Cleanup Verification Package for the 118-B-1, 105-B Solid Waste Burial Ground

**Prepared for the U.S. Department of Energy
by Washington Closure Hanford**

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EXECUTIVE SUMMARY

This cleanup verification package documents completion of remedial action, sampling activities, and compliance with cleanup criteria for the 118-B-1, 105-B Solid Waste Burial Ground. The 118-B-1 Burial Ground, part of the 100-BC-2 Operable Unit, is located in the 100-B/C Area of the Hanford Site in southeastern Washington State. This waste site was the primary burial ground for general wastes from the operation of the 105-B Reactor and P-10 Tritium Separation Project and also received waste from the 105-N Reactor. The burial ground was in operation between 1944 and 1973 and received reactor hardware, process piping and tubing, fuel spacers, glassware, electrical components, tritium process wastes, soft wastes and other miscellaneous debris.

Remediation of the 118-B-1 Burial Ground began on February 2, 2004, and was completed on June 7, 2007. Remedial action activities involved removing and stockpiling the uncontaminated overburden, and removing the buried waste material and the underlying contaminated soil for disposal. All contaminated solid waste materials were disposed at the Environmental Restoration Disposal Facility, with the exception of spent nuclear fuel, which will be transferred to the 100-K Basins for interim storage prior to final packaging and disposal.

Results of cleanup verification sampling, laboratory analyses, and data evaluations for the 118-B-1 site (which includes the remediation footprint, the overburden and below cleanup level soil stockpiles, and the waste staging pile area) indicate that residual tritium concentrations in vadose zone soils below the remediation footprint exceed remedial action objectives for the protection of groundwater. An explanation of significant difference to the *Record of Decision for the 100-BC-1, 100-BC-2, 100-DR-1, 100-DR-2, 100-FR-2, 100-HR-2, and 100-KR-2 Operable Units, Hanford Site (100 Area Burial Grounds), Benton County, Washington* (Burial Grounds ROD) assessed balancing factors, and concluded that tritium-contaminated soil may remain in-place, with institutional controls that prohibit future irrigation to minimize further mobilization of

residual tritium contamination to groundwater and the Columbia River. All remedial action objectives and goals for direct exposure, protection of groundwater, and protection of the Columbia River for contaminants other than tritium have been met (see Table ES-1).

Soil cleanup levels were established in the Burial Ground ROD based on a limited ecological risk assessment. Although not required by the Burial Ground ROD, a comparison against ecological risk screening levels has been made for the 118-B-1 waste site contaminants of concern and contaminants of potential concern. Screening levels were not exceeded for the site constituents, with the exception of barium, boron, cadmium, lead, mercury, molybdenum, selenium, and vanadium. Exceedance of screening values does not necessarily indicate the existence of risk to ecological receptors. Concentrations of cadmium, vanadium, and selenium are within the range of Hanford Site background levels, and molybdenum concentrations are consistent with those seen elsewhere at the Hanford Site (no established background value is available for molybdenum). Exceedances for barium, boron, lead, and mercury will be evaluated in the context of additional lines of evidence as part of the baseline risk assessment. A more complete quantitative ecological risk assessment will be presented in the baseline risk assessment for the river corridor portion of the Hanford Site and will be used to support the final closeout decision for the 118-B-1 waste site.

This evaluation supports a reclassification of the 118-B-1 waste site to Interim Closed Out, in accordance with the *Hanford Federal Facility Agreement and Consent Order* (Ecology et al. 1989) and the *Tri-Party Agreement Handbook Management Procedures, Waste Site Reclassification Guideline TPA-MP-14* (DOE-RL 2007). A copy of the waste site reclassification form is included as Attachment ES-1.

**Table ES-1. Summary of Remedial Action Goals for the
118-B-1 Burial Ground. (2 Pages)**

Regulatory Requirement	Remedial Action Goals	Results	Remedial Action Objectives Attained?	Ref.
Direct Exposure – Radionuclides	Attain 15 mrem/yr dose rate above background over 1,000 years.	The maximum predicted dose rates for the 118-B-1 Burial Ground are less than 15 mrem/yr. Carbon-14 and strontium-90 activities were not included in the plant ingestion pathway for the remediation footprint, because residual activities are below the root penetration zone.	Yes	a, b
Direct Exposure – Nonradionuclides	Attain individual COC/COPC RAGs.	All individual COC/COPC concentrations are below the direct exposure criteria.	Yes	c
Nonradionuclide Risk Requirements	Attain hazard quotient of less than 1 for all individual noncarcinogens.	All hazard quotients for individual nonradionuclide COCs/COPCs are less than 1.	Yes	d
	Attain a cumulative hazard quotient of less than 1 for noncarcinogens.	The cumulative hazard quotient for all areas and focused samples (8.8×10^{-1}) is less than 1.		d
	Attain an excess cancer risk of less than 1×10^{-6} for individual carcinogens.	All excess cancer risk values for individual nonradionuclide COCs/COPCs are less than 1×10^{-6} .		d
	Attain a total excess cancer risk of less than 1×10^{-5} for carcinogens.	The total excess carcinogenic risk for all areas and focused samples (8.0×10^{-7}) is less than 1×10^{-5} .		d
Groundwater/River Protection – Radionuclides	Attain single COC/COPC groundwater and river protection RAGs.	Among the radionuclide COCs/COPCs, only cesium-137, cobalt-60, strontium-90, and tritium are predicted to reach groundwater, at concentrations significantly below the RAGs. Tritium was not included in the evaluation for the remediation footprint, as an assessment of balancing factors concluded that residual tritium contamination should be left in-place with institutional controls to minimize further mobilization of residual tritium to groundwater. ^e	Yes	a, b
	Attain national primary drinking water regulations: ^f 4-mrem/yr (beta/gamma) dose rate to target receptor/organs.	All organ specific doses are below the 4-mrem/yr dose standard.		g

**Table ES-1. Summary of Remedial Action Goals for the
118-B-1 Burial Ground. (2 Pages)**

Regulatory Requirement	Remedial Action Goals	Results	Remedial Action Objectives Attained?	Ref.
	Meet drinking water standards for alpha emitters: the more stringent of 15 pCi/L MCL or 1/25 th of the derived concentration guide for DOE Order 5400.5. ^h	No alpha-emitting radionuclide COC/COPCs are predicted to impact groundwater.	Yes	a, b
	Meet total uranium standard of 21.2 pCi/L. ⁱ	Isotopic uranium concentrations are below background.	Yes	c
Groundwater/River Protection – Nonradionuclides	Attain individual nonradionuclide groundwater and river cleanup requirements.	Residual concentrations of multiple metals and organic compounds exceeded soil RAGs for the protection of groundwater and/or the Columbia River. However, none of these are predicted to migrate to groundwater (and thus the Columbia River) at concentrations exceeding groundwater or river criteria within 1,000 years, with the exception of beta-BHC. ^j However, modeling of the hydraulic conductivity and gradient data for the 100-B/C Area shows that there is a soil-to-groundwater dilution factor of approximately 6, indicating that beta-BHC will not leach to groundwater or the Columbia River at concentrations exceeding cleanup criteria. Therefore, residual contaminant concentrations achieve the remedial action objectives for groundwater and river protection.	Yes	c
Other Supporting Information	Sample design calculation brief.			k

^a 118-B-1 Combined Areas Cleanup Verification RESRAD Calculation Brief, 0100B-CA-V0308, Rev. 0 (Appendix C).

^b 118-B-1 Burial Ground Cleanup Verification RESRAD Calculation Brief for Overburden, Below Cleanup Level (BCL), and Staging Pile Area Soil, 0100B-CA-V0301, Rev. 0 (Appendix C).

^c 118-B-1 Burial Ground Cleanup Verification 95% UCL Calculations, 0100B-CA-V0299, Rev. 1 (Appendix C).

^d 118-B-1 Burial Ground Hazard Quotient and Carcinogenic Risk Calculations, 0100B-CA-V0300, Rev. 1 (Appendix C).

^e Explanation of Significant Difference for the Interim Action Record of Decision for the 100-BC-1, 100-BC-2, 100-DR-1, 100-DR-2, 100-FR-2, 100-HR-2, and 100-KR-2 Operable Units (100 Area Burial Grounds) (EPA 2007).

^f "National Primary Drinking Water Regulations" (40 Code of Federal Regulations 141).

^g 118-B-1 Burial Ground Combined Areas Comparison to Drinking Water Standards (MCL) Calculation Brief, 0100B-CA-V0309, Rev. 0 (Appendix C).

^h Radiation Protection of the Public and the Environment (DOE Order 5400.5).

ⁱ Based on the isotopic distribution of uranium in the 100 Areas, the 30 µg/L MCL corresponds to 21.2 pCi/L. Concentration-to-activity calculations are documented in Calculation of Total Uranium Activity Corresponding to a Maximum Contaminant Level for Total Uranium of 30 Micrograms per Liter in Groundwater (BHI 2001).

^j 100 Area Analogous Sites RESRAD Calculations, 0100X-CA-V0050, Rev. 0, Bechtel Hanford, Inc., Richland, Washington (2005).

^k 118-B-1 Shallow Zone, Overburden, BCL, and Staging Pile Sampling Plan, 0100B-CA-V0284, Rev. 0 (Appendix C).

COC = contaminant of concern

RAG = remedial action goal

COPC = contaminant of potential concern

RESRAD = RESidual RADioactivity (dose model)

MCL = maximum contaminant level (drinking water standard)

Attachment ES-1. Waste Site Reclassification Form.

Date Submitted: <u>12/12/07</u> Originator: <u>L. M. Dittmer</u> Phone: <u>372-9227</u>	WASTE SITE RECLASSIFICATION FORM Operable Unit(s): <u>100-BC-2</u> Waste Site Code: <u>118-B-1</u> Type of Reclassification Action: Closed Out ☐ Interim Closed Out ☒ No Action ☐ RCRA Postclosure ☐ Rejected ☐ Consolidated ☐	Control Number: 2007-032
This form documents agreement among parties listed authorizing classification of the subject unit as Closed Out, Interim Closed Out, No Action, RCRA Postclosure, Rejected, or Consolidated. This form also authorizes backfill of the waste management unit, if appropriate, for Closed Out and Interim Closed Out units. Final removal from the NPL of No Action and Closed Out waste management units will occur at a future date.		
<u>Description of current waste site condition:</u> <p>The 118-B-1 Burial Ground was the primary burial ground for general wastes from the operation of the 105-B Reactor and P-10 Tritium Separation Project. Remediation, verification sampling, and RESidual RADioactivity (RESRAD) modeling have been performed in accordance with remedial action objectives and goals established by the <i>Record of Decision for the 100-BC-1, 100-BC-2, 100-DR-1, 100-DR-2, 100-FR-2, 100-HR-2, and 100-KR-2 Operable Units, Hanford Site (100 Area Burial Grounds), Benton County, Washington</i> (Burial Ground ROD), U.S. Environmental Protection Agency, Region 10, Seattle, Washington and the October 2007 <i>Explanation of Significant Difference for the Interim Action Record of Decision for the 100-BC-1, 100-BC-2, 100-DR-1, 100-DR-2, 100-FR-2, 100-HR-2, and 100-KR-2 Operable Units (100 Area Burial Grounds) (118-B-1 ESD)</i>, U.S. Environmental Protection Agency, Region 10, Seattle, Washington. The selected remedy involved (1) excavating the site to the extent required to meet specified soil cleanup levels, (2) disposing of contaminated excavation materials at the Environmental Restoration Disposal Facility at the 200 Area of the Hanford Site or appropriate treatment, storage, and disposal facilities, (3) demonstrating through verification sampling and RESRAD modeling that cleanup goals have been achieved, and (4) proposing the site for reclassification as Interim Closed Out.</p>		
<u>Basis for reclassification:</u> <p>In accordance with this evaluation, the verification sampling and modeling results support a reclassification of this site to Interim Closed Out. The current site conditions achieve the remedial action objectives established in the Burial Ground ROD, as amended by the 118-B-1 ESD. The results show that residual tritium concentrations in the vadose zone beneath the burial ground exceed remedial action objectives for the protection of groundwater. The 118-B-1 ESD assessed balancing factors and concluded that residual tritium contamination should be left in-place with institutional controls to prohibit irrigation, minimizing further mobilization of residual tritium. The results of verification sampling and RESRAD modeling for contaminant concentrations other than tritium do not preclude any future uses (as bounded by the rural-residential scenario). With institutional controls to prevent irrigation, the results also demonstrate that residual contaminant concentrations are protective of groundwater and the Columbia River. The acceptability of direct exposure to residual tritium contamination in the deep vadose zone has not been demonstrated; therefore, institutional controls to prevent uncontrolled drilling or excavation into the deep zone are also required. The basis for reclassification is described in detail in the <i>Cleanup Verification Package for the 118-B-1, 105-B Solid Waste Burial Ground (CVP-2007-00006)</i>, Washington Closure Hanford, Richland, Washington.</p>		
<u>Waste Site Controls:</u> Engineered Controls: Yes ☐ No ☒ Institutional Controls: Yes ☒ No ☐ O&M requirements: Yes ☐ No ☒ Deed restrictions to prohibit irrigation and prevent uncontrolled drilling or excavation into the deep zone (greater than 4.6 m [15 ft] below ground surface).		
S. L. Charboneau DOE Federal Project Director (printed)	Signature	<u>12/20/07</u> Date
NA Ecology Project Manager (printed)	Signature	Date
L. Buelow EPA Project Manager (printed)	Signature	<u>1/9/08</u> Date

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ACRONYMS AND ABBREVIATIONS

BCL	below cleanup level
BCM	bank cubic meters
BCY	bank cubic yards
CFR	<i>Code of Federal Regulations</i>
COC	contaminant of concern
COPC	contaminant of potential concern
DOE-RL	U.S. Department of Energy Richland Operations Office
DQA	data quality assessment
EPA	U.S. Environmental Protection Agency
ERDF	Environmental Restoration Disposal Facility
ESD	Explanation of Significant Difference
ICP	inductively coupled plasma
MCL	maximum contaminant level (drinking water standard)
PCB	polychlorinated biphenyl
RAG	remedial action goal
RDR/RAWP	remedial design report/remedial action work plan
RESRAD	RESidual RADioactivity dose assessment model
ROD	Record of Decision
SAP	sampling and analysis plan
SPA	staging pile area
SSI	site-specific instruction
SNF	spent nuclear fuel
TPH	total petroleum hydrocarbons
TSD	treatment, storage, and disposal
UCL	upper confidence limit
WAC	<i>Washington Administrative Code</i>

1.0 STATEMENT OF PROTECTIVENESS

This report demonstrates that the 118-B-1 Burial Ground was remediated in accordance with the *Record of Decision for the 100-BC-1, 100-BC-2, 100-DR-1, 100-DR-2, 100-FR-2, 100-HR-2, and 100-KR-2 Operable Units, Hanford Site (100 Area Burial Grounds), Benton County, Washington* (Burial Grounds ROD) (EPA 2000) and the *Explanation of Significant Difference for the Interim Action Record of Decision for the 100-BC-1, 100-BC-2, 100-DR-1, 100-DR-2, 100-FR-2, 100-HR-2, and 100-KR-2 Operable Units (100 Area Burial Grounds)* (118-B-1 ESD) (EPA 2007), and meets the objectives and goals for interim closure as established in the Burial Ground ROD and the *Remedial Design Report/Remedial Action Work Plan for the 100 Area* (RDR/RAWP) (DOE-RL 2005).

The preferred remedy specified in the ROD (EPA 2000) and conducted for the 118-B-1 site included (1) excavating the site to the extent required to meet specified soil cleanup levels, (2) disposing of contaminated excavation materials at the Environmental Restoration Disposal Facility (ERDF) at the 200 Area of the Hanford Site or appropriate treatment, storage, and disposal (TSD) facilities, (3) backfilling the site with overburden and clean soil to average adjacent grade elevation, and (4) planting native vegetation species across the site. Excavation was driven by remedial action objectives for direct exposure, protection of groundwater, and protection of the Columbia River.

The results of verification sampling indicated that vadose zone soils beneath the burial ground contained residual tritium contamination in excess of remedial action objectives for the protection of groundwater. The 118-B-1 ESD (EPA 2007) was approved by the Tri-Parties to leave residual tritium-contaminated soil in-place based on consideration of balancing factors, and includes institutional controls to prohibit future irrigation at the 118-B-1 waste site. The results of verification sampling show that residual concentrations of contaminants other than tritium do not preclude any other future uses (as bounded by the rural-residential scenario) of shallow zone soils (i.e., surface to 4.6 m [15 ft] deep). Tritium activities in groundwater exceed the maximum contaminant level (MCL) of 20,000 pCi/L. With institutional controls to prevent irrigation, further mobilization of residual vadose zone tritium-contamination is predicted to be prevented to the extent that the MCL will not be exceeded for Columbia River water (EPA 2007). Further, removing this driving force will allow for natural decay of a larger portion of the residual vadose zone tritium inventory before reaching groundwater. Residual concentrations of non-tritium contaminants are protective of groundwater and the Columbia River. The acceptability of direct exposure to residual tritium contamination in the deep vadose zone has not been demonstrated; therefore, institutional controls to prevent uncontrolled drilling or excavation into the deep zone are also required.

Soil cleanup levels were established in the Burial Ground ROD (EPA 2000) based on a limited ecological risk assessment. Although not required by the Burial Ground ROD, a comparison against ecological risk screening levels has been made for the 118-B-1 waste site contaminants of concern (COCs)/contaminants of potential concern (COPCs). Screening levels were not exceeded for the site constituents, with the exception of barium, boron, cadmium, lead, mercury, molybdenum, selenium, and

vanadium. Exceedance of screening values does not necessarily indicate the existence of risk to ecological receptors. Concentrations of cadmium, vanadium, and selenium are within the range of Hanford Site background levels, and molybdenum concentrations are consistent with those seen elsewhere at the Hanford Site (no established background value is available for molybdenum). Exceedances for barium, boron, lead, and mercury will be evaluated in the context of additional lines of evidence as part of the baseline risk assessment. A more complete quantitative ecological risk assessment will be presented in the baseline risk assessment for the river corridor portion of the Hanford Site and will be used to support the final closeout decision for this waste site.

2.0 BACKGROUND AND GENERAL SITE INFORMATION

The 118-B-1 Burial Ground is located in the 100-BC-2 Operable Unit of the Hanford Site approximately 900 m (3,000 ft) east of the 105-C Reactor Building (Figures 1 and 2). This waste site operated from 1944 to 1973, receiving general radioactive and non-radioactive wastes from the 105-B and 105-N Reactors, construction wastes from modification of the 105-B Reactor Building, and process wastes from the P-10 Tritium Separation Project (Carpenter 1994).

The original burial ground consisted of six to eight trenches oriented in an east-west direction, but was expanded over its operational lifetime to 21 east-west trenches and 2 north-south trenches on the west side of the burial ground, according to historical documentation (Carpenter 1994) (Figure 3). During remediation of the site, it was discovered that 2 of the 23 trenches had not been used for waste disposal. The burial ground also consisted of several spline silos constructed from 3- to 3.7-m (10- to 12-ft) diameter metal culvert piping and 3 spacer pits shored with railroad ties. The overall lateral footprint of the burial ground prior to remediation was approximately 225 m by 90 m (740 ft by 300 ft).

A geophysical survey was performed over the 118-B-1 Burial Ground in 1993 (WHC 1993) to locate and map subsurface anomalies, and was validated by limited exploratory excavation in March 2002 (Ludowise 2002). Multiple subsurface anomalous zones were observed, generally consistent with the historical trench layout (Figure 3).

3.0 REMEDIAL ACTION SUMMARY

This section contains specific information about the excavation and disposal activities for the 118-B-1 Burial Ground. It also contains information about the types of wastes encountered in the burial ground and the field screening conducted.

Figure 1. Location of the 118-B-1 Burial Ground.

Figure 2. Historical Aerial Photograph of the 100-B/C Area, Including the 118-B-1 Burial Ground.

3.1 EXCAVATION AND DISPOSAL INFORMATION

Remedial action of the 118-B-1 Burial Ground began on February 2, 2004, with overburden removal. Approximately 20,000 BCM (26,200 BCY) of overburden material was removed before beginning excavation and sorting of the burial ground on March 16, 2004. Suspect spent nuclear fuel (SNF) was discovered on September 15, 2004, and remedial activities suspended until the Authorization Basis could be assessed and revised to address SNF. Load-out operations resumed on April 11, 2005, for previously sorted and segregated material. All remedial activities (excavation, sorting, and load-out) resumed on August 24, 2005, and were completed on June 7, 2007, with the exception of characterization and dispositioning of SNF and approximately 100 remaining anomalous containers.

Figure 3. 118-B-1 Burial Ground Trench Layout and Geophysical Investigation Results.

Over 132,300 tons (120,000 metric tons) of debris and contaminated soil from the 118-B-1 Burial Ground was removed and disposed at ERDF. The post-excavation topographic survey for the burial ground is shown in Figure 4. At the conclusion of remediation activities, the excavated area was approximately 10 m (33 ft) at its deepest, with a lateral footprint of approximately 21,600 m² (5.3 acres). Approximately 136,000 m² (33.6 acres) in total at the site were disturbed, including stockpiles and waste sorting and staging areas. An aerial photograph taken near the completion of excavation activities is shown in Figure 5.

3.2 WASTE INFORMATION

Twenty-three burial trenches were anticipated in the 118-B-1 Burial Ground, based on historical information; geophysical investigations indicated debris in 22 of those trenches. Exploratory excavation was performed at Trench 22, where no indications of buried debris were observed by geophysical instrumentation, and no debris or other waste forms were identified. Excavation at Trench 1 revealed only a large piece of metal, and no further waste forms were encountered. Waste forms encountered in the other 21 trenches included several thousand perforated and non-perforated spacers, spline cases, piping and tubing, miscellaneous metal, tritium furnaces, wax, lead items, mineral oil, reactor parts and hardware, SNF, hydraulic hoses and parts, degraded personal protective equipment, glassware, compressed gas cylinders, friable and non-friable asbestos containing material, gaskets, metal lathe turnings, dried paints, tar, electrical components, suspect pipe joint compound, and other miscellaneous debris. Photographs of selected waste items are provided in Appendix A.

Additionally, approximately 1,500 anomalous items were discovered during excavation and sorting operations. Approximately 1,000 of these were tubes used for packaging and disposal of tritium gas, approximately 350 were barium desiccant tubes, 81 were tubes used for packaging and disposal of mercury, approximately 50 were glass/plastic bottles, and approximately 70 were unique anomalous containers or solids.

Suspect SNF discovered during remediation activities was staged in two bunkers within the 118-B-1 waste staging pile area. Six pieces of confirmed SNF and two fractional pieces were identified following characterization. This material was transferred to the 100-K fuel storage basins for interim storage prior to final packaging and disposal.

**Figure 5. 118-B-1 Burial Ground After Major Excavation Activities
(taken November 2006).**

3.3 FIELD SCREENING

Radiological field screening was conducted during and after the site remedial actions as specified in the *100 Area Burial Grounds Remedial Action Sampling and Analysis Plan* (Burial Ground SAP) (DOE-RL 2001a). Field screening was used to guide the excavation to quickly assess the presence and level of contamination. Field screening at the site included using systematic global positioning radiological data mapping surveys in the excavation, on stockpiled material, and in interstitial areas with instrumentation specific to the detection of radiation associated with gamma and beta-emitting radionuclides.

The radiological surveys are provided in Appendix B. Multiple areas of elevated radiological activity requiring additional remediation were identified by the surveys. Additional material was selectively removed from these areas, and follow-up surveys performed using systematic global positioning surveys or hand-held instrumentation to confirm the adequacy of removal.

4.0 SAMPLING ACTIVITIES

Following remediation of the 118-B-1 Burial Ground, verification sampling was conducted in July 2006 and October through December 2006. Additional focused verification samples were collected from March to June 2007. Verification sampling is performed to collect data to determine if the remedial action goals (RAGs) have been met. RAGs are the specific numeric goals against which the verification data are evaluated to demonstrate attainment of the remedial action objectives as established in the Burial Ground ROD (EPA 2000) and the RDR/RAWP (DOE-RL 2005). The following subsections provide additional discussion of the information used to develop the COCs and COPCs for verification and focused sampling, as well as the sampling design selection and basis.

4.1 VERIFICATION SAMPLING DESIGN SELECTION AND BASIS

This section describes the basis for selection of an appropriate sampling design and the determination of the number of verification samples to collect at the 118-B-1 Burial Ground. Due to the complexity of the 118-B-1 Burial Ground, the standard sampling strategy identified in the Burial Ground SAP (DOE-RL 2001a) was deemed insufficient, and a more robust sampling design was developed, as described in the *Site Specific Instruction for Close-out Approach for 118-B-1* (WCH 2006).

For statistical verification sampling of the 118-B-1 Burial Ground remediation footprint, the footprints of the 21 trenches containing waste and surrounding land were grouped into one shallow zone decision unit with seven separate areas based on similarity of the waste forms observed during remediation, as described in the following subsections. In addition to these seven areas, the 118-B-1 waste site included one decision unit for the overburden stockpiles, divided into one area for the true overburden material stockpiles and one area for the below cleanup level (BCL) material stockpiles, and one decision unit/area for the waste staging and sorting area footprints (Figure 6). All ten areas were verified to meet the more restrictive shallow zone cleanup criteria, although the remediation footprint is partially in the deep zone (greater than 4.6 m [15 ft] below ground surface).

4.1.1 Area 1

Area 1 is composed of the footprints of Trenches 2 through 4. The waste stream observed within these trenches included general debris, perforated and non-perforated spacers, sandblasting material, gearboxes, compressed gas cylinders, small glass containers, mercury tubes, tritium tubes, asbestos, barium desiccant tubes, splines, and SNF.

Figure 6. 118-B-1 Area Boundaries for Verification Sampling.

4.1.2 Area 2

Area 2 is composed of the footprints of Trenches 5 through 8. The waste stream observed within these trenches included general debris, perforated and non-perforated spacers, tritium pots, and tritium furnaces.

4.1.3 Area 3

Area 3 is composed of the footprints of Trenches 9 through 20. The waste stream observed within these trenches included general debris, perforated and non-perforated spacers, tritium pots, tritium furnaces, small glass containers, mercury tubes, tritium tubes, wax, metal shavings, and a lead-lined cask.

4.1.4 Area 4

Area 4 is composed of the footprint of Trench 21. The waste stream observed within this trench included general debris, perforated and non-perforated spacers, ink, small glass containers, gearboxes, suspect herbicides, barium desiccant tubes, and silver slag.

4.1.5 Area 5

Area 5 is composed of the footprint of Trench 23. The waste stream observed within this trench included steel railing, a decayed drum containing oil, and elemental mercury.

4.1.6 Area 6

Area 6 is composed of the areas between trenches that were not included in Sampling Areas 1 through 5.

4.1.7 Area 7

Area 7 is composed of the haul roads between the burial ground and the waste staging and sorting areas.

4.1.8 Overburden Stockpiles

The overburden area consists of overburden removed from the 118-B-1 Burial Ground at the beginning of remedial operations as well as the historic spoils stockpiled onsite during excavation of the burial trenches.

4.1.9 BCL Stockpiles

The BCL stockpiles area consists of BCL material excavated in the layback between trenches.

4.1.10 Staging Pile Area Footprint

The staging pile area (SPA) decision unit consists of the footprints of two waste staging and sorting areas used during remedial activities.

4.1.11 Statistical Sampling Design

The number of sampling areas within each area was determined by the overall footprint size of the area, per the Burial Ground SAP (DOE-RL 2001a). The default number of verification samples for each decision subunit is four (4) composite samples. The required number of verification samples for each of the areas associated with the 118-B-1 waste site is listed in Table 1.

Each statistical verification sample was a composite formed by combining soil collected at four randomly selected nodes within each sampling area. The verification samples were submitted to offsite laboratories for analysis using approved Environmental Protection Agency (EPA) analytical methods, as required by the SAP (DOE-RL 2001a). The sample design methodology and sample location figures are presented in the calculation brief for verification sample design in Appendix C.

Table 1. Number of Statistical Verification Samples for the 118-B-1 Burial Ground.

Area	Footprint (ft ²)	Size Classification (ft ²)	Decision Subunits	Verification Samples
Area 1	40,600	Small (<100,000)	1	4 composites
Area 2	16,300	Small (<100,000)	1	4 composites
Area 3	50,000	Small (<100,000)	1	4 composites
Area 4	15,600	Small (<100,000)	1	4 composites
Area 5	11,700	Small (<100,000)	1	4 composites
Area 6	99,700	Small (<100,000)	1	4 composites
Area 7	99,000	Small (<100,000)	1	4 composites
Overburden Stockpiles	247,900	Medium (100,000 to 400,000)	4	16 composites
BCL Stockpiles	215,500	Medium (100,000 to 400,000)	4	16 composites
Staging Pile Area Footprint	300,100	Medium (100,000 to 400,000)	4	16 composites

BCL = below cleanup level

4.1.12 Focused Sampling

Focused samples were collected to provide confidence for the absence of contamination in residual soil beneath locations exhibiting visual soil stains, buried liquid

wastes or equipment, or large inventories of dangerous/hazardous wastes (e.g., lead debris and mercury-containing piping). Additionally, focused samples may be collected from locations where process knowledge indicates the potential for elevated concentrations of alpha- or beta-emitter contamination, or where waste characterization sampling results indicate potential elevated concentrations of chemical contaminants above RAGs.

Nineteen focused soil verification samples were collected, in addition to the statistical cleanup verification samples. Eleven of the focused samples were collected within the footprints of anomalous waste items or where high in-process sampling results occurred within the remediation footprint (Figure 7). Two of the focused samples were collected from soil underlying the SNF bunkers located in the SPA. The remaining six samples were collected at the locations of special waste staging areas. Additional description of the selection of focused samples is provided with the discussion of the development of COCs/COPCs, in Section 4.2.2.

4.1.13 Tritium Plume Characterization Sampling

In addition to the statistical and focused verification samples collected, eleven potholes were excavated in the remediation footprint and sampled at approximately 1-m (3-ft) intervals to characterize the extent of tritium contamination in the vadose zone underlying the 118-B-1 Burial Ground. One characterization borehole was also completed, including vadose zone and groundwater sampling, at the location of the highest detections of residual tritium. The sampling locations and results of these characterization activities are provided in Appendix D, and were used in the assessment of balancing factors for the 118-B-1 ESD (EPA 2007).

4.2 CONTAMINANTS OF CONCERN AND CONTAMINANTS OF POTENTIAL CONCERN FOR VERIFICATION SAMPLING

The SAP (DOE-RL 2001a) identifies the COCs for burial grounds based on waste forms encountered. Additional waste site COCs/COPCs were identified for the 118-B-1 Burial Ground based on process knowledge and results of in-process sampling. Based on the observed waste forms found during remediation activities and the results of waste characterization sampling, COCs/COPCs were identified for each decision unit in the *Site Specific Instruction for Close-Out Approach for 118-B-1* (118-B-1 SSI) (WCH 2006). The 118-B-1 SSI documents the agreements between the Department of Energy Richland Operations Office (DOE-RL) and the EPA regarding interim waste site closeout for the 118-B-1 Burial Ground. The COCs/COPCs identified in the 118-B-1 SSI (WCH 2006) include americium-241, carbon-14, cesium-137, cobalt-60, europium-152, europium-154, europium-155, nickel-63, plutonium-238, plutonium-239/240, plutonium-241, silver-108m, strontium-90,

Figure 7. Location of Focused Verification Soil Samples at the 118-B-1 Burial Ground.

tritium, uranium-233/234, uranium-235, uranium-238, the expanded list of inductively coupled plasma (ICP) metals (arsenic, antimony, barium, beryllium, boron, cadmium, total chromium, cobalt, copper, lead, manganese, molybdenum, nickel, selenium, silver, vanadium, and zinc), hexavalent chromium, mercury, polychlorinated biphenyls (PCBs), total petroleum hydrocarbons (TPH), semi-volatile organic compounds, volatile organic compounds, herbicides, pesticides, and asbestos. The COCs/COPCs detected at the 118-B-1 Burial Ground and their respective points of compliance, the remedial action goals (RAGs), are summarized in Section 5.0 of this cleanup verification package.

4.2.1 Statistical Sampling

The remediation footprint, stockpiles, and SPA footprint were divided into ten areas, based on use and the similarity of waste forms observed during remediation, as described in Section 4.1. The COCs/COPCs for the five areas associated with the remediation footprints for the burial trenches were identified based on the waste forms observed (WCH 2006). The COCs/COPCs for the remaining five areas (interstitial areas, haul roads, overburden stockpiles, BCL stockpiles, and the SPA footprint) are inclusive of all COCs/COPCs for the remediation footprint. The COCs/COPCs for each area are listed in Table 2.

Table 2. Summary of the 118-B-1 Waste Site COCs/COPCs for Statistical Verification Sampling. (2 Pages)

COCs/COPCs	Area 1	Area 2	Area 3	Area 4	Area 5	Areas 6 & 7, Overburden Stockpiles, BCL Stockpiles, and SPA
Radionuclides						
Americium-241	X	X ^a	X ^a			X
Carbon-14	X	X	X	X	X	X
Gamma-emitters ^b	X	X	X	X	X	X
Nickel-63	X	X	X	X	X	X
Plutonium-238	X	X ^a	X ^a			X
Plutonium-239/240	X	X ^a	X ^a			X
Plutonium-241	X	X ^a	X ^a			X
Strontium-90	X	X	X	X	X	X
Silver-108m	X	X	X	X	X	X
Tritium	X	X	X	X	X	X
Uranium-233/234	X					X
Uranium-235	X					X
Uranium-238	X					X

Table 2. Summary of the 118-B-1 Waste Site COCs/COPCs for Statistical Verification Sampling. (2 Pages)

COCs/COPCs	Area 1	Area 2	Area 3	Area 4	Area 5	Areas 6 & 7, Overburden Stockpiles, BCL Stockpiles, and SPA
Nonradionuclides						
Asbestos	X					X
ICP metals ^c	X	X	X	X	X	X
Hexavalent chromium	X	X	X	X	X	X
Mercury	X	X	X	X	X	X
Herbicides				X		X
Pesticides				X		X
PCBs	X		X	X	X	X
SVOA	X		X	X	X	X
TPH	X	X ^a	X	X	X	X
VOA	X		X	X	X	X

^a Analyte was not identified as a COC/COPC (WCH 2006), but was inadvertently included in the requested analyses.

^b Includes cesium-137, cobalt-60, europium-152, europium-154, and europium-155.

^c The expanded list of ICP metals analysis was performed (arsenic, antimony, barium, beryllium, boron, cadmium, total chromium, lead, cobalt, copper, manganese, molybdenum, nickel, selenium, silver, vanadium, and zinc).

BCL = below cleanup level

SPA = staging pile area

COC = contaminant of concern

SVOA = semivolatile organic analysis

COPC = contaminant of potential concern

TPH = total petroleum hydrocarbons

ICP = inductively coupled plasma

VOA = volatile organic analysis

PCB = polychlorinated biphenyl

4.2.2 Focused Sampling

The COCs/COPCs for focused samples were identified based on waste forms encountered, in-process sampling, and process knowledge (WCH 2006), and are listed in Table 3.

Table 3. 118-B-1 Focused Verification Sample Summary. (3 Pages)

Sample Location	Sample Number	Associated Anomaly	Coordinate Locations ^a	COCs/COPCs
1	J12R24	Pesticide/herbicide odor in Trench 21	N 144048.4 E 564414.0	Herbicides, pesticides, PCBs, SVOA, TPH, and VOA
2	J12R25	Cache of barium desiccant tubes in Trench 21	N 144048.3 E 564441.1	ICP metals ^b
3	J12R26	Cache of tritium tubes in Trench 16	N 143978.3 E 564429.5	Tritium and ICP metals ^b
4	J12R27	Cache of tritium tubes in Trench 15	N 143962.9 E 564420.6	Tritium
5	J12R28	Cache of mercury tubes in Trench 12	N 143929.4 E 564401.6	ICP metals ^b and mercury

Table 3. 118-B-1 Focused Verification Sample Summary. (3 Pages)

Sample Location	Sample Number	Associated Anomaly	Coordinate Locations ^a	COCs/COPCs
6	J12R29	Cache of lead debris in Trench 10	N 143925.8 E 564387.2	ICP metals ^b
7	J13P85	Mercury-contaminated soil in Trench 23	N 143908.7 E 564357.0	ICP metals ^b and mercury
8	J12R31	Cache of lead debris in Trench 7	N 143899.7 E 564433.3	ICP metals ^b
9	J12R32	Cache of lead debris in Trench 5	N 143885.7 E 564378.8	ICP metals ^b
10	J12R33	Deteriorated drum containing mineral oil in Trench 23	NA ^c	PCBs, SVOA, TPH, and VOA
11	J12R34	Cache of tritium and mercury tubes in Trench 2	N 143831.1 E 564370.1	Tritium, ICP metals ^b , and mercury
12	J14Y75	SNF Bunker 1	N 144084.4 E 564559.6	Americium-241, gamma-emitting radionuclides, plutonium-238, plutonium-239/240, plutonium-241, uranium-233/234, uranium-235, and uranium-238
13	J14Y76	SNF Bunker 2	N 144080.2 E 564535.2	Americium-241, gamma-emitting radionuclides, plutonium-238, plutonium-239/240, plutonium-241, uranium-233/234, uranium-235, and uranium-238
14	J12XB3	Initial process cell dumping area	N 144065.2 E 564227.9	Gamma-emitting radionuclides, ICP metals ^b , and mercury
15	J13NX4	Mercury-contaminated soil staging area in Trench 23	NA ^d	ICP metals ^b and mercury
16	J13P84	Mercury-contaminated soil staging area in waste staging pile area	NA ^e	ICP metals ^b and mercury
17	J14JJ3/ J152M1 ^f	Mercury-contaminated soil staging area in west end of Process Cell 4	NA ^g	Gamma-emitting radionuclides, tritium, ICP metals ^b , and mercury
18	J14L38	Mercury-contaminated soil staging area in middle of Process Cell 4	NA ^g	Gamma-emitting radionuclides, tritium, ICP metals ^b , and mercury
19	J14L39	Mercury-contaminated soil staging area in east end of Process Cell 4	NA ^g	Gamma-emitting radionuclides, tritium, ICP metals ^b , and mercury

Sources: Field logbooks EFL-1173-8, EFL-1173-10, EFL-1173-11, EFL-1173-12, and EFL-1173-13 (WCH 2007a, 2007b, 2007c, 2007d, 2007e)

^a Washington State Plane, South Zone meters.

^b Samples were analyzed for the expanded ICP metal list including antimony, arsenic, barium, beryllium, boron, cadmium, chromium, cobalt, copper, lead, manganese, molybdenum, nickel, selenium, vanadium, silver, and zinc.

^c Sample location adjusted from that listed in WCH (2006), due to significant topography change following loadout of mercury-contaminated soils. Sample was collected by combining multiple aliquots from the base of the trench excavation in the area into one sample.

^d Sample was collected by combining multiple aliquots from the excavated staging area into one sample.

Table 3. 118-B-1 Focused Verification Sample Summary. (3 Pages)

^e Sample was collected by combining multiple aliquots from areas with elevated field XRF mercury measurements into one sample.

^f Results for Sample J14JJ3 indicated residual mercury contamination in excess of cleanup criteria. Additional material was removed and replacement Sample J152M1 was collected and analyzed for tritium, ICP metals, and mercury.

^g Samples collected beneath staged mercury-contaminated soil in Process Cell 4 were collected by combining multiple aliquots from areas with elevated field XRF mercury measurements into one sample.

COC = contaminant of concern
COPC = contaminant of potential concern
ICP = inductively coupled plasma
NA = not applicable
PCB = polychlorinated biphenyl
SNF = spent nuclear fuel
SVOA = semivolatile organic analysis
TPH = total petroleum hydrocarbons
VOA = volatile organic analysis
XRF = x-ray fluorescence

5.0 SAMPLING RESULTS

All verification samples were submitted to offsite laboratories for analysis using approved U.S. Environmental Protection Agency (EPA) analytical methods, as required per the Burial Ground SAP (DOE-RL 2001a). The laboratory-reported data results from the verification sampling were used in the statistical calculations and are included with the 95% upper confidence limit (UCL) calculations in Appendix C. The laboratory-reported data for the focused samples are included with the supporting data attached to the 95% UCL calculations.

The primary statistical calculation to evaluate compliance with cleanup standards is the 95% UCL on the arithmetic mean of the data. The 95% UCL values for each COC/COPC are computed for each of the 118-B-1 Burial Ground areas as specified by the RDR/RAWP (DOE-RL 2005), with calculations provided in Appendix C. Prior to calculating the 95% UCL, the individual sample results are reviewed and, as appropriate, adjusted per the SAP (DOE-RL 2001a) and RDR/RAWP (DOE-RL 2005). When a nonradionuclide COC was detected in fewer than 50% of the verification samples collected, the maximum detected value was used for comparison against the RAGs. Statistical evaluations were not performed on data sets with no reported detections. Evaluation of the verification data from the focused samples was performed by direct comparison of the maximum sample result from all focused samples for each COC/COPC against cleanup criteria.

Comparisons of the statistical results for site COCs/COPCs with the RAGs (cleanup criteria) for each of the 118-B-1 Burial Ground areas are listed in Tables 4 through 13. Comparison of the maximum results for COCs/COPCs detected in focused verification samples with the RAGs are listed in Table 14. Calculated cleanup levels are not presented in the *Cleanup Levels and Risk Calculations (CLARC) Database* (Ecology 2005) under the *Washington Administrative Code (WAC)* 173-340-740(3) for aluminum, calcium, iron, magnesium, potassium, silicon, and sodium; therefore, these constituents are not considered site COCs/COPCs. Potassium-40, radium-226, radium-228,

thorium-228, and thorium-232 were detected in samples collected at the site, but are not considered within the statistical calculations. These isotopes are naturally occurring, not related to the operational history of the site, and/or were detected below background levels. All individual cleanup verification sample results are included with the 95% UCL calculation in Appendix C.

Initial data results from Area 5 and the SPA footprint indicated the presence of cesium-137 and tritium, respectively, at concentrations exceeding the cleanup criteria in one sampling area of each decision unit. Consequently, additional soil was removed from these areas and the areas re-sampled and analyzed for gamma-emitting radionuclides and tritium, respectively. The second analyses for cesium-137 and tritium were used to perform the 95% UCL calculations for Area 5 and the SPA, respectively, the results of which are presented in Tables 8 and 13.

Initial focused sample data results from the western end of the mercury-contaminated soil staging area in Process Cell 4 (Focused Sample 17) indicated the presence of residual mercury at a concentration exceeding the cleanup criteria. Consequently, additional soil was removed from this area and the area re-sampled and analyzed for tritium, ICP metals, and mercury. The second analysis for mercury was used in evaluation of the focused sample results, and the maximum results for tritium and ICP metals from each sampling event were used in the evaluation, the results of which are presented in Table 14.

A portion of the verification data for the herbicide 2,4-DB in the SPA footprint were rejected due to data quality deficiencies. The maximum detected accepted value was used for evaluation purposes in the SPA footprint, with additional discussion provided in the data quality assessment (DQA) (Appendix E).

Table 4. Comparison of Statistical Contaminant Concentrations to Action Levels for the 118-B-1 Area 1 Verification Sampling Event.* (2 Pages)

COC/COPC	Statistical Result (pCi/g)	Generic Site Lookup Values ^a (pCi/g)			Does the Statistical Result Exceed Lookup Values?	Does the Statistical Result Pass RESRAD Modeling?
		Shallow Zone Lookup Value ^b	Groundwater Protection Lookup Value	River Protection Lookup Value		
Carbon-14	1.93	5.16	-- ^c	-- ^c	No	Yes ^e
Cesium-137	0.201	6.2	1,465 ^d	1,465 ^d	No	
Cobalt-60	0.039	1.4	13,900 ^d	13,900 ^d	No	
Europium-152	0.695	3.3	-- ^c	-- ^c	No	
Strontium-90	0.125	4.5	27.6 ^d	27.6 ^d	No	
Tritium	158	459 ^d	12.6 ^d	12.6 ^d	Yes	-- ^f
Uranium-233/234	0.566 (<BG)	1.1 ^g	1.1 ^g	1.1 ^g	No	--
Uranium-235	0.051 (<BG)	0.61 ^c	0.5 ^h	0.5 ^h	No	--
Uranium-238	0.518 (<BG)	1.1 ^g	1.1 ^g	1.1 ^g	No	--

Table 4. Comparison of Statistical Contaminant Concentrations to Action Levels for the 118-B-1 Area 1 Verification Sampling Event.* (2 Pages)

COC/COPC	Statistical Result (mg/kg)	Remedial Action Goals ^a (mg/kg)			Does the Statistical Data Set Exceed RAGs?	Does the Statistical Result Pass RESRAD Modeling?
		Direct Exposure	Soil Cleanup Level for Groundwater Protection	Soil Cleanup Level for River Protection		
Arsenic	3.2 (<BG)	20	20	20	No	--
Barium	60.4 (<BG)	5,600 ⁱ	132 ^{ij}	224 ⁱ	No	--
Beryllium	0.60 (<BG)	10.4 ^k	1.51 ^j	1.51 ^j	No	--
Boron ^l	1.4	16,000	320	-- ^m	No	--
Chromium (total)	7.1 (<BG)	80,000 ⁱ	18.5 ^j	18.5 ^j	No	--
Cobalt	10.2 (<BG)	1,600	32	-- ^m	No	--
Copper	17.7 (<BG)	2,960	59.2	22.0 ^j	No	--
Lead	4.8 (<BG)	353	10.2 ^j	10.2 ^j	No	--
Manganese	381 (<BG)	11,200	512 ^j	512 ^j	No	--
Mercury	1.3	24	0.33 ^j	0.33 ^j	Yes	Yes ⁿ
Nickel	11.2 (<BG)	1,600	19.1 ^j	27.4	No	--
Vanadium	52.0 (<BG)	560	85.1 ^j	-- ^m	No	--
Zinc	45.8 (<BG)	24,000	480	67.8 ^j	No	--
bis(2-Ethylhexyl)phthalate	0.19	71.4	0.625	0.36	No	--
Di-n-butylphthalate	0.12	8,000	160	540	No	--
4-Methyl-2-pentanone	0.006	6,400	64	-- ^m	No	--
Acetone	0.014	72,000	720	-- ^m	No	--
Methylene chloride	0.019	133	0.5	0.94	No	--

*All footnotes are provided following Table 14.

-- = not applicable

BG = background (obtained from DOE-RL 1996 and DOE-RL 2001b, unless otherwise noted)

COC = contaminant of concern

COPC = contaminant of potential concern

RAG = remedial action goal

RESRAD = RESidual RADioactivity (dose-assessment model)

Table 5. Comparison of Statistical Contaminant Concentrations to Action Levels for the 118-B-1 Area 2 Verification Sampling Event.* (2 Pages)

COC/COPC	Statistical Result (pCi/g)	Generic Site Lookup Values ^a (pCi/g)			Does the Statistical Result Exceed Lookup Values?	Does the Statistical Result Pass RESRAD Modeling?
		Shallow Zone Lookup Value ^b	Groundwater Protection Lookup Value	River Protection Lookup Value		
Cesium-137	0.163	6.2	1,465 ^d	1,465 ^d	No	Yes ^e
Strontium-90	0.172	4.5	27.6 ^d	27.6 ^d	No	
Tritium	39.4	459 ^d	12.6 ^d	12.6 ^d	Yes	-- ^f

Table 5. Comparison of Statistical Contaminant Concentrations to Action Levels for the 118-B-1 Area 2 Verification Sampling Event.* (2 Pages)

COC/COPC	Statistical Result (mg/kg)	Remedial Action Goals ^a (mg/kg)			Does the Statistical Data Set Exceed RAGs?	Does the Statistical Result Pass RESRAD Modeling?
		Direct Exposure	Soil Cleanup Level for Groundwater Protection	Soil Cleanup Level for River Protection		
Arsenic	2.9 (<BG)	20	20	20	No	--
Barium	58.1 (<BG)	5,600 ⁱ	132 ^{ij}	224 ⁱ	No	--
Beryllium	0.64 (<BG)	10.4 ^k	1.51 ^j	1.51 ^j	No	--
Boron ^l	4.7	16,000	320	-- ^m	No	--
Chromium (total)	6.7 (<BG)	80,000 ⁱ	18.5 ^j	18.5 ^j	No	--
Chromium (hexavalent)	0.29	2.1	4.8 ^o	2	No	--
Cobalt	8.5 (<BG)	1,600	32	-- ^m	No	--
Copper	16.6 (<BG)	2,960	59.2	22.0 ^j	No	--
Lead	4.8 (<BG)	353	10.2 ^j	10.2 ^j	No	--
Manganese	321 (<BG)	11,200	512 ^j	512 ^j	No	--
Nickel	10.5 (<BG)	1,600	19.1 ^j	27.4	No	--
Vanadium	54.5 (<BG)	560	85.1 ^j	-- ^m	No	--
Zinc	43.2 (<BG)	24,000	480	67.8 ^j	No	--

*All footnotes are provided following Table 14.

-- = not applicable

BG = background (obtained from DOE-RL 1996 and DOE-RL 2001b, unless otherwise noted)

COC = contaminant of concern

COPC = contaminant of potential concern

RAG = remedial action goal

RESRAD = RESidual RADioactivity (dose-assessment model)

Table 6. Comparison of Statistical Contaminant Concentrations to Action Levels for the 118-B-1 Area 3 Verification Sampling Event.* (2 Pages)

COC/COPC	Statistical Result (pCi/g)	Generic Site Lookup Values ^a (pCi/g)			Does the Statistical Result Exceed Lookup Values?	Does the Statistical Result Pass RESRAD Modeling?
		Shallow Zone Lookup Value ^b	Groundwater Protection Lookup Value	River Protection Lookup Value		
Cesium-137	0.776	6.2	1,465 ^d	1,465 ^d	No	Yes ^e
Strontium-90	2.56	4.5	27.6 ^d	27.6 ^d	No	
Tritium	12.8	459 ^d	12.6 ^d	12.6 ^d	Yes	-- ^f

Table 6. Comparison of Statistical Contaminant Concentrations to Action Levels for the 118-B-1 Area 3 Verification Sampling Event.* (2 Pages)

COC/COPC	Statistical Result (mg/kg)	Remedial Action Goals ^a (mg/kg)			Does the Statistical Data Set Exceed RAGs?	Does the Statistical Result Pass RESRAD Modeling?
		Direct Exposure	Soil Cleanup Level for Groundwater Protection	Soil Cleanup Level for River Protection		
Arsenic	3.7 (<BG)	20	20	20	No	--
Barium	62.6 (<BG)	5,600 ⁱ	132 ^{ij}	224 ⁱ	No	--
Beryllium	0.63 (<BG)	10.4 ^k	1.51 ^j	1.51 ^j	No	--
Boron ^l	6.5	16,000	320	-- ^m	No	--
Chromium (total)	7.7 (<BG)	80,000 ⁱ	18.5 ^j	18.5 ^j	No	--
Chromium (hexavalent)	0.21	2.1	4.8 ^o	2	No	--
Cobalt	9.1 (<BG)	1,600	32	-- ^m	No	--
Copper	17.1 (<BG)	2,960	59.2	22.0 ^j	No	--
Lead	5.7 (<BG)	353	10.2 ^j	10.2 ^j	No	--
Manganese	367 (<BG)	11,200	512 ^j	512 ^j	No	--
Mercury	0.21 (<BG)	24	0.33 ^j	0.33 ^j	No	--
Nickel	15.9 (<BG)	1,600	19.1 ^j	27.4	No	--
Vanadium	47.5 (<BG)	560	85.1 ^j	-- ^m	No	--
Zinc	43.7 (<BG)	24,000	480	67.8 ^j	No	--
bis(2-Ethylhexyl)phthalate	0.14	71.4	0.625	0.36	No	--
Di-n-butylphthalate	0.16	8,000	160	540	No	--
4-Methyl-2-pentanone	0.006	6,400	64	-- ^m	No	--
Acetone	0.015	72,000	720	-- ^m	No	--
Carbon tetrachloride	0.009	7.7	0.034	0.05	No	--
Methylene chloride	0.019	133	0.5	0.94	No	--

*All footnotes are provided following Table 14.

-- = not applicable

BG = background (obtained from DOE-RL 1996 and DOE-RL 2001b, unless otherwise noted)

COC = contaminant of concern

COPC = contaminant of potential concern

RAG = remedial action goal

RESRAD = RESidual RADioactivity (dose-assessment model)

Table 7. Comparison of Statistical Contaminant Concentrations to Action Levels for the 118-B-1 Area 4 Verification Sampling Event.* (2 Pages)

COC/COPC	Statistical Result (pCi/g)	Generic Site Lookup Values ^a (pCi/g)			Does the Statistical Result Exceed Lookup Values?	Does the Statistical Result Pass RESRAD Modeling?
		Shallow Zone Lookup Value ^b	Groundwater Protection Lookup Value	River Protection Lookup Value		
Cesium-137	0.345	6.2	1,465 ^d	1,465 ^d	No	Yes ^e
COC/COPC	Statistical Result (mg/kg)	Remedial Action Goals ^a (mg/kg)			Does the Statistical Data Set Exceed RAGs?	Does the Statistical Result Pass RESRAD Modeling?
		Direct Exposure	Soil Cleanup Level for Groundwater Protection	Soil Cleanup Level for River Protection		
Arsenic	3.5 (<BG)	20	20	20	No	--
Barium	48.6 (<BG)	5,600 ⁱ	132 ^j	224 ⁱ	No	--
Beryllium	0.40 (<BG)	10.4 ^k	1.51 ^j	1.51 ^j	No	--
Boron ^l	3.9	16,000	320	-- ^m	No	--
Chromium (total)	6.6 (<BG)	80,000 ⁱ	18.5 ^j	18.5 ^j	No	--
Chromium (hexavalent)	0.22	2.1	4.8 ^o	2	No	--
Cobalt	8.6 (<BG)	1,600	32	-- ^m	No	--
Copper	16.2 (<BG)	2,960	59.2	22.0 ^j	No	--
Lead	4.9 (<BG)	353	10.2 ^j	10.2 ^j	No	--
Manganese	334 (<BG)	11,200	512 ^j	512 ^j	No	--
Nickel	10.6 (<BG)	1,600	19.1 ^j	27.4	No	--
Vanadium	49.9 (<BG)	560	85.1 ^j	-- ^m	No	--
Zinc	42.1 (<BG)	24,000	480	67.8 ^j	No	--
Aroclor-1254	0.080	0.5	0.017 ^p	0.017 ^p	Yes	Yes ⁿ
bis(2-Ethylhexyl)phthalate	0.41	71.4	0.625	0.36	Yes	Yes ⁿ
Di-n-butylphthalate	0.063	8,000	160	540	No	--
Diethylphthalate	0.017	64,000	1,280	4,600	No	--
Phenol	0.17	24,000	480	4,200	No	--
Acetone	0.012	72,000	720	-- ^m	No	--
Carbon tetrachloride	0.016	7.7	0.034	0.05	No	--
Methylene chloride	0.010	133	0.5	0.94	No	--
beta-BHC	0.0078	0.556	0.00486	0.00554	Yes	Yes ^q
4,4'-DDE	0.016	2.94	0.0257	0.005 ^p	Yes	Yes ⁿ
Dieldrin	0.0038	0.0625	0.003 ^p	0.003 ^p	Yes	Yes ⁿ
Endosulfan sulfate	0.0022	480	9.6	0.0112	No	--
Endrin	0.0015	24	0.2	0.039	No	--
Endrin aldehyde	0.0055	24	0.2	0.039	No	--
gamma-Chlordane	0.0025	0.769 ^r	0.0165 ^{p,r}	0.0165 ^p	No	--

Table 7. Comparison of Statistical Contaminant Concentrations to Action Levels for the 118-B-1 Area 4 Verification Sampling Event.* (2 Pages)

COC/COPC	Statistical Result (mg/kg)	Remedial Action Goals ^a (mg/kg)			Does the Statistical Data Set Exceed RAGs?	Does the Statistical Result Pass RESRAD Modeling?
		Direct Exposure	Soil Cleanup Level for Groundwater Protection	Soil Cleanup Level for River Protection		
2,4-D	0.013	800	7	-- ^m	No	--
2,4-DB	0.016	640	12.8	-- ^m	No	--
Dalapon	0.037	2,400	20	-- ^m	No	--
Dichloroprop ^s	0.14	800	7	-- ^m	No	--
Pentachlorophenol	0.014	8.33	0.073	0.056	No	--

*All footnotes are provided following Table 14.

-- = not applicable

BG = background (obtained from DOE-RL 1996 and DOE-RL 2001b, unless otherwise noted)

COC = contaminant of concern

COPC = contaminant of potential concern

RAG = remedial action goal

RESRAD = RESidual RADioactivity (dose-assessment model)

Table 8. Comparison of Statistical Contaminant Concentrations to Action Levels for the 118-B-1 Area 5 Verification Sampling Event.* (2 Pages)

COC/COPC	Statistical Result (pCi/g)	Generic Site Lookup Values ^a (pCi/g)			Does the Statistical Result Exceed Lookup Values?	Does the Statistical Result Pass RESRAD Modeling?
		Shallow Zone Lookup Value ^b	Groundwater Protection Lookup Value	River Protection Lookup Value		
Cesium-137	2.40	6.2	1,465 ^d	1,465 ^d	No	Yes ^e
Strontium-90	1.89	4.5	27.6 ^d	27.6 ^d	No	
COC/COPC	Statistical Result (mg/kg)	Remedial Action Goals ^a (mg/kg)			Does the Statistical Data Set Exceed RAGs?	Does the Statistical Result Pass RESRAD Modeling?
		Direct Exposure	Soil Cleanup Level for Groundwater Protection	Soil Cleanup Level for River Protection		
Arsenic	2.8 (<BG)	20	20	20	No	--
Barium	46.7 (<BG)	5,600 ⁱ	132 ^{i,j}	224 ⁱ	No	--
Beryllium	0.1 (<BG)	10.4 ^k	1.51 ^j	1.51 ^j	No	--
Boron ^l	1.1	16,000	320	-- ^m	No	--
Cadmium ^t	0.20 (<BG)	13.9	0.81 ^j	0.81 ^j	No	--
Chromium (total)	5.0 (<BG)	80,000 ⁱ	18.5 ^j	18.5 ^j	No	--
Chromium (hexavalent)	0.26	2.1	4.8 ^o	2	No	--
Cobalt	7.2 (<BG)	1,600	32	-- ^m	No	--
Copper	14.8 (<BG)	2,960	59.2	22.0 ^j	No	--

Table 8. Comparison of Statistical Contaminant Concentrations to Action Levels for the 118-B-1 Area 5 Verification Sampling Event.* (2 Pages)

COC/COPC	Statistical Result (mg/kg)	Remedial Action Goals ^a (mg/kg)			Does the Statistical Data Set Exceed RAGs?	Does the Statistical Result Pass RESRAD Modeling?
		Direct Exposure	Soil Cleanup Level for Groundwater Protection	Soil Cleanup Level for River Protection		
Lead	3.8 (<BG)	353	10.2 ^j	10.2 ^j	No	--
Manganese	290 (<BG)	11,200	512 ^j	512 ^j	No	--
Mercury	0.03 (<BG)	24	0.33 ^j	0.33 ^j	No	--
Nickel	7.4 (<BG)	1,600	19.1 ^j	27.4	No	--
Vanadium	37.4 (<BG)	560	85.1 ^j	-- ^m	No	--
Zinc	36.8 (<BG)	24,000	480	67.8 ^j	No	--
bis(2-Ethylhexyl)phthalate	0.17	71.4	0.625	0.36	No	--
Acetone	0.017	72,000	720	-- ^m	No	--
Methylene chloride	0.013	133	0.5	0.94	No	--

*All footnotes are provided following Table 14.

-- = not applicable

BG = background (obtained from DOE-RL 1996 and DOE-RL 2001b, unless otherwise noted)

COC = contaminant of concern

COPC = contaminant of potential concern

RAG = remedial action goal

RESRAD = RESidual RADioactivity (dose-assessment model)

Table 9. Comparison of Statistical Contaminant Concentrations to Action Levels for the 118-B-1 Area 6 Verification Sampling Event.* (2 Pages)

COC/COPC	Statistical Result (pCi/g)	Generic Site Lookup Values ^a (pCi/g)			Does the Statistical Result Exceed Lookup Values?	Does the Statistical Result Pass RESRAD Modeling?
		Shallow Zone Lookup Value ^b	Groundwater Protection Lookup Value	River Protection Lookup Value		
Cesium-137	0.150	6.2	1,465 ^d	1,465 ^d	No	Yes ^e
Tritium	3.19	459 ^d	12.6 ^d	12.6 ^d	No	-- ^f
Uranium-233/234	0.550 (<BG)	1.1 ^g	1.1 ^g	1.1 ^g	No	--
Uranium-238	0.690 (<BG)	1.1 ^g	1.1 ^g	1.1 ^g	No	--
COC/COPC	Statistical Result (mg/kg)	Remedial Action Goals ^a (mg/kg)			Does the Statistical Data Set Exceed RAGs?	Does the Statistical Result Pass RESRAD Modeling?
		Direct Exposure	Soil Cleanup Level for Groundwater Protection	Soil Cleanup Level for River Protection		
Arsenic	4.1 (<BG)	20	20	20	No	--
Barium	80.1 (<BG)	5,600 ⁱ	132 ^{i,j}	224 ⁱ	No	--
Beryllium	0.36 (<BG)	10.4 ^k	1.51 ^j	1.51 ^j	No	--

Table 9. Comparison of Statistical Contaminant Concentrations to Action Levels for the 118-B-1 Area 6 Verification Sampling Event.* (2 Pages)

COC/COPC	Statistical Result (mg/kg)	Remedial Action Goals ^a (mg/kg)			Does the Statistical Data Set Exceed RAGs?	Does the Statistical Result Pass RESRAD Modeling?
		Direct Exposure	Soil Cleanup Level for Groundwater Protection	Soil Cleanup Level for River Protection		
Boron ^l	6.1	16,000	320	-- ^m	No	--
Chromium (total)	7.4 (<BG)	80,000 ⁱ	18.5 ^j	18.5 ^j	No	--
Chromium (hexavalent)	0.27	2.1	4.8 ^o	2	No	--
Cobalt	8.5 (<BG)	1,600	32	-- ^m	No	--
Copper	16.6 (<BG)	2,960	59.2	22.0 ^j	No	--
Lead	5.0 (<BG)	353	10.2 ^j	10.2 ^j	No	--
Manganese	323 (<BG)	11,200	512 ^j	512 ^j	No	--
Mercury	0.02 (<BG)	24	0.33 ^j	0.33 ^j	No	--
Nickel	11.4 (<BG)	1,600	19.1 ^j	27.4	No	--
Vanadium	49.0 (<BG)	560	85.1 ^j	-- ^m	No	--
Zinc	41.4 (<BG)	24,000	480	67.8 ^j	No	--
bis(2-Ethylhexyl)phthalate	0.32	71.4	0.625	0.36	Yes ^u	Yes ⁿ
Butylbenzylphthalate	0.024	16,000	320	250	No	--
Di-n-butylphthalate	0.079	8,000	160	540	No	--
Phenol	0.023	24,000	480	4,200	No	--
Acetone	0.008	72,000	720	-- ^m	No	--
Carbon tetrachloride	0.007	7.7	0.034	0.05	No	--
Methylene chloride	0.008	133	0.5	0.94	No	--
Aldrin	0.00050	0.0588	0.00165 ^p	0.00165 ^p	No	--
2,4-D	0.062	800	7	-- ^m	No	--
2,4-DB	0.043	640	12.8	-- ^m	No	--
2,4,5-TP	0.012	640	5	-- ^m	No	--
Dalapon	0.036	2,400	20	-- ^m	No	--
Dichloroprop ^s	0.10	800	7	-- ^m	No	--

*All footnotes are provided following Table 14.

-- = not applicable

BG = background (obtained from DOE-RL 1996 and DOE-RL 2001b, unless otherwise noted)

COC = contaminant of concern

COPC = contaminant of potential concern

RAG = remedial action goal

RESRAD = RESidual RADioactivity (dose-assessment model)

Table 10. Comparison of Statistical Contaminant Concentrations to Action Levels for the 118-B-1 Area 7 Verification Sampling Event.* (2 Pages)

COC/COPC	Statistical Result (pCi/g)	Generic Site Lookup Values ^a (pCi/g)			Does the Statistical Result Exceed Lookup Values?	Does the Statistical Result Pass RESRAD Modeling?
		Shallow Zone Lookup Value ^b	Groundwater Protection Lookup Value	River Protection Lookup Value		
Cesium-137	0.517	6.2	1,465 ^d	1,465 ^d	No	Yes ^e
Europium-152	0.098	3.3	-- ^c	-- ^c	No	
Uranium-233/234	0.671 (<BG)	1.1 ^g	1.1 ^g	1.1 ^g	No	--
Uranium-238	0.725 (<BG)	1.1 ^g	1.1 ^g	1.1 ^g	No	--
COC/COPC	Statistical Result (mg/kg)	Remedial Action Goals ^a (mg/kg)			Does the Statistical Data Set Exceed RAGs?	Does the Statistical Result Pass RESRAD Modeling?
		Direct Exposure	Soil Cleanup Level for Groundwater Protection	Soil Cleanup Level for River Protection		
Arsenic	3.5 (<BG)	20	20	20	No	--
Barium	132	5,600 ⁱ	132 ^{i,j}	224 ⁱ	Yes	Yes ⁿ
Beryllium	0.31 (<BG)	10.4 ^k	1.51 ⁱ	1.51 ^j	No	--
Boron ^l	13.7	16,000	320	-- ^m	No	--
Chromium (total)	8.9 (<BG)	80,000 ⁱ	18.5 ^j	18.5 ^j	No	--
Chromium (hexavalent)	0.28	2.1	4.8 ^o	2	No	--
Cobalt	7.5 (<BG)	1,600	32	-- ^m	No	--
Copper	22.2	2,960	59.2	22.0 ^j	Yes	Yes ⁿ
Lead	11.0	353	10.2 ^j	10.2 ^j	Yes	Yes ⁿ
Manganese	329 (<BG)	11,200	512 ^j	512 ^j	No	--
Mercury	0.02 (<BG)	24	0.33 ^j	0.33 ^j	No	--
Molybdenum ^l	2.1	400	8	-- ^m	No	--
Nickel	10.6 (<BG)	1,600	19.1 ⁱ	27.4	No	--
Vanadium	39.8 (<BG)	560	85.1 ⁱ	-- ^m	No	--
Zinc	47.5 (<BG)	24,000	480	67.8 ^j	No	--
2-Methylnaphthalene	0.026	320	3.2	-- ^m	No	--
Diethylphthalate	0.025	64,000	1,280	4,600	No	--
Naphthalene	0.019	1,600	16.0	988	No	--
Acetone	0.009	72,000	720	-- ^m	No	--
Carbon tetrachloride	0.011	7.7	0.034	0.05	No	--
Methylene chloride	0.008	133	0.5	0.94	No	--
alpha-Chlordane	0.012	0.769 ^r	0.0165 ^{p,r}	0.0165 ^p	No	--
4,4'-DDE	0.015	2.94	0.0257	0.005 ^p	Yes	Yes ⁿ
Dieldrin	0.002	0.0625	0.003 ^p	0.003 ^p	No	--
Endrin ketone	0.0078	24	0.2	0.039	No	--

Table 10. Comparison of Statistical Contaminant Concentrations to Action Levels for the 118-B-1 Area 7 Verification Sampling Event.* (2 Pages)

COC/COPC	Statistical Result (mg/kg)	Remedial Action Goals ^a (mg/kg)			Does the Statistical Data Set Exceed RAGs?	Does the Statistical Result Pass RESRAD Modeling?
		Direct Exposure	Soil Cleanup Level for Groundwater Protection	Soil Cleanup Level for River Protection		
Methoxychlor	0.0091	400	4	1.67	No	--
2,4-D	0.023	800	7	-- ^m	No	--
2,4-DB	0.027	640	12.8	-- ^m	No	--
Dalapon	0.027	2,400	20	-- ^m	No	--
Dicamba	0.013	2,400	48	-- ^m	No	--
Dichloroprop ^s	0.050	800	7	-- ^m	No	--
Picloram	0.014	5,600	50	-- ^m	No	--

*All footnotes are provided following Table 14.

-- = not applicable

BG = background (obtained from DOE-RL 1996 and DOE-RL 2001b, unless otherwise noted)

COC = contaminant of concern

COPC = contaminant of potential concern

RAG = remedial action goal

RESRAD = RESidual RADioactivity (dose-assessment model)

Table 11. Comparison of Statistical Contaminant Concentrations to Action Levels for the 118-B-1 Overburden Verification Sampling Event.* (3 Pages)

COC/COPC	Statistical Result (pCi/g)	Generic Site Lookup Values ^a (pCi/g)			Does the Statistical Result Exceed Lookup Values?	Does the Statistical Result Pass RESRAD Modeling?
		Shallow Zone Lookup Value ^b	Groundwater Protection Lookup Value	River Protection Lookup Value		
Cesium-137	0.225 (<BG)	6.2	1,465 ^d	1,465 ^d	No	--
Europium-152	0.07	3.3	-- ^c	-- ^c	No	Yes ^v
Strontium-90	0.175 (<BG)	4.5	27.6 ^d	27.6 ^d	No	--
Uranium-233/234	0.542 (<BG)	1.1 ^g	1.1 ^g	1.1 ^g	No	--
Uranium-235	0.033 (<BG)	0.61 ^c	0.5 ^h	0.5 ^h	No	--
Uranium-238	0.556 (<BG)	1.1 ^g	1.1 ^g	1.1 ^g	No	--
COC/COPC	Statistical Result (mg/kg)	Remedial Action Goals ^a (mg/kg)			Does the Statistical Data Set Exceed RAGs?	Does the Statistical Result Pass RESRAD Modeling?
		Direct Exposure	Soil Cleanup Level for Groundwater Protection	Soil Cleanup Level for River Protection		
Arsenic	3.1 (<BG)	20	20	20	No	--
Barium	59.3 (<BG)	5,600 ⁱ	132 ^{i,j}	224 ⁱ	No	--
Beryllium	0.48 (<BG)	10.4 ^k	1.51 ^j	1.51 ^j	No	--

Table 11. Comparison of Statistical Contaminant Concentrations to Action Levels for the 118-B-1 Overburden Verification Sampling Event.* (3 Pages)

COC/COPC	Statistical Result (mg/kg)	Remedial Action Goals ^a (mg/kg)			Does the Statistical Data Set Exceed RAGs?	Does the Statistical Result Pass RESRAD Modeling?
		Direct Exposure	Soil Cleanup Level for Groundwater Protection	Soil Cleanup Level for River Protection		
Boron ^l	2.0	16,000	320	-- ^m	No	--
Cadmium ^t	0.43 (<BG)	13.9	0.81 ^j	0.81 ^j	No	--
Chromium (total)	7.2 (<BG)	80,000 ⁱ	18.5 ^j	18.5 ^j	No	--
Chromium (hexavalent)	0.23	2.1	4.8 ^o	2	No	--
Cobalt	8.7 (<BG)	1,600	32	-- ^m	No	--
Copper	16.0 (<BG)	2,960	59.2	22.0 ^j	No	--
Lead	5.1 (<BG)	353	10.2 ^j	10.2 ^j	No	--
Manganese	346 (<BG)	11,200	512 ^j	512 ^j	No	--
Mercury	0.05 (<BG)	24	0.33 ^j	0.33 ^j	No	--
Molybdenum ^l	0.83	400	8	-- ^m	No	--
Nickel	10.1 (<BG)	1,600	19.1 ^j	27.4	No	--
Selenium ^t	0.67 (<BG)	400	5	1	No	--
Vanadium	46.6 (<BG)	560	85.1 ^j	-- ^m	No	--
Zinc	40.0 (<BG)	24,000	480	67.8 ^j	No	--
Aroclor-1254	0.038	0.5	0.017 ^p	0.017 ^p	Yes	Yes ⁿ
bis(2-Ethylhexyl)phthalate	0.06	71.4	0.625	0.36	No	--
Di-n-butylphthalate	0.12	8,000	160	540	No	--
Phenol	0.022	24,000	480	4,200	No	--
4-Methyl-2-pentanone	0.011	6,400	64	-- ^m	No	--
Acetone	0.039	72,000	720	-- ^m	No	--
Carbon tetrachloride	0.011	7.7	0.034	0.05	No	--
Methylene chloride	0.016	133	0.5	0.94	No	--
Toluene	0.002	6,400	64	1,360	No	--
Xylenes (total)	0.001	16,000	160	-- ^m	No	--
beta-BHC	0.00064	0.556	0.00486	0.00554	No	--
4,4'-DDD	0.0019	4.17	0.0365	0.005 ^p	No	--
4,4'-DDE	0.0013	2.94	0.0257	0.005 ^p	No	--
4,4'-DDT	0.0011	2.94	0.0257	0.005 ^p	No	--
Endosulfan I	0.0028	480	9.6	0.0112	No	--
Endosulfan II	0.00060	480	9.6	0.0112	No	--
Endosulfan sulfate	0.00087	480	9.6	0.0112	No	--
Endrin aldehyde	0.0019	24	0.2	0.039	No	--
gamma-Chlordane	0.0025	0.769 ^r	0.0165 ^{p,r}	0.0165 ^p	No	--

Table 11. Comparison of Statistical Contaminant Concentrations to Action Levels for the 118-B-1 Overburden Verification Sampling Event.* (3 Pages)

COC/COPC	Statistical Result (mg/kg)	Remedial Action Goals ^a (mg/kg)			Does the Statistical Data Set Exceed RAGs?	Does the Statistical Result Pass RESRAD Modeling?
		Direct Exposure	Soil Cleanup Level for Groundwater Protection	Soil Cleanup Level for River Protection		
Methoxychlor	0.0067	400	4	1.67	No	--
2,4-D	0.026	800	7	-- ^m	No	--
2,4-DB	0.087	640	12.8	-- ^m	No	--
2,4,5-T	0.0039	800	16	-- ^m	No	--
2,4,5-TP	0.0096	640	5	-- ^m	No	--
Dalapon	0.023	2,400	20	-- ^m	No	--
Dicamba	0.016	2,400	48	-- ^m	No	--
Dichloroprop ^s	0.11	800	7	-- ^m	No	--
Pentachlorophenol	0.016	8.33	0.073	0.056	No	--

*All footnotes are provided following Table 14.

-- = not applicable

BG = background (obtained from DOE-RL 1996 and DOE-RL 2001b, unless otherwise noted)

COC = contaminant of concern

COPC = contaminant of potential concern

RAG = remedial action goal

RESRAD = RESidual RADioactivity (dose-assessment model)

Table 12. Comparison of Statistical Contaminant Concentrations to Action Levels for the 118-B-1 BCL Material Stockpiles Verification Sampling Event.* (3 Pages)

COC/COPC	Statistical Result (pCi/g)	Generic Site Lookup Values ^a (pCi/g)			Does the Statistical Result Exceed Lookup Values?	Does the Statistical Result Pass RESRAD Modeling?
		Shallow Zone Lookup Value ^b	Groundwater Protection Lookup Value	River Protection Lookup Value		
Cesium-137	0.159	6.2	1,465 ^d	1,465 ^d	No	Yes ^v
Cobalt-60	0.05	1.4	13,900 ^d	13,900 ^d	No	
Europium-152	0.068	3.3	-- ^c	-- ^c	No	
Strontium-90	0.120	4.5	27.6 ^d	27.6 ^d	No	
Uranium-233/234	0.564 (<BG)	1.1 ^g	1.1 ^g	1.1 ^g	No	--
Uranium-235	0.039 (<BG)	0.61 ^c	0.5 ^h	0.5 ^h	No	--
Uranium-238	0.587 (<BG)	1.1 ^g	1.1 ^g	1.1 ^g	No	--

Table 12. Comparison of Statistical Contaminant Concentrations to Action Levels for the 118-B-1 BCL Material Stockpiles Verification Sampling Event.* (3 Pages)

COC/COPC	Statistical Result (mg/kg)	Remedial Action Goals ^a (mg/kg)			Does the Statistical Data Set Exceed RAGs?	Does the Statistical Result Pass RESRAD Modeling?
		Direct Exposure	Soil Cleanup Level for Groundwater Protection	Soil Cleanup Level for River Protection		
Arsenic	3.7 (<BG)	20	20	20	No	--
Barium	60.8 (<BG)	5,600 ⁱ	132 ^{ij}	224 ⁱ	No	--
Beryllium	0.56 (<BG)	10.4 ^k	1.51 ^j	1.51 ^j	No	--
Boron ^l	1.8	16,000	320	-- ^m	No	--
Chromium (total)	8.1 (<BG)	80,000 ⁱ	18.5 ^j	18.5 ^j	No	--
Chromium (hexavalent)	0.24	2.1	4.8 ^o	2	No	--
Cobalt	9.2 (<BG)	1,600	32	-- ^m	No	--
Copper	15.9 (<BG)	2,960	59.2	22.0 ^j	No	--
Lead	5.1 (<BG)	353	10.2 ^j	10.2 ^j	No	--
Manganese	366 (<BG)	11,200	512 ^j	512 ^j	No	--
Mercury	0.03 (<BG)	24	0.33 ^j	0.33 ^j	No	--
Molybdenum ^l	0.43	400	8	-- ^m	No	--
Nickel	11.1 (<BG)	1,600	19.1 ^j	27.4	No	--
Selenium ^t	1.0	400	5	1	No	--
Vanadium	48.8 (<BG)	560	85.1 ^j	-- ^m	No	--
Zinc	41.4 (<BG)	24,000	480	67.8 ^j	No	--
bis(2-Ethylhexyl)phthalate	0.08	71.4	0.625	0.36	No	--
Di-n-butylphthalate	0.13	8,000	160	540	No	--
Diethylphthalate	0.019	64,000	1,280	4,600	No	--
Phenol	0.034	24,000	480	4,200	No	--
4-Methyl-2-pentanone	0.007	6,400	64	-- ^m	No	--
Acetone	0.020	72,000	720	-- ^m	No	--
Carbon tetrachloride	0.011	7.7	0.034	0.05	No	--
Methylene chloride	0.014	133	0.5	0.94	No	--
Toluene	0.001	6,400	64	1,360	No	--
Xylenes (total)	0.001	16,000	160	-- ^m	No	--
beta-BHC	0.0022	0.556	0.00486	0.00554	No	--
4,4'-DDT	0.0016	2.94	0.0257	0.005 ^p	No	--
Endosulfan I	0.0049	480	9.6	0.0112	No	--
Endosulfan sulfate	0.00084	480	9.6	0.0112	No	--
Endrin aldehyde	0.0015	24	0.2	0.039	No	--
Endrin ketone	0.0014	24	0.2	0.039	No	--
Heptachlor	0.00043	0.222	0.002	0.002 ^p	No	--

Table 12. Comparison of Statistical Contaminant Concentrations to Action Levels for the 118-B-1 BCL Material Stockpiles Verification Sampling Event.* (3 Pages)

COC/COPC	Statistical Result (mg/kg)	Remedial Action Goals ^a (mg/kg)			Does the Statistical Data Set Exceed RAGs?	Does the Statistical Result Pass RESRAD Modeling?
		Direct Exposure	Soil Cleanup Level for Groundwater Protection	Soil Cleanup Level for River Protection		
Methoxychlor	0.0053	400	4	1.67	No	--
2,4-DB	0.0098	640	12.8	-- ^m	No	--
Dalapon	0.048	2,400	20	-- ^m	No	--
Dicamba	0.013	2,400	48	-- ^m	No	--
Dichloroprop ^s	0.21	800	7	-- ^m	No	--

*All footnotes are provided following Table 14.

-- = not applicable

BCL = below cleanup level

BG = background (obtained from DOE-RL 1996 and DOE-RL 2001b, unless otherwise noted)

COC = contaminant of concern

COPC = contaminant of potential concern

RAG = remedial action goal

RESRAD = RESidual RADioactivity (dose-assessment model)

Table 13. Comparison of Statistical Contaminant Concentrations to Action Levels for the 118-B-1 Staging Pile Area Footprint Verification Sampling Event.* (3 Pages)

COC/COPC	Statistical Result (pCi/g)	Generic Site Lookup Values ^a (pCi/g)			Does the Statistical Result Exceed Lookup Values?	Does the Statistical Result Pass RESRAD Modeling?
		Shallow Zone Lookup Value ^b	Groundwater Protection Lookup Value	River Protection Lookup Value		
Americium-241	0.061	31.1	-- ^c	-- ^c	No	Yes ^v
Carbon-14	1.6	5.16	-- ^c	-- ^c	No	
Cesium-137	0.57	6.2	1,465 ^d	1,465 ^d	No	
Cobalt-60	0.028	1.4	13,900 ^d	13,900 ^d	No	
Europium-152	0.20	3.3	-- ^c	-- ^c	No	
Nickel-63	5.05	4,013 ^d	83 ^d	83 ^d	No	
Plutonium-239/240	0.125	33.9	-- ^c	-- ^c	No	
Strontium-90	0.236	4.5	27.6 ^d	27.6 ^d	No	
Tritium	14.6	459 ^d	12.6 ^d	12.6 ^d	Yes	
Uranium-233/234	0.625 (<BG)	1.1 ^g	1.1 ^g	1.1 ^g	No	--
Uranium-235	0.042 (<BG)	0.61 ^c	0.5 ^h	0.5 ^h	No	--
Uranium-238	0.562 (<BG)	1.1 ^g	1.1 ^g	1.1 ^g	No	--

Table 13. Comparison of Statistical Contaminant Concentrations to Action Levels for the 118-B-1 Staging Pile Area Footprint Verification Sampling Event.* (3 Pages)

COC/COPC	Statistical Result (mg/kg)	Remedial Action Goals ^a (mg/kg)			Does the Statistical Data Set Exceed RAGs?	Does the Statistical Result Pass RESRAD Modeling?
		Direct Exposure	Soil Cleanup Level for Groundwater Protection	Soil Cleanup Level for River Protection		
Arsenic	2.3 (<BG)	20	20	20	No	--
Barium	72.5 (<BG)	5,600 ⁱ	132 ^{i,j}	224 ⁱ	No	--
Beryllium	0.36 (<BG)	10.4 ^k	1.51 ^j	1.51 ^j	No	--
Boron ^l	1.9	16,000	320	-- ^m	No	--
Cadmium ^t	0.53 (<BG)	13.9	0.81 ^j	0.81 ^j	No	--
Chromium (total)	8.3 (<BG)	80,000 ⁱ	18.5 ^j	18.5 ^j	No	--
Chromium (hexavalent)	0.27	2.1	4.8 ^o	2	No	--
Cobalt	7.7 (<BG)	1,600	32	-- ^m	No	--
Copper	14.8 (<BG)	2,960	59.2	22.0 ^j	No	--
Lead	4.7 (<BG)	353	10.2 ^j	10.2 ^j	No	--
Manganese	330 (<BG)	11,200	512 ^j	512 ^j	No	--
Mercury	0.13 (<BG)	24	0.33 ^j	0.33 ^j	No	--
Molybdenum ⁿ	0.45	400	8	-- ^m	No	--
Nickel	10.8 (<BG)	1,600	19.1 ^j	27.4	No	--
Vanadium	46.4 (<BG)	560	85.1 ^j	-- ^m	No	--
Zinc	38.8 (<BG)	24,000	480	67.8 ^j	No	--
Aroclor-1242	0.047	0.5	0.017 ^p	0.017 ^p	Yes	Yes ⁿ
Aroclor-1254	0.17	0.5	0.017 ^p	0.017 ^p	Yes	Yes ⁿ
Aroclor-1260	0.056	0.5	0.017 ^p	0.017 ^p	Yes	Yes ⁿ
bis(2-Ethylhexyl)phthalate	0.09	71.4	0.625	0.36	No	--
Di-n-butylphthalate	0.11	8,000	160	540	No	--
Methylene chloride	0.014	133	0.5	0.94	No	--
Trichloroethene	0.002	2.5	0.01	0.31	No	--
Aldrin	0.0010	0.0588	0.00165 ^p	0.00165 ^p	No	--
alpha-Chlordane	0.00080	0.769 ^r	0.0165 ^{p,r}	0.0165 ^p	No	--
beta-BHC	0.00082	0.556	0.00486	0.00554	No	--
4,4'-DDE	0.0065	2.94	0.0257	0.005 ^r	Yes	Yes ⁿ
Endosulfan sulfate	0.0019	480	9.6	0.0112	No	--
gamma-Chlordane	0.0065	0.769 ^r	0.0165 ^{p,r}	0.0165 ^p	No	--
Methoxychlor	0.0017	400	4	1.67	No	--
2,4-D	0.048	800	7	-- ^m	No	--
2,4-DB	0.028 ^w	640	12.8	-- ^m	No	--
2,4,5-T	0.013	800	16	-- ^m	No	--

Table 13. Comparison of Statistical Contaminant Concentrations to Action Levels for the 118-B-1 Staging Pile Area Footprint Verification Sampling Event.* (3 Pages)

COC/COPC	Statistical Result (mg/kg)	Remedial Action Goals ^a (mg/kg)			Does the Statistical Data Set Exceed RAGs?	Does the Statistical Result Pass RESRAD Modeling?
		Direct Exposure	Soil Cleanup Level for Groundwater Protection	Soil Cleanup Level for River Protection		
2,4,5-TP	0.043	640	5	-- ^m	No	--
Dalapon	0.043	2,400	20	-- ^m	No	--
Dicamba	0.023	2,400	48	-- ^m	No	--
Dichloroprop ^s	0.049	800	7	-- ^m	No	--
Pentachlorophenol	0.0040	8.33	0.073	0.056	No	--

*All footnotes are provided following Table 14.

-- = not applicable

BG = background (obtained from DOE-RL 1996 and DOE-RL 2001b, unless otherwise noted)

COC = contaminant of concern

COPC = contaminant of potential concern

RAG = remedial action goal

RESRAD = RESidual RADioactivity (dose-assessment model)

Table 14. Comparison of Maximum Contaminant Concentrations to Action Levels for the 118-B-1 Focused Verification Samples.* (2 Pages)

COC/COPC	Maximum Result (pCi/g)	Generic Site Lookup Values ^a (pCi/g)			Does the Maximum Result Exceed Lookup Values?	Does the Maximum Result Pass RESRAD Modeling?
		Shallow Zone Lookup Value ^b	Groundwater Protection Lookup Value	River Protection Lookup Value		
Cesium-137	0.353	6.2	1,465 ^d	1,465 ^d	No	Yes ^e
Cobalt-60	0.155	1.4	13,900 ^d	13,900 ^d	No	
Tritium	137	459 ^d	12.6 ^d	12.6 ^d	Yes	-- ^f
Uranium-233/234	0.587 (<BG)	1.1 ^g	1.1 ^g	1.1 ^g	No	--
Uranium-238	0.564 (<BG)	1.1 ^g	1.1 ^g	1.1 ^g	No	--
COC/COPC	Maximum Result (mg/kg)	Remedial Action Goals ^a (mg/kg)			Does the Maximum Result Exceed Lookup Values?	Does the Maximum Result Pass RESRAD Modeling?
		Direct Exposure	Soil Cleanup Level for Groundwater Protection	Soil Cleanup Level for River Protection		
Arsenic	7.0	20	20	20	No	--
Barium	261	5,600 ⁱ	132 ^{i,j}	224 ⁱ	Yes	Yes ⁿ
Beryllium	0.58 (<BG)	10.4 ^k	1.51 ^j	1.51 ^j	No	--
Boron ^l	24.5	16,000	320	-- ^m	No	--
Cadmium ^t	0.28 (<BG)	13.9	0.81 ^j	0.81 ^j	No	--
Chromium (total)	16.4 (<BG)	80,000 ⁱ	18.5 ^j	18.5 ^j	No	--

Table 14. Comparison of Maximum Contaminant Concentrations to Action Levels for the 118-B-1 Focused Verification Samples.* (2 Pages)

COC/COPC	Maximum Result (mg/kg)	Remedial Action Goals ^a (mg/kg)			Does the Maximum Result Exceed Lookup Values?	Does the Maximum Result Pass RESRAD Modeling?
		Direct Exposure	Soil Cleanup Level for Groundwater Protection	Soil Cleanup Level for River Protection		
Cobalt	11.3 (<BG)	1,600	32	-- ^m	No	--
Copper	28.0	2,960	59.2	22.0 ^j	Yes	Yes ⁿ
Lead	34.3	353	10.2 ^j	10.2 ^j	Yes	Yes ⁿ
Manganese	421 (<BG)	11,200	512 ^j	512 ^j	No	--
Mercury	14.5	24	0.33 ^j	0.33 ^j	Yes	Yes ⁿ
Molybdenum ^l	0.81	400	8	-- ^m	No	--
Nickel	15.2 (<BG)	1,600	19.1 ^j	27.4	No	--
Vanadium	62.8 (<BG)	560	85.1 ^j	-- ^m	No	--
Zinc	65.1 (<BG)	24,000	480	67.8 ^j	No	--
bis(2-Ethylhexyl)phthalate	0.038	71.4	0.625	0.36	No	--
Acetone	0.099	72,000	720	-- ^m	No	--
Methylene chloride	0.016	133	0.5	0.94	No	--
Methoxychlor	0.0047	400	4	1.67	No	--
Dicamba	0.0091	2,400	48	-- ^m	No	--

*All footnotes are provided following Table 14.

-- = not applicable

BG = background (obtained from DOE-RL 1996 and DOE-RL 2001b, unless otherwise noted)

COC = contaminant of concern

COPC = contaminant of potential concern

NA = not applicable

RAG = remedial action goal

RESRAD = RESidual RADioactivity (dose-assessment model)

Verification Sample Summary Table Footnotes

^a Lookup values and RAGs obtained from the RDR/RAWP (DOE-RL 2005) or calculated per WAC 173-340-720, 730, and 740, Method B, 1996, unless otherwise noted.

^b Activity corresponding to a single-radionuclide 15 mrem/yr exposure as calculated using a generic RESidual RADioactivity (RESRAD) model (DOE-RL 2005).

^c No value—RESRAD modeling predicts the contaminant will not reach groundwater within 1,000 years.

^d Lookup value calculated per *100 Area Radionuclide and Nonradionuclide Lookup Values for the 1995 Interim Remedial Action Record of Decision* (BHI 2004).

^e *118-B-1 Combined Areas Cleanup Verification RESRAD Calculation Brief*, Appendix C.

^f The 118-B-1 ESD provides for controls to minimize further mobilization of residual tritium contamination in the deep vadose zone and allow interim site closure without further excavation based on evaluation of balancing factors.

^g The calculated lookup value is below the Hanford-specific statistical soil background activity. The value presented is the Hanford-specific statistical soil background activity.

^h The lookup value is below the required minimum detectable activity (MDA). The value presented is the required MDA.

- ⁱ Noncarcinogenic cleanup levels calculated from WAC 173-340, 1996 (Method B), as presented in the RDR/RAWP (DOE-RL 2005).
- ^j Where cleanup levels are less than background, cleanup levels default to background (WAC 173-340-700[4][d]) (1996).
- ^k Carcinogenic cleanup level calculated based on the inhalation exposure pathway per WAC 173-340-750[3], 1996 (Method B for air quality) and an airborne particulate mass loading rate of 0.0001 g/m³ (WDOH 1997).
- ^l No Hanford Site-specific or Washington State background value available.
- ^m No parameters (bioconcentration factors or ambient water quality criteria values) are available from the Ecology Cleanup Levels and Risk Calculations database (Ecology 2005) or other databases to calculate cleanup levels (WAC 173-340-730(3)(a)(iii), 1996 [Method B for surface waters]).
- ⁿ Based on the *100 Area Analogous Sites RESRAD Calculations* (BHI 2005) and contaminant-specific soil partitioning coefficient (K_d) value, contaminant will not migrate vertically more than 3 m (10 ft) in 1,000 years. Because the vadose zone underlying the site is greater than 13.4 m (44 ft) thick, the contaminant will not reach groundwater (and thus the Columbia River) in 1,000 years.
- ^o Calculated cleanup level (per WAC 173-340-720(3), 1996 [Method B for groundwater] and WAC 173-340-740(3)(a)(ii)(A), 1996 ["100 times rule"]) presented is lower than that presented in the RDR/RAWP (DOE-RL 2005), based on updated oral reference dose value (as provided in the EPA's Integrated Risk Information System available on the internet at <http://www.epa.gov/iris>).
- ^p Where cleanup levels are less than the required detection limit (RDL), cleanup levels default to the RDL (WAC 173-340-707[2], 1996 and DOE-RL 2005).
- ^q The soil-to-groundwater dilution factor modeled for the 100-B/C Area indicates that the small residual mass of beta-BHC will not be sufficient to migrate to groundwater or the river and result in a concentration exceeding the WAC 173-340-720(3), 1996 (Method B for groundwater) carcinogenic groundwater cleanup level (0.0486 µg/L) or the WAC 173-340-730(3), 1996 (Method B for surface waters) carcinogenic surface water cleanup level (0.0277 µg/L).
- ^r Carcinogenic cleanup level calculated from WAC 173-340, 1996 (Method B), as presented in the RDR/RAWP (DOE-RL 2005).
- ^s Toxicity data for this chemical are not available. RAGs for dichloroprop are based on the surrogate chemical 2,4-D.
- ^t Hanford Site-specific background value is not available; not evaluated during background study. Value used is from *Natural Background Soil Metals Concentrations in Washington State* (Ecology 1994).
- ^u The statistical verification data set fails the third component of the WAC 173-340-740(7)(e) 3-part test in comparison against soil RAG for river protection (i.e., more than 10% of the data set exceeds the soil RAG value).
- ^v *118-B-1 Burial Ground Cleanup Verification RESRAD Calculation Brief for Overburden, Below Cleanup Level (BCL), and Staging Pile Area Soil*, Appendix C.
- ^w A portion of the 2,4-DB data for the staging pile area was rejected based on data quality deficiencies; the value presented is the maximum detected accepted value.

6.0 DATA EVALUATION

This section demonstrates that remedial actions at the 118-B-1 Burial Ground have achieved the applicable RAGs and comply with applicable nonradionuclide risk requirements and WAC 173-340-740(7)(e) three-part test criteria. This section also describes the RESidual RADioactivity (RESRAD) modeling performed that predicts the dose rate, the excess lifetime cancer risk, and the impact on groundwater and the river from residual radionuclide COC/COPC concentrations. This section also presents a comparison against ecological soil screening levels.

6.1 COMPARISON OF SAMPLE DATA TO RAGS

Tables 4 through 14 compare the cleanup verification statistical and focused sample values to the soil RAGs and lookup values for direct exposure, protection of groundwater, and protection of the Columbia River. Barium, copper, lead, mercury, aroclor-1242, aroclor-1254, aroclor-1260, bis(2-ethylhexyl)phthalate, 4,4'-DDE, and dieldrin were quantified at concentrations exceeding soil protection RAGs for groundwater and/or river protection in one or more areas. Data were not collected on the vertical extent of these contaminants, but given the lowest soil-partitioning coefficient for these constituents (22 mL/g for copper), none would be expected to migrate more than 3 m (10 ft) vertically in 1,000 years (BHI 2005). The vadose zone underlying the 118-B-1 Burial Ground excavation is greater than 13.4 m (44 ft) thick; therefore, residual concentrations of these contaminants are predicted to be protective of groundwater. The only pathway for contaminant migration to the Columbia River is via groundwater; therefore, residual concentrations of these contaminants are also predicted to be protective of the Columbia River.

The pesticide beta-BHC was also quantified slightly above the soil RAGs for groundwater and river protection in one sample from Area 4. The low soil-partitioning coefficient associated with this contaminant (2.14 mL/g) prevents the use of conservative migration modeling to demonstrate protectiveness. However, modeling of the hydraulic conductivity and gradient data for the 100-B/C Area shows that there is a soil-to-groundwater dilution factor of approximately 6 in the soils underlying the 118-B-1 site, which indicates that beta-BHC will not leach to groundwater at concentrations exceeding the most restrictive WAC 173-340-720 cleanup level for groundwater (0.049 µg/L). Further, the fact that the only detection of beta-BHC in this area was a trace residual concentration detected in one soil sample suggests that there is insufficient residual mass of beta-BHC present to migrate through 13.4 m (44 ft) of underlying vadose zone soil to reach groundwater (and thus the Columbia River) and result in concentrations exceeding groundwater or surface water RAGs. Therefore, the remedial action objectives for protection of groundwater and the Columbia River are considered to have been achieved.

Tritium was also quantified above lookup values for the protection of groundwater and the Columbia River in Areas 1, 2, and 3, as well as the SPA footprint, and in focused samples associated with those areas. These exceedances were addressed by site-specific assessment and RESRAD modeling, described in Section 6.5 of this document.

6.2 COMPARISON OF SAMPLE DATA TO ECOLOGICAL RISK SCREENING LEVELS

Soil cleanup levels were established in the Burial Ground ROD (EPA 2000) based on a limited ecological risk assessment. Although not required by the Burial Ground ROD, a comparison against ecological risk screening levels has been made for the 118-B-1 waste site COCs/COPCs. Screening levels were not exceeded for the site constituents, with the exception of barium, boron, cadmium, lead, mercury, molybdenum, selenium, and vanadium. Exceedance of screening values does not necessarily indicate the

existence of risk to ecological receptors. Concentrations of cadmium, vanadium, and selenium are within the range of Hanford Site background levels, and molybdenum concentrations are consistent with those seen elsewhere at the Hanford Site (no established background value is available for molybdenum). Exceedances for barium, boron, lead, and mercury will be evaluated in the context of additional lines of evidence as part of the baseline risk assessment. A more complete quantitative ecological risk assessment will be presented in the baseline risk assessment for the river corridor portion of the Hanford Site and will be used to support the final closeout decision for this waste site.

6.3 HUMAN HEALTH RISK EVALUATION FOR NONRADIONUCLIDES

The human health risk evaluations are calculated for nonradionuclide COCs/COPCs, per WAC 173-340-740(3)(a)(iii)(A) and (B). The requirements include a hazard quotient of less than 1.0 for all individual noncarcinogens, a cumulative hazard quotient of less than 1.0, an individual contaminant carcinogenic risk of less than 1×10^{-6} , and a cumulative excess carcinogenic risk of less than 1×10^{-5} . The details of the hazard quotient calculations are provided in Appendix C.

Hazard quotient and excess carcinogenic risk calculations were conservatively performed for the 118-B-1 Burial Ground using the highest of the focused and statistical values from all areas. Risk values were not calculated for constituents that were not detected or were detected at concentrations below Hanford Site or Washington State background values. All individual hazard quotients are below 1.0, and all individual excess carcinogenic risk values are below 1×10^{-6} . The cumulative hazard quotient for the 118-B-1 waste site is 8.8×10^{-1} and the cumulative excess carcinogenic risk value is 8.0×10^{-7} , satisfying the criteria of less than 1.0 and less than 1×10^{-5} , respectively. Therefore, nonradionuclide risk requirements are met.

6.4 WAC THREE-PART TEST FOR NONRADIONUCLIDES

When using a statistical sampling approach, a RAG requirement for nonradionuclides is the WAC 173-340-740(7)(e) three-part test. The WAC 173-340 three-part test consists of the following criteria: (1) the cleanup verification 95% UCL value must be less than the cleanup level, (2) no single detection can exceed two times the cleanup criteria, and (3) the percentage of samples exceeding the cleanup criteria must be less than 10% of the data set.

The application of the three-part test for the 118-B-1 Burial Ground is included in the 95% UCL calculation (Appendix C). The results of this evaluation indicate that all residual COC/COPC concentrations pass the three-part test in comparison against applicable RAGs, except for barium, copper, lead, mercury, bis(2-ethylhexyl)phthalate, and 4,4'-DDE in comparison against soil RAGs for protection of groundwater and/or the Columbia River in one or more sampling areas. However, based on RESRAD modeling (BHI 2005), as described in Section 6.1, none of these contaminants are predicted to

migrate to groundwater or the Columbia River in 1,000 years. Therefore, the requirements of the three-part test are met.

6.5 RESRAD MODELING FOR RADIONUCLIDES

For radionuclide contaminants, site-specific RESRAD (ANL 2005) modeling was used to determine contaminant migration and to predict the dose rate, the excess lifetime cancer risk, and the impact on groundwater and the Columbia River from residual radionuclide COC/COPC concentrations (DOE-RL 2005). For the 118-B-1 Burial Ground, separate evaluations were performed for the overburden stockpiles, BCL material stockpiles, and staging pile footprint. The maximum value for each radionuclide analyte for all remediation footprint areas (Areas 1 through 7) and focused samples were conservatively included in one combined evaluation. Residual tritium concentrations within the remediation footprint were not included in the RESRAD evaluations for groundwater and river protection, because institutional controls implemented per the 118-B-1 ESD (EPA 2007) will allow attenuation of residual vadose zone tritium contamination. Residual concentrations of carbon-14 and strontium-90 were not included in the plant ingestion pathway for the remediation footprint, as this would lead to a predicted exceedance of direct exposure criteria, and residual concentrations of these contaminants are below the root penetration zone.

The individual radionuclide cleanup statistical values from Tables 4 through 14 were entered into the RESRAD computer code with the results included in the RESRAD calculations in Appendix C. The RESRAD-derived groundwater radionuclide concentrations as compared to groundwater RAGs are provided in the RESRAD calculations and the Comparison to Drinking Water Standards Calculation in Appendix C. Specific results from the calculations are summarized in the following subsections.

6.5.1 Attainment of Radionuclide Direct Exposure RAG

The direct exposure RAG for radionuclide COCs is expressed in terms of an allowable radiation dose rate above background, which is 15 mrem/yr over 1,000 years. The results of the RESRAD dose rate predictions for the 118-B-1 Burial Ground are summarized in Figures 8 through 11. The maximum dose rates for all areas occurs in the present year (2007), with predicted values of 13.0 mrem/yr, 0.309 mrem/yr, 1.70 mrem/yr, and 6.96 mrem/yr for the combined remediation footprint, overburden stockpiles, BCL material stockpiles, and SPA footprint, respectively. All dose rate predictions are less than the 15 mrem/yr RAG over 1,000 years.

6.5.2 Attainment of Radionuclide Excess Lifetime Cancer Risk Goal

The “National Oil and Hazardous Substances Pollution Contingency Plan” (40 *Code of Federal Regulations* [CFR] 300) presents a target range for residual radionuclide risk of 10^{-4} to 10^{-6} . The RESRAD model calculates the excess lifetime cancer risk associated

Figure 8. RESRAD Analysis for the Combined Areas in the Remediation Footprint– All Radionuclides, All-Pathways Dose Rate Estimate.

Figure 9. RESRAD Analysis for the Overburden Stockpiles– All Radionuclides, All-Pathways Dose Rate Estimate.

with the estimated radiation dose rates, with results summarized in Figures 12 through 15. For the 118-B-1 Burial Ground, the maximum excess lifetime cancer risk occurs at the present year (2007) for all areas, with predicted values of 1.38×10^{-4} , 3.65×10^{-6} , 1.98×10^{-5} , and 5.82×10^{-5} for the combined remediation footprint, overburden stockpiles, BCL material stockpiles, and SPA footprint, respectively.

6.5.3 Attainment of Radionuclide Groundwater and River Protection RAGS

The attainment of groundwater and river protection RAGs for radionuclides is determined by four criteria: (1) attain single COC/COPC groundwater and river RAGs, (2) attain the National Primary Drinking Water Regulations (40 CFR 141) 4 mrem/yr

Figure 10. RESRAD Analysis for the BCL Stockpiles– All Radionuclides, All-Pathways Dose Rate Estimate.

Figure 11. RESRAD Analysis for the SPA Footprint– All Radionuclides, All-Pathways Dose Rate Estimate.

(beta/gamma) dose standard to target receptor/organ, and (3) meet drinking water standards for non-uranium alpha-emitters (the more stringent of 15 pCi/L MCL or 1/25th of the derived concentration guide [DOE Order 5400.5]); and 4) meet total uranium standard of 21.2 pCi/L.

The first criterion is determined by comparing peak concentrations of radionuclide COCs/COPCs to the RAGs. The peak concentration is the maximum predicted value from all areas evaluated, as shown in the RESRAD calculation briefs in Appendix C. Of the radionuclide COCs/COPCs for the 118-B-1 Burial Ground, only cesium-137, cobalt-60, strontium-90, and tritium are predicted to reach groundwater in 1,000 years.

Figure 12. RESRAD Analysis – Radionuclide Risk, All Pathways – Combined Areas in the Remediation Footprint.

Figure 13. RESRAD Analysis – Radionuclide Risk, All Pathways – Overburden Stockpiles.

Predicted activity levels of cesium-137, cobalt-60, and strontium-90 are all significantly below the single COC/COPC RAGs. Predicted activity levels of tritium associated with soil activities in the SPA, overburden, and BCL soils are also significantly below the single COC/COPC RAGs. Tritium was not included in the overall site model for the excavation footprint, as described in Section 6.5. Tritium associated with the excavation footprint will exceed groundwater and Columbia River RAGs without the additional institutional controls documented in the 118-B-1 ESD (EPA 2007). The peak concentrations for each of these radionuclides are summarized in Table 15, but the tritium comparison is only for the combined SPA, overburden, and BCL soils. The peak concentration is the maximum value, as predicted by RESRAD modeling, from all evaluation areas, with the exception that tritium in the excavation footprint is not included because it is known that tritium will exceed RAGs without the additional institutional controls described in the 118-B-1 ESD (EPA 2007).

Figure 14. RESRAD Analysis – Radionuclide Risk, All Pathways – BCL Stockpiles.

Figure 15. RESRAD Analysis – Radionuclide Risk, All Pathways – SPA Footprint.

The second criterion, attainment of the National Primary Drinking Water Regulations 4 mrem/yr (beta/gamma) above background dose standard to target receptor/organ, is summarized in Figure 16, based on the results of the MCL calculation brief (Appendix C). RESRAD modeling predicts a maximum dose of 0.0786 mrem/yr to any organ (total body, bone, liver, and gastrointestinal track [lower large intestine]) within the 1,000 years of the evaluation period. Therefore, this criterion is attained.

The third criterion, meet drinking water standards for non-uranium alpha-emitters (the more stringent of 15 pCi/L MCL or 1/25th of the derived concentration guide [DOE Order 5400.5]) is demonstrated in the RESRAD calculation briefs in Appendix C. The results indicate that no alpha-emitting COCs/COPCs will impact groundwater within 1,000 years.

Table 15. Predicted Peak Radionuclide Groundwater Concentrations for the 118-B-1 Burial Ground.

Radionuclide	Peak Concentration (pCi/L) ^a	RAG (pCi/L)	RAGs Attained?
Cobalt-60	0.000430	100 ^b	Yes
Cesium-137	0.0123	60 ^b	Yes
Strontium-90	0.156	8 ^c	Yes
Tritium (excluding excavation footprint)	1,440 ^d	20,000 ^c	Yes

^a The peak concentration is the maximum predicted value from the remediation footprint, overburden stockpiles, BCL material, and waste staging pile area footprint. Results are presented in the RESRAD and MCL calculation briefs (Appendix C).

^b Lookup value corresponding to a single-radionuclide dose rate of 4 mrem/yr.

^c EPA drinking water promulgated MCL (40 CFR 141.66).

^d Maximum result from RESRAD modeling for the overburden stockpiles, BCL stockpiles, and waste staging pile area. Residual tritium concentrations within the remediation footprint were not considered, because institutional controls will allow for attenuation of residual vadose zone tritium contamination (EPA 2007).

BCL = below cleanup level

CFR = Code of Federal Regulations

EPA = U.S. Environmental Protection Agency

MCL = maximum contaminant level (drinking water standard)

RAG = remedial action goal

RESRAD = RESidual RADioactivity (dose-assessment model)

Figure 16. Dose Rate to Organs from Groundwater.

For the fourth and last criterion, meet the total uranium standard of 21.2 pCi/L, no uranium isotopes were detected above background levels in the 118-B-1 Burial Ground verification samples. Therefore, this standard is met.

7.0 DATA QUALITY ASSESSMENT

A DQA is performed to compare the verification sampling approach and resulting analytical data with the sampling and data quality requirements specified by the project objectives and performance specifications.

The DQA for the 118-B-1 Burial Ground established that the data are of the right type, quality, and quantity to support site verification decisions within specified error tolerances. The evaluation verified that the sample design was sufficient for the purpose of clean site verification. The detailed DQA is presented in Appendix E.

8.0 SUMMARY FOR WASTE SITE RECLASSIFICATION

This cleanup verification package demonstrates that remedial action at the 118-B-1 Burial Ground has achieved the remedial action objectives and corresponding RAGs established in the Burial Ground ROD (EPA 2000) and RDR/RAWP (DOE-RL 2005). The remaining soils at this site have been sampled, analyzed, and modeled. The results of verification sampling indicated that vadose zone soils beneath the burial ground contained residual tritium concentrations in excess of remedial action objectives for the protection of groundwater. The 118-B-1 ESD was approved by the Tri-Parties to leave residual tritium-contaminated soil in-place based on consideration of balancing factors, and includes institutional controls to prohibit future irrigation at the 118-B-1 waste site. The results of verification sampling show that residual concentrations of contaminants other than tritium do not preclude any other future uses (as bounded by the rural-residential scenario) of shallow zone soils (i.e., surface to 4.6 m [15 ft] deep). With institutional controls to prevent irrigation, the results also demonstrate that further mobilization of residual tritium-contamination to groundwater and the Columbia River will be minimized. Residual concentrations of non-tritium contaminants are also protective of groundwater and the Columbia River. The acceptability of direct exposure to residual tritium contamination in the deep vadose zone has not been demonstrated; therefore, institutional controls to prevent uncontrolled drilling or excavation into the deep zone are also required.

In accordance with this evaluation, the verification sampling and modeling results support a reclassification of the 118-B-1 Burial Ground to Interim Closed Out.

9.0 REFERENCES

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APPENDIX A
REMEDIATION PHOTOGRAPHS

Photograph A-1. Aerial Photograph of Remedial Activities at the 118-B-1 Burial Ground (taken July 2004).

Photograph A-2. Assorted Debris in the 118-B-1 Burial Ground.

Photograph A-3. Spacers in the 118-B-1 Burial Ground.

Photograph A-4. Tritium Furnaces in the 118-B-1 Burial Ground Waste Sorting Piles.

Photograph A-5. Tritium Tubes in the 118-B-1 Waste Sorting Piles.

Photograph A-6. Segregation of Tritium Tubes and Other Anomalous Items.

Photograph A-7. Segregated Tritium Tubes.

Photograph A-8. Accessing Tritium Tube Contents.

Photograph A-9. Anomalous Containers with Solid Lead Components.

Photograph A-10. Staged Mercury Tubes and Other Suspect Mercury-Containing Items.

Photograph A-11. Moisture Traps Used in the P-10 Tritium Separation Project.

Photograph A-12. Reinforced Rubber Hoses Containing Suspect Hydraulic Oil.

**Photograph A-13. Metal Canisters Containing Contaminated Oils and Other
P-10 Tritium Separation Project Process Wastes.**

Photograph A-14. Empty Metal Container.

Photograph A-15. Staged Compressed Gas Cylinders and Anomalous Containers.

APPENDIX B
SYSTEMATIC RADIOLOGICAL SURVEYS

Figure B-1. Composite of Initial Systematic Radiological Surveys for the 118-B-1 Burial Ground Remediation Footprint.

Figure B-2. Systematic Radiological Surveys Following Additional Material Removal in the 118-B-1 Burial Ground Remediation Footprint.

Figure B-3. Initial Systematic Radiological Survey for the 118-B-1 Eastern Waste Staging Pile Area Footprint.

Figure B-4. Systematic Radiological Survey for the 118-B-1 Eastern Waste Staging Pile Area Footprint Following Additional Material Removal.

Figure B-5. Systematic Radiological Survey for Overburden Stockpile.

Figure B-6. Systematic Radiological Survey for Overburden Stockpile.

Figure B-7. Systematic Radiological Survey for Northern BCL Stockpiles.

Figure B-8. Systematic Radiological Survey for Northeastern BCL Stockpiles.

Figure B-9. Systematic Radiological Survey for Northeastern BCL Stockpiles.

Figure B-10. Systematic Radiological Survey (gamma-Emitters) for Footprint of Contaminated Stockpile.

Figure B-11. Systematic Radiological Survey (beta-Emitters) for Footprint of Contaminated Stockpile.

Figure B-12. Systematic Radiological Survey for Eastern Spent Nuclear Fuel Bunker Footprint.

Figure B-13. Systematic Radiological Survey for Eastern Spent Nuclear Fuel Bunker Footprint.

Figure B-14. Systematic Radiological Survey for Western Spent Nuclear Fuel Bunker Footprint.

Figure B-15. Systematic Radiological Survey for Process Cell 4, Prior to Staging of Mercury-Contaminated Soil.

Figure B-16. Systematic Radiological Survey for Process Cell 3.

Figure B-17. Systematic Radiological Survey (beta-Emitters) for
Process Cells 1 and 2.

Figure B-18. Systematic Radiological Survey (gamma-Emitters) for Process Cells 1 and 2.

Figure B-19. Additional Systematic Radiological Survey (beta-Emitters) for Process Cells 1 and 2.

Figure B-20. Additional Systematic Radiological Survey (gamma-emitters) for Process Cells 1 and 2.

APPENDIX C

RESRAD INPUT PARAMETERS AND CALCULATION BRIEF EXCERPTS

CALCULATION BRIEF EXCERPTS

DISCLAIMER FOR CALCULATIONS

The calculations that are provided in the following appendix have been generated to document compliance with established cleanup levels. These calculations should be used in conjunction with other relevant documents in the administrative record.

CALCULATION BRIEFS

The following calculation briefs have been prepared in accordance with ENG-1, *Engineering Services*, ENG-1-4.5, "Project Calculations," Washington Closure Hanford, Richland, Washington.

118-B-1 Shallow Zone, Overburden and Staging Pile Sampling Plan, 0100B-CA-V0284, Rev. 0, Washington Closure Hanford, Richland, Washington (2006).

118-B-1 Burial Ground Cleanup Verification 95% UCL Calculations, 0100B-CA-V0299, Rev. 1, Washington Closure Hanford, Richland, Washington (2007).

118-B-1 Burial Ground Hazard Quotient and Carcinogenic Risk Calculations, 0100B-CA-V0300, Rev. 2, Washington Closure Hanford, Richland, Washington (2007).

118-B-1 Burial Ground Cleanup Verification RESRAD Calculation Brief for Overburden, Below Cleanup Level (BCL), and Staging Pile Area Soil, 0100B-CA-V0301, Rev. 0, Washington Closure Hanford, Richland, Washington (2007).

118-B-1 Combined Areas Cleanup Verification RESRAD Calculation Brief, 0100B-CA-V0308, Rev. 0, Washington Closure Hanford, Richland, Washington (2007).

118-B-1 Burial Ground Combined Areas Comparison to Drinking Water Standards (MCL) Calculation Brief, 0100B-CA-V0309, Rev. 0, Washington Closure Hanford, Richland, Washington (2007).

NOTE: The calculation briefs referenced in this appendix are kept in the active Washington Closure Hanford project files and are available upon request. When the project is completed, the files will be stored in a U.S. Department of Energy, Richland Operations Office repository. Only excerpts of the calculation briefs are included in this appendix.

CALCULATION COVER SHEET

Project Title: 118-B-1 Burial Ground Sample Design Job No. 14655
 Area: 100-B/C
 Discipline: Environmental Engineering *Calc. No. 0100B-CA-V0284
 Subject: 118-B-1 Shallow Zone, Overburden, BCL, and Staging Pile Sampling Plan
 Computer Program: Excel Program No. Excel 2003

The attached calculations have been generated to document compliance with established cleanup levels. These calculations should be used in conjunction with other relevant documents in the administrative record.

Committed Calculation ☒ Preliminary ☐ Superseded ☐ Voided ☐

Rev.	Sheet Numbers	Originator	Checker	Reviewer	Approval	Date
0	Cover = 1 Sht Calc = 4 Shts Attach1 = 1 Sht Attach2 = 1 Sht Attach3 = 10 Shts Total = 17 Shts	<i>plc</i> G. Cruz 8/15/06	<i>ab</i> C.A. Bentz 8/21/06	<i>cm</i> C.R. Martinez 08/22/06	<i>D.N. Strom</i> D.N. Strom	8-22-06
SUMMARY OF REVISIONS						

WCH-DE-018 (4/14/06)

*Obtain Calc. No. from R&DC and Form from Intranet

Washington Closure Hanford

CALCULATION SHEET

Originator G. Cruz Date 8/15/2006 Calc. No. 0100B-CA-V0284 Rev. No. 0
 Project 118-B-1 Burial Ground Sample Design Job No. 14655 Checked CSB Date 8/21/06
 Subject 118-B-1 Shallow Zone, Overburden, BCL, and Staging Pile Sampling Plan Sheet No. 1of4

1	Problem:	Calculate and display required sampling nodes in concurrence with 100 Area Burial Grounds Remedial Action Sampling
2		and Analysis Plan, DOE/RL-2001-35 Rev. 0, for verification and closure.
3		
4	Given:	-SAP (DOE/RL-2001-35 Rev. 0) requirements
5		-Shallow Sampling Area (Surface area of each zone determined from CAD program,
6		Attachment 3, Sht 1 of 10, CAD file 1BC:081506A, 118-B-1 Burial Ground Area 1 Shallow Zone Sampling Plan,
7		Attachment 3, Sht 2 of 10, CAD file 1BC:081506B, 118-B-1 Burial Ground Area 2 Shallow Zone Sampling Plan,
8		Attachment 3, Sht 3 of 10, CAD file 1BC:081506C, 118-B-1 Burial Ground Area 3 Shallow Zone Sampling Plan,
9		Attachment 3, Sht 4 of 10, CAD file 1BC:081506D, 118-B-1 Burial Ground Area 4 Shallow Zone Sampling Plan,
10		Attachment 3, Sht 5 of 10, CAD file 1BC:081506E, 118-B-1 Burial Ground Area 5 Shallow Zone Sampling Plan,
11		Attachment 3, Sht 6 of 10, CAD file 1BC:081506F, 118-B-1 Burial Ground Area 6 Shallow Zone Sampling Plan,
12		Attachment 3, Sht 7 of 10, CAD file 1BC:081506G, 118-B-1 Burial Ground Area 7 Shallow Zone Sampling Plan)
13		
14		-BCL Overburden Sampling Area (Surface area of each zone determined from CAD program,
15		Attachment 3, Sht 8 of 10, CAD file 1BC:081506H, 118-B-1 Burial Ground Overburden (BCL) Sampling Plan)
16		
17		-Overburden Sampling Area (Surface area of each zone determined from CAD program,
18		Attachment 3, Sht 9 of 10, CAD file 1BC:081506I, 118-B-1 Burial Ground Overburden Sampling Plan)
19		
20		-Staging Pile Sampling Area (Surface area of each zone determined from CAD program,
21		Attachment 3, Sht 10 of 10, CAD file 1BC:081506J, 118-B-1 Burial Ground Staging Pile Sampling Plan)
22		
23	SAP Requirements:	
24		-Develop a 16 node sampling grid for the sampling area
25	Shallow Zone:	-Use table 3-2 of the SAP to determine which four of the sixteen nodes will be sampled
26		to collect clean up verification samples
27		
28		-Develop a 16 node sampling grid for the sampling area
29	Overburden:	-Use table 3-2 of the SAP to determine which four of the sixteen nodes will be sampled
30		to collect clean up verification samples
31		
32		-Develop a 16 node sampling grid for the sampling area
33	Deep Zone:	-Use table 3-2 of the SAP to determine which four of the sixteen nodes will be sampled
34		to collect clean up verification samples
35		
36	Determination of Area 1 Shallow Zone Sampling Grid:	
37		
38	Shallow Zone Sampling Grid Area determined from Table 3-2, SAP	
39	Attachment 2, Number of Decision Subunits Based on Area (Converted to Sq Meters)	
40		
41	Total Area:	3775.07 m ²
42	Area of Decision Subunits (total area 1 subunit)	3775.07 m ²
43		
44	Decision Subunit divided into 4 Sampling Areas:	943.76 m ²
45		
46	Sampling Areas divided into a 16 node grid (node numbers 1-16):	58.98 m ²
47		
48	Nodes to be Sampled (as determined from Attachment 1, Table A-1, Sample Grid Point Lookup Table)	
49	See Attachment 3, Sht 1 of 10, 118-B-1 Burial Ground Area 1 Shallow Zone Sampling Plan,	
50	for Sample Location Table	
51		
52		

Washington Closure Hanford

CALCULATION SHEET

Originator G. Cruz Date 8/15/2006 Calc. No. 0100B-CA-V0284 Rev. No. 0
 Project 118-B-1 Burial Ground Sample Design Job No. 14655 Checked csb Date 8/21/06
 Subject 118-B-1 Shallow Zone, Overburden, BCL, and Staging Pile Sampling Pla Sheet No. 2of4

1									
2									
3	Determination of Area 2 Shallow Zone Sampling Grid:								
4									
5	Shallow Zone Sampling Grid Area determined from Table 3-2, SAP								
6	Attachment 2, Number of Decision Subunits Based on Area (Converted to Sq Meters)								
7									
8	Total Area:					1509.17	m ²		
9	Area of Decision Subunits (total area 1 subunit)					1509.17	m ²		
10									
11	Decision Subunit divided into 4 Sampling Areas:					377.29	m ²		
12									
13	Sampling Areas divided into a 16 node grid (node numbers 1-16):					23.58	m ²		
14									
15	Nodes to be Sampled (as determined from Attachment 1, Table A-1, Sample Grid Point Lookup Table)								
16		See Attachment 3, Sht 2 of 10, 118-B-1 Burial Ground Area 2 Shallow Zone Sampling Plan,							
17		for Sample Location Table							
18									
19	Determination of Area 3 Shallow Zone Sampling Grid:								
20									
21	Shallow Zone Sampling Grid Area determined from Table 3-2, SAP								
22	Attachment 2, Number of Decision Subunits Based on Area (Converted to Sq Meters)								
23									
24	Total Area:					4642.32	m ²		
25	Area of Decision Subunits (total area 1 subunit)					4642.32	m ²		
26									
27	Decision Subunit divided into 4 Sampling Areas:					1160.58	m ²		
28									
29	Sampling Areas divided into a 16 node grid (node numbers 1-16):					72.53	m ²		
30									
31	Nodes to be Sampled (as determined from Attachment 1, Table A-1, Sample Grid Point Lookup Table)								
32		See Attachment 3, Sht 3 of 10, 118-B-1 Burial Ground Area 3 Shallow Zone Sampling Plan,							
33		for Sample Location Table							
34									
35	Determination of Area 4 Shallow Zone Sampling Grid:								
36									
37	Shallow Zone Sampling Grid Area determined from Table 3-2, SAP								
38	Attachment 2, Number of Decision Subunits Based on Area (Converted to Sq Meters)								
39									
40	Total Area:					1446.78	m ²		
41	Area of Decision Subunits (total area 1 subunit)					1446.78	m ²		
42									
43	Decision Subunit divided into 4 Sampling Areas:					361.69	m ²		
44									
45	Sampling Areas divided into a 16 node grid (node numbers 1-16):					22.60	m ²		
46									
47	Nodes to be Sampled (as determined from Attachment 1, Table A-1, Sample Grid Point Lookup Table)								
48		See Attachment 3, Sht 4 of 10, 118-B-1 Burial Ground Area 4 Shallow Zone Sampling Plan,							
49		for Sample Location Table							
50									
51									

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CALCULATION SHEET

Originator G. Cruz Date 8/15/2006 Calc. No. 0100B-CA-V0284 Rev. No. 0
 Project 118-B-1 Burial Ground Sample Design Job No. 14655 Checked AB Date 8/21/06
 Subject 118-B-1 Shallow Zone, Overburden, BCL, and Staging Pile Sampling Pla Sheet No. 3of4

1									
2									
3	Determination of Area 5 Shallow Zone Sampling Grid:								
4									
5	Shallow Zone Sampling Grid Area determined from Table 3-2, SAP								
6	Attachment 2, Number of Decision Subunits Based on Area (Converted to Sq Meters)								
7									
8	Total Area:					1088.62	m ²		
9	Area of Decision Subunits (total area 1 subunit)					1088.62	m ²		
10									
11	Decision Subunit divided into 4 Sampling Areas:					272.15	m ²		
12									
13	Sampling Areas divided into a 16 node grid (node numbers 1-16):					17.00	m ²		
14									
15	Nodes to be Sampled (as determined from Attachment 1, Table A-1, Sample Grid Point Lookup Table)								
16		See Attachment 3, Sht 5 of 10, 118-B-1 Burial Ground Area 5 Shallow Zone Sampling Plan,							
17		for Sample Location Table							
18									
19	Determination of Area 6 Shallow Zone Sampling Grid:								
20									
21	Shallow Zone Sampling Grid Area determined from Table 3-2, SAP								
22	Attachment 2, Number of Decision Subunits Based on Area (Converted to Sq Meters)								
23									
24	Total Area:					9259.94	m ²		
25	Area of Decision Subunits (total area 1 subunit)					9259.94	m ²		
26									
27	Decision Subunit divided into 4 Sampling Areas:					2314.98	m ²		
28									
29	Sampling Areas divided into a 16 node grid (node numbers 1-16):					144.68	m ²		
30									
31	Nodes to be Sampled (as determined from Attachment 1, Table A-1, Sample Grid Point Lookup Table)								
32		See Attachment 3, Sht 6 of 10, 118-B-1 Burial Ground Area 6 Shallow Zone Sampling Plan,							
33		for Sample Location Table							
34									
35	Determination of Area 7 Shallow Zone Sampling Grid:								
36									
37	Shallow Zone Sampling Grid Area determined from Table 3-2, SAP								
38	Attachment 2, Number of Decision Subunits Based on Area (Converted to Sq Meters)								
39									
40	Total Area:					9200.00	m ²		
41	Area of Decision Subunits (total area 1 subunit)					9200.00	m ²		
42									
43	Decision Subunit divided into 4 Sampling Areas:					2300.00	m ²		
44									
45	Sampling Areas divided into a 16 node grid (node numbers 1-16):					143.75	m ²		
46									
47	Nodes to be Sampled (as determined from Attachment 1, Table A-1, Sample Grid Point Lookup Table)								
48		See Attachment 3, Sht 7 of 10, 118-B-1 Burial Ground Area 7 Shallow Zone Sampling Plan,							
49		for Sample Location Table							
50									
51									

Washington Closure Hanford

CALCULATION SHEET

Originator G. Cruz Date 8/15/2006 Calc. No. 0100B-CA-V0284 Rev. No. 0
 Project 118-B-1 Burial Ground Sample Design Job No. 14655 Checked CSB Date 8/21/06
 Subject 118-B-1 Shallow Zone, Overburden, BCL, and Staging Pile Sampling Plan Sheet No. 4 of 4

1									
2									
3	Determination of Overburden (BCL) Sampling Grid:								
4									
5	Overburden (BCL) Sampling Grid Area determined from Table 3-2, SAP								
6	Attachment 2, Number of Decision Subunits Based on Area (Converted to Sq Meters)								
7									
8	Total Area:					20021.52	m ²		
9	Area of Decision Subunits (total area 4 subunits)					5005.38	m ²		
10									
11	Decision Subunit divided into 4 Sampling Areas:					1251.34	m ²		
12									
13	Sampling Areas divided into a 16 node grid (node numbers 1-16):					78.20	m ²		
14									
15	Nodes to be Sampled (as determined from Attachment 1, Table A-1, Sample Grid Point Lookup Table)								
16		See Attachment 3, Sht 8 of 10, 118-B-1 Burial Ground Overburden (BCL) Sampling Plan,							
17		for Sample Location Table							
18									
19	Determination of Overburden Sampling Grid:								
20									
21	Overburden Sampling Grid Area determined from Table 3-2, SAP								
22	Attachment 2, Number of Decision Subunits Based on Area (Converted to Sq Meters)								
23									
24	Total Area:					23032.48	m ²		
25	Area of Decision Subunits (total area 4 subunits)					5758.12	m ²		
26									
27	Decision Subunit divided into 4 Sampling Areas:					1439.53	m ²		
28									
29	Sampling Areas divided into a 16 node grid (node numbers 1-16):					89.97	m ²		
30									
31	Nodes to be Sampled (as determined from Attachment 1, Table A-1, Sample Grid Point Lookup Table)								
32		See Attachment 3, Sht 9 of 10, 118-B-1 Burial Ground Overburden Sampling Plan,							
33		for Sample Location Table							
34									
35	Determination of Staging Pile Sampling Grid:								
36									
37	Staging Pile Sampling Grid Area determined from Table 3-2, SAP								
38	Attachment 2, Number of Decision Subunits Based on Area (Converted to Sq Meters)								
39									
40	Total Area:					27883.20	m ²		
41	Area of Decision Subunits (total area 4 subunits)					6970.80	m ²		
42									
43	Decision Subunit divided into 4 Sampling Areas:					1742.70	m ²		
44									
45	Sampling Areas divided into a 16 node grid (node numbers 1-16):					108.91	m ²		
46									
47	Nodes to be Sampled (as determined from Attachment 1, Table A-1, Sample Grid Point Lookup Table)								
48		See Attachment 3, Sht 10 of 10, 118-B-1 Burial Ground Staging Pile Sampling Plan,							
49		for Sample Location Table							
50									
51									

Washington Closure Hanford

Originator G. Cruz Date 8/15/2006 Calc. No. 0100B-CA-V0284 Rev. No. 0
 Project 118-B-1 Burial Ground Sample Design Job No. 14655 Checked CSB Date 8/21/06
 Subject 118-B-1 Shallow Zone, Overburden, BCL, and Staging Pile Sampling Plan Sheet No 1 of 1

1 ATTACHMENT 1

3 Sample Grid Point Lookup Table.

Default Plan	Sampling Area 1	Sampling Area 2	Sampling Area 3	Sampling Area 4	Sampling Area 5	Sampling Area 6	Sampling Area 7	Sampling Area 8	Sampling Area 9	Sampling Area 10
Closeout	3	6	1	4	5	1	3	3	4	16
Closeout	4	7	11	3	15	15	5	13	10	10
Closeout	16	3	2	7	7	10	11	4	3	14
Closeout	10	15	4	12	1	13	4	8	16	4
Not Sampling	2	14	5	9	13	12	8	2	14	8
Not Sampling	13	10	9	13	2	16	1	12	5	3
Not Sampling	6	1	10	8	14	4	16	5	8	6
Not Sampling	1	9	13	1	10	5	12	1	1	15
Not Sampling	9	12	7	5	6	2	6	7	15	9
Not Sampling	15	16	15	14	16	6	2	15	11	1
Not Sampling	8	13	8	10	12	11	13	14	2	12
Not Sampling	5	2	3	11	4	3	9	10	7	11
Not Sampling	7	11	14	15	11	14	14	6	13	2
Not Sampling	11	4	6	2	9	7	7	11	9	7
Not Sampling	12	8	16	16	3	8	15	9	6	13
Not Sampling	14	5	12	6	8	9	10	16	12	5

23 **** Note:** Grid nodes for each sampling area in each waste site should be numbered consistently, e.g., begin numbering
 24 the nodes in the northwesternmost node. Then number consecutively left to right.

Washington Closure Hanford

Originator G. Cruz Date 8/15/2006 Calc. No. 0100B-CA-V0284 Rev. No. 0
 Project 118-B-1 Burial Ground Sample Design Job No. 14655 Checked CSB Date 8/21/06
 Subject 118-B-1 Shallow Zone, Overburden, BCL, and Staging Pile Sampling Pla Sheet No. 1 of 1

1 ATTACHMENT 2

2

3 Number of Decision Subunits Based on Area.

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Site Verification Sampling Frequencies Based on Area.					
Decision Unit ^a	Waste Site Size ^b	Decision Subunits	Blocks ^c	Discrete Samples	Composite Samples
Shallow zone - 0 to 15 ft	Small: < 100,000 ft ²	1	4	16	4
	Medium: >100,000 ft ² < 400,000 ft ²	4	16	64	16
	Large: >400,000 ft ²	8	32	128	32
Deep Zone - >15 ft	Small: < 100,000 ft ²	1	4	16	4
	Medium: >100,000 ft ² < 400,000 ft ²	4	16	64	16
	Large: >400,000 ft ²	8	32	128	32
Overburden/layback stockpiles	Small: < 100,000 ft ²	1	4	16	4
	Medium: >100,000 ft ² < 400,000 ft ²	4	16	64	16
	Large: >400,000 ft ²	8	32	128	32
Staging pile areas (residual soil)	Small: < 100,000 ft ²	1	4	16	4
	Medium: >100,000 ft ² < 400,000 ft ²	4	16	64	16
	Large: >400,000 ft ²	8	32	128	32

^a The shallow zone, deep zone, overburden stockpile, and staging pile areas each represent single decision units. The total number of decision units will vary because individual waste sites may not have a deep zone, overburden stockpile, and/or staging pile areas.

^b Area of exposed surface after excavation or area of stockpile base (as applicable)

^c Decision subunits are divided into four blocks to ensure that random sampling locations are not bunched together in one area

NOTES

1. SHALLOW ZONE NODE AREAS ARE APPROXIMATELY 58.98 SQUARE METERS.
2. SAMPLES ARE TAKEN FROM THE APPROXIMATE CENTER SQUARE METERS.
3. THE SHALLOW ZONE CONSISTS OF SAMPLING AREAS A1, A2, A3 AND A4 WITHIN DECISION SUBUNIT 1.

LEGEND

VERIFICATION SAMPLING NODE

SAMPLE LOCATION TABLE

DECISION SUBUNIT	SAMPLING AREA	SAMPLE NODE	NORTHING	EASTING
1	A1	S-A1-3	143863.30	564370.58
		S-A1-4	143854.55	564370.03
		S-A1-10	143867.37	564388.48
		S-A1-16	143854.53	564397.73
	A2	S-A2-3	143842.16	564374.80
		S-A2-6	143840.58	564382.59
		S-A2-7	143833.43	564382.62
		S-A2-15	143832.63	564398.45
	A3	S-A3-1	143873.33	564406.62
		S-A3-2	143866.53	564406.66
		S-A3-4	143853.10	564406.72
		S-A3-11	143859.48	564424.52
	A4	S-A4-3	143832.21	564406.63
		S-A4-4	143825.21	564406.65
		S-A4-7	143832.47	564415.10
		S-A4-12	143826.12	564423.80

Attachment 3 Sheet No. 1 of 10

Originator G. CRUZ Date 8/15/06

Checked By CRB Date 8/21/06

Doc No. 0100B-CA-VOL 84 Rev. No. 6

ATTACHMENT 3

U.S. DEPARTMENT OF ENERGY
DOE RICHLAND OPERATIONS OFFICE
RIVIER CORRIDOR CLOSURE CONTRACT

100-B/C AREA
118-B-1 BURIAL GROUND AREA 1
SHALLOW ZONE SAMPLING PLAN

NOTES

1. SHALLOW ZONE NODE AREAS ARE APPROXIMATELY 23.58 SQUARE METERS.
2. SAMPLES ARE TAKEN FROM THE APPROXIMATE CENTER SQUARE METERS.
3. THE SHALLOW ZONE CONSISTS OF SAMPLING AREAS A1, A2, A3 AND A4 WITHIN DECISION SUBUNIT 1.

LEGEND

VERIFICATION SAMPLING NODE

SAMPLE LOCATION TABLE

DECISION SUBUNIT	SAMPLING AREA	SAMPLE NODE	NORTHING	EASTING
1	A1	S-A1-3	143907.59	564395.67
		S-A1-4	143907.67	564404.25
		S-A1-10	143904.81	564395.79
		S-A1-16	143899.29	564377.93
	A2	S-A2-3	143900.95	564399.24
		S-A2-6	143901.01	564419.83
		S-A2-7	143901.03	564426.67
		S-A2-15	143897.42	564427.06
	A3	S-A3-1	143894.01	564376.75
		S-A3-2	143893.97	564383.04
		S-A3-4	143893.38	564398.41
		S-A3-11	143890.44	564401.40
	A4	S-A4-3	143885.05	564391.55
		S-A4-4	143884.89	564398.24
		S-A4-7	143884.73	564416.62
		S-A4-12	143881.31	564396.16

Attachment 3 Sheet No. 2 of 10
 Originator E. CRUZ Date 8/15/06
 Chk'd By RLS Date 8/20/06
 Calc. No. 0100B-CA-V0284 Rev. No. 6

ATTACHMENT 3

100-B/C AREA
 118-B-1 BURIAL GROUND AREA 2
 SHALLOW ZONE SAMPLING PLAN

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NOTES

1. SHALLOW ZONE NODE AREAS ARE APPROXIMATELY 72.53 SQUARE METERS.
2. SAMPLES ARE TAKEN FROM THE APPROXIMATE CENTER SQUARE METERS.
3. THE SHALLOW ZONE CONSISTS OF SAMPLING AREAS A1, A2, A3 AND A4 WITHIN DECISION SUBUNIT 1.

LEGEND

VERIFICATION SAMPLING NODE

SAMPLE LOCATION TABLE

DECISION SUBUNIT	SAMPLING AREA	SAMPLE NODE	NORTHING	EASTING
1	A1	S-A1-3A	144030.13	564393.92
		S-A1-3B	144030.68	564420.74
		S-A1-4A	144030.46	564425.62
		S-A1-4B	143997.56	564368.38
		S-A1-10	143993.86	564391.54
	A2	S-A1-16	143992.92	564414.90
		S-A2-3	144000.07	564421.16
		S-A2-6	143980.30	564380.72
		S-A2-7	143980.62	564392.73
		S-A2-15	143969.17	564392.15
	A3	S-A3-1	143969.22	564401.10
		S-A3-2	143961.11	564401.29
		S-A3-4	143961.19	564410.56
		S-A3-11	143945.30	564392.93
		S-A4-3	143935.85	564416.99
	A4	S-A4-4A	143935.60	564425.99
		S-A4-4B	143927.23	564373.60
		S-A4-7	143926.29	564395.66
		S-A4-12A	143927.01	564432.86
		S-A4-12B	143911.82	564378.24

Attachment 3 Sheet No. 3 of 10
Originator G. CRUZ Date 8/15/06
Checked By CSB Date 8/24/06
Calc. No. 6100B-CA-V0284 Rev. No. 10

ATTACHMENT 3

U.S. DEPARTMENT OF ENERGY
DOE RICHLAND OPERATIONS OFFICE
RIVIER CORRIDOR CLOSURE CONTRACT

100-B/C AREA
118-B-1 BURIAL GROUND AREA 3
SHALLOW ZONE SAMPLING PLAN

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E 564400

NOTES

- 1. SHALLOW ZONE NODE AREAS ARE APPROXIMATELY 22.60 SQUARE METERS.
- 2. SAMPLES ARE TAKEN FROM THE APPROXIMATE CENTER SQUARE METERS.
- 3. THE SHALLOW ZONE CONSISTS OF SAMPLING AREAS A1, A2, A3 AND A4 WITHIN DECISION SUBUNIT 1.

LEGEND

VERIFICATION SAMPLING NODE

SAMPLE LOCATION TABLE

DECISION SUBUNIT	SAMPLING AREA	SAMPLE NODE	NORTHING	EASTING
1	A1	S-A1-3	144052.61	564374.33
		S-A1-4	144052.99	564379.49
		S-A1-10	144048.15	564364.66
		S-A1-16	144048.30	564394.91
	A2	S-A2-3	144043.73	564370.37
		S-A2-6	144043.72	564385.48
		S-A2-7	144043.72	564390.46
		S-A2-15	144038.98	564390.74
	A3	S-A3-1	144053.11	564399.57
		S-A3-2	144052.71	564404.20
		S-A3-4	144052.63	564414.16
		S-A3-11	144048.20	564410.55
	A4	S-A4-3	144043.88	564410.90
		S-A4-4	144043.88	564416.09
		S-A4-7	144043.90	564431.58
		S-A4-12	144039.23	564414.47

N 144050

SCALE 1:400

4 0 4 8 16 meters

U.S. DEPARTMENT OF ENERGY
DOE RICHLAND OPERATIONS OFFICE
RIVER CORRIDOR CLOSURE CONTRACT

100-B/C AREA
118-B-1 BURIAL GROUND AREA 4
SHALLOW ZONE SAMPLING PLAN

Attachment 3 Sheet No. 4 of 10
Originator G. CRUZ Date 8/15/06
Checked By CR Date 8/2/06
Calc. No. 8100B-CA-V0284 Rev. No. 0

ATTACHMENT 3

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N 143900

U.S. DEPARTMENT OF ENERGY
DOE RICHLAND OPERATIONS OFFICE
RIVER CORRIDOR CLOSURE CONTRACT

100-B/C AREA
118-B-1 BURIAL GROUND AREA 5
SHALLOW ZONE SAMPLING PLAN

NOTES

1. SHALLOW ZONE NODE AREAS ARE APPROXIMATELY 17.00 SQUARE METERS.
2. SAMPLES ARE TAKEN FROM THE APPROXIMATE CENTER SQUARE METERS.
3. THE SHALLOW ZONE CONSISTS OF SAMPLING AREAS A1, A2, A3 AND A4 WITHIN DECISION SUBUNIT 1.

LEGEND

VERIFICATION SAMPLING NODE

SAMPLE LOCATION TABLE

DECISION SUBUNIT	SAMPLING AREA	SAMPLE NODE	NORTHING	EASTING
1	A1	S-A1-3	143909.01	564348.44
		S-A1-4	143905.93	564348.41
		S-A1-10	143915.92	564353.53
		S-A1-16	143895.52	564353.81
	A2	S-A2-3	143887.49	564346.93
		S-A2-6	143878.73	564349.29
		S-A2-7	143872.61	564350.20
		S-A2-15	143872.53	564355.39
	A3	S-A3-1	143920.27	564358.25
		S-A3-2	143916.54	564358.36
		S-A3-4	143909.47	564358.52
		S-A3-11	143907.74	564363.60
	A4	S-A4-3	143887.10	564358.85
		S-A4-4	143884.35	564359.22
		S-A4-7	143875.98	564360.36
		S-A4-12	143878.83	564364.99

Attachment 3 Sheet No. 5 of 10
Originator G. CRUZ Date 8/15/06
Chkd By CA Date 8/24/06
Calc. No. 01008-CA-V0284 Rev. No. 0

ATTACHMENT 3

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SCALE 1:1200
12 0 12 24 48 meters

U.S. DEPARTMENT OF ENERGY
DOE RICHLAND OPERATIONS OFFICE
RIVIER CORRIDOR CLOSURE CONTRACT

100-B/C AREA
118-B-1 BURIAL GROUND AREA 6
SHALLOW ZONE SAMPLING PLAN

NOTES

1. SHALLOW ZONE NODE AREAS ARE APPROXIMATELY 144.68 SQUARE METERS.
2. SAMPLES ARE TAKEN FROM THE APPROXIMATE CENTER SQUARE METERS.
3. THE SHALLOW ZONE CONSISTS OF SAMPLING AREAS A1, A2, A3 AND A4 WITHIN DECISION SUBUNIT 1.

LEGEND

VERIFICATION SAMPLING NODE

SAMPLE LOCATION TABLE

DECISION SUBUNIT	SAMPLING AREA	SAMPLE NODE	NORTHING	EASTING
1	A1	S-A1-3	144034.23	564394.67
		S-A1-4	144032.66	564409.09
		S-A1-10	144009.33	564371.94
		S-A1-16	143951.32	564372.36
	A2	S-A2-3	143910.16	564368.19
		S-A2-6	143861.91	564355.35
		S-A2-7	143876.12	564344.32
		S-A2-15	143814.03	564367.97
	A3	S-A3-1	144058.61	564420.02
		S-A3-2	144055.25	564436.64
		S-A3-4	144026.93	564415.24
		S-A3-11	143975.19	564409.77
	A4	S-A4-3	143887.24	564431.04
		S-A4-4	143884.36	564432.95
		S-A4-7	143852.55	564440.43
		S-A4-12	143813.46	564441.35

Attachment 3 Sheet No. 6 of 10
Originator G. CRUZ Date 9/15/06
Chk'd By CAK Date 9/21/06
Calc. No. 0100B-CA-V0284 Rev. No. 1/01

ATTACHMENT 3

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SCALE 1:1200
12 0 12 24 48 meters

U.S. DEPARTMENT OF ENERGY
DOE RICHLAND OPERATIONS OFFICE
RIVER CORRIDOR CLOSURE CONTRACT

NOTES

1. SHALLOW ZONE NODE AREAS ARE APPROXIMATELY 143.75 SQUARE METERS.
2. SAMPLES ARE TAKEN FROM THE APPROXIMATE CENTER SQUARE METERS.
3. THE SHALLOW ZONE CONSISTS OF SAMPLING AREAS A1, A2, A3 AND A4 WITHIN DECISION SUBUNIT 1.

LEGEND

VERIFICATION SAMPLING NODE

SAMPLE LOCATION TABLE

DECISION SUBUNIT	SAMPLING AREA	SAMPLE NODE	NORTHING	EASTING
1	A1	S-A1-3	144015.66	564338.84
		S-A1-4	144006.00	564339.72
		S-A1-10	144032.72	564352.22
		S-A1-16	143960.85	564363.83
	A2	S-A2-3	143946.97	564365.28
		S-A2-6	143930.02	564353.74
		S-A2-7	143930.64	564339.55
		S-A2-15	143868.35	564321.48
	A3	S-A3-1	143855.65	564327.49
		S-A3-2	143848.37	564330.37
		S-A3-4	143828.27	564339.43
		S-A3-11	144037.25	564443.79
	A4	S-A4-3	143964.38	564441.63
		S-A4-4	143947.64	564443.52
		S-A4-7	143905.33	564441.80
		S-A4-12	143952.47	564453.15

Attachment 3 Sheet No. 7 of 10
Originator G. CRUZ Date 8/15/06
Chk'd By CAB Date 8/2/06
Calc. No. 01603-CA-V0284 Rev. No. 10

ATTACHMENT 3

100-B/C AREA
118-B-1 BURIAL GROUND AREA 7
SHALLOW ZONE SAMPLING PLAN

1BC:081506H.dwg

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NOTES

- OVERBURDEN NODE AREAS ARE APPROXIMATELY 78.20 SQUARE METERS.
- SAMPLES ARE TAKEN FROM THE APPROXIMATE CENTER SQUARE METERS.
- THE OVERBURDEN CONSISTS OF SAMPLING AREAS A1, A2, A3 AND A4 WITHIN DECISION SUBUNIT 1. AREAS B5, B6, B7, AND B8 WITHIN DECISION SUBUNIT 2. AREAS C9, C10, C1, AND C2 WITHIN DECISION SUBUNIT 3. AREAS D3, D4, D5, AND D6 WITHIN DECISION SUBUNIT 4.

LEGEND

VERIFICATION SAMPLING NODE

SAMPLE LOCATION TABLE

DECISION SUBUNIT	SAMPLING AREA	SAMPLE NODE	NORTHING	EASTING
1	A1	O-A1-3	144141.00	564576.02
		O-A1-4	144127.90	564576.11
		O-A1-10	144139.01	564556.70
		O-A1-16	144152.82	564421.61
	A2	O-A2-3	144136.15	564413.27
		O-A2-6	144140.27	564424.73
		O-A2-7	144133.08	564423.79
		O-A2-15	144123.00	564445.59
	A3	O-A3-1	144122.48	564410.55
		O-A3-2	144114.64	564409.39
		O-A3-4	144099.94	564406.23
		O-A3-11	144103.22	564430.03
	A4	O-A4-3	144089.05	564375.53
		O-A4-4	144078.34	564374.64
		O-A4-7	144090.76	564391.86
		O-A4-12	144079.58	564403.26
2	B5	O-B5-1	144152.15	564405.80
		O-B5-5	144149.30	564397.74
		O-B5-7	144122.21	564397.83
		O-B5-15	144127.40	564385.43
	B6	O-B6-1	144150.60	564378.47
		O-B6-10	144138.69	564364.51
		O-B6-13	144149.74	564357.92
		O-B6-15	144125.25	564357.91
	B7	O-B7-3	144125.75	564351.63
		O-B7-4	144113.01	564351.85
		O-B7-5	144150.00	564345.09
		O-B7-11	144125.22	564339.03
	B8	O-B8-3	144125.75	564326.22
		O-B8-4	144113.28	564326.18
		O-B8-8	144113.42	564319.76
		O-B8-13	144146.36	564305.44

DECISION SUBUNIT	SAMPLING AREA	SAMPLE NODE	NORTHING	EASTING
3	C9	O-C9-3	144033.11	564214.73
		O-C9-4	144027.80	564215.25
		O-C9-10	143842.70	564300.34
		O-C9-16	143841.78	564280.26
	C10	O-C10-4	143839.91	564268.37
		O-C10-10	143817.79	564282.49
		O-C10-14	143818.35	564258.21
		O-C10-16	143818.66	564244.40
	C1	O-C1-3	143810.10	564246.63
		O-C1-4	143798.69	564259.06
		O-C1-10	143800.39	564279.21
		O-C1-16	143802.30	564302.90
	C2	O-C2-3	143778.38	564265.59
		O-C2-6	143785.78	564279.01
		O-C2-7	143779.62	564278.91
		O-C2-15	143781.88	564303.10
4	D3	O-D3-1	143766.91	564264.42
		O-D3-2	143760.14	564264.71
		O-D3-4	143759.96	564276.82
		O-D3-11	143795.42	564352.96
	D4	O-D4-3	143795.38	564409.49
		O-D4-4	143789.64	564410.84
		O-D4-7	143794.99	564438.76
		O-D4-12	143761.42	564333.38
	D5	O-D5-1	143773.38	564351.33
		O-D5-5	143772.91	564363.58
		O-D5-7	143772.65	564370.17
		O-D5-15	143772.26	564398.95
	D6	O-D6-1	143771.78	564406.02
		O-D6-10	143760.46	564433.56
		O-D6-13	143772.78	564445.13
		O-D6-15	143771.82	564454.17

N 143900

SCALE 1:1600

16 0 16 32 64 meters

Attachment 3 Sheet No. 8 of 10
Originator G. CRUZ Date 8/15/06
Ch'd By CRB Date 8/24/06
Calc. No. 0100B-CA-V0284 Rev. No. 6

ATTACHMENT 3

U.S DEPARTMENT OF ENERGY
DOE RICHLAND OPERATIONS OFFICE
RIVIER CORRIDOR CLOSURE CONTRACT

100-B/C AREA
118-B-1 BURIAL GROUND
OVERBURDEN (BCL) SAMPLING PLAN

1BC:081506J.dwg

N 144200

E 564400

NOTES	
1. STAGING PILE NODE AREAS ARE APPROXIMATELY 108.91 SQUARE METERS.	
2. SAMPLES ARE TAKEN FROM THE APPROXIMATE CENTER SQUARE METERS.	
3. THE STAGING PILE CONSISTS OF SAMPLING AREAS A1, A2, A3 AND A4 WITHIN DECISION SUBUNIT 1. AREAS B5, B6, B7, AND B8 WITHIN DECISION SUBUNIT 2. AREAS C9, C10, C1, AND C2 WITHIN DECISION SUBUNIT 3. AREAS D3, D4, D5, AND D6 WITHIN DECISION SUBUNIT 4.	
LEGEND
	VERIFICATION SAMPLING NODE

SAMPLE LOCATION TABLE				
DECISION SUBUNIT	SAMPLING AREA	SAMPLE NODE	NORTHING	EASTING
1	A1	O-A1-3	144152.83	564227.39
		O-A1-4	144153.05	564239.90
		O-A1-10	144144.38	564212.37
		O-A1-16	144144.32	564291.00
	A2	O-A2-3	144136.15	564223.85
		O-A2-6	144136.12	564263.48
		O-A2-7	144136.11	564277.02
		O-A2-15	144127.83	564279.00
	A3	O-A3-1	144119.85	564198.57
		O-A3-2	144119.81	564211.79
		O-A3-4	144119.71	564238.34
		O-A3-11	144111.58	564225.75
	A4	O-A4-3	144103.63	564226.66
		O-A4-4	144103.60	564240.69
		O-A4-7	144103.51	564283.47
		O-A4-12	144096.18	564246.16
2	B5	O-B5-1	144089.31	564200.26
		O-B5-5	144089.39	564266.14
		O-B5-7	144089.43	564299.70
		O-B5-15	144083.11	564305.34
	B6	O-B6-1	144076.49	564200.94
		O-B6-10	144070.33	564218.58
		O-B6-13	144070.56	564271.13
		O-B6-15	144070.70	564305.99
	B7	O-B7-3	144063.93	564235.67
		O-B7-4	144064.07	564252.21
		O-B7-5	144064.22	564269.14
		O-B7-11	144057.35	564251.26
	B8	O-B8-3	144049.71	564251.79
		O-B8-4	144049.86	564265.48
		O-B8-8	144050.50	564324.05
		O-B8-13	144042.26	564288.25
3	C9	O-C9-3	144033.84	564259.21
		O-C9-4	144033.85	564272.07
		O-C9-10	144024.76	564258.54
		O-C9-16	144024.78	564326.11
	C10	O-C10-4	144012.83	564306.58
		O-C10-10	144003.09	564493.75
		O-C10-14	144003.48	564537.33
		O-C10-16	144003.46	564564.11
	C1	O-C1-3	144011.72	564500.13
		O-C1-4	144011.81	564514.66
		O-C1-10	144018.88	564487.39
		O-C1-16	144019.72	564576.51
	C2	O-C2-3	144026.27	564498.24
		O-C2-6	144026.66	564542.73
		O-C2-7	144026.80	564558.39
		O-C2-15	144033.92	564559.64
4	D3	O-D3-1	144041.04	564471.59
		O-D3-2	144041.11	564487.19
		O-D3-4	144041.24	564517.42
		O-D3-11	144048.45	564499.87
	D4	O-D4-3	144055.94	564500.38
		O-D4-4	144055.99	564515.00
		O-D4-7	144056.14	564559.27
		O-D4-12	144063.40	564516.03
	D5	O-D5-1	144070.86	564470.82
		O-D5-5	144070.80	564528.08
		O-D5-7	144070.80	564558.23
		O-D5-15	144078.21	564560.80
	D6	O-D6-1	144085.80	564470.32
		O-D6-10	144093.74	564484.21
		O-D6-13	144092.89	564529.16
		O-D6-15	144092.72	564560.58

Attachment 3 Sheet No. 10 of 10
Originator GR CRV2 Date 8/15/06
Chk'd By AS Date 8/2/06
Calc. No. 0100B-CA-VD284 Rev. No. 10

ATTACHMENT 3

SCALE 1:1500
15 0 15 30 60 meters

U.S DEPARTMENT OF ENERGY
DOE RICHLAND OPERATIONS OFFICE
RIVIER CORRIDOR CLOSURE CONTRACT

100-B/C AREA
118-B-1 BURIAL GROUND
STAGING PILE SAMPLING PLAN

CALCULATION COVER SHEET

Project Title: 100-B/C Field Remediation Job No. **14655**

Area: 100-B/C

Discipline: Environmental *Calculation No: 0100B-CA-V0299

Subject: 118-B-1 Burial Ground Cleanup Verification 95% UCL Calculations

Computer Program: Excel Program No: Excel 2003

The attached calculations have been generated to document compliance with established cleanup levels. These calculations should be used in conjunction with other relevant documents in the administrative record.

Committed Calculation ☒

Preliminary ☐

Superseded ☐

Voided ☐

Rev.	Sheet Numbers	Originator	Checker	Reviewer	Approval	Date
0	Cover = 1 Sheets = 61 Attn. 1 = 113 Total = 175	J. M. Capron	T. M. Blakley	N/A	D. N. Strom	2/20/07
1	Cover = 1 Sheets = 61 Attn. 1 = 113 Total = 175	J. M. Capron <i>J. M. Capron</i>	T. M. Blakley <i>T. M. Blakley</i>	N/A	D. N. Strom <i>D. N. Strom</i>	10-4-07

SUMMARY OF REVISION

1	Attachment 1 data tables and corresponding entries in calculation sheets revised to include additional sample data and results of third-party and internal data validation. Sheet 2 revised to include discussion of replacement samples and to remove discussion related to residual deep zone tritium contamination. Sheet 3 revised to indicate that all focused samples have been collected. Sheet 19 revised to use replacement cesium-137 data. Sheets 4 and 5 summary tables updated per changes to reflect changes in calculation sheets. Sheets 7, 11, 29, 31, 32, 35, 36, and 52 through 61 revised to include results of third-party and internal validation.

WCH-DE-018 (05/08/2007)

*Obtain Calc. No. from Document Control and Form from Intranet

CALCULATION SHEET

Washington Closure Hanford

Originator J. M. Capron Date 02/07/07 Calc. No. 0100B-CA-V0299 Rev. No. 0
 Project 100-B/C Field Remediation Job No. 14655 Checked T. M. Blakley Date 2/15/07
 Subject 118-B-1 Burial Ground Cleanup Verification 95% UCL Calculations Sheet No. 1 of 61

Summary**Purpose:**

Calculate the 95% upper confidence limit (UCL) values to evaluate compliance with cleanup standards for the subject site. Also, perform the Washington Administrative Code (WAC) 173-340-740(7)(e) 3-part test for each nonradioactive contaminant of concern (COC) and contaminant of potential concern (COPC) and calculate the relative percent difference (RPD) for primary-duplicate and primary-split sample pairs, as necessary.

Table of Contents:

Sheets 1 to 6 - Summary
 Sheets 7 to 9 - 118-B-1 Area 1 Statistical Calculations
 Sheets 10 to 12 - 118-B-1 Area 2 Statistical Calculations
 Sheets 13 to 15 - 118-B-1 Area 3 Statistical Calculations
 Sheets 16 to 18 - 118-B-1 Area 4 Statistical Calculations
 Sheets 19 to 20 - 118-B-1 Area 5 Statistical Calculations
 Sheets 21 to 23 - 118-B-1 Area 6 Statistical Calculations
 Sheets 24 to 26 - 118-B-1 Area 7 Statistical Calculations
 Sheets 27 to 29 - 118-B-1 Overburden Statistical Calculations
 Sheets 30 to 32 - 118-B-1 BCL Material Statistical Calculations
 Sheets 33 to 36 - 118-B-1 Staging Pile Area Statistical Calculations
 Sheets 37 to 41 - Ecology Software (MTCASat) Results (Overburden)
 Sheets 42 to 46 - Ecology Software (MTCASat) Results (BCL Material)
 Sheets 47 to 51 - Ecology Software (MTCASat) Results (Staging Pile Area)
 Sheets 52 to 61 - Split/Duplicate Analysis
 Attachment 1 - 118-B-1 Verification Sampling Results (43 sheets)

Given/References:

- 1) Sample Results (Attachment 1).
- 2) Background values and remedial action goals (RAGs) are taken from DOE-RL (1996, 2001b, 2005b) and Ecology (2005).
- 3) DOE-RL, 1996, Hanford Site Background: Part 2, Soil Background for Radionuclides, DOE/RL 96 12, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.
- 4) DOE-RL, 2001a, 100 Area Burial Grounds Remedial Action Sampling and Analysis Plan (SAP), DOE/RL-2001-35, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.
- 5) DOE-RL, 2001b, Hanford Site Background: Part 1, Soil Background for Nonradioactive Analytes, DOE/RL-92-24, Rev. 4, U.S. Department of Energy, Richland Operations Office, Richland, Washington.
- 6) DOE-RL, 2005, Remedial Design Report/Remedial Action Work Plan for the 100 Area (RDR/RAWP), DOE/RL-96-17, Rev. 5, U.S. Department of Energy, Richland Operations Office, Richland, Washington.
- 7) Ecology, 1992, Statistical Guidance for Ecology Site Managers, Publication #92-54, Washington Department of Ecology, Olympia, Washington.
- 8) Ecology, 1993, Statistical Guidance for Ecology Site Managers, Supplement S-6, Analyzing Site or Background Data with Below-detection Limit or Below-PQL Values (Censored Data Sets), Publication #92-54, Washington Department of Ecology, Olympia, Washington.
- 9) Ecology, 2005, Cleanup Levels and Risk Calculations (CLARC) Database, Washington State Department of Ecology, Olympia, Washington, <<https://fortress.wa.gov/ecy/clarc/CLARCHome.aspx>>.
- 10) EPA, 1994, USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, EPA 540/R-94/013. U.S. Environmental Protection Agency, Washington, D.C.
- 11) WAC 173-340, 1996, "Model Toxic Control Act - Cleanup," Washington Administrative Code.

Solution:

Calculation methodology is described in Ecology Pub. #92-54 (Ecology 1992, 1993), below, and in the RDR/RAWP (DOE-RL 2005b). Use data from attached worksheets to perform the 95% UCL calculation for each analyte, the WAC 173-340-740(7)(e) 3-part test for nonradionuclides, and the RPD calculations, as required. The hazard quotient and carcinogenic risk calculations are located in a separate calculation brief as an appendix to the Cleanup Verification Package (CVP).

Calculation Description:

The subject calculations were performed on data from soil verification samples from the subject waste site. The data were entered into an EXCEL 2003 spreadsheet and calculations performed by using the built-in spreadsheet functions and/or creating formulae within the cells. The statistical evaluation of data for use in accordance with the RDR/RAWP (DOE-RL 2005b) is documented by this calculation. Duplicate and split RPD results are used in evaluation of data quality within the CVP for this site.

CALCULATION SHEET

Washington Closure Hanford

Originator J. M. Capron *JMC* Date 10/03/07 Calc. No. 0100B-CA-V0299 Rev. No. 1
 Project 100-B/C Field Remediation Job No. 14655 Checked T. M. Blakley *TMB* Date 10/04/07
 Subject 118-B-1 Burial Ground Cleanup Verification 95% UCL Calculations Sheet No. 2 of 61

Summary (continued)

Methodology:

For nonradioactive analytes with ≤50% of the data below detection limits and all detected radionuclide analytes, the statistical value calculated to evaluate the effectiveness of cleanup is the 95% UCL. For nonradioactive analytes with >50% of the data below detection limits, the maximum detected value for the data set is used instead of the 95% UCL. The 95% UCL is not calculated for data sets with no reported detections. The evaluation of the portion of each analyte's data set below detection limits was performed by direct inspection of the attached sample results, and no further calculations were performed for those data sets where >50% of the data was below detection limits. The 95% UCL values were not calculated for radium-226, radium-228, thorium-228, thorium-232, and potassium-40, as these isotopes are excluded from consideration as COCs based on natural occurrence and analogous site information. The 95% UCL values were also not calculated for aluminum, calcium, iron, magnesium, potassium, silicon, and sodium, as no parameters to calculate cleanup values under WAC 173-340-740(3) are available in Ecology (2005) or other reference databases, and these constituents are thus not considered site COCs/COPCs.

All calculations for uranium isotopes and americium-241 were performed using data from isotope-specific analysis rather than data resulting from gamma spectroscopy. Due to data quality deficiencies, a portion of the data with reported detections for the herbicide 2,4-DB in the staging pile area (SPA) were rejected; the result reported in the results summary is the maximum accepted result from the SPA; additional discussion is provided in the CVP.

Initial data results from the SPA indicated the presence of tritium in sampling area A1 at a concentration that would result in a predicted exceedance of groundwater protection criteria. Therefore, additional material removal was performed and a new sample collected and submitted for tritium analysis. Further evaluation and calculations for tritium in the SPA were performed using the replacement sample data. Initial cesium-137 results for Sampling Area A3 of Area 5 (Sample J13V13) and mercury results for Focused Sample 17 (Sample J14JJ3) exceeded cleanup criteria; additional material was removed from these locations and replacement samples (Samples J14JH6 and J152M1, respectively) collected for cesium-137 and mercury, respectively.

All nonradionuclide data reported as being undetected are set to ½ the detection limit value for calculation of the statistics (Ecology 1993). In cases where third-party validation requified detected results as nondetected due to method blank contamination, but did not change the laboratory quantitation limit (i.e., bis(2-ethylhexyl)phthalate and methylene chloride in sample J13J06), ½ the reported value was used for calculation of statistics. For radionuclide data, calculation of the statistics is done using the reported value. In cases where the laboratory does not report a value below the minimum detectable activity (MDA), half of the MDA is used in the calculation. For the statistical evaluation of duplicate sample pairs, the samples are averaged before being included in the data set, after adjustments for censored data as described above. Split samples are not considered within statistical evaluation.

For nonradionuclides, the WAC 173-340 statistical guidance suggests that a test for distributional form be performed on the data and the 95% UCL calculated on the appropriate distribution using Ecology software. For nonradionuclide small data sets ($n < 10$) and all radionuclide data sets, the calculations are performed assuming nonparametric distribution, so no tests for distribution are performed. For nonradionuclide data sets of ten or greater, distributional testing and calculation of the 95% UCL is done using Ecology's MTCASat software (Ecology 1993). Due to differences in addressing censored data between the RDR/RAWP (DOE-RL 2005b) and MTCASat coding and due to a limitation in the MTCASat coding (no direct capability to address variable quantitation limits within a data set), substitutions for censored data are performed before software input and the resulting input set treated as uncensored.

The WAC 173-340-740(7)(e) 3-part test is performed for nonradionuclide analytes only and determines if:

- 1) the 95% UCL exceeds the most stringent cleanup limit for each COC/COC,
- 2) greater than 10% of the raw data exceed the most stringent cleanup limit for each COC/COC,
- 3) the maximum value of the raw data set exceeds two times the most stringent cleanup limit for each COC/COC.

The WAC 173-340-740(7)(e) 3-part test is not performed for COPCs/COCs where the statistical value defaults to the maximum value in the data set. Instead, direct comparison of the maximum value against site RAGs (within the CVP) is used as the compliance basis.

The RPD values are evaluated for analytes detected in a primary-duplicate or primary-split sample pair for the purposes of data quality assessment within the RSVP (where direct evaluation of the attached data showed that a given analyte was undetected in both the primary and duplicate sample or accepted data was not available for both samples in the pair, no further calculations were performed). The RPD is calculated when both the primary value and the duplicate value for a given analyte are above detection limits and are greater than 5 times the target detection limit (TDL). The TDL is a laboratory detection limit pre-determined for each analytical method, listed in Table II-1 of the SAP (DOE-RL 2005a). The RPD calculations use the following formula:

$$RPD = [|M-S| / ((M+S)/2)] * 100$$

where, M = main sample value S = split (or duplicate) sample value

CALCULATION SHEET

Washington Closure Hanford

Originator J. M. Capron *JMC* Date 10/03/07 Calc. No. 0100B-CA-V0299 Rev. No. 1
 Project 100-B/C Field Remediation Job No. 14655 Checked T. M. Blakley *TMB* Date 10/04/07
 Subject 118-B-1 Burial Ground Cleanup Verification 95% UCL Calculations Sheet No. 3 of 61

Summary (continued)

For quality assurance/quality control (QA/QC) split and duplicate RPD calculations, a value less than 30% indicates the data compare favorably. For regulatory splits, a threshold of 35% is used (EPA 1994). If the RPD is greater than 30% (or 35% for regulatory split data), further investigation regarding the usability of the data is performed. To assist in the identification of anomalous sample pairs, when an analyte is detected in the primary or duplicate/split sample, but was quantified at less than 5 times the TDL in one or both samples, an additional parameter is evaluated. In this case, if the difference between the primary and duplicate/split results exceeds a control limit of 2 times the TDL, further assessment regarding the usability of the data is performed. Additional discussion is provided in the data quality assessment section of the CVP, as necessary.

The results presented in the summary tables that follow are for use in risk analysis and the CVP for this site. In addition to the statistical samples collected at the subject site, focused samples were collected from selected locations based on observations made during site remediation. Statistical methodology is not applicable to non-statistical sampling, and direct evaluation of detected values will be used as the compliance basis. The maximum detected value for each analyte from all focused samples collected is presented in the results summary for use in the CVP.

Area 1 - WAC 173-340 3-Part Test for most stringent RAG:

18 95% UCL > Cleanup Limit? YES
 19 > 10% above Cleanup Limit? YES
 20 Any sample > 2x Cleanup Limit? YES

Because of the "yes" answers to the 3-part test for mercury, additional evaluation of the attainment of cleanup criteria will be performed.

Area 3 - WAC 173-340 3-Part Test for most stringent RAG:

26 95% UCL > Cleanup Limit? NO
 27 > 10% above Cleanup Limit? NO
 28 Any sample > 2x Cleanup Limit? NO

All data sets evaluated meet the 3-part test criteria when compared to the most stringent cleanup limit

Area 5 - WAC 173-340 3-Part Test for most stringent RAG:

35 95% UCL > Cleanup Limit? NO
 36 > 10% above Cleanup Limit? NO
 37 Any sample > 2x Cleanup Limit? NO

All data sets evaluated meet the 3-part test criteria when compared to the most stringent cleanup limit

Area 7 - WAC 173-340 3-Part Test for most stringent RAG:

44 95% UCL > Cleanup Limit? YES
 45 > 10% above Cleanup Limit? YES
 46 Any sample > 2x Cleanup Limit? YES

Because of the "yes" answers to the 3-part test for barium, copper, lead, and 4,4'-DDE, additional evaluation of the attainment of cleanup criteria will be performed.

BCL Material - WAC 173-340 3-Part Test for most stringent RAG:

53 95% UCL > Cleanup Limit? NO
 54 > 10% above Cleanup Limit? NO
 55 Any sample > 2x Cleanup Limit? NO

All data sets evaluated meet the 3-part test criteria when compared to the most stringent cleanup limit

Area 2 - WAC 173-340 3-Part Test for most stringent RAG:

95% UCL > Cleanup Limit? NO
 > 10% above Cleanup Limit? NO
 Any sample > 2x Cleanup Limit? NO

All data sets evaluated meet the 3-part test criteria when compared to the most stringent cleanup limit

Area 4 - WAC 173-340 3-Part Test for most stringent RAG:

95% UCL > Cleanup Limit? YES
 > 10% above Cleanup Limit? YES
 Any sample > 2x Cleanup Limit? NO

Because of the "yes" answers to the 3-part test for bis(2-ethylhexyl)phthalate, additional evaluation of the attainment of cleanup criteria will be performed.

Area 6 - WAC 173-340 3-Part Test for most stringent RAG:

95% UCL > Cleanup Limit? NO
 > 10% above Cleanup Limit? YES
 Any sample > 2x Cleanup Limit? NO

Because of the "yes" answer to the 3-part test for bis(2-ethylhexyl)phthalate, additional evaluation of the attainment of cleanup criteria will be performed.

Overburden - WAC 173-340 3-Part Test for most stringent RAG:

95% UCL > Cleanup Limit? NO
 > 10% above Cleanup Limit? NO
 Any sample > 2x Cleanup Limit? NO

All data sets evaluated meet the 3-part test criteria when compared to the most stringent cleanup limit

Staging Pile Area - WAC 173-340 3-Part Test for most stringent RAG:

95% UCL > Cleanup Limit? NO
 > 10% above Cleanup Limit? NO
 Any sample > 2x Cleanup Limit? NO

All data sets evaluated meet the 3-part test criteria when compared to the most stringent cleanup limit

CALCULATION SHEET

Washington Closure HanfordOriginator J. M. Capron Date 10/03/07Checked T. M. Blakley Date 10/04/07Project 100-B/C Field RemediationCalc. No. 0100B-CA-V0299Rev. No. 1Subject 118-B-1 Burial Ground Cleanup Verification 95% UCL CalculationsJob No. 14655Sheet No. 4 of 61

1 Summary (continued)

Results Summary - Areas 1 through 7 ^a								
Analyte	Area 1 ^b	Area 2 ^b	Area 3 ^b	Area 4 ^b	Area 5 ^b	Area 6 ^b	Area 7 ^b	Units
Carbon-14	1.93	--	--	--	--	--	--	pCi/g
Cesium-137	0.201	0.163	0.776	0.345	2.40	0.150	0.517	pCi/g
Cobalt-60	0.039	--	--	--	--	--	--	pCi/g
Europium-152	0.695	--	--	--	--	--	0.098	pCi/g
Strontium-90	0.125	0.172	2.56	--	1.89	--	--	pCi/g
Tritium	158	39.4	12.8	--	--	3.19	--	pCi/g
Uranium-233/234	0 (< BG)	--	--	--	--	0 (< BG)	0 (< BG)	pCi/g
Uranium-235	0 (< BG)	--	--	--	--	--	--	pCi/g
Uranium-238	0 (< BG)	--	--	--	--	0 (< BG)	0 (< BG)	pCi/g
Arsenic	3.2	2.9	3.7	3.5	2.8	4.1	3.5	mg/kg
Barium	60.4	58.1	62.6	48.6	46.7	80.1	132	mg/kg
Beryllium	0.60	0.64	0.63	0.40	0.1	0.36	0.31	mg/kg
Boron	1.4	4.7	6.5	3.9	1.1	6.1	13.7	mg/kg
Cadmium	--	--	--	--	0.20	--	--	mg/kg
Chromium (total)	7.1	6.7	7.7	6.6	5.0	7.4	8.9	mg/kg
Cobalt	10.2	8.5	9.1	8.6	7.2	8.5	7.5	mg/kg
Copper	17.7	16.6	17.1	16.2	14.8	16.6	22.2	mg/kg
Hexavalent chromium	--	0.29	0.21	0.22	0.26	0.27	0.28	mg/kg
Lead	4.8	4.8	5.7	4.9	3.8	5.0	11.0	mg/kg
Manganese	381	321	367	334	290	323	329	mg/kg
Mercury	1.3	--	0.21	--	0.03	0.02	0.02	mg/kg
Molybdenum	--	--	--	--	--	--	2.1	mg/kg
Nickel	11.2	10.5	15.9	10.6	7.4	11.4	10.6	mg/kg
Vanadium	52.0	54.5	47.5	49.9	37.4	49.0	39.8	mg/kg
Zinc	45.8	43.2	43.7	42.1	36.8	41.4	47.5	mg/kg
Aroclor-1254	--	--	--	0.080	--	--	--	mg/kg
2-Methylnaphthalene	--	--	--	--	--	--	0.026	mg/kg
bis(2-Ethylhexyl)phthalate	0.19	--	0.14	0.41	0.17	0.32	--	mg/kg
Butylbenzylphthalate	--	--	--	--	--	0.024	--	mg/kg
Di-n-butylphthalate	0.12	--	0.16	0.063	--	0.079	--	mg/kg
Diethylphthalate	--	--	--	0.017	--	--	0.025	mg/kg
Naphthalene	--	--	--	--	--	--	0.019	mg/kg
Phenol	--	--	--	0.17	--	0.023	--	mg/kg
4-Methyl-2-pentanone	0.006	--	0.006	--	--	--	--	mg/kg
Acetone	0.014	--	0.015	0.012	0.017	0.008	0.009	mg/kg
Carbon tetrachloride	--	--	0.009	0.016	--	0.007	0.011	mg/kg
Methylene chloride	0.019	--	0.019	0.010	0.013	0.008	0.008	mg/kg
Aldrin	--	--	--	--	--	0.00050	--	mg/kg
alpha-Chlordane	--	--	--	--	--	--	0.012	mg/kg
beta-BHC	--	--	--	0.0078	--	--	--	mg/kg
4,4'-DDE	--	--	--	0.016	--	--	0.015	mg/kg
Dieldrin	--	--	--	0.0038	--	--	0.002	mg/kg
Endosulfan sulfate	--	--	--	0.0022	--	--	--	mg/kg
Endrin	--	--	--	0.0015	--	--	--	mg/kg
Endrin aldehyde	--	--	--	0.0055	--	--	--	mg/kg
Endrin ketone	--	--	--	--	--	--	0.0078	mg/kg
gamma-Chlordane	--	--	--	0.0025	--	--	--	mg/kg
Methoxychlor	--	--	--	--	--	--	0.0091	mg/kg
2,4-D	--	--	--	0.013	--	0.062	0.023	mg/kg
2,4-DB	--	--	--	0.016	--	0.043	0.027	mg/kg
2,4,5-TP	--	--	--	--	--	0.012	--	mg/kg
Dalapon	--	--	--	0.037	--	0.036	0.027	mg/kg
Dicamba	--	--	--	--	--	--	0.013	mg/kg
Dichloroprop	--	--	--	0.14	--	0.10	0.050	mg/kg
Pentachlorophenol	--	--	--	0.014	--	--	--	mg/kg
Picloram	--	--	--	--	--	--	0.014	mg/kg

60 ^aNo detections were reported in any data set for COCs/COPCs not listed in this table.61 ^bMaximum or 95% UCL result, depending on data censorship, as described in the calculation methodology.

62 -- = not evaluated by laboratory analysis or not detected (for all samples in the data set)

63 COC = contaminant of concern

64 COPC = contaminant of potential concern

65 UCL = upper confidence limit

CALCULATION SHEET

Washington Closure HanfordOriginator J. M. Capron Date 10/03/07Checked T. M. BlakleyDate 10/04/07Project 100-B/C Field RemediationCalc. No. 0100B-CA-V0299Rev. No. 1Subject 118-B-1 Burial Ground Cleanup Verification 95% UCL CalculationsJob No. 14655Sheet No. 5 of 61

1 Summary (continued)

2 Results Summary - Overburden, BCL Material, SPA, and Focused Samples ^a					
3 Analyte	Overburden ^b	BCL Material ^b	SPA ^b	Focused Samples ^c	Units
4 Americium-241	--	--	0.061	--	pCi/g
5 Carbon-14	--	--	1.6	--	pCi/g
6 Cesium-137	0 (< BG)	0.159	0.57	0.353	pCi/g
7 Cobalt-60	--	0.05	0.028	0.155	pCi/g
8 Europium-152	0.07	0.068	0.20	--	pCi/g
9 Nickel-63	--	--	5.05	--	pCi/g
10 Plutonium-239/240	--	--	0.125	--	pCi/g
11 Strontium-90	0 (< BG)	0.120	0.236	--	pCi/g
12 Tritium	--	--	14.6	137	pCi/g
13 Uranium-233/234	0 (< BG)	0 (< BG)	0 (< BG)	0 (< BG)	pCi/g
14 Uranium-235	0 (< BG)	0 (< BG)	0 (< BG)	--	pCi/g
15 Uranium-238	0 (< BG)	0 (< BG)	0 (< BG)	0 (< BG)	pCi/g
16 Arsenic	3.1	3.7	2.3	7.0	mg/kg
17 Barium	59.3	60.8	72.5	261	mg/kg
18 Beryllium	0.48	0.56	0.36	0.58	mg/kg
19 Boron	2.0	1.8	1.9	24.5	mg/kg
20 Cadmium	0.43	--	0.53	0.28	mg/kg
21 Chromium (total)	7.2	8.1	8.3	16.4	mg/kg
22 Cobalt	8.7	9.2	7.7	11.3	mg/kg
23 Copper	16.0	15.9	14.8	28.0	mg/kg
24 Hexavalent chromium	0.23	0.24	0.27	--	mg/kg
25 Lead	5.1	5.1	4.7	34.3	mg/kg
26 Manganese	346	366	330	421	mg/kg
27 Mercury	0.05	0.03	0.13	14.5	mg/kg
28 Molybdenum	0.83	0.43	0.45	0.81	mg/kg
29 Nickel	10.1	11.1	10.8	15.2	mg/kg
30 Selenium	0.67	1.0	--	--	mg/kg
31 Vanadium	46.6	48.8	46.4	62.8	mg/kg
32 Zinc	40.0	41.4	38.8	65.1	mg/kg
33 Aroclor-1242	--	--	0.047	--	mg/kg
34 Aroclor-1254	0.038	--	0.17	--	mg/kg
35 Aroclor-1260	--	--	0.056	--	mg/kg
36 bis(2-Ethylhexyl)phthalate	0.06	0.08	0.09	0.038	mg/kg
37 Di-n-butylphthalate	0.12	0.13	0.11	--	mg/kg
38 Diethylphthalate	--	0.019	--	--	mg/kg
39 Phenol	0.022	0.034	--	--	mg/kg
40 4-Methyl-2-pentanone	0.011	0.007	--	--	mg/kg
41 Acetone	0.039	0.020	--	0.099	mg/kg
42 Carbon tetrachloride	0.011	0.011	--	--	mg/kg
43 Methylene chloride	0.016	0.014	0.014	0.016	mg/kg
44 Toluene	0.002	0.001	--	--	mg/kg
45 Trichloroethene	--	--	0.002	--	mg/kg
46 Xylenes (total)	0.001	0.001	--	--	mg/kg
47 Aldrin	--	--	0.0010	--	mg/kg
48 alpha-Chlordane	--	--	0.00080	--	mg/kg
49 beta-BHC	0.00064	0.0022	0.00082	--	mg/kg
50 4,4'-DDD	0.0019	--	--	--	mg/kg
51 4,4'-DDE	0.0013	--	0.0065	--	mg/kg
52 4,4'-DDT	0.0011	0.0016	--	--	mg/kg

53 ^aNo detections were reported in any data set for COCs/COPCs not listed in this table (continued on the following page).54 ^bMaximum or 95% UCL result, depending on data censorship, as described in the calculation methodology.55 ^cMaximum detected result from all focused samples.

56 -- = not evaluated by laboratory analysis or not detected (for all samples in the data set)

57 BG = background

58 BCL = below cleanup levels

59 COC = contaminant of concern

60 COPC = contaminant of potential concern

61 SPA = staging pile area

62 UCL = upper confidence limit

CALCULATION SHEET

Washington Closure Hanford

Originator J. M. Capron *JMC* Date 02/07/07
 Project 100-B/C Field Remediation
 Subject 118-B-1 Burial Ground Cleanup Verification 95% UCL Calculations

Checked T. M. Blakley *TMB* Date 2/15/07
 Calc. No. 0100B-CA-V0299 Rev. No. 0
 Job No. 14655 Sheet No. 6 of 61

1 Summary (continued)

2 Results Summary - Overburden, BCL Material, SPA, and Focused Samples (continued)^a

Analyte	Overburden ^b	BCL Material ^b	SPA ^b	Focused Samples ^c	Units
Endosulfan I	0.0028	0.0049	--	--	mg/kg
Endosulfan II	0.00060	--	--	--	mg/kg
Endosulfan sulfate	0.00087	0.00084	0.0019	--	mg/kg
Endrin aldehyde	0.0019	0.0015	--	--	mg/kg
Endrin ketone	--	0.0014	--	--	mg/kg
gamma-Chlordane	0.0025	--	0.0065	--	mg/kg
Heptachlor	--	0.00043	--	--	mg/kg
Methoxychlor	0.0067	0.0053	0.0017	0.0047	mg/kg
2,4-D	0.026	--	0.048	--	mg/kg
2,4-DB	0.087	0.0098	0.028 ^d	--	mg/kg
2,4,5-T	0.0039	--	0.013	--	mg/kg
2,4,5-TP	0.0096	--	0.043	--	mg/kg
Dalapon	0.023	0.048	0.043	--	mg/kg
Dicamba	0.016	0.013	0.023	0.0091	mg/kg
Dichloroprop	0.11	0.21	0.049	--	mg/kg
Pentachlorophenol	0.016	--	0.0040	--	mg/kg

20 ^aNo detections were reported in any data set for COCs/COPCs not listed in this table (continued from the previous page).

21 ^bMaximum or 95% UCL result, depending on data censorship, as described in the calculation methodology.

22 ^cMaximum detected result from focused samples 1 through 11 and 14 through 16.

23 ^dMaximum accepted result.

24 -- = not evaluated by laboratory analysis or not detected (for all samples in the data set)

25 BCL = below cleanup levels

26 COC = contaminant of concern

27 COPC = contaminant of potential concern

28 SPA = staging pile area

29 UCL = upper confidence limit

30

31 Relative Percent Difference Results^a -

Analyte	Area 1 A1 Duplicate Analysis ^b	Area 1 A1 Split Analysis ^b	Area 3 A3 Duplicate Analysis ^b	Area 3 A3 Split Analysis ^b	Area 4 A1 Duplicate Analysis ^b	Area 4 A1 Split Analysis ^b	BCL D4 Duplicate Analysis ^b	BCL B8 Split Analysis ^b	SPA B5 Duplicate Analysis ^b	SPA B5 Split Analysis ^b
Cesium-137	--	--	64%	61%	--	--	--	--	--	--
Europium-152	59%	7.5%	--	--	--	--	--	--	--	--
Potassium-40	16%	--	12%	--	67%	--	58%	--	67%	--
Radium-226	0.14%	--	--	--	--	--	56%	--	42%	--
Radium-228	0.88%	--	--	--	--	--	--	--	--	--
Aluminum	8.9%	21%	11%	11%	12%	38%	6.1%	39%	6.5%	47%
Barium	12%	20%	8.1%	9.4%	27%	41%	12%	25%	6.1%	28%
Calcium	10%	0.58%	2.2%	22%	19%	36%	2.9%	8.7%	1.4%	26%
Chromium	16%	2.9%	11%	34%	--	--	19%	25%	15%	44%
Cobalt	5.8%	36%	--	--	--	--	--	--	--	--
Copper	2.8%	10%	6.3%	22%	1.3%	5.0%	0%	4.3%	5.3%	17%
Iron	7.8%	23%	0%	3.0%	2.8%	20%	5.8%	12%	4.9%	23%
Magnesium	11%	1.9%	4.0%	17%	13%	22%	1.4%	22%	3.6%	34%
Manganese	13%	0.28%	4.2%	17%	0.69%	15%	7.1%	10%	6.1%	16%
Silicon	--	--	--	--	8.5%	38%	8.7%	103%	2.2%	62%
Sodium	3.7%	54%	--	--	--	--	--	--	--	--
Vanadium	12%	39%	6.2%	12%	18%	25%	8.4%	28%	7.4%	33%
Zinc	8.7%	1.1%	5.6%	30%	1.7%	15%	3.2%	12%	4.2%	19%

51 Quantitated results for cesium-137 (Area 4 primary-duplicate and primary-split pairs), cobalt-60 (BCL primary-split pair), radium-226 (Areas 3 and 4 primary-duplicate pairs), radium-228 (Area 4, BCL, and SPA primary-duplicate pairs), boron (Area 4 and SPA primary-split pairs), chromium (Area 4 primary-split pair), cobalt (Area 4 and SPA primary-split pairs), sodium (Area 4 and BCL primary-split pairs), aroclor-1254 (Area 4 and BCL primary-split pairs), aroclor-1260 (BCL primary-split pair), 4,4'-DDE (Area 4 primary-duplicate and primary-split pairs), and 4,4'-DDT (BCL primary-split pair)

52 did not exceed the relative percent difference quality control threshold of 5XTDL, but the difference between the results exceeded the 2XTDL control threshold.

53 ^aRelative percent difference evaluation was not required for analytes not included in this table.

54 ^bThe significance of relative percent difference values are discussed within the cleanup verification package for the subject site.

55 -- = analysis not required

56 BCL = below cleanup levels

57 QA/QC = quality assurance/quality control

58 SPA = staging pile area

+
3

CALCULATION SHEET

Washington Closure Hanford

Originator J. M. Capron
Project 100-B/C Field Remediation
Subject 118-B-1 Burial Ground Cleanup Verification 95% UCL Calculations

Date 10/03/07
Job No. 14655

Calc. No. 0100B-CA-V0299
Checked T. M. Blakley

Rev. No. 1
Date 10/04/07
Sheet No. 7 of 61

1 118-B-1 Area 1 Statistical Calculations

2 Verification Data

Sample Area	Sample Number	Sample Date	Carbon-14			Cesium-137			Cobalt-60			Europium-152			Strontium-90			Tritium			Uranium-233/234			Uranium-235			Uranium-238		
			pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA
A1	J12X44	7/19/2006	-1.41	U	3.1	0.308		0.065	0.066	U	0.066	1.24		0.13	0.275	J	0.27	1.74	U	3.4	0.546		0.25	0	U	0.30	0.353		0.25
Duplicate of J12X44	J12X48	7/19/2006	-0.925	U	2.7	0.169		0.041	0.037	U	0.037	0.676		0.092	0.024	UJ	0.23	0.535	U	2.8	0.572		0.26	0.082	U	0.31	0.572		0.26
A2	J12X45	7/19/2006	3.44		2.7	0.020	U	0.020	0.022	U	0.022	0.074	U	0.074	0.034	UJ	0.37	239		2.8	0.572		0.23	0	U	0.28	0.452		0.23
A3	J12X46	7/20/2006	-0.611	U	3.0	0.166		0.041	0.049		0.033	0.323		0.087	0.097	U	0.23	0.303	U	2.7	0.496		0.062	0.032	U	0.060	0.430		0.050
A4	J12X47	7/20/2006	-1.43	U	3.7	0.021	U	0.021	0.022	U	0.022	0.052	U	0.052	-0.007	U	0.26	0.574	U	3.1	0.449		0.063	0.055		0.053	0.552		0.054

10 Statistical Computation Input Data

Sample Area	Sample Number	Sample Date	Carbon-14 pCi/g			Cesium-137 pCi/g			Cobalt-60 pCi/g			Europium-152 pCi/g			Strontium-90 pCi/g			Tritium pCi/g			Uranium-233/234 pCi/g			Uranium-235 pCi/g			Uranium-238 pCi/g		
A1	J12X44/J12X48	7/19/2006	-1.17			0.239			0.026			0.958			0.150			1.14			0.559			0.041			0.463		
A2	J12X45	7/19/2006	3.44			0.010			0.011			0.037			0.034			239			0.572			0			0.452		
A3	J12X46	7/20/2006	-0.611			0.166			0.049			0.323			0.097			0.303			0.496			0.032			0.430		
A4	J12X47	7/20/2006	-1.43			0.011			0.011			0.026			-0.007			0.574			0.449			0.055			0.552		

17 Statistical Computations

95% UCL based on	Carbon-14			Cesium-137			Cobalt-60			Europium-152			Strontium-90			Tritium			Uranium-233/234			Uranium-235			Uranium-238		
	Radionuclide data set. Use nonparametric z-stat.			Radionuclide data set. Use nonparametric z-stat.			Radionuclide data set. Use nonparametric z-stat.			Radionuclide data set. Use nonparametric z-stat.			Radionuclide data set. Use nonparametric z-stat.			Radionuclide data set. Use nonparametric z-stat.			Radionuclide data set. Use nonparametric z-stat.			Radionuclide data set. Use nonparametric z-stat.			Radionuclide data set. Use nonparametric z-stat.		
N	4			4			4			4			4			4			4			4			4		
% < Detection limit	75%			50%			75%			50%			75%			75%			0%			75%			0%		
Mean	0.058			0.106			0.024			0.336			0.068			60			0.519			0.032			0.474		
Standard deviation	2.28			0.115			0.018			0.437			0.069			119			0.057			0.023			0.054		
95% UCL on mean	1.93			0.201			0.039			0.695			0.125			158			0.566			0.051			0.518		
Maximum detected value	3.44			0.308			0.049			1.24			0.275			239			0.572			0.055			0.572		
Background	NA			NA			NA			NA			NA			NA			1.1			0.11			1.1		
Statistical value above background	1.93			0.201			0.039			0.695			0.125			158			0 (< BG)			0 (< BG)			0 (< BG)		

28 BG = background
29 J = estimate
30 MDA = minimum detectable activity
31 NA = not applicable

Q = qualifier
U = undetected
UCL = upper confidence limit

CALCULATION SHEET

Washington Closure Hanford

Originator J. M. Capron
Project 100-B/C Field Remediation
Subject 118-B-1 Burial Ground Cleanup Verification 95% UCL Calculations

Date 02/07/07
Job No. 14655

Calc. No. 0100B-CA-V0299
Checked T. M. Blakley

Rev. No. 0
Date 2/15/07
Sheet No. 8 of 61

1 118-B-1 Area 1 Statistical Calculations (continued)

2 Verification Data

Sample Area	Sample Number	Sample Date	Arsenic			Barium			Beryllium			Boron			Chromium			Cobalt			Copper			Lead			Manganese		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
A1	J12X44	7/19/2006	2.9		1.8	53.7	C	0.06	0.59		0.06	1.9		0.70	7.0		0.38	10.1		0.41	17.4		0.35	4.7		0.90	361		0.09
Duplicate of J12X44	J12X48	7/19/2006	3.1		1.8	60.4	C	0.06	0.66		0.06	0.81		0.70	8.2		0.38	10.7		0.41	17.9		0.35	4.9		0.91	411		0.09
A2	J12X45	7/19/2006	2.1		1.8	63.1	C	0.06	0.57		0.06	1.5		0.70	4.7		0.38	9.7		0.41	16.8		0.35	4.2		0.90	373		0.09
A3	J12X46	7/20/2006	3.2		1.7	52.4	C	0.06	0.48		0.06	1.0		0.68	6.4		0.37	9.3		0.40	17.7		0.34	4.8		0.88	352		0.08
A4	J12X47	7/20/2006	2.8		1.7	52.1	C	0.06	0.54		0.06	0.82		0.68	5.4		0.37	9.8		0.40	16.0		0.34	4.2		0.88	367		0.08

10 Statistical Computation Input Data

Sample Area	Sample Number	Sample Date	Arsenic mg/kg			Barium mg/kg			Beryllium mg/kg			Boron mg/kg			Chromium mg/kg			Cobalt mg/kg			Copper mg/kg			Lead mg/kg			Manganese mg/kg		
A1	J12X44/J12X48	7/19/2006	3.0			57.1			0.63			1.4			7.6			10.4			17.7			4.8			386		
A2	J12X45	7/19/2006	2.1			63.1			0.57			1.5			4.7			9.7			16.8			4.2			373		
A3	J12X46	7/20/2006	3.2			52.4			0.48			1.0			6.4			9.3			17.7			4.8			352		
A4	J12X47	7/20/2006	2.8			52.1			0.54			0.82			5.4			9.8			16.0			4.2			367		

17 Statistical Computations

			Arsenic			Barium			Beryllium			Boron			Chromium			Cobalt			Copper			Lead			Manganese		
95% UCL based on			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.		
N			4			4			4			4			4			4			4			4			4		
% < Detection limit			0%			0%			0%			0%			0%			0%			0%			0%			0%		
Mean			2.8			56.2			0.55			1.2			6.0			9.8			17.0			4.5			370		
Standard deviation			0.5			5.2			0.06			0.3			1.3			0.5			0.8			0.3			14		
95% UCL on mean			3.2			60.4			0.60			1.4			7.1			10.2			17.7			4.8			381		
Maximum detected value			3.2			63.1			0.66			1.9			8.2			10.7			17.9			4.9			411		
Statistical value			3.2			60.4			0.60			1.4			7.1			10.2			17.7			4.8			381		
Most Stringent Cleanup Limit for nonradionuclide and RAG type			Direct Exposure/GW & River Protection			BG/GW Protection			BG/GW & River Protection			GW Protection			BG/GW & River Protection			GW Protection			BG/River Protection			BG/GW & River Protection			BG/GW & River Protection		
WAC 173-340 3-PART TEST			20			132			1.51			320			18.5			32			22.0			10.2			512		
95% UCL > Cleanup Limit?			NA			NA			NA			NO			NA			NA			NA			NA			NA		
> 10% above Cleanup Limit?			NA			NA			NA			NO			NA			NA			NA			NA			NA		
Any sample > 2X Cleanup Limit?			NA			NA			NA			NO			NA			NA			NA			NA			NA		
WAC 173-340 Compliance? YES			Because all values are below background (6.5 mg/kg), the WAC 173-340 3-part test is not required.			Because all values are below background (132 mg/kg), the WAC 173-340 3-part test is not required.			Because all values are below background (1.51 mg/kg), the WAC 173-340 3-part test is not required.			The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.			Because all values are below background (18.5 mg/kg), the WAC 173-340 3-part test is not required.			Because all values are below background (15.7 mg/kg), the WAC 173-340 3-part test is not required.			Because all values are below background (22.0 mg/kg), the WAC 173-340 3-part test is not required.			Because all values are below background (10.2 mg/kg), the WAC 173-340 3-part test is not required.			Because all values are below background (512 mg/kg), the WAC 173-340 3-part test is not required.		

33 BG = background
34 C = method blank contamination
35 GW = groundwater
36 NA = not applicable
37 PQL = practical quantitation limit

Q = qualifier
RAG = remedial action goal
UCL = upper confidence limit
WAC = Washington Administrative Code

CALCULATION SHEET

Washington Closure Hanford

Originator J. M. Capron
Project 100-B/C Field Remediation
Subject 118-B-1 Burial Ground Cleanup Verification 95% UCL Calculations

Date 02/07/07
Job No. 14655

Calc. No. 0100B-CA-V0299
Checked T. M. Blakley

Rev. No. 0
Date 2/5/07
Sheet No. 9 of 61

1 118-B-1 Area 1 Statistical Calculations (continued)

2 Verification Data

Sample Area	Sample Number	Sample Date	Mercury			Nickel			Vanadium			Zinc			bis(2-Ethylhexyl)phtalate			Di-n-butylphthalate			4-Methyl-2-pentanone			Acetone			Methylene Chloride		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
A1	J12X44	7/19/2006	0.01	U	0.01	11.5		0.70	46.1		0.26	45.0		0.46	0.24	JB	0.34	0.019	JB	0.34	0.005	JB	0.010	0.009	J	0.010	0.006		0.005
Duplicate of J12X44	J12X48	7/19/2006	0.02	U	0.02	12.9		0.70	51.9		0.26	49.1		0.47	0.13	JB	0.34	0.018	JB	0.34	0.008	JB	0.010	0.023		0.010	0.012		0.005
A2	J12X45	7/19/2006	0.02		0.01	8.2		0.70	49.3		0.26	42.7		0.47	0.14	JB	0.34	0.34	U	0.34	0.005	JB	0.010	0.011		0.010	0.015		0.005
A3	J12X46	7/20/2006	2.0		0.05	9.8		0.68	38.2		0.25	39.9		0.45	0.018	J	0.34	0.028	JB	0.34	0.005	JB	0.009	0.009	J	0.009	0.022		0.005
A4	J12X47	7/20/2006	0.02	U	0.02	8.7		0.68	51.8		0.25	43.8		0.45	0.34	U	0.34	0.018	JB	0.34	0.004	JB	0.010	0.004	J	0.010	0.012		0.005

10 Statistical Computation Input Data

Sample Area	Sample Number	Sample Date	Mercury mg/kg			Nickel mg/kg			Vanadium mg/kg			Zinc mg/kg			bis(2-Ethylhexyl)phtalate mg/kg			Di-n-butylphthalate mg/kg			4-Methyl-2-pentanone mg/kg			Acetone mg/kg			Methylene Chloride mg/kg		
A1	J12X44/J12X48	7/19/2006	0.008			12.2			49.0			47.1			0.19			0.019			0.007			0.016			0.009		
A2	J12X45	7/19/2006	0.02			8.2			49.3			42.7			0.14			0.17			0.005			0.011			0.015		
A3	J12X46	7/20/2006	2.0			9.8			38.2			39.9			0.018			0.028			0.005			0.009			0.022		
A4	J12X47	7/20/2006	0.01			8.7			51.8			43.8			0.17			0.018			0.004			0.004			0.012		

17 Statistical Computations

			Mercury			Nickel			Vanadium			Zinc			bis(2-Ethylhexyl)phtalate			Di-n-butylphthalate			4-Methyl-2-pentanone			Acetone			Methylene Chloride		
95% UCL based on			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.		
N			4			4			4			4			4			4			4			4			4		
% < Detection limit			50%			0%			0%			0%			25%			25%			0%			0%			0%		
Mean			0.5			9.7			47.1			43.4			0.13			0.06			0.005			0.010			0.015		
Standard deviation			1.0			1.8			6.0			3.0			0.08			0.07			0.001			0.005			0.006		
95% UCL on mean			1.3			11.2			52.0			45.8			0.19			0.12			0.006			0.014			0.019		
Maximum detected value			2.0			12.9			51.9			49.1			0.24			0.028			0.008			0.023			0.022		
Statistical value			1.3			11.2			52.0			45.8			0.19			0.12			0.006			0.014			0.019		
Most Stringent Cleanup Limit for nonradionuclide and RAG type			0.33 BG/GW & River Protection			19.1 BG/GW Protection			85.1 BG/GW Protection			67.8 BG/River Protection			0.36 River Protection			160 GW Protection			64 GW Protection			720 GW Protection			0.5 GW Protection		
WAC 173-340 3-PART TEST																													
95% UCL > Cleanup Limit?			YES			NA			NA			NA			NO			NO			NO			NO			NO		
> 10% above Cleanup Limit?			YES			NA			NA			NA			NO			NO			NO			NO			NO		
Any sample > 2X Cleanup Limit?			YES			NA			NA			NA			NO			NO			NO			NO			NO		
Further Assessment Required			Because of the "yes" answers to the 3-part test, a detailed assessment using RESRAD will be performed. The data set meets the 3-part test criteria when compared to the direct exposure cleanup level.			Because all values are below background (19.1 mg/kg), the WAC 173-340 3-part test is not required.			Because all values are below background (85.1 mg/kg), the WAC 173-340 3-part test is not required.			Because all values are below background (67.8 mg/kg), the WAC 173-340 3-part test is not required.			The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.			The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.			The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.			The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.			The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.		

33 B = method blank contamination
34 BG = background
35 GW = groundwater
36 J = estimate
37 NA = not applicable
38 PQL = practical quantitation limit

Q = qualifier
RAG = remedial action goal
U = undetected
UCL = upper confidence limit
WAC = Washington Administrative Code

CALCULATION SHEET

Washington Closure Hanford

Originator J. M. Capron
Project 100-B/C Field Remediation
Subject 118-B-1 Burial Ground Cleanup Verification 95% UCL Calculations

Date 02/07/07
Job No. 14655

Calc. No. 0100B-CA-V0299
Checked T. M. Blakley

Rev. No. 0
Date 2/15/07
Sheet No. 10 of 61

1 118-B-1 Area 2 Statistical Calculations

2 Verification Data

Sample Area	Sample Number	Sample Date	Cesium-137			Strontium-90			Tritium			Arsenic			Barium			Beryllium			Boron			Chromium		
			pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
A1	J12X50	7/20/2006	0.223		0.033	0.049	U	0.22	0.150	U	2.9	1.8		1.7	43.9	C	0.06	0.47		0.06	1.6		0.67	5.5		0.36
A2	J12X51	7/20/2006	0.099	U	0.099	0.248		0.23	59.6		2.8	3.2		1.7	55.5	C	0.06	0.62		0.06	5.5		0.68	6.9		0.37
A3	J12X52	7/20/2006	0.040	U	0.040	0.006	U	0.23	0.236	U	3.0	2.6		1.7	43.7	C	0.06	0.65		0.06	3.7		0.68	5.8		0.37
A4	J12X53	7/20/2006	0.056		0.028	0.003	U	0.24	-0.432	U	2.7	2.0		1.7	61.0	C	0.06	0.55		0.06	2.4		0.68	6.5		0.37

9 Statistical Computation Input Data

Sample Area	Sample Number	Sample Date	Cesium-137 pCi/g			Strontium-90 pCi/g			Tritium pCi/g			Arsenic mg/kg			Barium mg/kg			Beryllium mg/kg			Boron mg/kg			Chromium mg/kg		
A1	J12X50	7/20/2006	0.223			0.049			0.150			1.8			43.9			0.47			1.6			5.5		
A2	J12X51	7/20/2006	0.050			0.248			59.6			3.2			55.5			0.62			5.5			6.9		
A3	J12X52	7/20/2006	0.020			0.006			0.236			2.6			43.7			0.65			3.7			5.8		
A4	J12X53	7/20/2006	0.056			0.003			-0.432			2.0			61.0			0.55			2.4			6.5		

16 Statistical Computations

		Cesium-137			Strontium-90			Tritium			Arsenic			Barium			Beryllium			Boron			Chromium		
95% UCL based on		Radionuclide data set. Use nonparametric z-stat.			Radionuclide data set. Use nonparametric z-stat.			Radionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.		
N		4			4			4			4			4			4			4			4		
% < Detection limit		50%			75%			75%			0%			0%			0%			0%			0%		
Mean		0.087			0.077			14.9			2.4			51.0			0.57			3.3			6.2		
Standard deviation		0.092			0.116			29.8			0.6			8.6			0.08			1.7			0.6		
95% UCL on mean		0.163			0.172			39.4			2.9			58.1			0.64			4.7			6.7		
Maximum detected value		0.223			0.248			59.6			3.2			61.0			0.65			5.5			6.9		
Background		NA			NA			NA			6.5			132			1.51			NA			18.5		
Statistical value above background*		0.163			0.172			39.4			2.9			58.1			0.64			4.7			6.7		
Most Stringent Cleanup Limit for nonradionuclide and RAG type											Direct Exposure/GW & River Protection			BG/GW Protection			BG/GW & River Protection			320 GW Protection			18.5 BG/GW & River Protection		
WAC 173-340 3-PART TEST											NA			NA			NA			NO			NA		
95% UCL > Cleanup Limit?											NA			NA			NA			NO			NA		
> 10% above Cleanup Limit?											NA			NA			NA			NO			NA		
Any sample > 2X Cleanup Limit?											NA			NA			NA			NO			NA		
WAC 173-340 Compliance?		YES									Because all values are below background (6.5 mg/kg), the WAC 173-340 3-part test is not required.			Because all values are below background (132 mg/kg), the WAC 173-340 3-part test is not required.			Because all values are below background (1.51 mg/kg), the WAC 173-340 3-part test is not required.			The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.			Because all values are below background (18.5 mg/kg), the WAC 173-340 3-part test is not required.		

*Background is not subtracted for nonradionuclides; consideration of background is given by direct comparison against background values.

BG = background

Q = qualifier

C = method blank contamination

RAG = remedial action goal

GW = groundwater

U = undetected

MDA = minimum detectable activity

UCL = upper confidence limit

NA = not applicable

WAC = Washington Administrative Code

PQL = practical quantitation limit

CALCULATION SHEET

Washington Closure Hanford

Originator J. M. Capron
Project 100-B/C Field Remediation
Subject 118-B-1 Burial Ground Cleanup Verification 95% UCL Calculations

Date 10/03/07
Job No. 14655

Calc. No. 0100B-CA-V0299
Checked T. M. Blakley

Rev. No. 1
Date 10/04/07
Sheet No. 11 of 61

1 118-B-1 Area 2 Statistical Calculations (continued)

2 Verification Data

Sample Area	Sample Number	Sample Date	Cobalt			Copper			Hexavalent Chromium			Lead			Manganese			Nickel			Vanadium			Zinc		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
A1	J12X50	7/20/2006	8.4		0.39	15.0		0.33	0.20	UJ	0.20	3.2		0.86	311		0.08	9.9		0.67	54.0		0.25	43.3		0.45
A2	J12X51	7/20/2006	8.4		0.40	16.8		0.34	0.20	UJ	0.20	4.4		0.88	329		0.09	11.0		0.68	46.5		0.26	41.1		0.46
A3	J12X52	7/20/2006	8.1		0.40	16.2		0.34	0.26	J	0.20	4.0		0.88	298		0.09	9.2		0.68	54.7		0.26	42.1		0.46
A4	J12X53	7/20/2006	7.1		0.39	13.3		0.34	0.33	J	0.20	5.0		0.87	298		0.08	8.4		0.68	39.8		0.25	36.3		0.45

9 Statistical Computation Input Data

Sample Area	Sample Number	Sample Date	Cobalt mg/kg			Copper mg/kg			Hexavalent Chromium mg/kg			Lead mg/kg			Manganese mg/kg			Nickel mg/kg			Vanadium mg/kg			Zinc mg/kg		
A1	J12X50	7/20/2006	8.4			15.0			0.10			3.2			311			9.9			54.0			43.3		
A2	J12X51	7/20/2006	8.4			16.8			0.10			4.4			329			11.0			46.5			41.1		
A3	J12X52	7/20/2006	8.1			16.2			0.26			4.0			298			9.2			54.7			42.1		
A4	J12X53	7/20/2006	7.1			13.3			0.33			5.0			298			8.4			39.8			36.3		

16 Statistical Computations

95% UCL based on	Cobalt			Copper			Hexavalent Chromium			Lead			Manganese			Nickel			Vanadium			Zinc		
	Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.		
N	4			4			4			4			4			4			4			4		
% < Detection limit	0%			0%			50%			0%			0%			0%			0%			0%		
Mean	8.0			15.3			0.20			4.2			309			9.6			48.8			40.7		
Standard deviation	0.6			1.5			0.12			0.8			15			1.1			7.0			3.1		
95% UCL on mean	8.5			16.6			0.29			4.8			321			10.5			54.5			43.2		
Maximum detected value	8.4			16.8			0.33			5.0			329			11.0			54.7			43.3		
Statistical value	8.5			16.6			0.29			4.8			321			10.5			54.5			43.2		
Most Stringent Cleanup Limit for nonradionuclide and RAG type	32	GW Protection		22.0	BG/River Protection		2	River Protection		10.2	BG/GW & River Protection		512	BG/GW & River Protection		19.1	BG/GW Protection		85.1	BG/GW Protection		67.8	BG/River Protection	
WAC 173-340 3-PART TEST																								
95% UCL > Cleanup Limit?	NA			NA			NO			NA			NA			NA			NA			NA		
> 10% above Cleanup Limit?	NA			NA			NO			NA			NA			NA			NA			NA		
Any sample > 2X Cleanup Limit?	NA			NA			NO			NA			NA			NA			NA			NA		
WAC 173-340 Compliance?	YES			Because all values are below background (15.7 mg/kg), the WAC 173-340 3-part test is not required.			Because all values are below background (22.0 mg/kg), the WAC 173-340 3-part test is not required.			The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.			Because all values are below background (10.2 mg/kg), the WAC 173-340 3-part test is not required.			Because all values are below background (512 mg/kg), the WAC 173-340 3-part test is not required.			Because all values are below background (19.1 mg/kg), the WAC 173-340 3-part test is not required.			Because all values are below background (85.1 mg/kg), the WAC 173-340 3-part test is not required.		

32 BG = background
33 GW = groundwater
34 J = estimate
35 NA = not applicable
36 PQL = practical quantitation limit

Q = qualifier
RAG = remedial action goal
U = undetected
UCL = upper confidence limit
WAC = Washington Administrative Code

CALCULATION SHEET

Washington Closure Hanford

Originator J. M. Capron
Project 100-B/C Field Remediation
Subject 118-B-1 Burial Ground Cleanup Verification 95% UCL Calculations

Date 02/07/07
Job No. 14655

Calc. No. 0100B-CA-V0299
Checked T. M. Blakley

Rev. No. 0
Date 2/15/07
Sheet No. 12 of 61

1 118-B-1 Area 2 Statistical Calculations (continued)

2 Verification Data

Sample Area	Sample Number	Sample Date	Cobalt			Copper			Hexavalent Chromium			Lead			Manganese			Nickel			Vanadium			Zinc		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
A1	J12X50	7/20/2006	8.4		0.39	15.0		0.33	0.20	U	0.20	3.2		0.86	311		0.08	9.9		0.67	54.0		0.25	43.3		0.45
A2	J12X51	7/20/2006	8.4		0.40	16.8		0.34	0.20	U	0.20	4.4		0.88	329		0.09	11.0		0.68	46.5		0.26	41.1		0.46
A3	J12X52	7/20/2006	8.1		0.40	16.2		0.34	0.26		0.20	4.0		0.88	298		0.09	9.2		0.68	54.7		0.26	42.1		0.46
A4	J12X53	7/20/2006	7.1		0.39	13.3		0.34	0.33		0.20	5.0		0.87	298		0.08	8.4		0.68	39.8		0.25	36.3		0.45

9 Statistical Computation Input Data

Sample Area	Sample Number	Sample Date	Cobalt mg/kg			Copper mg/kg			Hexavalent Chromium mg/kg			Lead mg/kg			Manganese mg/kg			Nickel mg/kg			Vanadium mg/kg			Zinc mg/kg		
A1	J12X50	7/20/2006	8.4			15.0			0.10			3.2			311			9.9			54.0			43.3		
A2	J12X51	7/20/2006	8.4			16.8			0.10			4.4			329			11.0			46.5			41.1		
A3	J12X52	7/20/2006	8.1			16.2			0.26			4.0			298			9.2			54.7			42.1		
A4	J12X53	7/20/2006	7.1			13.3			0.33			5.0			298			8.4			39.8			36.3		

16 Statistical Computations

95% UCL based on	Cobalt			Copper			Hexavalent Chromium			Lead			Manganese			Nickel			Vanadium			Zinc		
	Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.		
N	4			4			4			4			4			4			4			4		
% < Detection limit	0%			0%			50%			0%			0%			0%			0%			0%		
Mean	8.0			15.3			0.20			4.2			309			9.6			48.8			40.7		
Standard deviation	0.6			1.5			0.12			0.8			15			1.1			7.0			3.1		
95% UCL on mean	8.5			16.6			0.29			4.8			321			10.5			54.5			43.2		
Maximum detected value	8.4			16.8			0.33			5.0			329			11.0			54.7			43.3		
Statistical value	8.5			16.6			0.29			4.8			321			10.5			54.5			43.2		
Most Stringent Cleanup Limit for nonradionuclide and RAG type	32	GW Protection		22.0	BG/River Protection		2	River Protection		10.2	BG/GW & River Protection		512	BG/GW & River Protection		19.1	BG/GW Protection		85.1	BG/GW Protection		67.8	BG/River Protection	
WAC 173-340 3-PART TEST																								
95% UCL > Cleanup Limit?	NA			NA			NO			NA			NA			NA			NA			NA		
> 10% above Cleanup Limit?	NA			NA			NO			NA			NA			NA			NA			NA		
Any sample > 2X Cleanup Limit?	NA			NA			NO			NA			NA			NA			NA			NA		
WAC 173-340 Compliance?	YES			Because all values are below background (15.7 mg/kg), the WAC 173-340 3-part test is not required.	Because all values are below background (22.0 mg/kg), the WAC 173-340 3-part test is not required.		The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.			Because all values are below background (10.2 mg/kg), the WAC 173-340 3-part test is not required.			Because all values are below background (512 mg/kg), the WAC 173-340 3-part test is not required.			Because all values are below background (19.1 mg/kg), the WAC 173-340 3-part test is not required.			Because all values are below background (85.1 mg/kg), the WAC 173-340 3-part test is not required.			Because all values are below background (67.8 mg/kg), the WAC 173-340 3-part test is not required.		

32 BG = background
33 GW = groundwater
34 NA = not applicable
35 PQL = practical quantitation limit
36 Q = qualifier
RAG = remedial action goal
U = undetected
UCL = upper confidence limit
WAC = Washington Administrative Code

CALCULATION SHEET

Washington Closure Hanford

Originator J. M. Capron
Project 100-B/C Field Remediation
Subject 118-B-1 Burial Ground Cleanup Verification 95% UCL Calculations

Date 02/07/07
Job No. 14655

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Checked T. M. Blakley

Rev. No. 0
Date 2/15/07
Sheet No. 13 of 61

1 118-B-1 Area 3 Statistical Calculations

2 Verification Data

Sample Area	Sample Number	Sample Date	Cesium-137			Strontium-90			Tritium			Arsenic			Barium			Beryllium			Boron			Chromium		
			pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
A1	J12X54	7/20/2006	0.028	U	0.028	0.005	U	0.21	0.767	U	2.7	2.4		1.7	58.8	C	0.06	0.56		0.06	8.9		0.67	5.4		0.36
A2	J12X55	7/20/2006	0.111		0.080	0.293		0.24	0.759	U	2.6	2.9		1.7	45.3	C	0.06	0.63		0.06	1.1		0.67	5.9		0.36
A3	J12X56	7/20/2006	1.51		0.12	4.42		0.31	0.491	U	2.7	4.5		1.7	52.4	C	0.06	0.65		0.06	2.2		0.68	9.2		0.37
Duplicate of J12X56	J12X58	7/20/2006	0.776		0.11	3.23		0.25	0.311	U	2.7	3.9		1.7	48.3	C	0.06	0.61		0.06	1.3		0.69	8.2		0.37
A4	J12X57	7/20/2006	0.088	U	0.088	-0.037	U	0.23	19.0		2.6	2.4		1.7	65.9	C	0.06	0.61		0.06	2.1		0.67	5.8		0.36

10 Statistical Computation Input Data

Sample Area	Sample Number	Sample Date	Cesium-137 pCi/g	Strontium-90 pCi/g	Tritium pCi/g	Arsenic mg/kg	Barium mg/kg	Beryllium mg/kg	Boron mg/kg	Chromium mg/kg
A1	J12X54	7/20/2006	0.014	0.005	0.767	2.4	58.8	0.56	8.9	5.4
A2	J12X55	7/20/2006	0.111	0.293	0.759	2.9	45.3	0.63	1.1	5.9
A3	J12X56/J12X58	7/20/2006	1.14	3.83	0.401	4.2	50.4	0.63	1.8	8.7
A4	J12X57	7/20/2006	0.044	-0.037	19.0	2.4	65.9	0.61	2.1	5.8

17 Statistical Computations

		Cesium-137	Strontium-90	Tritium	Arsenic	Barium	Beryllium	Boron	Chromium
95% UCL based on		Radionuclide data set. Use nonparametric z-stat.	Radionuclide data set. Use nonparametric z-stat.	Radionuclide data set. Use nonparametric z-stat.	Small nonradionuclide data set. Use nonparametric z-stat.	Small nonradionuclide data set. Use nonparametric z-stat.	Small nonradionuclide data set. Use nonparametric z-stat.	Small nonradionuclide data set. Use nonparametric z-stat.	Small nonradionuclide data set. Use nonparametric z-stat.
N		4	4	4	4	4	4	4	4
% < Detection limit		50%	50%	75%	0%	0%	0%	0%	0%
Mean		0.328	1.02	5.23	3.0	55.1	0.61	3.5	6.5
Standard deviation		0.545	1.87	9.18	0.8	9.1	0.03	3.6	1.5
95% UCL on mean		0.776	2.56	12.8	3.7	62.6	0.63	6.5	7.7
Maximum detected value		1.51	4.42	19.0	4.5	65.9	0.65	8.9	9.2
Background		NA	NA	NA	6.5	132	1.51	NA	18.5
Statistical value above background*		0.776	2.56	12.8	3.7	62.6	0.63	6.5	7.7
Most Stringent Cleanup Limit for nonradionuclide and RAG type					Direct Exposure/GW & River Protection	BG/GW Protection	BG/GW & River Protection	320 GW Protection	BG/GW & River Protection
WAC 173-340 3-PART TEST					NA	NA	NA	NO	NA
95% UCL > Cleanup Limit?					NA	NA	NA	NO	NA
> 10% above Cleanup Limit?					NA	NA	NA	NO	NA
Any sample > 2X Cleanup Limit?					Because all values are below background (6.5 mg/kg), the WAC 173-340 3-part test is not required.				
WAC 173-340 Compliance?		YES			Because all values are below background (132 mg/kg), the WAC 173-340 3-part test is not required.				
					Because all values are below background (1.51 mg/kg), the WAC 173-340 3-part test is not required.				
					The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.				
					Because all values are below background (18.5 mg/kg), the WAC 173-340 3-part test is not required.				

*Background is not subtracted for nonradionuclides; consideration of background is given by direct comparison against background values.

BG = background

Q = qualifier

C = method blank contamination

RAG = remedial action goal

GW = groundwater

U = undetected

MDA = minimum detectable activity

UCL = upper confidence limit

NA = not applicable

WAC = Washington Administrative Code

PQL = practical quantitation limit

CALCULATION SHEET

Washington Closure Hanford

Originator J. M. Capron
Project 100-B/C Field Remediation
Subject 118-B-1 Burial Ground Cleanup Verification 95% UCL Calculations

Date 02/07/07
Job No. 14655

Calc. No. 0100B-CA-V0299
Checked T. M. Blakley

Rev. No. 0
Date 2/15/07
Sheet No. 14 of 61

1 118-B-1 Area 3 Statistical Calculations (continued)

2 Verification Data

Sample Area	Sample Number	Sample Date	Cobalt			Copper			Lead			Manganese			Mercury			Nickel			Vanadium			Zinc		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
A1	J12X54	7/20/2006	7.8		0.39	15.6		0.33	4.6		0.86	297		0.08	0.04		0.01	19.0		0.67	42.6		0.25	37.5		0.45
A2	J12X55	7/20/2006	8.8		0.39	16.6		0.34	4.3		0.87	320		0.08	0.01	U	0.01	9.3		0.67	49.2		0.25	43.2		0.45
A3	J12X56	7/20/2006	8.9		0.40	18.0		0.34	6.6		0.88	339		0.08	0.01		0.01	10.5		0.68	40.0		0.25	44.3		0.45
Duplicate of J12X56	J12X58	7/20/2006	8.9		0.40	16.9		0.34	5.9		0.89	325		0.09	0.02	U	0.02	10.1		0.69	37.6		0.26	41.9		0.46
A4	J12X57	7/20/2006	9.1		0.39	16.1		0.34	4.5		0.87	390		0.08	0.30		0.01	9.6		0.67	44.9		0.25	42.2		0.45

10 Statistical Computation Input Data

Sample Area	Sample Number	Sample Date	Cobalt mg/kg			Copper mg/kg			Lead mg/kg			Manganese mg/kg			Mercury mg/kg			Nickel mg/kg			Vanadium mg/kg			Zinc mg/kg		
A1	J12X54	7/20/2006	7.8			15.6			4.6			297			0.04			19.0			42.6			37.5		
A2	J12X55	7/20/2006	8.8			16.6			4.3			320			0.005			9.3			49.2			43.2		
A3	J12X56/J12X58	7/20/2006	8.9			17.5			6.3			332			0.01			10.3			38.8			43.1		
A4	J12X57	7/20/2006	9.1			16.1			4.5			390			0.30			9.6			44.9			42.2		

17 Statistical Computations

	Cobalt	Copper	Lead	Manganese	Mercury	Nickel	Vanadium	Zinc
95% UCL based on	Small nonradionuclide data set. Use nonparametric z-stat.	Small nonradionuclide data set. Use nonparametric z-stat.	Small nonradionuclide data set. Use nonparametric z-stat.	Small nonradionuclide data set. Use nonparametric z-stat.	Small nonradionuclide data set. Use nonparametric z-stat.	Small nonradionuclide data set. Use nonparametric z-stat.	Small nonradionuclide data set. Use nonparametric z-stat.	Small nonradionuclide data set. Use nonparametric z-stat.
N	4	4	4	4	4	4	4	4
% < Detection limit	0%	0%	0%	0%	25%	0%	0%	0%
Mean	8.7	16.4	4.9	335	0.09	12.1	43.9	41.5
Standard deviation	0.6	0.8	0.9	40	0.14	4.7	4.4	2.7
95% UCL on mean	9.1	17.1	5.7	367	0.21	15.9	47.5	43.7
Maximum detected value	9.1	18.0	6.6	390	0.30	19.0	49.2	44.3
Statistical value	9.1	17.1	5.7	367	0.21	15.9	47.5	43.7
Most Stringent Cleanup Limit for nonradionuclide and RAG type	32 GW Protection	22.0 BG/River Protection	10.2 BG/GW & River Protection	512 BG/GW & River Protection	0.33 BG/GW & River Protection	19.1 BG/GW Protection	85.1 BG/GW Protection	67.8 BG/River Protection
WAC 173-340 3-PART TEST								
95% UCL > Cleanup Limit?	NA	NA	NA	NA	NA	NA	NA	NA
> 10% above Cleanup Limit?	NA	NA	NA	NA	NA	NA	NA	NA
Any sample > 2X Cleanup Limit?	NA	NA	NA	NA	NA	NA	NA	NA
WAC 173-340 Compliance?	YES	Because all values are below background (15.7 mg/kg), the WAC 173-340 3-part test is not required.	Because all values are below background (10.2 mg/kg), the WAC 173-340 3-part test is not required.	Because all values are below background (512 mg/kg), the WAC 173-340 3-part test is not required.	Because all values are below background (0.33 mg/kg), the WAC 173-340 3-part test is not required.	Because all values are below background (19.1 mg/kg), the WAC 173-340 3-part test is not required.	Because all values are below background (85.1 mg/kg), the WAC 173-340 3-part test is not required.	Because all values are below background (67.8 mg/kg), the WAC 173-340 3-part test is not required.

33 BG = background
34 GW = groundwater
35 NA = not applicable
36 PQL = practical quantitation limit
37 Q = qualifier
RAG = remedial action goal
U = undetected
UCL = upper confidence limit
WAC = Washington Administrative Code

CALCULATION SHEET

Washington Closure Hanford

Originator J. M. Capron
Project 100-B/C Field Remediation
Subject 118-B-1 Burial Ground Cleanup Verification 95% UCL Calculations

Date 02/07/07
Job No. 14655

Calc. No. 0100B-CA-V0299
Checked T. M. Blakley
Rev. No. 0
Date 2/15/07
Sheet No. 15 of 61

1 118-B-1 Area 3 Statistical Calculations (continued)

2 Verification Data

Sample Area	Sample Number	Sample Date	bis(2-Ethylhexyl)phthalate			Di-n-butylphthalate			4-Methyl-2-pentanone			Acetone			Carbon Tetrachloride			Methylene Chloride		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
A1	J12X54	7/20/2006	0.017	J	0.33	0.33	U	0.33	0.006	JB	0.010	0.015		0.010	0.005	U	0.005	0.026		0.005
A2	J12X55	7/20/2006	0.34	U	0.34	0.34	U	0.34	0.006	JB	0.010	0.016		0.010	0.008		0.005	0.005		0.005
A3	J12X56	7/20/2006	0.34	U	0.34	0.027	JB	0.34	0.010	U	0.010	0.007	J	0.010	0.005	U	0.005	0.005	U	0.005
Duplicate of J12X56	J12X58	7/20/2006	0.039	J	0.34	0.054	JB	0.34	0.010	U	0.010	0.008	J	0.010	0.005	U	0.005	0.005	U	0.005
A4	J12X57	7/20/2006	0.031	J	0.34	0.040	JB	0.34	0.010	U	0.010	0.006	J	0.010	0.011		0.005	0.005	J	0.005

10 Statistical Computation Input Data

Sample Area	Sample Number	Sample Date	bis(2-Ethylhexyl)phthalate mg/kg	Di-n-butylphthalate mg/kg	4-Methyl-2-pentanone mg/kg	Acetone mg/kg	Carbon Tetrachloride mg/kg	Methylene Chloride mg/kg
A1	J12X54	7/20/2006	0.017	0.17	0.006	0.015	0.003	0.026
A2	J12X55	7/20/2006	0.17	0.17	0.006	0.016	0.008	0.005
A3	J12X56/J12X58	7/20/2006	0.10	0.041	0.005	0.008	0.003	0.003
A4	J12X57	7/20/2006	0.031	0.040	0.005	0.006	0.011	0.005

17 Statistical Computations

18		bis(2-Ethylhexyl)phthalate			Di-n-butylphthalate			4-Methyl-2-pentanone			Acetone			Carbon Tetrachloride			Methylene Chloride		
	95% UCL based on	Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.		
19	N	4			4			4			4			4			4		
20	% < Detection limit	25%			50%			50%			0%			50%			25%		
21	Mean	0.08			0.10			0.006			0.011			0.006			0.010		
22	Standard deviation	0.07			0.07			0.001			0.005			0.004			0.011		
23	95% UCL on mean	0.14			0.16			0.006			0.015			0.009			0.019		
24	Maximum detected value	0.039			0.054			0.006			0.016			0.011			0.026		
25	Statistical value	0.14			0.16			0.006			0.015			0.009			0.019		
26																			
27	Most Stringent Cleanup Limit for nonradionuclide and RAG type	0.36	River Protection		160	GW Protection		64	GW Protection		720	GW Protection		0.034	GW Protection		0.5	GW Protection	
28	WAC 173-340 3-PART TEST																		
29	95% UCL > Cleanup Limit?	NO			NO			NO			NO			NO			NO		
30	> 10% above Cleanup Limit?	NO			NO			NO			NO			NO			NO		
31	Any sample > 2X Cleanup Limit?	NO			NO			NO			NO			NO			NO		
32	WAC 173-340 Compliance?	YES	The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.		The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.		The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.		The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.		The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.		The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.		The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.				

33 B = method blank contamination

34 GW = groundwater

35 J = estimate

36 PQL = practical quantitation limit

37 Q = qualifier

RAG = remedial action goal

U = undetected

UCL = upper confidence limit

WAC = Washington Administrative Code

CALCULATION SHEET

Washington Closure Hanford

Originator J. M. Capron
Project 100-B/C Field Remediation
Subject 118-B-1 Burial Ground Cleanup Verification 95% UCL Calculations

Date 02/07/07
Job No. 14655

Calc. No. 0100B-CA-V0299
Checked T. M. Blakley

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1 118-B-1 Area 4 Statistical Calculations

2 Verification Data

Sample Area	Sample Number	Sample Date	Cesium-137			Arsenic			Barium			Beryllium			Chromium			Cobalt			Copper			Hexavalent Chromium		
			pCi/g	Q	MDA	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
A1	J12X61	7/25/2006	0.738		0.048	2.5		1.7	39.1		0.06	0.42		0.06	3.7		0.36	8.4		0.39	15.5		0.34	0.30		0.20
Duplicate of J12X61	J12X65	7/25/2006	0.260		0.033	3.3		1.7	51.4		0.06	0.34		0.06	5.1		0.36	8.6		0.39	15.7		0.34	0.20	U	0.20
A2	J12X62	7/25/2006	0.022	U	0.022	2.8		1.7	47.2		0.06	0.36		0.06	5.4		0.36	7.9		0.39	14.3		0.33	0.20	U	0.20
A3	J12X63	7/25/2006	0.084		0.047	3.9		1.7	47.5		0.06	0.39		0.06	6.5		0.36	8.3		0.39	16.5		0.34	0.20	U	0.20
A4	J12X64	7/25/2006	0.047	U	0.047	2.8		1.7	49.2		0.06	0.40		0.06	6.7		0.36	8.6		0.39	15.6		0.33	0.24		0.20

10 Statistical Computation Input Data

Sample Area	Sample Number	Sample Date	Cesium-137 pCi/g	Arsenic mg/kg	Barium mg/kg	Beryllium mg/kg	Chromium mg/kg	Cobalt mg/kg	Copper mg/kg	Hexavalent Chromium mg/kg
A1	J12X61/J12X65	7/25/2006	0.499	2.9	45.3	0.38	4.4	8.5	15.6	0.20
A2	J12X62	7/25/2006	0.011	2.8	47.2	0.36	5.4	7.9	14.3	0.10
A3	J12X63	7/25/2006	0.084	3.9	47.5	0.39	6.5	8.3	16.5	0.10
A4	J12X64	7/25/2006	0.024	2.8	49.2	0.40	6.7	8.6	15.6	0.24

17 Statistical Computations

95% UCL based on	Cesium-137			Arsenic			Barium			Beryllium			Chromium			Cobalt			Copper			Hexavalent Chromium		
	Radionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.		
N	4			4			4			4			4			4			4			4		
% < Detection limit	50%			0%			0%			0%			0%			0%			0%			50%		
Mean	0.154			3.1			47.3			0.38			5.8			8.3			15.5			0.16		
Standard deviation	0.232			0.5			1.6			0.02			1.1			0.3			0.9			0.07		
95% UCL on mean	0.345			3.5			48.6			0.40			6.6			8.6			16.2			0.22		
Maximum detected value	0.738			3.9			51.4			0.42			6.7			8.6			16.5			0.30		
Background	NA			6.5			132			1.51			18.5			15.7			22.0			NA		
Statistical value above background*	0.345			3.5			48.6			0.40			6.6			8.6			16.2			0.22		
Most Stringent Cleanup Limit for nonradionuclide and RAG type				Direct Exposure/GW & River Protection			BG/GW Protection			BG/GW & River Protection			BG/GW & River Protection			32 GW Protection			22.0 BG/River Protection			2 River Protection		
WAC 173-340 3-PART TEST				NA			NA			NA			NA			NA			NA			NO		
95% UCL > Cleanup Limit?				NA			NA			NA			NA			NA			NA			NO		
> 10% above Cleanup Limit?				NA			NA			NA			NA			NA			NA			NO		
Any sample > 2X Cleanup Limit?				Because all values are below background (6.5 mg/kg), the WAC 173-340 3-part test is not required.			Because all values are below background (132 mg/kg), the WAC 173-340 3-part test is not required.			Because all values are below background (1.51 mg/kg), the WAC 173-340 3-part test is not required.			Because all values are below background (18.5 mg/kg), the WAC 173-340 3-part test is not required.			Because all values are below background (15.7 mg/kg), the WAC 173-340 3-part test is not required.			Because all values are below background (22.0 mg/kg), the WAC 173-340 3-part test is not required.			The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.		
WAC 173-340 Compliance?	YES																							

*Background is not subtracted for nonradionuclides; consideration of background is given by direct comparison against background values.

BG = background

GW = groundwater

MDA = minimum detectable activity

NA = not applicable

PQL = practical quantitation limit

Q = qualifier

RAG = remedial action goal

U = undetected

UCL = upper confidence limit

WAC = Washington Administrative Code

CALCULATION SHEET

Washington Closure Hanford

Originator J. M. Capron *JMC*
Project 100-B/C Field Remediation
Subject 118-B-1 Burial Ground Cleanup Verification 95% UCL Calculations

Date 02/07/07
Job No. 14655

Calc. No. 0100B-CA-V0299
Checked T. M. Blakley *TMB*

Rev. No. 0
Date 2/5/07
Sheet No. 17 of 61

1 118-B-1 Area 4 Statistical Calculations (continued)

2 Verification Data

Sample Area	Sample Number	Sample Date	Lead			Manganese			Nickel			Vanadium			Zinc			bis(2-Ethylhexyl)phthalate			Di-n-butylphthalate			Phenol		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
A1	J12X61	7/25/2006	5.2		0.87	290		0.08	6.8		0.67	53.4		0.25	41.7	C	0.45	0.046	JB	0.34	0.038	JB	0.34	0.34	U	0.34
Duplicate of J12X61	J12X65	7/25/2006	5.5		0.87	292		0.08	11.3		0.67	44.8		0.25	41.0	C	0.45	0.035	JB	0.34	0.063	JB	0.34	0.34	U	0.34
A2	J12X62	7/25/2006	3.3		0.85	299		0.08	9.3		0.66	43.5		0.25	35.8	C	0.45	0.029	JB	0.33	0.063	JB	0.33	0.026	JB	0.33
A3	J12X63	7/25/2006	4.4		0.87	334		0.08	10.2		0.67	41.6		0.25	39.5	C	0.45	0.60	JB	0.34	0.058	JB	0.34	0.34	U	0.34
A4	J12X64	7/25/2006	3.6		0.86	336		0.08	10.9		0.66	50.8		0.25	42.4	C	0.44	0.065	JB	0.34	0.062	JB	0.34	0.022	JB	0.34

10 Statistical Computation Input Data

Sample Area	Sample Number	Sample Date	Lead mg/kg			Manganese mg/kg			Nickel mg/kg			Vanadium mg/kg			Zinc mg/kg			bis(2-Ethylhexyl)phthalate mg/kg			Di-n-butylphthalate mg/kg			Phenol mg/kg		
A1	J12X61/J12X65	7/25/2006	5.4			291			9.1			49.1			41.4			0.041			0.051			0.17		
A2	J12X62	7/25/2006	3.3			299			9.3			43.5			35.8			0.029			0.063			0.026		
A3	J12X63	7/25/2006	4.4			334			10.2			41.6			39.5			0.60			0.058			0.17		
A4	J12X64	7/25/2006	3.6			336			10.9			50.8			42.4			0.065			0.062			0.022		

17 Statistical Computations

			Lead			Manganese			Nickel			Vanadium			Zinc			bis(2-Ethylhexyl)phthalate			Di-n-butylphthalate			Phenol		
95% UCL based on			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.		
N			4			4			4			4			4			4			4			4		
% < Detection limit			0%			0%			0%			0%			0%			0%			0%			50%		
Mean			4.2			315			9.9			46.3			39.8			0.18			0.058			0.10		
Standard deviation			0.9			23			0.8			4.4			2.9			0.28			0.006			0.08		
95% UCL on mean			4.9			334			10.6			49.9			42.1			0.41			0.063			0.17		
Maximum detected value			5.5			336			11.3			53.4			42.4			0.60			0.063			0.026		
Statistical value			4.9			334			10.6			49.9			42.1			0.41			0.063			0.17		
Most Stringent Cleanup Limit for nonradionuclide and RAG type			10.2 BG/GW & River Protection			512 BG/GW & River Protection			19.1 BG/GW Protection			85.1 BG/GW Protection			67.8 BG/River Protection			0.36 River Protection			160 GW Protection			480 GW Protection		
WAC 173-340 3-PART TEST																										
95% UCL > Cleanup Limit?			NA			NA			NA			NA			NA			YES			NO			NO		
> 10% above Cleanup Limit?			NA			NA			NA			NA			NA			YES			NO			NO		
Any sample > 2X Cleanup Limit?			NA			NA			NA			NA			NA			NO			NO			NO		
WAC 173-340 Compliance?			Further Assessment Required			Because all values are below background (10.2 mg/kg), the WAC 173-340 3-part test is not required.			Because all values are below background (512 mg/kg), the WAC 173-340 3-part test is not required.			Because all values are below background (19.1 mg/kg), the WAC 173-340 3-part test is not required.			Because all values are below background (85.1 mg/kg), the WAC 173-340 3-part test is not required.			Because all values are below background (67.8 mg/kg), the WAC 173-340 3-part test is not required.			Because of the "yes" answers to the 3-part test, a detailed assessment using RESRAD will be performed. The data set meets the 3-part test criteria when compared to the direct exposure cleanup level.			The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.		

33 B = method blank contamination (organic constituents)
34 BG = background
35 C = method blank contamination (inorganic constituents)
36 GW = groundwater
37 J = estimate
38 NA = not applicable

PQL = practical quantitation limit
Q = qualifier
RAG = remedial action goal
U = undetected
UCL = upper confidence limit
WAC = Washington Administrative Code

CALCULATION SHEET

Washington Closure Hanford

Originator J. M. Capron
Project 100-B/C Field Remediation
Subject 118-B-1 Burial Ground Cleanup Verification 95% UCL Calculations

Date 02/07/07
Job No. 14655

Calc. No. 0100B-CA-V0299
Checked T. M. Blakley

Rev. No. 0
Date 2/15/07
Sheet No. 18 of 61

1 118-B-1 Area 4 Statistical Calculations (continued)

2 Verification Data

Sample Area	Sample Number	Sample Date	Acetone			Carbon Tetrachloride			Methylene Chloride			2,4-DB			Dalapon			Dichloroprop		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
A1	J12X61	7/25/2006	0.019		0.010	0.013		0.005	0.005		0.005	0.017	U	0.017	0.029	J	0.034	0.034	U	0.034
Duplicate of J12X61	J12X65	7/25/2006	0.010	U	0.010	0.005	J	0.005	0.006		0.005	0.0090	J	0.017	0.048		0.034	0.034	U	0.034
A2	J12X62	7/25/2006	0.011		0.010	0.014		0.005	0.008		0.005	0.011	J	0.017	0.032	J	0.033	0.033	U	0.033
A3	J12X63	7/25/2006	0.011		0.010	0.017		0.005	0.012		0.005	0.017	U	0.017	0.034	U	0.034	0.047	I	0.034
A4	J12X64	7/25/2006	0.012		0.010	0.005		0.005	0.004	J	0.005	0.019		0.017	0.029	J	0.033	0.19	I	0.033

10 Statistical Computation Input Data

Sample Area	Sample Number	Sample Date	Acetone mg/kg	Carbon Tetrachloride mg/kg	Methylene Chloride mg/kg	2,4-DB mg/kg	Dalapon mg/kg	Dichloroprop mg/kg
A1	J12X61/J12X65	7/25/2006	0.012	0.009	0.006	0.0088	0.039	0.017
A2	J12X62	7/25/2006	0.011	0.014	0.008	0.011	0.032	0.017
A3	J12X63	7/25/2006	0.011	0.017	0.012	0.0085	0.017	0.047
A4	J12X64	7/25/2006	0.012	0.005	0.004	0.019	0.029	0.19

17 Statistical Computations

95% UCL based on	Acetone			Carbon Tetrachloride			Methylene Chloride			2,4-DB			Dalapon			Dichloroprop		
	Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.		
N	4			4			4			4			4			4		
% < Detection limit	0%			0%			0%			25%			25%			50%		
Mean	0.012			0.011			0.007			0.012			0.029			0.07		
Standard deviation	0.001			0.005			0.003			0.005			0.009			0.08		
95% UCL on mean	0.012			0.016			0.010			0.016			0.037			0.14		
Maximum detected value	0.019			0.017			0.012			0.019			0.048			0.19		
Statistical value	0.012			0.016			0.010			0.016			0.037			0.14		
Most Stringent Cleanup Limit for nonradionuclide and RAG type	720	GW Protection		0.034	GW Protection		0.5	GW Protection		12.8	GW Protection		20	GW Protection		7	GW Protection	
WAC 173-340 3-PART TEST																		
95% UCL > Cleanup Limit?	NO			NO			NO			NO			NO			NO		
> 10% above Cleanup Limit?	NO			NO			NO			NO			NO			NO		
Any sample > 2X Cleanup Limit?	NO			NO			NO			NO			NO			NO		
WAC 173-340 Compliance?	Yes	The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.		The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.			The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.			The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.			The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.			The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.		

33 GW = groundwater

34 I = interference on one analytical column

35 J = estimate

36 PQL = practical quantitation limit

37 Q = qualifier

RAG = remedial action goal

U = undetected

UCL = upper confidence limit

WAC = Washington Administrative Code

CALCULATION SHEET

Washington Closure Hanford

Originator J. M. Capron
Project 100-B/C Field Remediation
Subject 118-B-1 Burial Ground Cleanup Verification 95% UCL Calculations

Date 10/03/07
Job No. 14655

Calc. No. 0100B-CA-V0299
Checked T. M. Blakley

Rev. No. 1
Date 10/04/07
Sheet No. 19 of 61

1 118-B-1 Area 5 Statistical Calculations

2 Verification Data

Sample Area	Sample Number	Sample Date	Cesium-137			Strontium-90			Arsenic			Barium			Beryllium			Boron			Cadmium			Chromium			Cobalt			Copper		
			pCi/g	Q	MDA	pCi/g	Q	MDA	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
A1	J13V12	12/7/2006	0.13	U	0.13	-0.011	U	0.26	2.3		0.95	41.0	C	0.03	0.1		0.03	0.91		0.58	0.13		0.09	3.9		0.37	6.0		0.15	12.7		0.21
A2	J13V10	12/7/2006	0.076	U	0.076	-0.030	U	0.29	2.2		0.94	44.4	C	0.03	0.14		0.03	0.72		0.58	0.14		0.09	5.0		0.36	6.9		0.15	13.0		0.21
A3	J13V13*	12/7/2006	3.60		0.12	2.38		0.21	0.86		0.31	18.4	C	0.01	0.04		0.01	0.27		0.19	0.07		0.03	2.1		0.12	2.3		0.05	4.5		0.07
A4	J13V11	12/7/2006	0.096	U	0.096	1.38		0.24	2.9		0.95	42.8	C	0.03	0.13		0.03	1.2		0.58	0.23		0.09	4.6		0.37	6.6		0.15	14.3		0.22

*Sample J14JH6 replaced cesium-137 data for sample J13V13.

10 Statistical Computation Input Data

Sample Area	Sample Number	Sample Date	Cesium-137 pCi/g	Strontium-90 pCi/g	Arsenic mg/kg	Barium mg/kg	Beryllium mg/kg	Boron mg/kg	Cadmium mg/kg	Chromium mg/kg	Cobalt mg/kg	Copper mg/kg
A1	J13V12	12/7/2006	0.065	-0.011	2.3	41.0	0.1	0.91	0.13	3.9	6.0	12.7
A2	J13V10	12/7/2006	0.038	-0.030	2.2	44.4	0.14	0.72	0.14	5.0	6.9	13.0
A3	J13V13*	12/7/2006	3.60	2.38	0.86	18.4	0.04	0.27	0.07	2.1	2.3	4.5
A4	J13V11	12/7/2006	0.048	1.38	2.9	42.8	0.13	1.2	0.23	4.6	6.6	14.3

17 Statistical Computations

Cesium-137			Strontium-90			Arsenic			Barium			Beryllium			Boron			Cadmium			Chromium			Cobalt			Copper		
95% UCL based on			Radionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.		
N	4		4			4			4			4			4			4			4			4			4		
% < Detection limit	75%		50%			0%			0%			0%			0%			0%			0%			0%			0%		
Mean	0.94		0.93			2.1			36.7			0.1			0.8			0.14			3.9			5.5			11.1		
Standard deviation	1.77		1.17			0.9			12.2			0.05			0.4			0.07			1.3			2.1			4.5		
95% UCL on mean	2.40		1.89			2.8			46.7			0.1			1.1			0.20			5.0			7.2			14.8		
Maximum detected value	3.60		2.38			2.9			44.4			0.1			1.2			0.23			5.0			6.9			14.3		
Background	NA		NA			6.5			132			1.51			NA			0.81			18.5			15.7			22.0		
Statistical value above background*	2.40		1.89			2.8			46.7			0.1			1.1			0.20			5.0			7.2			14.8		
Most Stringent Cleanup Limit for nonradionuclide and RAG type						Direct Exposure/GW & River Protection			BG/GW Protection			BG/GW & River Protection			320 GW Protection			0.81 BG/GW & River Protection			18.5 BG/GW & River Protection			32 GW Protection			22.0 BG/River Protection		
WAC 173-340 3-PART TEST						NA			NA			NA			NO			NA			NA			NA			NA		
95% UCL > Cleanup Limit?						NA			NA			NA			NO			NA			NA			NA			NA		
> 10% above Cleanup Limit?						NA			NA			NA			NO			NA			NA			NA			NA		
Any sample > 2X Cleanup Limit?						Because all values are below background (6.5 mg/kg), the WAC 173-340 3-part test is not required.			Because all values are below background (132 mg/kg), the WAC 173-340 3-part test is not required.			Because all values are below background (1.51 mg/kg), the WAC 173-340 3-part test is not required.			The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.			Because all values are below background (0.81 mg/kg), the WAC 173-340 3-part test is not required.			Because all values are below background (18.5 mg/kg), the WAC 173-340 3-part test is not required.			Because all values are below background (15.7 mg/kg), the WAC 173-340 3-part test is not required.			Because all values are below background (22.0 mg/kg), the WAC 173-340 3-part test is not required.		
WAC 173-340 Compliance?			YES																										

*Background is not subtracted for nonradionuclides; consideration of background is given by direct comparison against background values.

BG = background

C = method blank contamination

GW = groundwater

MDA = minimum detectable activity

NA = not applicable

PQL = practical quantitation limit

Q = qualifier

RAG = remedial action goal

U = undetected

UCL = upper confidence limit

WAC = Washington Administrative Code

CALCULATION SHEET

Washington Closure Hanford

Originator J. M. Capron
Project 100-B/C Field Remediation
Subject 118-B-1 Burial Ground Cleanup Verification 95% UCL Calculations

Date 02/07/07
Job No. 14655

Calc. No. 0100B-CA-V0299
Checked T. M. Blakley

Rev. No. 0
Date 2/20/07
Sheet No. 20 of 61

1 118-B-1 Area 5 Statistical Calculations (continued)

2 Verification Data

Sample Area	Sample Number	Sample Date	Lead			Manganese			Mercury			Nickel			Vanadium			Zinc			bis(2-Ethylhexyl)phthalate			Acetone			Methylene Chloride		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
A1	J13V12	12/7/2006	3.0		0.49	244		0.12	0.01	U	0.01	6.3		0.68	33.6		0.18	38.6	C	0.12	0.058	JB	0.35	0.012	B	0.010	0.013	B	0.005
A2	J13V10	12/7/2006	2.8		0.49	302		0.12	0.04		0.02	7.4		0.67	34.7		0.18	31.7	C	0.12	0.35	U	0.35	0.010	U	0.010	0.012	B	0.005
A3	J13V13	12/7/2006	1.6		0.16	98.5		0.04	0.02	U	0.02	3.1		0.22	13.1		0.06	33.8	C	0.04	0.35	U	0.35	0.019	B	0.010	0.012	B	0.005
A4	J13V11	12/7/2006	4.2		0.49	234		0.12	0.02		0.01	6.6		0.68	33.7		0.18	33.1	C	0.12	0.022	JB	0.36	0.013		0.010	0.012	B	0.005

9 Statistical Computation Input Data

Sample Area	Sample Number	Sample Date	Lead mg/kg	Manganese mg/kg	Mercury mg/kg	Nickel mg/kg	Vanadium mg/kg	Zinc mg/kg	bis(2-Ethylhexyl)phthalate mg/kg	Acetone mg/kg	Methylene Chloride mg/kg
A1	J13V12	12/7/2006	3.0	244	0.005	6.3	33.6	38.6	0.058	0.012	0.013
A2	J13V10	12/7/2006	2.8	302	0.04	7.4	34.7	31.7	0.18	0.0050	0.012
A3	J13V13	12/7/2006	1.6	98.5	0.01	3.1	13.1	33.8	0.18	0.019	0.012
A4	J13V11	12/7/2006	4.2	234	0.02	6.6	33.7	33.1	0.022	0.013	0.012

16 Statistical Computations

95% UCL based on	Lead			Manganese			Mercury			Nickel			Vanadium			Zinc			bis(2-Ethylhexyl)phthalate			Acetone			Methylene Chloride		
	Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.		
N	4			4			4			4			4			4			4			4			4		
% < Detection limit	0%			0%			50%			0%			0%			0%			50%			25%			0%		
Mean	2.9			220			0.02			5.9			28.8			34.3			0.11			0.012			0.012		
Standard deviation	1.1			86			0.02			1.9			10.5			3.0			0.08			0.006			0.001		
95% UCL on mean	3.8			290			0.03			7.4			37.4			36.8			0.17			0.017			0.013		
Maximum detected value	4.2			302			0.04			7.4			34.7			38.6			0.058			0.019			0.013		
Statistical value	3.8			290			0.03			7.4			37.4			36.8			0.17			0.017			0.013		
Most Stringent Cleanup Limit for nonradionuclide and RAG type	10.2	BG/GW & River Protection		512	BG/GW & River Protection		0.33	BG/GW & River Protection		19.1	BG/GW Protection		85.1	BG/GW Protection		67.8	BG/River Protection		0.36	River Protection		720	GW Protection		0.5	GW Protection	
WAC 173-340 3-PART TEST																											
95% UCL > Cleanup Limit?	NA			NA			NA			NA			NA			NA			NO			NO			NO		
> 10% above Cleanup Limit?	NA			NA			NA			NA			NA			NA			NO			NO			NO		
Any sample > 2X Cleanup Limit?	NA			NA			NA			NA			NA			NA			NO			NO			NO		
WAC 173-340 Compliance? YES	Because all values are below background (10.2 mg/kg), the WAC 173-340 3-part test is not required.			Because all values are below background (512 mg/kg), the WAC 173-340 3-part test is not required.			Because all values are below background (0.33 mg/kg), the WAC 173-340 3-part test is not required.			Because all values are below background (19.1 mg/kg), the WAC 173-340 3-part test is not required.			Because all values are below background (85.1 mg/kg), the WAC 173-340 3-part test is not required.			Because all values are below background (67.8 mg/kg), the WAC 173-340 3-part test is not required.			The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.			The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.			The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.		

B = method blank contamination (organic constituents)
BG = background
C = method blank contamination (inorganic constituents)
GW = groundwater
J = estimate
NA = not applicable

PQL = practical quantitation limit
Q = qualifier
RAG = remedial action goal
U = undetected
UCL = upper confidence limit
WAC = Washington Administrative Code

CALCULATION SHEET

Washington Closure Hanford

Originator J. M. Capron
Project 100-B/C Field Remediation
Subject 118-B-1 Burial Ground Cleanup Verification 95% UCL Calculations

Date 02/07/07
Job No. 14655

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Date 2/20/07
Sheet No. 21 of 61

1 118-B-1 Area 6 Statistical Calculations

2 Verification Data

Sample Area	Sample Number	Sample Date	Cesium-137			Tritium			Uranium-233/234			Uranium-238			Arsenic			Barium			Beryllium			Boron			Chromium		
			pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
A1	J12XC2	7/25/2006	0.116		0.043	-1.11	U	3.1	0.456		0.18	0.576		0.18	2.9		1.7	96.4		0.06	0.34		0.06	8.8		0.67	7.4		0.36
A2	J12XC3	7/25/2006	0.160		0.067	-0.493	U	3.0	0.416		0.18	0.416		0.18	3.7		1.7	53.3		0.06	0.32		0.06	1.1		0.67	7.1		0.36
A3	J12XC4	7/25/2006	0.107		0.026	5.03		3.0	0.608		0.14	0.756		0.14	3.0		1.7	44.5		0.06	0.35		0.06	0.80		0.67	6.2		0.36
A4	J12XC5	7/25/2006	0.027	U	0.027	0.083	U	3.0	0.424		0.14	0.553		0.14	4.5		1.7	44.0		0.06	0.36		0.06	0.67	U	0.67	7.1		0.36

9 Statistical Computation Input Data

Sample Area	Sample Number	Sample Date	Cesium-137 pCi/g			Tritium pCi/g			Uranium-233/234 pCi/g			Uranium-238 pCi/g			Arsenic mg/kg			Barium mg/kg			Beryllium mg/kg			Boron mg/kg			Chromium mg/kg		
A1	J12XC2	7/25/2006	0.116			-1.11			0.456			0.576			2.9			96.4			0.34			8.8			7.4		
A2	J12XC3	7/25/2006	0.160			-0.493			0.416			0.416			3.7			53.3			0.32			1.1			7.1		
A3	J12XC4	7/25/2006	0.107			5.03			0.608			0.756			3.0			44.5			0.35			0.80			6.2		
A4	J12XC5	7/25/2006	0.014			0.083			0.424			0.553			4.5			44.0			0.36			0.34			7.1		

16 Statistical Computations

			Cesium-137			Tritium			Uranium-233/234			Uranium-238			Arsenic			Barium			Beryllium			Boron			Chromium		
95% UCL based on			Radionuclide data set. Use nonparametric z-stat.			Radionuclide data set. Use nonparametric z-stat.			Radionuclide data set. Use nonparametric z-stat.			Radionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.		
N			4			4			4			4			4			4			4			4			4		
% < Detection limit			25%			75%			0%			0%			0%			0%			0%			25%			0%		
Mean			0.099			0.88			0.476			0.575			3.5			59.6			0.34			2.8			7.0		
Standard deviation			0.062			2.81			0.090			0.140			0.7			24.9			0.02			4.0			0.5		
95% UCL on mean			0.150			3.19			0.550			0.690			4.1			80.1			0.36			6.1			7.4		
Maximum detected value			0.160			5.03			0.608			0.756			4.5			96.4			0.36			8.8			7.4		
Background			NA			NA			1.1			1.1			6.5			132			1.51			NA			18.5		
Statistical value above background*			0.150			3.19			0 (< BG)			0 (< BG)			4.1			80.1			0.36			6.1			7.4		
Most Stringent Cleanup Limit for nonradionuclide and RAG type															Direct Exposure/GW & River Protection			BG/GW Protection			BG/GW & River Protection			320 GW Protection			18.5 BG/GW & River Protection		
WAC 173-340 3-PART TEST															20			132			1.51								
95% UCL > Cleanup Limit?															NA			NA			NA			NO			NA		
> 10% above Cleanup Limit?															NA			NA			NA			NO			NA		
Any sample > 2X Cleanup Limit?															NA			NA			NA			NO			NA		
WAC 173-340 Compliance? YES															Because all values are below background (6.5 mg/kg), the WAC 173-340 3-part test is not required.			Because all values are below background (132 mg/kg), the WAC 173-340 3-part test is not required.			Because all values are below background (1.51 mg/kg), the WAC 173-340 3-part test is not required.			The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.			Because all values are below background (18.5 mg/kg), the WAC 173-340 3-part test is not required.		

*Background is not subtracted for nonradionuclides; consideration of background is given by direct comparison against background values.

BG = background

GW = groundwater

MDA = minimum detectable activity

NA = not applicable

PQL = practical quantitation limit

Q = qualifier

RAG = remedial action goal

U = undetected

UCL = upper confidence limit

WAC = Washington Administrative Code

CALCULATION SHEET

Washington Closure Hanford

Originator J. M. Capron
Project 100-B/C Field Remediation
Subject 118-B-1 Burial Ground Cleanup Verification 95% UCL Calculations

Date 02/07/07
Job No. 14655

Calc. No. 0100B-CA-V0299
Checked T. M. Blakley

Rev. No. 0
Date 2/20/07
Sheet No. 22 of 61

1 118-B-1 Area 6 Statistical Calculations (continued)

2 Verification Data

Sample Area	Sample Number	Sample Date	Cobalt			Copper			Hexavalent Chromium			Lead			Manganese			Mercury			Nickel			Vanadium			Zinc		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
A1	J12XC2	7/25/2006	7.1		0.39	13.7		0.33	0.20	U	0.20	5.1		0.86	297		0.08	0.02		0.01	11.5		0.67	37.3		0.25	35.2	C	0.45
A2	J12XC3	7/25/2006	7.8		0.39	14.3		0.34	0.24		0.20	4.7		0.87	312		0.08	0.01	U	0.01	10.8		0.67	42.5		0.25	39.2	C	0.45
A3	J12XC4	7/25/2006	8.4		0.39	16.3		0.34	0.22		0.20	4.0		0.87	322		0.08	0.02		0.01	9.3		0.67	49.1		0.25	40.9	C	0.45
A4	J12XC5	7/25/2006	8.5		0.39	16.9		0.34	0.28		0.20	4.7		0.87	322		0.08	0.02	U	0.02	11.0		0.67	48.7		0.25	41.2	C	0.45

9 Statistical Computation Input Data

Sample Area	Sample Number	Sample Date	Cobalt mg/kg			Copper mg/kg			Hexavalent Chromium mg/kg			Lead mg/kg			Manganese mg/kg			Mercury mg/kg			Nickel mg/kg			Vanadium mg/kg			Zinc mg/kg		
A1	J12XC2	7/25/2006	7.1			13.7			0.10			5.1			297			0.02			11.5			37.3			35.2		
A2	J12XC3	7/25/2006	7.8			14.3			0.24			4.7			312			0.005			10.8			42.5			39.2		
A3	J12XC4	7/25/2006	8.4			16.3			0.22			4.0			322			0.02			9.3			49.1			40.9		
A4	J12XC5	7/25/2006	8.5			16.9			0.28			4.7			322			0.01			11.0			48.7			41.2		

16 Statistical Computations

95% UCL based on	Cobalt			Copper			Hexavalent Chromium			Lead			Manganese			Mercury			Nickel			Vanadium			Zinc		
	Small nonradionuclide data set. Use nonparametric z-stat.	Small nonradionuclide data set. Use nonparametric z-stat.	Small nonradionuclide data set. Use nonparametric z-stat.	Small nonradionuclide data set. Use nonparametric z-stat.	Small nonradionuclide data set. Use nonparametric z-stat.	Small nonradionuclide data set. Use nonparametric z-stat.	Small nonradionuclide data set. Use nonparametric z-stat.	Small nonradionuclide data set. Use nonparametric z-stat.	Small nonradionuclide data set. Use nonparametric z-stat.	Small nonradionuclide data set. Use nonparametric z-stat.	Small nonradionuclide data set. Use nonparametric z-stat.	Small nonradionuclide data set. Use nonparametric z-stat.	Small nonradionuclide data set. Use nonparametric z-stat.	Small nonradionuclide data set. Use nonparametric z-stat.	Small nonradionuclide data set. Use nonparametric z-stat.	Small nonradionuclide data set. Use nonparametric z-stat.	Small nonradionuclide data set. Use nonparametric z-stat.	Small nonradionuclide data set. Use nonparametric z-stat.	Small nonradionuclide data set. Use nonparametric z-stat.	Small nonradionuclide data set. Use nonparametric z-stat.	Small nonradionuclide data set. Use nonparametric z-stat.	Small nonradionuclide data set. Use nonparametric z-stat.	Small nonradionuclide data set. Use nonparametric z-stat.	Small nonradionuclide data set. Use nonparametric z-stat.	Small nonradionuclide data set. Use nonparametric z-stat.	Small nonradionuclide data set. Use nonparametric z-stat.	Small nonradionuclide data set. Use nonparametric z-stat.
N	4			4			4			4			4			4			4			4			4		
% < Detection limit	0%			0%			25%			0%			0%			50%			0%			0%			0%		
Mean	8.0			15.3			0.21			4.6			313			0.01			10.7			44.4			39.1		
Standard deviation	0.6			1.5			0.08			0.5			12			0.01			0.9			5.6			2.8		
95% UCL on mean	8.5			16.6			0.27			5.0			323			0.02			11.4			49.0			41.4		
Maximum detected value	8.5			16.9			0.28			5.1			322			0.02			11.5			49.1			41.2		
Statistical value	8.5			16.6			0.27			5.0			323			0.02			11.4			49.0			41.4		
Most Stringent Cleanup Limit for nonradionuclide and RAG type	32 GW Protection	22.0 BG/River Protection	2 River Protection	10.2 BG/GW & River Protection	512 BG/GW & River Protection	0.33 BG/GW & River Protection	19.1 BG/GW Protection	85.1 BG/GW Protection	67.8 BG/River Protection																		
WAC 173-340 3-PART TEST																											
95% UCL > Cleanup Limit?	NA	NA	NO	NA	NA	NA	NA	NA	NA																		
> 10% above Cleanup Limit?	NA	NA	NO	NA	NA	NA	NA	NA	NA																		
Any sample > 2X Cleanup Limit?	NA	NA	NO	NA	NA	NA	NA	NA	NA																		
WAC 173-340 Compliance?	YES	Because all values are below background (15.7 mg/kg), the WAC 173-340 3-part test is not required.	Because all values are below background (22.0 mg/kg), the WAC 173-340 3-part test is not required.	The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.	Because all values are below background (10.2 mg/kg), the WAC 173-340 3-part test is not required.	Because all values are below background (512 mg/kg), the WAC 173-340 3-part test is not required.	Because all values are below background (0.33 mg/kg), the WAC 173-340 3-part test is not required.	Because all values are below background (19.1 mg/kg), the WAC 173-340 3-part test is not required.	Because all values are below background (85.1 mg/kg), the WAC 173-340 3-part test is not required.	Because all values are below background (67.8 mg/kg), the WAC 173-340 3-part test is not required.																	

32 BG = background
33 C = method blank contamination
34 GW = groundwater
35 NA = not applicable
36 PQL = practical quantitation limit

Q = qualifier
RAG = remedial action goal
U = undetected
UCL = upper confidence limit
WAC = Washington Administrative Code

CALCULATION SHEET

Washington Closure Hanford

Originator J. M. Capron
Project 100-B/C Field Remediation
Subject 118-B-1 Burial Ground Cleanup Verification 95% UCL Calculations

Date 02/07/07
Job No. 14655

Calc. No. 0100B-CA-V0299
Checked T. M. Blakley

Rev. No. 0
Date 2/20/07
Sheet No. 23 of 61

1 118-B-1 Area 6 Statistical Calculations (continued)

2 Verification Data

Sample Area	Sample Number	Sample Date	bis(2-Ethylhexyl)phthalate			Di-n-butylphthalate			Acetone			Carbon Tetrachloride			Methylene Chloride			2,4,5-TP			Dalapon			Dichloroprop		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
A1	J12XC2	7/25/2006	0.019	JB	0.33	0.075	JB	0.33	0.010	U	0.010	0.005		0.005	0.005	U	0.005	0.017	U	0.017	0.030	J	0.033	0.033	U	0.033
A2	J12XC3	7/25/2006	0.17	JB	0.34	0.084	JB	0.34	0.006	J	0.010	0.006		0.005	0.006		0.005	0.012	J	0.017	0.038		0.034	0.091		0.034
A3	J12XC4	7/25/2006	0.026	JB	0.34	0.049	JB	0.34	0.007	J	0.010	0.002	J	0.005	0.003	J	0.005	0.012	J	0.017	0.034		0.034	0.12		0.034
A4	J12XC5	7/25/2006	0.43	B	0.34	0.052	JB	0.34	0.008	J	0.010	0.007		0.005	0.010		0.005	0.017	U	0.017	0.031	J	0.034	0.034	U	0.034

9 Statistical Computation Input Data

Sample Area	Sample Number	Sample Date	bis(2-Ethylhexyl)phthalate mg/kg	Di-n-butylphthalate mg/kg	Acetone mg/kg	Carbon Tetrachloride mg/kg	Methylene Chloride mg/kg	2,4,5-TP mg/kg	Dalapon mg/kg	Dichloroprop mg/kg
A1	J12XC2	7/25/2006	0.019	0.075	0.0050	0.005	0.003	0.0085	0.030	0.017
A2	J12XC3	7/25/2006	0.17	0.084	0.006	0.006	0.006	0.012	0.038	0.091
A3	J12XC4	7/25/2006	0.026	0.049	0.007	0.002	0.003	0.012	0.034	0.12
A4	J12XC5	7/25/2006	0.43	0.052	0.008	0.007	0.010	0.0085	0.031	0.017

16 Statistical Computations

		bis(2-Ethylhexyl)phthalate	Di-n-butylphthalate	Acetone	Carbon Tetrachloride	Methylene Chloride	2,4,5-TP	Dalapon	Dichloroprop
95% UCL based on		Small nonradionuclide data set. Use nonparametric z-stat.	Small nonradionuclide data set. Use nonparametric z-stat.	Small nonradionuclide data set. Use nonparametric z-stat.	Small nonradionuclide data set. Use nonparametric z-stat.	Small nonradionuclide data set. Use nonparametric z-stat.	Small nonradionuclide data set. Use nonparametric z-stat.	Small nonradionuclide data set. Use nonparametric z-stat.	Small nonradionuclide data set. Use nonparametric z-stat.
N		4	4	4	4	4	4	4	4
% < Detection limit		0%	0%	25%	0%	25%	50%	0%	50%
Mean		0.16	0.065	0.007	0.005	0.005	0.010	0.033	0.06
Standard deviation		0.19	0.017	0.001	0.002	0.003	0.002	0.004	0.05
95% UCL on mean		0.32	0.079	0.008	0.007	0.008	0.012	0.036	0.10
Maximum detected value		0.43	0.084	0.008	0.007	0.010	0.012	0.038	0.12
Statistical value		0.32	0.079	0.008	0.007	0.008	0.012	0.036	0.10
Most Stringent Cleanup Limit for nonradionuclide and RAG type		0.36 River Protection	160 GW Protection	720 GW Protection	0.034 GW Protection	0.5 GW Protection	5 GW Protection	20 GW Protection	7 GW Protection
WAC 173-340 3-PART TEST									
95% UCL > Cleanup Limit?		NO	NO	NO	NO	NO	NO	NO	NO
> 10% above Cleanup Limit?		YES	NO	NO	NO	NO	NO	NO	NO
Any sample > 2X Cleanup Limit?		NO	NO	NO	NO	NO	NO	NO	NO
WAC 173-340 Compliance?		Further Assessment Required	The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.	The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.	The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.	The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.	The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.	The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.	The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.

32 B = method blank contamination
33 GW = groundwater
34 J = estimate
35 NA = not applicable
36 PQL = practical quantitation limit

Q = qualifier
RAG = remedial action goal
U = undetected
UCL = upper confidence limit
WAC = Washington Administrative Code

CALCULATION SHEET

Washington Closure Hanford

Originator J. M. Capron *JMC*
Project 100-B/C Field Remediation
Subject 118-B-1 Burial Ground Cleanup Verification 95% UCL Calculations

Date 02/07/07
Job No. 14655

Calc. No. 0100B-CA-V0299
Checked T. M. Blakley *TMB*

Rev. No. 0
Date 2/24/07
Sheet No. 24 of 61

1 118-B-1 Area 7 Statistical Calculations
2 Verification Data

Sample Area	Sample Number	Sample Date	Cesium-137			Europium-152			Uranium-233/234			Uranium-238			Arsenic			Barium			Beryllium			Boron		
			pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
A1	J12XC6	7/26/2006	0.578		0.086	0.17	U	0.17	0.473		0.26	0.574		0.26	3.8		1.7	145		0.06	0.30		0.06	18.1		0.67
A2	J12XC7	7/26/2006	0.450		0.046	0.12	U	0.12	0.602		0.27	0.708		0.27	3.1		1.7	75.1		0.06	0.31		0.06	2.7		0.66
A3	J12XC8	7/26/2006	0.271		0.091	0.17	U	0.17	0.718		0.25	0.424		0.25	3.1		1.7	53.7		0.06	0.19		0.06	1.3		0.67
A4	J12XC9	7/26/2006	0.297		0.018	0.104		0.052	0.292		0.28	0.729		0.28	2.8		1.7	119		0.06	0.27		0.06	7.7		0.67

9 Statistical Computation Input Data

Sample Area	Sample Number	Sample Date	Cesium-137 pCi/g			Europium-152 pCi/g			Uranium-233/234 pCi/g			Uranium-238 pCi/g			Arsenic mg/kg			Barium mg/kg			Beryllium mg/kg			Boron mg/kg		
A1	J12XC6	7/26/2006	0.578			0.085			0.473			0.574			3.8			145			0.30			18.1		
A2	J12XC7	7/26/2006	0.450			0.060			0.602			0.708			3.1			75.1			0.31			2.7		
A3	J12XC8	7/26/2006	0.271			0.085			0.718			0.424			3.1			53.7			0.19			1.3		
A4	J12XC9	7/26/2006	0.297			0.104			0.292			0.729			2.8			119			0.27			7.7		

16 Statistical Computations

			Cesium-137			Europium-152			Uranium-233/234			Uranium-238			Arsenic			Barium			Beryllium			Boron		
95% UCL based on			Radionuclide data set. Use nonparametric z-stat.			Radionuclide data set. Use nonparametric z-stat.			Radionuclide data set. Use nonparametric z-stat.			Radionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.		
N			4			4			4			4			4			4			4			4		
% < Detection limit			0%			75%			0%			0%			0%			0%			0%			0%		
Mean			0.399			0.084			0.521			0.609			3.2			98			0.27			7.5		
Standard deviation			0.143			0.018			0.183			0.141			0.4			41			0.05			7.6		
95% UCL on mean			0.517			0.098			0.671			0.725			3.5			132			0.31			13.7		
Maximum detected value			0.578			0.104			0.718			0.729			3.8			145			0.31			18.1		
Background			NA			NA			1.1			1.1			6.5			132			1.51			NA		
Statistical value above background*			0.517			0.098			0 (< BG)			0 (< BG)			3.5			132			0.31			13.7		
Most Stringent Cleanup Limit for nonradionuclide and RAG type															Direct Exposure/GW & River Protection			BG/GW Protection			BG/GW & River Protection			320 GW Protection		
WAC 173-340 3-PART TEST															NA			YES			NA			NO		
95% UCL > Cleanup Limit?															NA			YES			NA			NO		
> 10% above Cleanup Limit?															NA			YES			NA			NO		
Any sample > 2X Cleanup Limit?															NA			NO			NA			NO		
WAC 173-340 Compliance?															Because all values are below background (6.5 mg/kg), the WAC 173-340 3-part test is not required.			Because of the "yes" answers to the 3-part test, a detailed assessment using RESRAD will be performed. The data set meets the 3-part test criteria when compared to the direct exposure cleanup level.			Because all values are below background (1.51 mg/kg), the WAC 173-340 3-part test is not required.			The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.		
Further Assessment Required																										

33 *Background is not subtracted for nonradionuclides; consideration of background is given by direct comparison against background values.
34 BG = background
35 GW = groundwater
36 MDA = minimum detectable activity
37 NA = not applicable
38 PQL = practical quantitation limit

Q = qualifier
RAG = remedial action goal
U = undetected
UCL = upper confidence limit
WAC = Washington Administrative Code

CALCULATION SHEET

Washington Closure Hanford

Originator J. M. Capron
Project 100-B/C Field Remediation
Subject 118-B-1 Burial Ground Cleanup Verification 95% UCL Calculations

Date 02/07/07
Job No. 14655

Calc. No. 0100B-CA-V0299
Checked T. M. Blakley

Rev. No. 0
Date 2/20/07
Sheet No. 25 of 61

1 118-B-1 Area 7 Statistical Calculations (continued)

2 Verification Data

Sample Area	Sample Number	Sample Date	Chromium			Cobalt			Copper			Hexavalent Chromium			Lead			Manganese			Nickel			Vanadium		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
A1	J12XC6	7/26/2006	7.6		0.36	6.3		0.39	25.7		0.33	0.20	U	0.20	12.9		0.86	254		0.08	8.6		0.67	36.4		0.25
A2	J12XC7	7/26/2006	9.5		0.36	7.6		0.39	14.4		0.33	0.30		0.20	6.0		0.86	340		0.08	10.7		0.66	40.9		0.25
A3	J12XC8	7/26/2006	7.3		0.37	6.3		0.39	11.7		0.34	0.27		0.20	3.6		0.87	270		0.08	9.4		0.67	32.7		0.25
A4	J12XC9	7/26/2006	8.0		0.36	7.4		0.39	17.2		0.34	0.20	U	0.20	8.3		0.87	318		0.08	10.4		0.67	38.0		0.25

9 Statistical Computation Input Data

Sample Area	Sample Number	Sample Date	Chromium mg/kg			Cobalt mg/kg			Copper mg/kg			Hexavalent Chromium mg/kg			Lead mg/kg			Manganese mg/kg			Nickel mg/kg			Vanadium mg/kg		
A1	J12XC6	7/26/2006	7.6			6.3			25.7			0.10			12.9			254			8.6			36.4		
A2	J12XC7	7/26/2006	9.5			7.6			14.4			0.30			6.0			340			10.7			40.9		
A3	J12XC8	7/26/2006	7.3			6.3			11.7			0.27			3.6			270			9.4			32.7		
A4	J12XC9	7/26/2006	8.0			7.4			17.2			0.10			8.3			318			10.4			38.0		

16 Statistical Computations

		Chromium			Cobalt			Copper			Hexavalent Chromium			Lead			Manganese			Nickel			Vanadium					
	95% UCL based on	Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.					
18	N	4			4			4			4			4			4			4			4					
19	% < Detection limit	0%			0%			0%			50%			0%			0%			0%			0%					
20	Mean	8.1			6.9			17.3			0.19			7.7			296			9.8			37.0					
21	Standard deviation	1.0			0.7			6.1			0.11			4.0			40			1.0			3.4					
22	95% UCL on mean	8.9			7.5			22.2			0.28			11.0			329			10.6			39.8					
23	Maximum detected value	9.5			7.6			25.7			0.30			12.9			340			10.7			40.9					
24	Statistical value	8.9			7.5			22.2			0.28			11.0			329			10.6			39.8					
25	Most Stringent Cleanup Limit for nonradionuclide and RAG type	BG/GW & River Protection			32 GW Protection			22.0 BG/River Protection			2 River Protection			10.2 BG/GW & River Protection			512 BG/GW & River Protection			19.1 BG/GW Protection			85.1 BG/GW Protection					
26	WAC 173-340 3-PART TEST																											
27	95% UCL > Cleanup Limit?	NA			NA			YES			NO			YES			NA			NA			NA					
28	> 10% above Cleanup Limit?	NA			NA			YES			NO			YES			NA			NA			NA					
29	Any sample > 2X Cleanup Limit?	NA			NA			NO			NO			NO			NA			NA			NA					
30	WAC 173-340 Compliance?	Further Assessment Required			Because all values are below background (18.5 mg/kg), the WAC 173-340 3-part test is not required.			Because all values are below background (15.7 mg/kg), the WAC 173-340 3-part test is not required.			Because of the "yes" answers to the 3-part test, a detailed assessment using RESRAD will be performed. The data set meets the 3-part test criteria when compared to the direct exposure cleanup level.			The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.			Because of the "yes" answers to the 3-part test, a detailed assessment using RESRAD will be performed. The data set meets the 3-part test criteria when compared to the direct exposure cleanup level.			Because all values are below background (512 mg/kg), the WAC 173-340 3-part test is not required.			Because all values are below background (19.1 mg/kg), the WAC 173-340 3-part test is not required.			Because all values are below background (85.1 mg/kg), the WAC 173-340 3-part test is not required.		
31																												

32 BG = background
33 GW = groundwater
34 NA = not applicable
35 PQL = practical quantitation limit
36 Q = qualifier
RAG = remedial action goal
U = undetected
UCL = upper confidence limit
WAC = Washington Administrative Code

CALCULATION SHEET

Washington Closure Hanford

Originator J. M. Capron
Project 100-B/C Field Remediation
Subject 118-B-1 Burial Ground Cleanup Verification 95% UCL Calculations

Date 02/07/07
Job No. 14655

Calc. No. 0100B-CA-V0299
Checked T. M. Blakley

Rev. No. 0
Date 2/22/07
Sheet No. 26 of 61

1 118-B-1 Area 7 Statistical Calculations (continued)

2 Verification Data

Sample Area	Sample Number	Sample Date	Zinc			Acetone			Carbon Tetrachloride			Methylene Chloride			4,4'-DDE			2,4-D			Dalapon			Dichloroprop		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
A1	J12XC6	7/26/2006	48.7	C	0.45	0.008	J	0.010	0.009		0.005	0.010		0.005	0.015	DJ	0.0013	0.026	J	0.033	0.032	J	0.033	0.033	U	0.033
A2	J12XC7	7/26/2006	41.0	C	0.44	0.010	J	0.010	0.010		0.005	0.005	U	0.005	0.0013	UD	0.0013	0.033	U	0.033	0.020	J	0.033	0.037		0.033
A3	J12XC8	7/26/2006	31.1	C	0.45	0.010	U	0.010	0.005	U	0.005	0.005	U	0.005	0.0013	UD	0.0013	0.020	J	0.034	0.016	J	0.034	0.034	U	0.034
A4	J12XC9	7/26/2006	44.5	C	0.45	0.010	U	0.010	0.010		0.005	0.006		0.005	0.015	DJ	0.0013	0.013	J	0.034	0.034	U	0.034	0.060		0.034

9 Statistical Computation Input Data

Sample Area	Sample Number	Sample Date	Zinc mg/kg			Acetone mg/kg			Carbon Tetrachloride mg/kg			Methylene Chloride mg/kg			4,4'-DDE mg/kg			2,4-D mg/kg			Dalapon mg/kg			Dichloroprop mg/kg		
A1	J12XC6	7/26/2006	48.7			0.008			0.009			0.010			0.015			0.026			0.032			0.017		
A2	J12XC7	7/26/2006	41.0			0.010			0.010			0.003			0.00065			0.017			0.020			0.037		
A3	J12XC8	7/26/2006	31.1			0.0050			0.003			0.003			0.00065			0.020			0.016			0.017		
A4	J12XC9	7/26/2006	44.5			0.0050			0.010			0.006			0.015			0.013			0.017			0.060		

16 Statistical Computations

		Zinc			Acetone			Carbon Tetrachloride			Methylene Chloride			4,4'-DDE			2,4-D			Dalapon			Dichloroprop		
95% UCL based on		Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.			Small nonradionuclide data set. Use nonparametric z-stat.		
N		4			4			4			4			4			4			4			4		
% < Detection limit		0%			50%			25%			50%			50%			25%			25%			50%		
Mean		41.3			0.007			0.008			0.005			0.008			0.019			0.021			0.033		
Standard deviation		7.5			0.002			0.004			0.004			0.008			0.006			0.007			0.021		
95% UCL on mean		47.5			0.009			0.011			0.008			0.015			0.023			0.027			0.050		
Maximum detected value		48.7			0.010			0.010			0.010			0.015			0.026			0.032			0.060		
Statistical value		47.5			0.009			0.011			0.008			0.015			0.023			0.027			0.050		
Most Stringent Cleanup Limit for nonradionuclide and RAG type		67.8 BG/River Protection			720 GW Protection			0.034 GW Protection			0.5 GW Protection			0.005 RDL/River Protection			7 River Protection			20 GW Protection			7 GW Protection		
WAC 173-340 3-PART TEST																									
95% UCL > Cleanup Limit?		NA			NO			NO			NO			YES			NO			NO			NO		
> 10% above Cleanup Limit?		NA			NO			NO			NO			YES			NO			NO			NO		
Any sample > 2X Cleanup Limit?		NA			NO			NO			NO			YES			NO			NO			NO		
WAC 173-340 Compliance?		Further Assessment Required			Because all values are below background (67.8 mg/kg), the WAC 173-340 3-part test is not required.			The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.			The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.			The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.			Because of the "yes" answers to the 3-part test, a detailed assessment using RESRAD will be performed. The data set meets the 3-part test criteria when compared to the direct exposure cleanup level.			The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.			The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.		

32 BG = background
33 C = method blank contamination
34 D = diluted
35 GW = groundwater
36 J = estimate
37 NA = not applicable
38 PQL = practical quantitation limit

Q = qualifier
RAG = remedial action goal
RDL = required detection limit
U = undetected
UCL = upper confidence limit
WAC = Washington Administrative Code

CALCULATION SHEET

Washington Closure Hanford

Originator J. M. Capron
Project 100-B/C Field Remediation

Date 02/07/07 Checked T. M. Blakley
Subject 118-B-1 Burial Ground Cleanup Verification 95% UCL Calculations

Date 4/20/07

Calc. No. 0100B-CA-V0299
Job No. 14655

Rev. No. 0
Sheet No. 27 of 61

1 118-B-1 Overburden Statistical Calculations

2 Verification Data

	Sample Area	Sample Number	Sample Date	Cesium-137			Europium-152			Strontium-90			Uranium-233/234			Uranium-235			Uranium-238			Arsenic			Barium		
				pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	mg/kg	Q	PQL	mg/kg	Q	PQL
4	A1	J12WK0	7/11/06	0.076		0.018	0.043	U	0.043	0.441		0.39	0.534		0.032	0.004	U	0.044	0.563		0.025	2.6		0.59	77.1		0.02
6	A2	J12WK1	7/11/06	0.039	U	0.045	0.11	U	0.11	0.239	U	0.39	0.456		0.026	0.004	U	0.031	0.476		0.026	2.7		0.59	48.4		0.02
7	A3	J12WK2	7/11/06	0.081		0.031	0.085	U	0.085	0.067	U	0.36	0.479		0.026	0.008	U	0.031	0.567		0.026	2.3		0.59	54.6		0.02
8	A4	J12WK3	7/11/06	0.118		0.033	0.087	U	0.087	-0.001	U	0.42	0.436		0.036	0.037		0.035	0.387		0.036	2.7		0.58	55.9		0.02
9	B5	J12WK4	7/11/06	0.027	U	0.027	0.056	U	0.056	0.009	U	0.26	0.510		0.038	0.029	U	0.032	0.575		0.033	3.1		0.59	51.4		0.02
10	B6	J12WK5	7/11/06	0.223		0.066	0.13	U	0.13	0.350	U	0.43	0.461		0.027	0.013	U	0.033	0.489		0.027	2.9		0.59	56.4		0.02
11	B7	J12WK6	7/11/06	0.203		0.022	0.060	U	0.060	0.232	U	0.36	0.477		0.043	0.023	U	0.030	0.465		0.039	2.2		0.59	46.2		0.02
12	B8	J12WM7	7/17/06	0.288		0.087	0.19	U	0.19	-0.037	U	0.29	0.692		0.35	0	U	0.43	0.692		0.35	2.7		1.7	60.0		0.06
13	C9	J12WM8	7/17/06	0.169		0.019	0.063	U	0.063	0.015	U	0.29	0.767		0.21	0	U	0.25	0.575		0.21	2.3		1.7	53.7		0.06
14	C10	J12WM9	7/17/06	0.082		0.026	0.065	U	0.065	0.116	U	0.28	0.508		0.23	0	U	0.28	0.538		0.23	2.5		1.7	44.9		0.06
15	C1	J12WNO	7/17/06	0.100		0.038	0.088	U	0.088	-0.008	U	0.31	0.407		0.26	0.041	U	0.31	0.543		0.26	2.4		1.7	49.8		0.06
16	C2	J12WN1	7/17/06	0.233		0.080	0.20	U	0.20	0.013	U	0.34	0.337		0.23	0.037	U	0.28	0.521		0.23	2.4		1.7	43.0		0.06
17	D3	J12WM5	7/12/06	0.218		0.077	0.17	U	0.17	-0.019	U	0.26	0.455		0.029	0.022	U	0.028	0.479		0.023	3.5		1.7	51.7		0.06
18	D4	J12WM6	7/12/06	0.077	U	0.077	0.060	U	0.060	0.047	U	0.24	0.400		0.023	0.033		0.028	0.546		0.023	4.0		1.7	52.4		0.06
19	D5	J12WM3	7/12/06	0.654		0.030	0.165	U	0.067	0.194	U	0.26	0.530		0.028	0.022	U	0.034	0.504		0.028	3.6		1.7	83.5		0.06
20	D6	J12WM4	7/12/06	0.060	U	0.060	0.071	U	0.071	0.188	U	0.25	0.526		0.10	0.095	U	0.12	0.539		0.10	3.1		1.7	48.4		0.06

21 Statistical Computation Input Data

22	Sample Area	Sample Number	Sample Date	Cesium-137 pCi/g	Europium-152 pCi/g	Strontium-90 pCi/g	Uranium-233/234 pCi/g	Uranium-235 pCi/g	Uranium-238 pCi/g	Arsenic mg/kg	Barium mg/kg
23	A1	J12WK0	7/11/2006	0.076	0.022	0.441	0.534	0.004	0.563	2.6	77.1
25	A2	J12WK1	7/11/2006	0.039	0.055	0.239	0.456	0.004	0.476	2.7	48.4
26	A3	J12WK2	7/11/2006	0.081	0.043	0.067	0.479	0.008	0.567	2.3	54.6
27	A4	J12WK3	7/11/2006	0.118	0.044	-0.001	0.436	0.037	0.387	2.7	55.9
28	B5	J12WK4	7/11/2006	0.014	0.028	0.009	0.510	0.029	0.575	3.1	51.4
29	B6	J12WK5	7/11/2006	0.223	0.065	0.350	0.461	0.013	0.489	2.9	56.4
30	B7	J12WK6	7/11/2006	0.203	0.030	0.232	0.477	0.023	0.465	2.2	46.2
31	B8	J12WM7	7/17/2006	0.288	0.095	-0.037	0.692	0	0.692	2.7	60.0
32	C9	J12WM8	7/17/2006	0.169	0.032	0.015	0.767	0	0.575	2.3	53.7
33	C10	J12WM9	7/17/2006	0.082	0.033	0.116	0.508	0	0.538	2.5	44.9
34	C1	J12WN0	7/17/2006	0.100	0.044	-0.008	0.407	0.041	0.543	2.4	49.8
35	C2	J12WN1	7/17/2006	0.233	0.10	0.013	0.337	0.037	0.521	2.4	43.0
36	D3	J12WM5	7/12/2006	0.218	0.085	-0.019	0.455	0.022	0.479	3.5	51.7
37	D4	J12WM6	7/12/2006	0.039	0.030	0.047	0.400	0.033	0.546	4.0	52.4
38	D5	J12WM3	7/12/2006	0.654	0.165	0.194	0.530	0.022	0.504	3.6	83.5
39	D6	J12WM4	7/12/2006	0.030	0.036	0.188	0.526	0.095	0.539	3.1	48.4

40 Statistical Computations

41		Cesium-137	Europium-152	Strontium-90	Uranium-233/234	Uranium-235	Uranium-238	Arsenic	Barium
	95% UCL value based on	Radionuclide data set. Use nonparametric z-stat.	Radionuclide data set. Use nonparametric z-stat.	Radionuclide data set. Use nonparametric z-stat.	Radionuclide data set. Use nonparametric z-stat.	Radionuclide data set. Use nonparametric z-stat.	Radionuclide data set. Use nonparametric z-stat.	Large data set (n ≥ 10), use MTCAsat lognormal distribution.	Large data set (n ≥ 10), lognormal and normal distribution rejected, use z-statistic.
42									
43	N	16	16	16	16	16	16	16	16
44	% < Detection limit	25%	94%	94%	0%	88%	0%	0%	0%
45	Mean	0.160	0.06	0.115	0.498	0.023	0.529	2.8	54.8
46	Standard deviation	0.157	0.04	0.144	0.105	0.024	0.066	0.5	10.9
47	95% UCL on mean	0.225	0.07	0.175	0.542	0.033	0.556	3.1	59.3
48	Maximum detected value	0.654	0.165	0.441	0.767	0.037	0.692	4.0	83.5
49	Background	1.1	NA	0.18	1.1	0.11	1.1	6.5	132
50	Statistical value above background*	0 (< BG)	0.07	0 (< BG)	0 (< BG)	0 (< BG)	0 (< BG)	3.1	59.3
51	Most Stringent Cleanup Limit for nonradionuclide and RAG type							Direct Exposure/GW & River Protection	BG/GW Protection
52	WAC 173-340 3-PART TEST							20	132
53	95% UCL > Cleanup Limit?							NA	NA
54	> 10% above Cleanup Limit?							NA	NA
55	Any sample > 2X Cleanup Limit?							NA	NA
56	WAC 173-340 Compliance? Yes							Because all values are below background (6.5 mg/kg), the WAC 173-340 3-part test is not required.	Because all values are below background (132 mg/kg), the WAC 173-340 3-part test is not required.

57 *Background is not subtracted for nonradionuclides; consideration of background is given by direct comparison against background values.

58 BG = background

MDA = minimum detectable activity

PQL = practical quantitation limit.

RAG = remedial action goal

UCL = upper confidence limit

59 GW = groundwater

NA = not applicable

Q = qualifier

U = undetected

WAC = Washington Administrative Code

CALCULATION SHEET

Washington Closure Hanford

Originator J. M. Capron *JMC*
Project 100-B/C Field Remediation

Date 02/07/07
Subject 118-B-1 Burial Ground Cleanup Verification 95% UCL Calculations

Checked T. M. Blakley *TMB*
Date 2/20/07

Calc. No. 0100B-CA-V0299
Job No. 14655

Rev. No. 0
Sheet No. 28 of 61

1 118-B-1 Overburden Statistical Calculations (continued)

2 Verification Data

Sample Area	Sample Number	Sample Date	Beryllium			Boron			Chromium			Cobalt			Copper			Hexavalent Chromium			Lead			Manganese		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
A1	J12WK0	7/11/06	0.47		0.02	3.0		0.23	5.9		0.13	8.1		0.14	16.2		0.12	0.31		0.20	5.0		0.30	327		0.03
A2	J12WK1	7/11/06	0.49		0.02	1.6		0.23	7.2		0.13	8.5		0.14	14.3		0.12	0.27		0.20	4.3		0.30	335		0.03
A3	J12WK2	7/11/06	0.42		0.02	1.7		0.23	6.9		0.13	7.2		0.14	12.7		0.12	0.20	U	0.20	4.6		0.30	311		0.03
A4	J12WK3	7/11/06	0.43		0.02	1.6		0.23	6.7		0.12	7.7		0.13	12.4		0.12	0.20	U	0.20	4.7		0.30	339		0.03
B5	J12WK4	7/11/06	0.54		0.02	1.4		0.23	7.7		0.13	9.4		0.14	14.6		0.12	0.30		0.20	4.7		0.30	383		0.03
B6	J12WK5	7/11/06	0.55		0.02	1.4		0.23	6.4		0.13	8.0		0.13	15.3		0.12	0.27		0.20	4.6		0.30	339		0.03
B7	J12WK6	7/11/06	0.43		0.02	1.6		0.23	8.2		0.13	6.5		0.13	14.8		0.12	0.30		0.20	3.7		0.30	283		0.03
B8	J12WM7	7/17/06	0.36		0.06	1.8		0.67	8.0		0.36	7.9		0.39	15.2		0.33	0.20	U	0.20	5.1		0.86	332		0.08
C9	J12WM8	7/17/06	0.30		0.06	1.9		0.67	6.9		0.36	7.2		0.39	14.3		0.34	0.20	U	0.20	5.8		0.87	297		0.08
C10	J12WM9	7/17/06	0.27		0.06	1.2		0.68	6.6		0.37	7.3		0.39	14.9		0.34	0.25		0.20	3.8		0.87	282		0.08
C1	J12WN0	7/17/06	0.33		0.06	0.86		0.68	6.5		0.37	9.6		0.40	18.1		0.34	0.26		0.20	3.8		0.88	390		0.08
C2	J12WN1	7/17/06	0.28		0.06	1.8		0.67	5.7		0.37	8.1		0.39	15.1		0.34	0.20	U	0.20	4.3		0.87	303		0.08
D3	J12WM5	7/12/06	0.45		0.06	1.5		0.69	6.6		0.37	9.0		0.40	16.7		0.34	0.23		0.20	5.1		0.89	325		0.09
D4	J12WM6	7/12/06	0.48		0.06	1.2		0.68	7.5		0.37	10.2		0.40	17.0		0.34	0.20	U	0.20	5.1		0.88	374		0.09
D5	J12WM3	7/12/06	0.53		0.06	2.5		0.67	6.0		0.37	8.0		0.39	16.7		0.34	0.22		0.20	7.1		0.87	358		0.08
D6	J12WM4	7/12/06	0.49		0.06	2.0		0.67	6.4		0.37	9.1		0.39	16.0		0.34	0.20	U	0.20	4.5		0.87	322		0.08

21 Statistical Computation Input Data

Sample Area	Sample Number	Sample Date	Beryllium mg/kg	Boron mg/kg	Chromium mg/kg	Cobalt mg/kg	Copper mg/kg	Hexavalent Chromium mg/kg	Lead mg/kg	Manganese mg/kg
A1	J12WK0	7/11/2006	0.47	3.0	5.9	8.1	16.2	0.31	5.0	327
A2	J12WK1	7/11/2006	0.49	1.6	7.2	8.5	14.3	0.27	4.3	335
A3	J12WK2	7/11/2006	0.42	1.7	6.9	7.2	12.7	0.10	4.6	311
A4	J12WK3	7/11/2006	0.43	1.6	6.7	7.7	12.4	0.10	4.7	339
B5	J12WK4	7/11/2006	0.54	1.4	7.7	9.4	14.6	0.30	4.7	383
B6	J12WK5	7/11/2006	0.55	1.4	6.4	8.0	15.3	0.27	4.6	339
B7	J12WK6	7/11/2006	0.43	1.6	8.2	6.5	14.8	0.30	3.7	283
B8	J12WM7	7/17/2006	0.36	1.8	8.0	7.9	15.2	0.10	5.1	332
C9	J12WM8	7/17/2006	0.30	1.9	6.9	7.2	14.3	0.10	5.8	297
C10	J12WM9	7/17/2006	0.27	1.2	6.6	7.3	14.9	0.25	3.8	282
C1	J12WN0	7/17/2006	0.33	0.86	6.5	9.6	18.1	0.26	3.8	390
C2	J12WN1	7/17/2006	0.28	1.8	5.7	8.1	15.1	0.10	4.3	303
D3	J12WM5	7/12/2006	0.45	1.5	6.6	9.0	16.7	0.23	5.1	325
D4	J12WM6	7/12/2006	0.48	1.2	7.5	10.2	17.0	0.10	5.1	374
D5	J12WM3	7/12/2006	0.53	2.5	6.0	8.0	16.7	0.22	7.1	358
D6	J12WM4	7/12/2006	0.49	2.0	6.4	9.1	16.0	0.10	4.5	322

40 Statistical Computations

95% UCL value based on	Beryllium			Boron			Chromium			Cobalt			Copper			Hexavalent Chromium			Lead			Manganese		
	Large data set (n ≥ 10), use MTCASat lognormal distribution.			Large data set (n ≥ 10), use MTCASat lognormal distribution.			Large data set (n ≥ 10), use MTCASat lognormal distribution.			Large data set (n ≥ 10), use MTCASat lognormal distribution.			Large data set (n ≥ 10), use MTCASat lognormal distribution.			Large data set (n ≥ 10), lognormal and normal distribution rejected, use z-statistic.			Large data set (n ≥ 10), use MTCASat lognormal distribution.			Large data set (n ≥ 10), use MTCASat lognormal distribution.		
N	16			16			16			16			16			16			16			16		
% < Detection limit	0%			0%			0%			0%			0%			44%			0%			0%		
Mean	0.43			1.7			6.8			8.2			15.3			0.19			4.8			331		
Standard deviation	0.09			0.5			0.7			1.0			1.5			0.09			0.8			33		
95% UCL on mean	0.48			2.0			7.2			8.7			16.0			0.23			5.1			346		
Maximum detected value	0.55			3.0			8.2			10.2			18.1			0.31			7.1			390		
Statistical value	0.48			2.0			7.2			8.7			16.0			0.23			5.1			346		
Most Stringent Cleanup Limit for nonradionuclide and RAG type	1.51	BG/GW & River Protection		320	GW Protection		18.5	BG/GW & River Protection		32	GW Protection		22.0	BG/River Protection		2	River Protection		10.2	BG/GW & River Protection		512	BG/GW & River Protection	
WAC 173-340 3-PART TEST																								
95% UCL > Cleanup Limit?	NA			NO			NA			NA			NA			NO			NA			NA		
> 10% above Cleanup Limit?	NA			NO			NA			NA			NA			NO			NA			NA		
Any sample > 2X Cleanup Limit?	NA			NO			NA			NA			NA			NO			NA			NA		
WAC 173-340 Compliance?	Yes	Because all values are below background (1.51 mg/kg), the WAC 173-340 3-part test is not required.		The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.			Because all values are below background (18.5 mg/kg), the WAC 173-340 3-part test is not required.			Because all values are below background (15.7 mg/kg), the WAC 173-340 3-part test is not required.			Because all values are below background (22.0 mg/kg), the WAC 173-340 3-part test is not required.			The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.			Because all values are below background (10.2 mg/kg), the WAC 173-340 3-part test is not required.			Because all values are below background (512 mg/kg), the WAC 173-340 3-part test is not required.		

56 BG = background
57 GW = groundwater
58 NA = not applicable

PQL = practical quantitation limit
Q = qualifier
RAG = remedial action goal

U = undetected
UCL = upper confidence limit
WAC = Washington Administrative Code

CALCULATION SHEET

Washington Closure Hanford

Originator J. M. Capron
Project 100-B/C Field Remediation

Date 10/03/07
Subject 118-B-1 Burial Ground Cleanup Verification 95% UCL Calculations

Checked T. M. Blakley

Date 10/04/07

Calc. No. 0100B-CA-V0299
Job No. 14655

Rev. No. 1
Sheet No. 29 of 61

1 118-B-1 Overburden Statistical Calculations (continued)

2 Verification Data

Sample Area	Sample Number	Sample Date	Nickel			Vanadium			Zinc			bis(2-Ethylhexyl)phthalate			Di-n-butylphthalate			Carbon Tetrachloride			Methylene Chloride			Dicamba		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
A1	J12WK0	7/11/06	9.5		0.23	38.0		0.09	35.9		0.16	0.032	JB	0.34	0.34	U	0.34	0.005	U	0.005	0.009	BJ	0.005	0.012	J	0.034
A2	J12WK1	7/11/06	10.4		0.23	44.7		0.09	36.7		0.16	0.030	JB	0.34	0.34	U	0.34	0.005	U	0.005	0.006	BJ	0.005	0.034	U	0.034
A3	J12WK2	7/11/06	8.9		0.23	33.9		0.09	32.3		0.15	0.036	JB	0.33	0.033	J	0.33	0.005	U	0.005	0.011	BJ	0.005	0.033	U	0.033
A4	J12WK3	7/11/06	9.0		0.23	35.7		0.09	33.6		0.15	0.031	JB	0.34	0.34	U	0.34	0.005	U	0.005	0.009	BJ	0.005	0.0092	J	0.034
B5	J12WK4	7/11/06	12.8		0.23	51.6		0.09	40.1		0.15	0.083	JB	0.33	0.026	J	0.33	0.005	U	0.005	0.012	BJ	0.005	0.0087	J	0.033
B6	J12WK5	7/11/06	9.2		0.23	38.2		0.09	36.9		0.15	0.045	JB	0.33	0.33	U	0.33	0.005	U	0.005	0.016	BJ	0.005	0.017	J	0.033
B7	J12WK6	7/11/06	10.3		0.23	37.9		0.09	32.1		0.15	0.029	JB	0.33	0.33	U	0.33	0.005	U	0.005	0.018	BJ	0.005	0.013	J	0.033
B8	J12WM7	7/17/06	9.6		0.67	47.0	J	0.25	40.1		0.45	0.020	J	0.33	0.038	J	0.33	0.009		0.005	0.015		0.005	0.033	UJ	0.033
C9	J12WM8	7/17/06	8.8		0.67	36.1	J	0.25	33.9		0.45	0.088	J	0.34	0.041	J	0.34	0.012		0.005	0.008		0.005	0.0060	JB	0.034
C10	J12WM9	7/17/06	9.0		0.68	39.0	J	0.25	35.4		0.45	0.039	J	0.34	0.025	J	0.34	0.012		0.005	0.013		0.005	0.034	UJ	0.034
C1	J12WN0	7/17/06	9.5		0.68	55.0	J	0.25	42.2		0.45	0.037	J	0.34	0.039	J	0.34	0.007		0.005	0.006		0.005	0.015	JB	0.034
C2	J12WN1	7/17/06	8.9		0.67	39.4	J	0.25	35.9		0.45	0.028	J	0.33	0.042	J	0.33	0.024		0.005	0.030		0.005	0.013	JB	0.033
D3	J12WM5	7/12/06	9.8		0.69	49.4		0.26	42.4		0.46	0.028	J	0.34	0.019	J	0.34	0.010	J	0.005	0.008		0.005	0.034	UJ	0.034
D4	J12WM6	7/12/06	10.5		0.68	56.8		0.26	46.5		0.45	0.33	U	0.33	0.020	J	0.33	0.026	J	0.005	0.022		0.005	0.033	UJ	0.033
D5	J12WM3	7/12/06	9.4		0.67	42.1		0.25	43.0		0.45	0.021	J	0.33	0.33	U	0.33	0.006	J	0.005	0.014	B	0.005	0.033	UJ	0.033
D6	J12WM4	7/12/06	9.3		0.67	47.0		0.25	41.0		0.45	0.034	J	0.33	0.33	U	0.33	0.003	J	0.005	0.011	B	0.005	0.033	UJ	0.033

21 Statistical Computation Input Data

Sample Area	Sample Number	Sample Date	Nickel mg/kg	Vanadium mg/kg	Zinc mg/kg	bis(2-Ethylhexyl)phthalate mg/kg	Di-n-butylphthalate mg/kg	Carbon Tetrachloride mg/kg	Methylene Chloride mg/kg	Dicamba mg/kg
A1	J12WK0	7/11/2006	9.5	38.0	35.9	0.032	0.17	0.003	0.009	0.012
A2	J12WK1	7/11/2006	10.4	44.7	36.7	0.030	0.17	0.003	0.006	0.017
A3	J12WK2	7/11/2006	8.9	33.9	32.3	0.036	0.033	0.003	0.011	0.017
A4	J12WK3	7/11/2006	9.0	35.7	33.6	0.031	0.17	0.003	0.009	0.0092
B5	J12WK4	7/11/2006	12.8	51.6	40.1	0.083	0.026	0.003	0.012	0.0087
B6	J12WK5	7/11/2006	9.2	38.2	36.9	0.045	0.17	0.003	0.016	0.017
B7	J12WK6	7/11/2006	10.3	37.9	32.1	0.029	0.17	0.003	0.018	0.013
B8	J12WM7	7/17/2006	9.6	47.0	40.1	0.020	0.038	0.009	0.015	0.017
C9	J12WM8	7/17/2006	8.8	36.1	33.9	0.088	0.041	0.012	0.008	0.0060
C10	J12WM9	7/17/2006	9.0	39.0	35.4	0.039	0.025	0.012	0.013	0.017
C1	J12WN0	7/17/2006	9.5	55.0	42.2	0.037	0.039	0.007	0.006	0.015
C2	J12WN1	7/17/2006	8.9	39.4	35.9	0.028	0.042	0.024	0.030	0.013
D3	J12WM5	7/12/2006	9.8	49.4	42.4	0.028	0.019	0.010	0.008	0.017
D4	J12WM6	7/12/2006	10.5	56.8	46.5	0.17	0.020	0.026	0.022	0.017
D5	J12WM3	7/12/2006	9.4	42.1	43.0	0.021	0.17	0.006	0.014	0.017
D6	J12WM4	7/12/2006	9.3	47.0	41.0	0.034	0.17	0.003	0.011	0.017

40 Statistical Computations

	Nickel	Vanadium	Zinc	bis(2-Ethylhexyl)phthalate	Di-n-butylphthalate	Carbon Tetrachloride	Methylene Chloride	Dicamba
95% UCL value based on	Large data set (n ≥ 10), lognormal and normal distribution rejected, use z-statistic.	Large data set (n ≥ 10), use MTCASat lognormal distribution.	Large data set (n ≥ 10), use MTCASat lognormal distribution.	Large data set (n ≥ 10), use MTCASat lognormal distribution.	Large data set (n ≥ 10), use MTCASat lognormal distribution.	Large data set (n ≥ 10), lognormal and normal distribution rejected, use z-statistic.	Large data set (n ≥ 10), use MTCASat lognormal distribution.	Large data set (n ≥ 10), use MTCASat lognormal distribution.
N	16	16	16	16	16	16	16	16
% < Detection limit	0%	0%	0%	6%	44%	44%	0%	50%
Mean	9.7	43.2	38.0	0.05	0.09	0.008	0.013	0.014
Standard deviation	1.0	7.2	4.3	0.04	0.07	0.008	0.006	0.004
95% UCL on mean	10.1	46.6	40.0	0.06	0.12	0.011	0.016	0.016
Maximum detected value	12.8	56.8	46.5	0.088	0.042	0.026	0.030	0.017
Statistical value	10.1	46.6	40.0	0.06	0.12	0.011	0.016	0.016
Most Stringent Cleanup Limit for nonradionuclide and RAG type	19.1 BG/GW Protection	85.1 BG/GW Protection	67.8 BG/River Protection	0.36 River Protection	160 GW Protection	0.034 GW Protection	0.5 GW Protection	48 GW Protection
WAC 173-340 3-PART TEST								
95% UCL > Cleanup Limit?	NA	NA	NA	NO	NO	NO	NO	NO
> 10% above Cleanup Limit?	NA	NA	NA	NO	NO	NO	NO	NO
Any sample > 2X Cleanup Limit?	NA	NA	NA	NO	NO	NO	NO	NO
WAC 173-340 Compliance?	Yes	Because all values are below background (19.1 mg/kg), the WAC 173-340 3-part test is not required.	Because all values are below background (85.1 mg/kg), the WAC 173-340 3-part test is not required.	Because all values are below background (67.8 mg/kg), the WAC 173-340 3-part test is not required.	The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.	The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.	The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.	The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.

56 B = method blank contamination

57 BG = background

58 GW = groundwater

59 J = estimate

NA = not applicable

PQL = practical quantitation limit

Q = qualifier

RAG = remedial action goal

U = undetected

UCL = upper confidence limit

WAC = Washington Administrative Code

CALCULATION SHEET

Washington Closure Hanford

Originator J. M. Capron
Project 100-B/C Field Remediation

Date 02/07/07
Subject 118-B-1 Burial Ground Cleanup Verification 95% UCL Calculations

Checked T. M. Blakley
Date 2/20/08

Calc. No. 0100B-CA-V0299
Job No. 14655

Rev. No. 0
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1 118-B-1 BCL Material Statistical Calculations

2 Verification Data

Sample Area	Sample Number	Sample Date	Cesium-137			Cobalt-60			Europium-152			Strontium-90			Uranium-233/234			Uranium-235			Uranium-238			Arsenic			Barium		
			pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	mg/kg	Q	PQL	mg/kg	Q	PQL
A1	J12WN2	7/20/06	0.155		0.036	0.054	U	0.054	0.079	U	0.079	0.015	U	0.23	0.540		0.028	0.017	U	0.033	0.508		0.028	3.1		1.7	57.0	C	0.06
A2	J12WM1	7/12/06	0.13	U	0.13	0.076	U	0.076	0.17	U	0.17	0.071	U	0.26	0.491		0.17	0.054	U	0.21	0.714		0.17	3.7		1.7	53.7		0.06
A3	J12WM2	7/12/06	0.023	U	0.023	0.025	U	0.025	0.060	U	0.060	0.063	U	0.28	0.467		0.17	0.054	U	0.21	0.555		0.17	3.6		1.7	56.8		0.06
A4	J12WM0	7/12/06	0.133		0.037	0.054	U	0.054	0.080	U	0.080	0.092	U	0.28	0.517		0.17	0.027	U	0.21	0.495		0.17	3.1		1.7	62.0		0.06
B5	J12WL9	7/12/06	0.065	U	0.065	0.028	U	0.028	0.063	U	0.063	0.032	U	0.25	0.552		0.16	0.026	U	0.20	0.594		0.16	3.5		1.7	55.4		0.06
B6	J12WL8	7/12/06	0.372		0.11	0.089	U	0.089	0.19	U	0.19	0.210	U	0.27	0.569		0.16	0.051	U	0.20	0.485		0.16	3.2		1.7	56.9		0.06
B7	J12WL7	7/12/06	0.478		0.076	0.20	U	0.20	0.19	U	0.19	0.215	U	0.22	0.525		0.18	0	U	0.22	0.501		0.18	3.7		1.7	59.7		0.06
B8	J12WL6	7/12/06	0.069		0.043	0.164		0.039	0.143		0.090	0.140	U	0.30	0.503		0.20	0	U	0.25	0.715		0.20	3.3		1.7	54.2		0.06
C9	J12WK7	7/11/06	0.163		0.019	0.017	U	0.017	0.065	U	0.065	0.412		0.38	0.548		0.031	0.039		0.030	0.565		0.025	2.8		0.58	71.5		0.02
C10	J12WK9	7/11/06	0.045		0.038	0.032	U	0.032	0.071	U	0.071	0.049	U	0.42	0.509		0.023	0.014	U	0.027	0.498		0.023	3.8		0.59	59.8		0.02
C1	J12WK8	7/11/06	0.025		0.016	0.015	U	0.015	0.035	U	0.035	-0.084	U	0.33	0.567		0.043	0.042		0.036	0.556		0.037	2.9		0.59	75.4		0.02
C2	J12WL2	7/11/06	0.025	U	0.025	0.025	U	0.025	0.059	U	0.059	-0.083	U	0.27	0.523		0.028	0.027	U	0.034	0.549		0.035	4.8		0.59	54.8		0.02
D3	J12WL3	7/11/06	0.068	U	0.068	0.071	U	0.071	0.16	U	0.16	0.057	U	0.32	0.586		0.030	0.019	U	0.052	0.531		0.037	3.0		0.59	44.8		0.02
D4	J12WL4	7/11/06	0.045	U	0.045	0.044	U	0.044	0.12	U	0.12	-0.494	U	1.2	0.676		0.031	0.047		0.030	0.627		0.025	2.8		0.58	52.7		0.02
Duplicate of J12WL4	J12WL5	7/11/06	0.023	U	0.023	0.025	U	0.025	0.059	U	0.059	0.106	U	0.30	0.609		0.037	0.025	U	0.028	0.525		0.023	3.0		0.59	59.5		0.02
D5	J12WL0	7/11/06	0.010	U	0.010	0.010	U	0.010	0.025	U	0.025	0.082	U	0.35	0.560		0.035	0.031	U	0.034	0.556		0.028	3.2		0.59	49.7		0.02
D6	J12WL1	7/11/06	0.036	U	0.036	0.037	U	0.037	0.098	U	0.098	-0.117	U	0.29	0.624		0.044	0.065		0.033	0.552		0.034	4.1		0.58	50.6		0.02

22 Statistical Computation Input Data

Sample Area	Sample Number	Sample Date	Cesium-137 pCi/g	Cobalt-60 pCi/g	Europium-152 pCi/g	Strontium-90 pCi/g	Uranium-233/234 pCi/g	Uranium-235 pCi/g	Uranium-238 pCi/g	Arsenic mg/kg	Barium mg/kg
A1	J12WN2	7/20/2006	0.155	0.027	0.040	0.015	0.540	0.017	0.508	3.1	57.0
A2	J12WM1	7/12/2006	0.065	0.038	0.085	0.071	0.491	0.054	0.714	3.7	53.7
A3	J12WM2	7/12/2006	0.012	0.013	0.030	0.063	0.467	0.054	0.555	3.6	56.8
A4	J12WM0	7/12/2006	0.133	0.027	0.040	0.092	0.517	0.027	0.495	3.1	62.0
B5	J12WL9	7/12/2006	0.033	0.014	0.032	0.032	0.552	0.026	0.594	3.5	55.4
B6	J12WL8	7/12/2006	0.372	0.045	0.095	0.210	0.569	0.051	0.485	3.2	56.9
B7	J12WL7	7/12/2006	0.478	0.10	0.095	0.215	0.525	0	0.501	3.7	59.7
B8	J12WL6	7/12/2006	0.069	0.164	0.143	0.140	0.503	0	0.715	3.3	54.2
C9	J12WK7	7/11/2006	0.163	0.0085	0.033	0.412	0.548	0.039	0.565	2.8	71.5
C10	J12WK9	7/11/2006	0.045	0.016	0.036	0.049	0.509	0.014	0.498	3.8	59.8
C1	J12WK8	7/11/2006	0.025	0.0075	0.018	-0.084	0.567	0.042	0.556	2.9	75.4
C2	J12WL2	7/11/2006	0.013	0.013	0.030	-0.083	0.523	0.027	0.549	4.8	54.8
D3	J12WL3	7/11/2006	0.034	0.036	0.080	0.057	0.586	0.019	0.531	3.0	44.8
D4	J12WL4/J12WL5	7/11/2006	0.017	0.017	0.045	-0.194	0.643	0.036	0.576	2.9	56.1
D5	J12WL0	7/11/2006	0.0050	0.0050	0.013	0.082	0.560	0.031	0.556	3.2	49.7
D6	J12WL1	7/11/2006	0.018	0.019	0.049	-0.117	0.624	0.065	0.552	4.1	50.6

41 Statistical Computations

42		Cesium-137			Cobalt-60			Europium-152			Strontium-90			Uranium-233/234			Uranium-235			Uranium-238			Arsenic			Barium		
	95% UCL value based on	Radionuclide data set. Use nonparametric z-stat.			Radionuclide data set. Use nonparametric z-stat.			Radionuclide data set. Use nonparametric z-stat.			Radionuclide data set. Use nonparametric z-stat.			Radionuclide data set. Use nonparametric z-stat.			Radionuclide data set. Use nonparametric z-stat.			Radionuclide data set. Use nonparametric z-stat.			Large data set (n ≥ 10), use MTCASat lognormal distribution.			Large data set (n ≥ 10), use MTCASat lognormal distribution.		
43																												
44	N	16			16			16			16			16			16			16			16			16		
45	% < Detection limit	50%			94%			94%			94%			94%			75%			0%			0%			0%		
46	Mean	0.102			0.03			0.054			0.060			0.545			0.031			0.559			3.4			57.4		
47	Standard deviation	0.137			0.04			0.036			0.146			0.047			0.019			0.068			0.5			7.6		
48	95% UCL on mean	0.159			0.05			0.068			0.120			0.564			0.039			0.587			3.7			60.8		
49	Maximum detected value	0.478			0.16			0.143			0.412			0.676			0.065			0.715			4.8			75.4		
50	Background	NA			NA			NA			NA			1.1			0.11			1.1			6.5			132		
51	Statistical value above background*	0.159			0.05			0.068			0.120			0 (< BG)			0 (< BG)			0 (< BG)			3.7			60.8		
52	Most Stringent Cleanup Limit for nonradionuclide and RAG type																					Direct Exposure/GW & River Protection			BG/GW Protection			
53	WAC 173-340 3-PART TEST																					20			132			
54	95% UCL > Cleanup Limit?																					NA			NA			
55	> 10% above Cleanup Limit?																					NA			NA			
56	Any sample > 2X Cleanup Limit?																					NA			NA			
57	WAC 173-340 Compliance? Yes																					Because all values are below background (6.5 mg/kg), the WAC 173-340 3-part test is not required.			Because all values are below background (132 mg/kg), the WAC 173-340 3-part test is not required.			

58 *Background is not subtracted for nonradionuclides; consideration of background is given by direct comparison against background values.

59 BG = background

C = method blank contamination

MDA = minimum detectable activity

PQL = practical quantitation limit

RAG = remedial action goal

UCL = upper confidence limit

60 BCL = below cleanup levels

GW = groundwater

NA = not applicable

Q = qualifier

U = undetected

WAC = Washington Administrative Code

CALCULATION SHEET

Washington Closure Hanford

Originator J. M. Capron
Project 100-B/C Field Remediation

Date 10/03/07
Subject 118-B-1 Burial Ground Cleanup Verification 95% UCL Calculations

Checked T. M. Blakley
Date 10/04/07

Calc. No. 0100B-CA-V0299
Job No. 14655

Rev. No. 1
Sheet No. 31 of 61

1 118-B-1 BCL Material Statistical Calculations (continued)

2 Verification Data

Sample Area	Sample Number	Sample Date	Beryllium			Boron			Chromium			Cobalt			Copper			Hexavalent Chromium			Lead			Manganese		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
A1	J12WN2	7/20/06	0.47		0.06	2.0		0.68	6.6		0.37	9.5		0.40	15.9		0.34	0.21	J	0.20	4.9		0.88	359		0.08
A2	J12WM1	7/12/06	0.59		0.06	1.6		0.68	6.3		0.37	8.2		0.40	16.2		0.34	0.22		0.20	4.5		0.88	337		0.08
A3	J12WM2	7/12/06	0.58		0.06	1.4		0.68	7.2		0.37	8.4		0.40	16.0		0.34	0.28		0.20	4.5		0.88	346		0.09
A4	J12WM0	7/12/06	0.62		0.06	2.9		0.68	7.2		0.37	8.1		0.40	16.0		0.34	0.20	U	0.20	4.0		0.88	332		0.09
B5	J12WL9	7/12/06	0.49		0.06	1.3		0.68	8.3		0.37	9.2		0.40	16.2		0.34	0.28		0.20	4.4		0.88	359		0.09
B6	J12WL8	7/12/06	0.47		0.06	1.5		0.68	7.3		0.37	8.0		0.40	15.4		0.34	0.21		0.20	4.0		0.88	313		0.09
B7	J12WL7	7/12/06	0.46		0.06	1.5		0.68	8.7		0.37	7.9		0.40	14.6		0.34	0.20	U	0.20	4.4		0.88	329		0.08
B8	J12WL6	7/12/06	0.43		0.06	1.7		0.68	7.3		0.37	7.3		0.40	13.8		0.34	0.28		0.20	4.1		0.88	304		0.08
C9	J12WK7	7/11/06	0.58		0.02	2.8		0.23	9.5		0.12	7.9		0.13	15.4		0.11	0.20	U	0.20	5.2		0.30	327		0.03
C10	J12WK9	7/11/06	0.60		0.02	1.5		0.23	7.3		0.13	9.8		0.14	17.2		0.12	0.20	U	0.20	5.5		0.30	382		0.03
C1	J12WK8	7/11/06	0.57		0.02	1.5		0.23	7.5		0.13	8.6		0.14	14.4		0.12	0.20	U	0.20	4.5		0.30	407		0.03
C2	J12WL2	7/11/06	0.58		0.02	1.2		0.23	8.0		0.12	10.8		0.13	16.9		0.12	0.31		0.20	6.5		0.30	418		0.03
D3	J12WL3	7/11/06	0.50		0.02	1.2		0.23	7.4		0.13	9.4		0.14	14.2		0.12	0.26		0.20	4.6		0.30	346		0.03
D4	J12WL4	7/11/06	0.44		0.02	1.3		0.23	8.8		0.12	7.9		0.13	12.9		0.11	0.36		0.20	4.9		0.30	324		0.03
Duplicate of J12WL4	J12WL5	7/11/06	0.45		0.02	1.9		0.23	7.3		0.13	7.6		0.14	12.9		0.12	0.26		0.20	5.0		0.30	348		0.03
D5	J12WL0	7/11/06	0.50		0.02	1.1		0.23	7.1		0.13	8.8		0.13	14.3		0.12	0.27		0.20	4.9		0.30	339		0.03
D6	J12WL1	7/11/06	0.58		0.02	1.3		0.23	9.3		0.12	10.0		0.13	16.2		0.11	0.20	U	0.20	6.2		0.30	384		0.03

22 Statistical Computation Input Data

Sample Area	Sample Number	Sample Date	Beryllium mg/kg	Boron mg/kg	Chromium mg/kg	Cobalt mg/kg	Copper mg/kg	Hexavalent Chromium mg/kg	Lead mg/kg	Manganese mg/kg
A1	J12WN2	7/20/2006	0.47	2.0	6.6	9.5	15.9	0.21	4.9	359
A2	J12WM1	7/12/2006	0.59	1.6	6.3	8.2	16.2	0.22	4.5	337
A3	J12WM2	7/12/2006	0.58	1.4	7.2	8.4	16.0	0.28	4.5	346
A4	J12WM0	7/12/2006	0.62	2.9	7.2	8.1	16.0	0.10	4.0	332
B5	J12WL9	7/12/2006	0.49	1.3	8.3	9.2	16.2	0.28	4.4	359
B6	J12WL8	7/12/2006	0.47	1.5	7.3	8.0	15.4	0.21	4.0	313
B7	J12WL7	7/12/2006	0.46	1.5	8.7	7.9	14.6	0.10	4.4	329
B8	J12WL6	7/12/2006	0.43	1.7	7.3	7.3	13.8	0.28	4.1	304
C9	J12WK7	7/11/2006	0.58	2.8	9.5	7.9	15.4	0.10	5.2	327
C10	J12WK9	7/11/2006	0.60	1.5	7.3	9.8	17.2	0.10	5.5	382
C1	J12WK8	7/11/2006	0.57	1.5	7.5	8.6	14.4	0.10	4.5	407
C2	J12WL2	7/11/2006	0.58	1.2	8.0	10.8	16.9	0.31	6.5	418
D3	J12WL3	7/11/2006	0.50	1.2	7.4	9.4	14.2	0.26	4.6	346
D4	J12WL4/J12WL5	7/11/2006	0.45	1.6	8.1	7.8	12.9	0.31	5.0	336
D5	J12WL0	7/11/2006	0.50	1.1	7.1	8.8	14.3	0.27	4.9	339
D6	J12WL1	7/11/2006	0.58	1.3	9.3	10.0	16.2	0.10	6.2	384

41 Statistical Computations

	Beryllium	Boron	Chromium	Cobalt	Copper	Hexavalent Chromium	Lead	Manganese	
95% UCL value based on	Large data set (n ≥ 10), use MTCASat lognormal distribution.	Large data set (n ≥ 10), lognormal and normal distribution rejected, use z-statistic.	Large data set (n ≥ 10), use MTCASat lognormal distribution.	Large data set (n ≥ 10), use MTCASat lognormal distribution.	Large data set (n ≥ 10), use MTCASat lognormal distribution.	Large data set (n ≥ 10), lognormal and normal distribution rejected, use z-statistic.	Large data set (n ≥ 10), use MTCASat lognormal distribution.	Large data set (n ≥ 10), use MTCASat lognormal distribution.	
N	16	16	16	16	16	16	16	16	
% < Detection limit	0%	0%	0%	0%	0%	38%	0%	0%	
Mean	0.53	1.6	7.7	8.7	15.4	0.20	4.8	351	
Standard deviation	0.06	0.5	0.9	1.0	1.2	0.09	0.7	32	
95% UCL on mean	0.56	1.8	8.1	9.2	15.9	0.24	5.1	366	
Maximum detected value	0.62	2.9	9.5	10.8	17.2	0.36	6.5	418	
Statistical value	0.56	1.8	8.1	9.2	15.9	0.24	5.1	366	
Most Stringent Cleanup Limit for nonradionuclide and RAG type	BG/GW & River Protection 1.51	GW Protection 320	BG/GW & River Protection 18.5	GW Protection 32	BG/River Protection 22.0	River Protection 2	BG/GW & River Protection 10.2	BG/GW & River Protection 512	
WAC 173-340 3-PART TEST									
95% UCL > Cleanup Limit?	NA	NO	NA	NA	NA	NO	NA	NA	
> 10% above Cleanup Limit?	NA	NO	NA	NA	NA	NO	NA	NA	
Any sample > 2X Cleanup Limit?	NA	NO	NA	NA	NA	NO	NA	NA	
WAC 173-340 Compliance?	Yes	Because all values are below background (1.51 mg/kg), the WAC 173-340 3-part test is not required.	The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.	Because all values are below background (18.5 mg/kg), the WAC 173-340 3-part test is not required.	Because all values are below background (15.7 mg/kg), the WAC 173-340 3-part test is not required.	Because all values are below background (22.0 mg/kg), the WAC 173-340 3-part test is not required.	The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.	Because all values are below background (10.2 mg/kg), the WAC 173-340 3-part test is not required.	Because all values are below background (512 mg/kg), the WAC 173-340 3-part test is not required.

57 BCL = below cleanup levels

58 BG = background

GW = groundwater

J = estimate

NA = not applicable

PQL = practical quantitation limit

Q = qualifier

RAG = remedial action goal

U = undetected

UCL = upper confidence limit

WAC = Washington Administrative Code

CALCULATION SHEET

Washington Closure Hanford

Originator J. M. Capron
Project 100-B/C Field Remediation

Date 10/03/07
Subject 118-B-1 Burial Ground Cleanup Verification 95% UCL Calculations

Checked T. M. Blakley
Date 10/04/07

Calc. No. 0100B-CA-V0299
Job No. 14655

Rev. No. 1
Sheet No. 32 of 61

1 118-B-1 BCL Material Statistical Calculations (continued)

2 Verification Data

Sample Area	Sample Number	Sample Date	Molybdenum			Nickel			Vanadium			Zinc			bis(2-Ethylhexyl)phthalate			Di-n-butylphthalate			Carbon Tetrachloride			Methylene Chloride		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
A1	J12WN2	7/20/06	0.82	U	0.82	10.8		0.68	52.7		0.25	43.8		0.45	0.051	J	0.34	0.042	JB	0.34	0.005	U	0.005	0.013		0.005
A2	J12WM1	7/12/06	0.82	U	0.82	10.4		0.68	47.8		0.25	39.6		0.45	0.023	J	0.34	0.34	U	0.34	0.002	J	0.005	0.006	B	0.005
A3	J12WM2	7/12/06	0.82	U	0.82	10.0		0.68	44.8		0.26	38.3		0.46	0.020	J	0.34	0.027	J	0.34	0.004	J	0.005	0.007	B	0.005
A4	J12WM0	7/12/06	0.82	U	0.82	9.3		0.68	47.5		0.26	39.0		0.45	0.023	J	0.34	0.33	U	0.33	0.002	J	0.005	0.009	B	0.005
B5	J12WL9	7/12/06	0.83	U	0.83	11.1		0.68	54.2		0.26	44.2		0.46	0.022	J	0.34	0.34	U	0.34	0.011	J	0.005	0.005	U	0.005
B6	J12WL8	7/12/06	0.82	U	0.82	9.8		0.68	47.1		0.26	40.8		0.45	0.33	U	0.33	0.33	U	0.33	0.032	J	0.005	0.005		0.005
B7	J12WL7	7/12/06	0.82	U	0.82	11.4		0.68	42.5		0.25	37.5		0.45	0.33	U	0.33	0.33	U	0.33	0.013	J	0.005	0.002	J	0.005
B8	J12WL6	7/12/06	0.82	U	0.82	9.2		0.68	37.3		0.25	34.5		0.45	0.34	U	0.34	0.34	U	0.34	0.013	J	0.005	0.005	U	0.005
C9	J12WK7	7/11/06	0.35		0.28	11.0		0.23	46.3		0.09	38.6		0.15	0.021	JB	0.33	0.023	J	0.33	0.005	U	0.005	0.014	BJ	0.005
C10	J12WK9	7/11/06	0.49		0.28	11.3		0.23	46.3		0.09	41.9		0.16	0.036	JB	0.34	0.023	J	0.34	0.005	U	0.005	0.008	BJ	0.005
C1	J12WK8	7/11/06	0.39		0.28	10.1		0.23	43.9		0.09	38.6		0.15	0.029	JB	0.34	0.049	J	0.34	0.005	U	0.005	0.005	BJ	0.005
C2	J12WL2	7/11/06	0.50		0.28	12.5		0.23	49.8		0.09	44.4		0.15	0.023	JB	0.34	0.34	U	0.34	0.011		0.005	0.018	BJ	0.005
D3	J12WL3	7/11/06	0.42		0.28	11.9		0.23	49.6		0.09	40.0		0.15	0.029	JB	0.34	0.018	J	0.34	0.006		0.005	0.015	BJ	0.005
D4	J12WL4	7/11/06	0.39		0.28	9.6		0.23	39.7		0.09	35.3		0.15	0.020	JB	0.33	0.33	U	0.33	0.006		0.005	0.012	BJ	0.005
Duplicate of J12WL4	J12WL5	7/11/06	0.35		0.28	10.3		0.23	36.5		0.09	34.2		0.15	0.027	JB	0.33	0.045	J	0.33	0.005	U	0.005	0.011	BJ	0.005
D5	J12WL0	7/11/06	0.36		0.28	10.2		0.23	41.5		0.09	36.8		0.15	0.021	JB	0.33	0.33	U	0.33	0.005	U	0.005	0.006	BJ	0.005
D6	J12WL1	7/11/06	0.46		0.28	12.1		0.23	53.0		0.09	45.0		0.15	0.029	JB	0.33	0.036	J	0.33	0.004	J	0.005	0.015	BJ	0.005

22 Statistical Computation Input Data

Sample Area	Sample Number	Sample Date	Molybdenum mg/kg	Nickel mg/kg	Vanadium mg/kg	Zinc mg/kg	bis(2-Ethylhexyl)phthalate mg/kg	Di-n-butylphthalate mg/kg	Carbon Tetrachloride mg/kg	Methylene Chloride mg/kg
A1	J12WN2	7/20/2006	0.41	10.8	52.7	43.8	0.051	0.042	0.003	0.013
A2	J12WM1	7/12/2006	0.41	10.4	47.8	39.6	0.023	0.17	0.002	0.006
A3	J12WM2	7/12/2006	0.41	10.0	44.8	38.3	0.020	0.027	0.004	0.007
A4	J12WM0	7/12/2006	0.41	9.3	47.5	39.0	0.023	0.17	0.002	0.009
B5	J12WL9	7/12/2006	0.42	11.1	54.2	44.2	0.022	0.17	0.011	0.003
B6	J12WL8	7/12/2006	0.41	9.8	47.1	40.8	0.17	0.17	0.032	0.005
B7	J12WL7	7/12/2006	0.41	11.4	42.5	37.5	0.17	0.17	0.013	0.002
B8	J12WL6	7/12/2006	0.41	9.2	37.3	34.5	0.17	0.17	0.013	0.003
C9	J12WK7	7/11/2006	0.35	11.0	46.3	38.6	0.021	0.023	0.003	0.014
C10	J12WK9	7/11/2006	0.49	11.3	46.3	41.9	0.036	0.023	0.003	0.008
C1	J12WK8	7/11/2006	0.39	10.1	43.9	38.6	0.029	0.049	0.003	0.005
C2	J12WL2	7/11/2006	0.50	12.5	49.8	44.4	0.023	0.17	0.011	0.018
D3	J12WL3	7/11/2006	0.42	11.9	49.6	40.0	0.029	0.018	0.006	0.015
D4	J12WL4/J12WL5	7/11/2006	0.37	10.0	38.1	34.8	0.024	0.11	0.004	0.012
D5	J12WL0	7/11/2006	0.36	10.2	41.5	36.8	0.021	0.17	0.003	0.006
D6	J12WL1	7/11/2006	0.46	12.1	53.0	45.0	0.029	0.036	0.004	0.015

41 Statistical Computations

	Molybdenum	Nickel	Vanadium	Zinc	bis(2-Ethylhexyl)phthalate	Di-n-butylphthalate	Carbon Tetrachloride	Methylene Chloride
95% UCL value based on	Large data set (n ≥ 10), lognormal and normal distribution rejected, use z-statistic.	Large data set (n ≥ 10), use MTCASat lognormal distribution.	Large data set (n ≥ 10), use MTCASat lognormal distribution.	Large data set (n ≥ 10), use MTCASat lognormal distribution.	Large data set (n ≥ 10), lognormal and normal distribution rejected, use z-statistic.	Large data set (n ≥ 10), lognormal and normal distribution rejected, use z-statistic.	Large data set (n ≥ 10), lognormal and normal distribution rejected, use z-statistic.	Large data set (n ≥ 10), use MTCASat lognormal distribution.
N	16	16	16	16	16	16	16	16
% < Detection limit	50%	0%	0%	0%	19%	50%	31%	13%
Mean	0.41	10.7	46.4	39.9	0.05	0.10	0.007	0.009
Standard deviation	0.04	1.0	5.0	3.3	0.06	0.07	0.008	0.005
95% UCL on mean	0.43	11.1	48.8	41.4	0.08	0.13	0.011	0.014
Maximum detected value	0.50	12.5	54.2	45.0	0.051	0.049	0.032	0.018
Statistical value	0.43	11.1	48.8	41.4	0.08	0.13	0.011	0.014
Most Stringent Cleanup Limit for nonradionuclide and RAG type	8 GW Protection	19.1 BG/GW Protection	85.1 BG/GW Protection	67.8 BG/River Protection	0.36 River Protection	160 GW Protection	0.034 GW Protection	0.5 GW Protection
WAC 173-340 3-PART TEST								
95% UCL > Cleanup Limit?	NO	NA	NA	NA	NO	NO	NO	NO
> 10% above Cleanup Limit?	NO	NA	NA	NA	NO	NO	NO	NO
Any sample > 2X Cleanup Limit?	NO	NA	NA	NA	NO	NO	NO	NO
WAC 173-340 Compliance? Yes	The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.	Because all values are below background (19.1 mg/kg), the WAC 173-340 3-part test is not required.	Because all values are below background (85.1 mg/kg), the WAC 173-340 3-part test is not required.	Because all values are below background (67.8 mg/kg), the WAC 173-340 3-part test is not required.	The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.	The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.	The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.	The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.

57 B = method blank contamination
58 BCL = below cleanup levels
59 BG = background

GW = groundwater
J = estimate
NA = not applicable

PQL = practical quantitation limit
Q = qualifier
RAG = remedial action goal

U = undetected
UCL = upper confidence limit
WAC = Washington Administrative Code

CALCULATION SHEET

Washington Closure Hanford

Originator J. M. Capron
Project 100-B/C Field Remediation

Date 02/07/07
Subject 118-B-1 Burial Ground Cleanup Verification 95% UCL Calculations

Checked T. M. Blakley
Date 2/20/07

Calc. No. 0100B-CA-V0299
Job No. 14655

Rev. No. 0
Sheet No. 33 of 61

1 118-B-1 Staging Pile Area Statistical Calculations

2 Verification Data

Sample Area	Sample Number	Sample Date	Americium-241			Carbon-14			Cesium-137			Cobalt-60			Europium-152			Nickel-63			Plutonium-239/240			Strontium-90		
			pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA
A1	J13HY3	10/12/06	0.039	U	0.30	0.350	U	2.7	0.217		0.059	0.056	U	0.056	0.16	U	0.16	-0.455	U	3.3	0	U	0.55	-0.035	U	0.24
A2	J13HY4	10/12/06	0	U	0.23	0.017	U	2.5	0.037		0.034	0.030	U	0.030	0.075	U	0.075	-0.038	U	3.4	0.109	U	0.42	-0.053	U	0.26
A3	J13HY5	10/12/06	-0.055	U	0.21	-0.453	U	2.8	0.158		0.058	0.060	U	0.060	0.17	U	0.17	0.392	U	3.5	0	U	0.41	0.096	U	0.26
A4	J13HY6	10/12/06	0.031	U	0.24	-0.762	U	2.6	0.233		0.026	0.025	U	0.025	0.062	U	0.062	-0.597	U	3.5	0.092	U	0.35	0.227		0.22
B5	J13HY7	10/12/06	0.047	U	0.23	-0.278	U	2.6	0.222		0.057	0.064	U	0.064	0.17	U	0.17	0.952	U	3.5	0.044	U	0.33	0.092	U	0.24
Duplicate of J13HY7	J13J09	10/12/06	0.057	U	0.27	-0.403	U	2.7	0.109		0.032	0.033	U	0.033	0.073	U	0.073	0.723	U	3.5	0	U	0.34	0.002	U	0.24
	B6	J13HY8	10/17/06	-0.022	U	0.17	-0.733	U	2.8	0.079		0.026	0.037	U	0.037	0.081	U	0.081	2.54		2.4	0.044	U	0.33	0.105	U	0.29
B7	J13HY9	10/17/06	0.154	U	0.20	-0.077	U	2.8	0.043		0.031	0.027	U	0.027	0.065	U	0.065	0.863	U	2.5	0.041	U	0.31	-0.028	U	0.18
B8	J13J00	10/17/06	0.098	U	0.19	-1.02	U	2.6	0.084	U	0.084	0.075	U	0.075	0.21	U	0.21	1.66	U	2.4	0	U	0.35	-0.061	U	0.17
C9	J13J01	10/17/06	0	U	0.20	-1.15	U	2.6	0.223		0.040	0.040	U	0.040	0.094	U	0.094	0.500	U	2.4	0.314	U	0.40	0.016	U	0.17
C10	J13J02	10/18/06	0.103	U	0.16	-1.02	U	2.0	0.112		0.073	0.071	U	0.071	0.19	U	0.19	-0.966	U	3.6	0.130	U	0.33	0.028	U	0.26
C1	J13J03	10/18/06	0	U	0.16	0.221	U	2.2	0.066	U	0.066	0.042	U	0.042	0.172		0.070	0.750	U	3.5	0.088	U	0.34	0.166	U	0.17
C2	J13J04	10/18/06	0.126		0.040	-0.775	U	1.9	2.39		0.060	0.073	U	0.073	0.862		0.13	24.6		3.8	0.289		0.25	0.934		0.18
D3	J13J05	10/18/06	-0.011	U	0.045	-0.038	U	2.1	0.057	U	0.057	0.030	U	0.030	0.116		0.060	2.81	U	3.9	0.186	U	0.28	0.216		0.20
D4	J13J06	10/19/06	-0.004	U	0.057	0.645	U	2.1	0.662		0.013	0.013	U	0.013	0.076	U	0.076	1.66	U	3.8	0.028	U	0.22	0.288		0.18
D5	J13J07	10/23/06	0.036	U	0.14	-0.943	U	2.9	0.184		0.020	0.038		0.029	0.063	U	0.063	3.60		2.5	-0.012	U	0.067	0.139	U	0.25
D6	J13J08	10/23/06	0.046	U	0.18	11.3		2.6	0.669		0.056	0.060	U	0.060	0.17	U	0.17	2.98	U	3.2	0	U	0.33	0.131	U	0.31

22 Statistical Computation Input Data

Sample Area	Sample Number	Sample Date	Americium-241			Carbon-14			Cesium-137			Cobalt-60			Europium-152			Nickel-63			Plutonium-239/240			Strontium-90		
			pCi/g			pCi/g			pCi/g			pCi/g			pCi/g			pCi/g			pCi/g			pCi/g		
A1	J13HY3	10/12/2006	0.039			0.350			0.217			0.028			0.080			-0.455			0			-0.035		
A2	J13HY4	10/12/2006	0			0.017			0.037			0.015			0.038			-0.038			0.109			-0.053		
A3	J13HY5	10/12/2006	-0.055			-0.453			0.158			0.030			0.085			0.392			0			0.096		
A4	J13HY6	10/12/2006	0.031			-0.762			0.233			0.013			0.031			-0.597			0.092			0.227		
B5	J13HY7/J13J09	10/12/2006	0.052			-0.341			0.166			0.024			0.061			0.838			0.022			0.047		
B6	J13HY8	10/17/2006	-0.022			-0.733			0.079			0.019			0.041			2.54			0.044			0.105		
B7	J13HY9	10/17/2006	0.154			-0.077			0.043			0.014			0.033			0.863			0.041			-0.028		
B8	J13J00	10/17/2006	0.098			-1.02			0.042			0.038			0.11			1.66			0			-0.061		
C9	J13J01	10/17/2006	0			-1.15			0.223			0.020			0.047			0.500			0.314			0.016		
C10	J13J02	10/18/2006	0.103			-1.02			0.112			0.036			0.095			-0.966			0.130			0.028		
C1	J13J03	10/18/2006	0			0.221			0.033			0.021			0.172			0.750			0.088			0.166		
C2	J13J04	10/18/2006	0.126			-0.775			2.39			0.037			0.862			24.6			0.289			0.934		
D3	J13J05	10/18/2006	-0.011			-0.038			0.029			0.015			0.116			2.81			0.186			0.216		
D4	J13J06	10/19/2006	-0.004			0.645			0.662			0.0065			0.038			1.66			0.028			0.288		
D5	J13J07	10/23/2006	0.036			-0.943			0.184			0.038			0.032			3.60			-0.012			0.139		
D6	J13J08	10/23/2006	0.046			11.3			0.669			0.030			0.085			2.98			0			0.131		

41 Statistical Computations

	Americium-241	Carbon-14	Cesium-137	Cobalt-60	Europium-152	Nickel-63	Plutonium-239/240	Strontium-90
95% UCL value based on	Radionuclide data set. Use nonparametric z-stat.	Radionuclide data set. Use nonparametric z-stat.	Radionuclide data set. Use nonparametric z-stat.	Radionuclide data set. Use nonparametric z-stat.	Radionuclide data set. Use nonparametric z-stat.	Radionuclide data set. Use nonparametric z-stat.	Radionuclide data set. Use nonparametric z-stat.	Radionuclide data set. Use nonparametric z-stat.
N	16	16	16	16	16	16	16	16
% < Detection limit	94%	94%	19%	94%	81%	81%	94%	75%
Mean	0.037	0.3	0.33	0.024	0.12	2.57	0.083	0.139
Standard deviation	0.058	3.0	0.58	0.010	0.20	6.03	0.102	0.237
95% UCL on mean	0.061	1.6	0.57	0.028	0.20	5.05	0.125	0.236
Maximum detected value	0.126	11.3	2.39	0.038	0.862	24.6	0.289	0.934
Background	NA	NA	NA	NA	NA	NA	NA	NA
Statistical value above background	0.061	1.6	0.57	0.028	0.20	5.05	0.125	0.236

52 MDA = minimum detectable activity

53 NA = not applicable

54 Q = qualifier

55 U = undetected

56 UCL = upper confidence limit

CALCULATION SHEET

Washington Closure Hanford

Originator J. M. Capron
Project 100-B/C Field Remediation

Date 02/07/07
Subject 118-B-1 Burial Ground Cleanup Verification 95% UCL Calculations

Checked T. M. Blakley
Date 2/20/07

Calc. No. 0100B-CA-V0299
Job No. 14655

Rev. No. 0
Sheet No. 34 of 61

1 118-B-1 Staging Pile Area Statistical Calculations (continued)

2 Verification Data

Sample Area	Sample Number	Sample Date	Tritium			Uranium-233/234			Uranium-235			Uranium-238			Arsenic			Barium			Beryllium			Boron		
			pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
A1	J13HY3	10/12/06	2.04	U	2.7	0.466		0.050	0.038	U	0.042	0.575		0.035	2.7		1.1	80.5		0.06	0.31		0.03	2.6		1.1
A2	J13HY4	10/12/06	1.54	U	2.6	0.626		0.046	0.047		0.045	0.559		0.053	2.7		1.0	74.6		0.06	0.31		0.03	2.0		1.0
A3	J13HY5	10/12/06	1.23	U	2.9	0.502		0.047	0.024	U	0.046	0.606		0.038	2.2		1.0	73.7		0.06	0.31		0.03	1.8		1.0
A4	J13HY6	10/12/06	7.32		2.7	0.470		0.052	0.033	U	0.051	0.497		0.042	2.0		1.1	74.6		0.06	0.31		0.03	2.2		1.1
B5	J13HY7	10/12/06	3.09		2.6	0.600		0.038	0.079		0.032	0.534		0.038	2.3		1.0	63.8		0.06	0.26		0.03	1.5		1.0
Duplicate of J13HY7	J13J09	10/12/06	6.18		2.7	0.553		0.029	0.032	U	0.044	0.523		0.029	2.4		1.0	67.8		0.06	0.26		0.03	1.8		1.0
B6	J13HY8	10/17/06	1.62	U	2.8	0.413		0.19	0	U	0.22	0.632		0.19	2.3		0.37	65.2		0.02	0.42	C	0.01	1.3		0.37
B7	J13HY9	10/17/06	2.72	U	2.9	0.551		0.19	0.030	U	0.23	0.426		0.19	2.1		0.37	65.0		0.02	0.45	C	0.01	1.9		0.37
B8	J13J00	10/17/06	6.14		2.7	0.581		0.21	0.033	U	0.26	0.581		0.21	2.4		0.37	83.4		0.02	0.38	C	0.01	3.0		0.37
C9	J13J01	10/17/06	17.4		2.7	0.831		0.21	0.067	U	0.26	0.471		0.21	2.3		0.39	66.3		0.02	0.37	C	0.01	2.1		0.39
C10	J13J02	10/18/06	1.09	U	2.5	0.410		0.21	0.066	U	0.25	0.492		0.21	1.6		1.1	60.7		0.06	0.30	C	0.03	1.8		1.1
C1	J13J03*	10/18/06	67.8		2.1	0.657		0.23	0	U	0.28	0.448		0.23	1.6		1.1	57.5		0.06	0.39	C	0.03	1.6		1.1
C2	J13J04	10/18/06	4.84		2.5	0.643		0.22	0	U	0.27	0.409		0.22	1.1	U	1.1	33.4		0.06	0.38	C	0.03	1.1	U	1.1
D3	J13J05	10/18/06	4.92		2.8	0.683		0.22	0	U	0.26	0.740		0.22	1.1	U	1.1	67.5		0.06	0.41	C	0.03	1.1	U	1.1
D4	J13J06	10/19/06	0.021	UJ	2.6	0.714		0.12	0.037	U	0.14	0.410		0.12	2.1		1.1	62.9		0.06	0.13	C	0.03	1.1	U	1.1
D5	J13J07	10/23/06	0.990	U	2.9	0.581		0.10	0.065	U	0.13	0.473		0.10	1.8		1.1	85.0		0.06	0.29	C	0.03	1.1	U	1.1
D6	J13J08	10/23/06	1.27	U	2.6	0.541		0.040	0.018	U	0.035	0.553		0.037	2.5		1.1	56.0		0.06	0.30	C	0.03	1.7		1.1

22 Statistical Computation Input Data

Sample Area	Sample Number	Sample Date	Tritium pCi/g	Uranium-233/234 pCi/g	Uranium-235 pCi/g	Uranium-238 pCi/g	Arsenic mg/kg	Barium mg/kg	Beryllium mg/kg	Boron mg/kg
A1	J13HY3	10/12/2006	2.04	0.466	0.038	0.575	2.7	80.5	0.31	2.6
A2	J13HY4	10/12/2006	1.54	0.626	0.047	0.559	2.7	74.6	0.31	2.0
A3	J13HY5	10/12/2006	1.23	0.502	0.024	0.606	2.2	73.7	0.31	1.8
A4	J13HY6	10/12/2006	7.32	0.470	0.033	0.497	2.0	74.6	0.31	2.2
B5	J13HY7/J13J09	10/12/2006	4.64	0.577	0.056	0.529	2.4	65.8	0.26	1.7
B6	J13HY8	10/17/2006	1.62	0.413	0	0.632	2.3	65.2	0.42	1.3
B7	J13HY9	10/17/2006	2.72	0.551	0.030	0.426	2.1	65.0	0.45	1.9
B8	J13J00	10/17/2006	6.14	0.581	0.033	0.581	2.4	83.4	0.38	3.0
C9	J13J01	10/17/2006	17.4	0.831	0.067	0.471	2.3	66.3	0.37	2.1
C10	J13J02	10/18/2006	1.09	0.410	0.066	0.492	1.6	60.7	0.30	1.8
C1	J13J03*	10/18/2006	67.8	0.657	0	0.448	1.6	57.5	0.39	1.6
C2	J13J04	10/18/2006	4.84	0.643	0	0.409	0.55	33.4	0.38	0.55
D3	J13J05	10/18/2006	4.92	0.683	0	0.740	0.55	67.5	0.41	0.55
D4	J13J06	10/19/2006	0.021	0.714	0.037	0.410	2.1	62.9	0.13	0.55
D5	J13J07	10/23/2006	0.990	0.581	0.065	0.473	1.8	85.0	0.29	0.55
D6	J13J08	10/23/2006	1.27	0.541	0.018	0.553	2.5	56.0	0.30	1.7

41 Statistical Computations

Tritium			Uranium-233/234			Uranium-235			Uranium-238			Arsenic			Barium			Beryllium			Boron		
95% UCL value based on			Radionuclide data set. Use nonparametric z-stat.			Radionuclide data set. Use nonparametric z-stat.			Radionuclide data set. Use nonparametric z-stat.			Large data set (n ≥ 10), lognormal and normal distribution rejected, use z-statistic.			Large data set (n ≥ 10), use MTCASat normal distribution.			Large data set (n ≥ 10), lognormal and normal distribution rejected, use z-statistic.			Large data set (n ≥ 10), use MTCASat normal distribution.		
N			16			16			16			16			16			16			16		
% < Detection limit			56%			0%			88%			13%			0%			0%			25%		
Mean			7.8			0.578			0.032			2.0			67.0			0.33			1.6		
Standard deviation			16.5			0.114			0.024			0.6			12.5			0.08			0.7		
95% UCL on mean			14.6			0.625			0.042			2.3			72.5			0.36			1.9		
Maximum detected value			67.8			0.831			0.079			2.7			85.0			0.45			3.0		
Background			NA			1.1			0.11			6.5			132			132			NA		
Statistical value above background**			14.6			0 (< BG)			0 (< BG)			2.3			72.5			0.36			1.9		
Most Stringent Cleanup Limit for nonradionuclide and RAG type												Direct Exposure/GW & River Protection			BG/GW Protection			BG/GW & River Protection			320 GW Protection		
WAC 173-340 3-PART TEST												NA			NA			NA			NO		
95% UCL > Cleanup Limit?												NA			NA			NA			NO		
> 10% above Cleanup Limit?												NA			NA			NA			NO		
Any sample > 2X Cleanup Limit?												Because all values are below background (6.5 mg/kg), the WAC 173-340 3-part test is not required.			Because all values are below background (132 mg/kg), the WAC 173-340 3-part test is not required.			Because all values are below background (1.51 mg/kg), the WAC 173-340 3-part test is not required.			The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.		
WAC 173-340 Compliance? Yes																							

58 *Sample J14BH3 replaced tritium data for sample J13J03.

59 **Background is not subtracted for nonradionuclides; consideration of background is given by direct comparison against background values.

60 BG = background

GW = groundwater

MDA = minimum detectable activity

PQL = practical quantitation limit

RAG = remedial action goal

UCL = upper confidence limit

61 C = method blank contamination

J = estimate

NA = not applicable

Q = qualifier

U = undetected

WAC = Washington Administrative Code

CALCULATION SHEET

Washington Closure Hanford

Originator J. M. Capron
Project 100-B/C Field Remediation

Date 10/03/07
Subject 118-B-1 Burial Ground Cleanup Verification 95% UCL Calculations

Checked T. M. Blakley
Date 10/04/07

Calc. No. 0100B-CA-V0299
Job No. 14655

Rev. No. 1
Sheet No. 35 of 61

1 118-B-1 Staging Pile Area Statistical Calculations (continued)

2 Verification Data

Sample Area	Sample Number	Sample Date	Chromium			Cobalt			Copper			Lead			Manganese			Mercury			Molybdenum			Nickel		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
A1	J13HY3	10/12/06	7.8	C	0.20	7.2		0.14	14.4		0.23	5.5		0.34	333		0.06	0.02		0.02	0.44		0.28	10.2		0.37
A2	J13HY4	10/12/06	8.3	C	0.20	7.2		0.14	14.8		0.23	5.0		0.34	319		0.06	0.03		0.02	0.32		0.28	10.3		0.37
A3	J13HY5	10/12/06	8.8	C	0.20	7.6		0.14	15.2		0.23	4.5		0.34	342		0.06	0.05		0.01	0.31		0.28	10.1		0.37
A4	J13HY6	10/12/06	7.9	C	0.20	7.6		0.14	15.3		0.23	4.9		0.34	326		0.06	0.14		0.01	0.29		0.29	10.2		0.37
B5	J13HY7	10/12/06	8.0	C	0.20	6.4		0.14	12.9		0.23	4.5		0.34	286		0.06	0.09		0.01	0.28	U	0.28	10.8		0.37
Duplicate of J13HY7	J13J09	10/12/06	9.3	C	0.20	6.7		0.14	13.6		0.23	5.2		0.34	304		0.06	0.11		0.01	0.28	U	0.28	10.4		0.37
B6	J13HY8	10/17/06	8.2	C	0.07	7.3		0.05	14.3		0.08	4.5		0.12	309		0.02	0.07		0.02	0.37	CJ	0.10	9.4		0.13
B7	J13HY9	10/17/06	9.3	C	0.07	7.9		0.05	14.6		0.08	4.2		0.12	339		0.02	0.1		0.01	0.34	CJ	0.10	9.8		0.13
B8	J13J00	10/17/06	9.6	C	0.07	6.1		0.05	12.2		0.08	4.4		0.12	279		0.02	0.13		0.02	0.34	CJ	0.10	11.1		0.13
C9	J13J01	10/17/06	9.1	C	0.07	6.7		0.05	15.2		0.08	5.1		0.13	313		0.02	0.09		0.01	0.42	CJ	0.11	9.7		0.14
C10	J13J02	10/18/06	7.4	C	0.21	6.4		0.15	12.5		0.24	3.0		0.37	305		0.06	0.02	U	0.02	0.37	CJ	0.31	9.2		0.40
C1	J13J03	10/18/06	7.4	C	0.21	7.1		0.15	12.2		0.24	3.4		0.36	313		0.06	0.13		0.02	0.42	CJ	0.30	9.5		0.39
C2	J13J04	10/18/06	4.6	C	0.21	7.3		0.15	13.9		0.24	2.6		0.36	265		0.06	0.06		0.02	0.55	CJ	0.30	10.1		0.39
D3	J13J05	10/18/06	6.1	C	0.21	8.4		0.15	14.3		0.24	3.5		0.36	379		0.06	0.12		0.02	0.43	CJ	0.30	11.8		0.39
D4	J13J06	10/19/06	7.4	C	0.21	8.9		0.15	16.6		0.24	5.2	C	0.36	350		0.06	0.06		0.02	0.49		0.30	13.9	J	0.39
D5	J13J07	10/23/06	7.0	C	0.20	7.6		0.14	14.5		0.23	2.9	C	0.35	297		0.06	0.02		0.02	0.54		0.29	10.5		0.38
D6	J13J08	10/23/06	6.1	C	0.21	8.1		0.15	15.0		0.23	4.1	C	0.35	316		0.06	0.05		0.02	0.61		0.29	9.3		0.38

22 Statistical Computation Input Data

Sample Area	Sample Number	Sample Date	Chromium mg/kg	Cobalt mg/kg	Copper mg/kg	Lead mg/kg	Manganese mg/kg	Mercury mg/kg	Molybdenum mg/kg	Nickel mg/kg
A1	J13HY3	10/12/2006	7.8	7.2	14.4	5.5	333	0.02	0.44	10.2
A2	J13HY4	10/12/2006	8.3	7.2	14.8	5.0	319	0.03	0.32	10.3
A3	J13HY5	10/12/2006	8.8	7.6	15.2	4.5	342	0.05	0.31	10.1
A4	J13HY6	10/12/2006	7.9	7.6	15.3	4.9	326	0.14	0.29	10.2
B5	J13HY7/J13J09	10/12/2006	8.7	6.6	13.3	4.9	295	0.10	0.14	10.6
B6	J13HY8	10/17/2006	8.2	7.3	14.3	4.5	309	0.07	0.37	9.4
B7	J13HY9	10/17/2006	9.3	7.9	14.6	4.2	339	0.10	0.34	9.8
B8	J13J00	10/17/2006	9.6	6.1	12.2	4.4	279	0.13	0.34	11.1
C9	J13J01	10/17/2006	9.1	6.7	15.2	5.1	313	0.09	0.42	9.7
C10	J13J02	10/18/2006	7.4	6.4	12.5	3.0	305	0.01	0.37	9.2
C1	J13J03	10/18/2006	7.4	7.1	12.2	3.4	313	0.13	0.42	9.5
C2	J13J04	10/18/2006	4.6	7.3	13.9	2.6	265	0.06	0.55	10.1
D3	J13J05	10/18/2006	6.1	8.4	14.3	3.5	379	0.12	0.43	11.8
D4	J13J06	10/19/2006	7.4	8.9	16.6	5.2	350	0.06	0.49	13.9
D5	J13J07	10/23/2006	7.0	7.6	14.5	2.9	297	0.02	0.54	10.5
D6	J13J08	10/23/2006	6.1	8.1	15.0	4.1	316	0.05	0.61	9.3

41 Statistical Computations

	Chromium	Cobalt	Copper	Lead	Manganese	Mercury	Molybdenum	Nickel
95% UCL value based on	Large data set (n ≥ 10), use MTCASat normal distribution.	Large data set (n ≥ 10), use MTCASat lognormal distribution.	Large data set (n ≥ 10), use MTCASat lognormal distribution.	Large data set (n ≥ 10), use MTCASat lognormal distribution.	Large data set (n ≥ 10), use MTCASat lognormal distribution.	Large data set (n ≥ 10), use MTCASat lognormal distribution.	Large data set (n ≥ 10), use MTCASat normal distribution.	Large data set (n ≥ 10), lognormal and normal distribution rejected, use z-statistic.
N	16	16	16	16	16	16	16	16
% < Detection limit	0%	0%	0%	0%	0%	6%	6%	0%
Mean	7.7	7.4	14.3	4.2	318	0.07	0.40	10.4
Standard deviation	1.3	0.7	1.2	0.9	28	0.04	0.12	1.2
95% UCL on mean	8.3	7.7	14.8	4.7	330	0.13	0.45	10.8
Maximum detected value	9.6	8.9	16.6	5.5	379	0.14	0.61	13.9
Statistical value	8.3	7.7	14.8	4.7	330	0.13	0.45	10.8
Most Stringent Cleanup Limit for nonradionuclide and RAG type	18.5 BG/GW & River Protection	32 GW Protection	22.0 BG/River Protection	10.2 BG/GW & River Protection	512 BG/GW & River Protection	0.33 BG/GW & River Protection	8 GW Protection	19.1 BG/GW Protection
WAC 173-340 3-PART TEST								
95% UCL > Cleanup Limit?	NA	NA	NA	NA	NA	NA	NO	NA
> 10% above Cleanup Limit?	NA	NA	NA	NA	NA	NA	NO	NA
Any sample > 2X Cleanup Limit?	NA	NA	NA	NA	NA	NA	NO	NA
WAC 173-340 Compliance? Yes	Because all values are below background (18.5 mg/kg), the WAC 173-340 3-part test is not required.	Because all values are below background (15.7 mg/kg), the WAC 173-340 3-part test is not required.	Because all values are below background (22.0 mg/kg), the WAC 173-340 3-part test is not required.	Because all values are below background (10.2 mg/kg), the WAC 173-340 3-part test is not required.	Because all values are below background (512 mg/kg), the WAC 173-340 3-part test is not required.	Because all values are below background (0.33 mg/kg), the WAC 173-340 3-part test is not required.	The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.	Because all values are below background (19.1 mg/kg), the WAC 173-340 3-part test is not required.

56 BG = background

J = estimate

Q = qualifier

UCL = upper confidence limit

58 C = method blank contamination

NA = not applicable

RAG = remedial action goal

WAC = Washington Administrative Code

59 GW = groundwater

PQL = practical quantitation limit

U = undetected

CALCULATION SHEET

Washington Closure Hanford

Originator J. M. Capron
Project 100-B/C Field Remediation

Date 10/03/07
Subject 118-B-1 Burial Ground Cleanup Verification 95% UCL Calculations

Checked T. M. Blakley
Date 10/04/07

Calc. No. 0100B-CA-V0299
Job No. 14655

Rev. No. 1
Sheet No. 36 of 61

1 118-B-1 Staging Pile Area Statistical Calculations (continued)

2 Verification Data

Sample Area	Sample Number	Sample Date	Vanadium			Zinc			bis(2-Ethylhexyl)phthalate			Di-n-butylphthalate			Methylene Chloride			Endosulfan Sulfate			Dicamba		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
A1	J13HY3	10/12/06	38.2		0.14	36.0		0.09	0.037	JB	0.33	0.33	U	0.33	0.006	BJ	0.005	0.0016	D	0.0013	0.029	J	0.034
A2	J13HY4	10/12/06	41.6		0.14	35.8		0.08	0.031	JB	0.33	0.040	J	0.33	0.014	BJ	0.005	0.00040	JD	0.0013	0.015	J	0.034
A3	J13HY5	10/12/06	46.9		0.14	40.2		0.08	0.043	JB	0.33	0.33	U	0.33	0.013	BJ	0.005	0.00083	JD	0.0013	0.0096	JI	0.034
A4	J13HY6	10/12/06	42.2		0.14	37.0		0.09	0.031	JB	0.33	0.33	U	0.33	0.012	BJ	0.005	0.0018	D	0.0013	0.012	J	0.034
B5	J13HY7	10/12/06	36.4		0.14	33.0		0.08	0.024	JB	0.33	0.33	U	0.33	0.010	BJ	0.005	0.0013	UD	0.0013	0.0097	JI	0.034
Duplicate of J13HY7	J13J09	10/12/06	39.2		0.14	34.4		0.08	0.027	JB	0.33	0.030	J	0.33	0.012	BJ	0.005	0.00037	JD	0.0013	0.091	JI	0.034
B6	J13HY8	10/17/06	43.9		0.05	36.6	C	0.03	0.34	U	0.34	0.028	JB	0.34	0.018	BJ	0.005	0.00079	JD	0.0014	0.034	U	0.034
B7	J13HY9	10/17/06	49.8		0.05	41.8	C	0.03	0.020	JB	0.34	0.028	JB	0.34	0.015	BJ	0.005	0.0014	UD	0.0014	0.0094	JI	0.034
B8	J13J00	10/17/06	33.8		0.05	34.3	C	0.03	0.022	JB	0.34	0.030	JB	0.34	0.014	BJ	0.005	0.0014	UD	0.0014	0.0098	JI	0.034
C9	J13J01	10/17/06	38.6		0.05	37.2	C	0.03	0.037	JB	0.36	0.022	JB	0.36	0.017	BJ	0.005	0.0014	UD	0.0014	0.036	U	0.036
C10	J13J02	10/18/06	41.0		0.15	32.8	C	0.09	0.018	JB	0.35	0.046	JB	0.35	0.011	B	0.005	0.0014	UD	0.0014	0.035	U	0.035
C1	J13J03	10/18/06	43.3		0.15	35.4	C	0.09	0.35	U	0.35	0.035	JB	0.35	0.009	B	0.005	0.0014	UD	0.0014	0.035	U	0.035
C2	J13J04	10/18/06	50.9		0.15	37.5	C	0.09	0.024	JB	0.34	0.042	JB	0.34	0.011	B	0.005	0.0014	UD	0.0014	0.034	U	0.034
D3	J13J05	10/18/06	46.5		0.15	38.0	C	0.09	0.34	U	0.34	0.033	JB	0.34	0.012	B	0.005	0.0014	UD	0.0014	0.034	U	0.034
D4	J13J06	10/19/06	53.8		0.15	43.3	C	0.09	0.33	U	0.36	0.36	U	0.36	0.016	U	0.005	0.0014	UD	0.0014	0.0081	JI	0.036
D5	J13J07	10/23/06	49.2		0.14	39.4	C	0.09	0.042	JB	0.34	0.034	JB	0.34	0.011	B	0.005	0.00079	JD	0.0014	0.0079	J	0.034
D6	J13J08	10/23/06	44.1		0.15	40.0	C	0.09	0.031	JB	0.35	0.35	U	0.35	0.009	B	0.005	0.0073	JD	0.0014	0.027	J	0.035

22 Statistical Computation Input Data

Sample Area	Sample Number	Sample Date	Vanadium mg/kg			Zinc mg/kg			bis(2-Ethylhexyl)phthalate mg/kg			Di-n-butylphthalate mg/kg			Methylene Chloride mg/kg			Endosulfan Sulfate mg/kg			Dicamba mg/kg		
A1	J13HY3	10/12/2006	38.2			36.0			0.037			0.17			0.006			0.0016			0.029		
A2	J13HY4	10/12/2006	41.6			35.8			0.031			0.040			0.014			0.00040			0.015		
A3	J13HY5	10/12/2006	46.9			40.2			0.043			0.17			0.013			0.00083			0.0096		
A4	J13HY6	10/12/2006	42.2			37.0			0.031			0.17			0.012			0.0018			0.012		
B5	J13HY7/J13J09	10/12/2006	37.8			33.7			0.026			0.10			0.011			0.0005			0.050		
B6	J13HY8	10/17/2006	43.9			36.6			0.17			0.028			0.018			0.00079			0.017		
B7	J13HY9	10/17/2006	49.8			41.8			0.020			0.028			0.015			0.00070			0.0094		
B8	J13J00	10/17/2006	33.8			34.3			0.022			0.030			0.014			0.00070			0.0098		
C9	J13J01	10/17/2006	38.6			37.2			0.037			0.022			0.017			0.00070			0.018		
C10	J13J02	10/18/2006	41.0			32.8			0.018			0.046			0.011			0.00070			0.018		
C1	J13J03	10/18/2006	43.3			35.4			0.18			0.035			0.009			0.00070			0.018		
C2	J13J04	10/18/2006	50.9			37.5			0.024			0.042			0.011			0.00070			0.017		
D3	J13J05	10/18/2006	46.5			38.0			0.17			0.033			0.012			0.00070			0.017		
D4	J13J06	10/19/2006	53.8			43.3			0.17			0.18			0.008			0.00070			0.0081		
D5	J13J07	10/23/2006	49.2			39.4			0.042			0.034			0.011			0.00079			0.0079		
D6	J13J08	10/23/2006	44.1			40.0			0.031			0.18			0.009			0.0073			0.027		

41 Statistical Computations

			Vanadium			Zinc			bis(2-Ethylhexyl)phthalate			Di-n-butylphthalate			Methylene Chloride			Endosulfan Sulfate			Dicamba		
95% UCL value based on			Large data set (n ≥ 10), use MTCASat lognormal distribution.			Large data set (n ≥ 10), use MTCASat lognormal distribution.			Large data set (n ≥ 10), lognormal and normal distribution rejected, use z-statistic.			Large data set (n ≥ 10), lognormal and normal distribution rejected, use z-statistic.			Large data set (n ≥ 10), use MTCASat lognormal distribution.			Large data set (n ≥ 10), lognormal and normal distribution rejected, use z-statistic.			Large data set (n ≥ 10), use MTCASat lognormal distribution.		
N			16			16			16			16			16			16			16		
% < Detection limit			0%			0%			25%			31%			6%			50%			38%		
Mean			43.9			37.4			0.07			0.08			0.012			0.0012			0.018		
Standard deviation			5.4			2.9			0.06			0.06			0.003			0.0017			0.011		
95% UCL on mean			46.4			38.8			0.09			0.11			0.014			0.0019			0.023		
Maximum detected value			53.8			43.3			0.043			0.046			0.018			0.0073			0.091		
Statistical value			46.4			38.8			0.09			0.11			0.014			0.0019			0.023		
Most Stringent Cleanup Limit for nonradionuclide and RAG type			85.1 BG/GW Protection			67.8 BG/River Protection			0.36 River Protection			160 GW Protection			0.5 GW Protection			0.0112 River Protection			48 GW Protection		
WAC 173-340 3-PART TEST																							
95% UCL > Cleanup Limit?			NA			NA			NO			NO			NO			NO			NO		
> 10% above Cleanup Limit?			NA			NA			NO			NO			NO			NO			NO		
Any sample > 2X Cleanup Limit?			NA			NA			NO			NO			NO			NO			NO		
WAC 173-340 Compliance?			Yes			Because all values are below background (85.1 mg/kg), the WAC 173-340 3-part test is not required.			Because all values are below background (67.8 mg/kg), the WAC 173-340 3-part test is not required.			The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.			The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.			The data set meets the 3-part test criteria when compared to the most stringent cleanup limit.			Because all values are below background (0.33 mg/kg), the WAC 173-340 3-part test is not required.		

57 B = method blank contamination

58 BG = background

59 D = diluted

GW = groundwater

I = interference on one analytical column

J = estimate

CALCULATION SHEET

Washington Closure Hanford

Originator J. M. Capron *JMC*

Date 02/07/07

Calc. No. 0100B-CA-V0299

Rev. No. 0

Project 100-B/C Field Remediation

Job No. 14655

Checked T. M. Blakley *TMB*

Date 2/20/07

Subject 118-B-1 Burial Ground Cleanup Verification 95% UCL Calculations

Sheet No. 37 of 61

Ecology Software (MTCASat) Results (Overburden)

DATA	ID	Arsenic 95% UCL Calculation				DATA	ID	Barium 95% UCL Calculation			
2.6	J12WK0					77.1	J12WK0				
2.7	J12WK1					48.4	J12WK1				
2.3	J12WK2	Number of samples	Uncensored values			54.6	J12WK2	Number of samples	Uncensored values		
2.7	J12WK3	Uncensored	16	Mean	2.8	55.9	J12WK3	Uncensored	16	Mean	54.8
3.1	J12WK4	Censored		Lognormal mean	2.8	51.4	J12WK4	Censored		Lognormal mean	54.8
2.9	J12WK5	Detection limit or PQL		Std. devn.	0.5	56.4	J12WK5	Detection limit or PQL		Std. devn.	10.9
2.2	J12WK6	Method detection limit		Median	2.7	46.2	J12WK6	Method detection limit		Median	52.1
2.7	J12WM7	TOTAL	16	Min.	2.2	60.0	J12WM7	TOTAL	16	Min.	43.0
2.3	J12WM8			Max.	4.0	53.7	J12WM8			Max.	83.5
2.5	J12WM9					44.9	J12WM9				
2.4	J12WN0					49.8	J12WN0				
2.4	J12WN1	Lognormal distribution?	Normal distribution?			43.0	J12WN1	Lognormal distribution?	Normal distribution?		
3.5	J12WM5	r-squared is: 0.942	r-squared is: 0.908			51.7	J12WM5	r-squared is: 0.858	r-squared is: 0.787		
4.0	J12WM6	Recommendations:				52.4	J12WM6	Recommendations:			
3.6	J12WM3	Use lognormal distribution.				83.5	J12WM3	Reject BOTH lognormal and normal distributions.			
3.1	J12WM4					48.4	J12WM4				
		UCL (Land's method) is	3.1					UCL (based on Z-statistic) is	59.3		
DATA	ID	Beryllium 95% UCL Calculation				DATA	ID	Boron 95% UCL Calculation			
0.47	J12WK0					3.0	J12WK0				
0.49	J12WK1					1.6	J12WK1				
0.42	J12WK2	Number of samples	Uncensored values			1.7	J12WK2	Number of samples	Uncensored values		
0.43	J12WK3	Uncensored	16	Mean	0.43	1.6	J12WK3	Uncensored	16	Mean	1.7
0.54	J12WK4	Censored		Lognormal mean	0.43	1.4	J12WK4	Censored		Lognormal mean	1.7
0.55	J12WK5	Detection limit or PQL		Std. devn.	0.09	1.4	J12WK5	Detection limit or PQL		Std. devn.	0.5
0.43	J12WK6	Method detection limit		Median	0.44	1.6	J12WK6	Method detection limit		Median	1.6
0.36	J12WM7	TOTAL	16	Min.	0.27	1.8	J12WM7	TOTAL	16	Min.	0.86
0.30	J12WM8			Max.	0.55	1.9	J12WM8			Max.	3.0
0.27	J12WM9					1.2	J12WM9				
0.33	J12WN0					0.86	J12WN0				
0.28	J12WN1	Lognormal distribution?	Normal distribution?			1.8	J12WN1	Lognormal distribution?	Normal distribution?		
0.45	J12WM5	r-squared is: 0.910	r-squared is: 0.941			1.5	J12WM5	r-squared is: 0.955	r-squared is: 0.905		
0.48	J12WM6	Recommendations:				1.2	J12WM6	Recommendations:			
0.53	J12WM3	Use lognormal distribution.				2.5	J12WM3	Use lognormal distribution.			
0.49	J12WM4					2.0	J12WM4				
		UCL (Land's method) is	0.48					UCL (Land's method) is	2.0		

41 PQL = practical quantitation limit

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CALCULATION SHEET

Washington Closure Hanford

Originator J. M. Capron *JMC*

Date 02/07/07

Calc. No. 0100B-CA-V0299

Rev. No. 0

Project 100-B/C Field Remediation

Job No. 14655

Checked T. M. Blakley *TMB*

Date 2/28/07

Subject 118-B-1 Burial Ground Cleanup Verification 95% UCL Calculations

Sheet No. 38 of 61

Ecology Software (MTCASat) Results (Overburden)

DATA	ID	Chromium 95% UCL Calculation				DATA	ID	Cobalt 95% UCL Calculation			
5.9	J12WK0					8.1	J12WK0				
7.2	J12WK1					8.5	J12WK1				
6.9	J12WK2	Number of samples	Uncensored values			7.2	J12WK2	Number of samples	Uncensored values		
6.7	J12WK3	Uncensored	16	Mean	6.8	7.7	J12WK3	Uncensored	16	Mean	8.2
7.7	J12WK4	Censored		Lognormal mean	6.8	9.4	J12WK4	Censored		Lognormal mean	8.2
6.4	J12WK5	Detection limit or PQL		Std. devn.	0.7	8.0	J12WK5	Detection limit or PQL		Std. devn.	1.0
8.2	J12WK6	Method detection limit		Median	6.7	6.5	J12WK6	Method detection limit		Median	8.1
8.0	J12WM7	TOTAL	16	Min.	5.7	7.9	J12WM7	TOTAL	16	Min.	6.5
6.9	J12WM8			Max.	8.2	7.2	J12WM8			Max.	10.2
6.6	J12WM9					7.3	J12WM9				
6.5	J12WN0					9.6	J12WN0				
5.7	J12WN1	Lognormal distribution?	Normal distribution?			8.1	J12WN1	Lognormal distribution?	Normal distribution?		
6.6	J12WM5	r-squared is: 0.976	r-squared is: 0.966			9.0	J12WM5	r-squared is: 0.977	r-squared is: 0.971		
7.5	J12WM6	Recommendations:				10.2	J12WM6	Recommendations:			
6.0	J12WM3	Use lognormal distribution.				8.0	J12WM3	Use lognormal distribution.			
6.4	J12WM4					9.1	J12WM4				
		UCL (Land's method) is	7.2					UCL (Land's method) is	8.7		
DATA	ID	Copper 95% UCL Calculation				DATA	ID	Hexavalent Chromium 95% UCL Calculation			
16.2	J12WK0					0.31	J12WK0				
14.3	J12WK1					0.27	J12WK1				
12.7	J12WK2	Number of samples	Uncensored values			0.10	J12WK2	Number of samples	Uncensored values		
12.4	J12WK3	Uncensored	16	Mean	15.3	0.10	J12WK3	Uncensored	16	Mean	0.19
14.6	J12WK4	Censored		Lognormal mean	15.3	0.30	J12WK4	Censored		Lognormal mean	0.20
15.3	J12WK5	Detection limit or PQL		Std. devn.	1.5	0.27	J12WK5	Detection limit or PQL		Std. devn.	0.09
14.8	J12WK6	Method detection limit		Median	15.2	0.30	J12WK6	Method detection limit		Median	0.23
15.2	J12WM7	TOTAL	16	Min.	12.4	0.10	J12WM7	TOTAL	16	Min.	0.10
14.3	J12WM8			Max.	18.1	0.10	J12WM8			Max.	0.31
14.9	J12WM9					0.25	J12WM9				
18.1	J12WN0					0.26	J12WN0				
15.1	J12WN1	Lognormal distribution?	Normal distribution?			0.10	J12WN1	Lognormal distribution?	Normal distribution?		
16.7	J12WM5	r-squared is: 0.957	r-squared is: 0.968			0.23	J12WM5	r-squared is: 0.770	r-squared is: 0.811		
17.0	J12WM6	Recommendations:				0.10	J12WM6	Recommendations:			
16.7	J12WM3	Use lognormal distribution.				0.22	J12WM3	Reject BOTH lognormal and normal distributions.			
16.0	J12WM4					0.10	J12WM4				
		UCL (Land's method) is	16.0					UCL (based on Z-statistic) is	0.23		

41 PQL = practical quantitation limit

42 UCL = upper confidence limit

CALCULATION SHEET

Washington Closure Hanford

Originator J. M. Capron

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Subject 118-B-1 Burial Ground Cleanup Verification 95% UCL Calculations

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Ecology Software (MTCASat) Results (Overburden)

DATA	ID	Lead 95% UCL Calculation				DATA	ID	Manganese 95% UCL Calculation			
5.0	J12WK0					327	J12WK0				
4.3	J12WK1					335	J12WK1				
4.6	J12WK2	Number of samples	Uncensored values			311	J12WK2	Number of samples	Uncensored values		
4.7	J12WK3	Uncensored	16	Mean	4.8	339	J12WK3	Uncensored	16	Mean	331
4.7	J12WK4	Censored		Lognormal mean	4.8	383	J12WK4	Censored		Lognormal mean	331
4.6	J12WK5	Detection limit or PQL		Std. devn.	0.8	339	J12WK5	Detection limit or PQL		Std. devn.	33
3.7	J12WK6	Method detection limit		Median	4.7	283	J12WK6	Method detection limit		Median	330
5.1	J12WM7	TOTAL	16	Min.	3.7	332	J12WM7	TOTAL	16	Min.	282
5.8	J12WM8			Max.	7.1	297	J12WM8			Max.	390
3.8	J12WM9					282	J12WM9				
3.8	J12WN0					390	J12WN0				
4.3	J12WN1	Lognormal distribution?	Normal distribution?			303	J12WN1	Lognormal distribution?	Normal distribution?		
5.1	J12WM5	r-squared is: 0.920	r-squared is: 0.865			325	J12WM5	r-squared is: 0.974	r-squared is: 0.968		
5.1	J12WM6	Recommendations:				374	J12WM6	Recommendations:			
7.1	J12WM3	Use lognormal distribution.				358	J12WM3	Use lognormal distribution.			
4.5	J12WM4					322	J12WM4				
		UCL (Land's method) is	5.1					UCL (Land's method) is	346		
DATA	ID	Nickel 95% UCL Calculation				DATA	ID	Vanadium 95% UCL Calculation			
9.5	J12WK0					38.0	J12WK0				
10.4	J12WK1					44.7	J12WK1				
8.9	J12WK2	Number of samples	Uncensored values			33.9	J12WK2	Number of samples	Uncensored values		
9.0	J12WK3	Uncensored	16	Mean	9.7	35.7	J12WK3	Uncensored	16	Mean	43.2
12.8	J12WK4	Censored		Lognormal mean	9.7	51.6	J12WK4	Censored		Lognormal mean	43.3
9.2	J12WK5	Detection limit or PQL		Std. devn.	1.0	38.2	J12WK5	Detection limit or PQL		Std. devn.	7.2
10.3	J12WK6	Method detection limit		Median	9.5	37.9	J12WK6	Method detection limit		Median	40.8
9.6	J12WM7	TOTAL	16	Min.	8.8	47.0	J12WM7	TOTAL	16	Min.	33.9
8.8	J12WM8			Max.	12.8	36.1	J12WM8			Max.	56.8
9.0	J12WM9					39.0	J12WM9				
9.5	J12WN0					55.0	J12WN0				
8.9	J12WN1	Lognormal distribution?	Normal distribution?			39.4	J12WN1	Lognormal distribution?	Normal distribution?		
9.8	J12WM5	r-squared is: 0.790	r-squared is: 0.742			49.4	J12WM5	r-squared is: 0.951	r-squared is: 0.934		
10.5	J12WM6	Recommendations:				56.8	J12WM6	Recommendations:			
9.4	J12WM3	Reject BOTH lognormal and normal distributions.				42.1	J12WM3	Use lognormal distribution.			
9.3	J12WM4					47.0	J12WM4				
		UCL (based on Z-statistic) is	10.1					UCL (Land's method) is	46.6		

41 PQL = practical quantitation limit

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CALCULATION SHEET

Washington Closure Hanford

Originator J. M. Capron

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Subject 118-B-1 Burial Ground Cleanup Verification 95% UCL Calculations

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Ecology Software (MTCASat) Results (Overburden)

DATA	ID	Zinc 95% UCL Calculation				DATA	ID	bis(2-Ethylhexyl)phthalate 95% UCL Calculation			
35.9	J12WK0					0.032	J12WK0				
36.7	J12WK1					0.030	J12WK1				
32.3	J12WK2	Number of samples	Uncensored values			0.036	J12WK2	Number of samples	Uncensored values		
33.6	J12WK3	Uncensored	16	Mean	38.0	0.031	J12WK3	Uncensored	16	Mean	0.05
40.1	J12WK4	Censored		Lognormal mean	38.0	0.083	J12WK4	Censored		Lognormal mean	0.05
36.9	J12WK5	Detection limit or PQL		Std. devn.	4.3	0.045	J12WK5	Detection limit or PQL		Std. devn.	0.04
32.1	J12WK6	Method detection limit		Median	36.8	0.029	J12WK6	Method detection limit		Median	0.03
40.1	J12WM7	TOTAL	16	Min.	32.1	0.020	J12WM7	TOTAL	16	Min.	0.020
33.9	J12WM8			Max.	46.5	0.088	J12WM8			Max.	0.17
35.4	J12WM9					0.039	J12WM9				
42.2	J12WN0					0.037	J12WN0				
35.9	J12WN1	Lognormal distribution?	Normal distribution?			0.028	J12WN1	Lognormal distribution?	Normal distribution?		
42.4	J12WM5	r-squared is: 0.964	r-squared is: 0.958			0.028	J12WM5	r-squared is: 0.832	r-squared is: 0.622		
46.5	J12WM6	Recommendations:				0.17	J12WM6	Recommendations:			
43.0	J12WM3	Use lognormal distribution.				0.021	J12WM3	Reject BOTH lognormal and normal distributions.			
41.0	J12WM4					0.034	J12WM4				
		UCL (Land's method) is	40.0					UCL (based on Z-statistic) is	0.062		
DATA	ID	Di-n-butylphthalate 95% UCL Calculation				DATA	ID	Carbon Tetrachloride 95% UCL Calculation			
0.17	J12WK0					0.003	J12WK0				
0.17	J12WK1					0.003	J12WK1				
0.033	J12WK2	Number of samples	Uncensored values			0.003	J12WK2	Number of samples	Uncensored values		
0.17	J12WK3	Uncensored	16	Mean	0.09	0.003	J12WK3	Uncensored	16	Mean	0.008
0.026	J12WK4	Censored		Lognormal mean	0.10	0.003	J12WK4	Censored		Lognormal mean	0.008
0.17	J12WK5	Detection limit or PQL		Std. devn.	0.07	0.003	J12WK5	Detection limit or PQL		Std. devn.	0.008
0.17	J12WK6	Method detection limit		Median	0.04	0.003	J12WK6	Method detection limit		Median	0.005
0.038	J12WM7	TOTAL	16	Min.	0.019	0.009	J12WM7	TOTAL	16	Min.	0.003
0.041	J12WM8			Max.	0.17	0.012	J12WM8			Max.	0.026
0.025	J12WM9					0.012	J12WM9				
0.039	J12WN0					0.007	J12WN0				
0.042	J12WN1	Lognormal distribution?	Normal distribution?			0.024	J12WN1	Lognormal distribution?	Normal distribution?		
0.019	J12WM5	r-squared is: 0.818	r-squared is: 0.741			0.010	J12WM5	r-squared is: 0.842	r-squared is: 0.747		
0.020	J12WM6	Recommendations:				0.026	J12WM6	Recommendations:			
0.17	J12WM3	Reject BOTH lognormal and normal distributions.				0.006	J12WM3	Reject BOTH lognormal and normal distributions.			
0.17	J12WM4					0.003	J12WM4				
		UCL (based on Z-statistic) is	0.12					UCL (based on Z-statistic) is	0.011		

41 PQL = practical quantitation limit

42 UCL = upper confidence limit

CALCULATION SHEET

Washington Closure Hanford

Originator J. M. Capron *JMC*

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Subject 118-B-1 Burial Ground Cleanup Verification 95% UCL Calculations

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Ecology Software (MTCStat) Results (Overburden)

DATA	ID	Methylene Chloride 95% UCL Calculation				DATA	ID	Dicamba 95% UCL Calculation			
0.009	J12WK0					0.012	J12WK0				
0.006	J12WK1					0.017	J12WK1				
0.011	J12WK2	Number of samples		Uncensored values		0.017	J12WK2	Number of samples		Uncensored values	
0.009	J12WK3	Uncensored	16	Mean	0.013	0.0092	J12WK3	Uncensored	16	Mean	0.014
0.012	J12WK4	Censored		Lognormal mean	0.013	0.0087	J12WK4	Censored		Lognormal mean	0.014
0.016	J12WK5	Detection limit or PQL		Std. devn.	0.006	0.017	J12WK5	Detection limit or PQL		Std. devn.	0.004
0.018	J12WK6	Method detection limit		Median	0.012	0.013	J12WK6	Method detection limit		Median	0.017
0.015	J12WM7	TOTAL	16	Min.	0.006	0.017	J12WM7	TOTAL	16	Min.	0.0060
0.008	J12WM8			Max.	0.030	0.0060	J12WM8			Max.	0.017
0.013	J12WM9					0.017	J12WM9				
0.006	J12WN0					0.015	J12WN0				
0.030	J12WN1	Lognormal distribution?		Normal distribution?		0.013	J12WN1	Lognormal distribution?		Normal distribution?	
0.008	J12WM5	r-squared is: 0.979		r-squared is: 0.877		0.017	J12WM5	r-squared is: 0.741		r-squared is: 0.793	
0.022	J12WM6	Recommendations:				0.017	J12WM6	Recommendations:			
0.014	J12WM3	Use lognormal distribution.				0.017	J12WM3	Reject BOTH lognormal and normal distributions.			
0.011	J12WM4					0.017	J12WM4				
		UCL (Land's method) is		0.016				UCL (based on Z-statistic) is		0.016	

21 PQL = practical quantitation limit

22 UCL = upper confidence limit

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CALCULATION SHEET

Washington Closure Hanford

Originator J. M. Capron *JMC*

Project 100-B/C Field Remediation

Subject 118-B-1 Burial Ground Cleanup Verification 95% UCL Calculations

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Ecology Software (MTCASat) Results (BCL Material)

DATA	ID	Arsenic 95% UCL Calculation				DATA	ID	Barium 95% UCL Calculation			
3.1	J12WN2					57.0	J12WN2				
3.7	J12WM1					53.7	J12WM1				
3.6	J12WM2	Number of samples		Uncensored values		56.8	J12WM2	Number of samples		Uncensored values	
3.1	J12WM0	Uncensored	16	Mean	3.4	62.0	J12WM0	Uncensored	16	Mean	57.4
3.5	J12WL9	Censored		Lognormal mean	3.4	55.4	J12WL9	Censored		Lognormal mean	57.4
3.2	J12WL8	Detection limit or PQL		Std. devn.	0.5	56.9	J12WL8	Detection limit or PQL		Std. devn.	7.6
3.7	J12WL7	Method detection limit		Median	3.3	59.7	J12WL7	Method detection limit		Median	56.5
3.3	J12WL6	TOTAL	16	Min.	2.8	54.2	J12WL6	TOTAL	16	Min.	44.8
2.8	J12WK7			Max.	4.8	71.5	J12WK7			Max.	75.4
3.8	J12WK9					59.8	J12WK9				
2.9	J12WK8					75.4	J12WK8				
4.8	J12WL2	Lognormal distribution?		Normal distribution?		54.8	J12WL2	Lognormal distribution?		Normal distribution?	
3.0	J12WL3	r-squared is: 0.935		r-squared is: 0.894		44.8	J12WL3	r-squared is: 0.923		r-squared is: 0.891	
2.9	J12WL4/J12WL5	Recommendations:				56.1	J12WL4/J12WL5	Recommendations:			
3.2	J12WL0	Use lognormal distribution.				49.7	J12WL0	Use lognormal distribution.			
4.1	J12WL1					50.6	J12WL1				
		UCL (Land's method) is		3.7				UCL (Land's method) is		60.8	
DATA	ID	Beryllium 95% UCL Calculation				DATA	ID	Boron 95% UCL Calculation			
0.47	J12WN2					2.0	J12WN2				
0.59	J12WM1					1.6	J12WM1				
0.58	J12WM2	Number of samples		Uncensored values		1.4	J12WM2	Number of samples		Uncensored values	
0.62	J12WM0	Uncensored	16	Mean	0.53	2.9	J12WM0	Uncensored	16	Mean	1.6
0.49	J12WL9	Censored		Lognormal mean	0.53	1.3	J12WL9	Censored		Lognormal mean	1.6
0.47	J12WL8	Detection limit or PQL		Std. devn.	0.06	1.5	J12WL8	Detection limit or PQL		Std. devn.	0.5
0.46	J12WL7	Method detection limit		Median	0.54	1.5	J12WL7	Method detection limit		Median	1.5
0.43	J12WL6	TOTAL	16	Min.	0.43	1.7	J12WL6	TOTAL	16	Min.	1.1
0.58	J12WK7			Max.	0.62	2.8	J12WK7			Max.	2.9
0.60	J12WK9					1.5	J12WK9				
0.57	J12WK8					1.5	J12WK8				
0.58	J12WL2	Lognormal distribution?		Normal distribution?		1.2	J12WL2	Lognormal distribution?		Normal distribution?	
0.50	J12WL3	r-squared is: 0.903		r-squared is: 0.903		1.2	J12WL3	r-squared is: 0.865		r-squared is: 0.766	
0.45	J12WL4/J12WL5	Recommendations:				1.6	J12WL4/J12WL5	Recommendations:			
0.50	J12WL0	Use lognormal distribution.				1.1	J12WL0	Reject BOTH lognormal and normal distributions.			
0.58	J12WL1					1.3	J12WL1				
		UCL (Land's method) is		0.56				UCL (based on Z-statistic) is		1.8	

41 BCL = below cleanup levels

42 PQL = practical quantitation limit

43 UCL = upper confidence limit

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CALCULATION SHEET

Washington Closure HanfordOriginator J. M. Capron *J. Capron*

Project 100-B/C Field Remediation

Subject 118-B-1 Burial Ground Cleanup Verification 95% UCL Calculations

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Ecology Software (MTCStat) Results (BCL Material)

DATA	ID	Chromium 95% UCL Calculation				DATA	ID	Cobalt 95% UCL Calculation			
6.6	J12WN2					9.5	J12WN2				
6.3	J12WM1					8.2	J12WM1				
7.2	J12WM2	Number of samples	Uncensored values			8.4	J12WM2	Number of samples	Uncensored values		
7.2	J12WM0	Uncensored	16	Mean	7.7	8.1	J12WM0	Uncensored	16	Mean	8.7
8.3	J12WL9	Censored		Lognormal mean	7.7	9.2	J12WL9	Censored		Lognormal mean	8.7
7.3	J12WL8	Detection limit or PQL		Std. devn.	0.9	8.0	J12WL8	Detection limit or PQL		Std. devn.	1.0
8.7	J12WL7	Method detection limit		Median	7.4	7.9	J12WL7	Method detection limit		Median	8.5
7.3	J12WL6	TOTAL	16	Min.	6.3	7.3	J12WL6	TOTAL	16	Min.	7.3
9.5	J12WK7			Max.	9.5	7.9	J12WK7			Max.	10.8
7.3	J12WK9					9.8	J12WK9				
7.5	J12WK8					8.6	J12WK8				
8.0	J12WL2	Lognormal distribution?	Normal distribution?			10.8	J12WL2	Lognormal distribution?	Normal distribution?		
7.4	J12WL3	r-squared is: 0.943	r-squared is: 0.925			9.4	J12WL3	r-squared is: 0.967	r-squared is: 0.954		
8.1	J12WL4/J12WL5	Recommendations:				7.8	J12WL4/J12WL5	Recommendations:			
7.1	J12WL0	Use lognormal distribution.				8.8	J12WL0	Use lognormal distribution.			
9.3	J12WL1					10.0	J12WL1				
		UCL (Land's method) is		8.1				UCL (Land's method) is		9.2	
DATA	ID	Copper 95% UCL Calculation				DATA	ID	Hexavalent Chromium 95% UCL Calculation			
15.9	J12WN2					0.21	J12WN2				
16.2	J12WM1					0.22	J12WM1				
16.0	J12WM2	Number of samples	Uncensored values			0.28	J12WM2	Number of samples	Uncensored values		
16.0	J12WM0	Uncensored	16	Mean	15.4	0.10	J12WM0	Uncensored	16	Mean	0.20
16.2	J12WL9	Censored		Lognormal mean	15.4	0.28	J12WL9	Censored		Lognormal mean	0.21
15.4	J12WL8	Detection limit or PQL		Std. devn.	1.2	0.21	J12WL8	Detection limit or PQL		Std. devn.	0.09
14.6	J12WL7	Method detection limit		Median	15.7	0.10	J12WL7	Method detection limit		Median	0.22
13.8	J12WL6	TOTAL	16	Min.	12.9	0.28	J12WL6	TOTAL	16	Min.	0.10
15.4	J12WK7			Max.	17.2	0.10	J12WK7			Max.	0.31
17.2	J12WK9					0.10	J12WK9				
14.4	J12WK8					0.10	J12WK8				
16.9	J12WL2	Lognormal distribution?	Normal distribution?			0.31	J12WL2	Lognormal distribution?	Normal distribution?		
14.2	J12WL3	r-squared is: 0.944	r-squared is: 0.954			0.26	J12WL3	r-squared is: 0.791	r-squared is: 0.838		
12.9	J12WL4/J12WL5	Recommendations:				0.31	J12WL4/J12WL5	Recommendations:			
14.3	J12WL0	Use lognormal distribution.				0.27	J12WL0	Reject BOTH lognormal and normal distributions.			
16.2	J12WL1					0.10	J12WL1				
		UCL (Land's method) is		15.9				UCL (based on Z-statistic) is		0.24	

41 BCL = below cleanup levels

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43 UCL = upper confidence limit

CALCULATION SHEET

Washington Closure HanfordOriginator J. M. Capron *JMC*Date 02/07/07Calc. No. 0100B-CA-V0299Rev. No. 0Project 100-B/C Field RemediationJob No. 14655Checked T. M. Blakley *TMB*Date 2/28/07Subject 118-B-1 Burial Ground Cleanup Verification 95% UCL CalculationsSheet No. 44 of 61

Ecology Software (MTCASat) Results (BCL Material)

DATA	ID	Lead 95% UCL Calculation				DATA	ID	Manganese 95% UCL Calculation			
4.9	J12WN2					359	J12WN2				
4.5	J12WM1					337	J12WM1				
4.5	J12WM2	Number of samples		Uncensored values		346	J12WM2	Number of samples		Uncensored values	
4.0	J12WM0	Uncensored	16	Mean	4.8	332	J12WM0	Uncensored	16	Mean	351
4.4	J12WL9	Censored		Lognormal mean	4.8	359	J12WL9	Censored		Lognormal mean	351
4.0	J12WL8	Detection limit or PQL		Std. devn.	0.7	313	J12WL8	Detection limit or PQL		Std. devn.	32
4.4	J12WL7	Method detection limit		Median	4.6	329	J12WL7	Method detection limit		Median	343
4.1	J12WL6	TOTAL	16	Min.	4.0	304	J12WL6	TOTAL	16	Min.	304
5.2	J12WK7			Max.	6.5	327	J12WK7			Max.	418
5.5	J12WK9					382	J12WK9				
4.5	J12WK8					407	J12WK8				
6.5	J12WL2	Lognormal distribution?		Normal distribution?		418	J12WL2	Lognormal distribution?		Normal distribution?	
4.6	J12WL3	r-squared is: 0.919		r-squared is: 0.882		346	J12WL3	r-squared is: 0.951		r-squared is: 0.934	
5.0	J12WL4/J12WL5	Recommendations:				336	J12WL4/J12WL5	Recommendations:			
4.9	J12WL0	Use lognormal distribution.				339	J12WL0	Use lognormal distribution.			
6.2	J12WL1					384	J12WL1				
		UCL (Land's method) is		5.1				UCL (Land's method) is		366	
DATA	ID	Molybdenum 95% UCL Calculation				DATA	ID	Nickel 95% UCL Calculation			
0.41	J12WN2					10.8	J12WN2				
0.41	J12WM1					10.4	J12WM1				
0.41	J12WM2	Number of samples		Uncensored values		10.0	J12WM2	Number of samples		Uncensored values	
0.41	J12WM0	Uncensored	16	Mean	0.41	9.3	J12WM0	Uncensored	16	Mean	10.7
0.42	J12WL9	Censored		Lognormal mean	0.41	11.1	J12WL9	Censored		Lognormal mean	10.7
0.41	J12WL8	Detection limit or PQL		Std. devn.	0.04	9.8	J12WL8	Detection limit or PQL		Std. devn.	1.0
0.41	J12WL7	Method detection limit		Median	0.41	11.4	J12WL7	Method detection limit		Median	10.6
0.41	J12WL6	TOTAL	16	Min.	0.35	9.2	J12WL6	TOTAL	16	Min.	9.2
0.35	J12WK7			Max.	0.50	11.0	J12WK7			Max.	12.5
0.49	J12WK9					11.3	J12WK9				
0.39	J12WK8					10.1	J12WK8				
0.50	J12WL2	Lognormal distribution?		Normal distribution?		12.5	J12WL2	Lognormal distribution?		Normal distribution?	
0.42	J12WL3	r-squared is: 0.887		r-squared is: 0.871		11.9	J12WL3	r-squared is: 0.981		r-squared is: 0.977	
0.37	J12WL4/J12WL5	Recommendations:				10.0	J12WL4/J12WL5	Recommendations:			
0.36	J12WL0	Reject BOTH lognormal and normal distributions.				10.2	J12WL0	Use lognormal distribution.			
0.46	J12WL1					12.1	J12WL1				
		UCL (based on Z-statistic) is		0.43				UCL (Land's method) is		11.1	

41 BCL = below cleanup levels

42 PQL = practical quantitation limit

43 UCL = upper confidence limit

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Washington Closure Hanford

Originator J. M. Capron

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Subject 118-B-1 Burial Ground Cleanup Verification 95% UCL Calculations

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Ecology Software (MTCASat) Results (BCL Material)

DATA	ID	Vanadium 95% UCL Calculation				DATA	ID	Zinc 95% UCL Calculation			
52.7	J12WN2					43.8	J12WN2				
47.8	J12WM1					39.6	J12WM1				
44.8	J12WM2	Number of samples		Uncensored values		38.3	J12WM2	Number of samples		Uncensored values	
47.5	J12WM0	Uncensored	16	Mean	46.4	39.0	J12WM0	Uncensored	16	Mean	39.9
54.2	J12WL9	Censored		Lognormal mean	46.4	44.2	J12WL9	Censored		Lognormal mean	39.9
47.1	J12WL8	Detection limit or PQL		Std. devn.	5.0	40.8	J12WL8	Detection limit or PQL		Std. devn.	3.3
42.5	J12WL7	Method detection limit		Median	46.7	37.5	J12WL7	Method detection limit		Median	39.3
37.3	J12WL6	TOTAL	16	Min.	37.3	34.5	J12WL6	TOTAL	16	Min.	34.5
46.3	J12WK7			Max.	54.2	38.6	J12WK7			Max.	45.0
46.3	J12WK9					41.9	J12WK9				
43.9	J12WK8					38.6	J12WK8				
49.8	J12WL2	Lognormal distribution?		Normal distribution?		44.4	J12WL2	Lognormal distribution?		Normal distribution?	
49.6	J12WL3	r-squared is:	0.965	r-squared is:	0.977	40.0	J12WL3	r-squared is:	0.963	r-squared is:	0.961
38.1	J12WL4/J12WL5	Recommendations:				34.8	J12WL4/J12WL5	Recommendations:			
41.5	J12WL0	Use lognormal distribution.				36.8	J12WL0	Use lognormal distribution.			
53.0	J12WL1					45.0	J12WL1				
		UCL (Land's method) is		48.8				UCL (Land's method) is		41.4	
DATA	ID	bis(2-Ethylhexyl)phthalate 95% UCL Calculation				DATA	ID	Di-n-butylphthalate 95% UCL Calculation			
0.051	J12WN2					0.042	J12WN2				
0.023	J12WM1					0.17	J12WM1				
0.020	J12WM2	Number of samples		Uncensored values		0.027	J12WM2	Number of samples		Uncensored values	
0.023	J12WM0	Uncensored	16	Mean	0.05	0.17	J12WM0	Uncensored	16	Mean	0.10
0.022	J12WL9	Censored		Lognormal mean	0.05	0.17	J12WL9	Censored		Lognormal mean	0.11
0.17	J12WL8	Detection limit or PQL		Std. devn.	0.06	0.17	J12WL8	Detection limit or PQL		Std. devn.	0.07
0.17	J12WL7	Method detection limit		Median	0.03	0.17	J12WL7	Method detection limit		Median	0.14
0.17	J12WL6	TOTAL	16	Min.	0.020	0.17	J12WL6	TOTAL	16	Min.	0.018
0.021	J12WK7			Max.	0.17	0.023	J12WK7			Max.	0.17
0.036	J12WK9					0.023	J12WK9				
0.029	J12WK8					0.049	J12WK8				
0.023	J12WL2	Lognormal distribution?		Normal distribution?		0.17	J12WL2	Lognormal distribution?		Normal distribution?	
0.029	J12WL3	r-squared is:	0.713	r-squared is:	0.588	0.018	J12WL3	r-squared is:	0.808	r-squared is:	0.776
0.024	J12WL4/J12WL5	Recommendations:				0.11	J12WL4/J12WL5	Recommendations:			
0.021	J12WL0	Reject BOTH lognormal and normal distributions.				0.17	J12WL0	Reject BOTH lognormal and normal distributions.			
0.029	J12WL1					0.036	J12WL1				
		UCL (based on Z-statistic) is		0.08				UCL (based on Z-statistic) is		0.13	

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Washington Closure Hanford

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Ecology Software (MTCASat) Results (BCL Material)

DATA	ID	Carbon Tetrachloride 95% UCL Calculation					DATA	ID	Methylene Chloride 95% UCL Calculation				
0.003	J12WN2						0.013	J12WN2					
0.002	J12WM1						0.006	J12WM1					
0.004	J12WM2	Number of samples		Uncensored values			0.007	J12WM2	Number of samples		Uncensored values		
0.002	J12WM0	Uncensored	16	Mean	0.007		0.009	J12WM0	Uncensored	16	Mean	0.009	
0.011	J12WL9	Censored		Lognormal mean	0.007		0.003	J12WL9	Censored		Lognormal mean	0.009	
0.032	J12WL8	Detection limit or PQL		Std. devn.	0.008		0.005	J12WL8	Detection limit or PQL		Std. devn.	0.005	
0.013	J12WL7	Method detection limit		Median	0.004		0.002	J12WL7	Method detection limit		Median	0.008	
0.013	J12WL6	TOTAL	16	Min.	0.002		0.003	J12WL6	TOTAL	16	Min.	0.002	
0.003	J12WK7			Max.	0.032		0.014	J12WK7			Max.	0.018	
0.003	J12WK9						0.008	J12WK9					
0.003	J12WK8						0.005	J12WK8					
0.011	J12WL2	Lognormal distribution?		Normal distribution?			0.018	J12WL2	Lognormal distribution?		Normal distribution?		
0.006	J12WL3	r-squared is: 0.876		r-squared is: 0.660			0.015	J12WL3	r-squared is: 0.940		r-squared is: 0.948		
0.004	J12WL4/J12WL5	Recommendations:					0.012	J12WL4/J12WL5	Recommendations:				
0.003	J12WL0	Reject BOTH lognormal and normal distributions.					0.006	J12WL0	Use lognormal distribution.				
0.004	J12WL1						0.015	J12WL1					
				UCL (based on Z-statistic) is	0.011						UCL (Land's method) is	0.014	

21 BCL = below cleanup levels

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Ecology Software (MTCASat) Results (Staging Pile Area)

DATA	ID	Arsenic 95% UCL Calculation				DATA	ID	Barium 95% UCL Calculation			
2.7	J13HY3					80.5	J13HY3				
2.7	J13HY4					74.6	J13HY4				
2.2	J13HY5	Number of samples	Uncensored values			73.7	J13HY5	Number of samples	Uncensored values		
2.0	J13HY6	Uncensored	16	Mean	2.0	74.6	J13HY6	Uncensored	16	Mean	67.0
2.4	J13HY7/J13J09	Censored		Lognormal mean	2.1	65.8	J13HY7/J13J09	Censored		Lognormal mean	67.3
2.3	J13HY8	Detection limit or PQL		Std. devn.	0.6	65.2	J13HY8	Detection limit or PQL		Std. devn.	12.5
2.1	J13HY9	Method detection limit		Median	2.2	65.0	J13HY9	Method detection limit		Median	66.1
2.4	J13J00	TOTAL	16	Min.	0.55	83.4	J13J00	TOTAL	16	Min.	33.4
2.3	J13J01			Max.	2.7	66.3	J13J01			Max.	85.0
1.6	J13J02					60.7	J13J02				
1.6	J13J03					57.5	J13J03				
0.55	J13J04	Lognormal distribution?		Normal distribution?		33.4	J13J04	Lognormal distribution?		Normal distribution?	
0.55	J13J05	r-squared is: 0.680		r-squared is: 0.841		67.5	J13J05	r-squared is: 0.797		r-squared is: 0.902	
2.1	J13J06	Recommendations:				62.9	J13J06	Recommendations:			
1.8	J13J07	Reject BOTH lognormal and normal distributions.				85.0	J13J07	Use normal distribution.			
2.5	J13J08					56.0	J13J08				
		UCL (based on Z-statistic) is	2.3					UCL (based on t-statistic) is	72.5		
DATA	ID	Beryllium 95% UCL Calculation				DATA	ID	Boron 95% UCL Calculation			
0.31	J13HY3					2.6	J13HY3				
0.31	J13HY4					2.0	J13HY4				
0.31	J13HY5	Number of samples	Uncensored values			1.8	J13HY5	Number of samples	Uncensored values		
0.31	J13HY6	Uncensored	16	Mean	0.33	2.2	J13HY6	Uncensored	16	Mean	1.6
0.26	J13HY7/J13J09	Censored		Lognormal mean	0.34	1.7	J13HY7/J13J09	Censored		Lognormal mean	1.7
0.42	J13HY8	Detection limit or PQL		Std. devn.	0.08	1.3	J13HY8	Detection limit or PQL		Std. devn.	0.7
0.45	J13HY9	Method detection limit		Median	0.31	1.9	J13HY9	Method detection limit		Median	1.8
0.38	J13J00	TOTAL	16	Min.	0.13	3.0	J13J00	TOTAL	16	Min.	0.55
0.37	J13J01			Max.	0.45	2.1	J13J01			Max.	3.0
0.30	J13J02					1.8	J13J02				
0.39	J13J03					1.6	J13J03				
0.38	J13J04	Lognormal distribution?		Normal distribution?		0.55	J13J04	Lognormal distribution?		Normal distribution?	
0.41	J13J05	r-squared is: 0.760		r-squared is: 0.895		0.55	J13J05	r-squared is: 0.825		r-squared is: 0.924	
0.13	J13J06	Recommendations:				0.55	J13J06	Recommendations:			
0.29	J13J07	Reject BOTH lognormal and normal distributions.				0.55	J13J07	Use normal distribution.			
0.30	J13J08					1.7	J13J08				
		UCL (based on Z-statistic) is	0.36					UCL (based on t-statistic) is	1.9		

41 PQL = practical quantitation limit

42 UCL = upper confidence limit

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CALCULATION SHEET

Washington Closure HanfordOriginator J. M. Capron *JMC*

Project 100-B/C Field Remediation

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Ecology Software (MTCASat) Results (Staging Pile Area)

DATA	ID	Chromium 95% UCL Calculation				DATA	ID	Cobalt 95% UCL Calculation			
7.8	J13HY3					7.2	J13HY3				
8.3	J13HY4					7.2	J13HY4				
8.8	J13HY5	Number of samples		Uncensored values		7.6	J13HY5	Number of samples		Uncensored values	
7.9	J13HY6	Uncensored	16	Mean	7.7	7.6	J13HY6	Uncensored	16	Mean	7.4
8.7	J13HY7/J13J09	Censored		Lognormal mean	7.7	6.6	J13HY7/J13J09	Censored		Lognormal mean	7.4
8.2	J13HY8	Detection limit or PQL		Std. devn.	1.3	7.3	J13HY8	Detection limit or PQL		Std. devn.	0.7
9.3	J13HY9	Method detection limit		Median	7.9	7.9	J13HY9	Method detection limit		Median	7.3
9.6	J13J00	TOTAL	16	Min.	4.6	6.1	J13J00	TOTAL	16	Min.	6.1
9.1	J13J01			Max.	9.6	6.7	J13J01			Max.	8.9
7.4	J13J02					6.4	J13J02				
7.4	J13J03					7.1	J13J03				
4.6	J13J04	Lognormal distribution?		Normal distribution?		7.3	J13J04	Lognormal distribution?		Normal distribution?	
6.1	J13J05	r-squared is: 0.892		r-squared is: 0.949		8.4	J13J05	r-squared is: 0.983		r-squared is: 0.980	
7.4	J13J06	Recommendations:				8.9	J13J06	Recommendations:			
7.0	J13J07	Use normal distribution.				7.6	J13J07	Use lognormal distribution.			
6.1	J13J08					8.1	J13J08				
		UCL (based on t-statistic) is		8.3				UCL (Land's method) is		7.7	
DATA	ID	Copper 95% UCL Calculation				DATA	ID	Lead 95% UCL Calculation			
14.4	J13HY3					5.5	J13HY3				
14.8	J13HY4					5.0	J13HY4				
15.2	J13HY5	Number of samples		Uncensored values		4.5	J13HY5	Number of samples		Uncensored values	
15.3	J13HY6	Uncensored	16	Mean	14.3	4.9	J13HY6	Uncensored	16	Mean	4.2
13.3	J13HY7/J13J09	Censored		Lognormal mean	14.3	4.9	J13HY7/J13J09	Censored		Lognormal mean	4.2
14.3	J13HY8	Detection limit or PQL		Std. devn.	1.2	4.5	J13HY8	Detection limit or PQL		Std. devn.	0.9
14.6	J13HY9	Method detection limit		Median	14.5	4.2	J13HY9	Method detection limit		Median	4.5
12.2	J13J00	TOTAL	16	Min.	12.2	4.4	J13J00	TOTAL	16	Min.	2.6
15.2	J13J01			Max.	16.6	5.1	J13J01			Max.	5.5
12.5	J13J02					3.0	J13J02				
12.2	J13J03					3.4	J13J03				
13.9	J13J04	Lognormal distribution?		Normal distribution?		2.6	J13J04	Lognormal distribution?		Normal distribution?	
14.3	J13J05	r-squared is: 0.920		r-squared is: 0.931		3.5	J13J05	r-squared is: 0.917		r-squared is: 0.947	
16.6	J13J06	Recommendations:				5.2	J13J06	Recommendations:			
14.5	J13J07	Use lognormal distribution.				2.9	J13J07	Use lognormal distribution.			
15.0	J13J08					4.1	J13J08				
		UCL (Land's method) is		14.8				UCL (Land's method) is		4.7	

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Ecology Software (MTCASat) Results (Staging Pile Area)

DATA	ID	Manganese 95% UCL Calculation				DATA	ID	Mercury 95% UCL Calculation			
333	J13HY3					0.02	J13HY3				
319	J13HY4					0.03	J13HY4				
342	J13HY5	Number of samples	Uncensored values			0.05	J13HY5	Number of samples	Uncensored values		
326	J13HY6	Uncensored	16	Mean	318	0.14	J13HY6	Uncensored	16	Mean	0.07
295	J13HY7/J13J09	Censored		Lognormal mean	318	0.10	J13HY7/J13J09	Censored		Lognormal mean	0.08
309	J13HY8	Detection limit or PQL		Std. devn.	28	0.07	J13HY8	Detection limit or PQL		Std. devn.	0.04
339	J13HY9	Method detection limit		Median	315	0.10	J13HY9	Method detection limit		Median	0.07
279	J13J00	TOTAL	16	Min.	265	0.13	J13J00	TOTAL	16	Min.	0.01
313	J13J01			Max.	379	0.09	J13J01			Max.	0.14
305	J13J02					0.01	J13J02				
313	J13J03					0.13	J13J03				
265	J13J04	Lognormal distribution?		Normal distribution?		0.06	J13J04	Lognormal distribution?		Normal distribution?	
379	J13J05	r-squared is: 0.980		r-squared is: 0.977		0.12	J13J05	r-squared is: 0.907		r-squared is: 0.957	
350	J13J06	Recommendations:				0.06	J13J06	Recommendations:			
297	J13J07	Use lognormal distribution.				0.02	J13J07	Use lognormal distribution.			
316	J13J08					0.05	J13J08				
		UCL (Land's method) is		330				UCL (Land's method) is		0.13	
DATA	ID	Molybdenum 95% UCL Calculation				DATA	ID	Nickel 95% UCL Calculation			
0.44	J13HY3					10.2	J13HY3				
0.32	J13HY4					10.3	J13HY4				
0.31	J13HY5	Number of samples	Uncensored values			10.1	J13HY5	Number of samples	Uncensored values		
0.29	J13HY6	Uncensored	16	Mean	0.40	10.2	J13HY6	Uncensored	16	Mean	10.4
0.14	J13HY7/J13J09	Censored		Lognormal mean	0.40	10.6	J13HY7/J13J09	Censored		Lognormal mean	10.4
0.37	J13HY8	Detection limit or PQL		Std. devn.	0.12	9.4	J13HY8	Detection limit or PQL		Std. devn.	1.2
0.34	J13HY9	Method detection limit		Median	0.40	9.8	J13HY9	Method detection limit		Median	10.2
0.34	J13J00	TOTAL	16	Min.	0.14	11.1	J13J00	TOTAL	16	Min.	9.2
0.42	J13J01			Max.	0.61	9.7	J13J01			Max.	13.9
0.37	J13J02					9.2	J13J02				
0.42	J13J03					9.5	J13J03				
0.55	J13J04	Lognormal distribution?		Normal distribution?		10.1	J13J04	Lognormal distribution?		Normal distribution?	
0.43	J13J05	r-squared is: 0.860		r-squared is: 0.963		11.8	J13J05	r-squared is: 0.829		r-squared is: 0.777	
0.49	J13J06	Recommendations:				13.9	J13J06	Recommendations:			
0.54	J13J07	Use normal distribution.				10.5	J13J07	Reject BOTH lognormal and normal distributions.			
0.61	J13J08					9.3	J13J08				
		UCL (based on t-statistic) is		0.45				UCL (based on Z-statistic) is		10.8	

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Ecology Software (MTCStat) Results (Staging Pile Area)

DATA	ID	Vanadium 95% UCL Calculation				DATA	ID	Zinc 95% UCL Calculation			
38.2	J13HY3					36.0	J13HY3				
41.6	J13HY4					35.8	J13HY4				
46.9	J13HY5	Number of samples	Uncensored values			40.2	J13HY5	Number of samples	Uncensored values		
42.2	J13HY6	Uncensored	16	Mean	43.9	37.0	J13HY6	Uncensored	16	Mean	37.4
37.8	J13HY7/J13J09	Censored		Lognormal mean	43.9	33.7	J13HY7/J13J09	Censored		Lognormal mean	37.4
43.9	J13HY8	Detection limit or PQL		Std. devn.	5.4	36.6	J13HY8	Detection limit or PQL		Std. devn.	2.9
49.8	J13HY9	Method detection limit		Median	43.6	41.8	J13HY9	Method detection limit		Median	37.1
33.8	J13J00	TOTAL	16	Min.	33.8	34.3	J13J00	TOTAL	16	Min.	32.8
38.6	J13J01			Max.	53.8	37.2	J13J01			Max.	43.3
41.0	J13J02					32.8	J13J02				
43.3	J13J03					35.4	J13J03				
50.9	J13J04	Lognormal distribution?		Normal distribution?		37.5	J13J04	Lognormal distribution?		Normal distribution?	
46.5	J13J05	r-squared is: 0.985		r-squared is: 0.988		38.0	J13J05	r-squared is: 0.988		r-squared is: 0.981	
53.8	J13J06	Recommendations:				43.3	J13J06	Recommendations:			
49.2	J13J07	Use lognormal distribution.				39.4	J13J07	Use lognormal distribution.			
44.1	J13J08					40.0	J13J08				
		UCL (Land's method) is		46.4				UCL (Land's method) is		38.8	
DATA	ID	bis(2-Ethylhexyl)phthalate 95% UCL Calculation				DATA	ID	Di-n-butylphthalate 95% UCL Calculation			
0.037	J13HY3					0.17	J13HY3				
0.031	J13HY4					0.040	J13HY4				
0.043	J13HY5	Number of samples	Uncensored values			0.17	J13HY5	Number of samples	Uncensored values		
0.031	J13HY6	Uncensored	16	Mean	0.07	0.17	J13HY6	Uncensored	16	Mean	0.08
0.026	J13HY7/J13J09	Censored		Lognormal mean	0.06	0.10	J13HY7/J13J09	Censored		Lognormal mean	0.08
0.17	J13HY8	Detection limit or PQL		Std. devn.	0.06	0.028	J13HY8	Detection limit or PQL		Std. devn.	0.06
0.020	J13HY9	Method detection limit		Median	0.03	0.028	J13HY9	Method detection limit		Median	0.04
0.022	J13J00	TOTAL	16	Min.	0.018	0.030	J13J00	TOTAL	16	Min.	0.022
0.037	J13J01			Max.	0.18	0.022	J13J01			Max.	0.18
0.018	J13J02					0.046	J13J02				
0.18	J13J03					0.035	J13J03				
0.024	J13J04	Lognormal distribution?		Normal distribution?		0.042	J13J04	Lognormal distribution?		Normal distribution?	
0.17	J13J05	r-squared is: 0.814		r-squared is: 0.669		0.033	J13J05	r-squared is: 0.836		r-squared is: 0.758	
0.17	J13J06	Recommendations:				0.18	J13J06	Recommendations:			
0.042	J13J07	Reject BOTH lognormal and normal distributions.				0.034	J13J07	Reject BOTH lognormal and normal distributions.			
0.031	J13J08					0.18	J13J08				
		UCL (based on Z-statistic) is		0.09				UCL (based on Z-statistic) is		0.11	

41 PQL = practical quantitation limit

42 UCL = upper confidence limit

CALCULATION SHEET

Washington Closure Hanford

Originator J. M. Capron

Project 100-B/C Field Remediation

Subject 118-B-1 Burial Ground Cleanup Verification 95% UCL Calculations

Date 02/07/07

Job No. 14655

Calc. No. 0100B-CA-V0299

Checked T. M. Blakley

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Ecology Software (MTCStat) Results (Staging Pile Area)

DATA	ID	Methylene Chloride 95% UCL Calculation				DATA	ID	Endosulfan Sulfate 95% UCL Calculation			
0.006	J13HY3					0.0016	J13HY3				
0.014	J13HY4					0.00040	J13HY4				
0.013	J13HY5	Number of samples		Uncensored values		0.00083	J13HY5	Number of samples		Uncensored values	
0.012	J13HY6	Uncensored	16	Mean	0.012	0.0018	J13HY6	Uncensored	16	Mean	0.0012
0.011	J13HY7/J13J09	Censored		Lognormal mean	0.012	0.0005	J13HY7/J13J09	Censored		Lognormal mean	0.0011
0.018	J13HY8	Detection limit or PQL		Std. devn.	0.003	0.00079	J13HY8	Detection limit or PQL		Std. devn.	0.0017
0.015	J13HY9	Method detection limit		Median	0.012	0.00070	J13HY9	Method detection limit		Median	0.0007
0.014	J13J00	TOTAL	16	Min.	0.006	0.00070	J13J00	TOTAL	16	Min.	0.00040
0.017	J13J01			Max.	0.018	0.00070	J13J01			Max.	0.0073
0.011	J13J02					0.00070	J13J02				
0.009	J13J03					0.00070	J13J03				
0.011	J13J04	Lognormal distribution?		Normal distribution?		0.00070	J13J04	Lognormal distribution?		Normal distribution?	
0.012	J13J05	r-squared is: 0.959		r-squared is: 0.977		0.00070	J13J05	r-squared is: 0.663		r-squared is: 0.393	
0.008	J13J06	Recommendations:				0.00070	J13J06	Recommendations:			
0.011	J13J07	Use lognormal distribution.				0.00079	J13J07	Reject BOTH lognormal and normal distributions.			
0.009	J13J08					0.0073	J13J08				
		UCL (Land's method) is		0.014				UCL (based on Z-statistic) is		0.0019	
DATA	ID	Dicamba 95% UCL Calculation									
0.029	J13HY3										
0.015	J13HY4										
0.0096	J13HY5	Number of samples		Uncensored values							
0.012	J13HY6	Uncensored	16	Mean	0.018						
0.050	J13HY7/J13J09	Censored		Lognormal mean	0.018						
0.017	J13HY8	Detection limit or PQL		Std. devn.	0.011						
0.0094	J13HY9	Method detection limit		Median	0.017						
0.0098	J13J00	TOTAL	16	Min.	0.0079						
0.018	J13J01			Max.	0.050						
0.018	J13J02										
0.018	J13J03										
0.017	J13J04	Lognormal distribution?		Normal distribution?							
0.017	J13J05	r-squared is: 0.923		r-squared is: 0.751							
0.0081	J13J06	Recommendations:									
0.0079	J13J07	Use lognormal distribution.									
0.027	J13J08										
		UCL (Land's method) is		0.023							

41 PQL = practical quantitation limit

42 UCL = upper confidence limit

CALCULATION SHEET

Washington Closure Hanford

Originator J. M. Capron *JMC*

Project 100-B/C Field Remediation

Subject 118-B-1 Burial Ground Cleanup Verification 95% UCL Calculations

Date 10/03/07

Job No. 14655

Calc. No. 0100B-CA-V0299

Checked T. M. Blakley *TMB*

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1 Split/Duplicate Analysis

Sample Area	Sample Number	Sample Date	Cesium-137			Europium-152			Potassium-40			Radium-226			Radium-228			Thorium-228			Thorium-232			Strontium-90		
			pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA
Area 1 A1	J12X44	7/19/06	0.308		0.065	1.24		0.13	22.1		0.53	0.735		0.11	1.14		0.28	1.27		0.089	1.14		0.28	0.275	J	0.27
Duplicate of J12X44	J12X48	7/19/06	0.169		0.041	0.676		0.092	18.8		0.33	0.736		0.068	1.13		0.14	0.985		0.050	1.13		0.14	0.024	UJ	0.23
Split of J12X44	J12X49	7/19/06	0.133		0.0325	1.15		0.0877	--		--	--		--	--		--	--		--	--		--	0.582		0.137

7 Analysis:

TDL		0.1	0.1	0.5	0.1	0.2	1	1	1	
9	Duplicate Analysis	Both > MDA?	Yes (continue)	Yes (continue)	Yes (continue)	Yes (continue)	Yes (continue)	Yes (continue)	No - evaluate difference	
0		Both >5xTDL?	No - evaluate difference	Yes (calc RPD)	Yes (calc RPD)	Yes (calc RPD)	Yes (calc RPD)	No - evaluate difference	No - evaluate difference	
1		RPD		59%	16%	0.14%	0.88%			
2		Difference >2xTDL?	No - acceptable	Not applicable	Not applicable	Not applicable	Not applicable	No - acceptable	No - acceptable	No - acceptable
3	Split Analysis	Both > MDA?	Yes (continue)	Yes (continue)						Yes (continue)
4		Both >5xTDL?	No - evaluate difference	Yes (calc RPD)						No - evaluate difference
5		RPD		7.5%						
6		Difference >2xTDL?	No - acceptable	Not applicable						No - acceptable

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Sample Area	Sample Number	Sample Date	Tritium			Uranium-233/234			Uranium-238			Aluminum			Antimony			Arsenic			Barium			Beryllium		
			pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
Area 1 A1	J12X44	7/19/06	1.74	U	3.4	0.546		0.25	0.353		0.25	6040		8.4	1.3	UJ	1.3	2.9		1.8	53.7	C	0.06	0.59	Q	0.06
Duplicate of J12X44	J12X48	7/19/06	0.535	U	2.8	0.572		0.26	0.572		0.26	6600		8.4	1.3	UJ	1.3	3.1		1.8	60.4	C	0.06	0.66	Q	0.06
Split of J12X44	J12X49	7/19/06	0.0648		0.0282	0.533	J	0.0369	0.474	J	0.0369	7460	N	6.3	1.7	NJ	0.33	2.8		0.28	65.6		0.51	0.38	B*	0.071

23 Analysis:

TDL		10			1			1			5			0.6			10			2			0.5		
Duplicate Analysis	Both > PQL/MDA?	No - evaluate difference			Yes (continue)			Yes (continue)			Yes (continue)			No - evaluate difference			Yes (continue)			Yes (continue)			Yes (continue)		
	Both >5xTDL?				No - evaluate difference			No - evaluate difference			Yes (calc RPD)						No - evaluate difference			Yes (calc RPD)			No - evaluate difference		
	RPD										8.9%									12%					
	Difference >2xTDL?	No - acceptable			No - acceptable			No - acceptable			Not applicable			No - acceptable			No - acceptable			Not applicable			No - acceptable		
Split Analysis	Both > PQL/MDA?	No - evaluate difference			Yes (continue)			Yes (continue)			Yes (continue)			No - evaluate difference			Yes (continue)			Yes (continue)			Yes (continue)		
	Both >5xTDL?				No - evaluate difference			No - evaluate difference			Yes (calc RPD)						No - evaluate difference			Yes (calc RPD)			No - evaluate difference		
	RPD										21%									20%					
	Difference >2xTDL?	No - acceptable			No - acceptable			No - acceptable			Not applicable			No - acceptable			No - acceptable			Not applicable			No - acceptable		

33

Sample Area	Sample Number	Sample Date	Boron			Calcium			Chromium			Cobalt			Copper			Iron			Lead			Magnesium		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
Area 1 A1	J12X44	7/19/06	1.9		0.70	6860	C	4.8	7.0		0.38	10.1		0.41	17.4		0.35	22300		10.1	4.7		0.90	5080		2.8
Duplicate of J12X44	J12X48	7/19/06	0.81		0.70	7560	C	4.8	8.2		0.38	10.7		0.41	17.9		0.35	24100		10.2	4.9		0.91	5680		2.8
Split of J12X44	J12X49	7/19/06	1.7	B*	1.5	6820	CN	8.6	6.8		0.36	14.5		0.51	15.7	N	0.30	28000	N	2.4	3.6		0.15	5180	N	12.3

39 Analysis:

TDL		2			100			1			2			1			5			5			75		
Duplicate Analysis	Both > PQL?	Yes (continue)			Yes (continue)			Yes (continue)			Yes (continue)			Yes (continue)			Yes (continue)			Yes (continue)			Yes (continue)		
	Both >5xTDL?	No - evaluate difference			Yes (calc RPD)			Yes (calc RPD)			Yes (calc RPD)			Yes (calc RPD)			Yes (calc RPD)			No - evaluate difference			Yes (calc RPD)		
	RPD				10%			16%			5.8%			2.8%			7.8%						11%		
	Difference >2xTDL?	No - acceptable			Not applicable			Not applicable			Not applicable			Not applicable			Not applicable			No - acceptable			Not applicable		
Split Analysis	Both > PQL?	Yes (continue)			Yes (continue)			Yes (continue)			Yes (continue)			Yes (continue)			Yes (continue)			Yes (continue)			Yes (continue)		
	Both >5xTDL?	No - evaluate difference			Yes (calc RPD)			Yes (calc RPD)			Yes (calc RPD)			Yes (calc RPD)			Yes (calc RPD)			No - evaluate difference			Yes (calc RPD)		
	RPD				0.58%			2.9%			36%			10%			23%						1.9%		
	Difference >2xTDL?	No - acceptable			Not applicable			Not applicable			Not applicable			Not applicable			Not applicable			No - acceptable			Not applicable		

49 -- = not reported

50 B* =estimate

51 C = method blank contamination

CALCULATION SHEET

Washington Closure Hanford

Originator J. M. Capron

Project 100-B/C Field Remediation

Subject 118-B-1 Burial Ground Cleanup Verification 95% UCL Calculations

Date 10/03/07
Job No. 14655

Calc. No. 0100B-CA-V0299
Checked T. M. Blakley

Rev. No. 1
Date 10/04/07
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1 Split/Duplicate Analysis (continued)

Sample Area	Sample Number	Sample Date	Manganese			Mercury			Nickel			Potassium			Sodium			Vanadium			Zinc			bis(2-Ethylhexyl)phthalate		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	µg/kg	Q	PQL
Area 1 A1	J12X44	7/19/06	361		0.09	0.01	U	0.01	11.5		0.70	1240	C	6.6	264		2.2	46.1		0.26	45.0		0.46	240	JB	340
Duplicate of J12X44	J12X48	7/19/06	411		0.09	0.02	U	0.02	12.9		0.70	1380	C	6.6	274		2.2	51.9		0.26	49.1		0.47	130	JB	340
Split of J12X44	J12X49	7/19/06	360	N	0.10	0.0214	B*	0.0067	9.7		0.76	1460	N	50.5	460		10.1	68.7	N	0.68	44.5	CN	1.4	330	U	330
7 Analysis:																										
TDL			5			0.2			4			400			50			2.5			1			330		
Duplicate Analysis	Both > PQL?		Yes (continue)			No - evaluate difference			Yes (continue)			Yes (continue)			Yes (continue)			Yes (continue)			Yes (continue)			No - evaluate difference		
	Both >5xTDL?		Yes (calc RPD)						No - evaluate difference			No - evaluate difference			Yes (calc RPD)			Yes (calc RPD)			Yes (calc RPD)					
	RPD		13%												3.7%			12%			8.7%					
	Difference >2xTDL?		Not applicable			No - acceptable			No - acceptable			No - acceptable			Not applicable			Not applicable			Not applicable			No - acceptable		
Split Analysis	Both > PQL?		Yes (continue)			No - evaluate difference			Yes (continue)			Yes (continue)			Yes (continue)			Yes (continue)			Yes (continue)			No - evaluate difference		
	Both >5xTDL?		Yes (calc RPD)						No - evaluate difference			No - evaluate difference			Yes (calc RPD)			Yes (calc RPD)			Yes (calc RPD)					
	RPD		0.28%												54%			39%			1.1%					
	Difference >2xTDL?		Not applicable			No - acceptable			No - acceptable			No - acceptable			Not applicable			Not applicable			Not applicable			No - acceptable		

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Sample Area	Sample Number	Sample Date	Di-n-butylphthalate			4-Methyl-2-pentanone			Acetone			Methylene Chloride		
			µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL
Area 1 A1	J12X44	7/19/06	19	JB	340	5	JB	10	9	J	10	6		5
Duplicate of J12X44	J12X48	7/19/06	18	JB	340	8	JB	10	23	J	10	12		5
Split of J12X44	J12X49	7/19/06	330	U	330	10	U	10	20	U	20	5.1	U	5.1

23 Analysis:

TDL			330			10			20			10		
Duplicate Analysis	Both > PQL?		No - evaluate difference			No - evaluate difference			No - evaluate difference			Yes (continue)		
	Both >5xTDL?											No - evaluate difference		
	RPD													
	Difference >2xTDL?		No - acceptable			No - acceptable			No - acceptable			No - acceptable		
Split Analysis	Both > PQL?		No - evaluate difference			No - evaluate difference			No - evaluate difference			No - evaluate difference		
	Both >5xTDL?													
	RPD													
	Difference >2xTDL?		No - acceptable			No - acceptable			No - acceptable			No - acceptable		

33

Sample Area	Sample Number	Sample Date	Cesium-137			Nickel-63			Potassium-40			Radium-226			Radium-228			Thorium-228			Thorium-232			Strontium-90		
			pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA
Area 3 A3	J12X56	7/20/06	1.51		0.12	1.03	U	4.5	9.50		1.2	0.200	U	0.21	0.588		0.40	0.266		0.086	0.588		0.40	4.42		0.31
Duplicate of J12X56	J12X58	7/20/06	0.776		0.11	-0.828	U	4.3	10.7		0.90	0.437		0.16	0.87	U	0.87	0.250		0.079	0.87	U	0.87	3.23		0.25
Split of J12X56	J12X60	7/20/06	2.82		0.0363	6.61	J	5.94	--		--	--		--	--		--	--		--	--		--	3.43		0.175

39 Analysis:

TDL		0.1	30	0.5	0.1	0.2	1	1	1
Duplicate Analysis	Both > MDA?	Yes (continue)	No - evaluate difference	Yes (continue)	No - evaluate difference	No - evaluate difference	Yes (continue)	No - evaluate difference	Yes (continue)
	Both >5xTDL?	Yes (calc RPD)		Yes (calc RPD)			No - evaluate difference		No - evaluate difference
	RPD	64%		12%					
	Difference >2xTDL?	Not applicable	No - acceptable	Not applicable	Yes - assess further	No - acceptable	No - acceptable	No - acceptable	No - acceptable
Split Analysis	Both > MDA?	Yes (continue)	No - evaluate difference						Yes (continue)
	Both >5xTDL?	Yes (calc RPD)							No - evaluate difference
	RPD	61%							
	Difference >2xTDL?	Not applicable	No - acceptable						No - acceptable

49 -- = not reported

50 B = method blank contamination (organic constituents)

51 B* =estimate

52 C = method blank contamination (inorganic constituents)

53 J = estimate

54 MDA = minimum detectable activity

N = spiked analyte recovery outside control limits

PQL = practical quantitation limit

Q = qualifier

RPD = relative percent difference

TDL = target detection limit

U = undetected

CALCULATION SHEET

Washington Closure Hanford

Originator J. M. Capron
Project 100-B/C Field Remediation
Subject 118-B-1 Burial Ground Cleanup Verification 95% UCL Calculations

Date 10/03/07
Job No. 14655

Calc. No. 0100B-CA-V0299
Checked T. M. Blakley

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1 Split/Duplicate Analysis (continued)

Sample Area	Sample Number	Sample Date	Di-n-butylphthalate			Acetone		
			µg/kg	Q	PQL	mg/kg	Q	PQL
Area 3 A3	J12X56	7/20/06	27	JB	340	7	J	10
Duplicate of J12X56	J12X58	7/20/06	54	JB	340	8	J	10
Split of J12X56	J12X60	7/20/06	340	U	340.00	20	U	20

7 Analysis:

TDL		330	20
Duplicate Analysis	Both > PQL?	No - evaluate difference	No - evaluate difference
	Both >5xTDL?		
	RPD		
	Difference >2xTDL?	No - acceptable	No - acceptable
Split Analysis	Both > PQL?	No - evaluate difference	No - evaluate difference
	Both >5xTDL?		
	RPD		
	Difference >2xTDL?	No - acceptable	No - acceptable

17

Sample Area	Sample Number	Sample Date	Cesium-137			Potassium-40			Radium-226			Radium-228			Thorium-228			Thorium-232			Strontium-90			Aluminum		
			pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	mg/kg	Q	PQL
Area 4 A1	J12X61	7/25/06	0.738		0.048	21.8		0.36	0.696		0.077	1.10		0.17	1.09		0.055	1.10		0.17	0.208	U	0.23	3740		8.0
Duplicate of J12X61	J12X65	7/25/06	0.260		0.033	10.8		0.24	0.418		0.058	0.631		0.12	0.544		0.033	0.631		0.12	0.158	U	0.23	4220		8.1
Split of J12X61	J12X66	7/25/06	0.250		0.0274	--		--	--		--	--		--	--		--	--		--	0.319		0.166	5490	N	6.2

23 Analysis:

TDL		0.1	0.5	0.1	0.2	1	1	1	5
Duplicate Analysis	Both > PQL/MDA?	Yes (continue)	Yes (continue)	Yes (continue)	Yes (continue)	Yes (continue)	Yes (continue)	No - evaluate difference	Yes (continue)
	Both >5xTDL?	No - evaluate difference	Yes (calc RPD)	No - evaluate difference	No - evaluate difference	No - evaluate difference	No - evaluate difference		Yes (calc RPD)
	RPD		67%						12%
	Difference >2xTDL?	Yes - assess further	Not applicable	Yes - assess further	Yes - assess further	No - acceptable	No - acceptable	No - acceptable	Not applicable
Split Analysis	Both > PQL/MDA?	Yes (continue)							Yes (continue)
	Both >5xTDL?	No - evaluate difference							Yes (calc RPD)
	RPD								38%
	Difference >2xTDL?	Yes - assess further							Not applicable

33

Sample Area	Sample Number	Sample Date	Antimony			Arsenic			Barium			Beryllium			Boron			Calcium			Chromium			Cobalt		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
Area 4 A1	J12X61	7/25/06	1.2	U	1.2	2.5		1.7	39.1		0.06	0.42		0.06	1.0		0.67	6520	C	4.6	3.7		0.36	8.4		0.39
Duplicate of J12X61	J12X65	7/25/06	1.2	U	1.2	3.3		1.7	51.4		0.06	0.34		0.06	3.9		0.67	7870	C	4.6	5.1		0.36	8.6		0.39
Split of J12X61	J12X66	7/25/06	1.7	NJ	0.33	2.4		0.28	59.3		0.50	0.32	B*	0.071	7.7	B*	1.5	9360	C	8.6	6.2		0.36	13.9		0.50

39 Analysis:

TDL		0.6	10	2	0.5	2	100	1	2
Duplicate Analysis	Both > PQL?	No - evaluate difference	Yes (continue)	Yes (continue)	Yes (continue)	Yes (continue)	Yes (continue)	Yes (continue)	Yes (continue)
	Both >5xTDL?		No - evaluate difference	Yes (calc RPD)	No - evaluate difference	No - evaluate difference	Yes (calc RPD)	No - evaluate difference	No - evaluate difference
	RPD			27%			19%		
	Difference >2xTDL?	No - acceptable	No - acceptable	Not applicable	No - acceptable	No - acceptable	Not applicable	No - acceptable	No - acceptable
Split Analysis	Both > PQL?	No - evaluate difference	Yes (continue)	Yes (continue)	Yes (continue)	Yes (continue)	Yes (continue)	Yes (continue)	Yes (continue)
	Both >5xTDL?		No - evaluate difference	Yes (calc RPD)	No - evaluate difference	No - evaluate difference	Yes (calc RPD)	No - evaluate difference	No - evaluate difference
	RPD			41%			36%		
	Difference >2xTDL?	No - acceptable	No - acceptable	Not applicable	No - acceptable	Yes - assess further	Not applicable	Yes - assess further	Yes - assess further

-- = not reported
B = method blank contamination (organic constituents)
B* = estimate
C = method blank contamination (inorganic constituents)
J = estimate
MDA = minimum detectable activity
N = spiked analyte recovery outside control limits
PQL = practical quantitation limit
Q = qualifier
RPD = relative percent difference
TDL = target detection limit
U = undetected

CALCULATION SHEET

Washington Closure Hanford

Originator J. M. Capron
Project 100-B/C Field Remediation
Subject 118-B-1 Burial Ground Cleanup Verification 95% UCL Calculations

Date 10/03/07
Job No. 14655

Calc. No. 0100B-CA-V0299
Checked T. M. Blakley

Rev. No. 1
Date 10/04/07
Sheet No. 56 of 61

1 Split/Duplicate Analysis (continued)

Sample Area	Sample Number	Sample Date	Copper			Hexavalent Chromium			Iron			Lead			Magnesium			Manganese			Mercury			Nickel		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
Area 4 A1	J12X61	7/25/06	15.5		0.34	0.30		0.20	22100		9.7	5.2		0.87	3970		2.7	290		0.08	0.01	U	0.01	6.8		0.67
Duplicate of J12X61	J12X65	7/25/06	15.7		0.34	0.20	U	0.20	21500		9.8	5.5		0.87	4510		2.7	292		0.08	0.01	U	0.01	11.3		0.67
Split of J12X61	J12X66	7/25/06	16.3		0.30	0.350	U	0.350	27000		2.4	6.8		0.15	4950		12.2	337	N	0.10	0.0306	B*	0.0067	8.7		0.76

7 Analysis:

TDL		1	0.5	5	5	75	5	0.2	4
Duplicate Analysis	Both > PQL?	Yes (continue)	No - evaluate difference	Yes (continue)	Yes (continue)	Yes (continue)	Yes (continue)	No - evaluate difference	Yes (continue)
	Both >5xTDL?	Yes (calc RPD)		Yes (calc RPD)	No - evaluate difference	Yes (calc RPD)	Yes (calc RPD)		No - evaluate difference
	RPD	1.3%		2.8%		13%	0.69%		
	Difference >2xTDL?	Not applicable	No - acceptable	Not applicable	No - acceptable	Not applicable	Not applicable	No - acceptable	No - acceptable
Split Analysis	Both > PQL?	Yes (continue)	No - evaluate difference	Yes (continue)	Yes (continue)	Yes (continue)	Yes (continue)	No - evaluate difference	Yes (continue)
	Both >5xTDL?	Yes (calc RPD)		Yes (calc RPD)	No - evaluate difference	Yes (calc RPD)	Yes (calc RPD)		No - evaluate difference
	RPD	5.0%		20%		22%	15%		
	Difference >2xTDL?	Not applicable	No - acceptable	Not applicable	No - acceptable	Not applicable	Not applicable	No - acceptable	No - acceptable

17

Sample Area	Sample Number	Sample Date	Potassium			Selenium			Silicon			Sodium			Vanadium			Zinc			Aroclor-1254			bis(2-Ethylhexyl)phthalate		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL
Area 4 A1	J12X61	7/25/06	674		6.3	1.3	U	1.3	392	J	6.3	162		2.1	53.4		0.25	41.7	C	0.45	80		13	46	JB	340
Duplicate of J12X61	J12X65	7/25/06	816		6.4	1.3	U	1.3	360	J	6.4	164		2.1	44.8		0.25	41.0	C	0.45	57		13	35	JB	340
Split of J12X61	J12X66	7/25/06	1160		50.4	0.62	B*	0.17	577	CNJ	4.0	273		10.1	68.4	N	0.68	48.3		1.4	17	U	17	330	U	330

23 Analysis:

TDL			400	1	2	50	2.5	1	16.5	330
Duplicate Analysis	Both > PQL?	Yes (continue)	No - evaluate difference			Yes (continue)	Yes (continue)	Yes (continue)	Yes (continue)	No - evaluate difference
	Both >5xTDL?	No - evaluate difference				Yes (calc RPD)	Yes (calc RPD)	Yes (calc RPD)	Yes (calc RPD)	No - evaluate difference
	RPD					8.5%		18%	1.7%	
	Difference >2xTDL?	No - acceptable	No - acceptable			Not applicable	Not applicable	Not applicable	Not applicable	No - acceptable
Split Analysis	Both > PQL?	Yes (continue)	No - evaluate difference			Yes (continue)	Yes (continue)	Yes (continue)	Yes (continue)	No - evaluate difference
	Both >5xTDL?	No - evaluate difference				Yes (calc RPD)	Yes (calc RPD)	Yes (calc RPD)	Yes (calc RPD)	
	RPD					38%		25%	15%	
	Difference >2xTDL?	No - acceptable	No - acceptable			Not applicable	Yes - assess further	Not applicable	Not applicable	Yes - assess further

33

Sample Area	Sample Number	Sample Date	Di-n-butylphthalate			1,1,1-Trichloroethane			Acetone			Carbon Tetrachloride			Methylene Chloride			Trichloroethene			4,4'-DDE			Dieldrin		
			µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL
Area 4 A1	J12X61	7/25/06	38	JB	340	5	U	5	19		10	13		5	5		5	5	U	5	16	D	1.3	3.8	DI	1.3
Duplicate of J12X61	J12X65	7/25/06	63	JB	340	5	U	5	10	U	10	5	J	5	6		5	5	U	5	1.3	UD	1.3	0.74	JD	1.3
Split of J12X61	J12X66	7/25/06	330	U	330	1.2	J	5.0	20	U	20	4.4	J	5.0	5.0	U	5.0	2.4	J	5.0	1.7	U	1.7	1.7	U	1.7

39 Analysis:

TDL			330	5	20	5	10	5	3.3	3.3
Duplicate Analysis	Both > PQL?	No - evaluate difference	No - evaluate difference			No - evaluate difference	No - evaluate difference	No - evaluate difference	No - evaluate difference	No - evaluate difference
	Both >5xTDL?									
	RPD									
	Difference >2xTDL?	No - acceptable	No - acceptable			No - acceptable	No - acceptable	No - acceptable	No - acceptable	Yes - assess further
Split Analysis	Both > PQL?	No - evaluate difference	No - evaluate difference			No - evaluate difference	No - evaluate difference	No - evaluate difference	No - evaluate difference	No - evaluate difference
	Both >5xTDL?									
	RPD									
	Difference >2xTDL?	No - acceptable	No - acceptable			No - acceptable	No - acceptable	No - acceptable	No - acceptable	Yes - assess further

49 B = method blank contamination (organic constituents)

50 B* =estimate

51 C = method blank contamination (inorganic constituents)

52 D = diluted

53 I = interference on one analytical column

54 J = estimate

N = spiked analyte recovery outside control limits

PQL = practical quantitation limit

Q = qualifier

RPD = relative percent difference

TDL = target detection limit

U = undetected

CALCULATION SHEET

Washington Closure Hanford

Originator J. M. Capron

Project 100-B/C Field Remediation

Subject 118-B-1 Burial Ground Cleanup Verification 95% UCL Calculations

Date 10/03/07

Job No. 14655

Calc. No. 0100B-CA-V0299

Checked T. M. Blakley

Rev. No. 1

Date 10/04/07

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1 Split/Duplicate Analysis (continued)

Sample Area	Sample Number	Sample Date	Barium			Beryllium			Boron			Calcium			Chromium			Cobalt			Copper			Hexavalent Chromium		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
BCL D4	J12WL4	7/11/06	52.7		0.02	0.44		0.02	1.3		0.23	5800	C	2.1	8.8		0.12	7.9		0.13	12.9		0.11	0.36		0.20
Duplicate of J12WL4	J12WL5	7/11/06	59.5		0.02	0.45		0.02	1.9		0.23	5970	C	2.1	7.3		0.13	7.6		0.14	12.9		0.12	0.26		0.20
BCL B8	J12WL6	7/12/06	54.2		0.06	0.43		0.06	1.7		0.68	5750		4.6	7.3		0.37	7.3		0.40	13.8		0.34	0.28		0.20
Split of J12WL6	J12WW0	7/12/06	69.9		0.50	0.34	B*	0.071	2.8	B*C	1.5	6270	CN	8.6	9.4		0.36	10.9		0.50	14.4	N	0.30	0.350	UJ	0.350

8 Analysis:

TDL			2	0.5	2	100	1	2	1	0.5
Duplicate Analysis	Both > PQL?	Yes (continue)	Yes (continue)	Yes (continue)	Yes (continue)	Yes (continue)	Yes (continue)	Yes (continue)	Yes (continue)	Yes (continue)
	Both >5xTDL?	Yes (calc RPD)	No - evaluate difference	No - evaluate difference	Yes (calc RPD)	Yes (calc RPD)	No - evaluate difference	Yes (calc RPD)	No - evaluate difference	No - evaluate difference
	RPD	12%			2.9%	19%			0%	
	Difference >2xTDL?	Not applicable	No - acceptable	No - acceptable	Not applicable	Not applicable	No - acceptable	Not applicable	Not applicable	No - acceptable
Split Analysis	Both > PQL?	Yes (continue)	Yes (continue)	Yes (continue)	Yes (continue)	Yes (continue)	Yes (continue)	Yes (continue)	Yes (continue)	No - evaluate difference
	Both >5xTDL?	Yes (calc RPD)	No - evaluate difference	No - evaluate difference	Yes (calc RPD)	Yes (calc RPD)	No - evaluate difference	Yes (calc RPD)	No - evaluate difference	Yes (calc RPD)
	RPD	25%			8.7%	25%			4.3%	
	Difference >2xTDL?	Not applicable	No - acceptable	No - acceptable	Not applicable	Not applicable	No - acceptable	Not applicable	Not applicable	No - acceptable

Sample Area	Sample Number	Sample Date	Iron			Lead			Magnesium			Manganese			Molybdenum			Nickel			Potassium			Selenium		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
BCL D4	J12WL4	7/11/06	16100	C	0.52	4.9		0.30	4120		0.93	324		0.03	0.39		0.28	10.3		0.23	1160		2.2	0.45	U	0.45
Duplicate of J12WL4	J12WL5	7/11/06	15200	C	0.52	5.0		0.30	4180		0.94	348		0.03	0.35		0.28	10.2		0.23	1010		2.2	0.54		0.45
BCL B8	J12WL6	7/12/06	17900		9.9	4.1		0.88	3900		2.7	304		0.08	0.82	U	0.82	9.2		0.68	1110		6.4	1.3	U	1.3
Split of J12WL6	J12WW0	7/12/06	20100	N	2.4	4.8		0.15	4880	N	12.2	337	N	0.10	1.2	U	1.2	11.3		0.76	1450		50.4	0.33	B*	0.17

25 Analysis:

TDL			5	5	75	5	2	4	400	1
Duplicate Analysis	Both > PQL?	Yes (continue)	Yes (continue)	Yes (continue)	Yes (continue)	Yes (continue)	Yes (continue)	Yes (continue)	Yes (continue)	No - evaluate difference
	Both >5xTDL?	Yes (calc RPD)	No - evaluate difference	No - evaluate difference	Yes (calc RPD)	Yes (calc RPD)	No - evaluate difference	No - evaluate difference	No - evaluate difference	No - evaluate difference
	RPD	5.8%			1.4%	7.1%				
	Difference >2xTDL?	Not applicable	No - acceptable	No - acceptable	Not applicable	Not applicable	No - acceptable	No - acceptable	No - acceptable	No - acceptable
Split Analysis	Both > PQL?	Yes (continue)	Yes (continue)	Yes (continue)	Yes (continue)	Yes (continue)	No - evaluate difference	Yes (continue)	Yes (continue)	No - evaluate difference
	Both >5xTDL?	Yes (calc RPD)	No - evaluate difference	No - evaluate difference	Yes (calc RPD)	Yes (calc RPD)		No - evaluate difference	No - evaluate difference	No - evaluate difference
	RPD	12%			22%	10%				
	Difference >2xTDL?	Not applicable	No - acceptable	No - acceptable	Not applicable	Not applicable	No - acceptable	No - acceptable	No - acceptable	No - acceptable

Sample Area	Sample Number	Sample Date	Silicon			Sodium			Vanadium			Zinc			Aroclor-1254			Aroclor-1260			Benzo(a)anthracene			Benzo(a)pyrene		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL
BCL D4	J12WL4	7/11/06	613	CJ	2.2	145	C	0.73	39.7		0.09	35.3		0.15	13	U	13	13	U	13	330	U	330	330	U	330
Duplicate of J12WL4	J12WL5	7/11/06	562	CJ	2.2	146	C	0.73	36.5		0.09	34.2		0.15	13	U	13	13	U	13	330	U	330	330	U	330
BCL B8	J12WL6	7/12/06	500		6.4	104		2.2	37.3		0.25	34.5		0.45	13	U	13	13	U	13	340	U	340	340	U	340
Split of J12WL6	J12WW0	7/12/06	1560	CN	4.0	222	C	10.1	49.3		0.68	38.9		1.4	47	J	17	130	J	17	34	J	330	34	J	330

42 Analysis:

TDL			2	50	2.5	1	16.5	16.5	330	330
Duplicate Analysis	Both > PQL?	Yes (continue)	Yes (continue)	Yes (continue)	Yes (continue)	Yes (continue)	No - evaluate difference	No - evaluate difference	No - evaluate difference	No - evaluate difference
	Both >5xTDL?	Yes (calc RPD)	No - evaluate difference	No - evaluate difference	Yes (calc RPD)	Yes (calc RPD)				
	RPD	8.7%			8.4%	3.2%				
	Difference >2xTDL?	Not applicable	No - acceptable	No - acceptable	Not applicable	Not applicable	No - acceptable	No - acceptable	No - acceptable	No - acceptable
Split Analysis	Both > PQL?	Yes (continue)	Yes (continue)	Yes (continue)	Yes (continue)	Yes (continue)	No - evaluate difference	No - evaluate difference	No - evaluate difference	No - evaluate difference
	Both >5xTDL?	Yes (calc RPD)	No - evaluate difference	No - evaluate difference	Yes (calc RPD)	Yes (calc RPD)				
	RPD	103%			28%	12%				
	Difference >2xTDL?	Not applicable	Yes - assess further	Not applicable	Not applicable	Not applicable	Yes - assess further	Yes - assess further	No - acceptable	No - acceptable

52 B* =estimate

53 BCL = below cleanup levels

54 C = method blank contamination

55 J = estimate

56 N = spiked analyte recovery outside control limits

PQL = practical quantitation limit

Q = qualifier

RPD = relative percent difference

TDL = target detection limit

U = undetected

CALCULATION SHEET

Washington Closure Hanford

Originator J. M. Capron
Project 100-B/C Field Remediation
Subject 118-B-1 Burial Ground Cleanup Verification 95% UCL Calculations

Date 10/03/07
Job No. 14655

Calc. No. 0100B-CA-V0299
Checked T. M. Blakley

Rev. No. 1
Date 10/04/07
Sheet No. 60 of 61

1 Split/Duplicate Analysis (continued)

Sample Area	Sample Number	Sample Date	Americium-241			Cesium-137			Nickel-63			Plutonium-239/240			Potassium-40			Radium-226			Radium-228			Thorium-228		
			pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA
SPA B5	J13HY7	10/12/06	0.047	U	0.23	0.222		0.057	0.952	U	3.5	0.044	U	0.33	32.0		0.37	0.931		0.091	1.61		0.27	1.74		0.10
Duplicate of J13HY7	J13J09	10/12/06	0.057	U	0.27	0.109		0.032	0.723	U	3.5	0	U	0.34	15.9		0.29	0.607		0.057	0.839		0.11	0.826		0.038
Split of J13HY7	J13J10	10/12/06	0.311	J	0.0465	0.121		0.0213	5.13		5.07	0.195		0.0450	--		--	--		--	--		--	--		--

7 Analysis:

TDL			1	0.1	30	1	0.5	0.1	0.2	1
Duplicate Analysis	Both > MDA?	No - evaluate difference	Yes (continue)	No - evaluate difference	No - evaluate difference	Yes (continue)	Yes (continue)	Yes (continue)	Yes (continue)	Yes (continue)
	Both >5xTDL?		No - evaluate difference			Yes (calc RPD)	Yes (calc RPD)	No - evaluate difference	No - evaluate difference	
	RPD					67%	42%			
	Difference >2xTDL?	No - acceptable	No - acceptable	No - acceptable	No - acceptable	Not applicable	Not applicable	Yes - assess further	No - acceptable	
Split Analysis	Both > MDA?	No - evaluate difference	Yes (continue)	No - evaluate difference	No - evaluate difference					
	Both >5xTDL?		No - evaluate difference							
	RPD									
	Difference >2xTDL?	No - acceptable	No - acceptable	No - acceptable	No - acceptable					

Sample Area	Sample Number	Sample Date	Thorium-232			Tritium			Uranium-233/234			Uranium-235			Uranium-238			Aluminum			Antimony			Arsenic		
			pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
SPA B5	J13HY7	10/12/06	1.61		0.27	3.09		2.6	0.600		0.038	0.079		0.032	0.534		0.038	5200		6.4	1.0	U	1.0	2.3		1.0
Duplicate of J13HY7	J13J09	10/12/06	0.839		0.11	6.18		2.7	0.553		0.029	0.032	U	0.044	0.523		0.029	5550		6.5	1.0	U	1.0	2.4		1.0
Split of J13HY7	J13J10	10/12/06	--		--	0.327		0.0201	0.171		0.0331	0.0111	U	0.0391	0.163		0.0391	8360	N	6.2	1.0	NJ	0.33	3.0		0.28

23 Analysis:

TDL			1	10	1	0.5	1	5	0.6	10
Duplicate Analysis	Both > PQL/MDA?	Yes (continue)	Yes (continue)	Yes (continue)	No - evaluate difference	Yes (continue)	Yes (continue)	Yes (continue)	No - evaluate difference	Yes (continue)
	Both >5xTDL?	No - evaluate difference	No - evaluate difference	No - evaluate difference		No - evaluate difference	Yes (calc RPD)		No - evaluate difference	
	RPD						6.5%			
	Difference >2xTDL?	No - acceptable	No - acceptable	No - acceptable	No - acceptable	No - acceptable	Not applicable	No - acceptable	No - acceptable	No - acceptable
Split Analysis	Both > PQL/MDA?		Yes (continue)	Yes (continue)	No - evaluate difference	Yes (continue)	Yes (continue)	Yes (continue)	No - evaluate difference	Yes (continue)
	Both >5xTDL?		No - evaluate difference	No - evaluate difference		No - evaluate difference	Yes (calc RPD)		No - evaluate difference	
	RPD						47%			
	Difference >2xTDL?		No - acceptable	No - acceptable	No - acceptable	No - acceptable	Not applicable	No - acceptable	No - acceptable	No - acceptable

Sample Area	Sample Number	Sample Date	Barium			Beryllium			Boron			Cadmium			Calcium			Chromium			Cobalt			Copper		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
SPA B5	J13HY7	10/12/06	63.8		0.06	0.26		0.03	1.5		1.0	0.11		0.08	3490	C	2.4	8.0	C	0.20	6.4		0.14	12.9		0.23
Duplicate of J13HY7	J13J09	10/12/06	67.8		0.06	0.26		0.03	1.8		1.0	0.15		0.08	3540	C	2.4	9.3	C	0.20	6.7		0.14	13.6		0.23
Split of J13HY7	J13J10	10/12/06	84.8		0.50	0.35	B*	0.071	7.0	B*C	1.5	0.14	U	0.14	4520	CN	8.6	12.5		0.36	11.3		0.50	15.3		0.30

39 Analysis:

TDL			2	0.5	2	0.2	100	1	2	1
Duplicate Analysis	Both > PQL?	Yes (continue)	Yes (continue)	Yes (continue)	Yes (continue)	Yes (continue)	Yes (continue)	Yes (continue)	Yes (continue)	Yes (continue)
	Both >5xTDL?	Yes (calc RPD)	No - evaluate difference	No - evaluate difference	No - evaluate difference	Yes (calc RPD)	Yes (calc RPD)	No - evaluate difference	Yes (calc RPD)	
	RPD	6.1%				1.4%	15%			5.3%
	Difference >2xTDL?	Not applicable	No - acceptable	No - acceptable	No - acceptable	Not applicable	Not applicable	No - acceptable	Not applicable	Not applicable
Split Analysis	Both > PQL?	Yes (continue)	Yes (continue)	Yes (continue)	No - evaluate difference	Yes (continue)	Yes (continue)	Yes (continue)	Yes (continue)	Yes (continue)
	Both >5xTDL?	Yes (calc RPD)	No - evaluate difference	No - evaluate difference		Yes (calc RPD)	Yes (calc RPD)	No - evaluate difference	Yes (calc RPD)	
	RPD	28%				26%	44%			17%
	Difference >2xTDL?	Not applicable	No - acceptable	Yes - assess further	No - acceptable	Not applicable	Not applicable	Yes - assess further	Not applicable	Not applicable

- 49 B* =estimate
50 C = method blank contamination
51 J = estimate
52 MDA = minimum detectable activity
53 N = spiked analyte recovery outside control limits
54 PQL = practical quantitation limit
- Q = qualifier
RPD = relative percent difference
SPA = staging pile area
TDL = target detection limit
U = undetected

CALCULATION SHEET

Washington Closure Hanford

Originator J. M. Capron

Project 100-B/C Field Remediation

Subject 118-B-1 Burial Ground Cleanup Verification 95% UCL Calculations

Date 10/03/07
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Rev. No. 1
Date 10/04/07
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1 Split/Duplicate Analysis (continued)

Sample Area	Sample Number	Sample Date	Hexavalent Chromium			Iron			Lead			Magnesium			Manganese			Mercury			Nickel			Potassium		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
SPA B5	J13HY7	10/12/06	0.22		0.20	15900		6.9	4.5		0.34	3510		2.0	286		0.06	0.09		0.01	10.8		0.37	1220	C	6.0
Duplicate of J13HY7	J13J09	10/12/06	0.20	U	0.20	16700		6.9	5.2		0.34	3640		2.0	304		0.06	0.11		0.01	10.4		0.37	1300	C	6.0
Split of J13HY7	J13J10	10/12/06	0.350	U	0.350	20100	N	2.4	5.4	N	0.30	4960		12.2	335	N	0.10	0.12		0.0067	13.9		0.76	1500		50.4
Analysis:																										
TDL			0.5			5			5			75			5			0.2			4			400		
Duplicate Analysis	Both > PQL?		No - evaluate difference			Yes (continue)			Yes (continue)			Yes (continue)			Yes (continue)			Yes (continue)			Yes (continue)			Yes (continue)		
	Both >5xTDL?					Yes (calc RPD)			No - evaluate difference			Yes (calc RPD)			Yes (calc RPD)			No - evaluate difference			No - evaluate difference			No - evaluate difference		
	RPD					4.9%						3.6%			6.1%											
	Difference >2xTDL?		No - acceptable			Not applicable			No - acceptable			Not applicable			Not applicable			No - acceptable			No - acceptable			No - acceptable		
Split Analysis	Both > PQL?		No - evaluate difference			Yes (continue)			Yes (continue)			Yes (continue)			Yes (continue)			Yes (continue)			Yes (continue)			Yes (continue)		
	Both >5xTDL?					Yes (calc RPD)			No - evaluate difference			Yes (calc RPD)			Yes (calc RPD)			No - evaluate difference			No - evaluate difference			No - evaluate difference		
	RPD					23%						34%			16%											
	Difference >2xTDL?		No - acceptable			Not applicable			No - acceptable			Not applicable			Not applicable			No - acceptable			No - acceptable			No - acceptable		

Sample Area	Sample Number	Sample Date	Selenium			Silicon			Sodium			Vanadium			Zinc			bis(2-Ethylhexyl)phthalate			Di-n-butylphthalate			Acetone		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL
SPA B5	J13HY7	10/12/06	0.73	U	0.73	446		1.1	108	C	0.59	36.4		0.14	33.0		0.08	24	JB	330	330	U	330	10	UJ	10
Duplicate of J13HY7	J13J09	10/12/06	0.74	U	0.74	456		1.1	119	C	0.59	39.2		0.14	34.4		0.08	27	JB	330	30	J	330	10	UJ	10
Split of J13HY7	J13J10	10/12/06	0.62	B* C J	0.17	234	C N J	4.0	173	C	10.1	50.9		0.68	39.8	C	1.4	330	U	330	330	U	330	10	J B N	20

23 Analysis:

TDL			1			2			50			2.5			1			330			330			20		
Duplicate Analysis	Both > PQL?		No - evaluate difference			Yes (continue)			Yes (continue)			Yes (continue)			Yes (continue)			No - evaluate difference			No - evaluate difference			No - evaluate difference		
	Both >5xTDL?					Yes (calc RPD)			No - evaluate difference			Yes (calc RPD)			Yes (calc RPD)											
	RPD					2.2%						7.4%			4.2%											
	Difference >2xTDL?		No - acceptable			Not applicable			No - acceptable			Not applicable			Not applicable			No - acceptable			No - acceptable			No - acceptable		
Split Analysis	Both > PQL?		No - evaluate difference			Yes (continue)			Yes (continue)			Yes (continue)			Yes (continue)			No - evaluate difference			No - evaluate difference			No - evaluate difference		
	Both >5xTDL?					Yes (calc RPD)			No - evaluate difference			Yes (calc RPD)			Yes (calc RPD)											
	RPD					62%						33%			19%											
	Difference >2xTDL?		No - acceptable			Not applicable			No - acceptable			Not applicable			Not applicable			No - acceptable			No - acceptable			No - acceptable		

Sample Area	Sample Number	Sample Date	Methylene Chloride			Toluene			Trichloroethene			Endosulfan Sulfate			2,4-D			Dalapon			Dicamba			Dichloroprop		
			µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL
SPA B5	J13HY7	10/12/06	10	BJ	5	5	UJ	5	5	UJ	5	1.3	UD	1.3	34	U	34	9.5	J I	34	9.7	J I	34	49	I	34
Duplicate of J13HY7	J13J09	10/12/06	12	BJ	5	5	UJ	5	5	UJ	5	0.37	J D	1.3	22	J	34	34	U	34	9.1	J I	34	34	U	34
Split of J13HY7	J13J10	10/12/06	5.0	U	5.0	0.36	J B	5.0	1.0	J	5.0	1.7	U	1.7	81	U	81	40	U	40	40	U	40	81	U	81

39 Analysis:

		TDL	10	5	5	3.3	100	100	100	100
40	Duplicate Analysis	Both > PQL?	Yes (continue)	No - evaluate difference	No - evaluate difference	No - evaluate difference	No - evaluate difference	No - evaluate difference	No - evaluate difference	No - evaluate difference
41		Both >5xTDL?	No - evaluate difference							
42		RPD								
43		Difference >2xTDL?	No - acceptable	No - acceptable	No - acceptable	No - acceptable	No - acceptable	No - acceptable	No - acceptable	No - acceptable
44	Split Analysis	Both > PQL?	No - evaluate difference	No - evaluate difference	No - evaluate difference	No - evaluate difference	No - evaluate difference	No - evaluate difference	No - evaluate difference	No - evaluate difference
45		Both >5xTDL?								
46		RPD								
47		Difference >2xTDL?	No - acceptable	No - acceptable	No - acceptable	No - acceptable	No - acceptable	No - acceptable	No - acceptable	No - acceptable
48										

Attachment 1. 118-B-1 Verification Sampling Results.

Sample Location	Sample Number	Sample Date	Americium-241			Americium-241 GEA			Carbon-14			Cesium-137			Cobalt-60		
			pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA
Area 1 A1	J12X44	7/19/06	0.080	U	0.61	0.23	U	0.23	-1.41	U	3.1	0.308		0.065	0.066	U	0.066
Duplicate of J12X44	J12X48	7/19/06	0	U	0.65	0.33	U	0.33	-0.925	U	2.7	0.169		0.041	0.037	U	0.037
Split of J12X44	J12X49	7/19/06	0.0285	U	0.0448				0.230	U	0.807	0.133		0.0325	0.0382	U	0.0385
Area 1 A2	J12X45	7/19/06	-0.151	U	0.58	0.024	U	0.024	3.44		2.7	0.020	U	0.020	0.022	U	0.022
Area 1 A3	J12X46	7/20/06	0.254	U	0.65	0.35	U	0.35	-0.611	U	3.0	0.166		0.041	0.049		0.033
Area 1 A4	J12X47	7/20/06	0	U	0.60	0.11	U	0.11	-1.43	U	3.7	0.021	U	0.021	0.022	U	0.022
Area 2 A1	J12X50	7/20/06	-0.046	U	0.35	0.36	U	0.36	-0.994	U	3.2	0.223		0.033	0.041	U	0.041
Area 2 A2	J12X51	7/20/06	0	U	0.27	0.086	U	0.086	-0.641	U	3.2	0.099	U	0.099	0.12	U	0.12
Area 2 A3	J12X52	7/20/06	0.042	U	0.32	0.37	U	0.37	-1.07	U	3.4	0.040	U	0.040	0.042	U	0.042
Area 2 A4	J12X53	7/20/06	-0.040	U	0.38	0.14	U	0.14	-1.01	U	3.0	0.056		0.028	0.025	U	0.025
Area 3 A1	J12X54	7/20/06	0	U	0.26	0.036	U	0.036	-0.978	U	3.0	0.028	U	0.028	0.028	U	0.028
Area 3 A2	J12X55	7/20/06	0.046	U	0.51	0.32	U	0.32	-1.56	U	3.0	0.111		0.080	0.087	U	0.087
Area 3 A3	J12X56	7/20/06	0.111	U	0.35	0.095	U	0.095	-1.06	U	3.0	1.51		0.12	0.098	U	0.098
Duplicate of J12X56	J12X58	7/20/06	0.170	U	0.38	0.094	U	0.094	-0.855	U	3.0	0.776		0.11	0.10	U	0.10
Split of J12X56	J12X60	7/20/06							-0.105	U	0.831	2.82		0.0363	-0.00405	U	0.0401
Area 3 A4	J12X57	7/20/06	0.026	U	0.25	0.34	U	0.34	-1.76	U	2.9	0.088	U	0.088	0.089	U	0.089
Area 4 A1	J12X61	7/25/06				0.38	U	0.38	-0.111	U	2.4	0.738		0.048	0.084	U	0.084
Duplicate of J12X61	J12X65	7/25/06				0.20	U	0.20	0.241	U	2.4	0.260		0.033	0.036	U	0.036
Split of J12X61	J12X66	7/25/06							0.354	U	0.809	0.250		0.0274	0.0220	U	0.0345
Area 4 A2	J12X62	7/25/06				0.030	U	0.030	-0.860	U	2.5	0.022	U	0.022	0.028	U	0.028
Area 4 A3	J12X63	7/25/06				0.26	U	0.26	-1.03	U	2.4	0.084		0.047	0.043	U	0.043
Area 4 A4	J12X64	7/25/06				0.44	U	0.44	0.668	U	2.5	0.047	U	0.047	0.050	U	0.050
Area 5 A1	J13V12	12/7/06				0.066	U	0.066	0.649	U	1.9	0.13	U	0.13	0.10	U	0.10
Area 5 A2	J13V10	12/7/06				0.067	U	0.067	1.44	U	2.0	0.076	U	0.076	0.10	U	0.10
Area 5 A3	J13V13	12/7/06				0.47	U	0.47	1.11	U	1.9	19.1		0.14	0.082	U	0.082
Area 5 A3 resample	J14JH6	3/30/07				0.32	U	0.32				3.60		0.12	0.098	U	0.098
Area 5 A4	J13V11	12/7/06				0.069	U	0.069	0.301	U	1.8	0.096	U	0.096	0.13	U	0.13

Note: The following abbreviations apply to all Attachment 1 tables.

Note: Data qualified with B, B*, C, D, I, N, or J are considered acceptable values.

B = method blank contamination

B* = estimate

BCL = below cleanup levels

C = method blank contamination

D = diluted

FS = focused sample

GEA = gamma energy analysis

I = interference on one analytical column

J = estimate

OB = overburden

MDA = minimum detectable activity

N = spiked analyte recovery outside control limits (split samples)

PQL = practical quantitation limit

Q = qualifier

R = rejected

SPA = staging pile area

U = undetected

Attachment	1	Sheet No.	1 of 113
Originator	J. M. Capron <i>JMC</i>	Date	10/03/07
Checked	T. M. Blakley <i>TMB</i>	Date	10/4/2007
Calc. No.	0100B-CA-V0299	Rev. No.	1

Attachment 1. 118-B-1 Verification Sampling Results.

Sample Location	Sample Number	Sample Date	Americium-241			Americium-241 GEA			Carbon-14			Cesium-137			Cobalt-60		
			pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA
Area 6 A1	J12XC2	7/25/06	-0.042	U	0.32	0.36	U	0.36	-0.414	U	2.4	0.116		0.043	0.063	U	0.063
Area 6 A2	J12XC3	7/25/06	0.033	U	0.25	0.31	U	0.31	-0.401	U	2.3	0.160		0.067	0.077	U	0.077
Area 6 A3	J12XC4	7/25/06	0	U	0.19	0.026	U	0.026	0.471	U	2.4	0.107		0.026	0.025	U	0.025
Area 6 A4	J12XC5	7/25/06	0.107	U	0.20	0.031	U	0.031	0.918	U	2.3	0.027	U	0.027	0.028	U	0.028
Area 7 A1	J12XC6	7/26/06	0	U	0.22				0.369	U	2.5	0.578		0.086	0.076	U	0.076
Area 7 A2	J12XC7	7/26/06	0.028	U	0.21				0.144	U	2.3	0.450		0.046	0.037	U	0.037
Area 7 A3	J12XC8	7/26/06	0	U	0.23				-0.422	U	2.2	0.271		0.091	0.082	U	0.082
Area 7 A4	J12XC9	7/26/06	0.058	U	0.22				-0.574	U	2.2	0.297		0.018	0.022	U	0.022
OB A1	J12WK0	7/11/06	0	U	0.24	0.097	U	0.097	2.77	U	4.4	0.076		0.018	0.016	U	0.016
OB A2	J12WK1	7/11/06	-0.035	U	0.27	0.41	U	0.41	1.86	U	4.0	0.039	U	0.045	0.045	U	0.045
OB A3	J12WK2	7/11/06	0.111	U	0.27	0.24	U	0.24	1.35	U	3.9	0.081		0.031	0.038	U	0.038
OB A4	J12WK3	7/11/06	0	U	0.29	0.30	U	0.30	2.69	U	3.9	0.118		0.033	0.040	U	0.040
OB B5	J12WK4	7/11/06	0.103	U	0.49	0.17	U	0.17	0.951	U	3.6	0.027	U	0.027	0.028	U	0.028
OB B6	J12WK5	7/11/06	0	U	0.29	0.26	U	0.26	2.38	U	3.9	0.223		0.066	0.060	U	0.060
OB B7	J12WK6	7/11/06	-0.062	U	0.24	0.029	U	0.029	1.37	U	5.0	0.203		0.022	0.028	U	0.028
OB B8	J12WM7	7/17/06	0.022	U	0.17	0.34	U	0.34	0.568	U	3.0	0.288		0.087	0.079	U	0.079
OB C9	J12WM8	7/17/06	0.088	U	0.17	0.097	U	0.097	-0.308	U	3.1	0.169		0.019	0.018	U	0.018
OB C10	J12WM9	7/17/06	-0.050	U	0.19	0.035	U	0.035	1.30	U	2.6	0.082		0.026	0.026	U	0.026
OB C1	J12WN0	7/17/06	0.060	U	0.29	0.34	U	0.34	0.893	U	2.6	0.100		0.038	0.036	U	0.036
OB C2	J12WN1	7/17/06	0.097	U	0.25	0.35	U	0.35	1.01	U	2.5	0.233		0.080	0.094	U	0.094
OB D3	J12WM5	7/12/06	-0.037	U	0.18	0.32	U	0.32	0.763	U	4.2	0.218		0.077	0.080	U	0.080
OB D4	J12WM6	7/12/06	0.041	U	0.10	0.029	U	0.029	1.73	U	3.8	0.077	U	0.077	0.028	U	0.028
OB D5	J12WM3	7/12/06	0	U	0.18	0.15	U	0.15	2.68	U	4.4	0.654		0.030	0.047	U	0.047
OB D6	J12WM4	7/12/06	0.019	U	0.14	0.24	U	0.24	1.21	U	3.7	0.060	U	0.060	0.035	U	0.035
BCL A1	J12WN2	7/20/06	-0.087	U	0.33	0.21	U	0.21	-1.74	U	3.1	0.155		0.036	0.054	U	0.054
BCL A2	J12WM1	7/12/06	0.013	U	0.15	0.33	U	0.33	1.05	U	3.5	0.13	U	0.13	0.076	U	0.076
BCL A3	J12WM2	7/12/06	-0.049	U	0.15	0.029	U	0.029	1.74	U	3.8	0.023	U	0.023	0.025	U	0.025
BCL A4	J12WM0	7/12/06	0.017	U	0.13	0.16	U	0.16	1.14	U	3.7	0.133		0.037	0.054	U	0.054
BCL B5	J12WL9	7/12/06	-0.065	U	0.16	0.029	U	0.029	0.888	U	3.8	0.065	U	0.065	0.028	U	0.028

Attachment	I	Sheet No.	2 of 113
Originator	J. M. Capron	Date	02/07/07
Checked	T. M. Blakley	Date	
Calc. No.	0100B-CA-V0299	Rev. No.	0

Attachment 1. 118-B-1 Verification Sampling Results.

Sample Location	Sample Number	Sample Date	Americium-241			Americium-241 GEA			Carbon-14			Cesium-137			Cobalt-60		
			pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA
BCL B6	J12WL8	7/12/06	-0.016	U	0.16	0.34	U	0.34	1.15	U	3.7	0.372		0.11	0.089	U	0.089
BCL B7	J12WL7	7/12/06	-0.031	U	0.15	0.35	U	0.35	2.20	U	3.4	0.478		0.076	0.20	U	0.20
BCL B8	J12WL6	7/12/06	0	U	0.14	0.27	U	0.27	1.02	U	3.7	0.069		0.043	0.164		0.039
Split of J12WL6	J12WW0	7/12/06	0.0834		0.0408				0.547	U	0.754	0.0905		0.0218	0.0124	U	0.0238
BCL C9	J12WK7	7/11/06	-0.008	U	0.068	0.16	U	0.16	0.267	U	4.4	0.163		0.019	0.017	U	0.017
BCL C10	J12WK9	7/11/06	-0.013	U	0.066	0.14	U	0.14	0.948	U	4.0	0.045		0.038	0.032	U	0.032
BCL C1	J12WK8	7/11/06	0.043	U	0.052	0.10	U	0.10	1.70	U	3.5	0.025		0.016	0.015	U	0.015
BCL C2	J12WL2	7/11/06	-0.009	U	0.048	0.14	U	0.14	0.247	U	4.0	0.025	U	0.025	0.025	U	0.025
BCL D3	J12WL3	7/11/06	0.037	U	0.092	0.31	U	0.31	1.07	U	3.6	0.068	U	0.068	0.071	U	0.071
BCL D4	J12WL4	7/11/06	-0.012	U	0.066	0.43	U	0.43	1.78	U	4.0	0.045	U	0.045	0.044	U	0.044
Duplicate of J12WL4	J12WL5	7/11/06	-0.048	U	0.085	0.14	U	0.14	0.942	U	4.2	0.023	U	0.023	0.025	U	0.025
BCL D5	J12WL0	7/11/06	-0.042	U	0.086	0.058	U	0.058	2.46	U	3.9	0.010	U	0.010	0.010	U	0.010
BCL D6	J12WL1	7/11/06	0.004	U	0.070	0.37	U	0.37	0.905	U	4.0	0.036	U	0.036	0.037	U	0.037
SPA A1	J13HY3	10/12/06	0.039	U	0.30	0.63	U	0.63	0.350	U	2.7	0.217		0.059	0.056	U	0.056
SPA A2	J13HY4	10/12/06	0	U	0.23	0.17	U	0.17	0.017	U	2.5	0.037		0.034	0.030	U	0.030
SPA A3	J13HY5	10/12/06	-0.055	U	0.21	0.62	U	0.62	-0.453	U	2.8	0.158		0.058	0.060	U	0.060
SPA A4	J13HY6	10/12/06	0.031	U	0.24	0.14	U	0.14	-0.762	U	2.6	0.233		0.026	0.025	U	0.025
SPA B5	J13HY7	10/12/06	0.047	U	0.23	0.63	U	0.63	-0.278	U	2.6	0.222		0.057	0.064	U	0.064
Duplicate of J13HY7	J13J09	10/12/06	0.057	U	0.27	0.17	U	0.17	-0.403	U	2.7	0.109		0.032	0.033	U	0.033
Split of J13HY7	J13J10	10/12/06	0.311	J	0.0465				-0.197	U	0.862	0.121		0.0213	0.0117	U	0.0233
SPA B6	J13HY8	10/17/06	-0.022	U	0.17	0.050	U	0.050	-0.733	U	2.8	0.079		0.026	0.037	U	0.037
SPA B7	J13HY9	10/17/06	0.154	U	0.20	0.039	U	0.039	-0.077	U	2.8	0.043		0.031	0.027	U	0.027
SPA B8	J13J00	10/17/06	0.098	U	0.19	0.76	U	0.76	-1.02	U	2.6	0.084	U	0.084	0.075	U	0.075
SPA C9	J13J01	10/17/06	0	U	0.20	0.20	U	0.20	-1.15	U	2.6	0.223		0.040	0.040	U	0.040
SPA C10	J13J02	10/18/06	0.103	U	0.16	0.70	U	0.70	-1.02	U	2.0	0.112		0.073	0.071	U	0.071
SPA C1	J13J03	10/18/06	0	U	0.16	0.047	U	0.047	0.221	U	2.2	0.066	U	0.066	0.042	U	0.042
SPA C2	J13J04	10/18/06	0.126		0.040	0.53	U	0.53	-0.775	U	1.9	2.39		0.060	0.073	U	0.073
SPA D3	J13J05	10/18/06	-0.011	U	0.045	0.038	U	0.038	-0.038	U	2.1	0.057	U	0.057	0.030	U	0.030
SPA D4	J13J06	10/19/06	-0.004	U	0.057	0.016	U	0.016	0.645	U	2.1	0.662		0.013	0.013	U	0.013
SPA D5	J13J07	10/23/06	0.036	U	0.14	0.036	U	0.036	-0.943	U	2.9	0.184		0.020	0.038		0.029
SPA D6	J13J08	10/23/06	0.046	U	0.18	0.57	U	0.57	11.3		2.6	0.669		0.056	0.060	U	0.060
FS-12	J14Y75	6/27/07	-0.060	U	0.228	0.169	U	0.169				0.353		0.075	0.155		0.081
FS-13	J14Y76	6/27/07	-0.033	U	0.250	0.074	U	0.074				0.117	U	0.117	0.090	U	0.090
FS-14	J12XB3	7/19/06				0.077	U	0.077				0.086	U	0.086	0.12	U	0.12
FS-17	J14JJ3	3/5/07				0.16	U	0.16				0.080	U	0.080	0.051	U	0.051
FS-18	J14L38	3/5/07				0.046	U	0.046				0.057	U	0.057	0.072	U	0.072
FS-19	J14L39	3/5/07				0.057	U	0.057				0.069	U	0.069	0.070	U	0.070

Attachment	1	Sheet No.	3 of 113
Originator	J. M. Capron	Date	10/03/07
Checked	T. M. Blakley	Date	
Calc. No.	0100B-CA-V0299	Rev. No.	1

Attachment 1. 118-B-1 Verification Sampling Results.

Sample Location	Sample Number	Sample Date	Europium-152			Europium-154			Europium-155			Nickel-63			Plutonium-238		
			pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA
Area 1 A1	J12X44	7/19/06	1.24		0.13	0.19	U	0.19	0.14	U	0.14	2.28	U	2.6	0	U	1.5
Duplicate of J12X44	J12X48	7/19/06	0.676		0.092	0.12	U	0.12	0.21	U	0.21	1.15	U	2.7	0	U	0.96
Split of J12X44	J12X49	7/19/06	1.15		0.0877	0.0700	U	0.112	0.0352	U	0.110	4.41	U	5.46	0.00	U	0.0304
Area 1 A2	J12X45	7/19/06	0.074	U	0.074	0.14	U	0.14	0.045	U	0.045	0	U	2.6	-0.085	U	0.65
Area 1 A3	J12X46	7/20/06	0.323		0.087	0.12	U	0.12	0.14	U	0.14	0.177	U	3.9	0.019	U	0.060
Area 1 A4	J12X47	7/20/06	0.052	U	0.052	0.065	U	0.065	0.070	U	0.070	-1.38	U	4.1	0.009	U	0.11
Area 2 A1	J12X50	7/20/06	0.097	U	0.097	0.13	U	0.13	0.15	U	0.15	-1.55	U	3.7	0.201	U	0.77
Area 2 A2	J12X51	7/20/06	0.13	U	0.13	0.41	U	0.41	0.092	U	0.092	-0.044	U	3.9	0	U	1.1
Area 2 A3	J12X52	7/20/06	0.097	U	0.097	0.13	U	0.13	0.14	U	0.14	-2.48	U	4.4	0.117	U	0.90
Area 2 A4	J12X53	7/20/06	0.063	U	0.063	0.075	U	0.075	0.085	U	0.085	-1.47	U	3.9	-0.071	U	0.54
Area 3 A1	J12X54	7/20/06	0.060	U	0.060	0.096	U	0.096	0.055	U	0.055	-1.33	U	4.3	-0.119	U	0.91
Area 3 A2	J12X55	7/20/06	0.17	U	0.17	0.29	U	0.29	0.19	U	0.19	0.472	U	4.6	0.076	U	0.58
Area 3 A3	J12X56	7/20/06	0.18	U	0.18	0.37	U	0.37	0.10	U	0.10	1.03	U	4.5	-0.089	U	0.68
Duplicate of J12X56	J12X58	7/20/06	0.16	U	0.16	0.32	U	0.32	0.098	U	0.098	-0.828	U	4.3	-0.054	U	0.41
Split of J12X56	J12X60	7/20/06	0.274	U	0.114	-0.00265	U	0.118	0.0518	U	0.0879	6.61	J	5.94			
Area 3 A4	J12X57	7/20/06	0.19	U	0.19	0.30	U	0.30	0.21	U	0.21	0.192	U	4.2	0.098	U	0.75
Area 4 A1	J12X61	7/25/06	0.11	U	0.11	0.13	U	0.13	0.17	U	0.17	-0.037	U	3.3			
Duplicate of J12X61	J12X65	7/25/06	0.068	U	0.068	0.10	U	0.10	0.092	U	0.092	-0.356	U	3.5			
Split of J12X61	J12X66	7/25/06	-0.00874	U	0.0738	-0.00678	U	0.0850	0.0317	U	0.0846	1.36	U	5.97			
Area 4 A2	J12X62	7/25/06	0.058	U	0.058	0.086	U	0.086	0.063	U	0.063	-0.735	U	3.6			
Area 4 A3	J12X63	7/25/06	0.083	U	0.083	0.14	U	0.14	0.12	U	0.12	0.724	U	3.3			
Area 4 A4	J12X64	7/25/06	0.12	U	0.12	0.16	U	0.16	0.17	U	0.17	0.463	U	3.4			
Area 5 A1	J13V12	12/7/06	0.12	U	0.12	0.35	U	0.35	0.082	U	0.082	2.89	U	3.9			
Area 5 A2	J13V10	12/7/06	0.13	U	0.13	0.33	U	0.33	0.080	U	0.080	1.50	U	2.5			
Area 5 A3	J13V13	12/7/06	0.36	U	0.36	0.25	U	0.25	0.34	U	0.34	2.41	U	4.0			
Area 5 A3 resample	J14JH6	3/30/07	0.27	U	0.27	0.31	U	0.31	0.25	U	0.25						
Area 5 A4	J13V11	12/7/06	0.14	U	0.14	0.39	U	0.39	0.087	U	0.087	0.740	U	3.9			
Area 6 A1	J12XC2	7/25/06	0.10	U	0.10	0.12	U	0.12	0.14	U	0.14	-0.897	U	3.4	-0.192	U	0.92
Area 6 A2	J12XC3	7/25/06	0.16	U	0.16	0.25	U	0.25	0.18	U	0.18	-0.430	U	3.4	-0.068	U	0.66
Area 6 A3	J12XC4	7/25/06	0.055	U	0.055	0.083	U	0.083	0.049	U	0.049	1.13	U	3.5	0	U	0.62
Area 6 A4	J12XC5	7/25/06	0.064	U	0.064	0.10	U	0.10	0.072	U	0.072	0.122	U	3.6	-0.110	U	0.84

Attachment	1	Sheet No.	4 of 113
Originator	J. M. Capron	Date	10/03/07
Checked	T. M. Blakley	Date	
Calc. No.	0100B-CA-V0299	Rev. No.	1

Attachment 1. 118-B-1 Verification Sampling Results.

Sample Location	Sample Number	Sample Date	Europium-152			Europium-154			Europium-155			Nickel-63			Plutonium-238		
			pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA
Area 7 A1	J12XC6	7/26/06	0.17	U	0.17	0.23	U	0.23	0.17	U	0.17	-1.37	U	3.7	-0.104	U	1.0
Area 7 A2	J12XC7	7/26/06	0.12	U	0.12	0.12	U	0.12	0.15	U	0.15	-0.140	U	3.8	0.267	U	0.85
Area 7 A3	J12XC8	7/26/06	0.17	U	0.17	0.24	U	0.24	0.19	U	0.19	0.516	U	3.5	-0.071	U	0.54
Area 7 A4	J12XC9	7/26/06	0.104		0.052	0.067	U	0.067	0.072	U	0.072	2.41	U	3.7	-0.129	U	0.98
OB A1	J12WK0	7/11/06	0.043	U	0.043	0.052	U	0.052	0.084	U	0.084	-2.07	U	3.8	0	U	0.91
OB A2	J12WK1	7/11/06	0.11	U	0.11	0.15	U	0.15	0.20	U	0.20	-1.18	U	3.8	0.101	U	0.77
OB A3	J12WK2	7/11/06	0.085	U	0.085	0.14	U	0.14	0.12	U	0.12	1.39	U	4.2	0.138	U	1.1
OB A4	J12WK3	7/11/06	0.087	U	0.087	0.11	U	0.11	0.12	U	0.12	-0.205	U	3.7	0	U	0.66
OB B5	J12WK4	7/11/06	0.056	U	0.056	0.087	U	0.087	0.084	U	0.084	-0.160	U	3.6	0	U	0.65
OB B6	J12WK5	7/11/06	0.13	U	0.13	0.20	U	0.20	0.14	U	0.14	-0.628	U	3.8	-0.103	U	0.79
OB B7	J12WK6	7/11/06	0.060	U	0.060	0.085	U	0.085	0.059	U	0.059	1.10	U	3.8	0.062	U	0.68
OB B8	J12WM7	7/17/06	0.19	U	0.19	0.29	U	0.29	0.22	U	0.22	1.07	U	2.6	0.012	U	0.16
OB C9	J12WM8	7/17/06	0.063	U	0.063	0.055	U	0.055	0.059	U	0.059	0.384	U	2.7	0	U	0.24
OB C10	J12WM9	7/17/06	0.065	U	0.065	0.089	U	0.089	0.053	U	0.053	0.127	U	2.6	-0.067	U	0.52
OB C1	J12WN0	7/17/06	0.088	U	0.088	0.13	U	0.13	0.14	U	0.14	0.297	U	2.6	-0.028	U	0.20
OB C2	J12WN1	7/17/06	0.20	U	0.20	0.31	U	0.31	0.23	U	0.23	0.373	U	2.6	0.006	U	0.087
OB D3	J12WM5	7/12/06	0.17	U	0.17	0.25	U	0.25	0.18	U	0.18	-0.491	U	3.7	0	U	0.61
OB D4	J12WM6	7/12/06	0.060	U	0.060	0.089	U	0.089	0.080	U	0.080	-1.67	U	3.9	0.047	U	0.17
OB D5	J12WM3	7/12/06	0.165		0.067	0.078	U	0.078	0.088	U	0.088	-0.394	U	3.9	0	U	1.2
OB D6	J12WM4	7/12/06	0.071	U	0.071	0.11	U	0.11	0.10	U	0.10	-0.703	U	3.7	0	U	0.64
BCL A1	J12WN2	7/20/06	0.079	U	0.079	0.10	U	0.10	0.098	U	0.098	0.285	U	4.2	0.006	U	0.11
BCL A2	J12WM1	7/12/06	0.17	U	0.17	0.25	U	0.25	0.19	U	0.19	-1.60	U	3.8	-0.067	U	0.65
BCL A3	J12WM2	7/12/06	0.060	U	0.060	0.084	U	0.084	0.058	U	0.058	0.258	U	3.9	-0.120	U	1.3
BCL A4	J12WM0	7/12/06	0.080	U	0.080	0.12	U	0.12	0.080	U	0.080	-1.74	U	3.8	-0.086	U	0.41
BCL B5	J12WL9	7/12/06	0.063	U	0.063	0.095	U	0.095	0.060	U	0.060	-0.677	U	3.6	0.112	U	0.43
BCL B6	J12WL8	7/12/06	0.19	U	0.19	0.26	U	0.26	0.20	U	0.20	-1.19	U	3.7	-0.160	U	0.77
BCL B7	J12WL7	7/12/06	0.19	U	0.19	0.27	U	0.27	0.20	U	0.20	-0.342	U	3.8	0	U	0.43
BCL B8	J12WL6	7/12/06	0.143		0.090	0.13	U	0.13	0.12	U	0.12	0.840	U	4.0	0.061	U	0.47
Split of J12WL6	J12WW0	7/12/06	0.153	U	0.0623	-0.00325	U	0.0675	0.0281	U	0.0601	0.227	U	6.02	0.00727	U	0.0197

Attachment	I	Sheet No.	5 of 113
Originator	J. M. Capron	Date	02/07/07
Checked	T. M. Blakley	Date	
Calc. No.	0100B-CA-V0299	Rev. No.	0

Attachment 1. 118-B-1 Verification Sampling Results.

Sample Location	Sample Number	Sample Date	Europium-152			Europium-154			Europium-155			Nickel-63			Plutonium-238		
			pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA
BCL C9	J12WK7	7/11/06	0.065	U	0.065	0.057	U	0.057	0.10	U	0.10	-0.288	U	3.7	-0.040	U	0.23
BCL C10	J12WK9	7/11/06	0.071	U	0.071	0.11	U	0.11	0.079	U	0.079	0.158	U	3.6	-0.104	U	0.80
BCL C1	J12WK8	7/11/06	0.035	U	0.035	0.051	U	0.051	0.050	U	0.050	1.28	U	3.9	0.161	U	1.2
BCL C2	J12WL2	7/11/06	0.059	U	0.059	0.078	U	0.078	0.085	U	0.085	-1.12	U	4.8	0	U	0.54
BCL D3	J12WL3	7/11/06	0.16	U	0.16	0.24	U	0.24	0.17	U	0.17	-0.529	U	3.7	0	U	0.89
BCL D4	J12WL4	7/11/06	0.12	U	0.12	0.14	U	0.14	0.17	U	0.17	-1.57	U	3.5	-0.075	U	0.57
Duplicate of J12WL4	J12WL5	7/11/06	0.059	U	0.059	0.078	U	0.078	0.084	U	0.084	-1.87	U	3.6	0	U	0.94
BCL D5	J12WL0	7/11/06	0.025	U	0.025	0.032	U	0.032	0.042	U	0.042	-0.466	U	3.8	0	U	0.76
BCL D6	J12WL1	7/11/06	0.098	U	0.098	0.13	U	0.13	0.14	U	0.14	-2.02	U	3.6	-0.068	U	0.52
SPA A1	J13HY3	10/12/06	0.16	U	0.16	0.20	U	0.20	0.21	U	0.21	-0.455	U	3.3	0	U	0.55
SPA A2	J13HY4	10/12/06	0.075	U	0.075	0.097	U	0.097	0.10	U	0.10	-0.038	U	3.4	0.055	U	0.42
SPA A3	J13HY5	10/12/06	0.17	U	0.17	0.20	U	0.20	0.21	U	0.21	0.392	U	3.5	0	U	0.42
SPA A4	J13HY6	10/12/06	0.062	U	0.062	0.074	U	0.074	0.084	U	0.084	-0.597	U	3.5	-0.046	U	0.44
SPA B5	J13HY7	10/12/06	0.17	U	0.17	0.21	U	0.21	0.21	U	0.21	0.952	U	3.5	0.087	U	0.42
Duplicate of J13HY7	J13J09	10/12/06	0.073	U	0.073	0.097	U	0.097	0.10	U	0.10	0.723	U	3.5	0	U	0.34
Split of J13HY7	J13J10	10/12/06	0.000190	U	0.0461	0.0112	U	0.0700	0.0331	U	0.0579	5.13		5.07	-0.00376	U	0.0531
SPA B6	J13HY8	10/17/06	0.081	U	0.081	0.11	U	0.11	0.075	U	0.075	2.54		2.4	0.044	U	0.33
SPA B7	J13HY9	10/17/06	0.065	U	0.065	0.11	U	0.11	0.061	U	0.061	0.863	U	2.5	0.041	U	0.31
SPA B8	J13J00	10/17/06	0.21	U	0.21	0.26	U	0.26	0.26	U	0.26	1.66	U	2.4	-0.046	U	0.36
SPA C9	J13J01	10/17/06	0.094	U	0.094	0.13	U	0.13	0.12	U	0.12	0.500	U	2.4	-0.052	U	0.40
SPA C10	J13J02	10/18/06	0.19	U	0.19	0.24	U	0.24	0.24	U	0.24	-0.966	U	3.6	0.043	U	0.33
SPA C1	J13J03	10/18/06	0.172		0.070	0.13	U	0.13	0.073	U	0.073	0.750	U	3.5	-0.132	U	0.49
SPA C2	J13J04	10/18/06	0.862		0.13	0.18	U	0.18	0.18	U	0.18	24.6		3.8	0.128	U	0.36
SPA D3	J13J05	10/18/06	0.116		0.060	0.097	U	0.097	0.059	U	0.059	2.81	U	3.9	0.149	U	0.36
SPA D4	J13J06	10/19/06	0.076	U	0.076	0.038	U	0.038	0.033	U	0.033	1.66	U	3.8	-0.028	U	0.27
SPA D5	J13J07	10/23/06	0.063	U	0.063	0.094	U	0.094	0.053	U	0.053	3.60		2.5	-0.031	U	0.11
SPA D6	J13J08	10/23/06	0.17	U	0.17	0.20	U	0.20	0.20	U	0.20	2.98	U	3.2	-0.043	U	0.33
FS-12	J14Y75	6/27/07	0.239	U	0.239	0.256	U	0.256	0.174	U	0.174				-0.037	U	0.282
FS-13	J14Y76	6/27/07	0.227	U	0.227	0.249	U	0.249	0.156	U	0.156				0	U	0.374
FS-14	J12XB3	7/19/06	0.13	U	0.13	0.32	U	0.32	0.084	U	0.084						
FS-17	J14JJ3	3/5/07	0.11	U	0.11	0.15	U	0.15	0.12	U	0.12						
FS-18	J14L38	3/5/07	0.083	U	0.083	0.12	U	0.12	0.071	U	0.071						
FS-19	J14L39	3/5/07	0.16	U	0.16	0.21	U	0.21	0.11	U	0.11						

Attachment	1	Sheet No.	6 of 113
Originator	J. M. Capron	Date	10/03/07
Checked	T. M. Blakley	Date	
Calc. No.	0100B-CA-V0299	Rev. No.	1

Attachment 1. 118-B-1 Verification Sampling Results.

Sample Location	Sample Number	Sample Date	Plutonium-239/240			Plutonium-241			Potassium-40			Radium-226			Radium-228		
			pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA
Area 1 A1	J12X44	7/19/06	0	U	1.5	0.477	U	15	22.1		0.53	0.735		0.11	1.14		0.28
Duplicate of J12X44	J12X48	7/19/06	0	U	0.96	-3.76	U	15	18.8		0.33	0.736		0.068	1.13		0.14
Split of J12X44	J12X49	7/19/06	0.00	U	0.0304	0.409	U	1.99									
Area 1 A2	J12X45	7/19/06	0	U	0.65	5.29	U	15	11.0		0.17	0.416		0.039	0.624		0.089
Area 1 A3	J12X46	7/20/06	0.044	U	0.048	6.64	U	22	19.6		0.33	0.722		0.072	1.34		0.14
Area 1 A4	J12X47	7/20/06	0	U	0.070	7.47	U	20	10.1		0.19	0.344		0.040	0.606		0.092
Area 2 A1	J12X50	7/20/06	0	U	0.77	8.88	U	23	20.0		0.40	0.655		0.065	0.973		0.16
Area 2 A2	J12X51	7/20/06	0	U	1.1	2.24	U	25	9.05		1.5	0.192	U	0.20	0.742		0.40
Area 2 A3	J12X52	7/20/06	0	U	0.89	15.8	U	25	20.1		0.41	0.651		0.073	1.12		0.14
Area 2 A4	J12X53	7/20/06	0	U	0.54	13.0	U	24	12.9		0.28	0.456		0.049	0.764		0.11
Area 3 A1	J12X54	7/20/06	0.119	U	0.91	14.3	U	23	13.1		0.26	0.487		0.047	0.715		0.12
Area 3 A2	J12X55	7/20/06	0.076	U	0.58	9.52	U	25	26.4		0.84	0.965		0.16	1.46		0.34
Area 3 A3	J12X56	7/20/06	0.622	U	0.68	5.57	U	23	9.50		1.2	0.200	U	0.21	0.588		0.40
Duplicate of J12X56	J12X58	7/20/06	0.216	U	0.41	0.998	U	24	10.7		0.90	0.437		0.16	0.87	U	0.87
Split of J12X56	J12X60	7/20/06															
Area 3 A4	J12X57	7/20/06	0	U	0.75	9.85	U	23	26.5		0.96	0.972		0.16	1.61		0.38
Area 4 A1	J12X61	7/25/06							21.8		0.36	0.696		0.077	1.10		0.17
Duplicate of J12X61	J12X65	7/25/06							10.8		0.24	0.418		0.058	0.631		0.12
Split of J12X61	J12X66	7/25/06															
Area 4 A2	J12X62	7/25/06							12.0		0.20	0.377		0.043	0.719		0.092
Area 4 A3	J12X63	7/25/06							11.4		0.31	0.407		0.083	0.743		0.19
Area 4 A4	J12X64	7/25/06							23.4		0.45	0.825		0.091	1.32		0.21
Area 5 A1	J13V12	12/7/06							9.58		1.4	0.381		0.17	0.50	U	0.50
Area 5 A2	J13V10	12/7/06							10.3		1.2	0.394		0.13	0.872		0.33
Area 5 A3	J13V13	12/7/06							9.85		0.87	0.273		0.19	0.455		0.32
Area 5 A3 resample	J14JH6	3/30/07							8.84		1.1	0.293		0.14	0.925		0.37
Area 5 A4	J13V11	12/7/06							9.80		1.4	0.274		0.17	0.716		0.48
Area 6 A1	J12XC2	7/25/06	0.096	U	0.73	-13.0	U	23	24.1		0.32	0.870		0.075	1.31		0.15
Area 6 A2	J12XC3	7/25/06	0.068	U	0.52	-15.6	U	23	27.8		0.76	1.05		0.13	1.38		0.35
Area 6 A3	J12XC4	7/25/06	0	U	0.62	-5.92	U	23	12.0		0.23	0.433		0.042	0.690		0.092
Area 6 A4	J12XC5	7/25/06	0	U	0.84	-2.03	U	24	13.3		0.25	0.458		0.046	0.705		0.11

Attachment	1	Sheet No.	7 of 113
Originator	J. M. Capron	Date	10/03/07
Checked	T. M. Blakley	Date	
Calc. No.	0100B-CA-V0299	Rev. No.	1

Attachment 1. 118-B-1 Verification Sampling Results.

Sample Location	Sample Number	Sample Date	Plutonium-239/240			Plutonium-241			Potassium-40			Radium-226			Radium-228		
			pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA
Area 7 A1	J12XC6	7/26/06	0	U	0.80	-3.98	U	24	26.8		0.61	1.12		0.13	1.48		0.34
Area 7 A2	J12XC7	7/26/06	0	U	0.68	-11.4	U	23	26.5		0.38	1.04		0.075	1.44		0.18
Area 7 A3	J12XC8	7/26/06	0.071	U	0.54	-7.39	U	28	33.6		0.59	1.17		0.15	2.14		0.31
Area 7 A4	J12XC9	7/26/06	0.129	U	0.98	-12.3	U	26	12.8		0.21	0.536		0.039	0.728		0.088
OB A1	J12WK0	7/11/06	0.119	U	0.91	11.8	U	26	11.5		0.18	0.453		0.032	0.698		0.080
OB A2	J12WK1	7/11/06	0	U	0.77	-6.81	U	24	22.7		0.37	0.805		0.085	1.23		0.17
OB A3	J12WK2	7/11/06	0	U	1.1	-1.46	U	26	12.0		0.37	0.530		0.062	0.686		0.19
OB A4	J12WK3	7/11/06	0.086	U	0.66	-1.91	U	27	23.1		0.26	0.827		0.057	1.22		0.14
OB B5	J12WK4	7/11/06	0.428	U	0.65	2.93	U	26	11.8		0.24	0.435		0.048	0.694		0.099
OB B6	J12WK5	7/11/06	0	U	0.79	3.37	U	26	26.4		0.64	0.808		0.10	1.58		0.27
OB B7	J12WK6	7/11/06	0.062	U	0.47	-0.418	U	26	13.1		0.24	0.442		0.046	0.640		0.11
OB B8	J12WM7	7/17/06	0	U	0.11	-3.51	U	13	28.8		0.70	0.910		0.16	1.53		0.35
OB C9	J12WM8	7/17/06	0.053	U	0.10	1.58	U	13	12.9		0.18	0.464		0.034	0.751		0.070
OB C10	J12WM9	7/17/06	0	U	0.52	2.71	U	12	13.1		0.21	0.488		0.047	0.883		0.12
OB C1	J12WN0	7/17/06	0	U	0.11	11.4	U	24	20.0		0.34	0.778		0.072	1.13		0.15
OB C2	J12WN1	7/17/06	0.013	U	0.049	0.461	U	28	28.8		0.82	0.869		0.19	1.70		0.35
OB D3	J12WM5	7/12/06	-0.080	U	0.61	6.21	U	15	22.9		0.87	0.851		0.14	1.21		0.31
OB D4	J12WM6	7/12/06	0.035	U	0.089	5.46	U	12	12.6		0.25	0.494		0.050	0.795		0.092
OB D5	J12WM3	7/12/06	0.128	U	0.98	6.06	U	14	11.6		0.26	0.442		0.051	0.643		0.12
OB D6	J12WM4	7/12/06	0	U	0.64	10.1	U	14	9.87		0.29	0.382		0.051	0.608		0.12
BCL A1	J12WN2	7/20/06	0.012	U	0.064	15.1	U	19	10.8		0.32	0.402		0.049	0.644		0.15
BCL A2	J12WM1	7/12/06	0.135	U	0.52	4.34	U	14	25.3		0.77	0.857		0.14	1.47		0.31
BCL A3	J12WM2	7/12/06	0	U	0.92	8.67	U	12	12.5		0.25	0.460		0.047	0.783		0.12
BCL A4	J12WM0	7/12/06	0.086	U	0.33	4.87	U	16	24.7		0.36	0.838		0.073	1.38		0.19
BCL B5	J12WL9	7/12/06	0	U	0.43	7.48	U	14	12.7		0.26	0.469		0.047	0.872		0.13
BCL B6	J12WL8	7/12/06	0.080	U	0.61	4.87	U	12	25.6		0.89	0.900		0.12	1.62		0.31
BCL B7	J12WL7	7/12/06	0	U	0.35	10.3	U	13	30.1		0.87	0.960		0.15	1.38		0.38
BCL B8	J12WL6	7/12/06	0.123	U	0.47	7.93	U	14	11.4		0.40	0.497		0.068	0.669		0.18
Split of J12WL6	J12WW0	7/12/06	0.0363		0.0197	-0.354	U	2.30									

Attachment	1	Sheet No.	8 of 113
Originator	J. M. Capron	Date	10/03/07
Checked	T. M. Blakley	Date	
Calc. No.	0100B-CA-V0299	Rev. No.	0

Attachment 1. 118-B-1 Verification Sampling Results.

Sample Location	Sample Number	Sample Date	Plutonium-239/240			Plutonium-241			Potassium-40			Radium-226			Radium-228		
			pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA
BCL C9	J12WK7	7/11/06	0.040	U	0.077	7.84	U	29	21.4		0.16	0.794		0.033	1.28		0.065
BCL C10	J12WK9	7/11/06	0	U	0.80	-2.70	U	31	25.3		0.35	0.778		0.058	1.34		0.15
BCL C1	J12WK8	7/11/06	0	U	1.2	-0.406	U	25	11.6		0.14	0.466		0.027	0.741		0.058
BCL C2	J12WL2	7/11/06	0	U	0.54	6.52	U	27	13.6		0.25	0.487		0.050	0.836		0.11
BCL D3	J12WL3	7/11/06	0	U	0.89	8.21	U	28	26.0		0.80	0.957		0.11	1.34		0.31
BCL D4	J12WL4	7/11/06	0.075	U	0.57	6.26	U	33	24.7		0.43	0.908		0.083	1.58		0.19
Duplicate of J12WL4	J12WL5	7/11/06	0	U	0.94	11.4	U	30	13.6		0.22	0.508		0.048	0.810		0.11
BCL D5	J12WL0	7/11/06	0.099	U	0.76	3.18	U	27	12.6		0.10	0.458		0.020	0.800		0.050
BCL D6	J12WL1	7/11/06	0	U	0.52	13.4	U	31	22.2		0.40	0.803		0.071	1.29		0.15
SPA A1	J13HY3	10/12/06	0	U	0.55	6.43	U	22	24.3		0.62	0.991		0.094	1.46		0.25
SPA A2	J13HY4	10/12/06	0.109	U	0.42	13.1	U	23	14.4		0.32	0.574		0.055	0.896		0.13
SPA A3	J13HY5	10/12/06	0	U	0.41	7.02	U	22	28.8		0.38	1.04		0.10	1.54		0.25
SPA A4	J13HY6	10/12/06	0.092	U	0.35	4.26	U	21	12.6		0.26	0.583		0.048	0.860		0.099
SPA B5	J13HY7	10/12/06	0.044	U	0.33	12.6	U	23	32.0		0.37	0.931		0.091	1.61		0.27
Duplicate of J13HY7	J13J09	10/12/06	0	U	0.34	9.76	U	23	15.9		0.29	0.607		0.057	0.839		0.11
Split of J13HY7	J13J10	10/12/06	0.195		0.0450	0.348	U	2.17									
SPA B6	J13HY8	10/17/06	0.044	U	0.33	0.898	U	24	15.0		0.37	0.502		0.070	0.903		0.16
SPA B7	J13HY9	10/17/06	0.041	U	0.31	-16.8	U	22	12.9		0.41	0.608		0.052	0.827		0.15
SPA B8	J13J00	10/17/06	0	U	0.35	-15.1	U	25	29.3		2.7	1.10		0.12	1.76		0.32
SPA C9	J13J01	10/17/06	0.314	U	0.40	-25.4	U	27	17.1		0.30	0.620		0.068	0.958		0.16
SPA C10	J13J02	10/18/06	0.130	U	0.33	-11.2	U	26	29.5		2.6	0.955		0.11	1.65		0.28
SPA C1	J13J03	10/18/06	0.088	U	0.34	-19.2	U	26	13.8		0.30	0.523		0.066	0.816		0.13
SPA C2	J13J04	10/18/06	0.289		0.25	-6.01	U	26	21.0		0.48	0.610		0.093	1.04		0.24
SPA D3	J13J05	10/18/06	0.186	U	0.28	-8.46	U	26	13.9		0.25	0.507		0.053	0.856		0.098
SPA D4	J13J06	10/19/06	0.028	U	0.22	-11.2	U	30	13.3		0.12	0.498		0.021	0.791		0.047
SPA D5	J13J07	10/23/06	-0.012	U	0.067	-1.35	U	28	12.2		0.25	0.453		0.049	0.686		0.12
SPA D6	J13J08	10/23/06	0	U	0.33	8.17	U	27	22.6		0.56	0.933		0.094	1.27		0.24
FS-12	J14Y75	6/27/07	0.111	U	0.282	3.50	UJ	16.2	6.04		0.754	0.293		0.144	0.406		0.261
FS-13	J14Y76	6/27/07	0	U	0.374	1.73	UJ	12.7	5.18		0.706	0.188		0.144	0.450		0.329
FS-14	J12XB3	7/19/06							7.94		1.2	0.356		0.16	0.81	U	0.81
FS-17	J14J3	3/5/07							8.74		0.59	0.292		0.087	0.560		0.19
FS-18	J14L38	3/5/07							10.7		0.38	0.476		0.074	0.720		0.11
FS-19	J14L39	3/5/07							10.8		0.71	0.454		0.12	0.707		0.29

Attachment	1	Sheet No.	9 of 113
Originator	J. M. Capron	Date	10/03/07
Checked	T. M. Blakley	Date	
Calc. No.	0100B-CA-V0299	Rev. No.	1

Attachment 1. 118-B-1 Verification Sampling Results.

Sample Location	Sample Number	Sample Date	Silver-108m			Thorium-228			Thorium-232			Total beta Radiostrontium			Tritium		
			pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA
Area 1 A1	J12X44	7/19/06	0.040	U	0.040	1.27		0.089	1.14		0.28	0.275	J	0.27	1.74	U	3.4
Duplicate of J12X44	J12X48	7/19/06	0.026	U	0.026	0.985		0.050	1.13		0.14	0.024	UJ	0.23	0.535	U	2.8
Split of J12X44	J12X49	7/19/06	-0.00444	U	0.0260							0.582		0.137	0.0648		0.0282
Area 1 A2	J12X45	7/19/06	0.013	U	0.013	0.673		0.039	0.624		0.089	0.034	UJ	0.37	239		2.8
Area 1 A3	J12X46	7/20/06	0.025	U	0.025	1.01		0.047	1.34		0.14	0.097	U	0.23	0.303	U	2.7
Area 1 A4	J12X47	7/20/06	0.015	U	0.015	0.468		0.026	0.606		0.092	-0.007	U	0.26	0.574	U	3.1
Area 2 A1	J12X50	7/20/06	0.028	U	0.028	0.903		0.053	0.973		0.16	0.049	U	0.22	0.150	U	2.9
Area 2 A2	J12X51	7/20/06	0.050	U	0.050	0.271		0.077	0.742		0.40	0.248		0.23	59.6		2.8
Area 2 A3	J12X52	7/20/06	0.027	U	0.027	1.00		0.053	1.12		0.14	0.006	U	0.23	0.236	U	3.0
Area 2 A4	J12X53	7/20/06	0.018	U	0.018	0.620		0.031	0.764		0.11	0.003	U	0.24	-0.432	U	2.7
Area 3 A1	J12X54	7/20/06	0.018	U	0.018	0.637		0.031	0.715		0.12	0.005	U	0.21	0.767	U	2.7
Area 3 A2	J12X55	7/20/06	0.051	U	0.051	1.41		0.12	1.46		0.34	0.293		0.24	0.759	U	2.6
Area 3 A3	J12X56	7/20/06	0.070	U	0.070	0.266		0.086	0.588		0.40	4.42		0.31	0.491	U	2.7
Duplicate of J12X56	J12X58	7/20/06	0.058	U	0.058	0.250		0.079	0.87	U	0.87	3.23		0.25	0.311	U	2.7
Split of J12X56	J12X60	7/20/06	0.00198	U	0.0323							3.43		0.175	0.0577		0.0453
Area 3 A4	J12X57	7/20/06	0.055	U	0.055	1.46		0.14	1.61		0.38	-0.037	U	0.23	19.0		2.6
Area 4 A1	J12X61	7/25/06	0.030	U	0.030	1.09		0.055	1.10		0.17	0.208	U	0.23	-0.056	U	3.0
Duplicate of J12X61	J12X65	7/25/06	0.020	U	0.020	0.544		0.033	0.631		0.12	0.158	U	0.23	-0.936	U	3.1
Split of J12X61	J12X66	7/25/06	0.00648	U	0.0234							0.319		0.166	0.0303	U	0.0361
Area 4 A2	J12X62	7/25/06	0.016	U	0.016	0.588		0.029	0.719		0.092	-0.077	U	0.24	1.14	U	3.1
Area 4 A3	J12X63	7/25/06	0.025	U	0.025	0.579		0.039	0.743		0.19	-0.035	U	0.23	-0.228	U	3.1
Area 4 A4	J12X64	7/25/06	0.033	U	0.033	1.26		0.064	1.32		0.21	-0.021	U	0.22	-1.07	U	3.2
Area 5 A1	J13V12	12/7/06	0.044	U	0.044	0.293		0.068	0.50	U	0.50	-0.011	U	0.26	0.741	U	3.3
Area 5 A2	J13V10	12/7/06	0.044	U	0.044	0.283		0.058	0.872		0.33	-0.030	U	0.29	2.18	U	3.5
Area 5 A3	J13V13	12/7/06	0.12	U	0.12	0.538		0.18	0.455		0.32	2.38		0.21	0.369	U	3.3
Area 5 A3 resample	J14JH6	3/30/07	0.085	U	0.085	0.430		0.14	0.925		0.37						
Area 5 A4	J13V11	12/7/06	0.048	U	0.048	0.301		0.068	0.716		0.48	1.38		0.24	1.70	U	3.3
Area 6 A1	J12XC2	7/25/06	0.027	U	0.027	1.23		0.050	1.31		0.15	-0.052	U	0.23	-1.11	U	3.1
Area 6 A2	J12XC3	7/25/06	0.051	U	0.051	1.50		0.10	1.38		0.35	0.043	U	0.22	-0.493	U	3.0
Area 6 A3	J12XC4	7/25/06	0.014	U	0.014	0.590		0.027	0.690		0.092	0.010	U	0.24	5.03		3.0
Area 6 A4	J12XC5	7/25/06	0.015	U	0.015	0.639		0.030	0.705		0.11	-0.048	U	0.30	0.083	U	3.0

Attachment	1	Sheet No.	10 of 113
Originator	J. M. Capron	Date	10/03/07
Checked	T. M. Blakley	Date	
Calc. No.	0100B-CA-V0299	Rev. No.	1

Attachment 1. 118-B-1 Verification Sampling Results.

Sample Location	Sample Number	Sample Date	Silver-108m			Thorium-228			Thorium-232			Total beta Radiostrontium			Tritium		
			pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA
Area 7 A1	J12XC6	7/26/06	0.049	U	0.049	1.42		0.11	1.48		0.34	0.219	U	0.27	-1.72	UJ	3.4
Area 7 A2	J12XC7	7/26/06	0.029	U	0.029	1.43		0.054	1.44		0.18	-0.045	U	0.33	-0.580	UJ	3.1
Area 7 A3	J12XC8	7/26/06	0.054	U	0.054	1.80		0.11	2.14		0.31	0.031	U	0.30	-1.30	UJ	3.1
Area 7 A4	J12XC9	7/26/06	0.015	U	0.015	0.595		0.026	0.728		0.088	0.051	U	0.33	-0.879	UJ	3.1
OB A1	J12WK0	7/11/06	0.013	U	0.013	0.563		0.021	0.698		0.080	0.441		0.39	-2.08	U	5.4
OB A2	J12WK1	7/11/06	0.030	U	0.030	1.17		0.056	1.23		0.17	0.239	U	0.39	0.823	U	4.8
OB A3	J12WK2	7/11/06	0.023	U	0.023	0.805		0.065	0.686		0.19	0.067	U	0.36	-0.736	U	4.7
OB A4	J12WK3	7/11/06	0.023	U	0.023	1.21		0.043	1.22		0.14	-0.001	U	0.42	0.269	U	4.7
OB B5	J12WK4	7/11/06	0.018	U	0.018	0.568		0.028	0.694		0.099	0.009	U	0.26	-2.31	U	4.5
OB B6	J12WK5	7/11/06	0.040	U	0.040	1.42		0.088	1.58		0.27	0.350	U	0.43	-0.731	U	4.6
OB B7	J12WK6	7/11/06	0.017	U	0.017	0.590		0.029	0.640		0.11	0.232	U	0.36	-1.11	U	5.5
OB B8	J12WM7	7/17/06	0.057	U	0.057	1.49		0.14	1.53		0.35	-0.037	U	0.29	1.84	U	2.7
OB C9	J12WM8	7/17/06	0.013	U	0.013	0.635		0.021	0.751		0.070	0.015	U	0.29	0.850	U	2.8
OB C10	J12WM9	7/17/06	0.017	U	0.017	0.640		0.031	0.883		0.12	0.116	U	0.28	1.30	U	2.4
OB C1	J12WN0	7/17/06	0.027	U	0.027	1.05		0.048	1.13		0.15	-0.008	U	0.31	1.96	U	2.3
OB C2	J12WN1	7/17/06	0.059	U	0.059	1.42		0.13	1.70		0.35	0.013	U	0.34	0.468	U	2.3
OB D3	J12WM5	7/12/06	0.052	U	0.052	1.33		0.12	1.21		0.31	-0.019	U	0.26	1.72	U	4.4
OB D4	J12WM6	7/12/06	0.025	U	0.025	0.612		0.027	0.795		0.092	0.047	U	0.24	-0.621	U	3.9
OB D5	J12WM3	7/12/06	0.021	U	0.021	0.538		0.034	0.643		0.12	0.194	U	0.26	1.45	U	4.6
OB D6	J12WM4	7/12/06	0.023	U	0.023	0.467		0.038	0.608		0.12	0.188	U	0.25	1.39	U	3.8
BCL A1	J12WN2	7/20/06	0.021	U	0.021	0.534		0.039	0.644		0.15	0.015	U	0.23	2.03	U	2.7
BCL A2	J12WM1	7/12/06	0.053	U	0.053	1.36		0.11	1.47		0.31	0.071	U	0.26	-0.621	U	3.6
BCL A3	J12WM2	7/12/06	0.016	U	0.016	0.604		0.030	0.783		0.12	0.063	U	0.28	-1.03	U	3.9
BCL A4	J12WM0	7/12/06	0.025	U	0.025	1.34		0.058	1.38		0.19	0.092	U	0.28	-0.884	U	3.7
BCL B5	J12WL9	7/12/06	0.017	U	0.017	0.649		0.030	0.872		0.13	0.032	U	0.25	0	U	4.0
BCL B6	J12WL8	7/12/06	0.055	U	0.055	1.50		0.13	1.62		0.31	0.210	U	0.27	-0.762	U	3.9
BCL B7	J12WL7	7/12/06	0.057	U	0.057	1.48		0.12	1.38		0.38	0.215	U	0.22	0.819	U	3.7
BCL B8	J12WL6	7/12/06	0.025	U	0.025	0.593		0.050	0.669		0.18	0.140	U	0.30	-0.050	U	3.8
Split of J12WL6	J12WW0	7/12/06	0.000659	U	0.0159							0.126	U	0.151	0.0476	U	0.0625

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Originator	J. M. Capron	Date	10/03/07
Checked	T. M. Blakley	Date	
Calc. No.	0100B-CA-V0299	Rev. No.	0

Attachment 1. 118-B-1 Verification Sampling Results.

Sample Location	Sample Number	Sample Date	Silver-108m			Thorium-228			Thorium-232			Total beta Radiostrontium			Tritium		
			pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA
BCL C9	J12WK7	7/11/06	0.012	U	0.012	1.13		0.023	1.28		0.065	0.412		0.38	1.41	U	5.2
BCL C10	J12WK9	7/11/06	0.022	U	0.022	1.41		0.050	1.34		0.15	0.049	U	0.42	-0.567	U	5.0
BCL C1	J12WK8	7/11/06	0.010	U	0.010	0.760		0.025	0.741		0.058	-0.084	U	0.33	0.955	U	4.4
BCL C2	J12WL2	7/11/06	0.019	U	0.019	0.633		0.031	0.836		0.11	-0.083	U	0.27	-0.142	U	5.0
BCL D3	J12WL3	7/11/06	0.049	U	0.049	1.42		0.11	1.34		0.31	0.057	U	0.32	-1.58	U	4.4
BCL D4	J12WL4	7/11/06	0.033	U	0.033	1.31		0.060	1.58		0.19	-0.494	U	1.2	0.209	U	4.9
Duplicate of J12WL4	J12WL5	7/11/06	0.019	U	0.019	0.666		0.031	0.810		0.11	0.106	U	0.30	1.37	U	5.0
BCL D5	J12WL0	7/11/06	0.007	U	0.007	0.600		0.012	0.800		0.050	0.082	U	0.35	-1.91	U	4.6
BCL D6	J12WL1	7/11/06	0.027	U	0.027	1.18		0.052	1.29		0.15	-0.117	U	0.29	-1.77	U	5.0
SPA A1	J13HY3	10/12/06	0.044	U	0.044	1.60		0.095	1.46		0.25	-0.035	U	0.24	2.04	U	2.7
SPA A2	J13HY4	10/12/06	0.020	U	0.020	0.754		0.038	0.896		0.13	-0.053	U	0.26	1.54	U	2.6
SPA A3	J13HY5	10/12/06	0.044	U	0.044	1.76		0.10	1.54		0.25	0.096	U	0.26	1.23	U	2.9
SPA A4	J13HY6	10/12/06	0.017	U	0.017	0.726		0.032	0.860		0.099	0.227		0.22	7.32		2.7
SPA B5	J13HY7	10/12/06	0.045	U	0.045	1.74		0.10	1.61		0.27	0.092	U	0.24	3.09		2.6
Duplicate of J13HY7	J13J09	10/12/06	0.019	U	0.019	0.826		0.038	0.839		0.11	0.002	U	0.24	6.18		2.7
Split of J13HY7	J13J10	10/12/06	-0.00461	U	0.0138							0.102	U	0.176	0.327		0.0201
SPA B6	J13HY8	10/17/06	0.022	U	0.022	0.810		0.038	0.903		0.16	0.105	U	0.29	1.62	U	2.8
SPA B7	J13HY9	10/17/06	0.018	U	0.018	0.776		0.034	0.827		0.15	-0.028	U	0.18	2.72	U	2.9
SPA B8	J13J00	10/17/06	0.056	U	0.056	1.86		0.12	1.76		0.32	-0.061	U	0.17	6.14		2.7
SPA C9	J13J01	10/17/06	0.027	U	0.027	0.884		0.049	0.958		0.16	0.016	U	0.17	17.4		2.7
SPA C10	J13J02	10/18/06	0.050	U	0.050	1.69		0.12	1.65		0.28	0.028	U	0.26	1.09	U	2.5
SPA C1	J13J03	10/18/06	0.022	U	0.022	0.705		0.036	0.816		0.13	0.166	U	0.17	476		4.2
SPA C1 resample	J14BH3	1/12/07													67.8		2.1
SPA C2	J13J04	10/18/06	0.045	U	0.045	1.11		0.10	1.04		0.24	0.934		0.18	4.84		2.5
SPA D3	J13J05	10/18/06	0.018	U	0.018	0.764		0.030	0.856		0.098	0.216		0.20	4.92		2.8
SPA D4	J13J06	10/19/06	0.008	U	0.008	0.715		0.013	0.791		0.047	0.288		0.18	0.021	UJ	2.6
SPA D5	J13J07	10/23/06	0.018	U	0.018	0.606		0.032	0.686		0.12	0.139	U	0.25	0.990	U	2.9
SPA D6	J13J08	10/23/06	0.042	U	0.042	1.40		0.096	1.27		0.24	0.131	U	0.31	1.27	U	2.6
FS-3	J12R26	7/10/06													0.029	U	3.1
FS-4	J12R27	7/10/06													0.456	U	3.0
FS-11	J12R34	7/10/06													107		3.1
FS-12	J14Y75	6/27/07	0.066	U	0.066	0.424		0.135	0.406		0.261						
FS-13	J14Y76	6/27/07	0.059	U	0.059	0.543		0.158	0.450		0.329						
FS-14	J12XB3	7/19/06	0.048	U	0.048	0.220		0.066	0.81	U	0.81						
FS-17	J14J3	3/5/07	0.034	U	0.034	0.490		0.074	0.560		0.19				7.40		2.3
FS-17 resample	J152M1	5/10/07													3.24		2.7
FS-18	J14L38	3/5/07	0.023	U	0.023	0.594		0.043	0.720		0.11				9.20		2.4
FS-19	J14L39	3/5/07	0.048	U	0.048	0.821		0.11	0.707		0.29				137		2.5

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Checked	T. M. Blakley	Date	
Calc. No.	0100B-CA-V0299	Rev. No.	1

Attachment 1. 118-B-1 Verification Sampling Results.

Sample Location	Sample Number	Sample Date	Uranium-233/234			Uranium-235			Uranium-235 GEA			Uranium-238			Uranium-238 GEA		
			pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA
Area 1 A1	J12X44	7/19/06	0.546		0.25	0	U	0.30	0.20	U	0.20	0.353		0.25	6.7	U	6.7
Duplicate of J12X44	J12X48	7/19/06	0.572		0.26	0.082	U	0.31	0.15	U	0.15	0.572		0.26	4.3	U	4.3
Split of J12X44	J12X49	7/19/06	0.533	J	0.0369	0.0247	U	0.0304				0.474	J	0.0369			
Area 1 A2	J12X45	7/19/06	0.572		0.23	0	U	0.28	0.071	U	0.071	0.452		0.23	2.6	U	2.6
Area 1 A3	J12X46	7/20/06	0.496		0.062	0.032	U	0.060	0.16	U	0.16	0.430		0.050	4.6	U	4.6
Area 1 A4	J12X47	7/20/06	0.449		0.063	0.055		0.053	0.092	U	0.092	0.552		0.054	2.4	U	2.4
Area 2 A1	J12X50	7/20/06							0.16	U	0.16				4.6	U	4.6
Area 2 A2	J12X51	7/20/06							0.14	U	0.14				14	U	14
Area 2 A3	J12X52	7/20/06							0.16	U	0.16				5.1	U	5.1
Area 2 A4	J12X53	7/20/06							0.11	U	0.11				2.9	U	2.9
Area 3 A1	J12X54	7/20/06							0.10	U	0.10				3.3	U	3.3
Area 3 A2	J12X55	7/20/06							0.28	U	0.28				10	U	10
Area 3 A3	J12X56	7/20/06							0.16	U	0.16				13	U	13
Duplicate of J12X56	J12X58	7/20/06							0.15	U	0.15				14	U	14
Split of J12X56	J12X60	7/20/06															
Area 3 A4	J12X57	7/20/06							0.31	U	0.31				10	U	10
Area 4 A1	J12X61	7/25/06							0.17	U	0.17				4.8	U	4.8
Duplicate of J12X61	J12X65	7/25/06							0.13	U	0.13				3.8	U	3.8
Split of J12X61	J12X66	7/25/06															
Area 4 A2	J12X62	7/25/06							0.086	U	0.086				3.0	U	3.0
Area 4 A3	J12X63	7/25/06							0.16	U	0.16				4.7	U	4.7
Area 4 A4	J12X64	7/25/06							0.20	U	0.20				5.8	U	5.8
Area 5 A1	J13V12	12/7/06							0.12	U	0.12				13	U	13
Area 5 A2	J13V10	12/7/06							0.12	U	0.12				11	U	11
Area 5 A3	J13V13	12/7/06							0.49	U	0.49				8.9	U	8.9
Area 5 A3 resample	J14JH6	3/30/07							0.38	U	0.38				11	U	11
Area 5 A4	J13V11	12/7/06							0.14	U	0.14				12	U	12
Area 6 A1	J12XC2	7/25/06	0.456		0.18	0	U	0.22	0.16	U	0.16	0.576		0.18	4.4	U	4.4
Area 6 A2	J12XC3	7/25/06	0.416		0.18	0.028	U	0.21	0.26	U	0.26	0.416		0.18	8.4	U	8.4
Area 6 A3	J12XC4	7/25/06	0.608		0.14	0	U	0.17	0.077	U	0.077	0.756		0.14	2.6	U	2.6
Area 6 A4	J12XC5	7/25/06	0.424		0.14	0.022	U	0.17	0.13	U	0.13	0.553		0.14	3.4	U	3.4

Attachment	1	Sheet No.	13 of 113
Originator	J. M. Capron	Date	10/03/07
Checked	T. M. Blakley	Date	
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Attachment 1. 118-B-1 Verification Sampling Results.

Sample Location	Sample Number	Sample Date	Uranium-233/234			Uranium-235			Uranium-235 GEA			Uranium-238			Uranium-238 GEA		
			pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA
Area 7 A1	J12XC6	7/26/06	0.473		0.26	0	U	0.31	0.25	U	0.25	0.574		0.26	8.8	U	8.8
Area 7 A2	J12XC7	7/26/06	0.602		0.27	0.086	U	0.33	0.17	U	0.17	0.708		0.27	4.5	U	4.5
Area 7 A3	J12XC8	7/26/06	0.718		0.25	0.040	U	0.30	0.28	U	0.28	0.424		0.25	8.9	U	8.9
Area 7 A4	J12XC9	7/26/06	0.292		0.28	0.044	U	0.34	0.085	U	0.085	0.729		0.28	2.3	U	2.3
OB A1	J12WK0	7/11/06	0.534		0.032	0.004	U	0.044	0.067	U	0.067	0.563		0.025	2.0	U	2.0
OB A2	J12WK1	7/11/06	0.456		0.026	0.004	U	0.031	0.18	U	0.18	0.476		0.026	4.9	U	4.9
OB A3	J12WK2	7/11/06	0.479		0.026	0.008	U	0.031	0.15	U	0.15	0.567		0.026	4.1	U	4.1
OB A4	J12WK3	7/11/06	0.436		0.036	0.037		0.035	0.13	U	0.13	0.387		0.036	3.9	U	3.9
OB B5	J12WK4	7/11/06	0.510		0.038	0.029	U	0.032	0.10	U	0.10	0.575		0.033	3.2	U	3.2
OB B6	J12WK5	7/11/06	0.461		0.027	0.013	U	0.033	0.20	U	0.20	0.489		0.027	7.0	U	7.0
OB B7	J12WK6	7/11/06	0.477		0.043	0.023	U	0.030	0.085	U	0.085	0.465		0.039	3.0	U	3.0
OB B8	J12WM7	7/17/06	0.692		0.35	0	U	0.43	0.32	U	0.32	0.692		0.35	11	U	11
OB C9	J12WM8	7/17/06	0.767		0.21	0	U	0.25	0.076	U	0.076	0.575		0.21	2.0	U	2.0
OB C10	J12WM9	7/17/06	0.508		0.23	0	U	0.28	0.097	U	0.097	0.538		0.23	3.1	U	3.1
OB C1	J12WN0	7/17/06	0.407		0.26	0.041	U	0.31	0.15	U	0.15	0.543		0.26	4.2	U	4.2
OB C2	J12WN1	7/17/06	0.337		0.23	0.037	U	0.28	0.32	U	0.32	0.521		0.23	10	U	10
OB D3	J12WM5	7/12/06	0.455		0.029	0.022	U	0.028	0.26	U	0.26	0.479		0.023	8.9	U	8.9
OB D4	J12WM6	7/12/06	0.400		0.023	0.033		0.028	0.088	U	0.088	0.546		0.023	3.0	U	3.0
OB D5	J12WM3	7/12/06	0.530		0.028	0.022	U	0.034	0.10	U	0.10	0.504		0.028	3.0	U	3.0
OB D6	J12WM4	7/12/06	0.526		0.10	0.095	U	0.12	0.13	U	0.13	0.539		0.10	4.0	U	4.0
BCL A1	J12WN2	7/20/06	0.540		0.028	0.017	U	0.033	0.14	U	0.14	0.508		0.028	3.8	U	3.8
BCL A2	J12WM1	7/12/06	0.491		0.17	0.054	U	0.21	0.27	U	0.27	0.714		0.17	9.5	U	9.5
BCL A3	J12WM2	7/12/06	0.467		0.17	0.054	U	0.21	0.087	U	0.087	0.555		0.17	3.0	U	3.0
BCL A4	J12WM0	7/12/06	0.517		0.17	0.027	U	0.21	0.13	U	0.13	0.495		0.17	4.4	U	4.4
BCL B5	J12WL9	7/12/06	0.552		0.16	0.026	U	0.20	0.083	U	0.083	0.594		0.16	3.1	U	3.1
BCL B6	J12WL8	7/12/06	0.569		0.16	0.051	U	0.20	0.29	U	0.29	0.485		0.16	9.3	U	9.3
BCL B7	J12WL7	7/12/06	0.525		0.18	0	U	0.22	0.29	U	0.29	0.501		0.18	9.7	U	9.7
BCL B8	J12WL6	7/12/06	0.503		0.20	0	U	0.25	0.15	U	0.15	0.715		0.20	4.6	U	4.6
Split of J12WL6	J12WW0	7/12/06	0.874	J	0.0659	0.167		0.0456				0.697	J	0.0715			

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Originator	J. M. Capron	Date	10/03/07
Checked	T. M. Blakley	Date	
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Attachment 1. 118-B-1 Verification Sampling Results.

Sample Location	Sample Number	Sample Date	Uranium-233/234			Uranium-235			Uranium-235 GEA			Uranium-238			Uranium-238 GEA		
			pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA	pCi/g	Q	MDA
BCL C9	J12WK7	7/11/06	0.548		0.031	0.039		0.030	0.071	U	0.071	0.565		0.025	2.0	U	2.0
BCL C10	J12WK9	7/11/06	0.509		0.023	0.014	U	0.027	0.13	U	0.13	0.498		0.023	3.9	U	3.9
BCL C1	J12WK8	7/11/06	0.567		0.043	0.042		0.036	0.057	U	0.057	0.556		0.037	1.8	U	1.8
BCL C2	J12WL2	7/11/06	0.523		0.028	0.027	U	0.034	0.097	U	0.097	0.549		0.035	2.9	U	2.9
BCL D3	J12WL3	7/11/06	0.586		0.030	0.019	U	0.052	0.26	U	0.26	0.531		0.037	8.3	U	8.3
BCL D4	J12WL4	7/11/06	0.676		0.031	0.047		0.030	0.19	U	0.19	0.627		0.025	5.2	U	5.2
Duplicate of J12WL4	J12WL5	7/11/06	0.609		0.037	0.025	U	0.028	0.099	U	0.099	0.525		0.023	2.8	U	2.8
BCL D5	J12WL0	7/11/06	0.560		0.035	0.031	U	0.034	0.040	U	0.040	0.556		0.028	1.4	U	1.4
BCL D6	J12WL1	7/11/06	0.624		0.044	0.065		0.033	0.16	U	0.16	0.552		0.034	4.7	U	4.7
SPA A1	J13HY3	10/12/06	0.466		0.050	0.038	U	0.042	0.28	U	0.28	0.575		0.035	6.8	U	6.8
SPA A2	J13HY4	10/12/06	0.626		0.046	0.047		0.045	0.14	U	0.14	0.559		0.053	3.4	U	3.4
SPA A3	J13HY5	10/12/06	0.502		0.047	0.024	U	0.046	0.28	U	0.28	0.606		0.038	6.9	U	6.9
SPA A4	J13HY6	10/12/06	0.470		0.052	0.033	U	0.051	0.11	U	0.11	0.497		0.042	2.8	U	2.8
SPA B5	J13HY7	10/12/06	0.600		0.038	0.079		0.032	0.29	U	0.29	0.534		0.038	7.5	U	7.5
Duplicate of J13HY7	J13J09	10/12/06	0.553		0.029	0.032	U	0.044	0.13	U	0.13	0.523		0.029	3.4	U	3.4
Split of J13HY7	J13J10	10/12/06	0.171		0.0331	0.0111	U	0.0391				0.163		0.0391			
SPA B6	J13HY8	10/17/06	0.413		0.19	0	U	0.22	0.12	U	0.12	0.632		0.19	4.2	U	4.2
SPA B7	J13HY9	10/17/06	0.551		0.19	0.030	U	0.23	0.097	U	0.097	0.426		0.19	3.6	U	3.6
SPA B8	J13J00	10/17/06	0.581		0.21	0.033	U	0.26	0.35	U	0.35	0.581		0.21	9.2	U	9.2
SPA C9	J13J01	10/17/06	0.831		0.21	0.067	U	0.26	0.17	U	0.17	0.471		0.21	4.3	U	4.3
SPA C10	J13J02	10/18/06	0.410		0.21	0.066	U	0.25	0.32	U	0.32	0.492		0.21	8.4	U	8.4
SPA C1	J13J03	10/18/06	0.657		0.23	0	U	0.28	0.12	U	0.12	0.448		0.23	4.2	U	4.2
SPA C2	J13J04	10/18/06	0.643		0.22	0	U	0.27	0.25	U	0.25	0.409		0.22	6.6	U	6.6
SPA D3	J13J05	10/18/06	0.683		0.22	0	U	0.26	0.092	U	0.092	0.740		0.22	3.3	U	3.3
SPA D4	J13J06	10/19/06	0.714		0.12	0.037	U	0.14	0.055	U	0.055	0.410		0.12	1.3	U	1.3
SPA D5	J13J07	10/23/06	0.581		0.10	0.065	U	0.13	0.095	U	0.095	0.473		0.10	3.5	U	3.5
SPA D6	J13J08	10/23/06	0.541		0.040	0.018	U	0.035	0.27	U	0.27	0.553		0.037	6.5	U	6.5
FS-12	J14Y75	6/27/07	0.587		0.173	0.027	U	0.209	0.318	U	0.318	0.564		0.173	10.5	U	10.5
FS-13	J14Y76	6/27/07	0.461		0.186	0.029	U	0.225	0.283	U	0.283	0.510		0.186	9.31	U	9.31
FS-14	J12XB3	7/19/06							0.13	U	0.13				13	U	13
FS-17	J14J3	3/5/07							0.18	U	0.18				5.4	U	5.4
FS-18	J14L38	3/5/07							0.13	U	0.13				3.7	U	3.7
FS-19	J14L39	3/5/07							0.18	U	0.18				7.4	U	7.4

Attachment	1	Sheet No.	15 of 113
Originator	J. M. Capron	Date	10/03/07
Checked	T. M. Blakley	Date	
Calc. No.	0100B-CA-V0299	Rev. No.	1

Attachment 1. 118-B-1 Verification Sampling Results.

Sample Location	Sample Number	Sample Date	Aluminum			Antimony			Arsenic			Barium			Beryllium			Boron		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
Area 1 A1	J12X44	7/19/06	6040		8.4	1.3	UJ	1.3	2.9		1.8	53.7	C	0.06	0.59		0.06	1.9		0.70
Duplicate of J12X44	J12X48	7/19/06	6600		8.4	1.3	UJ	1.3	3.1		1.8	60.4	C	0.06	0.66		0.06	0.81		0.70
Split of J12X44	J12X49	7/19/06	7460	N	6.3	1.7	NJ	0.33	2.8		0.28	65.6		0.51	0.38	B*	0.071	1.7	B*	1.5
Area 1 A2	J12X45	7/19/06	4460		8.4	1.3	UJ	1.3	2.1		1.8	63.1	C	0.06	0.57		0.06	1.5		0.70
Area 1 A3	J12X46	7/20/06	5420		8.1	1.2	UJ	1.2	3.2		1.7	52.4	C	0.06	0.48		0.06	1.0		0.68
Area 1 A4	J12X47	7/20/06	4910		8.1	1.2	UJ	1.2	2.8		1.7	52.1	C	0.06	0.54		0.06	0.82		0.68
Area 2 A1	J12X50	7/20/06	3900		8.0	1.2	UJ	1.2	1.8		1.7	43.9	C	0.06	0.47		0.06	1.6		0.67
Area 2 A2	J12X51	7/20/06	5170		8.2	1.3	UJ	1.3	3.2		1.7	55.5	C	0.06	0.62		0.06	5.5		0.68
Area 2 A3	J12X52	7/20/06	5050		8.2	1.3	UJ	1.3	2.6		1.7	43.7	C	0.06	0.65		0.06	3.7		0.68
Area 2 A4	J12X53	7/20/06	4930		8.1	1.2	UJ	1.2	2.0		1.7	61.0	C	0.06	0.55		0.06	2.4		0.68
Area 3 A1	J12X54	7/20/06	4240		8.0	1.2	UJ	1.2	2.4		1.7	58.8	C	0.06	0.56		0.06	8.9		0.67
Area 3 A2	J12X55	7/20/06	4820		8.1	1.2	UJ	1.2	2.9		1.7	45.3	C	0.06	0.63		0.06	1.1		0.67
Area 3 A3	J12X56	7/20/06	6120		8.1	1.2	UJ	1.2	4.5		1.7	52.4	C	0.06	0.65		0.06	2.2		0.68
Duplicate of J12X56	J12X58	7/20/06	5500		8.2	1.3	UJ	1.3	3.9		1.7	48.3	C	0.06	0.61		0.06	1.3		0.69
Split of J12X56	J12X60	7/20/06	5470	N	6.3	1.1	NJ	0.34	3.0		0.28	47.7		0.51	0.34	B*	0.071	5.1	B*	1.5
Area 3 A4	J12X57	7/20/06	4640		8.1	1.2	UJ	1.2	2.4		1.7	65.9	C	0.06	0.61		0.06	2.1		0.67
Area 4 A1	J12X61	7/25/06	3740		8.0	1.2	U	1.2	2.5		1.7	39.1		0.06	0.42		0.06	1.0		0.67
Duplicate of J12X61	J12X65	7/25/06	4220		8.1	1.2	U	1.2	3.3		1.7	51.4		0.06	0.34		0.06	3.9		0.67
Split of J12X61	J12X66	7/25/06	5490	N	6.2	1.7	NJ	0.33	2.4		0.28	59.3		0.50	0.32	B*	0.071	7.7	B*	1.5
Area 4 A2	J12X62	7/25/06	4140		7.9	1.2	U	1.2	2.8		1.7	47.2		0.06	0.36		0.06	0.66	U	0.66
Area 4 A3	J12X63	7/25/06	4840		8.1	1.2	U	1.2	3.9		1.7	47.5		0.06	0.39		0.06	0.67	U	0.67
Area 4 A4	J12X64	7/25/06	5270		8.0	1.2	U	1.2	2.8		1.7	49.2		0.06	0.40		0.06	0.66	U	0.66
Area 5 A1	J13V12	12/7/06	3450		6.5	0.77	UJ	0.77	2.3		0.95	41.0	C	0.03	0.1		0.03	0.91		0.58
Area 5 A2	J13V10	12/7/06	3970		6.4	0.76	UJ	0.76	2.2		0.94	44.4	C	0.03	0.14		0.03	0.72		0.58
Area 5 A3	J13V13	12/7/06	1550		2.1	0.25	UJ	0.25	0.86		0.31	18.4	C	0.01	0.04		0.01	0.27		0.19
Area 5 A4	J13V11	12/7/06	3990		6.5	0.77	UJ	0.77	2.9		0.95	42.8	C	0.03	0.13		0.03	1.2		0.58
Area 6 A1	J12XC2	7/25/06	5070		8.0	1.2	U	1.2	2.9		1.7	96.4		0.06	0.34		0.06	8.8		0.67
Area 6 A2	J12XC3	7/25/06	5190		8.1	1.2	U	1.2	3.7		1.7	53.3		0.06	0.32		0.06	1.1		0.67
Area 6 A3	J12XC4	7/25/06	4710		8.1	1.2	U	1.2	3.0		1.7	44.5		0.06	0.35		0.06	0.80		0.67
Area 6 A4	J12XC5	7/25/06	5270		8.1	1.2	U	1.2	4.5		1.7	44.0		0.06	0.36		0.06	0.67	U	0.67
Area 7 A1	J12XC6	7/26/06	4980.00		8.00	1.2	UJ	1.2	3.8		1.7	145		0.06	0.30		0.06	18.1		0.67
Area 7 A2	J12XC7	7/26/06	6090		7.9	1.2	UJ	1.2	3.1		1.7	75.1		0.06	0.31		0.06	2.7		0.66
Area 7 A3	J12XC8	7/26/06	4610		8.1	1.2	UJ	1.2	3.1		1.7	53.7		0.06	0.19		0.06	1.3		0.67
Area 7 A4	J12XC9	7/26/06	5610		8.1	1.2	UJ	1.2	2.8		1.7	119		0.06	0.27		0.06	7.7		0.67

Attachment 1 Sheet No. 16 of 113
 Originator J. M. Capron Date 10/03/07
 Checked T. M. Blakley Date _____
 Calc. No. 0100B-CA-V0299 Rev. No. 1

Attachment 1. 118-B-1 Verification Sampling Results.

Sample Location	Sample Number	Sample Date	Aluminum			Antimony			Arsenic			Barium			Beryllium			Boron		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
OB A1	J12WK0	7/11/06	4440		2.3	0.43	UJ	0.43	2.6		0.59	77.1		0.02	0.47		0.02	3.0		0.23
OB A2	J12WK1	7/11/06	4930		2.3	0.43	UJ	0.43	2.7		0.59	48.4		0.02	0.49		0.02	1.6		0.23
OB A3	J12WK2	7/11/06	4650		2.3	0.42	UJ	0.42	2.3		0.59	54.6		0.02	0.42		0.02	1.7		0.23
OB A4	J12WK3	7/11/06	4350		2.3	0.42	UJ	0.42	2.7		0.58	55.9		0.02	0.43		0.02	1.6		0.23
OB B5	J12WK4	7/11/06	5330		2.3	0.42	UJ	0.42	3.1		0.59	51.4		0.02	0.54		0.02	1.4		0.23
OB B6	J12WK5	7/11/06	4810		2.3	0.42	UJ	0.42	2.9		0.59	56.4		0.02	0.55		0.02	1.4		0.23
OB B7	J12WK6	7/11/06	4720		2.3	0.42	UJ	0.42	2.2		0.59	46.2		0.02	0.43		0.02	1.6		0.23
OB B8	J12WM7	7/17/06	5540		8.0	1.2	UJ	1.2	2.7		1.7	60.0		0.06	0.36		0.06	1.8		0.67
OB C9	J12WM8	7/17/06	4610		8.1	1.2	UJ	1.2	2.3		1.7	53.7		0.06	0.30		0.06	1.9		0.67
OB C10	J12WM9	7/17/06	4440		8.1	1.2	UJ	1.2	2.5		1.7	44.9		0.06	0.27		0.06	1.2		0.68
OB C1	J12WN0	7/17/06	5080		8.1	1.2	UJ	1.2	2.4		1.7	49.8		0.06	0.33		0.06	0.86		0.68
OB C2	J12WN1	7/17/06	4510		8.1	1.2	UJ	1.2	2.4		1.7	43.0		0.06	0.28		0.06	1.8		0.67
OB D3	J12WM5	7/12/06	5160		8.2	1.3	UJ	1.3	3.5		1.7	51.7		0.06	0.45		0.06	1.5		0.69
OB D4	J12WM6	7/12/06	5810		8.2	1.2	UJ	1.2	4.0		1.7	52.4		0.06	0.48		0.06	1.2		0.68
OB D5	J12WM3	7/12/06	4990		8.1	1.2	UJ	1.2	3.6		1.7	83.5		0.06	0.53		0.06	2.5		0.67
OB D6	J12WM4	7/12/06	5170		8.1	1.2	UJ	1.2	3.1		1.7	48.4		0.06	0.49		0.06	2.0		0.67
BCL A1	J12WN2	7/20/06	5200		8.1	1.2	UJ	1.2	3.1		1.7	57.0	C	0.06	0.47		0.06	2.0		0.68
BCL A2	J12WM1	7/12/06	4960		8.1	1.2	UJ	1.2	3.7		1.7	53.7		0.06	0.59		0.06	1.6		0.68
BCL A3	J12WM2	7/12/06	5420		8.2	1.3	UJ	1.3	3.6		1.7	56.8		0.06	0.58		0.06	1.4		0.68
BCL A4	J12WM0	7/12/06	4890		8.2	1.2	UJ	1.2	3.1		1.7	62.0		0.06	0.62		0.06	2.9		0.68
BCL B5	J12WL9	7/12/06	5850		8.2	1.3	UJ	1.3	3.5		1.7	55.4		0.06	0.49		0.06	1.3		0.68
BCL B6	J12WL8	7/12/06	5450		8.2	1.3	UJ	1.3	3.2		1.7	56.9		0.06	0.47		0.06	1.5		0.68
BCL B7	J12WL7	7/12/06	5800		8.1	1.2	UJ	1.2	3.7		1.7	59.7		0.06	0.46		0.06	1.5		0.68
BCL B8	J12WL6	7/12/06	5170		8.2	1.2	UJ	1.2	3.3		1.7	54.2		0.06	0.43		0.06	1.7		0.68
Split of J12WL6	J12WW0	7/12/06	7690	N	6.3	1.4	NJ	0.33	3.8		0.28	69.9		0.50	0.34	B*	0.071	2.8	B*C	1.5
BCL C9	J12WK7	7/11/06	5880		2.3	0.42	UJ	0.42	2.8		0.58	71.5		0.02	0.58		0.02	2.8		0.23
BCL C10	J12WK9	7/11/06	5840		2.3	0.43	UJ	0.43	3.8		0.59	59.8		0.02	0.60		0.02	1.5		0.23
BCL C1	J12WK8	7/11/06	5540		2.3	0.43	UJ	0.43	2.9		0.59	75.4		0.02	0.57		0.02	1.5		0.23
BCL C2	J12WL2	7/11/06	5750		2.3	0.42	UJ	0.42	4.8		0.59	54.8		0.02	0.58		0.02	1.2		0.23
BCL D3	J12WL3	7/11/06	5550		2.3	0.43	UJ	0.43	3.0		0.59	44.8		0.02	0.50		0.02	1.2		0.23
BCL D4	J12WL4	7/11/06	5100		2.3	0.42	UJ	0.42	2.8		0.58	52.7		0.02	0.44		0.02	1.3		0.23
Duplicate of J12WL4	J12WL5	7/11/06	4800		2.3	0.42	UJ	0.42	3.0		0.59	59.5		0.02	0.45		0.02	1.9		0.23
BCL D5	J12WL0	7/11/06	5020		2.3	0.42	UJ	0.42	3.2		0.59	49.7		0.02	0.50		0.02	1.1		0.23
BCL D6	J12WL1	7/11/06	6610		2.3	0.42	UJ	0.42	4.1		0.58	50.6		0.02	0.58		0.02	1.3		0.23

Attachment 1 Sheet No. 17 of 113
 Originator J. M. Capron Date 10/03/07
 Checked T. M. Blakley Date _____
 Calc. No. 0100B-CA-V0299 Rev. No. 1

Attachment 1. 118-B-1 Verification Sampling Results.

Sample Location	Sample Number	Sample Date	Aluminum			Antimony			Arsenic			Barium			Beryllium			Boron		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
SPA A1	J13HY3	10/12/06	5520		6.5	1.0	U	1.0	2.7		1.1	80.5		0.06	0.31		0.03	2.6		1.1
SPA A2	J13HY4	10/12/06	5660		6.4	1.0	U	1.0	2.7		1.0	74.6		0.06	0.31		0.03	2.0		1.0
SPA A3	J13HY5	10/12/06	6080		6.4	1.0	U	1.0	2.2		1.0	73.7		0.06	0.31		0.03	1.8		1.0
SPA A4	J13HY6	10/12/06	5570		6.5	1.0	U	1.0	2.0		1.1	74.6		0.06	0.31		0.03	2.2		1.1
SPA B5	J13HY7	10/12/06	5200		6.4	1.0	U	1.0	2.3		1.0	63.8		0.06	0.26		0.03	1.5		1.0
Duplicate of J13HY7	J13J09	10/12/06	5550		6.5	1.0	U	1.0	2.4		1.0	67.8		0.06	0.26		0.03	1.8		1.0
Split of J13HY7	J13J10	10/12/06	8360	N	6.2	1.0	NJ	0.33	3.0		0.28	84.8		0.50	0.35	B*	0.071	7.0	B*C	1.5
SPA B6	J13HY8	10/17/06	5430		2.3	0.36	U	0.36	2.3		0.37	65.2		0.02	0.42	C	0.01	1.3		0.37
SPA B7	J13HY9	10/17/06	5850		2.3	0.36	U	0.36	2.1		0.37	65.0		0.02	0.45	C	0.01	1.9		0.37
SPA B8	J13J00	10/17/06	5800		2.3	0.36	U	0.36	2.4		0.37	83.4		0.02	0.38	C	0.01	3.0		0.37
SPA C9	J13J01	10/17/06	5350		2.4	0.38	U	0.38	2.3		0.39	66.3		0.02	0.37	C	0.01	2.1		0.39
SPA C10	J13J02	10/18/06	4900		7.0	1.1	UJ	1.1	1.6		1.1	60.7		0.06	0.30	C	0.03	1.8		1.1
SPA C1	J13J03	10/18/06	4890		6.9	1.1	UJ	1.1	1.6		1.1	57.5		0.06	0.39	C	0.03	1.6		1.1
SPA C2	J13J04	10/18/06	3590		6.9	1.1	UJ	1.1	1.1	U	1.1	33.4		0.06	0.38	C	0.03	1.1	U	1.1
SPA D3	J13J05	10/18/06	4730		6.8	1.1	UJ	1.1	1.1	U	1.1	67.5		0.06	0.41	C	0.03	1.1	U	1.1
SPA D4	J13J06	10/19/06	5300	C	6.9	1.1	UJ	1.1	2.1		1.1	62.9		0.06	0.13	C	0.03	1.1	U	1.1
SPA D5	J13J07	10/23/06	5140	C	6.6	1.0	UJ	1.0	1.8		1.1	85.0		0.06	0.29	C	0.03	1.1	U	1.1
SPA D6	J13J08	10/23/06	4730	C	6.7	1.1	UJ	1.1	2.5		1.1	56.0		0.06	0.30	C	0.03	1.7		1.1
FS-2	J12R25	7/10/06	4360		8.1	1.2	UJ	1.2	1.7	U	1.7	52.3		0.06	0.30		0.06	1.1		0.67
FS-3	J12R26	7/10/06	7200		8.2	1.2	UJ	1.2	4.0		1.7	55.5		0.06	0.42		0.06	1.8		0.68
FS-5	J12R28	7/10/06	6170		6.5	1.0	UJ	1.0	4.2		1.1	53.0		0.06	0.50		0.03	2.3		1.1
FS-6	J12R29	7/10/06	10100		8.1	1.2	UJ	1.2	4.4		1.7	209		0.06	0.58		0.06	16.1		0.67
FS-7	J13P85	11/15/06	4600		6.5	0.77	UJ	0.77	1.7		0.96	50.0	C	0.03	0.24		0.03	0.61		0.59
FS-8	J12R31	7/10/06	6770		8.2	1.3	UJ	1.3	2.1		1.7	261		0.06	0.47		0.06	24.5		0.68
FS-9	J12R32	7/10/06	6200		8.2	1.3	UJ	1.3	2.9		1.7	61.6		0.06	0.37		0.06	13.1		0.69
FS-11	J12R34	7/10/06	6980		6.5	1.0	UJ	1.0	7.0		1.1	61.0		0.06	0.46		0.03	1.6		1.1
FS-14	J12XB3	7/19/06	4700		8.8	1.3	UJ	1.3	1.9		1.9	45.5	C	0.06	0.51		0.06	4.1		0.73
FS-15	J13NX4	11/14/06	3630		6.5	0.77	UJ	0.77	1.4		0.95	38.6	C	0.03	0.18		0.03	0.58	U	0.58
FS-16	J13P84	11/15/06	3730		6.3	0.75	UJ	0.75	1.0		0.93	36.8	C	0.03	0.23		0.03	0.57	U	0.57
FS-17	J14J13	3/5/07	6480		1.4	0.31	UJ	0.31	2.8		0.40	64.3		0.02	0.40		0.01	1.7		0.37
FS-17 resample	J152M1	5/10/07	6200		1.4	0.31	U	0.31	2.7		0.39	63.4		0.02	0.46		0.01	1.8		0.37
FS-18	J14L38	3/5/07	5780		1.4	0.31	UJ	0.31	2.6		0.40	61.3		0.02	0.35		0.01	1.8		0.37
FS-19	J14L39	3/5/07	5380		1.4	0.31	UJ	0.31	2.3		0.40	57.6		0.02	0.35		0.01	1.3		0.37
Equipment blank	J12X59	7/20/06	151		8.1	1.2	UJ	1.2	1.7	U	1.7	3.9	C	0.06	0.18		0.06	0.67	U	0.67

Attachment 1 Sheet No. 18 of 113
 Originator J. M. Capron Date 10/03/07
 Checked T. M. Blakley Date _____
 Calc. No. 0100B-CA-V0299 Rev. No. 1

Attachment 1. 118-B-1 Verification Sampling Results.

Sample Location	Sample Number	Sample Date	Cadmium			Calcium			Chromium			Cobalt			Copper			Hexavalent Chromium		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
Area 1 A1	J12X44	7/19/06	0.20	U	0.20	6860	C	4.8	7.0		0.38	10.1		0.41	17.4		0.35	0.20	U	0.20
Duplicate of J12X44	J12X48	7/19/06	0.20	U	0.20	7560	C	4.8	8.2		0.38	10.7		0.41	17.9		0.35	0.20	U	0.20
Split of J12X44	J12X49	7/19/06	0.14	UNJ	0.14	6820	CN	8.6	6.8		0.36	14.5		0.51	15.7	N	0.30	0.350	UJ	0.350
Area 1 A2	J12X45	7/19/06	0.20	U	0.20	7280	C	4.8	4.7		0.38	9.7		0.41	16.8		0.35	0.20	U	0.20
Area 1 A3	J12X46	7/20/06	0.20	U	0.20	7150	C	4.6	6.4		0.37	9.3		0.40	17.7		0.34	0.20	UJ	0.20
Area 1 A4	J12X47	7/20/06	0.20	U	0.20	7870	C	4.6	5.4		0.37	9.8		0.40	16.0		0.34	0.20	UJ	0.20
Area 2 A1	J12X50	7/20/06	0.20	U	0.20	5360	C	4.6	5.5		0.36	8.4		0.39	15.0		0.33	0.20	UJ	0.20
Area 2 A2	J12X51	7/20/06	0.20	U	0.20	8200	C	4.7	6.9		0.37	8.4		0.40	16.8		0.34	0.20	UJ	0.20
Area 2 A3	J12X52	7/20/06	0.20	U	0.20	9080	C	4.7	5.8		0.37	8.1		0.40	16.2		0.34	0.26	J	0.20
Area 2 A4	J12X53	7/20/06	0.20	U	0.20	5120	C	4.6	6.5		0.37	7.1		0.39	13.3		0.34	0.33	J	0.20
Area 3 A1	J12X54	7/20/06	0.20	U	0.20	6080	C	4.6	5.4		0.36	7.8		0.39	15.6		0.33	0.20	UJ	0.20
Area 3 A2	J12X55	7/20/06	0.20	U	0.20	7310	C	4.6	5.9		0.36	8.8		0.39	16.6		0.34	0.20	UJ	0.20
Area 3 A3	J12X56	7/20/06	0.20	U	0.20	9860	C	4.6	9.2		0.37	8.9		0.40	18.0		0.34	0.20	UJ	0.20
Duplicate of J12X56	J12X58	7/20/06	0.20	U	0.20	9650	C	4.7	8.2		0.37	8.9		0.40	16.9		0.34	0.21	J	0.20
Split of J12X56	J12X60	7/20/06	0.14	UNJ	0.14	7870	C	8.7	6.5		0.36	10.2		0.51	14.4		0.31	0.350	UJ	0.350
Area 3 A4	J12X57	7/20/06	0.20	U	0.20	6680	C	4.6	5.8		0.36	9.1		0.39	16.1		0.34	0.20	UJ	0.20
Area 4 A1	J12X61	7/25/06	0.20	U	0.20	6520	C	4.6	3.7		0.36	8.4		0.39	15.5		0.34	0.30		0.20
Duplicate of J12X61	J12X65	7/25/06	0.20	U	0.20	7870	C	4.6	5.1		0.36	8.6		0.39	15.7		0.34	0.20	U	0.20
Split of J12X61	J12X66	7/25/06	0.14	UNJ	0.14	9360	C	8.6	6.2		0.36	13.9		0.50	16.3		0.30	0.350	U	0.350
Area 4 A2	J12X62	7/25/06	0.19	U	0.19	5490	C	4.5	5.4		0.36	7.9		0.39	14.3		0.33	0.20	U	0.20
Area 4 A3	J12X63	7/25/06	0.20	U	0.20	8920	C	4.6	6.5		0.36	8.3		0.39	16.5		0.34	0.20	U	0.20
Area 4 A4	J12X64	7/25/06	0.19	U	0.19	5770	C	4.5	6.7		0.36	8.6		0.39	15.6		0.33	0.24		0.20
Area 5 A1	J13V12	12/7/06	0.13		0.09	4550	CJ	3.8	3.9		0.37	6.0		0.15	12.7		0.21	0.21	U	0.21
Area 5 A2	J13V10	12/7/06	0.14		0.09	5050	CJ	3.8	5.0		0.36	6.9		0.15	13.0		0.21	0.21	U	0.21
Area 5 A3	J13V13	12/7/06	0.07		0.03	1770	CJ	1.3	2.1		0.12	2.3		0.05	4.5		0.07	0.26		0.21
Area 5 A4	J13V11	12/7/06	0.23		0.09	11900	CJ	3.8	4.6		0.37	6.6		0.15	14.3		0.22	0.21	U	0.21
Area 6 A1	J12XC2	7/25/06	0.20	U	0.20	5890	C	4.6	7.4		0.36	7.1		0.39	13.7		0.33	0.20	U	0.20
Area 6 A2	J12XC3	7/25/06	0.20	U	0.20	6030	C	4.6	7.1		0.36	7.8		0.39	14.3		0.34	0.24		0.20
Area 6 A3	J12XC4	7/25/06	0.20	U	0.20	10100	C	4.6	6.2		0.36	8.4		0.39	16.3		0.34	0.22		0.20
Area 6 A4	J12XC5	7/25/06	0.20	U	0.20	14500	C	4.6	7.1		0.36	8.5		0.39	16.9		0.34	0.28		0.20
Area 7 A1	J12XC6	7/26/06	0.19	U	0.19	7420	C	4.6	7.6		0.36	6.3		0.39	25.7		0.33	0.20	U	0.20
Area 7 A2	J12XC7	7/26/06	0.19	U	0.19	4550	C	4.5	9.5		0.36	7.6		0.39	14.4		0.33	0.30		0.20
Area 7 A3	J12XC8	7/26/06	0.20	U	0.20	4270	C	4.6	7.3		0.37	6.3		0.39	11.7		0.34	0.27		0.20
Area 7 A4	J12XC9	7/26/06	0.20	U	0.20	6150	C	4.6	8.0		0.36	7.4		0.39	17.2		0.34	0.20	U	0.20

Attachment	1	Sheet No.	19 of 113
Originator	J. M. Capron	Date	10/03/07
Checked	T. M. Blakley	Date	
Calc. No.	0100B-CA-V0299	Rev. No.	1

Attachment 1. 118-B-1 Verification Sampling Results.

Sample Location	Sample Number	Sample Date	Cadmium			Calcium			Chromium			Cobalt			Copper			Hexavalent Chromium		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
OB A1	J12WK0	7/11/06	0.41	U	0.41	5710	C	2.1	5.9		0.13	8.1		0.14	16.2		0.12	0.31		0.20
OB A2	J12WK1	7/11/06	0.41	U	0.41	5300	C	2.1	7.2		0.13	8.5		0.14	14.3		0.12	0.27		0.20
OB A3	J12WK2	7/11/06	0.43		0.41	4350	C	2.1	6.9		0.13	7.2		0.14	12.7		0.12	0.20	U	0.20
OB A4	J12WK3	7/11/06	0.42		0.40	4610	C	2.1	6.7		0.12	7.7		0.13	12.4		0.12	0.20	U	0.20
OB B5	J12WK4	7/11/06	0.41	U	0.41	5650	C	2.1	7.7		0.13	9.4		0.14	14.6		0.12	0.30		0.20
OB B6	J12WK5	7/11/06	0.40	U	0.40	5680	C	2.1	6.4		0.13	8.0		0.13	15.3		0.12	0.27		0.20
OB B7	J12WK6	7/11/06	0.40	U	0.40	5590	C	2.1	8.2		0.13	6.5		0.13	14.8		0.12	0.30		0.20
OB B8	J12WM7	7/17/06	0.28		0.20	4360	C	4.6	8.0		0.36	7.9		0.39	15.2		0.33	0.20	U	0.20
OB C9	J12WM8	7/17/06	0.31		0.20	3660	C	4.6	6.9		0.36	7.2		0.39	14.3		0.34	0.20	U	0.20
OB C10	J12WM9	7/17/06	0.32		0.20	3570	C	4.6	6.6		0.37	7.3		0.39	14.9		0.34	0.25		0.20
OB C1	J12WN0	7/17/06	0.32		0.20	4930	C	4.6	6.5		0.37	9.6		0.40	18.1		0.34	0.26		0.20
OB C2	J12WN1	7/17/06	0.26		0.20	4760	C	4.6	5.7		0.37	8.1		0.39	15.1		0.34	0.20	U	0.20
OB D3	J12WM5	7/12/06	0.20	U	0.20	5900		4.7	6.6		0.37	9.0		0.40	16.7		0.34	0.23		0.20
OB D4	J12WM6	7/12/06	0.20	U	0.20	6750		4.6	7.5		0.37	10.2		0.40	17.0		0.34	0.20	U	0.20
OB D5	J12WM3	7/12/06	0.20	U	0.20	4690		4.6	6.0		0.37	8.0		0.39	16.7		0.34	0.22		0.20
OB D6	J12WM4	7/12/06	0.20	U	0.20	6400		4.6	6.4		0.37	9.1		0.39	16.0		0.34	0.20	U	0.20
BCL A1	J12WN2	7/20/06	0.20	U	0.20	7000	C	4.6	6.6		0.37	9.5		0.40	15.9		0.34	0.21	J	0.20
BCL A2	J12WM1	7/12/06	0.20	U	0.20	6110		4.6	6.3		0.37	8.2		0.40	16.2		0.34	0.22		0.20
BCL A3	J12WM2	7/12/06	0.20	U	0.20	6800		4.7	7.2		0.37	8.4		0.40	16.0		0.34	0.28		0.20
BCL A4	J12WM0	7/12/06	0.20	U	0.20	4880		4.6	7.2		0.37	8.1		0.40	16.0		0.34	0.20	U	0.20
BCL B5	J12WL9	7/12/06	0.20	U	0.20	7180		4.7	8.3		0.37	9.2		0.40	16.2		0.34	0.28		0.20
BCL B6	J12WL8	7/12/06	0.20	U	0.20	6180		4.7	7.3		0.37	8.0		0.40	15.4		0.34	0.21		0.20
BCL B7	J12WL7	7/12/06	0.20	U	0.20	6120		4.6	8.7		0.37	7.9		0.40	14.6		0.34	0.20	U	0.20
BCL B8	J12WL6	7/12/06	0.20	U	0.20	5750		4.6	7.3		0.37	7.3		0.40	13.8		0.34	0.28		0.20
Split of J12WL6	J12WW0	7/12/06	0.14	UNJ	0.14	6270	CN	8.6	9.4		0.36	10.9		0.50	14.4	N	0.30	0.350	UJ	0.350
BCL C9	J12WK7	7/11/06	0.40	U	0.40	5360	C	2.1	9.5		0.12	7.9		0.13	15.4		0.11	0.20	U	0.20
BCL C10	J12WK9	7/11/06	0.41	U	0.41	9220	C	2.1	7.3		0.13	9.8		0.14	17.2		0.12	0.20	U	0.20
BCL C1	J12WK8	7/11/06	0.41	U	0.41	6140	C	2.1	7.5		0.13	8.6		0.14	14.4		0.12	0.20	U	0.20
BCL C2	J12WL2	7/11/06	0.40	U	0.40	11600	C	2.1	8.0		0.12	10.8		0.13	16.9		0.12	0.31		0.20
BCL D3	J12WL3	7/11/06	0.41	U	0.41	7130	C	2.1	7.4		0.13	9.4		0.14	14.2		0.12	0.26		0.20
BCL D4	J12WL4	7/11/06	0.40	U	0.40	5800	C	2.1	8.8		0.12	7.9		0.13	12.9		0.11	0.36		0.20
Duplicate of J12WL4	J12WL5	7/11/06	0.41	U	0.41	5970	C	2.1	7.3		0.13	7.6		0.14	12.9		0.12	0.26		0.20
BCL D5	J12WL0	7/11/06	0.40	U	0.40	6820	C	2.1	7.1		0.13	8.8		0.13	14.3		0.12	0.27		0.20
BCL D6	J12WL1	7/11/06	0.40	U	0.40	10400	C	2.1	9.3		0.12	10.0		0.13	16.2		0.11	0.20	U	0.20

Attachment 1 Sheet No. 20 of 113
 Originator J. M. Capron Date 10/03/07
 Checked T. M. Blakley Date _____
 Calc. No. 0100B-CA-V0299 Rev. No. 1

Attachment 1. 118-B-1 Verification Sampling Results.

Sample Location	Sample Number	Sample Date	Cadmium			Calcium			Chromium			Cobalt			Copper			Hexavalent Chromium		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
SPA A1	J13HY3	10/12/06	0.16		0.09	4020	C	2.4	7.8	C	0.20	7.2		0.14	14.4		0.23	0.20	U	0.20
SPA A2	J13HY4	10/12/06	0.12		0.08	3460	C	2.4	8.3	C	0.20	7.2		0.14	14.8		0.23	0.20	U	0.20
SPA A3	J13HY5	10/12/06	0.15		0.08	3630	C	2.4	8.8	C	0.20	7.6		0.14	15.2		0.23	0.20	U	0.20
SPA A4	J13HY6	10/12/06	0.13		0.09	4260	C	2.5	7.9	C	0.20	7.6		0.14	15.3		0.23	0.20	U	0.20
SPA B5	J13HY7	10/12/06	0.11		0.08	3490	C	2.4	8.0	C	0.20	6.4		0.14	12.9		0.23	0.22		0.20
Duplicate of J13HY7	J13J09	10/12/06	0.15		0.08	3540	C	2.4	9.3	C	0.20	6.7		0.14	13.6		0.23	0.20	U	0.20
Split of J13HY7	J13J10	10/12/06	0.14	U	0.14	4520	CN	8.6	12.5		0.36	11.3		0.50	15.3		0.30	0.350	U	0.350
SPA B6	J13HY8	10/17/06	0.03	U	0.03	3960	C	0.86	8.2	C	0.07	7.3		0.05	14.3		0.08	0.20	U	0.20
SPA B7	J13HY9	10/17/06	0.03	U	0.03	4490	C	0.87	9.3	C	0.07	7.9		0.05	14.6		0.08	0.21	U	0.21
SPA B8	J13J00	10/17/06	0.03	U	0.03	3470	C	0.86	9.6	C	0.07	6.1		0.05	12.2		0.08	0.20	U	0.20
SPA C9	J13J01	10/17/06	0.03	U	0.03	3630	C	0.90	9.1	C	0.07	6.7		0.05	15.2		0.08	0.22	U	0.22
SPA C10	J13J02	10/18/06	0.09	U	0.09	3220	C	2.6	7.4	C	0.21	6.4		0.15	12.5		0.24	0.27		0.21
SPA C1	J13J03	10/18/06	0.09	U	0.09	3560	C	2.6	7.4	C	0.21	7.1		0.15	12.2		0.24	0.21	U	0.21
SPA C2	J13J04	10/18/06	0.09	U	0.09	5250	C	2.6	4.6	C	0.21	7.3		0.15	13.9		0.24	0.21	U	0.21
SPA D3	J13J05	10/18/06	0.09	U	0.09	4300	C	2.6	6.1	C	0.21	8.4		0.15	14.3		0.24	0.21	U	0.21
SPA D4	J13J06	10/19/06	0.53		0.09	5800	CJ	2.6	7.4	C	0.21	8.9		0.15	16.6		0.24	0.22	U	0.22
SPA D5	J13J07	10/23/06	0.09	U	0.09	4780	CJ	2.5	7.0	C	0.20	7.6		0.14	14.5		0.23	0.23		0.21
SPA D6	J13J08	10/23/06	0.09	U	0.09	5140	CJ	2.5	6.1	C	0.21	8.1		0.15	15.0		0.23	0.21	U	0.21
FS-2	J12R25	7/10/06	0.20	U	0.20	3770		4.6	5.2		0.37	7.5		0.39	14.4		0.34			
FS-3	J12R26	7/10/06	0.28		0.20	7570		4.7	9.6		0.37	11.3		0.40	21.0		0.34			
FS-5	J12R28	7/10/06	0.09	UC	0.09	9270	C	2.5	7.1	C	0.20	8.8		0.14	18.3		0.23			
FS-6	J12R29	7/10/06	0.20	U	0.20	11700		4.6	15.9		0.36	9.6		0.39	28.0		0.34			
FS-7	J13P85	11/15/06	0.09	U	0.09	5590	C	3.9	5.2		0.37	6.9		0.15	14.2		0.22			
FS-8	J12R31	7/10/06	0.20	U	0.20	8560		4.7	7.6		0.37	6.8		0.40	13.7		0.34			
FS-9	J12R32	7/10/06	0.20	U	0.20	9520		4.7	8.0		0.37	8.7		0.40	18.2		0.34			
FS-11	J12R34	7/10/06	0.28	C	0.09	9980	C	2.5	16.4	C	0.20	8.7		0.14	18.5		0.23			
FS-14	J12XB3	7/19/06	0.21	U	0.21	5300	C	5.0	5.4		0.40	8.8		0.43	16.7		0.37			
FS-15	J13NX4	11/14/06	0.09	U	0.09	4140	C	3.8	4.8		0.37	7.4		0.15	13.5		0.22			
FS-16	J13P84	11/15/06	0.09	U	0.09	4260	C	3.7	3.9		0.36	7.2		0.15	13.8		0.21			
FS-17	J14J3	3/5/07	0.13		0.03	5920		0.74	10.0		0.08	9.0		0.09	18.1		0.12			
FS-17 resample	J152M1	5/10/07	0.03	U	0.03	5090		0.72	7.9		0.08	8.6		0.09	15.4		0.12			
FS-18	J14L38	3/5/07	0.17		0.03	4420		0.74	7.6		0.08	7.9		0.09	15.2		0.12			
FS-19	J14L39	3/5/07	0.17		0.03	4390		0.73	7.7		0.08	7.5		0.09	14.6		0.12			
Equipment blank	J12X59	7/20/06	0.20	U	0.20	89.5	C	4.6	0.71		0.36	0.39	U	0.39	0.34	U	0.34			

Attachment	1	Sheet No.	21 of 113
Originator	J. M. Capron	Date	10/03/07
Checked	T. M. Blakley	Date	
Calc. No.	0100B-CA-V0299	Rev. No.	1

Attachment 1. 118-B-1 Verification Sampling Results.

Sample Location	Sample Number	Sample Date	Iron			Lead			Magnesium			Manganese			Mercury			Molybdenum		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
Area 1 A1	J12X44	7/19/06	22300		10.1	4.7		0.90	5080		2.8	361		0.09	0.01	U	0.01	0.84	U	0.84
Duplicate of J12X44	J12X48	7/19/06	24100		10.2	4.9		0.91	5680		2.8	411		0.09	0.02	U	0.02	0.85	U	0.85
Split of J12X44	J12X49	7/19/06	28000	N	2.4	3.6		0.15	5180	N	12.3	360	N	0.10	0.0214	B*	0.0067	1.2	U	1.2
Area 1 A2	J12X45	7/19/06	23200		10.2	4.2		0.90	4320		2.8	373		0.09	0.02		0.01	0.84	U	0.84
Area 1 A3	J12X46	7/20/06	21700		9.9	4.8		0.88	4820		2.7	352		0.08	2.0		0.05	0.82	U	0.82
Area 1 A4	J12X47	7/20/06	24100		9.9	4.2		0.88	4630		2.7	367		0.08	0.02	U	0.02	0.82	U	0.82
Area 2 A1	J12X50	7/20/06	21300		9.7	3.2		0.86	4030		2.7	311		0.08	0.01	U	0.01	0.81	U	0.81
Area 2 A2	J12X51	7/20/06	20500		9.9	4.4		0.88	4760		2.8	329		0.09	0.01	U	0.01	0.83	U	0.83
Area 2 A3	J12X52	7/20/06	21800		9.9	4.0		0.88	4530		2.8	298		0.09	0.02	U	0.02	0.83	U	0.83
Area 2 A4	J12X53	7/20/06	17500		9.8	5.0		0.87	3710		2.7	298		0.08	0.02	U	0.02	0.82	U	0.82
Area 3 A1	J12X54	7/20/06	18800		9.7	4.6		0.86	3880		2.7	297		0.08	0.04		0.01	0.81	U	0.81
Area 3 A2	J12X55	7/20/06	22100		9.8	4.3		0.87	4670		2.7	320		0.08	0.01	U	0.01	0.81	U	0.81
Area 3 A3	J12X56	7/20/06	20100		9.9	6.6		0.88	5060		2.7	339		0.08	0.01		0.01	0.82	U	0.82
Duplicate of J12X56	J12X58	7/20/06	20100		10	5.9		0.89	4860		2.8	325		0.09	0.02	U	0.02	0.83	U	0.83
Split of J12X56	J12X60	7/20/06	19500		2.4	4.5		0.15	4280		12.4	287	N	0.10	0.0134	B*	0.0068	1.2	UNJ	1.2
Area 3 A4	J12X57	7/20/06	20500		9.8	4.5		0.87	4240		2.7	390		0.08	0.30		0.01	0.81	U	0.81
Area 4 A1	J12X61	7/25/06	22100		9.7	5.2		0.87	3970		2.7	290		0.08	0.01	U	0.01	0.81	U	0.81
Duplicate of J12X61	J12X65	7/25/06	21500		9.8	5.5		0.87	4510		2.7	292		0.08	0.01	U	0.01	0.81	U	0.81
Split of J12X61	J12X66	7/25/06	27000		2.4	6.8		0.15	4950		12.2	337	N	0.10	0.0306	B*	0.0067	1.2	UNJ	1.2
Area 4 A2	J12X62	7/25/06	19200		9.6	3.3		0.85	3820		2.7	299		0.08	0.01	U	0.01	0.80	U	0.80
Area 4 A3	J12X63	7/25/06	20200		9.8	4.4		0.87	4770		2.7	334		0.08	0.01	U	0.01	0.81	U	0.81
Area 4 A4	J12X64	7/25/06	22300		9.7	3.6		0.86	4800		2.7	336		0.08	0.01	U	0.01	0.80	U	0.80
Area 5 A1	J13V12	12/7/06	16000	C	7.5	3.0		0.49	3070	C	1.4	244		0.12	0.01	U	0.01	0.49	U	0.49
Area 5 A2	J13V10	12/7/06	16700	C	7.4	2.8		0.49	3440	C	1.4	302		0.12	0.04		0.02	0.49	U	0.49
Area 5 A3	J13V13	12/7/06	5920	C	2.5	1.6		0.16	1280	C	0.47	98.5		0.04	0.02	U	0.02	0.16	U	0.16
Area 5 A4	J13V11	12/7/06	16300	C	7.5	4.2		0.49	4100	C	1.4	234		0.12	0.02		0.01	0.49	U	0.49
Area 6 A1	J12XC2	7/25/06	17200		9.7	5.1		0.86	4250		2.7	297		0.08	0.02		0.01	0.81	U	0.81
Area 6 A2	J12XC3	7/25/06	19300		9.8	4.7		0.87	4070		2.7	312		0.08	0.01	U	0.01	0.81	U	0.81
Area 6 A3	J12XC4	7/25/06	21500		9.8	4.0		0.87	4510		2.7	322		0.08	0.02		0.01	0.81	U	0.81
Area 6 A4	J12XC5	7/25/06	22100		9.8	4.7		0.87	5040		2.7	322		0.08	0.02	U	0.02	0.81	U	0.81
Area 7 A1	J12XC6	7/26/06	17000		9.7	12.9		0.86	4440		2.7	254		0.08	0.02	U	0.02	2.1		0.81
Area 7 A2	J12XC7	7/26/06	18700		9.6	6.0		0.86	4140		2.7	340		0.08	0.01	U	0.01	0.80	U	0.80
Area 7 A3	J12XC8	7/26/06	15900		9.8	3.6		0.87	3410		2.7	270		0.08	0.02	U	0.02	0.81	U	0.81
Area 7 A4	J12XC9	7/26/06	18000		9.8	8.3		0.87	4220		2.7	318		0.08	0.02		0.02	0.81	U	0.81

Attachment 1 Sheet No. 22 of 113
 Originator J. M. Capron Date 10/03/07
 Checked T. M. Blakley Date _____
 Calc. No. 0100B-CA-V0299 Rev. No. 1

Attachment 1. 118-B-1 Verification Sampling Results.

Sample Location	Sample Number	Sample Date	Iron			Lead			Magnesium			Manganese			Mercury			Molybdenum		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
OB A1	J12WK0	7/11/06	16800	C	0.52	5.0		0.30	4110		0.94	327		0.03	0.01	U	0.01	0.43		0.28
OB A2	J12WK1	7/11/06	18200	C	0.52	4.3		0.30	4280		0.94	335		0.03	0.02	U	0.02	0.33		0.28
OB A3	J12WK2	7/11/06	14800	C	0.52	4.6		0.30	3660		0.94	311		0.03	0.02	U	0.02	0.38		0.28
OB A4	J12WK3	7/11/06	14800	C	0.52	4.7		0.30	3610		0.93	339		0.03	0.01	U	0.01	0.41		0.28
OB B5	J12WK4	7/11/06	20000	C	0.52	4.7		0.30	4540		0.94	383		0.03	0.01	U	0.01	0.42		0.28
OB B6	J12WK5	7/11/06	17100	C	0.52	4.6		0.30	4050		0.94	339		0.03	0.01	U	0.01	0.28	U	0.28
OB B7	J12WK6	7/11/06	15600	C	0.52	3.7		0.30	3950		0.94	283		0.03	0.01	U	0.01	0.34		0.28
OB B8	J12WM7	7/17/06	20100		9.7	5.1		0.86	4020		2.7	332		0.08	0.01	U	0.01	0.81	U	0.81
OB C9	J12WM8	7/17/06	17200		9.8	5.8		0.87	3560		2.7	297		0.08	0.01	U	0.01	0.81	U	0.81
OB C10	J12WM9	7/17/06	17800		9.8	3.8		0.87	3700		2.7	282		0.08	0.02	U	0.02	0.82	U	0.82
OB C1	J12WN0	7/17/06	24700		9.9	3.8		0.88	4450		2.7	390		0.08	0.02	U	0.02	0.82	U	0.82
OB C2	J12WN1	7/17/06	19700		9.8	4.3		0.87	4210		2.7	303		0.08	0.02		0.01	0.82	U	0.82
OB D3	J12WM5	7/12/06	22800		10	5.1		0.89	4580		2.8	325		0.09	0.02		0.01	0.83	U	0.83
OB D4	J12WM6	7/12/06	25100		9.9	5.1		0.88	5270		2.7	374		0.09	0.02	U	0.02	0.82	U	0.82
OB D5	J12WM3	7/12/06	19600		9.8	7.1		0.87	4080		2.7	358		0.08	0.05		0.02	0.82	U	0.82
OB D6	J12WM4	7/12/06	22000		9.8	4.5		0.87	4530		2.7	322		0.08	0.02		0.01	0.81	U	0.81
BCL A1	J12WN2	7/20/06	22300		9.9	4.9		0.88	4620		2.7	359		0.08	0.03		0.02	0.82	U	0.82
BCL A2	J12WM1	7/12/06	20700		9.9	4.5		0.88	4280		2.7	337		0.08	0.01	U	0.01	0.82	U	0.82
BCL A3	J12WM2	7/12/06	19700		9.9	4.5		0.88	4250		2.8	346		0.09	0.02	U	0.02	0.82	U	0.82
BCL A4	J12WM0	7/12/06	20300		9.9	4.0		0.88	4110		2.7	332		0.09	0.01	U	0.01	0.82	U	0.82
BCL B5	J12WL9	7/12/06	23400		9.9	4.4		0.88	4880		2.8	359		0.09	0.02	U	0.02	0.83	U	0.83
BCL B6	J12WL8	7/12/06	21000		9.9	4.0		0.88	4240		2.8	313		0.09	0.01	U	0.01	0.82	U	0.82
BCL B7	J12WL7	7/12/06	19500		9.9	4.4		0.88	4400		2.7	329		0.08	0.01	U	0.01	0.82	U	0.82
BCL B8	J12WL6	7/12/06	17900		9.9	4.1		0.88	3900		2.7	304		0.08	0.02	U	0.02	0.82	U	0.82
Split of J12WL6	J12WW0	7/12/06	20100	N	2.4	4.8		0.15	4880	N	12.2	337	N	0.10	0.0067	UN	0.0067	1.2	U	1.2
BCL C9	J12WK7	7/11/06	18400	C	0.52	5.2		0.30	4360		0.93	327		0.03	0.02		0.01	0.35		0.28
BCL C10	J12WK9	7/11/06	21200	C	0.52	5.5		0.30	5370		0.94	382		0.03	0.01	U	0.01	0.49		0.28
BCL C1	J12WK8	7/11/06	18900	C	0.52	4.5		0.30	4380		0.94	407		0.03	0.01	U	0.01	0.39		0.28
BCL C2	J12WL2	7/11/06	21300	C	0.52	6.5		0.30	5970		0.93	418		0.03	0.01	U	0.01	0.50		0.28
BCL D3	J12WL3	7/11/06	20500	C	0.52	4.6		0.30	4940		0.94	346		0.03	0.01	U	0.01	0.42		0.28
BCL D4	J12WL4	7/11/06	16100	C	0.52	4.9		0.30	4120		0.93	324		0.03	0.01	U	0.01	0.39		0.28
Duplicate of J12WL4	J12WL5	7/11/06	15200	C	0.52	5.0		0.30	4180		0.94	348		0.03	0.01	U	0.01	0.35		0.28
BCL D5	J12WL0	7/11/06	17600	C	0.52	4.9		0.30	4640		0.94	339		0.03	0.01	U	0.01	0.36		0.28
BCL D6	J12WL1	7/11/06	21600	C	0.52	6.2		0.30	5960		0.93	384		0.03	0.01	U	0.01	0.46		0.28

Attachment 1 Sheet No. 23 of 113
 Originator J. M. Capron Date 02/07/07
 Checked T. M. Blakley Date _____
 Calc. No. 0100B-CA-V0299 Rev. No. 0

Attachment 1. 118-B-1 Verification Sampling Results.

Sample Location	Sample Number	Sample Date	Iron			Lead			Magnesium			Manganese			Mercury			Molybdenum		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
SPA A1	J13HY3	10/12/06	16700		6.9	5.5		0.34	3680		2.0	333		0.06	0.02		0.02	0.44		0.28
SPA A2	J13HY4	10/12/06	18000		6.9	5.0		0.34	3790		2.0	319		0.06	0.03		0.02	0.32		0.28
SPA A3	J13HY5	10/12/06	19200		6.9	4.5		0.34	3770		2.0	342		0.06	0.05		0.01	0.31		0.28
SPA A4	J13HY6	10/12/06	18200		6.9	4.9		0.34	3850		2.1	326		0.06	0.14		0.01	0.29		0.29
SPA B5	J13HY7	10/12/06	15900		6.9	4.5		0.34	3510		2.0	286		0.06	0.09		0.01	0.28	U	0.28
Duplicate of J13HY7	J13J09	10/12/06	16700		6.9	5.2		0.34	3640		2.0	304		0.06	0.11		0.01	0.28	U	0.28
Split of J13HY7	J13J10	10/12/06	20100	N	2.4	5.4	N	0.30	4960		12.2	335	N	0.10	0.12		0.0067	1.2	UN	1.2
SPA B6	J13HY8	10/17/06	18200	C	2.4	4.5		0.12	3590	C	0.72	309		0.02	0.07		0.02	0.37	CJ	0.10
SPA B7	J13HY9	10/17/06	20100	C	2.5	4.2		0.12	3910	C	0.73	339		0.02	0.1		0.01	0.34	CJ	0.10
SPA B8	J13J00	10/17/06	15400	C	2.4	4.4		0.12	3630	C	0.72	279		0.02	0.13		0.02	0.34	CJ	0.10
SPA C9	J13J01	10/17/06	17900	C	2.6	5.1		0.13	3750	C	0.76	313		0.02	0.09		0.01	0.42	CJ	0.11
SPA C10	J13J02	10/18/06	17000	C	7.4	3.0		0.37	3430	C	2.2	305		0.06	0.02	U	0.02	0.37	CJ	0.31
SPA C1	J13J03	10/18/06	17900	C	7.4	3.4		0.36	3540	C	2.2	313		0.06	0.13		0.02	0.42	CJ	0.30
SPA C2	J13J04	10/18/06	20500	C	7.3	2.6		0.36	3920	C	2.2	265		0.06	0.06		0.02	0.55	CJ	0.30
SPA D3	J13J05	10/18/06	19400	C	7.3	3.5		0.36	3730	C	2.2	379		0.06	0.12		0.02	0.43	CJ	0.30
SPA D4	J13J06	10/19/06	23300		7.4	5.2	C	0.36	4260		2.2	350		0.06	0.06		0.02	0.49		0.30
SPA D5	J13J07	10/23/06	20700		7.0	2.9	C	0.35	4020		2.1	297		0.06	0.02		0.02	0.54		0.29
SPA D6	J13J08	10/23/06	20200		7.1	4.1	C	0.35	3960		2.1	316		0.06	0.05		0.02	0.61		0.29
FS-2	J12R25	7/10/06	19200		9.8	2.4		0.87	3690		2.7	296		0.08				0.82	U	0.82
FS-3	J12R26	7/10/06	24300		9.9	5.4		0.88	5950		2.8	421		0.09				0.82	U	0.82
FS-5	J12R28	7/10/06	21500		6.9	6.5	J	0.34	5030	C	2.1	352		0.06	0.24		0.01	0.54	CJ	0.29
FS-6	J12R29	7/10/06	21600		9.8	12.0		0.87	5920		2.7	405		0.08				0.81	U	0.81
FS-7	J13P85	11/15/06	17400		7.5	3.5		0.49	3510		1.4	261		0.12	0.97		0.02	0.49	U	0.49
FS-8	J12R31	7/10/06	17100		9.9	11.4		0.88	4030		2.8	314		0.09				0.82	U	0.82
FS-9	J12R32	7/10/06	21000		10	5.4		0.89	5470		2.8	361		0.09				0.83	U	0.83
FS-11	J12R34	7/10/06	22200		6.9	34.3	J	0.34	5790	C	2.1	404		0.06	0.24		0.01	0.81	C	0.29
FS-14	J12XB3	7/19/06	23000		10.6	3.5		0.94	4110		3.0	331		0.09	0.02	U	0.02	0.88	U	0.88
FS-15	J13NX4	11/14/06	19400		7.5	7.0		0.49	3680		1.4	253		0.12	10.3		0.23	0.49	U	0.49
FS-16	J13P84	11/15/06	19300		7.3	2.7		0.48	3430		1.4	262		0.12	0.06		0.02	0.48	U	0.48
FS-17	J14J3	3/5/07	24500		2.9	4.8		0.28	4650		0.72	370		0.02	81.0		1.6	0.43		0.13
FS-17 resample	J152M1	5/10/07	23400		2.9	4.5		0.27	4510		0.70	375		0.02	6.9		0.09	0.41		0.13
FS-18	J14L38	3/5/07	21600		2.9	4.1		0.28	3800		0.72	334		0.02	1.8		0.05	0.40		0.13
FS-19	J14L39	3/5/07	20200		2.9	3.9		0.27	3790		0.71	315		0.02	14.5		0.78	0.35		0.13
Equipment blank	J12X59	7/20/06	1560		9.8	1.2		0.87	28.6		2.7	24.6		0.08	0.02	U	0.02	0.81	U	0.81

Attachment 1 Sheet No. 24 of 113
 Originator J. M. Capron Date 10/03/07
 Checked T. M. Blakley Date _____
 Calc. No. 0100B-CA-V0299 Rev. No. 1

Attachment 1. 118-B-1 Verification Sampling Results.

Sample Location	Sample Number	Sample Date	Nickel			Potassium			Selenium			Silicon			Silver			Sodium		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
Area 1 A1	J12X44	7/19/06	11.5		0.70	1240	C	6.6	1.4	U	1.4	403	R	6.6	0.20	U	0.20	264		2.2
Duplicate of J12X44	J12X48	7/19/06	12.9		0.70	1380	C	6.6	1.4	U	1.4	511	R	6.6	0.20	U	0.20	274		2.2
Split of J12X44	J12X49	7/19/06	9.7		0.76	1460	N	50.5	0.17	U	0.17	1980	CN	4.0	0.20	UN	0.20	460		10.1
Area 1 A2	J12X45	7/19/06	8.2		0.70	913	C	6.6	1.4	U	1.4	333	R	6.6	0.20	U	0.20	232		2.2
Area 1 A3	J12X46	7/20/06	9.8		0.68	1130	C	6.4	1.3	U	1.3	456	R	6.4	0.20	U	0.20	278		2.2
Area 1 A4	J12X47	7/20/06	8.7		0.68	988	C	6.4	1.3	U	1.3	294	R	6.4	0.20	U	0.20	234		2.1
Area 2 A1	J12X50	7/20/06	9.9		0.67	697	C	6.3	1.3	U	1.3	373	R	6.3	0.20	U	0.20	120		2.1
Area 2 A2	J12X51	7/20/06	11.0		0.68	1070	C	6.5	1.3	U	1.3	456	R	6.5	0.20	U	0.20	219		2.2
Area 2 A3	J12X52	7/20/06	9.2		0.68	936	C	6.5	1.3	U	1.3	405	R	6.5	0.20	U	0.20	608		2.2
Area 2 A4	J12X53	7/20/06	8.4		0.68	1020	C	6.4	1.3	U	1.3	439	R	6.4	0.20	U	0.20	145		2.1
Area 3 A1	J12X54	7/20/06	19.0		0.67	919	C	6.3	1.3	U	1.3	398	R	6.3	0.20	U	0.20	200		2.1
Area 3 A2	J12X55	7/20/06	9.3		0.67	970	C	6.3	1.3	U	1.3	557	R	6.3	0.20	U	0.20	170		2.1
Area 3 A3	J12X56	7/20/06	10.5		0.68	1280	C	6.4	1.3	U	1.3	325	R	6.4	0.20	U	0.20	233		2.1
Duplicate of J12X56	J12X58	7/20/06	10.1		0.69	1120	C	6.5	1.3	U	1.3	367	R	6.5	0.20	U	0.20	201		2.2
Split of J12X56	J12X60	7/20/06	8.4		0.77	975		51.0	0.68	B*	0.18	511	CNJ	4.1	0.20	UNJ	0.20	235		10.2
Area 3 A4	J12X57	7/20/06	9.6		0.67	885	C	6.3	1.3	U	1.3	426	R	6.3	0.20	U	0.20	128		2.1
Area 4 A1	J12X61	7/25/06	6.8		0.67	674		6.3	1.3	U	1.3	392	J	6.3	0.20	U	0.20	162		2.1
Duplicate of J12X61	J12X65	7/25/06	11.3		0.67	816		6.4	1.3	U	1.3	360	J	6.4	0.20	U	0.20	164		2.1
Split of J12X61	J12X66	7/25/06	8.7		0.76	1160		50.4	0.62	B*	0.17	577	CNJ	4.0	0.20	UNJ	0.20	273		10.1
Area 4 A2	J12X62	7/25/06	9.3		0.66	795		6.3	1.3	U	1.3	430	J	6.3	0.19	U	0.19	111		2.1
Area 4 A3	J12X63	7/25/06	10.2		0.67	954		6.4	1.3	U	1.3	426	J	6.4	0.20	U	0.20	138		2.1
Area 4 A4	J12X64	7/25/06	10.9		0.66	928		6.3	1.3	U	1.3	417	J	6.3	0.19	U	0.19	164		2.1
Area 5 A1	J13V12	12/7/06	6.3		0.68	670		6.5	1.3	U	1.3	424	CJ	2.0	0.15	UC	0.15	143	C	0.77
Area 5 A2	J13V10	12/7/06	7.4		0.67	743		6.4	1.3	U	1.3	402	CJ	1.9	0.15	UC	0.15	125	C	0.76
Area 5 A3	J13V13	12/7/06	3.1		0.22	294		2.1	0.44	U	0.44	139	CJ	0.65	0.05	UC	0.05	42.7	C	0.25
Area 5 A4	J13V11	12/7/06	6.6		0.68	765		6.5	1.3	U	1.3	354	CJ	2.0	0.15	UC	0.15	304	C	0.77
Area 6 A1	J12XC2	7/25/06	11.5		0.67	1040		6.3	1.3	U	1.3	480	J	6.3	0.20	U	0.20	149		2.1
Area 6 A2	J12XC3	7/25/06	10.8		0.67	1030		6.3	1.3	U	1.3	359	J	6.3	0.20	U	0.20	148		2.1
Area 6 A3	J12XC4	7/25/06	9.3		0.67	878		6.4	1.3	U	1.3	378	J	6.4	0.20	U	0.20	137		2.1
Area 6 A4	J12XC5	7/25/06	11.0		0.67	957		6.3	1.3	U	1.3	387	J	6.3	0.20	U	0.20	150		2.1
Area 7 A1	J12XC6	7/26/06	8.6		0.67	904		6.3	1.3	U	1.3	392	J	6.3	0.19	U	0.19	189		2.1
Area 7 A2	J12XC7	7/26/06	10.7		0.66	1510		6.3	1.3	U	1.3	456	J	6.3	0.19	U	0.19	129		2.1
Area 7 A3	J12XC8	7/26/06	9.4		0.67	1040		6.4	1.3	U	1.3	425	J	6.4	0.20	U	0.20	87.6		2.1
Area 7 A4	J12XC9	7/26/06	10.4		0.67	1310		6.3	1.3	U	1.3	414	J	6.3	0.20	U	0.20	173		2.1

Attachment	1	Sheet No.	25 of 113
Originator	J. M. Capron	Date	10/03/07
Checked	T. M. Blakley	Date	
Calc. No.	0100B-CA-V0299	Rev. No.	1

Attachment 1. 118-B-1 Verification Sampling Results.

Sample Location	Sample Number	Sample Date	Nickel			Potassium			Selenium			Silicon			Silver			Sodium		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
OB A1	J12WK0	7/11/06	9.5		0.23	905		2.2	0.52		0.46	547	CJ	2.2	0.07	U	0.07	122	C	0.74
OB A2	J12WK1	7/11/06	10.4		0.23	975		2.2	0.65		0.46	513	CJ	2.2	0.07	U	0.07	127	C	0.74
OB A3	J12WK2	7/11/06	8.9		0.23	1100		2.2	0.45	U	0.45	592	CJ	2.2	0.07	U	0.07	107	C	0.73
OB A4	J12WK3	7/11/06	9.0		0.23	1060		2.2	0.45	U	0.45	696	CJ	2.2	0.07	U	0.07	102	C	0.73
OB B5	J12WK4	7/11/06	12.8		0.23	1040		2.2	0.67		0.45	462	CJ	2.2	0.07	U	0.07	119	C	0.73
OB B6	J12WK5	7/11/06	9.2		0.23	1050		2.2	0.45	U	0.45	437	CJ	2.2	0.07	U	0.07	124	C	0.73
OB B7	J12WK6	7/11/06	10.3		0.23	968		2.2	0.45	U	0.45	496	CJ	2.2	0.07	U	0.07	124	C	0.73
OB B8	J12WM7	7/17/06	9.6		0.67	1170		6.3	1.3	U	1.3	395	J	6.3	0.20	U	0.20	137		7.0
OB C9	J12WM8	7/17/06	8.8		0.67	1160		6.3	1.3	U	1.3	550	J	6.3	0.20	U	0.20	103		7.0
OB C10	J12WM9	7/17/06	9.0		0.68	1080		6.4	1.3	U	1.3	429	J	6.4	0.20	U	0.20	120		7.1
OB C1	J12WN0	7/17/06	9.5		0.68	1010		6.4	1.3	U	1.3	414	J	6.4	0.20	U	0.20	160		7.1
OB C2	J12WN1	7/17/06	8.9		0.67	969		6.4	1.3	U	1.3	493	J	6.4	0.20	U	0.20	103		7.1
OB D3	J12WM5	7/12/06	9.8		0.69	1100		6.5	1.3	U	1.3	370		6.5	0.20	U	0.20	130		2.2
OB D4	J12WM6	7/12/06	10.5		0.68	1190		6.4	1.3	U	1.3	417		6.4	0.20	U	0.20	154		2.2
OB D5	J12WM3	7/12/06	9.4		0.67	1090		6.4	1.3	U	1.3	435		6.4	0.20	U	0.20	170		2.1
OB D6	J12WM4	7/12/06	9.3		0.67	1150		6.4	1.3	U	1.3	391		6.4	0.20	U	0.20	129		2.1
BCL A1	J12WN2	7/20/06	10.8		0.68	1050	C	6.4	1.3	U	1.3	438	R	6.4	0.20	U	0.20	180		2.1
BCL A2	J12WM1	7/12/06	10.4		0.68	1020		6.4	1.3	U	1.3	451		6.4	0.20	U	0.20	142		2.2
BCL A3	J12WM2	7/12/06	10.0		0.68	1110		6.5	1.3	U	1.3	448		6.5	0.20	U	0.20	121		2.2
BCL A4	J12WM0	7/12/06	9.3		0.68	1000		6.4	1.3	U	1.3	465		6.4	0.20	U	0.20	126		2.2
BCL B5	J12WL9	7/12/06	11.1		0.68	1160		6.5	1.3	U	1.3	438		6.5	0.20	U	0.20	170		2.2
BCL B6	J12WL8	7/12/06	9.8		0.68	1080		6.4	1.3	U	1.3	479		6.4	0.20	U	0.20	136		2.2
BCL B7	J12WL7	7/12/06	11.4		0.68	1200		6.4	1.3	U	1.3	414		6.4	0.20	U	0.20	123		2.2
BCL B8	J12WL6	7/12/06	9.2		0.68	1110		6.4	1.3	U	1.3	500		6.4	0.20	U	0.20	104		2.2
Split of J12WL6	J12WW0	7/12/06	11.3		0.76	1450		50.4	0.33	B*	0.17	1560	CN	4.0	0.20	UNJ	0.20	222	C	10.1
BCL C9	J12WK7	7/11/06	11.0		0.23	1180		2.2	0.45	U	0.45	380	CJ	2.2	0.07	U	0.07	172	C	0.73
BCL C10	J12WK9	7/11/06	11.3		0.23	1200		2.2	0.49		0.46	451	CJ	2.2	0.07	U	0.07	220	C	0.74
BCL C1	J12WK8	7/11/06	10.1		0.23	1270		2.2	0.45	U	0.45	470	CJ	2.2	0.07	U	0.07	189	C	0.74
BCL C2	J12WL2	7/11/06	12.5		0.23	1140		2.2	0.80		0.45	532	CJ	2.2	0.07	U	0.07	239	C	0.73
BCL D3	J12WL3	7/11/06	11.9		0.23	973		2.2	1.0		0.45	462	CJ	2.2	0.07	U	0.07	162	C	0.73
BCL D4	J12WL4	7/11/06	9.6		0.23	1130		2.2	0.76		0.45	561	CJ	2.2	0.07	U	0.07	145	C	0.73
Duplicate of J12WL4	J12WL5	7/11/06	10.3		0.23	1160		2.2	0.45	U	0.45	613	CJ	2.2	0.07	U	0.07	146	C	0.73
BCL D5	J12WL0	7/11/06	10.2		0.23	1010		2.2	0.54		0.45	562	CJ	2.2	0.07	U	0.07	134	C	0.73
BCL D6	J12WL1	7/11/06	12.1		0.23	1180		2.2	0.63		0.45	438	CJ	2.2	0.07	U	0.07	205	C	0.73

Attachment	1	Sheet No.	26 of 113
Originator	J. M. Capron	Date	10/03/07
Checked	T. M. Blakley	Date	
Calc. No.	0100B-CA-V0299	Rev. No.	1

Attachment 1. 118-B-1 Verification Sampling Results.

Sample Location	Sample Number	Sample Date	Nickel			Potassium			Selenium			Silicon			Silver			Sodium		
			mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL	mg/kg	Q	PQL
SPA A1	J13HY3	10/12/06	10.2		0.37	1210	C	6.0	0.74	U	0.74	423		1.1	0.31	U	0.31	161	C	0.60
SPA A2	J13HY4	10/12/06	10.3		0.37	1140	C	6.0	0.73	U	0.73	465		1.1	0.31	U	0.31	104	C	0.59
SPA A3	J13HY5	10/12/06	10.1		0.37	1250	C	6.0	0.73	U	0.73	430		1.1	0.31	U	0.31	137	C	0.59
SPA A4	J13HY6	10/12/06	10.2		0.37	1160	C	6.1	0.74	U	0.74	459		1.1	0.31	U	0.31	176	C	0.60
SPA B5	J13HY7	10/12/06	10.8		0.37	1220	C	6.0	0.73	U	0.73	446		1.1	0.31	U	0.31	108	C	0.59
Duplicate of J13HY7	J13J09	10/12/06	10.4		0.37	1300	C	6.0	0.74	U	0.74	456		1.1	0.31	U	0.361	119	C	0.59
Split of J13HY7	J13J10	10/12/06	13.9		0.76	1500		50.4	0.62	B* ^{CJ}	0.17	234	CNJ	4.0	0.20	UNJ	0.20	173	C	10.1
SPA B6	J13HY8	10/17/06	9.4		0.13	1170		2.1	0.26	U	0.26	334	J	0.40	0.11	U	0.11	112	C	0.21
SPA B7	J13HY9	10/17/06	9.8		0.13	1040		2.1	0.26	U	0.26	317	J	0.40	0.11	U	0.11	164	C	0.21
SPA B8	J13J00	10/17/06	11.1		0.13	1250		2.1	0.26	U	0.26	556	J	0.40	0.11	U	0.11	134	C	0.21
SPA C9	J13J01	10/17/06	9.7		0.14	1270		2.2	0.27	U	0.27	385	J	0.42	0.12	U	0.12	114	C	0.22
SPA C10	J13J02	10/18/06	9.2		0.40	981		6.5	0.79	U	0.79	305		1.2	0.34	U	0.34	105	C	0.64
SPA C1	J13J03	10/18/06	9.5		0.39	979		6.4	0.79	U	0.79	401		1.2	0.33	U	0.33	104	C	0.64
SPA C2	J13J04	10/18/06	10.1		0.39	570		6.4	0.79	U	0.79	305		1.2	0.33	U	0.33	121	C	0.64
SPA D3	J13J05	10/18/06	11.8		0.39	810		6.3	0.78	U	0.78	347		1.2	0.33	U	0.33	125	C	0.63
SPA D4	J13J06	10/19/06	13.9	J	0.39	924		6.4	0.79	U	0.79	450	CJ	1.2	0.33	U	0.33	133	C	0.64
SPA D5	J13J07	10/23/06	10.5		0.38	806		6.1	0.75	U	0.75	548	C	1.2	0.32	U	0.32	133	C	0.61
SPA D6	J13J08	10/23/06	9.3		0.38	934		6.2	0.76	U	0.76	528	C	1.2	0.32	U	0.32	143	C	0.62
FS-2	J12R25	7/10/06	8.8		0.67	715		6.4	1.3	U	1.3	438		6.4	0.20	U	0.20	95.4		2.1
FS-3	J12R26	7/10/06	13.2		0.68	1670		6.4	1.3	U	0.13	433		6.4	0.20	U	0.20	254		2.2
FS-5	J12R28	7/10/06	10.4		0.37	1360	C	6.1	0.74	U	0.74	611	C	1.1	0.31	U	0.31	283	C	0.60
FS-6	J12R29	7/10/06	15.2		0.67	1920		6.4	1.3	U	1.3	629		6.4	0.20	U	0.20	324		2.1
FS-7	J13P85	11/15/06	8.2		0.68	874	C	6.5	1.3	U	1.3	447	C	2.0	0.15	U	0.15	223	C	0.77
FS-8	J12R31	7/10/06	9.0		0.68	1380		6.4	1.3	U	1.3	718		6.4	0.20	U	0.20	326		2.2
FS-9	J12R32	7/10/06	11.9		0.69	1580		6.5	1.3	U	1.3	417		6.5	0.20	U	0.20	1000		2.2
FS-11	J12R34	7/10/06	14.3		0.37	1490	C	6.1	0.74	U	0.74	680	C	1.1	0.31	U	0.31	408	C	0.60
FS-14	J12XB3	7/19/06	9.0		0.73	785	C	6.9	1.4	U	1.4	392	R	6.9	0.21	U	0.21	130		2.3
FS-15	J13NX4	11/14/06	9.4		0.68	524	C	6.5	1.3	U	1.3	626	C	2.0	0.15	U	0.15	110	C	0.77
FS-16	J13P84	11/15/06	7.8		0.66	513	C	6.4	1.3	U	1.3	426	C	1.9	0.15	U	0.15	130	C	0.75
FS-17	J14J3	3/5/07	11.9		0.19	1300		4.8	0.36	U	0.36	486	R	0.41	0.09	U	0.09	159		2.9
FS-17 resample	J152M1	5/10/07	10.1		0.18	1260		4.7	0.36	U	0.36	746		0.40	0.09	U	0.09	193		0.42
FS-18	J14L38	3/5/07	9.3		0.19	1210		4.8	0.36	U	0.36	447	R	0.41	0.09	U	0.09	144		2.9
FS-19	J14L39	3/5/07	10.0		0.18	1130		4.7	0.36	U	0.36	455	R	0.41	0.09	U	0.09	146		2.9
Equipment blank	J12X59	7/20/06	0.67	U	0.67	66.4	C	6.4	1.3	U	1.3	117	R	6.4	0.20	U	0.20	28.8		2.1

Attachment 1 Sheet No. 27 of 113
 Originator J. M. Capron Date 10/03/07
 Checked T. M. Blakley Date _____
 Calc. No. 0100B-CA-V0299 Rev. No. 1

Attachment 1. 118-B-1 Verification Sampling Results.

Sample Location	Sample Number	Sample Date	Vanadium			Zinc		
			mg/kg	Q	PQL	mg/kg	Q	PQL
Area 1 A1	J12X44	7/19/06	46.1		0.26	45.0		0.46
Duplicate of J12X44	J12X48	7/19/06	51.9		0.26	49.1		0.47
Split of J12X44	J12X49	7/19/06	68.7	N	0.68	44.5	CN	1.4
Area 1 A2	J12X45	7/19/06	49.3		0.26	42.7		0.47
Area 1 A3	J12X46	7/20/06	38.2		0.25	39.9		0.45
Area 1 A4	J12X47	7/20/06	51.8		0.25	43.8		0.45
Area 2 A1	J12X50	7/20/06	54.0		0.25	43.3		0.45
Area 2 A2	J12X51	7/20/06	46.5		0.26	41.1		0.46
Area 2 A3	J12X52	7/20/06	54.7		0.26	42.1		0.46
Area 2 A4	J12X53	7/20/06	39.8		0.25	36.3		0.45
Area 3 A1	J12X54	7/20/06	42.6		0.25	37.5		0.45
Area 3 A2	J12X55	7/20/06	49.2		0.25	43.2		0.45
Area 3 A3	J12X56	7/20/06	40.0		0.25	44.3		0.45
Duplicate of J12X56	J12X58	7/20/06	37.6		0.26	41.9		0.46
Split of J12X56	J12X60	7/20/06	44.9	N	0.69	32.6		1.4
Area 3 A4	J12X57	7/20/06	44.9		0.25	42.2		0.45
Area 4 A1	J12X61	7/25/06	53.4		0.25	41.7	C	0.45
Duplicate of J12X61	J12X65	7/25/06	44.8		0.25	41.0	C	0.45
Split of J12X61	J12X66	7/25/06	68.4	N	0.68	48.3		1.4
Area 4 A2	J12X62	7/25/06	43.5		0.25	35.8	C	0.45
Area 4 A3	J12X63	7/25/06	41.6		0.25	39.5	C	0.45
Area 4 A4	J12X64	7/25/06	50.8		0.25	42.4	C	0.44
Area 5 A1	J13V12	12/7/06	33.6		0.18	38.6	C	0.12
Area 5 A2	J13V10	12/7/06	34.7		0.18	31.7	C	0.12
Area 5 A3	J13V13	12/7/06	13.1		0.06	33.8	C	0.04
Area 5 A4	J13V11	12/7/06	33.7		0.18	33.1	C	0.12
Area 6 A1	J12XC2	7/25/06	37.3		0.25	35.2	C	0.45
Area 6 A2	J12XC3	7/25/06	42.5		0.25	39.2	C	0.45
Area 6 A3	J12XC4	7/25/06	49.1		0.25	40.9	C	0.45
Area 6 A4	J12XC5	7/25/06	48.7		0.25	41.2	C	0.45
Area 7 A1	J12XC6	7/26/06	36.4		0.25	48.7	C	0.45
Area 7 A2	J12XC7	7/26/06	40.9		0.25	41.0	C	0.44
Area 7 A3	J12XC8	7/26/06	32.7		0.25	31.1	C	0.45
Area 7 A4	J12XC9	7/26/06	38.0		0.25	44.5	C	0.45

Sample Location	Sample Number	Sample Date	Total Petroleum Hydrocarbons		
			mg/kg	Q	PQL
Area 1 A1	J12X44	7/19/06	135	U	135
Duplicate of J12X44	J12X48	7/19/06	135	U	135
Split of J12X44	J12X49	7/19/06	173	UN	173
Area 1 A2	J12X45	7/19/06	134	U	134
Area 1 A3	J12X46	7/20/06	134	U	134
Area 1 A4	J12X47	7/20/06	133	U	133
Area 2 A1	J12X50	7/20/06	133	U	133
Area 2 A2	J12X51	7/20/06	135	U	135
Area 2 A3	J12X52	7/20/06	134	U	134
Area 2 A4	J12X53	7/20/06	134	U	134
Area 3 A1	J12X54	7/20/06	135	U	135
Area 3 A2	J12X55	7/20/06	134	U	134
Area 3 A3	J12X56	7/20/06	135	U	135
Duplicate of J12X56	J12X58	7/20/06	136	U	136
Split of J12X56	J12X60	7/20/06	173	UNJ	173
Area 3 A4	J12X57	7/20/06	134	U	134
Area 4 A1	J12X61	7/25/06	134	U	134
Duplicate of J12X61	J12X65	7/25/06	134	U	134
Split of J12X61	J12X66	7/25/06	173	UNJ	173
Area 4 A2	J12X62	7/25/06	133	U	133
Area 4 A3	J12X63	7/25/06	133	U	133
Area 4 A4	J12X64	7/25/06	134	U	134
Area 5 A1	J13V12	12/7/06	139	U	139
Area 5 A2	J13V10	12/7/06	139	U	139
Area 5 A3	J13V13	12/7/06	139	U	139
Area 5 A4	J13V11	12/7/06	142	U	142
Area 6 A1	J13D51	9/5/06	133	U	133
Area 6 A2	J13D52	9/5/06	134	U	134
Area 6 A3	J13D53	9/5/06	133	U	133
Area 6 A4	J13D54	9/5/06	133	U	133
Area 7 A1	J13D55	9/5/06	133	U	133
Area 7 A2	J13D56	9/5/06	133	U	133
Area 7 A3	J13D57	9/5/06	134	U	134
Area 7 A4	J13D58	9/5/06	133	U	133

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J. M. Capron	Date	10/03/07
T. M. Blakley	Date	
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Attachment 1. 118-B-1 Verification Sampling Results.

Sample Location	Sample Number	Sample Date	Vanadium			Zinc		
			mg/kg	Q	PQL	mg/kg	Q	PQL
OB A1	J12WK0	7/11/06	38.0		0.09	35.9		0.16
OB A2	J12WK1	7/11/06	44.7		0.09	36.7		0.16
OB A3	J12WK2	7/11/06	33.9		0.09	32.3		0.15
OB A4	J12WK3	7/11/06	35.7		0.09	33.6		0.15
OB B5	J12WK4	7/11/06	51.6		0.09	40.1		0.15
OB B6	J12WK5	7/11/06	38.2		0.09	36.9		0.15
OB B7	J12WK6	7/11/06	37.9		0.09	32.1		0.15
OB B8	J12WM7	7/17/06	47.0	J	0.25	40.1		0.45
OB C9	J12WM8	7/17/06	36.1	J	0.25	33.9		0.45
OB C10	J12WM9	7/17/06	39.0	J	0.25	35.4		0.45
OB C1	J12WN0	7/17/06	55.0	J	0.25	42.2		0.45
OB C2	J12WN1	7/17/06	39.4	J	0.25	35.9		0.45
OB D3	J12WM5	7/12/06	49.4		0.26	42.4		0.46
OB D4	J12WM6	7/12/06	56.8		0.26	46.5		0.45
OB D5	J12WM3	7/12/06	42.1		0.25	43.0		0.45
OB D6	J12WM4	7/12/06	47.0		0.25	41.0		0.45
BCL A1	J12WN2	7/20/06	52.7		0.25	43.8		0.45
BCL A2	J12WM1	7/12/06	47.8		0.25	39.6		0.45
BCL A3	J12WM2	7/12/06	44.8		0.26	38.3		0.46
BCL A4	J12WM0	7/12/06	47.5		0.26	39.0		0.45
BCL B5	J12WL9	7/12/06	54.2		0.26	44.2		0.46
BCL B6	J12WL8	7/12/06	47.1		0.26	40.8		0.45
BCL B7	J12WL7	7/12/06	42.5		0.25	37.5		0.45
BCL B8	J12WL6	7/12/06	37.3		0.25	34.5		0.45
Split of J12WL6	J12WW0	7/12/06	49.3		0.68	38.9		1.4
BCL C9	J12WK7	7/11/06	46.3		0.09	38.6		0.15
BCL C10	J12WK9	7/11/06	46.3		0.09	41.9		0.16
BCL C1	J12WK8	7/11/06	43.9		0.09	38.6		0.15
BCL C2	J12WL2	7/11/06	49.8		0.09	44.4		0.15
BCL D3	J12WL3	7/11/06	49.6		0.09	40.0		0.15
BCL D4	J12WL4	7/11/06	39.7		0.09	35.3		0.15
Duplicate of J12WL4	J12WL5	7/11/06	36.5		0.09	34.2		0.15
BCL D5	J12WL0	7/11/06	41.5		0.09	36.8		0.15
BCL D6	J12WL1	7/11/06	53.0		0.09	45.0		0.15

Sample Location	Sample Number	Sample Date	Total Petroleum Hydrocarbons		
			mg/kg	Q	PQL
OB A1	J12WK0	7/11/06	134	U	134
OB A2	J12WK1	7/11/06	133	U	133
OB A3	J12WK2	7/11/06	133	U	133
OB A4	J12WK3	7/11/06	134	U	134
OB B5	J12WK4	7/11/06	134	U	134
OB B6	J12WK5	7/11/06	134	U	134
OB B7	J12WK6	7/11/06	133	U	133
OB B8	J12WM7	7/17/06	133	U	133
OB C9	J12WM8	7/17/06	132	U	132
OB C10	J12WM9	7/17/06	132	U	132
OB C1	J12WN0	7/17/06	132	U	132
OB C2	J12WN1	7/17/06	133	U	133
OB D3	J12WM5	7/12/06	134	U	134
OB D4	J12WM6	7/12/06	133	U	133
OB D5	J12WM3	7/12/06	134	U	134
OB D6	J12WM4	7/12/06	134	U	134
BCL A1	J12WN2	7/20/06	134	U	134
BCL A2	J12WM1	7/12/06	133	U	133
BCL A3	J12WM2	7/12/06	133	U	133
BCL A4	J12WM0	7/12/06	133	U	133
BCL B5	J12WL9	7/12/06	133	U	133
BCL B6	J12WL8	7/12/06	134	U	134
BCL B7	J12WL7	7/12/06	132	U	132
BCL B8	J12WL6	7/12/06	134	U	134
Split of J12WL6	J12WW0	7/12/06	173	UNJ	173
BCL C9	J12WK7	7/11/06	133	U	133
BCL C10	J12WK9	7/11/06	134	U	134
BCL C1	J12WK8	7/11/06	133	U	133
BCL C2	J12WL2	7/11/06	134	U	134
BCL D3	J12WL3	7/11/06	134	U	134
BCL D4	J12WL4	7/11/06	133	U	133
Duplicate of J12WL4	J12WL5	7/11/06	134	U	134
BCL D5	J12WL0	7/11/06	133	U	133
BCL D6	J12WL1	7/11/06	133	U	133

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J. M. Capron	Date	10/03/07
T. M. Blakley	Date	
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Attachment 1. 118-B-1 Verification Sampling Results.

Sample Location	Sample Number	Sample Date	Vanadium			Zinc		
			mg/kg	Q	PQL	mg/kg	Q	PQL
SPA A1	J13HY3	10/12/06	38.2		0.14	36.0		0.09
SPA A2	J13HY4	10/12/06	41.6		0.14	35.8		0.08
SPA A3	J13HY5	10/12/06	46.9		0.14	40.2		0.08
SPA A4	J13HY6	10/12/06	42.2		0.14	37.0		0.09
SPA B5	J13HY7	10/12/06	36.4		0.14	33.0		0.08
Duplicate of J13HY7	J13J09	10/12/06	39.2		0.14	34.4		0.08
Split of J13HY7	J13J10	10/12/06	50.9		0.68	39.8	C	1.4
SPA B6	J13HY8	10/17/06	43.9		0.05	36.6	C	0.03
SPA B7	J13HY9	10/17/06	49.8		0.05	41.8	C	0.03
SPA B8	J13J00	10/17/06	33.8		0.05	34.3	C	0.03
SPA C9	J13J01	10/17/06	38.6		0.05	37.2	C	0.03
SPA C10	J13J02	10/18/06	41.0		0.15	32.8	C	0.09
SPA C1	J13J03	10/18/06	43.3		0.15	35.4	C	0.09
SPA C2	J13J04	10/18/06	50.9		0.15	37.5	C	0.09
SPA D3	J13J05	10/18/06	46.5		0.15	38.0	C	0.09
SPA D4	J13J06	10/19/06	53.8		0.15	43.3	C	0.09
SPA D5	J13J07	10/23/06	49.2		0.14	39.4	C	0.09
SPA D6	J13J08	10/23/06	44.1		0.15	40.0	C	0.09
FS-2	J12R25	7/10/06	45.4		0.25	35.8		0.45
FS-3	J12R26	7/10/06	46.0		0.26	52.5		0.45
FS-5	J12R28	7/10/06	37.4	C	0.14	47.7		0.09
FS-6	J12R29	7/10/06	45.7		0.25	64.7		0.45
FS-7	J13P85	11/15/06	30.0		0.18	31.4	C	0.12
FS-8	J12R31	7/10/06	43.7		0.26	43.1		0.45
FS-9	J12R32	7/10/06	46.7		0.26	45.8		0.46
FS-11	J12R34	7/10/06	42.1	C	0.14	65.1		0.09
FS-14	J12XB3	7/19/06	59.9		0.27	44.7		0.49
FS-15	J13NX4	11/14/06	41.7		0.18	34.9	C	0.12
FS-16	J13P84	11/15/06	46.6		0.18	35.5	C	0.12
FS-17	J14JJ3	3/5/07	62.8		0.1	47.6		0.03
FS-17 resample	J152M1	5/10/07	53.8		0.1	45.1		0.03
FS-18	J14L38	3/5/07	53.2		0.1	41.7		0.03
FS-19	J14L39	3/5/07	49.4		0.1	40.0		0.03
Equipment blank	J12X59	7/20/06	0.49		0.25	4.8		0.45

Sample Location	Sample Number	Sample Date	Total Petroleum Hydrocarbons		
			mg/kg	Q	PQL
SPA A1	J13HY3	10/12/06	135	U	135
SPA A2	J13HY4	10/12/06	133	U	133
SPA A3	J13HY5	10/12/06	134	U	134
SPA A4	J13HY6	10/12/06	134	U	134
SPA B5	J13HY7	10/12/06	133	U	133
Duplicate of J13HY7	J13J09	10/12/06	133	U	133
Split of J13HY7	J13J10	10/12/06	173	U	173
SPA B6	J13HY8	10/17/06	136	U	136
SPA B7	J13HY9	10/17/06	137	U	137
SPA B8	J13J00	10/17/06	136	U	136
SPA C9	J13J01	10/17/06	142	U	142
SPA C10	J13J02	10/18/06	137	U	137
SPA C1	J13J03	10/18/06	137	U	137
SPA C2	J13J04	10/18/06	136	U	136
SPA D3	J13J05	10/18/06	137	U	137
SPA D4	J13J06	10/19/06	144	U	144
SPA D5	J13J07	10/23/06	137	U	137
SPA D6	J13J08	10/23/06	138	U	138
FS-1	J12R24	7/10/06	132	U	132
FS-10	J12R33	12/7/06	144	U	144

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J. M. Capron	Date	10/03/07
T. M. Blakley	Date	
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Attachment 1. 118-B-1 Verification Sampling Results.

Sample Location	Sample Number	Sample Date	Asbestos Result
Area 1 A1	J12X39	7/19/06	None detected
Duplicate of J12X44	J12X43	7/19/06	None detected
Area 1 A2	J12X40	7/19/06	None detected
Area 1 A3	J12X41	7/20/06	None detected
Area 1 A4	J12X42	7/20/06	None detected
Area 6 A1	J12XB4	7/25/06	None detected
Area 6 A2	J12XB5	7/25/06	None detected
Area 6 A3	J12XB6	7/25/06	None detected
Area 6 A4	J12XB7	7/25/06	None detected
Area 7 A1	J12XB8	7/26/06	None detected
Area 7 A2	J12XB9	7/26/06	None detected
Area 7 A3	J12XC0	7/26/06	None detected
Area 7 A4	J12XC1	7/26/06	None detected
OB A1	J12WN3	7/11/06	None detected
OB A2	J12WN4	7/11/06	None detected
OB A3	J12WN5	7/11/06	None detected
OB A4	J12WN6	7/11/06	None detected
OB B5	J12WN7	7/11/06	None detected
OB B6	J12WN8	7/11/06	None detected
OB B7	J12WN9	7/11/06	None detected
OB B8	J12WT0	7/17/06	None detected
OB C9	J12WT1	7/17/06	None detected
OB C10	J12WT2	7/17/06	None detected
OB C1	J12WT3	7/17/06	None detected
OB C2	J12WT4	7/17/06	None detected
OB D3	J12WR8	7/12/06	None detected
OB D4	J12WR9	7/12/06	None detected
OB D5	J12WR6	7/12/06	None detected
OB D6	J12WR7	7/12/06	None detected

Sample Location	Sample Number	Sample Date	Asbestos Result
BCL A1	J12WT5	7/20/06	None detected
BCL A2	J12WR4	7/12/06	None detected
BCL A3	J12WR5	7/12/06	None detected
BCL A4	J12WR3	7/12/06	None detected
BCL B5	J12WR2	7/12/06	None detected
BCL B6	J12WR1	7/12/06	None detected
BCL B7	J12WR0	7/12/06	None detected
BCL B8	J12WP9	7/12/06	None detected
BCL C9	J12WP0	7/11/06	None detected
BCL C10	J12WP2	7/11/06	None detected
BCL C1	J12WP1	7/11/06	None detected
BCL C2	J12WP5	7/11/06	None detected
BCL D3	J12WP6	7/11/06	None detected
BCL D4	J12WP7	7/11/06	None detected
Duplicate of J12WL4	J12WP8	7/11/06	None detected
BCL D5	J12WP3	7/11/06	None detected
BCL D6	J12WP4	7/11/06	None detected
SPA A1	J13J11	10/12/06	<1% chrysotile asbestos
SPA A2	J13J12	10/12/06	None detected
SPA A3	J13J13	10/12/06	None detected
SPA A4	J13J14	10/12/06	None detected
SPA B5	J13J15	10/12/06	None detected
Duplicate of J13HY7	J13J27	10/12/06	None detected
SPA B6	J13J16	10/17/06	None detected
SPA B7	J13J17	10/17/06	None detected
SPA B8	J13J18	10/17/06	None detected
SPA C9	J13J19	10/17/06	None detected
SPA C10	J13J20	10/18/06	None detected
SPA C1	J13J21	10/18/06	None detected
SPA C2	J13J22	10/18/06	None detected
SPA D3	J13J23	10/18/06	None detected
SPA D4	J13J24	10/19/06	None detected
SPA D5	J13J25	10/23/06	None detected
SPA D6	J13J26	10/23/06	None detected

Attachment 1
 Originator J. M. Capron
 Checked T. M. Blakley
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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J12X44 Area 1 A1			J12X48 Duplicate of J12X44			J12X49 Split of J12X44			J12X45 Area 1 A2		
	Sample Date 7/19/06			Sample Date 7/19/06			Sample Date 7/19/06			Sample Date 7/19/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL
Polychlorinated Biphenyls												
Aroclor-1016	13	U	13	13	U	13	17	U	17	13	U	13
Aroclor-1221	13	U	13	13	U	13	17	U	17	13	U	13
Aroclor-1232	13	U	13	13	U	13	17	U	17	13	U	13
Aroclor-1242	13	U	13	13	U	13	17	U	17	13	U	13
Aroclor-1248	13	U	13	13	U	13	17	U	17	13	U	13
Aroclor-1254	13	U	13	13	U	13	17	U	17	13	U	13
Aroclor-1260	13	U	13	13	U	13	17	U	17	13	U	13
Semivolatile Organic Compounds												
1,2,4-Trichlorobenzene	340	UJ	340	340	UJ	340	330	U	330	340	UJ	340
1,2-Dichlorobenzene	340	U	340	340	U	340	330	U	330	340	U	340
1,3-Dichlorobenzene	340	U	340	340	U	340	330	U	330	340	U	340
1,4-Dichlorobenzene	340	U	340	340	U	340	330	U	330	340	U	340
2,4,5-Trichlorophenol	850	U	850	850	U	850	330	U	330	840	U	840
2,4,6-Trichlorophenol	340	U	340	340	U	340	330	U	330	340	U	340
2,4-Dichlorophenol	340	U	340	340	U	340	330	U	330	340	U	340
2,4-Dimethylphenol	340	UJ	340	340	UJ	340	330	U	330	340	UJ	340
2,4-Dinitrophenol	850	U	850	850	U	850	1600	UR	1600	840	U	840
2,4-Dinitrotoluene	340	U	340	340	U	340	330	U	330	340	U	340
2,6-Dinitrotoluene	340	U	340	340	U	340	330	U	330	340	U	340
2-Chloronaphthalene	340	U	340	340	U	340	330	U	330	340	U	340
2-Chlorophenol	340	U	340	340	U	340	330	U	330	340	U	340
2-Methylnaphthalene	340	UJ	340	340	UJ	340	330	U	330	340	UJ	340
2-Methylphenol (cresol, o-)	340	U	340	340	U	340	330	U	330	340	U	340
2-Nitroaniline	850	U	850	850	U	850	1600	U	1600	840	U	840
2-Nitrophenol	340	U	340	340	U	340	330	U	330	340	U	340
3,3'-Dichlorobenzidine	340	U	340	340	U	340	1600	U	1600	340	U	340
3-Nitroaniline	850	U	850	850	U	850	1600	U	1600	840	U	840
4,6-Dinitro-2-methylphenol	850	U	850	850	U	850	1600	U	1600	840	U	840
4-Bromophenyl-phenylether	340	U	340	340	U	340	330	U	330	340	U	340
4-Chloro-3-methylphenol	340	UJ	340	340	UJ	340	330	U	330	340	UJ	340
4-Chloroaniline	340	U	340	340	U	340	330	U	330	340	U	340
4-Chlorophenyl-phenylether	340	U	340	340	U	340	330	U	330	340	U	340
4-Methylphenol (p-cresol)	340	U	340	340	U	340	670	U	670	340	U	340
4-Nitroaniline	850	U	850	850	U	850	1600	U	1600	840	U	840
4-Nitrophenol	850	U	850	850	U	850	1600	U	1600	840	U	840
Acenaphthene	340	U	340	340	U	340	330	U	330	340	U	340
Acenaphthylene	340	U	340	340	U	340	330	U	330	340	U	340
Anthracene	340	U	340	340	U	340	330	U	330	340	U	340
Benzo(a)anthracene	340	U	340	340	U	340	330	U	330	340	U	340
Benzo(a)pyrene	340	U	340	340	U	340	330	U	330	340	U	340
Benzo(b)fluoranthene	340	U	340	340	U	340	330	U	330	340	U	340
Benzo(g,h,i)perylene	340	U	340	340	U	340	330	U	330	340	U	340
Benzo(k)fluoranthene	340	U	340	340	U	340	330	U	330	340	U	340
bis(2-Chloro-1-methylethyl)ether	340	U	340	340	U	340	330	U	330	340	U	340
bis(2-Chloroethoxy)methane	340	U	340	340	U	340	330	U	330	340	U	340
bis(2-Chloroethyl)ether	340	U	340	340	U	340	330	U	330	340	U	340
bis(2-Ethylhexyl)phthalate	240	JB	340	130	JB	340	330	U	330	140	JB	340

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J12X44 Area 1 A1			J12X48 Duplicate of J12X44			J12X49 Split of J12X44			J12X45 Area 1 A2		
	Sample Date 7/19/06			Sample Date 7/19/06			Sample Date 7/19/06			Sample Date 7/19/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	MDL	µg/kg	Q	PQL
Semivolatile Organic Compounds (continued)												
Butylbenzylphthalate	340	U	340	340	U	340	330	U	330	340	U	340
Carbazole	340	U	340	340	U	340	330	U	330	340	U	340
Chrysene	340	U	340	340	U	340	330	U	330	340	U	340
Di-n-butylphthalate	19	JB	340	18	JB	340	330	U	330	340	U	340
Di-n-octylphthalate	340	U	340	340	U	340	330	U	330	340	U	340
Dibenz(a,h)anthracene	340	U	340	340	U	340	330	U	330	340	U	340
Dibenzofuran	340	U	340	340	U	340	330	U	330	340	U	340
Diethylphthalate	340	U	340	340	U	340	330	U	330	340	U	340
Dimethylphthalate	340	U	340	340	U	340	330	U	330	340	U	340
Fluoranthene	340	U	340	340	U	340	330	U	330	340	U	340
Fluorene	340	U	340	340	U	340	330	U	330	340	U	340
Hexachlorobenzene	340	U	340	340	U	340	330	U	330	340	U	340
Hexachlorobutadiene	340	U	340	340	U	340	330	U	330	340	U	340
Hexachlorocyclopentadiene	340	U	340	340	U	340	1600	U	1600	340	U	340
Hexachloroethane	340	U	340	340	U	340	330	U	330	340	U	340
Indeno(1,2,3-cd)pyrene	340	U	340	340	U	340	330	U	330	340	U	340
Isophorone	340	UJ	340	340	UJ	340	330	U	330	340	UJ	340
N-Nitroso-di-n-dipropylamine	340	U	340	340	U	340	330	U	330	340	U	340
N-Nitrosodiphenylamine	340	U	340	340	U	340	330	U	330	340	U	340
Naphthalene	340	U	340	340	U	340	330	U	330	340	U	340
Nitrobenzene	340	UJ	340	340	UJ	340	330	U	330	340	UJ	340
Pentachlorophenol	850	U	850	850	U	850	1600	U	1600	840	U	840
Phenanthrene	340	U	340	340	U	340	330	U	330	340	U	340
Phenol	340	U	340	340	U	340	330	U	330	340	U	340
Pyrene	340	U	340	340	U	340	330	U	330	340	U	340

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J12X44 Area 1 A1			J12X48 Duplicate of J12X44			J12X49 Split of J12X44			J12X45 Area 1 A2		
	Sample Date 7/19/06			Sample Date 7/19/06			Sample Date 7/19/06			Sample Date 7/19/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	MDL	µg/kg	Q	PQL
Volatile Organic Compounds												
1,1,1-Trichloroethane	5	U	5	5	U	5	5.1	U	5.1	5	U	5
1,1,2,2-Tetrachloroethane	5	U	5	5	U	5	5.1	U	5.1	5	U	5
1,1,2-Trichloroethane	5	U	5	5	U	5	5.1	U	5.1	5	U	5
1,1-Dichloroethane	5	U	5	5	U	5	5.1	U	5.1	5	U	5
1,1-Dichloroethene	5	U	5	5	U	5	5.1	U	5.1	5	U	5
1,2-Dichloroethane	5	U	5	5	U	5	5.1	U	5.1	5	U	5
1,2-Dichloroethene (total)	5	U	5	5	U	5	10	U	10	5	U	5
1,2-Dichloropropane	5	U	5	5	U	5	5.1	U	5.1	5	U	5
2-Butanone	10	U	10	10	U	10	10	U	10	10	U	10
2-Hexanone	10	U	10	10	U	10	20	U	20	10	U	10
4-Methyl-2-pentanone	5	JB	10	8	JB	10	10	U	10	5	JB	10
Acetone	9	J	10	23	J	10	20	U	20	11	J	10
Benzene	5	U	5	5	U	5	5.1	U	5.1	5	U	5
Bromodichloromethane	5	U	5	5	U	5	5.1	U	5.1	5	U	5
Bromoform	5	U	5	5	U	5	5.1	U	5.1	5	U	5
Bromomethane	10	U	10	10	U	10	10	UN	10	10	U	10
Carbon disulfide	5	U	5	5	U	5	5.1	U	5.1	5	U	5
Carbon tetrachloride	5	U	5	5	U	5	5.1	U	5.1	5	U	5
Chlorobenzene	5	U	5	5	U	5	5.1	U	5.1	5	U	5
Chloroethane	10	U	10	10	U	10	10	U	10	10	U	10
Chloroform	5	U	5	5	U	5	5.1	U	5.1	5	U	5
Chloromethane	10	U	10	10	U	10	10	U	10	10	U	10
cis-1,2-Dichloroethylene	5	U	5	5	U	5				5	U	5
cis-1,3-Dichloropropene	5	U	5	5	U	5	5.1	U	5.1	5	U	5
Dibromochloromethane	5	U	5	5	U	5	5.1	U	5.1	5	U	5
Ethylbenzene	5	U	5	5	U	5	5.1	U	5.1	5	U	5
Methylene chloride	6		5	12		5	5.1	U	5.1	15		5
Styrene	5	U	5	5	U	5	5.1	U	5.1	5	U	5
Tetrachloroethene	5	U	5	5	U	5	5.1	UN	5.1	5	U	5
Toluene	5	U	5	5	U	5	5.1	U	5.1	5	U	5
trans-1,2-Dichloroethylene	5	U	5	5	U	5				5	U	5
trans-1,3-Dichloropropene	5	U	5	5	U	5	5.1	U	5.1	5	U	5
Trichloroethene	5	U	5	5	U	5	5.1	U	5.1	5	U	5
Vinyl chloride	10	U	10	10	U	10	5.1	U	5.1	10	U	10
Xylenes (total)	5	U	5	5	U	5	10	U	10	5	U	5

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J12X46 Area 1 A3			J12X47 Area 1 A4			J12X54 Area 3 A1			J12X55 Area 3 A2		
	Sample Date 7/20/06			Sample Date 7/20/06			Sample Date 7/20/06			Sample Date 7/20/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL
Polychlorinated Biphenyls												
Aroclor-1016	13	U	13	14	U	14	13	U	13	13	U	13
Aroclor-1221	13	U	13	14	U	14	13	U	13	13	U	13
Aroclor-1232	13	U	13	14	U	14	13	U	13	13	U	13
Aroclor-1242	13	U	13	14	U	14	13	U	13	13	U	13
Aroclor-1248	13	U	13	14	U	14	13	U	13	13	U	13
Aroclor-1254	13	U	13	14	U	14	13	U	13	13	U	13
Aroclor-1260	13	U	13	14	U	14	13	U	13	13	U	13
Semivolatile Organic Compounds												
1,2,4-Trichlorobenzene	340	U	340	340	U	340	330	U	330	340	U	340
1,2-Dichlorobenzene	340	U	340	340	U	340	330	U	330	340	U	340
1,3-Dichlorobenzene	340	U	340	340	U	340	330	U	330	340	U	340
1,4-Dichlorobenzene	340	U	340	340	U	340	330	U	330	340	U	340
2,4,5-Trichlorophenol	840	U	840	850	U	850	840	U	840	840	U	840
2,4,6-Trichlorophenol	340	U	340	340	U	340	330	U	330	340	U	340
2,4-Dichlorophenol	340	U	340	340	U	340	330	U	330	340	U	340
2,4-Dimethylphenol	340	UJ	340	340	UJ	340	330	UJ	330	340	UJ	340
2,4-Dinitrophenol	840	U	840	850	U	850	840	U	840	840	U	840
2,4-Dinitrotoluene	340	U	340	340	U	340	330	U	330	340	U	340
2,6-Dinitrotoluene	340	U	340	340	U	340	330	U	330	340	U	340
2-Chloronaphthalene	340	U	340	340	U	340	330	U	330	340	U	340
2-Chlorophenol	340	U	340	340	U	340	330	U	330	340	U	340
2-Methylnaphthalene	340	U	340	340	U	340	330	U	330	340	U	340
2-Methylphenol (cresol, o-)	340	U	340	340	U	340	330	U	330	340	U	340
2-Nitroaniline	840	U	840	850	U	850	840	U	840	840	U	840
2-Nitrophenol	340	U	340	340	U	340	330	U	330	340	U	340
3,3'-Dichlorobenzidine	340	U	340	340	U	340	330	U	330	340	U	340
3-Nitroaniline	840	U	840	850	U	850	840	U	840	840	U	840
4,6-Dinitro-2-methylphenol	840	U	840	850	U	850	840	U	840	840	U	840
4-Bromophenyl-phenylether	340	U	340	340	U	340	330	U	330	340	U	340
4-Chloro-3-methylphenol	340	UJ	340	340	UJ	340	330	UJ	330	340	UJ	340
4-Chloroaniline	340	U	340	340	U	340	330	U	330	340	U	340
4-Chlorophenyl-phenylether	340	U	340	340	U	340	330	U	330	340	U	340
4-Methylphenol (p-cresol)	340	U	340	340	U	340	330	U	330	340	U	340
4-Nitroaniline	840	U	840	850	U	850	840	U	840	840	U	840
4-Nitrophenol	840	U	840	850	U	850	840	U	840	840	U	840
Acenaphthene	340	U	340	340	U	340	330	U	330	340	U	340
Acenaphthylene	340	U	340	340	U	340	330	U	330	340	U	340
Anthracene	340	U	340	340	U	340	330	U	330	340	U	340
Benzo(a)anthracene	340	U	340	340	U	340	330	U	330	340	U	340
Benzo(a)pyrene	340	U	340	340	U	340	330	U	330	340	U	340
Benzo(b)fluoranthene	340	U	340	340	U	340	330	U	330	340	U	340
Benzo(g,h,i)perylene	340	U	340	340	U	340	330	U	330	340	U	340
Benzo(k)fluoranthene	340	U	340	340	U	340	330	U	330	340	U	340
bis(2-Chloro-1-methylethyl)ether	340	U	340	340	U	340	330	U	330	340	U	340
bis(2-Chloroethoxy)methane	340	U	340	340	U	340	330	U	330	340	U	340
bis(2-Chloroethyl)ether	340	U	340	340	U	340	330	U	330	340	U	340
bis(2-Ethylhexyl)phthalate	18	J	340	340	U	340	17	J	330	340	U	340

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J12X46 Area 1 A3			J12X47 Area 1 A4			J12X54 Area 3 A1			J12X55 Area 3 A2		
	Sample Date 7/20/06			Sample Date 7/20/06			Sample Date 7/20/06			Sample Date 7/20/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	MDL	µg/kg	Q	PQL
Semivolatile Organic Compounds (continued)												
Butylbenzylphthalate	340	U	340	340	U	340	330	U	330	340	U	340
Carbazole	340	U	340	340	U	340	330	U	330	340	U	340
Chrysene	340	U	340	340	U	340	330	U	330	340	U	340
Di-n-butylphthalate	28	JB	340	18	JB	340	330	U	330	340	U	340
Di-n-octylphthalate	340	U	340	340	U	340	330	U	330	340	U	340
Dibenz(a,h)anthracene	340	U	340	340	U	340	330	U	330	340	U	340
Dibenzofuran	340	U	340	340	U	340	330	U	330	340	U	340
Diethylphthalate	340	U	340	340	U	340	330	U	330	340	U	340
Dimethylphthalate	340	U	340	340	U	340	330	U	330	340	U	340
Fluoranthene	340	U	340	340	U	340	330	U	330	340	U	340
Fluorene	340	U	340	340	U	340	330	U	330	340	U	340
Hexachlorobenzene	340	U	340	340	U	340	330	U	330	340	U	340
Hexachlorobutadiene	340	U	340	340	U	340	330	U	330	340	U	340
Hexachlorocyclopentadiene	340	U	340	340	U	340	330	U	330	340	U	340
Hexachloroethane	340	U	340	340	U	340	330	U	330	340	U	340
Indeno(1,2,3-cd)pyrene	340	U	340	340	U	340	330	U	330	340	U	340
Isophorone	340	UJ	340	340	UJ	340	330	UJ	330	340	UJ	340
N-Nitroso-di-n-dipropylamine	340	U	340	340	U	340	330	U	330	340	U	340
N-Nitrosodiphenylamine	340	U	340	340	U	340	330	U	330	340	U	340
Naphthalene	340	U	340	340	U	340	330	U	330	340	U	340
Nitrobenzene	340	U	340	340	U	340	330	U	330	340	U	340
Pentachlorophenol	840	U	840	850	U	850	840	U	840	840	U	840
Phenanthrene	340	U	340	340	U	340	330	U	330	340	U	340
Phenol	340	U	340	340	U	340	330	U	330	340	U	340
Pyrene	340	U	340	340	U	340	330	U	330	340	U	340

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J12X46 Area 1 A3			J12X47 Area 1 A4			J12X54 Area 3 A1			J12X55 Area 3 A2		
	Sample Date 7/20/06			Sample Date 7/20/06			Sample Date 7/20/06			Sample Date 7/20/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	MDL	µg/kg	Q	PQL
Volatile Organic Compounds												
1,1,1-Trichloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,1,2,2-Tetrachloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,1,2-Trichloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,1-Dichloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,1-Dichloroethene	5	U	5	5	U	5	5	U	5	5	U	5
1,2-Dichloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,2-Dichloroethene (total)	5	U	5	5	U	5	5	U	5	5	U	5
1,2-Dichloropropane	5	U	5	5	U	5	5	U	5	5	U	5
2-Butanone	9	U	9	10	U	10	10	U	10	10	U	10
2-Hexanone	9	U	9	10	U	10	10	U	10	10	U	10
4-Methyl-2-pentanone	5	JB	9	4	JB	10	6	JB	10	6	JB	10
Acetone	9	J	9	4	J	10	15		10	16		10
Benzene	5	U	5	5	U	5	5	U	5	5	U	5
Bromodichloromethane	5	U	5	5	U	5	5	U	5	5	U	5
Bromoform	5	U	5	5	U	5	5	U	5	5	U	5
Bromomethane	9	U	9	10	U	10	10	U	10	10	U	10
Carbon disulfide	5	U	5	5	U	5	5	U	5	5	U	5
Carbon tetrachloride	5	U	5	5	U	5	5	U	5	8		5
Chlorobenzene	5	U	5	5	U	5	5	U	5	5	U	5
Chloroethane	9	U	9	10	U	10	10	U	10	10	U	10
Chloroform	5	U	5	5	U	5	5	U	5	5	U	5
Chloromethane	9	U	9	10	U	10	10	U	10	10	U	10
cis-1,2-Dichloroethylene	5	U	5	5	U	5	5	U	5	5	U	5
cis-1,3-Dichloropropene	5	U	5	5	U	5	5	U	5	5	U	5
Dibromochloromethane	5	U	5	5	U	5	5	U	5	5	U	5
Ethylbenzene	5	U	5	5	U	5	5	U	5	5	U	5
Methylene chloride	22		5	12		5	26		5	5		5
Styrene	5	U	5	5	U	5	5	U	5	5	U	5
Tetrachloroethene	5	U	5	5	U	5	5	U	5	5	U	5
Toluene	5	U	5	5	U	5	5	U	5	5	U	5
trans-1,2-Dichloroethylene	5	U	5	5	U	5	5	U	5	5	U	5
trans-1,3-Dichloropropene	5	U	5	5	U	5	5	U	5	5	U	5
Trichloroethene	5	U	5	5	U	5	5	U	5	5	U	5
Vinyl chloride	9	U	9	10	U	10	10	U	10	10	U	10
Xylenes (total)	5	U	5	5	U	5	5	U	5	5	U	5

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J12X56 Area 3 A3			J12X58 Duplicate of J12X56			J12X60 Split of J12X56			J12X57 Area 3 A4		
	Sample Date 7/20/06			Sample Date 7/20/06			Sample Date 7/20/06			Sample Date 7/20/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL
Polychlorinated Biphenyls												
Aroclor-1016	14	U	14	14	U	14	17	U	17	13	U	13
Aroclor-1221	14	U	14	14	U	14	17	U	17	13	U	13
Aroclor-1232	14	U	14	14	U	14	17	U	17	13	U	13
Aroclor-1242	14	U	14	14	U	14	17	U	17	13	U	13
Aroclor-1248	14	U	14	14	U	14	17	U	17	13	U	13
Aroclor-1254	14	U	14	14	U	14	17	U	17	13	U	13
Aroclor-1260	14	U	14	14	U	14	17	U	17	13	U	13
Semivolatile Organic Compounds												
1,2,4-Trichlorobenzene	340	U	340	340	U	340	340	U	340	340	U	340
1,2-Dichlorobenzene	340	U	340	340	U	340	340	U	340	340	U	340
1,3-Dichlorobenzene	340	U	340	340	U	340	340	U	340	340	U	340
1,4-Dichlorobenzene	340	U	340	340	U	340	340	U	340	340	U	340
2,4,5-Trichlorophenol	850	U	850	850	U	850	340	U	340	840	U	840
2,4,6-Trichlorophenol	340	U	340	340	U	340	340	U	340	340	U	340
2,4-Dichlorophenol	340	U	340	340	U	340	340	U	340	340	U	340
2,4-Dimethylphenol	340	UJ	340	340	UJ	340	340	U	340	340	UJ	340
2,4-Dinitrophenol	850	U	850	850	U	850	1600	UJ	1600	840	U	840
2,4-Dinitrotoluene	340	U	340	340	U	340	340	U	340	340	U	340
2,6-Dinitrotoluene	340	U	340	340	U	340	340	U	340	340	U	340
2-Chloronaphthalene	340	U	340	340	U	340	340	U	340	340	U	340
2-Chlorophenol	340	U	340	340	U	340	340	U	340	340	U	340
2-Methylnaphthalene	340	U	340	340	U	340	340	U	340	340	U	340
2-Methylphenol (cresol, o-)	340	U	340	340	U	340	340	U	340	340	U	340
2-Nitroaniline	850	U	850	850	U	850	1600	U	1600	840	U	840
2-Nitrophenol	340	U	340	340	U	340	340	U	340	340	U	340
3,3'-Dichlorobenzidine	340	U	340	340	U	340	1600	U	1600	340	U	340
3-Nitroaniline	850	U	850	850	U	850	1600	U	1600	840	U	840
4,6-Dinitro-2-methylphenol	850	U	850	850	U	850	1600	U	1600	840	U	840
4-Bromophenyl-phenylether	340	U	340	340	U	340	340	U	340	340	U	340
4-Chloro-3-methylphenol	340	UJ	340	340	UJ	340	340	UJ	340	340	UJ	340
4-Chloroaniline	340	U	340	340	U	340	340	U	340	340	U	340
4-Chlorophenyl-phenylether	340	U	340	340	U	340	340	U	340	340	U	340
4-Methylphenol (p-cresol)	340	U	340	340	U	340	670	U	670	340	U	340
4-Nitroaniline	850	U	850	850	U	850	1600	U	1600	840	U	840
4-Nitrophenol	850	U	850	850	U	850	1600	U	1600	840	U	840
Acenaphthene	340	U	340	340	U	340	340	U	340	340	U	340
Acenaphthylene	340	U	340	340	U	340	340	U	340	340	U	340
Anthracene	340	U	340	340	U	340	340	U	340	340	U	340
Benzo(a)anthracene	340	U	340	340	U	340	340	U	340	340	U	340
Benzo(a)pyrene	340	U	340	340	U	340	340	U	340	340	U	340
Benzo(b)fluoranthene	340	U	340	340	U	340	340	U	340	340	U	340
Benzo(g,h,i)perylene	340	U	340	340	U	340	340	U	340	340	U	340
Benzo(k)fluoranthene	340	U	340	340	U	340	340	U	340	340	U	340
bis(2-Chloro-1-methylethyl)ether	340	U	340	340	U	340	340	U	340	340	U	340
bis(2-Chloroethoxy)methane	340	U	340	340	U	340	340	U	340	340	U	340
bis(2-Chloroethyl)ether	340	U	340	340	U	340	340	U	340	340	U	340
bis(2-Ethylhexyl)phthalate	340	U	340	39	J	340	340	U	340	31	J	340

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J12X56 Area 3 A3			J12X58 Duplicate of J12X56			J12X60 Split of J12X56			J12X57 Area 3 A4		
	Sample Date 7/20/06			Sample Date 7/20/06			Sample Date 7/20/06			Sample Date 7/20/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	MDL	µg/kg	Q	PQL
Semivolatile Organic Compounds (continued)												
Butylbenzylphthalate	340	U	340	340	U	340	340	U	340	340	U	340
Carbazole	340	U	340	340	U	340	340	U	340	340	U	340
Chrysene	340	U	340	340	U	340	340	U	340	340	U	340
Di-n-butylphthalate	27	JB	340	54	JB	340	340	U	340	40	JB	340
Di-n-octylphthalate	340	U	340	340	U	340	340	U	340	340	U	340
Dibenz(a,h)anthracene	340	U	340	340	U	340	340	U	340	340	U	340
Dibenzofuran	340	U	340	340	U	340	340	U	340	340	U	340
Diethylphthalate	340	U	340	340	U	340	340	U	340	340	U	340
Dimethylphthalate	340	U	340	340	U	340	340	U	340	340	U	340
Fluoranthene	340	U	340	340	U	340	340	U	340	340	U	340
Fluorene	340	U	340	340	U	340	340	U	340	340	U	340
Hexachlorobenzene	340	U	340	340	U	340	340	U	340	340	U	340
Hexachlorobutadiene	340	U	340	340	U	340	340	U	340	340	U	340
Hexachlorocyclopentadiene	340	U	340	340	U	340	1600	U	1600	340	U	340
Hexachloroethane	340	U	340	340	U	340	340	U	340	340	U	340
Indeno(1,2,3-cd)pyrene	340	U	340	340	U	340	340	U	340	340	U	340
Isophorone	340	UJ	340	340	UJ	340	340	U	340	340	UJ	340
N-Nitroso-di-n-dipropylamine	340	U	340	340	U	340	340	U	340	340	U	340
N-Nitrosodiphenylamine	340	U	340	340	U	340	340	U	340	340	U	340
Naphthalene	340	U	340	340	U	340	340	U	340	340	U	340
Nitrobenzene	340	U	340	340	U	340	340	U	340	340	U	340
Pentachlorophenol	850	U	850	850	U	850	1600	U	1600	840	U	840
Phenanthrene	340	U	340	340	U	340	340	U	340	340	U	340
Phenol	340	U	340	340	U	340	340	U	340	340	U	340
Pyrene	340	U	340	340	U	340	340	U	340	340	U	340

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J12X56 Area 3 A3 Sample Date 7/20/06			J12X58 Duplicate of J12X56 Sample Date 7/20/06			J12X60 Split of J12X56 Sample Date 7/20/06			J12X57 Area 3 A4 Sample Date 7/20/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	MDL	µg/kg	Q	PQL
	Volatile Organic Compounds											
1,1,1-Trichloroethane	5	U	5	5	U	5	5.1	U	5.1	5	U	5
1,1,2,2-Tetrachloroethane	5	U	5	5	U	5	5.1	U	5.1	5	U	5
1,1,2-Trichloroethane	5	U	5	5	U	5	5.1	U	5.1	5	U	5
1,1-Dichloroethane	5	U	5	5	U	5	5.1	U	5.1	5	U	5
1,1-Dichloroethene	5	U	5	5	U	5	5.1	U	5.1	5	U	5
1,2-Dichloroethane	5	U	5	5	U	5	5.1	U	5.1	5	U	5
1,2-Dichloroethene (total)	5	U	5	5	U	5	10	U	10	5	U	5
1,2-Dichloropropane	5	U	5	5	U	5	5.1	U	5.1	5	U	5
2-Butanone	10	U	10	10	U	10	10	U	10	10	U	10
2-Hexanone	10	U	10	10	U	10	20	U	20	10	U	10
4-Methyl-2-pentanone	10	U	10	10	U	10	10	U	10	10	U	10
Acetone	7	J	10	8	J	10	20	U	20	6	J	10
Benzene	5	U	5	5	U	5	5.1	U	5.1	5	U	5
Bromodichloromethane	5	U	5	5	U	5	5.1	U	5.1	5	U	5
Bromoform	5	U	5	5	U	5	5.1	U	5.1	5	U	5
Bromomethane	10	U	10	10	U	10	10	U	10	10	U	10
Carbon disulfide	5	U	5	5	U	5	5.1	U	5.1	5	U	5
Carbon tetrachloride	5	U	5	5	U	5	5.1	U	5.1	11		5
Chlorobenzene	5	U	5	5	U	5	5.1	U	5.1	5	U	5
Chloroethane	10	U	10	10	U	10	10	U	10	10	U	10
Chloroform	5	U	5	5	U	5	5.1	U	5.1	5	U	5
Chloromethane	10	U	10	10	U	10	10	U	10	10	U	10
cis-1,2-Dichloroethylene	5	U	5	5	U	5				5	U	5
cis-1,3-Dichloropropene	5	U	5	5	U	5	5.1	U	5.1	5	U	5
Dibromochloromethane	5	U	5	5	U	5	5.1	U	5.1	5	U	5
Ethylbenzene	5	U	5	5	U	5	5.1	U	5.1	5	U	5
Methylene chloride	5	U	5	5	U	5	5.1	U	5.1	5	J	5
Styrene	5	U	5	5	U	5	5.1	U	5.1	5	U	5
Tetrachloroethene	5	U	5	5	U	5	5.1	UN	5.1	5	U	5
Toluene	5	U	5	5	U	5	5.1	UN	5.1	5	U	5
trans-1,2-Dichloroethylene	5	U	5	5	U	5				5	U	5
trans-1,3-Dichloropropene	5	U	5	5	U	5	5.1	U	5.1	5	U	5
Trichloroethene	5	U	5	5	U	5	5.1	U	5.1	5	U	5
Vinyl chloride	10	U	10	10	U	10	5.1	U	5.1	10	U	10
Xylenes (total)	5	U	5	5	U	5	10	U	10	5	U	5

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J12X61 Area 4 A1			J12X65 Duplicate of J12X61			J12X66 Split of J12X61			J12X62 Area 4 A2		
	Sample Date 7/25/06			Sample Date 7/25/06			Sample Date 7/25/06			Sample Date 7/25/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL
Polychlorinated Biphenyls												
Aroclor-1016	13	U	13	13	U	13	17	U	17	13	U	13
Aroclor-1221	13	U	13	13	U	13	17	U	17	13	U	13
Aroclor-1232	13	U	13	13	U	13	17	U	17	13	U	13
Aroclor-1242	13	U	13	13	U	13	17	U	17	13	U	13
Aroclor-1248	13	U	13	13	U	13	17	U	17	13	U	13
Aroclor-1254	80		13	57		13	17	U	17	13	U	13
Aroclor-1260	13	U	13	13	U	13	17	U	17	13	U	13
Semivolatile Organic Compounds												
1,2,4-Trichlorobenzene	340	UJ	340	340	UJ	340	330	U	330	330	UJ	330
1,2-Dichlorobenzene	340	U	340	340	U	340	330	U	330	330	U	330
1,3-Dichlorobenzene	340	U	340	340	U	340	330	U	330	330	U	330
1,4-Dichlorobenzene	340	U	340	340	U	340	330	U	330	330	U	330
2,4,5-Trichlorophenol	840	U	840	840	U	840	330	U	330	840	U	840
2,4,6-Trichlorophenol	340	U	340	340	U	340	330	U	330	330	U	330
2,4-Dichlorophenol	340	U	340	340	U	340	330	U	330	330	U	330
2,4-Dimethylphenol	340	U	340	340	U	340	330	U	330	330	U	330
2,4-Dinitrophenol	840	U	840	840	U	840	1600	UJ	1600	840	U	840
2,4-Dinitrotoluene	340	U	340	340	U	340	330	U	330	330	U	330
2,6-Dinitrotoluene	340	U	340	340	U	340	330	U	330	330	U	330
2-Chloronaphthalene	340	U	340	340	U	340	330	U	330	330	U	330
2-Chlorophenol	340	U	340	340	U	340	330	U	330	330	U	330
2-Methylnaphthalene	340	UJ	340	340	UJ	340	330	U	330	330	UJ	330
2-Methylphenol (cresol, o-)	340	U	340	340	U	340	330	U	330	330	U	330
2-Nitroaniline	840	U	840	840	U	840	1600	U	1600	840	U	840
2-Nitrophenol	340	U	340	340	U	340	330	U	330	330	U	330
3,3'-Dichlorobenzidine	340	U	340	340	U	340	1600	U	1600	330	U	330
3-Nitroaniline	840	U	840	840	U	840	1600	U	1600	840	U	840
4,6-Dinitro-2-methylphenol	840	U	840	840	U	840	1600	U	1600	840	U	840
4-Bromophenyl-phenylether	340	U	340	340	U	340	330	U	330	330	U	330
4-Chloro-3-methylphenol	340	U	340	340	U	340	330	U	330	330	U	330
4-Chloroaniline	340	U	340	340	U	340	330	U	330	330	U	330
4-Chlorophenyl-phenylether	340	U	340	340	U	340	330	U	330	330	U	330
4-Methylphenol (p-cresol)	340	U	340	340	U	340	670	U	670	330	U	330
4-Nitroaniline	840	U	840	840	U	840	1600	U	1600	840	U	840
4-Nitrophenol	840	U	840	840	U	840	1600	U	1600	840	U	840
Acenaphthene	340	U	340	340	U	340	330	U	330	330	U	330
Acenaphthylene	340	U	340	340	U	340	330	U	330	330	U	330
Anthracene	340	U	340	340	U	340	330	U	330	330	U	330
Benzo(a)anthracene	340	U	340	340	U	340	330	U	330	330	U	330
Benzo(a)pyrene	340	U	340	340	U	340	330	U	330	330	U	330
Benzo(b)fluoranthene	340	U	340	340	U	340	330	U	330	330	U	330
Benzo(g,h,i)perylene	340	U	340	340	U	340	330	U	330	330	U	330
Benzo(k)fluoranthene	340	U	340	340	U	340	330	U	330	330	U	330
bis(2-Chloro-1-methylethyl)ether	340	U	340	340	U	340	330	U	330	330	U	330
bis(2-Chloroethoxy)methane	340	U	340	340	U	340	330	U	330	330	U	330
bis(2-Chloroethyl)ether	340	U	340	340	U	340	330	U	330	330	U	330
bis(2-Ethylhexyl)phthalate	46	JB	340	35	JB	340	330	U	330	29	JB	330

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J12X61 Area 4 A1			J12X65 Duplicate of J12X61			J12X66 Split of J12X61			J12X62 Area 4 A2		
	Sample Date 7/25/06			Sample Date 7/25/06			Sample Date 7/25/06			Sample Date 7/25/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	MDL	µg/kg	Q	PQL
Semivolatile Organic Compounds (continued)												
Butylbenzylphthalate	340	U	340	340	U	340	330	U	330	330	U	330
Carbazole	340	U	340	340	U	340	330	U	330	330	U	330
Chrysene	340	U	340	340	U	340	330	U	330	330	U	330
Di-n-butylphthalate	38	JB	340	63	JB	340	330	U	330	63	JB	330
Di-n-octylphthalate	340	U	340	340	U	340	330	U	330	330	U	330
Dibenz(a,h)anthracene	340	U	340	340	U	340	330	U	330	330	U	330
Dibenzofuran	340	U	340	340	U	340	330	U	330	330	U	330
Diethylphthalate	340	U	340	340	U	340	330	U	330	17	J	330
Dimethylphthalate	340	U	340	340	U	340	330	U	330	330	U	330
Fluoranthene	340	U	340	340	U	340	330	U	330	330	U	330
Fluorene	340	U	340	340	U	340	330	U	330	330	U	330
Hexachlorobenzene	340	U	340	340	U	340	330	U	330	330	U	330
Hexachlorobutadiene	340	U	340	340	U	340	330	U	330	330	U	330
Hexachlorocyclopentadiene	340	U	340	340	U	340	1600	U	1600	330	U	330
Hexachloroethane	340	U	340	340	U	340	330	U	330	330	U	330
Indeno(1,2,3-cd)pyrene	340	U	340	340	U	340	330	U	330	330	U	330
Isophorone	340	U	340	340	U	340	330	U	330	330	U	330
N-Nitroso-di-n-dipropylamine	340	U	340	340	U	340	330	U	330	330	U	330
N-Nitrosodiphenylamine	340	U	340	340	U	340	330	U	330	330	U	330
Naphthalene	340	U	340	340	U	340	330	U	330	330	U	330
Nitrobenzene	340	U	340	340	U	340	330	U	330	330	U	330
Pentachlorophenol	840	U	840	840	U	840	1600	U	1600	840	U	840
Phenanthrene	340	U	340	340	U	340	330	U	330	330	U	330
Phenol	340	U	340	340	U	340	330	U	330	26	JB	330
Pyrene	340	U	340	340	U	340	330	U	330	330	U	330

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J12X61 Area 4 A1			J12X65 Duplicate of J12X61			J12X66 Split of J12X61			J12X62 Area 4 A2		
	Sample Date 7/25/06			Sample Date 7/25/06			Sample Date 7/25/06			Sample Date 7/25/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	MDL	µg/kg	Q	PQL
Volatile Organic Compounds												
1,1,1-Trichloroethane	5	U	5	5	U	5	1.2	J	5.0	5	U	5
1,1,1,2-Tetrachloroethane	5	U	5	5	U	5	5.0	U	5.0	5	U	5
1,1,2-Trichloroethane	5	U	5	5	U	5	5.0	U	5.0	5	U	5
1,1-Dichloroethane	5	U	5	5	U	5	5.0	U	5.0	5	U	5
1,1-Dichloroethene	5	U	5	5	U	5	5.0	U	5.0	5	U	5
1,2-Dichloroethane	5	U	5	5	U	5	5.0	U	5.0	5	U	5
1,2-Dichloroethene (total)	5	U	5	5	U	5	10	U	10	5	U	5
1,2-Dichloropropane	5	U	5	5	U	5	5.0	U	5.0	5	U	5
2-Butanone	10	U	10	10	U	10	10	U	10	10	U	10
2-Hexanone	10	U	10	10	U	10	20	U	20	10	U	10
4-Methyl-2-pentanone	10	U	10	10	U	10	10	U	10	10	U	10
Acetone	19		10	10	U	10	20	U	20	11		10
Benzene	5	U	5	5	U	5	5.0	U	5.0	5	U	5
Bromodichloromethane	5	U	5	5	U	5	5.0	U	5.0	5	U	5
Bromoform	5	U	5	5	U	5	5.0	U	5.0	5	U	5
Bromomethane	10	U	10	10	U	10	10	U	10	10	U	10
Carbon disulfide	5	U	5	5	U	5	5.0	U	5.0	5	U	5
Carbon tetrachloride	13		5	5	J	5	4.4	J	5.0	14		5
Chlorobenzene	5	U	5	5	U	5	5.0	U	5.0	5	U	5
Chloroethane	10	U	10	10	U	10	10	U	10	10	U	10
Chloroform	5	U	5	5	U	5	5.0	U	5.0	5	U	5
Chloromethane	10	U	10	10	U	10	10	U	10	10	U	10
cis-1,2-Dichloroethylene	5	U	5	5	U	5				5	U	5
cis-1,3-Dichloropropene	5	U	5	5	U	5	5.0	U	5.0	5	U	5
Dibromochloromethane	5	U	5	5	U	5	5.0	U	5.0	5	U	5
Ethylbenzene	5	U	5	5	U	5	5.0	U	5.0	5	U	5
Methylene chloride	5		5	6		5	5.0	U	5.0	8		5
Styrene	5	U	5	5	U	5	5.0	U	5.0	5	U	5
Tetrachloroethene	5	U	5	5	U	5	5.0	UN	5.0	5	U	5
Toluene	5	U	5	5	U	5	5.0	UN	5.0	5	U	5
trans-1,2-Dichloroethylene	5	U	5	5	U	5				5	U	5
trans-1,3-Dichloropropene	5	U	5	5	U	5	5.0	U	5.0	5	U	5
Trichloroethene	5	U	5	5	U	5	2.4	J	5.0	5	U	5
Vinyl chloride	10	U	10	10	U	10	5.0	U	5.0	10	U	10
Xylenes (total)	5	U	5	5	U	5	10	U	10	5	U	5

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J12X61 Area 4 A1			J12X65 Duplicate of J12X61			J12X66 Split of J12X61			J12X62 Area 4 A2		
	Sample Date 7/25/06			Sample Date 7/25/06			Sample Date 7/25/06			Sample Date 7/25/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	MDL	µg/kg	Q	PQL
Pesticides												
Aldrin	1.3	UD	1.3	1.3	UD	1.3	1.7	U	1.7	1.3	UD	1.3
alpha-BHC	1.3	UD	1.3	1.3	UD	1.3	1.7	U	1.7	1.3	UD	1.3
alpha-Chlordane	1.3	UD	1.3	1.3	UD	1.3	1.7	U	1.7	1.3	UD	1.3
beta-BHC	1.3	UD	1.3	1.3	UD	1.3	1.7	U	1.7	7.8	JD	1.3
delta-BHC	1.3	UD	1.3	1.3	UD	1.3	1.7	U	1.7	1.3	UD	1.3
Dichlorodiphenyldichloroethane	1.3	UD	1.3	1.3	UD	1.3	1.7	U	1.7	1.3	UD	1.3
Dichlorodiphenyldichloroethylene	16	D	1.3	1.3	UD	1.3	1.7	U	1.7	1.3	UD	1.3
Dichlorodiphenyltrichloroethane	1.3	UD	1.3	1.3	UD	1.3	1.7	U	1.7	1.3	UD	1.3
Dieldrin	3.8	DI	1.3	0.74	JD	1.3	1.7	U	1.7	1.3	UD	1.3
Endosulfan I	1.3	UD	1.3	1.3	UD	1.3	1.7	U	1.7	1.3	UD	1.3
Endosulfan II	1.3	UD	1.3	1.3	UD	1.3	1.7	U	1.7	1.3	UD	1.3
Endosulfan sulfate	1.3	UD	1.3	2.2	JD	1.3	1.7	U	1.7	1.3	UD	1.3
Endrin	1.3	UD	1.3	1.3	UD	1.3	1.7	U	1.7	1.5	JDI	1.3
Endrin aldehyde	5.5	DI	1.3	1.3	UD	1.3	1.7	U	1.7	1.3	UD	1.3
Endrin ketone	1.3	UD	1.3	1.3	UD	1.3	1.7	U	1.7	1.3	UD	1.3
gamma-BHC (Lindane)	1.3	UD	1.3	1.3	UD	1.3	1.7	U	1.7	1.3	UD	1.3
gamma-Chlordane	1.3	UD	1.3	2.5	JD	1.3	1.7	U	1.7	1.3	UD	1.3
Heptachlor	1.3	UD	1.3	1.3	UD	1.3	1.7	U	1.7	1.3	UD	1.3
Heptachlor epoxide	1.3	UD	1.3	1.3	UD	1.3	1.7	U	1.7	1.3	UD	1.3
Methoxychlor	1.3	UD	1.3	1.3	UD	1.3	3.3	U	3.3	1.3	UD	1.3
Toxaphene	13	UDJ	13	13	UDJ	13	68	U	68	13	UDJ	13
Herbicides												
2,4,5-T	17	U	17	17	U	17	20	U	20	17	U	17
2,4-D	34	U	34	34	U	34	81	U	81	13	J	34
2,4,5-TP	17	U	17	17	U	17	20	U	20	17	U	17
MCPP							8100	U	8100			
MCPA							8100	U	8100			
Dinoseb	17	U	17	17	U	17	25	UN	25	17	U	17
2,4-DB	17	U	17	9.0	J	17	81	U	81	11	J	17
Dalapon	29	J	34	48		34	40	U	40	32	J	33
Dicamba	34	U	34	34	U	34	40	U	40	33	U	33
Dichloroprop	34	U	34	34	U	34	81	U	81	33	U	33
Pentachlorophenol	14	J	17	17	U	17				17	U	17
Picloram	17	UJ	17	17	UJ	17				17	UJ	17

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J12X63 Area 4 A3			J12X64 Area 4 A4			J13V12 Area 5 A1			J13V10 Area 5 A2		
	Sample Date 7/25/06			Sample Date 7/25/06			Sample Date 12/7/06			Sample Date 12/7/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL
Polychlorinated Biphenyls												
Aroclor-1016	13	U	13	13	U	13	14	UJ	14	14	UJ	14
Aroclor-1221	13	U	13	13	U	13	14	U	14	14	U	14
Aroclor-1232	13	U	13	13	U	13	14	U	14	14	U	14
Aroclor-1242	13	U	13	13	U	13	14	U	14	14	U	14
Aroclor-1248	13	U	13	13	U	13	14	U	14	14	U	14
Aroclor-1254	13	U	13	13	U	13	14	U	14	14	U	14
Aroclor-1260	13	U	13	13	U	13	14	UJ	14	14	UJ	14
Semivolatile Organic Compounds												
1,2,4-Trichlorobenzene	340	UJ	340	340	UJ	340	350	UJ	350	350	UJ	350
1,2-Dichlorobenzene	340	U	340	340	U	340	350	U	350	350	U	350
1,3-Dichlorobenzene	340	U	340	340	U	340	350	U	350	350	U	350
1,4-Dichlorobenzene	340	U	340	340	U	340	350	U	350	350	U	350
2,4,5-Trichlorophenol	840	U	840	840	U	840	880	U	880	880	U	880
2,4,6-Trichlorophenol	340	U	340	340	U	340	350	U	350	350	U	350
2,4-Dichlorophenol	340	U	340	340	U	340	350	UJ	350	350	UJ	350
2,4-Dimethylphenol	340	U	340	340	U	340	350	UJ	350	350	UJ	350
2,4-Dinitrophenol	840	U	840	840	U	840	880	U	880	880	U	880
2,4-Dinitrotoluene	340	U	340	340	U	340	350	U	350	350	U	350
2,6-Dinitrotoluene	340	U	340	340	U	340	350	U	350	350	U	350
2-Chloronaphthalene	340	U	340	340	U	340	350	U	350	350	U	350
2-Chlorophenol	340	U	340	340	U	340	350	U	350	350	U	350
2-Methylnaphthalene	340	UJ	340	340	UJ	340	350	UJ	350	350	UJ	350
2-Methylphenol (cresol, o-)	340	U	340	340	U	340	350	U	350	350	U	350
2-Nitroaniline	840	U	840	840	U	840	880	U	880	880	U	880
2-Nitrophenol	340	U	340	340	U	340	350	UJ	350	350	UJ	350
3,3'-Dichlorobenzidine	340	U	340	340	U	340	350	U	350	350	U	350
3-Nitroaniline	840	U	840	840	U	840	880	U	880	880	U	880
4,6-Dinitro-2-methylphenol	840	U	840	840	U	840	880	U	880	880	U	880
4-Bromophenyl-phenylether	340	U	340	340	U	340	350	U	350	350	U	350
4-Chloro-3-methylphenol	340	U	340	340	U	340	350	UJ	350	350	UJ	350
4-Chloroaniline	340	U	340	340	U	340	350	U	350	350	U	350
4-Chlorophenyl-phenylether	340	U	340	340	U	340	350	U	350	350	U	350
4-Methylphenol (p-cresol)	340	U	340	340	U	340	350	U	350	350	U	350
4-Nitroaniline	840	U	840	840	U	840	880	UR	880	880	UR	880
4-Nitrophenol	840	U	840	840	U	840	880	U	880	880	U	880
Acenaphthene	340	U	340	340	U	340	350	U	350	350	U	350
Acenaphthylene	340	U	340	340	U	340	350	U	350	350	U	350
Anthracene	340	U	340	340	U	340	350	U	350	350	U	350
Benzo(a)anthracene	340	U	340	340	U	340	350	U	350	350	U	350
Benzo(a)pyrene	340	U	340	340	U	340	350	U	350	350	U	350
Benzo(b)fluoranthene	340	U	340	340	U	340	350	U	350	350	U	350
Benzo(g,h,i)perylene	340	U	340	340	U	340	350	U	350	350	U	350
Benzo(k)fluoranthene	340	U	340	340	U	340	350	U	350	350	U	350
bis(2-Chloro-1-methylethyl)ether	340	U	340	340	U	340	350	U	350	350	U	350
bis(2-Chloroethoxy)methane	340	U	340	340	U	340	350	U	350	350	U	350
bis(2-Chloroethyl)ether	340	U	340	340	U	340	350	U	350	350	U	350
bis(2-Ethylhexyl)phthalate	600	B	340	65	JB	340	58	JB	350	350	U	350

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Constituents	J12X63 Area 4 A3			J12X64 Area 4 A4			J13V12 Area 5 A1			J13V10 Area 5 A2		
	Sample Date 7/25/06			Sample Date 7/25/06			Sample Date 12/7/06			Sample Date 12/7/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	MDL	µg/kg	Q	PQL
Semivolatile Organic Compounds (continued)												
Butylbenzylphthalate	340	U	340	340	U	340	350	U	350	350	U	350
Carbazole	340	U	340	340	U	340	350	U	350	350	U	350
Chrysene	340	U	340	340	U	340	350	U	350	350	U	350
Di-n-butylphthalate	58	JB	340	62	JB	340	350	U	350	350	U	350
Di-n-octylphthalate	340	U	340	340	U	340	350	U	350	350	U	350
Dibenz(a,h)anthracene	340	U	340	340	U	340	350	U	350	350	U	350
Dibenzofuran	340	U	340	340	U	340	350	U	350	350	U	350
Diethylphthalate	340	U	340	340	U	340	350	U	350	350	U	350
Dimethylphthalate	340	U	340	340	U	340	350	U	350	350	U	350
Fluoranthene	340	U	340	340	U	340	350	U	350	350	U	350
Fluorene	340	U	340	340	U	340	350	U	350	350	U	350
Hexachlorobenzene	340	U	340	340	U	340	350	U	350	350	U	350
Hexachlorobutadiene	340	U	340	340	U	340	350	U	350	350	U	350
Hexachlorocyclopentadiene	340	U	340	340	U	340	350	U	350	880	U	880
Hexachloroethane	340	U	340	340	U	340	350	U	350	350	U	350
Indeno(1,2,3-cd)pyrene	340	U	340	340	U	340	350	U	350	350	U	350
Isophorone	340	U	340	340	U	340	350	UJ	350	350	UJ	350
N-Nitroso-di-n-dipropylamine	340	U	340	340	U	340	350	U	350	350	U	350
N-Nitrosodiphenylamine	340	U	340	340	U	340	350	UJ	350	350	UJ	350
Naphthalene	340	U	340	340	U	340	350	U	350	350	U	350
Nitrobenzene	340	U	340	340	U	340	350	UJ	350	350	UJ	350
Pentachlorophenol	840	U	840	840	U	840	880	U	880	880	U	880
Phenanthrene	340	U	340	340	U	340	350	U	350	350	U	350
Phenol	340	U	340	22	JB	340	350	U	350	350	U	350
Pyrene	340	U	340	340	U	340	350	U	350	350	U	350

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J12X63 Area 4 A3			J12X64 Area 4 A4			J13V12 Area 5 A1			J13V10 Area 5 A2		
	Sample Date 7/25/06			Sample Date 7/25/06			Sample Date 12/7/06			Sample Date 12/7/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	MDL	µg/kg	Q	PQL
Volatile Organic Compounds												
1,1,1-Trichloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,1,2,2-Tetrachloroethane	5	U	5	5	U	5	5	UJ	5	5	UJ	5
1,1,2-Trichloroethane	5	U	5	5	U	5	5	UJ	5	5	UJ	5
1,1-Dichloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,1-Dichloroethene	5	U	5	5	U	5	5	U	5	5	U	5
1,2-Dichloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,2-Dichloroethene (total)	5	U	5	5	U	5	5	U	5	5	U	5
1,2-Dichloropropane	5	U	5	5	U	5	5	U	5	5	U	5
2-Butanone	10	U	10	10	U	10	10	U	10	10	U	10
2-Hexanone	10	U	10	10	U	10	10	U	10	10	U	10
4-Methyl-2-pentanone	10	U	10	10	U	10	10	UJ	10	10	UJ	10
Acetone	11		10	12		10	12	B	10	10	U	10
Benzene	5	U	5	5	U	5	5	U	5	5	U	5
Bromodichloromethane	5	U	5	5	U	5	5	U	5	5	U	5
Bromoform	5	U	5	5	U	5	5	UJ	5	5	UJ	5
Bromomethane	10	U	10	10	U	10	10	U	10	10	U	10
Carbon disulfide	5	U	5	5	U	5	5	U	5	5	U	5
Carbon tetrachloride	17		5	5		5	5	U	5	5	U	5
Chlorobenzene	5	U	5	5	U	5	5	U	5	5	U	5
Chloroethane	10	U	10	10	U	10	10	U	10	10	U	10
Chloroform	5	U	5	5	U	5	5	U	5	5	U	5
Chloromethane	10	U	10	10	U	10	10	U	10	10	U	10
cis-1,2-Dichloroethylene	5	U	5	5	U	5	5	U	5	5	U	5
cis-1,3-Dichloropropene	5	U	5	5	U	5	5	U	5	5	U	5
Dibromochloromethane	5	U	5	5	U	5	5	UJ	5	5	UJ	5
Ethylbenzene	5	U	5	5	U	5	5	U	5	5	U	5
Methylene chloride	12		5	4	J	5	13	B	5	12	B	5
Styrene	5	U	5	5	U	5	5	U	5	5	U	5
Tetrachloroethene	5	U	5	5	U	5	5	U	5	5	U	5
Toluene	5	U	5	5	U	5	5	U	5	5	U	5
trans-1,2-Dichloroethylene	5	U	5	5	U	5	5	U	5	5	U	5
trans-1,3-Dichloropropene	5	U	5	5	U	5	5	UJ	5	5	UJ	5
Trichloroethene	5	U	5	5	U	5	5	U	5	5	U	5
Vinyl chloride	10	U	10	10	U	10	10	U	10	10	U	10
Xylenes (total)	5	U	5	5	U	5	5	U	5	5	U	5

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Constituents	J12X63 Area 4 A3			J12X64 Area 4 A4		
	Sample Date 7/25/06			Sample Date 7/25/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL
Pesticides						
Aldrin	1.3	UD	1.3	1.3	UD	1.3
alpha-BHC	1.3	UD	1.3	1.3	UD	1.3
alpha-Chlordane	1.3	UD	1.3	1.3	UD	1.3
beta-BHC	1.3	UD	1.3	1.3	UD	1.3
delta-BHC	1.3	UD	1.3	1.3	UD	1.3
Dichlorodiphenyldichloroethane	1.3	UD	1.3	1.3	UD	1.3
Dichlorodiphenyldichloroethylene	1.3	UD	1.3	1.3	UD	1.3
Dichlorodiphenyltrichloroethane	1.3	UD	1.3	1.3	UD	1.3
Dieldrin	1.3	UD	1.3	1.3	UD	1.3
Endosulfan I	1.3	UD	1.3	1.3	UD	1.3
Endosulfan II	1.3	UD	1.3	1.3	UD	1.3
Endosulfan sulfate	1.3	UD	1.3	1.3	UD	1.3
Endrin	1.3	UD	1.3	1.3	UD	1.3
Endrin aldehyde	1.3	UD	1.3	1.3	UD	1.3
Endrin ketone	1.3	UD	1.3	1.3	UD	1.3
gamma-BHC (Lindane)	1.3	UD	1.3	1.3	UD	1.3
gamma-Chlordane	1.3	UD	1.3	1.3	UD	1.3
Heptachlor	1.3	UD	1.3	1.3	UD	1.3
Heptachlor epoxide	1.3	UD	1.3	1.3	UD	1.3
Methoxychlor	1.3	UD	1.3	1.3	UD	1.3
Toxaphene	13	UDJ	13	13	UDJ	13
Herbicides						
2,4,5-T	17	U	17	17	U	17
2,4-D	34	U	34	33	U	33
2,4,5-TP	17	U	17	17	U	17
Dinoseb	17	U	17	17	U	17
2,4-DB	17	U	17	19		17
Dalapon	34	U	34	29	J	33
Dicamba	34	U	34	33	U	33
Dichloroprop	47	I	34	190	I	33
Pentachlorophenol	17	U	17	17	U	17
Picloram	17	UJ	17	17	UJ	17

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J13V13 Area 5 A3			J13V11 Area 5 A4			J12XC2 Area 6 A1			J12XC3 Area 6 A2		
	Sample Date 12/7/06			Sample Date 12/7/06			Sample Date 7/25/06			Sample Date 7/25/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL
Polychlorinated Biphenyls												
Aroclor-1016	14	UJ	14	14	UJ	14	13	U	13	13	U	13
Aroclor-1221	14	U	14	14	U	14	13	U	13	13	U	13
Aroclor-1232	14	U	14	14	U	14	13	U	13	13	U	13
Aroclor-1242	14	U	14	14	U	14	13	U	13	13	U	13
Aroclor-1248	14	U	14	14	U	14	13	U	13	13	U	13
Aroclor-1254	14	U	14	14	U	14	13	U	13	13	U	13
Aroclor-1260	14	UJ	14	14	UJ	14	13	U	13	13	U	13
Semivolatile Organic Compounds												
1,2,4-Trichlorobenzene	350	UJ	350	360	UJ	360	330	UJ	330	340	UJ	340
1,2-Dichlorobenzene	350	U	350	360	U	360	330	U	330	340	U	340
1,3-Dichlorobenzene	350	U	350	360	U	360	330	U	330	340	U	340
1,4-Dichlorobenzene	350	U	350	360	U	360	330	U	330	340	U	340
2,4,5-Trichlorophenol	870	U	870	890	U	890	840	U	840	840	U	840
2,4,6-Trichlorophenol	350	U	350	360	U	360	330	U	330	340	U	340
2,4-Dichlorophenol	350	UJ	350	360	UJ	360	330	U	330	340	U	340
2,4-Dimethylphenol	350	UJ	350	360	UJ	360	330	U	330	340	U	340
2,4-Dinitrophenol	870	U	870	890	U	890	840	U	840	840	U	840
2,4-Dinitrotoluene	350	U	350	360	U	360	330	U	330	340	U	340
2,6-Dinitrotoluene	350	U	350	360	U	360	330	U	330	340	U	340
2-Chloronaphthalene	350	U	350	360	U	360	330	U	330	340	U	340
2-Chlorophenol	350	U	350	360	U	360	330	U	330	340	U	340
2-Methylnaphthalene	350	UJ	350	360	UJ	360	330	UJ	330	340	UJ	340
2-Methylphenol (cresol, o-)	350	U	350	360	U	360	330	U	330	340	U	340
2-Nitroaniline	870	U	870	890	U	890	840	U	840	840	U	840
2-Nitrophenol	350	UJ	350	360	UJ	360	330	U	330	340	U	340
3,3'-Dichlorobenzidine	350	U	350	360	U	360	330	U	330	340	U	340
3-Nitroaniline	870	U	870	890	U	890	840	U	840	840	U	840
4,6-Dinitro-2-methylphenol	870	U	870	890	U	890	840	U	840	840	U	840
4-Bromophenyl-phenylether	350	U	350	360	U	360	330	U	330	340	U	340
4-Chloro-3-methylphenol	350	UJ	350	360	UJ	360	330	U	330	340	U	340
4-Chloroaniline	350	U	350	360	U	360	330	U	330	340	U	340
4-Chlorophenyl-phenylether	350	U	350	360	U	360	330	U	330	340	U	340
4-Methylphenol (p-cresol)	350	U	350	360	U	360	330	U	330	340	U	340
4-Nitroaniline	870	UR	870	890	UR	890	840	U	840	840	U	840
4-Nitrophenol	870	U	870	890	U	890	840	U	840	840	U	840
Acenaphthene	350	U	350	360	U	360	330	U	330	340	U	340
Acenaphthylene	350	U	350	360	U	360	330	U	330	340	U	340
Anthracene	350	U	350	360	U	360	330	U	330	340	U	340
Benzo(a)anthracene	350	U	350	360	U	360	330	U	330	340	U	340
Benzo(a)pyrene	350	U	350	360	U	360	330	U	330	340	U	340
Benzo(b)fluoranthene	350	U	350	360	U	360	330	U	330	340	U	340
Benzo(g,h,i)perylene	350	U	350	360	U	360	330	U	330	340	U	340
Benzo(k)fluoranthene	350	U	350	360	U	360	330	U	330	340	U	340
bis(2-Chloro-1-methylethyl)ether	350	U	350	360	U	360	330	U	330	340	U	340
bis(2-Chloroethoxy)methane	350	U	350	360	U	360	330	U	330	340	U	340
bis(2-Chloroethyl)ether	350	U	350	360	U	360	330	U	330	340	U	340
bis(2-Ethylhexyl)phthalate	350	U	350	22	JB	360	19	JB	330	170	JB	340

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J13V13 Area 5 A3			J13V11 Area 5 A4			J12XC2 Area 6 A1			J12XC3 Area 6 A2		
	Sample Date 12/7/06			Sample Date 12/7/06			Sample Date 7/25/06			Sample Date 7/25/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	MDL	µg/kg	Q	PQL
Semivolatile Organic Compounds (continued)												
Butylbenzylphthalate	350	U	350	360	U	360	330	U	330	24	J	340
Carbazole	350	U	350	360	U	360	330	U	330	340	U	340
Chrysene	350	U	350	360	U	360	330	U	330	340	U	340
Di-n-butylphthalate	350	U	350	360	U	360	75	JB	330	84	JB	340
Di-n-octylphthalate	350	U	350	360	U	360	330	U	330	340	U	340
Dibenz(a,h)anthracene	350	U	350	360	U	360	330	U	330	340	U	340
Dibenzofuran	350	U	350	360	U	360	330	U	330	340	U	340
Diethylphthalate	350	U	350	360	U	360	330	U	330	340	U	340
Dimethylphthalate	350	U	350	360	U	360	330	U	330	340	U	340
Fluoranthene	350	U	350	360	U	360	330	U	330	340	U	340
Fluorene	350	U	350	360	U	360	330	U	330	340	U	340
Hexachlorobenzene	350	U	350	360	U	360	330	U	330	340	U	340
Hexachlorobutadiene	350	U	350	360	U	360	330	U	330	340	U	340
Hexachlorocyclopentadiene	350	U	350	360	U	360	330	U	330	340	U	340
Hexachloroethane	350	U	350	360	U	360	330	U	330	340	U	340
Indeno(1,2,3-cd)pyrene	350	U	350	360	U	360	330	U	330	340	U	340
Isophorone	350	UJ	350	360	UJ	360	330	U	330	340	U	340
N-Nitroso-di-n-dipropylamine	350	U	350	360	U	360	330	U	330	340	U	340
N-Nitrosodiphenylamine	350	UJ	350	360	UJ	360	330	U	330	340	U	340
Naphthalene	350	U	350	360	U	360	330	U	330	340	U	340
Nitrobenzene	350	UJ	350	360	UJ	360	330	U	330	340	U	340
Pentachlorophenol	870	U	870	890	U	890	840	U	840	840	U	840
Phenanthrene	350	U	350	360	U	360	330	U	330	340	U	340
Phenol	350	U	350	360	U	360	330	U	330	23	JB	340
Pyrene	350	U	350	360	U	360	330	U	330	340	U	340

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J13V13 Area 5 A3			J13V11 Area 5 A4			J12XC2 Area 6 A1			J12XC3 Area 6 A2		
	Sample Date 12/7/06			Sample Date 12/7/06			Sample Date 7/25/06			Sample Date 7/25/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	MDL	µg/kg	Q	PQL
Volatile Organic Compounds												
1,1,1-Trichloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,1,2,2-Tetrachloroethane	5	UJ	5	5	UJ	5	5	U	5	5	U	5
1,1,2-Trichloroethane	5	UJ	5	5	UJ	5	5	U	5	5	U	5
1,1-Dichloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,1-Dichloroethene	5	U	5	5	U	5	5	U	5	5	U	5
1,2-Dichloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,2-Dichloroethene (total)	5	U	5	5	U	5	5	U	5	5	U	5
1,2-Dichloropropane	5	U	5	5	U	5	5	U	5	5	U	5
2-Butanone	10	U	10	10	U	10	10	U	10	10	U	10
2-Hexanone	10	U	10	10	U	10	10	U	10	10	U	10
4-Methyl-2-pentanone	10	UJ	10	10	UJ	10	10	U	10	10	U	10
Acetone	19	B	10	13		10	10	U	10	6	J	10
Benzene	5	U	5	5	U	5	5	U	5	5	U	5
Bromodichloromethane	5	U	5	5	U	5	5	U	5	5	U	5
Bromoform	5	UJ	5	5	UJ	5	5	U	5	5	U	5
Bromomethane	10	U	10	10	U	10	10	U	10	10	U	10
Carbon disulfide	5	U	5	5	U	5	5	U	5	5	U	5
Carbon tetrachloride	5	U	5	5	U	5	5		5	6		5
Chlorobenzene	5	U	5	5	U	5	5	U	5	5	U	5
Chloroethane	10	U	10	10	U	10	10	U	10	10	U	10
Chloroform	5	U	5	5	U	5	5	U	5	5	U	5
Chloromethane	10	U	10	10	U	10	10	U	10	10	U	10
cis-1,2-Dichloroethylene	5	U	5	5	U	5	5	U	5	5	U	5
cis-1,3-Dichloropropene	5	U	5	5	U	5	5	U	5	5	U	5
Dibromochloromethane	5	UJ	5	5	UJ	5	5	U	5	5	U	5
Ethylbenzene	5	U	5	5	U	5	5	U	5	5	U	5
Methylene chloride	12	B	5	12	B	5	5	U	5	6		5
Styrene	5	U	5	5	U	5	5	U	5	5	U	5
Tetrachloroethene	5	U	5	5	U	5	5	U	5	5	U	5
Toluene	5	U	5	5	U	5	5	U	5	5	U	5
trans-1,2-Dichloroethylene	5	U	5	5	U	5	5	U	5	5	U	5
trans-1,3-Dichloropropene	5	UJ	5	5	UJ	5	5	U	5	5	U	5
Trichloroethene	5	U	5	5	U	5	5	U	5	5	U	5
Vinyl chloride	10	U	10	10	U	10	10	U	10	10	U	10
Xylenes (total)	5	U	5	5	U	5	5	U	5	5	U	5

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J12XC2 Area 6 A1			J12XC3 Area 6 A2		
	Sample Date 7/25/06			Sample Date 7/25/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL
Pesticides						
Aldrin	1.3	UD	1.3	1.3	UD	1.3
alpha-BHC	1.3	UD	1.3	1.3	UD	1.3
alpha-Chlordane	1.3	UD	1.3	1.3	UD	1.3
beta-BHC	1.3	UD	1.3	1.3	UD	1.3
delta-BHC	1.3	UD	1.3	1.3	UD	1.3
Dichlorodiphenyldichloroethane	1.3	UD	1.3	1.3	UD	1.3
Dichlorodiphenyldichloroethylene	1.3	UD	1.3	1.3	UD	1.3
Dichlorodiphenyltrichloroethane	1.3	UD	1.3	1.3	UD	1.3
Dieldrin	1.3	UD	1.3	1.3	UD	1.3
Endosulfan I	1.3	UD	1.3	1.3	UD	1.3
Endosulfan II	1.3	UD	1.3	1.3	UD	1.3
Endosulfan sulfate	1.3	UD	1.3	1.3	UD	1.3
Endrin	1.3	UD	1.3	1.3	UD	1.3
Endrin aldehyde	1.3	UD	1.3	1.3	UD	1.3
Endrin ketone	1.3	UD	1.3	1.3	UD	1.3
gamma-BHC (Lindane)	1.3	UD	1.3	1.3	UD	1.3
gamma-Chlordane	1.3	UD	1.3	1.3	UD	1.3
Heptachlor	1.3	UD	1.3	1.3	UD	1.3
Heptachlor epoxide	1.3	UD	1.3	1.3	UD	1.3
Methoxychlor	1.3	UD	1.3	1.3	UD	1.3
Toxaphene	13	UDJ	13	13	UDJ	13
Herbicides						
2,4,5-T	17	U	17	17	U	17
2,4-D	33	U	33	34	U	34
2,4,5-TP	17	U	17	12	J	17
Dinoseb	17	U	17	17	U	17
2,4-DB	17	U	17	43	I	17
Dalapon	30	J	33	38		34
Dicamba	33	U	33	34	U	34
Dichloroprop	33	U	33	91		34
Pentachlorophenol	17	U	17	17	U	17
Picloram	17	UJ	17	17	UJ	17

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J12XC4 Area 6 A3			J12XC5 Area 6 A4			J12XC6 Area 7 A1			J12XC7 Area 7 A2		
	Sample Date 7/25/06			Sample Date 7/25/06			Sample Date 7/26/06			Sample Date 7/26/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL
Polychlorinated Biphenyls												
Aroclor-1016	13	U	13	13	U	13	13	U	13	13	U	13
Aroclor-1221	13	U	13	13	U	13	13	U	13	13	U	13
Aroclor-1232	13	U	13	13	U	13	13	U	13	13	U	13
Aroclor-1242	13	U	13	13	U	13	13	U	13	13	U	13
Aroclor-1248	13	U	13	13	U	13	13	U	13	13	U	13
Aroclor-1254	13	U	13	13	U	13	13	U	13	13	U	13
Aroclor-1260	13	U	13	13	U	13	13	U	13	13	U	13
Semivolatile Organic Compounds												
1,2,4-Trichlorobenzene	340	UJ	340	340	UJ	340	330	UJ	330	330	UJ	330
1,2-Dichlorobenzene	340	U	340	340	U	340	330	U	330	330	U	330
1,3-Dichlorobenzene	340	U	340	340	U	340	330	U	330	330	U	330
1,4-Dichlorobenzene	340	U	340	340	U	340	330	U	330	330	U	330
2,4,5-Trichlorophenol	840	U	840	840	U	840	840	U	840	840	U	840
2,4,6-Trichlorophenol	340	U	340	340	U	340	330	U	330	330	U	330
2,4-Dichlorophenol	340	U	340	340	U	340	330	U	330	330	U	330
2,4-Dimethylphenol	340	U	340	340	U	340	330	U	330	330	U	330
2,4-Dinitrophenol	840	U	840	840	U	840	840	UJ	840	840	UJ	840
2,4-Dinitrotoluene	340	U	340	340	U	340	330	U	330	330	U	330
2,6-Dinitrotoluene	340	U	340	340	U	340	330	U	330	330	U	330
2-Chloronaphthalene	340	U	340	340	U	340	330	U	330	330	U	330
2-Chlorophenol	340	U	340	340	U	340	330	U	330	330	U	330
2-Methylnaphthalene	340	UJ	340	340	UJ	340	26	J	330	330	U	330
2-Methylphenol (cresol, o-)	340	U	340	340	U	340	330	U	330	330	U	330
2-Nitroaniline	840	U	840	840	U	840	840	U	840	840	U	840
2-Nitrophenol	340	U	340	340	U	340	330	U	330	330	U	330
3,3'-Dichlorobenzidine	340	U	340	340	U	340	330	U	330	330	U	330
3-Nitroaniline	840	U	840	840	U	840	840	U	840	840	U	840
4,6-Dinitro-2-methylphenol	840	U	840	840	U	840	840	U	840	840	U	840
4-Bromophenyl-phenylether	340	U	340	340	U	340	330	U	330	330	U	330
4-Chloro-3-methylphenol	340	U	340	340	U	340	330	U	330	330	U	330
4-Chloroaniline	340	U	340	340	U	340	330	U	330	330	U	330
4-Chlorophenyl-phenylether	340	U	340	340	U	340	330	U	330	330	U	330
4-Methylphenol (p-cresol)	340	U	340	340	U	340	330	U	330	330	U	330
4-Nitroaniline	840	U	840	840	U	840	840	U	840	840	U	840
4-Nitrophenol	840	U	840	840	U	840	840	U	840	840	U	840
Acenaphthene	340	U	340	340	U	340	330	U	330	330	U	330
Acenaphthylene	340	U	340	340	U	340	330	U	330	330	U	330
Anthracene	340	U	340	340	U	340	330	U	330	330	U	330
Benzo(a)anthracene	340	U	340	340	U	340	330	U	330	330	U	330
Benzo(a)pyrene	340	U	340	340	U	340	330	U	330	330	U	330
Benzo(b)fluoranthene	340	U	340	340	U	340	330	U	330	330	U	330
Benzo(g,h,i)perylene	340	U	340	340	U	340	330	U	330	330	U	330
Benzo(k)fluoranthene	340	U	340	340	U	340	330	U	330	330	U	330
bis(2-Chloro-1-methylethyl)ether	340	U	340	340	U	340	330	U	330	330	U	330
bis(2-Chloroethoxy)methane	340	U	340	340	U	340	330	U	330	330	U	330
bis(2-Chloroethyl)ether	340	U	340	340	U	340	330	U	330	330	U	330
bis(2-Ethylhexyl)phthalate	26	JB	340	430	B	340	330	U	330	330	U	330

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Constituents	J12XC4 Area 6 A3			J12XC5 Area 6 A4			J12XC6 Area 7 A1			J12XC7 Area 7 A2		
	Sample Date 7/25/06			Sample Date 7/25/06			Sample Date 7/26/06			Sample Date 7/26/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	MDL	µg/kg	Q	PQL
Semivolatile Organic Compounds (continued)												
Butylbenzylphthalate	340	U	340	340	U	340	330	U	330	330	U	330
Carbazole	340	U	340	340	U	340	330	U	330	330	U	330
Chrysene	340	U	340	340	U	340	330	U	330	330	U	330
Di-n-butylphthalate	49	JB	340	52	JB	340	330	U	330	330	U	330
Di-n-octylphthalate	340	U	340	340	U	340	330	U	330	330	U	330
Dibenz(a,h)anthracene	340	U	340	340	U	340	330	U	330	330	U	330
Dibenzofuran	340	U	340	340	U	340	330	U	330	330	U	330
Diethylphthalate	340	U	340	340	U	340	330	U	330	25	J	330
Dimethylphthalate	340	U	340	340	U	340	330	U	330	330	U	330
Fluoranthene	340	U	340	340	U	340	330	U	330	330	U	330
Fluorene	340	U	340	340	U	340	330	U	330	330	U	330
Hexachlorobenzene	340	U	340	340	U	340	330	U	330	330	U	330
Hexachlorobutadiene	340	U	340	340	U	340	330	U	330	330	U	330
Hexachlorocyclopentadiene	340	U	340	340	U	340	330	U	330	330	U	330
Hexachloroethane	340	U	340	340	U	340	330	U	330	330	U	330
Indeno(1,2,3-cd)pyrene	340	U	340	340	U	340	330	U	330	330	U	330
Isophorone	340	U	340	340	U	340	330	U	330	330	U	330
N-Nitroso-di-n-dipropylamine	340	U	340	340	U	340	330	U	330	330	U	330
N-Nitrosodiphenylamine	340	U	340	340	U	340	330	U	330	330	U	330
Naphthalene	340	U	340	340	U	340	19	J	330	330	U	330
Nitrobenzene	340	U	340	340	U	340	330	U	330	330	U	330
Pentachlorophenol	840	U	840	840	U	840	840	U	840	840	U	840
Phenanthrene	340	U	340	340	U	340	330	U	330	330	U	330
Phenol	340	U	340	340	U	340	330	U	330	330	U	330
Pyrene	340	U	340	340	U	340	330	U	330	330	U	330

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J12XC4 Area 6 A3			J12XC5 Area 6 A4			J12XC6 Area 7 A1			J12XC7 Area 7 A2		
	Sample Date 7/25/06			Sample Date 7/25/06			Sample Date 7/26/06			Sample Date 7/26/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	MDL	µg/kg	Q	PQL
Volatile Organic Compounds												
1,1,1-Trichloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,1,2,2-Tetrachloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,1,2-Trichloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,1-Dichloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,1-Dichloroethene	5	U	5	5	U	5	5	U	5	5	U	5
1,2-Dichloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,2-Dichloroethene (total)	5	U	5	5	U	5	5	U	5	5	U	5
1,2-Dichloropropane	5	U	5	5	U	5	5	U	5	5	U	5
2-Butanone	10	U	10	10	U	10	10	U	10	10	U	10
2-Hexanone	10	U	10	10	U	10	10	U	10	10	U	10
4-Methyl-2-pentanone	10	U	10	10	U	10	10	U	10	10	U	10
Acetone	7	J	10	8	J	10	8	J	10	10	J	10
Benzene	5	U	5	5	U	5	5	U	5	5	U	5
Bromodichloromethane	5	U	5	5	U	5	5	U	5	5	U	5
Bromoform	5	U	5	5	U	5	5	U	5	5	U	5
Bromomethane	10	U	10	10	U	10	10	U	10	10	U	10
Carbon disulfide	5	U	5	5	U	5	5	U	5	5	U	5
Carbon tetrachloride	2	J	5	7		5	9		5	10		5
Chlorobenzene	5	U	5	5	U	5	5	U	5	5	U	5
Chloroethane	10	U	10	10	U	10	10	U	10	10	U	10
Chloroform	5	U	5	5	U	5	5	U	5	5	U	5
Chloromethane	10	U	10	10	U	10	10	U	10	10	U	10
cis-1,2-Dichloroethylene	5	U	5	5	U	5	5	U	5	5	U	5
cis-1,3-Dichloropropene	5	U	5	5	U	5	5	U	5	5	U	5
Dibromochloromethane	5	U	5	5	U	5	5	U	5	5	U	5
Ethylbenzene	5	U	5	5	U	5	5	U	5	5	U	5
Methylene chloride	3	J	5	10		5	10		5	5	U	5
Styrene	5	U	5	5	U	5	5	U	5	5	U	5
Tetrachloroethene	5	U	5	5	U	5	5	U	5	5	U	5
Toluene	5	U	5	5	U	5	5	U	5	5	U	5
trans-1,2-Dichloroethylene	5	U	5	5	U	5	5	U	5	5	U	5
trans-1,3-Dichloropropene	5	U	5	5	U	5	5	U	5	5	U	5
Trichloroethene	5	U	5	5	U	5	5	U	5	5	U	5
Vinyl chloride	10	U	10	10	U	10	10	U	10	10	U	10
Xylenes (total)	5	U	5	5	U	5	5	U	5	5	U	5

Attachment 1
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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J12XC4 Area 6 A3			J12XC5 Area 6 A4			J12XC6 Area 7 A1			J12XC7 Area 7 A2		
	Sample Date 7/25/06			Sample Date 7/25/06			Sample Date 7/26/06			Sample Date 7/26/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	MDL	µg/kg	Q	PQL
Pesticides												
Aldrin	1.3	UD	1.3	0.50	JD	1.3	1.3	UDJ	1.3	1.3	UDJ	1.3
alpha-BHC	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
alpha-Chlordane	1.3	UD	1.3	1.3	UD	1.3	12	IDJ	1.3	1.3	UD	1.3
beta-BHC	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
delta-BHC	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Dichlorodiphenyldichloroethane	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Dichlorodiphenyldichloroethylene	1.3	UD	1.3	1.3	UD	1.3	15	DJ	1.3	1.3	UD	1.3
Dichlorodiphenyltrichloroethane	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Dieldrin	1.3	UD	1.3	1.3	UD	1.3	1.7	IDJ	1.3	1.3	UD	1.3
Endosulfan I	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Endosulfan II	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Endosulfan sulfate	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Endrin	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Endrin aldehyde	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Endrin ketone	1.3	UD	1.3	1.3	UD	1.3	7.8	DJ	1.3	1.3	UD	1.3
gamma-BHC (Lindane)	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
gamma-Chlordane	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Heptachlor	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Heptachlor epoxide	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Methoxychlor	1.3	UD	1.3	1.3	UD	1.3	9.1	IDJ	1.3	1.3	UD	1.3
Toxaphene	13	UDJ	13	13	UDJ	13	13	UDJ	13	13	UDJ	13
Herbicides												
2,4,5-T	17	U	17	17	U	17	17	UJ	17	17	UJ	17
2,4-D	62	I	34	34	U	34	26	J	33	33	U	33
2,4,5-TP	12	J	17	17	U	17	17	U	17	17	U	17
Dinoseb	17	U	17	17	U	17	17	U	17	17	U	17
2,4-DB	17	U	17	17	U	17	27	J	17	17	UJ	17
Dalapon	34		34	31	J	34	32	J	33	20	J	33
Dicamba	34	U	34	34	U	34	33	UJ	33	13	J	33
Dichloroprop	120		34	34	U	34	33	U	33	37		33
Pentachlorophenol	17	U	17	17	U	17	17	U	17	17	U	17
Picloram	17	UJ	17	17	UJ	17	17	UJ	17	14	J	17

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J12XC8 Area 7 A3			J12XC9 Area 7 A4			J12WK0 OB A1			J12WK1 OB A2		
	Sample Date 7/26/06			Sample Date 7/26/06			Sample Date 7/11/06			Sample Date 7/11/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL
Polychlorinated Biphenyls												
Aroclor-1016	13	U	13	13	U	13	13	U	13	13	U	13
Aroclor-1221	13	U	13	13	U	13	13	U	13	13	U	13
Aroclor-1232	13	U	13	13	U	13	13	U	13	13	U	13
Aroclor-1242	13	U	13	13	U	13	13	U	13	13	U	13
Aroclor-1248	13	U	13	13	U	13	13	U	13	13	U	13
Aroclor-1254	13	U	13	13	U	13	13	U	13	13	U	13
Aroclor-1260	13	U	13	13	U	13	13	U	13	13	U	13
Semivolatile Organic Compounds												
1,2,4-Trichlorobenzene	340	UJ	340	340	UJ	340	340	UJ	340	340	UJ	340
1,2-Dichlorobenzene	340	U	340	340	U	340	340	U	340	340	U	340
1,3-Dichlorobenzene	340	U	340	340	U	340	340	U	340	340	U	340
1,4-Dichlorobenzene	340	U	340	340	U	340	340	U	340	340	U	340
2,4,5-Trichlorophenol	840	U	840	840	U	840	840	U	840	840	U	840
2,4,6-Trichlorophenol	340	U	340	340	U	340	340	U	340	340	U	340
2,4-Dichlorophenol	340	U	340	340	U	340	340	U	340	340	U	340
2,4-Dimethylphenol	340	U	340	340	U	340	340	UJ	340	340	UJ	340
2,4-Dinitrophenol	840	UJ	840	840	UJ	840	840	UR	840	840	UR	840
2,4-Dinitrotoluene	340	U	340	340	U	340	340	U	340	340	U	340
2,6-Dinitrotoluene	340	U	340	340	U	340	340	U	340	340	U	340
2-Chloronaphthalene	340	U	340	340	U	340	340	U	340	340	U	340
2-Chlorophenol	340	U	340	340	U	340	340	U	340	340	U	340
2-Methylnaphthalene	340	U	340	340	U	340	340	UJ	340	340	UJ	340
2-Methylphenol (cresol, o-)	340	U	340	340	U	340	340	U	340	340	U	340
2-Nitroaniline	840	U	840	840	U	840	840	U	840	840	U	840
2-Nitrophenol	340	U	340	340	U	340	340	U	340	340	U	340
3,3'-Dichlorobenzidine	340	U	340	340	U	340	340	U	340	340	U	340
3-Nitroaniline	840	U	840	840	U	840	840	U	840	840	U	840
4,6-Dinitro-2-methylphenol	840	U	840	840	U	840	840	U	840	840	U	840
4-Bromophenyl-phenylether	340	U	340	340	U	340	340	U	340	340	U	340
4-Chloro-3-methylphenol	340	U	340	340	U	340	340	U	340	340	U	340
4-Chloroaniline	340	U	340	340	U	340	340	U	340	340	U	340
4-Chlorophenyl-phenylether	340	U	340	340	U	340	340	U	340	340	U	340
4-Methylphenol (p-cresol)	340	U	340	340	U	340	340	U	340	340	U	340
4-Nitroaniline	840	U	840	840	U	840	840	U	840	840	U	840
4-Nitrophenol	840	U	840	840	U	840	840	U	840	840	U	840
Acenaphthene	340	U	340	340	U	340	340	U	340	340	U	340
Acenaphthylene	340	U	340	340	U	340	340	U	340	340	U	340
Anthracene	340	U	340	340	U	340	340	U	340	340	U	340
Benzo(a)anthracene	340	U	340	340	U	340	340	U	340	340	U	340
Benzo(a)pyrene	340	U	340	340	U	340	340	U	340	340	U	340
Benzo(b)fluoranthene	340	U	340	340	U	340	340	U	340	340	U	340
Benzo(g,h,i)perylene	340	U	340	340	U	340	340	U	340	340	U	340
Benzo(k)fluoranthene	340	U	340	340	U	340	340	U	340	340	U	340
bis(2-Chloro-1-methylethyl)ether	340	U	340	340	U	340	340	U	340	340	U	340
bis(2-Chloroethoxy)methane	340	U	340	340	U	340	340	U	340	340	U	340
bis(2-Chloroethyl)ether	340	U	340	340	U	340	340	U	340	340	U	340
bis(2-Ethylhexyl)phthalate	330	U	340	330	U	340	32	JB	340	30	JB	340

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J12XC8 Area 7 A3			J12XC9 Area 7 A4			J12WK0 OB A1			J12WK1 OB A2		
	Sample Date 7/26/06			Sample Date 7/26/06			Sample Date 7/11/06			Sample Date 7/11/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	MDL	µg/kg	Q	PQL
Semivolatile Organic Compounds (continued)												
Butylbenzylphthalate	340	U	340	340	U	340	340	U	340	340	U	340
Carbazole	340	U	340	340	U	340	340	U	340	340	U	340
Chrysene	340	U	340	340	U	340	340	U	340	340	U	340
Di-n-butylphthalate	330	U	340	330	U	340	340	U	340	340	U	340
Di-n-octylphthalate	340	U	340	340	U	340	340	U	340	340	U	340
Dibenz(a,h)anthracene	340	U	340	340	U	340	340	U	340	340	U	340
Dibenzofuran	340	U	340	340	U	340	340	U	340	340	U	340
Diethylphthalate	340	U	340	340	U	340	340	U	340	340	U	340
Dimethylphthalate	340	U	340	340	U	340	340	U	340	340	U	340
Fluoranthene	340	U	340	340	U	340	340	U	340	340	U	340
Fluorene	340	U	340	340	U	340	340	U	340	340	U	340
Hexachlorobenzene	340	U	340	340	U	340	340	U	340	340	U	340
Hexachlorobutadiene	340	U	340	340	U	340	340	U	340	340	U	340
Hexachlorocyclopentadiene	340	U	340	340	U	340	340	U	340	340	U	340
Hexachloroethane	340	U	340	340	U	340	340	U	340	340	U	340
Indeno(1,2,3-cd)pyrene	340	U	340	340	U	340	340	U	340	340	U	340
Isophorone	340	U	340	340	U	340	340	UJ	340	340	UJ	340
N-Nitroso-di-n-dipropylamine	340	U	340	340	U	340	340	U	340	340	U	340
N-Nitrosodiphenylamine	340	U	340	340	U	340	340	U	340	340	U	340
Naphthalene	340	U	340	340	U	340	340	U	340	340	U	340
Nitrobenzene	340	U	340	340	U	340	340	U	340	340	U	340
Pentachlorophenol	840	U	840	840	U	840	840	U	840	840	U	840
Phenanthrene	340	U	340	340	U	340	340	U	340	340	U	340
Phenol	330	U	340	340	U	340	340	U	340	340	U	340
Pyrene	340	U	340	340	U	340	340	U	340	340	U	340

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J12XC8 Area 7 A3			J12XC9 Area 7 A4			J12WK0 OB A1			J12WK1 OB A2		
	Sample Date 7/26/06			Sample Date 7/26/06			Sample Date 7/11/06			Sample Date 7/11/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	MDL	µg/kg	Q	PQL
Volatile Organic Compounds												
1,1,1-Trichloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,1,2,2-Tetrachloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,1,2-Trichloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,1-Dichloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,1-Dichloroethene	5	U	5	5	U	5	5	U	5	5	U	5
1,2-Dichloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,2-Dichloroethene (total)	5	U	5	5	U	5	5	U	5	5	U	5
1,2-Dichloropropane	5	U	5	5	U	5	5	U	5	5	U	5
2-Butanone	10	U	10	10	U	10	10	U	10	10	U	10
2-Hexanone	10	U	10	10	U	10	10	U	10	10	U	10
4-Methyl-2-pentanone	10	U	10	10	U	10	10	U	10	10	U	10
Acetone	10	U	10	10	U	10	10	U	10	10	U	10
Benzene	5	U	5	5	U	5	5	U	5	5	U	5
Bromodichloromethane	5	U	5	5	U	5	5	U	5	5	U	5
Bromoform	5	U	5	5	U	5	5	U	5	5	U	5
Bromomethane	10	U	10	10	U	10	10	U	10	10	U	10
Carbon disulfide	5	U	5	5	U	5	5	U	5	5	U	5
Carbon tetrachloride	5	U	5	10		5	5	U	5	5	U	5
Chlorobenzene	5	U	5	5	U	5	5	U	5	5	U	5
Chloroethane	10	U	10	10	U	10	10	U	10	10	U	10
Chloroform	5	U	5	5	U	5	5	U	5	5	U	5
Chloromethane	10	U	10	10	U	10	10	U	10	10	U	10
cis-1,2-Dichloroethylene	5	U	5	5	U	5	5	U	5	5	U	5
cis-1,3-Dichloropropene	5	U	5	5	U	5	5	U	5	5	U	5
Dibromochloromethane	5	U	5	5	U	5	5	U	5	5	U	5
Ethylbenzene	5	U	5	5	U	5	5	U	5	5	U	5
Methylene chloride	5	U	5	6		5	9	BJ	5	6	BJ	5
Styrene	5	U	5	5	U	5	5	U	5	5	U	5
Tetrachloroethene	5	U	5	5	U	5	5	U	5	5	U	5
Toluene	5	U	5	5	U	5	5	U	5	5	U	5
trans-1,2-Dichloroethylene	5	U	5	5	U	5	5	U	5	5	U	5
trans-1,3-Dichloropropene	5	U	5	5	U	5	5	U	5	5	U	5
Trichloroethene	5	U	5	5	U	5	5	U	5	5	U	5
Vinyl chloride	10	U	10	10	U	10	10	U	10	10	U	10
Xylenes (total)	5	U	5	5	U	5	5	U	5	5	U	5

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J12XC8 Area 7 A3			J12XC9 Area 7 A4			J12WK0 OB A1			J12WK1 OB A2		
	Sample Date 7/26/06			Sample Date 7/26/06			Sample Date 7/11/06			Sample Date 7/11/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	MDL	µg/kg	Q	PQL
Pesticides												
Aldrin	1.3	UDJ	1.3	1.3	UDJ	1.3	1.3	UD	1.3	1.3	UD	1.3
alpha-BHC	1.3	UD	1.3	1.3	UD	1.3	1.3	UDJ	1.3	1.3	UDJ	1.3
alpha-Chlordane	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
beta-BHC	1.3	UD	1.3	1.3	UD	1.3	0.64	JD	1.3	1.3	UD	1.3
delta-BHC	1.3	UD	1.3	1.3	UD	1.3	1.3	UDJ	1.3	1.3	UDJ	1.3
Dichlorodiphenyldichloroethane	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Dichlorodiphenyldichloroethylene	1.3	UD	1.3	1.5	DJ	1.3	1.3	UDJ	1.3	1.3	UDJ	1.3
Dichlorodiphenyltrichloroethane	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Dieldrin	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Endosulfan I	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Endosulfan II	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Endosulfan sulfate	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Endrin	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Endrin aldehyde	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Endrin ketone	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
gamma-BHC (Lindane)	1.3	UD	1.3	1.3	UD	1.3	1.3	UDJ	1.3	1.3	UDJ	1.3
gamma-Chlordane	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Heptachlor	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Heptachlor epoxide	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Methoxychlor	1.3	UD	1.3	1.3	UD	1.3	2.7	D	1.3	1.3	UD	1.3
Toxaphene	13	UDJ	13	13	UDJ	13	13	UD	13	13	UD	13
Herbicides												
2,4,5-T	17	UJ	17	17	UJ	17	17	UJ	17	17	UJ	17
2,4-D	20	J	34	13	J	34	34	UJ	34	34	UJ	34
2,4,5-TP	17	U	17	17	U	17	17	UJ	17	17	UJ	17
Dinoseb	17	U	17	17	U	17	17	UJ	17	17	UJ	17
2,4-DB	17	UJ	17	17	UJ	17	17	UJ	17	17	UJ	17
Dalapon	16	J	34	34	U	34	34	UJ	34	34	UJ	34
Dicamba	34	UJ	34	34	UJ	34	12	J	34	34	UJ	34
Dichloroprop	34	U	34	60		34	34	UJ	34	34	UJ	34
Pentachlorophenol	17	U	17	17	U	17	17	UJ	17	17	UJ	17
Picloram	17	UJ	17	17	UJ	17	17	UR	17	17	UR	17

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J12WK2 OB A3			J12WK3 OB A4			J12WK4 OB B5			J12WK5 OB B6		
	Sample Date 7/11/06			Sample Date 7/11/06			Sample Date 7/11/06			Sample Date 7/11/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL
Polychlorinated Biphenyls												
Aroclor-1016	13	U	13	13	U	13	13	U	13	13	U	13
Aroclor-1221	13	U	13	13	U	13	13	U	13	13	U	13
Aroclor-1232	13	U	13	13	U	13	13	U	13	13	U	13
Aroclor-1242	13	U	13	13	U	13	13	U	13	13	U	13
Aroclor-1248	13	U	13	13	U	13	13	U	13	13	U	13
Aroclor-1254	13	U	13	13	U	13	13	U	13	13	U	13
Aroclor-1260	13	U	13	13	U	13	13	U	13	13	U	13
Semivolatile Organic Compounds												
1,2,4-Trichlorobenzene	330	UJ	330	340	UJ	340	330	UJ	330	330	UJ	330
1,2-Dichlorobenzene	330	U	330	340	U	340	330	U	330	330	U	330
1,3-Dichlorobenzene	330	U	330	340	U	340	330	U	330	330	U	330
1,4-Dichlorobenzene	330	U	330	340	U	340	330	U	330	330	U	330
2,4,5-Trichlorophenol	840	U	840	840	U	840	840	U	840	840	U	840
2,4,6-Trichlorophenol	330	U	330	340	U	340	330	U	330	330	U	330
2,4-Dichlorophenol	330	U	330	340	U	340	330	U	330	330	U	330
2,4-Dimethylphenol	330	UJ	330	340	UJ	340	330	UJ	330	330	UJ	330
2,4-Dinitrophenol	840	UR	840	840	UR	840	840	UR	840	840	UR	840
2,4-Dinitrotoluene	330	U	330	340	U	340	330	U	330	330	U	330
2,6-Dinitrotoluene	330	U	330	340	U	340	330	U	330	330	U	330
2-Chloronaphthalene	330	U	330	340	U	340	330	U	330	330	U	330
2-Chlorophenol	330	U	330	340	U	340	330	U	330	330	U	330
2-Methylnaphthalene	330	UJ	330	340	UJ	340	330	UJ	330	330	UJ	330
2-Methylphenol (cresol, o-)	330	U	330	340	U	340	330	U	330	330	U	330
2-Nitroaniline	840	U	840	840	U	840	840	U	840	840	U	840
2-Nitrophenol	330	U	330	340	U	340	330	U	330	330	U	330
3,3'-Dichlorobenzidine	330	U	330	340	U	340	330	U	330	330	U	330
3-Nitroaniline	840	U	840	840	U	840	840	U	840	840	U	840
4,6-Dinitro-2-methylphenol	840	U	840	840	U	840	840	U	840	840	U	840
4-Bromophenyl-phenylether	330	U	330	340	U	340	330	U	330	330	U	330
4-Chloro-3-methylphenol	330	U	330	340	U	340	330	U	330	330	U	330
4-Chloroaniline	330	U	330	340	U	340	330	U	330	330	U	330
4-Chlorophenyl-phenylether	330	U	330	340	U	340	330	U	330	330	U	330
4-Methylphenol (p-cresol)	330	U	330	340	U	340	330	U	330	330	U	330
4-Nitroaniline	840	U	840	840	U	840	840	U	840	840	U	840
4-Nitrophenol	840	U	840	840	U	840	840	U	840	840	U	840
Acenaphthene	330	U	330	340	U	340	330	U	330	330	U	330
Acenaphthylene	330	U	330	340	U	340	330	U	330	330	U	330
Anthracene	330	U	330	340	U	340	330	U	330	330	U	330
Benzo(a)anthracene	330	U	330	340	U	340	330	U	330	330	U	330
Benzo(a)pyrene	330	U	330	340	U	340	330	U	330	330	U	330
Benzo(b)fluoranthene	330	U	330	340	U	340	330	U	330	330	U	330
Benzo(g,h,i)perylene	330	U	330	340	U	340	330	U	330	330	U	330
Benzo(k)fluoranthene	330	U	330	340	U	340	330	U	330	330	U	330
bis(2-Chloro-1-methylethyl)ether	330	U	330	340	U	340	330	U	330	330	U	330
bis(2-Chloroethoxy)methane	330	U	330	340	U	340	330	U	330	330	U	330
bis(2-Chloroethyl)ether	330	U	330	340	U	340	330	U	330	330	U	330
bis(2-Ethylhexyl)phthalate	36	JB	330	31	JB	340	83	JB	330	45	JB	330

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J12WK2 OB A3			J12WK3 OB A4			J12WK4 OB B5			J12WK5 OB B6		
	Sample Date 7/11/06			Sample Date 7/11/06			Sample Date 7/11/06			Sample Date 7/11/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	MDL	µg/kg	Q	PQL
Semivolatile Organic Compounds (continued)												
Butylbenzylphthalate	330	U	330	340	U	340	330	U	330	330	U	330
Carbazole	330	U	330	340	U	340	330	U	330	330	U	330
Chrysene	330	U	330	340	U	340	330	U	330	330	U	330
Di-n-butylphthalate	33	J	330	340	U	340	26	J	330	330	U	330
Di-n-octylphthalate	330	U	330	340	U	340	330	U	330	330	U	330
Dibenz(a,h)anthracene	330	U	330	340	U	340	330	U	330	330	U	330
Dibenzofuran	330	U	330	340	U	340	330	U	330	330	U	330
Diethylphthalate	330	U	330	340	U	340	330	U	330	330	U	330
Dimethylphthalate	330	U	330	340	U	340	330	U	330	330	U	330
Fluoranthene	330	U	330	340	U	340	330	U	330	330	U	330
Fluorene	330	U	330	340	U	340	330	U	330	330	U	330
Hexachlorobenzene	330	U	330	340	U	340	330	U	330	330	U	330
Hexachlorobutadiene	330	U	330	340	U	340	330	U	330	330	U	330
Hexachlorocyclopentadiene	330	U	330	340	U	340	330	U	330	330	U	330
Hexachloroethane	330	U	330	340	U	340	330	U	330	330	U	330
Indeno(1,2,3-cd)pyrene	330	U	330	340	U	340	330	U	330	330	U	330
Isophorone	330	UJ	330	340	UJ	340	330	UJ	330	330	UJ	330
N-Nitroso-di-n-dipropylamine	330	U	330	340	U	340	330	U	330	330	U	330
N-Nitrosodiphenylamine	330	U	330	340	U	340	330	U	330	330	U	330
Naphthalene	330	U	330	340	U	340	330	U	330	330	U	330
Nitrobenzene	330	U	330	340	U	340	330	U	330	330	U	330
Pentachlorophenol	840	U	840	840	U	840	840	U	840	840	U	840
Phenanthrene	330	U	330	340	U	340	330	U	330	330	U	330
Phenol	22	J	330	340	U	340	330	U	330	330	U	330
Pyrene	330	U	330	340	U	340	330	U	330	330	U	330

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J12WK2 OB A3			J12WK3 OB A4			J12WK4 OB B5			J12WK5 OB B6		
	Sample Date 7/11/06			Sample Date 7/11/06			Sample Date 7/11/06			Sample Date 7/11/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	MDL	µg/kg	Q	PQL
Volatile Organic Compounds												
1,1,1-Trichloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,1,2,2-Tetrachloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,1,2-Trichloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,1-Dichloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,1-Dichloroethene	5	U	5	5	U	5	5	U	5	5	U	5
1,2-Dichloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,2-Dichloroethene (total)	5	U	5	5	U	5	5	U	5	5	U	5
1,2-Dichloropropane	5	U	5	5	U	5	5	U	5	5	U	5
2-Butanone	10	U	10	10	U	10	10	U	10	10	U	10
2-Hexanone	10	U	10	10	U	10	10	U	10	10	U	10
4-Methyl-2-pentanone	10	U	10	10	U	10	10	U	10	10	U	10
Acetone	10	U	10	10	U	10	10	U	10	38		38
Benzene	5	U	5	5	U	5	5	U	5	5	U	5
Bromodichloromethane	5	U	5	5	U	5	5	U	5	5	U	5
Bromoform	5	U	5	5	U	5	5	U	5	5	U	5
Bromomethane	10	U	10	10	U	10	10	U	10	10	U	10
Carbon disulfide	5	U	5	5	U	5	5	U	5	5	U	5
Carbon tetrachloride	5	U	5	5	U	5	5	U	5	5	U	5
Chlorobenzene	5	U	5	5	U	5	5	U	5	5	U	5
Chloroethane	10	U	10	10	U	10	10	U	10	10	U	10
Chloroform	5	U	5	5	U	5	5	U	5	5	U	5
Chloromethane	10	U	10	10	U	10	10	U	10	10	U	10
cis-1,2-Dichloroethylene	5	U	5	5	U	5	5	U	5	5	U	5
cis-1,3-Dichloropropene	5	U	5	5	U	5	5	U	5	5	U	5
Dibromochloromethane	5	U	5	5	U	5	5	U	5	5	U	5
Ethylbenzene	5	U	5	5	U	5	5	U	5	5	U	5
Methylene chloride	11	BJ	5	9	BJ	5	12	BJ	5	16	BJ	5
Styrene	5	U	5	5	U	5	5	U	5	5	U	5
Tetrachloroethene	5	U	5	5	U	5	5	U	5	5	U	5
Toluene	5	U	5	5	U	5	5	U	5	5	U	5
trans-1,2-Dichloroethylene	5	U	5	5	U	5	5	U	5	5	U	5
trans-1,3-Dichloropropene	5	U	5	5	U	5	5	U	5	5	U	5
Trichloroethene	5	U	5	5	U	5	5	U	5	5	U	5
Vinyl chloride	10	U	10	10	U	10	10	U	10	10	U	10
Xylenes (total)	5	U	5	5	U	5	5	U	5	5	U	5

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J12WK2 OB A3			J12WK3 OB A4			J12WK4 OB B5			J12WK5 OB B6		
	Sample Date 7/11/06			Sample Date 7/11/06			Sample Date 7/11/06			Sample Date 7/11/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	MDL	µg/kg	Q	PQL
Pesticides												
Aldrin	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
alpha-BHC	1.3	UDJ	1.3	1.3	UDJ	1.3	1.3	UDJ	1.3	1.3	UDJ	1.3
alpha-Chlordane	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
beta-BHC	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
delta-BHC	1.3	UDJ	1.3	1.3	UDJ	1.3	1.3	UDJ	1.3	1.3	UDJ	1.3
Dichlorodiphenyldichloroethane	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Dichlorodiphenyldichloroethylene	1.3	UDJ	1.3	1.3	UDJ	1.3	1.3	UDJ	1.3	1.3	UDJ	1.3
Dichlorodiphenyltrichloroethane	1.1	JD	1.3	0.74	JD	1.3	1.3	UD	1.3	0.94	JD	1.3
Dieldrin	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Endosulfan I	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Endosulfan II	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Endosulfan sulfate	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Endrin	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Endrin aldehyde	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Endrin ketone	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
gamma-BHC (Lindane)	1.3	UDJ	1.3	1.3	UDJ	1.3	1.3	UDJ	1.3	1.3	UDJ	1.3
gamma-Chlordane	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Heptachlor	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Heptachlor epoxide	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Methoxychlor	1.4	JDI	1.3	1.3	UD	1.3	5.5	D	1.3	1.3	UD	1.3
Toxaphene	13	UD	13	13	UD	13	13	UD	13	13	UD	13
Herbicides												
2,4,5-T	17	U	17	17	U	17	17	U	17	17	U	17
2,4-D	33	U	33	34	U	34	33	U	33	33	U	33
2,4,5-TP	17	U	17	17	U	17	17	U	17	17	U	17
Dinoseb	17	U	17	17	U	17	17	U	17	17	U	17
2,4-DB	17	U	17	17	U	17	17	U	17	17	U	17
Dalapon	33	U	33	34	U	34	33	U	33	20	J	33
Dicamba	33	U	33	9.2	J	34	8.7	J	33	17	J	33
Dichloroprop	33	U	33	34	U	34	33	U	33	33	U	33
Pentachlorophenol	17	U	17	16	J	17	17	U	17	17	U	17
Picloram	17	UR	17	17	UR	17	17	UR	17	17	UR	17

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Constituents	J12WK6 OB B7			J12WM7 OB B8			J12WM8 OB C9			J12WM9 OB C10		
	Sample Date 7/11/06			Sample Date 7/17/06			Sample Date 7/17/06			Sample Date 7/17/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL
Polychlorinated Biphenyls												
Aroclor-1016	13	U	13	13	U	13	13	U	13	13	U	13
Aroclor-1221	13	U	13	13	U	13	13	U	13	13	U	13
Aroclor-1232	13	U	13	13	U	13	13	U	13	13	U	13
Aroclor-1242	13	U	13	13	U	13	13	U	13	13	U	13
Aroclor-1248	13	U	13	13	U	13	13	U	13	13	U	13
Aroclor-1254	38	U	13	13	U	13	13	U	13	13	U	13
Aroclor-1260	13	U	13	13	U	13	13	U	13	13	U	13
Semivolatile Organic Compounds												
1,2,4-Trichlorobenzene	330	UJ	330	330	UJ	330	340	UJ	340	340	UJ	340
1,2-Dichlorobenzene	330	U	330	330	U	330	340	U	340	340	U	340
1,3-Dichlorobenzene	330	U	330	330	U	330	340	U	340	340	U	340
1,4-Dichlorobenzene	330	U	330	330	U	330	340	U	340	340	U	340
2,4,5-Trichlorophenol	840	U	840	840	U	840	840	U	840	840	U	840
2,4,6-Trichlorophenol	330	U	330	330	U	330	340	U	340	340	U	340
2,4-Dichlorophenol	330	U	330	330	U	330	340	U	340	340	U	340
2,4-Dimethylphenol	330	UJ	330	330	U	330	340	U	340	340	U	340
2,4-Dinitrophenol	840	UR	840	840	U	840	840	U	840	840	U	840
2,4-Dinitrotoluene	330	U	330	330	U	330	340	U	340	340	U	340
2,6-Dinitrotoluene	330	U	330	330	U	330	340	U	340	340	U	340
2-Chloronaphthalene	330	U	330	330	U	330	340	U	340	340	U	340
2-Chlorophenol	330	U	330	330	U	330	340	U	340	340	U	340
2-Methylnaphthalene	330	UJ	330	330	U	330	340	U	340	340	U	340
2-Methylphenol (cresol, o-)	330	U	330	330	U	330	340	U	340	340	U	340
2-Nitroaniline	840	U	840	840	U	840	840	U	840	840	U	840
2-Nitrophenol	330	U	330	330	U	330	340	U	340	340	U	340
3,3'-Dichlorobenzidine	330	U	330	330	U	330	340	U	340	340	U	340
3-Nitroaniline	840	U	840	840	U	840	840	U	840	840	U	840
4,6-Dinitro-2-methylphenol	840	U	840	840	U	840	840	U	840	840	U	840
4-Bromophenyl-phenylether	330	U	330	330	U	330	340	U	340	340	U	340
4-Chloro-3-methylphenol	330	U	330	330	U	330	340	U	340	340	U	340
4-Chloroaniline	330	U	330	330	U	330	340	U	340	340	U	340
4-Chlorophenyl-phenylether	330	U	330	330	U	330	340	U	340	340	U	340
4-Methylphenol (p-cresol)	330	U	330	330	U	330	340	U	340	340	U	340
4-Nitroaniline	840	U	840	840	U	840	840	U	840	840	U	840
4-Nitrophenol	840	U	840	840	U	840	840	U	840	840	U	840
Acenaphthene	330	U	330	330	U	330	340	U	340	340	U	340
Acenaphthylene	330	U	330	330	U	330	340	U	340	340	U	340
Anthracene	330	U	330	330	U	330	340	U	340	340	U	340
Benzo(a)anthracene	330	U	330	330	U	330	340	U	340	340	U	340
Benzo(a)pyrene	330	U	330	330	U	330	340	U	340	340	U	340
Benzo(b)fluoranthene	330	U	330	330	U	330	340	U	340	340	U	340
Benzo(g,h,i)perylene	330	U	330	330	U	330	340	U	340	340	U	340
Benzo(k)fluoranthene	330	U	330	330	U	330	340	U	340	340	U	340
bis(2-Chloro-1-methylethyl)ether	330	U	330	330	U	330	340	U	340	340	U	340
bis(2-Chloroethoxy)methane	330	U	330	330	U	330	340	U	340	340	U	340
bis(2-Chloroethyl)ether	330	U	330	330	U	330	340	U	340	340	U	340
bis(2-Ethylhexyl)phthalate	29	JB	330	20	J	330	88	J	340	39	J	340

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Constituents	J12WK6 OB B7			J12WM7 OB B8			J12WM8 OB C9			J12WM9 OB C10		
	Sample Date 7/11/06			Sample Date 7/17/06			Sample Date 7/17/06			Sample Date 7/17/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	MDL	µg/kg	Q	PQL
Semivolatile Organic Compounds (continued)												
Butylbenzylphthalate	330	U	330	330	U	330	340	U	340	340	U	340
Carbazole	330	U	330	330	U	330	340	U	340	340	U	340
Chrysene	330	U	330	330	U	330	340	U	340	340	U	340
Di-n-butylphthalate	330	U	330	38	J	330	41	J	340	25	J	340
Di-n-octylphthalate	330	U	330	330	U	330	340	U	340	340	U	340
Dibenz(a,h)anthracene	330	U	330	330	U	330	340	U	340	340	U	340
Dibenzofuran	330	U	330	330	U	330	340	U	340	340	U	340
Diethylphthalate	330	U	330	330	U	330	340	U	340	340	U	340
Dimethylphthalate	330	U	330	330	U	330	340	U	340	340	U	340
Fluoranthene	330	U	330	330	U	330	340	U	340	340	U	340
Fluorene	330	U	330	330	U	330	340	U	340	340	U	340
Hexachlorobenzene	330	U	330	330	U	330	340	U	340	340	U	340
Hexachlorobutadiene	330	U	330	330	U	330	340	U	340	340	U	340
Hexachlorocyclopentadiene	330	U	330	330	U	330	340	U	340	340	U	340
Hexachloroethane	330	U	330	330	U	330	340	U	340	340	U	340
Indeno(1,2,3-cd)pyrene	330	U	330	330	U	330	340	U	340	340	U	340
Isophorone	330	U	330	330	U	330	340	U	340	340	U	340
N-Nitroso-di-n-dipropylamine	330	U	330	330	U	330	340	U	340	340	U	340
N-Nitrosodiphenylamine	330	U	330	330	U	330	340	U	340	340	U	340
Naphthalene	330	U	330	330	U	330	340	U	340	340	U	340
Nitrobenzene	330	U	330	330	U	330	340	U	340	340	U	340
Pentachlorophenol	840	U	840	840	U	840	840	U	840	840	U	840
Phenanthrene	330	U	330	330	U	330	340	U	340	340	U	340
Phenol	330	U	330	330	U	330	340	U	340	340	U	340
Pyrene	330	U	330	330	U	330	340	U	340	340	U	340

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J12WK6 OB B7			J12WM7 OB B8			J12WM8 OB C9			J12WM9 OB C10		
	Sample Date 7/11/06			Sample Date 7/17/06			Sample Date 7/17/06			Sample Date 7/17/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	MDL	µg/kg	Q	PQL
Volatile Organic Compounds												
1,1,1-Trichloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,1,2,2-Tetrachloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,1,2-Trichloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,1-Dichloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,1-Dichloroethene	5	U	5	5	U	5	5	U	5	5	U	5
1,2-Dichloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,2-Dichloroethene (total)	5	U	5	5	U	5	5	U	5	5	U	5
1,2-Dichloropropane	5	U	5	5	U	5	5	U	5	5	U	5
2-Butanone	10	U	10	10	U	10	10	U	10	10	U	10
2-Hexanone	10	U	10	10	U	10	10	U	10	10	U	10
4-Methyl-2-pentanone	10	U	10	10	B	10	10	JB	10	11	B	10
Acetone	10	U	10	34		10	28		10	24		10
Benzene	5	U	5	5	U	5	5	U	5	5	U	5
Bromodichloromethane	5	U	5	5	U	5	5	U	5	5	U	5
Bromoform	5	U	5	5	U	5	5	U	5	5	U	5
Bromomethane	10	U	10	10	U	10	10	U	10	10	U	10
Carbon disulfide	5	U	5	5	U	5	5	U	5	5	U	5
Carbon tetrachloride	5	U	5	9		5	12		5	12		5
Chlorobenzene	5	U	5	5	U	5	5	U	5	5	U	5
Chloroethane	10	U	10	10	U	10	10	U	10	10	U	10
Chloroform	5	U	5	5	U	5	5	U	5	5	U	5
Chloromethane	10	U	10	10	U	10	10	U	10	10	U	10
cis-1,2-Dichloroethylene	5	U	5	5	U	5	5	U	5	5	U	5
cis-1,3-Dichloropropene	5	U	5	5	U	5	5	U	5	5	U	5
Dibromochloromethane	5	U	5	5	U	5	5	U	5	5	U	5
Ethylbenzene	5	U	5	5	U	5	5	U	5	5	U	5
Methylene chloride	18	BJ	5	15		5	8		5	13		5
Styrene	5	U	5	5	U	5	5	U	5	5	U	5
Tetrachloroethene	5	U	5	5	U	5	5	U	5	5	U	5
Toluene	5	U	5	1	JB	5	1	JB	5	1	JB	5
trans-1,2-Dichloroethylene	5	U	5	5	U	5	5	U	5	5	U	5
trans-1,3-Dichloropropene	5	U	5	5	U	5	5	U	5	5	U	5
Trichloroethene	5	U	5	5	U	5	5	U	5	5	U	5
Vinyl chloride	10	U	10	10	U	10	10	U	10	10	U	10
Xylenes (total)	5	U	5	1	J	5	5	U	5	5	U	5

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J12WK6 OB B7			J12WM7 OB B8			J12WM8 OB C9			J12WM9 OB C10		
	Sample Date 7/11/06			Sample Date 7/17/06			Sample Date 7/17/06			Sample Date 7/17/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	MDL	µg/kg	Q	PQL
Pesticides												
Aldrin	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
alpha-BHC	1.3	UDJ	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
alpha-Chlordane	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
beta-BHC	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
delta-BHC	1.3	UDJ	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Dichlorodiphenyldichloroethane	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Dichlorodiphenyldichloroethylene	1.3	UDJ	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Dichlorodiphenyltrichloroethane	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Dieldrin	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Endosulfan I	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Endosulfan II	1.3	UD	1.3	0.50	JID	1.3	1.3	UD	1.3	1.3	UD	1.3
Endosulfan sulfate	1.3	UD	1.3	1.3	UD	1.3	0.87	JD	1.3	1.3	UD	1.3
Endrin	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Endrin aldehyde	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Endrin ketone	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
gamma-BHC (Lindane)	1.3	UDJ	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
gamma-Chlordane	2.5	D	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Heptachlor	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Heptachlor epoxide	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Methoxychlor	1.3	UD	1.3	4.9	DJ	1.3	6.7	DJ	1.3	6.7	DJ	1.3
Toxaphene	13	UD	13	13	UD	13	13	UD	13	13	UD	13
Herbicides												
2,4,5-T	17	U	17	17	UJ	17	3.9	J	17	17	UJ	17
2,4-D	33	U	33	33	UJ	33	34	UJ	34	26	J	34
2,4,5-TP	17	U	17	5.8	J	17	17	U	17	9.0	J	17
Dinoseb	17	U	17	17	U	17	17	U	17	17	U	17
2,4-DB	17	U	17	17	U	17	17	U	17	87		17
Dalapon	23	J	33	33	UJ	33	34	UJ	34	34	UJ	34
Dicamba	13	J	33	33	UJ	33	6.0	JB	34	34	UJ	34
Dichloroprop	33	U	33	33	UJ	33	34	UJ	34	24	J	34
Pentachlorophenol	17	U	17	17	UJ	17	17	UJ	17	17	UJ	17
Picloram	17	UR	17	17	U	17	17	U	17	17	U	17

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J12WN0 OB C1			J12WN1 OB C2			J12WM5 OB D3			J12WM6 OB D4		
	Sample Date 7/17/06			Sample Date 7/17/06			Sample Date 7/12/06			Sample Date 7/12/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL
Polychlorinated Biphenyls												
Aroclor-1016	13	U	13	13	U	13	13	U	13	13	UJ	13
Aroclor-1221	13	U	13	13	U	13	13	U	13	13	UJ	13
Aroclor-1232	13	U	13	13	U	13	13	U	13	13	UJ	13
Aroclor-1242	13	U	13	13	U	13	13	U	13	13	UJ	13
Aroclor-1248	13	U	13	13	U	13	13	U	13	13	UJ	13
Aroclor-1254	13	U	13	13	U	13	13	U	13	13	UJ	13
Aroclor-1260	13	U	13	13	U	13	13	U	13	13	UJ	13
Semivolatile Organic Compounds												
1,2,4-Trichlorobenzene	340	UJ	340	330	UJ	330	340	U	340	330	U	330
1,2-Dichlorobenzene	340	U	340	330	U	330	340	U	340	330	U	330
1,3-Dichlorobenzene	340	U	340	330	U	330	340	U	340	330	U	330
1,4-Dichlorobenzene	340	U	340	330	U	330	340	U	340	330	U	330
2,4,5-Trichlorophenol	840	U	840	840	U	840	840	U	840	840	U	840
2,4,6-Trichlorophenol	340	U	340	330	U	330	340	U	340	330	U	330
2,4-Dichlorophenol	340	U	340	330	U	330	340	U	340	330	U	330
2,4-Dimethylphenol	340	U	340	330	U	330	340	U	340	330	U	330
2,4-Dinitrophenol	840	U	840	840	U	840	840	U	840	840	U	840
2,4-Dinitrotoluene	340	U	340	330	U	330	340	U	340	330	U	330
2,6-Dinitrotoluene	340	U	340	330	U	330	340	U	340	330	U	330
2-Chloronaphthalene	340	U	340	330	U	330	340	U	340	330	U	330
2-Chlorophenol	340	U	340	330	U	330	340	U	340	330	U	330
2-Methylnaphthalene	340	U	340	330	U	330	340	U	340	330	U	330
2-Methylphenol (cresol, o-)	340	U	340	330	U	330	340	U	340	330	U	330
2-Nitroaniline	840	U	840	840	U	840	840	U	840	840	U	840
2-Nitrophenol	340	U	340	330	U	330	340	U	340	330	U	330
3,3'-Dichlorobenzidine	340	U	340	330	U	330	340	U	340	330	U	330
3-Nitroaniline	840	U	840	840	U	840	840	U	840	840	U	840
4,6-Dinitro-2-methylphenol	840	U	840	840	U	840	840	U	840	840	U	840
4-Bromophenyl-phenylether	340	U	340	330	U	330	340	U	340	330	U	330
4-Chloro-3-methylphenol	340	U	340	330	U	330	340	U	340	330	U	330
4-Chloroaniline	340	U	340	330	U	330	340	U	340	330	U	330
4-Chlorophenyl-phenylether	340	U	340	330	U	330	340	U	340	330	U	330
4-Methylphenol (p-cresol)	340	U	340	330	U	330	340	U	340	330	U	330
4-Nitroaniline	840	U	840	840	U	840	840	U	840	840	U	840
4-Nitrophenol	840	U	840	840	U	840	840	U	840	840	U	840
Acenaphthene	340	U	340	330	U	330	340	U	340	330	U	330
Acenaphthylene	340	U	340	330	U	330	340	U	340	330	U	330
Anthracene	340	U	340	330	U	330	340	U	340	330	U	330
Benzo(a)anthracene	340	U	340	330	U	330	340	U	340	330	U	330
Benzo(a)pyrene	340	U	340	330	U	330	340	U	340	330	U	330
Benzo(b)fluoranthene	340	U	340	330	U	330	340	U	340	330	U	330
Benzo(g,h,i)perylene	340	U	340	330	U	330	340	U	340	330	U	330
Benzo(k)fluoranthene	340	U	340	330	U	330	340	U	340	330	U	330
bis(2-Chloro-1-methylethyl)ether	340	U	340	330	U	330	340	U	340	330	U	330
bis(2-Chloroethoxy)methane	340	U	340	330	U	330	340	U	340	330	U	330
bis(2-Chloroethyl)ether	340	U	340	330	U	330	340	U	340	330	U	330
bis(2-Ethylhexyl)phthalate	37	J	340	28	J	330	28	J	340	330	U	330

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J12WN0 OB C1			J12WN1 OB C2			J12WM5 OB D3			J12WM6 OB D4		
	Sample Date 7/17/06			Sample Date 7/17/06			Sample Date 7/12/06			Sample Date 7/12/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	MDL	µg/kg	Q	PQL
Semivolatile Organic Compounds (continued)												
Butylbenzylphthalate	340	U	340	330	U	330	340	U	340	330	U	330
Carbazole	340	U	340	330	U	330	340	U	340	330	U	330
Chrysene	340	U	340	330	U	330	340	U	340	330	U	330
Di-n-butylphthalate	39	J	340	42	J	330	19	J	340	20	J	330
Di-n-octylphthalate	340	U	340	330	U	330	340	U	340	330	U	330
Dibenz(a,h)anthracene	340	U	340	330	U	330	340	U	340	330	U	330
Dibenzofuran	340	U	340	330	U	330	340	U	340	330	U	330
Diethylphthalate	340	U	340	330	U	330	340	U	340	330	U	330
Dimethylphthalate	340	U	340	330	U	330	340	U	340	330	U	330
Fluoranthene	340	U	340	330	U	330	340	U	340	330	U	330
Fluorene	340	U	340	330	U	330	340	U	340	330	U	330
Hexachlorobenzene	340	U	340	330	U	330	340	U	340	330	U	330
Hexachlorobutadiene	340	U	340	330	U	330	340	U	340	330	U	330
Hexachlorocyclopentadiene	340	U	340	330	U	330	340	U	340	330	U	330
Hexachloroethane	340	U	340	330	U	330	340	U	340	330	U	330
Indeno(1,2,3-cd)pyrene	340	U	340	330	U	330	340	U	340	330	U	330
Isophorone	340	U	340	330	U	330	340	U	340	330	U	330
N-Nitroso-di-n-dipropylamine	340	U	340	330	U	330	340	U	340	330	U	330
N-Nitrosodiphenylamine	340	U	340	330	U	330	340	U	340	330	U	330
Naphthalene	340	U	340	330	U	330	340	U	340	330	U	330
Nitrobenzene	340	U	340	330	U	330	340	U	340	330	U	330
Pentachlorophenol	840	U	840	840	U	840	840	U	840	840	U	840
Phenanthrene	340	U	340	330	U	330	340	U	340	330	U	330
Phenol	340	U	340	330	U	330	340	U	340	330	U	330
Pyrene	340	U	340	330	U	330	340	U	340	330	U	330

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J12WN0 OB C1			J12WN1 OB C2			J12WM5 OB D3			J12WM6 OB D4		
	Sample Date 7/17/06			Sample Date 7/17/06			Sample Date 7/12/06			Sample Date 7/12/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	MDL	µg/kg	Q	PQL
Volatile Organic Compounds												
1,1,1-Trichloroethane	5	U	5	5	U	5	5	UJ	5	5	UJ	5
1,1,2,2-Tetrachloroethane	5	U	5	5	U	5	5	UJ	5	5	UJ	5
1,1,2-Trichloroethane	5	U	5	5	U	5	5	UJ	5	5	UJ	5
1,1-Dichloroethane	5	U	5	5	U	5	5	UJ	5	5	UJ	5
1,1-Dichloroethene	5	U	5	5	U	5	5	UJ	5	5	UJ	5
1,2-Dichloroethane	5	U	5	5	U	5	5	UJ	5	5	UJ	5
1,2-Dichloroethene (total)	5	U	5	5	U	5	5	UJ	5	5	UJ	5
1,2-Dichloropropane	5	U	5	5	U	5	5	UJ	5	5	UJ	5
2-Butanone	10	U	10	9	U	9	10	UJ	10	10	UJ	10
2-Hexanone	10	U	10	9	U	9	10	UJ	10	10	UJ	10
4-Methyl-2-pentanone	8	JB	10	9	U	9	6	J	10	10	UJ	10
Acetone	26		10	39		9	7	J	10	10	UJ	10
Benzene	5	U	5	5	U	5	5	UJ	5	5	UJ	5
Bromodichloromethane	5	U	5	5	U	5	5	UJ	5	5	UJ	5
Bromoform	5	U	5	5	U	5	5	UJ	5	5	UJ	5
Bromomethane	10	U	10	9	U	9	10	UJ	10	10	UJ	10
Carbon disulfide	5	U	5	5	U	5	5	UJ	5	5	UJ	5
Carbon tetrachloride	7		5	24		5	10	J	5	26	J	5
Chlorobenzene	5	U	5	5	U	5	5	UJ	5	5	UJ	5
Chloroethane	10	U	10	9	U	9	10	UJ	10	10	UJ	10
Chloroform	5	U	5	5	U	5	5	UJ	5	5	UJ	5
Chloromethane	10	U	10	9	U	9	10	UJ	10	10	UJ	10
cis-1,2-Dichloroethylene	5	U	5	5	U	5	5	UJ	5	5	UJ	5
cis-1,3-Dichloropropene	5	U	5	5	U	5	5	UJ	5	5	UJ	5
Dibromochloromethane	5	U	5	5	U	5	5	UJ	5	5	UJ	5
Ethylbenzene	5	U	5	5	U	5	5	UJ	5	5	UJ	5
Methylene chloride	6		5	30		5	8	J	5	22	J	5
Styrene	5	U	5	5	U	5	5	UJ	5	5	UJ	5
Tetrachloroethene	5	U	5	5	U	5	5	UJ	5	5	UJ	5
Toluene	1	JB	5	2	JB	5	2	J	5	1	J	5
trans-1,2-Dichloroethylene	5	U	5	5	U	5	5	UJ	5	5	UJ	5
trans-1,3-Dichloropropene	5	U	5	5	U	5	5	UJ	5	5	UJ	5
Trichloroethene	5	U	5	5	U	5	5	UJ	5	5	UJ	5
Vinyl chloride	10	U	10	9	U	9	10	UJ	10	10	UJ	10
Xylenes (total)	5	U	5	5	U	5	5	UJ	5	5	UJ	5

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J12WN0 OB C1			J12WN1 OB C2			J12WM5 OB D3			J12WM6 OB D4		
	Sample Date 7/17/06			Sample Date 7/17/06			Sample Date 7/12/06			Sample Date 7/12/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	MDL	µg/kg	Q	PQL
Pesticides												
Aldrin	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	0.33	UJ	0.33
alpha-BHC	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	0.33	UJ	0.33
alpha-Chlordane	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	0.33	UJ	0.33
beta-BHC	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	0.33	UJ	0.33
delta-BHC	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	0.33	UJ	0.33
Dichlorodiphenyldichloroethane	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	0.33	UJ	0.33
Dichlorodiphenyldichloroethylene	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	0.33	UJ	0.33
Dichlorodiphenyltrichloroethane	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	0.33	UJ	0.33
Dieldrin	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	0.33	UJ	0.33
Endosulfan I	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	2.8	J	0.33
Endosulfan II	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	0.54	J	0.33
Endosulfan sulfate	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	0.33	UJ	0.33
Endrin	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	0.33	UJ	0.33
Endrin aldehyde	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	0.33	UJ	0.33
Endrin ketone	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	0.33	UJ	0.33
gamma-BHC (Lindane)	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	0.33	UJ	0.33
gamma-Chlordane	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	0.33	UJ	0.33
Heptachlor	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	0.33	UJ	0.33
Heptachlor epoxide	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	0.33	UJ	0.33
Methoxychlor	1.7	IDJ	1.3	1.3	UD	1.3	1.3	UD	1.3	0.33	UJ	0.33
Toxaphene	13	UD	13	13	UD	13	13	UDJ	13	3.3	UJ	3.3
Herbicides												
2,4,5-T	17	UJ	17	17	UJ	17	17	UJ	17	17	UJ	17
2,4-D	34	UJ	34	33	UJ	33	34	UJ	34	33	UJ	33
2,4,5-TP	17	UJ	17	9.6	J	17	17	UJ	17	17	UJ	17
Dinoseb	17	UJ	17	17	UJ	17	17	UJ	17	17	U	17
2,4-DB	16	J	17	17	UJ	17	17	UJ	17	17	U	17
Dalapon	34	UJ	34	33	UJ	33	34	UJ	34	33	U	33
Dicamba	15	JB	34	13	JB	33	34	UJ	34	33	UJ	33
Dichloroprop	11	J	34	33	UJ	33	110	J	34	15	J	33
Pentachlorophenol	17	UJ	17	17	UJ	17	17	UJ	17	17	UJ	17
Picloram	17	UJ	17	17	UJ	17	17	UJ	17	17	U	17

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J12WM3 OB D5			J12WM4 OB D6			J12WN2 BCL A1			J12WM1 BCL A2		
	Sample Date 7/12/06			Sample Date 7/12/06			Sample Date 7/20/06			Sample Date 7/12/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL
Polychlorinated Biphenyls												
Aroclor-1016	13	U	13	13	U	13	13	U	13	13	U	13
Aroclor-1221	13	U	13	13	U	13	13	U	13	13	U	13
Aroclor-1232	13	U	13	13	U	13	13	U	13	13	U	13
Aroclor-1242	13	U	13	13	U	13	13	U	13	13	U	13
Aroclor-1248	13	U	13	13	U	13	13	U	13	13	U	13
Aroclor-1254	13	U	13	13	U	13	13	U	13	13	U	13
Aroclor-1260	13	U	13	13	U	13	13	U	13	13	U	13
Semivolatile Organic Compounds												
1,2,4-Trichlorobenzene	330	U	330	330	U	330	340	UJ	340	340	U	340
1,2-Dichlorobenzene	330	U	330	330	U	330	340	U	340	340	U	340
1,3-Dichlorobenzene	330	U	330	330	U	330	340	U	340	340	U	340
1,4-Dichlorobenzene	330	U	330	330	U	330	340	U	340	340	U	340
2,4,5-Trichlorophenol	840	U	840	830	U	830	840	U	840	840	U	840
2,4,6-Trichlorophenol	330	U	330	330	U	330	340	U	340	340	U	340
2,4-Dichlorophenol	330	U	330	330	U	330	340	U	340	340	U	340
2,4-Dimethylphenol	330	U	330	330	U	330	340	UJ	340	340	U	340
2,4-Dinitrophenol	840	U	840	830	U	830	840	U	840	840	U	840
2,4-Dinitrotoluene	330	U	330	330	U	330	340	U	340	340	U	340
2,6-Dinitrotoluene	330	U	330	330	U	330	340	U	340	340	U	340
2-Chloronaphthalene	330	U	330	330	U	330	340	U	340	340	U	340
2-Chlorophenol	330	U	330	330	U	330	340	U	340	340	U	340
2-Methylnaphthalene	330	U	330	330	U	330	340	UJ	340	340	U	340
2-Methylphenol (cresol, o-)	330	U	330	330	U	330	340	UJ	340	340	U	340
2-Nitroaniline	840	U	840	830	U	830	840	U	840	840	U	840
2-Nitrophenol	330	U	330	330	U	330	340	U	340	340	U	340
3,3'-Dichlorobenzidine	330	U	330	330	U	330	340	U	340	340	U	340
3-Nitroaniline	840	U	840	830	U	830	840	U	840	840	U	840
4,6-Dinitro-2-methylphenol	840	U	840	830	U	830	840	U	840	840	U	840
4-Bromophenyl-phenylether	330	U	330	330	U	330	340	U	340	340	U	340
4-Chloro-3-methylphenol	330	U	330	330	U	330	340	UJ	340	340	U	340
4-Chloroaniline	330	U	330	330	U	330	340	U	340	340	U	340
4-Chlorophenyl-phenylether	330	U	330	330	U	330	340	U	340	340	U	340
4-Methylphenol (p-cresol)	330	U	330	330	U	330	340	UJ	340	340	U	340
4-Nitroaniline	840	U	840	830	U	830	840	U	840	840	U	840
4-Nitrophenol	840	U	840	830	U	830	840	U	840	840	U	840
Acenaphthene	330	U	330	330	U	330	340	U	340	340	U	340
Acenaphthylene	330	U	330	330	U	330	340	U	340	340	U	340
Anthracene	330	U	330	330	U	330	340	U	340	340	U	340
Benzo(a)anthracene	330	U	330	330	U	330	340	U	340	340	U	340
Benzo(a)pyrene	330	U	330	330	U	330	340	U	340	340	U	340
Benzo(b)fluoranthene	330	U	330	330	U	330	340	U	340	340	U	340
Benzo(g,h,i)perylene	330	U	330	330	U	330	340	U	340	340	U	340
Benzo(k)fluoranthene	330	U	330	330	U	330	340	U	340	340	U	340
bis(2-Chloro-1-methylethyl)ether	330	U	330	330	U	330	340	U	340	340	U	340
bis(2-Chloroethoxy)methane	330	U	330	330	U	330	340	U	340	340	U	340
bis(2-Chloroethyl)ether	330	U	330	330	U	330	340	U	340	340	U	340
bis(2-Ethylhexyl)phthalate	21	J	330	34	J	330	51	J	340	23	J	340

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J12WM3 OB D5			J12WM4 OB D6			J12WN2 BCL A1			J12WM1 BCL A2		
	Sample Date 7/12/06			Sample Date 7/12/06			Sample Date 7/20/06			Sample Date 7/12/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	MDL	µg/kg	Q	PQL
Semivolatile Organic Compounds (continued)												
Butylbenzylphthalate	330	U	330	330	U	330	340	U	340	340	U	340
Carbazole	330	U	330	330	U	330	340	U	340	340	U	340
Chrysene	330	U	330	330	U	330	340	U	340	340	U	340
Di-n-butylphthalate	330	U	330	330	U	330	42	JB	340	340	U	340
Di-n-octylphthalate	330	U	330	330	U	330	340	U	340	340	U	340
Dibenz(a,h)anthracene	330	U	330	330	U	330	340	U	340	340	U	340
Dibenzofuran	330	U	330	330	U	330	340	U	340	340	U	340
Diethylphthalate	330	U	330	330	U	330	340	U	340	340	U	340
Dimethylphthalate	330	U	330	330	U	330	340	U	340	340	U	340
Fluoranthene	330	U	330	330	U	330	340	U	340	340	U	340
Fluorene	330	U	330	330	U	330	340	U	340	340	U	340
Hexachlorobenzene	330	U	330	330	U	330	340	U	340	340	U	340
Hexachlorobutadiene	330	U	330	330	U	330	340	U	340	340	U	340
Hexachlorocyclopentadiene	330	U	330	330	U	330	340	U	340	340	U	340
Hexachloroethane	330	U	330	330	U	330	340	U	340	340	U	340
Indeno(1,2,3-cd)pyrene	330	U	330	330	U	330	340	U	340	340	U	340
Isophorone	330	U	330	330	U	330	340	UJ	340	340	U	340
N-Nitroso-di-n-dipropylamine	330	U	330	330	U	330	340	U	340	340	U	340
N-Nitrosodiphenylamine	330	U	330	330	U	330	340	U	340	340	U	340
Naphthalene	330	U	330	330	U	330	340	U	340	340	U	340
Nitrobenzene	330	U	330	330	U	330	340	U	340	340	U	340
Pentachlorophenol	840	U	840	830	U	830	840	U	840	840	U	840
Phenanthrene	330	U	330	330	U	330	340	U	340	340	U	340
Phenol	330	U	330	330	U	330	340	U	340	340	U	340
Pyrene	330	U	330	330	U	330	340	U	340	340	U	340

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J12WM3 OB D5			J12WM4 OB D6			J12WN2 BCL A1			J12WM1 BCL A2		
	Sample Date 7/12/06			Sample Date 7/12/06			Sample Date 7/20/06			Sample Date 7/12/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	MDL	µg/kg	Q	PQL
Volatile Organic Compounds												
1,1,1-Trichloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,1,2,2-Tetrachloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,1,2-Trichloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,1-Dichloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,1-Dichloroethene	5	U	5	5	U	5	5	U	5	5	U	5
1,2-Dichloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,2-Dichloroethene (total)	5	U	5	5	U	5	5	U	5	5	U	5
1,2-Dichloropropane	5	U	5	5	U	5	5	U	5	5	U	5
2-Butanone	10	U	10	9	U	9	10	U	10	10	U	10
2-Hexanone	10	U	10	9	U	9	10	U	10	10	U	10
4-Methyl-2-pentanone	10	U	10	9	U	9	7	JB	10	10	U	10
Acetone	10	U	10	9	U	9	12		10	10	U	10
Benzene	5	U	5	5	U	5	5	U	5	5	U	5
Bromodichloromethane	5	U	5	5	U	5	5	U	5	5	U	5
Bromoform	5	U	5	5	U	5	5	U	5	5	U	5
Bromomethane	10	U	10	9	U	9	10	U	10	10	U	10
Carbon disulfide	5	U	5	5	U	5	5	U	5	5	U	5
Carbon tetrachloride	6	J	5	3	J	5	5	U	5	2	J	5
Chlorobenzene	5	U	5	5	U	5	5	U	5	5	U	5
Chloroethane	10	U	10	9	U	9	10	U	10	10	U	10
Chloroform	5	U	5	5	U	5	5	U	5	5	U	5
Chloromethane	10	U	10	9	U	9	10	U	10	10	U	10
cis-1,2-Dichloroethylene	5	U	5	5	U	5	5	U	5	5	U	5
cis-1,3-Dichloropropene	5	U	5	5	U	5	5	U	5	5	U	5
Dibromochloromethane	5	U	5	5	U	5	5	U	5	5	U	5
Ethylbenzene	5	U	5	5	U	5	5	U	5	5	U	5
Methylene chloride	14	B	5	11	B	5	13		5	6	B	5
Styrene	5	U	5	5	U	5	5	U	5	5	U	5
Tetrachloroethene	5	U	5	5	U	5	5	U	5	5	U	5
Toluene	5	U	5	5	U	5	5	U	5	5	U	5
trans-1,2-Dichloroethylene	5	U	5	5	U	5	5	U	5	5	U	5
trans-1,3-Dichloropropene	5	U	5	5	U	5	5	U	5	5	U	5
Trichloroethene	5	U	5	5	U	5	5	U	5	5	U	5
Vinyl chloride	10	U	10	9	U	9	10	U	10	10	U	10
Xylenes (total)	5	U	5	5	U	5	5	U	5	5	U	5

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J12WM3 OB D5			J12WM4 OB D6			J12WN2 BCL A1			J12WM1 BCL A2		
	Sample Date 7/12/06			Sample Date 7/12/06			Sample Date 7/20/06			Sample Date 7/12/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	MDL	µg/kg	Q	PQL
Pesticides												
Aldrin	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
alpha-BHC	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
alpha-Chlordane	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
beta-BHC	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
delta-BHC	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Dichlorodiphenyldichloroethane	1.9	D	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Dichlorodiphenyldichloroethylene	1.3	JD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Dichlorodiphenyltrichloroethane	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Dieldrin	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Endosulfan I	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Endosulfan II	0.60	JID	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Endosulfan sulfate	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Endrin	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Endrin aldehyde	1.9	D	1.3	1.3	UD	1.3	1.3	UD	1.3	1.5	JID	1.3
Endrin ketone	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
gamma-BHC (Lindane)	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
gamma-Chlordane	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Heptachlor	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Heptachlor epoxide	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Methoxychlor	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Toxaphene	13	UDJ	13	13	UDJ	13	13	UD	13	13	UDJ	13
Herbicides												
2,4,5-T	17	UJ	17	17	UJ	17	17	U	17	17	UJ	17
2,4-D	9.5	J	34	33	UJ	33	34	U	34	34	UJ	34
2,4,5-TP	17	UJ	17	17	UJ	17	17	U	17	17	UJ	17
Dinoseb	17	U	17	17	U	17	17	U	17	17	U	17
2,4-DB	9.2	J	17	8.8	J	17	9.3	J	17	17	U	17
Dalapon	33	U	33	33	U	33	14	J	34	34	U	34
Dicamba	33	UJ	33	33	UJ	33	34	U	34	34	UJ	34
Dichloroprop	33	UJ	33	33	UJ	33	34	U	34	34	UJ	34
Pentachlorophenol	17	UJ	17	17	UJ	17	17	U	17	17	UJ	17
Picloram	17	U	17	17	U	17	17	U	17	17	U	17

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J12WM2 BCL A3			J12WM0 BCL A4			J12WL9 BCL B5			J12WL8 BCL B6		
	Sample Date 7/12/06			Sample Date 7/12/06			Sample Date 7/12/06			Sample Date 7/12/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL
Polychlorinated Biphenyls												
Aroclor-1016	13	U	13	13	U	13	13	UJ	13	13	U	13
Aroclor-1221	13	U	13	13	U	13	13	UJ	13	13	U	13
Aroclor-1232	13	U	13	13	U	13	13	UJ	13	13	U	13
Aroclor-1242	13	U	13	13	U	13	13	UJ	13	13	U	13
Aroclor-1248	13	U	13	13	U	13	13	UJ	13	13	U	13
Aroclor-1254	13	U	13	13	U	13	13	UJ	13	13	U	13
Aroclor-1260	13	U	13	13	U	13	13	UJ	13	13	U	13
Semivolatile Organic Compounds												
1,2,4-Trichlorobenzene	340	U	340	330	U	330	340	U	340	330	U	330
1,2-Dichlorobenzene	340	U	340	330	U	330	340	U	340	330	U	330
1,3-Dichlorobenzene	340	U	340	330	U	330	340	U	340	330	U	330
1,4-Dichlorobenzene	340	U	340	330	U	330	340	U	340	330	U	330
2,4,5-Trichlorophenol	840	U	840	840	U	840	840	U	840	840	U	840
2,4,6-Trichlorophenol	340	U	340	330	U	330	340	U	340	330	U	330
2,4-Dichlorophenol	340	U	340	330	U	330	340	U	340	330	U	330
2,4-Dimethylphenol	340	U	340	330	U	330	340	U	340	330	U	330
2,4-Dinitrophenol	840	U	840	840	U	840	840	U	840	840	U	840
2,4-Dinitrotoluene	340	U	340	330	U	330	340	U	340	330	U	330
2,6-Dinitrotoluene	340	U	340	330	U	330	340	U	340	330	U	330
2-Chloronaphthalene	340	U	340	330	U	330	340	U	340	330	U	330
2-Chlorophenol	340	U	340	330	U	330	340	U	340	330	U	330
2-Methylnaphthalene	340	U	340	330	U	330	340	U	340	330	U	330
2-Methylphenol (cresol, o-)	340	U	340	330	U	330	340	U	340	330	U	330
2-Nitroaniline	840	U	840	840	U	840	840	U	840	840	U	840
2-Nitrophenol	340	U	340	330	U	330	340	U	340	330	U	330
3,3'-Dichlorobenzidine	340	U	340	330	U	330	340	U	340	330	U	330
3-Nitroaniline	840	U	840	840	U	840	840	U	840	840	U	840
4,6-Dinitro-2-methylphenol	840	U	840	840	U	840	840	U	840	840	U	840
4-Bromophenyl-phenylether	340	U	340	330	U	330	340	U	340	330	U	330
4-Chloro-3-methylphenol	340	U	340	330	U	330	340	U	340	330	U	330
4-Chloroaniline	340	U	340	330	U	330	340	U	340	330	U	330
4-Chlorophenyl-phenylether	340	U	340	330	U	330	340	U	340	330	U	330
4-Methylphenol (p-cresol)	340	U	340	330	U	330	340	U	340	330	U	330
4-Nitroaniline	840	U	840	840	U	840	840	U	840	840	U	840
4-Nitrophenol	840	U	840	840	U	840	840	U	840	840	U	840
Acenaphthene	340	U	340	330	U	330	340	U	340	330	U	330
Acenaphthylene	340	U	340	330	U	330	340	U	340	330	U	330
Anthracene	340	U	340	330	U	330	340	U	340	330	U	330
Benzo(a)anthracene	340	U	340	330	U	330	340	U	340	330	U	330
Benzo(a)pyrene	340	U	340	330	U	330	340	U	340	330	U	330
Benzo(b)fluoranthene	340	U	340	330	U	330	340	U	340	330	U	330
Benzo(g,h,i)perylene	340	U	340	330	U	330	340	U	340	330	U	330
Benzo(k)fluoranthene	340	U	340	330	U	330	340	U	340	330	U	330
bis(2-Chloro-1-methylethyl)ether	340	U	340	330	U	330	340	U	340	330	U	330
bis(2-Chloroethoxy)methane	340	U	340	330	U	330	340	U	340	330	U	330
bis(2-Chloroethyl)ether	340	U	340	330	U	330	340	U	340	330	U	330
bis(2-Ethylhexyl)phthalate	20	J	340	23	J	330	22	J	340	330	U	330

Attachment 1
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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J12WM2 BCL A3			J12WM0 BCL A4			J12WL9 BCL B5			J12WL8 BCL B6		
	Sample Date 7/12/06			Sample Date 7/12/06			Sample Date 7/12/06			Sample Date 7/12/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	MDL	µg/kg	Q	PQL
Semivolatile Organic Compounds (continued)												
Butylbenzylphthalate	340	U	340	330	U	330	340	U	340	330	U	330
Carbazole	340	U	340	330	U	330	340	U	340	330	U	330
Chrysene	340	U	340	330	U	330	340	U	340	330	U	330
Di-n-butylphthalate	27	J	340	330	U	330	340	U	340	330	U	330
Di-n-octylphthalate	340	U	340	330	U	330	340	U	340	330	U	330
Dibenz(a,h)anthracene	340	U	340	330	U	330	340	U	340	330	U	330
Dibenzofuran	340	U	340	330	U	330	340	U	340	330	U	330
Diethylphthalate	340	U	340	330	U	330	340	U	340	330	U	330
Dimethylphthalate	340	U	340	330	U	330	340	U	340	330	U	330
Fluoranthene	340	U	340	330	U	330	340	U	340	330	U	330
Fluorene	340	U	340	330	U	330	340	U	340	330	U	330
Hexachlorobenzene	340	U	340	330	U	330	340	U	340	330	U	330
Hexachlorobutadiene	340	U	340	330	U	330	340	U	340	330	U	330
Hexachlorocyclopentadiene	340	U	340	330	U	330	340	U	340	330	U	330
Hexachloroethane	340	U	340	330	U	330	340	U	340	330	U	330
Indeno(1,2,3-cd)pyrene	340	U	340	330	U	330	340	U	340	330	U	330
Isophorone	340	U	340	330	U	330	340	U	340	330	U	330
N-Nitroso-di-n-dipropylamine	340	U	340	330	U	330	340	U	340	330	U	330
N-Nitrosodiphenylamine	340	U	340	330	U	330	340	U	340	330	U	330
Naphthalene	340	U	340	330	U	330	340	U	340	330	U	330
Nitrobenzene	340	U	340	330	U	330	340	U	340	330	U	330
Pentachlorophenol	840	U	840	840	U	840	840	U	840	840	U	840
Phenanthrene	340	U	340	330	U	330	340	U	340	330	U	330
Phenol	340	U	340	330	U	330	340	U	340	330	U	330
Pyrene	340	U	340	330	U	330	340	U	340	330	U	330

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J12WM2 BCL A3			J12WM0 BCL A4			J12WL9 BCL B5			J12WL8 BCL B6		
	Sample Date 7/12/06			Sample Date 7/12/06			Sample Date 7/12/06			Sample Date 7/12/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	MDL	µg/kg	Q	PQL
Volatile Organic Compounds												
1,1,1-Trichloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,1,2,2-Tetrachloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,1,2-Trichloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,1-Dichloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,1-Dichloroethene	5	U	5	5	U	5	5	U	5	5	U	5
1,2-Dichloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,2-Dichloroethene (total)	5	U	5	5	U	5	5	U	5	5	U	5
1,2-Dichloropropane	5	U	5	5	U	5	5	U	5	5	U	5
2-Butanone	10	U	10	10	U	10	10	U	10	10	U	10
2-Hexanone	10	U	10	10	U	10	10	U	10	10	U	10
4-Methyl-2-pentanone	10	U	10	10	U	10	10	U	10	10	U	10
Acetone	10	U	10	10	U	10	10	U	10	10	U	10
Benzene	5	U	5	5	U	5	5	U	5	5	U	5
Bromodichloromethane	5	U	5	5	U	5	5	U	5	5	U	5
Bromoform	5	U	5	5	U	5	5	U	5	5	U	5
Bromomethane	10	U	10	10	U	10	10	U	10	10	U	10
Carbon disulfide	5	U	5	5	U	5	5	U	5	5	U	5
Carbon tetrachloride	4	J	5	2	J	5	11	J	5	32	J	5
Chlorobenzene	5	U	5	5	U	5	5	U	5	5	U	5
Chloroethane	10	U	10	10	U	10	10	U	10	10	U	10
Chloroform	5	U	5	5	U	5	5	U	5	5	U	5
Chloromethane	10	U	10	10	U	10	10	U	10	10	U	10
cis-1,2-Dichloroethylene	5	U	5	5	U	5	5	U	5	5	U	5
cis-1,3-Dichloropropene	5	U	5	5	U	5	5	U	5	5	U	5
Dibromochloromethane	5	U	5	5	U	5	5	U	5	5	U	5
Ethylbenzene	5	U	5	5	U	5	5	U	5	5	U	5
Methylene chloride	7	B	5	9	B	5	5	U	5	5		5
Styrene	5	U	5	5	U	5	5	U	5	5	U	5
Tetrachloroethene	5	U	5	5	U	5	5	U	5	5	U	5
Toluene	5	U	5	5	U	5	5	U	5	1	J	5
trans-1,2-Dichloroethylene	5	U	5	5	U	5	5	U	5	5	U	5
trans-1,3-Dichloropropene	5	U	5	5	U	5	5	U	5	5	U	5
Trichloroethene	5	U	5	5	U	5	5	U	5	5	U	5
Vinyl chloride	10	U	10	10	U	10	10	U	10	10	U	10
Xylenes (total)	5	U	5	1	J	5	5	U	5	5	U	5

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J12WM2 BCL A3			J12WM0 BCL A4			J12WL9 BCL B5			J12WL8 BCL B6		
	Sample Date 7/12/06			Sample Date 7/12/06			Sample Date 7/12/06			Sample Date 7/12/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	MDL	µg/kg	Q	PQL
Pesticides												
Aldrin	1.3	UD	1.3	1.3	UD	1.3	0.34	UJ	0.34	1.3	UD	1.3
alpha-BHC	1.3	UD	1.3	1.3	UD	1.3	0.34	UJ	0.34	1.3	UD	1.3
alpha-Chlordane	1.3	UD	1.3	1.3	UD	1.3	0.34	UJ	0.34	1.3	UD	1.3
beta-BHC	1.3	UD	1.3	2.2	D	1.3	0.34	UJ	0.34	1.3	UD	1.3
delta-BHC	1.3	UD	1.3	1.3	UD	1.3	0.34	UJ	0.34	1.3	UD	1.3
Dichlorodiphenyldichloroethane	1.3	UD	1.3	1.3	UD	1.3	0.34	UJ	0.34	1.3	UD	1.3
Dichlorodiphenyldichloroethylene	1.3	UD	1.3	1.3	UD	1.3	0.34	UJ	0.34	1.3	UD	1.3
Dichlorodiphenyltrichloroethane	1.3	UD	1.3	1.3	UD	1.3	0.34	UJ	0.34	1.3	UD	1.3
Dieldrin	1.3	UD	1.3	1.3	UD	1.3	0.34	UJ	0.34	1.3	UD	1.3
Endosulfan I	1.3	UD	1.3	1.3	UD	1.3	0.34	UJ	0.34	1.3	UD	1.3
Endosulfan II	1.3	UD	1.3	1.3	UD	1.3	0.34	UJ	0.34	1.3	UD	1.3
Endosulfan sulfate	1.3	UD	1.3	1.3	UD	1.3	0.84	J	0.34	1.3	UD	1.3
Endrin	1.3	UD	1.3	1.3	UD	1.3	0.34	UJ	0.34	1.3	UD	1.3
Endrin aldehyde	1.3	UD	1.3	1.3	UD	1.3	0.34	UJ	0.34	1.3	UD	1.3
Endrin ketone	1.3	UD	1.3	1.3	UD	1.3	1.4	J	0.34	1.3	UD	1.3
gamma-BHC (Lindane)	1.3	UD	1.3	1.3	UD	1.3	0.34	UJ	0.34	1.3	UD	1.3
gamma-Chlordane	1.3	UD	1.3	1.3	UD	1.3	0.34	UJ	0.34	1.3	UD	1.3
Heptachlor	1.3	UD	1.3	1.3	UD	1.3	0.34	UJ	0.34	1.3	UD	1.3
Heptachlor epoxide	1.3	UD	1.3	1.3	UD	1.3	0.34	UJ	0.34	1.3	UD	1.3
Methoxychlor	1.3	UD	1.3	1.3	UD	1.3	0.34	UJ	0.34	1.3	UD	1.3
Toxaphene	13	UDJ	13	13	UDJ	13	3.4	UJ	3.4	13	UDJ	13
Herbicides												
2,4,5-T	17	UJ	17	17	UJ	17	17	UJ	17	17	UJ	17
2,4-D	34	UJ	34	33	UJ	33	34	UJ	34	33	UJ	33
2,4,5-TP	17	UJ	17	17	UJ	17	17	UJ	17	17	UJ	17
Dinoseb	17	U	17	17	UJ	17	17	UJ	17	17	U	17
2,4-DB	9.4	J	17	17	UJ	17	17	UJ	17	17	U	17
Dalapon	34		34	33	UJ	33	48	J	34	33	U	33
Dicamba	34	UJ	34	11	J	33	34	UJ	34	33	UJ	33
Dichloroprop	34	UJ	34	33	UJ	33	34	UJ	34	9.7	J	17
Pentachlorophenol	17	UJ	17	17	UJ	17	17	UJ	17	17	UJ	17
Picloram	17	U	17	17	UJ	17	17	UJ	17	17	U	17

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J12WL7 BCL B7			J12WL6 BCL B8			J12WW0 Split of J12WL6			J12WK7 BCL C9		
	Sample Date 7/12/06			Sample Date 7/12/06			Sample Date 7/12/06			Sample Date 7/11/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL
Polychlorinated Biphenyls												
Aroclor-1016	13	U	13	13	U	13	17	U	17	13	U	13
Aroclor-1221	13	U	13	13	U	13	17	U	17	13	U	13
Aroclor-1232	13	U	13	13	U	13	17	U	17	13	U	13
Aroclor-1242	13	U	13	13	U	13	17	U	17	13	U	13
Aroclor-1248	13	U	13	13	U	13	17	U	17	13	U	13
Aroclor-1254	13	U	13	13	U	13	47	J	17	13	U	13
Aroclor-1260	13	U	13	13	U	13	130	J	17	13	U	13
Semivolatile Organic Compounds												
1,2,4-Trichlorobenzene	330	U	330	340	U	340	330	U	330	330	UJ	330
1,2-Dichlorobenzene	330	U	330	340	U	340	330	U	330	330	U	330
1,3-Dichlorobenzene	330	U	330	340	U	340	330	U	330	330	U	330
1,4-Dichlorobenzene	330	U	330	340	U	340	330	U	330	330	U	330
2,4,5-Trichlorophenol	830	U	830	840	U	840	330	U	330	840	U	840
2,4,6-Trichlorophenol	330	U	330	340	U	340	330	U	330	330	U	330
2,4-Dichlorophenol	330	U	330	340	U	340	330	U	330	330	U	330
2,4-Dimethylphenol	330	U	330	340	U	340	330	U	330	330	UJ	330
2,4-Dinitrophenol	830	U	830	840	U	840	1600	U	1600	840	UR	840
2,4-Dinitrotoluene	330	U	330	340	U	340	330	UN	330	330	U	330
2,6-Dinitrotoluene	330	U	330	340	U	340	330	UN	330	330	U	330
2-Chloronaphthalene	330	U	330	340	U	340	330	U	330	330	U	330
2-Chlorophenol	330	U	330	340	U	340	330	U	330	330	U	330
2-Methylnaphthalene	330	U	330	340	U	340	330	U	330	330	UJ	330
2-Methylphenol (cresol, o-)	330	U	330	340	U	340	330	U	330	330	U	330
2-Nitroaniline	830	U	830	840	U	840	1600	U	1600	840	U	840
2-Nitrophenol	330	U	330	340	U	340	330	U	330	330	U	330
3,3'-Dichlorobenzidine	330	U	330	340	U	340	1600	U	1600	330	U	330
3-Nitroaniline	830	U	830	840	U	840	1600	U	1600	840	U	840
4,6-Dinitro-2-methylphenol	830	U	830	840	U	840	1600	U	1600	840	U	840
4-Bromophenyl-phenylether	330	U	330	340	U	340	330	U	330	330	U	330
4-Chloro-3-methylphenol	330	U	330	340	U	340	330	U	330	330	U	330
4-Chloroaniline	330	U	330	340	U	340	330	U	330	330	U	330
4-Chlorophenyl-phenylether	330	U	330	340	U	340	330	U	330	330	U	330
4-Methylphenol (p-cresol)	330	U	330	340	U	340	670	U	670	330	U	330
4-Nitroaniline	830	U	830	840	U	840	1600	U	1600	840	U	840
4-Nitrophenol	830	U	830	840	U	840	1600	U	1600	840	U	840
Acenaphthene	330	U	330	340	U	340	330	U	330	330	U	330
Acenaphthylene	330	U	330	340	U	340	330	U	330	330	U	330
Anthracene	330	U	330	340	U	340	330	U	330	330	U	330
Benzo(a)anthracene	330	U	330	340	U	340	34	J	330	330	U	330
Benzo(a)pyrene	330	U	330	340	U	340	34	J	330	330	U	330
Benzo(b)fluoranthene	330	U	330	340	U	340	39	J	330	330	U	330
Benzo(g,h,i)perylene	330	U	330	340	U	340	36	J	330	330	U	330
Benzo(k)fluoranthene	330	U	330	340	U	340	330	U	330	330	U	330
bis(2-Chloro-1-methylethyl)ether	330	U	330	340	U	340	330	U	330	330	U	330
bis(2-Chloroethoxy)methane	330	U	330	340	U	340	330	U	330	330	U	330
bis(2-Chloroethyl)ether	330	U	330	340	U	340	330	U	330	330	U	330
bis(2-Ethylhexyl)phthalate	330	U	330	340	U	340	280	J	330	21	JB	330

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J12WL7 BCL B7			J12WL6 BCL B8			J12WW0 Split of J12WL6			J12WK7 BCL C9		
	Sample Date 7/12/06			Sample Date 7/12/06			Sample Date 7/12/06			Sample Date 7/11/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	MDL	µg/kg	Q	PQL
Semivolatile Organic Compounds (continued)												
Butylbenzylphthalate	330	U	330	340	U	340	330	U	330	330	U	330
Carbazole	330	U	330	340	U	340	330	U	330	330	U	330
Chrysene	330	U	330	340	U	340	77	J	330	330	U	330
Di-n-butylphthalate	330	U	330	340	U	340	330	U	330	23	J	330
Di-n-octylphthalate	330	U	330	340	U	340	330	U	330	330	U	330
Dibenz(a,h)anthracene	330	U	330	340	U	340	330	U	330	330	U	330
Dibenzofuran	330	U	330	340	U	340	330	U	330	330	U	330
Diethylphthalate	330	U	330	340	U	340	330	U	330	330	U	330
Dimethylphthalate	330	U	330	340	U	340	330	U	330	330	U	330
Fluoranthene	330	U	330	340	U	340	93	J	330	330	U	330
Fluorene	330	U	330	340	U	340	330	U	330	330	U	330
Hexachlorobenzene	330	U	330	340	U	340	330	U	330	330	U	330
Hexachlorobutadiene	330	U	330	340	U	340	330	U	330	330	U	330
Hexachlorocyclopentadiene	330	U	330	340	U	340	1600	U	1600	330	U	330
Hexachloroethane	330	U	330	340	U	340	330	U	330	330	U	330
Indeno(1,2,3-cd)pyrene	330	U	330	340	U	340	330	U	330	330	U	330
Isophorone	330	U	330	340	U	340	330	U	330	330	UJ	330
N-Nitroso-di-n-dipropylamine	330	U	330	340	U	340	330	U	330	330	U	330
N-Nitrosodiphenylamine	330	U	330	340	U	340	330	U	330	330	U	330
Naphthalene	330	U	330	340	U	340	330	U	330	330	U	330
Nitrobenzene	330	U	330	340	U	340	330	U	330	330	U	330
Pentachlorophenol	830	U	830	840	U	840	1600	U	1600	840	U	840
Phenanthrene	330	U	330	340	U	340	78	J	330	330	U	330
Phenol	330	U	330	340	U	340	330	U	330	330	U	330
Pyrene	330	U	330	340	U	340	87	J	330	330	U	330

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J12WL7 BCL B7			J12WL6 BCL B8			J12WW0 Split of J12WL6			J12WK7 BCL C9		
	Sample Date 7/12/06			Sample Date 7/12/06			Sample Date 7/12/06			Sample Date 7/11/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	MDL	µg/kg	Q	PQL
Volatile Organic Compounds												
1,1,1-Trichloroethane	5	U	5	5	U	5	5.0	U	5.0	5	U	5
1,1,2,2-Tetrachloroethane	5	U	5	5	U	5	5.0	U	5.0	5	U	5
1,1,2-Trichloroethane	5	U	5	5	U	5	5.0	U	5.0	5	U	5
1,1-Dichloroethane	5	U	5	5	U	5	5.0	U	5.0	5	U	5
1,1-Dichloroethene	5	U	5	5	U	5	5.0	U	5.0	5	U	5
1,2-Dichloroethane	5	U	5	5	U	5	5.0	U	5.0	5	U	5
1,2-Dichloroethene (total)	5	U	5	5	U	5	10	U	10	5	U	5
1,2-Dichloropropane	5	U	5	5	U	5	5.0	U	5.0	5	U	5
2-Butanone	9	U	9	10	U	10	10	U	10	10	U	10
2-Hexanone	9	U	9	10	U	10	20	U	20	10	U	10
4-Methyl-2-pentanone	9	U	9	10	U	10	10	U	10	10	U	10
Acetone	9	U	9	2	J	10	20	U	20	18		10
Benzene	5	U	5	5	U	5	5.0	U	5.0	5	U	5
Bromodichloromethane	5	U	5	5	U	5	5.0	U	5.0	5	U	5
Bromoform	5	U	5	5	U	5	5.0	U	5.0	5	U	5
Bromomethane	9	U	9	10	U	10	10	U	10	10	U	10
Carbon disulfide	5	U	5	5	U	5	5.0	U	5.0	5	U	5
Carbon tetrachloride	13	J	5	13	J	5	5.0	U	5.0	5	U	5
Chlorobenzene	5	U	5	5	U	5	5.0	U	5.0	5	U	5
Chloroethane	9	U	9	10	U	10	10	U	10	10	U	10
Chloroform	5	U	5	5	U	5	5.0	U	5.0	5	U	5
Chloromethane	9	U	9	10	U	10	10	U	10	10	U	10
cis-1,2-Dichloroethylene	5	U	5	5	U	5				5	U	5
cis-1,3-Dichloropropene	5	U	5	5	U	5	5.0	U	5.0	5	U	5
Dibromochloromethane	5	U	5	5	U	5	5.0	U	5.0	5	U	5
Ethylbenzene	5	U	5	5	U	5	5.0	U	5.0	5	U	5
Methylene chloride	2	J	5	5	U	5	5.0	U	5.0	14	BJ	5
Styrene	5	U	5	5	U	5	5.0	U	5.0	5	U	5
Tetrachloroethene	5	U	5	5	U	5	5.0	U	5.0	5	U	5
Toluene	5	U	5	5	U	5	0.68	J	5.0	5	U	5
trans-1,2-Dichloroethylene	5	U	5	5	U	5				5	U	5
trans-1,3-Dichloropropene	5	U	5	5	U	5	5.0	U	5.0	5	U	5
Trichloroethene	5	U	5	5	U	5	5.0	U	5.0	5	U	5
Vinyl chloride	9	U	9	10	U	10	5.0	U	5.0	10	U	10
Xylenes (total)	5	U	5	5	U	5	10	U	10	5	U	5

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J12WL7 BCL B7			J12WL6 BCL B8			J12WW0 Split of J12WL6			J12WK7 BCL C9		
	Sample Date 7/12/06			Sample Date 7/12/06			Sample Date 7/12/06			Sample Date 7/11/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	MDL	µg/kg	Q	PQL
Pesticides												
Aldrin	1.3	UD	1.3	1.3	UD	1.3	17	UD	17	1.3	UD	1.3
alpha-BHC	1.3	UD	1.3	1.3	UD	1.3	17	UD	17	1.3	UDJ	1.3
alpha-Chlordane	1.3	UD	1.3	1.3	UD	1.3	17	UD	17	1.3	UD	1.3
beta-BHC	1.3	UD	1.3	1.3	UD	1.3	17	UD	17	1.3	UD	1.3
delta-BHC	1.3	UD	1.3	1.3	UD	1.3	17	UD	17	1.3	UDJ	1.3
Dichlorodiphenyldichloroethane	1.3	UD	1.3	1.3	UD	1.3	17	UD	17	1.3	UD	1.3
Dichlorodiphenyldichloroethylene	1.3	UD	1.3	1.3	UD	1.3	17	UD	17	1.3	UDJ	1.3
Dichlorodiphenyltrichloroethane	1.6	JD	1.3	1.3	UD	1.3	17	UD	17	1.3	UD	1.3
Dieldrin	1.3	UD	1.3	1.3	UD	1.3	17	UD	17	1.3	UD	1.3
Endosulfan I	1.3	UD	1.3	1.3	UD	1.3	17	UD	17	1.3	UD	1.3
Endosulfan II	1.3	UD	1.3	1.3	UD	1.3	17	UD	17	1.3	UD	1.3
Endosulfan sulfate	1.3	UD	1.3	1.3	UD	1.3	17	UD	17	1.3	UD	1.3
Endrin	1.3	UD	1.3	1.3	UD	1.3	17	UD	17	1.3	UD	1.3
Endrin aldehyde	1.3	JD	1.3	1.3	UD	1.3	17	UD	17	1.3	UD	1.3
Endrin ketone	1.3	UD	1.3	1.3	UD	1.3	17	UD	17	1.3	UD	1.3
gamma-BHC (Lindane)	1.3	UD	1.3	1.3	UD	1.3	17	UD	17	1.3	UDJ	1.3
gamma-Chlordane	1.3	UD	1.3	1.3	UD	1.3	17	UD	17	1.3	UD	1.3
Heptachlor	1.3	UD	1.3	1.3	UD	1.3	17	UD	17	1.3	UD	1.3
Heptachlor epoxide	1.3	UD	1.3	1.3	UD	1.3	17	UD	17	1.3	UD	1.3
Methoxychlor	1.3	UD	1.3	1.3	UD	1.3	33	UD	33	3.7	D	1.3
Toxaphene	13	UDJ	13	13	UDJ	13	680	UD	680	13	UD	13
Herbicides												
2,4,5-T	17	UJ	17	17	UJ	17	20	U	20	17	U	17
2,4-D	33	UJ	33	34	UJ	34	81	U	81	33	U	33
2,4,5-TP	17	UJ	17	17	UJ	17	20	U	20	17	U	17
MCP							8100	U	8100			
MCPA							8100	U	8100			
Dinoseb	17	U	17	17	U	17	25	U	25	17	U	17
2,4-DB	17	U	17	17	U	17	81	U	81	17	U	17
Dalapon	33	U	33	34	U	34	40	U	40	33	U	33
Dicamba	33	UJ	33	34	UJ	34	40	U	40	12	J	33
Dichloroprop	10	J	33	210	J	17	81	U	81	11	J	33
Pentachlorophenol	17	UJ	17	17	UJ	17				17	U	17
Picloram	17	U	17	17	U	17				17	UR	17

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J12WK9 BCL C10			J12WK8 BCL C1			J12WL2 BCL C2			J12WL3 BCL D3		
	Sample Date 7/11/06			Sample Date 7/11/06			Sample Date 7/11/06			Sample Date 7/11/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL
Polychlorinated Biphenyls												
Aroclor-1016	13	U	13	13	U	13	13	U	13	13	U	13
Aroclor-1221	13	U	13	13	U	13	13	U	13	13	U	13
Aroclor-1232	13	U	13	13	U	13	13	U	13	13	U	13
Aroclor-1242	13	U	13	13	U	13	13	U	13	13	U	13
Aroclor-1248	13	U	13	13	U	13	13	U	13	13	U	13
Aroclor-1254	13	U	13	13	U	13	13	U	13	13	U	13
Aroclor-1260	13	U	13	13	U	13	13	U	13	13	U	13
Semivolatile Organic Compounds												
1,2,4-Trichlorobenzene	340	UJ	340	340	UJ	340	340	UJ	340	340	UJ	340
1,2-Dichlorobenzene	340	U	340	340	U	340	340	U	340	340	U	340
1,3-Dichlorobenzene	340	U	340	340	U	340	340	U	340	340	U	340
1,4-Dichlorobenzene	340	U	340	340	U	340	340	U	340	340	U	340
2,4,5-Trichlorophenol	840	U	840	840	U	840	840	U	840	840	U	840
2,4,6-Trichlorophenol	340	U	340	340	U	340	340	U	340	340	U	340
2,4-Dichlorophenol	340	U	340	340	U	340	340	U	340	340	U	340
2,4-Dimethylphenol	340	UJ	340	340	UJ	340	340	UJ	340	340	UJ	340
2,4-Dinitrophenol	840	UR	840	840	UR	840	840	UR	840	840	UR	840
2,4-Dinitrotoluene	340	U	340	340	U	340	340	U	340	340	U	340
2,6-Dinitrotoluene	340	U	340	340	U	340	340	U	340	340	U	340
2-Chloronaphthalene	340	U	340	340	U	340	340	U	340	340	U	340
2-Chlorophenol	340	U	340	340	U	340	340	U	340	340	U	340
2-Methylnaphthalene	340	UJ	340	340	UJ	340	340	UJ	340	340	UJ	340
2-Methylphenol (cresol, o-)	340	U	340	340	U	340	340	U	340	340	U	340
2-Nitroaniline	840	U	840	840	U	840	840	U	840	840	U	840
2-Nitrophenol	340	U	340	340	U	340	340	U	340	340	U	340
3,3'-Dichlorobenzidine	340	U	340	340	U	340	340	U	340	340	U	340
3-Nitroaniline	840	U	840	840	U	840	840	U	840	840	U	840
4,6-Dinitro-2-methylphenol	840	U	840	840	U	840	840	U	840	840	U	840
4-Bromophenyl-phenylether	340	U	340	340	U	340	340	U	340	340	U	340
4-Chloro-3-methylphenol	340	U	340	340	U	340	340	U	340	340	U	340
4-Chloroaniline	340	U	340	340	U	340	340	U	340	340	U	340
4-Chlorophenyl-phenylether	340	U	340	340	U	340	340	U	340	340	U	340
4-Methylphenol (p-cresol)	340	U	340	340	U	340	340	U	340	340	U	340
4-Nitroaniline	840	U	840	840	U	840	840	U	840	840	U	840
4-Nitrophenol	840	U	840	840	U	840	840	U	840	840	U	840
Acenaphthene	340	U	340	340	U	340	340	U	340	340	U	340
Acenaphthylene	340	U	340	340	U	340	340	U	340	340	U	340
Anthracene	340	U	340	340	U	340	340	U	340	340	U	340
Benzo(a)anthracene	340	U	340	340	U	340	340	U	340	340	U	340
Benzo(a)pyrene	340	U	340	340	U	340	340	U	340	340	U	340
Benzo(b)fluoranthene	340	U	340	340	U	340	340	U	340	340	U	340
Benzo(g,h,i)perylene	340	U	340	340	U	340	340	U	340	340	U	340
Benzo(k)fluoranthene	340	U	340	340	U	340	340	U	340	340	U	340
bis(2-Chloro-1-methylethyl)ether	340	U	340	340	U	340	340	U	340	340	U	340
bis(2-Chloroethoxy)methane	340	U	340	340	U	340	340	U	340	340	U	340
bis(2-Chloroethyl)ether	340	U	340	340	U	340	340	U	340	340	U	340
bis(2-Ethylhexyl)phthalate	36	JB	340	29	JB	340	23	JB	340	29	JB	340

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J12WK9 BCL C10			J12WK8 BCL C1			J12WL2 BCL C2			J12WL3 BCL D3		
	Sample Date 7/11/06			Sample Date 7/11/06			Sample Date 7/11/06			Sample Date 7/11/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	MDL	µg/kg	Q	PQL
Semivolatile Organic Compounds (continued)												
Butylbenzylphthalate	340	U	340	340	U	340	340	U	340	340	U	340
Carbazole	340	U	340	340	U	340	340	U	340	340	U	340
Chrysene	340	U	340	340	U	340	340	U	340	340	U	340
Di-n-butylphthalate	23	J	340	49	J	340	340	U	340	18	J	340
Di-n-octylphthalate	340	U	340	340	U	340	340	U	340	340	U	340
Dibenz(a,h)anthracene	340	U	340	340	U	340	340	U	340	340	U	340
Dibenzofuran	340	U	340	340	U	340	340	U	340	340	U	340
Diethylphthalate	340	U	340	19	J	340	340	U	340	340	U	340
Dimethylphthalate	340	U	340	340	U	340	340	U	340	340	U	340
Fluoranthene	340	U	340	340	U	340	340	U	340	340	U	340
Fluorene	340	U	340	340	U	340	340	U	340	340	U	340
Hexachlorobenzene	340	U	340	340	U	340	340	U	340	340	U	340
Hexachlorobutadiene	340	U	340	340	U	340	340	U	340	340	U	340
Hexachlorocyclopentadiene	340	U	340	340	U	340	340	U	340	340	U	340
Hexachloroethane	340	U	340	340	U	340	340	U	340	340	U	340
Indeno(1,2,3-cd)pyrene	340	U	340	340	U	340	340	U	340	340	U	340
Isophorone	340	UJ	340	340	UJ	340	340	UJ	340	340	UJ	340
N-Nitroso-di-n-dipropylamine	340	U	340	340	U	340	340	U	340	340	U	340
N-Nitrosodiphenylamine	340	U	340	340	U	340	340	U	340	340	U	340
Naphthalene	340	U	340	340	U	340	340	U	340	340	U	340
Nitrobenzene	340	U	340	340	U	340	340	U	340	340	U	340
Pentachlorophenol	840	U	840	840	U	840	840	U	840	840	U	840
Phenanthrene	340	U	340	340	U	340	340	U	340	340	U	340
Phenol	340	U	340	27	J	340	340	U	340	27	J	340
Pyrene	340	U	340	340	U	340	340	U	340	340	U	340

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J12WK9 BCL C10			J12WK8 BCL C1			J12WL2 BCL C2			J12WL3 BCL D3		
	Sample Date 7/11/06			Sample Date 7/11/06			Sample Date 7/11/06			Sample Date 7/11/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	MDL	µg/kg	Q	PQL
Volatile Organic Compounds												
1,1,1-Trichloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,1,2,2-Tetrachloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,1,2-Trichloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,1-Dichloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,1-Dichloroethene	5	U	5	5	U	5	5	U	5	5	U	5
1,2-Dichloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,2-Dichloroethene (total)	5	U	5	5	U	5	5	U	5	5	U	5
1,2-Dichloropropane	5	U	5	5	U	5	5	U	5	5	U	5
2-Butanone	10	U	10	10	U	10	10	U	10	10	U	10
2-Hexanone	10	U	10	10	U	10	10	U	10	10	U	10
4-Methyl-2-pentanone	10	U	10	10	U	10	10	U	10	10	U	10
Acetone	10	U	10	10	U	10	20		10	10	U	10
Benzene	5	U	5	5	U	5	5	U	5	5	U	5
Bromodichloromethane	5	U	5	5	U	5	5	U	5	5	U	5
Bromoform	5	U	5	5	U	5	5	U	5	5	U	5
Bromomethane	10	U	10	10	U	10	10	U	10	10	U	10
Carbon disulfide	5	U	5	5	U	5	5	U	5	5	U	5
Carbon tetrachloride	5	U	5	5	U	5	11		5	6		5
Chlorobenzene	5	U	5	5	U	5	5	U	5	5	U	5
Chloroethane	10	U	10	10	U	10	10	U	10	10	U	10
Chloroform	5	U	5	5	U	5	5	U	5	5	U	5
Chloromethane	10	U	10	10	U	10	10	U	10	10	U	10
cis-1,2-Dichloroethylene	5	U	5	5	U	5	5	U	5	5	U	5
cis-1,3-Dichloropropene	5	U	5	5	U	5	5	U	5	5	U	5
Dibromochloromethane	5	U	5	5	U	5	5	U	5	5	U	5
Ethylbenzene	5	U	5	5	U	5	5	U	5	5	U	5
Methylene chloride	8	BJ	5	5	BJ	5	18	BJ	5	15	BJ	5
Styrene	5	U	5	5	U	5	5	U	5	5	U	5
Tetrachloroethene	5	U	5	5	U	5	5	U	5	5	U	5
Toluene	5	U	5	5	U	5	5	U	5	5	U	5
trans-1,2-Dichloroethylene	5	U	5	5	U	5	5	U	5	5	U	5
trans-1,3-Dichloropropene	5	U	5	5	U	5	5	U	5	5	U	5
Trichloroethene	5	U	5	5	U	5	5	U	5	5	U	5
Vinyl chloride	10	U	10	10	U	10	10	U	10	10	U	10
Xylenes (total)	5	U	5	5	U	5	5	U	5	5	U	5

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J12WK9 BCL C10			J12WK8 BCL C1			J12WL2 BCL C2			J12WL3 BCL D3		
	Sample Date 7/11/06			Sample Date 7/11/06			Sample Date 7/11/06			Sample Date 7/11/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	MDL	µg/kg	Q	PQL
Pesticides												
Aldrin	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
alpha-BHC	1.3	UDJ	1.3	1.3	UDJ	1.3	1.3	UDJ	1.3	1.3	UDJ	1.3
alpha-Chlordane	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
beta-BHC	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
delta-BHC	1.3	UDJ	1.3	1.3	UDJ	1.3	1.3	UDJ	1.3	1.3	UDJ	1.3
Dichlorodiphenyldichloroethane	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Dichlorodiphenyldichloroethylene	1.3	UDJ	1.3	1.3	UDJ	1.3	1.3	UDJ	1.3	1.3	UDJ	1.3
Dichlorodiphenyltrichloroethane	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Dieldrin	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Endosulfan I	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Endosulfan II	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Endosulfan sulfate	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Endrin	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Endrin aldehyde	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Endrin ketone	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
gamma-BHC (Lindane)	1.3	UDJ	1.3	1.3	UDJ	1.3	1.3	UDJ	1.3	1.3	UDJ	1.3
gamma-Chlordane	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Heptachlor	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Heptachlor epoxide	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Methoxychlor	3.5	D	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Toxaphene	13	UD	13	13	UD	13	13	UD	13	13	UD	13
Herbicides												
2,4,5-T	17	U	17	17	U	17	17	UJ	17	17	U	17
2,4-D	34	U	34	34	U	34	34	UJ	34	34	U	34
2,4,5-TP	17	U	17	17	U	17	17	UJ	17	17	U	17
Dinoseb	17	U	17	17	U	17	17	UJ	17	17	U	17
2,4-DB	17	U	17	17	U	17	17	UJ	17	17	U	17
Dalapon	34	U	34	34	U	34	34	UJ	34	34	U	34
Dicamba	34	U	34	9.4	J	34	9.9	J	34	34	U	34
Dichloroprop	34	U	34	34	U	34	34	UJ	34	34	U	34
Pentachlorophenol	17	U	17	17	U	17	17	UJ	17	17	U	17
Picloram	17	UR	17	17	UR	17	17	UR	17	17	UR	17

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J12WL4 BCL D4			J12WL5 Duplicate of J12WL4			J12WL0 BCL D5			J12WL1 BCL D6		
	Sample Date 7/11/06			Sample Date 7/11/06			Sample Date 7/11/06			Sample Date 7/11/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL
Polychlorinated Biphenyls												
Aroclor-1016	13	U	13	13	U	13	13	U	13	13	U	13
Aroclor-1221	13	U	13	13	U	13	13	U	13	13	U	13
Aroclor-1232	13	U	13	13	U	13	13	U	13	13	U	13
Aroclor-1242	13	U	13	13	U	13	13	U	13	13	U	13
Aroclor-1248	13	U	13	13	U	13	13	U	13	13	U	13
Aroclor-1254	13	U	13	13	U	13	13	U	13	13	U	13
Aroclor-1260	13	U	13	13	U	13	13	U	13	13	U	13
Semivolatile Organic Compounds												
1,2,4-Trichlorobenzene	330	UJ	330	330	UJ	330	330	UJ	330	330	UJ	330
1,2-Dichlorobenzene	330	U	330	330	U	330	330	U	330	330	U	330
1,3-Dichlorobenzene	330	U	330	330	U	330	330	U	330	330	U	330
1,4-Dichlorobenzene	330	U	330	330	U	330	330	U	330	330	U	330
2,4,5-Trichlorophenol	840	U	840	840	U	840	840	U	840	840	U	840
2,4,6-Trichlorophenol	330	U	330	330	U	330	330	U	330	330	U	330
2,4-Dichlorophenol	330	U	330	330	U	330	330	U	330	330	U	330
2,4-Dimethylphenol	330	UJ	330	330	UJ	330	330	UJ	330	330	UJ	330
2,4-Dinitrophenol	840	UR	840	840	UR	840	840	UR	840	840	UR	840
2,4-Dinitrotoluene	330	U	330	330	U	330	330	U	330	330	U	330
2,6-Dinitrotoluene	330	U	330	330	U	330	330	U	330	330	U	330
2-Chloronaphthalene	330	U	330	330	U	330	330	U	330	330	U	330
2-Chlorophenol	330	U	330	330	U	330	330	U	330	330	U	330
2-Methylnaphthalene	330	UJ	330	330	UJ	330	330	UJ	330	330	UJ	330
2-Methylphenol (cresol, o-)	330	U	330	330	U	330	330	U	330	330	U	330
2-Nitroaniline	840	U	840	840	U	840	840	U	840	840	U	840
2-Nitrophenol	330	U	330	330	U	330	330	U	330	330	U	330
3,3'-Dichlorobenzidine	330	U	330	330	U	330	330	U	330	330	U	330
3-Nitroaniline	840	U	840	840	U	840	840	U	840	840	U	840
4,6-Dinitro-2-methylphenol	840	U	840	840	U	840	840	U	840	840	U	840
4-Bromophenyl-phenylether	330	U	330	330	U	330	330	U	330	330	U	330
4-Chloro-3-methylphenol	330	U	330	330	U	330	330	U	330	330	U	330
4-Chloroaniline	330	U	330	330	U	330	330	U	330	330	U	330
4-Chlorophenyl-phenylether	330	U	330	330	U	330	330	U	330	330	U	330
4-Methylphenol (p-cresol)	330	U	330	330	U	330	330	U	330	330	U	330
4-Nitroaniline	840	U	840	840	U	840	840	U	840	840	U	840
4-Nitrophenol	840	U	840	840	U	840	840	U	840	840	U	840
Acenaphthene	330	U	330	330	U	330	330	U	330	330	U	330
Acenaphthylene	330	U	330	330	U	330	330	U	330	330	U	330
Anthracene	330	U	330	330	U	330	330	U	330	330	U	330
Benzo(a)anthracene	330	U	330	330	U	330	330	U	330	330	U	330
Benzo(a)pyrene	330	U	330	330	U	330	330	U	330	330	U	330
Benzo(b)fluoranthene	330	U	330	330	U	330	330	U	330	330	U	330
Benzo(g,h,i)perylene	330	U	330	330	U	330	330	U	330	330	U	330
Benzo(k)fluoranthene	330	U	330	330	U	330	330	U	330	330	U	330
bis(2-Chloro-1-methylethyl)ether	330	U	330	330	U	330	330	U	330	330	U	330
bis(2-Chloroethoxy)methane	330	U	330	330	U	330	330	U	330	330	U	330
bis(2-Chloroethyl)ether	330	U	330	330	U	330	330	U	330	330	U	330
bis(2-Ethylhexyl)phthalate	20	JB	330	27	JB	330	21	JB	330	29	JB	330

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J12WL4 BCL D4			J12WL5 Duplicate of J12WL4			J12WL0 BCL D5			J12WL1 BCL D6		
	Sample Date 7/11/06			Sample Date 7/11/06			Sample Date 7/11/06			Sample Date 7/11/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	MDL	µg/kg	Q	PQL
Semivolatile Organic Compounds (continued)												
Butylbenzylphthalate	330	U	330	330	U	330	330	U	330	330	U	330
Carbazole	330	U	330	330	U	330	330	U	330	330	U	330
Chrysene	330	U	330	330	U	330	330	U	330	330	U	330
Di-n-butylphthalate	330	U	330	45	J	330	330	U	330	36	J	330
Di-n-octylphthalate	330	U	330	330	U	330	330	U	330	330	U	330
Dibenz(a,h)anthracene	330	U	330	330	U	330	330	U	330	330	U	330
Dibenzofuran	330	U	330	330	U	330	330	U	330	330	U	330
Diethylphthalate	330	U	330	18	J	330	330	U	330	330	U	330
Dimethylphthalate	330	U	330	330	U	330	330	U	330	330	U	330
Fluoranthene	330	U	330	330	U	330	330	U	330	330	U	330
Fluorene	330	U	330	330	U	330	330	U	330	330	U	330
Hexachlorobenzene	330	U	330	330	U	330	330	U	330	330	U	330
Hexachlorobutadiene	330	U	330	330	U	330	330	U	330	330	U	330
Hexachlorocyclopentadiene	330	U	330	330	U	330	330	U	330	330	U	330
Hexachloroethane	330	U	330	330	U	330	330	U	330	330	U	330
Indeno(1,2,3-cd)pyrene	330	U	330	330	U	330	330	U	330	330	U	330
Isophorone	330	UJ	330	330	UJ	330	330	UJ	330	330	UJ	330
N-Nitroso-di-n-dipropylamine	330	U	330	330	U	330	330	U	330	330	U	330
N-Nitrosodiphenylamine	330	U	330	330	U	330	330	U	330	330	U	330
Naphthalene	330	U	330	330	U	330	330	U	330	330	U	330
Nitrobenzene	330	U	330	330	U	330	330	U	330	330	U	330
Pentachlorophenol	840	U	840	840	U	840	840	U	840	840	U	840
Phenanthrene	330	U	330	330	U	330	330	U	330	330	U	330
Phenol	330	U	330	34	J	330	330	U	330	20	J	330
Pyrene	330	U	330	330	U	330	330	U	330	330	U	330

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J12WL4 BCL D4			J12WL5 Duplicate of J12WL4			J12WL0 BCL D5			J12WL1 BCL D6		
	Sample Date 7/11/06			Sample Date 7/11/06			Sample Date 7/11/06			Sample Date 7/11/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	MDL	µg/kg	Q	PQL
Volatile Organic Compounds												
1,1,1-Trichloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,1,2,2-Tetrachloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,1,2-Trichloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,1-Dichloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,1-Dichloroethene	5	U	5	5	U	5	5	U	5	5	U	5
1,2-Dichloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,2-Dichloroethene (total)	5	U	5	5	U	5	5	U	5	5	U	5
1,2-Dichloropropane	5	U	5	5	U	5	5	U	5	5	U	5
2-Butanone	10	U	10	10	U	10	10	U	10	10	U	10
2-Hexanone	10	U	10	10	U	10	10	U	10	10	U	10
4-Methyl-2-pentanone	10	U	10	10	U	10	10	U	10	10	U	10
Acetone	10	U	10	10	U	10	10	U	10	20		10
Benzene	5	U	5	5	U	5	5	U	5	5	U	5
Bromodichloromethane	5	U	5	5	U	5	5	U	5	5	U	5
Bromoform	5	U	5	5	U	5	5	U	5	5	U	5
Bromomethane	10	U	10	10	U	10	10	U	10	10	U	10
Carbon disulfide	5	U	5	5	U	5	5	U	5	5	U	5
Carbon tetrachloride	6		5	5	U	5	5	U	5	4	J	5
Chlorobenzene	5	U	5	5	U	5	5	U	5	5	U	5
Chloroethane	10	U	10	10	U	10	10	U	10	10	U	10
Chloroform	5	U	5	5	U	5	5	U	5	5	U	5
Chloromethane	10	U	10	10	U	10	10	U	10	10	U	10
cis-1,2-Dichloroethylene	5	U	5	5	U	5	5	U	5	5	U	5
cis-1,3-Dichloropropene	5	U	5	5	U	5	5	U	5	5	U	5
Dibromochloromethane	5	U	5	5	U	5	5	U	5	5	U	5
Ethylbenzene	5	U	5	5	U	5	5	U	5	5	U	5
Methylene chloride	12	BJ	5	11	BJ	5	6	BJ	5	15	BJ	5
Styrene	5	U	5	5	U	5	5	U	5	5	U	5
Tetrachloroethene	5	U	5	5	U	5	5	U	5	5	U	5
Toluene	5	U	5	5	U	5	5	U	5	5	U	5
trans-1,2-Dichloroethylene	5	U	5	5	U	5	5	U	5	5	U	5
trans-1,3-Dichloropropene	5	U	5	5	U	5	5	U	5	5	U	5
Trichloroethene	5	U	5	5	U	5	5	U	5	5	U	5
Vinyl chloride	10	U	10	10	U	10	10	U	10	10	U	10
Xylenes (total)	5	U	5	5	U	5	5	U	5	1	J	5

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J12WL4 BCL D4			J12WL5 Duplicate of J12WL4			J12WL0 BCL D5			J12WL1 BCL D6		
	Sample Date 7/11/06			Sample Date 7/11/06			Sample Date 7/11/06			Sample Date 7/11/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	MDL	µg/kg	Q	PQL
Pesticides												
Aldrin	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
alpha-BHC	1.3	UDJ	1.3	1.3	UDJ	1.3	1.3	UDJ	1.3	1.3	UDJ	1.3
alpha-Chlordane	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
beta-BHC	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
delta-BHC	1.3	UDJ	1.3	1.3	UDJ	1.3	1.3	UDJ	1.3	1.3	UDJ	1.3
Dichlorodiphenyldichloroethane	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Dichlorodiphenyldichloroethylene	1.3	UDJ	1.3	1.3	UDJ	1.3	1.3	UDJ	1.3	1.3	UDJ	1.3
Dichlorodiphenyltrichloroethane	0.50	JD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Dieldrin	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Endosulfan I	1.3	UD	1.3	1.3	UD	1.3	4.9	D	1.3	1.3	UD	1.3
Endosulfan II	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Endosulfan sulfate	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Endrin	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Endrin aldehyde	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Endrin ketone	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
gamma-BHC (Lindane)	1.3	UDJ	1.3	1.3	UDJ	1.3	1.3	UDJ	1.3	1.3	UDJ	1.3
gamma-Chlordane	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Heptachlor	1.3	UD	1.3	1.3	UD	1.3	0.43	JDI	1.3	1.3	UD	1.3
Heptachlor epoxide	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Methoxychlor	1.7	D	1.3	1.3	UD	1.3	1.3	UD	1.3	5.3	D	1.3
Toxaphene	13	UD	13	13	UD	13	13	UD	13	13	UD	13
Herbicides												
2,4,5-T	17	U	17	17	U	17	17	U	17	17	U	17
2,4-D	33	U	33	33	U	33	33	U	33	33	U	33
2,4,5-TP	17	U	17	17	U	17	17	U	17	17	U	17
Dinoseb	17	U	17	17	U	17	17	U	17	17	U	17
2,4-DB	17	U	17	9.8	J	17	17	U	17	9.4	J	17
Dalapon	28	J	33	33	U	33	33	U	33	33	U	33
Dicamba	13	J	33	10	J	33	10	J	33	33	U	33
Dichloroprop	33	U	33	33	U	33	8.4	J	33	33	U	33
Pentachlorophenol	17	U	17	17	U	17	17	U	17	17	U	17
Picloram	17	UR	17	17	UR	17	17	UR	17	17	UR	17

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J13HY3 SPA A1			J13HY4 SPA A2			J13HY5 SPA A3			J13HY6 SPA A4		
	Sample Date 10/12/06			Sample Date 10/12/06			Sample Date 10/12/06			Sample Date 10/12/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL
Polychlorinated Biphenyls												
Aroclor-1016	14	U	14	13	U	13	13	U	13	13	U	13
Aroclor-1221	14	U	14	13	U	13	13	U	13	13	U	13
Aroclor-1232	14	U	14	13	U	13	13	U	13	13	U	13
Aroclor-1242	14	U	14	13	U	13	13	U	13	13	U	13
Aroclor-1248	14	U	14	13	U	13	13	U	13	13	U	13
Aroclor-1254	14	U	14	13	U	13	13	U	13	4.1	J	13
Aroclor-1260	14	U	14	13	U	13	13	U	13	13	U	13
Semivolatile Organic Compounds												
1,2,4-Trichlorobenzene	330	UJ	330	330	UJ	330	330	UJ	330	330	UJ	330
1,2-Dichlorobenzene	330	U	330	330	U	330	330	U	330	330	U	330
1,3-Dichlorobenzene	330	U	330	330	U	330	330	U	330	330	U	330
1,4-Dichlorobenzene	330	U	330	330	U	330	330	U	330	330	U	330
2,4,5-Trichlorophenol	830	U	830	830	U	830	830	U	830	830	U	830
2,4,6-Trichlorophenol	330	U	330	330	U	330	330	U	330	330	U	330
2,4-Dichlorophenol	330	U	330	330	U	330	330	U	330	330	U	330
2,4-Dimethylphenol	330	UJ	330	330	UJ	330	330	UJ	330	330	UJ	330
2,4-Dinitrophenol	830	U	830	830	U	830	830	U	830	830	U	830
2,4-Dinitrotoluene	330	U	330	330	U	330	330	U	330	330	U	330
2,6-Dinitrotoluene	330	U	330	330	U	330	330	U	330	330	U	330
2-Chloronaphthalene	330	U	330	330	U	330	330	U	330	330	U	330
2-Chlorophenol	330	U	330	330	U	330	330	U	330	330	U	330
2-Methylnaphthalene	330	UJ	330	330	UJ	330	330	UJ	330	330	UJ	330
2-Methylphenol (cresol, o-)	330	U	330	330	U	330	330	U	330	330	U	330
2-Nitroaniline	830	U	830	830	U	830	830	U	830	830	U	830
2-Nitrophenol	330	U	330	330	U	330	330	U	330	330	U	330
3,3'-Dichlorobenzidine	330	U	330	330	U	330	330	U	330	330	U	330
3-Nitroaniline	830	U	830	830	U	830	830	U	830	830	U	830
4,6-Dinitro-2-methylphenol	830	U	830	830	U	830	830	U	830	830	U	830
4-Bromophenyl-phenylether	330	U	330	330	U	330	330	U	330	330	U	330
4-Chloro-3-methylphenol	330	U	330	330	U	330	330	U	330	330	U	330
4-Chloroaniline	330	U	330	330	U	330	330	U	330	330	U	330
4-Chlorophenyl-phenylether	330	U	330	330	U	330	330	U	330	330	U	330
4-Methylphenol (p-cresol)	330	U	330	330	U	330	330	U	330	330	U	330
4-Nitroaniline	830	U	830	830	U	830	830	U	830	830	U	830
4-Nitrophenol	830	U	830	830	U	830	830	U	830	830	U	830
Acenaphthene	330	U	330	330	U	330	330	U	330	330	U	330
Acenaphthylene	330	U	330	330	U	330	330	U	330	330	U	330
Anthracene	330	U	330	330	U	330	330	U	330	330	U	330
Benzo(a)anthracene	330	U	330	330	U	330	330	U	330	330	U	330
Benzo(a)pyrene	330	U	330	330	U	330	330	U	330	330	U	330
Benzo(b)fluoranthene	330	U	330	330	U	330	330	U	330	330	U	330
Benzo(g,h,i)perylene	330	U	330	330	U	330	330	U	330	330	U	330
Benzo(k)fluoranthene	330	U	330	330	U	330	330	U	330	330	U	330
bis(2-Chloro-1-methylethyl)ether	330	U	330	330	U	330	330	U	330	330	U	330
bis(2-Chloroethoxy)methane	330	U	330	330	U	330	330	U	330	330	U	330
bis(2-Chloroethyl)ether	330	U	330	330	U	330	330	U	330	330	U	330
bis(2-Ethylhexyl)phthalate	37	JB	330	31	JB	330	43	JB	330	31	JB	330

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J13HY3 SPA A1			J13HY4 SPA A2			J13HY5 SPA A3			J13HY6 SPA A4		
	Sample Date 10/12/06			Sample Date 10/12/06			Sample Date 10/12/06			Sample Date 10/12/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL
Semivolatile Organic Compounds (continued)												
Butylbenzylphthalate	330	U	330	330	U	330	330	U	330	330	U	330
Carbazole	330	U	330	330	U	330	330	U	330	330	U	330
Chrysene	330	U	330	330	U	330	330	U	330	330	U	330
Di-n-butylphthalate	330	U	330	40	J	330	330	U	330	330	U	330
Di-n-octylphthalate	330	U	330	330	U	330	330	U	330	330	U	330
Dibenz(a,h)anthracene	330	U	330	330	U	330	330	U	330	330	U	330
Dibenzofuran	330	U	330	330	U	330	330	U	330	330	U	330
Diethylphthalate	330	U	330	330	U	330	330	U	330	330	U	330
Dimethylphthalate	330	U	330	330	U	330	330	U	330	330	U	330
Fluoranthene	330	U	330	330	U	330	330	U	330	330	U	330
Fluorene	330	U	330	330	U	330	330	U	330	330	U	330
Hexachlorobenzene	330	U	330	330	U	330	330	U	330	330	U	330
Hexachlorobutadiene	330	U	330	330	U	330	330	U	330	330	U	330
Hexachlorocyclopentadiene	330	U	330	330	U	330	330	U	330	330	U	330
Hexachloroethane	330	U	330	330	U	330	330	U	330	330	U	330
Indeno(1,2,3-cd)pyrene	330	U	330	330	U	330	330	U	330	330	U	330
Isophorone	330	UJ	330	330	UJ	330	330	UJ	330	330	UJ	330
N-Nitroso-di-n-dipropylamine	330	U	330	330	U	330	330	U	330	330	U	330
N-Nitrosodiphenylamine	330	U	330	330	U	330	330	U	330	330	U	330
Naphthalene	330	U	330	330	U	330	330	U	330	330	U	330
Nitrobenzene	330	UJ	330	330	UJ	330	330	UJ	330	330	UJ	330
Pentachlorophenol	830	U	830	830	U	830	830	U	830	830	U	830
Phenanthrene	330	U	330	330	U	330	330	U	330	330	U	330
Phenol	330	U	330	330	U	330	330	U	330	330	U	330
Pyrene	330	U	330	330	U	330	330	U	330	330	U	330

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J13HY3 SPA A1			J13HY4 SPA A2			J13HY5 SPA A3			J13HY6 SPA A4		
	Sample Date 10/12/06			Sample Date 10/12/06			Sample Date 10/12/06			Sample Date 10/12/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL
Volatile Organic Compounds												
1,1,1-Trichloroethane	5	UJ	5	5	UJ	5	5	UJ	5	5	UJ	5
1,1,2,2-Tetrachloroethane	5	UJ	5	5	UJ	5	5	UJ	5	5	UJ	5
1,1,2-Trichloroethane	5	UJ	5	5	UJ	5	5	UJ	5	5	UJ	5
1,1-Dichloroethane	5	UJ	5	5	UJ	5	5	UJ	5	5	UJ	5
1,1-Dichloroethene	5	UJ	5	5	UJ	5	5	UJ	5	5	UJ	5
1,2-Dichloroethane	5	UJ	5	5	UJ	5	5	UJ	5	5	UJ	5
1,2-Dichloroethene (total)	5	UJ	5	5	UJ	5	5	UJ	5	5	UJ	5
1,2-Dichloropropane	5	UJ	5	5	UJ	5	5	UJ	5	5	UJ	5
2-Butanone	10	UJ	10	10	UJ	10	10	UJ	10	10	UJ	10
2-Hexanone	10	UJ	10	10	UJ	10	10	UJ	10	10	UJ	10
4-Methyl-2-pentanone	10	UJ	10	10	UJ	10	10	UJ	10	10	UJ	10
Acetone	10	UJ	10	10	UJ	10	10	UJ	10	10	UJ	10
Benzene	5	UJ	5	5	UJ	5	5	UJ	5	5	UJ	5
Bromodichloromethane	5	UJ	5	5	UJ	5	5	UJ	5	5	UJ	5
Bromoform	5	UJ	5	5	UJ	5	5	UJ	5	5	UJ	5
Bromomethane	10	UJ	10	10	UJ	10	10	UJ	10	10	UJ	10
Carbon disulfide	5	UJ	5	5	UJ	5	5	UJ	5	5	UJ	5
Carbon tetrachloride	5	UJ	5	5	UJ	5	5	UJ	5	5	UJ	5
Chlorobenzene	5	UJ	5	5	UJ	5	5	UJ	5	5	UJ	5
Chloroethane	10	UJ	10	10	UJ	10	10	UJ	10	10	UJ	10
Chloroform	5	UJ	5	5	UJ	5	5	UJ	5	5	UJ	5
Chloromethane	10	UJ	10	10	UJ	10	10	UJ	10	10	UJ	10
cis-1,2-Dichloroethylene	5	UJ	5	5	UJ	5	5	UJ	5	5	UJ	5
cis-1,3-Dichloropropene	5	UJ	5	5	UJ	5	5	UJ	5	5	UJ	5
Dibromochloromethane	5	UJ	5	5	UJ	5	5	UJ	5	5	UJ	5
Ethylbenzene	5	UJ	5	5	UJ	5	5	UJ	5	5	UJ	5
Methylene chloride	6	BJ	5	14	BJ	5	13	BJ	5	12	BJ	5
Styrene	5	UJ	5	5	UJ	5	5	UJ	5	5	UJ	5
Tetrachloroethene	5	UJ	5	5	UJ	5	5	UJ	5	5	UJ	5
Toluene	5	UJ	5	5	UJ	5	5	UJ	5	5	UJ	5
trans-1,2-Dichloroethylene	5	UJ	5	5	UJ	5	5	UJ	5	5	UJ	5
trans-1,3-Dichloropropene	5	UJ	5	5	UJ	5	5	UJ	5	5	UJ	5
Trichloroethene	5	UJ	5	5	UJ	5	5	UJ	5	5	UJ	5
Vinyl chloride	10	UJ	10	10	UJ	10	10	UJ	10	10	UJ	10
Xylenes (total)	5	UJ	5	5	UJ	5	5	UJ	5	5	UJ	5

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J13HY3 SPA A1			J13HY4 SPA A2			J13HY5 SPA A3			J13HY6 SPA A4		
	Sample Date 10/12/06			Sample Date 10/12/06			Sample Date 10/12/06			Sample Date 10/12/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL
Pesticides												
Aldrin	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
alpha-BHC	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
alpha-Chlordane	0.63	JID	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
beta-BHC	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
delta-BHC	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Dichlorodiphenyldichloroethane	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Dichlorodiphenyldichloroethylene	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Dichlorodiphenyltrichloroethane	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Dieldrin	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Endosulfan I	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Endosulfan II	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Endosulfan sulfate	1.6	D	1.3	0.40	JD	1.3	0.83	JD	1.3	1.8	D	1.3
Endrin	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Endrin aldehyde	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Endrin ketone	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
gamma-BHC (Lindane)	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
gamma-Chlordane	0.60	JD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Heptachlor	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Heptachlor epoxide	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Methoxychlor	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3	1.3	UD	1.3
Toxaphene	13	UD	13	13	UD	13	13	UD	13	13	UD	13
Herbicides												
2,4,5-T	13	JI	17	17	U	17	17	U	17	17	U	17
2,4-D	48	I	34	34	U	34	34	U	34	17	JI	34
2,4,5-TP	43	I	17	17	U	17	17	U	17	11	JI	17
Dinoseb	17	U	17	17	U	17	17	U	17	17	U	17
2,4-DB	110	R	17	16	JIR	17	19	IR	17	17	UR	17
Dalapon	23	J	34	34	U	34	34	U	34	13	JI	34
Dicamba	29	J	34	15	J	34	9.6	JI	34	12	J	34
Dichloroprop	34	U	34	16	JI	34	34	U	34	34	U	34
Pentachlorophenol	17	UJ	17	17	UJ	17	17	UJ	17	17	UJ	17

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J13HY7 SPA B5			J13J09 Duplicate of J13HY7			J13J10 Split of J13HY7			J13HY8 SPA B6		
	Sample Date 10/12/06			Sample Date 10/12/06			Sample Date 10/12/06			Sample Date 10/17/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL
Polychlorinated Biphenyls												
Aroclor-1016	13	U	13	13	U	13	17	U	17	14	U	14
Aroclor-1221	13	U	13	13	U	13	17	U	17	14	U	14
Aroclor-1232	13	U	13	13	U	13	17	U	17	14	U	14
Aroclor-1242	13	U	13	13	U	13	17	U	17	14	U	14
Aroclor-1248	13	U	13	13	U	13	17	U	17	14	U	14
Aroclor-1254	13	U	13	13	U	13	17	U	17	14	U	14
Aroclor-1260	13	U	13	13	U	13	17	U	17	14	U	14
Semivolatile Organic Compounds												
1,2,4-Trichlorobenzene	330	UJ	330	330	UJ	330	330	U	330	340	U	340
1,2-Dichlorobenzene	330	U	330	330	U	330	330	U	330	340	U	340
1,3-Dichlorobenzene	330	U	330	330	U	330	330	U	330	340	U	340
1,4-Dichlorobenzene	330	U	330	330	U	330	330	U	330	340	U	340
2,4,5-Trichlorophenol	830	U	830	830	U	830	330	U	330	850	U	850
2,4,6-Trichlorophenol	330	U	330	330	U	330	330	U	330	340	U	340
2,4-Dichlorophenol	330	U	330	330	U	330	330	U	330	340	U	340
2,4-Dimethylphenol	330	UJ	330	330	UJ	330	330	U	330	340	U	340
2,4-Dinitrophenol	830	U	830	830	U	830	1600	U	1600	850	U	850
2,4-Dinitrotoluene	330	U	330	330	U	330	330	U	330	340	U	340
2,6-Dinitrotoluene	330	U	330	330	U	330	330	U	330	340	U	340
2-Chloronaphthalene	330	U	330	330	U	330	330	U	330	340	U	340
2-Chlorophenol	330	U	330	330	U	330	330	U	330	340	U	340
2-Methylnaphthalene	330	UJ	330	330	UJ	330	330	U	330	340	U	340
2-Methylphenol (cresol, o-)	330	U	330	330	U	330	330	U	330	340	U	340
2-Nitroaniline	830	U	830	830	U	830	1600	U	1600	850	U	850
2-Nitrophenol	330	U	330	330	U	330	330	U	330	340	U	340
3,3'-Dichlorobenzidine	330	U	330	330	U	330	1600	U	1600	340	U	340
3-Nitroaniline	830	U	830	830	U	830	1600	U	1600	850	U	850
4,6-Dinitro-2-methylphenol	830	U	830	830	U	830	1600	U	1600	850	U	850
4-Bromophenyl-phenylether	330	U	330	330	U	330	330	U	330	340	U	340
4-Chloro-3-methylphenol	330	U	330	330	U	330	330	U	330	340	U	340
4-Chloroaniline	330	U	330	330	U	330	330	U	330	340	U	340
4-Chlorophenyl-phenylether	330	U	330	330	U	330	330	U	330	340	U	340
4-Methylphenol (p-cresol)	330	U	330	330	U	330	670	U	670	340	U	340
4-Nitroaniline	830	U	830	830	U	830	1600	U	1600	850	U	850
4-Nitrophenol	830	U	830	830	U	830	1600	U	1600	850	U	850
Acenaphthene	330	U	330	330	U	330	330	U	330	340	U	340
Acenaphthylene	330	U	330	330	U	330	330	U	330	340	U	340
Anthracene	330	U	330	330	U	330	330	U	330	340	U	340
Benzo(a)anthracene	330	U	330	330	U	330	330	U	330	340	U	340
Benzo(a)pyrene	330	U	330	330	U	330	330	U	330	340	U	340
Benzo(b)fluoranthene	330	U	330	330	U	330	330	U	330	340	U	340
Benzo(g,h,i)perylene	330	U	330	330	U	330	330	U	330	340	U	340
Benzo(k)fluoranthene	330	U	330	330	U	330	330	U	330	340	U	340
bis(2-Chloro-1-methylethyl)ether	330	U	330	330	U	330	330	U	330	340	U	340
bis(2-Chloroethoxy)methane	330	U	330	330	U	330	330	U	330	340	U	340
bis(2-Chloroethyl)ether	330	U	330	330	U	330	330	U	330	340	U	340
bis(2-Ethylhexyl)phthalate	24	JB	330	27	JB	330	330	U	330	340	U	340

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J13HY7 SPA B5			J13J09 Duplicate of J13HY7			J13J10 Split of J13HY7			J13HY8 SPA B6		
	Sample Date 10/12/06			Sample Date 10/12/06			Sample Date 10/12/06			Sample Date 10/17/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL
Semivolatile Organic Compounds (continued)												
Butylbenzylphthalate	330	U	330	330	U	330	330	U	330	340	U	340
Carbazole	330	U	330	330	U	330	330	U	330	340	U	340
Chrysene	330	U	330	330	U	330	330	U	330	340	U	340
Di-n-butylphthalate	330	U	330	30	J	330	330	U	330	28	JB	340
Di-n-octylphthalate	330	U	330	330	U	330	330	U	330	340	U	340
Dibenz(a,h)anthracene	330	U	330	330	U	330	330	U	330	340	U	340
Dibenzofuran	330	U	330	330	U	330	330	U	330	340	U	340
Diethylphthalate	330	U	330	330	U	330	330	U	330	340	U	340
Dimethylphthalate	330	U	330	330	U	330	330	U	330	340	U	340
Fluoranthene	330	U	330	330	U	330	330	U	330	340	U	340
Fluorene	330	U	330	330	U	330	330	U	330	340	U	340
Hexachlorobenzene	330	U	330	330	U	330	330	U	330	340	U	340
Hexachlorobutadiene	330	U	330	330	U	330	330	U	330	340	U	340
Hexachlorocyclopentadiene	330	U	330	330	U	330	1600	U	1600	340	U	340
Hexachloroethane	330	U	330	330	U	330	330	U	330	340	U	340
Indeno(1,2,3-cd)pyrene	330	U	330	330	U	330	330	U	330	340	U	340
Isophorone	330	UJ	330	330	UJ	330	330	U	330	340	U	340
N-Nitroso-di-n-dipropylamine	330	U	330	330	U	330	330	U	330	340	U	340
N-Nitrosodiphenylamine	330	U	330	330	U	330	330	U	330	340	U	340
Naphthalene	330	U	330	330	U	330	330	U	330	340	U	340
Nitrobenzene	330	UJ	330	330	UJ	330	330	U	330	340	U	340
Pentachlorophenol	830	U	830	830	U	830	1600	U	1600	850	U	850
Phenanthrene	330	U	330	330	U	330	330	U	330	340	U	340
Phenol	330	U	330	330	U	330	330	U	330	340	U	340
Pyrene	330	U	330	330	U	330	330	U	330	340	U	340

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J13HY7 SPA B5			J13J09 Duplicate of J13HY7			J13J10 Split of J13HY7			J13HY8 SPA B6		
	Sample Date 10/12/06			Sample Date 10/12/06			Sample Date 10/12/06			Sample Date 10/17/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL
Volatile Organic Compounds												
1,1,1-Trichloroethane	5	UJ	5	5	UJ	5	5.0	U	5.0	5	UJ	5
1,1,2,2-Tetrachloroethane	5	UJ	5	5	UJ	5	5.0	U	5.0	5	UJ	5
1,1,2-Trichloroethane	5	UJ	5	5	UJ	5	5.0	U	5.0	5	UJ	5
1,1-Dichloroethane	5	UJ	5	5	UJ	5	5.0	U	5.0	5	UJ	5
1,1-Dichloroethene	5	UJ	5	5	UJ	5	5.0	U	5.0	5	UJ	5
1,2-Dichloroethane	5	UJ	5	5	UJ	5	5.0	U	5.0	5	UJ	5
1,2-Dichloroethene (total)	5	UJ	5	5	UJ	5	10	U	10	5	UJ	5
1,2-Dichloropropane	5	UJ	5	5	UJ	5	5.0	U	5.0	5	UJ	5
2-Butanone	10	UJ	10	10	UJ	10	10	U	10	10	UJ	10
2-Hexanone	10	UJ	10	10	UJ	10	20	U	20	10	UJ	10
4-Methyl-2-pentanone	10	UJ	10	10	UJ	10	10	U	10	10	UJ	10
Acetone	10	UJ	10	10	UJ	10	10	JBN	20	10	UJ	10
Benzene	5	UJ	5	5	UJ	5	5.0	U	5.0	5	UJ	5
Bromodichloromethane	5	UJ	5	5	UJ	5	5.0	U	5.0	5	UJ	5
Bromoform	5	UJ	5	5	UJ	5	5.0	U	5.0	5	UJ	5
Bromomethane	10	UJ	10	10	UJ	10	10	UNJ	10	10	UJ	10
Carbon disulfide	5	UJ	5	5	UJ	5	5.0	U	5.0	5	UJ	5
Carbon tetrachloride	5	UJ	5	5	UJ	5	5.0	U	5.0	5	UJ	5
Chlorobenzene	5	UJ	5	5	UJ	5	5.0	U	5.0	5	UJ	5
Chloroethane	10	UJ	10	10	UJ	10	10	U	10	10	UJ	10
Chloroform	5	UJ	5	5	UJ	5	5.0	U	5.0	5	UJ	5
Chloromethane	10	UJ	10	10	UJ	10	10	U	10	10	UJ	10
cis-1,2-Dichloroethylene	5	UJ	5	5	UJ	5				5	UJ	5
cis-1,3-Dichloropropene	5	UJ	5	5	UJ	5	5.0	U	5.0	5	UJ	5
Dibromochloromethane	5	UJ	5	5	UJ	5	5.0	U	5.0	5	UJ	5
Ethylbenzene	5	UJ	5	5	UJ	5	5.0	U	5.0	5	UJ	5
Methylene chloride	10	BJ	5	12	BJ	5	5.0	U	5.0	18	BJ	5
Styrene	5	UJ	5	5	UJ	5	5.0	U	5.0	5	UJ	5
Tetrachloroethene	5	UJ	5	5	UJ	5	5.0	U	5.0	5	UJ	5
Toluene	5	UJ	5	5	UJ	5	0.36	JB	5.0	5	UJ	5
trans-1,2-Dichloroethylene	5	UJ	5	5	UJ	5				5	UJ	5
trans-1,3-Dichloropropene	5	UJ	5	5	UJ	5	5.0	U	5.0	5	UJ	5
Trichloroethene	5	UJ	5	5	UJ	5	1.0	J	5.0	5	UJ	5
Vinyl chloride	10	UJ	10	10	UJ	10	5.0	U	5.0	10	UJ	10
Xylenes (total)	5	UJ	5	5	UJ	5	10	U	10	5	UJ	5

Attachment 1
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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J13HY7 SPA B5			J13J09 Duplicate of J13HY7			J13J10 Split of J13HY7			J13HY8 SPA B6		
	Sample Date 10/12/06			Sample Date 10/12/06			Sample Date 10/12/06			Sample Date 10/17/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL
Pesticides												
Aldrin	1.3	UD	1.3	1.3	UD	1.3	1.7	U	1.7	1.4	UD	1.4
alpha-BHC	1.3	UD	1.3	1.3	UD	1.3	1.7	U	1.7	1.4	UD	1.4
alpha-Chlordane	1.3	UD	1.3	1.3	UD	1.3	1.7	U	1.7	1.4	UD	1.4
beta-BHC	1.3	UD	1.3	1.3	UD	1.3	1.7	U	1.7	0.82	JD	1.4
delta-BHC	1.3	UD	1.3	1.3	UD	1.3	1.7	U	1.7	1.4	UD	1.4
Dichlorodiphenyldichloroethane	1.3	UD	1.3	1.3	UD	1.3	1.7	U	1.7	1.4	UD	1.4
Dichlorodiphenyldichloroethylene	1.3	UD	1.3	1.3	UD	1.3	1.7	U	1.7	1.4	UD	1.4
Dichlorodiphenyltrichloroethane	1.3	UD	1.3	1.3	UD	1.3	1.7	U	1.7	1.4	UD	1.4
Dieldrin	1.3	UD	1.3	1.3	UD	1.3	1.7	U	1.7	1.4	UD	1.4
Endosulfan I	1.3	UD	1.3	1.3	UD	1.3	1.7	U	1.7	1.4	UD	1.4
Endosulfan II	1.3	UD	1.3	1.3	UD	1.3	1.7	U	1.7	1.4	UD	1.4
Endosulfan sulfate	1.3	UD	1.3	0.37	JD	1.3	1.7	U	1.7	0.79	JD	1.4
Endrin	1.3	UD	1.3	1.3	UD	1.3	1.7	U	1.7	1.4	UD	1.4
Endrin aldehyde	1.3	UD	1.3	1.3	UD	1.3	1.7	U	1.7	1.4	UD	1.4
Endrin ketone	1.3	UD	1.3	1.3	UD	1.3	1.7	U	1.7	1.4	UD	1.4
gamma-BHC (Lindane)	1.3	UD	1.3	1.3	UD	1.3	1.7	U	1.7	1.4	UD	1.4
gamma-Chlordane	1.3	UD	1.3	1.3	UD	1.3	1.7	U	1.7	1.4	UD	1.4
Heptachlor	1.3	UD	1.3	1.3	UD	1.3	1.7	UN	1.7	1.4	UD	1.4
Heptachlor epoxide	1.3	UD	1.3	1.3	UD	1.3	1.7	U	1.7	1.4	UD	1.4
Methoxychlor	1.3	UD	1.3	1.3	UD	1.3	3.3	U	3.3	1.4	UD	1.4
Toxaphene	13	UD	13	13	UD	13	68	U	68	14	UD	14
Herbicides												
2,4,5-T	17	U	17	17	U	17	20	U	20	17	U	17
2,4-D	34	U	34	22	J	34	81	U	81	34	U	34
2,4,5-TP	17	U	17	17	U	17	20	U	20	17	U	17
MCPP							8100	U	8100			
MCPA							8100	U	8100			
Dinoseb	17	U	17	17	U	17	25	UN	25	17	U	17
2,4-DB	17	UR	17	17	UR	17	81	U	81	17	U	17
Dalapon	9.5	JI	34	34	U	34	40	U	40	34	U	34
Dicamba	9.7	JI	34	9.1	JI	34	40	U	40	34	U	34
Dichloroprop	49	I	34	34	U	34	81	U	81	34	U	34
Pentachlorophenol	17	UJ	17	17	UJ	17				17	U	17

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J13HY9 SPA B7			J13J00 SPA B8			J13J01 SPA C9			J13J02 SPA C10		
	Sample Date 10/17/06			Sample Date 10/17/06			Sample Date 10/17/06			Sample Date 10/18/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL
Polychlorinated Biphenyls												
Aroclor-1016	14	U	14	14	U	14	14	U	14	14	U	14
Aroclor-1221	14	U	14	14	U	14	14	U	14	14	U	14
Aroclor-1232	14	U	14	14	U	14	14	U	14	14	U	14
Aroclor-1242	14	U	14	14	U	14	14	U	14	14	U	14
Aroclor-1248	14	U	14	14	U	14	14	U	14	14	U	14
Aroclor-1254	14	U	14	14	U	14	14	U	14	14	U	14
Aroclor-1260	14	U	14	14	U	14	14	U	14	14	U	14
Semivolatile Organic Compounds												
1,2,4-Trichlorobenzene	340	U	340	340	U	340	360	U	360	350	U	350
1,2-Dichlorobenzene	340	U	340	340	U	340	360	U	360	350	U	350
1,3-Dichlorobenzene	340	U	340	340	U	340	360	U	360	350	U	350
1,4-Dichlorobenzene	340	U	340	340	U	340	360	U	360	350	U	350
2,4,5-Trichlorophenol	860	U	860	850	U	850	890	U	890	860	U	860
2,4,6-Trichlorophenol	340	U	340	340	U	340	360	U	360	350	U	350
2,4-Dichlorophenol	340	U	340	340	U	340	360	U	360	350	U	350
2,4-Dimethylphenol	340	U	340	340	U	340	360	U	360	350	U	350
2,4-Dinitrophenol	860	U	860	850	U	850	890	U	890	860	U	860
2,4-Dinitrotoluene	340	U	340	340	U	340	360	U	360	350	U	350
2,6-Dinitrotoluene	340	U	340	340	U	340	360	U	360	350	U	350
2-Chloronaphthalene	340	U	340	340	U	340	360	U	360	350	U	350
2-Chlorophenol	340	U	340	340	U	340	360	U	360	350	U	350
2-Methylnaphthalene	340	U	340	340	U	340	360	U	360	350	U	350
2-Methylphenol (cresol, o-)	340	U	340	340	U	340	360	U	360	350	U	350
2-Nitroaniline	860	U	860	850	U	850	890	U	890	860	U	860
2-Nitrophenol	340	U	340	340	U	340	360	U	360	350	U	350
3,3'-Dichlorobenzidine	340	U	340	340	U	340	360	U	360	350	U	350
3-Nitroaniline	860	U	860	850	U	850	890	U	890	860	U	860
4,6-Dinitro-2-methylphenol	860	U	860	850	U	850	890	U	890	860	U	860
4-Bromophenyl-phenylether	340	U	340	340	U	340	360	U	360	350	U	350
4-Chloro-3-methylphenol	340	U	340	340	U	340	360	U	360	350	U	350
4-Chloroaniline	340	U	340	340	U	340	360	U	360	350	U	350
4-Chlorophenyl-phenylether	340	U	340	340	U	340	360	U	360	350	U	350
4-Methylphenol (p-cresol)	340	U	340	340	U	340	360	U	360	350	U	350
4-Nitroaniline	860	U	860	850	U	850	890	U	890	860	U	860
4-Nitrophenol	860	U	860	850	U	850	890	U	890	860	U	860
Acenaphthene	340	U	340	340	U	340	360	U	360	350	U	350
Acenaphthylene	340	U	340	340	U	340	360	U	360	350	U	350
Anthracene	340	U	340	340	U	340	360	U	360	350	U	350
Benzo(a)anthracene	340	U	340	340	U	340	360	U	360	350	U	350
Benzo(a)pyrene	340	U	340	340	U	340	360	U	360	350	U	350
Benzo(b)fluoranthene	340	U	340	340	U	340	360	U	360	350	U	350
Benzo(g,h,i)perylene	340	U	340	340	U	340	360	U	360	350	U	350
Benzo(k)fluoranthene	340	U	340	340	U	340	360	U	360	350	U	350
bis(2-Chloro-1-methylethyl)ether	340	U	340	340	U	340	360	U	360	350	U	350
bis(2-Chloroethoxy)methane	340	U	340	340	U	340	360	U	360	350	U	350
bis(2-Chloroethyl)ether	340	U	340	340	U	340	360	U	360	350	U	350
bis(2-Ethylhexyl)phthalate	20	JB	340	22	JB	340	37	JB	360	18	JB	350

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J13HY9 SPA B7			J13J00 SPA B8			J13J01 SPA C9			J13J02 SPA C10		
	Sample Date 10/17/06			Sample Date 10/17/06			Sample Date 10/17/06			Sample Date 10/18/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL
Semivolatile Organic Compounds (continued)												
Butylbenzylphthalate	340	U	340	340	U	340	360	U	360	350	U	350
Carbazole	340	U	340	340	U	340	360	U	360	350	U	350
Chrysene	340	U	340	340	U	340	360	U	360	350	U	350
Di-n-butylphthalate	28	JB	340	30	JB	340	22	JB	360	46	JB	350
Di-n-octylphthalate	340	U	340	340	U	340	360	U	360	350	U	350
Dibenz(a,h)anthracene	340	U	340	340	U	340	360	U	360	350	U	350
Dibenzofuran	340	U	340	340	U	340	360	U	360	350	U	350
Diethylphthalate	340	U	340	340	U	340	360	U	360	350	U	350
Dimethylphthalate	340	U	340	340	U	340	360	U	360	350	U	350
Fluoranthene	340	U	340	340	U	340	360	U	360	350	U	350
Fluorene	340	U	340	340	U	340	360	U	360	350	U	350
Hexachlorobenzene	340	U	340	340	U	340	360	U	360	350	U	350
Hexachlorobutadiene	340	U	340	340	U	340	360	U	360	350	U	350
Hexachlorocyclopentadiene	340	U	340	340	U	340	360	U	360	350	U	350
Hexachloroethane	340	U	340	340	U	340	360	U	360	350	U	350
Indeno(1,2,3-cd)pyrene	340	U	340	340	U	340	360	U	360	350	U	350
Isophorone	340	U	340	340	U	340	360	U	360	350	U	350
N-Nitroso-di-n-dipropylamine	340	U	340	340	U	340	360	U	360	350	U	350
N-Nitrosodiphenylamine	340	U	340	340	U	340	360	U	360	350	U	350
Naphthalene	340	U	340	340	U	340	360	U	360	350	U	350
Nitrobenzene	340	U	340	340	U	340	360	U	360	350	U	350
Pentachlorophenol	860	U	860	850	U	850	890	U	890	860	U	860
Phenanthrene	340	U	340	340	U	340	360	U	360	350	U	350
Phenol	340	U	340	340	U	340	360	U	360	350	U	350
Pyrene	340	U	340	340	U	340	360	U	360	350	U	350

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J13HY9 SPA B7			J13J00 SPA B8			J13J01 SPA C9			J13J02 SPA C10		
	Sample Date 10/17/06			Sample Date 10/17/06			Sample Date 10/17/06			Sample Date 10/18/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL
Volatile Organic Compounds												
1,1,1-Trichloroethane	5	UJ	5	5	UJ	5	5	UJ	5	5	U	5
1,1,2,2-Tetrachloroethane	5	UJ	5	5	UJ	5	5	UJ	5	5	U	5
1,1,2-Trichloroethane	5	UJ	5	5	UJ	5	5	UJ	5	5	U	5
1,1-Dichloroethane	5	UJ	5	5	UJ	5	5	UJ	5	5	U	5
1,1-Dichloroethene	5	UJ	5	5	UJ	5	5	UJ	5	5	U	5
1,2-Dichloroethane	5	UJ	5	5	UJ	5	5	UJ	5	5	U	5
1,2-Dichloroethene (total)	5	UJ	5	5	UJ	5	5	UJ	5	5	U	5
1,2-Dichloropropane	5	UJ	5	5	UJ	5	5	UJ	5	5	U	5
2-Butanone	10	UJ	10	10	UJ	10	10	UJ	10	10	U	10
2-Hexanone	10	UJ	10	10	UJ	10	10	UJ	10	10	U	10
4-Methyl-2-pentanone	10	UJ	10	10	UJ	10	10	UJ	10	10	U	10
Acetone	10	UJ	10	10	UJ	10	10	UJ	10	10	U	10
Benzene	5	UJ	5	5	UJ	5	5	UJ	5	5	U	5
Bromodichloromethane	5	UJ	5	5	UJ	5	5	UJ	5	5	U	5
Bromoform	5	UJ	5	5	UJ	5	5	UJ	5	5	U	5
Bromomethane	10	UJ	10	10	UJ	10	10	UJ	10	10	U	10
Carbon disulfide	5	UJ	5	5	UJ	5	5	UJ	5	5	U	5
Carbon tetrachloride	5	UJ	5	5	UJ	5	5	UJ	5	5	U	5
Chlorobenzene	5	UJ	5	5	UJ	5	5	UJ	5	5	U	5
Chloroethane	10	UJ	10	10	UJ	10	10	UJ	10	10	U	10
Chloroform	5	UJ	5	5	UJ	5	5	UJ	5	5	U	5
Chloromethane	10	UJ	10	10	UJ	10	10	UJ	10	10	U	10
cis-1,2-Dichloroethylene	5	UJ	5	5	UJ	5	5	UJ	5	5	U	5
cis-1,3-Dichloropropene	5	UJ	5	5	UJ	5	5	UJ	5	5	U	5
Dibromochloromethane	5	UJ	5	5	UJ	5	5	UJ	5	5	U	5
Ethylbenzene	5	UJ	5	5	UJ	5	5	UJ	5	5	U	5
Methylene chloride	15	BJ	5	14	BJ	5	17	BJ	5	11	B	5
Styrene	5	UJ	5	5	UJ	5	5	UJ	5	5	U	5
Tetrachloroethene	5	UJ	5	5	UJ	5	5	UJ	5	5	U	5
Toluene	5	UJ	5	5	UJ	5	5	UJ	5	5	U	5
trans-1,2-Dichloroethylene	5	UJ	5	5	UJ	5	5	UJ	5	5	U	5
trans-1,3-Dichloropropene	5	UJ	5	5	UJ	5	5	UJ	5	5	U	5
Trichloroethene	5	UJ	5	5	UJ	5	5	UJ	5	2	J	5
Vinyl chloride	10	UJ	10	10	UJ	10	10	UJ	10	10	U	10
Xylenes (total)	5	UJ	5	5	UJ	5	5	UJ	5	5	U	5

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J13HY9 SPA B7			J13J00 SPA B8			J13J01 SPA C9			J13J02 SPA C10		
	Sample Date 10/17/06			Sample Date 10/17/06			Sample Date 10/17/06			Sample Date 10/18/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL
Pesticides												
Aldrin	1.4	UD	1.4	1.4	UD	1.4	1.0	JD	1.4	1.4	UD	1.4
alpha-BHC	1.4	UD	1.4	1.4	UD	1.4	1.4	UD	1.4	1.4	UD	1.4
alpha-Chlordane	1.4	UD	1.4	1.4	UD	1.4	1.4	UD	1.4	1.4	UD	1.4
beta-BHC	1.4	UD	1.4	1.4	UD	1.4	1.4	UD	1.4	1.4	UD	1.4
delta-BHC	1.4	UD	1.4	1.4	UD	1.4	1.4	UD	1.4	1.4	UD	1.4
Dichlorodiphenyldichloroethane	1.4	UD	1.4	1.4	UD	1.4	1.4	UD	1.4	1.4	UD	1.4
Dichlorodiphenyldichloroethylene	1.4	UD	1.4	1.4	UD	1.4	1.0	JD	1.4	1.4	UD	1.4
Dichlorodiphenyltrichloroethane	1.4	UD	1.4	1.4	UD	1.4	1.4	UD	1.4	1.4	UD	1.4
Dieldrin	1.4	UD	1.4	1.4	UD	1.4	1.4	UD	1.4	1.4	UD	1.4
Endosulfan I	1.4	UD	1.4	1.4	UD	1.4	1.4	UD	1.4	1.4	UD	1.4
Endosulfan II	1.4	UD	1.4	1.4	UD	1.4	1.4	UD	1.4	1.4	UD	1.4
Endosulfan sulfate	1.4	UD	1.4	1.4	UD	1.4	1.4	UD	1.4	1.4	UD	1.4
Endrin	1.4	UD	1.4	1.4	UD	1.4	1.4	UD	1.4	1.4	UD	1.4
Endrin aldehyde	1.4	UD	1.4	1.4	UD	1.4	1.4	UD	1.4	1.4	UD	1.4
Endrin ketone	1.4	UD	1.4	1.4	UD	1.4	1.4	UD	1.4	1.4	UD	1.4
gamma-BHC (Lindane)	1.4	UD	1.4	1.4	UD	1.4	1.4	UD	1.4	1.4	UD	1.4
gamma-Chlordane	1.4	UD	1.4	1.4	UD	1.4	1.4	UD	1.4	1.4	UD	1.4
Heptachlor	1.4	UD	1.4	1.4	UD	1.4	1.4	UD	1.4	1.4	UD	1.4
Heptachlor epoxide	1.4	UD	1.4	1.4	UD	1.4	1.4	UD	1.4	1.4	UD	1.4
Methoxychlor	1.4	UD	1.4	1.4	UD	1.4	1.4	UD	1.4	1.4	UD	1.4
Toxaphene	1.4	UD	1.4	1.4	UD	1.4	1.4	UD	1.4	1.4	UD	1.4
Herbicides												
2,4,5-T	17	U	17	17	U	17	18	U	18	17	U	17
2,4-D	18	JI	34	34	U	34	36	U	36	35	U	35
2,4,5-TP	17	U	17	17	U	17	18	U	18	17	U	17
Dinoseb	17	U	17	17	U	17	18	U	18	17	U	17
2,4-DB	28	I	17	17	U	17	18	U	18	17	U	17
Dalapon	36		34	34	U	34	36	U	36	36		35
Dicamba	9.4	JI	34	9.8	JI	34	36	U	36	35	U	35
Dichloroprop	34	U	34	34	U	34	36	U	36	35	U	35
Pentachlorophenol	17	U	17	17	U	17	18	U	18	17	U	17

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J13J03 SPA C1			J13J04 SPA C2			J13J05 SPA D3			J13J06 SPA D4		
	Sample Date 10/18/06			Sample Date 10/18/06			Sample Date 10/18/06			Sample Date 10/19/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL
Polychlorinated Biphenyls												
Aroclor-1016	14	U	14	14	U	14	14	U	14	14	U	14
Aroclor-1221	14	U	14	14	U	14	14	U	14	14	U	14
Aroclor-1232	14	U	14	14	U	14	14	U	14	14	U	14
Aroclor-1242	14	U	14	14	U	14	47		14	14	U	14
Aroclor-1248	14	U	14	14	U	14	14	U	14	14	U	14
Aroclor-1254	14	U	14	14	U	14	170		14	27		14
Aroclor-1260	14	U	14	14	U	14	56		14	12	J	14
Semivolatile Organic Compounds												
1,2,4-Trichlorobenzene	350	U	350	340	U	340	340	U	340	360	U	360
1,2-Dichlorobenzene	350	U	350	340	U	340	340	U	340	360	U	360
1,3-Dichlorobenzene	350	U	350	340	U	340	340	U	340	360	U	360
1,4-Dichlorobenzene	350	U	350	340	U	340	340	U	340	360	U	360
2,4,5-Trichlorophenol	870	U	870	860	U	860	860	U	860	900	U	900
2,4,6-Trichlorophenol	350	U	350	340	U	340	340	U	340	360	U	360
2,4-Dichlorophenol	350	U	350	340	U	340	340	U	340	360	U	360
2,4-Dimethylphenol	350	U	350	340	U	340	340	U	340	360	U	360
2,4-Dinitrophenol	870	U	870	860	U	860	860	U	860	900	U	900
2,4-Dinitrotoluene	350	U	350	340	U	340	340	U	340	360	U	360
2,6-Dinitrotoluene	350	U	350	340	U	340	340	U	340	360	U	360
2-Chloronaphthalene	350	U	350	340	U	340	340	U	340	360	U	360
2-Chlorophenol	350	U	350	340	U	340	340	U	340	360	U	360
2-Methylnaphthalene	350	U	350	340	U	340	340	U	340	360	U	360
2-Methylphenol (cresol, o-)	350	U	350	340	U	340	340	U	340	360	U	360
2-Nitroaniline	870	U	870	860	U	860	860	U	860	900	U	900
2-Nitrophenol	350	U	350	340	U	340	340	U	340	360	U	360
3,3'-Dichlorobenzidine	350	U	350	340	U	340	340	U	340	360	U	360
3-Nitroaniline	870	U	870	860	U	860	860	U	860	900	U	900
4,6-Dinitro-2-methylphenol	870	U	870	860	U	860	860	U	860	900	U	900
4-Bromophenyl-phenylether	350	U	350	340	U	340	340	U	340	360	U	360
4-Chloro-3-methylphenol	350	U	350	340	U	340	340	U	340	360	U	360
4-Chloroaniline	350	U	350	340	U	340	340	U	340	360	U	360
4-Chlorophenyl-phenylether	350	U	350	340	U	340	340	U	340	360	U	360
4-Methylphenol (p-cresol)	350	U	350	340	U	340	340	U	340	360	U	360
4-Nitroaniline	870	U	870	860	U	860	860	U	860	900	U	900
4-Nitrophenol	870	U	870	860	U	860	860	U	860	900	U	900
Acenaphthene	350	U	350	340	U	340	340	U	340	360	U	360
Acenaphthylene	350	U	350	340	U	340	340	U	340	360	U	360
Anthracene	350	U	350	340	U	340	340	U	340	360	U	360
Benzo(a)anthracene	350	U	350	340	U	340	340	U	340	360	U	360
Benzo(a)pyrene	350	U	350	340	U	340	340	U	340	360	U	360
Benzo(b)fluoranthene	350	U	350	340	U	340	340	U	340	360	U	360
Benzo(g,h,i)perylene	350	U	350	340	U	340	340	U	340	360	U	360
Benzo(k)fluoranthene	350	U	350	340	U	340	340	U	340	360	U	360
bis(2-Chloro-1-methylethyl)ether	350	U	350	340	U	340	340	U	340	360	U	360
bis(2-Chloroethoxy)methane	350	U	350	340	U	340	340	U	340	360	U	360
bis(2-Chloroethyl)ether	350	U	350	340	U	340	340	U	340	360	U	360
bis(2-Ethylhexyl)phthalate	350	U	350	24	JB	340	340	U	340	330	U	360

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J13J03 SPA C1			J13J04 SPA C2			J13J05 SPA D3			J13J06 SPA D4		
	Sample Date 10/18/06			Sample Date 10/18/06			Sample Date 10/18/06			Sample Date 10/19/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL
Semivolatile Organic Compounds (continued)												
Butylbenzylphthalate	350	U	350	340	U	340	340	U	340	360	U	360
Carbazole	350	U	350	340	U	340	340	U	340	360	U	360
Chrysene	350	U	350	340	U	340	340	U	340	360	U	360
Di-n-butylphthalate	35	JB	350	42	JB	340	33	JB	340	360	U	360
Di-n-octylphthalate	350	U	350	340	U	340	340	U	340	360	U	360
Dibenz(a,h)anthracene	350	U	350	340	U	340	340	U	340	360	U	360
Dibenzofuran	350	U	350	340	U	340	340	U	340	360	U	360
Diethylphthalate	350	U	350	340	U	340	340	U	340	360	U	360
Dimethylphthalate	350	U	350	340	U	340	340	U	340	360	U	360
Fluoranthene	350	U	350	340	U	340	340	U	340	360	U	360
Fluorene	350	U	350	340	U	340	340	U	340	360	U	360
Hexachlorobenzene	350	U	350	340	U	340	340	U	340	360	U	360
Hexachlorobutadiene	350	U	350	340	U	340	340	U	340	360	U	360
Hexachlorocyclopentadiene	350	U	350	340	U	340	340	U	340	360	U	360
Hexachloroethane	350	U	350	340	U	340	340	U	340	330	U	360
Indeno(1,2,3-cd)pyrene	350	U	350	340	U	340	340	U	340	360	U	360
Isophorone	350	U	350	340	U	340	340	U	340	360	U	360
N-Nitroso-di-n-dipropylamine	350	U	350	340	U	340	340	U	340	360	U	360
N-Nitrosodiphenylamine	350	U	350	340	U	340	340	U	340	360	U	360
Naphthalene	350	U	350	340	U	340	340	U	340	360	U	360
Nitrobenzene	350	U	350	340	U	340	340	U	340	360	U	360
Pentachlorophenol	870	U	870	860	U	860	860	U	860	900	U	900
Phenanthrene	350	U	350	340	U	340	340	U	340	360	U	360
Phenol	350	U	350	340	U	340	340	U	340	360	U	360
Pyrene	350	U	350	340	U	340	340	U	340	360	U	360

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J13J03 SPA C1			J13J04 SPA C2			J13J05 SPA D3			J13J06 SPA D4		
	Sample Date 10/18/06			Sample Date 10/18/06			Sample Date 10/18/06			Sample Date 10/19/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL
Volatile Organic Compounds												
1,1,1-Trichloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,1,2,2-Tetrachloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,1,2-Trichloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,1-Dichloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,1-Dichloroethene	5	U	5	5	U	5	5	U	5	5	U	5
1,2-Dichloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,2-Dichloroethene (total)	5	U	5	5	U	5	5	U	5	5	U	5
1,2-Dichloropropane	5	U	5	5	U	5	5	U	5	5	U	5
2-Butanone	10	U	10	10	U	10	10	U	10	10	U	10
2-Hexanone	10	U	10	10	U	10	10	U	10	10	U	10
4-Methyl-2-pentanone	10	U	10	10	U	10	10	U	10	10	U	10
Acetone	10	U	10	10	U	10	10	U	10	10	U	10
Benzene	5	U	5	5	U	5	5	U	5	5	U	5
Bromodichloromethane	5	U	5	5	U	5	5	U	5	5	U	5
Bromoform	5	U	5	5	U	5	5	U	5	5	U	5
Bromomethane	10	U	10	10	U	10	10	U	10	10	U	10
Carbon disulfide	5	U	5	5	U	5	5	U	5	5	U	5
Carbon tetrachloride	5	U	5	5	U	5	5	U	5	5	U	5
Chlorobenzene	5	U	5	5	U	5	5	U	5	5	U	5
Chloroethane	10	U	10	10	U	10	10	U	10	10	U	10
Chloroform	5	U	5	5	U	5	5	U	5	5	U	5
Chloromethane	10	U	10	10	U	10	10	U	10	10	U	10
cis-1,2-Dichloroethylene	5	U	5	5	U	5	5	U	5	5	U	5
cis-1,3-Dichloropropene	5	U	5	5	U	5	5	U	5	5	U	5
Dibromochloromethane	5	U	5	5	U	5	5	U	5	5	U	5
Ethylbenzene	5	U	5	5	U	5	5	U	5	5	U	5
Methylene chloride	9	B	5	11	B	5	12	B	5	16	U	5
Styrene	5	U	5	5	U	5	5	U	5	5	U	5
Tetrachloroethene	5	U	5	5	U	5	5	U	5	5	U	5
Toluene	5	U	5	5	U	5	5	U	5	5	U	5
trans-1,2-Dichloroethylene	5	U	5	5	U	5	5	U	5	5	U	5
trans-1,3-Dichloropropene	5	U	5	5	U	5	5	U	5	5	U	5
Trichloroethene	5	U	5	5	U	5	5	U	5	5	U	5
Vinyl chloride	10	U	10	10	U	10	10	U	10	10	U	10
Xylenes (total)	5	U	5	5	U	5	5	U	5	5	U	5

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J13J03 SPA C1			J13J04 SPA C2			J13J05 SPA D3			J13J06 SPA D4		
	Sample Date 10/18/06			Sample Date 10/18/06			Sample Date 10/18/06			Sample Date 10/19/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL
Pesticides												
Aldrin	1.4	UD	1.4	1.4	UD	1.4	0.34	JID	1.4	1.4	U	1.4
alpha-BHC	1.4	UD	1.4	1.4	UD	1.4	1.4	UD	1.4	1.4	U	1.4
alpha-Chlordane	0.80	JD	1.4	1.4	UD	1.4	1.4	UD	1.4	1.4	U	1.4
beta-BHC	1.4	UD	1.4	1.4	UD	1.4	1.4	UD	1.4	1.4	U	1.4
delta-BHC	1.4	UD	1.4	1.4	UD	1.4	1.4	UD	1.4	1.4	U	1.4
Dichlorodiphenyldichloroethane	1.4	UD	1.4	1.4	UD	1.4	1.4	UD	1.4	1.4	U	1.4
Dichlorodiphenyldichloroethylene	1.4	UD	1.4	1.4	UD	1.4	6.5	D	1.4	1.4	U	1.4
Dichlorodiphenyltrichloroethane	1.4	UD	1.4	1.4	UD	1.4	1.4	UD	1.4	1.4	U	1.4
Dieldrin	1.4	UD	1.4	1.4	UD	1.4	1.4	UD	1.4	1.4	U	1.4
Endosulfan I	1.4	UD	1.4	1.4	UD	1.4	1.4	UD	1.4	1.4	U	1.4
Endosulfan II	1.4	UD	1.4	1.4	UD	1.4	1.4	UD	1.4	1.4	U	1.4
Endosulfan sulfate	1.4	UD	1.4	1.4	UD	1.4	1.4	UD	1.4	1.4	U	1.4
Endrin	1.4	UD	1.4	1.4	UD	1.4	1.4	UD	1.4	1.4	U	1.4
Endrin aldehyde	1.4	UD	1.4	1.4	UD	1.4	1.4	UD	1.4	1.4	U	1.4
Endrin ketone	1.4	UD	1.4	1.4	UD	1.4	1.4	UD	1.4	1.4	U	1.4
gamma-BHC (Lindane)	1.4	UD	1.4	1.4	UD	1.4	1.4	UD	1.4	1.4	U	1.4
gamma-Chlordane	0.87	JD	1.4	1.4	UD	1.4	6.5	ID	1.4	1.4	U	1.4
Heptachlor	1.4	UD	1.4	1.4	UD	1.4	1.4	UD	1.4	1.4	U	1.4
Heptachlor epoxide	1.4	UD	1.4	1.4	UD	1.4	1.4	UD	1.4	1.4	U	1.4
Methoxychlor	1.4	UD	1.4	1.4	UD	1.4	1.4	UD	1.4	1.4	U	1.4
Toxaphene	14	UD	14	14	UD	14	14	UD	14	14	UJ	14
Herbicides												
2,4,5-T	17	U	17	17	U	17	17	U	17	18	U	18
2,4-D	35	U	35	34	U	34	34	U	34	36	UJ	36
2,4,5-TP	17	U	17	17	U	17	17	U	17	18	U	18
Dinoseb	17	U	17	17	U	17	17	U	17	18	U	18
2,4-DB	17	U	17	17	U	17	17	U	17	18	U	18
Dalapon	43		35	34	U	34	34	U	34	24	J	36
Dicamba	35	U	35	34	U	34	34	U	34	8.1	Jl	36
Dichloroprop	35	U	35	9.9	J	34	34	U	34	36	U	36
Pentachlorophenol	17	U	17	17	U	17	17	U	17	18	U	18

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J13J07 SPA D5			J13J08 SPA D6			J12R24 FS-1			J12R33 FS-10		
	Sample Date 10/23/06			Sample Date 10/23/06			Sample Date 7/10/06			Sample Date 12/7/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL
Polychlorinated Biphenyls												
Aroclor-1016	14	U	14	14	U	14	13	U	13	14	UJ	14
Aroclor-1221	14	U	14	14	U	14	13	U	13	14	U	14
Aroclor-1232	14	U	14	14	U	14	13	U	13	14	U	14
Aroclor-1242	14	U	14	14	U	14	13	U	13	14	U	14
Aroclor-1248	14	U	14	14	U	14	13	U	13	14	U	14
Aroclor-1254	14	U	14	14	U	14	13	U	13	14	U	14
Aroclor-1260	14	U	14	14	U	14	13	U	13	14	UJ	14
Semivolatile Organic Compounds												
1,2,4-Trichlorobenzene	340	U	340	350	U	350	330	U	330	360	UJ	360
1,2-Dichlorobenzene	340	U	340	350	U	350	330	U	330	360	U	360
1,3-Dichlorobenzene	340	U	340	350	U	350	330	U	330	360	U	360
1,4-Dichlorobenzene	340	U	340	350	U	350	330	U	330	360	U	360
2,4,5-Trichlorophenol	860	U	860	870	U	870	830	U	830	900	U	900
2,4,6-Trichlorophenol	340	U	340	350	U	350	330	U	330	360	U	360
2,4-Dichlorophenol	340	U	340	350	U	350	330	U	330	360	UJ	360
2,4-Dimethylphenol	340	U	340	350	U	350	330	U	330	360	UJ	360
2,4-Dinitrophenol	860	U	860	870	U	870	830	U	830	900	U	900
2,4-Dinitrotoluene	340	U	340	350	U	350	330	U	330	360	U	360
2,6-Dinitrotoluene	340	U	340	350	U	350	330	U	330	360	U	360
2-Chloronaphthalene	340	U	340	350	U	350	330	U	330	360	U	360
2-Chlorophenol	340	U	340	350	U	350	330	U	330	360	U	360
2-Methylnaphthalene	340	U	340	350	U	350	330	U	330	360	UJ	360
2-Methylphenol (cresol, o-)	340	U	340	350	U	350	330	U	330	360	U	360
2-Nitroaniline	860	U	860	870	U	870	830	U	830	900	U	900
2-Nitrophenol	340	U	340	350	U	350	330	U	330	360	UJ	360
3,3'-Dichlorobenzidine	340	U	340	350	U	350	330	U	330	360	U	360
3-Nitroaniline	860	U	860	870	U	870	830	U	830	900	U	900
4,6-Dinitro-2-methylphenol	860	U	860	870	U	870	830	U	830	900	U	900
4-Bromophenyl-phenylether	340	U	340	350	U	350	330	U	330	360	U	360
4-Chloro-3-methylphenol	340	U	340	350	U	350	330	U	330	360	UJ	360
4-Chloroaniline	340	U	340	350	U	350	330	U	330	360	U	360
4-Chlorophenyl-phenylether	340	U	340	350	U	350	330	U	330	360	U	360
4-Methylphenol (p-cresol)	340	U	340	350	U	350	330	U	330	360	U	360
4-Nitroaniline	860	U	860	870	U	870	830	U	830	900	UR	900
4-Nitrophenol	860	U	860	870	U	870	830	U	830	900	U	900
Acenaphthene	340	U	340	350	U	350	330	U	330	360	U	360
Acenaphthylene	340	U	340	350	U	350	330	U	330	360	U	360
Anthracene	340	U	340	350	U	350	330	U	330	360	U	360
Benzo(a)anthracene	340	U	340	350	U	350	330	U	330	360	U	360
Benzo(a)pyrene	340	U	340	350	U	350	330	U	330	360	U	360
Benzo(b)fluoranthene	340	U	340	350	U	350	330	U	330	360	U	360
Benzo(g,h,i)perylene	340	U	340	350	U	350	330	U	330	360	U	360
Benzo(k)fluoranthene	340	U	340	350	U	350	330	U	330	360	U	360
bis(2-Chloro-1-methylethyl)ether	340	U	340	350	U	350	330	U	330	360	U	360
bis(2-Chloroethoxy)methane	340	U	340	350	U	350	330	U	330	360	U	360
bis(2-Chloroethyl)ether	340	U	340	350	U	350	330	U	330	360	U	360
bis(2-Ethylhexyl)phthalate	42	JB	340	31	JB	350	26	JB	330	38	JB	360

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J13J07 SPA D5			J13J08 SPA D6			J12R24 FS-1			J12R33 FS-10		
	Sample Date 10/23/06			Sample Date 10/23/06			Sample Date 7/10/06			Sample Date 12/7/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL
Semivolatile Organic Compounds (continued)												
Butylbenzylphthalate	340	U	340	350	U	350	330	U	330	360	U	360
Carbazole	340	U	340	350	U	350	330	U	330	360	U	360
Chrysene	340	U	340	350	U	350	330	U	330	360	U	360
Di-n-butylphthalate	34	JB	340	350	U	350	330	U	330	360	U	360
Di-n-octylphthalate	340	U	340	350	U	350	330	U	330	360	U	360
Dibenz(a,h)anthracene	340	U	340	350	U	350	330	U	330	360	U	360
Dibenzofuran	340	U	340	350	U	350	330	U	330	360	U	360
Diethylphthalate	340	U	340	350	U	350	330	U	330	360	U	360
Dimethylphthalate	340	U	340	350	U	350	330	U	330	360	U	360
Fluoranthene	340	U	340	350	U	350	330	U	330	360	U	360
Fluorene	340	U	340	350	U	350	330	U	330	360	U	360
Hexachlorobenzene	340	U	340	350	U	350	330	U	330	360	U	360
Hexachlorobutadiene	340	U	340	350	U	350	330	U	330	360	U	360
Hexachlorocyclopentadiene	340	U	340	350	U	350	330	U	330	360	U	360
Hexachloroethane	340	U	340	350	U	350	330	U	330	360	U	360
Indeno(1,2,3-cd)pyrene	340	U	340	350	U	350	330	U	330	360	U	360
Isophorone	340	U	340	350	U	350	330	U	330	360	U	360
N-Nitroso-di-n-dipropylamine	340	U	340	350	U	350	330	U	330	360	U	360
N-Nitrosodiphenylamine	340	U	340	350	U	350	330	U	330	360	UJ	360
Naphthalene	340	U	340	350	U	350	330	U	330	360	U	360
Nitrobenzene	340	U	340	350	U	350	330	U	330	360	UJ	360
Pentachlorophenol	860	U	860	870	U	870	830	U	830	900	U	900
Phenanthrene	340	U	340	350	U	350	330	U	330	360	U	360
Phenol	340	U	340	350	U	350	330	U	330	360	U	360
Pyrene	340	U	340	350	U	350	330	U	330	360	U	360

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J13J07 SPA D5			J13J08 SPA D6			J12R24 FS-1			J12R33 FS-10		
	Sample Date 10/23/06			Sample Date 10/23/06			Sample Date 7/10/06			Sample Date 12/7/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL
Volatile Organic Compounds												
1,1,1-Trichloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,1,2,2-Tetrachloroethane	5	U	5	5	U	5	5	U	5	5	UJ	5
1,1,2-Trichloroethane	5	U	5	5	U	5	5	U	5	5	UJ	5
1,1-Dichloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,1-Dichloroethene	5	U	5	5	U	5	5	U	5	5	U	5
1,2-Dichloroethane	5	U	5	5	U	5	5	U	5	5	U	5
1,2-Dichloroethene (total)	5	U	5	5	U	5	5	U	5	5	U	5
1,2-Dichloropropane	5	U	5	5	U	5	5	U	5	5	U	5
2-Butanone	10	U	10	10	U	10	10	U	10	10	U	10
2-Hexanone	10	U	10	10	U	10	10	U	10	10	U	10
4-Methyl-2-pentanone	10	U	10	10	U	10	10	U	10	10	UJ	10
Acetone	10	U	10	10	U	10	99		10	39	B	10
Benzene	5	U	5	5	U	5	5	U	5	5	U	5
Bromodichloromethane	5	U	5	5	U	5	5	U	5	5	U	5
Bromoform	5	U	5	5	U	5	5	U	5	5	UJ	5
Bromomethane	10	U	10	10	U	10	10	U	10	10	U	10
Carbon disulfide	5	U	5	5	U	5	5	U	5	5	U	5
Carbon tetrachloride	5	U	5	5	U	5	5	U	5	5	U	5
Chlorobenzene	5	U	5	5	U	5	5	U	5	5	U	5
Chloroethane	10	U	10	10	U	10	10	U	10	10	U	10
Chloroform	5	U	5	5	U	5	5	U	5	5	U	5
Chloromethane	10	U	10	10	U	10	10	U	10	10	U	10
cis-1,2-Dichloroethylene	5	U	5	5	U	5	5	U	5	5	U	5
cis-1,3-Dichloropropene	5	U	5	5	U	5	5	U	5	5	U	5
Dibromochloromethane	5	U	5	5	U	5	5	U	5	5	UJ	5
Ethylbenzene	5	U	5	5	U	5	5	U	5	5	U	5
Methylene chloride	11	B	5	9	B	5	16	BJ	5	14	B	5
Styrene	5	U	5	5	U	5	5	U	5	5	U	5
Tetrachloroethene	5	U	5	5	U	5	5	U	5	5	U	5
Toluene	5	U	5	5	U	5	5	U	5	5	U	5
trans-1,2-Dichloroethylene	5	U	5	5	U	5	5	U	5	5	U	5
trans-1,3-Dichloropropene	5	U	5	5	U	5	5	U	5	5	UJ	5
Trichloroethene	5	U	5	5	U	5	5	U	5	5	U	5
Vinyl chloride	10	U	10	10	U	10	10	U	10	10	U	10
Xylenes (total)	5	U	5	5	U	5	5	U	5	5	U	5

Attachment 1
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Calc. No. 0100B-CA-V0299

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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J13J07 SPA D5			J13J08 SPA D6			J12R24 FS-1		
	Sample Date 10/23/06			Sample Date 10/23/06			Sample Date 7/10/06		
	µg/kg	Q	PQL	µg/kg	Q	PQL	µg/kg	Q	PQL
Pesticides									
Aldrin	1.4	UD	1.4	1.4	UD	1.4	1.3	UDJ	1.3
alpha-BHC	1.4	UD	1.4	1.4	UD	1.4	1.3	UDJ	1.3
alpha-Chlordane	1.4	UD	1.4	1.4	UD	1.4	1.3	UD	1.3
beta-BHC	1.4	UD	1.4	1.4	UD	1.4	1.3	UD	1.3
delta-BHC	1.4	UD	1.4	1.4	UD	1.4	1.3	UDJ	1.3
Dichlorodiphenyldichloroethane	1.4	UD	1.4	1.4	UD	1.4	1.3	UD	1.3
Dichlorodiphenyldichloroethylene	1.4	UD	1.4	1.4	UD	1.4	1.3	UDJ	1.3
Dichlorodiphenyltrichloroethane	1.4	UD	1.4	1.4	UD	1.4	1.3	UD	1.3
Dieldrin	1.4	UD	1.4	1.4	UD	1.4	1.3	UD	1.3
Endosulfan I	1.4	UD	1.4	1.4	UD	1.4	1.3	UD	1.3
Endosulfan II	1.4	UD	1.4	1.4	UD	1.4	1.3	UD	1.3
Endosulfan sulfate	0.79	JD	1.4	0.73	JD	1.4	1.3	UDJ	1.3
Endrin	1.4	UD	1.4	1.4	UD	1.4	1.3	UDJ	1.3
Endrin aldehyde	1.4	UD	1.4	1.4	UD	1.4	1.3	UDJ	1.3
Endrin ketone	1.4	UD	1.4	1.4	UD	1.4	1.3	UD	1.3
gamma-BHC (Lindane)	1.4	UD	1.4	1.4	UD	1.4	1.3	UDJ	1.3
gamma-Chlordane	1.4	UD	1.4	1.4	UD	1.4	1.3	UD	1.3
Heptachlor	1.4	UD	1.4	1.4	UD	1.4	1.3	UDJ	1.3
Heptachlor epoxide	1.4	UD	1.4	1.4	UD	1.4	1.3	UD	1.3
Methoxychlor	1.7	D	1.4	1.4	UD	1.4	4.7	D	1.3
Toxaphene	14	UD	14	14	UD	14	13	UD	13
Herbicides									
2,4,5-T	17	U	17	17	U	17	17	UJ	17
2,4-D	34	U	34	13	J	35	33	UJ	33
2,4,5-TP	11	J	17	17	U	17	17	U	17
Dinoseb	17	U	17	17	U	17	17	U	17
2,4-DB	17	U	17	17	U	17	17	UJ	17
Dalapon	34	U	34	35	U	35	33	U	33
Dicamba	7.9	J	34	27	J	35	9.1	J	33
Dichloroprop	34	U	34	35	U	35	33	UJ	33
Pentachlorophenol	4.0	J	17	17	U	17	17	U	17

Attachment 1
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Attachment 1. 118-B-1 Verification Sampling Results.

Constituents	J12X59 Equipment Blank Sample Date 7/20/06			Constituents	J12X59 Equipment Blank Sample Date 7/20/06		
	µg/kg	Q	PQL		µg/kg	Q	PQL
Semivolatile Organic Compounds				Semivolatile Organic Compounds (continued)			
1,2,4-Trichlorobenzene	330	UJ	330	Benzo(b)fluoranthene	330	U	330
1,2-Dichlorobenzene	330	U	330	Benzo(g,h,i)perylene	330	U	330
1,3-Dichlorobenzene	330	U	330	Benzo(k)fluoranthene	330	U	330
1,4-Dichlorobenzene	330	U	330	bis(2-Chloro-1-methylethyl)ether	330	U	330
2,4,5-Trichlorophenol	830	U	830	bis(2-Chloroethoxy)methane	330	U	330
2,4,6-Trichlorophenol	330	U	330	bis(2-Chloroethyl)ether	330	U	330
2,4-Dichlorophenol	330	U	330	bis(2-Ethylhexyl)phthalate	35	J	330
2,4-Dimethylphenol	330	UJ	330	Butylbenzylphthalate	330	U	330
2,4-Dinitrophenol	830	U	830	Carbazole	330	U	330
2,4-Dinitrotoluene	330	U	330	Chrysene	330	U	330
2,6-Dinitrotoluene	330	U	330	Di-n-butylphthalate	120	JB	330
2-Chloronaphthalene	330	U	330	Di-n-octylphthalate	330	U	330
2-Chlorophenol	330	U	330	Dibenz(a,h)anthracene	330	U	330
2-Methylnaphthalene	330	UJ	330	Dibenzofuran	330	U	330
2-Methylphenol (cresol, o-)	330	UJ	330	Diethylphthalate	330	U	330
2-Nitroaniline	830	U	830	Dimethylphthalate	330	U	330
2-Nitrophenol	330	U	330	Fluoranthene	330	U	330
3,3'-Dichlorobenzidine	330	U	330	Fluorene	330	U	330
3-Nitroaniline	830	U	830	Hexachlorobenzene	330	U	330
4,6-Dinitro-2-methylphenol	830	U	830	Hexachlorobutadiene	330	U	330
4-Bromophenyl-phenylether	330	U	330	Hexachlorocyclopentadiene	330	U	330
4-Chloro-3-methylphenol	330	UJ	330	Hexachloroethane	330	U	330
4-Chloroaniline	330	U	330	Indeno(1,2,3-cd)pyrene	330	U	330
4-Chlorophenyl-phenylether	330	U	330	Isophorone	330	UJ	330
4-Methylphenol (p-cresol)	330	UJ	330	N-Nitroso-di-n-dipropylamine	330	U	330
4-Nitroaniline	830	U	830	N-Nitrosodiphenylamine	330	U	330
4-Nitrophenol	830	U	830	Naphthalene	330	U	330
Acenaphthene	330	U	330	Nitrobenzene	330	U	330
Acenaphthylene	330	U	330	Pentachlorophenol	830	U	830
Anthracene	330	U	330	Phenanthrene	330	U	330
Benzo(a)anthracene	330	U	330	Phenol	330	U	330
Benzo(a)pyrene	330	U	330	Pyrene	330	U	330

Attachment 1
 Originator J. M. Capron
 Checked T. M. Blakley
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Sheet No. 113 of 113
 Date 10/04/07
 Date
 Rev. No. 1

CALCULATION COVER SHEETProject Title: 100-B/C Field Remediation Job No. **14655**Area: 100-B/CDiscipline: Environmental *Calculation No: 0100B-CA-V0300Subject: 118-B-1 Burial Ground Hazard Quotient and Carcinogenic Risk CalculationsComputer Program: Excel Program No: Excel 2003

The attached calculations have been generated to document compliance with established cleanup levels. These calculations should be used in conjunction with other relevant documents in the administrative record.

Committed Calculation ☒Preliminary ☐Superseded ☐Voided ☐

Rev.	Sheet Numbers	Originator	Checker	Reviewer	Approval	Date
0	Cover = 1 Sheets = 4 Total = 5	J. M. Capron	S. W. Clark	N/A	D. N. Strom	2/8/07
1	Cover = 1 Sheets = 4 Total = 5	J. M. Capron	T. M. Blakley	N/A	D. N. Strom	10/4/07
2	Cover = 1 Sheets = 4 Total = 5	J. M. Capron <i>J. M. Capron</i>	S. W. Clark <i>S. W. Clark</i>	N/A	D. N. Strom <i>D. N. Strom</i>	12-3-07

SUMMARY OF REVISION

1	Revision to include additional focused sample data. Cover page replaced. Sheet 1 revised to reference revised UCL calculation. Sheet 2 revised to remove identification of specific focused samples. Sheet 3 updated with higher mercury value; cumulative calculations on Sheet 4 and summary statement on Sheet 2 revised accordingly.
2	Revised Sheet 3 to use updated RAG values for trichloroethene; there is no impact to the summed hazard quotient or excess carcinogenic risk values. Replaced cover page.

WCH-DE-018 (05/08/2007) *Obtain Calc. No. from Document Control and Form from Intranet

Washington Closure Hanford		CALCULATION SHEET					
Originator:	J. M. Capron <i>JMC</i>	Date:	10/04/07	Calc. No.:	0100B-CA-V0300	Rev.:	1
Project:	100-B/C Field Remediation	Job No:	14655	Checked:	T. M. Blakley <i>TMB</i>	Date:	10/04/07
Subject:	118-B-1 Burial Ground Hazard Quotient and Carcinogenic Risk Calculations						Sheet No. 1 of 4

PURPOSE:

Provide documentation to support the calculation of the hazard quotient (HQ) and excess carcinogenic risk values for the 118-B-1 burial ground remediation verification sampling results. In accordance with the remedial action goals (RAGs) in the remedial design report/remedial action work plan (RDR/RAWP) (DOE-RL 2005), the following criteria must be met:

- 1) An HQ of <1.0 for all individual noncarcinogens
- 2) A cumulative HQ of <1.0 for noncarcinogens
- 3) An excess carcinogenic risk of <1 x 10⁻⁶ for individual carcinogens
- 4) A cumulative excess carcinogenic risk of <1 x 10⁻⁵ for carcinogens.

GIVEN/REFERENCES:

- 1) DOE-RL, 2005, *Remedial Design Report/Remedial Action Work Plan for the 100 Areas*, DOE/RL-96-17, Rev. 5, U.S. Department of Energy, Richland Operations Office, Richland, Washington.
- 2) EPA, 1994, *Guidance Manual for the Integrated Exposure Uptake Biokinetic Model for Lead in Children*, EPA/540/R-93/081, Publication No. 9285.7-15-1, U.S. Environmental Protection Agency, Washington, D.C.
- 3) WAC 173-340, "Model Toxics Control Act – Cleanup," *Washington Administrative Code*, 1996.
- 4) WCH, 2007, *118-B-1 Burial Ground Cleanup Verification 95% UCL Calculations*, Calculation No. 0100B-CA-V0299, Rev. 1, Washington Closure Hanford, Richland, Washington.

SOLUTION:

- 1) Calculate an HQ for each noncarcinogenic constituent detected above background and compare to the individual HQ of <1.0 (DOE-RL 2005).
- 2) Sum the HQs and compare to the cumulative HQ criterion of <1.0.
- 3) Calculate an excess carcinogenic risk value for each carcinogenic constituent detected above background and compare to the individual excess carcinogenic risk criterion of <1 x 10⁻⁶ (DOE-RL 2005).
- 4) Sum the excess carcinogenic risk values and compare to the cumulative excess carcinogenic risk criterion of <1 x 10⁻⁵.

Washington Closure Hanford		CALCULATION SHEET					
Originator:	J. M. Capron <i>JMC</i>	Date:	10/04/07	Calc. No.:	0100B-CA-V0300	Rev.:	1
Project:	100-B/C Field Remediation	Job No:	14655	Checked:	T. M. Blakley <i>TMB</i>	Date:	10/04/07
Subject:	118-B-1 Burial Ground Hazard Quotient and Carcinogenic Risk Calculations					Sheet No. 2 of 4	

METHODOLOGY:

Hazard quotient and carcinogenic risk calculations were performed for the 118-B-1 burial ground using the highest statistical value from all sampling areas or individual detections in focused samples for each analyte detected above background. Of the contaminants of concern (COCs) and contaminants of potential concern (COPCs) for the site, boron and molybdenum require the HQ calculations because they were detected and Washington State or Hanford Site background values are not available. Barium, copper, lead, mercury, and selenium are included because they were quantified above their respective Hanford Site background values. Hexavalent chromium and multiple organic compounds (as identified in Table 1) are included because they were detected by laboratory analysis and cannot be attributed to natural occurrence. Arsenic was detected above the Hanford Site background value but below the WAC 173-340 Method A cleanup level. Due to the intent of Method A cleanup values and the allowance to use such values for arsenic (DOE-RL 2005), arsenic has been excluded from the Method B individual analyte and cumulative risk requirements. All other site nonradionuclide COCs and COPCs were not detected or were detected below background levels. An example of the HQ and risk calculations is presented below:

- 1) For example, the statistical value for boron is 24.5 mg/kg, divided by the noncarcinogenic RAG value of 16,000 mg/kg (calculated in accordance with the noncarcinogenic toxics effects formula in WAC 173-340-740[3]), is 1.5×10^{-3} . Comparing this value, and all other individual values, to the requirement of <1.0 , this criterion is met.
- 2) After the HQ calculations are completed for the appropriate analytes, the cumulative HQ is obtained by summing the individual values. (To avoid errors due to intermediate rounding, the individual HQ values prior to rounding are used for this calculation.) The sum of the HQ values is 8.8×10^{-1} . Comparing this value to the requirement of <1.0 , this criterion is met.
- 3) To calculate the excess carcinogenic risk, the 95% upper confidence limit or maximum value is divided by the carcinogenic RAG value, then multiplied by 1×10^{-6} . For example, the maximum statistical value for hexavalent chromium is 0.29 mg/kg; divided by 2.1 mg/kg and multiplied as indicated is 1.4×10^{-7} . Comparing this value, and all other individual values, to the requirement of $<1 \times 10^{-6}$, this criterion is met.
- 4) After these calculations are completed for the carcinogenic analytes, the cumulative excess carcinogenic risk is obtained by summing the individual values. (To avoid errors due to intermediate rounding, the individual values prior to rounding are used for this calculation.) The sum of the excess carcinogenic risk values is 8.0×10^{-7} . Comparing this value to the requirement of $<1 \times 10^{-5}$, this criterion is met.

RESULTS:

- 1) List individual noncarcinogens and corresponding HQs >1.0 : None
- 2) List the cumulative noncarcinogenic HQ >1.0 : None
- 3) List individual carcinogens and corresponding excess cancer risk $>1 \times 10^{-6}$: None
- 4) List the cumulative excess cancer risk for carcinogens $>1 \times 10^{-5}$: None.

Washington Closure Hanford

CALCULATION SHEET

Originator:	J. M. Capron <i>JMC</i>	Date:	12/01/07	Calc. No.:	0100B-CA-V0300	Rev.:	2
Project:	100-B/C Field Remediation	Job No:	14655	Checked:	S. W. Clark <i>SWC</i>	Date:	12/03/07
Subject:	118-B-1 Burial Ground Hazard Quotient and Carcinogenic Risk Calculations					Sheet No.	3 of 4

Table 1 shows the results of the calculations for the 118-B-1 burial ground.

Table 1. Hazard Quotient and Excess Cancer Risk Results for the 118-B-1 Burial Ground.
(2 Pages)

Contaminants of Concern/ Contaminants of Potential Concern	Maximum or Statistical Value ^a (mg/kg)	Noncarcinogen RAG ^b (mg/kg)	Hazard Quotient	Carcinogen RAG ^b (mg/kg)	Carcinogen Risk
Metals					
Barium	261	5,600	4.7E-02	--	--
Boron	24.5	16,000	1.5E-03	--	--
Chromium, hexavalent ^c	0.29	240	1.2E-03	2.1	1.4E-07
Copper	28.0	2,960	9.5E-03	--	--
Lead ^d	34.3	353	9.7E-02	--	--
Mercury	14.5	24	6.0E-01	--	--
Molybdenum	2.1	400	5.3E-03	--	--
Selenium	1.0	400	2.5E-03	--	--
Semivolatiles					
Bis(2-ethylhexyl) phthalate	0.41	1,600	2.6E-04	71.4	5.7E-09
Butylbenzylphthalate	0.024	16,000	1.5E-06	--	--
Diethylphthalate	0.025	64,000	3.9E-07	--	--
Di-n-butylphthalate	0.16	8,000	2.0E-05	--	--
Methylnaphthalene; 2-	0.026	320	8.1E-05	--	--
Naphthalene	0.019	1,600	1.2E-05	--	--
Phenol	0.17	24,000	7.1E-06	--	--
Pesticides					
Aldrin	0.0010	2.40	4.2E-04	0.0588	1.7E-08
BHC, beta-	0.0078	--	--	0.556	1.4E-08
Chlordane (alpha and gamma)	0.0185	40	4.6E-04	2.86	6.5E-09
DDD, 4,4'-	0.0019	--	--	4.17	4.6E-10
DDE, 4,4'-	0.016	--	--	2.94	5.4E-09
DDT, 4,4'-	0.0016	40	4.0E-05	2.94	5.4E-10
Dieldrin	0.0038	4	9.5E-04	0.0625	6.1E-08
Endosulfan (I, II, sulfate)	0.0077	480	1.6E-05	--	--
Endrin (and ketone, aldehyde)	0.0148	24	6.2E-04	--	--
Heptachlor	0.00043	40	1.1E-05	0.222	1.9E-09
Methoxychlor	0.0091	400	2.3E-05	--	--
Polychlorinated Biphenyls					
Aroclor-1242	0.047	--	--	0.5	9.4E-08
Aroclor-1254	0.17	1.6	1.1E-01	0.5	3.4E-07
Aroclor-1260	0.056	--	--	0.5	1.1E-07
Volatile Organic Compounds					
Acetone	0.099	72,000	1.4E-06	--	--
Carbon tetrachloride	0.016	56	2.9E-04	7.7	2.1E-09
Methyl-2-pentanone; 4-	0.011	6,400	1.7E-06	--	--
Methylene chloride	0.019	4,800	4.0E-06	133	1.4E-10
Trichloroethene	0.002	24	8.3E-05	2.5	8.0E-10
Toluene	0.002	6,400	3.1E-07	--	--
Xylenes (total)	0.001	16,000	6.3E-08	--	--

Washington Closure Hanford			CALCULATION SHEET				
Originator:	J. M. Capron <i>JMC</i>	Date:	10/04/07	Calc. No.:	0100B-CA-V0300	Rev.:	1
Project:	100-B/C Field Remediation	Job No:	14655	Checked:	T. M. Blakley <i>TMB</i>	Date:	10/04/07
Subject:	118-B-1 Burial Ground Hazard Quotient and Carcinogenic Risk Calculations					Sheet No. 4 of 4	

**Table 1. Hazard Quotient and Excess Cancer Risk Results for the 118-B-1 Burial Ground.
(2 Pages)**

Contaminants of Concern/ Contaminants of Potential Concern	Maximum or Statistical Value ^a (mg/kg)	Noncarcinogen RAG ^b (mg/kg)	Hazard Quotient	Carcinogen RAG ^b (mg/kg)	Carcinogen Risk
Herbicides					
2,4-D	0.062	800	7.8E-05	--	--
2,4-DB	0.087	640	1.4E-04	--	--
2,4,5-T	0.013	800	1.6E-05	--	--
2,4,5-TP	0.043	640	6.7E-05	--	--
Dalapon	0.048	2,400	2.0E-05	--	--
Dicamba	0.023	2,400	9.6E-06	--	--
Dichloroprop	0.21	--	--	--	--
Pentachlorophenol	0.016	2,400	6.7E-06	8.33	1.9E-09
Picloram	0.014	5,600	2.5E-06	--	--
Totals					
Cumulative Hazard Quotient:			8.8E-01		
Cumulative Excess Cancer Risk:					8.0E-07

Notes:

^a = From WCH (2007).

^b = Value obtained from *Washington Administrative Code* (WAC) 173-340-740(3), Method B, 1996, unless otherwise noted.

^c = Value for the carcinogen RAG calculated based on the inhalation exposure pathway (WAC) 173-340-750(3), 1996.

^d = Value for the noncarcinogen RAG obtained from EPA (1994).

-- = not applicable

RAG = remedial action goal

CONCLUSION:

This calculation demonstrates that the 118-B-1 burial ground meets the requirements for hazard quotient and excess carcinogenic risk as identified in the RDR/RAWP (DOE-RL 2005).

CALCULATION COVER SHEET

Project Title 118-B-1 Burial Ground Cleanup Verification **Job No.** 14655
Area 100 B/C Area
Discipline Environmental ***Calc. No.** 0100B-CA-V0301
Subject 118-B-1 Burial Ground Cleanup Verification RESRAD Calculation Brief for
Overburden, Below Cleanup Level (BCL), and Staging Pile Area Soil
Computer Program RESRAD **Program No.** Version 6.3

The attached calculations have been generated to document compliance with established cleanup levels.
 These calculations should be used in conjunction with other relevant documents in the administrative record.

Committed Calculation ☒ **Preliminary** ☐ **Superseded** ☐ **Voided** ☐

Rev.	Sheet Numbers	Originator	Checker	Reviewer	Approval	Date
0	Cover - 1 pg Summary - 5 pg Attn. 1 - 1 pg Attn. 2 - 1 pg Attn. 3 - 19 pg Attn. 4 - 21 pg Attn. 5 - 10 pg Attn. 6 - 19 pg Attn. 7 - 21 pg Attn. 8 - 10 pg Attn. 9 - 27 pg Attn. 10 - 41 pg Attn. 11 - 19 pg Total - 195 pages	S. W. Clark <i>S.W. Clark</i> 2/5/07	M. W. Perrott <i>M. Perrott</i> 2/5/07	T. M. Blakley <i>T.M. Blakley</i> for phone conversation 2/5/07	D. N. Strom <i>D. N. Strom</i> 2-8-07	2-8-07
SUMMARY OF REVISION						

WCH-DE-018 (9/01/2006)

*Obtain Calc. No. from R&DC and Form from Intranet

Washington Closure Hanford

CALCULATION SHEET

Originator:	S. W. Clark <i>SWC</i>	Date:	2/5/07	Calc. No.:	0100B-CA-V0301	Rev.:	0
Project:	118-B-1 Burial Ground Cleanup	Job No:	14655	Checked:	M. W. Perrott <i>MWP</i>	Date:	2/5/07
Subject:	118-B-1 Burial Ground Cleanup Verification RESRAD Calculation Brief for Overburden, Below Cleanup Level (BCL), and Staging Pile Area Soil					Sheet No.	1 of 5

PURPOSE:

Calculate the soil and groundwater concentrations, dose, and risk contributions from remaining radionuclide contaminants in overburden soil, below cleanup level (BCL) soil, and soil beneath staging pile areas at the 118-B-1 Burial Ground over a period of 1,000 years.

GIVEN/REFERENCES:

- 1) Cleanup verification data from *118-B-1 Burial Ground 95% UCL Calculation*, Calculation No. 0100B-CA-V0299, Rev. 0, Washington Closure Hanford, Richland, Washington.
- 2) *Remedial Design Report/Remedial Action Work Plan for the 100 Area (RDR/RAWP)*, DOE/RL-96-17, Rev. 5, U.S. Department of Energy, Richland Operations Office, Richland, Washington.
- 3) Radioactive and nonradioactive contaminants of potential concern (COPCs) from the *100 Area Burial Grounds Remedial Action Sampling and Analysis Plan*, DOE/RL-2001-35, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington. For the purpose of these RESRAD calculations, the radioactive COPCs are americium-241, carbon-14, cesium-137, cobalt-60, europium-152, europium-154, europium-155, nickel-63, plutonium-238, plutonium-239/240, plutonium-241, silver-108m, strontium-90, tritium (H-3), uranium-233/234, uranium-235, and uranium-238. The nonradionuclide COPCs are cadmium, hexavalent chromium, mercury, PCBs, SVOAs, TPH, and VOAs.
- 4) RESidual RADioactivity (RESRAD) computer code, version 6.3, to calculate compliance with residual radioactivity guidelines, developed for the U.S. Department of Energy by the Environmental Assessment Division of Argonne National Laboratory, Argonne, Illinois.
- 5) Sample design data from the *118-B-1 Burial Ground Sampling Plan*, Calculation No. 0100B-CA-V0284, Rev. 0, Washington Closure Hanford, Richland, Washington..
- 6) Groundwater elevation from *Hanford Groundwater Monitoring for Fiscal Year 2005*, PNNL-15670, Pacific Northwest National Laboratory, Richland, Washington.

SOLUTION:

- 1) Separate RESRAD runs were performed for the 118-B-1 Burial Ground overburden (OB) soil, for the below cleanup level (BCL) soil, and for the staging pile area (SPA). Table 1 shows the elevations (NAVD88) and thickness of each soil horizon. The OB/BCL/SPA soil was all considered to be in the shallow zone (between the ground surface and 4.6 m [15 ft] deep). Attachment 1 shows representative dimensions of soil horizons and contaminant pathways considered for dose, risk, and groundwater protection modeling. Attachment 2 shows a schematic of the 118-B-1 Burial Ground area with the pieces making up the individual units labeled. Input factors for each run are shown in the "Summary" section of the RESRAD "Mixture Sums and Single Radionuclide Guidelines" printouts in the Attachments to this Calculation Summary.

Washington Closure Hanford

CALCULATION SHEET

Originator:	S. W. Clark <i>[Signature]</i>	Date:	2/5/07	Calc. No.:	0100B-CA-V0301	Rev.:	0
Project:	118-B-1 Burial Ground Cleanup	Job No:	14655	Checked:	M. W. Perrott <i>[Signature]</i>	Date:	2/5/07
Subject:	118-B-1 Burial Ground Cleanup Verification RESRAD Calculation Brief for Overburden, Below Cleanup Level (BCL), and Staging Pile Area Soil					Sheet No. 2 of 5	

Table 1. Waste Site Dimensions for RESRAD Modeling

Parameter	Overburden	BCL	Staging Pile Area
<i>Contaminated Zone Dimensions</i>			
Cover Depth	0	0	0
Area of Contaminated Zone (CZ)	23,032	20,022	27,883
Length Parallel to Aquifer Flow	180	146	210
<i>Elevations of Vadose Zone Horizons</i>			
Elevation: Surface	144.5	144.5	144.5
Elevation: Groundwater	121.8	121.8	121.8
Thickness: Contaminated Zone	4.6	4.6	4.6
Thickness: Uncontaminated Unsaturated Zone	18.1	18.1	18.1
BCL = Below Cleanup Levels Soil			

- 2) The cleanup verification data set for the 118-B-1 Burial Ground OB/BCL/SPA soil is presented in Table 2. The year where the peak dose (or concentration) occurs from each individual radionuclide contaminant of concern (COC) and layer is determined by a preliminary run. This year is then added for all horizons for the final RESRAD runs. For the direct exposure pathway (i.e. soil ingestion and inhalation and external radiation), the peak year occurred at year zero (year 2007) for all COCs. For the water pathways (i.e. drinking water and food ingestion) the peak year was year 30 for tritium. The 30-year time period was added to all RESRAD runs. RESRAD evaluations were performed for the 118-B-1 Burial Ground OB/BCL/SPA soils assuming that the residual contamination levels from the shallow zone sample data sets extend to a maximum of 4.6 m (15 ft) below the ground surface (Attachment 1).

METHODOLOGY:

- 1) Runs of RESRAD version 6.3 were completed for the 118-B-1 Burial Ground OB/BCL/SPA soils using the radionuclide concentrations shown in Table 2. RESRAD numerical output reports for dose, risk, and concentration are presented in the Attachments to this calculation summary.

Table 2. Cleanup Verification Data Set ^a (2 pages)

COCs	Overburden	BCL	Staging Pile Area
<i>Radionuclide Activity (pCi/g)</i>			
Americium-241	--	--	0.061
Carbon-14	--	--	1.6
Cesium-137	0(<BG)	0.159	0.57
Cobalt-60	--	0.05	0.028
Europium-152	0.07	0.068	0.20

Washington Closure Hanford

CALCULATION SHEET

Originator:	S. W. Clark <i>SWC</i>	Date:	2/5/07	Calc. No.:	0100B-CA-V0301	Rev.:	0
Project:	118-B-1 Burial Ground Cleanup	Job No.:	14655	Checked:	M. W. Perrott <i>MWP</i>	Date:	2/5/07
Subject:	118-B-1 Burial Ground Cleanup Verification RESRAD Calculation Brief for Overburden, Below Cleanup Level (BCL), and Staging Pile Area Soil					Sheet No.	3 of 5

Table 2. Cleanup Verification Data Set^a (2 pages)

COCs	Overburden	BCL	Staging Pile Area
<i>Radionuclide Activity (pCi/g)</i>			
Europium-154	--	--	--
Europium-155	--	--	--
Nickel-63	--	--	5.05
Plutonium-238	--	--	--
Plutonium-239	--	--	0.103
Plutonium-240	--	--	0.022
Plutonium-241	--	--	--
Silver (Ag-108m)	--	--	--
Strontium-90	0(<BG)	0.120	0.236
Tritium (H-3)	--	--	14.6
Uranium-233/234	0(<BG)	0(<BG)	0(<BG)
Uranium-235	0(<BG)	0(<BG)	0(<BG)
Uranium-238	0(<BG)	0(<BG)	0(<BG)

-- = Not evaluated by laboratory analysis or not detected (for all samples in the data set).

BCL = Below Cleanup Levels

COCs = Contaminants of Concern

^a Soil concentration values are from 118-B-1 Burial Ground 95% UCL Calculation, Calculation No. 0100B-CA-V0299, Rev. 0, Washington Closure Hanford, Richland, Washington. Refer to the 95% UCL for nonradionuclide concentrations. Nonradionuclides are not evaluated in this RESRAD calculation.

RESULTS:

1) Radionuclide "All Pathways" Dose Rate

The "all pathways" (maximum) dose rates are shown in Table 3. The maximum all pathways dose rate from the 118-B-1 Burial Ground overburden soil is 0.309 mrem/yr at year zero (2007). For the below cleanup level (BCL) soil the total maximum all-pathways dose rate is 1.70 mrem/yr at year zero (2007). For the staging pile area the total maximum all-pathways dose rate is 6.96 mrem/yr at year zero (2007).

Table 3. All Pathways Dose Rate (mrem/yr)

RESRAD Run	Vadose Zone Horizons	"All Pathways" Dose Contributions in mrem/yr at Each Time Slice (yr)								
		0	1	3	10	11	30	100	300	1000
OB	Shallow Zone	3.09E-01	2.93E-01	2.64E-01	1.83E-01	1.74E-01	6.48E-02	1.69E-03	5.10E-08	1.21E-16
BCL	Shallow Zone	1.70E+00	1.60E+00	1.43E+00	1.02E+00	9.74E-01	5.09E-01	8.37E-02	7.06E-04	4.46E-11
SPA	Shallow Zone	6.96E+00	4.38E+00	3.35E+00	2.60E+00	2.52E+00	1.58E+00	3.22E-01	7.50E-02	5.46E-02

OB = Overburden

BCL = Below Cleanup Levels

SPA = Staging Pile Area

Washington Closure Hanford**CALCULATION SHEET**

Originator:	S. W. Clark <i>SWC</i>	Date:	2/5/07	Calc. No.:	0100B-CA-V0301	Rev.:	0
Project:	118-B-1 Burial Ground Cleanup	Job No:	14655	Checked:	M. W. Perrott <i>MWP</i>	Date:	2/5/07
Subject:	118-B-1 Burial Ground Cleanup Verification RESRAD Calculation Brief for Overburden, Below Cleanup Level (BCL), and Staging Pile Area Soil					Sheet No. 4 of 5	

2) Radionuclide Excess Lifetime Cancer Risk

The radionuclide excess lifetime cancer risk (ELCR) results are shown in Table 4. The maximum ELCR for the overburden (OB) soil is 3.65×10^{-6} at year zero (2007). The maximum ELCR for the below cleanup level (BCL) soil is 1.98×10^{-5} at year zero (2007). For the staging pile area (SPA) the total maximum all-pathways ELRC is 5.82×10^{-5} at year zero (2007).

Table 4. Radionuclide Excess Lifetime Cancer Risk

RESRAD Run	Vadose Zone Horizons	Excess Cancer Risk at Each Time Slice (yr)								
		0	1	3	10	11	30	100	300	1000
OB	Shallow Zone	3.65E-06	3.46E-06	3.12E-06	2.17E-06	2.06E-06	7.65E-07	2.00E-08	6.03E-13	8.14E-22
BCL	Shallow Zone	1.98E-05	1.89E-05	1.74E-05	1.33E-05	1.29E-05	7.24E-06	1.24E-06	1.06E-08	6.86E-16
SPA	Shallow Zone	5.82E-05	5.10E-05	4.67E-05	3.81E-05	3.69E-05	2.19E-05	4.27E-06	3.10E-07	1.09E-07

OB = Overburden
BCL = Below Cleanup Levels
SPA = Staging Pile Area

3) Radionuclide Groundwater Protection

The radionuclide concentrations in groundwater calculated by the RESRAD model are summarized in Table 5. Among the radionuclide COCs only tritium is calculated to reach groundwater in the 1,000 years of the RESRAD model run. Tritium is predicted to reach groundwater at a concentration below the remedial action goal (RAG). Therefore, no calculation for comparison to drinking water standards was necessary.

Table 5. Predicted Groundwater (Well Water/Drinking Water) Concentrations (2 pages)

Radio-nuclide	Vadose Zone Horizon	Groundwater Concentrations in pCi/L at Each Time Slice (yr)									RAG, pCi/L
		0	1	3	10	11	30	100	300	1000	
Tritium (H-3)	OB	0	0	0	0	0	0	0	0	0	20,000
	BCL	0	0	0	0	0	0	0	0	0	
	SPA	0	0	0	0	0	1440	0	0	0	

RAG = Remedial action goal from the 100 Area RDR/RAWP
OB/BCL = Overburden/Below Cleanup Levels
SPA = Staging Pile Area

CONCLUSIONS:

- The "all pathways" (maximum) dose rates are shown in Table 3. The maximum all pathways dose rate for the 118-B-1 Burial Ground overburden (OB) soil is 0.309 mrem/yr at year zero (2007). The maximum all-pathways dose rate for the below cleanup level (BCL) soil is 1.70 mrem/yr at year zero (2007). The maximum all-pathways dose rate for the staging pile area is 6.96 mrem/yr at year zero (2007).
- None of the site COCs are projected to exceed remedial action goals (RAGs).

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CALCULATION SHEET

Originator:	S. W. Clark <i>[Signature]</i>	Date:	2/5/07	Calc. No.:	0100B-CA-V0301	Rev.:	0
Project:	118-B-1 Burial Ground Cleanup	Job No:	14655	Checked:	M. W. Perrott <i>[Signature]</i>	Date:	2/5/07
Subject:	118-B-1 Burial Ground Cleanup Verification RESRAD Calculation Brief for Overburden, Below Cleanup Level (BCL), and Staging Pile Area Soil					Sheet No.	5 of 5

- 1 • The radionuclide excess lifetime cancer risk (ELCR) results are shown in Table 4. The
- 2 maximum ELCR for the overburden (OB) soil is 3.65×10^{-6} at year zero (2007). The
- 3 maximum ELCR for the below cleanup level (BCL) soil is 1.98×10^{-5} at year zero (2007).
- 4 The maximum all-pathways ELRC for the staging pile area (SPA) is 5.82×10^{-5} at year zero
- 5 (2007).
- 6
- 7 • Among the radionuclide COCs only tritium is calculated to reach groundwater in the 1,000
- 8 years of the RESRAD model run. Tritium is predicted to reach groundwater at
- 9 concentrations below the RAGs.

ATTACHMENTS:

- 14 1. Graphic showing 118-B-1 Cleanup Verification Model (1 page)
- 15 2. Schematic of the 118-B-1 Burial Ground Remediation Areas (1 page)
- 16 3. RESRAD Output: 118-B-1 Overburden Radionuclides – Mixture Sums and Single
- 17 Radionuclide Guidelines (19 pages)
- 18 4. RESRAD Output: 118-B-1 Overburden Radionuclides – Intake Quantities and Health Risk
- 19 Factors (21 pages)
- 20 5. RESRAD Output: 118-B-1 Overburden Radionuclides – Concentration of Radionuclides,
- 21 (10 Pages)
- 22 6. RESRAD Output: 118-B-1 Below Cleanup Level Radionuclides – Mixture Sums and Single
- 23 Radionuclide Guidelines (19 pages)
- 24 7. RESRAD Output: 118-B-1 Below Cleanup Level Radionuclides - Intake Quantities and
- 25 Health Risk Factors (21 pages)
- 26 8. RESRAD Output: 118-B-1 Below Cleanup Level Radionuclides - Concentration of
- 27 Radionuclides (10 pages)
- 28 9. RESRAD Output: 118-B-1 Staging Pile Area Radionuclides – Mixture Sums and Single
- 29 Radionuclide Guidelines (27 pages)
- 30 10. RESRAD Output: 118-B-1 Staging Pile Area Radionuclides - Intake Quantities and Health
- 31 Risk Factors (41 pages)
- 32 11. RESRAD Output: 118-B-1 Staging Pile Area Radionuclides - Concentration of
- 33 Radionuclides (19 pages)

ATTACHMENT 1

118-B-1 Burial Ground OB/BCL/SPA Cleanup Verification Model

Attachment 1 Sheet No. 1 of 1
 Originators: S. W. Clark SWC Date 2/5/97
 Chk'd By M. W. Perrott MWP Date 2/5/97
 Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 2

Schematic of the 118-B-1 Burial Ground Remediation Areas Sampled for Cleanup
Verification

Attachment 2 Sheet No. 1 of 1
Originators: S. W. Clark Date 2/5/07
Chk'd By M. W. Perrott Date 2/5/07
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 3

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:22 Page 1
Summary : 118-B-1 Overburden RESRAD Evaluation File: 118-B-1 Overburden.RAD

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Time = 3.000E+00	11
Time = 1.000E+01	12
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Attachment 3 Sheet No. 1 of 19
 Originators: S. W. Clark *SWC* Date 2/5/07
 Chk'd By M. W. Perrott *MWP* Date 2/5/07
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ATTACHMENT 3

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:22 Page 2
Summary : 118-B-1 Overburden RESRAD Evaluation File: 118-B-1_Overburden.RAD

Dose Conversion Factor (and Related) Parameter Summary

File: HEAST 2001 MORBIDITY

Menu	Parameter	Current Value	Base Case*	Parameter Name
Dose conversion factors for inhalation, mrem/pCi:				
B-1	Eu-152	2.210E-04	2.210E-04	DCF2(1)
B-1	Gd-152	2.430E-01	2.430E-01	DCF2(3)
Dose conversion factors for ingestion, mrem/pCi:				
D-1	Eu-152	6.480E-06	6.480E-06	DCF3(1)
D-1	Gd-152	1.610E-04	1.610E-04	DCF3(3)
Food transfer factors:				
D-34	Eu-152 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,1)
D-34	Eu-152 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-03	2.000E-03	RTF(1,2)
D-34	Eu-152 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-05	5.000E-05	RTF(1,3)
D-34	Gd-152 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(3,1)
D-34	Gd-152 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-03	2.000E-03	RTF(3,2)
D-34	Gd-152 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-05	2.000E-05	RTF(3,3)
Bioaccumulation factors, fresh water, L/kg:				
D-5	Eu-152 , fish	5.000E+01	5.000E+01	BIOFAC(1,1)
D-5	Eu-152 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5	Gd-152 , fish	2.500E+01	2.500E+01	BIOFAC(3,1)
D-5	Gd-152 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(3,2)

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Attachment 3 Sheet No. 2 of 19
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 3

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:22 Page 3
Summary : 118-B-1 Overburden RESRAD Evaluation File: 118-B-1_Overburden.RAD

Site-Specific Parameter Summary				
0	Parameter	User	Default	Used by RESRAD
Menu	Parameter	Input	Default	(If different from user input)
AAAAA	Area of contaminated zone (m**2)	2.303E+04	1.000E+04	---
R011	Thickness of contaminated zone (m)	4.600E+00	2.000E+00	---
R011	Length parallel to aquifer flow (m)	1.800E+02	1.000E+02	---
R011	Basic radiation dose limit (mrem/yr)	4.000E+00	3.000E+01	---
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---
R011	Times for calculations (yr)	1.100E+01	3.000E+01	---
R011	Times for calculations (yr)	3.000E+01	1.000E+02	---
R011	Times for calculations (yr)	1.000E+02	3.000E+02	---
R011	Times for calculations (yr)	3.000E+02	1.000E+03	---
R011	Times for calculations (yr)	1.000E+03	0.000E+00	---
R011	Times for calculations (yr)	not used	0.000E+00	---
R012	Initial principal radionuclide (pCi/g): Eu-152	7.000E-02	0.000E+00	---
R012	Concentration in groundwater (pCi/L): Eu-152	not used	0.000E+00	---
R013	Cover depth (m)	0.000E+00	0.000E+00	---
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---
R013	Density of contaminated zone (g/cm**3)	1.600E+00	1.500E+00	---
R013	Contaminated zone erosion rate (m/yr)	0.000E+00	1.000E-03	---
R013	Contaminated zone total porosity	4.000E-01	4.000E-01	---
R013	Contaminated zone field capacity	1.500E-01	2.000E-01	---
R013	Contaminated zone hydraulic conductivity (m/yr)	2.500E+02	1.000E+01	---
R013	Contaminated zone b parameter	4.050E+00	5.300E+00	---
R013	Average annual wind speed (m/sec)	3.400E+00	2.000E+00	---
R013	Humidity in air (g/m**3)	not used	8.000E+00	---
R013	Evapotranspiration coefficient	9.100E-01	5.000E-01	---
R013	Precipitation (m/yr)	1.600E-01	1.000E+00	---
R013	Irrigation (m/yr)	7.600E-01	2.000E-01	---
R013	Irrigation mode	overhead	overhead	---
R013	Runoff coefficient	2.000E-01	2.000E-01	---
R013	Watershed area for nearby stream or pond (m**2)	1.000E+06	1.000E+06	---
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---
R014	Density of saturated zone (g/cm**3)	1.600E+00	1.500E+00	---
R014	Saturated zone total porosity	4.000E-01	4.000E-01	---
R014	Saturated zone effective porosity	2.500E-01	2.000E-01	---
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---
R014	Saturated zone hydraulic conductivity (m/yr)	5.530E+03	1.000E+02	---
R014	Saturated zone hydraulic gradient	1.250E-03	2.000E-02	---
R014	Saturated zone b parameter	not used	5.300E+00	---
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---
R014	Well pump intake depth (m below water table)	4.600E+00	1.000E+01	---
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---
R014	Well pumping rate (m**3/yr)	2.500E+02	2.500E+02	---
R015	Number of unsaturated zone strata	1	1	---

Attachment 3 Sheet No. 3 of 19
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 3

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:22 Page 4
Summary : 118-B-1 Overburden RESRAD Evaluation File: 118-B-1_Overburden.RAD

Site-Specific Parameter Summary (continued)				
Menu	Parameter	User Input	Default (If different from user input)	Parameter Name
R015	Unsat. zone 1, thickness (m)	1.810E+01	4.000E+00	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.600E+00	1.500E+00	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.000E-01	4.000E-01	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.500E-01	2.000E-01	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.500E-01	2.000E-01	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	4.050E+00	5.300E+00	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	2.500E+02	1.000E+01	HCUZ(1)
R016	Distribution coefficients for Eu-152			
R016	Contaminated zone (cm**3/g)	2.000E+02	-1.000E+00	DCNUCC(1)
R016	Unsat. zone 1 (cm**3/g)	2.000E+02	-1.000E+00	DCNUCC(1,1)
R016	Saturated zone (cm**3/g)	2.000E+02	-1.000E+00	DCNUCC(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.426E-05 ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used SOLUBK(1)
R016	Distribution coefficients for daughter Gd-152			
R016	Contaminated zone (cm**3/g)	-1.000E+00	-1.000E+00	8.249E+02 DCNUCC(3)
R016	Unsat. zone 1 (cm**3/g)	-1.000E+00	-1.000E+00	8.249E+02 DCNUCC(3,1)
R016	Saturated zone (cm**3/g)	-1.000E+00	-1.000E+00	8.249E+02 DCNUCC(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.316E-05 ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used SOLUBK(3)
R017	Inhalation rate (m**3/yr)	7.300E+03	8.400E+03	--- INHALR
R017	Mass loading for inhalation (g/m**3)	1.000E-04	1.000E-04	--- MLINH
R017	Exposure duration	3.000E+01	3.000E+01	--- ED
R017	Shielding factor, inhalation	4.000E-01	4.000E-01	--- SHF3
R017	Shielding factor, external gamma	8.000E-01	7.000E-01	--- SHF1
R017	Fraction of time spent indoors	6.000E-01	5.000E-01	--- FIND
R017	Fraction of time spent outdoors (on site)	2.000E-01	2.500E-01	--- FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA. FS
R017	Radii of shape factor array (Used if FS = -1):			
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	--- RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	--- RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	--- RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	--- RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	--- RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	--- RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	--- RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	--- RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	--- RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	--- RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	--- RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	--- RAD_SHAPE(12)

Attachment 3 Sheet No. 4 of 19
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 3

1RESRAD, Version 6.3 T< Limit = 180 days 02/02/2007 19:22 Page 5
Summary : 118-B-1 Overburden RESRAD Evaluation File: 118-B-1_Overburden.RAD

Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	Used by RESRAD	Parameter Name
AAAAAA					
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
AAAAAA					
R018	Fruits, vegetables and grain consumption (kg/yr)	1.100E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.700E+00	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	1.000E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	3.600E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	1.970E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	7.300E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	7.300E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	5.000E-01	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.100E+01	FMEAT
R018	Contamination fraction of milk	-1	-1	0.100E+01	FMILK
AAAAAA					
R019	Livestock fodder intake for meat (kg/day)	6.800E+01	6.800E+01	---	LF15
R019	Livestock fodder intake for milk (kg/day)	5.500E+01	5.500E+01	---	LF16
R019	Livestock water intake for meat (L/day)	5.000E+01	5.000E+01	---	LW15
R019	Livestock water intake for milk (L/day)	1.600E+02	1.600E+02	---	LW16
R019	Livestock soil intake (kg/day)	5.000E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	1.000E-04	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
AAAAAA					
R198	Wet weight crop yield for Non-Leafy (kg/m**2)	7.000E-01	7.000E-01	---	YV(1)
R198	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R198	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R198	Growing Season for Non-Leafy (years)	1.700E-01	1.700E-01	---	TE(1)
R198	Growing Season for Leafy (years)	2.500E-01	2.500E-01	---	TE(2)
R198	Growing Season for Fodder (years)	8.000E-02	8.000E-02	---	TE(3)
R198	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)

Attachment 3 Sheet No. 5 of 19
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 3

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:22 Page 6
Summary : 118-B-1 Overburden RESRAD Evaluation File: 118-B-1_Overburden.RAD

Site-Specific Parameter Summary (continued)						
0	Menu	Parameter	User Input	Default	Used by RESRAD	Parameter Name
	AAAAA	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
	R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
	R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
	R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
	R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDRY(3)
	R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
	R19B	Wet Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RWET(2)
	R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
	R19B	Weathering Removal Constant for Vegetation	2.000E+01	2.000E+01	---	WLAM
	C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
	C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
	C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
	C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
	C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
	C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSU
	C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSU
	C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
	C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
	C14	DCF correction factor for gaseous forms of C14	not used	0.000E+00	---	CO2F
	STOR	Storage times of contaminated foodstuffs (days):				
	STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
	STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
	STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
	STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
	STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
	STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
	STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
	STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
	STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
	R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
	R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
	R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
	R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
	R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
	R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
	R021	Diffusion coefficient for radon gas (m/sec):				
	R021	in cover material	not used	2.000E-06	---	DIFCV
	R021	in foundation material	not used	3.000E-07	---	DIFFL
	R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
	R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX
	R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
	R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
	R021	Building interior area factor	not used	0.000E+00	---	FAI
	R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
	R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
	R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)
	TITL	Number of graphical time points	32	---	---	NPTS
	TITL	Maximum number of integration points for dose	5	---	---	LYMAX

Attachment 3 Sheet No. 6 of 19
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
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ATTACHMENT 3

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:22 Page 7
Summary : 118-B-1 Overburden RESRAD Evaluation File: 118-B-1 Overburden.RAD

Site-Specific Parameter Summary (continued)

Site Specific Parameter Summary (continued)				
Menu	Parameter	User Input	Default (If different from user input)	Used by RESRAD Parameter Name
TITL	Maximum number of integration points for risk	9	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	suppressed

Attachment 3 Sheet No. 7 of 19
 Originators: S. W. Clark Date _____
 Chk'd By M. W. Perrott Date _____
 Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 3

1RESRAD, Version 6.3 T_x Limit = 180 days 02/02/2007 19:22 Page 8
Summary : 118-B-1 Overburden RESRAD Evaluation File: 118-B-1_Overburden.RAD

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
AAAAAAAAAAAAAAAAAAAAAAAAAAAA		AAAAAAAAAAAAAAAAAAAAAAAAAAAA	
Area: 23032.00 square meters		Eu-152 7.000E-02	
Thickness:	4.60 meters		
Cover Depth:	0.00 meters		

0

Total Dose TDose(t), mrem/yr

Basic Radiation Dose Limit = 4.000E+00 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

AAAAAAAAAAAAAAAAAAAAAAAAAAAA

t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	1.100E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDose(t):	3.093E-01	2.936E-01	2.646E-01	1.838E-01	1.745E-01	6.489E-02	1.697E-03	5.110E-08	1.207E-16
M(t):	7.732E-02	7.340E-02	6.614E-02	4.594E-02	4.361E-02	1.622E-02	4.243E-04	1.277E-08	3.019E-17

0Maximum TDose(t): 3.093E-01 mrem/yr at t = 0.000E+00 years

Attachment 3 Sheet No. 8 of 19
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 3

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:22 Page 9
Summary : 118-B-1 Overburden RESRAD Evaluation File: 118-B-1_Overburden.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)										
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years										
Water Independent Pathways (Inhalation excludes radon)										
	Ground		Inhalation		Radon		Plant		Meat	
Radio-	AAAAA		AAAAA		AAAAA		AAAAA		AAAAA	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Eu-152	3.092E-01	0.9996	6.633E-07	0.0000	0.000E+00	0.0000	6.229E-05	0.0002	2.133E-05	0.0001
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	3.092E-01	0.9996	6.633E-07	0.0000	0.000E+00	0.0000	6.229E-05	0.0002	2.133E-05	0.0001
Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)										
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years										
Water Dependent Pathways										
	Water		Fish		Radon		Plant		Meat	
Radio-	AAAAA		AAAAA		AAAAA		AAAAA		AAAAA	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
0*Sum of all water independent and dependent pathways.										

Attachment 3 Sheet No. 9 of 19
 Originators: S. W. Clark Date
 Chk'd By M. W. Perrott Date
 Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 3

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:22 Page 10
Summary : 118-B-1 Overburden RESRAD Evaluation File: 118-B-1_Overburden.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)										
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years										
Water Independent Pathways (Inhalation excludes radon)										
	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil			
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Nuclide	mrem/yr	mrem/yr	mrem/yr	mrem/yr	mrem/yr	mrem/yr	mrem/yr	mrem/yr	mrem/yr	mrem/yr
Eu-152	2.935E-01	0.9996	6.297E-07	0.0000	0.000E+00	0.0000	5.913E-05	0.0002	2.025E-05	0.0001
111111	11111111	111111	11111111	111111	11111111	111111	11111111	111111	11111111	111111
Total	2.935E-01	0.9996	6.297E-07	0.0000	0.000E+00	0.0000	5.913E-05	0.0002	2.025E-05	0.0001
Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)										
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years										
Water Dependent Pathways										
	Water	Fish	Radon	Plant	Meat	Milk	All Pathways*			
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Nuclide	mrem/yr	mrem/yr	mrem/yr	mrem/yr	mrem/yr	mrem/yr	mrem/yr	mrem/yr	mrem/yr	mrem/yr
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
111111	11111111	111111	11111111	111111	11111111	111111	11111111	111111	11111111	111111
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
0*Sum of all water independent and dependent pathways.										

Attachment 3 Sheet No. 10 of 19
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 3

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:22 Page 11
Summary : 118-B-1 Overburden RESRAD Evaluation File: 118-B-1_Overburden.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years
Water Independent Pathways (Inhalation excludes radon)

	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Nuclide	mrem/yr	mrem/yr	mrem/yr	mrem/yr	mrem/yr	mrem/yr	mrem/yr
	fract.	fract.	fract.	fract.	fract.	fract.	fract.
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
Eu-152	2.645E-01	5.674E-07	0.0000	5.328E-05	1.825E-05	1.206E-06	2.208E-05
	0.9996	0.0000	0.0000	0.0002	0.0001	0.0000	0.0001
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	2.645E-01	5.674E-07	0.0000	5.328E-05	1.825E-05	1.206E-06	2.208E-05

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years
Water Dependent Pathways

	Water	Fish	Radon	Plant	Meat	Milk	All Pathways*
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Nuclide	mrem/yr	mrem/yr	mrem/yr	mrem/yr	mrem/yr	mrem/yr	mrem/yr
	fract.	fract.	fract.	fract.	fract.	fract.	fract.
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
Eu-152	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.646E-01
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.646E-01

0*Sum of all water independent and dependent pathways.

Attachment 3 Sheet No. 11 of 19
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 3

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:22 Page 12
Summary : 118-B-1 Overburden RESRAD Evaluation File: 118-B-1_Overburden.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)													
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years													
Water Independent Pathways (Inhalation excludes radon)													
	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil
Radio-	AAAA	AAAA	AAAA	AAAA	AAAA	AAAA	AAAA	AAAA	AAAA	AAAA	AAAA	AAAA	AAAA
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr
Eu-152	1.837E-01	0.9996	3.941E-07	0.0000	0.000E+00	0.0000	3.701E-05	0.0002	1.267E-05	0.0001	8.374E-07	0.0000	1.534E-05
iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii
Total	1.837E-01	0.9996	3.941E-07	0.0000	0.000E+00	0.0000	3.701E-05	0.0002	1.267E-05	0.0001	8.374E-07	0.0000	1.534E-05
Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)													
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years													
Water Dependent Pathways													
	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*
Radio-	AAAA	AAAA	AAAA	AAAA	AAAA	AAAA	AAAA	AAAA	AAAA	AAAA	AAAA	AAAA	AAAA
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.838E-01
iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.838E-01
0*Sum of all water independent and dependent pathways.													

Attachment 3 Sheet No. 12 of 19
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 3

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:22 Page 13
Summary : 118-B-1 Overburden RESRAD Evaluation File: 118-B-1_Overburden.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)														
As mrem/yr and Fraction of Total Dose At t = 1.100E+01 years														
Water Independent Pathways (Inhalation excludes radon)														
0	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
0	Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	
	Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	
	Eu-152	1.744E-01	0.9996	3.741E-07	0.0000	0.000E+00	0.0000	3.513E-05	0.0002	1.203E-05	0.0001	7.950E-07	0.0000	
	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	
	Total	1.744E-01	0.9996	3.741E-07	0.0000	0.000E+00	0.0000	3.513E-05	0.0002	1.203E-05	0.0001	7.950E-07	0.0000	
0														
Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)														
As mrem/yr and Fraction of Total Dose At t = 1.100E+01 years														
Water Dependent Pathways														
0	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
0	Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	
	Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	
	Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	
	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	
	Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	
0	*Sum of all water independent and dependent pathways.													

Attachment 3 Sheet No. 13 of 19
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 3

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:22 Page 14
Summary : 118-B-1 Overburden RESRAD Evaluation File: 118-B-1_Overburden.RAD

Total Dose Contributions TDose(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years
Water Independent Pathways (Inhalation excludes radon)

	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil
Radio-	AAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAA
Nuclide	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.
Eu-152	6.486E-02 0.9996	1.392E-07 0.0000	0.000E+00 0.0000	1.307E-05 0.0002	4.475E-06 0.0001	2.957E-07 0.0000	5.415E-06 0.0001
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	6.486E-02 0.9996	1.392E-07 0.0000	0.000E+00 0.0000	1.307E-05 0.0002	4.475E-06 0.0001	2.957E-07 0.0000	5.415E-06 0.0001

Total Dose Contributions TDose(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years
Water Dependent Pathways

	Water	Fish	Radon	Plant	Meat	Milk	All Pathways*
Radio-	AAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAA
Nuclide	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.
Eu-152	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	6.489E-02 1.0000
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	6.489E-02 1.0000

0*Sum of all water independent and dependent pathways.

Attachment 3 Sheet No. 14 of 19
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
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ATTACHMENT 3

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:22 Page 15
Summary : 118-B-1 Overburden RESRAD Evaluation File: 118-B-1_Overburden.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years
Water Independent Pathways (Inhalation excludes radon)

	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil
Radio-	AAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAA
Nuclide	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.
Eu-152	1.697E-03 0.9996	3.640E-09 0.0000	0.000E+00 0.0000	3.418E-07 0.0002	1.170E-07 0.0001	7.733E-09 0.0000	1.416E-07 0.0001
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	1.697E-03 0.9996	3.640E-09 0.0000	0.000E+00 0.0000	3.418E-07 0.0002	1.170E-07 0.0001	7.733E-09 0.0000	1.416E-07 0.0001

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years
Water Dependent Pathways

	Water	Fish	Radon	Plant	Meat	Milk	All Pathways*
Radio-	AAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAA
Nuclide	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.
Eu-152	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.697E-03 1.0000
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.697E-03 1.0000

0*Sum of all water independent and dependent pathways.

Attachment 3 Sheet No. 15 of 19
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
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ATTACHMENT 3

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:22 Page 16
Summary : 118-B-1 Overburden RESRAD Evaluation File: 118-B-1_Overburden.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)										
As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years										
Water Independent Pathways (Inhalation excludes radon)										
	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil			
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA			
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Eu-152	5.108E-08	0.9996	1.096E-13	0.0000	0.000E+00	0.0000	1.029E-11	0.0002	3.524E-12	0.0001
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	5.108E-08	0.9996	1.096E-13	0.0000	0.000E+00	0.0000	1.029E-11	0.0002	3.524E-12	0.0001
Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)										
As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years										
Water Dependent Pathways										
	Water	Fish	Radon	Plant	Meat	Milk	All Pathways*			
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA			
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
0*Sum of all water independent and dependent pathways.										

Attachment 3 Sheet No. 16 of 19
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 3

1RESRAD, Version 6.3 T< Limit = 180 days 02/02/2007 19:22 Page 17
Summary : 118-B-1 Overburden RESRAD Evaluation File: 118-B-1_Overburden.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years
Water Independent Pathways (Inhalation excludes radon)

	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Nuclide	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Eu-152	7.651E-24 0.0000	2.544E-17 0.2107	0.000E+00 0.0000	5.397E-17 0.4470	1.848E-17 0.1531	4.885E-19 0.0040	2.237E-17 0.1852
iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii
Total	7.651E-24 0.0000	2.544E-17 0.2107	0.000E+00 0.0000	5.397E-17 0.4470	1.848E-17 0.1531	4.885E-19 0.0040	2.237E-17 0.1852

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years
Water Dependent Pathways

	Water	Fish	Radon	Plant	Meat	Milk	All Pathways*
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Nuclide	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Eu-152	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.207E-16 1.0000
iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii
Total	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.207E-16 1.0000

0*Sum of all water independent and dependent pathways.

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Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
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ATTACHMENT 3

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:22 Page 18
Summary : 118-B-1 Overburden RESRAD Evaluation File: 118-B-1_Overburden.RAD

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

0	Parent	Product	Thread	Fraction	DSR(j,t)	At Time in Years	(mrem/yr)/(pCi/g)
	(i)	(j)			0.000E+00	1.000E+00	3.000E+00
	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
	Eu-152	Eu-152	7.208E-01	3.185E+00	3.023E+00	2.724E+00	1.892E+00
	Eu-152	Eu-152	2.792E-01	1.234E+00	1.171E+00	1.055E+00	7.330E-01
	Eu-152	Gd-152	2.792E-01	4.470E-17	1.311E-16	2.909E-16	7.356E-16
	Eu-152	adSR(j)		1.234E+00	1.171E+00	1.055E+00	7.330E-01

The DSR includes contributions from associated (half-life 6 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 4.000E+00 mrem/yr

ONuclide	(i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	1.100E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
	Eu-152	9.053E-01	9.537E-01	1.058E+00	1.524E+00	1.605E+00	4.315E+00	1.650E+02	5.479E+06	*1.765E+14	

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 0.000E+00 years

ONuclide	Initial	tmin	DSR(i,tmin)	G(i,tmin)	DSR(i,tmax)	G(i,tmax)
(i)	(pCi/g)	(years)	(pCi/g)	(pCi/g)	(pCi/g)	(pCi/g)
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Eu-152	7.000E-02	0.000E+00	4.418E+00	9.053E-01	4.418E+00	9.053E-01

Attachment 3 Sheet No. 18 of 19
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 3

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:22 Page 19
Summary : 118-B-1 Overburden RESRAD Evaluation File: 118-B-1_Overburden.RAD

Individual Nuclide Dose Summed Over All Pathways
Parent Nuclide and Branch Fraction Indicated

ONuclide	Parent	THF(i)	DOSE(j,t), mrem/yr									
(j)	(i)		t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	1.100E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
Eu-152	Eu-152	7.208E-01	2.229E-01	2.116E-01	1.907E-01	1.325E-01	1.257E-01	4.677E-02	1.223E-03	3.683E-08	5.517E-24	
Eu-152	Eu-152	2.792E-01	8.635E-02	8.197E-02	7.387E-02	5.131E-02	4.871E-02	1.812E-02	4.738E-04	1.427E-08	2.137E-24	
Eu-152	asDOSE(j)		3.093E-01	2.936E-01	2.646E-01	1.838E-01	1.745E-01	6.489E-02	1.697E-03	5.110E-08	7.654E-24	
OGd-152	Eu-152	2.792E-01	3.129E-18	9.174E-18	2.036E-17	5.149E-17	5.508E-17	9.728E-17	1.215E-16	1.219E-16	1.207E-16	
iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

ONuclide	Parent	THF(i)	S(j,t), pCi/g									
(j)	(i)		t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	1.100E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
Eu-152	Eu-152	7.208E-01	5.046E-02	4.790E-02	4.316E-02	2.998E-02	2.846E-02	1.059E-02	2.769E-04	8.336E-09	1.249E-24	
Eu-152	Eu-152	2.792E-01	1.954E-02	1.855E-02	1.672E-02	1.161E-02	1.102E-02	4.100E-03	1.072E-04	3.229E-09	4.837E-25	
Eu-152	as(j)		7.000E-02	6.645E-02	5.988E-02	4.159E-02	3.948E-02	1.469E-02	3.841E-04	1.157E-08	1.732E-24	
OGd-152	Eu-152	2.792E-01	0.000E+00	1.222E-16	3.484E-16	9.778E-16	1.050E-15	1.904E-15	2.394E-15	2.401E-15	2.379E-15	
iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii

THF(i) is the thread fraction of the parent nuclide.
ORESCALC.EXE execution time = 11.66 seconds

Attachment 3 Sheet No. 19 of 19
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 4

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:22 Page 1
Intrisk : 118-B-1 Overburden RESRAD Evaluation File: 118-B-1_Overburden.RAD

Table of Contents

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Part III: Intake Quantities and Health Risk Factors

[illegible]

Cancer Risk Slope Factors	2
Risk Slope and ETFG for the Ground Pathway	3
Amount of Intake Quantities and Excess Cancer Risks	
Time= 0.000E+00	4
Time= 1.000E+00	6
Time= 3.000E+00	8
Time= 1.000E+01	10
Time= 1.100E+01	12
Time= 3.000E+01	14
Time= 1.000E+02	16
Time= 3.000E+02	18
Time= 1.000E+03	20

Attachment 4 Sheet No. 1 of 21
 Originators: S. W. Clark *SWC* Date 2/5/89
 Chk'd By M. W. Perrott *MWP* Date 2/5/89
 Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 4

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:22 Page 2
Intrisk : 118-B-1 Overburden RESRAD Evaluation File: 118-B-1_Overburden.RAD

Cancer Risk Slope Factors Summary Table				
Risk Library: HEAST 2001 Morbidity				
Menu	Parameter	Current Value	Base Case*	Parameter Name
Sf-1 Ground external radiation slope factors, 1/yr per (pCi/g):				
Sf-1	Eu-152	5.30E-06	5.30E-06	SLPF(1,1)
Sf-1	Gd-152	0.00E+00	0.00E+00	SLPF(3,1)
Sf-2 Inhalation, slope factors, 1/(pCi):				
Sf-2	Eu-152	9.10E-11	9.10E-11	SLPF(1,2)
Sf-2	Gd-152	9.10E-09	9.10E-09	SLPF(3,2)
Sf-3 Food ingestion, slope factors, 1/(pCi):				
Sf-3	Eu-152	8.70E-12	8.70E-12	SLPF(1,3)
Sf-3	Gd-152	3.85E-11	3.85E-11	SLPF(3,3)
Sf-3 Water ingestion, slope factors, 1/(pCi):				
Sf-3	Eu-152	6.07E-12	6.07E-12	SLPF(1,4)
Sf-3	Gd-152	2.97E-11	2.97E-11	SLPF(3,4)
Sf-3 Soil ingestion, slope factors, 1/(pCi):				
Sf-3	Eu-152	1.62E-11	1.62E-11	SLPF(1,5)
Sf-3	Gd-152	6.29E-11	6.29E-11	SLPF(3,5)

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Attachment 4 Sheet No. 2 of 21
Originators: S. W. Clark Date _____
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ATTACHMENT 4

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:22 Page 3
Intrisk : 118-B-1 Overburden RESRAD Evaluation File: 118-B-1_Overburden.RAD

Risk Slope and Environmental Transport Factors for the Ground Pathway

ONuclide	Slope(i)*	ETFG(i,t) At Time in Years (dimensionless)									
(i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	1.100E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03	
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	
Eu-152	5.300E-06	6.471E-01	6.471E-01	6.471E-01	6.471E-01	6.471E-01	6.471E-01	6.471E-01	6.471E-01	6.471E-01	
Gd-152	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	
iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	

* - Units are 1/yr per (pCi/g) at infinite depth and area. Multiplication by EFG(i,t) converts to site conditions.

Attachment 4 Sheet No. 3 of 21
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
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ATTACHMENT 4

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:22 Page 4
Intrisk : 118-B-1 Overburden RESRAD Evaluation File: 118-B-1_Overburden.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 0.000E+00 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Eu-152	3.080E-03	9.864E+00	3.378E+00	2.232E-01	4.088E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.755E+01
Gd-152	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 0.000E+00 years

0

Radio- Nuclide	Water Independent Pathways (Inhalation excludes radon)					Water Dependent Pathways				
	Ground	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Milk
Eu-152	3.645E-06	0.9992	4.256E-12	0.0000	1.303E-09	0.0004	4.462E-10	0.0001	2.948E-11	0.0000
Gd-152	0.000E+00	0.0000	1.430E-23	0.0000	1.937E-22	0.0000	6.633E-23	0.0000	1.753E-24	0.0000
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	3.645E-06	0.9992	4.256E-12	0.0000	1.303E-09	0.0004	4.462E-10	0.0001	2.948E-11	0.0000

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 0.000E+00 years

Radio- Nuclide	Water Independent Pathways					Water Dependent Pathways				
	Water	Fish	Plant	Meat	Milk	All Pathways**	Water	Fish	Plant	Milk
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Gd-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

Attachment 4 Sheet No. 4 of 21
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 4

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:22 Page 5
Intrisk : 118-B-1 Overburden RESRAD Evaluation File: 118-B-1_Overburden.RAD

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p) and Fraction of Total Risk at t= 0.000E+00 years														
Water Independent Pathways (Inhalation excludes radon)														
	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Radio- Nuclide	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Eu-152	3.645E-06	0.9992	4.256E-12	0.0000	0.000E+00	0.0000	1.303E-09	0.0004	4.462E-10	0.0001	2.948E-11	0.0000	1.005E-09	0.0003
Total	3.645E-06	0.9992	4.256E-12	0.0000	0.000E+00	0.0000	1.303E-09	0.0004	4.462E-10	0.0001	2.948E-11	0.0000	1.005E-09	0.0003

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p) and Fraction of Total Risk at t= 0.000E+00 years														
Water Dependent Pathways														
Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
	Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.648E-06	1.0000
IIIIII	IIIIII	IIIIII	IIIIII	IIIIII	IIIIII	IIIIII	IIIIII	IIIIII	IIIIII	IIIIII	IIIIII	IIIIII	IIIIII	IIIIII
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.648E-06	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Attachment 4 Sheet No. 5 of 21
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 4

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:22 Page 6
Intrisk : 118-B-1 Overburden RESRAD Evaluation File: 118-B-1_Overburden.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 1.000E+00 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total	
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk		Ingestion*
Eu-152	2.924E-03	9.364E+00	3.207E+00	2.119E-01	3.881E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.666E+01
Gd-152	5.378E-18	1.722E-14	5.898E-15	1.565E-16	7.138E-15	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.042E-14
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+00 years

0

Radio- Nuclide	Water Independent Pathways (Inhalation excludes radon)						Soil					
	Ground risk fract.	Inhalation risk fract.	Plant risk fract.	Meat risk fract.	Milk risk fract.	Ingestion*						
Eu-152	3.460E-06	0.9992	4.040E-12	0.0000	1.237E-09	0.0004	4.236E-10	0.0001	2.799E-11	0.0000	9.545E-10	0.0003
Gd-152	0.000E+00	0.0000	1.504E-23	0.0000	2.038E-22	0.0000	6.978E-23	0.0000	1.845E-24	0.0000	1.380E-22	0.0000
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	3.460E-06	0.9992	4.040E-12	0.0000	1.237E-09	0.0004	4.236E-10	0.0001	2.799E-11	0.0000	9.545E-10	0.0003

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water	Fish	Plant	Meat	Milk	All Pathways**		
	risk fract.	risk fract.	risk fract.	risk fract.	risk fract.	risk fract.		
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.463E-06	1.0000
Gd-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.284E-22	0.0000
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.463E-06	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

Attachment 4 Sheet No. 6 of 21
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 4

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:22 Page 7
Intrisk : 118-B-1 Overburden RESRAD Evaluation File: 118-B-1_Overburden.RAD

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p) and Fraction of Total Risk at t= 1.000E+00 years										
Water Independent Pathways (Inhalation excludes radon)										
	Ground		Inhalation		Radon		Plant		Meat	
Radio- Nuclide	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Eu-152	3.460E-06	0.9992	4.040E-12	0.0000	0.000E+00	0.0000	1.237E-09	0.0004	4.236E-10	0.0001
Total	3.460E-06	0.9992	4.040E-12	0.0000	0.000E+00	0.0000	1.237E-09	0.0004	4.236E-10	0.0001

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p) and Fraction of Total Risk at t= 1.000E+00 years										
Water Dependent Pathways										
	Water		Fish		Radon		Plant		Meat	
Radio- Nuclide	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Attachment 4 Sheet No. 7 of 21
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 4

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:22 Page 8
Intrisk : 118-B-1 Overburden RESRAD Evaluation File: 118-B-1 Overburden.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 3.000E+00 years

Radio-Nuclide	Water Independent Pathways (Inhalation w/o radon)						Water Dependent Pathways						Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk			
Eu-152	2.635E-03	8.438E+00	2.890E+00	1.909E-01	3.497E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.502E+01		
Gd-152	1.533E-17	4.909E-14	1.681E-14	4.449E-16	2.035E-14	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.670E-14		

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil and water-dependent water, fish, plant, meat, milk pathways

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+00 years

		Water Independent Pathways (Inhalation excludes radon)											
		Ground		Inhalation		Plant		Meat		Milk		Soil	
Radio-	Nuclide	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
Eu-152	3.118E-06	0.9992	3.640E-12	0.0000	1.115E-09	0.0004	3.817E-10	0.0001	2.522E-11	0.0000	8.601E-10	0.0003	
Gd-152	0.000E+00	0.0000	1.641E-23	0.0000	2.224E-22	0.0000	7.616E-23	0.0000	2.013E-24	0.0000	1.506E-22	0.0000	
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	3.118E-06	0.9992	3.640E-12	0.0000	1.115E-09	0.0004	3.817E-10	0.0001	2.522E-11	0.0000	8.601E-10	0.0003	

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+00 years

Water Dependent Pathways												
	Water		Fish		Plant		Meat		Milk		All Pathways**	
Radio- Nuclide	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
EA-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.120E-06	1.0000
Gd-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.675E-22	0.0000
iiiiifii	iiiiifii	iiiiifii	iiiiifii	iiiiifii	iiiiifii	iiiiifii	iiiiifii	iiiiifii	iiiiifii	iiiiifii	iiiiifii	iiiiifii
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.120E-06	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil and water dependent water, fish, plant, meat, milk pathways

Attachment 4 Sheet No. 8 of 21
 Originators: S. W. Clark Date _____
 Chk'd By M. W. Perrott Date _____
 Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 4

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:22 Page 9
Intrisk : 118-B-1 Overburden RESRAD Evaluation File: 118-B-1_Overburden.RAD

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+00 years
Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground risk fract.	Inhalation risk fract.	Radon risk fract.	Plant risk fract.	Meat risk fract.	Milk risk fract.	Soil risk fract.
Eu-152	3.118E-06	0.9992	3.640E-12	0.0000	0.000E+00	0.0000	1.115E-09
Total	3.118E-06	0.9992	3.640E-12	0.0000	0.000E+00	0.0000	1.115E-09

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+00 years
Water Dependent Pathways

Radio- Nuclide	Water risk fract.	Fish risk fract.	Radon risk fract.	Plant risk fract.	Meat risk fract.	Milk risk fract.	All pathways risk fract.
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.120E-06
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.120E-06

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Attachment 4 Sheet No. 9 of 21
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 4

1RESRAD, Version 6.3 T< Limit = 180 days 02/02/2007 19:22 Page 10
Intrisk : 118-B-1 Overburden RESRAD Evaluation File: 118-B-1_Overburden.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 1.000E+01 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Eu-152	1.830E-03	5.862E+00	2.007E+00	1.326E-01	2.429E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.043E+01
Gd-152	4.302E-17	1.378E-13	4.719E-14	1.247E-15	5.710E-14	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.433E-13
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+01 years

0

Radio- Nuclide	Water Independent Pathways (Inhalation excludes radon)									
	Ground	Inhalation	Plant	Meat	Milk	Soil	Ground	Inhalation	Plant	Soil
Eu-152	2.166E-06	0.9992	2.529E-12	0.0000	7.742E-10	0.0004	2.651E-10	0.0001	1.752E-11	0.0000
Gd-152	0.000E+00	0.0000	2.024E-23	0.0000	2.742E-22	0.0000	9.390E-23	0.0000	2.482E-24	0.0000
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	2.166E-06	0.9992	2.529E-12	0.0000	7.742E-10	0.0004	2.651E-10	0.0001	1.752E-11	0.0000

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.167E-06	1.0000
Gd-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.765E-22	0.0000
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.167E-06	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

Attachment 4 Sheet No. 10 of 21
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 4

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:22 Page 11
Intrisk : 118-B-1 Overburden RESRAD Evaluation File: 118-B-1_Overburden.RAD

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+01 years
Water Independent Pathways (Inhalation excludes radon)

	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Nuclide	risk fract.	risk fract.	risk fract.	risk fract.	risk fract.	risk fract.	risk fract.
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
Eu-152	2.166E-06 0.9992	2.529E-12 0.0000	0.000E+00 0.0000	7.742E-10 0.0004	2.651E-10 0.0001	1.752E-11 0.0000	5.975E-10 0.0003
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	2.166E-06 0.9992	2.529E-12 0.0000	0.000E+00 0.0000	7.742E-10 0.0004	2.651E-10 0.0001	1.752E-11 0.0000	5.975E-10 0.0003

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+01 years
Water Dependent Pathways

	Water	Fish	Radon	Plant	Meat	Milk	All pathways
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Nuclide	risk fract.	risk fract.	risk fract.	risk fract.	risk fract.	risk fract.	risk fract.
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
Eu-152	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	2.167E-06 1.0000
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	2.167E-06 1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Attachment 4 Sheet No. 11 of 21
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 4

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:22 Page 12
Intrisk : 118-B-1 Overburden RESRAD Evaluation File: 118-B-1_Overburden.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 1.100E+01 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Eu-152	1.737E-03	5.564E+00	1.906E+00	1.259E-01	2.306E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	9.902E+00
Gd-152	4.622E-17	1.480E-13	5.069E-14	1.340E-15	6.134E-14	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.614E-13

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.100E+01 years

0

Radio- Nuclide	Water Independent Pathways (Inhalation excludes radon)						Soil					
	Ground risk fract.	Inhalation risk fract.	Plant risk fract.	Meat risk fract.	Milk risk fract.							
Eu-152	2.056E-06	0.9992	2.400E-12	0.0000	7.350E-10	0.0004	2.517E-10	0.0001	1.663E-11	0.0000	5.672E-10	0.0003
Gd-152	0.000E+00	0.0000	2.068E-23	0.0000	2.802E-22	0.0000	9.595E-23	0.0000	2.536E-24	0.0000	1.897E-22	0.0000
Total	2.056E-06	0.9992	2.400E-12	0.0000	7.350E-10	0.0004	2.517E-10	0.0001	1.663E-11	0.0000	5.672E-10	0.0003

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.100E+01 years

Water Dependent Pathways

Radio- Nuclide	Water	Fish	Plant	Meat	Milk	All Pathways**		
	risk fract.	risk fract.	risk fract.	risk fract.	risk fract.	risk fract.		
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.057E-06	1.0000
Gd-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.891E-22	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.057E-06	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

Attachment 4 Sheet No. 12 of 21
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
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ATTACHMENT 4

1RESRAD, Version 6.3 T< Limit = 180 days 02/02/2007 19:22 Page 13
Intrisk : 118-B-1 Overburden RESRAD Evaluation File: 118-B-1_Overburden.RAD

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.100E+01 years
Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground risk fract.	Inhalation risk fract.	Radon risk fract.	Plant risk fract.	Meat risk fract.	Milk risk fract.	Soil risk fract.
Eu-152	2.056E-06 0.9992	2.400E-12 0.0000	0.000E+00 0.0000	7.350E-10 0.0004	2.517E-10 0.0001	1.663E-11 0.0000	5.672E-10 0.0003
Total	2.056E-06 0.9992	2.400E-12 0.0000	0.000E+00 0.0000	7.350E-10 0.0004	2.517E-10 0.0001	1.663E-11 0.0000	5.672E-10 0.0003

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.100E+01 years
Water Dependent Pathways

Radio- Nuclide	Water risk fract.	Fish risk fract.	Radon risk fract.	Plant risk fract.	Meat risk fract.	Milk risk fract.	All pathways risk fract.
Eu-152	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	2.057E-06 1.0000
Total	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	2.057E-06 1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Attachment 4 Sheet No. 13 of 21
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 4

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:22 Page 14
Intrisk : 118-B-1 Overburden RESRAD Evaluation File: 118-B-1_Overburden.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 3.000E+01 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Eu-152	6.462E-04	2.070E+00	7.087E-01	4.683E-02	8.577E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.683E+00
Gd-152	8.377E-17	2.683E-13	9.187E-14	2.428E-15	1.112E-13	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.737E-13
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+01 years

Radio- Nuclide	Water Independent Pathways (Inhalation excludes radon)						Total					
	Ground	Inhalation	Plant	Meat	Milk	Soil						
Eu-152	7.647E-07	0.9992	8.928E-13	0.0000	2.734E-10	0.0004	9.362E-11	0.0001	6.185E-12	0.0000	2.109E-10	0.0003
Gd-152	0.000E+00	0.0000	2.586E-23	0.0000	3.504E-22	0.0000	1.200E-22	0.0000	3.172E-24	0.0000	2.373E-22	0.0000
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	7.647E-07	0.9992	8.928E-13	0.0000	2.734E-10	0.0004	9.362E-11	0.0001	6.185E-12	0.0000	2.109E-10	0.0003

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.653E-07	1.0000
Gd-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.367E-22	0.0000
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.653E-07	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

Attachment 4 Sheet No. 14 of 21
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 4

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:22 Page 15
Intrisk : 118-B-1 Overburden RESRAD Evaluation File: 118-B-1_Overburden.RAD

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+01 years
Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil
Eu-152	7.647E-07 0.9992	8.928E-13 0.0000	0.000E+00 0.0000	2.734E-10 0.0004	9.362E-11 0.0001	6.185E-12 0.0000	2.109E-10 0.0003
Total	7.647E-07 0.9992	8.928E-13 0.0000	0.000E+00 0.0000	2.734E-10 0.0004	9.362E-11 0.0001	6.185E-12 0.0000	2.109E-10 0.0003

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water	Fish	Radon	Plant	Meat	Milk	All pathways
Eu-152	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	7.653E-07 1.0000
Total	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	7.653E-07 1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Attachment 4 Sheet No. 15 of 21
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 4

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:22 Page 16
Intrisk : 118-B-1 Overburden RESRAD Evaluation File: 118-B-1_Overburden.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 1.000E+02 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Eu-152	1.690E-05	5.413E-02	1.854E-02	1.225E-03	2.243E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	9.632E-02
Gd-152	1.053E-16	3.374E-13	1.155E-13	3.053E-15	1.398E-13	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.957E-13
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+02 years

0

Radio- Nuclide	Water Independent Pathways (Inhalation excludes radon)									
	Ground	Inhalation	Plant	Meat	Milk	Soil				
Eu-152	2.000E-08	0.9992	2.335E-14	0.0000	7.150E-12	0.0004	2.448E-12	0.0001	1.618E-13	0.0000
Gd-152	0.000E+00	0.0000	2.883E-23	0.0000	3.906E-22	0.0000	1.338E-22	0.0000	3.535E-24	0.0000
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	2.000E-08	0.9992	2.335E-14	0.0000	7.150E-12	0.0004	2.448E-12	0.0001	1.618E-13	0.0000

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water	Fish	Plant	Meat	Milk	All Pathways**
	risk fract.	risk fract.	risk fract.	risk fract.	risk fract.	risk fract.
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Gd-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

Attachment 4 Sheet No. 16 of 21
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 4

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:22 Page 17
Intrisk : 118-B-1 Overburden RESRAD Evaluation File: 118-B-1_Overburden.RAD

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+02 years
Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground risk fract.	Inhalation risk fract.	Radon risk fract.	Plant risk fract.	Meat risk fract.	Milk risk fract.	Soil risk fract.
Eu-152	2.000E-08 0.9992	2.335E-14 0.0000	0.000E+00 0.0000	7.150E-12 0.0004	2.448E-12 0.0001	1.618E-13 0.0000	5.517E-12 0.0003
Total	2.000E-08 0.9992	2.335E-14 0.0000	0.000E+00 0.0000	7.150E-12 0.0004	2.448E-12 0.0001	1.618E-13 0.0000	5.517E-12 0.0003

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+02 years
Water Dependent Pathways

Radio- Nuclide	Water risk fract.	Fish risk fract.	Radon risk fract.	Plant risk fract.	Meat risk fract.	Milk risk fract.	All pathways risk fract.
Eu-152	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	2.001E-08 1.0000
Total	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	2.001E-08 1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Attachment 4 Sheet No. 17 of 21
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 4

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:22 Page 18
Intrisk : 118-B-1 Overburden RESRAD Evaluation File: 118-B-1_Overburden.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 3.000E+02 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Eu-152	5.089E-10	1.630E-06	5.581E-07	3.688E-08	6.754E-07	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.900E-06
Gd-152	1.056E-16	3.383E-13	1.159E-13	3.062E-15	1.402E-13	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.975E-13

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+02 years

Radio- Nuclide	Water Independent Pathways (Inhalation excludes radon)							
	Ground risk fract.	Inhalation risk fract.	Plant risk fract.	Meat risk fract.	Milk risk fract.	Soil risk fract.		
Eu-152	6.022E-13	0.9992	7.031E-19	0.0000	2.153E-16	0.0004	7.372E-17	0.0001
Gd-152	0.000E+00	0.0000	2.883E-23	0.0000	3.907E-22	0.0000	1.338E-22	0.0000
Total	6.022E-13	0.9992	7.031E-19	0.0000	2.153E-16	0.0004	7.372E-17	0.0001

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+02 years

Radio- Nuclide	Water Dependent Pathways						All Pathways**
	Water risk fract.	Fish risk fract.	Plant risk fract.	Meat risk fract.	Milk risk fract.		
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.026E-13
Gd-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.214E-22
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.026E-13

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

Attachment 4 Sheet No. 18 of 21
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 4

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:22 Page 19
Intrisk : 118-B-1 Overburden RESRAD Evaluation File: 118-B-1_Overburden.RAD

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+02 years
Water Independent Pathways (Inhalation excludes radon)

	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil							
Radio- Nuclide	risk fract.	risk fract.	risk fract.	risk fract.	risk fract.	risk fract.	risk fract.							
Eu-152	6.022E-13	0.9992	7.031E-19	0.0000	0.000E+00	0.0000	2.153E-16	0.0004	7.372E-17	0.0001	4.871E-18	0.0000	1.661E-16	0.0003
Total	6.022E-13	0.9992	7.031E-19	0.0000	0.000E+00	0.0000	2.153E-16	0.0004	7.372E-17	0.0001	4.871E-18	0.0000	1.661E-16	0.0003

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+02 years
Water Dependent Pathways

	Water	Fish	Radon	Plant	Meat	Milk	All pathways							
Radio- Nuclide	risk fract.	risk fract.	risk fract.	risk fract.	risk fract.	risk fract.	risk fract.							
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Attachment 4 Sheet No. 19 of 21
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 4

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:22 Page 20
Intrisk : 118-B-1 Overburden RESRAD Evaluation File: 118-B-1_Overburden.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 1.000E+03 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Eu-152	7.623E-26	2.441E-22	8.360E-23	5.524E-24	1.012E-22	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.344E-22
Gd-152	1.047E-16	3.352E-13	1.148E-13	3.034E-15	1.389E-13	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.920E-13
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+03 years

0

Radio- Nuclide	Water Independent Pathways (Inhalation excludes radon)					Water Dependent Pathways					Total
	Ground	Inhalation	Plant	Meat	Milk	Soil	Ground	Inhalation	Plant	Meat	
Eu-152	7.559E-29	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Gd-152	0.000E+00	0.000E+00	2.857E-23	0.0351	3.871E-22	0.4757	1.326E-22	0.1629	3.504E-24	0.0043	2.621E-22
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	7.559E-29	0.000E+00	2.857E-23	0.0351	3.871E-22	0.4757	1.326E-22	0.1629	3.504E-24	0.0043	2.621E-22

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+03 years

Radio- Nuclide	Water Independent Pathways					Water Dependent Pathways					All Pathways**
	Ground	Inhalation	Plant	Meat	Milk	Soil	Ground	Inhalation	Plant	Meat	
Eu-152	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Gd-152	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

Attachment 4 Sheet No. 20 of 21
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 4

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:22 Page 21
Intrisk : 118-B-1 Overburden RESRAD Evaluation File: 118-B-1_Overburden.RAD

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p) and Fraction of Total Risk at t= 1.000E+03 years														
Water Independent Pathways (Inhalation excludes radon)														
	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Radio- Nuclide	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Eu-152	7.559E-29	0.0000	2.857E-23	0.0351	0.000E+00	0.0000	3.871E-22	0.4757	1.326E-22	0.1629	3.504E-24	0.0043	2.621E-22	0.3220
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	7.559E-29	0.0000	2.857E-23	0.0351	0.000E+00	0.0000	3.871E-22	0.4757	1.326E-22	0.1629	3.504E-24	0.0043	2.621E-22	0.3220

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p) and Fraction of Total Risk at t= 1.000E+03 years														
Water Dependent Pathways														
	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
Radio- Nuclide	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.138E-22	1.0000
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.138E-22	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Attachment 4 Sheet No. 21 of 21
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 5

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Concent : 118-B-1 Overburden RESRAD Evaluation      File: 118-B-1_Overburden.RAD
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ÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ

Part IV: Concentration of Radionuclides

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Concentration of radionuclides in different media

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Time= 3.000E+00	4
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Time= 3.000E+01	7
Time= 1.000E+02	8
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Attachment 5 Sheet No. 1 of 10
 Originators: S. W. Clark *SWC* Date 2/5/07
 Chk'd By M. W. Perrott *MWP* Date 2/5/07
 Calc. No. 0100B-CA-V0301 Rev. No. 0

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Concent : 118-B-1 Overburden RESRAD Evaluation File: 118-B-1_Overburden.RAD

Concentration of radionuclides in environmental media
at t = 0.000E+00 years

	Contaminat- ed Zone	Surface Soil*	Air Par- ticulate	Well Water	Surface Water
Radio- Nuclide	pCi/g	pCi/g	pCi/m**3	pCi/L	pCi/L
Eu-152	7.000E-02	7.000E-02	9.589E-07	0.000E+00	0.000E+00
Gd-152	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in foodstuff media
at t = 0.000E+00 years*

	Drinking Water	Nonleafy Vegetable	Leafy Vegetable	Fodder Meat	Fodder Milk	Meat	Milk	Fish	Crustacea
Radio- Nuclide	pCi/L	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/L	pCi/kg	pCi/kg
Eu-152	0.000E+00	1.751E-01	1.753E-01	1.753E-01	1.753E-01	9.384E-02	2.232E-03	0.000E+00	0.000E+00
Gd-152	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Attachment 5 Sheet No. 2 of 10
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
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Concent : 118-B-1 Overburden RESRAD Evaluation File: 118-B-1_Overburden.RAD

Concentration of radionuclides in environmental media
at t = 1.000E+00 years

Radio-	Contaminat- ed Zone	Surface Soil*	Air Par- ticulate	Well Water	Surface Water
Nuclide	pCi/g	pCi/g	pCi/m**3	pCi/L	pCi/L
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
Eu-152	6.645E-02	6.645E-02	9.103E-07	0.000E+00	0.000E+00
Gd-152	1.222E-16	1.222E-16	1.674E-21	0.000E+00	0.000E+00
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in foodstuff media
at t = 1.000E+00 years*

Radio-	Drinking Water	Nonleafy Vegetable	Leafy Vegetable	Fodder Meat	Fodder Milk	Meat	Milk	Fish	Crustacea
Nuclide	pCi/L	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/L	pCi/kg	pCi/kg
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
Eu-152	0.000E+00	1.662E-01	1.664E-01	1.669E-01	1.664E-01	8.908E-02	2.119E-03	0.000E+00	0.000E+00
Gd-152	0.000E+00	3.057E-16	3.060E-16	2.897E-16	3.052E-16	1.638E-16	1.565E-18	0.000E+00	0.000E+00
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Attachment 5 Sheet No. 3 of 10
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
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ATTACHMENT 5

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Concent : 118-B-1 Overburden RESRAD Evaluation File: 118-B-1_Overburden.RAD

Concentration of radionuclides in environmental media
at t = 3.000E+00 years

Radio- Nuclide	Contaminat- ed Zone	Surface Soil*	Air Par- tificate	Well Water	Surface Water
	pCi/g	pCi/g	pCi/m**3	pCi/L	pCi/L
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
Eu-152	5.988E-02	5.988E-02	8.203E-07	0.000E+00	0.000E+00
Gd-152	3.484E-16	3.484E-16	4.773E-21	0.000E+00	0.000E+00
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in foodstuff media
at t = 3.000E+00 years*

Radio- Nuclide	Drinking Water	Nonleafy Vegetable	Leafy Vegetable	Fodder Meat	Fodder Milk	Meat	Milk	Fish	Crustacea
	pCi/L	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/L	pCi/kg	pCi/kg
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
Eu-152	0.000E+00	1.497E-01	1.499E-01	1.504E-01	1.500E-01	8.027E-02	1.909E-03	0.000E+00	0.000E+00
Gd-152	0.000E+00	8.712E-16	8.722E-16	8.576E-16	8.716E-16	4.670E-16	4.449E-18	0.000E+00	0.000E+00
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Attachment 5 Sheet No. 4 of 10
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
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ATTACHMENT 5

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Concent : 118-B-1 Overburden RESRAD Evaluation File: 118-B-1_Overburden.RAD

Concentration of radionuclides in environmental media
at t = 1.000E+01 years

Radio- Nuclide	Contaminat- ed Zone	Surface Soil*	Air Par- ticulate	Well Water	Surface Water
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
AAAAAAA	pCi/g	pCi/g	pCi/m**3	pCi/L	pCi/L
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
Eu-152	4.159E-02	4.159E-02	5.698E-07	0.000E+00	0.000E+00
Gd-152	9.778E-16	9.778E-16	1.339E-20	0.000E+00	0.000E+00
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters,
i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in foodstuff media
at t = 1.000E+01 years*

Radio- Nuclide	Drinking Water	Nonleafy Vegetable	Leafy Vegetable	Fodder Meat	Fodder Milk	Meat	Milk	Fish	Crustacea
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
AAAAAAA	pCi/L	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/L	pCi/kg	pCi/kg
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
Eu-152	0.000E+00	1.040E-01	1.041E-01	1.044E-01	1.042E-01	5.576E-02	1.326E-03	0.000E+00	0.000E+00
Gd-152	0.000E+00	2.445E-15	2.448E-15	2.438E-15	2.448E-15	1.311E-15	1.247E-17	0.000E+00	0.000E+00
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters,
i.e. using parameters appearing in the input screen when the pathways are active.

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Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
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1RESRAD, Version 6.3 T_x Limit = 180 days .02/02/2007 19:22 Page 6
Concent : 118-B-1 Overburden RESRAD Evaluation File: 118-B-1_Overburden.RAD

Concentration of radionuclides in environmental media
at t = 1.100E+01 years

Radio- Nuclide	Contaminat- ed Zone	Surface Soil*	Air Par- ticulate	Well Water	Surface Water
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
	pCi/g	pCi/g	pCi/m**3	pCi/L	pCi/L
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
Eu-152	3.948E-02	3.948E-02	5.409E-07	0.000E+00	0.000E+00
Gd-152	1.050E-15	1.050E-15	1.439E-20	0.000E+00	0.000E+00
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in foodstuff media
at t = 1.100E+01 years*

Radio- Nuclide	Drinking Water	Nonleafy Vegetable	Leafy Vegetable	Fodder Meat	Fodder Milk	Meat	Milk	Fish	Crustacea
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
	pCi/L	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/L	pCi/kg	pCi/kg
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
Eu-152	0.000E+00	9.874E-02	9.885E-02	9.915E-02	9.888E-02	5.293E-02	1.259E-03	0.000E+00	0.000E+00
Gd-152	0.000E+00	2.627E-15	2.630E-15	2.620E-15	2.630E-15	1.408E-15	1.340E-17	0.000E+00	0.000E+00
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Attachment 5 Sheet No. 6 of 10
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
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Concent : 118-B-1 Overburden RESRAD Evaluation File: 118-B-1_Overburden.RAD

Concentration of radionuclides in environmental media
at t = 3.000E+01 years

Radio-	Contaminat- ted Zone	Surface Soil*	Air Par- ticulate	Well Water	Surface Water
Nuclide	pCi/g	pCi/g	pCi/m**3	pCi/L	pCi/L
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
Eu-152	1.469E-02	1.469E-02	2.012E-07	0.000E+00	0.000E+00
Gd-152	1.904E-15	1.904E-15	2.608E-20	0.000E+00	0.000E+00
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in foodstuff media
at t = 3.000E+01 years*

Radio-	Drinking Water	Nonleafy Vegetable	Leafy Vegetable	Fodder Meat	Fodder Milk	Meat	Milk	Fish	Crustacea
Nuclide	pCi/L	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/L	pCi/kg	pCi/kg
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
Eu-152	0.000E+00	3.673E-02	3.677E-02	3.688E-02	3.678E-02	1.969E-02	4.683E-04	0.000E+00	0.000E+00
Gd-152	0.000E+00	4.761E-15	4.766E-15	4.763E-15	4.767E-15	2.552E-15	2.428E-17	0.000E+00	0.000E+00
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

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Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
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Concent : 118-B-1 Overburden RESRAD Evaluation File: 118-B-1_Overburden.RAD

Concentration of radionuclides in environmental media
at t = 1.000E+02 years

Radio- Nuclide	Contaminat- ed Zone	Surface Soil*	Air Par- ticulate	Well Water	Surface Water
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
	pCi/g	pCi/g	pCi/m**3	pCi/L	pCi/L
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Eu-152	3.841E-04	3.841E-04	5.262E-09	0.000E+00	0.000E+00
Gd-152	2.394E-15	2.394E-15	3.280E-20	0.000E+00	0.000E+00
iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in foodstuff media
at t = 1.000E+02 years*

Radio- Nuclide	Drinking Water	Nonleafy Vegetable	Leafy Vegetable	Fodder Meat	Fodder Milk	Meat	Milk	Fish	Crustacea
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
	pCi/L	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/L	pCi/kg	pCi/kg
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Eu-152	0.000E+00	9.606E-04	9.616E-04	9.645E-04	9.619E-04	5.149E-04	1.225E-05	0.000E+00	0.000E+00
Gd-152	0.000E+00	5.987E-15	5.993E-15	5.994E-15	5.994E-15	3.209E-15	3.053E-17	0.000E+00	0.000E+00
iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Attachment 5 Sheet No. 8 of 10
Originators: S. W. Clark Date
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Concent : 118-B-1 Overburden RESRAD Evaluation File: 118-B-1_Overburden.RAD

Concentration of radionuclides in environmental media
at t = 3.000E+02 years

Radio- Nuclide	Contaminat- ed Zone	Surface Soil*	Air Par- ticulate	Well Water	Surface Water
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
AAAAAAA	pCi/g	pCi/g	pCi/m**3	pCi/L	pCi/L
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
Eu-152	1.157E-08	1.157E-08	1.584E-13	0.000E+00	0.000E+00
Gd-152	2.401E-15	2.401E-15	3.289E-20	0.000E+00	0.000E+00
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters,
i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in foodstuff media
at t = 3.000E+02 years*

Radio- Nuclide	Drinking Water	Nonleafy Vegetable	Leafy Vegetable	Fodder Meat	Fodder Milk	Meat	Milk	Fish	Crustacea
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
AAAAAAA	pCi/L	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/L	pCi/kg	pCi/kg
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
Eu-152	0.000E+00	2.892E-08	2.895E-08	2.904E-08	2.896E-08	1.550E-08	3.688E-10	0.000E+00	0.000E+00
Gd-152	0.000E+00	6.004E-15	6.011E-15	6.012E-15	6.012E-15	3.218E-15	3.062E-17	0.000E+00	0.000E+00
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters,
i.e. using parameters appearing in the input screen when the pathways are active.

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Concent : 118-B-1 Overburden RESRAD Evaluation File: 118-B-1_Overburden.RAD

Concentration of radionuclides in environmental media
at t = 1.000E+03 years

Radio-	Contaminat-	Surface	Air Par-	Well	Surface
Nuclide	ted Zone	Soil*	ticulate	Water	Water
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
	pCi/g	pCi/g	pCi/m**3	pCi/L	pCi/L
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Eu-152	1.732E-24	1.732E-24	2.373E-29	0.000E+00	0.000E+00
Gd-152	2.379E-15	2.379E-15	3.259E-20	0.000E+00	0.000E+00
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in foodstuff media
at t = 1.000E+03 years*

Radio-	Drinking	Nonleafy	Leafy	Fodder	Fodder	Meat	Milk	Fish	Crustacea
Nuclide	Water	Vegetable	Vegetable	Meat	Milk				
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
	pCi/L	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/L	pCi/kg	pCi/kg
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Eu-152	0.000E+00	4.332E-24	4.337E-24	4.350E-24	4.338E-24	2.322E-24	5.524E-26	0.000E+00	0.000E+00
Gd-152	0.000E+00	5.949E-15	5.956E-15	5.956E-15	5.956E-15	3.189E-15	3.034E-17	0.000E+00	0.000E+00
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Attachment 5 Sheet No. 10 of 10
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
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ATTACHMENT 6

1RESRAD, Version 6.3 T< Limit = 180 days 02/02/2007 19:38 Page 1
Summary : 118-B-1 BCL RESRAD Evaluation File: 118-B-1_BCL.RAD

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Originators: S. W. Clark SWC Date 2/5/07
Chk'd By M. W. Perrott MWP Date 2/5/07
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ATTACHMENT 6

1RESRAD, Version 6.3 T< Limit = 180 days 02/02/2007 19:38 Page 2
Summary : 118-B-1 BCL RESRAD Evaluation File: 118-B-1_BCL.RAD

Dose Conversion Factor (and Related) Parameter Summary

File: HEAST 2001 MORBIDITY

Menu	Parameter	Current Value	Base Case*	Parameter Name
Dose conversion factors for inhalation, mrem/pCi:				
B-1	Co-60	2.190E-04	2.190E-04	DCF2(1)
B-1	Cs-137+D	3.190E-05	3.190E-05	DCF2(2)
B-1	Eu-152	2.210E-04	2.210E-04	DCF2(3)
B-1	Gd-152	2.430E-01	2.430E-01	DCF2(5)
B-1	Sr-90+D	1.308E-03	1.300E-03	DCF2(6)
Dose conversion factors for ingestion, mrem/pCi:				
D-1	Co-60	2.690E-05	2.690E-05	DCF3(1)
D-1	Cs-137+D	5.000E-05	5.000E-05	DCF3(2)
D-1	Eu-152	6.480E-06	6.480E-06	DCF3(3)
D-1	Gd-152	1.610E-04	1.610E-04	DCF3(5)
D-1	Sr-90+D	1.528E-04	1.420E-04	DCF3(6)
Food transfer factors:				
D-34	Co-60 , plant/soil concentration ratio, dimensionless	8.000E-02	8.000E-02	RTF(1,1)
D-34	Co-60 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-02	2.000E-02	RTF(1,2)
D-34	Co-60 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-03	2.000E-03	RTF(1,3)
D-34	Cs-137+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(2,1)
D-34	Cs-137+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.000E-02	3.000E-02	RTF(2,2)
D-34	Cs-137+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	8.000E-03	8.000E-03	RTF(2,3)
D-34	Eu-152 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(3,1)
D-34	Eu-152 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-03	2.000E-03	RTF(3,2)
D-34	Eu-152 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-05	5.000E-05	RTF(3,3)
D-34	Gd-152 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(5,1)
D-34	Gd-152 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-03	2.000E-03	RTF(5,2)
D-34	Gd-152 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-05	2.000E-05	RTF(5,3)
D-34	Sr-90+D , plant/soil concentration ratio, dimensionless	3.000E-01	3.000E-01	RTF(6,1)
D-34	Sr-90+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-03	8.000E-03	RTF(6,2)
D-34	Sr-90+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-03	2.000E-03	RTF(6,3)
Bioaccumulation factors, fresh water, L/kg:				
D-5	Co-60 , fish	3.000E+02	3.000E+02	BIOFAC(1,1)
D-5	Co-60 , crustacea and mollusks	2.000E+02	2.000E+02	BIOFAC(1,2)
D-5	Cs-137+D , fish	2.000E+03	2.000E+03	BIOFAC(2,1)
D-5	Cs-137+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(2,2)
D-5	Eu-152 , fish	5.000E+01	5.000E+01	BIOFAC(3,1)
D-5	Eu-152 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(3,2)
D-5	Gd-152 , fish	2.500E+01	2.500E+01	BIOFAC(5,1)
D-5	Gd-152 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(5,2)
D-5	Sr-90+D , fish	6.000E+01	6.000E+01	BIOFAC(6,1)
D-5	Sr-90+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(6,2)

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Attachment 6 Sheet No. 2 of 19
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 6

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:38 Page 3
Summary : 118-B-1 BCL RESRAD Evaluation File: 118-B-1_BCL.RAD

Site-Specific Parameter Summary			Used by RESRAD		Parameter	
Menu	Parameter	User Input Default	(If different from user input)		Name	
R011	Area of contaminated zone (m**2)	2.002E+04	1.000E+04	---	AREA	
R011	Thickness of contaminated zone (m)	4.600E+00	2.000E+00	---	THICKO	
R011	Length parallel to aquifer flow (m)	1.460E+02	1.000E+02	---	LCZPAQ	
R011	Basic radiation dose limit (mrem/yr)	4.000E+00	3.000E+01	---	BRDL	
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI	
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)	
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)	
R011	Times for calculations (yr)	1.000E+01	1.000E+01	---	T(4)	
R011	Times for calculations (yr)	1.100E+01	3.000E+01	---	T(5)	
R011	Times for calculations (yr)	3.000E+01	1.000E+02	---	T(6)	
R011	Times for calculations (yr)	1.000E+02	3.000E+02	---	T(7)	
R011	Times for calculations (yr)	3.000E+02	1.000E+03	---	T(8)	
R011	Times for calculations (yr)	1.000E+03	0.000E+00	---	T(9)	
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)	
R012	Initial principal radionuclide (pCi/g): Co-60	5.000E-02	0.000E+00	---	S1(1)	
R012	Initial principal radionuclide (pCi/g): Cs-137	1.590E-01	0.000E+00	---	S1(2)	
R012	Initial principal radionuclide (pCi/g): Eu-152	7.000E-02	0.000E+00	---	S1(3)	
R012	Initial principal radionuclide (pCi/g): Sr-90	1.200E-01	0.000E+00	---	S1(6)	
R012	Concentration in groundwater (pCi/L): Co-60	not used	0.000E+00	---	W1(1)	
R012	Concentration in groundwater (pCi/L): Cs-137	not used	0.000E+00	---	W1(2)	
R012	Concentration in groundwater (pCi/L): Eu-152	not used	0.000E+00	---	W1(3)	
R012	Concentration in groundwater (pCi/L): Sr-90	not used	0.000E+00	---	W1(6)	
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVERO	
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV	
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV	
R013	Density of contaminated zone (g/cm**3)	1.600E+00	1.500E+00	---	DENSCZ	
R013	Contaminated zone erosion rate (m/yr)	0.000E+00	1.000E-03	---	VCZ	
R013	Contaminated zone total porosity	4.000E-01	4.000E-01	---	TPCZ	
R013	Contaminated zone field capacity	1.500E-01	2.000E-01	---	FCCZ	
R013	Contaminated zone hydraulic conductivity (m/yr)	2.500E+02	1.000E+01	---	HCCZ	
R013	Contaminated zone b parameter	4.050E+00	5.300E+00	---	BCZ	
R013	Average annual wind speed (m/sec)	3.400E+00	2.000E+00	---	WIND	
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID	
R013	Evapotranspiration coefficient	9.100E-01	5.000E-01	---	EVAPTR	
R013	Precipitation (m/yr)	1.600E-01	1.000E+00	---	PRECIP	
R013	Irrigation (m/yr)	7.600E-01	2.000E-01	---	RI	
R013	Irrigation mode	overhead	overhead	---	IDITCH	
R013	Runoff coefficient	2.000E-01	2.000E-01	---	RUNOFF	
R013	Watershed area for nearby stream or pond (m**2)	1.000E+06	1.000E+06	---	WAREA	
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS	
R014	Density of saturated zone (g/cm**3)	1.600E+00	1.500E+00	---	DENSQA	
R014	Saturated zone total porosity	4.000E-01	4.000E-01	---	TPSZ	
R014	Saturated zone effective porosity	2.500E-01	2.000E-01	---	EPSZ	
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ	
R014	Saturated zone hydraulic conductivity (m/yr)	5.530E+03	1.000E+02	---	HCSZ	
R014	Saturated zone hydraulic gradient	1.250E-03	2.000E-02	---	HGWT	
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ	
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT	

Attachment 6 Sheet No. 3 of 19
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Chk'd By M. W. Perrott Date
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ATTACHMENT 6

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:38 Page 4
Summary : 118-B-1 BCL RESRAD Evaluation File: 118-B-1_BCL.RAD

Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R014	Well pump intake depth (m below water table)	4.600E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	2.500E+02	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS
R015	Unsat. zone 1, thickness (m)	1.810E+01	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.600E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.000E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.500E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	1.500E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	4.050E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	2.500E+02	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Co-60				
R016	Contaminated zone (cm**3/g)	5.000E+01	1.000E+03	---	DCNUCC(1)
R016	Unsat. zone 1 (cm**3/g)	5.000E+01	1.000E+03	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	5.000E+01	1.000E+03	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.166E-04	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Cs-137				
R016	Contaminated zone (cm**3/g)	5.000E+01	4.600E+03	---	DCNUCC(2)
R016	Unsat. zone 1 (cm**3/g)	5.000E+01	4.600E+03	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	5.000E+01	4.600E+03	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.166E-04	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Eu-152				
R016	Contaminated zone (cm**3/g)	2.000E+02	1.000E+00	---	DCNUCC(3)
R016	Unsat. zone 1 (cm**3/g)	2.000E+02	1.000E+00	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	2.000E+02	1.000E+00	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.426E-05	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for Sr-90				
R016	Contaminated zone (cm**3/g)	2.500E+01	3.000E+01	---	DCNUCC(6)
R016	Unsat. zone 1 (cm**3/g)	2.500E+01	3.000E+01	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	2.500E+01	3.000E+01	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.323E-04	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for daughter Gd-152				
R016	Contaminated zone (cm**3/g)	1.000E+00	1.000E+00	8.249E+02	DCNUCC(5)
R016	Unsat. zone 1 (cm**3/g)	1.000E+00	1.000E+00	8.249E+02	DCNUCU(5,1)
R016	Saturated zone (cm**3/g)	1.000E+00	1.000E+00	8.249E+02	DCNUCS(5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.316E-05	ALEACH(5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(5)
R017	Inhalation rate (m**3/yr)	7.300E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	1.000E-04	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED

Attachment 6 Sheet No. 4 of 19
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 6

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Summary : 118-B-1 BCL RESRAD Evaluation File: 118-B-1_BCL.RAD

Site-Specific Parameter Summary (continued)					
0	Menu	Parameter	User Input	Default	Used by RESRAD
		Parameter	Input	Default	(If different from user input)
	R017	Shielding factor, inhalation	4.000E-01	4.000E-01	---
	R017	Shielding factor, external gamma	8.000E-01	7.000E-01	---
	R017	Fraction of time spent indoors	6.000E-01	5.000E-01	---
	R017	Fraction of time spent outdoors (on site)	2.000E-01	2.500E-01	---
	R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.
	R017	Radii of shape factor array (used if FS = -1):			
	R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---
	R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---
	R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---
	R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---
	R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---
	R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---
	R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---
	R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---
	R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---
	R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---
	R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---
	R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---
	R017	Fractions of annular areas within AREA:			
	R017	Ring 1	not used	1.000E+00	---
	R017	Ring 2	not used	2.732E-01	---
	R017	Ring 3	not used	0.000E+00	---
	R017	Ring 4	not used	0.000E+00	---
	R017	Ring 5	not used	0.000E+00	---
	R017	Ring 6	not used	0.000E+00	---
	R017	Ring 7	not used	0.000E+00	---
	R017	Ring 8	not used	0.000E+00	---
	R017	Ring 9	not used	0.000E+00	---
	R017	Ring 10	not used	0.000E+00	---
	R017	Ring 11	not used	0.000E+00	---
	R017	Ring 12	not used	0.000E+00	---
	R018	Fruits, vegetables and grain consumption (kg/yr)	1.100E+02	1.600E+02	---
	R018	Leafy vegetable consumption (kg/yr)	2.700E+00	1.400E+01	---
	R018	Milk consumption (L/yr)	1.000E+02	9.200E+01	---
	R018	Meat and poultry consumption (kg/yr)	3.600E+01	6.300E+01	---
	R018	Fish consumption (kg/yr)	1.970E+01	5.400E+00	---
	R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---
	R018	Soil ingestion rate (g/yr)	7.300E+01	3.650E+01	---
	R018	Drinking water intake (L/yr)	7.300E+02	5.100E+02	---
	R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---
	R018	Contamination fraction of household water	not used	1.000E+00	---
	R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---
	R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---
	R018	Contamination fraction of aquatic food	5.000E-01	5.000E-01	---
	R018	Contamination fraction of plant food	-1	-1	0.500E+00
	R018	Contamination fraction of meat	-1	-1	0.100E+01
	R018	Contamination fraction of milk	-1	-1	0.100E+01
	R019	Livestock fodder intake for meat (kg/day)	6.800E+01	6.800E+01	---

Attachment 6 Sheet No. 5 of 19
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
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1RESRAD, Version 6.3 T< Limit = 180 days 02/02/2007 19:38 Page 6
Summary : 118-B-1 BCL RESRAD Evaluation File: 118-B-1_BCL.RAD

Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R019	Livestock fodder intake for milk (kg/day)	5.500E+01	5.500E+01	---	LF16
R019	Livestock water intake for meat (L/day)	5.000E+01	5.000E+01	---	LW15
R019	Livestock water intake for milk (L/day)	1.600E+02	1.600E+02	---	LW16
R019	Livestock soil intake (kg/day)	5.000E-01	5.000E-01	---	LS1
R019	Mass loading for foliar deposition (g/m**3)	1.000E-04	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGMDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	7.000E-01	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	1.700E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	2.500E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	8.000E-02	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	2.000E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
C14	DCF correction factor for gaseous forms of C14	not used	0.000E+00	---	CO2F
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)

Attachment 6 Sheet No. 6 of 19
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 6

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:38 Page 7
Summary : 118-B-1 BCL RESRAD Evaluation File: 118-B-1 BCL.RAD

Site-Specific Parameter Summary (continued)					
	User	Default	Used by RESRAD	Parameter Name	
Menu	Input	(If different from user input)			
R021 Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1	
R021 Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL	
R021 Total porosity of the cover material	not used	4.000E-01	---	TPCV	
R021 Total porosity of the building foundation	not used	1.000E-01	---	TPFL	
R021 Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV	
R021 Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL	
R021 Diffusion coefficient for radon gas (m/sec):					
R021 in cover material	not used	2.000E-06	---	DIFCV	
R021 in foundation material	not used	3.000E-07	---	DIFFL	
R021 in contaminated zone soil	not used	2.000E-06	---	DIFCZ	
R021 Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMIX	
R021 Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG	
R021 Height of the building (room) (m)	not used	2.500E+00	---	HRM	
R021 Building interior area factor	not used	0.000E+00	---	FAI	
R021 Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL	
R021 Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)	
R021 Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)	
TITL Number of graphical time points	32	---	---	NPTS	
TITL Maximum number of integration points for dose	5	---	---	LYMAX	
TITL Maximum number of integration points for risk	9	---	---	KYMAX	

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	suppressed

Attachment 6 Sheet No. 7 of 19
 Originators: S. W. Clark Date _____
 Chk'd By M. W. Perrott Date _____
 Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 6

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:38 Page 8
Summary : 118-B-1 BCL RESRAD Evaluation File: 118-B-1_BCL.RAD

Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
AAAAAAAAAAAAAAAAAAAAAAAAAAAA		AAAAAAAAAAAAAAAAAAAAAAAAAAAA	
Area:	20022.00 square meters	Co-60	5.000E-02
Thickness:	4.60 meters	Cs-137	1.590E-01
Cover Depth:	0.00 meters	Eu-152	7.000E-02
		Sr-90	1.200E-01

0

Total Dose TDOSE(t), mrem/yr
Basic Radiation Dose Limit = 4.000E+00 mrem/yr
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)
AAAAAAAAAAAAAAAAAAAAAAAAAAAA
t (years): 0.000E+00 1.000E+00 3.000E+00 1.000E+01 1.100E+01 3.000E+01 1.000E+02 3.000E+02 1.000E+03
TDOSE(t): 1.697E+00 1.599E+00 1.428E+00 1.017E+00 9.743E-01 5.084E-01 8.370E-02 7.061E-04 4.458E-11
M(t): 4.244E-01 3.997E-01 3.569E-01 2.542E-01 2.436E-01 1.271E-01 2.092E-02 1.765E-04 1.114E-11
OMaximum TDOSE(t): 1.697E+00 mrem/yr at t = 0.000E+00 years

Attachment 6 Sheet No. 8 of 19
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 6

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:38 Page 9
Summary : 118-B-1 BCL RESRAD Evaluation File: 118-B-1_BCL.RAD

Total Dose Contributions TD0SE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years
Water Independent Pathways (Inhalation excludes radon)

	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Nuclide	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Co-60	4.898E-01 0.2886	4.450E-07 0.0000	0.000E+00 0.0000	5.681E-03 0.0033	5.390E-03 0.0032	1.235E-03 0.0007	7.359E-05 0.0000
Cs-137	3.442E-01 0.2028	2.175E-07 0.0000	0.000E+00 0.0000	1.771E-02 0.0104	2.733E-02 0.0161	1.697E-02 0.0100	4.589E-04 0.0003
Eu-152	3.086E-01 0.1818	6.538E-07 0.0000	0.000E+00 0.0000	6.229E-05 0.0000	2.133E-05 0.0000	1.409E-06 0.0000	2.581E-05 0.0000
Sr-90	1.880E-03 0.0011	6.728E-06 0.0000	0.000E+00 0.0000	3.062E-01 0.1804	1.091E-01 0.0642	6.160E-02 0.0363	1.058E-03 0.0006
iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii
Total	1.145E+00 0.6743	8.045E-06 0.0000	0.000E+00 0.0000	3.297E-01 0.1942	1.418E-01 0.0835	7.981E-02 0.0470	1.616E-03 0.0010

Total Dose Contributions TD0SE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years
Water Dependent Pathways

	Water	Fish	Radon	Plant	Meat	Milk	All Pathways*
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Nuclide	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Co-60	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	5.022E-01 0.2959
Cs-137	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	4.067E-01 0.2396
Eu-152	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	3.087E-01 0.1819
Sr-90	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	4.798E-01 0.2827
iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii
Total	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.697E+00 1.0000

*Sum of all water independent and dependent pathways.

Attachment 6 Sheet No. 9 of 19
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 6

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:38 Page 10
Summary : 118-B-1 BCL RESRAD Evaluation File: 118-B-1_BCL.RAD

Total Dose Contributions TD0SE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years
Water Independent Pathways (Inhalation excludes radon)

	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil
Radio- Nuclide	AAAAA mrem/yr fract.	AAAAA mrem/yr fract.	AAAAA mrem/yr fract.	AAAAA mrem/yr fract.	AAAAA mrem/yr fract.	AAAAA mrem/yr fract.	AAAAA mrem/yr fract.
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Co-60	4.294E-01 0.2685	3.901E-07 0.0000	0.000E+00 0.0000	4.980E-03 0.0031	4.725E-03 0.0030	1.083E-03 0.0007	6.451E-05 0.0000
Cs-137	3.363E-01 0.2103	2.124E-07 0.0000	0.000E+00 0.0000	1.730E-02 0.0108	2.670E-02 0.0167	1.658E-02 0.0104	4.483E-04 0.0003
Eu-152	2.929E-01 0.1832	6.207E-07 0.0000	0.000E+00 0.0000	5.913E-05 0.0000	2.025E-05 0.0000	1.338E-06 0.0000	2.450E-05 0.0000
Sr-90	1.835E-03 0.0011	6.567E-06 0.0000	0.000E+00 0.0000	2.989E-01 0.1869	1.064E-01 0.0666	6.012E-02 0.0376	1.033E-03 0.0006
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	1.060E+00 0.6632	7.791E-06 0.0000	0.000E+00 0.0000	3.213E-01 0.2009	1.379E-01 0.0862	7.779E-02 0.0487	1.570E-03 0.0010

Total Dose Contributions TD0SE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years
Water Dependent Pathways

	Water	Fish	Radon	Plant	Meat	Milk	All Pathways*
Radio- Nuclide	AAAAA mrem/yr fract.	AAAAA mrem/yr fract.	AAAAA mrem/yr fract.	AAAAA mrem/yr fract.	AAAAA mrem/yr fract.	AAAAA mrem/yr fract.	AAAAA mrem/yr fract.
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Co-60	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	4.402E-01 0.2753
Cs-137	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	3.973E-01 0.2485
Eu-152	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	2.930E-01 0.1833
Sr-90	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	4.684E-01 0.2929
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.599E+00 1.0000

0*Sum of all water independent and dependent pathways.

Attachment 6 Sheet No. 10 of 19
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 6

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:38 Page 11
Summary : 118-B-1 BCL RESRAD Evaluation File: 118-B-1_BCL.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)														
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years														
Water Independent Pathways (Inhalation excludes radon)														
0	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
0														
Radio-	AAAAAAAAAAAAAAAA		AAAAAAAAAAAAAAAA		AAAAAAAAAAAAAAAA		AAAAAAAAAAAAAAAA		AAAAAAAAAAAAAAAA		AAAAAAAAAAAAAAAA		AAAAAAAAAAAAAAAA	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
AAAAAAA	AAAAAAAAA	AAAAAA	AAAAAAAAA	AAAAAA	AAAAAAAAA	AAAAAA	AAAAAAAAA	AAAAAA	AAAAAAAAA	AAAAAA	AAAAAAAAA	AAAAAA	AAAAAAAAA	AAAAAA
Co-60	3.299E-01	0.2311	2.997E-07	0.0000	0.000E+00	0.0000	3.827E-03	0.0027	3.631E-03	0.0025	8.319E-04	0.0006	4.957E-05	0.0000
Cs-137	3.210E-01	0.2248	2.028E-07	0.0000	0.000E+00	0.0000	1.652E-02	0.0116	2.548E-02	0.0178	1.583E-02	0.0111	4.279E-04	0.0003
Eu-152	2.640E-01	0.1849	5.593E-07	0.0000	0.000E+00	0.0000	5.328E-05	0.0000	1.825E-05	0.0000	1.206E-06	0.0000	2.208E-05	0.0000
Sr-90	1.748E-03	0.0012	6.257E-06	0.0000	0.000E+00	0.0000	2.848E-01	0.1995	1.014E-01	0.0710	5.728E-02	0.0401	9.838E-04	0.0007
iiiiiii	iiiiiii	iiiiii	iiiiiii	iiiiii	iiiiiii	iiiiii	iiiiiii	iiiiii	iiiiiii	iiiiii	iiiiiii	iiiiii	iiiiiii	iiiiii
Total	9.166E-01	0.6420	7.318E-06	0.0000	0.000E+00	0.0000	3.052E-01	0.2137	1.305E-01	0.0914	7.394E-02	0.0518	1.483E-03	0.0010
0														
Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)														
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years														
Water Dependent Pathways														
0	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
0														
Radio-	AAAAAAAAAAAAAAAA		AAAAAAAAAAAAAAAA		AAAAAAAAAAAAAAAA		AAAAAAAAAAAAAAAA		AAAAAAAAAAAAAAAA		AAAAAAAAAAAAAAAA		AAAAAAAAAAAAAAAA	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
AAAAAAA	AAAAAAAAA	AAAAAA	AAAAAAAAA	AAAAAA	AAAAAAAAA	AAAAAA	AAAAAAAAA	AAAAAA	AAAAAAAAA	AAAAAA	AAAAAAAAA	AAAAAA	AAAAAAAAA	AAAAAA
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.383E-01	0.2369
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.792E-01	0.2656
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.641E-01	0.1850
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.462E-01	0.3125
iiiiiii	iiiiiii	iiiiii	iiiiiii	iiiiii	iiiiiii	iiiiii	iiiiiii	iiiiii	iiiiiii	iiiiii	iiiiiii	iiiiii	iiiiiii	iiiiii
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.428E+00	1.0000
0*Sum of all water independent and dependent pathways.														

Attachment 6 Sheet No. 11 of 19
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 6

1RESRAD, Version 6.3 T_{1/2} Limit = 180 days 02/02/2007 19:38 Page 12
Summary : 118-B-1 BCL RESRAD Evaluation File: 118-B-1_BCL.RAD

Total Dose Contributions TDose(i,p,t) for Individual Radionuclides (i) and Pathways (p)									
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years									
Water Independent Pathways (Inhalation excludes radon)									
0	Ground		Inhalation		Radon		Plant		Meat
0									Milk
0									Soil
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr
AAAAAA	AAAAAA	AAAAA	AAAAAA	AAAAA	AAAAAA	AAAAA	AAAAAA	AAAAA	AAAAAA
Co-60	1.312E-01	0.1291	1.192E-07	0.0000	0.000E+00	0.0000	1.522E-03	0.0015	3.309E-04
Cs-137	2.726E-01	0.2682	1.722E-07	0.0000	0.000E+00	0.0000	1.403E-02	0.0138	3.634E-04
Eu-152	1.834E-01	0.1804	3.885E-07	0.0000	0.000E+00	0.0000	3.701E-05	0.0000	1.534E-05
Sr-90	1.475E-03	0.0015	5.280E-06	0.0000	0.000E+00	0.0000	2.403E-01	0.2364	8.303E-04
iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii
Total	5.887E-01	0.5790	5.960E-06	0.0000	0.000E+00	0.0000	2.559E-01	0.2517	1.229E-03
0									
Total Dose Contributions TDose(i,p,t) for Individual Radionuclides (i) and Pathways (p)									
As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years									
Water Dependent Pathways									
0	Water		Fish		Radon		Plant		Meat
0									Milk
0									All Pathways*
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr
AAAAAA	AAAAAA	AAAAA	AAAAAA	AAAAA	AAAAAA	AAAAA	AAAAAA	AAAAA	AAAAAA
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00
iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00
0*Sum of all water independent and dependent pathways.									

Attachment 6 Sheet No. 12 of 19
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 6

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:38 Page 13
Summary : 118-B-1 BCL RESRAD Evaluation File: 118-B-1_BCL.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)														
As mrem/yr and Fraction of Total Dose At t = 1.100E+01 years														
Water Independent Pathways (Inhalation excludes radon)														
0	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
0	Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	
0	Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	
	Co-60	1.150E-01	0.1181	1.045E-07	0.0000	0.000E+00	0.0000	1.334E-03	0.0014	1.266E-03	0.0013	2.900E-04	0.0003	
	Cs-137	2.664E-01	0.2734	1.683E-07	0.0000	0.000E+00	0.0000	1.370E-02	0.0141	2.115E-02	0.0217	1.313E-02	0.0135	
	Eu-152	1.741E-01	0.1787	3.688E-07	0.0000	0.000E+00	0.0000	3.513E-05	0.0000	1.203E-05	0.0000	7.950E-07	0.0000	
	Sr-90	1.440E-03	0.0015	5.154E-06	0.0000	0.000E+00	0.0000	2.346E-01	0.2408	8.353E-02	0.0857	4.718E-02	0.0484	
	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	
	Total	5.569E-01	0.5716	5.796E-06	0.0000	0.000E+00	0.0000	2.497E-01	0.2562	1.060E-01	0.1088	6.061E-02	0.0622	
0														
Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)														
As mrem/yr and Fraction of Total Dose At t = 1.100E+01 years														
Water Dependent Pathways														
0	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
0	Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	
0	Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	
	Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	
	Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	
	Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	
	Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	
	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	
	Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	
	0*Sum of all water independent and dependent pathways.													

Attachment 6 Sheet No. 13 of 19
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 6

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:38 Page 14
Summary : 118-B-1 BCL RESRAD Evaluation File: 118-B-1_BCL.RAD

Total Dose Contributions TD0SE(i,p,t) for Individual Radionuclides (i) and Pathways (p)													
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years													
Water Independent Pathways (Inhalation excludes radon)													
	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
Co-60	9.416E-03	0.0185	8.555E-09	0.0000	0.000E+00	0.0000	1.092E-04	0.0002	1.036E-04	0.0002	2.374E-05	0.0000	1.415E-06
Cs-137	1.710E-01	0.3364	1.080E-07	0.0000	0.000E+00	0.0000	8.799E-03	0.0173	1.358E-02	0.0267	8.433E-03	0.0166	2.280E-04
Eu-152	6.474E-02	0.1273	1.372E-07	0.0000	0.000E+00	0.0000	1.307E-05	0.0000	4.475E-06	0.0000	2.957E-07	0.0000	5.415E-06
Sr-90	9.085E-04	0.0018	3.252E-06	0.0000	0.000E+00	0.0000	1.480E-01	0.2912	5.271E-02	0.1037	2.977E-02	0.0586	5.113E-04
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	2.461E-01	0.4840	3.506E-06	0.0000	0.000E+00	0.0000	1.569E-01	0.3087	6.639E-02	0.1306	3.823E-02	0.0752	7.461E-04
Total Dose Contributions TD0SE(i,p,t) for Individual Radionuclides (i) and Pathways (p)													
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years													
Water Dependent Pathways													
	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.654E-03
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.020E-01
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.476E-02
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.319E-01
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.084E-01
0*Sum of all water independent and dependent pathways.													

Attachment 6 Sheet No. 14 of 19
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 6

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:38 Page 15
Summary : 118-B-1 BCL RESRAD Evaluation File: 118-B-1_BCL.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years
Water Independent Pathways (Inhalation excludes radon)

	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Nuclide	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.
Co-60	9.323E-07 0.0000	8.470E-13 0.0000	0.000E+00 0.0000	1.081E-08 0.0000	1.026E-08 0.0000	2.351E-09 0.0000	1.401E-10 0.0000
Cs-137	3.342E-02 0.3993	2.111E-08 0.0000	0.000E+00 0.0000	1.720E-03 0.0205	2.653E-03 0.0317	1.648E-03 0.0197	4.455E-05 0.0005
Eu-152	1.693E-03 0.0202	3.588E-09 0.0000	0.000E+00 0.0000	3.418E-07 0.0000	1.170E-07 0.0000	7.733E-09 0.0000	1.416E-07 0.0000
Sr-90	1.666E-04 0.0020	5.962E-07 0.0000	0.000E+00 0.0000	2.714E-02 0.3242	9.663E-03 0.1154	5.458E-03 0.0652	9.374E-05 0.0011
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	3.528E-02 0.4215	6.209E-07 0.0000	0.000E+00 0.0000	2.886E-02 0.3448	1.232E-02 0.1471	7.106E-03 0.0849	1.384E-04 0.0017

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years
Water Dependent Pathways

	Water	Fish	Radon	Plant	Meat	Milk	All Pathways*
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Nuclide	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.
Co-60	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	9.559E-07 0.0000
Cs-137	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	3.949E-02 0.4718
Eu-152	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.694E-03 0.0202
Sr-90	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	4.252E-02 0.5080
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	8.370E-02 1.0000

0*Sum of all water independent and dependent pathways.

Attachment 6 Sheet No. 15 of 19
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 6

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:38 Page 16
Summary : 118-B-1 BCL RESRAD Evaluation File: 118-B-1_BCL.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years
Water Independent Pathways (Inhalation excludes radon)

0	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil
Radio-	AAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAA
Nuclide	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.
Co-60	3.378E-18 0.0000	3.069E-24 0.0000	0.000E+00 0.0000	3.918E-20 0.0000	3.717E-20 0.0000	8.517E-21 0.0000	5.075E-22 0.0000
Cs-137	3.150E-04 0.4462	1.990E-10 0.0000	0.000E+00 0.0000	1.621E-05 0.0230	2.501E-05 0.0354	1.553E-05 0.0220	4.200E-07 0.0006
Eu-152	5.098E-08 0.0001	1.081E-13 0.0000	0.000E+00 0.0000	1.029E-11 0.0000	3.524E-12 0.0000	2.329E-13 0.0000	4.265E-12 0.0000
Sr-90	1.308E-06 0.0019	4.681E-09 0.0000	0.000E+00 0.0000	2.131E-04 0.3017	7.587E-05 0.1074	4.285E-05 0.0607	7.360E-07 0.0010
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	3.164E-04 0.4481	4.880E-09 0.0000	0.000E+00 0.0000	2.293E-04 0.3247	1.009E-04 0.1429	5.839E-05 0.0827	1.156E-06 0.0016

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years
Water Dependent Pathways

0	Water	Fish	Radon	Plant	Meat	Milk	All Pathways*
Radio-	AAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAA
Nuclide	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.
Co-60	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	3.463E-18 0.0000
Cs-137	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	3.722E-04 0.5271
Eu-152	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	5.100E-08 0.0001
Sr-90	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	3.338E-04 0.4728
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	7.061E-04 1.0000

0*Sum of all water independent and dependent pathways.

Attachment 6 Sheet No. 16 of 19
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
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ATTACHMENT 6

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:38 Page 17
Summary : 118-B-1 BCL RESRAD Evaluation File: 118-B-1_BCL.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)															
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years															
Water Independent Pathways (Inhalation excludes radon)															
0	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		
0	Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	
	Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
	Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
	Cs-137	2.561E-11	0.5746	1.618E-17	0.0000	0.000E+00	0.0000	1.318E-12	0.0296	2.033E-12	0.0456	1.263E-12	0.0283	3.414E-14	0.0008
	Eu-152	7.637E-24	0.0000	2.507E-17	0.0000	0.000E+00	0.0000	5.397E-17	0.0000	1.848E-17	0.0000	4.885E-19	0.0000	2.237E-17	0.0000
	Sr-90	5.608E-14	0.0013	2.007E-16	0.0000	0.000E+00	0.0000	9.137E-12	0.2050	3.253E-12	0.0730	1.838E-12	0.0412	3.156E-14	0.0007
	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
	Total	2.567E-11	0.5758	2.420E-16	0.0000	0.000E+00	0.0000	1.045E-11	0.2345	5.287E-12	0.1186	3.101E-12	0.0696	6.573E-14	0.0015
0															
Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)															
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years															
Water Dependent Pathways															
0	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*		
0	Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	
	Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
	Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
	Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.026E-11	0.6788
	Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.204E-16	0.0000
	Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.432E-11	0.3211
	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
	Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.458E-11	1.0000
0*Sum of all water independent and dependent pathways.															

Attachment 6 Sheet No. 17 of 19
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 6

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:38 Page 18
Summary : 118-B-1 BCL RESRAD Evaluation File: 118-B-1_BCL.RAD

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

0	Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Co-60	Co-60	1.000E+00	1.004E+01 8.804E+00	6.765E+00 2.691E+00 2.359E+00 1.931E-01 1.912E-05 6.926E-17 0.000E+00
OCs-137+D	Cs-137+D	1.000E+00	2.558E+00 2.499E+00	2.385E+00 2.026E+00 1.979E+00 1.271E+00 2.483E-01 2.341E-03 1.903E-10
OEu-152	Eu-152	7.208E-01	3.179E+00 3.017E+00	2.719E+00 1.889E+00 1.793E+00 6.669E-01 1.744E-02 5.252E-07 7.867E-23
OEu-152	Eu-152	2.792E-01	1.231E+00 1.169E+00	1.053E+00 7.316E-01 6.945E-01 2.583E-01 6.756E-03 2.034E-07 3.047E-23
Eu-152	Gd-152	2.792E-01	4.456E-17 1.307E-16	2.900E-16 7.334E-16 7.845E-16 1.386E-15 1.731E-15 1.736E-15 1.720E-15
Eu-152	DSR(j)		1.231E+00 1.169E+00	1.053E+00 7.316E-01 6.945E-01 2.583E-01 6.756E-03 2.034E-07 1.720E-15
OSr-90+D	Sr-90+D	1.000E+00	3.999E+00 3.903E+00	3.718E+00 3.138E+00 3.063E+00 1.933E+00 3.543E-01 2.782E-03 1.193E-10

The DSR includes contributions from associated (half-life 6 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 4.000E+00 mrem/yr

ONuclide (i)	t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	1.100E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Co-60	3.983E-01	4.543E-01	5.913E-01	1.487E+00	1.696E+00	2.072E+01	2.092E+05	*1.132E+15	*1.132E+15
Cs-137	1.564E+00	1.601E+00	1.677E+00	1.974E+00	2.021E+00	3.148E+00	1.611E+01	1.709E+03	2.102E+10
Eu-152	9.070E-01	9.555E-01	1.060E+00	1.526E+00	1.608E+00	4.323E+00	1.653E+02	5.490E+06	*1.765E+14
Sr-90	1.000E+00	1.025E+00	1.076E+00	1.275E+00	1.306E+00	2.070E+00	1.129E+01	1.438E+03	3.353E+10

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 0.000E+00 years

ONuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin) (pCi/g)	G(i,tmin) (pCi/g)	DSR(i,tmax) (pCi/g)	G(i,tmax) (pCi/g)
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Co-60	5.000E-02	0.000E+00	1.004E+01	3.983E-01	1.004E+01	3.983E-01
Cs-137	1.590E-02	0.000E+00	2.558E+00	1.564E+00	2.558E+00	1.564E+00
Eu-152	7.000E-01	0.000E+00	4.410E+00	9.070E-01	4.410E+00	9.070E-01
Sr-90	1.200E-01	0.000E+00	3.999E+00	1.000E+00	3.999E+00	1.000E+00

Attachment 6 Sheet No. 18 of 19
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 6

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:38 Page 19
Summary : 118-B-1 BCL RESRAD Evaluation File: 118-B-1_BCL.RAD

Individual Nuclide Dose Summed Over All Pathways Parent Nuclide and Branch Fraction Indicated

ONuclide Parent	THF(i)	(j)	(i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	1.100E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
Co-60	Co-60	1.000E+00	5.022E-01	4.402E-01	3.383E-01	1.345E-01	1.179E-01	9.654E-03	9.559E-07	3.463E-18	0.000E+00		
OCs-137	Cs-137	1.000E+00	4.067E-01	3.973E-01	3.792E-01	3.221E-01	3.147E-01	2.020E-01	3.949E-02	3.722E-04	3.026E-11		
OEu-152	Eu-152	7.208E-01	2.225E-01	2.112E-01	1.903E-01	1.322E-01	1.255E-01	4.668E-02	1.221E-03	3.676E-08	5.507E-24		
Eu-152	Eu-152	2.792E-01	8.619E-02	8.182E-02	7.373E-02	5.121E-02	4.862E-02	1.808E-02	4.729E-04	1.424E-08	2.133E-24		
Eu-152	adose(j)		3.087E-01	2.930E-01	2.641E-01	1.834E-01	1.741E-01	6.476E-02	1.694E-03	5.100E-08	7.640E-24		
OGd-152	Eu-152	2.792E-01	3.120E-18	9.147E-18	2.030E-17	5.133E-17	5.492E-17	9.699E-17	1.212E-16	1.215E-16	1.204E-16		
OSr-90	Sr-90	1.000E+00	4.798E-01	4.684E-01	4.462E-01	3.766E-01	3.676E-01	2.319E-01	4.252E-02	3.338E-04	1.432E-11		
iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration Parent Nuclide and Branch Fraction Indicated

ONuclide Parent	THF(i)	(j)	(i)	t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	1.100E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
Co-60	Co-60	1.000E+00	5.000E-02	4.383E-02	3.368E-02	1.339E-02	1.174E-02	9.612E-04	9.517E-08	3.448E-19	0.000E+00		
OCs-137	Cs-137	1.000E+00	1.590E-01	1.553E-01	1.483E-01	1.259E-01	1.230E-01	7.898E-02	1.544E-02	1.455E-04	1.183E-11		
OEu-152	Eu-152	7.208E-01	5.046E-02	4.790E-02	4.316E-02	2.998E-02	2.846E-02	1.059E-02	2.769E-04	8.336E-09	1.249E-24		
Eu-152	Eu-152	2.792E-01	1.954E-02	1.855E-02	1.672E-02	1.161E-02	1.102E-02	4.100E-03	1.072E-04	3.229E-09	4.837E-25		
Eu-152	as(j)		7.000E-02	6.645E-02	5.988E-02	4.159E-02	3.948E-02	1.469E-02	3.841E-04	1.157E-08	1.732E-24		
OGd-152	Eu-152	2.792E-01	0.000E+00	1.222E-16	3.484E-16	9.778E-16	1.050E-15	1.904E-15	2.394E-15	2.401E-15	2.379E-15		
OSr-90	Sr-90	1.000E+00	1.200E-01	1.171E-01	1.116E-01	9.417E-02	9.192E-02	5.800E-02	1.063E-02	8.348E-05	3.580E-12		
iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii

THF(i) is the thread fraction of the parent nuclide.

ORESCALC.EXE execution time = 9.00 seconds

Attachment 6 Sheet No. 19 of 19
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 7

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:38 Page 1
Intrisk : 118-B-1 BCL RESRAD Evaluation File: 118-B-1 BCL.RAD

Table of Contents

ÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ

Part III: Intake Quantities and Health Risk Factors

[illegible]

Cancer Risk Slope Factors	2
Risk Slope and ETFG for the Ground Pathway	3
Amount of Intake Quantities and Excess Cancer Risks	
Time= 0.000E+00	4
Time= 1.000E+00	6
Time= 3.000E+00	8
Time= 1.000E+01	10
Time= 1.100E+01	12
Time= 3.000E+01	14
Time= 1.000E+02	16
Time= 3.000E+02	18
Time= 1.000E+03	20

Attachment 7 Sheet No. 1 of 21
 Originators: S. W. Clark *SWC* Date 2/5/87
 Chk'd By M. W. Perrott *MP* Date 2/5/87
 Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 7

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:38 Page 2
Intrisk : 118-B-1 BCL RESRAD Evaluation File: 118-B-1_BCL.RAD

Cancer Risk Slope Factors Summary Table
Risk Library: HEAST 2001 Morbidity

Menu	Parameter	Current Value	Base Case*	Parameter Name
Sf-1	Ground external radiation slope factors, 1/yr per (pCi/g):			
Sf-1	Co-60	1.24E-05	1.24E-05	SLPF(1,1)
Sf-1	Cs-137+D	2.55E-06	5.32E-10	SLPF(2,1)
Sf-1	Eu-152	5.30E-06	5.30E-06	SLPF(3,1)
Sf-1	Gd-152	0.00E+00	0.00E+00	SLPF(5,1)
Sf-1	Sr-90+D	1.96E-08	4.82E-10	SLPF(6,1)
Sf-2	Inhalation, slope factors, 1/(pCi):			
Sf-2	Co-60	3.58E-11	3.58E-11	SLPF(1,2)
Sf-2	Cs-137+D	1.19E-11	1.19E-11	SLPF(2,2)
Sf-2	Eu-152	9.10E-11	9.10E-11	SLPF(3,2)
Sf-2	Gd-152	9.10E-09	9.10E-09	SLPF(5,2)
Sf-2	Sr-90+D	1.13E-10	1.05E-10	SLPF(6,2)
Sf-3	Food ingestion, slope factors, 1/(pCi):			
Sf-3	Co-60	2.23E-11	2.23E-11	SLPF(1,3)
Sf-3	Cs-137+D	3.74E-11	3.74E-11	SLPF(2,3)
Sf-3	Eu-152	8.70E-12	8.70E-12	SLPF(3,3)
Sf-3	Gd-152	3.85E-11	3.85E-11	SLPF(5,3)
Sf-3	Sr-90+D	9.53E-11	6.88E-11	SLPF(6,3)
Sf-3	Water ingestion, slope factors, 1/(pCi):			
Sf-3	Co-60	1.57E-11	1.57E-11	SLPF(1,4)
Sf-3	Cs-137+D	3.04E-11	3.04E-11	SLPF(2,4)
Sf-3	Eu-152	6.07E-12	6.07E-12	SLPF(3,4)
Sf-3	Gd-152	2.97E-11	2.97E-11	SLPF(5,4)
Sf-3	Sr-90+D	7.40E-11	5.59E-11	SLPF(6,4)
Sf-3	Soil ingestion, slope factors, 1/(pCi):			
Sf-3	Co-60	4.03E-11	4.03E-11	SLPF(1,5)
Sf-3	Cs-137+D	4.33E-11	4.33E-11	SLPF(2,5)
Sf-3	Eu-152	1.62E-11	1.62E-11	SLPF(3,5)
Sf-3	Gd-152	6.29E-11	6.29E-11	SLPF(5,5)
Sf-3	Sr-90+D	1.44E-10	9.18E-11	SLPF(6,5)

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Attachment 7 Sheet No. 2 of 21
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
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ATTACHMENT 7

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:38 Page 3
Intrisk : 118-B-1 BCL RESRAD Evaluation File: 118-B-1_BCL.RAD

ONuclide	Slope(i)*	Risk Slope and Environmental Transport Factors for the Ground Pathway									
(i)	t=	ETFG(i,t) At Time in Years (dimensionless)									
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
Ba-137m	2.690E-06	6.421E-01	6.421E-01	6.421E-01	6.421E-01	6.421E-01	6.421E-01	6.421E-01	6.421E-01	6.421E-01	6.421E-01
Co-60	1.240E-05	6.448E-01	6.448E-01	6.448E-01	6.448E-01	6.448E-01	6.448E-01	6.448E-01	6.448E-01	6.448E-01	6.448E-01
Cs-137	5.320E-10	6.512E-01	6.512E-01	6.512E-01	6.512E-01	6.512E-01	6.512E-01	6.512E-01	6.512E-01	6.512E-01	6.512E-01
Eu-152	5.300E-06	6.458E-01	6.458E-01	6.458E-01	6.458E-01	6.458E-01	6.458E-01	6.458E-01	6.458E-01	6.458E-01	6.458E-01
Gd-152	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Sr-90	4.820E-10	6.523E-01	6.523E-01	6.523E-01	6.523E-01	6.523E-01	6.523E-01	6.523E-01	6.523E-01	6.523E-01	6.523E-01
Y-90	1.910E-08	6.439E-01	6.439E-01	6.439E-01	6.439E-01	6.439E-01	6.439E-01	6.439E-01	6.439E-01	6.439E-01	6.439E-01
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

* - Units are 1/yr per (pCi/g) at infinite depth and area. Multiplication by ETFG(i,t) converts to site conditions.

Attachment 7 Sheet No. 3 of 21
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 7

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:38 Page 4
Intrisk : 118-B-1 BCL RESRAD Evaluation File: 118-B-1_BCL.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 0.000E+00 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Co-60	2.169E-03	2.254E+02	2.138E+02	4.900E+01	2.920E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.912E+02
Cs-137	6.897E-03	3.584E+02	5.530E+02	3.435E+02	9.286E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.264E+03
Eu-152	3.036E-03	9.864E+00	3.378E+00	2.232E-01	4.088E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.755E+01
Gd-152	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Sr-90	5.205E-03	2.029E+03	7.223E+02	4.080E+02	7.008E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.166E+03
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil and water-dependent water, fish, plant, meat, milk pathways											

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 0.000E+00 years

Radio- Nuclide	Ground		Inhalation		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Co-60	2.978E-06	0.1504	5.783E-13	0.0000	3.744E-08	0.0019	3.552E-08	0.0018	8.139E-09	0.0004	8.765E-10	0.0000
Cs-137	5.607E-06	0.2832	1.771E-12	0.0000	2.892E-07	0.0146	4.463E-07	0.0225	2.772E-07	0.0140	8.676E-09	0.0004
Eu-152	3.637E-06	0.1837	4.194E-12	0.0000	1.303E-09	0.0001	4.462E-10	0.0000	2.948E-11	0.0000	1.005E-09	0.0001
Gd-152	0.000E+00	0.0000	1.409E-23	0.0000	1.937E-22	0.0000	6.634E-23	0.0000	1.754E-24	0.0000	1.312E-22	0.0000
Sr-90	3.227E-08	0.0016	1.258E-11	0.0000	4.122E-06	0.2082	1.468E-06	0.0741	8.290E-07	0.0419	2.156E-08	0.0011
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	1.225E-05	0.6189	1.913E-11	0.0000	4.450E-06	0.2247	1.950E-06	0.0985	1.114E-06	0.0563	3.212E-08	0.0016

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.060E-06	0.1545
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.629E-06	0.3348
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.640E-06	0.1838
Gd-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.071E-22	0.0000
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.472E-06	0.3269
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.980E-05	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

Attachment 7 Sheet No. 4 of 21
Originators: S. W. Clark Date
Chk'd By: M. W. Perrott Date
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ATTACHMENT 7

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:38 Page 5
Intrisk : 118-B-1 BCL RESRAD Evaluation File: 118-B-1_BCL.RAD

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p) and Fraction of Total Risk at t= 0.000E+00 years Water Independent Pathways (Inhalation excludes radon)										
Radio-	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil			
Nuclide	risk	risk	risk	risk	risk	risk	risk	risk	risk	risk
fract.	fract.	fract.	fract.	fract.	fract.	fract.	fract.	fract.	fract.	fract.
Co-60	2.978E-06	0.1504	5.783E-13	0.0000	0.000E+00	0.0000	3.744E-08	0.0019	3.552E-08	0.0018
Cs-137	5.607E-06	0.2832	1.771E-12	0.0000	0.000E+00	0.0000	2.892E-07	0.0146	4.463E-07	0.0225
Eu-152	3.637E-06	0.1837	4.194E-12	0.0000	0.000E+00	0.0000	1.303E-09	0.0001	4.462E-10	0.0000
Sr-90	3.227E-08	0.0016	1.258E-11	0.0000	0.000E+00	0.0000	4.122E-06	0.2082	1.468E-06	0.0741
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	1.225E-05	0.6189	1.913E-11	0.0000	0.000E+00	0.0000	4.450E-06	0.2247	1.950E-06	0.0985

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p) and Fraction of Total Risk at t= 0.000E+00 years Water Dependent Pathways										
Radio-	Water	Fish	Radon	Plant	Meat	Milk	All pathways			
Nuclide	risk	risk	risk	risk	risk	risk	risk	risk	risk	risk
fract.	fract.	fract.	fract.	fract.	fract.	fract.	fract.	fract.	fract.	fract.
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Attachment 7 Sheet No. 5 of 21
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
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ATTACHMENT 7

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:38 Page 6
Intrisk : 118-B-1 BCL RESRAD Evaluation File: 118-B-1_BCL.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pci/yr at t= 1.000E+00 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Co-60	1.901E-03	1.976E+02	1.875E+02	4.296E+01	2.560E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.306E+02
Cs-137	6.738E-03	3.501E+02	5.403E+02	3.356E+02	9.072E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.235E+03
Eu-152	2.882E-03	9.364E+00	3.207E+00	2.119E-01	3.881E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.666E+01
Gd-152	5.301E-18	1.722E-14	5.898E-15	1.565E-16	7.138E-15	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.042E-14
Sr-90	5.080E-03	1.980E+03	7.051E+02	3.983E+02	6.840E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.090E+03
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+00 years

0

Radio- Nuclide	Water Independent Pathways (Inhalation excludes radon)									
	Ground	Inhalation	Plant	Meat	Milk	Soil	Ground	Inhalation	Plant	Meat
Co-60	2.610E-06	0.1379	5.069E-13	0.0000	3.282E-08	0.0017	3.114E-08	0.0016	7.135E-09	0.0004
Cs-137	5.478E-06	0.2894	1.730E-12	0.0000	2.826E-07	0.0149	4.360E-07	0.0230	2.708E-07	0.0143
Eu-152	3.453E-06	0.1824	3.982E-12	0.0000	1.237E-09	0.0001	4.235E-10	0.0000	2.798E-11	0.0000
Gd-152	0.000E+00	0.0000	1.483E-23	0.0000	2.038E-22	0.0000	6.979E-23	0.0000	1.845E-24	0.0000
Sr-90	3.149E-08	0.0017	1.228E-11	0.0000	4.023E-06	0.2125	1.432E-06	0.0757	8.091E-07	0.0427
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	1.157E-05	0.6113	1.850E-11	0.0000	4.340E-06	0.2292	1.900E-06	0.1004	1.087E-06	0.0574

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+00 years

0

Radio- Nuclide	Water Dependent Pathways									
	Water	Fish	Plant	Meat	Milk	All Pathways**	Water	Fish	Plant	Meat
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Gd-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

Attachment 7 Sheet No. 6 of 21
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 7

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:38 Page 7
Intrisk : 118-B-1 BCL RESRAD Evaluation File: 118-B-1_BCL.RAD

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+00 years
Water Independent Pathways (Inhalation excludes radon)

	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil
Radio-	risk	risk	risk	risk	risk	risk	risk
Nuclide	fract.	fract.	fract.	fract.	fract.	fract.	fract.
Co-60	2.610E-06 0.1379	5.069E-13 0.0000	0.000E+00 0.0000	3.282E-08 0.0017	3.114E-08 0.0016	7.135E-09 0.0004	7.683E-10 0.0000
Cs-137	5.478E-06 0.2894	1.730E-12 0.0000	0.000E+00 0.0000	2.826E-07 0.0149	4.360E-07 0.0230	2.708E-07 0.0143	8.476E-09 0.0004
Eu-152	3.453E-06 0.1824	3.982E-12 0.0000	0.000E+00 0.0000	1.237E-09 0.0001	4.235E-10 0.0000	2.798E-11 0.0000	9.544E-10 0.0001
Sr-90	3.149E-08 0.0017	1.228E-11 0.0000	0.000E+00 0.0000	4.023E-06 0.2125	1.432E-06 0.0757	8.091E-07 0.0427	2.104E-08 0.0011
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	1.157E-05 0.6113	1.850E-11 0.0000	0.000E+00 0.0000	4.340E-06 0.2292	1.900E-06 0.1004	1.087E-06 0.0574	3.124E-08 0.0017

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+00 years
Water Dependent Pathways

	Water	Fish	Radon	Plant	Meat	Milk	All pathways
Radio-	risk	risk	risk	risk	risk	risk	risk
Nuclide	fract.	fract.	fract.	fract.	fract.	fract.	fract.
Co-60	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	2.682E-06 0.1417
Cs-137	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	6.476E-06 0.3421
Eu-152	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	3.456E-06 0.1825
Sr-90	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	6.317E-06 0.3337
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.893E-05 1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Attachment 7 Sheet No. 7 of 21
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 7

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:38 Page 8
Intrisk : 118-B-1 BCL RESRAD Evaluation File: 118-B-1_BCL.RADAmount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pci/yr at t= 3.000E+00 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)						Water Dependent Pathways						Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk			
Co-60	1.461E-03	1.518E+02	1.440E+02	3.301E+01	1.967E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.309E+02
Cs-137	6.431E-03	3.342E+02	5.156E+02	3.203E+02	8.658E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.179E+03
Eu-152	2.597E-03	8.438E+00	2.890E+00	1.909E-01	3.497E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.502E+01
Gd-152	1.511E-17	4.909E-14	1.681E-14	4.449E-16	2.035E-14	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.670E-14
Sr-90	4.840E-03	1.886E+03	6.717E+02	3.794E+02	6.517E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.944E+03
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil and water-dependent water, fish, plant, meat, milk pathways													

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+00 years

0		Water Independent Pathways (Inhalation excludes radon)											
		Ground		Inhalation		Plant		Meat		Milk		Soil	
Radio-	Nuclide	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Co-60		2.006E-06	0.1155	3.895E-13	0.0000	2.522E-08	0.0015	2.393E-08	0.0014	5.482E-09	0.0003	5.904E-10	0.0000
Cs-137		5.228E-06	0.3009	1.651E-12	0.0000	2.697E-07	0.0155	4.161E-07	0.0240	2.585E-07	0.0149	8.090E-09	0.0005
Eu-152		3.111E-06	0.1791	3.588E-12	0.0000	1.114E-09	0.0001	3.817E-10	0.0000	2.522E-11	0.0000	8.600E-10	0.0000
Gd-152		0.000E+00	0.0000	1.618E-23	0.0000	2.224E-22	0.0000	7.616E-23	0.0000	2.013E-24	0.0000	1.506E-22	0.0000
Sr-90		3.000E-08	0.0017	1.170E-11	0.0000	3.833E-06	0.2206	1.365E-06	0.0785	7.709E-07	0.0444	2.005E-08	0.0012
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total		1.038E-05	0.5972	1.733E-11	0.0000	4.129E-06	0.2376	1.805E-06	0.1039	1.035E-06	0.0596	2.959E-08	0.0017

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.061E-06	0.1186
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.181E-06	0.3558
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.114E-06	0.1792
Gd-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.673E-22	0.0000
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.018E-06	0.3464
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.737E-05	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil and water dependent water, fish, plant, meat, milk pathways

Attachment 7 Sheet No. 8 of 21
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 7

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:38 Page 9
Intrisk : 118-B-1 BCL RESRAD Evaluation File: 118-B-1_BCL.RAD

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p) and Fraction of Total Risk at t= 3.000E+00 years Water Independent Pathways (Inhalation excludes radon)														
	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Radio- Nuclide	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Co-60	2.006E-06	0.1155	3.895E-13	0.0000	0.000E+00	0.0000	2.522E-08	0.0015	2.393E-08	0.0014	5.482E-09	0.0003	5.904E-10	0.0000
Cs-137	5.228E-06	0.3009	1.651E-12	0.0000	0.000E+00	0.0000	2.697E-07	0.0155	4.161E-07	0.0240	2.585E-07	0.0149	8.090E-09	0.0005
Eu-152	3.111E-06	0.1791	3.588E-12	0.0000	0.000E+00	0.0000	1.114E-09	0.0001	3.817E-10	0.0000	2.522E-11	0.0000	8.600E-10	0.0000
Sr-90	3.000E-08	0.0017	1.170E-11	0.0000	0.000E+00	0.0000	3.833E-06	0.2206	1.365E-06	0.0785	7.709E-07	0.0444	2.005E-08	0.0012
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	1.038E-05	0.5972	1.733E-11	0.0000	0.000E+00	0.0000	4.129E-06	0.2376	1.805E-06	0.1039	1.035E-06	0.0596	2.959E-08	0.0017

0
Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+00 years

Water Dependent Pathways														
	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
Radio- Nuclide	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.061E-06	0.1186
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.181E-06	0.3558
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.114E-06	0.1792
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.018E-06	0.3464
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.737E-05	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Attachment 7 Sheet No. 9 of 21
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 7

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:38 Page 10
Intrisk : 118-B-1 BCL RESRAD Evaluation File: 118-B-1_BCL.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 1.000E+01 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Co-60	5.810E-04	6.038E+01	5.729E+01	1.313E+01	7.822E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.316E+02
Cs-137	5.462E-03	2.838E+02	4.380E+02	2.720E+02	7.354E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.001E+03
Eu-152	1.804E-03	5.861E+00	2.007E+00	1.326E-01	2.429E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.043E+01
Gd-152	4.241E-17	1.378E-13	4.719E-14	1.247E-15	5.710E-14	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.433E-13
Sr-90	4.085E-03	1.592E+03	5.669E+02	3.202E+02	5.500E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.485E+03
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil and water-dependent water, fish, plant, meat, milk pathways											

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+01 years

Radio- Nuclide	Water Independent Pathways (Inhalation excludes radon)					Soil				
	Ground	Inhalation	Plant	Meat	Milk	risk	fract.	risk	fract.	risk
Co-60	7.977E-07	0.0599	1.549E-13	0.0000	1.003E-08	0.0008	9.516E-09	0.0007	2.180E-09	0.0002
Cs-137	4.441E-06	0.3336	1.403E-12	0.0000	2.291E-07	0.0172	3.535E-07	0.0266	2.195E-07	0.0165
Eu-152	2.161E-06	0.1624	2.492E-12	0.0000	7.741E-10	0.0001	2.651E-10	0.0000	1.752E-11	0.0000
Gd-152	0.000E+00	0.0000	1.995E-23	0.0000	2.742E-22	0.0000	9.391E-23	0.0000	2.482E-24	0.0000
Sr-90	2.532E-08	0.0019	9.875E-12	0.0000	3.235E-06	0.2430	1.152E-06	0.0865	6.506E-07	0.0489
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	7.425E-06	0.5578	1.392E-11	0.0000	3.474E-06	0.2610	1.515E-06	0.1138	8.723E-07	0.0655

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.197E-07	0.0616
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.250E-06	0.3944
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.163E-06	0.1625
Gd-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.762E-22	0.0000
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.079E-06	0.3816
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.331E-05	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

Attachment 7 Sheet No. 10 of 21
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 7

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:38 Page 11
Intrisk : 118-B-1 BCL RESRAD Evaluation File: 118-B-1_BCL.RAD

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p) and Fraction of Total Risk at t= 1.000E+01 years Water Independent Pathways (Inhalation excludes radon)														
	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Radio- Nuclide	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Co-60	7.977E-07	0.0599	1.549E-13	0.0000	0.000E+00	0.0000	1.003E-08	0.0008	9.516E-09	0.0007	2.180E-09	0.0002	2.348E-10	0.0000
Cs-137	4.441E-06	0.3336	1.403E-12	0.0000	0.000E+00	0.0000	2.291E-07	0.0172	3.535E-07	0.0266	2.195E-07	0.0165	6.871E-09	0.0005
Eu-152	2.161E-06	0.1624	2.492E-12	0.0000	0.000E+00	0.0000	7.741E-10	0.0001	2.651E-10	0.0000	1.752E-11	0.0000	5.974E-10	0.0000
Sr-90	2.532E-08	0.0019	9.875E-12	0.0000	0.000E+00	0.0000	3.235E-06	0.2430	1.152E-06	0.0865	6.506E-07	0.0489	1.692E-08	0.0013
Total	7.425E-06	0.5578	1.392E-11	0.0000	0.000E+00	0.0000	3.474E-06	0.2610	1.515E-06	0.1138	8.723E-07	0.0655	2.462E-08	0.0018

0
Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+01 years

Water Dependent Pathways														
	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
Radio- Nuclide	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
AAAAAAA	AAAAAAA	AAAAA	AAAAAAA	AAAAA	AAAAAAA	AAAAA	AAAAAAA	AAAAA	AAAAAAA	AAAAA	AAAAAAA	AAAAA	AAAAAAA	AAAAA
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.197E-07	0.0616
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.250E-06	0.3944
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.163E-06	0.1625
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.079E-06	0.3816
iiiiiii	iiiiiii	iiiiii	iiiiiii	iiiiii	iiiiiii	iiiiii	iiiiiii	iiiiii	iiiiiii	iiiiii	iiiiiii	iiiiii	iiiiiii	iiiiii
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.331E-05	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Attachment 7 Sheet No. 11 of 21
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 7

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:38 Page 12
Intrisk : 118-B-1 BCL RESRAD Evaluation File: 118-B-1_BCL.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 1.100E+01 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Co-60	5.093E-04	5.293E+01	5.022E+01	1.151E+01	6.857E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.153E+02
Cs-137	5.336E-03	2.773E+02	4.279E+02	2.658E+02	7.185E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	9.781E+02
Eu-152	1.713E-03	5.564E+00	1.905E+00	1.259E-01	2.306E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	9.901E+00
Gd-152	4.556E-17	1.480E-13	5.069E-14	1.340E-15	6.134E-14	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.614E-13
Sr-90	3.987E-03	1.554E+03	5.533E+02	3.125E+02	5.368E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.425E+03
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.100E+01 years

Radio- Nuclide	Water Independent Pathways (Inhalation excludes radon)									
	Ground	Inhalation	Plant	Meat	Milk	Soil	Ground	Inhalation	Plant	Meat
Co-60	6.993E-07	0.0544	1.358E-13	0.0000	8.792E-09	0.0007	8.341E-09	0.0006	1.911E-09	0.0001
Cs-137	4.338E-06	0.3374	1.370E-12	0.0000	2.238E-07	0.0174	3.453E-07	0.0269	2.145E-07	0.0167
Eu-152	2.052E-06	0.1596	2.366E-12	0.0000	7.349E-10	0.0001	2.517E-10	0.0000	1.663E-11	0.0000
Gd-152	0.000E+00	0.0000	2.039E-23	0.0000	2.802E-22	0.0000	9.596E-23	0.0000	2.536E-24	0.0000
Sr-90	2.472E-08	0.0019	9.639E-12	0.0000	3.157E-06	0.2455	1.124E-06	0.0874	6.350E-07	0.0494
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	7.114E-06	0.5533	1.351E-11	0.0000	3.390E-06	0.2637	1.478E-06	0.1150	8.514E-07	0.0662

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.100E+01 years

Radio- Nuclide	Water Dependent Pathways						All Pathways**
	Water	Fish	Plant	Meat	Milk		
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.185E-07
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.129E-06
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.053E-06
Gd-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.888E-22
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.957E-06
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.286E-05

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

Attachment 7 Sheet No. 12 of 21
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 7

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:38 Page 13
Intrisk : 118-B-1 BCL RESRAD Evaluation File: 118-B-1_BCL.RAD

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.100E+01 years

0
0 Water Independent Pathways (Inhalation excludes radon)
Radio- Ground Inhalation Radon Plant Meat Milk Soil
Nuclide risk fract. risk fract. risk fract. risk fract. risk fract. risk fract. risk fract.
AAAAAA AAAAAA AAAAAA AAAAAA AAAAAA AAAAAA AAAAAA AAAAAA
Co-60 6.993E-07 0.0544 1.358E-13 0.0000 0.000E+00 0.0000 8.792E-09 0.0007 8.341E-09 0.0006 1.911E-09 0.0001 2.058E-10 0.0000
Cs-137 4.338E-06 0.3374 1.370E-12 0.0000 0.000E+00 0.0000 2.238E-07 0.0174 3.453E-07 0.0269 2.145E-07 0.0167 6.713E-09 0.0005
Eu-152 2.052E-06 0.1596 2.366E-12 0.0000 0.000E+00 0.0000 7.349E-10 0.0001 2.517E-10 0.0000 1.663E-11 0.0000 5.671E-10 0.0000
Sr-90 2.472E-08 0.0019 9.639E-12 0.0000 0.000E+00 0.0000 3.157E-06 0.2455 1.124E-06 0.0874 6.350E-07 0.0494 1.651E-08 0.0013
iiiiiii iiiiii iiiiii iiiiii iiiiii iiiiii iiiiii iiiiii
Total 7.114E-06 0.5533 1.351E-11 0.0000 0.000E+00 0.0000 3.390E-06 0.2637 1.478E-06 0.1150 8.514E-07 0.0662 2.400E-08 0.0019

0
Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.100E+01 years

Water Dependent Pathways

Radio-	Water	Fish	Radon	Plant	Meat	Milk	All pathways
Nuclide	risk fract.	risk fract.	risk fract.	risk fract.	risk fract.	risk fract.	risk fract.
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
Co-60	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	7.185E-07 0.0559
Cs-137	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	5.129E-06 0.3989
Eu-152	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	2.053E-06 0.1597
Sr-90	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	4.957E-06 0.3856
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.286E-05 1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Attachment 7 Sheet No. 13 of 21
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 7

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:38 Page 14
Intrisk : 118-B-1 BCL RESRAD Evaluation File: 118-B-1_BCL.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 3.000E+01 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Co-60	4.169E-05	4.333E+00	4.111E+00	9.421E-01	5.614E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	9.443E+00
Cs-137	3.426E-03	1.780E+02	2.747E+02	1.706E+02	4.613E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	6.280E+02
Eu-152	6.370E-04	2.070E+00	7.087E-01	4.683E-02	8.577E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.683E+00
Gd-152	8.257E-17	2.683E-13	9.187E-14	2.428E-15	1.112E-13	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.737E-13
Sr-90	2.516E-03	9.805E+02	3.491E+02	1.972E+02	3.387E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.530E+03
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+01 years

Radio- Nuclide	Water Independent Pathways (Inhalation excludes radon)									
	Ground risk	Inhalation fract.	Plant risk	Meat fract.	Milk risk	Soil fract.	Ground risk	Inhalation fract.	Plant risk	Meat fract.
Co-60	5.725E-08	0.0079	1.112E-14	0.0000	7.198E-10	0.0001	6.829E-10	0.0001	1.565E-10	0.0000
Cs-137	2.785E-06	0.3845	8.797E-13	0.0000	1.437E-07	0.0198	2.217E-07	0.0306	1.377E-07	0.0190
Eu-152	7.631E-07	0.1054	8.800E-13	0.0000	2.733E-10	0.0000	9.360E-11	0.0000	6.185E-12	0.0000
Gd-152	0.000E+00	0.0000	2.549E-23	0.0000	3.504E-22	0.0000	1.200E-22	0.0000	3.172E-24	0.0000
Sr-90	1.559E-08	0.0022	6.082E-12	0.0000	1.992E-06	0.2750	7.093E-07	0.0979	4.007E-07	0.0553
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	3.621E-06	0.5000	7.853E-12	0.0000	2.137E-06	0.2950	9.318E-07	0.1286	5.385E-07	0.0743

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways** risk fract.
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk fract.
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.882E-08
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.293E-06
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.637E-07
Gd-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.364E-22
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.128E-06
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.244E-06

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

Attachment 7 Sheet No. 14 of 21
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 7

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:38 Page 15
Intrisk : 118-B-1 BCL RESRAD Evaluation File: 118-B-1_BCL.RAD

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+01 years
Water Independent Pathways (Inhalation excludes radon)

	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil							
Radio-	risk	risk	risk	risk	risk	risk	risk							
Nuclide	fract.	fract.	fract.	fract.	fract.	fract.	fract.							
Co-60	5.725E-08	0.0079	1.112E-14	0.0000	0.000E+00	0.0000	7.198E-10	0.0001	6.829E-10	0.0001	1.565E-10	0.0000	1.685E-11	0.0000
Cs-137	2.785E-06	0.3845	8.797E-13	0.0000	0.000E+00	0.0000	1.437E-07	0.0198	2.217E-07	0.0306	1.377E-07	0.0190	4.310E-09	0.0006
Eu-152	7.631E-07	0.1054	8.800E-13	0.0000	0.000E+00	0.0000	2.733E-10	0.0000	9.360E-11	0.0000	6.185E-12	0.0000	2.109E-10	0.0000
Sr-90	1.559E-08	0.0022	6.082E-12	0.0000	0.000E+00	0.0000	1.992E-06	0.2750	7.093E-07	0.0979	4.007E-07	0.0553	1.042E-08	0.0014
ifififif	ififififif	ifififif	ififififif	ifififif	ififififif	ifififif	ififififif	ifififif	ififififif	ifififif	ififififif	ifififif	ififififif	ifififif
Total	3.621E-06	0.5000	7.853E-12	0.0000	0.000E+00	0.0000	2.137E-06	0.2950	9.318E-07	0.1286	5.385E-07	0.0743	1.496E-08	0.0021

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+01 years
Water Dependent Pathways

	Water	Fish	Radon	Plant	Meat	Milk	All pathways			
Radio-	risk	risk	risk	risk	risk	risk	risk			
Nuclide	fract.	fract.	fract.	fract.	fract.	fract.	fract.			
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.882E-08	0.0081
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.293E-06	0.4546
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.637E-07	0.1054
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.128E-06	0.4318
ifififif	ififififif	ifififif	ififififif	ifififif	ififififif	ifififif	ififififif	ifififif	ififififif	ifififif
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.244E-06	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Attachment 7 Sheet No. 15 of 21
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 7

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:38 Page 16
Intrisk : 118-B-1 BCL RESRAD Evaluation File: 118-B-1_BCL.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 1.000E+02 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Co-60	4.128E-09	4.290E-04	4.071E-04	9.327E-05	5.558E-06	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	9.349E-04
Cs-137	6.696E-04	3.480E+01	5.369E+01	3.335E+01	9.015E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.227E+02
Eu-152	1.666E-05	5.413E-02	1.854E-02	1.225E-03	2.243E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	9.632E-02
Gd-152	1.038E-16	3.374E-13	1.155E-13	3.053E-15	1.398E-13	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.957E-13
Sr-90	4.612E-04	1.798E+02	6.401E+01	3.615E+01	6.210E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.805E+02
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+02 years

Radio- Nuclide	Water Independent Pathways (Inhalation excludes radon)									
	Ground	Inhalation	Plant	Meat	Milk	Soil	Ground	Inhalation	Plant	Meat
Co-60	5.668E-12	0.0000	1.101E-18	0.0000	7.126E-14	0.0000	6.761E-14	0.0000	1.549E-14	0.0000
Cs-137	5.444E-07	0.4401	1.719E-13	0.0000	2.808E-08	0.0227	4.333E-08	0.0350	2.691E-08	0.0218
Eu-152	1.996E-08	0.0161	2.302E-14	0.0000	7.149E-12	0.0000	2.448E-12	0.0000	1.618E-13	0.0000
Gd-152	0.000E+00	0.0000	2.842E-23	0.0000	3.906E-22	0.0000	1.338E-22	0.0000	3.535E-24	0.0000
Sr-90	2.859E-09	0.0023	1.115E-12	0.0000	3.652E-07	0.2952	1.300E-07	0.1051	7.345E-08	0.0594
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	5.672E-07	0.4585	1.310E-12	0.0000	3.933E-07	0.3179	1.734E-07	0.1402	1.004E-07	0.0811

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+02 years

Radio- Nuclide	Water Dependent Pathways						All Pathways**
	Water	Fish	Plant	Meat	Milk		
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.824E-12
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.436E-07
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.997E-08
Gd-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.208E-22
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.735E-07
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.237E-06

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

Attachment 7 Sheet No. 16 of 21
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 7

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:38 Page 17
Intrisk : 118-B-1 BCL RESRAD Evaluation File: 118-B-1_BCL.RAD

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+02 years
Water Independent Pathways (Inhalation excludes radon)

	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil
Radio-	risk	risk	risk	risk	risk	risk	risk
Nuclide	fract.	fract.	fract.	fract.	fract.	fract.	fract.
Co-60	5.668E-12 0.0000	1.101E-18 0.0000	0.000E+00 0.0000	7.126E-14 0.0000	6.761E-14 0.0000	1.549E-14 0.0000	1.668E-15 0.0000
Cs-137	5.444E-07 0.4401	1.719E-13 0.0000	0.000E+00 0.0000	2.808E-08 0.0227	4.333E-08 0.0350	2.691E-08 0.0218	8.423E-10 0.0007
Eu-152	1.996E-08 0.0161	2.302E-14 0.0000	0.000E+00 0.0000	7.149E-12 0.0000	2.448E-12 0.0000	1.618E-13 0.0000	5.517E-12 0.0000
Sr-90	2.859E-09 0.0023	1.115E-12 0.0000	0.000E+00 0.0000	3.652E-07 0.2952	1.300E-07 0.1051	7.345E-08 0.0594	1.910E-09 0.0015
ifififif	ififififif ifififif	ififififif ifififif	ififififif ifififif	ififififif ifififif	ififififif ifififif	ififififif ifififif	ififififif ifififif
Total	5.672E-07 0.4585	1.310E-12 0.0000	0.000E+00 0.0000	3.933E-07 0.3179	1.734E-07 0.1402	1.004E-07 0.0811	2.758E-09 0.0022

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+02 years
Water Dependent Pathways

	Water	Fish	Radon	Plant	Meat	Milk	All pathways
Radio-	risk	risk	risk	risk	risk	risk	risk
Nuclide	fract.	fract.	fract.	fract.	fract.	fract.	fract.
Co-60	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	5.824E-12 0.0000
Cs-137	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	6.436E-07 0.5203
Eu-152	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.997E-08 0.0161
Sr-90	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	5.735E-07 0.4636
ifififif	ififififif ifififif	ififififif ifififif	ififififif ifififif	ififififif ifififif	ififififif ifififif	ififififif ifififif	ififififif ifififif
Total	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.237E-06 1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Attachment 7 Sheet No. 17 of 21
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 7

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:38 Page 18
Intrisk : 118-B-1 BCL RESRAD Evaluation File: 118-B-1_BCL.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 3.000E+02 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Co-60	1.496E-20	1.554E-15	1.475E-15	3.379E-16	2.014E-17	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.387E-15
Cs-137	6.311E-06	3.280E-01	5.061E-01	3.143E-01	8.497E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.157E+00
Eu-152	5.016E-10	1.630E-06	5.581E-07	3.688E-08	6.754E-07	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.900E-06
Gd-152	1.041E-16	3.383E-13	1.159E-13	3.062E-15	1.402E-13	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.975E-13
Sr-90	3.621E-06	1.411E+00	5.025E-01	2.839E-01	4.875E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.203E+00
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil and water-dependent water, fish, plant, meat, milk pathways											

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+02 years

Radio- Nuclide	Ground		Inhalation		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Co-60	2.054E-23	0.0000	0.000E+00	0.0000	2.582E-25	0.0000	2.449E-25	0.0000	5.613E-26	0.0000	6.044E-27	0.0000
Cs-137	5.131E-09	0.4855	1.621E-15	0.0000	2.647E-10	0.0250	4.084E-10	0.0386	2.537E-10	0.0240	7.939E-12	0.0008
Eu-152	6.010E-13	0.0001	6.930E-19	0.0000	2.153E-16	0.0000	7.371E-17	0.0000	4.870E-18	0.0000	1.661E-16	0.0000
Gd-152	0.000E+00	0.0000	2.842E-23	0.0000	3.907E-22	0.0000	1.338E-22	0.0000	3.536E-24	0.0000	2.645E-22	0.0000
Sr-90	2.245E-11	0.0021	8.754E-15	0.0000	2.867E-09	0.2713	1.021E-09	0.0966	5.767E-10	0.0546	1.500E-11	0.0014
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	5.154E-09	0.4877	1.038E-14	0.0000	3.132E-09	0.2963	1.429E-09	0.1352	8.304E-10	0.0786	2.294E-11	0.0022

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.110E-23	0.0000
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.066E-09	0.5739
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.014E-13	0.0001
Gd-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.210E-22	0.0000
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.502E-09	0.4260
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.057E-08	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

Attachment 7 Sheet No. 18 of 21
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 7

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:38 Page 19
Intrisk : 118-B-1 BCL RESRAD Evaluation File: 118-B-1_BCL.RAD

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p) and Fraction of Total Risk at t= 3.000E+02 years Water Independent Pathways (Inhalation excludes radon)									
Radio- Nuclide	Ground risk fract.	Inhalation risk fract.	Radon risk fract.	Plant risk fract.	Meat risk fract.	Milk risk fract.	Soil risk fract.		
Co-60	2.054E-23	0.000E+00	0.000E+00	0.000E+00	2.582E-25	0.000E+00	5.613E-26	0.000E+00	6.044E-27
Cs-137	5.131E-09	0.4855	1.621E-15	0.000E+00	2.647E-10	0.0250	4.084E-10	0.0386	2.537E-10
Eu-152	6.010E-13	0.0001	6.930E-19	0.000E+00	0.000E+00	0.000E+00	2.153E-16	0.000E+00	7.371E-17
Sr-90	2.245E-11	0.0021	8.754E-15	0.000E+00	0.000E+00	0.000E+00	2.867E-09	0.2713	1.021E-09
Total	5.154E-09	0.4877	1.038E-14	0.000E+00	0.000E+00	0.000E+00	3.132E-09	0.2963	1.429E-09

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p) and Fraction of Total Risk at t= 3.000E+02 years Water Dependent Pathways									
Radio- Nuclide	Water risk fract.	Fish risk fract.	Radon risk fract.	Plant risk fract.	Meat risk fract.	Milk risk fract.	All pathways risk fract.		
Co-60	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.110E-23
Cs-137	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	6.066E-09
Eu-152	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	6.014E-13
Sr-90	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.502E-09
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.057E-08

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Attachment 7 Sheet No. 19 of 21
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 7

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:38 Page 20
Intrisk : 118-B-1 BCL RESRAD Evaluation File: 118-B-1_BCL.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 1.000E+03 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	
Co-60	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Cs-137	5.131E-13	2.666E-08	4.114E-08	2.555E-08	6.909E-10	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	9.405E-08
Eu-152	7.514E-26	2.441E-22	8.360E-23	5.524E-24	1.012E-22	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.344E-22
Gd-152	1.032E-16	3.352E-13	1.148E-13	3.034E-15	1.389E-13	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.920E-13
Sr-90	1.553E-13	6.052E-08	2.155E-08	1.217E-08	2.091E-10	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	9.445E-08

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+03 years

0

0

Radio- Nuclide	Water Independent Pathways (Inhalation excludes radon)											
	Ground risk	fract.	Inhalation risk	fract.	Plant risk	fract.	Meat risk	fract.	Milk risk	fract.	Soil risk	fract.
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Cs-137	4.172E-16	0.6079	1.318E-22	0.0000	2.152E-17	0.0314	3.320E-17	0.0484	2.062E-17	0.0301	6.455E-19	0.0009
Eu-152	7.544E-29	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Gd-152	0.000E+00	0.0000	2.816E-23	0.0000	3.871E-22	0.0000	1.326E-22	0.0000	3.504E-24	0.0000	2.621E-22	0.0000
Sr-90	9.626E-19	0.0014	3.754E-22	0.0000	1.230E-16	0.1792	4.378E-17	0.0638	2.473E-17	0.0360	6.432E-19	0.0009
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	4.181E-16	0.6093	5.353E-22	0.0000	1.445E-16	0.2105	7.699E-17	0.1122	4.536E-17	0.0661	1.289E-18	0.0019

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.932E-16	0.7186
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.544E-29	0.0000
Gd-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.134E-22	0.0000
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.931E-16	0.2814
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.863E-16	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

Attachment 7 Sheet No. 20 of 21
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 7

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:38 Page 21
Intrisk : 118-B-1 BCL RESRAD Evaluation File: 118-B-1_BCL.RAD

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p) and Fraction of Total Risk at t= 1.000E+03 years Water Independent Pathways (Inhalation excludes radon)									
	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil		
Radio-	risk	risk	risk	risk	risk	risk	risk	risk	risk
Nuclide	fract.	fract.	fract.	fract.	fract.	fract.	fract.	fract.	fract.
Co-60	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000
Cs-137	4.172E-16 0.6079	1.318E-22 0.0000	0.000E+00 0.0000	2.152E-17 0.0314	3.320E-17 0.0484	2.062E-17 0.0301	6.455E-19 0.0009	6.455E-19 0.0009	6.455E-19 0.0009
Eu-152	7.544E-29 0.0000	2.816E-23 0.0000	0.000E+00 0.0000	3.871E-22 0.0000	1.326E-22 0.0000	3.504E-24 0.0000	2.621E-22 0.0000	2.621E-22 0.0000	2.621E-22 0.0000
Sr-90	9.626E-19 0.0014	3.754E-22 0.0000	0.000E+00 0.0000	1.230E-16 0.1792	4.378E-17 0.0638	2.473E-17 0.0360	6.432E-19 0.0009	6.432E-19 0.0009	6.432E-19 0.0009
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	4.181E-16 0.6093	5.353E-22 0.0000	0.000E+00 0.0000	1.445E-16 0.2105	7.699E-17 0.1122	4.536E-17 0.0661	1.289E-18 0.0019	1.289E-18 0.0019	1.289E-18 0.0019

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p) and Fraction of Total Risk at t= 1.000E+03 years Water Dependent Pathways									
	Water	Fish	Radon	Plant	Meat	Milk	All pathways		
Radio-	risk	risk	risk	risk	risk	risk	risk	risk	risk
Nuclide	fract.	fract.	fract.	fract.	fract.	fract.	fract.	fract.	fract.
Co-60	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000
Cs-137	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	4.932E-16 0.7186	4.932E-16 0.7186
Eu-152	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	8.134E-22 0.0000	8.134E-22 0.0000
Sr-90	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.931E-16 0.2814	1.931E-16 0.2814
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	6.863E-16 1.0000	6.863E-16 1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Attachment 7 Sheet No. 21 of 21
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 8

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:38 Page 1
Concent : 118-B-1 BCL RESRAD Evaluation File: 118-B-1_BCL.RAD

Table of Contents
 AAAAAAAAAAAAAAAAAA
 Part IV: Concentration of Radionuclides
 ff

Concentration of radionuclides in different media

Time= 0.000E+00	2
Time= 1.000E+00	3
Time= 3.000E+00	4
Time= 1.000E+01	5
Time= 1.100E+01	6
Time= 3.000E+01	7
Time= 1.000E+02	8
Time= 3.000E+02	9
Time= 1.000E+03	10

Attachment 8 Sheet No. 1 of 10
 Originators: S. W. Clark SWC Date 2/5/07
 Chk'd By M. W. Perrott Map Date 2/5/07
 Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 8

1RESRAD, Version 6.3 T< Limit = 180 days 02/02/2007 19:38 Page 2
Concent : 118-B-1 BCL RESRAD Evaluation File: 118-B-1_BCL.RAD

Concentration of radionuclides in environmental media
at t = 0.000E+00 years

Radio-	Contaminat- ed Zone	Surface Soil*	Air Par- tificate	Well Water	Surface Water
Nuclide	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
	pCi/g	pCi/g	pCi/m**3	pCi/L	pCi/L
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Co-60	5.000E-02	5.000E-02	6.752E-07	0.000E+00	0.000E+00
Cs-137	1.590E-01	1.590E-01	2.147E-06	0.000E+00	0.000E+00
Eu-152	7.000E-02	7.000E-02	9.453E-07	0.000E+00	0.000E+00
Gd-152	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Sr-90	1.200E-01	1.200E-01	1.620E-06	0.000E+00	0.000E+00
iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in foodstuff media
at t = 0.000E+00 years*

Radio-	Drinking Water	Nonleafy Vegetable	Leafy Vegetable	Fodder Meat	Fodder Milk	Meat	Milk	Fish	Crustacea
Nuclide	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
	pCi/L	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/L	pCi/kg	pCi/kg
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Co-60	0.000E+00	4.000E+00	4.000E+00	4.000E+00	4.000E+00	5.940E+00	4.900E-01	0.000E+00	0.000E+00
Cs-137	0.000E+00	6.360E+00	6.361E+00	6.361E+00	6.361E+00	1.536E+01	3.435E+00	0.000E+00	0.000E+00
Eu-152	0.000E+00	1.751E-01	1.752E-01	1.753E-01	1.753E-01	9.384E-02	2.232E-03	0.000E+00	0.000E+00
Gd-152	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Sr-90	0.000E+00	3.600E+01	3.600E+01	3.600E+01	3.600E+01	2.006E+01	4.080E+00	0.000E+00	0.000E+00
iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Attachment	8	Sheet No. 2 of 10
Originators:	S. W. Clark	Date
Chk'd By	M. W. Perrott	Date
Calc. No.	0100B-CA-V0301	Rev. No. 0

ATTACHMENT 8

1RESRAD, Version 6.3 T< Limit = 180 days 02/02/2007 19:38 Page 3
Concent : 118-B-1 BCL RESRAD Evaluation File: 118-B-1_BCL.RAD

Concentration of radionuclides in environmental media
at t = 1.000E+00 years

Radio-	Contaminat-	Surface	Air Par-	Well	Surface
Nuclide	ted Zone	Soil*	ticulate	Water	Water
	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
	pCi/g	pCi/g	pCi/m**3	pCi/L	pCi/L
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Co-60	4.383E-02	4.383E-02	5.919E-07	0.000E+00	0.000E+00
Cs-137	1.553E-01	1.553E-01	2.098E-06	0.000E+00	0.000E+00
Eu-152	6.645E-02	6.645E-02	8.973E-07	0.000E+00	0.000E+00
Gd-152	1.222E-16	1.222E-16	1.651E-21	0.000E+00	0.000E+00
Sr-90	1.171E-01	1.171E-01	1.582E-06	0.000E+00	0.000E+00
iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in foodstuff media
at t = 1.000E+00 years*

Radio-	Drinking	Nonleafy	Leafy	Fodder	Fodder	Meat	Milk	Fish	Crustacea
Nuclide	Water	Vegetable	Vegetable	Meat	Milk				
	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
	pCi/L	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/L	pCi/kg	pCi/kg
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Co-60	0.000E+00	3.506E+00	3.507E+00	3.532E+00	3.508E+00	5.207E+00	4.296E-01	0.000E+00	0.000E+00
Cs-137	0.000E+00	6.214E+00	6.214E+00	6.222E+00	6.215E+00	1.501E+01	3.356E+00	0.000E+00	0.000E+00
Eu-152	0.000E+00	1.662E-01	1.664E-01	1.669E-01	1.664E-01	8.908E-02	2.119E-03	0.000E+00	0.000E+00
Gd-152	0.000E+00	3.056E-16	3.060E-16	2.897E-16	3.052E-16	1.638E-16	1.565E-18	0.000E+00	0.000E+00
Sr-90	0.000E+00	3.514E+01	3.514E+01	3.519E+01	3.514E+01	1.959E+01	3.983E+00	0.000E+00	0.000E+00
iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Attachment 8 Sheet No. 3 of 10
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 8

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:38 Page 4
Concent : 118-B-1 BCL RESRAD Evaluation File: 118-B-1_BCL.RAD

Concentration of radionuclides in environmental media
at t = 3.000E+00 years

Radio- Nuclide	Contaminat- ed Zone	Surface Soil*	Air Par- tificate	Well Water	Surface Water
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
AAAAAAA	pCi/g	pCi/g	pCi/m**3	pCi/L	pCi/L
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
Co-60	3.368E-02	3.368E-02	4.548E-07	0.000E+00	0.000E+00
Cs-137	1.483E-01	1.483E-01	2.002E-06	0.000E+00	0.000E+00
Eu-152	5.988E-02	5.988E-02	8.086E-07	0.000E+00	0.000E+00
Gd-152	3.484E-16	3.484E-16	4.705E-21	0.000E+00	0.000E+00
Sr-90	1.116E-01	1.116E-01	1.507E-06	0.000E+00	0.000E+00
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in foodstuff media
at t = 3.000E+00 years*

Radio- Nuclide	Drinking Water	Nonleafy Vegetable	Leafy Vegetable	Fodder Meat	Fodder Milk	Meat	Milk	Fish	Crustacea
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
AAAAAAA	pCi/L	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/L	pCi/kg	pCi/kg
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
Co-60	0.000E+00	2.694E+00	2.694E+00	2.714E+00	2.695E+00	4.001E+00	3.301E-01	0.000E+00	0.000E+00
Cs-137	0.000E+00	5.930E+00	5.931E+00	5.939E+00	5.931E+00	1.432E+01	3.203E+00	0.000E+00	0.000E+00
Eu-152	0.000E+00	1.497E-01	1.499E-01	1.504E-01	1.500E-01	8.027E-02	1.909E-03	0.000E+00	0.000E+00
Gd-152	0.000E+00	8.712E-16	8.722E-16	8.576E-16	8.716E-16	4.670E-16	4.449E-18	0.000E+00	0.000E+00
Sr-90	0.000E+00	3.348E+01	3.348E+01	3.352E+01	3.348E+01	1.866E+01	3.794E+00	0.000E+00	0.000E+00
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.

For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Attachment 8 Sheet No. 4 of 10
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 8

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:38 Page 5
Concent : 118-B-1 BCL RESRAD Evaluation File: 118-B-1_BCL.RAD

Concentration of radionuclides in environmental media
at t = 1.000E+01 years

Radio-	Contaminat-	Surface	Air Par-	Well	Surface
Nuclide	ted Zone	Soil*	ticulate	Water	Water
	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
	pCi/g	pCi/g	pCi/m**3	pCi/L	pCi/L
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Co-60	1.339E-02	1.339E-02	1.809E-07	0.000E+00	0.000E+00
Cs-137	1.259E-01	1.259E-01	1.700E-06	0.000E+00	0.000E+00
Eu-152	4.159E-02	4.159E-02	5.617E-07	0.000E+00	0.000E+00
Gd-152	9.778E-16	9.778E-16	1.320E-20	0.000E+00	0.000E+00
Sr-90	9.417E-02	9.417E-02	1.272E-06	0.000E+00	0.000E+00
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in foodstuff media
at t = 1.000E+01 years*

Radio-	Drinking	Nonleafy	Leafy	Fodder	Fodder	Meat	Milk	Fish	Crustacea
Nuclide	Water	Vegetable	Vegetable	Meat	Milk				
	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
	pCi/L	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/L	pCi/kg	pCi/kg
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Co-60	0.000E+00	1.072E+00	1.072E+00	1.079E+00	1.072E+00	1.591E+00	1.313E-01	0.000E+00	0.000E+00
Cs-137	0.000E+00	5.037E+00	5.037E+00	5.044E+00	5.038E+00	1.217E+01	2.720E+00	0.000E+00	0.000E+00
Eu-152	0.000E+00	1.040E-01	1.041E-01	1.044E-01	1.042E-01	5.576E-02	1.326E-03	0.000E+00	0.000E+00
Gd-152	0.000E+00	2.445E-15	2.448E-15	2.438E-15	2.448E-15	1.311E-15	1.247E-17	0.000E+00	0.000E+00
Sr-90	0.000E+00	2.825E+01	2.825E+01	2.829E+01	2.826E+01	1.575E+01	3.202E+00	0.000E+00	0.000E+00
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Attachment 8 Sheet No. 5 of 10
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 8

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:38 Page 6
Concent : 118-B-1 BCL RESRAD Evaluation File: 118-B-1_BCL.RAD

Concentration of radionuclides in environmental media
at t = 1.100E+01 years

Radio- Nuclide	Contaminat- ed Zone	Surface Soil*	Air Par- ticulate	Well Water	Surface Water
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
AAAAAAA	pCi/g	pCi/g	pCi/m**3	pCi/L	pCi/L
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
Co-60	1.174E-02	1.174E-02	1.586E-07	0.000E+00	0.000E+00
Cs-137	1.230E-01	1.230E-01	1.661E-06	0.000E+00	0.000E+00
Eu-152	3.948E-02	3.948E-02	5.332E-07	0.000E+00	0.000E+00
Gd-152	1.050E-15	1.050E-15	1.418E-20	0.000E+00	0.000E+00
Sr-90	9.192E-02	9.192E-02	1.241E-06	0.000E+00	0.000E+00
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in foodstuff media
at t = 1.100E+01 years*

Radio- Nuclide	Drinking Water	Nonleafy Vegetable	Leafy Vegetable	Fodder Meat	Fodder Milk	Meat	Milk	Fish	Crustacea
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
AAAAAAA	pCi/L	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/L	pCi/kg	pCi/kg
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
Co-60	0.000E+00	9.393E-01	9.394E-01	9.462E-01	9.397E-01	1.395E+00	1.151E-01	0.000E+00	0.000E+00
Cs-137	0.000E+00	4.921E+00	4.921E+00	4.928E+00	4.922E+00	1.189E+01	2.658E+00	0.000E+00	0.000E+00
Eu-152	0.000E+00	9.874E-02	9.885E-02	9.915E-02	9.888E-02	5.293E-02	1.259E-03	0.000E+00	0.000E+00
Gd-152	0.000E+00	2.627E-15	2.630E-15	2.620E-15	2.630E-15	1.408E-15	1.340E-17	0.000E+00	0.000E+00
Sr-90	0.000E+00	2.758E+01	2.758E+01	2.761E+01	2.758E+01	1.537E+01	3.125E+00	0.000E+00	0.000E+00
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Attachment 8 Sheet No. 6 of 10
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 8

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:38 Page 7
Concent : 118-B-1 BCL RESRAD Evaluation File: 118-B-1 BCL.RAD

Concentration of radionuclides in environmental media
at t = 3.000E+01 years

	Contaminant- ed Zone	Surface Soil*	Air Par- ticulate	Well Water	Surface Water
Radio- Nuclide	AAAAAAAAA	AAAAAAAAA	AAAAAAAAA	AAAAAAAAA	AAAAAAAAA
	pCi/g	pCi/g	pCi/m*3	pCi/L	pCi/L
AAAAAAAA	AAAAAAAAA	AAAAAAAAA	AAAAAAAAA	AAAAAAAAA	AAAAAAAAA
Co-60	9.612E-04	9.612E-04	1.298E-08	0.000E+00	0.000E+00
Cs-137	7.898E-02	7.898E-02	1.067E-06	0.000E+00	0.000E+00
Eu-152	1.469E-02	1.469E-02	1.983E-07	0.000E+00	0.000E+00
Gd-152	1.904E-15	1.904E-15	2.571E-20	0.000E+00	0.000E+00
Sr-90	5.800E-02	5.800E-02	7.832E-07	0.000E+00	0.000E+00

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in foodstuff media
at $t = 3.000\text{E}+01$ years*

[illegible]

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.

For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Attachment 8 Sheet No. 7 of 10
 Originator: S. W. Clark Date _____
 Chk'd By M. W. Perrott Date _____
 Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 8

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:38 Page 8
Concent : 118-B-1 BCL RESRAD Evaluation File: 118-B-1_BCL.RAD

Concentration of radionuclides in environmental media
at t = 1.000E+02 years

Radio-	Contaminat-	Surface	Air Par-	Well	Surface
Nuclide	ted Zone	Soil*	ticulate	Water	Water
	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
	pCi/g	pCi/g	pCi/m**3	pCi/L	pCi/L
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Co-60	9.517E-08	9.517E-08	1.285E-12	0.000E+00	0.000E+00
Cs-137	1.544E-02	1.544E-02	2.085E-07	0.000E+00	0.000E+00
Eu-152	3.841E-04	3.841E-04	5.187E-09	0.000E+00	0.000E+00
Gd-152	2.394E-15	2.394E-15	3.233E-20	0.000E+00	0.000E+00
Sr-90	1.063E-02	1.063E-02	1.436E-07	0.000E+00	0.000E+00
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in foodstuff media
at t = 1.000E+02 years*

Radio-	Drinking	Nonleafy	Leafy	Fodder	Fodder	Meat	Milk	Fish	Crustacea
Nuclide	Water	Vegetable	Vegetable	Meat	Milk				
	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
	pCi/L	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/L	pCi/kg	pCi/kg
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Co-60	0.000E+00	7.614E-06	7.614E-06	7.669E-06	7.617E-06	1.131E-05	9.327E-07	0.000E+00	0.000E+00
Cs-137	0.000E+00	6.175E-01	6.175E-01	6.183E-01	6.176E-01	1.491E+00	3.335E-01	0.000E+00	0.000E+00
Eu-152	0.000E+00	9.606E-04	9.616E-04	9.645E-04	9.619E-04	5.149E-04	1.225E-05	0.000E+00	0.000E+00
Gd-152	0.000E+00	5.987E-15	5.993E-15	5.994E-15	5.994E-15	3.209E-15	3.053E-17	0.000E+00	0.000E+00
Sr-90	0.000E+00	3.190E+00	3.190E+00	3.194E+00	3.190E+00	1.778E+00	3.615E-01	0.000E+00	0.000E+00
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Attachment 8 Sheet No. 8 of 10
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 8

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:38 Page 9
Concent : 118-B-1 BCL RESRAD Evaluation File: 118-B-1_BCL.RAD

Concentration of radionuclides in environmental media
at t = 3.000E+02 years

Radio-	Contaminat-	Surface	Air Par-	Well	Surface
Nuclide	ted Zone	Soil*	ticulate	Water	Water
	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
	pCi/g	pCi/g	pCi/m**3	pCi/L	pCi/L
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Co-60	3.448E-19	3.448E-19	4.656E-24	0.000E+00	0.000E+00
Cs-137	1.455E-04	1.455E-04	1.965E-09	0.000E+00	0.000E+00
Eu-152	1.157E-08	1.157E-08	1.562E-13	0.000E+00	0.000E+00
Gd-152	2.401E-15	2.401E-15	3.242E-20	0.000E+00	0.000E+00
Sr-90	8.348E-05	8.348E-05	1.127E-09	0.000E+00	0.000E+00
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in foodstuff media
at t = 3.000E+02 years*

Radio-	Drinking	Nonleafy	Leafy	Fodder	Fodder	Meat	Milk	Fish	Crustacea
Nuclide	Water	Vegetable	Vegetable	Meat	Milk				
	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
	pCi/L	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/L	pCi/kg	pCi/kg
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Co-60	0.000E+00	2.758E-17	2.758E-17	2.779E-17	2.760E-17	4.096E-17	3.379E-18	0.000E+00	0.000E+00
Cs-137	0.000E+00	5.820E-03	5.821E-03	5.828E-03	5.821E-03	1.406E-02	3.143E-03	0.000E+00	0.000E+00
Eu-152	0.000E+00	2.892E-08	2.895E-08	2.904E-08	2.896E-08	1.550E-08	3.688E-10	0.000E+00	0.000E+00
Gd-152	0.000E+00	6.004E-15	6.011E-15	6.011E-15	6.011E-15	3.218E-15	3.062E-17	0.000E+00	0.000E+00
Sr-90	0.000E+00	2.505E-02	2.504E-02	2.508E-02	2.505E-02	1.396E-02	2.839E-03	0.000E+00	0.000E+00
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.

For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Attachment 8 Sheet No. 9 of 10
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 8

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:38 Page 10
Concent : 118-B-1 BCL RESRAD Evaluation File: 118-B-1_BCL.RAD

Concentration of radionuclides in environmental media
at t = 1.000E+03 years

Radio- Nuclide	Contaminat- ed Zone pCi/g	Surface Soil* pCi/g	Air Par- ticulate pCi/m*3	Well Water pCi/L	Surface Water pCi/L
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
Co-60	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Cs-137	1.183E-11	1.183E-11	1.597E-16	0.000E+00	0.000E+00
Eu-152	1.732E-24	1.732E-24	2.339E-29	0.000E+00	0.000E+00
Gd-152	2.379E-15	2.379E-15	3.212E-20	0.000E+00	0.000E+00
Sr-90	3.580E-12	3.580E-12	4.834E-17	0.000E+00	0.000E+00
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of radionuclides in foodstuff media
at t = 1.000E+03 years*

Radio- Nuclide	Drinking Water pCi/L	Nonleafy Vegetable pCi/kg	Leafy Vegetable pCi/kg	Fodder Meat pCi/kg	Fodder Milk pCi/kg	Meat pCi/kg	Milk pCi/L	Fish pCi/kg	Crustacea pCi/kg
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
Co-60	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Cs-137	0.000E+00	4.732E-10	4.732E-10	4.739E-10	4.733E-10	1.143E-09	2.555E-10	0.000E+00	0.000E+00
Eu-152	0.000E+00	4.332E-24	4.337E-24	4.350E-24	4.338E-24	2.322E-24	5.524E-26	0.000E+00	0.000E+00
Gd-152	0.000E+00	5.949E-15	5.955E-15	5.956E-15	5.956E-15	3.189E-15	3.034E-17	0.000E+00	0.000E+00
Sr-90	0.000E+00	1.074E-09	1.074E-09	1.076E-09	1.074E-09	5.986E-10	1.217E-10	0.000E+00	0.000E+00
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Attachment 8 Sheet No. 10 of 10
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 9

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1RESRAD, Version 6.3      T« Limit = 180 days      02/02/2007  19:48  Page   1
Summary : 118-B-1 Staging Pile Area RESRAD Evaluation
File    : 118-B-1_SPA_Area.RAD
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[illegible]

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Attachment 9 Sheet No. 1 of 27
 Originators: S. W. Clark *swc* Date 2/5/07
 Chk'd By M. W. Perrott *mwp* Date 2/5/07
 Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 9

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1RESRAD, Version 6.3      T« Limit = 180 days      02/02/2007 19:48 Page 2
Summary : 118-B-1 Staging Pile Area RESRAD Evaluation
File    : 118-B-1_SPA_Area.RAD
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Dose Conversion Factor (and Related) Parameter Summary
File: HEAST 2001 MORBIDITY

Menu	Parameter	Current Value	Base Case*	Parameter Name
Dose conversion factors for inhalation, mrem/pCi:				
B-1	Ac-227+D	6.724E+00	6.700E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	C-14	2.090E-06	2.090E-06	DCF2(3)
B-1	Co-60	2.190E-04	2.190E-04	DCF2(4)
B-1	Cs-137+D	3.190E-05	3.190E-05	DCF2(5)
B-1	Eu-152	2.210E-04	2.210E-04	DCF2(6)
B-1	Gd-152	2.430E-01	2.430E-01	DCF2(8)
B-1	H-3	6.400E-08	6.400E-08	DCF2(9)
B-1	Ni-63	6.290E-06	6.290E-06	DCF2(10)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(11)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(12)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(13)
B-1	Pu-240	4.290E-01	4.290E-01	DCF2(14)
B-1	Ra-228+D	5.078E-03	4.770E-03	DCF2(16)
B-1	Sr-90+D	1.308E-03	1.300E-03	DCF2(17)
B-1	Th-228+D	3.454E-01	3.420E-01	DCF2(18)
B-1	Th-229+D	2.169E+00	2.150E+00	DCF2(19)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(20)
B-1	U-233	1.350E-01	1.350E-01	DCF2(21)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(22)
B-1	U-236	1.250E-01	1.250E-01	DCF2(23)
Dose conversion factors for ingestion, mrem/pCi:				
D-1	Ac-227+D	1.480E-02	1.410E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	C-14	2.090E-06	2.090E-06	DCF3(3)
D-1	Co-60	2.690E-05	2.690E-05	DCF3(4)
D-1	Cs-137+D	5.000E-05	5.000E-05	DCF3(5)
D-1	Eu-152	6.480E-06	6.480E-06	DCF3(6)
D-1	Gd-152	1.610E-04	1.610E-04	DCF3(8)
D-1	H-3	6.400E-08	6.400E-08	DCF3(9)
D-1	Ni-63	5.770E-07	5.770E-07	DCF3(10)
D-1	Np-237+D	4.444E-03	4.440E-03	DCF3(11)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(12)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(13)
D-1	Pu-240	3.540E-03	3.540E-03	DCF3(14)
D-1	Ra-228+D	1.442E-03	1.440E-03	DCF3(16)
D-1	Sr-90+D	1.528E-04	1.420E-04	DCF3(17)
D-1	Th-228+D	8.086E-04	3.960E-04	DCF3(18)
D-1	Th-229+D	4.027E-03	3.530E-03	DCF3(19)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(20)
D-1	U-233	2.890E-04	2.890E-04	DCF3(21)
D-1	U-235+D	2.673E-04	2.660E-04	DCF3(22)
D-1	U-236	2.690E-04	2.690E-04	DCF3(23)
Food transfer factors:				
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,3)

Attachment 9 Sheet No. 2 of 27
 Originators: S. W. Clark Date _____
 Chk'd By M. W. Perrott Date _____
 Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 9

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 3
Summary : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Dose Conversion Factor (and Related) Parameter Summary (continued)

File: HEAST 2001 MORBIDITY

Menu	Parameter	Current Value	Base Case*	Parameter Name
0	AAAAA			
D-34	Am-241, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				
D-34	C-14, plant/soil concentration ratio, dimensionless	5.500E+00	5.500E+00	RTF(3,1)
D-34	C-14, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.100E-02	3.100E-02	RTF(3,2)
D-34	C-14, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.200E-02	1.200E-02	RTF(3,3)
D-34				
D-34	Co-60, plant/soil concentration ratio, dimensionless	8.000E-02	8.000E-02	RTF(4,1)
D-34	Co-60, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-02	2.000E-02	RTF(4,2)
D-34	Co-60, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-03	2.000E-03	RTF(4,3)
D-34				
D-34	Cs-137+D, plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(5,1)
D-34	Cs-137+D, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.000E-02	3.000E-02	RTF(5,2)
D-34	Cs-137+D, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	8.000E-03	8.000E-03	RTF(5,3)
D-34				
D-34	Eu-152, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(6,1)
D-34	Eu-152, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-03	2.000E-03	RTF(6,2)
D-34	Eu-152, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-05	5.000E-05	RTF(6,3)
D-34				
D-34	Gd-152, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(8,1)
D-34	Gd-152, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-03	2.000E-03	RTF(8,2)
D-34	Gd-152, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-05	2.000E-05	RTF(8,3)
D-34				
D-34	H-3, plant/soil concentration ratio, dimensionless	4.800E+00	4.800E+00	RTF(9,1)
D-34	H-3, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.200E-02	1.200E-02	RTF(9,2)
D-34	H-3, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-02	1.000E-02	RTF(9,3)
D-34				
D-34	Ni-63, plant/soil concentration ratio, dimensionless	5.000E-02	5.000E-02	RTF(10,1)
D-34	Ni-63, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-03	5.000E-03	RTF(10,2)
D-34	Ni-63, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-02	2.000E-02	RTF(10,3)
D-34				
D-34	Np-237+D, plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(11,1)
D-34	Np-237+D, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(11,2)
D-34	Np-237+D, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(11,3)
D-34				
D-34	Pa-231, plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(12,1)
D-34	Pa-231, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-03	5.000E-03	RTF(12,2)
D-34	Pa-231, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(12,3)
D-34				
D-34	Pu-239, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(13,1)
D-34	Pu-239, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(13,2)
D-34	Pu-239, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-06	1.000E-06	RTF(13,3)
D-34				
D-34	Pu-240, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(14,1)
D-34	Pu-240, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(14,2)
D-34	Pu-240, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-06	1.000E-06	RTF(14,3)
D-34				

Attachment 9 Sheet No. 3 of 27
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 9

1RESRAD, Version 6.3 T_{1/2} Limit = 180 days 02/02/2007 19:48 Page 4
Summary : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Dose Conversion Factor (and Related) Parameter Summary (continued)

File: HEAST 2001 MORBIDITY

Menu	Parameter	Current Value	Base Case*	Parameter Name
0	AAAAA			AAAAA
D-34	Ra-228+D, plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(16,1)
D-34	Ra-228+D, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(16,2)
D-34	Ra-228+D, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(16,3)
D-34				
D-34	Sr-90+D, plant/soil concentration ratio, dimensionless	3.000E-01	3.000E-01	RTF(17,1)
D-34	Sr-90+D, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-03	8.000E-03	RTF(17,2)
D-34	Sr-90+D, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-03	2.000E-03	RTF(17,3)
D-34				
D-34	Th-228+D, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(18,1)
D-34	Th-228+D, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(18,2)
D-34	Th-228+D, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(18,3)
D-34				
D-34	Th-229+D, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(19,1)
D-34	Th-229+D, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(19,2)
D-34	Th-229+D, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(19,3)
D-34				
D-34	Th-232, plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(20,1)
D-34	Th-232, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(20,2)
D-34	Th-232, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(20,3)
D-34				
D-34	U-233, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(21,1)
D-34	U-233, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(21,2)
D-34	U-233, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(21,3)
D-34				
D-34	U-235+D, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(22,1)
D-34	U-235+D, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(22,2)
D-34	U-235+D, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(22,3)
D-34				
D-34	U-236, plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(23,1)
D-34	U-236, beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(23,2)
D-34	U-236, milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(23,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D, fish	1.500E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D, crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Am-241, fish	3.000E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241, crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)
D-5				
D-5	C-14, fish	5.000E+04	5.000E+04	BIOFAC(3,1)
D-5	C-14, crustacea and mollusks	9.100E+03	9.100E+03	BIOFAC(3,2)
D-5				
D-5	Co-60, fish	3.000E+02	3.000E+02	BIOFAC(4,1)
D-5	Co-60, crustacea and mollusks	2.000E+02	2.000E+02	BIOFAC(4,2)
D-5				
D-5	Cs-137+D, fish	2.000E+03	2.000E+03	BIOFAC(5,1)
D-5	Cs-137+D, crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(5,2)
D-5				
D-5	Eu-152, fish	5.000E+01	5.000E+01	BIOFAC(6,1)
D-5	Eu-152, crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(6,2)

Attachment 9 Sheet No. 4 of 27
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 9

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 5
Summary : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Dose Conversion Factor (and Related) Parameter Summary (continued)

File: HEAST 2001 MORBIDITY

Menu	Parameter	Current Value	Base Case*	Parameter Name
D-5	Gd-152 , fish	2.500E+01	2.500E+01	BIOFAC(8,1)
D-5	Gd-152 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(8,2)
D-5	H-3 , fish	1.000E+00	1.000E+00	BIOFAC(9,1)
D-5	H-3 , crustacea and mollusks	1.000E+00	1.000E+00	BIOFAC(9,2)
D-5	Ni-63 , fish	1.000E+02	1.000E+02	BIOFAC(10,1)
D-5	Ni-63 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(10,2)
D-5	Np-237+D , fish	3.000E+01	3.000E+01	BIOFAC(11,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(11,2)
D-5	Pa-231 , fish	1.000E+01	1.000E+01	BIOFAC(12,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(12,2)
D-5	Pu-239 , fish	3.000E+01	3.000E+01	BIOFAC(13,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(13,2)
D-5	Pu-240 , fish	3.000E+01	3.000E+01	BIOFAC(14,1)
D-5	Pu-240 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(14,2)
D-5	Ra-228+D , fish	5.000E+01	5.000E+01	BIOFAC(16,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(16,2)
D-5	Sr-90+D , fish	6.000E+01	6.000E+01	BIOFAC(17,1)
D-5	Sr-90+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(17,2)
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(18,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(18,2)
D-5	Th-229+D , fish	1.000E+02	1.000E+02	BIOFAC(19,1)
D-5	Th-229+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(19,2)
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(20,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(20,2)
D-5	U-233 , fish	1.000E+01	1.000E+01	BIOFAC(21,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(21,2)
D-5	U-235+D , fish	1.000E+01	1.000E+01	BIOFAC(22,1)
D-5	U-235+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(22,2)
D-5	U-236 , fish	1.000E+01	1.000E+01	BIOFAC(23,1)
D-5	U-236 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(23,2)

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Attachment 9 Sheet No. 5 of 27
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 9

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 6
Summary : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Site-Specific Parameter Summary						
0	Menu	Parameter	User	Default	Used by RESRAD	Parameter Name
	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
		Area of contaminated zone (m**2)	2.002E+04	1.000E+04	---	AREA
R011		Thickness of contaminated zone (m)	4.600E+00	2.000E+00	---	THICK0
R011		Length parallel to aquifer flow (m)	1.460E+02	1.000E+02	---	LCZPAQ
R011		Basic radiation dose limit (mrem/yr)	4.000E+00	3.000E+01	---	BRDL
R011		Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011		Times for calculations (yr)	1.000E+00	1.000E+00	---	T (2)
R011		Times for calculations (yr)	3.000E+00	3.000E+00	---	T (3)
R011		Times for calculations (yr)	1.000E+01	1.000E+01	---	T (4)
R011		Times for calculations (yr)	1.100E+01	3.000E+01	---	T (5)
R011		Times for calculations (yr)	3.000E+01	1.000E+02	---	T (6)
R011		Times for calculations (yr)	1.000E+02	3.000E+02	---	T (7)
R011		Times for calculations (yr)	3.000E+02	1.000E+03	---	T (8)
R011		Times for calculations (yr)	1.000E+03	0.000E+00	---	T (9)
R011		Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012		Initial principal radionuclide (pCi/g): Am-241	6.100E-02	0.000E+00	---	S1(2)
R012		Initial principal radionuclide (pCi/g): C-14	1.600E+00	0.000E+00	---	S1(3)
R012		Initial principal radionuclide (pCi/g): Co-60	2.800E-02	0.000E+00	---	S1(4)
R012		Initial principal radionuclide (pCi/g): Cs-137	5.700E-01	0.000E+00	---	S1(5)
R012		Initial principal radionuclide (pCi/g): Eu-152	2.000E-01	0.000E+00	---	S1(6)
R012		Initial principal radionuclide (pCi/g): H-3	1.460E+01	0.000E+00	---	S1(9)
R012		Initial principal radionuclide (pCi/g): Ni-63	5.050E+00	0.000E+00	---	S1(10)
R012		Initial principal radionuclide (pCi/g): Pu-239	1.030E-01	0.000E+00	---	S1(13)
R012		Initial principal radionuclide (pCi/g): Pu-240	2.200E-02	0.000E+00	---	S1(14)
R012		Initial principal radionuclide (pCi/g): Sr-90	2.360E-01	0.000E+00	---	S1(17)
R012		Concentration in groundwater (pCi/L): Am-241	not used	0.000E+00	---	W1(2)
R012		Concentration in groundwater (pCi/L): C-14	not used	0.000E+00	---	W1(3)
R012		Concentration in groundwater (pCi/L): Co-60	not used	0.000E+00	---	W1(4)
R012		Concentration in groundwater (pCi/L): Cs-137	not used	0.000E+00	---	W1(5)
R012		Concentration in groundwater (pCi/L): Eu-152	not used	0.000E+00	---	W1(6)
R012		Concentration in groundwater (pCi/L): H-3	not used	0.000E+00	---	W1(9)
R012		Concentration in groundwater (pCi/L): Ni-63	not used	0.000E+00	---	W1(10)
R012		Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(13)
R012		Concentration in groundwater (pCi/L): Pu-240	not used	0.000E+00	---	W1(14)
R012		Concentration in groundwater (pCi/L): Sr-90	not used	0.000E+00	---	W1(17)
R013		Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013		Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013		Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013		Density of contaminated zone (g/cm**3)	1.600E+00	1.500E+00	---	DENSCZ
R013		Contaminated zone erosion rate (m/yr)	0.000E+00	1.000E-03	---	VCZ
R013		Contaminated zone total porosity	4.000E-01	4.000E-01	---	TPCZ
R013		Contaminated zone field capacity	1.500E-01	2.000E-01	---	FCCZ
R013		Contaminated zone hydraulic conductivity (m/yr)	2.500E+02	1.000E+01	---	HCCZ
R013		Contaminated zone b parameter	4.050E+00	5.300E+00	---	BCZ
R013		Average annual wind speed (m/sec)	3.400E+00	2.000E+00	---	WIND
R013		Humidity in air (g/m**3)	8.000E+00	8.000E+00	---	HUMID
R013		Evapotranspiration coefficient	9.100E-01	5.000E-01	---	EVAPTR
R013		Precipitation (m/yr)	1.600E-01	1.000E+00	---	PRECIP
R013		Irrigation (m/yr)	7.600E-01	2.000E-01	---	R1

Attachment 9 Sheet No. 6 of 27
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 9

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 7
Summary : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Site-Specific Parameter Summary (continued)						
0	Menu	Parameter	User	Default	Used by RESRAD	Parameter Name
			Input	(If different from user input)		
	R013	Irrigation mode	overhead	overhead	---	IDITCH
	R013	Runoff coefficient	2.000E-01	2.000E-01	---	RUNOFF
	R013	Watershed area for nearby stream or pond (m**2)	1.000E+06	1.000E+06	---	WAREA
	R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
	R014	Density of saturated zone (g/cm**3)	1.600E+00	1.500E+00	---	DENSAQ
	R014	Saturated zone total porosity	4.000E-01	4.000E-01	---	TPSZ
	R014	Saturated zone effective porosity	2.500E-01	2.000E-01	---	EPSZ
	R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
	R014	Saturated zone hydraulic conductivity (m/yr)	5.530E+03	1.000E+02	---	HCSZ
	R014	Saturated zone hydraulic gradient	1.250E-03	2.000E-02	---	HGWT
	R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
	R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
	R014	Well pump intake depth (m below water table)	4.600E+00	1.000E+01	---	DWIBWT
	R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
	R014	Well pumping rate (m**3/yr)	2.500E+02	2.500E+02	---	UW
	R015	Number of unsaturated zone strata	1	1	---	NS
	R015	Unsat. zone 1, thickness (m)	1.810E+01	4.000E+00	---	H(1)
	R015	Unsat. zone 1, soil density (g/cm**3)	1.600E+00	1.500E+00	---	DENSUZ(1)
	R015	Unsat. zone 1, total porosity	4.000E-01	4.000E-01	---	TPUZ(1)
	R015	Unsat. zone 1, effective porosity	2.500E-01	2.000E-01	---	EPUZ(1)
	R015	Unsat. zone 1, field capacity	1.500E-01	2.000E-01	---	FCUZ(1)
	R015	Unsat. zone 1, soil-specific b parameter	4.050E+00	5.300E+00	---	BUZ(1)
	R015	Unsat. zone 1, hydraulic conductivity (m/yr)	2.500E+02	1.000E+01	---	HCUZ(1)
	R016	Distribution coefficients for Am-241				
	R016	Contaminated zone (cm**3/g)	2.000E+02	2.000E+01	---	DCNUCC(2)
	R016	Unsat. zone 1 (cm**3/g)	2.000E+02	2.000E+01	---	DCNUCU(2,1)
	R016	Saturated zone (cm**3/g)	2.000E+02	2.000E+01	---	DCNUCS(2)
	R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.426E-05	ALEACH(2)
	R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
	R016	Distribution coefficients for C-14				
	R016	Contaminated zone (cm**3/g)	2.000E+02	0.000E+00	---	DCNUCC(3)
	R016	Unsat. zone 1 (cm**3/g)	2.000E+02	0.000E+00	---	DCNUCU(3,1)
	R016	Saturated zone (cm**3/g)	2.000E+02	0.000E+00	---	DCNUCS(3)
	R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.426E-05	ALEACH(3)
	R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
	R016	Distribution coefficients for Co-60				
	R016	Contaminated zone (cm**3/g)	5.000E+01	1.000E+03	---	DCNUCC(4)
	R016	Unsat. zone 1 (cm**3/g)	5.000E+01	1.000E+03	---	DCNUCU(4,1)
	R016	Saturated zone (cm**3/g)	5.000E+01	1.000E+03	---	DCNUCS(4)
	R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.166E-04	ALEACH(4)
	R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(4)

Attachment 9 Sheet No. 7 of 27
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 9

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 8
Summary : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name

R016	Distribution coefficients for Cs-137				
R016	Contaminated zone (cm**3/g)	5.000E+01	4.600E+03	---	DCNUCC(5)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	4.600E+03	---	DCNUCU(5,1)
R016	Saturated zone (cm**3/g)	5.000E+01	4.600E+03	---	DCNUCS(5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.166E-04	ALEACH(5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(5)

R016	Distribution coefficients for Eu-152				
R016	Contaminated zone (cm**3/g)	2.000E+02	-1.000E+00	---	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	2.000E+02	-1.000E+00	---	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	2.000E+02	-1.000E+00	---	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.426E-05	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)

R016	Distribution coefficients for H-3				
R016	Contaminated zone (cm**3/g)	0.000E+00	0.000E+00	---	DCNUCC(9)
R016	Unsaturated zone 1 (cm**3/g)	0.000E+00	0.000E+00	---	DCNUCU(9,1)
R016	Saturated zone (cm**3/g)	0.000E+00	0.000E+00	---	DCNUCS(9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	8.969E-02	ALEACH(9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(9)

R016	Distribution coefficients for Ni-63				
R016	Contaminated zone (cm**3/g)	3.000E+01	1.000E+03	---	DCNUCC(10)
R016	Unsaturated zone 1 (cm**3/g)	3.000E+01	1.000E+03	---	DCNUCU(10,1)
R016	Saturated zone (cm**3/g)	3.000E+01	1.000E+03	---	DCNUCS(10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.605E-04	ALEACH(10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(10)

R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm**3/g)	2.000E+02	2.000E+03	---	DCNUCC(13)
R016	Unsaturated zone 1 (cm**3/g)	2.000E+02	2.000E+03	---	DCNUCU(13,1)
R016	Saturated zone (cm**3/g)	2.000E+02	2.000E+03	---	DCNUCS(13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.426E-05	ALEACH(13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(13)

R016	Distribution coefficients for Pu-240				
R016	Contaminated zone (cm**3/g)	2.000E+02	2.000E+03	---	DCNUCC(14)
R016	Unsaturated zone 1 (cm**3/g)	2.000E+02	2.000E+03	---	DCNUCU(14,1)
R016	Saturated zone (cm**3/g)	2.000E+02	2.000E+03	---	DCNUCS(14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.426E-05	ALEACH(14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(14)

R016	Distribution coefficients for Sr-90				
R016	Contaminated zone (cm**3/g)	2.500E+01	3.000E+01	---	DCNUCC(17)
R016	Unsaturated zone 1 (cm**3/g)	2.500E+01	3.000E+01	---	DCNUCU(17,1)
R016	Saturated zone (cm**3/g)	2.500E+01	3.000E+01	---	DCNUCS(17)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.323E-04	ALEACH(17)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(17)

Attachment 9 Sheet No. 8 of 27
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
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ATTACHMENT 9

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1RESRAD, Version 6.3      T« Limit = 180 days      02/02/2007 19:48 Page 9
Summary : 118-B-1 Staging Pile Area RESRAD Evaluation
File    : 118-B-1 SPA Area.RAD
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Site-Specific Parameter Summary (continued)					
0		User	Default	Used by RESRAD	Parameter
Menu	Parameter	Input		(If different from user input)	Name
AAAAA	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.397E-04	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
	Distribution coefficients for daughter Gd-152				
R016	Contaminated zone (cm**3/g)	-1.000E+00	-1.000E+00	8.249E+02	DCNUCC(8)
R016	Unsaturated zone 1 (cm**3/g)	-1.000E+00	-1.000E+00	8.249E+02	DCNUCU(8,1)
R016	Saturated zone (cm**3/g)	-1.000E+00	-1.000E+00	8.249E+02	DCNUCS(8)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.316E-05	ALEACH(8)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(8)
	Distribution coefficients for daughter Np-237				
R016	Contaminated zone (cm**3/g)	1.500E+01	-1.000E+00	---	DCNUCC(11)
R016	Unsaturated zone 1 (cm**3/g)	1.500E+01	-1.000E+00	---	DCNUCU(11,1)
R016	Saturated zone (cm**3/g)	1.500E+01	-1.000E+00	---	DCNUCS(11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	7.181E-04	ALEACH(11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(11)
	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(12)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(12,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.166E-04	ALEACH(12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(12)
	Distribution coefficients for daughter Ra-228				
R016	Contaminated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCC(16)
R016	Unsaturated zone 1 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCU(16,1)
R016	Saturated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCS(16)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.549E-04	ALEACH(16)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(16)
	Distribution coefficients for daughter Th-228				
R016	Contaminated zone (cm**3/g)	2.000E+02	6.000E+04	---	DCNUCC(18)
R016	Unsaturated zone 1 (cm**3/g)	2.000E+02	6.000E+04	---	DCNUCU(18,1)
R016	Saturated zone (cm**3/g)	2.000E+02	6.000E+04	---	DCNUCS(18)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.426E-05	ALEACH(18)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(18)
	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	2.000E+02	6.000E+04	---	DCNUCC(19)
R016	Unsaturated zone 1 (cm**3/g)	2.000E+02	6.000E+04	---	DCNUCU(19,1)
R016	Saturated zone (cm**3/g)	2.000E+02	6.000E+04	---	DCNUCS(19)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.426E-05	ALEACH(19)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(19)

Attachment 9 Sheet No. 9 of 27
 Originators: S. W. Clark Date _____
 Chk'd By M. W. Perrott Date _____
 Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 9

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 10
Summary : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Site-Specific Parameter Summary (continued)					
Menu	Parameter	User	Default	Used by RESRAD	Parameter Name
(If different from user input)					
R016	Distribution coefficients for daughter Th-232				
R016	Contaminated zone (cm**3/g)	2.000E+02	6.000E+04	---	DCNUCC(20)
R016	Unsaturated zone 1 (cm**3/g)	2.000E+02	6.000E+04	---	DCNUCU(20,1)
R016	Saturated zone (cm**3/g)	2.000E+02	6.000E+04	---	DCNUCS(20)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.426E-05	ALEACH(20)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(20)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	2.000E+00	5.000E+01	---	DCNUCC(21)
R016	Unsaturated zone 1 (cm**3/g)	2.000E+00	5.000E+01	---	DCNUCU(21,1)
R016	Saturated zone (cm**3/g)	2.000E+00	5.000E+01	---	DCNUCS(21)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.119E-03	ALEACH(21)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(21)
R016	Distribution coefficients for daughter U-235				
R016	Contaminated zone (cm**3/g)	2.000E+00	5.000E+01	---	DCNUCC(22)
R016	Unsaturated zone 1 (cm**3/g)	2.000E+00	5.000E+01	---	DCNUCU(22,1)
R016	Saturated zone (cm**3/g)	2.000E+00	5.000E+01	---	DCNUCS(22)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.119E-03	ALEACH(22)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(22)
R016	Distribution coefficients for daughter U-236				
R016	Contaminated zone (cm**3/g)	2.000E+00	5.000E+01	---	DCNUCC(23)
R016	Unsaturated zone 1 (cm**3/g)	2.000E+00	5.000E+01	---	DCNUCU(23,1)
R016	Saturated zone (cm**3/g)	2.000E+00	5.000E+01	---	DCNUCS(23)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.119E-03	ALEACH(23)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(23)
R017	Inhalation rate (m**3/yr)	7.300E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	1.000E-04	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	4.000E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	8.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	6.000E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	2.000E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)

Attachment 9 Sheet No. 10 of 27
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 9

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 11
Summary : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
AAAAA					
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.100E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.700E+00	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	1.000E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	3.600E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	1.970E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	7.300E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	7.300E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	5.000E-01	5.000E-01	---	FR9
R018	Contamination fraction of plant food	-1	-1	0.500E+00	FPLANT
R018	Contamination fraction of meat	-1	-1	0.100E+01	FMEAT
R018	Contamination fraction of milk	-1	-1	0.100E+01	FMILK
R019	Livestock fodder intake for meat (kg/day)	6.800E+01	6.800E+01	---	LF15
R019	Livestock fodder intake for milk (kg/day)	5.500E+01	5.500E+01	---	LF16
R019	Livestock water intake for meat (L/day)	5.000E+01	5.000E+01	---	LW15
R019	Livestock water intake for milk (L/day)	1.600E+02	1.600E+02	---	LW16
R019	Livestock soil intake (kg/day)	5.000E-01	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	1.000E-04	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	1.000E+00	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	not used	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	1.000E+00	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R198	Wet weight crop yield for Non-Leafy (kg/m**2)	7.000E-01	7.000E-01	---	YV(1)
R198	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R198	Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---	YV(3)
R198	Growing Season for Non-Leafy (years)	1.700E-01	1.700E-01	---	TE(1)
R198	Growing Season for Leafy (years)	2.500E-01	2.500E-01	---	TE(2)
R198	Growing Season for Fodder (years)	8.000E-02	8.000E-02	---	TE(3)

Attachment 9 Sheet No. 11 of 27
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 9

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1RESRAD, Version 6.3      T« Limit = 180 days      02/02/2007 19:48 Page 12
Summary : 118-B-1 Staging Pile Area RESRAD Evaluation
File    : 118-B-1 SPA Area.RAD
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Site-Specific Parameter Summary (continued)					
Menu	Parameter	User Input	Default	Used by RESRAD	Parameter Name
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	1.000E+00	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDY(2)
R19B	Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RDY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	2.000E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	2.000E-05	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	3.000E-02	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	2.000E-02	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	9.800E-01	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	3.000E-01	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	7.000E-07	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	1.000E-10	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	8.000E-01	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	2.000E-01	2.000E-01	---	AVFG5
C14	DCF correction factor for gaseous forms of C14	1.234E+02	0.000E+00	---	CO2F
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	not used	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	not used	2.000E+00	---	HMXZ
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	---	FAI
R021	Building depth below ground surface (m)	not used	1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	not used	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	not used	1.500E-01	---	EMANA(2)

Attachment 9 Sheet No. 12 of 27
 Originators: S. W. Clark Date _____
 Chk'd By M. W. Perrott Date _____
 Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 9

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 13
Summary : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
TITL	Number of graphical time points	32	---	---	NPTS
TITL	Maximum number of integration points for dose	5	---	---	LYMAX
TITL	Maximum number of integration points for risk	9	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	suppressed

Attachment 9 Sheet No. 13 of 27
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 9

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 14
Summary : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Contaminated Zone Dimensions	Initial Soil Concentrations, pCi/g
Area: 20022.00 square meters	Am-241 6.100E-02
Thickness: 4.60 meters	C-14 1.600E+00
Cover Depth: 0.00 meters	Co-60 2.800E-02
	Cs-137 5.700E-01
	Eu-152 2.000E-01
	H-3 1.460E+01
	Ni-63 5.050E+00
	Pu-239 1.030E-01
	Pu-240 2.200E-02
	Sr-90 2.360E-01

0

Total Dose TDOSE(t), mrem/yr
Basic Radiation Dose Limit = 4.000E+00 mrem/yr
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)
t (years): 0.000E+00 1.000E+00 3.000E+00 1.000E+01 1.100E+01 3.000E+01 1.000E+02 3.000E+02 1.000E+03
TDOSE(t): 6.962E+00 4.376E+00 3.348E+00 2.604E+00 2.524E+00 1.576E+00 3.216E-01 7.499E-02 5.463E-02
M(t): 1.741E+00 1.094E+00 8.370E-01 6.510E-01 6.309E-01 3.940E-01 8.039E-02 1.875E-02 1.366E-02
Maximum TDOSE(t): 6.962E+00 mrem/yr at t = 0.000E+00 years

Attachment 9 Sheet No. 14 of 27
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 9

1RESRAD, Version 6.3 T< Limit = 180 days 02/02/2007 19:48 Page 15
Summary : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)									
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years									
Water Independent Pathways (Inhalation excludes radon)									
	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil		
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Nuclide	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.
Am-241	1.768E-03 0.0003	1.174E-03 0.0002	0.000E+00 0.0000	1.251E-02 0.0018	2.269E-04 0.0000	2.464E-05 0.0000	1.296E-02 0.0019		
C-14	7.628E-06 0.0000	2.930E-04 0.0000	0.000E+00 0.0000	1.589E+00 0.2283	7.384E-01 0.1061	5.601E-01 0.0804	1.034E-04 0.0000		
Co-60	2.743E-01 0.0394	2.492E-07 0.0000	0.000E+00 0.0000	3.181E-03 0.0005	3.018E-03 0.0004	6.916E-04 0.0001	4.121E-05 0.0000		
Cs-137	1.234E+00 0.1773	7.796E-07 0.0000	0.000E+00 0.0000	6.350E-02 0.0091	9.798E-02 0.0141	6.085E-02 0.0087	1.645E-03 0.0002		
Eu-152	8.817E-01 0.1266	1.868E-06 0.0000	0.000E+00 0.0000	1.780E-04 0.0000	6.094E-05 0.0000	4.027E-06 0.0000	7.375E-05 0.0000		
H-3	0.000E+00 0.0000	1.114E-02 0.0016	0.000E+00 0.0000	2.219E-01 0.0319	6.268E-02 0.0090	1.010E-01 0.0145	3.373E-05 0.0000		
Ni-63	0.000E+00 0.0000	1.373E-06 0.0000	0.000E+00 0.0000	8.179E-03 0.0012	2.038E-03 0.0003	1.887E-02 0.0027	1.695E-04 0.0000		
Pu-239	1.986E-05 0.0000	1.917E-03 0.0003	0.000E+00 0.0000	2.056E-02 0.0030	7.459E-04 0.0001	2.024E-05 0.0000	2.129E-02 0.0031		
Pu-240	2.164E-06 0.0000	4.093E-04 0.0001	0.000E+00 0.0000	4.392E-03 0.0006	1.593E-04 0.0000	4.324E-06 0.0000	4.548E-03 0.0007		
Sr-90	3.697E-03 0.0005	1.323E-05 0.0000	0.000E+00 0.0000	6.023E-01 0.0865	2.145E-01 0.0308	1.211E-01 0.0174	2.081E-03 0.0003		
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	2.396E+00 0.3441	1.495E-02 0.0021	0.000E+00 0.0000	2.526E+00 0.3628	1.120E+00 0.1608	8.627E-01 0.1239	4.294E-02 0.0062		

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)									
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years									
Water Dependent Pathways									
	Water	Fish	Radon	Plant	Meat	Milk	All Pathways*		
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Nuclide	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.
Am-241	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	2.866E-02 0.0041	
C-14	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	2.888E+00 0.4149	
Co-60	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	2.812E-01 0.0404	
Cs-137	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.458E+00 0.2094	
Eu-152	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	8.820E-01 0.1267	
H-3	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	3.968E-01 0.0570	
Ni-63	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	2.926E-02 0.0042	
Pu-239	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	4.456E-02 0.0064	
Pu-240	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	9.515E-03 0.0014	
Sr-90	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	9.437E-01 0.1355	
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	6.962E+00 1.0000	

0*Sum of all water independent and dependent pathways.

Attachment 9 Sheet No. 15 of 27
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 9

1RESRAD, Version 6.3 T< Limit = 180 days 02/02/2007 19:48 Page 16
Summary : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p) As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years Water Independent Pathways (Inhalation excludes radon)									
	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil		
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA		
Nuclide	mrem/yr	mrem/yr	mrem/yr	mrem/yr	mrem/yr	mrem/yr	mrem/yr		
Am-241	1.765E-03	0.0004	1.172E-03	0.0003	0.000E+00	0.0000	1.249E-02	0.0029	2.266E-04
C-14	1.802E-06	0.0000	6.922E-05	0.0000	0.000E+00	0.0000	3.787E-01	0.0865	1.809E-01
Co-60	2.404E-01	0.0549	2.184E-07	0.0000	0.000E+00	0.0000	2.789E-03	0.0006	2.646E-03
Cs-137	1.206E+00	0.2755	7.616E-07	0.0000	0.000E+00	0.0000	6.203E-02	0.0142	9.572E-02
Eu-152	8.370E-01	0.1912	1.773E-06	0.0000	0.000E+00	0.0000	1.689E-04	0.0000	5.785E-05
H-3	0.000E+00	0.0000	3.881E-03	0.0009	0.000E+00	0.0000	7.772E-02	0.0178	2.233E-02
Ni-63	0.000E+00	0.0000	1.362E-06	0.0000	0.000E+00	0.0000	8.117E-03	0.0019	2.023E-03
Pu-239	1.986E-05	0.0000	1.916E-03	0.0004	0.000E+00	0.0000	2.056E-02	0.0047	7.458E-04
Pu-240	2.164E-06	0.0000	4.093E-04	0.0001	0.000E+00	0.0000	4.391E-03	0.0010	1.593E-04
Sr-90	3.608E-03	0.0008	1.292E-05	0.0000	0.000E+00	0.0000	5.879E-01	0.1343	2.093E-01
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	2.288E+00	0.5229	7.464E-03	0.0017	0.000E+00	0.0000	1.155E+00	0.2639	5.142E-01

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p) As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years Water Dependent Pathways									
	Water	Fish	Radon	Plant	Meat	Milk	All Pathways*		
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA		
Nuclide	mrem/yr	mrem/yr	mrem/yr	mrem/yr	mrem/yr	mrem/yr	mrem/yr		
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.861E-02
C-14	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.956E-01
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.465E-01
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.424E+00
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.373E-01
H-3	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.397E-01
Ni-63	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.904E-02
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.455E-02
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.513E-03
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.211E-01
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.376E+00

*Sum of all water independent and dependent pathways.

Attachment 9 Sheet No. 16 of 27
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 9

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 17
Summary : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)														
As mrem/yr and Fraction of Total Dose At t = 3.00E+00 years														
Water Independent Pathways (Inhalation excludes radon)														
Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Am-241	1.759E-03	0.0005	1.168E-03	0.0003	0.000E+00	0.0000	1.245E-02	0.0037	2.258E-04	0.0001	2.451E-05	0.0000	1.289E-02	0.0039
C-14	1.006E-07	0.0000	3.864E-06	0.0000	0.000E+00	0.0000	2.114E-02	0.0063	1.010E-02	0.0030	7.585E-03	0.0023	1.364E-06	0.0000
Co-60	1.848E-01	0.0552	1.679E-07	0.0000	0.000E+00	0.0000	2.143E-03	0.0006	2.033E-03	0.0006	4.659E-04	0.0001	2.776E-05	0.0000
Cs-137	1.151E+00	0.3437	7.269E-07	0.0000	0.000E+00	0.0000	5.921E-02	0.0177	9.136E-02	0.0273	5.674E-02	0.0169	1.534E-03	0.0005
Eu-152	7.542E-01	0.2253	1.598E-06	0.0000	0.000E+00	0.0000	1.522E-04	0.0000	5.213E-05	0.0000	3.445E-06	0.0000	6.309E-05	0.0000
H-3	0.000E+00	0.0000	4.712E-04	0.0001	0.000E+00	0.0000	9.438E-03	0.0028	2.712E-03	0.0008	4.344E-03	0.0013	1.427E-06	0.0000
Ni-63	0.000E+00	0.0000	1.342E-06	0.0000	0.000E+00	0.0000	7.995E-03	0.0024	1.992E-03	0.0006	1.845E-02	0.0055	1.657E-04	0.0000
Pu-239	1.985E-05	0.0000	1.916E-03	0.0006	0.000E+00	0.0000	2.056E-02	0.0061	7.457E-04	0.0002	2.024E-05	0.0000	2.129E-02	0.0064
Pu-240	2.163E-06	0.0000	4.091E-04	0.0001	0.000E+00	0.0000	4.390E-03	0.0013	1.592E-04	0.0000	4.322E-06	0.0000	4.546E-03	0.0014
Sr-90	3.437E-03	0.0010	1.230E-05	0.0000	0.000E+00	0.0000	5.601E-01	0.1673	1.994E-01	0.0596	1.126E-01	0.0336	1.935E-03	0.0006
iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii
Total	2.095E+00	0.6257	3.984E-03	0.0012	0.000E+00	0.0000	6.975E-01	0.2083	3.088E-01	0.0922	2.003E-01	0.0598	4.245E-02	0.0127

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)														
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years														
Water Dependent Pathways														
	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
C-14	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
H-3	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ni-63	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
0*Sum of all water independent and dependent pathways.														

0*Sum of all water independent and dependent pathways.

Attachment 9 Sheet No. 17 of 27
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 9

1RESRAD, Version 6.3 T_{1/2} Limit = 180 days 02/02/2007 19:48 Page 18
Summary : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Total Dose Contributions TD0SE(i,p,t) for Individual Radionuclides (i) and Pathways (p) As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years Water Independent Pathways (Inhalation excludes radon)									
	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil		
Radio- Nuclide	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.
Am-241	1.739E-03 0.0007	1.154E-03 0.0004	0.000E+00 0.0000	1.231E-02 0.0047	2.233E-04 0.0001	2.423E-05 0.0000	1.274E-02 0.0049		
C-14	4.135E-12 0.0000	1.588E-10 0.0000	0.000E+00 0.0000	8.690E-07 0.0000	4.151E-07 0.0000	3.118E-07 0.0000	5.604E-11 0.0000		
Co-60	7.348E-02 0.0282	6.676E-08 0.0000	0.000E+00 0.0000	8.523E-04 0.0003	8.086E-04 0.0003	1.853E-04 0.0001	1.104E-05 0.0000		
Cs-137	9.774E-01 0.3753	6.174E-07 0.0000	0.000E+00 0.0000	5.029E-02 0.0193	7.760E-02 0.0298	4.820E-02 0.0185	1.303E-03 0.0005		
Eu-152	5.239E-01 0.2012	1.110E-06 0.0000	0.000E+00 0.0000	1.057E-04 0.0000	3.621E-05 0.0000	2.393E-06 0.0000	4.382E-05 0.0000		
H-3	0.000E+00 0.0000	2.940E-07 0.0000	0.000E+00 0.0000	5.889E-06 0.0000	1.692E-06 0.0000	2.710E-06 0.0000	8.905E-10 0.0000		
Ni-63	0.000E+00 0.0000	1.272E-06 0.0000	0.000E+00 0.0000	7.582E-03 0.0029	1.889E-03 0.0007	1.749E-02 0.0067	1.571E-04 0.0001		
Pu-239	1.984E-05 0.0000	1.915E-03 0.0007	0.000E+00 0.0000	2.054E-02 0.0079	7.453E-04 0.0003	2.023E-05 0.0000	2.128E-02 0.0082		
Pu-240	2.160E-06 0.0000	4.087E-04 0.0002	0.000E+00 0.0000	4.385E-03 0.0017	1.591E-04 0.0001	4.317E-06 0.0000	4.541E-03 0.0017		
Sr-90	2.901E-03 0.0011	1.038E-05 0.0000	0.000E+00 0.0000	4.727E-01 0.1815	1.683E-01 0.0646	9.507E-02 0.0365	1.633E-03 0.0006		
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii		
Total	1.579E+00 0.6065	3.492E-03 0.0013	0.000E+00 0.0000	5.687E-01 0.2184	2.498E-01 0.0959	1.610E-01 0.0618	4.171E-02 0.0160		

Total Dose Contributions TD0SE(i,p,t) for Individual Radionuclides (i) and Pathways (p) As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years Water Dependent Pathways									
	Water	Fish	Radon	Plant	Meat	Milk	All Pathways*		
Radio- Nuclide	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.
Am-241	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	2.819E-02 0.0108		
C-14	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.596E-06 0.0000		
Co-60	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	7.534E-02 0.0289		
Cs-137	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.155E+00 0.4434		
Eu-152	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	5.241E-01 0.2013		
H-3	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.059E-05 0.0000		
Ni-63	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	2.712E-02 0.0104		
Pu-239	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	4.452E-02 0.0171		
Pu-240	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	9.499E-03 0.0036		
Sr-90	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	7.406E-01 0.2844		
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii		
Total	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	2.604E+00 1.0000		

0*Sum of all water independent and dependent pathways.

Attachment 9 Sheet No. 18 of 27
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 9

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 19
Summary : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)															
As mrem/yr and Fraction of Total Dose At t = 1.100E+01 years															
Water Independent Pathways (Inhalation excludes radon)															
0	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil		
0	Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	
	Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
	Am-241	1.736E-03	0.0007	1.153E-03	0.0005	0.000E+00	0.0000	1.229E-02	0.0049	2.229E-04	0.0001	2.419E-05	0.0000	1.272E-02	0.0050
	C-14	9.770E-13	0.0000	3.752E-11	0.0000	0.000E+00	0.0000	2.053E-07	0.0000	9.807E-08	0.0000	7.366E-08	0.0000	1.324E-11	0.0000
	Co-60	6.441E-02	0.0255	5.852E-08	0.0000	0.000E+00	0.0000	7.471E-04	0.0003	7.088E-04	0.0003	1.624E-04	0.0001	9.678E-06	0.0000
	Cs-137	9.548E-01	0.3784	6.032E-07	0.0000	0.000E+00	0.0000	4.913E-02	0.0195	7.581E-02	0.0300	4.708E-02	0.0187	1.273E-03	0.0005
	Eu-152	4.973E-01	0.1971	1.054E-06	0.0000	0.000E+00	0.0000	1.004E-04	0.0000	3.438E-05	0.0000	2.271E-06	0.0000	4.160E-05	0.0000
	H-3	0.000E+00	0.0000	1.025E-07	0.0000	0.000E+00	0.0000	2.052E-06	0.0000	5.896E-07	0.0000	9.445E-07	0.0000	3.103E-10	0.0000
	Ni-63	0.000E+00	0.0000	1.263E-06	0.0000	0.000E+00	0.0000	7.525E-03	0.0030	1.875E-03	0.0007	1.736E-02	0.0069	1.560E-04	0.0001
	Pu-239	1.984E-05	0.0000	1.915E-03	0.0008	0.000E+00	0.0000	2.054E-02	0.0081	7.452E-04	0.0003	2.022E-05	0.0000	2.127E-02	0.0084
	Pu-240	2.160E-06	0.0000	4.086E-04	0.0002	0.000E+00	0.0000	4.384E-03	0.0017	1.590E-04	0.0001	4.316E-06	0.0000	4.540E-03	0.0018
	Sr-90	2.832E-03	0.0011	1.014E-05	0.0000	0.000E+00	0.0000	4.613E-01	0.1828	1.643E-01	0.0651	9.279E-02	0.0368	1.594E-03	0.0006
	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
	Total	1.521E+00	0.6028	3.489E-03	0.0014	0.000E+00	0.0000	5.561E-01	0.2203	2.438E-01	0.0966	1.575E-01	0.0624	4.161E-02	0.0165

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)														
As mrem/yr and Fraction of Total Dose At t = 1.100E+01 years														
Water Dependent Pathways														
	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Radio-	AAAAA		AAAAA		AAAAA		AAAAA		AAAAA		AAAAA		AAAAA	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
C-14	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.814E-02	0.0112
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.771E-07	0.0000
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.604E-02	0.0262
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.128E+00	0.4470
H-3	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.975E-01	0.1971
Ni-63	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.689E-06	0.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.692E-02	0.0107
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.452E-02	0.0176
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.498E-03	0.0038
iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.524E+00	1.0000
0*Sum of all water independent and dependent pathways.														

0*Sum of all water independent and dependent pathways.

Attachment 9 Sheet No. 19 of 27
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 9

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 20
Summary : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)										
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years										
Water Independent Pathways (Inhalation excludes radon)										
0	Ground		Inhalation		Radon		Plant		Meat	
0										
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Am-241	1.683E-03	0.0011	1.117E-03	0.0007	0.000E+00	0.0000	1.191E-02	0.0076	2.161E-04	0.0001
C-14	1.215E-24	0.0000	4.667E-23	0.0000	0.000E+00	0.0000	2.554E-19	0.0000	1.220E-19	0.0000
Co-60	5.273E-03	0.0033	4.791E-09	0.0000	0.000E+00	0.0000	6.116E-05	0.0000	5.803E-05	0.0000
Cs-137	6.130E-01	0.3890	3.873E-07	0.0000	0.000E+00	0.0000	3.154E-02	0.0200	4.867E-02	0.0309
Eu-152	1.850E-01	0.1174	3.919E-07	0.0000	0.000E+00	0.0000	3.734E-05	0.0000	1.279E-05	0.0000
H-3	0.000E+00	0.0000	2.050E-16	0.0000	0.000E+00	0.0000	4.105E-15	0.0000	1.180E-15	0.0000
Ni-63	0.000E+00	0.0000	1.093E-06	0.0000	0.000E+00	0.0000	6.515E-03	0.0041	1.623E-03	0.0010
Pu-239	1.981E-05	0.0000	1.912E-03	0.0012	0.000E+00	0.0000	2.051E-02	0.0130	7.440E-04	0.0005
Pu-240	2.154E-06	0.0000	4.074E-04	0.0003	0.000E+00	0.0000	4.371E-03	0.0028	1.585E-04	0.0001
Sr-90	1.787E-03	0.0011	6.396E-06	0.0000	0.000E+00	0.0000	2.911E-01	0.1847	1.037E-01	0.0658
iiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	8.068E-01	0.5119	3.444E-03	0.0022	0.000E+00	0.0000	3.660E-01	0.2323	1.551E-01	0.0984

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)										
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years										
Water Dependent Pathways										
0	Water		Fish		Radon		Plant		Meat	
0										
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
C-14	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
H-3	6.739E-02	0.0428	5.184E-05	0.0000	0.000E+00	0.0000	1.975E-02	0.0125	3.236E-03	0.0021
Ni-63	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
iiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	6.739E-02	0.0428	5.184E-05	0.0000	0.000E+00	0.0000	1.975E-02	0.0125	3.236E-03	0.0021

0*Sum of all water independent and dependent pathways.

Attachment 9 Sheet No. 20 of 27
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 9

1RESRAD, Version 6.3 T< Limit = 180 days 02/02/2007 19:48 Page 21
Summary : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)														
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years														
Water Independent Pathways (Inhalation excludes radon)														
0	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
0	Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
	Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr
	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
	Am-241	1.499E-03	0.0047	9.945E-04	0.0031	0.000E+00	0.0000	1.061E-02	0.0330	1.928E-04	0.0006	2.088E-05	0.0001	1.098E-02
	C-14	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00
	Co-60	5.221E-07	0.0000	4.743E-13	0.0000	0.000E+00	0.0000	6.055E-09	0.0000	5.745E-09	0.0000	1.316E-09	0.0000	7.844E-11
	Cs-137	1.198E-01	0.3726	7.568E-08	0.0000	0.000E+00	0.0000	6.165E-03	0.0192	9.512E-03	0.0296	5.908E-03	0.0184	1.597E-04
	Eu-152	4.838E-03	0.0150	1.025E-08	0.0000	0.000E+00	0.0000	9.765E-07	0.0000	3.344E-07	0.0000	2.210E-08	0.0000	4.047E-07
	H-3	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00
	Ni-63	0.000E+00	0.0000	6.431E-07	0.0000	0.000E+00	0.0000	3.832E-03	0.0119	9.550E-04	0.0030	8.842E-03	0.0275	7.943E-05
	Pu-239	1.970E-05	0.0001	1.901E-03	0.0059	0.000E+00	0.0000	2.039E-02	0.0634	7.397E-04	0.0023	2.008E-05	0.0001	2.112E-02
	Pu-240	2.129E-06	0.0000	4.028E-04	0.0013	0.000E+00	0.0000	4.322E-03	0.0134	1.568E-04	0.0005	4.255E-06	0.0000	4.476E-03
	Sr-90	3.276E-04	0.0010	1.173E-06	0.0000	0.000E+00	0.0000	5.337E-02	0.1660	1.900E-02	0.0591	1.073E-02	0.0334	1.844E-04
	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
	Total	1.265E-01	0.3934	3.300E-03	0.0103	0.000E+00	0.0000	9.869E-02	0.3069	3.056E-02	0.0950	2.553E-02	0.0794	3.699E-02

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)														
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years														
Water Dependent Pathways														
	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.429E-02	0.0755
C-14	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.353E-07	0.0000
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.416E-01	0.4402
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.840E-03	0.0151
H-3	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ni-63	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.371E-02	0.0426
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.419E-02	0.1374
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.363E-03	0.0291
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.362E-02	0.2600
iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.216E-01	1.0000
0*Sum of all water independent and dependent pathways.														

0*Sum of all water independent and dependent pathways.

Attachment 9 Sheet No. 21 of 27
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 9

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 22
Summary : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Total Dose Contributions TD0SE(i,p,t) for Individual Radionuclides (i) and Pathways (p)									
As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years									
Water Independent Pathways (Inhalation excludes radon)									
	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil		
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA		
Nuclide	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.		
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA		
Am-241	1.078E-03 0.0144	7.139E-04 0.0095	0.000E+00 0.0000	7.629E-03 0.1017	1.392E-04 0.0019	1.500E-05 0.0002	7.880E-03 0.1051		
C-14	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000		
Co-60	1.892E-18 0.0000	1.718E-24 0.0000	0.000E+00 0.0000	2.194E-20 0.0000	2.081E-20 0.0000	4.769E-21 0.0000	2.842E-22 0.0000		
Cs-137	1.129E-03 0.0151	7.134E-10 0.0000	0.000E+00 0.0000	5.811E-05 0.0008	8.966E-05 0.0012	5.569E-05 0.0007	1.505E-06 0.0000		
Eu-152	1.457E-07 0.0000	3.087E-13 0.0000	0.000E+00 0.0000	2.940E-11 0.0000	1.007E-11 0.0000	6.653E-13 0.0000	1.219E-11 0.0000		
H-3	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000		
Ni-63	0.000E+00 0.0000	1.412E-07 0.0000	0.000E+00 0.0000	8.414E-04 0.0112	2.097E-04 0.0028	1.941E-03 0.0259	1.744E-05 0.0002		
Pu-239	1.938E-05 0.0003	1.869E-03 0.0249	0.000E+00 0.0000	2.006E-02 0.2675	7.275E-04 0.0097	1.975E-05 0.0003	2.077E-02 0.2770		
Pu-240	2.062E-06 0.0000	3.901E-04 0.0052	0.000E+00 0.0000	4.186E-03 0.0558	1.518E-04 0.0020	4.122E-06 0.0001	4.334E-03 0.0578		
Sr-90	2.572E-06 0.0000	9.206E-09 0.0000	0.000E+00 0.0000	4.190E-04 0.0056	1.492E-04 0.0020	8.428E-05 0.0011	1.447E-06 0.0000		
iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii		
Total	2.232E-03 0.0298	2.973E-03 0.0397	0.000E+00 0.0000	3.319E-02 0.4426	1.467E-03 0.0196	2.120E-03 0.0283	3.300E-02 0.4401		

Total Dose Contributions TD0SE(i,p,t) for Individual Radionuclides (i) and Pathways (p)									
As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years									
Water Dependent Pathways									
	Water	Fish	Radon	Plant	Meat	Milk	All Pathways*		
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA		
Nuclide	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.		
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA		
Am-241	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.746E-02 0.2328		
C-14	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000		
Co-60	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000		
Cs-137	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.939E-18 0.0000		
Eu-152	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.334E-03 0.0178		
H-3	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.457E-07 0.0000		
Ni-63	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	3.010E-03 0.0401		
Pu-239	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	4.346E-02 0.5796		
Pu-240	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	9.068E-03 0.1209		
Sr-90	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	6.565E-04 0.0088		
iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii		
Total	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	7.499E-02 1.0000		

*Sum of all water independent and dependent pathways.

Attachment 9 Sheet No. 22 of 27
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 9

1RESRAD, Version 6.3 T< Limit = 180 days 02/02/2007 19:48 Page 23
Summary : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p) As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years Water Independent Pathways (Inhalation excludes radon)									
	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil		
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Nuclide	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.
Am-241	3.413E-04 0.0062	2.238E-04 0.0041	0.000E+00 0.0000	2.415E-03 0.0442	4.509E-05 0.0008	4.716E-06 0.0001	2.470E-03 0.0452		
C-14	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000		
Co-60	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000		
Cs-137	9.182E-11 0.0000	5.800E-17 0.0000	0.000E+00 0.0000	4.724E-12 0.0000	7.290E-12 0.0000	4.528E-12 0.0000	1.224E-13 0.0000		
Eu-152	2.182E-23 0.0000	7.164E-17 0.0000	0.000E+00 0.0000	1.542E-16 0.0000	5.281E-17 0.0000	1.396E-18 0.0000	6.390E-17 0.0000		
H-3	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000		
Ni-63	0.000E+00 0.0000	7.002E-10 0.0000	0.000E+00 0.0000	4.173E-06 0.0001	1.040E-06 0.0000	9.627E-06 0.0002	8.649E-08 0.0000		
Pu-239	1.829E-05 0.0003	1.764E-03 0.0323	0.000E+00 0.0000	1.892E-02 0.3464	6.864E-04 0.0126	1.863E-05 0.0003	1.960E-02 0.3587		
Pu-240	1.843E-06 0.0000	3.487E-04 0.0064	0.000E+00 0.0000	3.741E-03 0.0685	1.357E-04 0.0025	3.684E-06 0.0001	3.874E-03 0.0709		
Sr-90	1.103E-13 0.0000	3.948E-16 0.0000	0.000E+00 0.0000	1.797E-11 0.0000	6.398E-12 0.0000	3.614E-12 0.0000	6.207E-14 0.0000		
iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii
Total	3.614E-04 0.0066	2.336E-03 0.0428	0.000E+00 0.0000	2.508E-02 0.4591	8.683E-04 0.0159	3.666E-05 0.0007	2.594E-02 0.4748		

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p) As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years Water Dependent Pathways									
	Water	Fish	Radon	Plant	Meat	Milk	All Pathways*		
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Nuclide	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.
Am-241	1.706E-07 0.0000	1.641E-09 0.0000	0.000E+00 0.0000	1.886E-08 0.0000	1.480E-09 0.0000	7.535E-09 0.0000	5.500E-03 0.1007		
C-14	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000		
Co-60	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000		
Cs-137	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.085E-10 0.0000		
Eu-152	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	3.439E-16 0.0000		
H-3	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000		
Ni-63	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.493E-05 0.0003		
Pu-239	6.496E-07 0.0000	6.995E-09 0.0000	0.000E+00 0.0000	7.182E-08 0.0000	6.392E-09 0.0000	2.736E-08 0.0000	4.101E-02 0.7506		
Pu-240	3.878E-06 0.0001	3.637E-08 0.0000	0.000E+00 0.0000	4.287E-07 0.0000	3.373E-08 0.0000	1.718E-07 0.0000	8.110E-03 0.1484		
Sr-90	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	2.815E-11 0.0000		
iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii
Total	4.698E-06 0.0001	4.501E-08 0.0000	0.000E+00 0.0000	5.194E-07 0.0000	4.160E-08 0.0000	2.067E-07 0.0000	5.463E-02 1.0000		

0*Sum of all water independent and dependent pathways.

Attachment 9 Sheet No. 23 of 27
Originators: S. W. Clark Date
Chk'd By: M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 9

1RESRAD, Version 6.3 T_{1/2} Limit = 180 days 02/02/2007 19:48 Page 24
Summary : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Dose/Source Ratios Summed Over All Pathways											
Parent and Progeny Principal Radionuclide Contributions Indicated											
0	Parent (i)	Product (j)	Thread Fraction	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)							
	AAAAA	AAAAA	AAAAA	0.000E+00	1.000E+00	3.000E+00	1.000E+01	1.100E+01	3.000E+01	1.000E+02	3.000E+02
	Am-241	Am-241	1.000E+00	4.699E-01	4.691E-01	4.675E-01	4.621E-01	4.614E-01	4.471E-01	3.981E-01	2.857E-01
	Am-241	Np-237+D	1.000E+00	9.551E-07	2.987E-06	7.048E-06	2.111E-05	2.310E-05	6.001E-05	1.822E-04	4.308E-04
	Am-241	U-233	1.000E+00	2.715E-14	1.568E-13	7.423E-13	6.130E-12	7.312E-12	4.811E-11	4.367E-10	2.444E-09
	Am-241	Th-229+D	1.000E+00	9.444E-18	1.364E-16	1.565E-15	4.071E-14	5.335E-14	9.570E-13	3.002E-11	5.630E-10
	Am-241	αDSR(j)		4.699E-01	4.691E-01	4.675E-01	4.622E-01	4.614E-01	4.471E-01	3.983E-01	2.862E-01
	OC-14	C-14	1.000E+00	1.805E+00	4.348E-01	2.427E-02	9.975E-07	2.357E-07	2.931E-19	0.000E+00	0.000E+00
	OC-60	Co-60	1.000E+00	1.004E+01	8.804E+00	6.765E+00	2.691E+00	2.359E+00	1.931E-01	1.912E-05	6.926E-17
	OCs-137+D	Cs-137+D	1.000E+00	2.558E+00	2.499E+00	2.385E+00	2.026E+00	1.979E+00	1.271E+00	2.483E-01	2.341E-03
	OEu-152	Eu-152	7.208E-01	3.179E+00	3.017E+00	2.719E+00	1.889E+00	1.793E+00	6.669E-01	1.744E-02	5.252E-07
	OEu-152	Eu-152	2.792E-01	1.231E+00	1.169E+00	1.053E+00	7.316E-01	6.945E-01	2.583E-01	6.756E-03	2.034E-07
	Eu-152	Gd-152	2.792E-01	4.456E-17	1.307E-16	2.900E-16	7.334E-16	7.845E-16	1.386E-15	1.731E-15	1.736E-15
	Eu-152	αDSR(j)		1.231E+00	1.169E+00	1.053E+00	7.316E-01	6.945E-01	2.583E-01	6.756E-03	2.034E-07
	OH-3	H-3	1.000E+00	2.718E-02	9.569E-03	1.162E-03	7.251E-07	2.527E-07	6.895E-03	6.201E-34	0.000E+00
	ONi-63	Ni-63	1.000E+00	5.794E-03	5.750E-03	5.663E-03	5.371E-03	5.330E-03	4.615E-03	2.715E-03	5.960E-04
	OPu-239	Pu-239	1.000E+00	4.326E-01	4.326E-01	4.325E-01	4.322E-01	4.322E-01	4.315E-01	4.290E-01	4.220E-01
	Pu-239	U-235+D	1.000E+00	2.769E-10	8.307E-10	1.930E-09	5.688E-09	6.214E-09	1.570E-08	4.354E-08	8.409E-08
	Pu-239	Pa-231	1.000E+00	2.746E-14	2.066E-13	1.124E-12	1.010E-11	1.210E-11	8.263E-11	7.966E-10	5.216E-09
	Pu-239	Ac-227+D	1.000E+00	1.623E-16	2.155E-15	2.299E-14	5.466E-13	7.099E-13	1.105E-11	2.325E-10	2.207E-09
	Pu-239	αDSR(j)		4.326E-01	4.326E-01	4.325E-01	4.322E-01	4.322E-01	4.315E-01	4.290E-01	4.220E-01
	OPu-240	Pu-240	4.950E-08	2.141E-08	2.140E-08	2.140E-08	2.137E-08	2.137E-08	2.131E-08	2.107E-08	2.040E-08
	OPu-240	Pu-240	1.000E+00	4.325E-01	4.324E-01	4.323E-01	4.318E-01	4.317E-01	4.304E-01	4.256E-01	4.122E-01
	Pu-240	U-236	1.000E+00	1.027E-09	3.136E-09	7.324E-09	2.164E-08	2.364E-08	5.974E-08	1.652E-07	3.159E-07
	Pu-240	Th-232	1.000E+00	1.018E-19	6.859E-19	3.551E-18	3.109E-17	3.720E-17	2.523E-16	2.431E-15	1.603E-14
	Pu-240	Ra-228+D	1.000E+00	5.069E-20	7.744E-19	8.726E-18	1.929E-16	2.469E-16	3.003E-15	4.113E-14	3.026E-13
	Pu-240	Th-228+D	1.000E+00	3.446E-21	9.644E-20	2.025E-18	9.128E-17	1.224E-16	2.114E-15	3.387E-14	2.592E-13
	Pu-240	αDSR(j)		4.325E-01	4.324E-01	4.323E-01	4.318E-01	4.317E-01	4.304E-01	4.256E-01	4.122E-01
	OSr-90+D	Sr-90+D	1.000E+00	3.999E+00	3.903E+00	3.718E+00	3.138E+00	3.063E+00	1.933E+00	3.543E-01	2.782E-03
	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii

The DSR includes contributions from associated (half-life ≤ 180 days) daughters.

Attachment 9 Sheet No. 24 of 27
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 9

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 25
Summary : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 4.000E+00 mrem/yr

ONuclide	(i)	t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	1.100E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
Am-241	8.513E+00	8.527E+00	8.556E+00	8.655E+00	8.669E+00	8.946E+00	1.004E+01	1.398E+01	4.436E+01	
C-14	2.216E+00	9.200E+00	1.648E+02	4.010E+06	1.697E+07	*4.455E+12	*4.455E+12	*4.455E+12	*4.455E+12	
Co-60	3.983E-01	4.543E-01	5.913E-01	1.487E+00	1.696E+00	2.072E+01	2.092E+05	*1.132E+15	*1.132E+15	
Cs-137	1.564E+00	1.601E+00	1.677E+00	1.974E+00	2.021E+00	3.148E+00	1.611E+01	1.709E+03	2.102E+10	
Eu-152	9.070E-01	9.555E-01	1.060E+00	1.526E+00	1.608E+00	4.323E+00	1.653E+02	5.490E+06	*1.765E+14	
H-3	1.472E+02	4.180E+02	3.442E+03	5.517E+06	1.583E+07	5.802E+02	*9.597E+15	*9.597E+15	*9.597E+15	
Ni-63	6.904E+02	6.957E+02	7.063E+02	7.448E+02	7.504E+02	8.667E+02	1.473E+03	6.711E+03	1.353E+06	
Pu-239	9.246E+00	9.247E+00	9.249E+00	9.254E+00	9.255E+00	9.270E+00	9.324E+00	9.480E+00	1.005E+01	
Pu-240	9.249E+00	9.250E+00	9.253E+00	9.264E+00	9.265E+00	9.293E+00	9.398E+00	9.704E+00	1.085E+01	
Sr-90	1.000E+00	1.025E+00	1.076E+00	1.275E+00	1.306E+00	2.070E+00	1.129E+01	1.438E+03	3.353E+10	
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	
*At specific activity limit										

0										
Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)										
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g										
at tmin = time of minimum single radionuclide soil guideline										
and at tmax = time of maximum total dose = 0.000E+00 years										
ONuclide	Initial	tmin	DSR(i,tmin)	G(i,tmin)	DSR(i,tmax)	G(i,tmax)				
(i)	(pCi/g)	(years)	(pCi/g)	(pCi/g)	(pCi/g)	(pCi/g)				
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA				
Am-241	6.100E-02	0.000E+00	4.699E-01	8.513E+00	4.699E-01	8.513E+00				
C-14	1.600E+00	0.000E+00	1.805E+00	2.216E+00	1.805E+00	2.216E+00				
Co-60	2.800E-02	0.000E+00	1.004E+01	3.983E-01	1.004E+01	3.983E-01				
Cs-137	5.700E-01	0.000E+00	2.558E+00	1.564E+00	2.558E+00	1.564E+00				
Eu-152	2.000E-01	0.000E+00	4.410E+00	9.070E-01	4.410E+00	9.070E-01				
H-3	1.460E+01	0.000E+00	2.718E-02	1.472E+02	2.718E-02	1.472E+02				
Ni-63	5.050E+00	0.000E+00	5.794E-03	6.904E+02	5.794E-03	6.904E+02				
Pu-239	1.030E-01	0.000E+00	4.326E-01	9.246E+00	4.326E-01	9.246E+00				
Pu-240	2.200E-02	0.000E+00	4.325E-01	9.249E+00	4.325E-01	9.249E+00				
Sr-90	2.360E-01	0.000E+00	3.999E+00	1.000E+00	3.999E+00	1.000E+00				
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii				

Attachment 9 Sheet No. 25 of 27
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 9

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 26
Summary : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Individual Nuclide Dose Summed Over All Pathways										
Parent Nuclide and Branch Fraction Indicated			DOSE(j,t), mrem/yr							
ONuclide	Parent	THF(i)	t= 0.000E+00 1.000E+00 3.000E+00 1.000E+01 1.100E+01 3.000E+01 1.000E+02 3.000E+02 1.000E+03							
(j)	(i)									
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
Am-241	Am-241	1.000E+00	2.866E-02	2.861E-02	2.852E-02	2.819E-02	2.814E-02	2.727E-02	2.428E-02	1.743E-02
ONp-237	Am-241	1.000E+00	5.826E-08	1.822E-07	4.299E-07	1.288E-06	1.409E-06	3.661E-06	1.111E-05	2.628E-05
OU-233	Am-241	1.000E+00	1.656E-15	9.564E-15	4.528E-14	3.739E-13	4.461E-13	2.935E-12	2.664E-11	1.491E-10
OTh-229	Am-241	1.000E+00	5.761E-19	8.322E-18	9.547E-17	2.483E-15	3.254E-15	5.838E-14	1.831E-12	3.434E-11
OC-14	C-14	1.000E+00	2.888E+00	6.956E-01	3.883E-02	1.596E-06	3.771E-07	4.690E-19	0.000E+00	0.000E+00
OCO-60	Co-60	1.000E+00	2.812E-01	2.465E-01	1.894E-01	7.534E-02	6.604E-02	5.407E-03	5.353E-07	1.939E-18
OCs-137	Cs-137	1.000E+00	1.458E+00	1.424E+00	1.360E+00	1.155E+00	1.128E+00	7.243E-01	1.416E-01	1.334E-03
OEu-152	Eu-152	7.208E-01	6.357E-01	6.035E-01	5.438E-01	3.778E-01	3.586E-01	1.334E-01	3.488E-03	1.050E-07
Eu-152	Eu-152	2.792E-01	2.463E-01	2.338E-01	2.106E-01	1.463E-01	1.389E-01	5.166E-02	1.351E-03	4.069E-08
Eu-152	adOSE(j)		8.820E-01	8.373E-01	7.545E-01	5.241E-01	4.975E-01	1.850E-01	4.840E-03	1.457E-07
OGd-152	Eu-152	2.792E-01	8.913E-18	2.613E-17	5.800E-17	1.467E-16	1.569E-16	2.771E-16	3.462E-16	3.471E-16
OH-3	H-3	1.000E+00	3.968E-01	1.397E-01	1.697E-02	1.059E-05	3.689E-06	1.007E-01	0.000E+00	0.000E+00
ONi-63	Ni-63	1.000E+00	2.926E-02	2.904E-02	2.860E-02	2.712E-02	2.692E-02	2.331E-02	1.371E-02	3.010E-03
OPu-239	Pu-239	1.000E+00	4.456E-02	4.455E-02	4.455E-02	4.452E-02	4.452E-02	4.445E-02	4.419E-02	4.346E-02
OU-235	Pu-239	1.000E+00	2.852E-11	8.556E-11	1.988E-10	5.859E-10	6.400E-10	1.617E-09	4.485E-09	8.661E-09
OPa-231	Pu-239	1.000E+00	2.828E-15	2.128E-14	1.158E-13	1.040E-12	1.246E-12	8.511E-12	8.205E-11	5.372E-10
OAc-227	Pu-239	1.000E+00	1.672E-17	2.220E-16	2.368E-15	5.630E-14	7.312E-14	1.138E-12	2.395E-11	2.273E-10
OPu-240	Pu-240	4.950E-08	4.710E-10	4.709E-10	4.708E-10	4.702E-10	4.701E-10	4.687E-10	4.635E-10	4.489E-10
Pu-240	Pu-240	1.000E+00	9.515E-03	9.513E-03	9.510E-03	9.499E-03	9.498E-03	9.469E-03	9.363E-03	9.068E-03
Pu-240	adOSE(j)		9.515E-03	9.513E-03	9.510E-03	9.499E-03	9.498E-03	9.469E-03	9.363E-03	9.068E-03
OU-236	Pu-240	1.000E+00	2.260E-11	6.898E-11	1.611E-10	4.761E-10	5.202E-10	1.314E-09	3.635E-09	6.950E-09
OTh-232	Pu-240	1.000E+00	2.240E-21	1.509E-20	7.812E-20	6.839E-19	8.185E-19	5.551E-18	5.348E-17	3.527E-16
ORa-228	Pu-240	1.000E+00	1.115E-21	1.704E-20	1.920E-19	4.244E-18	5.432E-18	6.606E-17	9.050E-16	6.657E-15
OTH-228	Pu-240	1.000E+00	7.582E-23	2.122E-21	4.456E-20	2.008E-18	2.693E-18	4.651E-17	7.451E-16	5.702E-15
OSr-90	Sr-90	1.000E+00	9.437E-01	9.211E-01	8.775E-01	7.406E-01	7.229E-01	4.561E-01	8.362E-02	6.565E-04
iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii

THF(i) is the thread fraction of the parent nuclide.

Attachment 9 Sheet No. 26 of 27
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 9

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 27
Summary : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Individual Nuclide Soil Concentration												
Parent Nuclide and Branch Fraction Indicated												
ONuclide	Parent	THF(i)	S(j,t), pCi/g									
(j)	(i)		t=	0.000E+00	1.000E+00	3.000E+00	1.000E+01	1.100E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
Am-241	Am-241	1.000E+00	6.100E-02	6.090E-02	6.070E-02	6.000E-02	5.990E-02	5.804E-02	5.168E-02	3.709E-02	1.162E-02	
ONp-237	Am-241	1.000E+00	0.000E+00	1.973E-08	5.906E-08	1.952E-07	2.145E-07	5.720E-07	1.755E-06	4.164E-06	6.245E-06	
OU-233	Am-241	1.000E+00	0.000E+00	4.309E-14	3.859E-13	4.214E-12	5.086E-12	3.609E-11	3.379E-10	1.909E-09	5.155E-09	
OTH-229	Am-241	1.000E+00	0.000E+00	1.357E-18	3.651E-17	1.334E-15	1.772E-15	3.468E-14	1.127E-12	2.135E-11	2.726E-10	
OC-14	C-14	1.000E+00	1.600E+00	3.780E-01	2.110E-02	8.673E-07	2.049E-07	2.549E-19	0.000E+00	0.000E+00	0.000E+00	
OCa-60	Co-60	1.000E+00	2.800E-02	2.454E-02	1.886E-02	7.501E-03	6.575E-03	5.383E-04	5.330E-08	1.931E-19	0.000E+00	
OCs-137	Cs-137	1.000E+00	5.700E-01	5.569E-01	5.315E-01	4.514E-01	4.410E-01	2.832E-01	5.534E-02	5.216E-04	4.241E-11	
OEu-152	Eu-152	7.208E-01	1.442E-01	1.368E-01	1.233E-01	8.566E-02	8.132E-02	3.024E-02	7.910E-04	2.382E-08	3.568E-24	
Eu-152	Eu-152	2.792E-01	5.584E-02	5.301E-02	4.777E-02	3.318E-02	3.150E-02	1.172E-02	3.064E-04	9.226E-09	1.382E-24	
Eu-152	as(j):		2.000E-01	1.899E-01	1.711E-01	1.188E-01	1.128E-01	4.196E-02	1.097E-03	3.304E-08	4.950E-24	
OGd-152	Eu-152	2.792E-01	0.000E+00	3.492E-16	9.954E-16	2.794E-15	3.001E-15	5.439E-15	6.840E-15	6.860E-15	6.797E-15	
OH-3	H-3	1.000E+00	1.460E+01	5.088E+00	6.178E-01	3.855E-04	1.343E-04	2.687E-13	0.000E+00	0.000E+00	0.000E+00	
ONi-63	Ni-63	1.000E+00	5.050E+00	5.012E+00	4.936E+00	4.681E+00	4.646E+00	4.023E+00	2.366E+00	5.195E-01	2.576E-03	
OPu-239	Pu-239	1.000E+00	1.030E-01	1.030E-01	1.030E-01	1.029E-01	1.029E-01	1.027E-01	1.021E-01	1.005E-01	9.479E-02	
OU-235	Pu-239	1.000E+00	0.000E+00	1.012E-10	3.020E-10	9.885E-10	1.085E-09	2.817E-09	7.904E-09	1.531E-08	1.842E-08	
OPa-231	Pu-239	1.000E+00	0.000E+00	1.071E-15	9.606E-15	1.054E-13	1.273E-13	9.153E-13	9.012E-12	5.936E-11	2.951E-10	
OAc-227	Pu-239	1.000E+00	0.000E+00	1.128E-17	2.989E-16	1.038E-14	1.369E-14	2.351E-13	5.150E-12	4.938E-11	2.803E-10	
OPu-240	Pu-240	4.950E-08	1.089E-09	1.089E-09	1.088E-09	1.087E-09	1.087E-09	1.084E-09	1.072E-09	1.038E-09	9.277E-10	
Pu-240	Pu-240	1.000E+00	2.200E-02	2.200E-02	2.199E-02	2.196E-02	2.196E-02	2.189E-02	2.165E-02	2.097E-02	1.874E-02	
Pu-240	as(j):		2.200E-02	2.200E-02	2.199E-02	2.196E-02	2.196E-02	2.189E-02	2.165E-02	2.097E-02	1.874E-02	
OU-236	Pu-240	1.000E+00	0.000E+00	6.495E-10	1.938E-09	6.344E-09	6.960E-09	1.807E-08	5.053E-08	9.689E-08	1.111E-07	
OTH-232	Pu-240	1.000E+00	0.000E+00	1.604E-20	1.438E-19	1.578E-18	1.906E-18	1.372E-17	1.354E-16	8.991E-16	4.619E-15	
ORa-228	Pu-240	1.000E+00	0.000E+00	6.257E-22	1.589E-20	4.829E-19	6.259E-19	8.231E-18	1.160E-16	8.592E-16	4.569E-15	
OTH-228	Pu-240	1.000E+00	0.000E+00	5.311E-23	3.583E-21	2.533E-19	3.456E-19	6.619E-18	1.097E-16	8.462E-16	4.554E-15	
OSr-90	Sr-90	1.000E+00	2.360E-01	2.303E-01	2.195E-01	1.852E-01	1.808E-01	1.141E-01	2.091E-02	1.642E-04	7.041E-12	
iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii
THF(i) is the thread fraction of the parent nuclide.												
ORESCALC.EXE execution time = 12.71 seconds												

Attachment 9 Sheet No. 27 of 27
Originators: S. W. Clark Date
Chk'd By: M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 10

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 1
Intrisk : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

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Part III: Intake Quantities and Health Risk Factors	
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Amount of Intake Quantities and Excess Cancer Risks	
Time= 0.000E+00	6
Time= 1.000E+00	10
Time= 3.000E+00	14
Time= 1.000E+01	18
Time= 1.100E+01	22
Time= 3.000E+01	26
Time= 1.000E+02	30
Time= 3.000E+02	34
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Attachment 10 Sheet No. 1 of 41
Originators: S. W. Clark *SWC* Date 2/5/07
Chk'd By M. W. Perrott *MWP* Date 2/5/07
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 10

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 2
Intrisk : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Cancer Risk Slope Factors Summary Table
Risk Library: HEAST 2001 Morbidity

0	Menu	Parameter	Current Value	Base Case*	Parameter Name
		Ground external radiation slope factors, 1/yr per (pCi/g):			
Sf-1	Ac-227+D		1.47E-06	3.48E-10	SLPF(1,1)
Sf-1	Am-241		2.76E-08	2.76E-08	SLPF(2,1)
Sf-1	C-14		7.83E-12	7.83E-12	SLPF(3,1)
Sf-1	Co-60		1.24E-05	1.24E-05	SLPF(4,1)
Sf-1	Cs-137+D		2.55E-06	5.32E-10	SLPF(5,1)
Sf-1	Eu-152		5.30E-06	5.30E-06	SLPF(6,1)
Sf-1	Gd-152		0.00E+00	0.00E+00	SLPF(8,1)
Sf-1	H-3		0.00E+00	0.00E+00	SLPF(9,1)
Sf-1	Ni-63		0.00E+00	0.00E+00	SLPF(10,1)
Sf-1	Np-237+D		7.97E-07	5.36E-08	SLPF(11,1)
Sf-1	Pa-231		1.39E-07	1.39E-07	SLPF(12,1)
Sf-1	Pu-239		2.00E-10	2.00E-10	SLPF(13,1)
Sf-1	Pu-240		6.98E-11	6.98E-11	SLPF(14,1)
Sf-1	Ra-228+D		4.53E-06	0.00E+00	SLPF(16,1)
Sf-1	Sr-90+D		1.96E-08	4.82E-10	SLPF(17,1)
Sf-1	Th-228+D		7.76E-06	5.59E-09	SLPF(18,1)
Sf-1	Th-229+D		1.17E-06	2.25E-07	SLPF(19,1)
Sf-1	Th-232		3.42E-10	3.42E-10	SLPF(20,1)
Sf-1	U-233		9.82E-10	9.82E-10	SLPF(21,1)
Sf-1	U-235+D		5.43E-07	5.18E-07	SLPF(22,1)
Sf-1	U-236		1.25E-10	1.25E-10	SLPF(23,1)
		Inhalation, slope factors, 1/(pCi):			
Sf-2	Ac-227+D		2.09E-07	1.49E-07	SLPF(1,2)
Sf-2	Am-241		2.81E-08	2.81E-08	SLPF(2,2)
Sf-2	C-14		7.07E-12	7.07E-12	SLPF(3,2)
Sf-2	Co-60		3.58E-11	3.58E-11	SLPF(4,2)
Sf-2	Cs-137+D		1.19E-11	1.19E-11	SLPF(5,2)
Sf-2	Eu-152		9.10E-11	9.10E-11	SLPF(6,2)
Sf-2	Gd-152		9.10E-09	9.10E-09	SLPF(8,2)
Sf-2	H-3		1.99E-13	1.99E-13	SLPF(9,2)
Sf-2	Ni-63		5.77E-12	5.77E-12	SLPF(10,2)
Sf-2	Np-237+D		1.77E-08	1.77E-08	SLPF(11,2)
Sf-2	Pa-231		4.55E-08	4.55E-08	SLPF(12,2)
Sf-2	Pu-239		3.33E-08	3.33E-08	SLPF(13,2)
Sf-2	Pu-240		3.33E-08	3.33E-08	SLPF(14,2)
Sf-2	Ra-228+D		5.23E-09	5.18E-09	SLPF(16,2)
Sf-2	Sr-90+D		1.13E-10	1.05E-10	SLPF(17,2)
Sf-2	Th-228+D		1.43E-07	1.32E-07	SLPF(18,2)
Sf-2	Th-229+D		2.25E-07	1.75E-07	SLPF(19,2)
Sf-2	Th-232		4.33E-08	4.33E-08	SLPF(20,2)
Sf-2	U-233		1.16E-08	1.16E-08	SLPF(21,2)
Sf-2	U-235+D		1.01E-08	1.01E-08	SLPF(22,2)
Sf-2	U-236		1.05E-08	1.05E-08	SLPF(23,2)
		Food ingestion, slope factors, 1/(pCi):			
Sf-3	Ac-227+D		6.53E-10	2.45E-10	SLPF(1,3)
Sf-3	Am-241		1.34E-10	1.34E-10	SLPF(2,3)
Sf-3	C-14		2.00E-12	2.00E-12	SLPF(3,3)

Attachment 10 Sheet No. 2 of 41
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 10

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 3
Intrisk : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1 SPA Area.RAD

Cancer Risk Slope Factors Summary Table (continued)

Risk Library: HEAST 2001 Morbidity

Menu	Parameter	Current Value	Base Case*	Parameter Name
Sf-3	Co-60	2.23E-11	2.23E-11	SLPF(4,3)
Sf-3	Cs-137+D	3.74E-11	3.74E-11	SLPF(5,3)
Sf-3	Eu-152	8.70E-12	8.70E-12	SLPF(6,3)
Sf-3	Gd-152	3.85E-11	3.85E-11	SLPF(8,3)
Sf-3	H-3	1.44E-13	1.44E-13	SLPF(9,3)
Sf-3	Ni-63	9.51E-13	9.51E-13	SLPF(10,3)
Sf-3	Np-237+D	9.10E-11	8.29E-11	SLPF(11,3)
Sf-3	Pa-231	2.26E-10	2.26E-10	SLPF(12,3)
Sf-3	Pu-239	1.74E-10	1.74E-10	SLPF(13,3)
Sf-3	Pu-240	1.74E-10	1.74E-10	SLPF(14,3)
Sf-3	Ra-228+D	1.43E-09	1.43E-09	SLPF(16,3)
Sf-3	Sr-90+D	9.53E-11	6.88E-11	SLPF(17,3)
Sf-3	Th-228+D	4.22E-10	1.48E-10	SLPF(18,3)
Sf-3	Th-229+D	7.16E-10	2.90E-10	SLPF(19,3)
Sf-3	Th-232	1.33E-10	1.33E-10	SLPF(20,3)
Sf-3	U-233	9.69E-11	9.69E-11	SLPF(21,3)
Sf-3	U-235+D	9.76E-11	9.44E-11	SLPF(22,3)
Sf-3	U-236	9.03E-11	9.03E-11	SLPF(23,3)
Sf-3	Water ingestion, slope factors, 1/(pCi):			
Sf-3	Ac-227+D	4.86E-10	2.01E-10	SLPF(1,4)
Sf-3	Am-241	1.04E-10	1.04E-10	SLPF(2,4)
Sf-3	C-14	1.55E-12	1.55E-12	SLPF(3,4)
Sf-3	Co-60	1.57E-11	1.57E-11	SLPF(4,4)
Sf-3	Cs-137+D	3.04E-11	3.04E-11	SLPF(5,4)
Sf-3	Eu-152	6.07E-12	6.07E-12	SLPF(6,4)
Sf-3	Gd-152	2.97E-11	2.97E-11	SLPF(8,4)
Sf-3	H-3	1.12E-13	1.12E-13	SLPF(9,4)
Sf-3	Ni-63	6.70E-13	6.70E-13	SLPF(10,4)
Sf-3	Np-237+D	6.74E-11	6.18E-11	SLPF(11,4)
Sf-3	Pa-231	1.73E-10	1.73E-10	SLPF(12,4)
Sf-3	Pu-239	1.35E-10	1.35E-10	SLPF(13,4)
Sf-3	Pu-240	1.35E-10	1.35E-10	SLPF(14,4)
Sf-3	Ra-228+D	1.04E-09	1.04E-09	SLPF(16,4)
Sf-3	Sr-90+D	7.40E-11	5.59E-11	SLPF(17,4)
Sf-3	Th-228+D	3.00E-10	1.07E-10	SLPF(18,4)
Sf-3	Th-229+D	5.28E-10	2.24E-10	SLPF(19,4)
Sf-3	Th-232	1.01E-10	1.01E-10	SLPF(20,4)
Sf-3	U-233	7.18E-11	7.18E-11	SLPF(21,4)
Sf-3	U-235+D	7.18E-11	6.96E-11	SLPF(22,4)
Sf-3	U-236	6.70E-11	6.70E-11	SLPF(23,4)
Sf-3	Soil ingestion, slope factors, 1/(pCi):			
Sf-3	Ac-227+D	1.16E-09	3.81E-10	SLPF(1,5)
Sf-3	Am-241	2.17E-10	2.17E-10	SLPF(2,5)
Sf-3	C-14	2.79E-12	2.79E-12	SLPF(3,5)
Sf-3	Co-60	4.03E-11	4.03E-11	SLPF(4,5)
Sf-3	Cs-137+D	4.33E-11	4.33E-11	SLPF(5,5)
Sf-3	Eu-152	1.62E-11	1.62E-11	SLPF(6,5)
Sf-3	Gd-152	6.29E-11	6.29E-11	SLPF(8,5)

Attachment 10 Sheet No. 3 of 41
 Originator: S. W. Clark Date _____
 Chk'd By M. W. Perrott Date _____
 Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 10

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 4
Intrisk : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Cancer Risk Slope Factors Summary Table (continued)
Risk Library: HEAST 2001 Morbidity

0	Menu	Parameter	Current Value	Base Case*	Parameter Name
	Sf-3	H-3	2.20E-13	2.20E-13	SLPF(9,5)
	Sf-3	Ni-63	1.79E-12	1.79E-12	SLPF(10,5)
	Sf-3	Np-237+D	1.62E-10	1.46E-10	SLPF(11,5)
	Sf-3	Pa-231	3.74E-10	3.74E-10	SLPF(12,5)
	Sf-3	Pu-239	2.76E-10	2.76E-10	SLPF(13,5)
	Sf-3	Pu-240	2.77E-10	2.77E-10	SLPF(14,5)
	Sf-3	Ra-228+D	2.29E-09	2.28E-09	SLPF(16,5)
	Sf-3	Sr-90+D	1.44E-10	9.18E-11	SLPF(17,5)
	Sf-3	Th-228+D	8.09E-10	2.89E-10	SLPF(18,5)
	Sf-3	Th-229+D	1.29E-09	4.96E-10	SLPF(19,5)
	Sf-3	Th-232	2.31E-10	2.31E-10	SLPF(20,5)
	Sf-3	U-233	1.60E-10	1.60E-10	SLPF(21,5)
	Sf-3	U-235+D	1.63E-10	1.57E-10	SLPF(22,5)
	Sf-3	U-236	1.49E-10	1.49E-10	SLPF(23,5)
	Sf-Rn	Radon Inhalation slope factors, 1/(pCi):			
	Sf-Rn	Rn-220Inhalation slope factors, 1/(pCi):	1.90E-13	1.90E-13	SLPFRN(2,1)
	Sf-Rn	Po-216Inhalation slope factors, 1/(pCi):	3.00E-15	3.00E-15	SLPFRN(2,2)
	Sf-Rn	Pb-212Inhalation slope factors, 1/(pCi):	3.90E-11	3.90E-11	SLPFRN(2,3)
	Sf-Rn	Bi-212Inhalation slope factors, 1/(pCi):	3.70E-11	3.70E-11	SLPFRN(2,4)
	Sf-Rn	Radon K factors, (mrem/WLM):			
	Sf-Rn	Rn-220 Indoor	1.50E+02	1.50E+02	KFACTR(2,1)
	Sf-Rn	Rn-220 Outdoor	2.50E+02	2.50E+02	KFACTR(2,2)

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Attachment 10 Sheet No. 4 of 41
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 10

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 5
Intrisk : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Risk Slope and Environmental Transport Factors for the Ground Pathway									
ONuclide	Slope(i)*	ETFG(i,t) At Time in Years (dimensionless)							
(i)	t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	1.100E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
Ac-225	4.500E-08	6.546E-01	6.546E-01	6.546E-01	6.546E-01	6.546E-01	6.546E-01	6.546E-01	6.546E-01
Ac-227	3.480E-10	6.554E-01	6.554E-01	6.554E-01	6.554E-01	6.554E-01	6.554E-01	6.554E-01	6.554E-01
Ac-228	4.530E-06	6.453E-01	6.453E-01	6.453E-01	6.453E-01	6.453E-01	6.453E-01	6.453E-01	6.453E-01
Am-241	2.760E-08	6.636E-01	6.636E-01	6.636E-01	6.636E-01	6.636E-01	6.636E-01	6.636E-01	6.636E-01
At-217	1.320E-09	6.447E-01	6.447E-01	6.447E-01	6.447E-01	6.447E-01	6.447E-01	6.447E-01	6.447E-01
Ba-137m	2.690E-06	6.421E-01	6.421E-01	6.421E-01	6.421E-01	6.421E-01	6.421E-01	6.421E-01	6.421E-01
Bi-211	1.880E-07	6.481E-01	6.481E-01	6.481E-01	6.481E-01	6.481E-01	6.481E-01	6.481E-01	6.481E-01
Bi-212	8.870E-07	6.430E-01	6.430E-01	6.430E-01	6.430E-01	6.430E-01	6.430E-01	6.430E-01	6.430E-01
Bi-213	5.650E-07	6.454E-01	6.454E-01	6.454E-01	6.454E-01	6.454E-01	6.454E-01	6.454E-01	6.454E-01
C-14	7.830E-12	6.696E-01	6.696E-01	6.696E-01	6.696E-01	6.696E-01	6.696E-01	6.696E-01	6.696E-01
Co-60	1.240E-05	6.448E-01	6.448E-01	6.448E-01	6.448E-01	6.448E-01	6.448E-01	6.448E-01	6.448E-01
Cs-137	5.320E-10	6.512E-01	6.512E-01	6.512E-01	6.512E-01	6.512E-01	6.512E-01	6.512E-01	6.512E-01
Eu-152	5.300E-06	6.458E-01	6.458E-01	6.458E-01	6.458E-01	6.458E-01	6.458E-01	6.458E-01	6.458E-01
Fr-221	1.110E-07	6.512E-01	6.512E-01	6.512E-01	6.512E-01	6.512E-01	6.512E-01	6.512E-01	6.512E-01
Fr-223	1.400E-07	6.511E-01	6.511E-01	6.511E-01	6.511E-01	6.511E-01	6.511E-01	6.511E-01	6.511E-01
Gd-152	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
H-3	0.000E+00	6.800E-01	6.800E-01	6.800E-01	6.800E-01	6.800E-01	6.800E-01	6.800E-01	6.800E-01
Ni-63	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Np-237	5.360E-08	6.568E-01	6.568E-01	6.568E-01	6.568E-01	6.568E-01	6.568E-01	6.568E-01	6.568E-01
Pa-231	1.390E-07	6.483E-01	6.483E-01	6.483E-01	6.483E-01	6.483E-01	6.483E-01	6.483E-01	6.483E-01
Pa-233	7.430E-07	6.490E-01	6.490E-01	6.490E-01	6.490E-01	6.490E-01	6.490E-01	6.490E-01	6.490E-01
Pb-209	5.370E-10	6.523E-01	6.523E-01	6.523E-01	6.523E-01	6.523E-01	6.523E-01	6.523E-01	6.523E-01
Pb-211	2.290E-07	6.445E-01	6.445E-01	6.445E-01	6.445E-01	6.445E-01	6.445E-01	6.445E-01	6.445E-01
Pb-212	5.090E-07	6.520E-01	6.520E-01	6.520E-01	6.520E-01	6.520E-01	6.520E-01	6.520E-01	6.520E-01
Po-211	3.580E-08	6.421E-01	6.421E-01	6.421E-01	6.421E-01	6.421E-01	6.421E-01	6.421E-01	6.421E-01
Po-212	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Po-213	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Po-215	7.480E-10	6.454E-01	6.454E-01	6.454E-01	6.454E-01	6.454E-01	6.454E-01	6.454E-01	6.454E-01
Po-216	7.870E-11	6.439E-01	6.439E-01	6.439E-01	6.439E-01	6.439E-01	6.439E-01	6.439E-01	6.439E-01
Pu-239	2.000E-10	6.533E-01	6.533E-01	6.533E-01	6.533E-01	6.533E-01	6.533E-01	6.533E-01	6.533E-01
Pu-240	6.980E-11	6.708E-01	6.708E-01	6.708E-01	6.708E-01	6.708E-01	6.708E-01	6.708E-01	6.708E-01
Ra-223	4.340E-07	6.509E-01	6.509E-01	6.509E-01	6.509E-01	6.509E-01	6.509E-01	6.509E-01	6.509E-01
Ra-224	3.720E-08	6.511E-01	6.511E-01	6.511E-01	6.511E-01	6.511E-01	6.511E-01	6.511E-01	6.511E-01
Ra-225	5.910E-09	6.687E-01	6.687E-01	6.687E-01	6.687E-01	6.687E-01	6.687E-01	6.687E-01	6.687E-01
Ra-228	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Rn-219	2.250E-07	6.481E-01	6.481E-01	6.481E-01	6.481E-01	6.481E-01	6.481E-01	6.481E-01	6.481E-01
Rn-220	1.700E-09	6.430E-01	6.430E-01	6.430E-01	6.430E-01	6.430E-01	6.430E-01	6.430E-01	6.430E-01
Sr-90	4.820E-10	6.523E-01	6.523E-01	6.523E-01	6.523E-01	6.523E-01	6.523E-01	6.523E-01	6.523E-01
Th-227	3.780E-07	6.516E-01	6.516E-01	6.516E-01	6.516E-01	6.516E-01	6.516E-01	6.516E-01	6.516E-01
Th-228	5.590E-09	6.543E-01	6.543E-01	6.543E-01	6.543E-01	6.543E-01	6.543E-01	6.543E-01	6.543E-01
Th-229	2.250E-07	6.552E-01	6.552E-01	6.552E-01	6.552E-01	6.552E-01	6.552E-01	6.552E-01	6.552E-01
Th-231	2.450E-08	6.573E-01	6.573E-01	6.573E-01	6.573E-01	6.573E-01	6.573E-01	6.573E-01	6.573E-01
Th-232	3.420E-10	6.595E-01	6.595E-01	6.595E-01	6.595E-01	6.595E-01	6.595E-01	6.595E-01	6.595E-01
Tl-207	1.520E-08	6.448E-01	6.448E-01	6.448E-01	6.448E-01	6.448E-01	6.448E-01	6.448E-01	6.448E-01
Tl-208	1.760E-05	6.457E-01	6.457E-01	6.457E-01	6.457E-01	6.457E-01	6.457E-01	6.457E-01	6.457E-01
Tl-209	9.830E-06	6.456E-01	6.456E-01	6.456E-01	6.456E-01	6.456E-01	6.456E-01	6.456E-01	6.456E-01
U-233	9.820E-10	6.536E-01	6.536E-01	6.536E-01	6.536E-01	6.536E-01	6.536E-01	6.536E-01	6.536E-01
U-235	5.180E-07	6.523E-01	6.523E-01	6.523E-01	6.523E-01	6.523E-01	6.523E-01	6.523E-01	6.523E-01
U-236	1.250E-10	6.643E-01	6.643E-01	6.643E-01	6.643E-01	6.643E-01	6.643E-01	6.643E-01	6.643E-01
Y-90	1.910E-08	6.439E-01	6.439E-01	6.439E-01	6.439E-01	6.439E-01	6.439E-01	6.439E-01	6.439E-01
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

* - Units are 1/yr per (pCi/g) at infinite depth and area. Multiplication by ETFG(i,t) converts to site conditions.

Attachment 10 Sheet No. 5 of 41
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 10

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 6
Intrisk : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 0.000E+00 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Am-241	2.646E-03	3.440E+00	6.240E-02	6.774E-03	3.562E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.072E+00
C-14	2.648E+02	1.371E+06	5.354E+05	4.335E+05	9.344E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.340E+06
Co-60	1.214E-03	1.262E+02	1.198E+02	2.744E+01	1.635E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.751E+02
Cs-137	2.472E-02	1.285E+03	1.982E+03	1.231E+03	3.329E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.532E+03
Eu-152	8.675E-03	2.818E+01	9.652E+00	6.377E-01	1.168E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.015E+01
Gd-152	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
H-3	2.815E+05	5.431E+06	1.357E+06	2.289E+06	8.526E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	9.077E+06
Ni-63	2.190E-01	1.423E+04	3.545E+03	3.283E+04	2.949E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.090E+04
Np-237	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pa-231	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pu-239	4.468E-03	5.809E+00	2.107E-01	5.719E-03	6.015E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.204E+01
Pu-240	9.542E-04	1.241E+00	4.501E-02	1.221E-03	1.285E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.572E+00
Ra-228	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Sr-90	1.024E-02	3.990E+03	1.421E+03	8.024E+02	1.378E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	6.226E+03
Th-228	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-229	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-232	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-233	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-236	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
Radon and its Decay Products as pCi/yr at t= 0.000E+00 years

0

Radon Pathway	Radionuclides							
	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

Attachment 10 Sheet No. 6 of 41
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 10

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 7
Intrisk : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p) and Fraction of Total Risk at t= 0.000E+00 years Water Independent Pathways (Inhalation excludes radon)												
0	Ground		Inhalation		Plant		Meat		Milk		Soil	
0	Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
	Nuclide	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Ac-227	1.770E-18	0.0000	1.682E-20	0.0000	1.741E-19	0.0000	2.807E-21	0.0000	1.567E-21	0.0000	1.261E-19	0.0000
Am-241	3.270E-08	0.0006	2.176E-09	0.0000	1.349E-08	0.0002	2.447E-10	0.0000	2.656E-11	0.0000	2.262E-08	0.0004
C-14	1.067E-11	0.0000	2.382E-09	0.0000	3.492E-06	0.0601	1.369E-06	0.0236	1.107E-06	0.0190	3.317E-10	0.0000
Co-60	1.668E-06	0.0287	3.238E-13	0.0000	2.097E-08	0.0004	1.989E-08	0.0003	4.558E-09	0.0001	4.908E-10	0.0000
Cs-137	2.010E-05	0.3457	6.349E-12	0.0000	1.037E-06	0.0178	1.600E-06	0.0275	9.937E-07	0.0171	3.110E-08	0.0005
Eu-152	1.039E-05	0.1787	1.198E-11	0.0000	3.722E-09	0.0001	1.275E-09	0.0000	8.422E-11	0.0000	2.872E-09	0.0000
Gd-152	0.000E+00	0.0000	4.027E-23	0.0000	5.535E-22	0.0000	1.895E-22	0.0000	5.010E-24	0.0000	3.747E-22	0.0000
H-3	0.000E+00	0.0000	7.546E-08	0.0013	1.056E-06	0.0182	2.668E-07	0.0046	4.482E-07	0.0077	2.527E-10	0.0000
Ni-63	0.000E+00	0.0000	3.391E-11	0.0000	3.631E-07	0.0062	9.048E-08	0.0016	8.377E-07	0.0144	1.417E-08	0.0002
Np-237	4.493E-12	0.0000	6.671E-15	0.0000	8.889E-13	0.0000	5.247E-14	0.0000	6.292E-16	0.0000	8.209E-14	0.0000
Pa-231	8.359E-19	0.0000	1.831E-20	0.0000	1.178E-18	0.0000	4.407E-19	0.0000	1.117E-21	0.0000	2.026E-19	0.0000
Pu-239	4.032E-10	0.0000	4.458E-09	0.0001	3.028E-08	0.0005	1.099E-09	0.0000	2.981E-11	0.0000	4.974E-08	0.0009
Pu-240	3.083E-11	0.0000	9.510E-10	0.0000	6.461E-09	0.0001	2.344E-10	0.0000	6.361E-12	0.0000	1.065E-08	0.0002
Ra-228	2.064E-22	0.0000	1.601E-26	0.0000	2.261E-22	0.0000	1.130E-23	0.0000	2.667E-23	0.0000	9.423E-24	0.0000
Sr-90	6.346E-08	0.0011	2.475E-11	0.0000	8.106E-06	0.1394	2.886E-06	0.0496	1.630E-06	0.0280	4.240E-08	0.0007
Th-228	2.624E-22	0.0000	3.237E-25	0.0000	2.124E-24	0.0000	1.215E-25	0.0000	1.529E-26	0.0000	2.471E-24	0.0000
Th-229	1.989E-19	0.0000	2.564E-21	0.0000	1.071E-20	0.0000	3.954E-22	0.0000	5.507E-23	0.0000	1.979E-20	0.0000
Th-232	3.135E-26	0.0000	2.610E-25	0.0000	1.048E-24	0.0000	3.850E-26	0.0000	5.328E-27	0.0000	1.875E-24	0.0000
U-233	2.360E-19	0.0000	1.850E-19	0.0000	5.157E-18	0.0000	3.107E-19	0.0000	1.389E-18	0.0000	3.436E-18	0.0000
U-235	1.535E-14	0.0000	1.900E-17	0.0000	5.959E-16	0.0000	3.461E-17	0.0000	1.618E-16	0.0000	4.137E-16	0.0000
U-236	2.310E-17	0.0000	1.267E-16	0.0000	3.535E-15	0.0000	2.053E-16	0.0000	9.601E-16	0.0000	2.421E-15	0.0000
iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii
Total	3.226E-05	0.5548	8.551E-08	0.0015	1.413E-05	0.2430	6.236E-06	0.1072	5.022E-06	0.0864	1.746E-07	0.0030

Attachment 10 Sheet No. 7 of 41
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 10

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 8
Intrisk : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 0.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.092E-18	0.0000
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.126E-08	0.0012
C-14	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.971E-06	0.1027
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.714E-06	0.0295
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.376E-05	0.4087
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.040E-05	0.1789
Gd-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.163E-21	0.0000
H-3	1.472E-07	0.0025	1.455E-10	0.0000	5.538E-08	0.0010	9.041E-09	0.0002	2.869E-08	0.0005	2.087E-06	0.0359
Ni-63	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.305E-06	0.0225
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.523E-12	0.0000
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.677E-18	0.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.602E-08	0.0015
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.833E-08	0.0003
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.799E-22	0.0000
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.273E-05	0.2189
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.674E-22	0.0000
Th-229	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.324E-19	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.259E-17	0.0000
U-233	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.071E-17	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.658E-14	0.0000
U-236	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.271E-15	0.0000
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	1.472E-07	0.0025	1.455E-10	0.0000	5.538E-08	0.0010	9.041E-09	0.0002	2.869E-08	0.0005	5.815E-05	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 0.000E+00 years

0

Radon	Radionuclides							
Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

Attachment 10 Sheet No. 8 of 41
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 10

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 9
Intrisk : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 0.000E+00 years
Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground risk fract.	Inhalation risk fract.	Radon risk fract.	Plant risk fract.	Meat risk fract.	Milk risk fract.	Soil risk fract.
Am-241	3.270E-08 0.0006	2.176E-09 0.0000	0.000E+00 0.0000	1.349E-08 0.0002	2.447E-10 0.0000	2.656E-11 0.0000	2.262E-08 0.0004
C-14	1.067E-11 0.0000	2.382E-09 0.0000	0.000E+00 0.0000	3.492E-06 0.0601	1.369E-06 0.0236	1.107E-06 0.0190	3.317E-10 0.0000
Co-60	1.668E-06 0.0287	3.238E-13 0.0000	0.000E+00 0.0000	2.097E-08 0.0004	1.989E-08 0.0003	4.558E-09 0.0001	4.908E-10 0.0000
Cs-137	2.010E-05 0.3457	6.349E-12 0.0000	0.000E+00 0.0000	1.037E-06 0.0178	1.600E-06 0.0275	9.937E-07 0.0171	3.110E-08 0.0005
Eu-152	1.039E-05 0.1787	1.198E-11 0.0000	0.000E+00 0.0000	3.722E-09 0.0001	1.275E-09 0.0000	8.422E-11 0.0000	2.872E-09 0.0000
H-3	0.000E+00 0.0000	7.546E-08 0.0013	0.000E+00 0.0000	1.056E-06 0.0182	2.668E-07 0.0046	4.482E-07 0.0077	2.527E-10 0.0000
Ni-63	0.000E+00 0.0000	3.391E-11 0.0000	0.000E+00 0.0000	3.631E-07 0.0062	9.048E-08 0.0016	8.377E-07 0.0144	1.417E-08 0.0002
Pu-239	4.032E-10 0.0000	4.458E-09 0.0001	0.000E+00 0.0000	3.028E-08 0.0005	1.099E-09 0.0000	2.981E-11 0.0000	4.974E-08 0.0009
Pu-240	3.083E-11 0.0000	9.510E-10 0.0000	0.000E+00 0.0000	6.461E-09 0.0001	2.344E-10 0.0000	6.362E-12 0.0000	1.065E-08 0.0002
Sr-90	6.346E-08 0.0011	2.475E-11 0.0000	0.000E+00 0.0000	8.106E-06 0.1394	2.886E-06 0.0496	1.630E-06 0.0280	4.240E-08 0.0007
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	3.226E-05 0.5548	8.551E-08 0.0015	0.000E+00 0.0000	1.413E-05 0.2430	6.236E-06 0.1072	5.022E-06 0.0864	1.746E-07 0.0030

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 0.000E+00 years
Water Dependent Pathways

Radio- Nuclide	Water risk fract.	Fish risk fract.	Radon risk fract.	Plant risk fract.	Meat risk fract.	Milk risk fract.	All pathways risk fract.
Am-241	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	7.127E-08 0.0012
C-14	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	5.971E-06 0.1027
Co-60	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.714E-06 0.0295
Cs-137	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	2.376E-05 0.4087
Eu-152	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.040E-05 0.1789
H-3	1.472E-07 0.0025	1.455E-10 0.0000	0.000E+00 0.0000	5.538E-08 0.0010	9.041E-09 0.0002	2.869E-08 0.0005	2.087E-06 0.0359
Ni-63	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.305E-06 0.0225
Pu-239	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	8.602E-08 0.0015
Pu-240	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.833E-08 0.0003
Sr-90	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.273E-05 0.2189
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	1.472E-07 0.0025	1.455E-10 0.0000	0.000E+00 0.0000	5.538E-08 0.0010	9.041E-09 0.0002	2.869E-08 0.0005	5.815E-05 1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Attachment 10 Sheet No. 9 of 41
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 10

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 10
Intrisk : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 1.000E+00 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
Ac-227	4.893E-19	2.090E-15	3.228E-16	1.697E-17	6.588E-16	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.089E-15
Am-241	2.641E-03	3.434E+00	6.229E-02	6.762E-03	3.556E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.060E+00
C-14	6.256E+01	3.423E+05	1.635E+05	1.228E+05	2.208E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	6.287E+05
Co-60	1.065E-03	1.106E+02	1.050E+02	2.406E+01	1.433E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.411E+02
Cs-137	2.415E-02	1.255E+03	1.937E+03	1.203E+03	3.252E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.427E+03
Eu-152	8.235E-03	2.675E+01	9.162E+00	6.054E-01	1.109E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.761E+01
Gd-152	1.515E-17	4.921E-14	1.685E-14	4.472E-16	2.039E-14	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.690E-14
H-3	9.811E+04	1.965E+06	5.646E+05	9.043E+05	2.971E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.434E+06
Ni-63	2.174E-01	1.412E+04	3.519E+03	3.258E+04	2.927E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.051E+04
Np-237	8.560E-10	2.145E-05	1.137E-06	1.448E-08	1.152E-06	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.376E-05
Pa-231	4.646E-17	5.704E-13	1.826E-13	7.280E-16	6.256E-14	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.163E-13
Pu-239	4.467E-03	5.808E+00	2.107E-01	5.718E-03	6.015E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.204E+01
Pu-240	9.541E-04	1.240E+00	4.500E-02	1.221E-03	1.285E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.571E+00
Ra-228	2.714E-23	1.259E-18	4.376E-20	1.233E-19	3.654E-20	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.462E-18
Sr-90	9.991E-03	3.894E+03	1.387E+03	7.832E+02	1.345E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	6.077E+03
Th-228	2.304E-24	1.949E-20	1.087E-21	1.563E-22	3.102E-21	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.383E-20
Th-229	5.887E-20	9.455E-17	5.699E-18	9.799E-19	7.927E-17	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.805E-16
Th-232	6.956E-22	1.002E-18	4.395E-20	7.865E-21	9.365E-19	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.991E-18
U-233	1.869E-15	9.138E-12	7.148E-13	2.174E-12	2.517E-12	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.454E-11
U-235	4.389E-12	1.394E-08	7.806E-10	3.799E-09	5.909E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.443E-08
U-236	2.817E-11	8.949E-08	5.011E-09	2.439E-08	3.793E-08	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.568E-07
iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
Radon and its Decay Products as pCi/yr at t= 1.000E+00 years

0

Radon Pathway	Radionuclides							
	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

Attachment 10 Sheet No. 10 of 41
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 10

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 11
Intrisk : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p) and Fraction of Total Risk at t= 1.000E+00 years Water Independent Pathways (Inhalation excludes radon)												
	Ground		Inhalation		Plant		Meat		Milk		Soil	
0												
0												
Radio-	AAAAA		AAAAA		AAAAA		AAAAA		AAAAA		AAAAA	
Nuclide	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
Ac-227	2.005E-18	0.0000	1.905E-20	0.0000	1.970E-19	0.0000	3.112E-21	0.0000	1.774E-21	0.0000	1.428E-19	0.0000
Am-241	3.264E-08	0.0006	2.172E-09	0.0000	1.347E-08	0.0003	2.443E-10	0.0000	2.652E-11	0.0000	2.259E-08	0.0004
C-14	2.522E-12	0.0000	5.628E-10	0.0000	8.711E-07	0.0171	4.161E-07	0.0082	3.125E-07	0.0061	7.837E-11	0.0000
Co-60	1.462E-06	0.0287	2.839E-13	0.0000	1.838E-08	0.0004	1.744E-08	0.0003	3.996E-09	0.0001	4.303E-10	0.0000
Cs-137	1.964E-05	0.3849	6.202E-12	0.0000	1.013E-06	0.0199	1.563E-06	0.0306	9.708E-07	0.0190	3.039E-08	0.0006
Eu-152	9.865E-06	0.1934	1.138E-11	0.0000	3.534E-09	0.0001	1.210E-09	0.0000	7.995E-11	0.0000	2.727E-09	0.0001
Gd-152	0.000E+00	0.0000	4.236E-23	0.0000	5.822E-22	0.0000	1.994E-22	0.0000	5.271E-24	0.0000	3.942E-22	0.0000
H-3	0.000E+00	0.0000	2.630E-08	0.0005	3.811E-07	0.0075	1.095E-07	0.0021	1.754E-07	0.0034	8.804E-11	0.0000
Ni-63	0.000E+00	0.0000	3.366E-11	0.0000	3.604E-07	0.0071	8.979E-08	0.0018	8.314E-07	0.0163	1.406E-08	0.0003
Np-237	4.788E-12	0.0000	7.110E-15	0.0000	9.474E-13	0.0000	5.594E-14	0.0000	6.706E-16	0.0000	8.750E-14	0.0000
Pa-231	9.211E-19	0.0000	2.017E-20	0.0000	1.298E-18	0.0000	4.858E-19	0.0000	1.230E-21	0.0000	2.232E-19	0.0000
Pu-239	4.032E-10	0.0000	4.457E-09	0.0001	3.028E-08	0.0006	1.098E-09	0.0000	2.981E-11	0.0000	4.974E-08	0.0010
Pu-240	3.082E-11	0.0000	9.508E-10	0.0000	6.460E-09	0.0001	2.343E-10	0.0000	6.360E-12	0.0000	1.065E-08	0.0002
Ra-228	2.314E-22	0.0000	1.796E-26	0.0000	2.535E-22	0.0000	1.268E-23	0.0000	2.992E-23	0.0000	1.057E-23	0.0000
Sr-90	6.194E-08	0.0012	2.415E-11	0.0000	7.912E-06	0.1551	2.817E-06	0.0552	1.591E-06	0.0312	4.138E-08	0.0008
Th-228	2.970E-22	0.0000	3.665E-25	0.0000	2.396E-24	0.0000	1.368E-25	0.0000	1.721E-26	0.0000	2.798E-24	0.0000
Th-229	2.265E-19	0.0000	2.919E-21	0.0000	1.218E-20	0.0000	4.498E-22	0.0000	6.259E-23	0.0000	2.253E-20	0.0000
Th-232	3.454E-26	0.0000	2.876E-25	0.0000	1.155E-24	0.0000	4.240E-26	0.0000	5.862E-27	0.0000	2.066E-24	0.0000
U-233	2.599E-19	0.0000	2.037E-19	0.0000	5.675E-18	0.0000	3.415E-19	0.0000	1.529E-18	0.0000	3.784E-18	0.0000
U-235	1.634E-14	0.0000	2.023E-17	0.0000	6.345E-16	0.0000	3.686E-17	0.0000	1.723E-16	0.0000	4.405E-16	0.0000
U-236	2.460E-17	0.0000	1.349E-16	0.0000	3.764E-15	0.0000	2.187E-16	0.0000	1.022E-15	0.0000	2.577E-15	0.0000
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	3.106E-05	0.6088	3.452E-08	0.0007	1.061E-05	0.2080	5.016E-06	0.0983	3.886E-06	0.0762	1.721E-07	0.0034

Attachment 10 Sheet No. 11 of 41
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 10

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 12
Intrisk : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.368E-18	0.0000
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.114E-08	0.0014
C-14	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.600E-06	0.0314
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.502E-06	0.0294
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.322E-05	0.4550
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.873E-06	0.1935
Gd-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.223E-21	0.0000
H-3	1.464E-07	0.0029	1.448E-10	0.0000	5.520E-08	0.0011	9.069E-09	0.0002	2.862E-08	0.0006	9.318E-07	0.0183
Ni-63	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.296E-06	0.0254
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.887E-12	0.0000
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.950E-18	0.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.601E-08	0.0017
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.833E-08	0.0004
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.381E-22	0.0000
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.242E-05	0.2435
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.028E-22	0.0000
Th-229	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.646E-19	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.591E-24	0.0000
U-233	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.179E-17	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.765E-14	0.0000
U-236	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.742E-15	0.0000
iiiiiii	iiiiiii	iiiiii	iiiiiii	iiiiii	iiiiiii	iiiiii	iiiiiii	iiiiii	iiiiiii	iiiiii	iiiiiii	iiiiii
Total	1.464E-07	0.0029	1.448E-10	0.0000	5.520E-08	0.0011	9.069E-09	0.0002	2.862E-08	0.0006	5.102E-05	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 1.000E+00 years

0

Radon Pathway	Radionuclides									
	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212		
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

Attachment 10 Sheet No. 12 of 41
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 10

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 13
Intrisk : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p) and Fraction of Total Risk at t= 1.000E+00 years									
Water Independent Pathways (Inhalation excludes radon)									
0	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil		
0									
Radio- Nuclide	risk fract.	risk fract.	risk fract.	risk fract.	risk fract.	risk fract.	risk fract.	risk fract.	risk fract.
Am-241	3.265E-08 0.0006	2.172E-09 0.0000	0.000E+00 0.0000	1.347E-08 0.0003	2.443E-10 0.0000	2.652E-11 0.0000	2.259E-08 0.0004	7.837E-11 0.0000	4.303E-10 0.0000
C-14	2.522E-12 0.0000	5.628E-10 0.0000	0.000E+00 0.0000	8.711E-07 0.0171	4.161E-07 0.0082	3.125E-07 0.0061	7.837E-11 0.0000	4.303E-10 0.0000	4.303E-10 0.0000
Co-60	1.462E-06 0.0287	2.839E-13 0.0000	0.000E+00 0.0000	1.838E-08 0.0004	1.744E-08 0.0003	3.996E-09 0.0001	4.303E-10 0.0000	4.303E-10 0.0000	4.303E-10 0.0000
Cs-137	1.964E-05 0.3849	6.202E-12 0.0000	0.000E+00 0.0000	1.013E-06 0.0199	1.563E-06 0.0306	9.708E-07 0.0190	3.039E-08 0.0006	2.727E-09 0.0001	2.727E-09 0.0001
Eu-152	9.865E-06 0.1934	1.138E-11 0.0000	0.000E+00 0.0000	3.534E-09 0.0001	1.210E-09 0.0000	7.995E-11 0.0000	2.727E-09 0.0001	2.727E-09 0.0001	2.727E-09 0.0001
H-3	0.000E+00 0.0000	2.630E-08 0.0005	0.000E+00 0.0000	3.811E-07 0.0075	1.095E-07 0.0021	1.754E-07 0.0034	8.804E-11 0.0000	4.303E-10 0.0000	4.303E-10 0.0000
Ni-63	0.000E+00 0.0000	3.366E-11 0.0000	0.000E+00 0.0000	3.604E-07 0.0071	8.979E-08 0.0018	8.314E-07 0.0163	1.406E-08 0.0003	4.303E-10 0.0000	4.303E-10 0.0000
Pu-239	4.032E-10 0.0000	4.457E-09 0.0001	0.000E+00 0.0000	3.028E-08 0.0006	1.098E-09 0.0000	2.981E-11 0.0000	4.974E-08 0.0010	4.303E-10 0.0000	4.303E-10 0.0000
Pu-240	3.082E-11 0.0000	9.508E-10 0.0000	0.000E+00 0.0000	6.460E-09 0.0001	2.343E-10 0.0000	6.361E-12 0.0000	1.065E-08 0.0002	4.303E-10 0.0000	4.303E-10 0.0000
Sr-90	6.194E-08 0.0012	2.415E-11 0.0000	0.000E+00 0.0000	7.912E-06 0.1551	2.817E-06 0.0552	1.591E-06 0.0312	4.138E-08 0.0008	4.303E-10 0.0000	4.303E-10 0.0000
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	3.106E-05 0.6088	3.452E-08 0.0007	0.000E+00 0.0000	1.061E-05 0.2080	5.016E-06 0.0983	3.886E-06 0.0762	1.721E-07 0.0034	4.303E-10 0.0000	4.303E-10 0.0000

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p) and Fraction of Total Risk at t= 1.000E+00 years									
Water Dependent Pathways									
Radio- Nuclide	Water risk fract.	Fish risk fract.	Radon risk fract.	Plant risk fract.	Meat risk fract.	Milk risk fract.	All pathways risk fract.		
Am-241	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	7.115E-08 0.0014	1.600E-06 0.0314	1.600E-06 0.0314
C-14	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.502E-06 0.0294	2.322E-05 0.4550	2.322E-05 0.4550
Co-60	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	9.873E-06 0.1935	9.318E-07 0.0183	9.318E-07 0.0183
Cs-137	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.296E-06 0.0254	8.601E-08 0.0017	8.601E-08 0.0017
Eu-152	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.833E-08 0.0004	1.242E-05 0.2435	1.242E-05 0.2435
H-3	1.464E-07 0.0029	1.448E-10 0.0000	0.000E+00 0.0000	5.520E-08 0.0011	9.069E-09 0.0002	2.862E-08 0.0006	5.102E-05 1.0000	5.102E-05 1.0000	5.102E-05 1.0000
Ni-63	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.296E-06 0.0254	8.601E-08 0.0017	8.601E-08 0.0017
Pu-239	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.833E-08 0.0004	1.242E-05 0.2435	1.242E-05 0.2435
Pu-240	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.833E-08 0.0004	1.242E-05 0.2435	1.242E-05 0.2435
Sr-90	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.242E-05 0.2435	5.102E-05 1.0000	5.102E-05 1.0000
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	1.464E-07 0.0029	1.448E-10 0.0000	0.000E+00 0.0000	5.520E-08 0.0011	9.069E-09 0.0002	2.862E-08 0.0006	5.102E-05 1.0000	5.102E-05 1.0000	5.102E-05 1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Attachment 10 Sheet No. 13 of 41
Originators: S. W. Clark Date
Chk'd By: M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 10

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 14
Intrisk : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 3.000E+00 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
Ac-227	1.297E-17	4.685E-14	3.456E-15	4.091E-16	1.746E-14	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	6.817E-14
Am-241	2.633E-03	3.423E+00	6.209E-02	6.740E-03	3.545E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.037E+00
C-14	3.492E+00	1.911E+04	9.128E+03	6.856E+03	1.232E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.509E+04
Co-60	8.180E-04	8.502E+01	8.067E+01	1.848E+01	1.101E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.853E+02
Cs-137	2.305E-02	1.198E+03	1.849E+03	1.148E+03	3.104E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.226E+03
Eu-152	7.421E-03	2.411E+01	8.256E+00	5.455E-01	9.991E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.290E+01
Gd-152	4.317E-17	1.403E-13	4.804E-14	1.271E-15	5.813E-14	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.477E-13
H-3	1.191E+04	2.386E+05	6.856E+04	1.098E+05	3.608E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.170E+05
Ni-63	2.141E-01	1.391E+04	3.466E+03	3.209E+04	2.883E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.975E+04
Np-237	2.562E-09	6.578E-05	3.772E-06	4.596E-08	3.449E-06	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.305E-05
Pa-231	4.167E-16	5.313E-12	1.900E-12	5.541E-15	5.610E-13	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.780E-12
Pu-239	4.466E-03	5.807E+00	2.107E-01	5.717E-03	6.014E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.204E+01
Pu-240	9.538E-04	1.240E+00	4.498E-02	1.221E-03	1.284E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.570E+00
Ra-228	6.894E-22	3.442E-17	1.551E-18	3.844E-18	9.282E-19	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.075E-17
Sr-90	9.519E-03	3.710E+03	1.321E+03	7.462E+02	1.282E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.790E+03
Th-228	1.554E-22	6.548E-19	4.266E-20	5.454E-21	2.093E-19	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	9.122E-19
Th-229	1.584E-18	2.190E-15	9.332E-17	1.464E-17	2.132E-15	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.430E-15
Th-232	6.238E-21	8.410E-18	3.297E-19	5.027E-20	8.399E-18	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.719E-17
U-233	1.674E-14	6.381E-11	4.391E-12	1.650E-11	2.254E-11	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.072E-10
U-235	1.310E-11	4.224E-08	2.429E-09	1.148E-08	1.763E-08	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.379E-08
U-236	8.408E-11	2.711E-07	1.559E-08	7.371E-08	1.132E-07	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.737E-07
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
Radon and its Decay Products as pCi/yr at t= 3.000E+00 years

0

Radon Pathway	Radionuclides							
	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

Attachment 10 Sheet No. 14 of 41
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 10

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 15
Intrisk : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p) and Fraction of Total Risk at t= 3.000E+00 years												
Water Independent Pathways (Inhalation excludes radon)												
	Ground		Inhalation		Plant		Meat		Milk		Soil	
Radio- Nuclide	AAAAA risk	AAAAA fract.	AAAAA risk	AAAAA fract.	AAAAA risk	AAAAA fract.	AAAAA risk	AAAAA fract.	AAAAA risk	AAAAA fract.	AAAAA risk	AAAAA fract.
Ac-227	2.539E-18	0.0000	2.413E-20	0.0000	2.494E-19	0.0000	3.786E-21	0.0000	2.246E-21	0.0000	1.808E-19	0.0000
Am-241	3.254E-08	0.0007	2.165E-09	0.0000	1.342E-08	0.0003	2.435E-10	0.0000	2.643E-11	0.0000	2.251E-08	0.0005
C-14	1.408E-13	0.0000	3.142E-11	0.0000	4.863E-08	0.0010	2.323E-08	0.0005	1.745E-08	0.0004	4.375E-12	0.0000
Co-60	1.123E-06	0.0240	2.181E-13	0.0000	1.412E-08	0.0003	1.340E-08	0.0003	3.070E-09	0.0001	3.306E-10	0.0000
Cs-137	1.874E-05	0.4010	5.920E-12	0.0000	9.668E-07	0.0207	1.492E-06	0.0319	9.266E-07	0.0198	2.900E-08	0.0006
Eu-152	8.890E-06	0.1902	1.025E-11	0.0000	3.184E-09	0.0001	1.090E-09	0.0000	7.205E-11	0.0000	2.457E-09	0.0001
Gd-152	0.000E+00	0.0000	4.623E-23	0.0000	6.354E-22	0.0000	2.176E-22	0.0000	5.752E-24	0.0000	4.302E-22	0.0000
H-3	0.000E+00	0.0000	3.193E-09	0.0001	4.628E-08	0.0010	1.330E-08	0.0003	2.130E-08	0.0005	1.069E-11	0.0000
Ni-63	0.000E+00	0.0000	3.315E-11	0.0000	3.549E-07	0.0076	8.844E-08	0.0019	8.189E-07	0.0175	1.385E-08	0.0003
Np-237	5.377E-12	0.0000	7.985E-15	0.0000	1.064E-12	0.0000	6.288E-14	0.0000	7.536E-16	0.0000	9.826E-14	0.0000
Pa-231	1.107E-18	0.0000	2.425E-20	0.0000	1.561E-18	0.0000	5.844E-19	0.0000	1.478E-21	0.0000	2.684E-19	0.0000
Pu-239	4.031E-10	0.0000	4.456E-09	0.0001	3.028E-08	0.0006	1.098E-09	0.0000	2.981E-11	0.0000	4.973E-08	0.0011
Pu-240	3.081E-11	0.0000	9.505E-10	0.0000	6.458E-09	0.0001	2.343E-10	0.0000	6.358E-12	0.0000	1.065E-08	0.0002
Ra-228	2.876E-22	0.0000	2.231E-26	0.0000	3.151E-22	0.0000	1.578E-23	0.0000	3.721E-23	0.0000	1.313E-23	0.0000
Sr-90	5.901E-08	0.0013	2.301E-11	0.0000	7.537E-06	0.1612	2.684E-06	0.0574	1.516E-06	0.0324	3.943E-08	0.0008
Th-228	3.757E-22	0.0000	4.636E-25	0.0000	3.009E-24	0.0000	1.713E-25	0.0000	2.155E-26	0.0000	3.539E-24	0.0000
Th-229	2.899E-19	0.0000	3.737E-21	0.0000	1.559E-20	0.0000	5.749E-22	0.0000	7.988E-23	0.0000	2.884E-20	0.0000
Th-232	4.153E-26	0.0000	3.458E-25	0.0000	1.388E-24	0.0000	5.091E-26	0.0000	7.031E-27	0.0000	2.484E-24	0.0000
U-233	3.121E-19	0.0000	2.447E-19	0.0000	6.804E-18	0.0000	4.086E-19	0.0000	1.834E-18	0.0000	4.544E-18	0.0000
U-235	1.832E-14	0.0000	2.267E-17	0.0000	7.112E-16	0.0000	4.133E-17	0.0000	1.931E-16	0.0000	4.937E-16	0.0000
U-236	2.756E-17	0.0000	1.512E-16	0.0000	4.219E-15	0.0000	2.452E-16	0.0000	1.146E-15	0.0000	2.888E-15	0.0000
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	2.885E-05	0.6172	1.087E-08	0.0002	9.021E-06	0.1930	4.317E-06	0.0923	3.303E-06	0.0707	1.680E-07	0.0036

Attachment 10 Sheet No. 15 of 41
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 10

1RESRAD, Version 6.3 T_x Limit = 180 days 02/02/2007 19:48 Page 16
Intrisk : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+00 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.000E-18	0.0000
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.091E-08	0.0015
C-14	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.934E-08	0.0019
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.154E-06	0.0247
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.216E-05	0.4740
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.897E-06	0.1903
Gd-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.335E-21	0.0000
H-3	6.570E-07	0.0141	6.502E-10	0.0000	2.479E-07	0.0053	4.081E-08	0.0009	1.285E-07	0.0028	1.159E-06	0.0248
Ni-63	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.276E-06	0.0273
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.612E-12	0.0000
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.547E-18	0.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.600E-08	0.0018
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.833E-08	0.0004
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.688E-22	0.0000
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.184E-05	0.2532
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.829E-22	0.0000
Th-229	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.387E-19	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.317E-24	0.0000
U-233	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.415E-17	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.978E-14	0.0000
U-236	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.677E-15	0.0000
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	6.570E-07	0.0141	6.502E-10	0.0000	2.479E-07	0.0053	4.081E-08	0.0009	1.285E-07	0.0028	4.674E-05	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 3.000E+00 years

0

Radionuclides									
Radon	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212	
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

Attachment 10 Sheet No. 16 of 41
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 10

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 17
Intrisk : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p) and Fraction of Total Risk at t= 3.000E+00 years									
Water Independent Pathways (Inhalation excludes radon)									
Radio- Nuclide	Ground risk fract.	Inhalation risk fract.	Radon risk fract.	Plant risk fract.	Meat risk fract.	Milk risk fract.	Soil risk fract.		
Am-241	3.254E-08 0.0007	2.165E-09 0.0000	0.000E+00 0.0000	1.343E-08 0.0003	2.435E-10 0.0000	2.643E-11 0.0000	2.251E-08 0.0005		
C-14	1.408E-13 0.0000	3.142E-11 0.0000	0.000E+00 0.0000	4.863E-08 0.0010	2.323E-08 0.0005	1.745E-08 0.0004	4.375E-12 0.0000		
Co-60	1.123E-06 0.0240	2.181E-13 0.0000	0.000E+00 0.0000	1.412E-08 0.0003	1.340E-08 0.0003	3.070E-09 0.0001	3.306E-10 0.0000		
Cs-137	1.874E-05 0.4010	5.920E-12 0.0000	0.000E+00 0.0000	9.668E-07 0.0207	1.492E-06 0.0319	9.266E-07 0.0198	2.900E-08 0.0006		
Eu-152	8.890E-06 0.1902	1.025E-11 0.0000	0.000E+00 0.0000	3.184E-09 0.0001	1.090E-09 0.0000	7.205E-11 0.0000	2.457E-09 0.0001		
H-3	0.000E+00 0.0000	3.193E-09 0.0001	0.000E+00 0.0000	4.628E-08 0.0010	1.330E-08 0.0003	2.130E-08 0.0005	1.069E-11 0.0000		
Ni-63	0.000E+00 0.0000	3.315E-11 0.0000	0.000E+00 0.0000	3.549E-07 0.0076	8.844E-08 0.0019	8.189E-07 0.0175	1.385E-08 0.0003		
Pu-239	4.031E-10 0.0000	4.456E-09 0.0001	0.000E+00 0.0000	3.028E-08 0.0006	1.098E-09 0.0000	2.981E-11 0.0000	4.973E-08 0.0011		
Pu-240	3.081E-11 0.0000	9.505E-10 0.0000	0.000E+00 0.0000	6.458E-09 0.0001	2.343E-10 0.0000	6.359E-12 0.0000	1.065E-08 0.0002		
Sr-90	5.901E-08 0.0013	2.301E-11 0.0000	0.000E+00 0.0000	7.537E-06 0.1612	2.684E-06 0.0574	1.516E-06 0.0324	3.943E-08 0.0008		
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii		
Total	2.885E-05 0.6172	1.087E-08 0.0002	0.000E+00 0.0000	9.021E-06 0.1930	4.317E-06 0.0923	3.303E-06 0.0707	1.680E-07 0.0036		

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p) and Fraction of Total Risk at t= 3.000E+00 years									
Water Dependent Pathways									
Radio- Nuclide	Water risk fract.	Fish risk fract.	Radon risk fract.	Plant risk fract.	Meat risk fract.	Milk risk fract.	All pathways risk fract.		
Am-241	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	7.091E-08 0.0015		
C-14	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	8.934E-08 0.0019		
Co-60	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.154E-06 0.0247		
Cs-137	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	2.216E-05 0.4740		
Eu-152	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	8.897E-06 0.1903		
H-3	6.570E-07 0.0141	6.502E-10 0.0000	0.000E+00 0.0000	2.479E-07 0.0053	4.081E-08 0.0009	1.285E-07 0.0028	1.159E-06 0.0248		
Ni-63	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.276E-06 0.0273		
Pu-239	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	8.600E-08 0.0018		
Pu-240	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.833E-08 0.0004		
Sr-90	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.184E-05 0.2532		
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii		
Total	6.570E-07 0.0141	6.502E-10 0.0000	0.000E+00 0.0000	2.479E-07 0.0053	4.081E-08 0.0009	1.285E-07 0.0028	4.674E-05 1.0000		

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Attachment 10 Sheet No. 17 of 41
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 10

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 18
Intrisk : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 1.000E+01 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
Ac-227	4.502E-16	1.515E-12	4.324E-14	1.356E-14	6.061E-13	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.178E-12
Am-241	2.602E-03	3.384E+00	6.137E-02	6.662E-03	3.504E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	6.955E+00
C-14	1.435E-04	7.854E-01	3.752E-01	2.818E-01	5.065E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.442E+00
Co-60	3.253E-04	3.381E+01	3.208E+01	7.351E+00	4.381E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.369E+01
Cs-137	1.958E-02	1.018E+03	1.570E+03	9.752E+02	2.636E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.589E+03
Eu-152	5.155E-03	1.675E+01	5.735E+00	3.789E-01	6.940E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.980E+01
Gd-152	1.212E-16	3.937E-13	1.348E-13	3.564E-15	1.632E-13	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	6.952E-13
H-3	7.433E+00	1.489E+02	4.278E+01	6.852E+01	2.251E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.602E+02
Ni-63	2.031E-01	1.319E+04	3.287E+03	3.043E+04	2.734E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.718E+04
Np-237	8.469E-09	2.193E-04	1.290E-05	1.549E-07	1.140E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.437E-04
Pa-231	4.571E-15	5.906E-11	2.192E-11	5.697E-14	6.155E-12	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.720E-11
Pu-239	4.464E-03	5.804E+00	2.105E-01	5.714E-03	6.010E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.203E+01
Pu-240	9.527E-04	1.239E+00	4.493E-02	1.220E-03	1.283E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.568E+00
Ra-228	2.095E-20	1.073E-15	5.265E-17	1.253E-16	2.820E-17	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.279E-15
Sr-90	8.033E-03	3.131E+03	1.115E+03	6.297E+02	1.082E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.886E+03
Th-228	1.099E-20	2.842E-17	1.723E-18	2.161E-19	1.479E-17	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.515E-17
Th-229	5.787E-17	7.656E-14	2.898E-15	4.156E-16	7.792E-14	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.578E-13
Th-232	6.846E-20	9.000E-17	3.347E-18	4.722E-19	9.217E-17	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.860E-16
U-233	1.828E-13	6.253E-10	3.879E-11	1.672E-10	2.461E-10	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.077E-09
U-235	4.287E-11	1.390E-07	8.063E-09	3.775E-08	5.773E-08	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.425E-07
U-236	2.751E-10	8.920E-07	5.175E-08	2.423E-07	3.705E-07	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.557E-06
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
Radon and its Decay Products as pCi/yr at t= 1.000E+01 years

0

Radon Pathway	Radionuclides							
	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

Attachment 10 Sheet No. 18 of 41
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 10

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 19
Intrisk : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p) and Fraction of Total Risk at t= 1.000E+01 years												
Water Independent Pathways (Inhalation excludes radon)												
0	Ground		Inhalation		Plant		Meat		Milk		Soil	
0	Nuclide	risk fract.	risk fract.	risk fract.	risk fract.	risk fract.	risk fract.	risk fract.	risk fract.	risk fract.	risk fract.	risk fract.
	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
	Ac-227	5.206E-18	0.0000	4.947E-20	0.0000	5.100E-19	0.0000	6.849E-21	0.0000	4.596E-21	0.0000	3.707E-19
	Am-241	3.216E-08	0.0008	2.140E-09	0.0001	1.327E-08	0.0003	2.407E-10	0.0000	2.613E-11	0.0000	2.225E-08
	C-14	5.786E-18	0.0000	1.291E-15	0.0000	1.999E-12	0.0000	9.547E-13	0.0000	7.170E-13	0.0000	1.798E-16
	Co-60	4.467E-07	0.0117	8.675E-14	0.0000	5.617E-09	0.0001	5.329E-09	0.0001	1.221E-09	0.0000	1.315E-10
	Cs-137	1.592E-05	0.4176	5.028E-12	0.0000	8.212E-07	0.0215	1.267E-06	0.0332	7.870E-07	0.0206	2.463E-08
	Eu-152	6.175E-06	0.1620	7.121E-12	0.0000	2.212E-09	0.0001	7.575E-10	0.0000	5.005E-11	0.0000	1.707E-09
	Gd-152	0.000E+00	0.0000	5.700E-23	0.0000	7.835E-22	0.0000	2.683E-22	0.0000	7.092E-24	0.0000	5.305E-22
	H-3	0.000E+00	0.0000	1.992E-12	0.0000	2.887E-11	0.0000	8.297E-12	0.0000	1.329E-11	0.0000	6.671E-15
	Ni-63	0.000E+00	0.0000	3.144E-11	0.0000	3.366E-07	0.0088	8.387E-08	0.0022	7.766E-07	0.0204	1.313E-08
	Np-237	7.417E-12	0.0000	1.101E-14	0.0000	1.469E-12	0.0000	8.692E-14	0.0000	1.041E-15	0.0000	1.355E-13
	Pa-231	1.924E-18	0.0000	4.213E-20	0.0000	2.713E-18	0.0000	1.017E-18	0.0000	2.560E-21	0.0000	4.662E-19
	Pu-239	4.029E-10	0.0000	4.454E-09	0.0001	3.026E-08	0.0008	1.098E-09	0.0000	2.979E-11	0.0000	4.970E-08
	Pu-240	3.078E-11	0.0000	9.495E-10	0.0000	6.451E-09	0.0002	2.340E-10	0.0000	6.351E-12	0.0000	1.063E-08
	Ra-228	5.531E-22	0.0000	4.292E-26	0.0000	6.066E-22	0.0000	3.045E-23	0.0000	7.173E-23	0.0000	2.526E-23
	Sr-90	4.980E-08	0.0013	1.942E-11	0.0000	6.361E-06	0.1669	2.265E-06	0.0594	1.279E-06	0.0336	3.327E-08
	Th-228	7.608E-22	0.0000	9.387E-25	0.0000	5.970E-24	0.0000	3.367E-25	0.0000	4.240E-26	0.0000	7.166E-24
	Th-229	6.167E-19	0.0000	7.949E-21	0.0000	3.312E-20	0.0000	1.218E-21	0.0000	1.685E-22	0.0000	6.136E-20
	Th-232	7.215E-26	0.0000	6.008E-25	0.0000	2.409E-24	0.0000	8.816E-26	0.0000	1.213E-26	0.0000	4.315E-24
	U-233	5.401E-19	0.0000	4.234E-19	0.0000	1.172E-17	0.0000	6.995E-19	0.0000	3.163E-18	0.0000	7.862E-18
	U-235	2.507E-14	0.0000	3.103E-17	0.0000	9.736E-16	0.0000	5.661E-17	0.0000	2.644E-16	0.0000	6.756E-16
	U-236	3.771E-17	0.0000	2.068E-16	0.0000	5.774E-15	0.0000	3.357E-16	0.0000	1.568E-15	0.0000	3.952E-15
	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii
	Total	2.262E-05	0.5935	7.609E-09	0.0002	7.577E-06	0.1988	3.624E-06	0.0951	2.844E-06	0.0746	1.555E-07

Attachment 10 Sheet No. 19 of 41
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 10

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 20
Intrisk : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+01 years

Water Dependent Pathways

Radio-	Water		Fish		Plant		Meat		Milk		All Pathways**	
Nuclide	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.148E-18	0.0000
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.009E-08	0.0018
C-14	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.672E-12	0.0000
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.590E-07	0.0120
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.882E-05	0.4937
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.180E-06	0.1621
Gd-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.646E-21	0.0000
H-3	7.901E-07	0.0207	7.792E-10	0.0000	2.958E-07	0.0078	4.753E-08	0.0012	1.529E-07	0.0040	1.287E-06	0.0338
Ni-63	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.210E-06	0.0317
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.120E-12	0.0000
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.165E-18	0.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.595E-08	0.0023
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.831E-08	0.0005
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.287E-21	0.0000
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.989E-06	0.2620
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.752E-22	0.0000
Th-229	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.205E-19	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.497E-24	0.0000
U-233	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.440E-17	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.707E-14	0.0000
U-236	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.187E-14	0.0000
ifififif	ififififif	ifififif	ififififif	ifififif	ififififif	ifififif	ififififif	ifififif	ififififif	ifififif	ififififif	ifififif
Total	7.901E-07	0.0207	7.792E-10	0.0000	2.958E-07	0.0078	4.753E-08	0.0012	1.529E-07	0.0040	3.812E-05	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 1.000E+01 years

0

Radon	Radionuclides									
Pathway	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212		
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
ififififif	ififififif	ififififif	ififififif	ififififif	ififififif	ififififif	ififififif	ififififif	ififififif	ififififif
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

Attachment 10 Sheet No. 20 of 41
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 10

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 21
Intrisk : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)														
and Fraction of Total Risk at t= 1.000E+01 years														
Water Independent Pathways (Inhalation excludes radon)														
	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Radio- Nuclide	AAAAA risk	AAAAA fract.	AAAAA risk	AAAAA fract.	AAAAA risk	AAAAA fract.	AAAAA risk	AAAAA fract.	AAAAA risk	AAAAA fract.	AAAAA risk	AAAAA fract.	AAAAA risk	AAAAA fract.
Am-241	3.217E-08	0.0008	2.140E-09	0.0001	0.000E+00	0.0000	1.327E-08	0.0003	2.408E-10	0.0000	2.613E-11	0.0000	2.225E-08	0.0006
C-14	5.786E-18	0.0000	1.291E-15	0.0000	0.000E+00	0.0000	1.999E-12	0.0000	9.547E-13	0.0000	7.170E-13	0.0000	1.798E-16	0.0000
Co-60	4.467E-07	0.0117	8.675E-14	0.0000	0.000E+00	0.0000	5.617E-09	0.0001	5.329E-09	0.0001	1.221E-09	0.0000	1.315E-10	0.0000
Cs-137	1.592E-05	0.4176	5.028E-12	0.0000	0.000E+00	0.0000	8.212E-07	0.0215	1.267E-06	0.0332	7.870E-07	0.0206	2.463E-08	0.0006
Eu-152	6.175E-06	0.1620	7.121E-12	0.0000	0.000E+00	0.0000	2.212E-09	0.0001	7.575E-10	0.0000	5.005E-11	0.0000	1.707E-09	0.0000
H-3	0.000E+00	0.0000	1.992E-12	0.0000	0.000E+00	0.0000	2.887E-11	0.0000	8.297E-12	0.0000	1.329E-11	0.0000	6.671E-15	0.0000
Ni-63	0.000E+00	0.0000	3.144E-11	0.0000	0.000E+00	0.0000	3.366E-07	0.0088	8.387E-08	0.0022	7.766E-07	0.0204	1.313E-08	0.0003
Pu-239	4.029E-10	0.0000	4.454E-09	0.0001	0.000E+00	0.0000	3.026E-08	0.0008	1.098E-09	0.0000	2.979E-11	0.0000	4.970E-08	0.0013
Pu-240	3.078E-11	0.0000	9.495E-10	0.0000	0.000E+00	0.0000	6.451E-09	0.0002	2.340E-10	0.0000	6.352E-12	0.0000	1.063E-08	0.0003
Sr-90	4.980E-08	0.0013	1.942E-11	0.0000	0.000E+00	0.0000	6.361E-06	0.1669	2.265E-06	0.0594	1.279E-06	0.0336	3.327E-08	0.0009
ii														

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p) and Fraction of Total Risk at t= 1.000E+01 years														
Water Dependent Pathways														
	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Nuclide	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.010E-08	0.0018
C-14	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.672E-12	0.0000
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.590E-07	0.0120
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.882E-05	0.4937
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.180E-06	0.1621
H-3	7.901E-07	0.0207	7.792E-10	0.0000	0.000E+00	0.0000	2.958E-07	0.0078	4.753E-08	0.0012	1.529E-07	0.0040	1.287E-06	0.0338
Ni-63	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.210E-06	0.0317
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.595E-08	0.0023
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.831E-08	0.0005
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.989E-06	0.2620
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	7.901E-07	0.0207	7.792E-10	0.0000	0.000E+00	0.0000	2.958E-07	0.0078	4.753E-08	0.0012	1.529E-07	0.0040	3.812E-05	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Attachment 10 Sheet No. 21 of 41
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 10

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 22
Intrisk : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 1.100E+01 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
Ac-227	5.938E-16	1.993E-12	5.288E-14	1.785E-14	7.995E-13	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.863E-12
Am-241	2.598E-03	3.378E+00	6.127E-02	6.651E-03	3.498E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	6.944E+00
C-14	3.391E-05	1.856E-01	8.864E-02	6.657E-02	1.197E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.408E-01
Co-60	2.852E-04	2.964E+01	2.812E+01	6.444E+00	3.840E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	6.459E+01
Cs-137	1.913E-02	9.941E+02	1.534E+03	9.527E+02	2.576E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.506E+03
Eu-152	4.893E-03	1.590E+01	5.444E+00	3.597E-01	6.588E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.829E+01
Gd-152	1.302E-16	4.229E-13	1.448E-13	3.829E-15	1.753E-13	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.468E-13
H-3	2.590E+00	5.188E+01	1.491E+01	2.388E+01	7.845E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	9.067E+01
Ni-63	2.015E-01	1.309E+04	3.262E+03	3.020E+04	2.713E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.683E+04
Np-237	9.305E-09	2.410E-04	1.419E-05	1.704E-07	1.253E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.679E-04
Pa-231	5.522E-15	7.138E-11	2.653E-11	6.863E-14	7.434E-12	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.054E-10
Pu-239	4.463E-03	5.803E+00	2.105E-01	5.713E-03	6.010E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.203E+01
Pu-240	9.526E-04	1.239E+00	4.493E-02	1.219E-03	1.283E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.567E+00
Ra-228	2.715E-20	1.392E-15	6.854E-17	1.629E-16	3.655E-17	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.660E-15
Sr-90	7.841E-03	3.056E+03	1.088E+03	6.147E+02	1.056E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.769E+03
Th-228	1.499E-20	3.782E-17	2.275E-18	2.855E-19	2.018E-17	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	6.056E-17
Th-229	7.688E-17	1.015E-13	3.828E-15	5.464E-16	1.035E-13	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.094E-13
Th-232	8.269E-20	1.086E-16	4.030E-18	5.666E-19	1.113E-16	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.245E-16
U-233	2.206E-13	7.514E-10	4.638E-11	2.011E-10	2.970E-10	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.296E-09
U-235	4.704E-11	1.525E-07	8.852E-09	4.143E-08	6.334E-08	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.662E-07
U-236	3.019E-10	9.789E-07	5.680E-08	2.659E-07	4.064E-07	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.708E-06
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
Radon and its Decay Products as pCi/yr at t= 1.100E+01 years

0

Radon Pathway	Radionuclides						
	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

Attachment : 10 Sheet No. 22 of 41
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 10

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 23
Intrisk : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p) and Fraction of Total Risk at t= 1.100E+01 years Water Independent Pathways (Inhalation excludes radon)													
	Ground		Inhalation		Plant		Meat		Milk		Soil		
Radio- Nuclide	AAAAA risk	AAAAA fract.	AAAAA risk	AAAAA fract.	AAAAA risk	AAAAA fract.	AAAAA risk	AAAAA fract.	AAAAA risk	AAAAA fract.	AAAAA risk	AAAAA fract.	
Ac-227	5.700E-18	0.0000	5.416E-20	0.0000	5.582E-19	0.0000	7.379E-21	0.0000	5.031E-21	0.0000	4.059E-19	0.0000	
Am-241	3.211E-08	0.0009	2.137E-09	0.0001	1.325E-08	0.0004	2.403E-10	0.0000	2.608E-11	0.0000	2.222E-08	0.0006	
C-14	1.367E-18	0.0000	3.051E-16	0.0000	4.722E-13	0.0000	2.256E-13	0.0000	1.694E-13	0.0000	4.249E-17	0.0000	
Co-60	3.916E-07	0.0106	7.605E-14	0.0000	4.923E-09	0.0001	4.671E-09	0.0001	1.070E-09	0.0000	1.153E-10	0.0000	
Cs-137	1.555E-05	0.4211	4.912E-12	0.0000	8.023E-07	0.0217	1.238E-06	0.0335	7.689E-07	0.0208	2.406E-08	0.0007	
Eu-152	5.862E-06	0.1587	6.760E-12	0.0000	2.100E-09	0.0001	7.190E-10	0.0000	4.751E-11	0.0000	1.620E-09	0.0000	
Gd-152	0.000E+00	0.0000	5.824E-23	0.0000	8.006E-22	0.0000	2.742E-22	0.0000	7.246E-24	0.0000	5.420E-22	0.0000	
H-3	0.000E+00	0.0000	6.943E-13	0.0000	1.006E-11	0.0000	2.891E-12	0.0000	4.631E-12	0.0000	2.325E-15	0.0000	
Ni-63	0.000E+00	0.0000	3.120E-11	0.0000	3.340E-07	0.0090	8.324E-08	0.0023	7.707E-07	0.0209	1.303E-08	0.0004	
Np-237	7.706E-12	0.0000	1.144E-14	0.0000	1.526E-12	0.0000	9.032E-14	0.0000	1.081E-15	0.0000	1.408E-13	0.0000	
Pa-231	2.061E-18	0.0000	4.513E-20	0.0000	2.907E-18	0.0000	1.090E-18	0.0000	2.741E-21	0.0000	4.994E-19	0.0000	
Pu-239	4.029E-10	0.0000	4.453E-09	0.0001	3.026E-08	0.0008	1.098E-09	0.0000	2.979E-11	0.0000	4.970E-08	0.0013	
Pu-240	3.077E-11	0.0000	9.493E-10	0.0000	6.450E-09	0.0002	2.340E-10	0.0000	6.350E-12	0.0000	1.063E-08	0.0003	
Ra-228	6.003E-22	0.0000	4.657E-26	0.0000	6.584E-22	0.0000	3.306E-23	0.0000	7.786E-23	0.0000	2.741E-23	0.0000	
Sr-90	4.861E-08	0.0013	1.896E-11	0.0000	6.209E-06	0.1681	2.211E-06	0.0599	1.249E-06	0.0338	3.248E-08	0.0009	
Th-228	8.308E-22	0.0000	1.025E-24	0.0000	6.503E-24	0.0000	3.664E-25	0.0000	4.614E-26	0.0000	7.826E-24	0.0000	
Th-229	6.788E-19	0.0000	8.749E-21	0.0000	3.645E-20	0.0000	1.339E-21	0.0000	1.852E-22	0.0000	6.753E-20	0.0000	
Th-232	7.729E-26	0.0000	6.436E-25	0.0000	2.580E-24	0.0000	9.441E-26	0.0000	1.298E-26	0.0000	4.623E-24	0.0000	
U-233	5.783E-19	0.0000	4.533E-19	0.0000	1.254E-17	0.0000	7.479E-19	0.0000	3.385E-18	0.0000	8.418E-18	0.0000	
U-235	2.601E-14	0.0000	3.220E-17	0.0000	1.010E-15	0.0000	5.874E-17	0.0000	2.744E-16	0.0000	7.010E-16	0.0000	
U-236	3.913E-17	0.0000	2.146E-16	0.0000	5.992E-15	0.0000	3.484E-16	0.0000	1.627E-15	0.0000	4.100E-15	0.0000	
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	
Total	2.189E-05	0.5926	7.602E-09	0.0002	7.402E-06	0.2004	3.539E-06	0.0958	2.790E-06	0.0755	1.539E-07	0.0042	

Attachment 10 Sheet No. 23 of 41
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 10

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 24
Intrisk : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.100E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.731E-18	0.0000
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.997E-08	0.0019
C-14	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.676E-13	0.0000
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.024E-07	0.0109
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.839E-05	0.4978
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.867E-06	0.1588
Gd-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.682E-21	0.0000
H-3	7.051E-07	0.0191	6.989E-10	0.0000	2.670E-07	0.0072	4.444E-08	0.0012	1.387E-07	0.0038	1.156E-06	0.0313
Ni-63	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.201E-06	0.0325
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.475E-12	0.0000
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.605E-18	0.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.594E-08	0.0023
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.830E-08	0.0005
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.397E-21	0.0000
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.750E-06	0.2640
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.466E-22	0.0000
Th-229	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.931E-19	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.031E-24	0.0000
U-233	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.612E-17	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.809E-14	0.0000
U-236	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.232E-14	0.0000
iiiiiiii	iiiiiiiiii	iiiiiiii	iiiiiiiiii	iiiiiiii	iiiiiiiiii	iiiiiiii	iiiiiiiiii	iiiiiiii	iiiiiiiiii	iiiiiiii	iiiiiiiiii	iiiiiiii
Total	7.051E-07	0.0191	6.989E-10	0.0000	2.670E-07	0.0072	4.444E-08	0.0012	1.387E-07	0.0038	3.694E-05	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 1.100E+01 years

0

Radon Pathway	Radionuclides									
	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212		
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
iiiiiiiiii	iiiiiiiiii	iiiiiiiiii	iiiiiiiiii	iiiiiiiiii	iiiiiiiiii	iiiiiiiiii	iiiiiiiiii	iiiiiiiiii	iiiiiiiiii	iiiiiiiiii
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

Attachment 10 Sheet No. 24 of 41
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 10

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 25
Intrisk : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p) and Fraction of Total Risk at t= 1.100E+01 years														
Water Independent Pathways (Inhalation excludes radon)														
	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Radio- Nuclide	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
AAAAAAA	AAAAAAA	AAAAA	AAAAAAA	AAAAA	AAAAAAA	AAAAA	AAAAAAA	AAAAA	AAAAAAA	AAAAA	AAAAAAA	AAAAA	AAAAAAA	AAAAA
Am-241	3.211E-08	0.0009	2.137E-09	0.0001	0.000E+00	0.0000	1.325E-08	0.0004	2.404E-10	0.0000	2.608E-11	0.0000	2.222E-08	0.0006
C-14	1.367E-18	0.0000	3.051E-16	0.0000	0.000E+00	0.0000	4.722E-13	0.0000	2.256E-13	0.0000	1.694E-13	0.0000	4.249E-17	0.0000
Co-60	3.916E-07	0.0106	7.605E-14	0.0000	0.000E+00	0.0000	4.923E-09	0.0001	4.671E-09	0.0001	1.070E-09	0.0000	1.153E-10	0.0000
Cs-137	1.555E-05	0.4211	4.912E-12	0.0000	0.000E+00	0.0000	8.023E-07	0.0217	1.238E-06	0.0335	7.689E-07	0.0208	2.406E-08	0.0007
Eu-152	5.862E-06	0.1587	6.760E-12	0.0000	0.000E+00	0.0000	2.100E-09	0.0001	7.190E-10	0.0000	4.751E-11	0.0000	1.620E-09	0.0000
H-3	0.000E+00	0.0000	6.943E-13	0.0000	0.000E+00	0.0000	1.006E-11	0.0000	2.891E-12	0.0000	4.631E-12	0.0000	2.325E-15	0.0000
Ni-63	0.000E+00	0.0000	3.120E-11	0.0000	0.000E+00	0.0000	3.340E-07	0.0090	8.324E-08	0.0023	7.707E-07	0.0209	1.303E-08	0.0004
Pu-239	4.029E-10	0.0000	4.453E-09	0.0001	0.000E+00	0.0000	3.026E-08	0.0008	1.098E-09	0.0000	2.979E-11	0.0000	4.970E-08	0.0013
Pu-240	3.077E-11	0.0000	9.493E-10	0.0000	0.000E+00	0.0000	6.450E-09	0.0002	2.340E-10	0.0000	6.351E-12	0.0000	1.063E-08	0.0003
Sr-90	4.861E-08	0.0013	1.896E-11	0.0000	0.000E+00	0.0000	6.209E-06	0.1681	2.211E-06	0.0599	1.249E-06	0.0338	3.248E-08	0.0009
iiiiiii	iiiiiii	iiiiii	iiiiiii	iiiiii	iiiiiii	iiiiii	iiiiiii	iiiiii	iiiiiii	iiiiii	iiiiiii	iiiiii	iiiiiii	iiiiii
Total	2.189E-05	0.5926	7.602E-09	0.0002	0.000E+00	0.0000	7.402E-06	0.2004	3.539E-06	0.0958	2.790E-06	0.0755	1.539E-07	0.0042
Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p) and Fraction of Total Risk at t= 1.100E+01 years														

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p) and Fraction of Total Risk at t= 1.100E+01 years														
Water Dependent Pathways														
Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.998E-08	0.0019
C-14	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.676E-13	0.0000
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.024E-07	0.0109
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.839E-05	0.4978
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.867E-06	0.1588
H-3	7.051E-07	0.0191	6.989E-10	0.0000	0.000E+00	0.0000	2.670E-07	0.0072	4.444E-08	0.0012	1.387E-07	0.0038	1.156E-06	0.0313
Ni-63	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.201E-06	0.0325
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.594E-08	0.0023
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.830E-08	0.0005
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.750E-06	0.2640
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	7.051E-07	0.0191	6.989E-10	0.0000	0.000E+00	0.0000	2.670E-07	0.0072	4.444E-08	0.0012	1.387E-07	0.0038	3.694E-05	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Attachment 10 Sheet No. 25 of 41
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 10

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 26
Intrisk : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 3.000E+01 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	1.020E-14	3.360E-11	4.503E-13	3.028E-13	1.373E-11	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.808E-11
Am-241	2.517E-03	3.273E+00	5.937E-02	6.445E-03	3.390E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	6.729E+00
C-14	4.218E-17	2.308E-13	1.102E-13	8.280E-14	1.488E-17	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.239E-13
Co-60	2.335E-05	2.427E+00	2.302E+00	5.276E-01	3.144E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.288E+00
Cs-137	1.228E-02	6.382E+02	9.848E+02	6.117E+02	1.654E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.251E+03
Eu-152	1.820E-03	5.913E+00	2.025E+00	1.338E-01	2.450E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.052E+01
Gd-152	2.359E-16	7.665E-13	2.625E-13	6.938E-15	3.176E-13	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.354E-12
H-3	5.182E-09	1.038E-07	2.982E-08	4.777E-08	1.569E-11	1.051E+06	8.082E+02	3.077E+05	5.023E+04	1.594E+05	1.569E+06
Ni-63	1.745E-01	1.133E+04	2.824E+03	2.615E+04	2.349E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.054E+04
Np-237	2.481E-08	6.439E-04	3.813E-05	4.564E-07	3.340E-05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.159E-04
Pa-231	3.970E-14	5.149E-10	1.931E-10	4.853E-13	5.345E-11	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.619E-10
Pu-239	4.456E-03	5.794E+00	2.102E-01	5.704E-03	6.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.201E+01
Pu-240	9.497E-04	1.235E+00	4.479E-02	1.216E-03	1.279E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.559E+00
Ra-228	3.570E-19	1.842E-14	9.249E-16	2.178E-15	4.807E-16	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.200E-14
Sr-90	4.948E-03	1.928E+03	6.866E+02	3.878E+02	6.661E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.009E+03
Th-228	2.871E-19	6.159E-16	3.473E-17	4.374E-18	3.866E-16	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.042E-15
Th-229	1.504E-15	1.967E-12	7.230E-14	1.001E-14	2.025E-12	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.075E-12
Th-232	5.949E-19	7.763E-16	2.840E-17	3.905E-18	8.010E-16	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.610E-15
U-233	1.565E-12	5.179E-09	3.087E-10	1.398E-09	2.107E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.993E-09
U-235	1.222E-10	3.968E-07	2.307E-08	1.077E-07	1.645E-07	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	6.922E-07
U-236	7.836E-10	2.544E-06	1.480E-07	6.909E-07	1.055E-06	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.438E-06

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
Radon and its Decay Products as pCi/yr at t= 3.000E+01 years

0

Radon Pathway	Radionuclides							
	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

Attachment 10 Sheet No. 26 of 41
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 10

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 27
Intrisk : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p) and Fraction of Total Risk at t= 3.000E+01 years Water Independent Pathways (Inhalation excludes radon)													
Ground		Inhalation		Plant		Meat		Milk		Soil			
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Nuclide	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk
Ac-227	2.153E-17	0.0000	2.046E-19	0.0000	2.100E-18	0.0000	2.207E-20	0.0000	1.895E-20	0.0000	1.533E-18	0.0000	1.533E-18
Am-241	3.111E-08	0.0014	2.070E-09	0.0001	1.284E-08	0.0006	2.328E-10	0.0000	2.527E-11	0.0000	2.153E-08	0.0010	2.153E-08
C-14	1.670E-30	0.0000	3.794E-28	0.0000	5.873E-25	0.0000	2.805E-25	0.0000	2.107E-25	0.0000	5.191E-29	0.0000	5.191E-29
Co-60	3.206E-08	0.0015	6.226E-15	0.0000	4.031E-10	0.0000	3.824E-10	0.0000	8.763E-11	0.0000	9.436E-12	0.0000	9.436E-12
Cs-137	9.986E-06	0.4554	3.154E-12	0.0000	5.151E-07	0.0235	7.948E-07	0.0362	4.936E-07	0.0225	1.545E-08	0.0007	1.545E-08
Eu-152	2.180E-06	0.0994	2.514E-12	0.0000	7.809E-10	0.0000	2.674E-10	0.0000	1.767E-11	0.0000	6.026E-10	0.0000	6.026E-10
Gd-152	0.000E+00	0.0000	7.284E-23	0.0000	1.001E-21	0.0000	3.429E-22	0.0000	9.062E-24	0.0000	6.779E-22	0.0000	6.779E-22
H-3	0.000E+00	0.0000	1.389E-21	0.0000	2.013E-20	0.0000	5.784E-21	0.0000	9.264E-21	0.0000	4.650E-24	0.0000	4.650E-24
Ni-63	0.000E+00	0.0000	2.702E-11	0.0000	2.892E-07	0.0132	7.207E-08	0.0033	6.673E-07	0.0304	1.128E-08	0.0005	1.128E-08
Np-237	1.306E-11	0.0000	1.939E-14	0.0000	2.588E-12	0.0000	1.534E-13	0.0000	1.835E-15	0.0000	2.386E-13	0.0000	2.386E-13
Pa-231	5.592E-18	0.0000	1.225E-19	0.0000	7.894E-18	0.0000	2.966E-18	0.0000	7.410E-21	0.0000	1.355E-18	0.0000	1.355E-18
Pu-239	4.022E-10	0.0000	4.446E-09	0.0002	3.021E-08	0.0014	1.096E-09	0.0000	2.974E-11	0.0000	4.962E-08	0.0023	4.962E-08
Pu-240	3.068E-11	0.0000	9.464E-10	0.0000	6.430E-09	0.0003	2.332E-10	0.0000	6.330E-12	0.0000	1.060E-08	0.0005	1.060E-08
Ra-228	1.946E-21	0.0000	1.510E-25	0.0000	2.136E-21	0.0000	1.077E-22	0.0000	2.532E-22	0.0000	8.884E-23	0.0000	8.884E-23
Sr-90	3.067E-08	0.0014	1.196E-11	0.0000	3.918E-06	0.1787	1.395E-06	0.0636	7.880E-07	0.0359	2.049E-08	0.0009	2.049E-08
Th-228	2.927E-21	0.0000	3.611E-24	0.0000	2.220E-23	0.0000	1.232E-24	0.0000	1.553E-25	0.0000	2.757E-23	0.0000	2.757E-23
Th-229	2.843E-18	0.0000	3.665E-20	0.0000	1.524E-19	0.0000	5.573E-21	0.0000	7.656E-22	0.0000	2.829E-19	0.0000	2.829E-19
Th-232	2.099E-25	0.0000	1.748E-24	0.0000	6.996E-24	0.0000	2.551E-25	0.0000	3.490E-26	0.0000	1.255E-23	0.0000	1.255E-23
U-233	1.551E-18	0.0000	1.215E-18	0.0000	3.339E-17	0.0000	1.975E-18	0.0000	9.033E-18	0.0000	2.257E-17	0.0000	2.257E-17
U-235	4.305E-14	0.0000	5.328E-17	0.0000	1.673E-15	0.0000	9.731E-17	0.0000	4.542E-16	0.0000	1.160E-15	0.0000	1.160E-15
U-236	6.471E-17	0.0000	3.549E-16	0.0000	9.913E-15	0.0000	5.767E-16	0.0000	2.692E-15	0.0000	6.781E-15	0.0000	6.781E-15
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	1.226E-05	0.5591	7.508E-09	0.0003	4.773E-06	0.2176	2.264E-06	0.1032	1.949E-06	0.0889	1.296E-07	0.0059	1.296E-07

Attachment 10 Sheet No. 27 of 41
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 10

1RESRAD, Version 6.3 T< Limit = 180 days 02/02/2007 19:48 Page 28
Intrisk : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+01 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.541E-17	0.0000
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.780E-08	0.0031
C-14	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.079E-24	0.0000
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.294E-08	0.0015
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.180E-05	0.5383
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.182E-06	0.0995
Gd-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.104E-21	0.0000
H-3	3.297E-07	0.0150	3.292E-10	0.0000	1.269E-07	0.0058	2.215E-08	0.0010	6.630E-08	0.0030	5.454E-07	0.0249
Ni-63	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.040E-06	0.0474
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.606E-11	0.0000
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.794E-17	0.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.580E-08	0.0039
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.825E-08	0.0008
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.532E-21	0.0000
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.152E-06	0.2805
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.981E-21	0.0000
Th-229	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.322E-18	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.180E-23	0.0000
U-233	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.973E-17	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.649E-14	0.0000
U-236	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.038E-14	0.0000
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	3.297E-07	0.0150	3.292E-10	0.0000	1.269E-07	0.0058	2.215E-08	0.0010	6.630E-08	0.0030	2.193E-05	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 3.000E+01 years

0

Radon Pathway	Radionuclides							
	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

Attachment 10 Sheet No. 28 of 41
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 10

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 29
Intrisk : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+01 years
Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground risk fract.	Inhalation risk fract.	Radon risk fract.	Plant risk fract.	Meat risk fract.	Milk risk fract.	Soil risk fract.
Am-241	3.112E-08 0.0014	2.070E-09 0.0001	0.000E+00 0.0000	1.284E-08 0.0006	2.330E-10 0.0000	2.528E-11 0.0000	2.153E-08 0.0010
C-14	1.670E-30 0.0000	3.794E-28 0.0000	0.000E+00 0.0000	5.873E-25 0.0000	2.805E-25 0.0000	2.107E-25 0.0000	5.191E-29 0.0000
Co-60	3.206E-08 0.0015	6.226E-15 0.0000	0.000E+00 0.0000	4.031E-10 0.0000	3.824E-10 0.0000	8.763E-11 0.0000	9.436E-12 0.0000
Cs-137	9.986E-06 0.4554	3.154E-12 0.0000	0.000E+00 0.0000	5.151E-07 0.0235	7.948E-07 0.0362	4.936E-07 0.0225	1.545E-08 0.0007
Eu-152	2.180E-06 0.0994	2.514E-12 0.0000	0.000E+00 0.0000	7.809E-10 0.0000	2.674E-10 0.0000	1.767E-11 0.0000	6.026E-10 0.0000
H-3	0.000E+00 0.0000	1.389E-21 0.0000	0.000E+00 0.0000	2.013E-20 0.0000	5.784E-21 0.0000	9.264E-21 0.0000	4.650E-24 0.0000
Ni-63	0.000E+00 0.0000	2.702E-11 0.0000	0.000E+00 0.0000	2.892E-07 0.0132	7.207E-08 0.0033	6.673E-07 0.0304	1.128E-08 0.0005
Pu-239	4.023E-10 0.0000	4.446E-09 0.0002	0.000E+00 0.0000	3.021E-08 0.0014	1.096E-09 0.0000	2.974E-11 0.0000	4.962E-08 0.0023
Pu-240	3.068E-11 0.0000	9.464E-10 0.0000	0.000E+00 0.0000	6.430E-09 0.0003	2.332E-10 0.0000	6.333E-12 0.0000	1.060E-08 0.0005
Sr-90	3.067E-08 0.0014	1.196E-11 0.0000	0.000E+00 0.0000	3.918E-06 0.1787	1.395E-06 0.0636	7.880E-07 0.0359	2.049E-08 0.0009
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	1.226E-05 0.5591	7.508E-09 0.0003	0.000E+00 0.0000	4.773E-06 0.2176	2.264E-06 0.1032	1.949E-06 0.0889	1.296E-07 0.0059

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+01 years
Water Dependent Pathways

Radio- Nuclide	Water risk fract.	Fish risk fract.	Radon risk fract.	Plant risk fract.	Meat risk fract.	Milk risk fract.	All pathways risk fract.
Am-241	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	6.782E-08 0.0031
C-14	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.079E-24 0.0000
Co-60	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	3.294E-08 0.0015
Cs-137	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.180E-05 0.5383
Eu-152	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	2.182E-06 0.0995
H-3	3.297E-07 0.0150	3.292E-10 0.0000	0.000E+00 0.0000	1.269E-07 0.0058	2.215E-08 0.0010	6.630E-08 0.0030	5.454E-07 0.0249
Ni-63	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.040E-06 0.0474
Pu-239	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	8.580E-08 0.0039
Pu-240	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.825E-08 0.0008
Sr-90	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	6.152E-06 0.2805
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	3.297E-07 0.0150	3.292E-10 0.0000	0.000E+00 0.0000	1.269E-07 0.0058	2.215E-08 0.0010	6.630E-08 0.0030	2.193E-05 1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Attachment 10 Sheet No. 29 of 41
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 10

1RESRAD, Version 6.3 T_{1/2} Limit = 180 days 02/02/2007 19:48 Page 30
Intrisk : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t = 1.000E+02 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)						Water Dependent Pathways						Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk			
Ac-227	2.234E-13	7.303E-10	5.819E-12	6.597E-12	3.008E-10	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.043E-09
Am-241	2.242E-03	2.915E+00	5.286E-02	5.739E-03	3.018E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.991E+00
C-14	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Co-60	2.312E-09	2.403E-04	2.280E-04	5.223E-05	3.112E-06	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.236E-04
Cs-137	2.400E-03	1.247E+02	1.925E+02	1.195E+02	3.232E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.400E+02
Eu-152	4.760E-05	1.547E-01	5.296E-02	3.499E-03	6.409E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.752E-01
Gd-152	2.967E-16	9.639E-13	3.301E-13	8.724E-15	3.994E-13	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.702E-12
H-3	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.504E-25	1.177E-28	4.583E-26	8.400E-27	2.411E-26	2.289E-25	0.000E+00	2.289E-25
Ni-63	1.026E-01	6.667E+03	1.661E+03	1.538E+04	1.382E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.385E+04
Np-237	7.613E-08	1.977E-03	1.174E-04	1.403E-06	1.025E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.199E-03
Pa-231	3.909E-13	5.076E-09	1.911E-09	4.745E-12	5.263E-10	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.518E-09
Pu-239	4.431E-03	5.761E+00	2.090E-01	5.671E-03	5.965E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.194E+01
Pu-240	9.391E-04	1.221E+00	4.429E-02	1.202E-03	1.264E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.531E+00
Ra-228	5.032E-18	2.601E-13	1.316E-14	3.088E-14	6.775E-15	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.110E-13
Sr-90	9.070E-04	3.535E+02	1.259E+02	7.110E+01	1.221E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.517E+02
Th-228	4.760E-18	9.616E-15	5.260E-16	6.643E-17	6.409E-15	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.662E-14
Th-229	4.890E-14	6.368E-11	2.319E-12	3.165E-13	6.584E-11	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.322E-10
Th-232	5.873E-18	7.644E-15	2.779E-16	3.786E-17	7.907E-15	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.587E-14
U-233	1.466E-11	4.792E-08	2.812E-09	1.299E-08	1.974E-08	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.345E-08
U-235	3.428E-10	1.114E-06	6.482E-08	3.024E-07	4.616E-07	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.942E-06
U-236	2.192E-09	7.120E-06	4.144E-07	1.933E-06	2.951E-06	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.242E-05

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
Radon and its Decay Products as pCi/yr at t = 1.000E+02 years

0

Radon Pathway	Radionuclides							
	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

Attachment 10 Sheet No. 30 of 41
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 10

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 31
Intrisk : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p) and Fraction of Total Risk at t= 1.000E+02 years Water Independent Pathways (Inhalation excludes radon)													
	Ground		Inhalation		Plant		Meat		Milk		Soil		
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	
Radio- Nuclide	AAAAA risk	AAAAA fract.	AAAAA risk	AAAAA fract.	AAAAA risk	AAAAA fract.	AAAAA risk	AAAAA fract.	AAAAA risk	AAAAA fract.	AAAAA risk	AAAAA fract.	
Ac-227	2.043E-16	0.0000	1.942E-18	0.0000	1.986E-17	0.0000	1.522E-19	0.0000	1.794E-19	0.0000	1.455E-17	0.0000	
Am-241	2.770E-08	0.0065	1.843E-09	0.0004	1.143E-08	0.0027	2.073E-10	0.0000	2.251E-11	0.0000	1.917E-08	0.0045	
C-14	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	
Co-60	3.174E-12	0.0000	6.164E-19	0.0000	3.991E-14	0.0000	3.786E-14	0.0000	8.676E-15	0.0000	9.343E-16	0.0000	
Cs-137	1.952E-06	0.4573	6.164E-13	0.0000	1.007E-07	0.0236	1.553E-07	0.0364	9.648E-08	0.0226	3.020E-09	0.0007	
Eu-152	5.703E-08	0.0134	6.576E-14	0.0000	2.043E-11	0.0000	6.995E-12	0.0000	4.622E-13	0.0000	1.576E-11	0.0000	
Gd-152	0.000E+00	0.0000	8.120E-23	0.0000	1.116E-21	0.0000	3.822E-22	0.0000	1.010E-23	0.0000	7.557E-22	0.0000	
H-3	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	
Ni-63	0.000E+00	0.0000	1.589E-11	0.0000	1.701E-07	0.0399	4.239E-08	0.0099	3.925E-07	0.0920	6.637E-09	0.0016	
Np-237	3.076E-11	0.0000	4.567E-14	0.0000	6.098E-12	0.0000	3.621E-13	0.0000	4.327E-15	0.0000	5.621E-13	0.0000	
Pa-231	3.154E-17	0.0000	6.907E-19	0.0000	4.455E-17	0.0000	1.677E-17	0.0000	4.163E-20	0.0000	7.644E-18	0.0000	
Pu-239	3.999E-10	0.0001	4.421E-09	0.0010	3.003E-08	0.0070	1.089E-09	0.0003	2.957E-11	0.0000	4.933E-08	0.0116	
Pu-240	3.034E-11	0.0000	9.359E-10	0.0002	6.358E-09	0.0015	2.306E-10	0.0001	6.260E-12	0.0000	1.048E-08	0.0025	
Ra-228	1.347E-20	0.0000	1.045E-24	0.0000	1.481E-20	0.0000	7.494E-22	0.0000	1.759E-21	0.0000	6.152E-22	0.0000	
Sr-90	5.623E-09	0.0013	2.193E-12	0.0000	7.182E-07	0.1683	2.558E-07	0.0599	1.445E-07	0.0339	3.757E-09	0.0009	
Th-228	2.205E-20	0.0000	2.721E-23	0.0000	1.623E-22	0.0000	8.863E-24	0.0000	1.119E-24	0.0000	2.077E-22	0.0000	
Th-229	3.835E-17	0.0000	4.943E-19	0.0000	2.051E-18	0.0000	7.464E-20	0.0000	1.018E-20	0.0000	3.815E-18	0.0000	
Th-232	1.187E-24	0.0000	9.881E-24	0.0000	3.950E-23	0.0000	1.436E-24	0.0000	1.955E-25	0.0000	7.098E-23	0.0000	
U-233	8.324E-18	0.0000	6.525E-18	0.0000	1.781E-16	0.0000	1.044E-17	0.0000	4.827E-17	0.0000	1.212E-16	0.0000	
U-235	9.303E-14	0.0000	1.151E-16	0.0000	3.616E-15	0.0000	2.105E-16	0.0000	9.818E-16	0.0000	2.507E-15	0.0000	
U-236	1.394E-16	0.0000	7.647E-16	0.0000	2.136E-14	0.0000	1.244E-15	0.0000	5.801E-15	0.0000	1.461E-14	0.0000	
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	
Total	2.042E-06	0.4786	7.219E-09	0.0017	1.037E-06	0.2430	4.550E-07	0.1066	6.335E-07	0.1485	9.241E-08	0.0217	

Attachment 10 Sheet No. 31 of 41
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 10

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 32
Intrisk : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.410E-16	0.0000
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.037E-08	0.0141
C-14	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.262E-12	0.0000
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.307E-06	0.5406
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.707E-08	0.0134
Gd-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.345E-21	0.0000
H-3	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ni-63	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.117E-07	0.1433
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.783E-11	0.0000
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.012E-16	0.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.531E-08	0.0200
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.804E-08	0.0042
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.141E-20	0.0000
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.128E-06	0.2643
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.246E-20	0.0000
Th-229	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.479E-17	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.232E-22	0.0000
U-233	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.728E-16	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.005E-13	0.0000
U-236	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.392E-14	0.0000
ifififif	ififififif	ifififif	ififififif	ifififif	ififififif	ifififif	ififififif	ifififif	ififififif	ifififif	ififififif	ifififif
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.267E-06	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 1.000E+02 years

0

Radon Pathway	Radionuclides						
	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
ififififif	ififififif	ififififif	ififififif	ififififif	ififififif	ififififif	ififififif
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

Attachment 10 Sheet No. 32 of 41
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 10

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 33
Intrisk : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)													
and Fraction of Total Risk at t= 1.000E+02 years													
Water Independent Pathways (Inhalation excludes radon)													
	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil
Radio- Nuclide	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk
Am-241	2.773E-08	0.0065	1.843E-09	0.0004	0.000E+00	0.0000	1.144E-08	0.0027	2.077E-10	0.0000	2.251E-11	0.0000	1.917E-08
C-14	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00
Co-60	3.174E-12	0.0000	6.164E-19	0.0000	0.000E+00	0.0000	3.991E-14	0.0000	3.786E-14	0.0000	8.676E-15	0.0000	9.343E-16
Cs-137	1.952E-06	0.4573	6.164E-13	0.0000	0.000E+00	0.0000	1.007E-07	0.0236	1.553E-07	0.0364	9.648E-08	0.0226	3.020E-09
Eu-152	5.703E-08	0.0134	6.576E-14	0.0000	0.000E+00	0.0000	2.043E-11	0.0000	6.995E-12	0.0000	4.622E-13	0.0000	1.576E-11
H-3	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00
Ni-63	0.000E+00	0.0000	1.589E-11	0.0000	0.000E+00	0.0000	1.701E-07	0.0399	4.239E-08	0.0099	3.925E-07	0.0920	6.637E-09
Pu-239	4.000E-10	0.0001	4.421E-09	0.0010	0.000E+00	0.0000	3.003E-08	0.0070	1.089E-09	0.0003	2.957E-11	0.0000	4.933E-08
Pu-240	3.034E-11	0.0000	9.359E-10	0.0002	0.000E+00	0.0000	6.358E-09	0.0015	2.306E-10	0.0001	6.265E-12	0.0000	1.048E-08
Sr-90	5.623E-09	0.0013	2.193E-12	0.0000	0.000E+00	0.0000	7.182E-07	0.1683	2.558E-07	0.0599	1.445E-07	0.0339	3.757E-09
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	2.042E-06	0.4786	7.219E-09	0.0017	0.000E+00	0.0000	1.037E-06	0.2430	4.550E-07	0.1066	6.335E-07	0.1485	9.241E-08

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p) and Fraction of Total Risk at t= 1.000E+02 years														
Water Dependent Pathways														
Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.041E-08	0.0142
C-14	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.262E-12	0.0000
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.307E-06	0.5406
Sr-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.707E-08	0.0134
H-3	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ni-63	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.117E-07	0.1433
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.531E-08	0.0200
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.804E-08	0.0042
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.128E-06	0.2643
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.267E-06	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Attachment 10 Sheet No. 33 of 41
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 10

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 34
Intrisk : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 3.000E+02 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	2.142E-12	6.989E-09	4.582E-11	6.317E-11	2.884E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	9.982E-09
Am-241	1.609E-03	2.092E+00	3.794E-02	4.119E-03	2.166E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.300E+00
C-14	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Co-60	8.375E-21	8.704E-16	8.259E-16	1.892E-16	1.128E-17	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.897E-15
Cs-137	2.262E-05	1.176E+00	1.814E+00	1.127E+00	3.046E-02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.147E+00
Eu-152	1.433E-09	4.657E-06	1.595E-06	1.054E-07	1.930E-06	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.286E-06
Gd-152	2.975E-16	9.666E-13	3.310E-13	8.749E-15	4.006E-13	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.707E-12
H-3	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ni-63	2.253E-02	1.464E+03	3.647E+02	3.377E+03	3.034E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.236E+03
Np-237	1.806E-07	4.692E-03	2.788E-04	3.331E-06	2.432E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.218E-03
Pa-231	2.575E-12	3.345E-08	1.260E-08	3.119E-11	3.466E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.955E-08
Pu-239	4.358E-03	5.666E+00	2.055E-01	5.578E-03	5.867E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.174E+01
Pu-240	9.094E-04	1.182E+00	4.289E-02	1.164E-03	1.224E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.451E+00
Ra-228	3.727E-17	1.928E-12	9.768E-14	2.291E-13	5.018E-14	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.305E-12
Sr-90	7.121E-06	2.776E+00	9.883E-01	5.583E-01	9.588E-03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.332E+00
Th-228	3.671E-17	7.312E-14	3.970E-15	5.017E-16	4.942E-14	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.270E-13
Th-229	9.262E-13	1.205E-09	4.375E-11	5.948E-12	1.247E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.502E-09
Th-232	3.900E-17	5.072E-14	1.841E-15	2.501E-16	5.251E-14	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.053E-13
U-233	8.279E-11	2.697E-07	1.576E-08	7.317E-08	1.115E-07	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.701E-07
U-235	6.641E-10	2.158E-06	1.256E-07	5.858E-07	8.941E-07	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.763E-06
U-236	4.202E-09	1.365E-05	7.949E-07	3.707E-06	5.658E-06	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.381E-05

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
Radon and its Decay Products as pCi/yr at t= 3.000E+02 years

Radon Pathway	Radionuclides							
	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

Attachment 10 Sheet No. 34 of 41
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 10

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 35
Intrisk : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p) and Fraction of Total Risk at t= 3.000E+02 years Water Independent Pathways (Inhalation excludes radon)												
	Ground		Inhalation		Plant		Meat		Milk		Soil	
Radio- Nuclide	AAAAA risk	AAAAA fract.	AAAAA risk	AAAAA fract.	AAAAA risk	AAAAA fract.	AAAAA risk	AAAAA fract.	AAAAA risk	AAAAA fract.	AAAAA risk	AAAAA fract.
Ac-227	1.538E-15	0.0000	1.461E-17	0.0000	1.492E-16	0.0000	9.735E-19	0.0000	1.348E-18	0.0000	1.095E-16	0.0000
Am-241	1.988E-08	0.0642	1.323E-09	0.0043	8.204E-09	0.0265	1.488E-10	0.0005	1.615E-11	0.0001	1.376E-08	0.0444
C-14	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Co-60	1.150E-23	0.0000	0.000E+00	0.0000	1.446E-25	0.0000	1.372E-25	0.0000	3.143E-26	0.0000	3.385E-27	0.0000
Cs-137	1.840E-08	0.0594	5.810E-15	0.0000	9.489E-10	0.0031	1.464E-09	0.0047	9.094E-10	0.0029	2.846E-11	0.0001
Eu-152	1.717E-12	0.0000	1.980E-18	0.0000	6.150E-16	0.0000	2.106E-16	0.0000	1.392E-17	0.0000	4.746E-16	0.0000
Gd-152	0.000E+00	0.0000	8.121E-23	0.0000	1.116E-21	0.0000	3.823E-22	0.0000	1.010E-23	0.0000	7.558E-22	0.0000
H-3	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ni-63	0.000E+00	0.0000	3.489E-12	0.0000	3.735E-08	0.1206	9.308E-09	0.0301	8.618E-08	0.2783	1.457E-09	0.0047
Np-237	6.667E-11	0.0002	9.901E-14	0.0000	1.322E-11	0.0000	7.854E-13	0.0000	9.385E-15	0.0000	1.218E-12	0.0000
Pa-231	1.732E-16	0.0000	3.793E-18	0.0000	2.447E-16	0.0000	9.222E-17	0.0000	2.282E-19	0.0000	4.197E-17	0.0000
Pu-239	3.933E-10	0.0013	4.348E-09	0.0140	2.954E-08	0.0954	1.072E-09	0.0035	2.908E-11	0.0001	4.852E-08	0.1567
Pu-240	2.938E-11	0.0001	9.063E-10	0.0029	6.158E-09	0.0199	2.234E-10	0.0007	6.062E-12	0.0000	1.015E-08	0.0328
Ra-228	8.158E-20	0.0000	6.330E-24	0.0000	8.972E-20	0.0000	4.546E-21	0.0000	1.066E-20	0.0000	3.725E-21	0.0000
Sr-90	4.415E-11	0.0001	1.722E-14	0.0000	5.639E-09	0.0182	2.008E-09	0.0065	1.134E-09	0.0037	2.950E-11	0.0001
Th-228	1.379E-19	0.0000	1.702E-22	0.0000	1.004E-21	0.0000	5.449E-23	0.0000	6.886E-24	0.0000	1.299E-21	0.0000
Th-229	5.472E-16	0.0000	7.053E-18	0.0000	2.924E-17	0.0000	1.062E-18	0.0000	1.443E-19	0.0000	5.444E-17	0.0000
Th-232	6.570E-24	0.0000	5.470E-23	0.0000	2.185E-22	0.0000	7.932E-24	0.0000	1.078E-24	0.0000	3.929E-22	0.0000
U-233	3.918E-17	0.0000	3.071E-17	0.0000	8.356E-16	0.0000	4.881E-17	0.0000	2.267E-16	0.0000	5.703E-16	0.0000
U-235	1.657E-13	0.0000	2.051E-16	0.0000	6.441E-15	0.0000	3.750E-16	0.0000	1.749E-15	0.0000	4.465E-15	0.0000
U-236	2.458E-16	0.0000	1.348E-15	0.0000	3.766E-14	0.0000	2.193E-15	0.0000	1.023E-14	0.0000	2.575E-14	0.0000
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	3.881E-08	0.1253	6.581E-09	0.0212	8.785E-08	0.2837	1.422E-08	0.0459	8.828E-08	0.2850	7.394E-08	0.2388

Attachment 10 Sheet No. 35 of 41
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 10

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 36
Intrisk : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+02 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.813E-15	0.0000
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.333E-08	0.1399
C-14	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.182E-23	0.0000
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.175E-08	0.0702
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.718E-12	0.0000
Gd-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.346E-21	0.0000
H-3	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ni-63	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.343E-07	0.4337
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.201E-11	0.0003
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.561E-16	0.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.390E-08	0.2709
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.747E-08	0.0564
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.902E-19	0.0000
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.855E-09	0.0286
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.405E-19	0.0000
Th-229	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.391E-16	0.0000
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.817E-22	0.0000
U-233	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.751E-15	0.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.789E-13	0.0000
U-236	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.743E-14	0.0000
iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.097E-07	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 3.000E+02 years

0

Radon Pathway	Radionuclides							
	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

Attachment 10 Sheet No. 36 of 41
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 10

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 37
Intrisk : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+02 years
Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground risk fract.	Inhalation risk fract.	Radon risk fract.	Plant risk fract.	Meat risk fract.	Milk risk fract.	Soil risk fract.
Am-241	1.995E-08 0.0644	1.323E-09 0.0043	0.000E+00 0.0000	8.217E-09 0.0265	1.496E-10 0.0005	1.616E-11 0.0001	1.376E-08 0.0444
C-14	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000
Co-60	1.150E-23 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.446E-25 0.0000	1.372E-25 0.0000	3.143E-26 0.0000	3.385E-27 0.0000
Cs-137	1.840E-08 0.0594	5.810E-15 0.0000	0.000E+00 0.0000	9.489E-10 0.0031	1.464E-09 0.0047	9.094E-10 0.0029	2.846E-11 0.0001
Eu-152	1.717E-12 0.0000	1.980E-18 0.0000	0.000E+00 0.0000	6.150E-16 0.0000	2.106E-16 0.0000	1.392E-17 0.0000	4.746E-16 0.0000
H-3	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000
Ni-63	0.000E+00 0.0000	3.489E-12 0.0000	0.000E+00 0.0000	3.735E-08 0.1206	9.308E-09 0.0301	8.618E-08 0.2783	1.457E-09 0.0047
Pu-239	3.935E-10 0.0013	4.348E-09 0.0140	0.000E+00 0.0000	2.954E-08 0.0954	1.072E-09 0.0035	2.908E-11 0.0001	4.852E-08 0.1567
Pu-240	2.938E-11 0.0001	9.063E-10 0.0029	0.000E+00 0.0000	6.158E-09 0.0199	2.234E-10 0.0007	6.072E-12 0.0000	1.015E-08 0.0328
Sr-90	4.415E-11 0.0001	1.722E-14 0.0000	0.000E+00 0.0000	5.639E-09 0.0182	2.008E-09 0.0065	1.134E-09 0.0037	2.950E-11 0.0001
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	3.881E-08 0.1253	6.581E-09 0.0212	0.000E+00 0.0000	8.785E-08 0.2837	1.422E-08 0.0459	8.828E-08 0.2850	7.394E-08 0.2388

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+02 years
Water Dependent Pathways

Radio- Nuclide	Water risk fract.	Fish risk fract.	Radon risk fract.	Plant risk fract.	Meat risk fract.	Milk risk fract.	All pathways risk fract.
Am-241	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	4.342E-08 0.1402
C-14	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000
Co-60	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.182E-23 0.0000
Cs-137	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	2.175E-08 0.0702
Eu-152	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.718E-12 0.0000
H-3	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000
Ni-63	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.343E-07 0.4337
Pu-239	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	8.390E-08 0.2709
Pu-240	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.747E-08 0.0564
Sr-90	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	8.855E-09 0.0286
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	3.097E-07 1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Attachment 10 Sheet No. 37 of 41
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 10

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 38
Intrisk : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pci/yr at t= 1.000E+03 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
Ac-227	1.216E-11	3.966E-08	2.446E-10	3.585E-10	1.637E-08	1.699E-06	7.586E-08	1.877E-07	1.032E-09	2.505E-09	2.023E-06
Am-241	5.041E-04	6.554E-01	1.189E-02	1.290E-03	6.787E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.347E+00
C-14	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Co-60	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Cs-137	1.839E-12	9.559E-08	1.475E-07	9.161E-08	2.477E-09	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	3.372E-07
Eu-152	2.147E-25	6.975E-22	2.389E-22	1.578E-23	2.891E-22	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.241E-21
Gd-152	2.948E-16	9.578E-13	3.280E-13	8.669E-15	3.969E-13	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.691E-12
H-3	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ni-63	1.117E-04	7.259E+00	1.809E+00	1.675E+01	1.505E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.597E+01
Np-237	2.709E-07	7.039E-03	4.183E-04	4.997E-06	3.647E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.827E-03
Pa-231	1.280E-11	1.663E-07	6.268E-08	1.550E-10	1.723E-08	7.419E-07	8.213E-09	8.238E-08	9.559E-08	2.814E-10	1.175E-06
Pu-239	4.111E-03	5.346E+00	1.939E-01	5.263E-03	5.536E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.108E+01
Pu-240	8.129E-04	1.057E+00	3.834E-02	1.041E-03	1.095E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.191E+00
Ra-228	1.982E-16	1.025E-11	5.198E-13	1.219E-12	2.668E-13	7.501E-12	3.390E-13	8.364E-13	1.892E-13	5.504E-13	2.168E-11
Sr-90	3.054E-13	1.190E-07	4.238E-08	2.394E-08	4.112E-10	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.858E-07
Th-228	1.975E-16	3.919E-13	2.123E-14	2.684E-15	2.660E-13	2.613E-12	2.366E-13	2.955E-13	1.076E-14	1.564E-15	3.839E-12
Th-229	1.182E-11	1.537E-08	5.578E-10	7.572E-11	1.592E-08	1.247E-07	1.128E-08	1.400E-08	3.610E-10	5.454E-11	1.824E-07
Th-232	2.003E-16	2.605E-13	9.451E-15	1.283E-15	2.697E-13	2.693E-12	2.435E-13	3.003E-13	7.427E-15	1.103E-15	3.787E-12
U-233	2.236E-10	7.276E-07	4.245E-08	1.975E-07	3.011E-07	5.879E-04	5.514E-06	6.499E-05	5.111E-06	2.604E-05	6.908E-04
U-235	7.988E-10	2.595E-06	1.511E-07	7.047E-07	1.075E-06	2.306E-03	2.163E-05	2.549E-04	2.005E-05	1.022E-04	2.709E-03
U-236	4.818E-09	1.566E-05	9.115E-07	4.251E-06	6.488E-06	1.441E-02	1.352E-04	1.593E-03	1.254E-04	6.386E-04	1.693E-02
* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil and water-dependent water, fish, plant, meat, milk pathways											

0

Amount of Intake Quantities QINT9(irn,i,t) and QINT9W(irn,i,t) for Inhalation of
Radon and its Decay Products as pci/yr at t= 1.000E+03 years

Radon Pathway	Radionuclides							
	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

Attachment 10 Sheet No. 38 of 41
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 10

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 39
Intrisk : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p) and Fraction of Total Risk at t= 1.000E+03 years Water Independent Pathways (Inhalation excludes radon)													
Ground		Inhalation		Plant		Meat		Milk		Soil			
Radio-	risk	risk	risk	risk	risk	risk	risk	risk	risk	risk	risk	risk	risk
Nuclide	fract.	fract.	fract.	fract.	fract.	fract.	fract.	fract.	fract.	fract.	fract.	fract.	fract.
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
Ac-227	8.146E-15	0.0000	7.740E-17	0.0000	7.900E-16	0.0000	4.872E-18	0.0000	7.141E-18	0.0000	5.801E-16	0.0000	
Am-241	6.229E-09	0.0571	4.145E-10	0.0038	2.570E-09	0.0235	4.662E-11	0.0004	5.061E-12	0.0000	4.310E-09	0.0395	
C-14	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	
Cs-137	1.496E-15	0.0000	4.723E-22	0.0000	7.714E-17	0.0000	1.190E-16	0.0000	7.393E-17	0.0000	2.314E-18	0.0000	
Eu-152	2.560E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	
Gd-152	0.000E+00	0.0000	8.046E-23	0.0000	1.106E-21	0.0000	3.788E-22	0.0000	1.001E-23	0.0000	7.488E-22	0.0000	
H-3	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	
Ni-63	0.000E+00	0.0000	1.730E-14	0.0000	1.852E-10	0.0017	4.616E-11	0.0004	4.274E-10	0.0039	7.227E-12	0.0001	
Np-237	9.677E-11	0.0009	1.437E-13	0.0000	1.919E-11	0.0002	1.140E-12	0.0000	1.362E-14	0.0000	1.768E-12	0.0000	
Pa-231	8.106E-16	0.0000	1.775E-17	0.0000	1.146E-15	0.0000	4.318E-16	0.0000	1.068E-18	0.0000	1.965E-16	0.0000	
Pu-239	3.711E-10	0.0034	4.102E-09	0.0376	2.787E-08	0.2553	1.011E-09	0.0093	2.744E-11	0.0003	4.578E-08	0.4193	
Pu-240	2.626E-11	0.0002	8.101E-10	0.0074	5.504E-09	0.0504	1.997E-10	0.0018	5.419E-12	0.0000	9.074E-09	0.0831	
Ra-228	4.076E-19	0.0000	3.162E-23	0.0000	4.483E-19	0.0000	2.273E-20	0.0000	5.329E-20	0.0000	1.861E-20	0.0000	
Sr-90	1.893E-18	0.0000	7.383E-22	0.0000	2.418E-16	0.0000	8.611E-17	0.0000	4.864E-17	0.0000	1.265E-18	0.0000	
Th-228	6.969E-19	0.0000	8.599E-22	0.0000	5.052E-21	0.0000	2.736E-22	0.0000	3.459E-23	0.0000	6.564E-21	0.0000	
Th-229	6.334E-15	0.0000	8.165E-17	0.0000	3.384E-16	0.0000	1.228E-17	0.0000	1.667E-18	0.0000	6.302E-16	0.0000	
Th-232	3.178E-23	0.0000	2.646E-22	0.0000	1.057E-21	0.0000	3.835E-23	0.0000	5.205E-24	0.0000	1.901E-21	0.0000	
U-233	9.951E-17	0.0000	7.800E-17	0.0000	2.120E-15	0.0000	1.237E-16	0.0000	5.754E-16	0.0000	1.449E-15	0.0000	
U-235	1.954E-13	0.0000	2.419E-16	0.0000	7.596E-15	0.0000	4.423E-16	0.0000	2.063E-15	0.0000	5.267E-15	0.0000	
U-236	2.762E-16	0.0000	1.515E-15	0.0000	4.233E-14	0.0000	2.465E-15	0.0000	1.149E-14	0.0000	2.894E-14	0.0000	
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	6.724E-09	0.0616	5.327E-09	0.0488	3.615E-08	0.3311	1.305E-09	0.0119	4.653E-10	0.0043	5.917E-08	0.5419	

Attachment 10 Sheet No. 39 of 41
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc: No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 10

1RESRAD, Version 6.3 T< Limit = 180 days 02/02/2007 19:48 Page 40
Intrisk : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+03 years

Water Dependent Pathways

Radio- Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
Ac-227	2.594E-14	0.0000	1.555E-15	0.0000	3.848E-15	0.0000	2.115E-17	0.0000	5.135E-17	0.0000	4.102E-14	0.0000
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.358E-08	0.1243
C-14	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.768E-15	0.0000
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.560E-28	0.0000
Gd-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.324E-21	0.0000
H-3	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ni-63	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.660E-10	0.0061
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.190E-10	0.0011
Pa-231	4.021E-15	0.0000	5.815E-17	0.0000	5.833E-16	0.0000	6.766E-16	0.0000	1.991E-18	0.0000	7.944E-15	0.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.916E-08	0.7250
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.562E-08	0.1431
Ra-228	2.454E-19	0.0000	1.525E-20	0.0000	3.763E-20	0.0000	8.511E-21	0.0000	2.477E-20	0.0000	1.282E-18	0.0000
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.797E-16	0.0000
Th-228	2.459E-20	0.0000	3.138E-21	0.0000	3.920E-21	0.0000	1.427E-22	0.0000	2.075E-23	0.0000	7.415E-19	0.0000
Th-229	2.119E-15	0.0000	2.599E-16	0.0000	3.224E-16	0.0000	8.288E-18	0.0000	1.250E-18	0.0000	1.011E-14	0.0000
Th-232	8.537E-21	0.0000	1.016E-21	0.0000	1.253E-21	0.0000	3.092E-23	0.0000	4.587E-24	0.0000	1.414E-20	0.0000
U-233	1.310E-12	0.0000	1.658E-14	0.0000	1.954E-13	0.0000	1.537E-14	0.0000	7.831E-14	0.0000	1.620E-12	0.0000
U-235	4.997E-12	0.0000	6.373E-14	0.0000	7.511E-13	0.0000	5.909E-14	0.0000	3.010E-13	0.0000	6.383E-12	0.0001
U-236	2.911E-11	0.0003	3.680E-13	0.0000	4.338E-12	0.0000	3.413E-13	0.0000	1.739E-12	0.0000	3.598E-11	0.0003
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	3.545E-11	0.0003	4.502E-13	0.0000	5.289E-12	0.0000	4.164E-13	0.0000	2.118E-12	0.0000	1.092E-07	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS9(irn,i,t) and CNRS9W(irn,i,t) for Inhalation of
Radon and its Decay Products at t= 1.000E+03 years

0

Radon Pathway	Radionuclides							
	Rn-222	Po-218	Pb-214	Bi-214	Rn-220	Po-216	Pb-212	Bi-212
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
Water-ind.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Water-dep.	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Water-ind. == Water-independent Water-dep. == Water-dependent

Attachment 10 Sheet No. 40 of 41
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 10

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 41
Intrisk : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p) and Fraction of Total Risk at t= 1.000E+03 years Water Independent Pathways (Inhalation excludes radon)														
	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Radio- Nuclide	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Am-241	6.326E-09	0.0579	4.147E-10	0.0038	0.000E+00	0.0000	2.589E-09	0.0237	4.776E-11	0.0004	5.075E-12	0.0000	4.312E-09	0.0395
C-14	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Cs-137	1.496E-15	0.0000	4.723E-22	0.0000	0.000E+00	0.0000	7.714E-17	0.0000	1.190E-16	0.0000	7.393E-17	0.0000	2.314E-18	0.0000
Eu-152	2.560E-28	0.0000	8.046E-23	0.0000	0.000E+00	0.0000	1.106E-21	0.0000	3.788E-22	0.0000	1.001E-23	0.0000	7.488E-22	0.0000
H-3	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ni-63	0.000E+00	0.0000	1.730E-14	0.0000	0.000E+00	0.0000	1.852E-10	0.0017	4.616E-11	0.0004	4.274E-10	0.0039	7.227E-12	0.0001
Pu-239	3.713E-10	0.0034	4.102E-09	0.0376	0.000E+00	0.0000	2.787E-08	0.2553	1.011E-09	0.0093	2.744E-11	0.0003	4.578E-08	0.4193
Pu-240	2.626E-11	0.0002	8.101E-10	0.0074	0.000E+00	0.0000	5.504E-09	0.0504	1.997E-10	0.0018	5.430E-12	0.0000	9.074E-09	0.0831
Sr-90	1.893E-18	0.0000	7.383E-22	0.0000	0.000E+00	0.0000	2.418E-16	0.0000	8.611E-17	0.0000	4.864E-17	0.0000	1.265E-18	0.0000
iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii	iiiiiiii
Total	6.724E-09	0.0616	5.327E-09	0.0488	0.000E+00	0.0000	3.615E-08	0.3311	1.305E-09	0.0119	4.653E-10	0.0043	5.917E-08	0.5419

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p) and Fraction of Total Risk at t= 1.000E+03 years														
Water Dependent Pathways														
	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
Radio- Nuclide	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Am-241	1.312E-12	0.0000	1.684E-14	0.0000	0.000E+00	0.0000	1.957E-13	0.0000	1.538E-14	0.0000	7.831E-14	0.0000	1.370E-08	0.1254
C-14	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.768E-15	0.0000
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.324E-21	0.0000
H-3	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ni-63	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.660E-10	0.0061
Pu-239	5.027E-12	0.0000	6.534E-14	0.0000	0.000E+00	0.0000	7.555E-13	0.0000	5.979E-14	0.0000	3.011E-13	0.0000	7.917E-08	0.7251
Pu-240	2.911E-11	0.0003	3.680E-13	0.0000	0.000E+00	0.0000	4.338E-12	0.0000	3.413E-13	0.0000	1.739E-12	0.0000	1.566E-08	0.1434
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.797E-16	0.0000
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	3.545E-11	0.0003	4.502E-13	0.0000	0.000E+00	0.0000	5.289E-12	0.0000	4.164E-13	0.0000	2.118E-12	0.0000	1.092E-07	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Attachment 10 Sheet No. 41 of 41
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 11

RESRAD, Version 6.3 T_{1/2} Limit = 180 days 02/02/2007 19:48 Page 1
Concent : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1 SPA Area.RAD

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Table of Contents
 AAAAAAAAAAAAAAAAAA

Part IV: Concentration of Radionuclides

[illegible]

Concentration of radionuclides in different media

Time= 0.000E+00	.....	2
Time= 1.000E+00	.....	4
Time= 3.000E+00	.....	6
Time= 1.000E+01	.....	8
Time= 1.100E+01	.....	10
Time= 3.000E+01	.....	12
Time= 1.000E+02	.....	14
Time= 3.000E+02	.....	16
Time= 1.000E+03	.....	18

Attachment 11 Sheet No. 1 of 19
 Originators: S. W. Clark *swc* Date 2/5/07
 Chk'd By M. W. Perrott *MWP* Date 2/5/07
 Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 11

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 2
Concent : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Concentration of radionuclides in environmental media
at t = 0.000E+00 years

Radio- Nuclide	Contaminat- ed Zone	Surface Soil*	Air Par- ticulate	Well Water	Surface Water
	pCi/g	pCi/g	pCi/m**3	pCi/L	pCi/L
Ac-227	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Am-241	6.100E-02	6.100E-02	8.237E-07	0.000E+00	0.000E+00
C-14	1.600E+00	1.600E+00	2.161E-05	0.000E+00	0.000E+00
Co-60	2.800E-02	2.800E-02	3.781E-07	0.000E+00	0.000E+00
Cs-137	5.700E-01	5.700E-01	7.697E-06	0.000E+00	0.000E+00
Eu-152	2.000E-01	2.000E-01	2.701E-06	0.000E+00	0.000E+00
Gd-152	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
H-3	1.460E+01	1.460E+01	1.972E-04	0.000E+00	0.000E+00
Ni-63	5.050E+00	5.050E+00	6.819E-05	0.000E+00	0.000E+00
Np-237	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pa-231	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pu-239	1.030E-01	1.030E-01	1.391E-06	0.000E+00	0.000E+00
Pu-240	2.200E-02	2.200E-02	2.971E-07	0.000E+00	0.000E+00
Ra-228	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Sr-90	2.360E-01	2.360E-01	3.187E-06	0.000E+00	0.000E+00
Th-228	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-229	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-232	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-233	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-236	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of H-3 in soil moisture = 1.206E+02 pCi/ml
Concentration of gaseous H-3 in air = 3.214E+01 pCi/m**3
Concentration of gaseous C-14 in air = 1.119E+01 pCi/m**3

Attachment 11 Sheet No. 2 of 19
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 11

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 3
Concent : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Concentration of radionuclides in foodstuff media
at t = 0.000E+00 years*

	Drinking Water	Nonleafy Vegetable	Leafy Vegetable	Fodder Meat	Fodder Milk	Meat	Milk	Fish	Crustacea
Radio- Nuclide	AAAAA pCi/L	AAAAA pCi/kg	AAAAA pCi/kg	AAAAA pCi/kg	AAAAA pCi/kg	AAAAA pCi/kg	AAAAA pCi/L	AAAAA pCi/kg	AAAAA pCi/kg
Ac-227	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Am-241	0.000E+00	6.104E-02	6.122E-02	6.124E-02	6.124E-02	1.733E-03	6.774E-05	0.000E+00	0.000E+00
C-14	0.000E+00	2.479E+04	5.578E+03	2.095E+04	9.420E+03	1.487E+04	4.335E+03	0.000E+00	0.000E+00
Co-60	0.000E+00	2.240E+00	2.240E+00	2.240E+00	2.240E+00	3.327E+00	2.744E-01	0.000E+00	0.000E+00
Cs-137	0.000E+00	2.280E+01	2.280E+01	2.280E+01	2.280E+01	5.507E+01	1.231E+01	0.000E+00	0.000E+00
Eu-152	0.000E+00	5.001E-01	5.007E-01	5.008E-01	5.008E-01	2.681E-01	6.377E-03	0.000E+00	0.000E+00
Gd-152	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
H-3	0.000E+00	9.637E+04	9.637E+04	9.637E+04	9.637E+04	3.768E+04	2.289E+04	0.000E+00	0.000E+00
Ni-63	0.000E+00	2.525E+02	2.525E+02	2.525E+02	2.525E+02	9.848E+01	3.283E+02	0.000E+00	0.000E+00
Np-237	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pa-231	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Pu-239	0.000E+00	1.031E-01	1.034E-01	1.034E-01	1.034E-01	5.853E-03	5.719E-05	0.000E+00	0.000E+00
Pu-240	0.000E+00	2.202E-02	2.208E-02	2.209E-02	2.209E-02	1.250E-03	1.221E-05	0.000E+00	0.000E+00
Ra-228	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Sr-90	0.000E+00	7.080E+01	7.080E+01	7.080E+01	7.080E+01	3.946E+01	8.024E+00	0.000E+00	0.000E+00
Th-228	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-229	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Th-232	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-233	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-235	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
U-236	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.

For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Attachment 11 Sheet No. 3 of 19
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 11

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 4
Concent : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Concentration of radionuclides in environmental media
at t = 1.000E+00 years

Radio- Nuclide	Contaminat- ed Zone	Surface Soil*	Air Par- ticulate	Well Water	Surface Water
	pCi/g	pCi/g	pCi/m**3	pCi/L	pCi/L
Ac-227	1.128E-17	1.128E-17	1.523E-22	0.000E+00	0.000E+00
Am-241	6.090E-02	6.090E-02	8.224E-07	0.000E+00	0.000E+00
C-14	3.780E-01	3.780E-01	5.105E-06	0.000E+00	0.000E+00
Co-60	2.454E-02	2.454E-02	3.314E-07	0.000E+00	0.000E+00
Cs-137	5.569E-01	5.569E-01	7.520E-06	0.000E+00	0.000E+00
Eu-152	1.899E-01	1.899E-01	2.564E-06	0.000E+00	0.000E+00
Gd-152	3.492E-16	3.492E-16	4.716E-21	0.000E+00	0.000E+00
H-3	5.088E+00	5.088E+00	6.870E-05	0.000E+00	0.000E+00
Ni-63	5.012E+00	5.012E+00	6.768E-05	0.000E+00	0.000E+00
Np-237	1.973E-08	1.973E-08	2.665E-13	0.000E+00	0.000E+00
Pa-231	1.071E-15	1.071E-15	1.447E-20	0.000E+00	0.000E+00
Pu-239	1.030E-01	1.030E-01	1.391E-06	0.000E+00	0.000E+00
Pu-240	2.200E-02	2.200E-02	2.970E-07	0.000E+00	0.000E+00
Ra-228	6.257E-22	6.257E-22	8.449E-27	0.000E+00	0.000E+00
Sr-90	2.303E-01	2.303E-01	3.111E-06	0.000E+00	0.000E+00
Th-228	5.311E-23	5.311E-23	7.173E-28	0.000E+00	0.000E+00
Th-229	1.357E-18	1.357E-18	1.833E-23	0.000E+00	0.000E+00
Th-232	1.604E-20	1.604E-20	2.166E-25	0.000E+00	0.000E+00
U-233	4.309E-14	4.309E-14	5.819E-19	0.000E+00	0.000E+00
U-235	1.012E-10	1.012E-10	1.366E-15	0.000E+00	0.000E+00
U-236	6.495E-10	6.495E-10	8.771E-15	0.000E+00	0.000E+00
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of H-3 in soil moisture = 4.202E+01 pCi/ml
Concentration of gaseous H-3 in air = 1.120E+01 pCi/m**3
Concentration of gaseous C-14 in air = 2.643E+00 pCi/m**3

Attachment 11 Sheet No. 4 of 19
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 11

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 5
Concent : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Concentration of radionuclides in foodstuff media
at t = 1.000E+00 years*

	Drinking Water	Nonleafy Vegetable	Leafy Vegetable	Fodder Meat	Fodder Milk	Meat	Milk	Fish	Crustacea
Radio- Nuclide	pCi/L	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/L	pCi/kg	pCi/kg
Ac-227	0.000E+00	3.730E-17	2.895E-17	4.511E-17	5.202E-17	8.968E-18	1.697E-19	0.000E+00	0.000E+00
Am-241	0.000E+00	6.094E-02	6.111E-02	6.114E-02	6.114E-02	1.730E-03	6.762E-05	0.000E+00	0.000E+00
C-14	0.000E+00	6.191E+03	1.323E+03	6.398E+03	2.669E+03	4.542E+03	1.228E+03	0.000E+00	0.000E+00
Co-60	0.000E+00	1.964E+00	1.964E+00	1.978E+00	1.964E+00	2.916E+00	2.406E-01	0.000E+00	0.000E+00
Cs-137	0.000E+00	2.228E+01	2.228E+01	2.231E+01	2.228E+01	5.380E+01	1.203E+01	0.000E+00	0.000E+00
Eu-152	0.000E+00	4.748E-01	4.753E-01	4.767E-01	4.754E-01	2.545E-01	6.054E-03	0.000E+00	0.000E+00
Gd-152	0.000E+00	8.733E-16	8.743E-16	8.277E-16	8.721E-16	4.681E-16	4.472E-18	0.000E+00	0.000E+00
H-3	0.000E+00	3.490E+04	3.368E+04	4.024E+04	3.809E+04	1.568E+04	9.043E+03	0.000E+00	0.000E+00
Ni-63	0.000E+00	2.506E+02	2.506E+02	2.507E+02	2.506E+02	9.774E+01	3.258E+02	0.000E+00	0.000E+00
Np-237	0.000E+00	3.803E-07	3.937E-07	3.270E-07	3.475E-07	3.160E-08	1.448E-10	0.000E+00	0.000E+00
Pa-231	0.000E+00	1.011E-14	1.067E-14	7.804E-15	8.783E-15	5.071E-15	7.280E-18	0.000E+00	0.000E+00
Pu-239	0.000E+00	1.031E-01	1.034E-01	1.034E-01	1.034E-01	5.853E-03	5.718E-05	0.000E+00	0.000E+00
Pu-240	0.000E+00	2.201E-02	2.207E-02	2.208E-02	2.208E-02	1.250E-03	1.221E-05	0.000E+00	0.000E+00
Ra-228	0.000E+00	2.227E-20	2.483E-20	1.400E-20	1.678E-20	1.216E-21	1.233E-21	0.000E+00	0.000E+00
Sr-90	0.000E+00	6.911E+01	6.911E+01	6.920E+01	6.911E+01	3.852E+01	7.832E+00	0.000E+00	0.000E+00
Th-228	0.000E+00	3.524E-22	7.733E-23	6.342E-22	7.621E-22	3.020E-23	1.563E-24	0.000E+00	0.000E+00
Th-229	0.000E+00	1.685E-18	1.380E-18	2.626E-18	2.954E-18	1.583E-19	9.799E-21	0.000E+00	0.000E+00
Th-232	0.000E+00	1.782E-20	1.623E-20	1.926E-20	2.119E-20	1.221E-21	7.865E-23	0.000E+00	0.000E+00
U-233	0.000E+00	1.634E-13	1.120E-13	2.485E-13	2.691E-13	1.985E-14	2.174E-14	0.000E+00	0.000E+00
U-235	0.000E+00	2.472E-10	2.529E-10	2.209E-10	2.340E-10	2.168E-11	3.799E-11	0.000E+00	0.000E+00
U-236	0.000E+00	1.587E-09	1.624E-09	1.418E-09	1.503E-09	1.392E-10	2.439E-10	0.000E+00	0.000E+00

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Attachment 11 Sheet No. 5 of 19
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 11

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 6
Concent : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Concentration of radionuclides in environmental media
at t = 3.000E+00 years

Radio- Nuclide	Contaminat- ed Zone	Surface Soil*	Air Par- ticulate	Well Water	Surface Water
	pCi/g	pCi/g	pCi/m**3	pCi/L	pCi/L
Ac-227	2.989E-16	2.989E-16	4.037E-21	0.000E+00	0.000E+00
Am-241	6.070E-02	6.070E-02	8.197E-07	0.000E+00	0.000E+00
C-14	2.110E-02	2.110E-02	2.850E-07	0.000E+00	0.000E+00
Co-60	1.886E-02	1.886E-02	2.547E-07	0.000E+00	0.000E+00
Cs-137	5.315E-01	5.315E-01	7.177E-06	0.000E+00	0.000E+00
Eu-152	1.711E-01	1.711E-01	2.310E-06	0.000E+00	0.000E+00
Gd-152	9.954E-16	9.954E-16	1.344E-20	0.000E+00	0.000E+00
H-3	6.178E-01	6.178E-01	8.343E-06	0.000E+00	0.000E+00
Ni-63	4.936E+00	4.936E+00	6.666E-05	0.000E+00	0.000E+00
Np-237	5.906E-08	5.906E-08	7.976E-13	0.000E+00	0.000E+00
Pa-231	9.606E-15	9.606E-15	1.297E-19	0.000E+00	0.000E+00
Pu-239	1.030E-01	1.030E-01	1.391E-06	0.000E+00	0.000E+00
Pu-240	2.199E-02	2.199E-02	2.969E-07	0.000E+00	0.000E+00
Ra-228	1.589E-20	1.589E-20	2.146E-25	0.000E+00	0.000E+00
Sr-90	2.195E-01	2.195E-01	2.963E-06	0.000E+00	0.000E+00
Th-228	3.583E-21	3.583E-21	4.839E-26	0.000E+00	0.000E+00
Th-229	3.651E-17	3.651E-17	4.930E-22	0.000E+00	0.000E+00
Th-232	1.438E-19	1.438E-19	1.942E-24	0.000E+00	0.000E+00
U-233	3.859E-13	3.859E-13	5.211E-18	0.000E+00	0.000E+00
U-235	3.020E-10	3.020E-10	4.078E-15	0.000E+00	0.000E+00
U-236	1.938E-09	1.938E-09	2.618E-14	0.000E+00	0.000E+00
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of H-3 in soil moisture = 5.103E+00 pCi/ml
Concentration of gaseous H-3 in air = 1.360E+00 pCi/m**3
Concentration of gaseous C-14 in air = 1.475E-01 pCi/m**3

Attachment 11 Sheet No. 6 of 19
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 11

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 7
Concent : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Concentration of radionuclides in foodstuff media
at t = 3.000E+00 years*

	Drinking Water	Nonleafy Vegetable	Leafy Vegetable	Fodder Meat	Fodder Milk	Meat	Milk	Fish	Crustacea
Radio- Nuclide	pCi/L	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/L	pCi/kg	pCi/kg
Ac-227	0.000E+00	8.333E-16	7.547E-16	9.583E-16	1.005E-15	9.599E-17	4.091E-18	0.000E+00	0.000E+00
Am-241	0.000E+00	6.074E-02	6.091E-02	6.094E-02	6.093E-02	1.725E-03	6.740E-05	0.000E+00	0.000E+00
C-14	0.000E+00	3.456E+02	7.386E+01	3.572E+02	1.490E+02	2.536E+02	6.856E+01	0.000E+00	0.000E+00
Co-60	0.000E+00	1.509E+00	1.509E+00	1.520E+00	1.509E+00	2.241E+00	1.848E-01	0.000E+00	0.000E+00
Cs-137	0.000E+00	2.126E+01	2.126E+01	2.129E+01	2.126E+01	5.135E+01	1.148E+01	0.000E+00	0.000E+00
Eu-152	0.000E+00	4.278E-01	4.283E-01	4.296E-01	4.284E-01	2.293E-01	5.455E-03	0.000E+00	0.000E+00
Gd-152	0.000E+00	2.489E-15	2.492E-15	2.450E-15	2.490E-15	1.334E-15	1.271E-17	0.000E+00	0.000E+00
H-3	0.000E+00	4.238E+03	4.089E+03	4.886E+03	4.625E+03	1.904E+03	1.098E+03	0.000E+00	0.000E+00
Ni-63	0.000E+00	2.468E+02	2.468E+02	2.470E+02	2.469E+02	9.627E+01	3.209E+02	0.000E+00	0.000E+00
Np-237	0.000E+00	1.167E-06	1.180E-06	1.114E-06	1.134E-06	1.048E-07	4.596E-10	0.000E+00	0.000E+00
Pa-231	0.000E+00	9.424E-14	9.596E-14	8.693E-14	9.012E-14	5.278E-14	5.541E-17	0.000E+00	0.000E+00
Pu-239	0.000E+00	1.031E-01	1.033E-01	1.034E-01	1.034E-01	5.852E-03	5.717E-05	0.000E+00	0.000E+00
Pu-240	0.000E+00	2.201E-02	2.207E-02	2.207E-02	2.207E-02	1.250E-03	1.221E-05	0.000E+00	0.000E+00
Ra-228	0.000E+00	6.103E-19	6.340E-19	5.264E-19	5.551E-19	4.310E-20	3.844E-20	0.000E+00	0.000E+00
Sr-90	0.000E+00	6.584E+01	6.584E+01	6.593E+01	6.584E+01	3.670E+01	7.462E+00	0.000E+00	0.000E+00
Th-228	0.000E+00	1.180E-20	4.209E-21	2.584E-20	2.729E-20	1.185E-21	5.454E-23	0.000E+00	0.000E+00
Th-229	0.000E+00	3.892E-17	3.679E-17	4.396E-17	4.610E-17	2.592E-18	1.464E-19	0.000E+00	0.000E+00
Th-232	0.000E+00	1.494E-19	1.447E-19	1.558E-19	1.610E-19	9.158E-21	5.027E-22	0.000E+00	0.000E+00
U-233	0.000E+00	1.136E-12	9.785E-13	1.455E-12	1.498E-12	1.220E-13	1.650E-13	0.000E+00	0.000E+00
U-235	0.000E+00	7.494E-10	7.556E-10	7.241E-10	7.371E-10	6.746E-11	1.148E-10	0.000E+00	0.000E+00
U-236	0.000E+00	4.811E-09	4.850E-09	4.648E-09	4.732E-09	4.330E-10	7.371E-10	0.000E+00	0.000E+00

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Attachment 11 Sheet No. 7 of 19
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 11

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 8
Concent : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Concentration of radionuclides in environmental media
at t = 1.000E+01 years

Radio- Nuclide	Contaminat- ed Zone	Surface Soil*	Air Par- ticulate	Well Water	Surface Water
	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
	pci/g	pci/g	pci/m**3	pci/L	pci/L
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Ac-227	1.038E-14	1.038E-14	1.402E-19	0.000E+00	0.000E+00
Am-241	6.000E-02	6.000E-02	8.102E-07	0.000E+00	0.000E+00
C-14	8.673E-07	8.673E-07	1.171E-11	0.000E+00	0.000E+00
Co-60	7.501E-03	7.501E-03	1.013E-07	0.000E+00	0.000E+00
Cs-137	4.514E-01	4.514E-01	6.096E-06	0.000E+00	0.000E+00
Eu-152	1.188E-01	1.188E-01	1.605E-06	0.000E+00	0.000E+00
Gd-152	2.794E-15	2.794E-15	3.773E-20	0.000E+00	0.000E+00
H-3	3.855E-04	3.855E-04	5.205E-09	0.000E+00	0.000E+00
Ni-63	4.681E+00	4.681E+00	6.322E-05	0.000E+00	0.000E+00
Np-237	1.952E-07	1.952E-07	2.637E-12	0.000E+00	0.000E+00
Pa-231	1.054E-13	1.054E-13	1.423E-18	0.000E+00	0.000E+00
Pu-239	1.029E-01	1.029E-01	1.390E-06	0.000E+00	0.000E+00
Pu-240	2.196E-02	2.196E-02	2.966E-07	0.000E+00	0.000E+00
Ra-228	4.829E-19	4.829E-19	6.521E-24	0.000E+00	0.000E+00
Sr-90	1.852E-01	1.852E-01	2.501E-06	0.000E+00	0.000E+00
Th-228	2.533E-19	2.533E-19	3.421E-24	0.000E+00	0.000E+00
Th-229	1.334E-15	1.334E-15	1.802E-20	0.000E+00	0.000E+00
Th-232	1.578E-18	1.578E-18	2.131E-23	0.000E+00	0.000E+00
U-233	4.214E-12	4.214E-12	5.690E-17	0.000E+00	0.000E+00
U-235	9.885E-10	9.885E-10	1.335E-14	0.000E+00	0.000E+00
U-236	6.344E-09	6.344E-09	8.566E-14	0.000E+00	0.000E+00
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of H-3 in soil moisture = 3.184E-03 pci/ml
Concentration of gaseous H-3 in air = 8.486E-04 pci/m**3
Concentration of gaseous C-14 in air = 6.064E-06 pci/m**3

Attachment 11 Sheet No. 8 of 19
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 11

1RESRAD, Version 6.3 T< Limit = 180 days 02/02/2007 19:48 Page 9
Concent : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Concentration of radionuclides in foodstuff media
at t = 1.000E+01 years*

	Drinking Water	Nonleafy Vegetable	Leafy Vegetable	Fodder Meat	Fodder Milk	Meat	Milk	Fish	Crustacea
Radio- Nuclide	pcI/L	pcI/kg	pcI/kg	pcI/kg	pcI/kg	pcI/kg	pcI/L	pcI/kg	pcI/kg
Ac-227	0.000E+00	2.691E-14	2.605E-14	2.856E-14	2.899E-14	1.201E-15	1.356E-16	0.000E+00	0.000E+00
Am-241	0.000E+00	6.004E-02	6.021E-02	6.024E-02	6.023E-02	1.705E-03	6.662E-05	0.000E+00	0.000E+00
C-14	0.000E+00	1.421E-02	3.036E-03	1.468E-02	6.124E-03	1.042E-02	2.818E-03	0.000E+00	0.000E+00
Co-60	0.000E+00	6.001E-01	6.001E-01	6.045E-01	6.003E-01	8.912E-01	7.351E-02	0.000E+00	0.000E+00
Cs-137	0.000E+00	1.806E+01	1.806E+01	1.808E+01	1.806E+01	4.361E+01	9.752E+00	0.000E+00	0.000E+00
Eu-152	0.000E+00	2.972E-01	2.975E-01	2.984E-01	2.976E-01	1.593E-01	3.789E-03	0.000E+00	0.000E+00
Gd-152	0.000E+00	6.986E-15	6.994E-15	6.966E-15	6.994E-15	3.745E-15	3.564E-17	0.000E+00	0.000E+00
H-3	0.000E+00	2.644E+00	2.552E+00	3.049E+00	2.886E+00	1.188E+00	6.852E-01	0.000E+00	0.000E+00
Ni-63	0.000E+00	2.341E+02	2.341E+02	2.342E+02	2.341E+02	9.130E+01	3.043E+02	0.000E+00	0.000E+00
Np-237	0.000E+00	3.891E-06	3.905E-06	3.839E-06	3.859E-06	3.582E-07	1.549E-09	0.000E+00	0.000E+00
Pa-231	0.000E+00	1.048E-12	1.054E-12	1.024E-12	1.035E-12	6.090E-13	5.697E-16	0.000E+00	0.000E+00
Pu-239	0.000E+00	1.030E-01	1.033E-01	1.033E-01	1.033E-01	5.848E-03	5.714E-05	0.000E+00	0.000E+00
Pu-240	0.000E+00	2.198E-02	2.204E-02	2.205E-02	2.205E-02	1.248E-03	1.220E-05	0.000E+00	0.000E+00
Ra-228	0.000E+00	1.903E-17	1.930E-17	1.814E-17	1.841E-17	1.463E-18	1.253E-18	0.000E+00	0.000E+00
Sr-90	0.000E+00	5.556E+01	5.556E+01	5.564E+01	5.557E+01	3.097E+01	6.297E+00	0.000E+00	0.000E+00
Th-228	0.000E+00	5.099E-19	2.729E-19	1.027E-18	1.042E-18	4.786E-20	2.161E-21	0.000E+00	0.000E+00
Th-229	0.000E+00	1.359E-15	1.341E-15	1.400E-15	1.422E-15	8.050E-17	4.156E-18	0.000E+00	0.000E+00
Th-232	0.000E+00	1.597E-18	1.585E-18	1.624E-18	1.641E-18	9.298E-20	4.722E-21	0.000E+00	0.000E+00
U-233	0.000E+00	1.111E-11	1.059E-11	1.225E-11	1.237E-11	1.078E-12	1.672E-12	0.000E+00	0.000E+00
U-235	0.000E+00	2.467E-09	2.474E-09	2.445E-09	2.457E-09	2.240E-10	3.775E-10	0.000E+00	0.000E+00
U-236	0.000E+00	1.583E-08	1.588E-08	1.569E-08	1.577E-08	1.437E-09	2.423E-09	0.000E+00	0.000E+00

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Attachment 11 Sheet No. 9 of 19
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 11

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 10
Concent : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Concentration of radionuclides in environmental media
at t = 1.100E+01 years

Radio- Nuclide	Contaminat- ed Zone	Surface Soil*	Air Par- ticulate	Well Water	Surface Water
	pCi/g	pCi/g	pCi/m**3	pCi/L	pCi/L
Ac-227	1.369E-14	1.369E-14	1.849E-19	0.000E+00	0.000E+00
Am-241	5.990E-02	5.990E-02	8.089E-07	0.000E+00	0.000E+00
C-14	2.049E-07	2.049E-07	2.767E-12	0.000E+00	0.000E+00
Co-60	6.575E-03	6.575E-03	8.879E-08	0.000E+00	0.000E+00
Cs-137	4.410E-01	4.410E-01	5.956E-06	0.000E+00	0.000E+00
Eu-152	1.128E-01	1.128E-01	1.523E-06	0.000E+00	0.000E+00
Gd-152	3.001E-15	3.001E-15	4.053E-20	0.000E+00	0.000E+00
H-3	1.343E-04	1.343E-04	1.814E-09	0.000E+00	0.000E+00
Ni-63	4.646E+00	4.646E+00	6.274E-05	0.000E+00	0.000E+00
Np-237	2.145E-07	2.145E-07	2.897E-12	0.000E+00	0.000E+00
Pa-231	1.273E-13	1.273E-13	1.719E-18	0.000E+00	0.000E+00
Pu-239	1.029E-01	1.029E-01	1.390E-06	0.000E+00	0.000E+00
Pu-240	2.196E-02	2.196E-02	2.966E-07	0.000E+00	0.000E+00
Ra-228	6.259E-19	6.259E-19	8.452E-24	0.000E+00	0.000E+00
Sr-90	1.808E-01	1.808E-01	2.441E-06	0.000E+00	0.000E+00
Th-228	3.456E-19	3.456E-19	4.667E-24	0.000E+00	0.000E+00
Th-229	1.772E-15	1.772E-15	2.394E-20	0.000E+00	0.000E+00
Th-232	1.906E-18	1.906E-18	2.574E-23	0.000E+00	0.000E+00
U-233	5.086E-12	5.086E-12	6.868E-17	0.000E+00	0.000E+00
U-235	1.085E-09	1.085E-09	1.465E-14	0.000E+00	0.000E+00
U-236	6.960E-09	6.960E-09	9.398E-14	0.000E+00	0.000E+00
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of H-3 in soil moisture = 1.109E-03 pCi/ml
Concentration of gaseous H-3 in air = 2.957E-04 pCi/m**3
Concentration of gaseous C-14 in air = 1.433E-06 pCi/m**3

Attachment 11 Sheet No. 10 of 19
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 11

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 11
Concent : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Concentration of radionuclides in foodstuff media
at t = 1.100E+01 years*

	Drinking Water	Nonleafy Vegetable	Leafy Vegetable	Fodder Meat	Fodder Milk	Meat	Milk	Fish	Crustacea
Radio- Nuclide	AAAAA pCi/L	AAAAA pCi/kg	AAAAA pCi/kg	AAAAA pCi/kg	AAAAA pCi/kg	AAAAA pCi/kg	AAAAA pCi/L	AAAAA pCi/kg	AAAAA pCi/kg
Ac-227	0.000E+00	3.539E-14	3.436E-14	3.741E-14	3.791E-14	1.469E-15	1.785E-16	0.000E+00	0.000E+00
Am-241	0.000E+00	5.994E-02	6.011E-02	6.014E-02	6.013E-02	1.702E-03	6.651E-05	0.000E+00	0.000E+00
C-14	0.000E+00	3.356E-03	7.173E-04	3.468E-03	1.447E-03	2.462E-03	6.657E-04	0.000E+00	0.000E+00
Co-60	0.000E+00	5.260E-01	5.260E-01	5.299E-01	5.262E-01	7.812E-01	6.444E-02	0.000E+00	0.000E+00
Cs-137	0.000E+00	1.764E+01	1.764E+01	1.767E+01	1.764E+01	4.261E+01	9.527E+00	0.000E+00	0.000E+00
Eu-152	0.000E+00	2.821E-01	2.824E-01	2.833E-01	2.825E-01	1.512E-01	3.597E-03	0.000E+00	0.000E+00
Gd-152	0.000E+00	7.505E-15	7.513E-15	7.487E-15	7.513E-15	4.023E-15	3.829E-17	0.000E+00	0.000E+00
H-3	0.000E+00	9.214E-01	8.892E-01	1.062E+00	1.006E+00	4.141E-01	2.388E-01	0.000E+00	0.000E+00
Ni-63	0.000E+00	2.323E+02	2.323E+02	2.324E+02	2.323E+02	9.061E+01	3.020E+02	0.000E+00	0.000E+00
Np-237	0.000E+00	4.276E-06	4.290E-06	4.225E-06	4.245E-06	3.941E-07	1.704E-09	0.000E+00	0.000E+00
Pa-231	0.000E+00	1.267E-12	1.273E-12	1.240E-12	1.252E-12	7.370E-13	6.863E-16	0.000E+00	0.000E+00
Pu-239	0.000E+00	1.030E-01	1.033E-01	1.033E-01	1.033E-01	5.848E-03	5.713E-05	0.000E+00	0.000E+00
Pu-240	0.000E+00	2.198E-02	2.204E-02	2.205E-02	2.205E-02	1.248E-03	1.219E-05	0.000E+00	0.000E+00
Ra-228	0.000E+00	2.470E-17	2.501E-17	2.363E-17	2.394E-17	1.904E-18	1.629E-18	0.000E+00	0.000E+00
Sr-90	0.000E+00	5.423E+01	5.423E+01	5.431E+01	5.424E+01	3.023E+01	6.147E+00	0.000E+00	0.000E+00
Th-228	0.000E+00	6.786E-19	3.710E-19	1.353E-18	1.372E-18	6.320E-20	2.855E-21	0.000E+00	0.000E+00
Th-229	0.000E+00	1.802E-15	1.781E-15	1.852E-15	1.877E-15	1.063E-16	5.464E-18	0.000E+00	0.000E+00
Th-232	0.000E+00	1.927E-18	1.914E-18	1.957E-18	1.976E-18	1.119E-19	5.666E-21	0.000E+00	0.000E+00
U-233	0.000E+00	1.335E-11	1.278E-11	1.461E-11	1.474E-11	1.288E-12	2.011E-12	0.000E+00	0.000E+00
U-235	0.000E+00	2.707E-09	2.715E-09	2.685E-09	2.698E-09	2.459E-10	4.143E-10	0.000E+00	0.000E+00
U-236	0.000E+00	1.737E-08	1.742E-08	1.723E-08	1.731E-08	1.578E-09	2.659E-09	0.000E+00	0.000E+00
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Attachment 11 Sheet No. 11 of 19
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 11

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 12
Concent : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Concentration of radionuclides in environmental media
at t = 3.000E+01 years

Radio- Nuclide	Contaminat- ed Zone	Surface Soil*	Air Par- ticulate	Well Water	Surface Water
	pCi/g	pCi/g	pCi/m**3	pCi/L	pCi/L
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
Ac-227	2.351E-13	2.351E-13	3.175E-18	0.000E+00	0.000E+00
Am-241	5.804E-02	5.804E-02	7.838E-07	0.000E+00	0.000E+00
C-14	2.549E-19	2.549E-19	3.442E-24	0.000E+00	0.000E+00
Co-60	5.383E-04	5.383E-04	7.269E-09	0.000E+00	0.000E+00
Cs-137	2.832E-01	2.832E-01	3.824E-06	0.000E+00	0.000E+00
Eu-152	4.196E-02	4.196E-02	5.666E-07	0.000E+00	0.000E+00
Gd-152	5.439E-15	5.439E-15	7.345E-20	0.000E+00	0.000E+00
H-3	2.687E-13	2.687E-13	3.629E-18	1.440E+03	7.859E+01
Ni-63	4.023E+00	4.023E+00	5.432E-05	0.000E+00	0.000E+00
Np-237	5.720E-07	5.720E-07	7.724E-12	0.000E+00	0.000E+00
Pa-231	9.153E-13	9.153E-13	1.236E-17	0.000E+00	0.000E+00
Pu-239	1.027E-01	1.027E-01	1.387E-06	0.000E+00	0.000E+00
Pu-240	2.189E-02	2.189E-02	2.957E-07	0.000E+00	0.000E+00
Ra-228	8.231E-18	8.231E-18	1.111E-22	0.000E+00	0.000E+00
Sr-90	1.141E-01	1.141E-01	1.540E-06	0.000E+00	0.000E+00
Th-228	6.619E-18	6.619E-18	8.939E-23	0.000E+00	0.000E+00
Th-229	3.468E-14	3.468E-14	4.683E-19	0.000E+00	0.000E+00
Th-232	1.372E-17	1.372E-17	1.852E-22	0.000E+00	0.000E+00
U-233	3.609E-11	3.609E-11	4.873E-16	0.000E+00	0.000E+00
U-235	2.817E-09	2.817E-09	3.805E-14	0.000E+00	0.000E+00
U-236	1.807E-08	1.807E-08	2.440E-13	0.000E+00	0.000E+00
iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of H-3 in soil moisture = 2.219E-12 pCi/ml
Concentration of gaseous H-3 in air = 5.915E-13 pCi/m**3
Concentration of gaseous C-14 in air = 1.782E-18 pCi/m**3

Attachment 11 Sheet No. 12 of 19
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 11

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 13
Concent : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Concentration of radionuclides in foodstuff media
at t = 3.000E+01 years*

	Drinking Water	Nonleafy Vegetable	Leafy Vegetable	Fodder Meat	Fodder Milk	Meat	Milk	Fish	Crustacea
Radio- Nuclide	AAAAA pCi/L	AAAAA pCi/kg	AAAAA pCi/kg	AAAAA pCi/kg	AAAAA pCi/kg	AAAAA pCi/kg	AAAAA pCi/L	AAAAA pCi/kg	AAAAA pCi/kg
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Ac-227	0.000E+00	5.964E-13	5.893E-13	6.124E-13	6.153E-13	1.251E-14	3.028E-15	0.000E+00	0.000E+00
Am-241	0.000E+00	5.808E-02	5.825E-02	5.827E-02	5.827E-02	1.649E-03	6.445E-05	0.000E+00	0.000E+00
C-14	0.000E+00	4.174E-15	8.921E-16	4.314E-15	1.800E-15	3.062E-15	8.280E-16	0.000E+00	0.000E+00
Co-60	0.000E+00	4.306E-02	4.307E-02	4.338E-02	4.308E-02	6.395E-02	5.276E-03	0.000E+00	0.000E+00
Cs-137	0.000E+00	1.133E+01	1.133E+01	1.134E+01	1.133E+01	2.736E+01	6.117E+00	0.000E+00	0.000E+00
Eu-152	0.000E+00	1.049E-01	1.050E-01	1.054E-01	1.051E-01	5.625E-02	1.338E-03	0.000E+00	0.000E+00
Gd-152	0.000E+00	1.360E-14	1.362E-14	1.361E-14	1.362E-14	7.291E-15	6.938E-17	0.000E+00	0.000E+00
H-3	1.440E+03	5.399E+03	7.936E+03	2.526E+03	2.531E+03	1.395E+03	1.594E+03	7.846E+01	7.846E+01
Ni-63	0.000E+00	2.011E+02	2.012E+02	2.012E+02	2.012E+02	7.845E+01	2.615E+02	0.000E+00	0.000E+00
Np-237	0.000E+00	1.143E-05	1.144E-05	1.138E-05	1.140E-05	1.059E-06	4.564E-09	0.000E+00	0.000E+00
Pa-231	0.000E+00	9.136E-12	9.155E-12	9.069E-12	9.100E-12	5.364E-12	4.853E-15	0.000E+00	0.000E+00
Pu-239	0.000E+00	1.028E-01	1.031E-01	1.031E-01	1.031E-01	5.839E-03	5.704E-05	0.000E+00	0.000E+00
Pu-240	0.000E+00	2.191E-02	2.197E-02	2.198E-02	2.198E-02	1.244E-03	1.216E-05	0.000E+00	0.000E+00
Ra-228	0.000E+00	3.268E-16	3.291E-16	3.200E-16	3.213E-16	2.569E-17	2.178E-17	0.000E+00	0.000E+00
Sr-90	0.000E+00	3.422E+01	3.422E+01	3.427E+01	3.422E+01	1.907E+01	3.878E+00	0.000E+00	0.000E+00
Th-228	0.000E+00	1.103E-17	6.961E-18	2.032E-17	2.041E-17	9.647E-19	4.374E-20	0.000E+00	0.000E+00
Th-229	0.000E+00	3.491E-14	3.482E-14	3.529E-14	3.547E-14	2.008E-15	1.001E-16	0.000E+00	0.000E+00
Th-232	0.000E+00	1.378E-17	1.377E-17	1.388E-17	1.393E-17	7.889E-19	3.905E-20	0.000E+00	0.000E+00
U-233	0.000E+00	9.194E-11	9.047E-11	9.546E-11	9.577E-11	8.574E-12	1.398E-11	0.000E+00	0.000E+00
U-235	0.000E+00	7.041E-09	7.053E-09	7.028E-09	7.040E-09	6.410E-10	1.077E-09	0.000E+00	0.000E+00
U-236	0.000E+00	4.515E-08	4.523E-08	4.507E-08	4.514E-08	4.110E-09	6.909E-09	0.000E+00	0.000E+00
iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.

For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Attachment 11 Sheet No. 13 of 19
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 11

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 14
Concent : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Concentration of radionuclides in environmental media
at t = 1.000E+02 years

Radio- Nuclide	Contaminat- ed Zone	Surface Soil*	Air Par- ticulate	Well Water	Surface Water
	pCi/g	pCi/g	pCi/m**3	pCi/L	pCi/L
Ac-227	5.150E-12	5.150E-12	6.955E-17	0.000E+00	0.000E+00
Am-241	5.168E-02	5.168E-02	6.979E-07	0.000E+00	0.000E+00
C-14	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Co-60	5.330E-08	5.330E-08	7.197E-13	0.000E+00	0.000E+00
Cs-137	5.534E-02	5.534E-02	7.473E-07	0.000E+00	0.000E+00
Eu-152	1.097E-03	1.097E-03	1.482E-08	0.000E+00	0.000E+00
Gd-152	6.840E-15	6.840E-15	9.236E-20	0.000E+00	0.000E+00
H-3	0.000E+00	0.000E+00	0.000E+00	2.055E-28	1.121E-29
Ni-63	2.366E+00	2.366E+00	3.195E-05	0.000E+00	0.000E+00
Np-237	1.755E-06	1.755E-06	2.370E-11	0.000E+00	0.000E+00
Pa-231	9.012E-12	9.012E-12	1.217E-16	0.000E+00	0.000E+00
Pu-239	1.021E-01	1.021E-01	1.379E-06	0.000E+00	0.000E+00
Pu-240	2.165E-02	2.165E-02	2.924E-07	0.000E+00	0.000E+00
Ra-228	1.160E-16	1.160E-16	1.567E-21	0.000E+00	0.000E+00
Sr-90	2.091E-02	2.091E-02	2.824E-07	0.000E+00	0.000E+00
Th-228	1.097E-16	1.097E-16	1.482E-21	0.000E+00	0.000E+00
Th-229	1.127E-12	1.127E-12	1.522E-17	0.000E+00	0.000E+00
Th-232	1.354E-16	1.354E-16	1.828E-21	0.000E+00	0.000E+00
U-233	3.379E-10	3.379E-10	4.564E-15	0.000E+00	0.000E+00
U-235	7.904E-09	7.904E-09	1.067E-13	0.000E+00	0.000E+00
U-236	5.053E-08	5.053E-08	6.823E-13	0.000E+00	0.000E+00
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of H-3 in soil moisture = 0.000E+00 pCi/ml
Concentration of gaseous H-3 in air = 0.000E+00 pCi/m**3
Concentration of gaseous C-14 in air = 0.000E+00 pCi/m**3

Attachment 11 Sheet No. 14 of 19
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 11

1RESRAD, Version 6.3 T_{1/2} Limit = 180 days 02/02/2007 19:48 Page 15
Concent : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Concentration of radionuclides in foodstuff media
at t = 1.000E+02 years*

	Drinking Water	Nonleafy Vegetable	Leafy Vegetable	Fodder Meat	Fodder Milk	Meat	Milk	Fish	Crustacea
Radio- Nuclide	AAAAA pCi/L	AAAAA pCi/kg	AAAAA pCi/kg	AAAAA pCi/kg	AAAAA pCi/kg	AAAAA pCi/kg	AAAAA pCi/L	AAAAA pCi/kg	AAAAA pCi/kg
Ac-227	0.000E+00	1.296E-11	1.290E-11	1.314E-11	1.316E-11	1.616E-13	6.597E-14	0.000E+00	0.000E+00
Am-241	0.000E+00	5.172E-02	5.186E-02	5.189E-02	5.188E-02	1.468E-03	5.739E-05	0.000E+00	0.000E+00
C-14	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Co-60	0.000E+00	4.264E-06	4.264E-06	4.295E-06	4.265E-06	6.332E-06	5.223E-07	0.000E+00	0.000E+00
Cs-137	0.000E+00	2.214E+00	2.214E+00	2.217E+00	2.214E+00	5.346E+00	1.195E+00	0.000E+00	0.000E+00
Eu-152	0.000E+00	2.744E-03	2.747E-03	2.756E-03	2.748E-03	1.471E-03	3.499E-05	0.000E+00	0.000E+00
Gd-152	0.000E+00	1.710E-14	1.712E-14	1.713E-14	1.713E-14	9.169E-15	8.724E-17	0.000E+00	0.000E+00
H-3	2.061E-28	8.054E-28	1.139E-27	4.387E-28	4.153E-28	2.333E-28	2.411E-28	1.143E-29	1.143E-29
Ni-63	0.000E+00	1.183E+02	1.183E+02	1.184E+02	1.183E+02	4.615E+01	1.538E+02	0.000E+00	0.000E+00
Np-237	0.000E+00	3.509E-05	3.511E-05	3.506E-05	3.507E-05	3.261E-06	1.403E-08	0.000E+00	0.000E+00
Pa-231	0.000E+00	9.008E-11	9.015E-11	8.991E-11	9.000E-11	5.308E-11	4.745E-14	0.000E+00	0.000E+00
Pu-239	0.000E+00	1.022E-01	1.025E-01	1.025E-01	1.025E-01	5.805E-03	5.671E-05	0.000E+00	0.000E+00
Pu-240	0.000E+00	2.167E-02	2.173E-02	2.173E-02	2.173E-02	1.230E-03	1.202E-05	0.000E+00	0.000E+00
Ra-228	0.000E+00	4.616E-15	4.639E-15	4.558E-15	4.563E-15	3.655E-16	3.088E-16	0.000E+00	0.000E+00
Sr-90	0.000E+00	6.274E+00	6.273E+00	6.282E+00	6.274E+00	3.497E+00	7.110E-01	0.000E+00	0.000E+00
Th-228	0.000E+00	1.720E-16	1.146E-16	3.054E-16	3.057E-16	1.461E-17	6.643E-19	0.000E+00	0.000E+00
Th-229	0.000E+00	1.130E-12	1.131E-12	1.136E-12	1.138E-12	6.441E-14	3.165E-15	0.000E+00	0.000E+00
Th-232	0.000E+00	1.356E-16	1.359E-16	1.362E-16	1.364E-16	7.721E-18	3.786E-19	0.000E+00	0.000E+00
U-233	0.000E+00	8.504E-10	8.464E-10	8.624E-10	8.632E-10	7.812E-11	1.299E-10	0.000E+00	0.000E+00
U-235	0.000E+00	1.976E-08	1.979E-08	1.978E-08	1.978E-08	1.801E-09	3.024E-09	0.000E+00	0.000E+00
U-236	0.000E+00	1.263E-07	1.265E-07	1.264E-07	1.265E-07	1.151E-08	1.933E-08	0.000E+00	0.000E+00
iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Attachment 11 Sheet No. 15 of 19
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 11

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 16
Concent : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Concentration of radionuclides in environmental media
at t = 3.000E+02 years

Radio- Nuclide	Contaminat- ed Zone	Surface Soil*	Air Par- ticulate	Well Water	Surface Water
	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
	pCi/g	pCi/g	pCi/m**3	pCi/L	pCi/L
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Ac-227	4.938E-11	4.938E-11	6.669E-16	0.000E+00	0.000E+00
Am-241	3.709E-02	3.709E-02	5.009E-07	0.000E+00	0.000E+00
C-14	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Co-60	1.931E-19	1.931E-19	2.607E-24	0.000E+00	0.000E+00
Cs-137	5.216E-04	5.216E-04	7.044E-09	0.000E+00	0.000E+00
Eu-152	3.304E-08	3.304E-08	4.462E-13	0.000E+00	0.000E+00
Gd-152	6.860E-15	6.860E-15	9.263E-20	0.000E+00	0.000E+00
H-3	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ni-63	5.195E-01	5.195E-01	7.016E-06	0.000E+00	0.000E+00
Np-237	4.164E-06	4.164E-06	5.623E-11	0.000E+00	0.000E+00
Pa-231	5.936E-11	5.936E-11	8.016E-16	0.000E+00	0.000E+00
Pu-239	1.005E-01	1.005E-01	1.357E-06	0.000E+00	0.000E+00
Pu-240	2.097E-02	2.097E-02	2.831E-07	0.000E+00	0.000E+00
Ra-228	8.592E-16	8.592E-16	1.160E-20	0.000E+00	0.000E+00
Sr-90	1.642E-04	1.642E-04	2.217E-09	0.000E+00	0.000E+00
Th-228	8.462E-16	8.462E-16	1.143E-20	0.000E+00	0.000E+00
Th-229	2.135E-11	2.135E-11	2.884E-16	0.000E+00	0.000E+00
Th-232	8.991E-16	8.991E-16	1.214E-20	0.000E+00	0.000E+00
U-233	1.909E-09	1.909E-09	2.577E-14	0.000E+00	0.000E+00
U-235	1.531E-08	1.531E-08	2.067E-13	0.000E+00	0.000E+00
U-236	9.689E-08	9.689E-08	1.308E-12	0.000E+00	0.000E+00
iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of H-3 in soil moisture = 0.000E+00 pCi/mL
Concentration of gaseous H-3 in air = 0.000E+00 pCi/m**3
Concentration of gaseous C-14 in air = 0.000E+00 pCi/m**3

Attachment 11 Sheet No. 16 of 19
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 11

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 17
Concent : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Concentration of radionuclides in foodstuff media
at t = 3.000E+02 years*

	Drinking Water	Nonleafy Vegetable	Leafy Vegetable	Fodder Meat	Fodder Milk	Meat	Milk	Fish	Crustacea
Radio- Nuclide	AAAAA pCi/L	AAAAA pCi/kg	AAAAA pCi/kg	AAAAA pCi/kg	AAAAA pCi/kg	AAAAA pCi/kg	AAAAA pCi/L	AAAAA pCi/kg	AAAAA pCi/kg
Ac-227	0.000E+00	1.240E-10	1.237E-10	1.254E-10	1.254E-10	1.273E-12	6.317E-13	0.000E+00	0.000E+00
Am-241	0.000E+00	3.712E-02	3.723E-02	3.724E-02	3.724E-02	1.054E-03	4.119E-05	0.000E+00	0.000E+00
C-14	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Co-60	0.000E+00	1.545E-17	1.545E-17	1.556E-17	1.545E-17	2.294E-17	1.892E-18	0.000E+00	0.000E+00
Cs-137	0.000E+00	2.087E-02	2.087E-02	2.089E-02	2.087E-02	5.039E-02	1.127E-02	0.000E+00	0.000E+00
Eu-152	0.000E+00	8.263E-08	8.273E-08	8.297E-08	8.275E-08	4.430E-08	1.054E-09	0.000E+00	0.000E+00
Gd-152	0.000E+00	1.715E-14	1.717E-14	1.718E-14	1.718E-14	9.195E-15	8.749E-17	0.000E+00	0.000E+00
H-3	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ni-63	0.000E+00	2.598E+01	2.598E+01	2.599E+01	2.598E+01	1.013E+01	3.377E+01	0.000E+00	0.000E+00
Np-237	0.000E+00	8.327E-05	8.329E-05	8.326E-05	8.327E-05	7.743E-06	3.331E-08	0.000E+00	0.000E+00
Pa-231	0.000E+00	5.935E-10	5.938E-10	5.934E-10	5.935E-10	3.501E-10	3.119E-13	0.000E+00	0.000E+00
Pu-239	0.000E+00	1.005E-01	1.008E-01	1.009E-01	1.009E-01	5.709E-03	5.578E-05	0.000E+00	0.000E+00
Pu-240	0.000E+00	2.098E-02	2.104E-02	2.105E-02	2.105E-02	1.191E-03	1.164E-05	0.000E+00	0.000E+00
Ra-228	0.000E+00	3.421E-14	3.436E-14	3.385E-14	3.386E-14	2.713E-15	2.291E-15	0.000E+00	0.000E+00
Sr-90	0.000E+00	4.926E-02	4.926E-02	4.932E-02	4.926E-02	2.745E-02	5.583E-03	0.000E+00	0.000E+00
Th-228	0.000E+00	1.308E-15	8.824E-16	2.300E-15	2.301E-15	1.103E-16	5.017E-18	0.000E+00	0.000E+00
Th-229	0.000E+00	2.138E-11	2.143E-11	2.146E-11	2.147E-11	1.215E-12	5.948E-14	0.000E+00	0.000E+00
Th-232	0.000E+00	9.000E-16	9.023E-16	9.032E-16	9.034E-16	5.114E-17	2.501E-18	0.000E+00	0.000E+00
U-233	0.000E+00	4.786E-09	4.779E-09	4.820E-09	4.821E-09	4.377E-10	7.317E-10	0.000E+00	0.000E+00
U-235	0.000E+00	3.829E-08	3.833E-08	3.834E-08	3.834E-08	3.489E-09	5.858E-09	0.000E+00	0.000E+00
U-236	0.000E+00	2.423E-07	2.426E-07	2.426E-07	2.426E-07	2.208E-08	3.707E-08	0.000E+00	0.000E+00

iiiiiii iiii iiii iiii iiii iiii iiii iiii iiii iiii
*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Attachment 11 Sheet No. 17 of 19
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 11

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 18
Concent : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Concentration of radionuclides in environmental media
at t = 1.000E+03 years

Radio- Nuclide	Contaminat- ed Zone	Surface Soil*	Air Par- ticulate	Well Water	Surface Water
	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
	pCi/g	pCi/g	pCi/m**3	pCi/L	pCi/L
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Ac-227	2.803E-10	2.803E-10	3.786E-15	2.327E-09	1.270E-10
Am-241	1.162E-02	1.162E-02	1.569E-07	0.000E+00	0.000E+00
C-14	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Co-60	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Cs-137	4.241E-11	4.241E-11	5.727E-16	0.000E+00	0.000E+00
Eu-152	4.950E-24	4.950E-24	6.684E-29	0.000E+00	0.000E+00
Gd-152	6.797E-15	6.797E-15	9.178E-20	0.000E+00	0.000E+00
H-3	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ni-63	2.576E-03	2.576E-03	3.479E-08	0.000E+00	0.000E+00
Np-237	6.245E-06	6.245E-06	8.434E-11	0.000E+00	0.000E+00
Pa-231	2.951E-10	2.951E-10	3.984E-15	1.016E-09	5.544E-11
Pu-239	9.479E-02	9.479E-02	1.280E-06	0.000E+00	0.000E+00
Pu-240	1.874E-02	1.874E-02	2.531E-07	0.000E+00	0.000E+00
Ra-228	4.569E-15	4.569E-15	6.170E-20	1.028E-14	5.608E-16
Sr-90	7.041E-12	7.041E-12	9.508E-17	0.000E+00	0.000E+00
Th-228	4.554E-15	4.554E-15	6.150E-20	3.572E-15	1.949E-16
Th-229	2.726E-10	2.726E-10	3.681E-15	1.707E-10	9.312E-12
Th-232	4.619E-15	4.619E-15	6.237E-20	3.687E-15	2.012E-16
U-233	5.155E-09	5.155E-09	6.962E-14	8.053E-07	4.394E-08
U-235	1.842E-08	1.842E-08	2.487E-13	3.159E-06	1.723E-07
U-236	1.111E-07	1.111E-07	1.500E-12	1.974E-05	1.077E-06
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of H-3 in soil moisture = 0.000E+00 pCi/ml
Concentration of gaseous H-3 in air = 0.000E+00 pCi/m**3
Concentration of gaseous C-14 in air = 0.000E+00 pCi/m**3

Attachment 11 Sheet No. 18 of 19
Originators: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0301 Rev. No. 0

ATTACHMENT 11

1RESRAD, Version 6.3 T« Limit = 180 days 02/02/2007 19:48 Page 19
Concent : 118-B-1 Staging Pile Area RESRAD Evaluation
File : 118-B-1_SPA_Area.RAD

Concentration of radionuclides in foodstuff media
at t = 1.000E+03 years*

	Drinking Water	Nonleafy Vegetable	Leafy Vegetable	Fodder Meat	Fodder Milk	Meat	Milk	Fish	Crustacea
Radio- Nuclide	AAAAA pCi/L	AAAAA pCi/kg	AAAAA pCi/kg	AAAAA pCi/kg	AAAAA pCi/kg	AAAAA pCi/kg	AAAAA pCi/L	AAAAA pCi/kg	AAAAA pCi/kg
Ac-227	2.327E-09	3.757E-09	1.534E-08	1.671E-08	1.671E-08	3.546E-11	2.863E-11	1.904E-09	1.269E-07
Am-241	0.000E+00	1.163E-02	1.166E-02	1.167E-02	1.167E-02	3.302E-04	1.290E-05	0.000E+00	0.000E+00
C-14	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Co-60	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Cs-137	0.000E+00	1.696E-09	1.696E-09	1.699E-09	1.697E-09	4.097E-09	9.161E-10	0.000E+00	0.000E+00
Eu-152	0.000E+00	1.238E-23	1.239E-23	1.243E-23	1.239E-23	6.635E-24	1.578E-25	0.000E+00	0.000E+00
Gd-152	0.000E+00	1.700E-14	1.702E-14	1.702E-14	1.702E-14	9.111E-15	8.669E-17	0.000E+00	0.000E+00
H-3	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Ni-63	0.000E+00	1.288E-01	1.288E-01	1.289E-01	1.288E-01	5.024E-02	1.675E-01	0.000E+00	0.000E+00
Np-237	0.000E+00	1.249E-04	1.249E-04	1.249E-04	1.249E-04	1.162E-05	4.997E-08	0.000E+00	0.000E+00
Pa-231	1.016E-09	4.291E-09	9.352E-09	1.001E-08	1.001E-08	4.396E-09	4.364E-12	5.551E-10	6.102E-09
Pu-239	0.000E+00	9.486E-02	9.512E-02	9.516E-02	9.516E-02	5.387E-03	5.263E-05	0.000E+00	0.000E+00
Pu-240	0.000E+00	1.876E-02	1.881E-02	1.881E-02	1.881E-02	1.065E-03	1.041E-05	0.000E+00	0.000E+00
Ra-228	1.028E-14	1.956E-13	2.476E-13	2.503E-13	2.504E-13	1.969E-14	1.769E-14	2.802E-14	1.401E-13
Sr-90	0.000E+00	2.112E-09	2.112E-09	2.115E-09	2.113E-09	1.177E-09	2.394E-10	0.000E+00	0.000E+00
Th-228	3.579E-15	1.183E-14	2.731E-14	3.895E-14	3.896E-14	8.885E-16	4.248E-17	1.955E-14	9.775E-14
Th-229	1.709E-10	5.009E-10	1.350E-09	1.515E-09	1.515E-09	2.552E-11	1.303E-12	9.320E-10	4.661E-09
Th-232	3.689E-15	9.512E-15	2.786E-14	3.088E-14	3.089E-14	4.688E-16	2.386E-17	2.012E-14	1.006E-13
U-233	8.053E-07	1.070E-06	5.080E-06	5.562E-06	5.562E-06	1.432E-07	2.624E-07	4.394E-07	2.636E-06
U-235	3.159E-06	4.193E-06	1.992E-05	2.182E-05	2.182E-05	5.612E-07	1.029E-06	1.723E-06	1.034E-05
U-236	1.974E-05	2.620E-05	1.245E-04	1.364E-04	1.364E-04	3.507E-06	6.429E-06	1.077E-05	6.464E-05

iiiiiiii iiii iiii iiii iiii iiii iiii iiii iiii iiii
*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters, i.e. using parameters appearing in the input screen when the pathways are active.

Attachment 11 Sheet No. 19 of 19
Originators: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0301 Rev. No. 0

Acrobat 8.0

CALCULATION COVER SHEET

Project Title: Field Remediation Job No. 14655

Area: 100-BC

Discipline: Environmental *Calculation No: 0100B-CA-V0308

Subject: 118-B-1 Combined Areas Cleanup Verification RESRAD Calculation Brief

Computer Program: RESRAD Program No: Version 6.3

The attached calculations have been generated to document compliance with established cleanup levels. These calculations should be used in conjunction with other relevant documents in the administrative record.

Committed Calculation ☒

Preliminary ☐

Superseded ☐

Voided ☐

Rev.	Sheet Numbers	Originator	Checker	Reviewer	Approval	Date
0	Cover - 1 pg Summary - 5 pg Attn. 1 - 1 pg Attn. 2 - 1 pg Attn. 3 - 20 pg Attn. 4 - 21 pg Attn. 5 - 10 pg Total - 59 pages	S. W. Clark	M. W. Perrott	N/A	J. M. Capron	10/6/07

SUMMARY OF REVISION

Washington Closure Hanford

CALCULATION SHEET

Originator:	S. W. Clark	Date:	6/3/07	Calc. No.:	0100B-CA-V0308	Rev.:	0
Project:	118-B-1 Burial Ground Cleanup	Job No.:	14655	Checked:	M. W. Perrott	Date:	10/3/07
Subject:	118-B-1 Burial Ground Cleanup Verification RESRAD Calculation Brief					Sheet No.	1 of 5

PURPOSE:

Calculate the soil and groundwater concentrations, dose, and risk contributions from remaining radionuclide contaminants in the combined remediated 118-B-1 Burial Ground areas over a period of 1,000 years.

GIVEN/REFERENCES:

- 1) Cleanup verification data from the *118-B-1 Burial Ground Cleanup Verification 95% UCL Calculation*, Calculation No. 0100B-CA-V0299, Rev. 0, Washington Closure Hanford, Richland, Washington.
- 2) *Remedial Design Report/Remedial Action Work Plan for the 100 Area (RDR/RAWP)*, DOE/RL-96-17, Rev. 5, U.S. Department of Energy, Richland Operations Office, Richland, Washington.
- 3) Radioactive and nonradioactive contaminants of concern from the *100 Area Burial Grounds Remedial Action Sampling and Analysis Plan*, DOE/RL-2001-35, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington and from the *Site Specific Instruction for Closeout Approach for 118-B-1*, SSI-100-BC-09, CCN 130128, Rev. 0, Washington Closure Hanford, Richland, Washington. For the purpose of these RESRAD calculations, the radioactive contaminants of potential concern (COPCs) are americium-241, carbon-14, cesium-137, cobalt-60, europium-152, europium-154, europium-155, nickel-63, plutonium-238, plutonium-239/240, plutonium-241, silver-108m, strontium-90, tritium (H-3), uranium-233/234, uranium-235, and uranium-238. The nonradionuclide COPCs include cadmium, hexavalent chromium, lead, mercury, PCBs, SVOAs, TPH, VOAs, herbicides and pesticides. The full suite of detected nonradionuclide COPCs are identified in the 118-B-1 95% UCL Calculation; attainment of nonradionuclide RAGs will be discussed in the Cleanup Verification Package (CVP).
- 4) RESidual RADioactivity (RESRAD) computer code, version 6.3, to calculate compliance with residual radioactivity guidelines, developed for the U.S. Department of Energy by the Environmental Assessment Division of Argonne National Laboratory, Argonne, Illinois.
- 5) RESRAD evaluation of 118-B-1 overburden (OB) soil, below cleanup level (BCL) soil, and soil beneath staging pile areas (SPA) was previously performed in the *118-B-1 Burial Ground Cleanup Verification RESRAD Calculation Brief for Overburden, Below Cleanup Level (BCL), and Staging Pile Area Soil*, Calculation No. 0100B-CA-V0301, Rev. 0, Washington Closure Hanford, Richland, Washington.
- 6) Sample design data from the *118-B-1 Shallow Zone, Overburden, BCL, and Staging Pile Sampling Plan*, Calculation No. 0100B-CA-V0284, Rev. 0, Washington Closure Hanford, Richland, Washington.
- 7) Groundwater elevation from *Hanford Groundwater Monitoring for Fiscal Year 2006*, PNNL-16346, Pacific Northwest National Laboratory, Richland, Washington.

SOLUTION:

- 1) Table 1 shows the representative dimensions of soil horizons and contaminant pathways considered for dose, risk, and groundwater protection. The average surrounding grade

Washington Closure Hanford

CALCULATION SHEET

Originator:	S. W. Clark	Date:	10/3/07	Calc. No.:	0100B-CA-V0308	Rev.:	0
Project:	118-B-1 Burial Ground Cleanup	Job No.:	14655	Checked:	M. W. Perrott	Date:	10/3/07
Subject:	118-B-1 Burial Ground Cleanup Verification RESRAD Calculation Brief					Sheet No.	2 of 5

elevation and the maximum excavation depth are used to represent the burial ground excavation. Attachment 1 shows elevations (NAVD88) and thickness of each soil horizon. Attachment 2 shows a schematic of the 118-B-1 Burial Ground area with the pieces making up the individual units labeled.

Table 1. Waste Site Dimensions for RESRAD Modeling		
Parameter	Units	Combined Areas
<i>Contaminated Zone Dimensions</i>		
Cover Depth	m	0
Area of Contaminated Zone (CZ)	m ²	30,922
Length Parallel to Aquifer Flow	m	180
<i>Elevations of Vadose Zone Horizons</i>		
Elevation: Surface	m	144.5
Elevation: Groundwater	m	121.8
Thickness: Contaminated Zone	m	13.4

- 2) Separate cleanup verification sampling was performed for each of the 118-B-1 Burial Ground Areas 1, 2, 3, 4, 5, 6, and 7. The maximums of the statistical and focused sample values from the individual Burial Ground Areas, shown in Table 2, were used to perform a RESRAD run for the combined areas. This is more conservative than performing RESRAD evaluations for the individual areas, so RESRAD evaluations for the individual areas were not performed.
- 3) All sources of tritium in the 118-B-1 Burial Ground have been removed and disposed. Sampling of test pits and boreholes in the vadose zone beneath 118-B-1 shows residual tritium soil contamination. RESRAD modeling predicts that residual tritium will continue to exceed groundwater protection criteria for approximately 140 years. Measurements at a downgradient monitoring well have remained above the maximum contaminant level (MCL) for tritium in drinking water since 1998. An *Explanation of Significant Difference for the Interim Action Record of Decision for the 100-BC-1, 100-BC-2, 100-DR-1, 100-DR-2, 100-FR-2, 100-HR-2, and 100-KR-2 Operable Units (100 Area Burial Grounds)* (ESD, October 2007) is in the approval process based on the balancing factors evaluation, which showed that additional institutional controls will be required to ensure protection of groundwater and the Columbia River. In summary, institutional controls include prohibition of irrigation at 118-B-1 to minimize further mobilization of residual tritium-contamination to groundwater and the Columbia River. Statistical and focused sample concentrations of tritium reported in the 118-B-1 95% UCL calculation were not evaluated for groundwater and river protection (see Table 2) because institutional controls will be implemented per the October 2007 ESD to allow attenuation of residual concentrations of tritium that exist in deep zone soil.
- 4) To be conservative, the shallow zone RESRAD evaluation for the 118-B-1 combined areas was performed assuming that residual contamination levels extend uniformly from the surface to groundwater. Carbon-14 and strontium-90 in the pathways affected by plant ingestion caused the total all pathways dose to be greater than 15 mrem/yr. Because the

Washington Closure Hanford**CALCULATION SHEET**

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Project:	118-B-1 Burial Ground Cleanup	Job No:	14655	Checked:	M. W. Perrott	Date:	10/3/07
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elevated residual carbon-14 and strontium-90 concentrations are deeper than the root penetration zone (2.5 m [8 ft]), and not accessible to plants, the RESRAD plant ingestion input parameters for "contaminated fractions" for the combined areas are set equal to zero.

- 5) The year where the peak dose (or concentration) occurs from each individual radionuclide COC and layer is determined by a preliminary run. This year is then added for all horizons for the final RESRAD runs. For the direct exposure pathways (i.e. soil ingestion, inhalation, and external radiation), the peak year occurred at year zero (year 2007) for all COCs. For the water pathways (i.e. drinking water and food ingestion) the peak year occurred at year 7 for cobalt-60 and at year 43 for cesium-137 and strontium-90. The 7 and 43-year time periods were added to all RESRAD runs.

METHODOLOGY:

- 1) Runs of RESRAD version 6.3 were completed for the 118-B-1 Burial Ground combined areas using the radionuclide concentrations shown in Table 2. RESRAD numerical output reports for dose, risk, and concentration for the shallow zone evaluation are presented in the Attachments to this calculation summary.

Table 2. Cleanup Verification Data Set ^a (2 Pages)

COPCs	Area 1	Area 2	Area 3	Area 4	Area 5	Area 6	Area 7	Focused Samples	Combined Areas
<i>Radionuclide Activity (pCi/g)</i>									
Am-241	--	--	--	--	--	--	--	--	--
C-14	1.93	--	--	--	--	--	--	--	1.93
Cs-137	0.201	0.163	0.776	0.345	2.40	0.150	0.517	0.353	0.776
Co-60	0.039	--	--	--	--	--	--	0.155	0.155
Eu-152	0.695	--	--	--	--	--	0.098	--	0.695
Eu-154	--	--	--	--	--	--	--	--	--
Eu-155	--	--	--	--	--	--	--	--	--
Ni-63	--	--	--	--	--	--	--	--	--
Pu-238	--	--	--	--	--	--	--	--	--
Pu-239/240	--	--	--	--	--	--	--	--	--
Pu-241	--	--	--	--	--	--	--	--	--
Silver (Ag-108m)	--	--	--	--	--	--	--	--	--
Sr-90	0.125	0.172	2.56	--	1.89	--	--	--	2.56
Tritium (H-3)	Not evaluated for groundwater and river protection based on the balancing factors evaluation documented in the October 2007 ESD, which showed that additional institutional controls will be required to ensure protection of groundwater and the Columbia River. In summary, institutional controls include prohibition of irrigation at 118-B-1 to minimize further mobilization of residual tritium-contamination to groundwater and the Columbia River. Additionally, the ESD states that RESRAD modeling in the soil may be conducted without accounting for the irrigation rate of 0.76 m/yr (30 in./yr) for tritium at the 118-B-1 waste site.								
U-233/234	0(<BG)	--	--	--	--	0(<BG)	0(<BG)	0(<BG)	0(<BG)

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Project:	118-B-1 Burial Ground Cleanup	Job No:	44655	Checked:	M. W. Perrott	Date:	10/3/07
Subject:	118-B-1 Burial Ground Cleanup Verification RESRAD Calculation Brief					Sheet No.	4 of 5

Table 2. Cleanup Verification Data Set ^a (2 Pages)

COPCs	Area 1	Area 2	Area 3	Area 4	Area 5	Area 6	Area 7	Focused Samples	Combined Areas
U-235	0(<BG)	--	--	--	--	--	--	--	0(<BG)
U-238	0(<BG)	--	--	--	--	0(<BG)	0(<BG)	0(<BG)	0(<BG)

-- = Not evaluated by laboratory analysis or not detected (for all samples in the data set).

^a Soil concentration values are from 118-B-1 Burial Ground Cleanup Verification 95% UCL Calculation, Calculation No. 0100B-CA-V0299, Rev. 0, Washington Closure Hanford, Richland, Washington. Refer to the 95% UCL for nonradionuclide concentrations. Nonradionuclides are not evaluated in this RESRAD calculation.

RESULTS:**1) Radionuclide "All Pathways" Dose Rate**

The maximum all pathways dose rate, shown in Table 3, for the 118-B-1 Burial Ground combined areas is 13.0 mrem/yr at year zero (2007).

Table 3. All Pathways Dose Rate (mrem/yr)

RESRAD Run	"All Pathways" Dose Contributions in mrem/yr at Each Time Slice (yr)								
	0	1	3	7	11	43	100	300	1000
Combined Areas	1.30E+01	1.18E+01	1.01E+01	7.89E+00	6.57E+00	2.41E+00	5.68E-01	5.49E-03	1.81E-04

2) Radionuclide Excess Lifetime Cancer Risk

The maximum radionuclide excess lifetime cancer risk (ELCR), shown in Table 4, for the 118-B-1 Burial Ground combined areas is 1.38×10^{-4} at year zero (2007).

Table 4. Radionuclide Excess Lifetime Cancer Risk

Table 4. Radionuclide Excess Lifetime Cancer Risk										
RESRAD Run	Vadose Zone Horizons	Excess Cancer Risk at Each Time Slice (yr)								
		0	1	3	7	11	43	100	300	1000
Combined Areas		1.38E-04	1.31E-04	1.18E-04	1.00E-04	8.67E-05	3.41E-05	8.23E-06	8.25E-08	5.18E-09

3) Radionuclide Groundwater Protection

The radionuclide concentrations in groundwater calculated by the RESRAD model are summarized in Table 5. Among the radionuclide COCs, cesium-137, cobalt-60, and strontium-90 are calculated to reach groundwater in the 1,000 years of the RESRAD model run. All COCs are predicted to reach groundwater at concentrations significantly below their RAGs.

Table 5. Predicted Groundwater (Well Water/Drinking Water) Concentrations (2 pages)

Radio-nuclides	Vadose Zone Horizon	Groundwater Concentrations in pCi/L at Each Time Slice (yr)									RAGs, pCi/L
		0	1	3	7	11	43	100	300	1000	
Cs-137	Comb. Areas	0	7.52E-04	2.16E-03	4.60E-03	6.58E-03	1.23E-02	7.66E-03	2.26E-04	0	60
Co-60	Comb. Areas	0	1.35E-04	3.12E-04	4.30E-04	3.99E-04	2.32E-05	3.00E-08	3.40E-19	7.11E-11	100
Sr-90	Comb. Areas	0	9.85E-03	2.82E-02	6.00E-02	8.56E-02	1.56E-01	9.35E-02	2.40E-03	3.03E-10	8

RAGs = Remedial action goals from the 100 Area RDR/RAWP

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CALCULATION SHEET

Originator:	S. W. Clark <i>SWC</i>	Date:	10/3/07	Calc. No.:	0100B-CA-V0308	Rev.:	0
Project:	118-B-1 Burial Ground Cleanup	Job No.:	14655	Checked:	M. W. Perrott <i>MWP</i>	Date:	10/3/07
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CONCLUSIONS:

- The "all pathways" (maximum) dose rates are shown in Table 3. The maximum all pathways dose rate from the 118-B-1 Burial Ground excavated combined areas is 13.0 mrem/yr at year zero (2007).
- The dominant pathway for the dose rate is direct external exposure (external gamma).
- The primary radionuclide contributing to the direct exposure pathway is europium-152.
- None of the site COCs that were evaluated are projected to exceed remedial action goals (RAGs).
- The radionuclide excess lifetime cancer risk (ELCR) results are shown in Table 4. The maximum ELCR from the 118-B-1 Burial Ground areas combined areas 1.38×10^{-4} at year zero (2007).
- The radionuclide concentrations in groundwater calculated by the RESRAD model are summarized in Table 5. Among the radionuclide COCs, cesium-137, cobalt-60, and strontium-90 are calculated to reach groundwater in the 1,000 years of the RESRAD model evaluation. All COCs are predicted to reach groundwater at concentrations significantly below their RAGs.

ATTACHMENTS:

1. Graphic showing 118-B-1 Cleanup Verification Model (1 pages)
2. Schematic of the 118-B-1 Burial Ground Remediation Areas (1 page)
3. RESRAD Output: 118-B-1 Combined Areas Radionuclides – Mixture Sums and Single Radionuclide Guidelines (20 pages)
4. RESRAD Output: 118-B-1 Combined Areas Radionuclides - Intake Quantities and Health Risk Factors (21 pages)
5. RESRAD Output: 118-B-1 Combined Areas Radionuclides - Concentration of Radionuclides (10 pages)

ATTACHMENT 1

118-B-1 Combined Areas Cleanup Verification Model

Attachment 1 Sheet No. 1 of 1
Originator: S. W. Clark Date 10/3/07
Chk'd By: M. W. Perrott Date 10/3/07
Calc. No. 0100B-CA-V0308 Rev. No. 0

ATTACHMENT 2

Schematic of the 118-B-1 Burial Ground Remediation Areas Sampled for Cleanup Verification

Attachment 2 Sheet No. 1 of 1
 Originators: S. W. Clark Date 1/3/07
 Chk'd By M. W. Perrott Date 1/3/07
 Calc. No. 0100BCA-V0308 Rev. No. 0

ATTACHMENT 3

1RESRAD, Version 6.3 T₀ Limit = 180 days 10/03/2007 08:15 Page 1
Summary : 118-B-1 Combined Areas RESRAD Evaluation
File : 118-B-1_Combined Areas w-o plants.RAD

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 Originator: S. W. Clark *SWC* Date 4/3/97
 Chk'd By M. W. Perrott *mp* Date 4/3/97
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ATTACHMENT 3

1RESRAD, Version 6.3 T« Limit = 180 days 10/03/2007 08:15 Page 2
Summary : 118-B-1 Combined Areas RESRAD Evaluation
File : 118-B-1_Combined_Areas_w-o plants.RAD

Dose Conversion Factor (and Related) Parameter Summary

File: HEAST 2001 MORBIDITY

0	Menu	Parameter	Current Value	Base Case*	Parameter Name
	B-1	Dose conversion factors for inhalation, mrem/pCi:			
	B-1	C-14	2.090E-06	2.090E-06	DCF2(1)
	B-1	Co-60	2.190E-04	2.190E-04	DCF2(2)
	B-1	Cs-137+D	3.190E-05	3.190E-05	DCF2(3)
	B-1	Eu-152	2.210E-04	2.210E-04	DCF2(4)
	B-1	Gd-152	2.430E-01	2.430E-01	DCF2(6)
	B-1	Sr-90+D	1.308E-03	1.300E-03	DCF2(7)
	D-1	Dose conversion factors for ingestion, mrem/pCi:			
	D-1	C-14	2.090E-06	2.090E-06	DCF3(1)
	D-1	Co-60	2.690E-05	2.690E-05	DCF3(2)
	D-1	Cs-137+D	5.000E-05	5.000E-05	DCF3(3)
	D-1	Eu-152	6.480E-06	6.480E-06	DCF3(4)
	D-1	Gd-152	1.610E-04	1.610E-04	DCF3(6)
	D-1	Sr-90+D	1.528E-04	1.420E-04	DCF3(7)
	D-34	Food transfer factors:			
	D-34	C-14 , plant/soil concentration ratio, dimensionless	5.500E+00	5.500E+00	RTF(1,1)
	D-34	C-14 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.100E-02	3.100E-02	RTF(1,2)
	D-34	C-14 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.200E-02	1.200E-02	RTF(1,3)
	D-34	Co-60 , plant/soil concentration ratio, dimensionless	8.000E-02	8.000E-02	RTF(2,1)
	D-34	Co-60 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-02	2.000E-02	RTF(2,2)
	D-34	Co-60 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-03	2.000E-03	RTF(2,3)
	D-34	Cs-137+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(3,1)
	D-34	Cs-137+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.000E-02	3.000E-02	RTF(3,2)
	D-34	Cs-137+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	8.000E-03	8.000E-03	RTF(3,3)
	D-34	Eu-152 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(4,1)
	D-34	Eu-152 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-03	2.000E-03	RTF(4,2)
	D-34	Eu-152 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-05	5.000E-05	RTF(4,3)
	D-34	Gd-152 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(6,1)
	D-34	Gd-152 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-03	2.000E-03	RTF(6,2)
	D-34	Gd-152 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-05	2.000E-05	RTF(6,3)
	D-34	Sr-90+D , plant/soil concentration ratio, dimensionless	3.000E-01	3.000E-01	RTF(7,1)
	D-34	Sr-90+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-03	8.000E-03	RTF(7,2)
	D-34	Sr-90+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-03	2.000E-03	RTF(7,3)
	D-5	Bioaccumulation factors, fresh water, L/kg:			
	D-5	C-14 , fish	5.000E+04	5.000E+04	BIOFAC(1,1)
	D-5	C-14 , crustacea and mollusks	9.100E+03	9.100E+03	BIOFAC(1,2)
	D-5	Co-60 , fish	3.000E+02	3.000E+02	BIOFAC(2,1)
	D-5	Co-60 , crustacea and mollusks	2.000E+02	2.000E+02	BIOFAC(2,2)
	D-5	Cs-137+D , fish	2.000E+03	2.000E+03	BIOFAC(3,1)
	D-5	Cs-137+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(3,2)

Attachment 3 Sheet No. 2 of 20
Originator: S. W. Clark Date 10/3/07
Chk'd By M. W. Perrott Date 10/3/07
Calc. No. 0100B-CA-V0308 Rev. No. 0

ATTACHMENT 3

1RESRAD, Version 6.3 T« Limit = 180 days 10/03/2007, 08:15 Page 3
Summary : 118-B-1 Combined Areas RESRAD Evaluation
File : 118-B-1_Combined_Areas_w-o plants.RAD

Dose Conversion Factor (and Related) Parameter Summary (continued)

File: HEAST 2001 MORBIDITY

Menu	Parameter	Current Value	Base Case*	Parameter Name
D-5	EU-152 , fish	5.000E+01	5.000E+01	BIOFAC(4,1)
D-5	EU-152 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(4,2)
D-5	Gd-152 , fish	2.500E+01	2.500E+01	BIOFAC(6,1)
D-5	Gd-152 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(6,2)
D-5	Sr-90+D , fish	6.000E+01	6.000E+01	BIOFAC(7,1)
D-5	Sr-90+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(7,2)

*Base Case means Default.Lib w/o Associate Nuclide contributions.

Attachment 3 Sheet No. 3 of 20
Originator: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0308 Rev. No. 0

ATTACHMENT 3

1RESRAD, Version 6.3 T« Limit = 180 days 10/03/2007 08:15 Page 4
Summary : 118-B-1 Combined Areas RESRAD Evaluation
File : 118-B-1_Combined_Areas_w-o plants.RAD

Site-Specific Parameter Summary					
Menu	Parameter	User	Default	Used by RESRAD (If different from user input)	Parameter Name
0	Area of contaminated zone (m**2)	3.092E+04	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)	2.270E+01	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)	1.800E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)	4.000E+00	3.000E+01	---	BRDL
R011	Time since placement of material (yr)	0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)	1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)	3.000E+00	3.000E+00	---	T(3)
R011	Times for calculations (yr)	7.000E+00	1.000E+01	---	T(4)
R011	Times for calculations (yr)	1.100E+01	3.000E+01	---	T(5)
R011	Times for calculations (yr)	4.300E+01	1.000E+02	---	T(6)
R011	Times for calculations (yr)	1.000E+02	3.000E+02	---	T(7)
R011	Times for calculations (yr)	3.000E+02	1.000E+03	---	T(8)
R011	Times for calculations (yr)	1.000E+03	0.000E+00	---	T(9)
R011	Times for calculations (yr)	not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g): C-14	1.930E+00	0.000E+00	---	S1(1)
R012	Initial principal radionuclide (pCi/g): Co-60	1.550E-01	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g): Cs-137	7.760E-01	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g): Eu-152	6.950E-01	0.000E+00	---	S1(4)
R012	Initial principal radionuclide (pCi/g): Sr-90	2.560E+00	0.000E+00	---	S1(7)
R012	Concentration in groundwater (pCi/L): C-14	not used	0.000E+00	---	W1(1)
R012	Concentration in groundwater (pCi/L): Co-60	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L): Cs-137	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L): Eu-152	not used	0.000E+00	---	W1(4)
R012	Concentration in groundwater (pCi/L): Sr-90	not used	0.000E+00	---	W1(7)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.600E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	0.000E+00	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.000E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	1.500E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	2.500E+02	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	4.050E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	3.400E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	not used	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	9.100E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	1.600E-01	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	0.000E+00	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	2.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	1.000E+06	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.600E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.000E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	2.500E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	1.500E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	5.530E+03	1.000E+02	---	HCSZ

Attachment 3 Sheet No. 4 of 20
Originator: S.W. Clark Date
Chk'd By M.W. Perrott Date
Calc. No. 0100B-CA-V0308 Rev. No. 0

ATTACHMENT 3

1RESRAD, Version 6.3 T« Limit = 180 days 10/03/2007 08:15 Page 5
Summary : 118-B-1 Combined Areas RESRAD Evaluation
File : 118-B-1_Combined_Areas_w-o plants.RAD

Site-Specific Parameter Summary (continued)					
Menu	Parameter	User	Default	Used by RESRAD	Parameter Name
		Input	(If different from user input)		
R014	Saturated zone hydraulic gradient	1.250E-03	2.000E-02	---	HGWT
R014	Saturated zone b parameter	not used	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	0.000E+00	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	4.600E+00	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m ³ /yr)	2.500E+02	2.500E+02	---	UW
R015	Number of unsaturated zone strata	0	1	---	NS
R016	Distribution coefficients for C-14				
R016	Contaminated zone (cm ³ /g)	2.000E+02	0.000E+00	---	DCNUCC(1)
R016	Saturated zone (cm ³ /g)	2.000E+02	0.000E+00	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.585E-06	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)
R016	Distribution coefficients for Co-60				
R016	Contaminated zone (cm ³ /g)	5.000E+01	1.000E+03	---	DCNUCC(2)
R016	Saturated zone (cm ³ /g)	5.000E+01	1.000E+03	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.331E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Cs-137				
R016	Contaminated zone (cm ³ /g)	5.000E+01	4.600E+03	---	DCNUCC(3)
R016	Saturated zone (cm ³ /g)	5.000E+01	4.600E+03	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	6.331E-06	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for Eu-152				
R016	Contaminated zone (cm ³ /g)	2.000E+02	-1.000E+00	---	DCNUCC(4)
R016	Saturated zone (cm ³ /g)	2.000E+02	-1.000E+00	---	DCNUCS(4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.585E-06	ALEACH(4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(4)
R016	Distribution coefficients for Sr-90				
R016	Contaminated zone (cm ³ /g)	2.500E+01	3.000E+01	---	DCNUCC(7)
R016	Saturated zone (cm ³ /g)	2.500E+01	3.000E+01	---	DCNUCS(7)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.264E-05	ALEACH(7)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(7)
R016	Distribution coefficients for daughter Gd-152				
R016	Contaminated zone (cm ³ /g)	-1.000E+00	-1.000E+00	8.249E+02	DCNUCC(6)
R016	Saturated zone (cm ³ /g)	-1.000E+00	-1.000E+00	8.249E+02	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.845E-07	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R017	Inhalation rate (m ³ /yr)	7.300E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m ³)	1.000E-04	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	4.000E-01	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	8.000E-01	7.000E-01	---	SHF1

Attachment 3 Sheet No. 5 of 20
Originator: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0308 Rev. No. 0

ATTACHMENT 3

1RESRAD, Version 6.3 T« Limit = 180 days 10/03/2007 08:15 Page 6
Summary : 118-B-1 Combined Areas RESRAD Evaluation
File : 118-B-1_Combined_Areas_w-o plants.RAD

Site-Specific Parameter Summary (continued)					
Menu	Parameter	User	Default	Used by RESRAD	Parameter Name
	Input			(If different from user input)	
0	AAAAA				AAAAA
R017	Fraction of time spent indoors	6.000E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	2.000E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	1.100E+02	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	2.700E+00	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	1.000E+02	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	3.600E+01	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	1.970E+01	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	9.000E-01	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	7.300E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	7.300E+02	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	1.000E+00	1.000E+00	---	FDW
R018	Contamination fraction of household water	not used	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	1.000E+00	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	1.000E+00	1.000E+00	---	FIW
R018	Contamination fraction of aquatic food	5.000E-01	5.000E-01	---	FR9
R018	Contamination fraction of plant food	0.000E+00	-1	---	FPLANT
R018	Contamination fraction of meat	-1	-1	0.100E+01	FMEAT
R018	Contamination fraction of milk	-1	-1	0.100E+01	FMILK
R019	Livestock fodder intake for meat (kg/day)	6.800E+01	6.800E+01	---	LF15
R019	Livestock fodder intake for milk (kg/day)	5.500E+01	5.500E+01	---	LF16

Attachment 3 Sheet No. 6 of 20
Originator: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0308 Rev. No. 0

ATTACHMENT 3

File : 118-B-1_Combined_Areas_w-o plants.RAD

Site-Specific Parameter Summary (continued)

Menu		Parameter	User Input	Default	(If different from user input)	Used by RESRAD	Parameter Name
R019		Livestock water intake for meat (L/day)	5.000E+01	5.000E+01	---		LW15
R019		Livestock water intake for milk (L/day)	1.600E+02	1.600E+02	---		LW16
R019		Livestock soil intake (kg/day)	5.000E-01	5.000E-01	---		LS1
R019		Mass loading for foliar deposition (g/m**3)	1.000E-04	1.000E-04	---		MLFD
R019		Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---		DM
R019		Depth of roots (cm)	9.000E-01	9.000E-01	---		DROOT
R019		Drinking water fraction from ground water	1.000E+00	1.000E+00	---		FGWDW
R019		Household water fraction from ground water	not used	1.000E+00	---		FGWHH
R019		Livestock water fraction from ground water	1.000E+00	1.000E+00	---		FGWLW
R019		Irrigation fraction from ground water	1.000E+00	1.000E+00	---		FGWIR
R19B		Wet weight crop yield for Non-Leafy (kg/m**2)	7.000E-01	7.000E-01	---		YV(1)
R19B		Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---		YV(2)
R19B		Wet weight crop yield for Fodder (kg/m**2)	1.100E+00	1.100E+00	---		YV(3)
R19B		Growing Season for Non-Leafy (years)	1.700E-01	1.700E-01	---		TE(1)
R19B		Growing Season for Leafy (years)	2.500E-01	2.500E-01	---		TE(2)
R19B		Growing Season for Fodder (years)	8.000E-02	8.000E-02	---		TE(3)
R19B		Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---		TIV(1)
R19B		Translocation Factor for Leafy	1.000E+00	1.000E+00	---		TIV(2)
R19B		Translocation Factor for Fodder	1.000E+00	1.000E+00	---		TIV(3)
R19B		Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---		RDRY(1)
R19B		Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---		RDRY(2)
R19B		Dry Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---		RDRY(3)
R19B		Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---		RWET(1)
R19B		Wet Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---		RWET(2)
R19B		Wet Foliar Interception Fraction for Fodder	2.500E-01	2.500E-01	---		RWET(3)
R19B		Weathering Removal Constant for Vegetation	2.000E+01	2.000E+01	---		WLAM
C14		C-12 concentration in water (g/cm**3)	2.000E-05	2.000E-05	---		C12WTR
C14		C-12 concentration in contaminated soil (g/g)	3.000E-02	3.000E-02	---		C12CZ
C14		Fraction of vegetation carbon from soil	2.000E-02	2.000E-02	---		CSOIL
C14		Fraction of vegetation carbon from air	9.800E-01	9.800E-01	---		CAIR
C14		C-14 evasion layer thickness in soil (m)	3.000E-01	3.000E-01	---		DMC
C14		C-14 evasion flux rate from soil (1/sec)	7.000E-07	7.000E-07	---		EVSN
C14		C-12 evasion flux rate from soil (1/sec)	1.000E-10	1.000E-10	---		REVSN
C14		Fraction of grain in beef cattle feed	8.000E-01	8.000E-01	---		AVFG4
C14		Fraction of grain in milk cow feed	2.000E-01	2.000E-01	---		AVFG5
C14		DCF correction factor for gaseous forms of C14	1.234E+02	0.000E+00	---		CO2F
STOR		Storage times of contaminated foodstuffs (days):					
STOR		Fruits, non-leafy vegetables, and grain	1.400E+01	1.400E+01	---		STOR_T(1)
STOR		Leafy vegetables	1.000E+00	1.000E+00	---		STOR_T(2)
STOR		Milk	1.000E+00	1.000E+00	---		STOR_T(3)
STOR		Meat and poultry	2.000E+01	2.000E+01	---		STOR_T(4)
STOR		Fish	7.000E+00	7.000E+00	---		STOR_T(5)
STOR		Crustacea and mollusks	7.000E+00	7.000E+00	---		STOR_T(6)
STOR		Well water	1.000E+00	1.000E+00	---		STOR_T(7)
STOR		Surface water	1.000E+00	1.000E+00	---		STOR_T(8)
STOR		Livestock fodder	4.500E+01	4.500E+01	---		STOR_T(9)

Attachment 3 Sheet No. 7 of 20
 Originator: S. W. Clark Date _____
 Chk'd By M. W. Perrott Date _____
 Calc. No. 0100B-CA-V0308 Rev. No. 0

ATTACHMENT 3

1RESRAD, Version 6.3 T« Limit = 180 days 10/03/2007 08:15 Page 8
Summary : 118-B-1 Combined Areas RESRAD Evaluation
File : 118-B-1_Combined_Areas_w-o plants.RAD

Site-Specific Parameter Summary (continued)						
0			3	3	3	3
Menu	Parameter	Input	Default	Used by RESRAD	(If different from user input)	Parameter Name
AAAAA	AA					

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	active
5 -- milk ingestion	active
6 -- aquatic foods	active
7 -- drinking water	active
8 -- soil ingestion	active
9 -- radon	suppressed
Find peak pathway doses	suppressed

Attachment 3 Sheet No. 8 of 20
Originator: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0308 Rev. No. 0

ATTACHMENT 3

1RESRAD, Version 6.3 T« Limit = 180 days 10/03/2007 08:15 Page 9
Summary : 118-B-1 Combined Areas RESRAD Evaluation
File : 118-B-1_Combined_Areas_w-o plants.RAD

Contaminated Zone Dimensions	Initial Soil Concentrations, pCi/g
AAAAAAAAAAAAAAAAAAAAAAAAAAAA	AAAAAAAAAAAAAAAAAAAAAAAAAAAA
Area: 30922.00 square meters	C-14 1.930E+00
Thickness: 22.70 meters	Co-60 1.550E-01
Cover Depth: 0.00 meters	Cs-137 7.760E-01
	Eu-152 6.950E-01
	Sr-90 2.560E+00

0

Total Dose TDOSE(t), mrem/yr
Basic Radiation Dose Limit = 4.000E+00 mrem/yr
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)
AAAAAAAAAAAAAAAAAAAAAAAAAAAA
t (years): 0.000E+00 1.000E+00 3.000E+00 7.000E+00 1.100E+01 4.300E+01 1.000E+02 3.000E+02 1.000E+03
TDOSE(t): 1.298E+01 1.182E+01 1.006E+01 7.888E+00 6.566E+00 2.405E+00 5.682E-01 5.489E-03 1.809E-04
M(t): 3.246E+00 2.955E+00 2.516E+00 1.972E+00 1.641E+00 6.012E-01 1.420E-01 1.372E-03 4.522E-05
OMaximum TDOSE(t): 1.298E+01 mrem/yr at t = 0.000E+00 years

Attachment 3 Sheet No. 9 of 20
Originator: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0308 Rev. No. 0

ATTACHMENT 3

1RESRAD, Version 6.3 T« Limit = 180 days 10/03/2007 08:15 Page 10
Summary : 118-B-1 Combined Areas RESRAD Evaluation
File : 118-B-1_Combined_Areas_w-o plants.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)														
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years														
Water Independent Pathways (Inhalation excludes radon)														
0	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
0														
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
C-14	1.512E-05	0.0000	7.192E-04	0.0001	0.000E+00	0.0000	0.000E+00	0.0000	1.519E+00	0.1170	1.213E+00	0.0934	2.042E-04	0.0000
Co-60	1.528E+00	0.1177	1.442E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.671E-02	0.0013	3.829E-03	0.0003	2.282E-04	0.0000
Cs-137	1.692E+00	0.1304	1.110E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.334E-01	0.0103	8.285E-02	0.0064	2.240E-03	0.0002
Eu-152	3.083E+00	0.2375	6.787E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.118E-04	0.0000	1.399E-05	0.0000	2.563E-04	0.0000
Sr-90	4.038E-02	0.0031	1.501E-04	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.327E+00	0.1792	1.314E+00	0.1012	2.257E-02	0.0017
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	6.344E+00	0.4887	8.787E-04	0.0001	0.000E+00	0.0000	0.000E+00	0.0000	3.996E+00	0.3078	2.614E+00	0.2014	2.550E-02	0.0020
0														

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)														
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years														
Water Dependent Pathways														
	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Radio- Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
C-14	8.327E-08	0.0000	2.609E-05	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.937E-09	0.0000	1.518E-08	0.0000	2.733E+00	0.2105
Co-60	1.380E-06	0.0000	2.646E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.109E-08	0.0000	6.020E-08	0.0000	1.549E+00	0.1193
Cs-137	1.380E-05	0.0000	1.716E-04	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.177E-07	0.0000	2.408E-06	0.0000	1.911E+00	0.1472
Eu-152	9.874E-08	0.0000	5.861E-08	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.375E-10	0.0000	1.077E-10	0.0000	3.084E+00	0.2375
Sr-90	5.525E-04	0.0000	2.213E-04	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.795E-06	0.0000	2.410E-05	0.0000	3.705E+00	0.2854
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	5.678E-04	0.0000	4.217E-04	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.078E-05	0.0000	2.658E-05	0.0000	1.298E+01	1.0000
0*Sum of all water independent and dependent pathways.														

Attachment 3 Sheet No. 10 of 20
Originator: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0308 Rev. No. 0

ATTACHMENT 3

1RESRAD, Version 6.3 T« Limit = 180 days 10/03/2007 08:15 Page 11
Summary : 118-B-1 Combined Areas RESRAD Evaluation
File : 118-B-1_Combined_Areas_w-o plants.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)														
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years														
Water Independent Pathways (Inhalation excludes radon)														
	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
C-14	1.128E-05	0.0000	5.369E-04	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.140E+00	0.0964	9.086E-01	0.0769	1.525E-04	0.0000
Co-60	1.340E+00	0.1133	1.265E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.465E-02	0.0012	3.357E-03	0.0003	2.001E-04	0.0000
Cs-137	1.654E+00	0.1399	1.084E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.303E-01	0.0110	8.096E-02	0.0068	2.189E-03	0.0002
Eu-152	2.927E+00	0.2476	6.443E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.011E-04	0.0000	1.328E-05	0.0000	2.433E-04	0.0000
Sr-90	3.943E-02	0.0033	1.466E-04	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.272E+00	0.1922	1.283E+00	0.1086	2.204E-02	0.0019
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	5.960E+00	0.5042	6.922E-04	0.0001	0.000E+00	0.0000	0.000E+00	0.0000	3.557E+00	0.3009	2.276E+00	0.1926	2.483E-02	0.0021

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)														
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years														
Water Dependent Pathways														
	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
C-14	2.217E-07	0.0000	7.087E-05	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.534E-09	0.0000	4.053E-08	0.0000	2.049E+00	0.1733
Co-60	3.697E-06	0.0000	7.231E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.756E-07	0.0000	1.618E-07	0.0000	1.358E+00	0.1149
Cs-137	4.070E-05	0.0000	5.162E-04	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.900E-06	0.0000	7.123E-06	0.0000	1.868E+00	0.1580
Eu-152	2.838E-07	0.0000	1.718E-07	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.348E-09	0.0000	3.104E-10	0.0000	2.928E+00	0.2476
Sr-90	1.628E-03	0.0001	6.651E-04	0.0001	0.000E+00	0.0000	0.000E+00	0.0000	3.094E-05	0.0000	7.123E-05	0.0000	3.619E+00	0.3062
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	1.673E-03	0.0001	1.260E-03	0.0001	0.000E+00	0.0000	0.000E+00	0.0000	3.402E-05	0.0000	7.856E-05	0.0000	1.182E+01	1.0000
0*Sum of all water independent and dependent pathways.														

Attachment 3 Sheet No. 11 of 20
Originator: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0308 Rev. No. 0

ATTACHMENT 3

1RESRAD, Version 6.3 T« Limit = 180 days 10/03/2007 08:15 Page 12
Summary : 118-B-1 Combined Areas RESRAD Evaluation
File : 118-B-1_Combined_Areas_w-o plants.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years
Water Independent Pathways (Inhalation excludes radon)

	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Nuclide	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
C-14	6.286E-06 0.0000	2.991E-04 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	6.349E-01 0.0631	5.063E-01 0.0503	8.494E-05 0.0000
Co-60	1.030E+00 0.1024	9.722E-07 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.126E-02 0.0011	2.581E-03 0.0003	1.538E-04 0.0000
Cs-137	1.579E+00 0.1569	1.035E-06 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.245E-01 0.0124	7.730E-02 0.0077	2.090E-03 0.0002
Eu-152	2.638E+00 0.2622	5.807E-06 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.812E-04 0.0000	1.197E-05 0.0000	2.193E-04 0.0000
Sr-90	3.760E-02 0.0037	1.398E-04 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	2.166E+00 0.2153	1.224E+00 0.1216	2.102E-02 0.0021
iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii
Total	5.285E+00 0.5252	4.467E-04 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	2.937E+00 0.2919	1.810E+00 0.1799	2.357E-02 0.0023

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years
Water Dependent Pathways

	Water	Fish	Radon	Plant	Meat	Milk	All Pathways*
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Nuclide	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
C-14	4.021E-07 0.0000	1.293E-04 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.025E-08 0.0000	7.360E-08 0.0000	1.142E+00 0.1135
Co-60	6.667E-06 0.0000	1.312E-05 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	3.236E-07 0.0000	2.920E-07 0.0000	1.044E+00 0.1038
Cs-137	9.083E-05 0.0000	1.159E-03 0.0001	0.000E+00 0.0000	0.000E+00 0.0000	6.614E-06 0.0000	1.591E-05 0.0000	1.784E+00 0.1773
Eu-152	5.983E-07 0.0000	3.646E-07 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	2.904E-09 0.0000	6.552E-10 0.0000	2.638E+00 0.2622
Sr-90	3.628E-03 0.0004	1.492E-03 0.0001	0.000E+00 0.0000	0.000E+00 0.0000	7.045E-05 0.0000	1.589E-04 0.0000	3.454E+00 0.3433
iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii
Total	3.727E-03 0.0004	2.794E-03 0.0003	0.000E+00 0.0000	0.000E+00 0.0000	7.740E-05 0.0000	1.752E-04 0.0000	1.006E+01 1.0000

0*Sum of all water independent and dependent pathways.

Attachment 3 Sheet No. 12 of 20
Originator: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0308 Rev. No. 0

ATTACHMENT 3

1RESRAD, Version 6.3 T« Limit = 180 days 10/03/2007 08:15 Page 13
Summary : 118-B-1 Combined Areas RESRAD Evaluation
File : 118-B-1_Combined_Areas_w-o plants.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 7.000E+00 years
Water Independent Pathways (Inhalation excludes radon)

	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Nuclide	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
C-14	1.951E-06 0.0000	9.285E-05 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.971E-01 0.0250	1.572E-01 0.0199	2.637E-05 0.0000
Co-60	6.087E-01 0.0772	5.745E-07 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	6.656E-03 0.0008	1.525E-03 0.0002	9.088E-05 0.0000
Cs-137	1.440E+00 0.1825	9.439E-07 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.135E-01 0.0144	7.048E-02 0.0089	1.905E-03 0.0002
Eu-152	2.143E+00 0.2716	4.716E-06 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.472E-04 0.0000	9.724E-06 0.0000	1.781E-04 0.0000
Sr-90	3.418E-02 0.0043	1.271E-04 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.969E+00 0.2497	1.112E+00 0.1410	1.911E-02 0.0024
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	4.225E+00 0.5356	2.261E-04 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	2.287E+00 0.2899	1.342E+00 0.1701	2.131E-02 0.0027

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 7.000E+00 years
Water Dependent Pathways

	Water	Fish	Radon	Plant	Meat	Milk	All Pathways*
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Nuclide	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
C-14	5.585E-07 0.0000	1.800E-04 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.434E-08 0.0000	1.023E-07 0.0000	3.545E-01 0.0449
Co-60	8.460E-06 0.0000	1.670E-05 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	4.141E-07 0.0000	3.707E-07 0.0000	6.170E-01 0.0782
Cs-137	1.776E-04 0.0000	2.273E-03 0.0003	0.000E+00 0.0000	0.000E+00 0.0000	1.304E-05 0.0000	3.113E-05 0.0000	1.628E+00 0.2064
Eu-152	1.043E-06 0.0000	6.368E-07 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	5.104E-09 0.0000	1.142E-09 0.0000	2.143E+00 0.2717
Sr-90	7.074E-03 0.0009	2.916E-03 0.0004	0.000E+00 0.0000	0.000E+00 0.0000	1.385E-04 0.0000	3.100E-04 0.0000	3.146E+00 0.3988
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	7.262E-03 0.0009	5.386E-03 0.0007	0.000E+00 0.0000	0.000E+00 0.0000	1.520E-04 0.0000	3.416E-04 0.0000	7.888E+00 1.0000

0*Sum of all water independent and dependent pathways.

Attachment 3 Sheet No. 13 of 20
Originator: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0308 Rev. No. 0

ATTACHMENT 3

1RESRAD, Version 6.3 T« Limit = 180 days 10/03/2007 08:15 Page 14
Summary : 118-B-1 Combined Areas RESRAD Evaluation
File : 118-B-1_Combined_Areas_w-o plants.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.100E+01 years
Water Independent Pathways (Inhalation excludes radon)

	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Nuclide	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
C-14	6.057E-07 0.0000	2.882E-05 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	6.118E-02 0.0093	4.878E-02 0.0074	8.185E-06 0.0000
Co-60	3.597E-01 0.0548	3.395E-07 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	3.933E-03 0.0006	9.012E-04 0.0001	5.370E-05 0.0000
Cs-137	1.313E+00 0.1999	8.606E-07 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.035E-01 0.0158	6.425E-02 0.0098	1.737E-03 0.0003
Eu-152	1.740E+00 0.2650	3.831E-06 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.195E-04 0.0000	7.898E-06 0.0000	1.446E-04 0.0000
Sr-90	3.108E-02 0.0047	1.155E-04 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.790E+00 0.2727	1.011E+00 0.1540	1.737E-02 0.0026
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	3.444E+00 0.5245	1.494E-04 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.959E+00 0.2984	1.125E+00 0.1714	1.932E-02 0.0029

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.100E+01 years
Water Dependent Pathways

	Water	Fish	Radon	Plant	Meat	Milk	All Pathways*
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Nuclide	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
C-14	6.068E-07 0.0000	1.957E-04 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.560E-08 0.0000	1.111E-07 0.0000	1.102E-01 0.0168
Co-60	7.670E-06 0.0000	1.515E-05 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	3.765E-07 0.0000	3.362E-07 0.0000	3.646E-01 0.0555
Cs-137	2.483E-04 0.0000	3.180E-03 0.0005	0.000E+00 0.0000	0.000E+00 0.0000	1.828E-05 0.0000	4.353E-05 0.0000	1.485E+00 0.2262
Eu-152	1.299E-06 0.0000	7.940E-07 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	6.374E-09 0.0000	1.423E-09 0.0000	1.741E+00 0.2651
Sr-90	9.864E-03 0.0015	4.069E-03 0.0006	0.000E+00 0.0000	0.000E+00 0.0000	1.936E-04 0.0000	4.323E-04 0.0001	2.865E+00 0.4364
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	1.012E-02 0.0015	7.461E-03 0.0011	0.000E+00 0.0000	0.000E+00 0.0000	2.123E-04 0.0000	4.762E-04 0.0001	6.566E+00 1.0000

0*Sum of all water independent and dependent pathways.

Attachment 3 Sheet No. 14 of 20
Originator: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0308 Rev. No. 0

ATTACHMENT 3

1RESRAD, Version 6.3 T« Limit = 180 days 10/03/2007 08:15 Page 15
Summary : 118-B-1 Combined Areas RESRAD Evaluation
File : 118-B-1_Combined_Areas_w-o plants.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)											
As mrem/yr and Fraction of Total Dose At t = 4.300E+01 years											
Water Independent Pathways (Inhalation excludes radon)											
0	Ground		Inhalation		Radon		Plant		Meat		Soil
0	Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
	Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
	C-14	5.223E-11	0.0000	2.485E-09	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.275E-06	0.0000
	Co-60	5.350E-03	0.0022	5.049E-09	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.849E-05	0.0000
	Cs-137	6.265E-01	0.2605	4.108E-07	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.938E-02	0.0205
	Eu-152	3.296E-01	0.1370	7.254E-07	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.264E-05	0.0000
	Sr-90	1.450E-02	0.0060	5.391E-05	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.356E-01	0.3475
	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
	Total	9.759E-01	0.4058	5.505E-05	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.851E-01	0.3680

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)											
As mrem/yr and Fraction of Total Dose At t = 4.300E+01 years											
Water Dependent Pathways											
0	Water		Fish		Radon		Plant		Meat		All Pathways*
0	Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
	Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
	C-14	6.263E-07	0.0000	2.020E-04	0.0001	0.000E+00	0.0000	0.000E+00	0.0000	1.611E-08	0.0000
	Co-60	4.319E-07	0.0000	8.540E-07	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.127E-08	0.0000
	Cs-137	4.485E-04	0.0002	5.750E-03	0.0024	0.000E+00	0.0000	0.000E+00	0.0000	3.313E-05	0.0000
	Eu-152	9.308E-07	0.0000	5.696E-07	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.584E-09	0.0000
	Sr-90	1.742E-02	0.0072	7.194E-03	0.0030	0.000E+00	0.0000	0.000E+00	0.0000	3.432E-04	0.0001
	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
	Total	1.787E-02	0.0074	1.315E-02	0.0055	0.000E+00	0.0000	0.000E+00	0.0000	3.764E-04	0.0002

0*Sum of all water independent and dependent pathways.

Attachment 3 Sheet No. 15 of 20
Originator: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0308 Rev. No. 0

ATTACHMENT 3

1RESRAD, Version 6.3 T« Limit = 180 days 10/03/2007 08:15 Page 16
Summary : 118-B-1 Combined Areas RESRAD Evaluation
File : 118-B-1_Combined_Areas_w-o plants.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)										
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years										
Water Independent Pathways (Inhalation excludes radon)										
0	Ground		Inhalation		Radon		Plant		Meat	
0	Soil									
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
AAAAAA	AAAAAA	AAAAA	AAAAAA	AAAAA	AAAAAA	AAAAA	AAAAAA	AAAAA	AAAAAA	AAAAA
C-14	3.007E-18	0.0000	1.431E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.037E-13	0.0000
Co-60	2.971E-06	0.0000	2.804E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.248E-08	0.0000
Cs-137	1.678E-01	0.2953	1.100E-07	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.323E-02	0.0233
Eu-152	1.701E-02	0.0299	3.744E-08	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.168E-06	0.0000
Sr-90	3.732E-03	0.0066	1.387E-05	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.150E-01	0.3784
iiiiii	iiiiiii	iiiiii	iiiiiii	iiiiii	iiiiiii	iiiiii	iiiiiii	iiiiii	iiiiiii	iiiiii
Total	1.885E-01	0.3318	1.402E-05	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.282E-01	0.4017

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)										
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years										
Water Dependent Pathways										
0	Water		Fish		Radon		Plant		Meat	
0										
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
AAAAAA	AAAAAA	AAAAA	AAAAAA	AAAAA	AAAAAA	AAAAA	AAAAAA	AAAAA	AAAAAA	AAAAA
C-14	6.338E-07	0.0000	2.044E-04	0.0004	0.000E+00	0.0000	0.000E+00	0.0000	1.631E-08	0.0000
Co-60	5.543E-10	0.0000	1.096E-09	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.732E-11	0.0000
Cs-137	2.776E-04	0.0005	3.560E-03	0.0063	0.000E+00	0.0000	0.000E+00	0.0000	2.052E-05	0.0000
Eu-152	1.110E-07	0.0000	6.794E-08	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.471E-10	0.0000
Sr-90	1.036E-02	0.0182	4.279E-03	0.0075	0.000E+00	0.0000	0.000E+00	0.0000	2.043E-04	0.0004
iiiiii	iiiiiii	iiiiii	iiiiiii	iiiiii	iiiiiii	iiiiii	iiiiiii	iiiiii	iiiiiii	iiiiii
Total	1.064E-02	0.0187	8.044E-03	0.0142	0.000E+00	0.0000	0.000E+00	0.0000	2.248E-04	0.0004

0*Sum of all water independent and dependent pathways.

Attachment 3 Sheet No. 16 of 20
Originator: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0308 Rev. No. 0

ATTACHMENT 3

1RESRAD, Version 6.3 T« Limit = 180 days 10/03/2007 08:15 Page 17
Summary : 118-B-1 Combined Areas RESRAD Evaluation
File : 118-B-1_Combined_Areas_w-o plants.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)											
As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years											
Water Independent Pathways (Inhalation excludes radon)											
0	Ground		Inhalation		Radon		Plant		Meat		Soil
0	Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
	Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
	C-14	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
	Co-60	1.122E-17	0.0000	1.059E-23	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.812E-20	0.0000
	Cs-137	1.650E-03	0.3005	1.082E-09	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.300E-04	0.0237
	Eu-152	5.176E-07	0.0001	1.139E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.555E-11	0.0000
	Sr-90	3.186E-05	0.0058	1.184E-07	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.836E-03	0.3344
	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
	Total	1.682E-03	0.3064	1.195E-07	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.966E-03	0.3581
0											

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)											
As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years											
Water Dependent Pathways											
0	Water		Fish		Radon		Plant		Meat		All Pathways*
0	Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
	Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
	C-14	6.098E-07	0.0001	1.967E-04	0.0358	0.000E+00	0.0000	0.000E+00	0.0000	1.569E-08	0.0000
	Co-60	6.268E-21	0.0000	1.240E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.090E-22	0.0000
	Cs-137	8.165E-06	0.0015	1.047E-04	0.0191	0.000E+00	0.0000	0.000E+00	0.0000	6.039E-07	0.0001
	Eu-152	1.010E-11	0.0000	6.184E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.981E-14	0.0000
	Sr-90	2.649E-04	0.0483	1.094E-04	0.0199	0.000E+00	0.0000	0.000E+00	0.0000	5.224E-06	0.0010
	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
	Total	2.736E-04	0.0498	4.108E-04	0.0748	0.000E+00	0.0000	0.000E+00	0.0000	5.843E-06	0.0011
0	Sum of all water independent and dependent pathways.										

Attachment 3 Sheet No. 17 of 20
Originator: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0308 Rev. No. 0

ATTACHMENT 3

1RESRAD, Version 6.3 T« Limit = 180 days 10/03/2007 08:15 Page 18
Summary : 118-B-1 Combined Areas RESRAD Evaluation
File : 118-B-1_Combined_Areas_w-o plants.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years
Water Independent Pathways (Inhalation excludes radon)

	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Nuclide	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
C-14	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000
Co-60	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000
Cs-137	1.554E-10 0.0000	1.019E-16 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.225E-11 0.0000	7.607E-12 0.0000	2.057E-13 0.0000
Eu-152	8.044E-23 0.0000	2.638E-16 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.860E-16 0.0000	4.916E-18 0.0000	2.251E-16 0.0000
Sr-90	1.833E-12 0.0000	6.813E-15 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.056E-10 0.0000	5.965E-11 0.0000	1.025E-12 0.0000
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	1.572E-10 0.0000	7.179E-15 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.179E-10 0.0000	6.726E-11 0.0000	1.230E-12 0.0000

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years
Water Dependent Pathways

	Water	Fish	Radon	Plant	Meat	Milk	All Pathways*
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Nuclide	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.	mrem/yr fract.
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
C-14	5.587E-07 0.0031	1.802E-04 0.9963	0.000E+00 0.0000	0.000E+00 0.0000	1.437E-08 0.0001	1.023E-07 0.0006	1.809E-04 1.0000
Co-60	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000
Cs-137	2.567E-12 0.0000	3.292E-11 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.898E-13 0.0000	4.500E-13 0.0000	2.116E-10 0.0000
Eu-152	1.058E-17 0.0000	4.750E-18 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	5.158E-20 0.0000	4.632E-21 0.0000	6.952E-16 0.0000
Sr-90	3.341E-11 0.0000	1.380E-11 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	6.591E-13 0.0000	1.465E-12 0.0000	2.175E-10 0.0000
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	5.587E-07 0.0031	1.802E-04 0.9963	0.000E+00 0.0000	0.000E+00 0.0000	1.437E-08 0.0001	1.023E-07 0.0006	1.809E-04 1.0000

0*Sum of all water independent and dependent pathways.

Attachment 3 Sheet No. 18 of 20
Originator: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0308 Rev. No. 0

ATTACHMENT 3

1RESRAD, Version 6.3 T« Limit = 180 days 10/03/2007 08:15 Page 19
Summary : 118-B-1 Combined Areas RESRAD Evaluation
File : 118-B-1_Combined_Areas_w-o plants.RAD

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

0 Parent	Product	Thread	DSR(j,t) At Time in Years	(mrem/yr)/(pCi/g)
(i)	(j)	Fraction	0.000E+00 1.000E+00 3.000E+00 7.000E+00 1.100E+01 4.300E+01 1.000E+02 3.000E+02 1.000E+03	
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
C-14	C-14	1.000E+00	1.416E+00 1.062E+00 5.915E-01 1.837E-01 5.710E-02 1.100E-04 1.063E-04 1.023E-04 9.372E-05	
OC-60	Co-60	1.000E+00	9.994E+00 8.762E+00 6.736E+00 3.981E+00 2.352E+00 3.499E-02 1.944E-05 7.353E-17 0.000E+00	
OCs-137+D	Cs-137+D	1.000E+00	2.463E+00 2.407E+00 2.299E+00 2.098E+00 1.914E+00 9.197E-01 2.492E-01 2.548E-03 2.726E-10	
OEu-152	Eu-152	7.208E-01	3.198E+00 3.036E+00 2.736E+00 2.223E+00 1.805E+00 3.419E-01 1.764E-02 5.369E-07 8.344E-23	
OEu-152	Eu-152	2.792E-01	1.239E+00 1.176E+00 1.060E+00 8.609E-01 6.992E-01 1.324E-01 6.834E-03 2.080E-07 3.232E-23	
Eu-152	Gd-152	2.792E-01	2.501E-17 7.333E-17 1.628E-16 3.160E-16 4.405E-16 8.778E-16 9.759E-16 9.854E-16 1.000E-15	
Eu-152	DSR(j)		1.239E+00 1.176E+00 1.060E+00 8.609E-01 6.992E-01 1.324E-01 6.834E-03 2.080E-07 1.000E-15	
OSr-90+D	Sr-90+D	1.000E+00	1.447E+00 1.414E+00 1.349E+00 1.229E+00 1.119E+00 5.297E-01 1.397E-01 1.294E-03 8.495E-11	
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

The DSR includes contributions from associated (half-life > 180 days) daughters.

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 4.000E+00 mrem/yr

0 Nuclide	(i)	t = 0.000E+00	1.000E+00	3.000E+00	7.000E+00	1.100E+01	4.300E+01	1.000E+02	3.000E+02	1.000E+03
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
C-14	2.824E+00	3.768E+00	6.762E+00	2.177E+01	7.006E+01	3.637E+04	3.762E+04	3.910E+04	4.268E+04	
Co-60	4.003E-01	4.565E-01	5.938E-01	1.005E+00	1.700E+00	1.143E+02	2.058E+05	*1.132E+15	*1.132E+15	
Cs-137	1.624E+00	1.662E+00	1.740E+00	1.907E+00	2.090E+00	4.349E+00	1.605E+01	1.570E+03	1.467E+10	
Eu-152	9.015E-01	9.496E-01	1.054E+00	1.297E+00	1.597E+00	8.434E+00	1.634E+02	5.370E+06	*1.765E+14	
Sr-90	2.764E+00	2.829E+00	2.965E+00	3.255E+00	3.574E+00	7.552E+00	2.864E+01	3.090E+03	4.709E+10	
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 0.000E+00 years

0 Nuclide	Initial	tmin	DSR(i,tmin)	G(i,tmin)	DSR(i,tmax)	G(i,tmax)
(i)	(pCi/g)	(years)		(pCi/g)		(pCi/g)
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
C-14	1.930E+00	0.000E+00	1.416E+00	2.824E+00	1.416E+00	2.824E+00
Co-60	1.550E-01	0.000E+00	9.994E+00	4.003E-01	9.994E+00	4.003E-01
Cs-137	7.760E-01	0.000E+00	2.463E+00	1.624E+00	2.463E+00	1.624E+00
Eu-152	6.950E-01	0.000E+00	4.437E+00	9.015E-01	4.437E+00	9.015E-01
Sr-90	2.560E+00	0.000E+00	1.447E+00	2.764E+00	1.447E+00	2.764E+00
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

Attachment 3 Sheet No. 19 of 20
Originator: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0308 Rev. No. 0

ATTACHMENT 3

1RESRAD, Version 6.3 T« Limit = 180 days 10/03/2007 08:15 Page 20
Summary : 118-B-1 Combined Areas RESRAD Evaluation
File : 118-B-1_Combined_Areas_w-o plants.RAD

Individual Nuclide Dose Summed Over All Pathways
Parent Nuclide and Branch Fraction Indicated

ONuclide	Parent	THF(i)	DOSE(j,t), mrem/yr									
(j)	(i)	t=	0.000E+00	1.000E+00	3.000E+00	7.000E+00	1.100E+01	4.300E+01	1.000E+02	3.000E+02	1.000E+03	
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	
C-14	C-14	1.000E+00	2.733E+00	2.049E+00	1.142E+00	3.545E-01	1.102E-01	2.123E-04	2.052E-04	1.974E-04	1.809E-04	
OCo-60	Co-60	1.000E+00	1.549E+00	1.358E+00	1.044E+00	6.170E-01	3.646E-01	5.424E-03	3.013E-06	1.140E-17	0.000E+00	
OCs-137	Cs-137	1.000E+00	1.911E+00	1.868E+00	1.784E+00	1.628E+00	1.485E+00	7.137E-01	1.934E-01	1.978E-03	2.116E-10	
OEu-152	Eu-152	7.208E-01	2.223E+00	2.110E+00	1.902E+00	1.545E+00	1.255E+00	2.376E-01	1.226E-02	3.731E-07	5.799E-23	
Eu-152	Eu-152	2.792E-01	8.610E-01	8.174E-01	7.367E-01	5.983E-01	4.860E-01	9.203E-02	4.750E-03	1.445E-07	2.246E-23	
Eu-152	DOSE(j)		3.084E+00	2.928E+00	2.638E+00	2.143E+00	1.741E+00	3.296E-01	1.701E-02	5.177E-07	8.046E-23	
OGd-152	Eu-152	2.792E-01	1.738E-17	5.097E-17	1.131E-16	2.197E-16	3.062E-16	6.100E-16	6.783E-16	6.849E-16	6.952E-16	
OSr-90	Sr-90	1.000E+00	3.705E+00	3.619E+00	3.454E+00	3.146E+00	2.865E+00	1.356E+00	3.576E-01	3.314E-03	2.175E-10	
iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	

THF(i) is the thread fraction of the parent nuclide.

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

ONuclide	Parent	THF(i)	S(j,t), pCi/g									
(j)	(i)	t=	0.000E+00	1.000E+00	3.000E+00	7.000E+00	1.100E+01	4.300E+01	1.000E+02	3.000E+02	1.000E+03	
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	
C-14	C-14	1.000E+00	1.930E+00	1.441E+00	8.026E-01	2.492E-01	7.734E-02	6.668E-06	3.840E-13	0.000E+00	0.000E+00	
OCo-60	Co-60	1.000E+00	1.550E-01	1.359E-01	1.045E-01	6.174E-02	3.648E-02	5.426E-04	3.013E-07	1.138E-18	0.000E+00	
OCs-137	Cs-137	1.000E+00	7.760E-01	7.583E-01	7.240E-01	6.601E-01	6.018E-01	2.873E-01	7.694E-02	7.564E-04	7.125E-11	
OEu-152	Eu-152	7.208E-01	5.010E-01	4.756E-01	4.286E-01	3.481E-01	2.827E-01	5.354E-02	2.763E-03	8.409E-08	1.307E-23	
Eu-152	Eu-152	2.792E-01	1.940E-01	1.842E-01	1.660E-01	1.348E-01	1.095E-01	2.074E-02	1.070E-03	3.257E-08	5.062E-24	
Eu-152	AS(j):		6.950E-01	6.598E-01	5.946E-01	4.829E-01	3.923E-01	7.428E-02	3.834E-03	1.167E-07	1.813E-23	
OGd-152	Eu-152	2.792E-01	0.000E+00	1.214E-15	3.459E-15	7.307E-15	1.043E-14	2.139E-14	2.382E-14	2.395E-14	2.394E-14	
OSr-90	Sr-90	1.000E+00	2.560E+00	2.500E+00	2.383E+00	2.167E+00	1.970E+00	9.194E-01	2.366E-01	2.020E-03	1.162E-10	
iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	

THF(i) is the thread fraction of the parent nuclide.

ORESCALC.EXE execution time = 5.84 seconds

Attachment 3 Sheet No. 20 of 20
Originator: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0308 Rev. No. 0

ATTACHMENT 4

1RESRAD, Version 6.3 T« Limit = 180 days 10/03/2007 08:15 Page 1
Intrisk : 118-B-1 Combined Areas RESRAD Evaluation
File : 118-B-1_Combined_Areas_w-o plants.RAD

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Cancer Risk Slope Factors	2
Risk Slope and ETFG for the Ground Pathway	3
Amount of Intake Quantities and Excess Cancer Risks	
Time= 0.000E+00	4
Time= 1.000E+00	6
Time= 3.000E+00	8
Time= 7.000E+00	10
Time= 1.100E+01	12
Time= 4.300E+01	14
Time= 1.000E+02	16
Time= 3.000E+02	18
Time= 1.000E+03	20

Attachment 4 Sheet No. 1 of 21
Originator: S.W. Clark *SWC* Date 10/3/07
Chk'd By M.W. Perrott *MP* Date 10/3/07
Calc. No. 0100B-CA-V0308 Rev. No. 0

ATTACHMENT 4

1RESRAD, Version 6.3 T« Limit = 180 days 10/03/2007 08:15 Page 2
Intrisk : 118-B-1 Combined Areas RESRAD Evaluation
File : 118-B-1_Combined_Areas_w-o plants.RAD

Cancer Risk Slope Factors Summary Table
Risk Library: HEAST 2001 Morbidity

0	Menu	Parameter	Current Value	Base Case*	Parameter Name
	Sf-1	Ground external radiation slope factors, 1/yr per (pCi/g):			
	Sf-1	C-14	7.83E-12	7.83E-12	SLPF(1,1)
	Sf-1	Co-60	1.24E-05	1.24E-05	SLPF(2,1)
	Sf-1	Cs-137+D	2.55E-06	5.32E-10	SLPF(3,1)
	Sf-1	Eu-152	5.30E-06	5.30E-06	SLPF(4,1)
	Sf-1	Gd-152	0.00E+00	0.00E+00	SLPF(6,1)
	Sf-1	Sr-90+D	1.96E-08	4.82E-10	SLPF(7,1)
	Sf-2	Inhalation, slope factors, 1/(pCi):			
	Sf-2	C-14	7.07E-12	7.07E-12	SLPF(1,2)
	Sf-2	Co-60	3.58E-11	3.58E-11	SLPF(2,2)
	Sf-2	Cs-137+D	1.19E-11	1.19E-11	SLPF(3,2)
	Sf-2	Eu-152	9.10E-11	9.10E-11	SLPF(4,2)
	Sf-2	Gd-152	9.10E-09	9.10E-09	SLPF(6,2)
	Sf-2	Sr-90+D	1.13E-10	1.05E-10	SLPF(7,2)
	Sf-3	Food ingestion, slope factors, 1/(pCi):			
	Sf-3	C-14	2.00E-12	2.00E-12	SLPF(1,3)
	Sf-3	Co-60	2.23E-11	2.23E-11	SLPF(2,3)
	Sf-3	Cs-137+D	3.74E-11	3.74E-11	SLPF(3,3)
	Sf-3	Eu-152	8.70E-12	8.70E-12	SLPF(4,3)
	Sf-3	Gd-152	3.85E-11	3.85E-11	SLPF(6,3)
	Sf-3	Sr-90+D	9.53E-11	6.88E-11	SLPF(7,3)
	Sf-3	Water ingestion, slope factors, 1/(pCi):			
	Sf-3	C-14	1.55E-12	1.55E-12	SLPF(1,4)
	Sf-3	Co-60	1.57E-11	1.57E-11	SLPF(2,4)
	Sf-3	Cs-137+D	3.04E-11	3.04E-11	SLPF(3,4)
	Sf-3	Eu-152	6.07E-12	6.07E-12	SLPF(4,4)
	Sf-3	Gd-152	2.97E-11	2.97E-11	SLPF(6,4)
	Sf-3	Sr-90+D	7.40E-11	5.59E-11	SLPF(7,4)
	Sf-3	Soil ingestion, slope factors, 1/(pCi):			
	Sf-3	C-14	2.79E-12	2.79E-12	SLPF(1,5)
	Sf-3	Co-60	4.03E-11	4.03E-11	SLPF(2,5)
	Sf-3	Cs-137+D	4.33E-11	4.33E-11	SLPF(3,5)
	Sf-3	Eu-152	1.62E-11	1.62E-11	SLPF(4,5)
	Sf-3	Gd-152	6.29E-11	6.29E-11	SLPF(6,5)
	Sf-3	Sr-90+D	1.44E-10	9.18E-11	SLPF(7,5)

|||||
*Base Case means Default.Lib w/o Associate Nuclide contributions.

Attachment 4 Sheet No. 2 of 21
Originator: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0308 Rev. No. 0

ATTACHMENT 4

1RESRAD, Version 6.3 T« Limit = 180 days 10/03/2007 08:15 Page 3
Intrisk : 118-B-1 Combined Areas RESRAD Evaluation
File : 118-B-1_Combined_Areas_w-o plants.RAD

		Risk Slope and Environmental Transport Factors for the Ground Pathway										
ONuclide	Slope(i)*	ETFG(i,t) At Time in Years (dimensionless)										
		t= 0.000E+00	1.000E+00	3.000E+00	7.000E+00	1.100E+01	4.300E+01	1.000E+02	3.000E+02	1.000E+03		
(i)	AAAAAAAA	AAAAAAAA	AAAAAAAA	AAAAAAAA	AAAAAAAA	AAAAAAAA	AAAAAAAA	AAAAAAAA	AAAAAAAA	AAAAAAAA	AAAAAAAA	AAAAAAAA
Ba-137m	2.690E-06	6.467E-01	6.467E-01	6.467E-01	6.467E-01	6.467E-01	6.467E-01	6.467E-01	6.467E-01	6.467E-01	6.467E-01	6.467E-01
C-14	7.830E-12	6.716E-01	6.716E-01	6.716E-01	6.716E-01	6.716E-01	6.716E-01	6.716E-01	6.716E-01	6.716E-01	6.716E-01	6.716E-01
Co-60	1.240E-05	6.489E-01	6.489E-01	6.489E-01	6.489E-01	6.489E-01	6.489E-01	6.489E-01	6.489E-01	6.489E-01	6.489E-01	6.489E-01
Cs-137	5.320E-10	6.554E-01	6.554E-01	6.554E-01	6.554E-01	6.554E-01	6.554E-01	6.554E-01	6.554E-01	6.554E-01	6.554E-01	6.554E-01
Eu-152	5.300E-06	6.500E-01	6.500E-01	6.500E-01	6.500E-01	6.500E-01	6.500E-01	6.500E-01	6.500E-01	6.500E-01	6.500E-01	6.500E-01
Gd-152	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Sr-90	4.820E-10	6.564E-01	6.564E-01	6.564E-01	6.564E-01	6.564E-01	6.564E-01	6.564E-01	6.564E-01	6.564E-01	6.564E-01	6.564E-01
Y-90	1.910E-08	6.483E-01	6.483E-01	6.483E-01	6.483E-01	6.483E-01	6.483E-01	6.483E-01	6.483E-01	6.483E-01	6.483E-01	6.483E-01
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

* - Units are 1/yr per (pCi/g) at infinite depth and area. Multiplication by ETFG(i,t) converts to site conditions.

Attachment 4 Sheet No. 3 of 21
Originator: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0308 Rev. No. 0

ATTACHMENT 4

1RESRAD, Version 6.3 T« Limit = 180 days 10/03/2007 08:15 Page 4
Intrisk : 118-B-1 Combined Areas RESRAD Evaluation
File : 118-B-1_Combined_Areas_w-o plants.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 0.000E+00 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
C-14	3.969E+02	0.000E+00	7.998E+05	6.475E+05	1.127E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.447E+06
Co-60	7.029E-03	0.000E+00	6.629E+02	1.519E+02	9.052E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	8.239E+02
Cs-137	3.519E-02	0.000E+00	2.699E+03	1.676E+03	4.532E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	4.420E+03
Eu-152	3.152E-02	0.000E+00	3.354E+01	2.216E+00	4.059E+01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	7.634E+01
Gd-152	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Sr-90	1.161E-01	0.000E+00	1.541E+04	8.704E+03	1.495E+02	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.426E+04
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 0.000E+00 years

0

0

Radio- Nuclide	Ground		Inhalation		Plant		Meat		Milk		Soil	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
C-14	3.494E-11	0.0000	9.661E-09	0.0001	0.000E+00	0.0000	5.694E-06	0.0412	4.565E-06	0.0331	1.083E-09	0.0000
Co-60	9.304E-06	0.0674	1.877E-12	0.0000	0.000E+00	0.0000	1.103E-07	0.0008	2.527E-08	0.0002	2.721E-09	0.0000
Cs-137	2.764E-05	0.2002	9.061E-12	0.0000	0.000E+00	0.0000	2.184E-06	0.0158	1.357E-06	0.0098	4.246E-08	0.0003
Eu-152	3.637E-05	0.2634	4.356E-11	0.0000	0.000E+00	0.0000	4.432E-09	0.0000	2.929E-10	0.0000	9.988E-09	0.0001
Gd-152	0.000E+00	0.0000	1.464E-22	0.0000	0.000E+00	0.0000	6.590E-22	0.0000	1.742E-23	0.0000	1.303E-21	0.0000
Sr-90	6.969E-07	0.0050	2.822E-10	0.0000	0.000E+00	0.0000	3.148E-05	0.2280	1.778E-05	0.1288	4.625E-07	0.0033
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	7.401E-05	0.5360	9.997E-09	0.0001	0.000E+00	0.0000	3.947E-05	0.2859	2.373E-05	0.1719	5.187E-07	0.0038

Attachment 4 Sheet No. 4 of 21
Originator: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0308 Rev. No. 0

ATTACHMENT 4

1RESRAD, Version 6.3 T« Limit = 180 days 10/03/2007 08:15 Page 5
Intrisk : 118-B-1 Combined Areas RESRAD Evaluation
File : 118-B-1_Combined_Areas_w-o plants.RAD

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 0.000E+00 years

Water Dependent Pathways

Radio-	Water	Fish	Plant	Meat	Milk	All Pathways**
Nuclide	risk fract.	risk fract.	risk fract.	risk fract.	risk fract.	risk fract.
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
C-14	1.237E-11 0.0000	5.148E-09 0.0000	0.000E+00 0.0000	4.102E-13 0.0000	2.923E-12 0.0000	1.027E-05 0.0744
Co-60	9.228E-11 0.0000	2.587E-10 0.0000	0.000E+00 0.0000	6.422E-12 0.0000	5.744E-12 0.0000	9.442E-06 0.0684
Cs-137	4.922E-09 0.0000	7.757E-08 0.0006	0.000E+00 0.0000	4.462E-10 0.0000	1.062E-09 0.0000	3.131E-05 0.2267
Eu-152	3.288E-11 0.0000	2.881E-11 0.0000	0.000E+00 0.0000	2.314E-13 0.0000	5.163E-14 0.0000	3.638E-05 0.2635
Gd-152	8.504E-25 0.0000	4.870E-25 0.0000	0.000E+00 0.0000	5.174E-27 0.0000	4.817E-28 0.0000	2.127E-21 0.0000
Sr-90	1.549E-07 0.0011	8.234E-08 0.0006	0.000E+00 0.0000	3.921E-09 0.0000	8.746E-09 0.0001	5.067E-05 0.3670
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	1.600E-07 0.0012	1.653E-07 0.0012	0.000E+00 0.0000	4.374E-09 0.0000	9.816E-09 0.0001	1.381E-04 1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

0

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 0.000E+00 years

0

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil
Nuclide	risk fract.	risk fract.	risk fract.	risk fract.	risk fract.	risk fract.	risk fract.
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
C-14	3.494E-11 0.0000	9.661E-09 0.0001	0.000E+00 0.0000	0.000E+00 0.0000	5.694E-06 0.0412	4.565E-06 0.0331	1.083E-09 0.0000
Co-60	9.304E-06 0.0674	1.877E-12 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.103E-07 0.0008	2.527E-08 0.0002	2.721E-09 0.0000
Cs-137	2.764E-05 0.2002	9.061E-12 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	2.184E-06 0.0158	1.357E-06 0.0098	4.246E-08 0.0003
Eu-152	3.637E-05 0.2634	4.356E-11 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	4.432E-09 0.0000	2.929E-10 0.0000	9.988E-09 0.0001
Sr-90	6.969E-07 0.0050	2.822E-10 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	3.148E-05 0.2280	1.778E-05 0.1288	4.625E-07 0.0033
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	7.401E-05 0.5360	9.997E-09 0.0001	0.000E+00 0.0000	0.000E+00 0.0000	3.947E-05 0.2859	2.373E-05 0.1719	5.187E-07 0.0038

0

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 0.000E+00 years

Water Dependent Pathways

Radio-	Water	Fish	Radon	Plant	Meat	Milk	All pathways
Nuclide	risk fract.	risk fract.	risk fract.	risk fract.	risk fract.	risk fract.	risk fract.
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
C-14	1.237E-11 0.0000	5.148E-09 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	4.102E-13 0.0000	2.923E-12 0.0000	1.027E-05 0.0744
Co-60	9.228E-11 0.0000	2.587E-10 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	6.422E-12 0.0000	5.744E-12 0.0000	9.442E-06 0.0684
Cs-137	4.922E-09 0.0000	7.757E-08 0.0006	0.000E+00 0.0000	0.000E+00 0.0000	4.462E-10 0.0000	1.062E-09 0.0000	3.131E-05 0.2267
Eu-152	3.288E-11 0.0000	2.881E-11 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	2.314E-13 0.0000	5.163E-14 0.0000	3.638E-05 0.2635
Sr-90	1.549E-07 0.0011	8.234E-08 0.0006	0.000E+00 0.0000	0.000E+00 0.0000	3.921E-09 0.0000	8.746E-09 0.0001	5.067E-05 0.3670
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	1.600E-07 0.0012	1.653E-07 0.0012	0.000E+00 0.0000	0.000E+00 0.0000	4.374E-09 0.0000	9.816E-09 0.0001	1.381E-04 1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Attachment 4 Sheet No. 5 of 21
Originator: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0308 Rev. No. 0

ATTACHMENT 4

1RESRAD, Version 6.3 T« Limit = 180 days 10/03/2007 08:15 Page 6
Intrisk : 118-B-1 Combined Areas RESRAD Evaluation
File : 118-B-1_Combined_Areas_w-o plants.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 1.000E+00 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
C-14	2.963E+02	0.000E+00	6.288E+05	5.014E+05	8.413E+01	7.616E-02	2.422E+01	0.000E+00	1.866E-03	1.391E-02	1.130E+06
Co-60	6.163E-03	0.000E+00	5.812E+02	1.332E+02	7.937E+00	9.841E-02	1.914E-01	0.000E+00	4.587E-03	4.302E-03	7.227E+02
Cs-137	3.439E-02	0.000E+00	2.637E+03	1.638E+03	4.428E+01	5.491E-01	6.927E+00	0.000E+00	3.839E-02	9.602E-02	4.327E+03
Eu-152	2.992E-02	0.000E+00	3.184E+01	2.104E+00	3.853E+01	3.002E-02	1.807E-02	0.000E+00	1.399E-04	3.281E-05	7.252E+01
Gd-152	5.503E-17	0.000E+00	5.857E-14	1.554E-15	7.087E-14	8.224E-18	3.670E-18	0.000E+00	3.623E-20	3.666E-21	1.310E-13
Sr-90	1.134E-01	0.000E+00	1.505E+04	8.499E+03	1.460E+02	7.191E+00	2.922E+00	0.000E+00	1.341E-01	3.143E-01	2.370E+04
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

0
Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+00 years

Radio- Nuclide	Water Independent Pathways (Inhalation excludes radon)									
	Ground risk	Inhalation fract.	Plant risk	Meat fract.	Milk risk	Soil fract.	Ground risk	Inhalation fract.	Plant risk	Meat fract.
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
C-14	2.608E-11	0.0000	7.211E-09	0.0001	0.000E+00	0.0000	4.330E-06	0.0331	3.453E-06	0.0264
Co-60	8.157E-06	0.0624	1.646E-12	0.0000	0.000E+00	0.0000	9.669E-08	0.0007	2.215E-08	0.0002
Cs-137	2.701E-05	0.2066	8.854E-12	0.0000	0.000E+00	0.0000	2.134E-06	0.0163	1.326E-06	0.0101
Eu-152	3.452E-05	0.2641	4.136E-11	0.0000	0.000E+00	0.0000	4.208E-09	0.0000	2.780E-10	0.0000
Gd-152	0.000E+00	0.0000	1.540E-22	0.0000	0.000E+00	0.0000	6.933E-22	0.0000	1.833E-23	0.0000
Sr-90	6.805E-07	0.0052	2.756E-10	0.0000	0.000E+00	0.0000	3.074E-05	0.2352	1.736E-05	0.1328
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	7.037E-05	0.5384	7.538E-09	0.0001	0.000E+00	0.0000	3.731E-05	0.2854	2.216E-05	0.1696

Attachment 4 Sheet No. 6 of 21
Originator: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0308 Rev. No. 0

ATTACHMENT 4

1RESRAD, Version 6.3 T« Limit = 180 days 10/03/2007 08:15 Page 7
Intrisk : 118-B-1 Combined Areas RESRAD Evaluation
File : 118-B-1_Combined_Areas_w-o plants.RAD

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+00 years

Water Dependent Pathways

	Water	Fish	Plant	Meat	Milk	All Pathways**
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Nuclide	risk fract.	risk fract.	risk fract.	risk fract.	risk fract.	risk fract.
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
C-14	1.278E-11 0.0000	5.316E-09 0.0000	0.000E+00 0.0000	4.236E-13 0.0000	3.019E-12 0.0000	7.796E-06 0.0596
Co-60	9.246E-11 0.0000	2.592E-10 0.0000	0.000E+00 0.0000	6.432E-12 0.0000	5.755E-12 0.0000	8.279E-06 0.0633
Cs-137	5.172E-09 0.0000	8.151E-08 0.0006	0.000E+00 0.0000	4.689E-10 0.0000	1.115E-09 0.0000	3.060E-05 0.2341
Eu-152	3.399E-11 0.0000	2.978E-11 0.0000	0.000E+00 0.0000	2.392E-13 0.0000	5.338E-14 0.0000	3.454E-05 0.2642
Gd-152	9.013E-25 0.0000	5.219E-25 0.0000	0.000E+00 0.0000	5.623E-27 0.0000	5.114E-28 0.0000	2.238E-21 0.0000
Sr-90	1.627E-07 0.0012	8.648E-08 0.0007	0.000E+00 0.0000	4.118E-09 0.0000	9.185E-09 0.0001	4.950E-05 0.3787
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	1.681E-07 0.0013	1.736E-07 0.0013	0.000E+00 0.0000	4.594E-09 0.0000	1.031E-08 0.0001	1.307E-04 1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

0

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+00 years

0

Water Independent Pathways (Inhalation excludes radon)

0

	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Nuclide	risk fract.	risk fract.	risk fract.	risk fract.	risk fract.	risk fract.	risk fract.
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
C-14	2.608E-11 0.0000	7.211E-09 0.0001	0.000E+00 0.0000	0.000E+00 0.0000	4.330E-06 0.0331	3.453E-06 0.0264	8.081E-10 0.0000
Co-60	8.157E-06 0.0624	1.646E-12 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	9.669E-08 0.0007	2.215E-08 0.0002	2.386E-09 0.0000
Cs-137	2.701E-05 0.2066	8.854E-12 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	2.134E-06 0.0163	1.326E-06 0.0101	4.149E-08 0.0003
Eu-152	3.452E-05 0.2641	4.136E-11 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	4.208E-09 0.0000	2.780E-10 0.0000	9.482E-09 0.0001
Sr-90	6.805E-07 0.0052	2.756E-10 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	3.074E-05 0.2352	1.736E-05 0.1328	4.516E-07 0.0035
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	7.037E-05 0.5384	7.538E-09 0.0001	0.000E+00 0.0000	0.000E+00 0.0000	3.731E-05 0.2854	2.216E-05 0.1696	5.058E-07 0.0039

0

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+00 years

Water Dependent Pathways

	Water	Fish	Radon	Plant	Meat	Milk	All pathways
Radio-	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
Nuclide	risk fract.	risk fract.	risk fract.	risk fract.	risk fract.	risk fract.	risk fract.
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
C-14	1.278E-11 0.0000	5.316E-09 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	4.236E-13 0.0000	3.019E-12 0.0000	7.796E-06 0.0596
Co-60	9.246E-11 0.0000	2.592E-10 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	6.432E-12 0.0000	5.755E-12 0.0000	8.279E-06 0.0633
Cs-137	5.172E-09 0.0000	8.151E-08 0.0006	0.000E+00 0.0000	0.000E+00 0.0000	4.689E-10 0.0000	1.115E-09 0.0000	3.060E-05 0.2341
Eu-152	3.399E-11 0.0000	2.978E-11 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	2.392E-13 0.0000	5.338E-14 0.0000	3.454E-05 0.2642
Sr-90	1.627E-07 0.0012	8.648E-08 0.0007	0.000E+00 0.0000	0.000E+00 0.0000	4.118E-09 0.0000	9.185E-09 0.0001	4.950E-05 0.3787
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	1.681E-07 0.0013	1.736E-07 0.0013	0.000E+00 0.0000	0.000E+00 0.0000	4.594E-09 0.0000	1.031E-08 0.0001	1.307E-04 1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Attachment 4 Sheet No. 7 of 21
Originator: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0308 Rev. No. 0

ATTACHMENT 4

1RESRAD, Version 6.3 T« Limit = 180 days 10/03/2007 08:15 Page 8
Intrisk : 118-B-1 Combined Areas RESRAD Evaluation
File : 118-B-1_Combined_Areas_w-o plants.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 3.000E+00 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
C-14	1.651E+02	0.000E+00	3.504E+05	2.794E+05	4.687E+01	1.757E-01	5.649E+01	0.000E+00	4.470E-03	3.216E-02	6.298E+05
Co-60	4.737E-03	0.000E+00	4.468E+02	1.024E+02	6.101E+00	2.274E-01	4.473E-01	0.000E+00	1.101E-02	9.958E-03	5.560E+02
Cs-137	3.283E-02	0.000E+00	2.518E+03	1.564E+03	4.228E+01	1.576E+00	2.010E+01	0.000E+00	1.144E-01	2.761E-01	4.146E+03
Eu-152	2.696E-02	0.000E+00	2.870E+01	1.896E+00	3.473E+01	8.131E-02	4.951E-02	0.000E+00	3.937E-04	8.903E-05	6.545E+01
Gd-152	1.569E-16	0.000E+00	1.669E-13	4.418E-15	2.020E-13	4.096E-17	1.940E-17	0.000E+00	2.444E-19	1.827E-20	3.734E-13
Sr-90	1.081E-01	0.000E+00	1.435E+04	8.104E+03	1.392E+02	2.061E+01	8.466E+00	0.000E+00	3.991E-01	9.025E-01	2.262E+04
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil and water-dependent water, fish, plant, meat, milk pathways											

0
Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+00 years

Radio- Nuclide	Water Independent Pathways (Inhalation excludes radon)									
	Ground risk fract.	Inhalation risk fract.	Plant risk fract.	Meat risk fract.	Milk risk fract.	Soil risk fract.	Ground risk fract.	Inhalation risk fract.	Plant risk fract.	Meat risk fract.
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
C-14	1.453E-11	0.0000	4.018E-09	0.0000	0.000E+00	0.0000	2.412E-06	0.0204	1.924E-06	0.0163
Co-60	6.271E-06	0.0530	1.265E-12	0.0000	0.000E+00	0.0000	7.433E-08	0.0006	1.703E-08	0.0001
Cs-137	2.579E-05	0.2180	8.454E-12	0.0000	0.000E+00	0.0000	2.038E-06	0.0172	1.266E-06	0.0107
Eu-152	3.111E-05	0.2630	3.727E-11	0.0000	0.000E+00	0.0000	3.792E-09	0.0000	2.506E-10	0.0000
Gd-152	0.000E+00	0.0000	1.681E-22	0.0000	0.000E+00	0.0000	7.567E-22	0.0000	2.000E-23	0.0000
Sr-90	6.489E-07	0.0055	2.628E-10	0.0000	0.000E+00	0.0000	2.931E-05	0.2478	1.656E-05	0.1400
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	6.382E-05	0.5395	4.327E-09	0.0000	0.000E+00	0.0000	3.384E-05	0.2860	1.976E-05	0.1671

Attachment 4 Sheet No. 8 of 21
Originator: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0308 Rev. No. 0

ATTACHMENT 4

1RESRAD, Version 6.3 T« Limit = 180 days 10/03/2007 08:15 Page 9
Intrisk : 118-B-1 Combined Areas RESRAD Evaluation
File : 118-B-1_Combined_Areas_w-o plants.RAD

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+00 years

Water Dependent Pathways

Radio-	Water		Fish		Plant		Meat		Milk		All Pathways**	
Nuclide	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
C-14	1.331E-11	0.0000	5.537E-09	0.0000	0.000E+00	0.0000	4.414E-13	0.0000	3.144E-12	0.0000	4.346E-06	0.0367
Co-60	8.885E-11	0.0000	2.492E-10	0.0000	0.000E+00	0.0000	6.189E-12	0.0000	5.530E-12	0.0000	6.364E-06	0.0538
Cs-137	5.630E-09	0.0000	8.874E-08	0.0008	0.000E+00	0.0000	5.106E-10	0.0000	1.214E-09	0.0000	2.923E-05	0.2471
Eu-152	3.563E-11	0.0000	3.123E-11	0.0000	0.000E+00	0.0000	2.509E-13	0.0000	5.596E-14	0.0000	3.113E-05	0.2631
Gd-152	9.668E-25	0.0000	5.798E-25	0.0000	0.000E+00	0.0000	6.506E-27	0.0000	5.512E-28	0.0000	2.442E-21	0.0000
Sr-90	1.770E-07	0.0015	9.407E-08	0.0008	0.000E+00	0.0000	4.481E-09	0.0000	9.990E-09	0.0001	4.723E-05	0.3993
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	1.828E-07	0.0015	1.886E-07	0.0016	0.000E+00	0.0000	4.998E-09	0.0000	1.121E-08	0.0001	1.183E-04	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, milk pathways

0

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+00 years

0

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
C-14	1.453E-11	0.0000	4.018E-09	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.412E-06	0.0204	1.924E-06	0.0163	4.502E-10	0.0000
Co-60	6.271E-06	0.0530	1.265E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.433E-08	0.0006	1.703E-08	0.0001	1.834E-09	0.0000
Cs-137	2.579E-05	0.2180	8.454E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.038E-06	0.0172	1.266E-06	0.0107	3.962E-08	0.0003
Eu-152	3.111E-05	0.2630	3.727E-11	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.792E-09	0.0000	2.506E-10	0.0000	8.545E-09	0.0001
Sr-90	6.489E-07	0.0055	2.628E-10	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.931E-05	0.2478	1.656E-05	0.1400	4.306E-07	0.0036
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	6.382E-05	0.5395	4.327E-09	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.384E-05	0.2860	1.976E-05	0.1671	4.810E-07	0.0041

0

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+00 years

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
Nuclide	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
C-14	1.331E-11	0.0000	5.537E-09	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.414E-13	0.0000	3.144E-12	0.0000	4.346E-06	0.0367
Co-60	8.885E-11	0.0000	2.492E-10	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.189E-12	0.0000	5.530E-12	0.0000	6.364E-06	0.0538
Cs-137	5.630E-09	0.0000	8.874E-08	0.0008	0.000E+00	0.0000	0.000E+00	0.0000	5.106E-10	0.0000	1.214E-09	0.0000	2.923E-05	0.2471
Eu-152	3.563E-11	0.0000	3.123E-11	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.509E-13	0.0000	5.596E-14	0.0000	3.113E-05	0.2631
1RESRAD, Version 6.3	T« Limit = 180 days													
Sr-90	1.770E-07	0.0015	9.407E-08	0.0008	0.000E+00	0.0000	0.000E+00	0.0000	4.481E-09	0.0000	9.990E-09	0.0001	4.723E-05	0.3993
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	1.828E-07	0.0015	1.886E-07	0.0016	0.000E+00	0.0000	0.000E+00	0.0000	4.998E-09	0.0000	1.121E-08	0.0001	1.183E-04	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Attachment 4 Sheet No. 9 of 21
Originator: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0308 Rev. No. 0

ATTACHMENT 4

1RESRAD, Version 6.3 T« Limit = 180 days 10/03/2007 08:15 Page 10
Intrisk : 118-B-1 Combined Areas RESRAD Evaluation
File : 118-B-1_Combined_Areas_w-o plants.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 7.000E+00 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
C-14	5.124E+01	0.000E+00	1.088E+05	8.672E+04	1.455E+01	2.620E-01	8.447E+01	0.000E+00	6.726E-03	4.798E-02	1.956E+05
Co-60	2.800E-03	0.000E+00	2.640E+02	6.050E+01	3.605E+00	3.137E-01	6.190E-01	0.000E+00	1.535E-02	1.375E-02	3.291E+02
Cs-137	2.993E-02	0.000E+00	2.296E+03	1.426E+03	3.855E+01	3.354E+00	4.292E+01	0.000E+00	2.462E-01	5.879E-01	3.807E+03
Eu-152	2.190E-02	0.000E+00	2.331E+01	1.540E+00	2.820E+01	1.542E-01	9.417E-02	0.000E+00	7.544E-04	1.689E-04	5.330E+01
Gd-152	3.314E-16	0.000E+00	3.526E-13	9.324E-15	4.267E-13	2.368E-16	1.055E-16	0.000E+00	1.111E-18	1.039E-19	7.891E-13
Sr-90	9.826E-02	0.000E+00	1.304E+04	7.368E+03	1.265E+02	4.374E+01	1.803E+01	0.000E+00	8.560E-01	1.916E+00	2.060E+04
iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 7.000E+00 years

Radio- Nuclide	Water Independent Pathways (Inhalation excludes radon)						
	Ground	Inhalation	Plant	Meat	Milk	Soil	
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
C-14	4.511E-12 0.0000	1.247E-09 0.0000	0.000E+00 0.0000	7.489E-07 0.0075	5.971E-07 0.0060	1.398E-10 0.0000	
Co-60	3.706E-06 0.0370	7.476E-13 0.0000	0.000E+00 0.0000	4.392E-08 0.0004	1.006E-08 0.0001	1.084E-09 0.0000	
Cs-137	2.351E-05 0.2350	7.708E-12 0.0000	0.000E+00 0.0000	1.858E-06 0.0186	1.154E-06 0.0115	3.612E-08 0.0004	
Eu-152	2.527E-05 0.2525	3.027E-11 0.0000	0.000E+00 0.0000	3.080E-09 0.0000	2.035E-10 0.0000	6.940E-09 0.0001	
Gd-152	0.000E+00 0.0000	1.922E-22 0.0000	0.000E+00 0.0000	8.653E-22 0.0000	2.287E-23 0.0000	1.711E-21 0.0000	
Sr-90	5.899E-07 0.0059	2.389E-10 0.0000	0.000E+00 0.0000	2.665E-05 0.2663	1.505E-05 0.1504	3.915E-07 0.0039	
iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii
Total	5.308E-05 0.5304	1.525E-09 0.0000	0.000E+00 0.0000	2.930E-05 0.2928	1.681E-05 0.1680	4.357E-07 0.0044	

Attachment 4 Sheet No. 10 of 21
Originator: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
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ATTACHMENT 4

1RESRAD, Version 6.3 T« Limit = 180 days 10/03/2007 08:15 Page 11
Intrisk : 118-B-1 Combined Areas RESRAD Evaluation
File : 118-B-1_Combined_Areas_w-o plants.RAD

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 7.000E+00 years

Water Dependent Pathways

Radio-	Water		Fish		Plant		Meat		Milk		All Pathways**	
Nuclide	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
C-14	1.376E-11	0.0000	5.727E-09	0.0001	0.000E+00	0.0000	4.568E-13	0.0000	3.252E-12	0.0000	1.353E-06	0.0135
Co-60	7.350E-11	0.0000	2.063E-10	0.0000	0.000E+00	0.0000	5.129E-12	0.0000	4.576E-12	0.0000	3.761E-06	0.0376
Cs-137	6.394E-09	0.0001	1.008E-07	0.0010	0.000E+00	0.0000	5.803E-10	0.0000	1.379E-09	0.0000	2.667E-05	0.2665
Eu-152	3.707E-11	0.0000	3.250E-11	0.0000	0.000E+00	0.0000	2.612E-13	0.0000	5.822E-14	0.0000	2.528E-05	0.2526
Gd-152	1.326E-24	0.0000	7.723E-25	0.0000	0.000E+00	0.0000	8.396E-27	0.0000	7.533E-28	0.0000	2.793E-21	0.0000
Sr-90	2.006E-07	0.0020	1.066E-07	0.0011	0.000E+00	0.0000	5.082E-09	0.0001	1.132E-08	0.0001	4.300E-05	0.4297
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	2.071E-07	0.0021	2.134E-07	0.0021	0.000E+00	0.0000	5.668E-09	0.0001	1.271E-08	0.0001	1.001E-04	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

0

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 7.000E+00 years

0

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
C-14	4.511E-12	0.0000	1.247E-09	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.489E-07	0.0075	5.971E-07	0.0060	1.398E-10	0.0000
Co-60	3.706E-06	0.0370	7.476E-13	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.392E-08	0.0004	1.006E-08	0.0001	1.084E-09	0.0000
Cs-137	2.351E-05	0.2350	7.708E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.858E-06	0.0186	1.154E-06	0.0115	3.612E-08	0.0004
Eu-152	2.527E-05	0.2525	3.027E-11	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.080E-09	0.0000	2.035E-10	0.0000	6.940E-09	0.0001
Sr-90	5.899E-07	0.0059	2.389E-10	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.665E-05	0.2663	1.505E-05	0.1504	3.915E-07	0.0039
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	5.308E-05	0.5304	1.525E-09	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.930E-05	0.2928	1.681E-05	0.1680	4.357E-07	0.0044

0

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 7.000E+00 years

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
Nuclide	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
C-14	1.376E-11	0.0000	5.727E-09	0.0001	0.000E+00	0.0000	0.000E+00	0.0000	4.568E-13	0.0000	3.252E-12	0.0000	1.353E-06	0.0135
Co-60	7.350E-11	0.0000	2.063E-10	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.129E-12	0.0000	4.576E-12	0.0000	3.761E-06	0.0376
Cs-137	6.394E-09	0.0001	1.008E-07	0.0010	0.000E+00	0.0000	0.000E+00	0.0000	5.803E-10	0.0000	1.379E-09	0.0000	2.667E-05	0.2665
Eu-152	3.707E-11	0.0000	3.250E-11	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.612E-13	0.0000	5.822E-14	0.0000	2.528E-05	0.2526
Sr-90	2.006E-07	0.0020	1.066E-07	0.0011	0.000E+00	0.0000	0.000E+00	0.0000	5.082E-09	0.0001	1.132E-08	0.0001	4.300E-05	0.4297
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	2.071E-07	0.0021	2.134E-07	0.0021	0.000E+00	0.0000	0.000E+00	0.0000	5.668E-09	0.0001	1.271E-08	0.0001	1.001E-04	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Attachment 4 Sheet No. 11 of 21
Originator: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0308 Rev. No. 0

ATTACHMENT 4

1RESRAD, Version 6.3 T« Limit = 180 days 10/03/2007 08:15 Page 12
Intrisk : 118-B-1 Combined Areas RESRAD Evaluation
File : 118-B-1_Combined_Areas_w-o plants.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 1.100E+01 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
C-14	1.591E+01	0.000E+00	3.376E+04	2.692E+04	4.517E+00	2.887E-01	9.311E+01	0.000E+00	7.424E-03	5.287E-02	6.078E+04
Co-60	1.654E-03	0.000E+00	1.560E+02	3.575E+01	2.131E+00	2.913E-01	5.754E-01	0.000E+00	1.430E-02	1.277E-02	1.948E+02
Cs-137	2.729E-02	0.000E+00	2.093E+03	1.300E+03	3.515E+01	4.806E+00	6.155E+01	0.000E+00	3.537E-01	8.425E-01	3.496E+03
Eu-152	1.779E-02	0.000E+00	1.893E+01	1.251E+00	2.291E+01	1.968E-01	1.203E-01	0.000E+00	9.657E-04	2.156E-04	4.341E+01
Gd-152	4.731E-16	0.000E+00	5.035E-13	1.331E-14	6.093E-13	4.440E-16	2.091E-16	0.000E+00	2.349E-18	1.965E-19	1.127E-12
Sr-90	8.933E-02	0.000E+00	1.186E+04	6.698E+03	1.150E+02	6.249E+01	2.578E+01	0.000E+00	1.227E+00	2.739E+00	1.876E+04
iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii
* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil and water-dependent water, fish, plant, meat, milk pathways											

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.100E+01 years

Radio- Nuclide	Water Independent Pathways (Inhalation excludes radon)									
	Ground	Inhalation	Plant	Meat	Milk	Soil	Ground	Inhalation	Plant	Meat
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
C-14	1.400E-12	0.0000	3.871E-10	0.0000	0.000E+00	0.0000	2.325E-07	0.0027	1.854E-07	0.0021
Co-60	2.190E-06	0.0253	4.418E-13	0.0000	0.000E+00	0.0000	2.596E-08	0.0003	5.948E-09	0.0001
Cs-137	2.144E-05	0.2473	7.027E-12	0.0000	0.000E+00	0.0000	1.694E-06	0.0195	1.052E-06	0.0121
Eu-152	2.052E-05	0.2368	2.459E-11	0.0000	0.000E+00	0.0000	2.502E-09	0.0000	1.653E-10	0.0000
Gd-152	0.000E+00	0.0000	2.118E-22	0.0000	0.000E+00	0.0000	9.535E-22	0.0000	2.520E-23	0.0000
Sr-90	5.363E-07	0.0062	2.172E-10	0.0000	0.000E+00	0.0000	2.423E-05	0.2795	1.368E-05	0.1579
iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii
Total	4.469E-05	0.5156	6.364E-10	0.0000	0.000E+00	0.0000	2.618E-05	0.3021	1.493E-05	0.1722

0

Attachment 4 Sheet No. 12 of 21
Originator: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0308 Rev. No. 0

ATTACHMENT 4

1RESRAD, Version 6.3 T« Limit = 180 days 10/03/2007 08:15 Page 13
Intrisk : 118-B-1 Combined Areas RESRAD Evaluation
File : 118-B-1_Combined_Areas_w-o plants.RAD

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.100E+01 years

Water Dependent Pathways

Radio- Nuclide	Water risk fract.	Fish risk fract.	Plant risk fract.	Meat risk fract.	Milk risk fract.	All Pathways** risk fract.
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
C-14	1.390E-11 0.0000	5.784E-09 0.0001	0.000E+00 0.0000	4.614E-13 0.0000	3.284E-12 0.0000	4.241E-07 0.0049
Co-60	5.585E-11 0.0000	1.568E-10 0.0000	0.000E+00 0.0000	3.900E-12 0.0000	3.477E-12 0.0000	2.223E-06 0.0256
Cs-137	6.980E-09 0.0001	1.101E-07 0.0013	0.000E+00 0.0000	6.337E-10 0.0000	1.505E-09 0.0000	2.433E-05 0.2808
Eu-152	3.671E-11 0.0000	3.219E-11 0.0000	0.000E+00 0.0000	2.588E-13 0.0000	5.765E-14 0.0000	2.053E-05 0.2369
Gd-152	1.650E-24 0.0000	9.185E-25 0.0000	0.000E+00 0.0000	9.574E-27 0.0000	9.299E-28 0.0000	3.078E-21 0.0000
Sr-90	2.184E-07 0.0025	1.161E-07 0.0013	0.000E+00 0.0000	5.536E-09 0.0001	1.233E-08 0.0001	3.915E-05 0.4518
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	2.255E-07 0.0026	2.321E-07 0.0027	0.000E+00 0.0000	6.174E-09 0.0001	1.384E-08 0.0002	8.667E-05 1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

0

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.100E+01 years

Water Independent Pathways (Inhalation excludes radon)

Radio- Nuclide	Ground risk fract.	Inhalation risk fract.	Radon risk fract.	Plant risk fract.	Meat risk fract.	Milk risk fract.	Soil risk fract.
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
C-14	1.400E-12 0.0000	3.871E-10 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	2.325E-07 0.0027	1.854E-07 0.0021	4.339E-11 0.0000
Co-60	2.190E-06 0.0253	4.418E-13 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	2.596E-08 0.0003	5.948E-09 0.0001	6.405E-10 0.0000
Cs-137	2.144E-05 0.2473	7.027E-12 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	1.694E-06 0.0195	1.052E-06 0.0121	3.293E-08 0.0004
Eu-152	2.052E-05 0.2368	2.459E-11 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	2.502E-09 0.0000	1.653E-10 0.0000	5.637E-09 0.0001
Sr-90	5.363E-07 0.0062	2.172E-10 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	2.423E-05 0.2795	1.368E-05 0.1579	3.559E-07 0.0041
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	4.469E-05 0.5156	6.364E-10 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	2.618E-05 0.3021	1.493E-05 0.1722	3.951E-07 0.0046

0

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.100E+01 years

Water Dependent Pathways

Radio- Nuclide	Water risk fract.	Fish risk fract.	Radon risk fract.	Plant risk fract.	Meat risk fract.	Milk risk fract.	All pathways risk fract.
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
C-14	1.390E-11 0.0000	5.784E-09 0.0001	0.000E+00 0.0000	0.000E+00 0.0000	4.614E-13 0.0000	3.284E-12 0.0000	4.241E-07 0.0049
Co-60	5.585E-11 0.0000	1.568E-10 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	3.900E-12 0.0000	3.477E-12 0.0000	2.223E-06 0.0256
Cs-137	6.980E-09 0.0001	1.101E-07 0.0013	0.000E+00 0.0000	0.000E+00 0.0000	6.337E-10 0.0000	1.505E-09 0.0000	2.433E-05 0.2808
Eu-152	3.671E-11 0.0000	3.219E-11 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	2.588E-13 0.0000	5.765E-14 0.0000	2.053E-05 0.2369
Sr-90	2.184E-07 0.0025	1.161E-07 0.0013	0.000E+00 0.0000	0.000E+00 0.0000	5.536E-09 0.0001	1.233E-08 0.0001	3.915E-05 0.4518
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	2.255E-07 0.0026	2.321E-07 0.0027	0.000E+00 0.0000	0.000E+00 0.0000	6.174E-09 0.0001	1.384E-08 0.0002	8.667E-05 1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Attachment 4 Sheet No. 13 of 21
Originator: S. W. Clark Date
Chk'd By: M. W. Perrott Date
Calc. No. 0100B-CA-V0308 Rev. No. 0

ATTACHMENT 4

1RESRAD, Version 6.3 T« Limit = 180 days 10/03/2007 08:15 Page 14
Intrisk : 118-B-1 Combined Areas RESRAD Evaluation
File : 118-B-1_Combined_Areas_w-o plants.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 4.300E+01 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
C-14	1.371E-03	0.000E+00	2.911E+00	2.321E+00	3.894E-04	2.997E-01	9.667E+01	0.000E+00	7.711E-03	5.488E-02	1.023E+02
Co-60	2.460E-05	0.000E+00	2.321E+00	5.317E-01	3.169E-02	1.694E-02	3.350E-02	0.000E+00	8.345E-04	7.427E-04	2.936E+00
Cs-137	1.303E-02	0.000E+00	9.990E+02	6.205E+02	1.678E+01	8.970E+00	1.150E+02	0.000E+00	6.627E-01	1.573E+00	1.763E+03
Eu-152	3.369E-03	0.000E+00	3.585E+00	2.369E-01	4.338E+00	1.457E-01	8.918E-02	0.000E+00	7.177E-04	1.597E-04	8.396E+00
Gd-152	9.700E-16	0.000E+00	1.032E-12	2.728E-14	1.249E-12	2.752E-15	1.314E-15	0.000E+00	1.608E-17	1.218E-18	2.313E-12
Sr-90	4.169E-02	0.000E+00	5.534E+03	3.126E+03	5.369E+01	1.141E+02	4.710E+01	0.000E+00	2.247E+00	4.999E+00	8.882E+03
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil and water-dependent water, fish, plant, meat, milk pathways											

0
Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 4.300E+01 years

Radio- Nuclide	Water Independent Pathways (Inhalation excludes radon)									
	Ground risk	fract.	Inhalation risk	fract.	Plant risk	fract.	Meat risk	fract.	Milk risk	fract.
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
C-14	1.207E-16	0.0000	3.338E-14	0.0000	0.000E+00	0.0000	2.004E-11	0.0000	1.598E-11	0.0000
Co-60	3.257E-08	0.0010	6.570E-15	0.0000	0.000E+00	0.0000	3.860E-10	0.0000	8.845E-11	0.0000
Cs-137	1.023E-05	0.3000	3.354E-12	0.0000	0.000E+00	0.0000	8.085E-07	0.0237	5.022E-07	0.0147
Eu-152	3.887E-06	0.1140	4.656E-12	0.0000	0.000E+00	0.0000	4.737E-10	0.0000	3.130E-11	0.0000
Gd-152	0.000E+00	0.0000	2.804E-22	0.0000	0.000E+00	0.0000	1.263E-21	0.0000	3.337E-23	0.0000
Sr-90	2.503E-07	0.0073	1.014E-10	0.0000	0.000E+00	0.0000	1.131E-05	0.3315	6.386E-06	0.1872
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	1.440E-05	0.4222	1.094E-10	0.0000	0.000E+00	0.0000	1.212E-05	0.3552	6.888E-06	0.2020

Attachment 4 Sheet No. 14 of 21
Originator: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0308 Rev. No. 0

ATTACHMENT 4

1RESRAD, Version 6.3 T« Limit = 180 days 10/03/2007 08:15 Page 15
Intrisk : 118-B-1 Combined Areas RESRAD Evaluation
File : 118-B-1_Combined_Areas_w-o plants.RAD

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 4.300E+01 years

Water Dependent Pathways

Radio-	Water		Fish		Plant		Meat		Milk		All Pathways**	
Nuclide	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
C-14	1.393E-11	0.0000	5.796E-09	0.0002	0.000E+00	0.0000	4.624E-13	0.0000	3.291E-12	0.0000	5.850E-09	0.0002
Co-60	2.307E-12	0.0000	6.480E-12	0.0000	0.000E+00	0.0000	1.614E-13	0.0000	1.437E-13	0.0000	3.306E-08	0.0010
Cs-137	7.723E-09	0.0002	1.218E-07	0.0036	0.000E+00	0.0000	7.022E-10	0.0000	1.666E-09	0.0000	1.169E-05	0.3427
Eu-152	1.695E-11	0.0000	1.487E-11	0.0000	0.000E+00	0.0000	1.197E-13	0.0000	2.662E-14	0.0000	3.888E-06	0.1140
Gd-152	3.894E-24	0.0000	2.321E-24	0.0000	0.000E+00	0.0000	2.576E-26	0.0000	2.219E-27	0.0000	4.079E-21	0.0000
Sr-90	2.366E-07	0.0069	1.258E-07	0.0037	0.000E+00	0.0000	6.005E-09	0.0002	1.336E-08	0.0004	1.849E-05	0.5421
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	2.444E-07	0.0072	2.535E-07	0.0074	0.000E+00	0.0000	6.708E-09	0.0002	1.503E-08	0.0004	3.411E-05	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

0

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 4.300E+01 years

0

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
C-14	1.207E-16	0.0000	3.338E-14	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.004E-11	0.0000	1.598E-11	0.0000	3.741E-15	0.0000
Co-60	3.257E-08	0.0010	6.570E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.860E-10	0.0000	8.845E-11	0.0000	9.525E-12	0.0000
Cs-137	1.023E-05	0.3000	3.354E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.085E-07	0.0237	5.022E-07	0.0147	1.572E-08	0.0005
Eu-152	3.887E-06	0.1140	4.656E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.737E-10	0.0000	3.130E-11	0.0000	1.067E-09	0.0000
Sr-90	2.503E-07	0.0073	1.014E-10	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.131E-05	0.3315	6.386E-06	0.1872	1.661E-07	0.0049
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	1.440E-05	0.4222	1.094E-10	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.212E-05	0.3552	6.888E-06	0.2020	1.829E-07	0.0054

0

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 4.300E+01 years

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
Nuclide	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
C-14	1.393E-11	0.0000	5.796E-09	0.0002	0.000E+00	0.0000	0.000E+00	0.0000	4.624E-13	0.0000	3.291E-12	0.0000	5.850E-09	0.0002
Co-60	2.307E-12	0.0000	6.480E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.614E-13	0.0000	1.437E-13	0.0000	3.306E-08	0.0010
Cs-137	7.723E-09	0.0002	1.218E-07	0.0036	0.000E+00	0.0000	0.000E+00	0.0000	7.022E-10	0.0000	1.666E-09	0.0000	1.169E-05	0.3427
Eu-152	1.695E-11	0.0000	1.487E-11	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.197E-13	0.0000	2.662E-14	0.0000	3.888E-06	0.1140
Sr-90	2.366E-07	0.0069	1.258E-07	0.0037	0.000E+00	0.0000	0.000E+00	0.0000	6.005E-09	0.0002	1.336E-08	0.0004	1.849E-05	0.5421
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	2.444E-07	0.0072	2.535E-07	0.0074	0.000E+00	0.0000	0.000E+00	0.0000	6.708E-09	0.0002	1.503E-08	0.0004	3.411E-05	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Attachment 4 Sheet No. 15 of 21
Originator: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0308 Rev. No. 0

ATTACHMENT 4

1RESRAD, Version 6.3 T« Limit = 180 days 10/03/2007 08:15 Page 16
Intrisk : 118-B-1 Combined Areas RESRAD Evaluation
File : 118-B-1_Combined_Areas_w-o plants.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 1.000E+02 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
C-14	7.896E-11	0.000E+00	1.676E-07	1.336E-07	2.242E-11	3.032E-01	9.778E+01	0.000E+00	7.800E-03	5.551E-02	9.815E+01
Co-60	1.366E-08	0.000E+00	1.289E-03	2.953E-04	1.760E-05	2.189E-05	4.328E-05	0.000E+00	1.079E-06	9.593E-07	1.669E-03
Cs-137	3.489E-03	0.000E+00	2.676E+02	1.662E+02	4.493E+00	5.589E+00	7.166E+01	0.000E+00	4.132E-01	9.799E-01	5.169E+02
Eu-152	1.739E-04	0.000E+00	1.850E-01	1.222E-02	2.239E-01	1.749E-02	1.071E-02	0.000E+00	8.622E-05	1.917E-05	4.494E-01
Gd-152	1.080E-15	0.000E+00	1.149E-12	3.038E-14	1.391E-12	6.458E-15	3.125E-15	0.000E+00	3.805E-17	2.865E-18	2.580E-12
Sr-90	1.073E-02	0.000E+00	1.424E+03	8.043E+02	1.381E+01	6.827E+01	2.820E+01	0.000E+00	1.346E+00	2.993E+00	2.343E+03
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil and water-dependent water, fish, plant, meat, milk pathways											

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+02 years

Radio- Nuclide	Water Independent Pathways (Inhalation excludes radon)									
	Ground	Inhalation	Plant	Meat	Milk	Soil	Ground	Inhalation	Plant	Meat
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
C-14	6.952E-24	0.0000	1.922E-21	0.0000	0.000E+00	0.0000	1.154E-18	0.0000	9.202E-19	0.0000
Co-60	1.809E-11	0.0000	3.649E-18	0.0000	0.000E+00	0.0000	2.144E-13	0.0000	4.912E-14	0.0000
Cs-137	2.741E-06	0.3330	8.984E-13	0.0000	0.000E+00	0.0000	2.166E-07	0.0263	1.345E-07	0.0163
Eu-152	2.006E-07	0.0244	2.403E-13	0.0000	0.000E+00	0.0000	2.445E-11	0.0000	1.615E-12	0.0000
Gd-152	0.000E+00	0.0000	2.957E-22	0.0000	0.000E+00	0.0000	1.331E-21	0.0000	3.518E-23	0.0000
Sr-90	6.440E-08	0.0078	2.608E-11	0.0000	0.000E+00	0.0000	2.909E-06	0.3534	1.643E-06	0.1996
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	3.006E-06	0.3652	2.722E-11	0.0000	0.000E+00	0.0000	3.126E-06	0.3797	1.778E-06	0.2160

Attachment 4 Sheet No. 16 of 21
Originator: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0308 Rev. No. 0

ATTACHMENT 4

1RESRAD, Version 6.3 T« Limit = 180 days 10/03/2007 08:15 Page 17
Intrisk : 118-B-1 Combined Areas RESRAD Evaluation.
File : 118-B-1_Combined_Areas_w-o plants.RAD

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+02 years

Water Dependent Pathways

Radio-	Water		Fish		Plant		Meat		Milk		All Pathways**	
Nuclide	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
C-14	1.384E-11	0.0000	5.759E-09	0.0007	0.000E+00	0.0000	4.594E-13	0.0000	3.270E-12	0.0000	5.777E-09	0.0007
Co-60	2.743E-15	0.0000	7.704E-15	0.0000	0.000E+00	0.0000	1.920E-16	0.0000	1.708E-16	0.0000	1.836E-11	0.0000
Cs-137	4.165E-09	0.0005	6.570E-08	0.0080	0.000E+00	0.0000	3.788E-10	0.0000	8.984E-10	0.0001	3.167E-06	0.3848
Eu-152	1.794E-12	0.0000	1.574E-12	0.0000	0.000E+00	0.0000	1.268E-14	0.0000	2.818E-15	0.0000	2.007E-07	0.0244
Gd-152	7.257E-24	0.0000	4.312E-24	0.0000	0.000E+00	0.0000	4.790E-26	0.0000	4.133E-27	0.0000	4.305E-21	0.0000
Sr-90	1.226E-07	0.0149	6.524E-08	0.0079	0.000E+00	0.0000	3.114E-09	0.0004	6.924E-09	0.0008	4.857E-06	0.5901
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	1.268E-07	0.0154	1.367E-07	0.0166	0.000E+00	0.0000	3.493E-09	0.0004	7.825E-09	0.0010	8.231E-06	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

0
0
0
Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
C-14	6.952E-24	0.0000	1.922E-21	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.154E-18	0.0000	9.202E-19	0.0000	2.154E-22	0.0000
Co-60	1.809E-11	0.0000	3.649E-18	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.144E-13	0.0000	4.912E-14	0.0000	5.290E-15	0.0000
Cs-137	2.741E-06	0.3330	8.984E-13	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.166E-07	0.0263	1.345E-07	0.0163	4.210E-09	0.0005
Eu-152	2.006E-07	0.0244	2.403E-13	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.445E-11	0.0000	1.615E-12	0.0000	5.509E-11	0.0000
Sr-90	6.440E-08	0.0078	2.608E-11	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.909E-06	0.3534	1.643E-06	0.1996	4.274E-08	0.0052
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	3.006E-06	0.3652	2.722E-11	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.126E-06	0.3797	1.778E-06	0.2160	4.700E-08	0.0057

0
Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+02 years

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
Nuclide	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
C-14	1.384E-11	0.0000	5.759E-09	0.0007	0.000E+00	0.0000	0.000E+00	0.0000	4.594E-13	0.0000	3.270E-12	0.0000	5.777E-09	0.0007
Co-60	2.743E-15	0.0000	7.704E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.920E-16	0.0000	1.708E-16	0.0000	1.836E-11	0.0000
Cs-137	4.165E-09	0.0005	6.570E-08	0.0080	0.000E+00	0.0000	0.000E+00	0.0000	3.788E-10	0.0000	8.984E-10	0.0001	3.167E-06	0.3848
Eu-152	1.794E-12	0.0000	1.574E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.268E-14	0.0000	2.818E-15	0.0000	2.007E-07	0.0244
Sr-90	1.226E-07	0.0149	6.524E-08	0.0079	0.000E+00	0.0000	0.000E+00	0.0000	3.114E-09	0.0004	6.924E-09	0.0008	4.857E-06	0.5901
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	1.268E-07	0.0154	1.367E-07	0.0166	0.000E+00	0.0000	0.000E+00	0.0000	3.493E-09	0.0004	7.825E-09	0.0010	8.231E-06	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Attachment 4 Sheet No. 17 of 21
Originator: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0308 Rev. No. 0

ATTACHMENT 4

1RESRAD, Version 6.3 T« Limit = 180 days 10/03/2007 08:15 Page 18
Intrisk : 118-B-1 Combined Areas RESRAD Evaluation
File : 118-B-1_Combined_Areas_w-o plants.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 3.000E+02 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
C-14	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.918E-01	9.411E+01	0.000E+00	7.507E-03	5.343E-02	9.446E+01
Co-60	5.163E-20	0.000E+00	4.869E-15	1.116E-15	6.649E-17	2.482E-16	4.910E-16	0.000E+00	1.224E-17	1.088E-17	6.814E-15
Cs-137	3.430E-05	0.000E+00	2.631E+00	1.634E+00	4.417E-02	1.649E-01	2.115E+00	0.000E+00	1.220E-02	2.892E-02	6.630E+00
Eu-152	5.290E-09	0.000E+00	5.630E-06	3.720E-07	6.813E-06	1.597E-06	9.777E-07	0.000E+00	7.875E-09	1.750E-09	1.540E-05
Gd-152	1.086E-15	0.000E+00	1.156E-12	3.054E-14	1.398E-12	2.137E-14	9.428E-15	0.000E+00	9.860E-17	9.328E-18	2.616E-12
Sr-90	9.160E-05	0.000E+00	1.216E+01	6.868E+00	1.180E-01	1.751E+00	7.234E-01	0.000E+00	3.454E-02	7.676E-02	2.173E+01
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil and water-dependent water, fish, plant, meat, milk pathways											

0
Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+02 years

Radio- Nuclide	Water Independent Pathways (Inhalation excludes radon)									
	Ground risk fract.	Inhalation risk fract.	Plant risk fract.	Meat risk fract.	Milk risk fract.	Soil risk fract.	Ground risk fract.	Inhalation risk fract.	Plant risk fract.	Meat risk fract.
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
C-14	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000	0.000E+00 0.0000
Co-60	6.834E-23 0.0000	7.954E-30 0.0000	0.000E+00 0.0000	8.100E-25 0.0000	1.856E-25 0.0000	1.999E-26 0.0000	6.834E-23 0.0000	7.954E-30 0.0000	0.000E+00 0.0000	8.100E-25 0.0000
Cs-137	2.694E-08 0.3266	8.832E-15 0.0000	0.000E+00 0.0000	2.129E-09 0.0258	1.322E-09 0.0160	4.139E-11 0.0005	2.694E-08 0.3266	8.832E-15 0.0000	0.000E+00 0.0000	2.129E-09 0.0258
Eu-152	6.104E-12 0.0001	7.312E-18 0.0000	0.000E+00 0.0000	7.440E-16 0.0000	4.916E-17 0.0000	1.676E-15 0.0000	6.104E-12 0.0001	7.312E-18 0.0000	0.000E+00 0.0000	7.440E-16 0.0000
Gd-152	0.000E+00 0.0000	2.965E-22 0.0000	0.000E+00 0.0000	1.335E-21 0.0000	3.528E-23 0.0000	2.639E-21 0.0000	0.000E+00 0.0000	2.965E-22 0.0000	0.000E+00 0.0000	1.335E-21 0.0000
Sr-90	5.499E-10 0.0067	2.227E-13 0.0000	0.000E+00 0.0000	2.484E-08 0.3011	1.403E-08 0.1701	3.649E-10 0.0044	5.499E-10 0.0067	2.227E-13 0.0000	0.000E+00 0.0000	2.484E-08 0.3011
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	2.750E-08 0.3333	2.315E-13 0.0000	0.000E+00 0.0000	2.697E-08 0.3269	1.535E-08 0.1861	4.063E-10 0.0049	2.750E-08 0.3333	2.315E-13 0.0000	0.000E+00 0.0000	2.697E-08 0.3269

Attachment 4 Sheet No. 18 of 21
Originator: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0308 Rev. No. 0

ATTACHMENT 4

1RESRAD, Version 6.3 T« Limit = 180 days 10/03/2007 08:15 Page 19
Intrisk : 118-B-1 Combined Areas RESRAD Evaluation
File : 118-B-1_Combined_Areas_w-o plants.RAD

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+02 years

Water Dependent Pathways

Radio-	Water		Fish		Plant		Meat		Milk		All Pathways**
Nuclide	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
C-14	1.356E-11	0.0002	5.644E-09	0.0684	0.000E+00	0.0000	4.502E-13	0.0000	3.204E-12	0.0000	5.661E-09
Co-60	2.975E-26	0.0000	8.358E-26	0.0000	0.000E+00	0.0000	2.084E-27	0.0000	1.852E-27	0.0000	6.947E-23
Cs-137	1.133E-10	0.0014	1.788E-09	0.0217	0.000E+00	0.0000	1.031E-11	0.0001	2.444E-11	0.0003	3.237E-08
Eu-152	1.528E-16	0.0000	1.340E-16	0.0000	0.000E+00	0.0000	1.080E-18	0.0000	2.400E-19	0.0000	6.107E-12
Gd-152	1.985E-23	0.0000	1.163E-23	0.0000	0.000E+00	0.0000	1.259E-25	0.0000	1.128E-26	0.0000	4.337E-21
Sr-90	2.901E-09	0.0352	1.543E-09	0.0187	0.000E+00	0.0000	7.368E-11	0.0009	1.638E-10	0.0020	4.447E-08
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	3.028E-09	0.0367	8.975E-09	0.1088	0.000E+00	0.0000	8.444E-11	0.0010	1.914E-10	0.0023	8.250E-08

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, meat, milk pathways

0

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+02 years

0

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
C-14	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Co-60	6.834E-23	0.0000	7.954E-30	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.100E-25	0.0000	1.856E-25	0.0000	1.999E-26	0.0000
Cs-137	2.694E-08	0.3266	8.832E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.129E-09	0.0258	1.322E-09	0.0160	4.139E-11	0.0005
Eu-152	6.104E-12	0.0001	7.313E-18	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.440E-16	0.0000	4.916E-17	0.0000	1.676E-15	0.0000
Sr-90	5.499E-10	0.0067	2.227E-13	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.484E-08	0.3011	1.403E-08	0.1701	3.649E-10	0.0044
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	2.750E-08	0.3333	2.315E-13	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.697E-08	0.3269	1.535E-08	0.1861	4.063E-10	0.0049

0

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 3.000E+02 years

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
Nuclide	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
C-14	1.356E-11	0.0002	5.644E-09	0.0684	0.000E+00	0.0000	0.000E+00	0.0000	4.502E-13	0.0000	3.204E-12	0.0000	5.661E-09	0.0686
Co-60	2.975E-26	0.0000	8.358E-26	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.084E-27	0.0000	1.852E-27	0.0000	6.947E-23	0.0000
Cs-137	1.133E-10	0.0014	1.788E-09	0.0217	0.000E+00	0.0000	0.000E+00	0.0000	1.031E-11	0.0001	2.444E-11	0.0003	3.237E-08	0.3924
Eu-152	1.528E-16	0.0000	1.340E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.080E-18	0.0000	2.400E-19	0.0000	6.107E-12	0.0001
Sr-90	2.901E-09	0.0352	1.543E-09	0.0187	0.000E+00	0.0000	0.000E+00	0.0000	7.368E-11	0.0009	1.638E-10	0.0020	4.447E-08	0.5390
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	3.028E-09	0.0367	8.975E-09	0.1088	0.000E+00	0.0000	0.000E+00	0.0000	8.444E-11	0.0010	1.914E-10	0.0023	8.250E-08	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Attachment 4 Sheet No. 19 of 21
Originator: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0308 Rev. No. 0

ATTACHMENT 4

1RESRAD, Version 6.3 T« Limit = 180 days 10/03/2007 08:15 Page 20
Intrisk : 118-B-1 Combined Areas RESRAD Evaluation
File : 118-B-1_Combined_Areas_w-o plants.RAD

Amount of Intake Quantities QINT(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As pCi/yr at t= 1.000E+03 years

Radio- Nuclide	Water Independent Pathways (Inhalation w/o radon)					Water Dependent Pathways					Total Ingestion*
	Inhalation	Plant	Meat	Milk	Soil	Water	Fish	Plant	Meat	Milk	
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
C-14	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.673E-01	8.623E+01	0.000E+00	6.878E-03	4.895E-02	8.655E+01
Co-60	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Cs-137	3.231E-12	0.000E+00	2.478E-07	1.539E-07	4.161E-09	5.190E-08	6.656E-07	0.000E+00	3.839E-09	9.101E-09	1.136E-06
Eu-152	8.222E-25	0.000E+00	8.750E-22	5.781E-23	1.059E-21	8.278E-22	5.068E-22	0.000E+00	4.082E-24	9.072E-25	3.331E-21
Gd-152	1.086E-15	0.000E+00	1.155E-12	3.053E-14	1.398E-12	6.608E-14	2.931E-14	0.000E+00	3.143E-16	2.887E-17	2.680E-12
Sr-90	5.269E-12	0.000E+00	6.994E-07	3.951E-07	6.786E-09	2.213E-07	9.141E-08	0.000E+00	4.365E-09	9.700E-09	1.428E-06
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

* Sum of all ingestion pathways, i.e. water independent plant, meat, milk, soil
and water-dependent water, fish, plant, meat, milk pathways

0

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+03 years

Radio- Nuclide	Water Independent Pathways (Inhalation excludes radon)									
	Ground risk	fract.	Inhalation risk	fract.	Plant risk	fract.	Meat risk	fract.	Milk risk	fract.
AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA	AAAAAA
C-14	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Cs-137	2.538E-15	0.0000	8.320E-22	0.0000	0.000E+00	0.0000	2.005E-16	0.0000	1.246E-16	0.0000
Eu-152	9.487E-28	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Gd-152	0.000E+00	0.0000	2.964E-22	0.0000	0.000E+00	0.0000	1.334E-21	0.0000	3.527E-23	0.0000
Sr-90	3.163E-17	0.0000	1.281E-20	0.0000	0.000E+00	0.0000	1.429E-15	0.0000	8.071E-16	0.0000
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	2.570E-15	0.0000	1.394E-20	0.0000	0.000E+00	0.0000	1.629E-15	0.0000	9.317E-16	0.0000

Attachment 4 Sheet No. 20 of 21
Originator: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0308 Rev. No. 0

ATTACHMENT 4

1RESRAD, Version 6.3 T« Limit = 180 days 10/03/2007 08:15 Page 21
Intrisk : 118-B-1 Combined Areas RESRAD Evaluation
File : 118-B-1_Combined_Areas_w-o plants.RAD

Excess Cancer Risks CNRS(i,p,t) for Individual Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+03 years

Water Dependent Pathways

Radio-	Water		Fish		Plant		Meat		Milk		All Pathways**	
Nuclide	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
C-14	1.241E-11	0.0024	5.165E-09	0.9970	0.000E+00	0.0000	4.120E-13	0.0001	2.932E-12	0.0006	5.181E-09	1.0000
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Cs-137	3.460E-17	0.0000	5.459E-16	0.0000	0.000E+00	0.0000	3.148E-18	0.0000	7.463E-18	0.0000	3.458E-15	0.0000
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.487E-28	0.0000
Gd-152	5.992E-23	0.0000	3.502E-23	0.0000	0.000E+00	0.0000	3.799E-25	0.0000	3.403E-26	0.0000	4.400E-21	0.0000
Sr-90	3.510E-16	0.0000	1.868E-16	0.0000	0.000E+00	0.0000	8.918E-18	0.0000	1.982E-17	0.0000	2.855E-15	0.0000
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	1.241E-11	0.0024	5.165E-09	0.9970	0.000E+00	0.0000	4.120E-13	0.0001	2.932E-12	0.0006	5.181E-09	1.0000

** Sum of water independent ground, inhalation, plant, meat, milk, soil
and water dependent water, fish, plant, milk pathways

0

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+03 years

0

Water Independent Pathways (Inhalation excludes radon)

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
C-14	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Cs-137	2.538E-15	0.0000	8.320E-22	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.005E-16	0.0000	1.246E-16	0.0000	3.899E-18	0.0000
Eu-152	9.487E-28	0.0000	2.964E-22	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.334E-21	0.0000	3.527E-23	0.0000	2.638E-21	0.0000
Sr-90	3.163E-17	0.0000	1.281E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.429E-15	0.0000	8.071E-16	0.0000	2.099E-17	0.0000
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	2.570E-15	0.0000	1.394E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.629E-15	0.0000	9.317E-16	0.0000	2.489E-17	0.0000

0

Total Excess Cancer Risk CNRSI(i,p,t)*** for Initially Existent Radionuclides (i) and Pathways (p)
and Fraction of Total Risk at t= 1.000E+03 years

Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All pathways	
Nuclide	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
C-14	1.241E-11	0.0024	5.165E-09	0.9970	0.000E+00	0.0000	0.000E+00	0.0000	4.120E-13	0.0001	2.932E-12	0.0006	5.181E-09	1.0000
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Cs-137	3.460E-17	0.0000	5.459E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.148E-18	0.0000	7.463E-18	0.0000	3.458E-15	0.0000
Eu-152	5.992E-23	0.0000	3.502E-23	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.799E-25	0.0000	3.403E-26	0.0000	4.400E-21	0.0000
Sr-90	3.510E-16	0.0000	1.868E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.918E-18	0.0000	1.982E-17	0.0000	2.855E-15	0.0000
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii
Total	1.241E-11	0.0024	5.165E-09	0.9970	0.000E+00	0.0000	0.000E+00	0.0000	4.120E-13	0.0001	2.932E-12	0.0006	5.181E-09	1.0000

***CNRSI(i,p,t) includes contribution from decay daughter radionuclides

Attachment 4 Sheet No. 21 of 21
Originator: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0308 Rev. No. 0

ATTACHMENT 5

1RESRAD, Version 6.3   T« Limit = 180 days   10/03/2007 08:15 Page 1
Concent : 118-B-1 Combined Areas RESRAD Evaluation
File : 118-B-1_Combined Areas_w-o plants.RAD

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Table of contents
 AAAAAAAAAAAAAAAAAAAAAA

Part IV: Concentration of Radionuclides

Part IV: Concentration of Radioisotopes
iiiiiii

Concentration of radionuclides in different media

Time= 0.000E+00	2
Time= 1.000E+00	3
Time= 3.000E+00	4
Time= 7.000E+00	5
Time= 1.100E+01	6
Time= 4.300E+01	7
Time= 1.000E+02	8
Time= 3.000E+02	9
Time= 1.000E+03	10

ATTACHMENT 5

1RESRAD, Version 6.3 T« Limit = 180 days 10/03/2007 08:15 Page 2
Concent : 118-B-1 Combined Areas RESRAD Evaluation
File : 118-B-1_Combined_Areas_w-o plants.RAD

Concentration of radionuclides in environmental media
at t = 0.000E+00 years

Radio- Nuclide	Contaminat- ed Zone	Surface Soil*	Air Par- ticate	Well Water	Surface Water
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
AAAAA	pCi/g	pCi/g	pCi/m**3	pCi/L	pCi/L
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
C-14	1.930E+00	1.930E+00	2.725E-05	0.000E+00	0.000E+00
Co-60	1.550E-01	1.550E-01	2.188E-06	0.000E+00	0.000E+00
Cs-137	7.760E-01	7.760E-01	1.096E-05	0.000E+00	0.000E+00
Eu-152	6.950E-01	6.950E-01	9.812E-06	0.000E+00	0.000E+00
Gd-152	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Sr-90	2.560E+00	2.560E+00	3.614E-05	0.000E+00	0.000E+00
iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters,
i.e. using parameters appearing in the input screen when the pathways are active.
Concentration of gaseous C-14 in air = 1.677E+01 pCi/m**3

Concentration of radionuclides in foodstuff media
at t = 0.000E+00 years*

Radio- Nuclide	Drinking Water	Nonleafy Vegetable	Leafy Vegetable	Fodder Meat	Fodder Milk	Meat	Milk	Fish	Crustacea
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
AAAAA	pCi/L	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/L	pCi/kg	pCi/kg
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
C-14	0.000E+00	3.704E+04	8.333E+03	3.129E+04	1.407E+04	2.222E+04	6.475E+03	0.000E+00	0.000E+00
Co-60	0.000E+00	1.240E+01	1.240E+01	1.240E+01	1.240E+01	1.841E+01	1.519E+00	0.000E+00	0.000E+00
Cs-137	0.000E+00	3.104E+01	3.104E+01	3.104E+01	3.104E+01	7.497E+01	1.676E+01	0.000E+00	0.000E+00
Eu-152	0.000E+00	1.738E+00	1.740E+00	1.740E+00	1.740E+00	9.317E-01	2.216E-02	0.000E+00	0.000E+00
Gd-152	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Sr-90	0.000E+00	7.680E+02	7.680E+02	7.680E+02	7.680E+02	4.280E+02	8.704E+01	0.000E+00	0.000E+00
iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii	iiiiii

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters,
i.e. using parameters appearing in the input screen when the pathways are active.

Attachment 5 Sheet No. 2 of 10
Originator: S.W. Clark Date _____
Chk'd By M.W. Perrott Date _____
Calc. No. 0100B-CA-V0308 Rev. No. 0

ATTACHMENT 5

1RESRAD, Version 6.3 T< Limit = 180 days 10/03/2007 08:15 Page 3
Concent : 118-B-1 Combined Areas RESRAD Evaluation
File : 118-B-1_Combined_Areas_w-o plants.RAD

Concentration of radionuclides in environmental media
at t = 1.000E+00 years

Radio- Nuclide	Contaminat- ed Zone	Surface Soil*	Air Par- ticulate	Well Water	Surface Water
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
AAAAAAA	pCi/g	pCi/g	pCi/m**3	pCi/L	pCi/L
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
C-14	1.441E+00	1.441E+00	2.034E-05	1.046E-04	4.959E-05
Co-60	1.359E-01	1.359E-01	1.919E-06	1.352E-04	6.410E-05
Cs-137	7.583E-01	7.583E-01	1.071E-05	7.543E-04	3.577E-04
Eu-152	6.598E-01	6.598E-01	9.315E-06	4.124E-05	1.955E-05
Gd-152	1.214E-15	1.214E-15	1.713E-20	1.138E-20	5.394E-21
Sr-90	2.500E+00	2.500E+00	3.529E-05	9.877E-03	4.683E-03
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters,
i.e. using parameters appearing in the input screen when the pathways are active.
Concentration of gaseous C-14 in air = 1.252E+01 pCi/m**3

Concentration of radionuclides in foodstuff media
at t = 1.000E+00 years*

Radio- Nuclide	Drinking Water	Nonleafy Vegetable	Leafy Vegetable	Fodder Meat	Fodder Milk	Meat	Milk	Fish	Crustacea
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
AAAAAAA	pCi/L	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/L	pCi/kg	pCi/kg
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
C-14	1.043E-04	2.796E+04	6.225E+03	2.461E+04	1.090E+04	1.747E+04	5.014E+03	2.438E+00	4.438E-01
Co-60	1.348E-04	1.087E+01	1.087E+01	1.095E+01	1.088E+01	1.615E+01	1.332E+00	1.886E-02	1.257E-02
Cs-137	7.522E-04	3.033E+01	3.033E+01	3.037E+01	3.034E+01	7.326E+01	1.638E+01	7.016E-01	3.508E-02
Eu-152	4.112E-05	1.650E+00	1.652E+00	1.657E+00	1.652E+00	8.845E-01	2.104E-02	9.589E-04	1.918E-02
Gd-152	1.127E-20	3.035E-15	3.038E-15	2.876E-15	3.031E-15	1.627E-15	1.554E-17	1.424E-19	5.038E-18
Sr-90	9.850E-03	7.499E+02	7.499E+02	7.509E+02	7.500E+02	4.180E+02	8.500E+01	2.756E-01	4.594E-01
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters,
i.e. using parameters appearing in the input screen when the pathways are active.

Attachment 5 Sheet No. 3 of 10
Originator: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0308 Rev. No. 0

ATTACHMENT 5

1RESRAD, Version 6.3 T« Limit = 180 days 10/03/2007 08:15 Page 4
Concent : 118-B-1 Combined Areas RESRAD Evaluation
File : 118-B-1_Combined_Areas_w-o plants.RAD

Concentration of radionuclides in environmental media
at t = 3.000E+00 years

Radio-	Contaminat-	Surface	Air Par-	Well	Surface
Nuclide	ted Zone	Soil*	ticulate	Water	Water
	pCi/g	pCi/g	pCi/m**3	pCi/L	pCi/L
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
C-14	8.026E-01	8.026E-01	1.133E-05	2.409E-04	1.142E-04
Co-60	1.045E-01	1.045E-01	1.475E-06	3.118E-04	1.478E-04
Cs-137	7.240E-01	7.240E-01	1.022E-05	2.161E-03	1.025E-03
Eu-152	5.946E-01	5.946E-01	8.395E-06	1.115E-04	5.286E-05
Gd-152	3.459E-15	3.459E-15	4.884E-20	5.594E-20	2.653E-20
Sr-90	2.383E+00	2.383E+00	3.365E-05	2.825E-02	1.340E-02
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters,
i.e. using parameters appearing in the input screen when the pathways are active.
Concentration of gaseous C-14 in air = 6.974E+00 pCi/m**3

Concentration of radionuclides in foodstuff media
at t = 3.000E+00 years*

Radio-	Drinking	Nonleafy	Leafy	Fodder	Fodder	Meat	Milk	Fish	Crustacea
Nuclide	Water	Vegetable	Vegetable	Meat	Milk				
	pCi/L	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/L	pCi/kg	pCi/kg
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
C-14	2.407E-04	1.558E+04	3.468E+03	1.371E+04	6.072E+03	9.732E+03	2.794E+03	5.688E+00	1.035E+00
Co-60	3.115E-04	8.358E+00	8.358E+00	8.418E+00	8.361E+00	1.241E+01	1.024E+00	4.406E-02	2.938E-02
Cs-137	2.159E-03	2.896E+01	2.896E+01	2.900E+01	2.897E+01	6.995E+01	1.564E+01	2.036E+00	1.018E-01
Eu-152	1.114E-04	1.487E+00	1.489E+00	1.493E+00	1.489E+00	7.971E-01	1.896E-02	2.626E-03	5.253E-02
Gd-152	5.611E-20	8.651E-15	8.661E-15	8.516E-15	8.655E-15	4.637E-15	4.418E-17	7.259E-19	2.723E-17
Sr-90	2.823E-02	7.150E+02	7.151E+02	7.160E+02	7.151E+02	3.985E+02	8.105E+01	7.987E-01	1.331E+00
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters,
i.e. using parameters appearing in the input screen when the pathways are active.

Attachment 5 Sheet No. 4 of 10
Originator: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0308 Rev. No. 0

ATTACHMENT 5

1RESRAD, Version 6.3 T« Limit = 180 days 10/03/2007 08:15 Page 5
Concent : 118-B-1 Combined Areas RESRAD Evaluation
File : 118-B-1_Combined_Areas_w-o plants.RAD

Concentration of radionuclides in environmental media
at t = 7.000E+00 years

Radio- Nuclide	Contaminat- ed Zone	Surface Soil*	Air Par- tificate	Well Water	Surface Water
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
AAAAAAA	pCi/g	pCi/g	pCi/m**3	pCi/L	pCi/L
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
C-14	2.492E-01	2.492E-01	3.518E-06	3.590E-04	1.702E-04
Co-60	6.174E-02	6.174E-02	8.716E-07	4.299E-04	2.038E-04
Cs-137	6.601E-01	6.601E-01	9.319E-06	4.596E-03	2.179E-03
Eu-152	4.829E-01	4.829E-01	6.818E-06	2.113E-04	1.002E-04
Gd-152	7.307E-15	7.307E-15	1.032E-19	3.256E-19	1.544E-19
Sr-90	2.167E+00	2.167E+00	3.059E-05	5.994E-02	2.842E-02
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters,
i.e. using parameters appearing in the input screen when the pathways are active.
Concentration of gaseous C-14 in air = 2.165E+00 pCi/m**3

Concentration of radionuclides in foodstuff media
at t = 7.000E+00 years*

Radio- Nuclide	Drinking Water	Nonleafy Vegetable	Leafy Vegetable	Fodder Meat	Fodder Milk	Meat	Milk	Fish	Crustacea
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
AAAAAAA	pCi/L	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/L	pCi/kg	pCi/kg
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
C-14	3.590E-04	4.835E+03	1.077E+03	4.256E+03	1.885E+03	3.021E+03	8.672E+02	8.504E+00	1.548E+00
Co-60	4.297E-04	4.939E+00	4.939E+00	4.975E+00	4.941E+00	7.335E+00	6.052E-01	6.098E-02	4.066E-02
Cs-137	4.595E-03	2.640E+01	2.641E+01	2.644E+01	2.641E+01	6.378E+01	1.426E+01	4.347E+00	2.174E-01
Eu-152	2.112E-04	1.208E+00	1.209E+00	1.213E+00	1.209E+00	6.474E-01	1.540E-02	4.996E-03	9.991E-02
Gd-152	3.243E-19	1.827E-14	1.830E-14	1.818E-14	1.829E-14	9.796E-15	9.325E-17	3.845E-18	1.504E-16
Sr-90	5.991E-02	6.501E+02	6.501E+02	6.509E+02	6.501E+02	3.623E+02	7.369E+01	1.701E+00	2.834E+00
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters,
i.e. using parameters appearing in the input screen when the pathways are active.

Attachment 5 Sheet No. 5 of 10
Originator: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0308 Rev. No. 0

ATTACHMENT 5

1RESRAD, Version 6.3 T< Limit = 180 days 10/03/2007 08:15 Page 6
Concent : 118-B-1 Combined Areas RESRAD Evaluation
File : 118-B-1_Combined_Areas_w-o plants.RAD

Concentration of radionuclides in environmental media
at t = 1.100E+01 years

Radio- Nuclide	Contaminat- ed Zone	Surface Soil*	Air Par- ticulate	Well Water	Surface Water
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
AAAAA	pCi/g	pCi/g	pCi/m**3	pCi/L	pCi/L
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
C-14	7.734E-02	7.734E-02	1.092E-06	3.955E-04	1.876E-04
Co-60	3.648E-02	3.648E-02	5.151E-07	3.992E-04	1.893E-04
Cs-137	6.018E-01	6.018E-01	8.496E-06	6.585E-03	3.123E-03
Eu-152	3.923E-01	3.923E-01	5.538E-06	2.697E-04	1.279E-04
Gd-152	1.043E-14	1.043E-14	1.473E-19	6.043E-19	2.865E-19
Sr-90	1.970E+00	1.970E+00	2.781E-05	8.563E-02	4.060E-02
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters,
i.e. using parameters appearing in the input screen when the pathways are active.

Concentration of gaseous C-14 in air = 6.720E-01 pCi/m**3

Concentration of radionuclides in foodstuff media
at t = 1.100E+01 years*

Radio- Nuclide	Drinking Water	Nonleafy Vegetable	Leafy Vegetable	Fodder Meat	Fodder Milk	Meat	Milk	Fish	Crustacea
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
AAAAA	pCi/L	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/L	pCi/kg	pCi/kg
AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA	AAAAA
C-14	3.955E-04	1.501E+03	3.342E+02	1.321E+03	5.851E+02	9.378E+02	2.692E+02	9.375E+00	1.706E+00
Co-60	3.991E-04	2.919E+00	2.919E+00	2.940E+00	2.920E+00	4.335E+00	3.577E-01	5.669E-02	3.779E-02
Cs-137	6.584E-03	2.407E+01	2.407E+01	2.411E+01	2.408E+01	5.815E+01	1.301E+01	6.234E+00	3.117E-01
Eu-152	2.696E-04	9.809E-01	9.821E-01	9.850E-01	9.824E-01	5.259E-01	1.251E-02	6.382E-03	1.276E-01
Gd-152	6.082E-19	2.609E-14	2.612E-14	2.603E-14	2.612E-14	1.399E-14	1.331E-16	7.581E-18	2.988E-16
Sr-90	8.561E-02	5.910E+02	5.910E+02	5.918E+02	5.910E+02	3.294E+02	6.701E+01	2.432E+00	4.053E+00
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.

For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters,
i.e. using parameters appearing in the input screen when the pathways are active.

Attachment 5 Sheet No. 6 of 10
Originator: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0308 Rev. No. 0

ATTACHMENT 5

1RESRAD, Version 6.3 T« Limit = 180 days 10/03/2007 08:15 Page 7
Concent : 118-B-1 Combined Areas RESRAD Evaluation
File : 118-B-1_Combined_Areas_w-o plants.RAD

Concentration of radionuclides in environmental media
at t = 4.300E+01 years

Radio- Nuclide	Contaminat- ed Zone	Surface Soil*	Air Par- ticulate	Well Water	Surface Water
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
AAAAAAA	pCi/g	pCi/g	pCi/m**3	pCi/L	pCi/L
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
C-14	6.668E-06	6.668E-06	9.414E-11	4.105E-04	1.947E-04
Co-60	5.426E-04	5.426E-04	7.660E-09	2.321E-05	1.101E-05
Cs-137	2.873E-01	2.873E-01	4.056E-06	1.229E-02	5.827E-03
Eu-152	7.428E-02	7.428E-02	1.049E-06	1.996E-04	9.466E-05
Gd-152	2.139E-14	2.139E-14	3.020E-19	3.735E-18	1.771E-18
Sr-90	9.194E-01	9.194E-01	1.298E-05	1.562E-01	7.409E-02
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters,
i.e. using parameters appearing in the input screen when the pathways are active.
Concentration of gaseous C-14 in air = 5.794E-05 pCi/m**3

Concentration of radionuclides in foodstuff media
at t = 4.300E+01 years*

Radio- Nuclide	Drinking Water	Nonleafy Vegetable	Leafy Vegetable	Fodder Meat	Fodder Milk	Meat	Milk	Fish	Crustacea
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
AAAAAAA	pCi/L	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/L	pCi/kg	pCi/kg
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
C-14	4.105E-04	1.294E-01	2.881E-02	1.139E-01	5.045E-02	8.107E-02	2.376E-02	9.733E+00	1.771E+00
Co-60	2.321E-05	4.341E-02	4.341E-02	4.372E-02	4.342E-02	6.448E-02	5.325E-03	3.300E-03	2.200E-03
Cs-137	1.229E-02	1.149E+01	1.149E+01	1.151E+01	1.149E+01	2.777E+01	6.221E+00	1.165E+01	5.824E-01
Eu-152	1.996E-04	1.858E-01	1.860E-01	1.865E-01	1.860E-01	9.960E-02	2.370E-03	4.731E-03	9.462E-02
Gd-152	3.770E-18	5.349E-14	5.355E-14	5.354E-14	5.356E-14	2.867E-14	2.728E-16	4.725E-17	1.887E-15
Sr-90	1.562E-01	2.758E+02	2.758E+02	2.762E+02	2.758E+02	1.538E+02	3.131E+01	4.443E+00	7.405E+00
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters,
i.e. using parameters appearing in the input screen when the pathways are active.

Attachment 5 Sheet No. 7 of 10
Originator: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0308 Rev. No. 0

ATTACHMENT 5

1RESRAD, Version 6.3   T< Limit = 180 days   10/03/2007 08:15 Page 8
Concent : 118-B-1 Combined Areas RESRAD Evaluation
File : 118-B-1_Combined_Areas_w-o plants.RAD

Concentration of radionuclides in environmental media
at t = 1.000E+02 years

Radio- Nuclide	Contaminat- ed Zone	Surface Soil*	Air Par- ticulate	Well Water	Surface Water
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
AAAAAAA	pCi/g	pCi/g	pCi/m**3	pCi/L	pCi/L
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
C-14	3.840E-13	3.840E-13	5.421E-18	4.153E-04	1.969E-04
Co-60	3.013E-07	3.013E-07	4.254E-12	2.998E-08	1.422E-08
Cs-137	7.694E-02	7.694E-02	1.086E-06	7.656E-03	3.630E-03
Eu-152	3.834E-03	3.834E-03	5.413E-08	2.396E-05	1.136E-05
Gd-152	2.382E-14	2.382E-14	3.362E-19	8.741E-18	4.145E-18
Sr-90	2.366E-01	2.366E-01	3.340E-06	9.353E-02	4.435E-02
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters,
i.e. using parameters appearing in the input screen when the pathways are active.
Concentration of gaseous C-14 in air = 3.336E-12 pCi/m**3

Concentration of radionuclides in foodstuff media
at t = 1.000E+02 years*

Radio- Nuclide	Drinking Water	Nonleafy Vegetable	Leafy Vegetable	Fodder Meat	Fodder Milk	Meat	Milk	Fish	Crustacea
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
AAAAAAA	pCi/L	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/L	pCi/kg	pCi/kg
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
C-14	4.153E-04	7.451E-09	1.659E-09	6.559E-09	2.905E-09	2.167E-04	5.551E-04	9.846E+00	1.792E+00
Co-60	2.998E-08	2.410E-05	2.410E-05	2.428E-05	2.411E-05	3.583E-05	2.962E-06	4.264E-06	2.843E-06
Cs-137	7.656E-03	3.078E+00	3.078E+00	3.082E+00	3.078E+00	7.445E+00	1.672E+00	7.259E+00	3.630E-01
Eu-152	2.396E-05	9.587E-03	9.599E-03	9.627E-03	9.601E-03	5.142E-03	1.224E-04	5.680E-04	1.136E-02
Gd-152	8.846E-18	5.956E-14	5.963E-14	5.964E-14	5.964E-14	3.193E-14	3.038E-16	1.122E-16	4.488E-15
Sr-90	9.352E-02	7.097E+01	7.097E+01	7.106E+01	7.097E+01	3.959E+01	8.073E+00	2.660E+00	4.434E+00
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.

For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters,
i.e. using parameters appearing in the input screen when the pathways are active.

Attachment 5 Sheet No. 8 of 10
Originator: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0308 Rev. No. 0

ATTACHMENT 5

1RESRAD, Version 6.3 T« Limit = 180 days 10/03/2007 08:15 Page 9
Concent : 118-B-1 Combined Areas RESRAD Evaluation
File : 118-B-1_Combined_Areas_w-o plants.RAD

Concentration of radionuclides in environmental media
at t = 3.000E+02 years

Radio- Nuclide	Contaminat- ed Zone	Surface Soil*	Air Par- ticulate	Well Water	Surface Water
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
AAAAAAA	pCi/g	pCi/g	pCi/m**3	pCi/L	pCi/L
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
C-14	0.000E+00	0.000E+00	0.000E+00	3.997E-04	1.895E-04
Co-60	1.138E-18	1.138E-18	1.607E-23	3.401E-19	1.613E-19
Cs-137	7.564E-04	7.564E-04	1.068E-08	2.259E-04	1.071E-04
Eu-152	1.167E-07	1.167E-07	1.647E-12	2.188E-09	1.037E-09
Gd-152	2.395E-14	2.395E-14	3.381E-19	2.939E-17	1.394E-17
Sr-90	2.020E-03	2.020E-03	2.852E-08	2.399E-03	1.137E-03
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters,
i.e. using parameters appearing in the input screen when the pathways are active.
Concentration of gaseous C-14 in air = 0.000E+00 pCi/m**3

Concentration of radionuclides in foodstuff media
at t = 3.000E+02 years*

Radio- Nuclide	Drinking Water	Nonleafy Vegetable	Leafy Vegetable	Fodder Meat	Fodder Milk	Meat	Milk	Fish	Crustacea
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
AAAAAAA	pCi/L	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/kg	pCi/L	pCi/kg	pCi/kg
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
C-14	3.997E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	2.085E-04	5.343E-04	9.476E+00	1.725E+00
Co-60	3.401E-19	9.108E-17	9.108E-17	9.174E-17	9.112E-17	1.356E-16	1.127E-17	4.837E-17	3.225E-17
Cs-137	2.259E-04	3.026E-02	3.026E-02	3.030E-02	3.026E-02	7.341E-02	1.663E-02	2.142E-01	1.071E-02
Eu-152	2.188E-09	2.917E-07	2.921E-07	2.929E-07	2.922E-07	1.566E-07	3.737E-09	5.187E-08	1.037E-06
Gd-152	2.927E-17	5.989E-14	5.996E-14	5.996E-14	5.996E-14	3.210E-14	3.055E-16	3.385E-16	1.354E-14
Sr-90	2.399E-03	6.060E-01	6.060E-01	6.068E-01	6.060E-01	3.387E-01	6.944E-02	6.824E-02	1.137E-01
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters,
i.e. using parameters appearing in the input screen when the pathways are active.

Attachment 5 Sheet No. 9 of 10
Originator: S. W. Clark Date _____
Chk'd By M. W. Perrott Date _____
Calc. No. 0100B-CA-V0308 Rev. No. 0

ATTACHMENT 5

1RESRAD, Version 6.3 T« Limit = 180 days 10/03/2007 08:15 Page 10
Concent : 118-B-1 Combined Areas RESRAD Evaluation
File : 118-B-1_Combined_Areas_w-o plants.RAD

Concentration of radionuclides in environmental media
at t = 1.000E+03 years

Radio-	Contaminat-	Surface	Air Par-	Well	Surface
Nuclide	ted Zone	Soil*	ticulate	Water	Water
	pcI/g	pcI/g	pcI/m**3	pcI/L	pcI/L
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
C-14	0.000E+00	0.000E+00	0.000E+00	3.662E-04	1.736E-04
Co-60	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Cs-137	7.125E-11	7.125E-11	1.006E-15	7.110E-11	3.371E-11
Eu-152	1.813E-23	1.813E-23	2.560E-28	1.134E-24	5.377E-25
Gd-152	2.394E-14	2.394E-14	3.380E-19	9.083E-17	4.307E-17
Sr-90	1.162E-10	1.162E-10	1.640E-15	3.031E-10	1.437E-10
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

*The Surface Soil is the top layer of soil within the user specified mixing zone/depth.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters,
i.e. using parameters appearing in the input screen when the pathways are active.
Concentration of gaseous C-14 in air = 0.000E+00 pcI/m**3

Concentration of radionuclides in foodstuff media
at t = 1.000E+03 years*

Radio-	Drinking	Nonleafy	Leafy	Fodder	Fodder	Meat	Milk	Fish	Crustacea
Nuclide	Water	Vegetable	Vegetable	Meat	Milk				
	pcI/L	pcI/kg	pcI/kg	pcI/kg	pcI/kg	pcI/kg	pcI/L	pcI/kg	pcI/kg
AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA	AAAAAAA
C-14	3.662E-04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.911E-04	4.895E-04	8.682E+00	1.580E+00
Co-60	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
Cs-137	7.110E-11	2.850E-09	2.850E-09	2.854E-09	2.850E-09	6.990E-09	1.630E-09	6.742E-08	3.371E-09
Eu-152	1.134E-24	4.534E-23	4.539E-23	4.553E-23	4.541E-23	2.442E-23	5.872E-25	2.689E-23	5.377E-22
Gd-152	9.052E-17	5.987E-14	5.994E-14	5.995E-14	5.995E-14	3.210E-14	3.056E-16	1.053E-15	4.210E-14
Sr-90	3.031E-10	3.486E-08	3.486E-08	3.490E-08	3.486E-08	1.955E-08	4.048E-09	8.624E-09	1.437E-08
iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii	iiiiiii

*Concentrations are at consumption time and include radioactive decay and ingrowth during storage time.
For livestock fodder, consumption time is t minus meat or milk storage time.

Concentrations in the media occurring in pathways that are suppressed are calculated using the current input parameters,
i.e. using parameters appearing in the input screen when the pathways are active.

Attachment 5 Sheet No. 10 of 10
Originator: S. W. Clark Date
Chk'd By M. W. Perrott Date
Calc. No. 0100B-CA-V0308 Rev. No. 0

CALCULATION COVER SHEET

Project Title: Field Remediation Job No. **14655**

Area: 100-BC

Discipline: Environmental *Calculation No: 0100B-CA-V0309
118-B-1 Burial Ground Combined Areas Comparison to Drinking Water Standards
 Subject: (MCL) Calculation Brief

Computer Program: Excel Program No: Excel 2003

The attached calculations have been generated to document compliance with established cleanup levels. These calculations should be used in conjunction with other relevant documents in the administrative record.

Committed Calculation ☒ Preliminary ☐ Superseded ☐ Voided ☐

Rev.	Sheet Numbers	Originator	Checker	Reviewer	Approval	Date
0	Cover - 1 pg Calculations - 3 pg Total - 4 pages	 S. W. Clark	 M. W. Perrott	N/A	 J. M. Capron	10/6/07

SUMMARY OF REVISION

Washington Closure Hanford

CALCULATION SHEET

Originator	S. W. Clark	Date	10/3/07	Calc. No.	0100B-CA-V0309	Rev. No.	0	
Project	Field Remediation	Job No.	14855	Checked	M. W. Perrott	Date	10/3/07	
Subject	118-B-1 Burial Ground Combined Areas Comparison to Drinking Water Standards (MCL) Calculation						Sheet No.	1 of 3

1	Purpose:
2	Compare RESRAD derived groundwater radionuclide concentrations to remedial action goals and maximum contaminant levels (MCLs) for groundwater.
3	Compare beta/gamma emitter dose contributions to the maximum allowable dose of 4 mrem/yr. Compare alpha emitter dose contributions to the maximum
4	allowable gross particle activity of 15 pCi/L or 1/25th of the derived concentration guide (DCG).
5	
6	Table of Contents:
7	1. Calculation Summary
8	2. Comparison to MCLs
9	3. Cumulative Dose Comparison
10	
11	Given/References:
12	1) RESRAD derived groundwater radionuclide concentrations from Calculation 0100B-CA-V0308, 118-B-1 Combined Areas Cleanup Verification RESRAD
13	Calculation Brief.
14	2) Remedial action goals for groundwater and MCLs summarized in Table 2-3 of the Remedial Design Report/Remedial Action Work Plan for the 100 Area
15	(RDR/RAWP), DOE/RL-96-17, Rev. 5, U.S. Department of Energy, Richland Operations Office, Richland, WA.
16	3) Maximum allowable dose of 4 mrem/yr for beta/gamma emitters and maximum allowable gross particle activity of 15 pCi/L for alpha emitters from:
17	40 CFR 141, "National Primary Drinking Water Regulation," Code of Federal Regulations, as amended (40 CFR Part 141, Subpart G, 141.66).
18	
19	4) 1/25th of the derived concentration guide (DCG) values from Radiation Protection of the Public and Environment, DOE Order 5400.5, U.S. Department of
20	Energy, Washington D.C.
21	
22	5) Individual organ-dose calculation methodology for beta/gamma emitter dose contribution to the maximum allowable dose of 4 mrem/yr from: Maximum
23	Permissible Body Burdens and Maximum Permissible Concentrations of Radionuclides in Air or Water for Occupational Exposure, National Bureau of Standards
24	(NBS) Handbook 69, as amended, U.S. Department of Commerce, Washington D.C., and National Primary Drinking Water Regulations, EPA-570/9-76-003,
25	U.S. Environmental Protection Agency, Office of Water Supply, Washington, D.C.
26	
27	Solution:
28	1. The site data for the calculation are the groundwater concentrations for the contaminants of concern (COCs) (daughter products are not considered) over time
29	from the RESRAD groundwater concentration file.
30	
31	2. Compare the concentrations for each radionuclide to the groundwater remedial action goal and MCL given in the RDR/RAWP, Table 2-3.
32	
33	3. The cumulative dose for each organ for the beta and gamma emitting COCs predicted to reach groundwater (Co-60, Cs-137, and Sr-90) at time t is calculated
34	separately using the concentration corresponding to 4 mrem/year dose (C4) and the sum of fractions equation shown below (from EPA-570/9-76-003). The
35	organs for which doses need to be computed are total body, bone, liver and gastrointestinal tract [lower large intestine] (GI(LLI)). The individual organ doses are
36	compared to 4 mrem/yr.
37	$\text{Doseorgan } x(t) = [\text{ConcA}(t)/\text{C4A}(x) + \text{ConcB}(t)/\text{C4B}(x) + \dots] \times (4 \text{ mrem/yr})$
38	
39	Where:
40	Doseorgan x (t) is the total dose to organ x in mrem/yr at time t.
41	ConcA(t), ConcB(t), etc., are the concentrations of isotope A, B, etc., at time t in pCi/L, for all gamma emitting COCs.
42	C4A(x), C4B(x), etc., are the 4 mrem/yr dose equivalent concentrations for organ x of isotope A, B, etc., at time t in pCi/L, for all organs and for all gamma
43	emitting COCs.
44	If the dose for organ x < 4 mrem/yr, then the standard is met.
45	
46	Conclusions:
47	1. The concentrations for each of the radionuclide COCs are less than the groundwater remedial action goals and MCLs given in the RDR/RAWP, Table 2-3.
48	
49	2. The cumulative dose for each total body, bone, liver and gastrointestinal tract for all beta and gamma emitting COCs is less than 4 mrem/yr
50	
51	3. RESRAD modeling indicates that no alpha-emitting COC will impact groundwater. Therefore, concentrations for the alpha emitting COCs are less than the
52	maximum allowable gross particle activity of 15 pCi/L and the 1/25th of the DCG.
53	
54	4. The total uranium COCs (U-233/234, U-235, and U-238) are present at concentrations less than natural background.
55	
56	
57	
58	
59	
60	

Washington Closure Hanford

CALCULATION SHEET

Originator S. W. Clark *[Signature]* Date *10/3/07* Calc. No. 0100B-CA-V0309 Rev. No. 0
Project Field Remediation Job 14655 Checked M. W. Perrott *[Signature]* Date *10/26/07*
Subject 118-B-1 Burial Ground Combined Areas Comparison to Drinking Water Standards (MCL) Calculation Sheet No. 2 of 3

- 1 Table of Comparisons of the Maximum Concentration of Each Radionuclide to its Groundwater MCL
2 Data derived from RESRAD modelling, units are pCi/L.
3

Radionuclide	Time (years)									MCL	Exceeds MCL?	Peak Conc.	Year of Peak Conc.
	0	1	3	7	11	43	135	300	1000				
Co-60	0	1.35E-04	3.12E-04	4.30E-04	3.99E-04	2.32E-05	3.00E-08	3.40E-19	7.11E-11	100	No	4.30E-04	7
Cs-137	0	7.52E-04	2.16E-03	4.60E-03	6.58E-03	1.23E-02	7.66E-03	2.26E-04	0	60	No	1.23E-02	43
Sr-90	0	9.85E-03	2.82E-02	6.00E-02	8.56E-02	1.56E-01	9.35E-02	2.40E-03	3.03E-10	8	No	1.56E-01	43

118-B-1 MCL (0100B-CA-V0309)

Comparison to MCLs

Washington Closure Hanford

CALCULATION SHEET

Originator S. W. Clark
Project Field Remediation
Subject 118-B-1 Burial Ground Combined Areas Comparison to Drinking Water Standards (MCL) Calculation

Date 10/3/07
Job 14655

Calc. No. 0100B-CA-V0309
Checked M. W. Perrott

Rev. No. 0
Date 10/2/07
Sheet No. 3 of 3

- 1 Table Showing the Calculation of the Cumulative Dose for All Radionuclides and Comparison to the 4 mrem/yr Drinking Water Standard
2 Data derived from RESRAD modelling, units are pCi/L.
3

Radionuclide	Time (years)									Organ	C ₄	Exceeds 4 mrem/yr?	Peak Conc. pCi/L	Year of Peak Conc.	
	0	1	3	7	11	43	135	300	1000						
Co-60	0	1.35E-04	3.12E-04	4.30E-04	3.99E-04	2.32E-05	3.00E-08	3.40E-19	7.11E-11	GI(LLI)	100	No	4.30E-04	7	
										Total Body	900	No			
											Liver	3,000	No		
Cs-137	0	7.52E-04	2.16E-03	4.60E-03	6.58E-03	1.23E-02	7.66E-03	2.26E-04	0	Bone	80	No	1.23E-02	43	
										GI(LLI)	2,000	No			
											Total Body	200	No		
										Liver	60	No			
Sr-90	0	9.85E-03	2.82E-02	6.00E-02	8.56E-02	1.56E-01	9.35E-02	2.40E-03	3.03E-10	Bone	8	No	1.56E-01	43	
										GI(LLI)	100	No			
											Total Body	8	No		
Cumulative dose, mrem/yr, for each organ (with time)															
Organ	Time (years)									Exceeds 4 mrem/yr?	Peak Dose mrem/yr	Year of Peak Dose			
	0	1	3	7	11	43	135	300	1000						
Bone	0	4.96E-03	1.42E-02	3.02E-02	4.31E-02	7.86E-02	4.71E-02	1.21E-03	1.52E-10	No	7.86E-02	43			
GI(LLI)	0	4.01E-04	1.14E-03	2.43E-03	3.45E-03	6.27E-03	3.76E-03	9.65E-05	1.50E-11	No	6.27E-03	43			
Total Body	0	4.94E-03	1.41E-02	3.01E-02	4.29E-02	7.82E-02	4.69E-02	1.20E-03	1.52E-10	No	7.82E-02	43			
Liver	0	5.03E-05	1.44E-04	3.07E-04	4.39E-04	8.20E-04	5.11E-04	1.51E-05	9.48E-14	No	8.20E-04	43			

118-B-1 MCL (0100B-CA-V0309)

Cumulative Dose Comparison

APPENDIX D
TRITIUM PLUME CHARACTERIZATION SAMPLING RESULTS

Tritium Plume Characterization Sampling Results

Residual tritium contamination was detected in multiple statistical soil verification samples collected from Areas 1, 2, and 3 of the 118-B-1 Burial Ground remediation footprint, as well as in focused soil verification samples associated with caches of tritium-contaminated wastes. Because verification samples are collected from the exposed soil surface, and the surfaces sampled had all been exposed for a significant length of time prior to sampling, it was postulated that tritium contamination in the strata sampled may have been reduced by evaporative loss after completion of excavation activities. Therefore, additional investigation was undertaken to characterize residual tritium contamination in the deep vadose zone underlying the burial ground remediation footprint.

Initially, discrete samples were collected at each of the four composite sampling nodes associated with the highest reported detection of tritium, in Area 1. Based on the results of these samples, the sampling node associated with tritium contamination was isolated. A test pit was then excavated at this location, and soil samples collected for tritium analysis at approximately 1 m depth intervals. Results of these samples showed that tritium concentrations in the uppermost stratum were significantly lower than those in lower strata, confirming loss to evaporative transport at exposed surfaces.

Additional excavations to collect vertical profile data were then performed in Areas 2 and 3. Due to the frozen ground conditions at the time of this investigation, sampling nodes associated with tritium contamination could not be isolated, and test pits and associated sampling-at-depth were completed at all sampling nodes associated with composite verification samples with elevated detections of tritium. Following review of all test pit data, a characterization borehole was completed in Area 1, Node A2-3, at the location of the highest observed deep vadose zone tritium contamination levels.

Test pit locations are shown in Figure D-1. Analytical results provided in Table D-1, and summarized in Figures D-2 and D-3.

**Figure D-1. Test Pit Locations for Deep Vadose Zone
Tritium Contamination Characterization.**

Table D-1. Tritium Results for Characterization Potholes and Borehole. (2 Pages)

Sample Location	Sample Number	Sample Date	Tritium		
			pCi/g	Q	MDA
Area 1, A2-3	J13DK7	9/7/2006	494		7.1
Area 1, A2-6	J13DK8	9/7/2006	106		3.2
Area 1, A2-7	J13DK9	9/7/2006	-0.420	U	2.7
Area 1, A2-15	J13DL0	9/7/2006	0.170	U	2.7
Area 1, A2-3, 3' bef	J13H32	9/23/06	37500		110
Area 1, A2-3, 7' bef	J13H33	9/23/06	36300		100
Area 1, A2-3, 10' bef	J13H34	9/23/06	33400		100
Area 1, A2-3, 14' bef	J13HN8	10/4/06	29000		41
Area 1, A2-3, 19' bef	J13HN9	10/4/06	15800		29
Area 1, A2-3, 24' bef	J13HP0	10/4/06	19100		32
Area 1, A2-3, 29' bef	J13HP1	10/4/06	23800		36
Area 1, A2-3, 35.7' bef	J14YF7	4/18/07	39900		9.5
Area 1, A2-3, 40' bef	J14YF8	4/18/07	26600		7.8
Area 1, A2-3, 45.6' bef	J14YH0	4/18/07	9050		4.3
Area 1, A2-3, 50' bef	J14YH1	4/18/07	2800		2.5
Duplicate of J14YH1	J14YH2	4/18/07	2750		2.5
Area 1, A2-3, 55.6' bef	J14YH3	4/18/07	936		6.2
Area 1, A2-3, 80' bef	J14YH4	4/18/07	563		5.1
Area 1, A2-3, 85.6' bef	J14YH5	4/18/07	42.3		2.5
Equipment blank	J14YF9	4/18/07	35.9		2.8
Sample Location	Sample Number	Sample Date	Tritium		
			pCi/L	Q	MDA
Area 1, A2-3, groundwater (unfiltered)	J14YX7	4/23/07	908		190
Area 1, A2-3, groundwater (filtered)	J14YX8	4/23/07	813		190
Equipment blank	J14Yx6	4/23/07	78.7	U	190
Excavation floor at Area 1, A2-3 was approximately 20 ft bgs					
Sample Location	Sample Number	Sample Date	Tritium		
			pCi/g	Q	MDA
Area 2, A2-3, 3' bef	J13VM3	12/12/06	0.298	U	3.9
Area 2, A2-3, 6' bef	J13VM4	12/12/06	-0.547	U	4.2
Area 2, A2-3, 9' bef	J13VM5	12/12/06	-0.512	U	4.0
Area 2, A2-3, 24' bef	J13VM6	12/12/06	1.06	U	4.3
Excavation floor at Area 2, A2-3 was approximately 20 ft bgs					
Area 2, A2-6, 3' bef	J13VL9	12/12/06	448		4.4
Area 2, A2-6, 6' bef	J13VM0	12/12/06	228		4.5
Area 2, A2-6, 9' bef	J13VM1	12/12/06	199		3.8
Area 2, A2-6, 25' bef	J13VM2	12/12/06	18.3		3.6
Excavation floor at Area 2, A2-6 was approximately 14 ft bgs					

bef = below excavation floor

acronym = bef

bgs = below ground surface

MDA = minimum detectable activity

Q = qualifier

U = undetected

Table D-1. Tritium Results for Characterization Potholes and Borehole. (2 Pages)

Sample Location	Sample Number	Sample Date	Tritium		
			pCi/g	Q	MDA
Area 2, A2-7, 3' bef	J13VL1	12/12/06	306		4.4
Area 2, A2-7, 6' bef	J13VL2	12/12/06	3370		5.9
Area 2, A2-7, 9' bef	J13VL3	12/12/06	19700		15
Area 2, A2-7, 22' bef	J13VL4	12/12/06	6350		7.8
Excavation floor at Area 2, A2-7 was approximately 14 ft bgs					
Area 2, A2-15, 3' bef	J13VL5	12/12/06	10300		9.8
Area 2, A2-15, 6' bef	J13VL6	12/12/06	11600		11
Area 2, A2-15, 9' bef	J13VL7	12/12/06	24700		17
Area 2, A2-15, 22' bef	J13VL8	12/12/06	16200		13
Excavation floor at Area 2, A2-15 was approximately 12 ft bgs					
Area 3, A4-3, 3' bef	J13V22	12/8/2006	15.8		3.0
Area 3, A4-3, 6' bef	J13V23	12/8/2006	48.4		2.7
Area 3, A4-3, 9' bef	J13V24	12/8/2006	36.6		2.7
Area 3, A4-3, 24' bef	J13V25	12/8/2006	6.16		2.7
Excavation floor at Area 3, A4-3 was approximately 8 ft bgs					
Area 3, A4-4A, 3' bef	J13V18	12/8/2006	-5.48	U	2.7
Area 3, A4-4A, 6' bef	J13V19	12/8/2006	-6.44	U	2.8
Area 3, A4-4A, 9' bef	J13V20	12/8/2006	-6.64	U	2.5
Area 3, A4-4A, 25' bef	J13V21	12/8/2006	-5.76	U	2.7
Excavation floor at Area 3, A4-4A was approximately 5 ft bgs					
Area 3, A4-4B, 3' bef	J13V26	12/8/2006	1.58	U	1.9
Area 3, A4-4B, 6' bef	J13V27	12/8/2006	1.46	U	1.9
Area 3, A4-4B, 9' bef	J13V28	12/8/2006	1.72	U	1.9
Area 3, A4-4B, 24' bef	J13V29	12/8/2006	1.13	U	1.9
Excavation floor at Area 3, A4-4B was approximately 8 ft bgs					
Area 3, A4-7, 3' bef	J13V30	12/8/2006	704		6.2
Area 3, A4-7, 6' bef	J13V31	12/8/2006	4310		17
Area 3, A4-7, 9' bef	J13V32	12/8/2006	2230		11
Area 3, A4-7, 20' bef	J13V33	12/8/2006	484		4.3
Excavation floor at Area 3, A4-7 was approximately 20 ft bgs					
Area 3, A4-12A, 3' bef	J13V14	12/8/2006	0	U	2.6
Area 3, A4-12A, 6' bef	J13V15	12/8/2006	-4.18	U	2.5
Area 3, A4-12A, 9' bef	J13V16	12/8/2006	-3.84	U	2.5
Area 3, A4-12A, 24' bef	J13V17	12/8/2006	60.0		2.5
Excavation floor at Area 3, A4-12A was approximately 15 ft bgs					
Area 3, A4-12B, 3' bef	J13V34	12/8/2006	0.123	U	2.1
Area 3, A4-12B, 6' bef	J13V35	12/8/2006	1.34	U	2.0
Area 3, A4-12B, 9' bef	J13V36	12/8/2006	1.15	U	2.1
Area 3, A4-12B, 20' bef	J13VL0	12/8/2006	2.98		2.0
Excavation floor at Area 3, A4-12B was approximately 15 ft bgs					

bef = below excavation floor

acronym = bef

bgs = below ground surface

MDA = minimum detectable activity

Q = qualifier

U = undetected

Figure D-2. Results of Test Pit Sampling for Deep Vadose Zone Tritium Contamination Characterization.

D-5

Figure D-3. Results of Borehole Sampling for Deep Vadose Zone Tritium Contamination Characterization at Area 1, Node A2-3.

APPENDIX E
DATA QUALITY ASSESSMENT

DATA QUALITY ASSESSMENT FOR THE 118-B-1 BURIAL GROUND

C1.0 OVERVIEW

The data quality assessment (DQA) completes the data life cycle (i.e., planning, implementation, and assessment) that was initiated by the data quality objectives process. The DQA includes a review of the field logbook information (WCH 2007a, 2007b, 2007c, 2007d, 2007e) to verify sample location, date, and time. It also involves a scientific and statistical evaluation of the data to determine if they are of the right type, quality, and quantity to support their intended use for closeout decisions (EPA 2000).

This DQA was performed in accordance with data quality objectives found in the *100 Area Burial Grounds Remedial Action Sampling and Analysis Plan* (Burial Ground SAP) (DOE-RL 2001). The DQA is based on the guidelines presented in *Guidance for Data Quality Assessment* (EPA 2000). Statistical tests used in this DQA were performed as specified in the SAP and the *Remedial Design Report/Remedial Action Work Plan for the 100 Area* (RDR/RAWP) (DOE-RL 2005).

Prior to performing statistical tests, the field logbooks (WCH 2007a, 2007b, 2007c, 2007d, 2007e), the *Site Specific Instruction for Close-out Approach for 118-B-1* (WCH 2006), and the sample analytical data were evaluated. The site-specific verification sampling design was developed to provide a more comprehensive sampling strategy than the general design provided by the Burial Ground SAP based on grouping of waste forms encountered during 118-B-1 Burial Ground remediation. All samples were collected per the sample design. A portion of the cleanup verification sample analytical data was validated for compliance requirements (DOE-RL 2005). An evaluation is performed to determine if the laboratory carried out all steps required by the SAP and the laboratory contract governing the conduct of analysis and reporting of the data. Third-party data validation, in accordance with validation procedures specified in *Data Validation Procedure for Chemical Analysis* (BHI 2000a) and in *Data Validation Procedure for Radiochemical Analysis* (BHI 2000b), is performed as part of data evaluation. After validation and data evaluation, the appropriate statistical analyses are performed on the analytical data (Appendix C) to determine statistical values, as appropriate, for each contaminant. The cleanup verification sample analytical data are stored in the Environmental Restoration (ENRE) project-specific database prior to being submitted for inclusion in the Hanford Environmental Information System (HEIS) database and are also summarized in the 95% upper confidence limit calculation in Appendix C.

C1.1 LABORATORY QUALITY MEASURES

All verification samples are subject to laboratory-specific quality assurance (QA) requirements, including instrument procurement, maintenance, calibration, and operation. Additional laboratory quality control (QC) checks are performed, as appropriate, for the analytical method at a rate of 1 per sample delivery group (SDG), or 1 per 20 samples, whichever is more frequent. Laboratory internal QC checks include the following:

- Laboratory Contamination. Each analytical batch contains a laboratory (method) blank (material of similar composition as the samples with known/minimal concentrations of the analytes of interest) carried through the complete analytical process. The method blank is used to evaluate samples for false-positive results due to contamination at the laboratory.
- Analytical Accuracy. For most analyses, a known quantity of representative analytes of interest are added to a separate aliquot of a sample from the analytical batch, known as the matrix spike/matrix spike duplicate (MS/MSD). The recovery percentages of the added MS are used to evaluate analytical accuracy. For analyses not amenable to MS techniques (e.g., gamma energy analysis) or where analytical recovery is corrected via internal standards (e.g., alpha spectral analyses), accuracy is evaluated from recovery of the QC reference sample (i.e., laboratory control sample [LCS] or blank spike sample).
- Analytical Precision. Separate aliquots removed from the same sample container are analyzed for each analytical batch, and referred to as the laboratory duplicate or replicate. The replicate sample results (evaluated by relative percent differences [RPDs]) are used to assess the analytical precision achieved at the laboratory. However, natural heterogeneities often found in soil matrix samples also play a significant part in the RPD result.
- QC Reference Samples. A QC reference sample is prepared from an independent standard at a concentration other than that used for calibration, but within the calibration range. Reference samples provide an independent check on analytical technique and methodology.

Laboratories are also subject to periodic and random assessments of the laboratory performance, systems, and overall program. These assessments are performed by the Washington Closure Hanford QA group to ensure that the laboratories are performing within laboratory contract requirements.

C1.2 DATA VALIDATION

The 118-B-1 Burial Ground is the largest burial ground at 100-B/C, and the closeout approach included a sample design with multiple decision units. Verification sample

data collected at the 118-B-1 waste site were provided by the laboratories in 28 SDGs, and 13 separate SDGs for asbestos samples. This DQA addresses the SDGs by the decision units as they were designed in the *Site Specific Instruction for Close-out Approach for 118-B-1* (WCH 2006). As the 118-B-1 waste site closeout includes multiple decision units, samples from several decision units may be included in any one SDG. Unless otherwise noted, deficiencies listed below are specific to the individual SDG, but apply to all samples within that SDG.

After sampling was completed, all of the fixed laboratory data from SDGs K0494 and K0601 were submitted for third-party Level C validation. Level C validation procedures are specified in *Data Validation Procedure for Radiochemical Analysis* (BHI 2000b) and *Data Validation Procedure for Chemical Analysis* (BHI 2000a).

Level C validation procedures were used to review and qualify the data for the following parameters:

- Sample holding times
- Method blanks
- MS/MSD recovery
- Surrogate recovery
- Sample replicates (duplicates)
- Laboratory control sample results
- Data package completeness
- Achievement of required detection limits (RDLs) or contract required quantitation limits.

Data qualified as rejected (i.e., "R" flagged) indicate that the associated analytical result is tainted by a major deficiency in the quality of the data. Rejected data are unsuitable for decision-making purposes. Data qualified as estimated (i.e., "J" flagged) indicate that the data is estimated, but may be used for decision-making purposes. Data qualified as undetected (i.e., "U" flagged) indicate the analyte was analyzed for but not detected. For nonradionuclides, nondetected results are reported at the practical quantitation limit (PQL). For radionuclides, nondetected results are reported at the actual value obtained from analysis (positive or negative but less than the minimum detected activity [MDA]), except for limited analyses where no value can be calculated and the analytes are reported nondetected at the MDA. All other validated results are considered accurate within the standard errors associated with the methods.

The adequacy of laboratory QA/QC was evaluated for precision, accuracy, completeness, and RDLs pursuant to the SAP (DOE-RL 2001). The organization performing the data validation reported that, of the data given formal validation, the laboratory met the standards for performance for precision ($\pm 30\%$), accuracy ($\pm 30\%$), and completeness ($>90\%$).

C1.2.1 Remediation Footprint

For Areas 1 through 7, representing Trenches 2-21 and Trench 23, the area between the targeted trenches, and the surface of the haul roads between the burial ground and the staging pile area, verification sample data was provided in ten SDGs: SDG K0486, SDG J00085, SDG J00097, SDG K0491, SDG J00087, SDG K0493, SDG K0494, SDG K0638, SDG K0749, and SDG K0551. SDG K0601 was submitted for third-party validation. Verification sample data for bulk asbestos was provided in four SDGs: SDG 06I-3787-01, SDG 06I-3786-01, SDG 06I-3912-01, and SDG 06I-3936-01. Major deficiencies were identified in the analytical data set, rendering some data unacceptable for decision-making purposes. Major and minor deficiencies are discussed below.

SDG K0486

This SDG comprises 4 field samples, three collected from Area 1 (J12X44, J12X45, J12X48), and one focused field sample collected from the Cell 4 pothole (J12XB3). These samples were analyzed for ICP metals, mercury, hexavalent chromium, total petroleum hydrocarbons (TPH), volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), and by alpha spectroscopy, beta counting, gamma spectroscopy, and liquid scintillation counting, as directed in the sample design (WCH 2006). One field duplicate pair is included in this SDG (J12X44/J12X48). A major deficiency was found in SDG K0486. Major and minor deficiencies are as follows:

In the ICP metals analysis, the LCS recovery for silicon is below the acceptance criteria at 5.6%. Associated sample results for silicon are likely biased low. However, the MS recovery for silicon is 182.5%, showing conflicting QC results. As the QC results are significantly different and the LCS recovery is less than 10%, the silicon sample results for SDG K0486 are qualified as “rejected”, and flagged with an “R”. Silicon is not a COPC for the 118-B-1 waste site, and the rejected silicon data do not impact completeness of the verification sampling data.

In addition, the MS recoveries for five ICP metals (aluminum, iron, manganese, silicon, and antimony) are out of acceptance criteria. For most of these analytes, the spiking concentration is insignificant compared to the native concentration in the sample from which the MS was prepared. For these analytes, the deficiency in the MS is a reflection of the analytical variability of the native concentration rather than a measure of the recovery from the sample. To confirm quantitation, post digestion spikes and serial dilutions were prepared, and the results for the four analytes are in the range of 96.6% and 102.8%. Antimony and silicon did not have mismatched spike and native concentrations in the original MS. The original MS recovery for antimony is 60%. Sample results for antimony are considered estimated and flagged “J”. The data are useable for decision-making purposes. Silicon sample results for SDG K0486 are qualified as “rejected”, and flagged with an “R”, as the MS and LCS recoveries conflict significantly.

The analytes barium, calcium, and potassium are reported in the MB at concentrations that are below the contract-required quantitation limits (CRQLs), however, the sample results are greater than 5 times the MB concentration. The data are useable for decision-making purposes.

The relative percent difference (RPD) value for boron is above the laboratory acceptance criteria at 87.8%. The duplicate pair is near the detection limit, analysis of RPDs is not considered to be useful in the precision determination. The data are usable for decision-making purposes.

In the VOC analysis, sixteen MS recoveries are above the acceptance criteria. The MS for acetone is 358%, and the MSD recovery is 308%. The 1,2-dichloroethane MS and MSD are 149% and 145%, respectively. The MS and MSD for 2-butanone are 289% and 234%, respectively. The carbon tetrachloride MS recovery is 142% and MSD is 141%. The MS recovery is 143% for bromodichloromethane, and is 136% for 1,2-dichloropropane. For dibromochloromethane, the MS is 139% and the MSD is 131%. For trans-1,3-dichloropropene the MS is 146% and the MSD is 133%. The 2-hexanone MS and MSD are 237% and 204%, respectively. Field sample data for these analytes may contain high bias. Sample data detected results are considered estimated and flagged "J". However, high biased data and/or estimated data are useable for decision making purposes.

The LCS recovery for 2-butanone exceeded the acceptance criteria at 214%. The data are useable for decision making purposes.

In the SVOC analysis, the MS recoveries for nitrobenzene is 47%, for isophorone is 59%, for 2,4-dimethylphenol is 45%, for 4-chloro-3-methylphenol is 55%, for 2-methylnaphthalene is 56%, and for 1,2,4-trichlorobenzene is 53%. Each of these MS recoveries is out of acceptance criteria. Sample results for these SVOCs are considered estimated and flagged "J". The data are useable for decision-making purposes.

The common laboratory contaminants bis(2-ethylhexyl)phthalate and di-n-butylphthalate are detected in the MB at concentrations less than the CRQL. The data are not otherwise affected and are useable for decision-making purposes.

In the radionuclides, the RPD calculated for total strontium in the laboratory duplicate pair is above the acceptance criteria of 30%, at 160%. The data are considered estimated and flagged "J". Elevated RPDs in environmental soil samples are attributed to natural heterogeneities in the soil matrix from which the sample and duplicate are prepared. The data are useable for decision-making purposes.

SDG J00085

This SDG comprises one field sample (J12X49), a split of sample J12X44 from SDG K0486. This sample was analyzed at Lionville Laboratory, Inc., with the analyses including ICP metals, mercury, hexavalent chromium, VOC, SVOC, PCBs, and gamma spectroscopy. No major deficiencies were found in SDG J00085. Minor deficiencies are as follows:

In the ICP metals analysis, the analytes calcium, silicon, and zinc are reported in the MB at concentrations that are below the CRQLs, however, the sample results are greater than 5 times the MB concentration, and the data are useable for decision-making purposes.

In addition, the MS recoveries for seven ICP metals (aluminum, cadmium, calcium, copper, iron, antimony, and silicon) are out of acceptance criteria. For aluminum and iron, the spiking concentration is insignificant compared to the native concentration in the sample from which the MS was prepared. For these analytes, the deficiency in the MS is a reflection of the analytical variability of the native concentration rather than a measure of the recovery from the sample. Antimony and cadmium have low MS recoveries, at 50% and 32%, respectively. These analytes are considered estimated and flagged "J". The calcium, copper, and silicon MS recoveries are high, indicating the sample data may be biased high. High biased or estimated data for SDG J00085 are useable for decision-making purposes.

In the VOC analysis, four MS recoveries are above the acceptance criteria. The MS for bromomethane is 162%, and the MSD recovery is 158%. The MS and MSD for tetrachloroethane are 155% and 153%, respectively. Field sample data for these analytes may contain high bias. Sample data detected results are considered estimated and flagged "J". However, high biased data and/or estimated data are useable for decision-making purposes.

The LCS recovery for bromomethane is above the acceptance criteria, at 154%. The data are useable for decision-making purposes.

In the SVOC analysis, the LCS recovery is below the acceptance criteria for 2,4-dinitrophenol, with a recovery of 0%. All 2,4-dinitrophenol data for SDG J00085 are rejected and flagged "R." It should be noted that this analyte has been rejected on a technical basis. There were no associated analytes detected in the samples, such as the related mononitrophenols: 2-nitrophenol and 4-nitrophenol. Solvents such as this are not typically found individually without other detections. There are no known Hanford Site processes that would have resulted exclusively in this analyte. Therefore, there is no reason to assume that 2,4-dinitrophenol was present in the samples. The LCS recovery for 4,6-dinitro-2-methylphenol is 20%, also below the acceptance criteria. All other QC results for 4,6-dinitro-2-methylphenol are acceptable, however, the data may be considered estimated. The 4,6-dinitro-2-methylphenol data are useable for decision-making purposes.

In the gamma spectroscopy analysis, there was insufficient material to perform a duplicate analysis. The sample was recounted on a different detector to provide a laboratory duplicate. The RPDs calculated for europium-154 and europium-155 in the laboratory duplicate pair, are above the acceptance criteria at 51.1% and 79%, respectively. In the alpha spectroscopy analysis, the RPD calculated for plutonium-239/240 in the laboratory duplicate pair is above the acceptance criteria at 200%. In the liquid scintillation counting analysis, the RPDs calculated for carbon-14 and nickel-63 in the laboratory duplicate pair are above the acceptance criteria at 45.2% and 96.7%, respectively. Each of the samples results are below their MDAs, therefore, analysis of RPDs is not considered to be useful in the precision determination. The data are useable for decision-making purposes.

In the gas proportional counting analysis, the RPD calculated for total strontium in the laboratory duplicate pair is above the acceptance criteria at 170.5%. The primary sample is detected with a result close to the MDA, and the duplicate is non-detected. When one of the two samples is non-detected or when the duplicate pair is near the detection limit, analysis of RPDs is not considered to be useful in the precision determination. The data are useable for decision-making purposes.

In the hexavalent chromium analysis, the MS recovery is below the acceptance criterion with a result of 42%. The data are considered estimated and flagged "J", but are useable for decision-making purposes.

SDG J00097

This SDG comprises two samples (J12X49-A and J12WW0-A) that were submitted for additional radiochemical analysis. The original SDG for sample J12X49 was SDG J00085, the original SDG for sample J12WW0 was SDG J00084. For this SDG, these samples were analyzed by alpha spectroscopy and liquid scintillation counting. No major deficiencies were found in SDG J00097. Minor deficiencies are as follows:

In the alpha spectroscopy analysis, the sample J12X49-A laboratory duplicate RPDs calculated for plutonium-238, plutonium-239/240, americium-241, uranium-235, and uranium-238 are above the acceptance criteria at 200%, 90.5%, 82.0, 42.7%, and 35.8%, respectively. The sample J12WW0-A laboratory duplicate RPDs calculated for uranium-235 and uranium-238 are above the acceptance criteria at 58.2% and 41.5%, respectively. For these analytes, either one of the two samples is non-detected or the duplicate pair is near the detection limit, and analysis of RPDs is not considered to be useful in the precision determination. The data are useable for decision-making purposes.

Also in the alpha spectroscopy analysis, uranium-234 and uranium-238 are reported in the MB. The uranium-234 and uranium-238 analytical results for samples J12X49-A and J12WW0-A are biased high, and detected sample results are considered estimated and flagged "J". High biased data are useable for decision-making purposes.

SDG K0491

This SDG comprises 12 field samples, two collected from Area 1 (J12X46, J12X47), four collected from Area 2 (J12X50-J12X53), five (J12X54-J12X58) collected from Area 3, and an equipment blank (J12X59). These samples were analyzed for ICP metals, mercury, hexavalent chromium, TPH, VOCs, SVOCs, PCBs, pesticides, herbicides, and by alpha spectroscopy, beta counting, gamma spectroscopy, and liquid scintillation counting. One field duplicate pair is included in this SDG (J12X56/J12X58). A major deficiency was found in SDG K0491. Major and minor deficiencies are as follows:

In the ICP metals analysis, the LCS recovery for silicon is below the acceptance criteria at 5.6%. Associated sample results for silicon are likely biased low. However, the MS recovery for silicon is 148.0%, showing conflicting quality control (QC) results. As the QC results are significantly different and the LCS recovery is less than 10%, the silicon sample results for SDG K0491 are qualified as "rejected", and flagged with an "R." Silicon is not a COPC for the 118-B-1 waste site, and the rejected silicon data do not impact completeness of the verification sampling data.

The MS recoveries for five ICP metals (aluminum, iron, manganese, antimony, and silicon) are out of acceptance criteria. For most of these analytes, the spiking concentration is insignificant compared to the native concentration in the sample from which the MS was prepared. For these analytes, the deficiency in the MS is a reflection of the analytical variability of the native concentration rather than a measure of the recovery from the sample. To confirm quantitation, post digestion spikes and serial dilutions were prepared, and the results for the analytes are in the range of 88.9% and 101.9%. Antimony and silicon did not have mismatched spike and native concentrations in the original MS. The original MS recovery for antimony is 51.4%, and sample results are considered estimated and flagged "J". The original MS recovery for silicon is 148.0% indicating a potential high bias to the sample results. The data are useable for decision-making purposes.

The analytes barium, calcium, and potassium are reported in the MB at concentrations that are below the CRQLs, however, the sample results are greater than 5 times the MB concentration, and the data are useable for decision-making purposes.

In the SVOC analysis, nine MS recoveries are below the acceptance criteria. The MS for 2,4-dimethylphenol is 44%, and the MSD recovery is 49%. The 1,2,4-trichlorobenzene MS and MSD are 51% and 57%, respectively. The isophorone MS recovery is 58%, the 4-chloro-3-methylphenol MS is 55%, and the 2-methylnaphthalene MS is 56%. The MSD recovery is 59% for 2-methylphenol and 4-methylphenol. The data are considered estimated and flagged "J". Estimated data are useable for decision-making purposes.

No LCS recoveries results are reported for the SVOC. Due to an extraction error, no spike was added to the LCS sample. The data are not otherwise affected and are useable for decision-making purposes.

The common laboratory contaminants di-n-butylphthalate is detected in the MB at concentrations less than the CRQL. The data are not otherwise affected and are useable for decision-making purposes.

In the hexavalent chromium analysis, the sample holding time was missed for samples J12X50 through J12X53, which were taken from 118-B-1 Area 2. The samples were collected on July 20, 2006, and analyzed on September 1, 2006. Because the holding time was exceeded by less than twice the limit, the data are useable for decision-making purposes. The sample results for hexavalent chromium in SDG K0491 are considered estimated and flagged "J".

In the VOC analysis, three MS recoveries are above the acceptance criteria. The 1,2-dichloroethane MSD recovery is 142%, the cis-1,3-dichloropropene MSD is 132%, and the trans-1,3-dichloropropene MSD is 142%. Also, the LCS recovery for 2-butanone exceeded the acceptance criteria at 214%. Field sample data for these analytes may contain high bias. All sample results for these analytes were reported as nondetected. The data are useable for decision-making purposes.

Toluene and 4-methyl-2-pentanone are detected in the MB at concentrations less than the CRQL. The data are not otherwise affected and are useable for decision-making purposes.

In the chlorinated pesticides analysis, one surrogate recovery for the MSD is above the acceptance criteria with a value of 119%. However, the secondary criterion for surrogate recoveries is met, as there is no more than one outlier. The data are useable for decision-making purposes.

SDG K0493

This SDG comprises nine field samples, five collected from Area 4 (J12X61 – J12X65), and four collected from Area 6 (J12XC2 – J12XC5). These samples were analyzed for ICP metals, mercury, hexavalent chromium, TPH, VOCs, SVOCs, PCBs, pesticides, herbicides, and by alpha spectroscopy, beta counting, gamma spectroscopy, and liquid scintillation counting. One field duplicate pair is included in this SDG (J12X61/J12X65). No major deficiencies were found in SDG K0493. Minor deficiencies are as follows:

All of the picloram data in SDG K0493 may be considered estimated due to lack of a MS, MSD, or LCS analysis for the analyte. The data are considered estimated and flagged "J". The data are acceptable for decision-making purposes.

In the pesticide analysis, the surrogate recoveries for samples J12X62, J12X63, J12X64, J12X65, J12XC4, and the MS and MSD samples for J12X61 are outside the

initial criterion, with high results. These samples do not meet the secondary criterion for surrogate recoveries, as there is more than one outlier for each sample. The results for these samples are considered estimated and flagged "J". Samples J12X61, J12XC2, J12XC3, and J12XC5 have one surrogate outside the acceptance criteria, also with high results. All pesticide data are acceptable for decision-making purposes.

The MS and MSD results for each of the pesticides reported in SDG K0493 are high, with all results exceeding the acceptance criteria except the MS and MSD for 4,4'-DDE and the MS and MSD for methoxychlor. The high MS and MSD results indicate that the sample results may be biased high, and the detected sample results for the pesticides in SDG K0493 (excluding 4,4'-DDE) are flagged "J". The analytes with detected results that may be biased high are beta-BHC in sample J12X64, and gamma-chlordane and endosulfan sulfate in sample J12X65. The data are useable for decision-making purposes.

The LCS recovery for aldrin is outside the acceptance criteria at 55%, indicating the sample results may be biased low. However, the LSC recovery for aldrin is within the QC limits for aldrin in soil (34% - 132%) assigned in the Contract Laboratory Program *Statement of Work for Organics Analysis* (EPA 2006). The data are acceptable for decision-making purposes.

All of the toxaphene data in SDG K0493 are considered estimated due to lack of a MS, MSD, or LCS analysis for the analyte, and flagged "J". The data are acceptable for decision-making purposes.

In the VOC analysis, 13 MS recoveries are outside the acceptance criteria. The MS for bromomethane is 234%, and the MSD recovery is 232%. The 2-butanone MS and MSD are 294% and 301%, respectively. The MS and MSD for trichloroethene are 146% and 147%, respectively. The dibromochloromethane MS recovery is 148% and MSD is 154%. For bromoform, the MS is 143% and the MSD is 152%. The 2-hexanone MSD is 210%. The high MS and MSD results indicate that the sample results may be biased high, however, the sample results for these VOC analytes in SDG K0493 are reported as nondetected. The data are useable for decision-making purposes.

LCS recoveries for three VOCs are outside the acceptance criteria. The bromomethane LCS recovery is 241%, the 2-butanone LCS recovery is 223%, and the dibromochloromethane LCS recovery is 131%. The laboratory discussed the bromomethane recovery in the data package narrative, noting that the instrument response factor was elevated for bromomethane, causing a high method blank recovery. The results for 2-butanone and dibromochloromethane are all reported as nondetected. The data are useable for decision-making purposes.

In the SVOC analysis, three MS recoveries are outside the acceptance criteria. The MS recovery for 1,2,4-trichlorobenzene is 59%, and the MSD recovery is 57%. The 2-methylnaphthalene MSD is 59%. The data are considered estimated and flagged "J". The data are useable for decision-making purposes.

The common laboratory contaminants bis(2-ethylhexyl)phthalate and di-n-butylphthalate were detected in the MB at concentrations less than the CRQL. The target compound phenol was detected in the MB at levels less than the CRQL. The data are not otherwise affected and are useable for decision-making purposes.

The analytes calcium and zinc are reported in the MB at concentrations that are below the CRQLs. However, the sample results are greater than 5 times the MB concentration, and the data are useable for decision-making purposes.

In addition, the MS recoveries for four ICP metals (aluminum, iron, manganese, and silicon) are out of acceptance criteria. For most of these analytes, the spiking concentration is insignificant compared to the native concentration in the sample from which the MS was prepared. For these analytes, the deficiency in the MS is a reflection of the analytical variability of the native concentration rather than a measure of the recovery from the sample. To confirm quantitation, post digestion spikes and serial dilutions were prepared, and the results for the analytes are in the range of 97.0% to 107.7%. Silicon did not have mismatched spike and native concentrations in the original MS. The original MS recovery for silicon is 152.4%. The data are useable for decision-making purposes.

Also, in the ICP metals analysis, the LCS recovery for silicon is below the acceptance criteria at 33.0%. Silicon is not a COPC for the 118-B-1 waste site.

The RPDs calculated for silicon in the laboratory duplicate pair (sample J12X61, and J12X61 [duplicate]), are above the acceptance criteria with the value of 32.8%. Elevated RPDs in environmental soil samples are attributed to heterogeneities in the sample matrix and not to deficiencies in the analytical methodologies. However, because there are multiple QC issues with the silicon samples, the silicon results for SDG K0493 are considered estimated and flagged "J". The data are useable for decision-making purposes.

In the alpha spectroscopy analysis, the RPDs calculated for uranium-233/234 and uranium-238 in the laboratory duplicate pair are above the acceptance criteria at 41% and 34%, respectively. Each sample result is just above the detection limit. When the duplicate pair is near the detection limit, analysis of RPDs is not considered to be useful in the precision determination. The data are useable for decision-making purposes.

SDG J00087

This SDG comprises two split samples: sample J12X60 is a split of sample J12X56 from SDG K0491, and sample J12X66 is a split of sample J12X61 from SDG K0493. This SDG was analyzed for ICP metals, mercury, hexavalent chromium, TPH, VOCs, SVOCs, pesticides, PCBs, herbicides, and by alpha spectroscopy, beta counting, gamma spectroscopy, and liquid scintillation counting. No major deficiencies were found in SDG J00087. Minor deficiencies are as follows:

In the VOC analysis, the bromomethane LCS recovery is above the acceptance criteria with a value of 154%, suggesting a high bias. The sample results for bromomethane in SDG J00087 were reported as non-detected. The data are useable for decision-making purposes.

Also in the VOC analysis, the MS and MSD recoveries for toluene are 75% and 142%, respectively. The MS and MSD for tetrachloroethene are both 153%. These MS and MSD recoveries are out of acceptance criteria, with high results suggesting a high bias. The sample analytical results are all below the detection limits. The data are useable for decision-making purposes.

In the SVOC analysis, the MS and MSD recoveries for 2,4-dinitrophenol are 13% and 18%, respectively. The 2,4-dinitrophenol sample results are considered estimated, and flagged "J". The data are useable for decision-making purposes.

In the PCB analysis, the surrogate recovery for sample J12X66 is above the acceptance criteria with a value of 196%. The surrogate recovery for the MB and one of two MS surrogates are above the acceptance criteria with values of 178% and 212% respectively. The surrogate recoveries suggest a high bias for the PCB samples, however, the PCB sample results are all reported as non-detected. The data are useable for decision-making purposes.

In the herbicide analysis, the dinoseb LCS recovery is below the acceptance criteria with a value of 37%. The MS and MSD for dinoseb are also below the acceptance criteria, at 46% and 76% respectively. The dinoseb sample results in SDG J00087 may be considered estimated. The data are useable for decision-making purposes.

The analytes calcium and silicon are reported in the MB at concentrations that are below the CRQLs, however, the sample results are greater than 5 times the MB concentration. The data are useable for decision-making purposes.

The MS recoveries for eight ICP metals (aluminum, cadmium, manganese, molybdenum, silicon, silver, vanadium, and antimony) are out of acceptance criteria. For aluminum and manganese, the spiking concentration is insignificant compared to the native concentration in the sample from which the MS was prepared. For these analytes, the deficiency in the MS is a reflection of the analytical variability of the native concentration rather than a measure of the recovery from the sample. Antimony, cadmium, molybdenum, silicon, and silver have low MS recoveries, at 58%, 36%, 50%, 33%, and 37%, respectively. These analytes are considered estimated, and flagged "J". The vanadium MS recovery is high, indicating the sample data may be biased high. All ICP metals data for SDG J00087 are useable for decision-making purposes.

The RPD value for mercury is above the laboratory acceptance criteria at 43%. Elevated RPDs are attributed to natural heterogeneity of the sample matrixes. The data are usable for decision-making purposes.

In the TPH analysis, the LCS recovery is outside the acceptance criteria at 57% and 51%, and the MS recovery is outside the acceptance criteria at 45%. The sample results are considered estimated and flagged "J". The data are useable for decision-making purposes.

The RPD calculated for TPH in the laboratory duplicate pair is above the acceptance criterion at 200%. Each of the samples results are below the PQL. When the duplicate pair is near the detection limit, analysis of RPDs is not considered to be useful in the precision determination. The data are useable for decision-making purposes.

In the liquid scintillation counting analysis, the RPD calculated for carbon-14, nickel-63, and tritium in the laboratory duplicate pair is above the acceptance criteria at 69.7%, 71.9%, and 39.2%, respectively. For tritium, the primary sample is detected just above the detection limit, and the duplicate sample is reported as below the detection limit. For carbon-14, each of the samples results is below the detection limit. The nickel-63 results are both just above the detection limit. When the duplicate pair is near the detection limit, analysis of RPDs is not considered to be useful in the precision determination. The data are useable for decision-making purposes.

The radionuclide nickel-63 is reported in the MB at a concentration similar to the MDA. Nickel-63 in sample J12X66 is reported below the detection limit. Sample J12X60 has a nickel-63 result similar to the result reported for the MB. The MB nickel-63 result indicates that the J12X60 nickel-63 result may be biased high. The J12X60 nickel-63 result is considered estimated and flagged "J". The data are useable for decision-making purposes.

SDG K0638

This SDG comprises four field samples collected from Area 5 (J13V10-J13V13) and one focused sample (J12R33), also from Area 5. These samples were analyzed for ICP metals, mercury, hexavalent chromium, TPH, VOCs, SVOCs, PCBs, and by beta counting, gamma spectroscopy, and liquid scintillation counting. No major deficiencies were found in SDG K0594. Minor deficiencies are as follows:

In the VOC analysis, seven MS recoveries are outside the acceptance criteria. The MS and MSD recoveries for 1,1,2,2-tetrachloroethane are 66% and 40%, respectively. The dibromochloromethane, 1,1,2-trichloroethane, trans-1,3-dichloropropene, bromoform, and 4-methyl-2-pentanone MSD recoveries are 66%, 64%, 65%, 50%, and 36%, respectively. The sample results for these analytes are considered estimated and flagged "J". The data are useable for decision-making purposes.

Also in the VOC analysis, one surrogate recovery for the MSD is outside the acceptance criteria with a value of 60%. However, the secondary criterion for surrogate recoveries is met, as there is no more than one outlier. The data are useable for decision-making purposes.

The LCS recovery for 1,1,2,2-tetrachloroethane is outside the acceptance criteria at 137%. The high LCS recovery may indicate a high bias for the analyte in samples, however, all sample results are below the PQL. The data are useable for decision-making purposes.

The common laboratory contaminants methylene chloride and acetone are detected in the MB at concentrations less than the CRQL. The data are not otherwise affected and are useable for decision-making purposes.

In the SVOC analysis, nine MS recoveries are outside the acceptance criteria. The MS for nitrobenzene is 46%, and the MSD recovery is 45%. The MS for 2-nitrophenol is 46%, and the MSD recovery is 43%. The MS for 1,2,4-trichlorobenzene is 41%, and the MSD recovery is 40%. The MS for 2,4-dichlorophenol is 48%, and the MSD recovery is 44%. The MS for 2,4-dimethylphenol is 42%, and the MSD recovery is 40%. The 4-chloro-3-methylphenol MS and MSD are 58% and 49%, respectively. The MS for 2-methylnaphthalene is 52%, and the MSD recovery is 45%. The isophorone MSD recovery is 56%, and the n-nitrosodiphenylamine (1) MSD is 48%. The sample results for these analytes are considered estimated and flagged "J". The data are useable for decision-making purposes.

Also in the SVOC analysis, one surrogate recovery for the sample J12R33 is outside the acceptance criteria with a value of 140%. However, the secondary criterion for surrogate recoveries is met, as there is no more than one outlier. The data are useable for decision-making purposes.

The LCS recoveries for 2-nitrophenol, 2,4-dimethylphenol, 4-chloro-3-methylphenol, and 2-methylnaphthalene are outside the acceptance criteria at 45%, 39%, 56%, and 54%, respectively. The LCS recovery for 2,4-dichlorophenol and 1,2,4-trichlorobenzene are both 48%. The sample results for these analytes are considered estimated and flagged "J". The data are useable for decision-making purposes.

The LCS recovery for 4-nitroaniline is 1%, therefore, the 4-nitroaniline results for SDG K0638 are rejected and flagged "R". It should be noted that this analyte has been rejected on a technical basis. There were no associated analytes detected in the samples, such as the related mononitroaniline 2-nitroaniline. Solvents such as this are not typically found individually without other detections. There are no known Hanford Site processes that would have resulted exclusively in this analyte. Therefore, there is no reason to assume that 4-nitroaniline was present in the samples. The data are not useable for decision-making purposes.

The common laboratory contaminants bis(2-ethylhexyl)phthalate and di-n-butylphthalate were detected in the MB at concentrations less than the CRQL. The data are not otherwise affected and are useable for decision-making purposes.

In the PCB analysis, one surrogate recovery for the sample J13V12 is outside the acceptance criteria with a value of 127%. However, the secondary criterion for surrogate recoveries is met, as there is no more than one outlier. The data are useable for decision-making purposes.

No MS or MSD recoveries results are reported for aroclor-1016 and aroclor-1260. The laboratory sample discrepancy report stated that no matrix spike was added to these samples. The sample results for these analytes are considered estimated and flagged "J". The data are useable for decision-making purposes.

The analytes barium, calcium, iron, magnesium, molybdenum, silver, sodium, silicon, and zinc are reported in the MB at concentrations that are just above the PQLs. The sample results are greater than 5 times the MB concentration, with the exception of silver and molybdenum, which may be biased high. The sample results for silver and molybdenum are considered estimated and flagged "J". The data are useable for decision-making purposes.

In addition, the MS recoveries for five ICP metals (aluminum, calcium, iron, manganese, and antimony) are out of acceptance criteria. For aluminum, iron, and manganese, the spiking concentration is insignificant compared to the native concentration in the sample from which the MS was prepared. For these analytes, the deficiency in the MS is a reflection of the analytical variability of the native concentration rather than a measure of the recovery from the sample. To confirm quantitation, post digestion spikes and serial dilutions were prepared for all five analytes, and the results for the analytes are in the range of 95.4% and 99.2%. Antimony and calcium did not have mismatched spike and native concentrations in the original MS. The original MS recovery for calcium is 146.8%, indicating a high bias in the samples. The original MS recovery for antimony is 48%, and the sample results for antimony are considered estimated, and flagged with a "J". The data are useable for decision-making purposes.

Also in the ICP metals analysis, the LCS recovery for silicon is below the acceptance criteria at 14.2%. Associated sample results for silicon are considered estimated and flagged "J". Silicon is not a COPC for the 118-B-1 waste site. The data are usable for decision-making purposes.

The RPD values for mercury and lead are outside the laboratory acceptance criteria at 35.3% and 30.3%, respectively. Elevated RPDs are attributed to natural heterogeneity of the sample matrixes. The data are usable for decision-making purposes.

SDG K0749

This SDG comprises one field sample collected from Area 5 (J14JH6). Sample J14JH6 was a resample taken from Area 5 A3, following the removal of material at the location. This sample was analyzed by beta counting, gamma spectroscopy, and liquid scintillation counting. No major or minor deficiencies were found in SDG K0749.

SDG K0494

This SDG comprises four field samples collected from Area 7 (J12XC6 – J12XC9). These samples were analyzed for ICP metals, mercury, hexavalent chromium, VOC, SVOC, PCBs, pesticides, herbicides, and by alpha spectroscopy, beta counting, gamma spectroscopy, and liquid scintillation counting. SDG K0494 was submitted for formal third-party validation. No major deficiencies were found in SDG K0494. Minor deficiencies are as follows:

In the SVOC analysis, the MS and MSD recoveries for 1,2,4-trichlorobenzene are 57% and 59%, both out of acceptance criteria. Third-party validation qualified all results for these analytes in the SDG K0494 as estimated and flagged “J”. Estimated data are useable for decision-making purposes.

The RPD for the 2,4-dinitrophenol MS and MSD is outside the acceptance criteria at 65%. Third party validation qualified all 2,4-dinitrophenol field sample results as estimated and flagged “J”. Estimated results are useable for decision-making purposes.

The common laboratory contaminants bis(2-ethylhexyl)phthalate and di-n-butylphthalate were detected in the MB at 70 ug/kg and 51 ug/kg, respectively; both concentrations are less than the CRQL. The target compound phenol is detected in the MB at 34 ug/kg, less than the CRQL. Third-party validation raised the reported values for phenol, bis(2-ethylhexyl)phthalate, and di-n-butylphthalate in the SDG K0494 field samples to the required quantitation limit of 330 µg/kg and qualified them as undetected and flagged “U”. Butylbenzylphthalate was also detected in the MB, at 35 ug/kg, however, butylbenzylphthalate was not detected in any of the field samples. The data are not affected and are useable for decision-making purposes.

No matrix spike analysis was performed for tritium. Third party validation qualified all tritium results as estimated and flagged “J”. The data are useable for decision-making purposes.

The analyte hexavalent chromium was detected just above the detection limit in the laboratory duplicate result for sample J12XC6. In the initial analysis for the sample, hexavalent chromium was non-detected. The laboratory reported an RPD value for these results of 36.6%. However, when the duplicate pair is near the detection limit, analysis of RPDs is not considered to be useful in the precision determination. The data are useable for decision-making purposes.

In the VOC analysis, 10 MS recoveries are outside the acceptance criteria. The laboratory sample discrepancy report stated that the bromomethane response factor was running high during analysis and the percent difference for bromomethane is greater than in-house limits, causing the percent recovery for the matrix spike to run high. Bromomethane was not detected in any field samples from SDG K0494, therefore, there is no impact to the data. The MS and MSD recovery for bromomethane are 295% and 307%, respectively. The 2-butanone MS and MSD are 237% and 227%, respectively. The MS and MSD for bromodichloromethane are 145% and 146%, respectively. The dibromochloromethane MS is 168% and the MSD is 167%. The bromoform MS and MSD are 164% and 160%, respectively. The data are useable for decision-making purposes.

The LCS recoveries for bromomethane, 2-butanone, and dibromochloromethane are outside the acceptance criteria at 241%, 223%, and 131%, respectively. The data are useable for decision-making purposes.

In the pesticide analysis, third-party validation assigned a "J" flag to all aldrin results in SDG K0494, as the LCS recovery is outside QC limits at 55%. The data are useable for decision-making purposes.

An MS recovery for dieldrin is outside acceptance criteria at 134%. Third-party validation qualified the dieldrin sample result for sample J12XC6 as an estimate and flagged "J". Estimated data are useable for decision-making purposes.

In the pesticides analysis, all surrogate recoveries for SDG K0494 samples are above the acceptance criteria. All detected pesticide results for the samples are flagged "J" by third-party validation. The data are useable for decision-making purposes.

In the herbicides analysis, the RPD for the MS and MSD recoveries for dicamba (76%), 2,4,5-T (36%), and 2,4-DB (112%) are outside the acceptance criteria. Third-party validation qualified the results as estimated and flagged "J". The data are useable for decision making purposes.

In the herbicides analysis, two MSD recoveries are below the acceptance criteria. The MSD for dicamba is 18% and for 2,4-B is 13%. All dicamba and 2,4-B results for the samples were flagged "J" by third-party validation. The data are useable for decision-making purposes.

All of the toxaphene and picloram data in SDG K0494 were qualified by third-party validation as estimated with "J" flags, due to lack of a MS, MSD, or LCS analysis for the analyte. Estimated, or "J"-flagged, data are acceptable for decision-making purposes.

The analytes calcium and zinc are reported in the MB at concentrations that are just above the PQLs, however, the sample results are greater than 5 times the MB concentration, and the data are useable for decision-making purposes.

The MS recoveries for four ICP metals (aluminum, iron, manganese, antimony and silicon) are out of acceptance criteria. For aluminum, iron, and manganese, the spiking concentration is insignificant compared to the native concentration in the sample from which the MS was prepared. For these analytes, the deficiency in the MS is a reflection of the analytical variability of the native concentration rather than a measure of the recovery from the sample. To confirm quantitation, post digestion spikes and serial dilutions were prepared for all five analytes, and the results for the analytes are in the range of 98.1% and 113.6%. Antimony and silicon did not have mismatched spike and native concentrations in the original MS. The original MS recovery for silicon is 422.8%, indicating the sample results may be biased high. The original MS recovery for antimony is 50.2%. All antimony results for the samples are flagged "J" by third-party validation. Estimated, or "J"-flagged, data are considered acceptable for the intended use of the data. The data are useable for decision-making purposes.

Also, in the ICP metals analysis, the LCS recovery for silicon is below the acceptance criteria at 33.0%. Associated sample results for silicon are likely biased low. All silicon results for the samples are flagged "J" by third-party validation. Estimated, or "J"-flagged, data are considered acceptable for the intended use of the data. The data are useable for decision-making purposes.

Finally, the RPD values for molybdenum and nickel are above the laboratory acceptance criteria at 52.6% and 40.7%, respectively. Elevated RPDs are attributed to natural heterogeneity of the sample matrixes. The data are usable for decision-making purposes.

SDG K0551

This SDG comprises eight field samples (J13D51 – J13D58) collected from Sampling Areas 6 and 7. These samples were analyzed for TPH only. No major or minor deficiencies were found in SDG K0551.

Bulk Asbestos SDGs

Bulk asbestos samples were collected from Areas 1, 6, and 7, and reported in four SDGs. SDG 06I-3787-01 comprises three field samples taken from Area 1. SDG 06I-3786-01 comprises two field samples taken from Area 1 (in addition to one sample from the below cleanup level [BCL] material stockpiles). SDG 06I-3912-01 comprises four samples taken from Area 6. SDG 06I-3936-01 comprises four samples taken from Area 7. No major or minor deficiencies were found in SDG 06I-3787-01, SDG 06I-3786-01, SDG 06I-3912-01, or SDG 06I-3936-01.

C1.2.2 Overburden and BCL Stockpiles

For the overburden and BCL stockpiles, verification sample data was provided in six SDGs: SDG K0471, SDG K0484, SDG K0474, SDG K0491, SDG J00084, and

SDG J00097. Verification sample data for bulk asbestos was provided in four SDGs: SDG 06I-3564-01, SDG 06I-3658-01, SDG 06I-3634-01, and SDG 06I-3786-01. Major deficiencies were identified in the analytical data set, rendering some data unacceptable for decision-making purposes. Major and minor deficiencies are discussed below.

SDG K0471

This SDG comprises 16 field samples, seven collected from the 118-B-1 overburden stockpiles (J12WK0 – J12WK6), and nine collected from the BCL stockpiles (J12WK7 – J12WK9 and J12WL0 – J12WL5). These samples were analyzed for ICP metals, mercury, hexavalent chromium, TPH, VOCs, SVOCs, PCBs, pesticides, herbicides, and by alpha spectroscopy, beta counting, gamma spectroscopy, and liquid scintillation counting. One field duplicate pair is included in this SDG (J12WL4/J12WL5). One major deficiency was found in SDG K0471. Major and minor deficiencies are as follows:

In the herbicide analysis, eight MS recoveries are below the acceptance criteria. The dicamba MS and MSD are 0% and 22%, respectively. The picloram MS and MSD are 3% and 10%, respectively. The dichloroprop, 2,4-D, and 2,4,5-T MSDs are 28%, 23%, and 25%, respectively. The 2,4-DB MS is 25%. The LCS for picloram is below EPA Contract Laboratory Program Quality Control criteria with a recovery of 53%. As the picloram MS, MSD, and BS are all outside the criteria, the picloram sample results are rejected for the SDG K0471, and are flagged “R”. All other herbicide data are useable for decision-making purposes.

Also in the herbicides analysis, surrogate recoveries for sample J12WK0, J12WK1, and J12WL2 are below the acceptance criteria, with results of 35%, 16%, and 39% respectively. All herbicide results for the samples are considered estimated and flagged “J”. The data are useable for decision-making purposes.

In the SVOC analysis, seven MS recoveries are below the acceptance criteria. The MS and MSD recovery for 2,4-dimethylphenol are both 46%. The 1,2,4-trichlorobenzene MS and MSD are 52% and 51%, respectively. The MS and MSD for 2-methylnaphthalene are 57% and 58%, respectively. The isophorone MS is 59%. The sample results for these SVOCs are considered estimated and flagged “J”. Estimated data are useable for decision-making purposes.

The LCS recovery for 2,4-dinitrophenol is below the acceptance criteria at 3%. The sample results for 2,4-dinitrophenol are rejected and flagged “R”. It should be noted that this analyte has been rejected on a technical basis. There were no associated analytes detected in the samples, such as the related mononitrophenols: 2-nitrophenol and 4-nitrophenol. Solvents such as this are not typically found individually without other detections. There are no known Hanford Site processes that would have resulted exclusively in this analyte. Therefore, there is no reason to assume that 2,4-dinitrophenol was present in the samples.

The common laboratory contaminants bis(2-ethylhexyl)phthalate is detected in the MB at concentrations less than the CRQL. The data are not otherwise affected and are useable for decision-making purposes.

In the VOC analysis, methylene chloride is reported in the MB at a concentration of 11 ug/kg, above the PQL of 10 ug/kg. The sample results are reported at concentrations similar to the PQL, with a range of 3 – 18 ug/kg. The sample results for methylene chloride are likely biased high, and are considered estimated and flagged “J”. Estimated data are useable for decision-making purposes.

In the chlorinated pesticides analysis, surrogate recoveries for five samples are outside the acceptance criteria. However, the secondary criterion for surrogate recoveries is met in four samples, as there is no more than one outlier. Sample J12WK4 recoveries are outside the acceptance criteria for both surrogates, and all pesticide results for the sample are flagged “J”. The data are useable for decision-making purposes.

Five MS recoveries in the pesticides analysis are below the acceptance criteria. The alpha-BHC MS and MSD are 58% and 23%, respectively. The gamma-benzenehexachloride, delta-benzenehexachloride, and 4,4'-dichlorodiphenyldichloroethylene MSDs are 26%, 30%, and 57%, respectively. The sample results for these analytes are considered estimated and flagged “J”. The data are useable for decision-making purposes.

The analytes calcium, iron, sodium, and silicon are reported in the MB at concentrations that are just above the PQLs, however, the sample results are greater than 5 times the MB concentration, and the data are useable for decision-making purposes.

In addition, the MS recoveries for five ICP metals (aluminum, iron, manganese, antimony, and silicon) are out of acceptance criteria. For aluminum, iron, and manganese, the spiking concentration is insignificant compared to the native concentration in the sample from which the MS was prepared. For these analytes, the deficiency in the MS is a reflection of the analytical variability of the native concentration rather than a measure of the recovery from the sample. To confirm quantitation, post digestion spikes and serial dilutions were prepared for all five analytes, and the results for the analytes are in the range of 90.4% and 103.7%. Antimony and silicon did not have mismatched spike and native concentrations in the original MS. The original MS recovery for antimony is 38% and for silicon is 57%. The sample results for antimony and silicon in SDG K0471 are considered estimated and flagged “J”. Estimated data are useable for decision-making purposes.

Also, in the ICP metals analysis, the LCS recovery for silicon is below the acceptance criterion at 51.1%. Associated sample results for silicon are likely biased low. Silicon is not a COPC for the 118-B-1 waste site. The data are useable for decision-making purposes.

The analyte hexavalent chromium was detected just above the detection limit in the initial result for sample J11VL2. In the laboratory duplicate for the sample, hexavalent chromium is non-detected. The laboratory reported an RPD value for these results of 54.5%. However, when the duplicate pair is near the detection limit, analysis of RPDs is not considered to be useful in the precision determination. The data are useable for decision-making purposes.

In the gamma spectroscopy analysis, the RPD calculated for cesium-137 in the laboratory duplicate pair is above the acceptance criteria at 56.0%. The primary sample is detected just above the detection limit, and the duplicate sample is reported as below the detection limit. When the duplicate pair is near the detection limit, analysis of RPDs is not considered to be useful in the precision determination. The data are useable for decision-making purposes.

SDG K0484

This SDG comprises 5 field samples collected from the 118-B-1 overburden stockpiles (J12WM7 – J12WM9 and J12WN0 – J12WN1). These samples were analyzed for ICP metals, mercury, hexavalent chromium, TPH, VOCs, SVOCs, PCBs, pesticides, herbicides, and by alpha spectroscopy, beta counting, gamma spectroscopy, and liquid scintillation counting. No major deficiencies were found in SDG K0471. Minor deficiencies are as follows:

In the VOC analysis, five MS recoveries are above the acceptance criteria. The MS and MSD recovery for 1,1,2,2-tetrachloroethene are 153% and 182%, respectively. The MSD recoveries for dibromochloromethane, 1,1,2-trichloroethane, and trans-1,3-dichloropropene are 143%, 139%, and 131%, respectively. These MS recoveries indicate a potential high bias for the sample results. However, all sample results for these analytes are reported as nondetected. The data are useable for decision-making purposes.

The LCS recoveries for 2-butanone are above the acceptance criteria at 214% and 207%, indicating a potential high bias for the data. However, the sample results for 2-butanone are reported as the PQL. The data are useable for decision-making purposes.

The toluene and 4-methyl-2-pentanone are detected in the MB at concentrations less than the CRQL, indicating that sample data may be biased high. All sample results for these analytes are similar to the PQL. The data are not otherwise affected and are useable for decision-making purposes.

For the herbicide analyses, the target compound dalapan was detected in the MB at a concentration above the PQL. All samples were reanalyzed, and dalapan was again detected in the MB at a concentration above the PQL. Both sets of analytical results are reported. All dalapan analytical results are reported as the PQL or detected below the PQL. The data are useable for decision-making purposes.

For the herbicide analysis, the surrogate recoveries for two of the samples are below the acceptance criteria. These samples are J12WN0 and J12WN1. The herbicide data for these samples are considered estimated and flagged "J". Estimated data are useable for decision-making purposes.

The MSDs for dicamba do not meet the acceptance criteria for either the first or second sample analysis. However, the MSs for dicamba are within the acceptance criteria, and the data are useable for decision-making purposes.

Nine LCS recoveries for herbicides are below the acceptance criteria. The dicamba LCS and LCS duplicate are 22% and 17%, respectively. The 2,4-D LCS and LCS duplicate are 20% and 25%, respectively. The 2,4,5-T LCS and LCS duplicate are 28% and 23%, respectively. The LCS recoveries for dalaprop and dichloroprop are 6% and 10%, respectively, and the LCS duplicate for pentachlorophenol is 47%. The data for these analytes are considered estimated and flagged "J". The data are useable for decision-making purposes.

In the SVOC analysis, the common laboratory contaminants bis(2-ethylhexyl)phthalate and di-n-butylphthalate are detected in the MB at concentrations less than the CRQL. The data are not otherwise affected and are useable for decision-making purposes.

The LCS recovery for 1,2,4-trichlorobenzene is below the acceptance criteria with a reported result of 57%. The data for 1,2,4-trichlorobenzene are considered estimated and flagged "J". The data are useable for decision-making purposes.

In the pesticides analysis, one surrogate recovery for sample J12WM9 is outside the acceptance criteria. However, the secondary criterion for surrogate recoveries is met for the sample, as there is no more than one outlier. Both surrogate recoveries for sample J12WM7, and the sample J12WM7 MS and MSD are above the acceptance criteria, indicating a potential high bias in the data. The sample results are all reported as nondetects, with the exception of methoxychlor. The detected methoxychlor results in SDG K0484 are considered estimated and flagged "J". The data are useable for decision-making purposes.

Also in the pesticides analysis, four MS recoveries are above the acceptance criteria. The MS recoveries for alpha-BHC, endosulfan I, and endosulfan II are 131%, 129%, and 131%, respectively, indicating a potential high bias in the samples for these analytes. The sample results for these analytes are reported as non-detects. The MSD for alpha-BHC is 47%, however, the MS was within the acceptance criteria. The data are useable for decision-making purposes.

In the metals analysis, calcium was reported in the MB at a concentration just above the PQL, however, the sample results are greater than 5 times the MB concentration, and the data are useable for decision-making purposes.

The MS recoveries for six ICP metals (aluminum, iron, manganese, antimony, silicon, and vanadium) are out of acceptance criteria. For aluminum, iron, and manganese, the spiking concentration is insignificant compared to the native concentration in the sample from which the MS was prepared. For these analytes, the deficiency in the MS is a reflection of the analytical variability of the native concentration rather than a measure of the recovery from the sample. To confirm quantitation, post digestion spikes and serial dilutions were prepared for all five analytes, and the results for the analytes are in the range of 97.7% and 103.6%. Antimony, silicon, and vanadium did not have mismatched spike and native concentrations in the original MS. The original MS recovery for silicon is high, at 192.2%. The original MS recoveries for antimony (41.6%) and for vanadium (65.5%) are low. The antimony and vanadium data are considered estimated and flagged "J". Estimated data are considered acceptable for decision-making purposes.

The LCS recovery for silicon is below the acceptance criteria at 13.3%. Associated sample results for silicon are likely biased low, and the sample results for silicon are considered estimates and flagged "J". Silicon is not a COPC for the 118-B-1 waste site. Estimated data are considered acceptable for decision-making purposes.

The RPD value for potassium and sodium are above the laboratory acceptance criteria at 31.1% and 115.4%, respectively. Elevated RPDs are attributed to natural heterogeneity of the sample matrixes. The data are usable for decision-making purposes.

SDG K0474

This SDG comprises 11 field samples, four collected from the 118-B-1 overburden stockpiles (J12WM3 – J12WM6), and seven collected from the BCL stockpiles (J12WM0 – J12WM3 and J12WL6 – J12WL9). These samples were analyzed for ICP metals, mercury, hexavalent chromium, TPH, VOCs, SVOCs, PCBs, pesticides, herbicides, and by alpha spectroscopy, beta counting, gamma spectroscopy, and liquid scintillation counting. No major deficiencies were found in SDG K0474. Minor deficiencies are as follows:

In the VOC analysis, holding times were exceeded for samples J12WM5 and J12WM6. The holding time was also exceeded when sample J12WL7 was reanalyzed. The samples were collected on 7/12/2006, and were analyzed on 7/25/2006 through 7/31/2006. The holding time was exceeded by less than twice the limit, and the data are considered estimated and flagged "J". The data are useable for decision-making purposes.

Also in the VOC analysis, 24 MS recoveries are above the acceptance criteria, indicating a potential high bias in the data. The MS for acetone is 409%, and the MSD recovery is 417%. The MS for 1,2-dichloroethane is 143%, and the MSD recovery is 153%. The MS for 2-butanone is 318%, and the MSD recovery is 340%. The MS for carbon tetrachloride is 193%, and the MSD recovery is 176%. The MS for 1,2-dichloropropane is 133%, and the MSD recovery is 134%. The

dibromochloromethane MS and MSD are 132% and 133%, respectively. The MS for trans-1,3-dichloropropene is 137%, and the MSD recovery is 134%. The 4-methyl-2-pentanone MS and MSD are 160% and 180%, respectively. The MS for 2-hexanone is 245%, and the MSD recovery is 263%. The 1,1,2,2-tetrachloroethane MS recovery is 136%, and the MSD is 137%. The MS recovery for bromodichloromethane and cis-1,3-dichloropropene are 142% and 131%, respectively. The 1,1,2-trichloroethane MSD is 131%. The data for these analytes are reported as detected below the PQL or as nondetected, with the exception of carbon tetrachloride in select samples. The detected carbon tetrachloride sample results are considered estimated and flagged "J". The data are useable for decision-making purposes.

In the PCB analysis, one surrogate recovery for sample J12WM0 is above the acceptance criteria. However, the secondary criterion for surrogate recoveries is met for the sample, as there is no more than one outlier. Both surrogate recoveries for samples J12WL9 and J12WM6 are below the acceptance criteria. The reported results for these samples are considered estimated and flagged "J". The data are useable for decision-making purposes.

In the pesticides analysis, both surrogate recoveries for samples J12WL6, J12WM6, and J12WL9 are outside the acceptance criteria. The surrogate recoveries for J12WL6 are high, at 135% and 149%, indicating a potential high bias. All pesticide results for these samples are less than the PQL. The surrogate recoveries for J12WM6 and J12WL9 are low, at 12% and 5%, and 19% and 11%, respectively. The pesticide results for these samples are considered estimated and flagged "J". The data are useable for decision-making purposes.

All of the toxaphene data in SDG K0474 is considered estimated with "J" flags, due to lack of a MS, MSD, or LCS analysis for the analyte. Estimated, or "J"-flagged, data are acceptable for decision-making purposes.

In the SVOC analysis, the common laboratory contaminants bis(2-ethylhexyl)phthalate and di-n-butylphthalate were detected in the MB at concentrations less than the CRQL. The data are not otherwise affected and are useable for decision-making purposes.

Also in the SVOC analysis, 37 MS recoveries are below the acceptance criteria. The laboratory sample discrepancy report cited an MS loss during extraction as the probable cause for the low recoveries. The MSD recovery, surrogate recovery, and LCS recovery for each of these analytes are within the acceptance criteria. The data are useable for decision-making purposes.

In the herbicide analysis, the surrogate recoveries for samples J12WL9, J12WM0, and J12WM5, the J12WM5 MS, the MB, and the MB duplicate are below the acceptance criteria. It appears that samples J12WL9, J12WM0, J12WM5, and J12WM0 MS were rerun, with similar or slightly improved surrogate recoveries, though still below the acceptance criteria. Herbicide analytical results for these samples are considered estimated and flagged "J". The data are useable for decision-making purposes.

Also in the herbicide analysis, the MS recovery for dichloroprop is 6%, below the acceptance criteria. The J12WM0 MS was rerun, and the MS and MSD for that sample are within the criteria. The data are useable for decision-making purposes.

The LCS recoveries for six herbicides are below the acceptance criteria. The LCS and LCS duplicate for dicamba are both 18%, for dichloroprop, they are both 21%, and for 2,4-D they are both 14%. The 2,4,5-TP LCS recovery is 27%, with a LCS duplicate recovery of 25%. The 2,4,5-T LCS recovery is 17%, with a LCS duplicate recovery of 16%. The pentachlorophenol LCS recovery is 39%. The results for these analytes are considered estimated and flagged "J". The data are useable for decision-making purposes.

The MS recoveries for six ICP metals (aluminum, iron, mercury, manganese, antimony, and silicon) are out of acceptance criteria. For aluminum, iron, manganese, and silicon, the spiking concentration is insignificant compared to the native concentration in the sample from which the MS was prepared. For these analytes, the deficiency in the MS is a reflection of the analytical variability of the native concentration rather than a measure of the recovery from the sample. To confirm quantitation, post digestion spikes and serial dilutions were prepared for all five analytes, and the results for the analytes are in the range of 99.3% and 107.4%. Antimony and mercury did not have mismatched spike and native concentrations in the original MS. The original MS recovery for mercury is 197.8%, indicating the sample results may be biased high. The sample results are reported as either the PQL or similar to the PQL. The original MS recovery for antimony is 52.6%. The antimony data is considered estimated and flagged "J". All the metals data are useable for decision-making purposes.

The LCS recovery for silicon is below the acceptance criteria at 30.1%. Associated sample results for silicon are likely biased low. Silicon is not a COPC for the 118-B-1 waste site. The data are useable for decision-making purposes.

In the gamma spectroscopy analysis, the RPDs calculated for cesium-137 and europium-155 in the laboratory duplicate pair are above the acceptance criteria at 50% and 47%, respectively. For both analytes, the primary sample is detected just above the detection limit, and the duplicate sample is reported as below the detection limit. When the duplicate pair is near the detection limit, analysis of RPDs is not considered to be useful in the precision determination. The data are useable for decision-making purposes.

SDG J00084

This SDG comprises one field sample (J12WW0), a split of sample J12WL6 in SDG K0474. This sample was analyzed for ICP metals, mercury, hexavalent chromium, TPH, VOCs, SVOCs, PCBs, pesticides, herbicides, and by alpha spectroscopy, beta counting, gamma spectroscopy, and liquid scintillation counting. No major deficiencies were found in SDG J00084. Minor deficiencies are as follows:

In the VOC analysis, one surrogate recovery is above the acceptance criteria with a value of 129%. However, the secondary criterion for surrogate recoveries is met, as there is no more than one outlier. The data are useable for decision-making purposes.

In the SVOC analysis, the MSD recovery for 2,6-dinitrotoluene is 108%, and for 2,4-dinitrotoluene, it is 113%. Both of these recoveries are above the acceptance criteria indicating a potential high bias. The sample results were reported as nondetected. The data are useable for decision-making purposes.

In the PCB analysis, one surrogate recovery is above the acceptance criteria with a value of 190%. The surrogate recovery for the MS and MSD are above the acceptance criteria with values of 180% and 173% respectively. The detected sample results for aroclor-1254 and aroclor-1260 are may be biased high, and are considered estimated and flagged "J." The data are useable for decision-making purposes.

The analytes barium, calcium, silicon and sodium are reported in the MB at concentrations that are below the CRQLs, however, the sample results are greater than 5 times the MB concentration, and the data are useable for decision-making purposes.

The MS recoveries for eleven ICP metals (aluminum, cadmium, calcium, copper, iron, magnesium, manganese, mercury, silicon, silver, and antimony) are out of acceptance criteria. For aluminum, iron, and manganese, the spiking concentration is insignificant compared to the native concentration in the sample from which the MS was prepared. For these analytes, the deficiency in the MS is a reflection of the analytical variability of the native concentration rather than a measure of the recovery from the sample. Four of the analytes that did not have mismatched spike and native concentrations in the original MS have low MS recoveries. Antimony has MS and MSD recoveries of 44% and 45%, respectively. Cadmium has MS and MSD recoveries of 51% and 55%, respectively. Silver has MS and MSD recoveries of 67% and 62%, respectively. Silicon has a MS recovery of 44%; however, the MSD is within acceptance criteria at 78%. Antimony, cadmium, and silver are considered estimated and flagged "J." The remaining analytes with MS recoveries out of acceptance criteria had MS and MSD recoveries that are high, indicating the sample data may be biased high. All ICP metals data for SDG J00084 are useable for decision-making purposes.

Also, in the ICP metals analysis, the LCS recovery for silicon is above the acceptance criteria at 144%. Associated sample results for silicon are likely biased high. Silicon is not a COPC for the 118-B-1 waste site. The data are useable for decision-making purposes.

In the TPH analysis, the LCS recovery is below the acceptance criteria at 54% and 53%, and the MS recovery is below the acceptance criteria at 49%. The sample results are considered estimated and flagged "J." The data are useable for decision-making purposes.

In the hexavalent chromium analysis, the MS recovery is below the acceptance criteria with a result of 62%. The sample results are considered estimated and flagged "J." The data are useable for decision-making purposes.

In the alpha-energy analysis for plutonium-239/240, the RPD calculated in the laboratory duplicate pair is above the acceptance criteria at 251%. The primary sample is detected just above the detection limit, and the duplicate sample is reported as the PQL. When the duplicate pair is near the detection limit, analysis of RPDs is not considered to be useful in the precision determination. The data are useable for decision-making purposes.

In the liquid scintillation counting analysis, the RPDs calculated for carbon-14, nickel-63, and tritium in the laboratory duplicate pair are above the acceptance criteria at 40.5%, 174.1%, and 161.4%, respectively. For carbon-14, the primary sample is reported as below the PQL, and the duplicate sample is detected just above the detection limit. For nickel-63 and tritium, each of the samples results is below the detection limit. When the duplicate pair is near the detection limit, analysis of RPDs is not considered to be useful in the precision determination. The data are useable for decision-making purposes.

In the gamma spectroscopy analysis, the RPDs calculated for silver-108m, cobalt-60, and europium-154 in the laboratory duplicate pair are above the acceptance criteria at 233%, 95.3%, and 49%, respectively. Each of the samples results are below the PQL. When the duplicate pair is near the detection limit, analysis of RPDs is not considered to be useful in the precision determination. The data are useable for decision-making purposes.

Bulk Asbestos SDGs

Bulk asbestos samples were collected from the overburden and BCL stockpiles, and reported in four SDGs. SDG 06I-3564-01 comprises 16 field samples taken from the overburden and BCL piles. SDG 06I-3658-01 comprises five field samples taken from the overburden piles. SDG 06I-3634-01 comprises 11 samples taken from the overburden and BCL piles. SDG 06I-3786-01 comprises one sample taken from the BCL piles (in addition to two samples from Area 1). No major or minor deficiencies were found in SDG 06I-3564-01, SDG 06I-3658-01, SDG 06I-3634-01, or SDG 06I-3786-01.

C1.2.3 Waste Staging/Sorting Area Footprint

The verification sample data collected from the waste staging pile area (SPA) were provided in six SDGs: SDG K0594, SDG J00103, SDG K0595, SDG K0597, SDG K0601, and SDG K0602. Verification sample data for bulk asbestos samples were provided in five SDGs: SDG 06-A-5594, SDG 06-A-5679, SDG 06I-5661-01, SDG 06I-5717-01, and SDG 06I-5735-01. Major deficiencies were identified in the analytical data set, rendering some data unacceptable for decision-making purposes. Major and minor deficiencies are discussed below.

SDG K0594

This SDG comprises six field samples collected from the SPA (J13HY3 – J13HY7 and J13J09). These samples were analyzed for ICP metals, mercury, hexavalent chromium, TPH, VOCs, SVOCs, PCBs, pesticides, herbicides, and by alpha spectroscopy, beta counting, gamma spectroscopy, and liquid scintillation counting. One field duplicate pair is included in this SDG (J13HY7/J13J09). A major deficiency was found in SDG K0594. Major and minor deficiencies are as follows:

In the VOC analysis, the samples were analyzed outside the required holding time. The samples were collected on 10/12/06, and were analyzed on 11/2/06. The holding time was exceeded by less than twice the limit, and the data are considered estimated and flagged "J". Estimated data are useable for decision-making purposes.

The common laboratory contaminant methylene chloride is detected in the MB at concentrations less than the CRQL. The data are not otherwise affected and are useable for decision-making purposes.

Five MS recoveries in the VOC analysis are above the acceptance criteria. The acetone MS recovery is 304%. The laboratory case narrative explained that the internal standard area criteria were not met for sample J13HY3 MS, and that the analysis of associated matrix spike duplicate fulfills the reanalysis requirement. The MSD recoveries for 1,1-dichloroethane and 1,2-dichloropropane are 143% and 139%, respectively. The chloroform and 1,1,1-trichloroethane MSDs are both 141%. The J13HY3 MSD was inadvertently analyzed out of tune time (12 hr), according to the laboratory case narrative. The data are useable for decision-making purposes.

In the SVOC analysis, five MS recoveries are below the acceptance criteria. The MSD recoveries for nitrobenzene, isophorone, and 2-methylnaphthalene are 48%, 57%, and 54%, respectively. The 1,2,4-trichlorobenzene MS and MSD are 49% and 47%, respectively. The data are considered estimated and flagged "J." Estimated data are useable for decision-making purposes.

The LCS recoveries for 2,4-dimethylphenol, 1,2,4-trichlorobenzene, and 2-methylnaphthalene are below the acceptance criteria at 48%, 53%, and 59%, respectively. The data are considered estimated and flagged "J." The data are useable for decision-making purposes.

The common laboratory contaminants bis(2-ethylhexyl)phthalate was detected in the MB at concentrations less than the CRQL. The data are not otherwise affected and are useable for decision-making purposes.

In the herbicides analysis, five MS recoveries are below the acceptance criteria. The MS recoveries for dichloroprop, 2,4-D, and 2,4,5-T are 29%, 25%, and 28%, respectively. The 2,4-DB MS and MSD are both 0%. The 2,4-DB sample results in SDG K0594 are rejected and flagged "R." In soil, the compound 2,4-DB has a half-life

of approximately seven days, and is broken down into 2,4-D. The 2,4-D analytical results were reported as non-detected, indicating the 2,4-DB sample concentrations are below the RAG concentrations. The rejected results for 2,4-DB do not impact completeness of the verification sampling data.

The LCS recovery for pentachlorophenol is below the acceptance criteria at 47%. The data are considered estimated and flagged "J." The data are useable for decision-making purposes.

In the pesticides analysis, six surrogate recoveries for five samples are above the acceptance criteria. However, the secondary criterion for surrogate recoveries is met for four of the five samples, as there is no more than one outlier for the samples. Both surrogate recoveries for sample J13HY5 exceeded the acceptance criteria. One pesticide is detected for sample J13HY5, however, it is detected below the CRQL, and therefore is already flagged "J" and considered estimated. The data are useable for decision-making purposes.

Also in the pesticides analysis, six MS recoveries are above the acceptance criteria, indicating a potential high bias. The aldrin MS recovery is 121%. The Endosulfan I MS recovery is 125%. The MS and MSD recovery for 4,4'-DDE are 138% and 126%, respectively. The 4,4'-DDD MS and MSD are 153% and 147%, respectively. The sample results for these analytes are reported as nondetected. The data are useable for decision-making purposes.

The LCS recovery for 4,4'-DDE is above the acceptance criterion at 125%. The high MB may indicate a high bias for 4,4'-DDE in samples, however, all sample results for 4,4'-DDE are below the PQL. The data are useable for decision-making purposes.

The analytes calcium, chromium, potassium, and sodium were reported in the MB at concentrations that are just above the PQLs, however, the sample results are greater than 5 times the MB concentration, and the data are useable for decision-making purposes.

The MS recoveries for four ICP metals (aluminum, iron, manganese, and silicon) are out of acceptance criteria. For aluminum, iron, and manganese, the spiking concentration is insignificant compared to the native concentration in the sample from which the MS was prepared. For these analytes, the deficiency in the MS is a reflection of the analytical variability of the native concentration rather than a measure of the recovery from the sample. To confirm quantitation, post digestion spikes and serial dilutions were prepared for all five analytes, and the results for the analytes are in the range of 87.6% and 99.4%. Silicon did not have mismatched spike and native concentrations in the original MS. The original MS recovery for silicon is 210.1%, indicating a potential high bias. Silicon is not a COPC for the 118-B-1 waste site. The data are useable for decision-making purposes.

Also in the ICP metals analysis, the LCS recovery for silicon is below the acceptance criterion at 41.5%. Associated sample results for silicon are likely biased low. Silicon is

not a COPC for the 118-B-1 waste site. The data are useable for decision-making purposes.

The RPD value for molybdenum is above the laboratory acceptance criteria at 36.0%. When the duplicate pair is near the detection limit, analysis of RPDs is not considered to be useful in the precision determination. The data are usable for decision-making purposes.

In the TPH analysis, the initial result is reported as non-detected for sample J13HY3. In the laboratory duplicate for the sample, TPH were detected just above the detection limit. The laboratory reported an RPD value for these results of 44.3%. However, when the duplicate pair is near the detection limit, analysis of RPDs is not considered to be useful in the precision determination. The data are useable for decision-making purposes.

SDG J00103

This SDG comprises one field sample (J13J10), a split of sample J13HY7. This sample was analyzed for ICP metals, mercury, hexavalent chromium, TPH, VOCs, SVOCs, PCBs, and by alpha spectroscopy, beta counting, gamma spectroscopy, and liquid scintillation counting. No major deficiencies were found in SDG J00103. Minor deficiencies are as follows:

In the VOC analysis, acetone and toluene are detected in the MB at concentrations less than the CRQL. The data are not affected and are useable for decision-making purposes.

The bromomethane LCS recovery is below the acceptance criteria with a value of 43%. The MS and MSD recoveries for bromomethane are below the acceptance criteria, at 31% and 28%, respectively. The bromomethane sample results for SDG J00103 are considered estimated and flagged "J." The data are useable for decision-making purposes.

The MS and MSD recoveries for acetone are out of acceptance criteria, at 158% and 217%, respectively, indicating a potential high bias. The sample analytical result was detected at a concentration less than the PQL. The data are useable for decision-making purposes.

In the pesticide analysis, the heptachlor LCS recovery is above the acceptance criterion with a value of 984%. The MS and MSD for heptachlor are also above the acceptance criteria, at 177% and 150%, respectively. These QC results indicate a potential high bias, however, the heptachlor data is reported as non-detected. The data are useable for decision-making purposes.

In the herbicide analysis, the dinoseb LCS recovery is below the acceptance criterion with a value of 69%. The MS and MSD for dinoseb are also out of acceptance criteria,

at 105% and 84%, respectively. The data may be considered estimated. The data are useable for decision-making purposes.

The analytes boron, calcium, selenium, silicon, sodium, and zinc are reported in the MB at concentrations that are below the CRQLs. The sample results are greater than 5 times the MB concentration, with the exception of selenium. The selenium sample results for SDG J00103 may be biased high, and are considered estimated with a "J" flag. Estimated data are useable for decision-making purposes.

In addition, the MS recoveries for eight ICP metals (aluminum, calcium, iron, manganese, lead, silicon, silver, and antimony) are out of acceptance criteria. For aluminum and iron, the spiking concentration is insignificant compared to the native concentration in the sample from which the MS was prepared. For these analytes, the deficiency in the MS is a reflection of the analytical variability of the native concentration rather than a measure of the recovery from the sample. Three of the analytes that did not have mismatched spike and native concentrations in the original MS has low MS recoveries. Antimony has MS and MSD recoveries of 40% and 41%, respectively. Silicon has MS and MSD recoveries of 42% and 34%, respectively. Silver has a MS recovery of 74%; however, the MSD is within acceptance criteria at 75%. These analytes are considered estimated and flagged "J." The remaining analytes with MS recoveries out of acceptance criteria had MS and MSD recoveries that are high, indicating the sample data may be biased high. All ICP metals data for SDG J00103 are useable for decision-making purposes.

In the alpha-energy analysis for uranium-235, uranium-238, plutonium-238 and plutonium-239/240, the RPDs calculated in the laboratory duplicate pair are above the acceptance criteria at 200%, 38.9%, 326% and 77.4%, respectively. The uranium-235 and plutonium-238 results are both below the detection limit. The plutonium-239/240 results are both detected just above the detection limit. The uranium-238 primary result is below the detection limit with the duplicate result just above the detection limit. When the duplicate pair is near the detection limit, analysis of RPDs is not considered to be useful in the precision determination. The data are useable for decision-making purposes.

In the liquid scintillation counting analysis, the RPDs calculated for plutonium-241, carbon-14, and nickel-63 in the laboratory duplicate pair are above the acceptance criteria at 124.6, 738.9%, and 43.6%, respectively. For plutonium-241 and carbon-14, each of the samples results is below the detection limit. The nickel-63 results were both detected slightly above the detection limit. When the duplicate pair is near the detection limit, analysis of RPDs is not considered to be useful in the precision determination. The data are useable for decision-making purposes.

In the gamma spectroscopy analysis, there was insufficient material to perform a duplicate analysis. The sample was recounted on a different detector to provide a laboratory duplicate. The RPDs calculated for silver-108m, cobalt-60, europium-152, and europium-154 in the laboratory duplicate pair, are above the acceptance criteria at 158.9%, 69.8%, 209.8, and 1295.8%, respectively. Each of the samples results are

below the PQL. When the duplicate pair is near the detection limit, analysis of RPDs is not considered to be useful in the precision determination. The data are useable for decision-making purposes.

The radionuclide americium-241 was reported in the MB at a concentration similar to the MDL. Sample J13J10 has an americium-241 result that is less than five times greater than the result reported for the MB, indicating that the sample may be biased high. The sample result is considered estimated and flagged "J." The data are useable for decision-making purposes.

SDG K0595

This SDG comprises four field samples collected from the SPA (J13HY8, J13HY9, J13J00, and J13J01). These samples were analyzed for ICP metals, mercury, hexavalent chromium, TPH, VOCs, SVOCs, PCBs, pesticides, herbicides, and by alpha spectroscopy, beta counting, gamma spectroscopy, and liquid scintillation counting. No major deficiencies were found in SDG K0595. Minor deficiencies are as follows:

In the VOC analysis, the samples were analyzed outside the required holding time. The samples were collected on 10/17/06, and were analyzed on 11/3/06. The holding time was exceeded by less than twice the limit, and the data are considered estimated and flagged "J." Estimated data are useable for decision-making purposes.

The common laboratory contaminants methylene chloride is detected in the MB at concentrations less than the CRQL. The data are not otherwise affected and are useable for decision-making purposes.

Also in the VOC analysis, 12 MS recoveries are above the acceptance criteria. The acetone MS and MSD recoveries are 523% and 504%, respectively. The MS and MSD recoveries for 2-butanone are 310% and 289%, respectively. The 4-methyl-2-pentanone MS and MSD recoveries are 186% and 179%, respectively. The 2-hexanone MS and MSD recoveries are 257% and 237%, respectively. The MS and MSD recoveries for 1,1,2,2-tetrachloroethane are 145% and 137%, respectively. The chloromethane and 1,2-dichloropropane MSDs are 181% and 131%, respectively. These recoveries indicate a potential high bias, however, the sample results are reported as non-detected. The data are useable for decision-making purposes.

In the metals analysis, the analytes beryllium, calcium, chromium, iron, magnesium, sodium, and zinc are reported in the MB at concentrations that are just above the PQLs, however, the sample results are greater than 5 times the MB concentration, and the data are useable for decision-making purposes. Molybdenum is reported in the MB at 0.18 mg/kg, above the PQL of 0.10 mg/kg. Molybdenum sample results for J13HY8, J13HY9, J13J00, and J13J01 are 0.37, 0.34, 0.34, and 0.42 mg/kg, respectively. The detected MB results indicate that the sample results may be biased high. The molybdenum sample results for these samples are considered estimated and flagged "J." The data are useable for decision-making purposes.

In addition, the MS recoveries for four ICP metals (aluminum, iron, manganese, and silicon) are out of acceptance criteria. For aluminum, iron, and manganese, the spiking concentration is insignificant compared to the native concentration in the sample from which the MS was prepared. For these analytes, the deficiency in the MS is a reflection of the analytical variability of the native concentration rather than a measure of the recovery from the sample. To confirm quantitation, post digestion spikes and serial dilutions were prepared for all five analytes, and the results for the analytes are in the range of 91.6% and 105%. Silicon did not have mismatched spike and native concentrations in the original MS. The original MS recovery for silicon is 49.6%. The silicon sample results are considered estimated and flagged "J." The data are useable for decision-making purposes.

Also in the ICP metals analysis, the LCS recovery for silicon is below the acceptance criteria at 52.5%. Associated sample results for silicon are likely biased low. The silicon sample results are considered estimated and flagged "J." Silicon is not a COPC for the 118-B-1 waste site.

The analyte hexavalent chromium is detected just above the detection limit in the laboratory duplicate result for sample J13HY8. In the initial result for the sample, hexavalent chromium was non-detected. The laboratory reported an RPD value for these results of 69.5%. However, when the duplicate pair is near the detection limit, analysis of RPDs is not considered to be useful in the precision determination. The data are useable for decision-making purposes.

In the SVOC analysis, the common laboratory contaminants bis(2-ethylhexyl)phthalate and di-n-butylphthalate were detected in the MB at concentrations less than the CRQL. The data are not otherwise affected and are useable for decision-making purposes.

In the alpha spectroscopy analysis, the RPD calculated for uranium-238 in the laboratory duplicate pair is above the acceptance criteria at 40%. Each sample result is just above the detection limit. When the duplicate pair is near the detection limit, analysis of RPDs is not considered to be useful in the precision determination. The data are useable for decision-making purposes.

SDG K0597

This SDG comprises four field samples collected from the SPA (J13J02 – J13J05). These samples were analyzed for ICP metals, mercury, hexavalent chromium, TPH, VOCs, SVOCs, PCBs, pesticides, herbicides, and by alpha spectroscopy, beta counting, gamma spectroscopy, and liquid scintillation counting. No major deficiencies were found in SDG K0597. Minor deficiencies are as follows:

In the VOC analysis, the common laboratory contaminant methylene chloride was detected in the MB at concentrations less than the CRQL. The data are not affected and are useable for decision-making purposes.

MS recoveries for two VOC analyses are above the acceptance criteria. The MS and MSD recoveries for acetone are 485% and 415%, respectively. The 2-butanone MS and MSD recoveries are 267% and 236%, respectively. All other sample results are below the CRQL. According to the laboratory sample discrepancy report, the MS and MSD samples for acetone and 2-butanone may have been double-spiked. The data are useable for decision-making purposes.

In the SVOC analysis, the common laboratory contaminants bis(2-ethylhexyl)phthalate and di-n-butylphthalate were detected in the MB at concentrations less than the CRQL. The data are not otherwise affected and are useable for decision-making purposes.

For sample J13J04, four SVOC surrogate recoveries were above the acceptance criteria, indicating a potential high bias. All SVOC results for sample J13J04 are below the CRQL. The laboratory sample discrepancy report stated that the sample may have been concentrated, with the observation that the sample caps didn't fit tightly, as a probable cause for the high surrogate recoveries. The data are useable for decision-making purposes.

The analytes beryllium, calcium, chromium, iron, magnesium, molybdenum, sodium, and zinc are reported in the MB at concentrations that are just above the PQLs. The sample results are greater than 5 times the MB concentration, with the exception of molybdenum, which may be biased high. The molybdenum sample results are considered estimated and flagged "J." The data are useable for decision-making purposes.

In addition, the MS recoveries for five ICP metals (aluminum, iron, manganese, antimony, and silicon) are out of acceptance criteria. For aluminum, iron, and manganese, the spiking concentration is insignificant compared to the native concentration in the sample from which the MS was prepared. For these analytes, the deficiency in the MS is a reflection of the analytical variability of the native concentration rather than a measure of the recovery from the sample. To confirm quantitation, post digestion spikes and serial dilutions were prepared for all five analytes, and the results for the analytes are in the range of 95.4% and 103.4%. Antimony and silicon did not have mismatched spike and native concentrations in the original MS. The original MS recovery for silicon is 206.5%, indicating a potential high bias. The original MS recovery for antimony is 57%, and the antimony sample results are considered estimated and flagged "J." Estimated data are useable for decision-making purposes.

Also, in the ICP metals analysis, the LCS recovery for silicon is below the acceptance criteria at 52.5%. Associated sample results for silicon are likely biased low. Silicon is not a COPC for the 118-B-1 waste site. The data are useable for decision-making purposes.

In the alpha-spectroscopy analysis, the RPD calculated for uranium-233/234 in the laboratory duplicate pair is above the acceptance criteria at 37%. Each sample result is

just above the detection limit. When the duplicate pair is near the detection limit, analysis of RPDs is not considered to be useful in the precision determination. The data are useable for decision-making purposes.

SDG K0601

This SDG comprises one field sample from the SPA (J13J06). This sample was analyzed for ICP metals, mercury, hexavalent chromium, TPH, VOCs, SVOCs, PCBs, pesticides, herbicides, and by alpha spectroscopy, beta counting, gamma spectroscopy, and liquid scintillation counting. SDG K0601 was submitted for third-party validation. No major deficiencies were found in SDG K0601. Minor deficiencies are as follows:

In the VOC analysis, methylene chloride is reported in the method blank at a concentration less than the CRQL. Third-party validation qualified all methylene chloride results in the SDG K0601 as undetected and flagged "U." The data are not otherwise affected and are useable for decision-making purposes.

Also in the VOC analysis, the MS recoveries for acetone and 2-butanone are above the acceptance criteria. The acetone MS and MSD recoveries are 377% and 318%, respectively. The 2-butanone MS recovery is 205%. The laboratory sample discrepancy report stated that the matrix spike may have inadvertently been doubled. All associated sample results are below the CRQL. The data are useable for decision-making purposes.

In the SVOC analysis, hexachloroethane and the common laboratory contaminant bis(2-ethylhexyl)phthalate were detected in the MB at concentrations less than the CRQL. Third-party validation qualified all hexachloroethane and bis(2-ethylhexyl)phthalate results in the SDG K0601 as undetected and flagged "U". The data are not otherwise affected and are useable for decision-making purposes.

In the herbicide analysis, the MS recovery for dalapon is below the acceptance criteria at 23%, and the RPD for dalapon is below the acceptance criteria at 58%. Third-party validation qualified all dalapon results in the SDG K0601 as estimated and flagged "J." The data are useable for decision-making purposes.

The RPD for 2,4-D is below the acceptance criterion at 36%. Third-party validation qualified all 2,4-D results in the SDG K0601 as estimated and flagged "J." The data are useable for decision-making purposes.

All of the toxaphene data in SDG K0601 was qualified by third-party validation as estimated with "J" flags, due to lack of a MS, MSD, or LCS analysis for the analyte. Estimated, or "J"-flagged, data are acceptable for decision-making purposes.

In the metals analysis, the MS recoveries for six ICP metals (aluminum, calcium, iron, manganese, antimony, and silicon) are out of acceptance criteria. For aluminum, iron, and manganese, the spiking concentration is insignificant compared to the native

concentration in the sample from which the MS was prepared. For these analytes, the deficiency in the MS is a reflection of the analytical variability of the native concentration rather than a measure of the recovery from the sample. To confirm quantitation, post digestion spikes and serial dilutions were prepared for all five analytes, and the results for the analytes are in the range of 102.8% and 108.8%. Antimony, silicon, and calcium did not have mismatched spike and native concentrations in the original MS. The original MS recoveries for antimony, silicon, and calcium are 52.6%, 145.6%, and 64.7%, respectively. Third party validation qualified all calcium, antimony, and silicon results in the SDG K0601 as estimated and flagged "J." Estimated, or "J"-flagged, data are considered acceptable for the intended use of the data. The data are useable for decision-making purposes.

The analytes aluminum, beryllium, calcium, chromium, lead, silicon, and zinc were reported in the MB at concentrations that are just above the PQLs. The sample results are greater than 5 times the MB concentration. The data are useable for decision-making purposes.

Also, in the ICP metals analysis, the LCS recovery for silicon is below the acceptance criterion at 31.2%. Associated sample results for silicon are likely biased low. Silicon is not a COPC for the 118-B-1 waste site.

The RPD values for arsenic (39.3%) and molybdenum (42.4%) are above the laboratory acceptance criteria. When the duplicate pair is near the detection limit, analysis of RPDs is not considered to be useful in the precision determination. However, the RPD value for nickel is 90.1%, and all nickel results in SDG K0601 were qualified as estimated and flagged "J" by third-party validation. The data are usable for decision-making purposes.

In the liquid scintillation counting analysis, the MS for tritium was not performed. All tritium results in SDG K0601 were qualified as estimated and flagged "J" by third-party validation. The data are usable for decision-making purposes.

SDG K0602

This SDG comprises two field samples from the SPA (J13J07 and J13J08). These samples were analyzed for ICP metals, mercury, hexavalent chromium, TPH, VOCs, SVOCs, PCBs, pesticides, herbicides, and by alpha spectroscopy, beta counting, gamma spectroscopy, and liquid scintillation counting. No major deficiencies were found in SDG K0602. Minor deficiencies are as follows:

In the VOC analysis, methylene chloride is reported in the method blank at a concentration less than the CRQL. The data are not otherwise affected and are useable for decision-making purposes.

Also in the VOC analysis, five MS recoveries are outside the acceptance criteria. The MS recovery for 1,1,2,2-tetrachloroethane is 63%, the MSD recovery is within the

acceptance criteria. The acetone, 2-butanone, 4-methyl-2-pentanone, and 2-hexanone MSD recoveries are 538%, 301%, 174%, and 243%, respectively. These recoveries indicate a potential high bias. However, all associated sample results are below the CRQLs. The data are useable for decision-making purposes.

In the SVOC analysis, the common laboratory contaminants bis(2-ethylhexyl)phthalate and di-n-butylphthalate are detected in the MB at a concentration less than the CRQL. The data are not affected and are useable for decision-making purposes.

In the herbicide analysis, the surrogate recovery for sample J13J07 is above the acceptance criteria. All sample results are undetected or detected below the CRQL, and, therefore, the detected results are already flagged "J" and considered estimated. The data are useable for decision-making purposes.

In the pesticide analysis, both surrogate recoveries for sample J13J08 are above the acceptance criteria. All sample results are undetected or detected below the CRQL, and therefore the detected results are already flagged "J" and considered estimated. The data are useable for decision-making purposes.

In the metals analysis, the MS recoveries for six ICP metals (aluminum, calcium, iron, manganese, antimony, and silicon) are out of acceptance criteria. For aluminum, iron, manganese, and silicon, the spiking concentration is insignificant compared to the native concentration in the sample from which the MS was prepared. For these analytes, the deficiency in the MS is a reflection of the analytical variability of the native concentration rather than a measure of the recovery from the sample. To confirm quantitation, post digestion spikes and serial dilutions were prepared for all five analytes, and the results for the analytes are in the range of 95.9% and 99.6%. Antimony and calcium did not have mismatched spike and native concentrations in the original MS. The original MS recovery for antimony is 51.9%. The original MS recovery for calcium is 70.2%. The antimony and calcium sample results are considered estimated and flagged "J." The data are useable for decision-making purposes.

The analytes aluminum, beryllium, calcium, chromium, lead, sodium, silicon, and zinc were reported in the MB at concentrations that are slightly above the PQLs. The sample results are greater than 5 times the MB concentration. The data are useable for decision-making purposes.

Also in the ICP metals analysis, the LCS recovery for silicon is below the acceptance criterion at 31.2%. Associated sample results for silicon are likely biased low. Silicon is not a COPC for the 118-B-1 waste site. The data are useable for decision-making purposes.

Finally, the RPD value for arsenic is above the laboratory acceptance criterion, with a result of 32.6%. When the duplicate pair is near the detection limit, analysis of RPDs is not considered to be useful in the precision determination. The data are usable for decision-making purposes.

SDG K0679

This SDG comprises one field sample (J14BH3) collected from the SPA. This sample was analyzed for tritium only. No major or minor deficiencies were found in SDG K0679.

Bulk Asbestos SDGs

Bulk asbestos samples were collected from the SPA, and reported in five SDGs. SDG 06-A-5594 comprises six field samples, SDG 06-A-5679 comprises four field samples, SDG 06I-5661-01 comprises four samples, SDG 06I-5717-01 comprises one sample, and SDG 06I-5735-01 comprises two samples. No major or minor deficiencies were found in SDG 06-A-5594, SDG 06-A-5679, SDG 06I-5661-01, SDG 06I-5717-01 or SDG 06I-5735-01.

C1.2.3 Focused Samples

Focused samples were taken from the 118-B-1 waste site and verification sample data are provided in six SDGs: SDG K0470, SDG K0623, SDG K0638, SDG K0486, SDG K0783, and SDG K0853. The deficiencies for SDG K0638 and K0486 are discussed in the DQA section covering the Area 1 through 7 subunits. The deficiencies for SDG K0470, SDG K0623, SDG K0730, and SDG K0853 are discussed below.

SDG K0470

This SDG comprises nine focused field samples (J12R24 – J12R29, J12R31, J12R32, and J12R34). These samples were analyzed for ICP metals, mercury, hexavalent chromium, TPH, VOCs, SVOCs, PCBs, pesticides, herbicides, and by gamma spectroscopy. No major deficiencies were found in SDG K0594. Minor deficiencies are as follows:

In the pesticides analysis, 13 of 40 MS recoveries are below the acceptance criteria. The MS and MSD recovery for alpha-benzenehexachloride are 10% and 43%, respectively. The MS and MSD recovery for gamma-benzenehexachloride (lindane) are 13% and 44%, respectively. The MS and MSD recovery for delta-benzenehexachloride are 20% and 38%, respectively. The heptachlor MS is 56%. The aldrin MS is 31%. The MS and MSD recovery for 4,4'-DDE are 48% and 55%, respectively. The endrin MS, endrin aldehyde MS, and endosulfan sulfate MS are 36%, 22%, and 49%, respectively. The sample results for these analytes are considered estimated and flagged "J." The data are useable for decision-making purposes.

In the VOC analysis, methylene chloride is reported in the method blank at a concentration of 11 ug/kg, above the PQL of 10 ug/kg. The J12R24 sample result is reported at 16 ug/kg, slightly above the PQL. The sample result for methylene chloride

is likely biased high, and is considered estimated with a "J" flag. Estimated data are useable for decision-making purposes.

In the SVOC analysis, the common laboratory contaminant bis(2-ethylhexyl)phthalate is detected in the MB at a concentration less than the CRQL. The data are not otherwise affected and are useable for decision-making purposes.

In the herbicides analysis, six of 20 MS recoveries are below the acceptance criteria. The MS and MSD recovery for picloram are 16% and 29%, respectively. The MS recovery for dichloroprop, 2,4-D, 2,4,5-T, and 2,4-DB MS are 21%, 22%, 22%, and 27%, respectively. The sample results for these analytes are considered estimated and flagged "J." The data are useable for decision-making purposes.

The LCS for picloram is below acceptance criteria with a recovery of 33%. The sample results for these analytes are considered estimated and flagged "J." The data are useable for decision-making purposes.

In the metals analysis, the MS recoveries for six ICP metals (aluminum, calcium, iron, manganese, antimony, and silicon) are out of acceptance criteria. For aluminum, calcium, iron, manganese, and silicon, the spiking concentration is insignificant compared to the native concentration in the sample from which the MS was prepared. For these analytes, the deficiency in the MS is a reflection of the analytical variability of the native concentration rather than a measure of the recovery from the sample. To confirm quantitation, post digestion spikes and serial dilutions were prepared for all five analytes, and the results for the analytes are in the range of 95.9% and 99.6%. Antimony did not have mismatched spike and native concentrations in the original MS. The original MS recovery for antimony is 40.6%, and the antimony data are considered estimated and flagged "J." Estimated data are useable for decision-making purposes.

Also in the ICP metals analysis, the LCS recovery for silicon is below the acceptance criteria at 57.0%. Associated sample results for silicon are likely biased low. The data are useable for decision making purposes. Silicon is not a COPC for the 118-B-1 waste site.

The RPD values for boron and sodium are above the laboratory acceptance criteria, both with an RPD of 31.7%. When the duplicate pair is near the detection limit, analysis of RPDs is not considered to be useful in the precision determination. The data are usable for decision-making purposes.

Metals analysis was added to SDG K0470 for samples J12R34 and J12R28. The MS recoveries for eight ICP metals (aluminum, calcium, iron, magnesium, manganese, lead, antimony, and silicon) are out of acceptance criteria. For aluminum, calcium, iron, manganese, and silicon, the spiking concentration is insignificant compared to the native concentration in the sample from which the MS was prepared. For these analytes, the deficiency in the MS is a reflection of the analytical variability of the native concentration rather than a measure of the recovery from the sample. To confirm quantitation, post digestion spikes and serial dilutions were prepared for all five

analytes, and the results for the analytes are in the range of 95.9% and 99.6%. Antimony, magnesium, and lead did not have mismatched spike and native concentrations in the original MS. The original MS recovery for magnesium was high, with a result of 131.8%. The original MS recovery for lead and antimony are 73.9% and 43.3%, respectively. The sample results for lead and antimony for samples J12R34 and J12R28 are considered estimated and flagged "J." The data are useable for decision-making purposes.

Also in the ICP metals analysis for samples J12R34 and J12R28, the LCS recovery for silicon is below the acceptance criteria at 38.9%. Associated sample results for silicon are likely biased low. Silicon is not a COPC for the 118-B-1 waste site. The data are useable for decision-making purposes.

The analytes calcium, cadmium, chromium, potassium, magnesium, molybdenum, sodium, silicon, and vanadium are reported in the MB for samples J12R34 and J12R28 at concentrations that are just above the PQLs. The sample results are greater than 5 times the MB concentration, with the exception of cadmium and molybdenum in sample J12R28. The cadmium result was reported as a nondetect, and the molybdenum was reported at a concentration just above the PQL. The molybdenum MB result indicates the sample J12R28 molybdenum result may be biased high. The sample result is considered estimated and flagged "J." Estimated data are useable for decision-making purposes.

Finally, the RPD values for boron, cadmium, chromium, molybdenum, and lead for samples J12R34 and J12R28 are above the laboratory acceptance criteria, with RPDs of 31.6%, 64.8%, 43.4%, 101.8%, and 31.0%, respectively. When the duplicate pair is near the detection limit, analysis of RPDs is not considered to be useful in the precision determination. The data are usable for decision-making purposes.

SDG K0623

This SDG comprises three field samples (J13P84, J13P85, and J13NX4). These samples were analyzed for ICP metals only. No major deficiencies were found in SDG K0623. Minor deficiencies are as follows:

In the metals analysis, the MS recoveries for five ICP metals (aluminum, iron, manganese, antimony, and silicon) are out of acceptance criteria. For aluminum, iron, and manganese, the spiking concentration is insignificant compared to the native concentration in the sample from which the MS was prepared. For these analytes, the deficiency in the MS is a reflection of the analytical variability of the native concentration rather than a measure of the recovery from the sample. To confirm quantitation, post digestion spikes and serial dilutions were prepared for all five analytes, and the results for the analytes are in the range of 98.8 and 105.7%. Antimony and silicon did not have mismatched spike and native concentrations in the original MS. The original MS recovery for silicon is 174.6% indicating a potential high bias. The original MS recovery

for antimony is 58.7%. The sample results for antimony are considered estimated and flagged "J." Estimated data are useable for decision-making purposes.

The analytes barium, calcium, potassium, sodium, silicon, and zinc are reported in the MB at concentrations that are just above the PQLs. The sample results are greater than 5 times the MB concentration. The data are useable for decision-making purposes.

Also, in the ICP metals analysis, the LCS recovery for silicon is below the acceptance criteria at 17.3%. Silicon is not a COPC for the 118-B-1 waste site. The data are usable for decision-making purposes.

Finally, the RPD value for arsenic is above the laboratory acceptance criteria, with a result of 56.2%. When the duplicate pair is near the detection limit, analysis of RPDs is not considered to be useful in the precision determination. The data are usable for decision-making purposes.

SDG K0730

This SDG comprises three field samples (J14L38, J13L39, and J14JJ3). These samples were analyzed for ICP metals, by alpha spectroscopy, gamma spectroscopy, and liquid scintillation counting. Major and minor deficiencies were found in SDG K0730, as follows:

In the metals analysis, the MS recoveries for five ICP metals (aluminum, iron, mercury, antimony, and silicon) are out of acceptance criteria. For aluminum, iron, and mercury, the spiking concentration is insignificant compared to the native concentration in the sample from which the MS was prepared. For these analytes, the deficiency in the MS is a reflection of the analytical variability of the native concentration rather than a measure of the recovery from the sample. To confirm quantitation, post digestion spikes and serial dilutions were prepared for all five analytes, and the results for the analytes are in the range of 80.4 and 120.0%. Antimony and silicon did not have mismatched spike and native concentrations in the original MS. The original MS recoveries for silicon and antimony are 3.7% and 49.3%, respectively. Also, the LCS recovery for silicon is below the acceptance criteria at 53.4%. As the MS recovery is below 10% and the LCS recover did not meet the acceptance criteria, the sample results for silicon for SDG K0783 are qualified as rejected, and flagged with an "R." The sample results for antimony are considered estimated and flagged "J." Estimated data are useable for decision-making purposes.

The analytes aluminum, barium, calcium, chromium, iron, magnesium, manganese, silicon, and zinc are reported in the MB at concentrations that are just above the PQLs. The sample results are greater than 5 times the MB concentration. The data are useable for decision-making purposes.

Finally, the RPD value for silicon is above the laboratory acceptance criteria, with a result of 32.6%. The silicon sample results for SDG K0783 are qualified as rejected,

and flagged with an "R," as multiple QC criteria are not met for the analyte. Silicon is not a COPC for the 118-B-1 waste site, and the rejected silicon data do not impact completeness of the verification sampling data.

SDG K0853

This SDG comprises two field samples (J14Y75 and J14Y76). These samples were analyzed by alpha spectroscopy, gamma spectroscopy, and liquid scintillation counting. No major deficiencies were found in SDG K0853. Minor deficiencies are as follows:

The MDA for plutonium-241 for sample J14Y75 is greater than the required MDA of 15 pCi/g. The results for sample J14Y75 are reported as below the detection limit. The J14Y75 sample results for plutonium-241 are considered estimated and flagged "J." Estimated data are useable for decision-making purposes.

SDG K0783

This SDG comprises one focused field soil sample (J152M1). The sample was analyzed for ICP metals, mercury, and tritium by liquid scintillation counting. A major deficiency was found in SDG K0783. Major and minor deficiencies are as follows:

In the ICP metals analysis, the LCS recovery for silicon is below the acceptance criteria at less than 1%. As the LCS recovery is less than 10%, the silicon sample results for SDG K0783 are qualified as "rejected", and flagged with an "R." Silicon is not a COPC for the 118-B-1 waste site, and the rejected silicon data do not impact completeness of the verification sampling data.

The analytes barium, calcium, magnesium, sodium, and silicon are reported in the MB at concentrations that are below the CRQLs. However, the sample results are greater than 5 times the MB concentration, and the data are useable for decision-making purposes.

In addition, the MS recoveries for six metals (aluminum, iron, manganese, mercury, antimony, and silicon) are out of acceptance criteria. For most of these analytes, the spiking concentration is insignificant compared to the native concentration in the sample from which the MS was prepared. For these analytes, the deficiency in the MS is a reflection of the analytical variability of the native concentration rather than a measure of the recovery from the sample. To confirm quantitation, post digestion spikes and serial dilutions were prepared, and the results for the analytes are in the range of 88.1% to 100.7%. Antimony had a native concentrations in the original MS below the detection limit. The original MS recovery for antimony is 43.4%. The antimony results in SDG K0783 are considered estimated and flagged "J." The data are useable for decision-making purposes.

The RPDs calculated for mercury and nickel in the laboratory duplicate pair (sample J152M1, and J152M1 [duplicate]), are above the acceptance criteria with the value of

55.2% and 33.7%, respectively. Elevated RPDs in environmental soil samples are attributed to heterogeneities in the sample matrix and not to deficiencies in the analytical methodologies. The data are useable for decision-making purposes.

C.1.3 FIELD QUALITY ASSURANCE/QUALITY CONTROL

RPD evaluations of main sample(s) versus the laboratory duplicate(s) are routinely performed and reported by the laboratory. Any deficiencies in those calculations are reported by SDG in the previous sections.

Field QA/QC measures are used to assess potential sources of error and cross contamination of samples that could bias results. Field QA/QC samples, listed in the field logbooks (WCH 2007a, 2007b), are summarized in Table 1. The main and QA/QC sample results are presented with the calculations in Appendix C.

Table 1. Field Quality Assurance/Quality Control Samples.

Area	Main Sample	Duplicate Sample	Split Sample
Area 1 A1	J12X44	J12X48	J12X49
Area 3 A3	J12X56	J12X58	J12X60
Area 4 A1	J12X61	J12X65	J12X66
BCL D4	J12WL4	J12WL5	--
BCL B8	J12WL6	--	J12WW0
SPA B5	J13HY7	J13J09	J13J10

Field duplicate samples are collected to provide a relative measure of the degree of local heterogeneity in the sampling medium, unlike laboratory duplicates that are used to evaluate precision in the analytical process. The field duplicates are evaluated by computing the RPD of the duplicate samples for each analyte. Only analytes with values above five times the detection limits for both the main and duplicate samples are compared. The 95% upper confidence limit (UCL) calculation brief in Appendix C provides details on duplicate pair evaluation and RPD calculation. The data are suitable for the intended purpose of cleanup verification.

Split samples are collected to provide a relative measure of the variability in the sampling, sample handling, and analytical techniques used by commercial laboratories. The field main and split samples are evaluated by computing the RPD of the split samples for each analyte to determine the usability of the verification data. The U.S. Environmental Protection Agency Contract Laboratory Program duplicate sample comparison methodology, *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review* (EPA 1994), is used as an initial test of the data from the splits. Only analytes that had values above five times the CRQL for both the

main and split sample were compared. The 95% UCL calculation brief in Appendix C provides details on split pair RPD calculation. The RPD acceptance criteria for project-split samples is $\leq 30\%$ (less than or equal to 30%).

Radionuclides. The RPDs calculated for cesium-137 in the Area 3 A3 field duplicate (J12X58) and the Area 3 A3 split sample (J12X60) are above the acceptance criterion (30%) at 64% and 61%, respectively. The RPD calculated for europium-152 in the Area 1 A1 duplicate (J12X48) analysis is above the acceptance criterion at 59%. The RPDs calculated for potassium-40 in the Area 4 A1 (J12X61), the BCL D4 (J12WL5), and the SPA B5 (J13J09) duplicates are above the acceptance criterion (30%) at 67%, 58%, and 67%, respectively. The RPDs calculated for radium-226 in the BCL D4 (J12WL5) and the SPA B5 (J13J09) duplicates are above the acceptance criterion (30%) at 56%, and 42%, respectively. Elevated RPDs, such as these, in the analysis of environmental soil samples, are largely attributed to heterogeneities in the soil matrix and only in small part attributed to precision and accuracy issues at the laboratory. The data are useable for decision-making purposes.

Nonradionuclides. The RPDs calculated for aluminum in the Area 4 A1 (J12X66), BCL B8 (J12WW0), and SPA B5 (J13J10) split samples are above the acceptance criterion (30%) at 38%, 39%, and 47%, respectively. The RPD calculated for barium in the Area 4 A1 (J12X66) split analysis is above the acceptance criterion at 41%. The RPD calculated for calcium in the Area 4 A1 (J12X66) split analysis is above the acceptance criterion at 36%. The RPDs calculated for chromium in the Area 3 A3 (J12X60) and the SPA B5 (J13J10) splits are above the acceptance criterion (30%) at 34% and 44%, respectively. The RPD calculated for cobalt in the Area 1 A1 (J12X49) split is above the acceptance criterion (30%) at 36%. The RPD calculated for magnesium in the SPA B5 (J13J10) split sample is above the acceptance criterion (30%) at 34%. The RPDs calculated for silicon in the Area 4 A1 (J12X66), BCL B8 (J12WW0), and SPA B5 (J13J10) split samples are above the acceptance criterion (30%) at 38%, 103%, and 62%, respectively. The RPD calculated for sodium in the Area 1 A1 (J12X49) split analysis is above the acceptance criterion at 54%. The RPDs calculated for vanadium in the Area 1 A1 (J12X49) and the SPA B5 (J13J10) splits are above the acceptance criterion (30%) at 39% and 33%, respectively. Elevated RPDs, such as these, in the analysis of environmental soil samples, are largely attributed to heterogeneities in the soil matrix and only in small part attributed to precision and accuracy issues at the laboratory. The data are useable for decision-making purposes.

RPDs for the remaining radionuclides and nonradionuclide analytes are not calculated because an evaluation of the data shows the analytes are not detected in both the main and duplicate sample at more than 5 times the target detection limit (TDL). RPDs of analytes detected at low concentrations (less than five times the detection limit) are not considered to be indicative of the analytical system performance. The data are useable for decision-making purposes.

A secondary check of the data variability is used when one or both of the samples being evaluated (main and duplicate) is less than 5 times the TDL, including undetected

analytes. In these cases, a control limit of ± 2 times the TDL is used (Appendix C) to indicate that a visual check of the data is required by the reviewer. For the Area 3 duplicate sample (J12X58), the radium-226 results exceeded this check. The Area 4 A4 (J12X65) duplicate sample cesium-137, radium-226, radium-228, and 4,4'-DDE results exceeded this check. The Area 4 A4 split sample (J12X66) cesium-137, boron, chromium, cobalt, sodium, arochlor-1254, and 4,4'-DDE results exceeded this check. The BCL D4 duplicate sample (J12WL5) radium-228 result exceeded this check. The BCL B8 split sample (J12WW0) cobalt-60, sodium, arochlor-1254, arochlor-1260, and 4,4'-DDT results also exceeded this check. The SPA B5 duplicate sample (J13J09) radium-228 results exceeded this check. The SPA B5 split sample (J13J10) boron and cobalt results exceeded this check. All of these results are attributed to heterogeneities in the sample matrix from which the samples were collected. A visual inspection of all of the data is also performed. No additional major or minor deficiencies are noted. The data are useable for decision-making purposes.

C1.4 SUITABILITY OF DATA

Limited, random, or sample matrix-specific influenced batch QC issues, such as those discussed above, are a potential for any analysis. The number and types seen in these data sets are within expectations for the matrix types and analyses performed. The DQA review of the 118-B-1 verification sampling data found that the analytical results are accurate within the standard errors associated with the analytical methods, sampling, and sample handling. The DQA review for 118-B-1 waste site concludes that the reviewed data are of the right type, quality, and quantity to support the intended use. Detection limits, precision, accuracy, and sampling data group completeness were assessed to determine if any analytical results should be rejected as a result of QA and QC deficiencies. The analytical data were found acceptable for decision-making purposes, with the exception of the sample results reported for silicon within SDG K0486, SDG K0491, and K0730, picloram within SDG K0471, and 2,4-DB in K0594. The verification sample analytical data are stored in the ENRE project-specific database prior to being submitted for inclusion in the HEIS database. The verification sample analytical data are also summarized in the 95% UCL calculation in Appendix C.

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