U.S. Army
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Luckey Site
Luckey, Ohio

FINAL
Remedial Investigation Report
Volume III (Appendices)

Prepared for:
U.S. Army Corps of Engineers
Buffalo District

Prepared by:
Science Applications International Corporation
Dublin, Ohio

Managed by:
Montgomery Watson

Total Environmental Restoration Contract
DACW27-97-D-0015 Task Order 0009
U.S. Army Corps of Engineers
Louisville District

September 2000

MONTGOMERY WATSON
Serving The World's Environmental Needs

SAIC
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contributed to the preparation of this document and should not be considered an eligible contractor for its review.

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ACRONYMS AND ABBREVIATIONS

AASHO	American Association of State Highway Officials
ACGIH	American Conference of Governmental Industrial Hygienists
ADD	average daily dose
AEC	Atomic Energy Commission
AMSL	above mean sea level
ANL	Argonne National Laboratories
ANSI	American National Standards Institute
ARAR	Applicable or Relevant and Appropriate Requirement
ASTM	American Society for Testing and Materials
ATSDR	Agency for Toxic Substances Disease Registry
ATV	all terrain vehicle
AUF	area use factor
BAF	bioaccumulation factor
BBC	Brush Beryllium Company
BCF	bioaccumulation concentration
BeOH	beryllium hydroxide
bgs	below ground surface
bls	below land surface
BMW	background monitoring well
BNI	Bechtel National, Inc
BRA	baseline risk assessment
BZ	breathing zone
CBD	chronic beryllium desease
CDC	Centers for Disease Control and Prevention
CEC	cation exchange capacity
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
cm^2	square centimeters
COCs	constituents of concern
COPCs	constituents of potential concern
CPECs	constituents of potential ecological concern
cpm	counts per minute
CSF	cancer slope factor
CT	central tendency
DACs	derived air concentrations
DAD	dermal absorbed dose
DAF	dilution attenuation factor
DCF	dose conversion factor
DCGL	Derived Concentration Guidance Level
DOD	Department of Defense
DOE	Department of Energy
DPC	Defense Plant Corporation
dpm	disintegrations per minute
DQA	data quality assessment
DQI	data quality indicators
DQO	Data Quality Objective
EDD	electronic data deliverable
EDQL	Ecological Data Quality Level
EEQ	environmental effects quotient
Eh	redox potential
ELCR	excess lifetime cancer risk

ACRONYMS AND ABBREVIATIONS

EM	electromagnetic
EPA	Environmental Protection Agency
EPC	exposure point concentration
EPI	Environmental Physics Incorporated
ERA	ecological risk assessment
ESA	Endangered Species Act
EU	exposure unit
FA	functional area
FBI	family biotic index
FID	flame-ionization detector
FIDLER	field instrument for detecting low-energy radiation
foc	fraction of organic carbon
FOV	fields of view
FP	Field Procedure
FS	Feasibility Study
ft	foot or feet
FUSRAP	Formerly Utilized Sites Remedial Action Program
GEL	General Engineering Laboratories
GI	gastrointestinal
GPS	Global Positioning System
GPR	ground penetrating radar
GSA	General Services Administration
H&S	Health and Safety
ha	hectares
HEAST	Health Effects and Assessment Summary Tables
HELP	Huron/Erie Lake Plain
HEPA	High Efficiency Particulate Air
HHRA	Human Health Risk Assessment
HI	hazard index
HQ	hazard quotient
HVAC	heating, ventilating, and air conditioning
IA	Investigation Area
IAEA	International Atomic Energy Agency
IDL	instrument detection limit
IEUBK	Integrated Exposure Uptake Biokinetic Model
ILCRs	incremental lifetime cancer risk
IRIS	Integrated Risk Information System
ISGS	in situ gamma-ray spectroscopy
kg	kilograms
LCS	laboratory control sample
LCSD	laboratory control sample duplicate
LIBS	Laser Induced Breakdown Spectroscopy
LOAEL	lowest observed adverse effects level
LOSA	Lake Ontario Storage Area
m^2	square meters
MARRSIM	Multi-Agency Radiation Survey and Site Investigation Manual
MCE	mixed cellulose ester
MCL	maximum contaminant level
MED	Manhattan Engineering District
mg/kg	milligrams/kilogram
mm	millimeter

ACRONYMS AND ABBREVIATIONS

MOA	Memorandum of Agreement
MS/MSD	matrix spike/matrix spike duplicate
MW	monitoring well
NARA	National Archive and Records Administration
NCEA	National Center for Environmental Assessment
NCP	National Contingency Plan
NEPA	National Environmental Policy Act
NESHAPS	National Emissions Standards for Hazardous Air Pollutants
NIOSH	National Institute for Occupational Safety and Health
NOAA	National Oceanic and Atmospheric Administration
NOAEL	no observed adverse effect level
NPDES	National Pollution Discharge Elimination System
NRC	Nuclear Regulatory Commission
NYCRR	New York Central Railroad
Ohio DOH	Ohio Department of Health
ODNR	Ohio Department of Natural Resources
Ohio EPA	Ohio Environmental Protection Agency
OMW	off-site monitoring well
ORNL	Oak Ridge National Laboratory
OSHA	Occupation Safety and Health Administration
OSWER	Office of Solid Waste and Emergency Response
OVA	Organic Vapor Analyzer
PACM	presumed asbestos-containing material
PAH	polyaromatic hydrocarbon
PCBs	polychlorinated biphenyls
PCE	tetrachloroethene
PCOC	potential constituent of concern
pCi	picocuries
pCi/g	picocuries per gram
pCi/L	picocuries per liter
PE	performance evaluation
PEL	Permissible Exposure Limits
PID	photoionization detector
ppb	parts per billion
PPE	Personal Protective Equipment
ppm	parts per million
PRGs	Preliminary Remediation Goals
PRP	potentially responsible party
PVC	polyvinyl chloride
PZ	piezometer
QA	Quality Assurance
QC	Quality Control
QAPP	quality assurance project plan
Ra	radium
RAGS	Risk Assessment Guidance for Superfund
RBCs	risk-based concentrations
RBP	rapid bioassessment protocol
RCRA	Resource Conservation and Recovery Act
RESRAD	residual radiation computer code
RfD	reference dose factor
RHTG	Records Holding Technical Group

ACRONYMS AND ABBREVIATIONS

RI	Remedial Investigation
RME	reasonable maximum exposure
RPD	relative percent difference
RPM	radiation protection manager
SAFER	Streamlined Approach for Environmental Restoration
SAIC	Science Applications International Corporation
SAP	sampling and analysis
SI	Site Investigation
SOP	standard operating procedure
SQL	sample quantitation limit
STP	sewage treatment facility
SVOCs	semi-volatile organic compounds
SWSD	surface water and sediment
T&E	threatened and endangered
TAL	target analyte list
TBC	to be considered
TCE	trichloroethene
TCL	target compound list
TDS	total dissolved solids
Th	thorium
TIC	tentatively identified compound
TLV	Threshold Limit Value
TM	Technical Memorandum
TOC	total organic carbon
TRACER	Transportable Remote Analyzer for Characterization and Environmental Remediation
TRPH	total recoverable petroleum hydrocarbons
TRV	toxicity reference values
TRW	Technical Review Workgroup
TSS	total suspended solids
TUF	temporal use factor
TW	test well
TWA	time-weighted average
U	uranium
UCL	upper confidence limit
USACE	United States Army Corps of Engineers
USAF	United States Air Force
USCS	Unified Soil Classification Service
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UST	underground storage tank
UTL	upper tolerance limit
VFT	vinyl floor tile
VOCs	Volatile Organic Compounds
WP	Work Plan
WWII	World War II
µg	micrograms
µg/dL	micrograms per deciliter
$\mu g/ft^2$	micrograms per square feet

ACRONYMS AND ABBREVIATIONS

µg/kg	micrograms per kilogram
µg/L	micrograms per liter
µg/m^3	micrograms per meter cubed
µrem	microrem
µrem/hr	microrem per hour
µR/h	microRoentgen per hour

APPENDIX 4B:
Building Activity Results

APPENDIX 4B: BUILDING ACTIVITY RESULTS

LIST OF APPENDIX COMPONENTS

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- Maintenance Building
- Bulk Storage Building
- Former Laboratory Building
- Former Melting, Alloying, and Shipping Building
- Production Building
- Annex

APPENDIX 4B.1:
Analytical Results of Samples in Buildings

Phase IV IA04 Building Materials

Station	IA04-BM0005	IA04-BM0005	IA04-BM0005	IA04-BM0005	IA04-BM0005
Sample No	LUBM0043	LUBM0068	LUBM0093	LUBM0098	LUBM0099
Collection Date	06/25/98	07/11/98	07/11/98	07/26/98	07/26/98
Duplicate ID					
Metals					
Beryllium (mg/kg)	1020				
Radiological Parameters (AlphaSpec)					
Actinium-227 (pCi/g)	0.314 U	0.832 J	0.245 J	0.0866 U	-0.0279 U
Thorium-228 (pCi/g)	0.742 J	0.0846 U	0.255 J	0.308 J	0.273 J
Thorium-230 (pCi/g)	7.3	19.1	7.28	0.519 J	0.533 J
Thorium-232 (pCi/g)	0.592 J	0.145 J	0.123 J	0.137 J	0.14 J
Uranium-233/234 (pCi/g)	2.39 J	22.2	5.48	3.42	11.3
Uranium-235 (pCi/g)	0.152 UJ	1.35	0.26 J	0.358 J	0.567 J
Uranium-238 (pCi/g)	1.77 J	21.6	4.92	4.1	10.9
Radiological Parameters (GammaSpec)					
Actinium-228 (pCi/g)	0.582 J	0.292 U	0.0965 U	0.198 U	0 U
Cesium-137 (pCi/g)	0.0346 U	0.0099 U	-0.0009 U	0 U	0.0144 U
Cobalt-60 (pCi/g)	0.0198 U	-0.0261 U	0.0106 U	0.0084 U	-0.0187 U
Potassium-40 (pCi/g)	3.47	1.76	0.652 U	9.03	7.34
Protactinium-231 (pCi/g)	0.324 U	-0.0813 U	-0.774 U	-0.0385 U	-0.29 U
Radium-226 (pCi/g)	2.69	21.5	4.4	0.752 J	0.444 J
Radium-228 (pCi/g)	0.582 J	0.292 U	0.0965 U	0.198 J	0.316 J
Thorium-234 (pCi/g)	1.43 U	19.5	1.85 U	7.06	13.6
Uranium-235 (pCi/g)	0.191 U	1.84	0.443 J	0.457 J	0.707 J

Phase IV IA04 Building Materials

Station	**IA04-BM0001**	**IA04-BM0001**	**IA04-BM0001**	**IA04-BM0002**	**IA04-BM0002**	**IA04-BM0002**	**IA04-BM0002**	**IA04-BM0002**	**IA04-BM0002**	**IA04-BM0002**
Sample No	**LUBM0001**	**LUBM0002**	**LUBM0003**	**LUBM0004**	**LUBM0005**	**LUBM0013**	**LUBM0014**	**LUBM0015**	**LUBM0016**	**LUBM0017**
Collection Date	**07/11/98**	**07/11/98**	**07/11/98**	**07/14/98**	**07/14/98**	**07/13/98**	**07/13/98**	**07/13/98**	**07/14/98**	**07/14/98**
Duplicate ID										
Metals										
Beryllium (mg/kg)	0.17 B	541	16	9.3	10.3	7.1	6	97.3	1.1 B	2.1 B

Station	**IA04-BM0002**	**IA04-BM0003**	**IA04-BM0003**	**IA04-BM0003**	**IA04-BM0003**	**IA04-BM0003**	**IA04-BM0003**	**IA04-BM0003**	**IA04-BM0003**	**IA04-BM0003**
Sample No	**LUBM0018**	**LUBM0019**	**LUBM0020**	**LUBM0021**	**LUBM0022**	**LUBM0023**	**LUBM0024**	**LUBM0025**	**LUBM0026**	**LUBM0027**
Collection Date	**07/14/98**	**07/20/98**	**07/20/98**	**07/20/98**	**07/20/98**	**07/20/98**	**07/20/98**	**07/20/98**	**07/20/98**	**07/20/98**
Duplicate ID										
Metals										
Beryllium (mg/kg)	10.2	0.71 J	2.2 J	3.8 J	1.4 J	0.46 J	0.88 J	1.8 J	1.4 J	8.1 J

Station	**IA04-BM0003**	**IA04-BM0004**	**IA04-BM0004**	**IA04-BM0004**	**IA04-BM0004**	**IA04-BM0004**	**IA04-BM0004**	**IA04-BM0004**	**IA04-BM0004**	**IA04-BM0004**
Sample No	**LUBM0028**	**LUBM0031**	**LUBM0032**	**LUBM0033**	**LUBM0034**	**LUBM0035**	**LUBM0036**	**LUBM0037**	**LUBM0037D**	**LUBM0038**
Collection Date	**07/21/98**	**07/24/98**	**07/24/98**	**07/24/98**	**07/24/98**	**07/24/98**	**07/27/98**	**07/24/98**	**07/24/98**	**07/24/98**
Duplicate ID									**LUBM9181**	
Metals										
Beryllium (mg/kg)	0.55 J	0.4 J	19.6 J	0.44 J	155 J	0.16 J	28	1.8 J	5.5 J	14.2 J

Station	**IA04-BM0004**	**IA04-BM0004**	**IA04-BM0004**	**IA04-BM0004**	**IA04-BM0004**	**IA04-BM0004**	**IA04-BM0004**	**IA04-BM0004**	**IA04-BM0004**	**IA04-BM0005**
Sample No	**LUBM0039**	**LUBM0040**	**LUBM0041**	**LUBM0042**	**LUBM0100**	**LUBM0101**	**LUBM0102**	**LUBM0103**	**LUBM0104**	**LUBM0044**
Collection Date	**07/24/98**	**07/24/98**	**07/24/98**	**07/24/98**	**07/27/98**	**07/28/98**	**07/29/98**	**07/29/98**	**07/29/98**	**06/27/98**
Duplicate ID										
Metals										
Beryllium (mg/kg)	0.51 J	500 J	0.66 J	1.1 J	425	90.3	146	302	106	129

Station	**IA04-BM0005**	**IA04-BM0005**	**IA04-BM0005**	**IA04-BM0005**	**IA04-BM0005**	**IA04-BM0005**	**IA04-BM0005**	**IA04-BM0005**	**IA04-BM0005**	**IA04-BM0005**
Sample No	**LUBM0045**	**LUBM0046**	**LUBM0047**	**LUBM0048**	**LUBM0048D**	**LUBM0049**	**LUBM0050**	**LUBM0051**	**LUBM0052**	**LUBM0053**
Collection Date	**06/27/98**	**06/27/98**	**06/27/98**	**06/28/98**	**06/28/98**	**06/28/98**	**06/28/98**	**06/29/98**	**06/30/98**	**06/30/98**
Duplicate ID					**LUBM9182**					
Metals										
Beryllium (mg/kg)	122	73	45.4	53.5	58.7	55.5	96.7	315	65.4 E	97.6 E

Station	**IA04-BM0005**	**IA04-BM0005**	**IA04-BM0005**	**IA04-BM0005**	**IA04-BM0005**	**IA04-BM0005**	**IA04-BM0005**	**IA04-BM0005**	**IA04-BM0005**	**IA04-BM0005**
Sample No	**LUBM0054**	**LUBM0054D**	**LUBM0055**	**LUBM0056**	**LUBM0057**	**LUBM0058**	**LUBM0059**	**LUBM0060**	**LUBM0061**	**LUBM0062**
Collection Date	**07/07/98**	**07/07/98**	**07/07/98**	**07/07/98**	**07/08/98**	**07/08/98**	**07/08/98**	**07/09/98**	**07/09/98**	**07/09/98**
Duplicate ID		**LUBM9183**								
Metals										
Beryllium (mg/kg)	291	504	310	235	39.9	131	102	122	83.7	82.5

Station	**IA04-BM0005**	**IA04-BM0005**	**IA04-BM0005**	**IA04-BM0005**	**IA04-BM0005**	**IA04-BM0005**	**IA04-BM0005**	**IA04-BM0005**	**IA04-BM0005**	**IA04-BM0005**

Phase IV IA04 Building Materials

Sample No	**LUBM0063**	**LUBM0064**	**LUBM0065**	**LUBM0066**	**LUBM0067**	**LUBM0069**	**LUBM0070**	**LUBM0071**	**LUBM0092**	**LUBM0094**
Collection Date	**07/10/98**	**07/10/98**	**07/10/98**	**07/11/98**	**07/11/98**	**07/11/98**	**07/11/98**	**07/11/98**	**07/11/98**	**07/11/98**
Duplicate ID										
Metals										
Beryllium (mg/kg)	46.8	41.3	147	268	11.3	0.33	0.09 B	135	11.7	59.4

Station	**IA04-BM0005**	**IA04-BM0005**	**IA04-BM0005**	**IA04-BM0005**	**IA04-BM0005**	**IA04-BM0006**	**IA04-BM0007**	**IA04-BM0007**	**IA04-BM0007**
Sample No	**LUBM0094D**	**LUBM0095**	**LUBM0095D**	**LUBM0096**	**LUBM0097**	**LUBM0007**	**LUBM0008**	**LUBM0009**	**LUBM0010**
Collection Date	**07/11/98**	**07/11/98**	**07/11/98**	**07/11/98**	**07/11/98**	**07/14/98**	**10/26/98**	**10/26/98**	**10/26/98**
Duplicate ID	**LUBM9184**		**LUBM9185**						
Metals									
Beryllium (mg/kg)	6.2	17.8	110	1	12.3	23.5	0.08 B	12.2	0.65 B

Phase IV IA04 Bulk Dust

Station	**IA04-BM0004**
Sample No	**LUDU0001**
Collection Date	**07/24/99**
Depth (ft)	**0.0-0.0**
Duplicate ID	
Northing	**0**
Easting	**0**
Metals	
Aluminum (mg/kg)	6060
Antimony (mg/kg)	5.7 J
Arsenic (mg/kg)	11.4
Barium (mg/kg)	226
Beryllium (mg/kg)	78.8
Cadmium (mg/kg)	38.2
Calcium (mg/kg)	40500
Chromium (mg/kg)	128
Cobalt (mg/kg)	35.6
Copper (mg/kg)	254
Iron (mg/kg)	121000 J
Lead (mg/kg)	2730
Magnesium (mg/kg)	11000
Manganese (mg/kg)	781 J
Mercury (mg/kg)	0.69999 J
Nickel (mg/kg)	85.4
Potassium (mg/kg)	1060
Selenium (mg/kg)	1.3 U
Silver (mg/kg)	1.5 B
Sodium (mg/kg)	4160
Thallium (mg/kg)	1.8 UJ
Vanadium (mg/kg)	8.3
Zinc (mg/kg)	9400
Semivolatile Organics	
1,2,4-Trichlorobenzene (ug/kg)	13300 U
1,2-Dichlorobenzene (ug/kg)	13300 U
1,3-Dichlorobenzene (ug/kg)	13300 U
1,4-Dichlorobenzene (ug/kg)	13300 U
1-Octadecene (ug/kg)	0 U
2,2'-Oxybis (1-chloropropane) (ug/kg)	13300 U
2,4,5-Trichlorophenol (ug/kg)	13300 U
2,4,6-Trichlorophenol (ug/kg)	13300 U
2,4-Dichlorophenol (ug/kg)	13300 U
2,4-Dimethylphenol (ug/kg)	13300 U
2,4-Dinitrophenol (ug/kg)	26700 U

Phase IV IA04 Bulk Dust

Station	**IA04-BM0004**
Sample No	**LUDU0001**
Collection Date	**07/24/99**
Depth (ft)	**0.0-0.0**
Duplicate ID	
Northing	**0**
Easting	**0**
2,4-Dinitrotoluene (ug/kg)	13300 U
2,6-Dinitrotoluene (ug/kg)	13300 U
2-Chloronaphthalene (ug/kg)	13300 U
2-Chlorophenol (ug/kg)	13300 U
2-Fluorobiphenyl (%)	0
2-Fluorophenol (%)	0
2-Methylnaphthalene (ug/kg)	13300 U
2-Methylphenol (ug/kg)	13300 U
2-Nitroaniline (ug/kg)	33300 U
2-Nitrophenol (ug/kg)	13300 U
3,3'-Dichlorobenzidine (ug/kg)	26700 U
3-Nitroaniline (ug/kg)	33300 U
4,6-Dinitro-2-methylphenol (ug/kg)	26700 U
4-Bromophenyl phenyl ether (ug/kg)	13300 U
4-Chloroaniline (ug/kg)	13300 U
4-Chlorophenylphenylether (ug/kg)	13300 U
4-Nitroaniline (ug/kg)	13300 U
4-Nitrophenol (ug/kg)	13300 U
4-chloro-3-methyl phenol (ug/kg)	13300 U
Acenaphthene (ug/kg)	13300 U
Acenaphthylene (ug/kg)	13300 U
Anthracene (ug/kg)	13300 U
Benzo(a)anthracene (ug/kg)	13300 U
Benzo(a)pyrene (ug/kg)	13300 U
Benzo(b)fluoranthene (ug/kg)	13300 U
Benzo(ghi)perylene (ug/kg)	13300 U
Benzo(k)fluoranthene (ug/kg)	13300 U
Butylbenzylphthalate (ug/kg)	13300 U
Carbazole (ug/kg)	13300 U
Chrysene (ug/kg)	13300 U
Di-n-butylphthalate (ug/kg)	13300 U
Di-n-octylphthalate (ug/kg)	13300 U
Dibenz(a,h)anthracene (ug/kg)	13300 U
Dibenzofuran (ug/kg)	13300 U
Diethyl phthalate (ug/kg)	13300 U
Dimethyl phthalate (ug/kg)	13300 U

Phase IV IA04 Bulk Dust

Station	**IA04-BM0004**
Sample No	**LUDU0001**
Collection Date	**07/24/99**
Depth (ft)	**0.0-0.0**
Duplicate ID	
Northing	**0**
Easting	**0**
Eicosane (ug/kg)	0 U
Fluoranthene (ug/kg)	13300 U
Fluorene (ug/kg)	13300 U
Hexachlorobenzene (ug/kg)	13300 U
Hexachlorobutadiene (ug/kg)	13300 U
Hexachlorocyclopentadiene (ug/kg)	13300 U
Hexachloroethane (ug/kg)	13300 U
Indeno(1,2,3-cd)pyrene (ug/kg)	13300 U
Isophorone (ug/kg)	13300 U
N-Nitrosodipropylamine (ug/kg)	13300 U
Naphthalene (ug/kg)	13300 U
Nitrobenzene (ug/kg)	13300 U
Pentachlorophenol (ug/kg)	26700 U
Pentatriacontane (ug/kg)	0 U
Phenanthrene (ug/kg)	13300 U
Phenol (ug/kg)	13300 U
Pyrene (ug/kg)	13300 U
bis(2-chloroethoxy)methane (ug/kg)	13300 U
bis(2-chloroethyl) ether (ug/kg)	13300 U
bis(2-ethylhexyl)phthalate (ug/kg)	79600 D
m,p-Cresol (ug/kg)	13300 U
n-Nitrosodiphenylamine (ug/kg)	13300 U

Phase IV IA04 Bulk Dust

Station	**IA04-BM0001**	**IA04-BM0001**	**IA04-BM0001**	**IA04-BM0001**	**IA04-BM0001**	**IA04-BM0001**	**IA04-BM0002**	**IA04-BM0002**
Sample No	**LUDU0023**	**LUDU0024**	**LUDU0025**	**LUDU0026**	**LUDU0027**	**LUDU0028**	**LUDU0002**	**LUDU0003**
Collection Date	**06/30/99**	**06/30/99**	**06/30/99**	**07/01/99**	**07/01/99**	**07/01/99**	**06/16/99**	**06/16/99**
Duplicate ID								
Metals								
Beryllium (mg/kg)	54.2	13.4	5.9	47.3 J	6.4 J	26.7 J	18	10.3

Station	**IA04-BM0002**	**IA04-BM0002**	**IA04-BM0002**	**IA04-BM0002**	**IA04-BM0002**	**IA04-BM0002**	**IA04-BM0003**	**IA04-BM0003**
Sample No	**LUDU0004**	**LUDU0005**	**LUDU0006**	**LUDU0007**	**LUDU0008**	**LUDU0009**	**LUDU0012**	**LUDU0013**
Collection Date	**06/17/99**	**06/17/99**	**06/17/99**	**06/17/99**	**06/17/99**	**06/17/99**	**06/28/99**	**06/28/99**
Duplicate ID								
Metals								
Beryllium (mg/kg)	22.6	11.4	185	22.8	28.2	48.9	24.6	11.1

Station	**IA04-BM0003**	**IA04-BM0003**	**IA04-BM0003**	**IA04-BM0003**	**IA04-BM0003**	**IA04-BM0003**	**IA04-BM0003**	**IA04-BM0003**
Sample No	**LUDU0014**	**LUDU0015**	**LUDU0016**	**LUDU0017**	**LUDU0018**	**LUDU0019**	**LUDU0020**	**LUDU0021**
Collection Date	**06/28/99**	**06/29/99**	**06/29/99**	**06/29/99**	**06/29/99**	**06/29/99**	**06/29/99**	**06/29/99**
Duplicate ID								
Metals								
Beryllium (mg/kg)	14.5	71.7	12	16.2	30.6	16.4	10.2	3.8

Station	**IA04-BM0003**	**IA04-BM0004**	**IA04-BM0004**	**IA04-BM0004**	**IA04-BM0004**	**IA04-BM0004**	**IA04-BM0004**	**IA04-BM0004**
Sample No	**LUDU0022**	**LUDU0037**	**LUDU0038**	**LUDU0039**	**LUDU0040**	**LUDU0047**	**LUDU0048**	**LUDU0049**
Collection Date	**06/30/99**	**07/08/99**	**07/06/99**	**07/06/99**	**07/06/99**	**07/08/99**	**07/09/99**	**07/09/99**
Duplicate ID								
Metals								
Beryllium (mg/kg)	2.8	81.8 E	56.6 J	87.7 J	8.6 J	13.3 E	62.2 E	61.5 E

Station	**IA04-BM0004**	**IA04-BM0004**	**IA04-BM0004**	**IA04-BM0004**	**IA04-BM0004**	**IA04-BM0004**	**IA04-BM0004**	**IA04-BM0004**
Sample No	**LUDU0050**	**LUDU0051**	**LUDU0052**	**LUDU0053**	**LUDU0054**	**LUDU0055**	**LUDU0056**	**LUDU0057**
Collection Date	**07/09/99**	**07/09/99**	**07/10/99**	**07/10/99**	**07/10/99**	**07/10/99**	**07/10/99**	**07/10/99**
Duplicate ID								
Metals								
Beryllium (mg/kg)	97.5 E	18.2 E	58.1 E	45.6 E	19.5 E	29 E	37.4 E	42.5 E

Station	**IA04-BM0004**	**IA04-BM0004**	**IA04-BM0004**	**IA04-BM0004**	**IA04-BM0004**	**IA04-BM0004**	**IA04-BM0004**	**IA04-BM0004**
Sample No	**LUDU0058**	**LUDU0059**	**LUDU0060**	**LUDU0061**	**LUDU0062**	**LUDU0063**	**LUDU0064**	**LUDU0069**
Collection Date	**07/11/99**	**07/11/99**	**07/11/99**	**07/11/99**	**07/11/99**	**07/11/99**	**07/11/99**	**07/12/99**
Duplicate ID								
Metals								
Beryllium (mg/kg)	48.3 E	32.2 E	19.3 E	6.9 E	29.4 J	9.7 J	37 J	8.5

Station	**IA04-BM0004**	**IA04-BM0004**	**IA04-BM0004**	**IA04-BM0004**	**IA04-BM0004**	**IA04-BM0004**	**IA04-BM0004**	**IA04-BM0004**

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Sample No	**LUDU0070**	**LUDU0073**	**LUDU0074**	**LUDU0075**	**LUDU0076**	**LUDU0077**	**LUDU0078**	**LUDU0079**
Collection Date	**07/12/99**	**07/13/99**	**07/13/99**	**07/14/99**	**07/14/99**	**07/14/99**	**07/14/99**	**07/14/99**
Duplicate ID								
Metals								
Beryllium (mg/kg)	32.6	41.7	41.3	57.9	59.4	117	65.8	65.7
Station	**IA04-BM0004**	**IA04-BM0004**	**IA04-BM0004**	**IA04-BM0004**	**IA04-BM0004**	**IA04-BM0004**	**IA04-BM0004**	**IA04-BM0004**
Sample No	**LUDU0080**	**LUDU0081**	**LUDU0082**	**LUDU0083**	**LUDU0084**	**LUDU0085**	**LUDU0092**	**LUDU0093**
Collection Date	**07/15/99**	**07/15/99**	**07/15/99**	**07/15/99**	**07/15/99**	**07/20/99**	**07/21/99**	**07/21/99**
Duplicate ID								
Metals								
Beryllium (mg/kg)	125 J	336 J	32.9 J	14.2 J	28.6 J	46.9 J	40 J	146 J
Station	**IA04-BM0004**	**IA04-BM0004**	**IA04-BM0004**	**IA04-BM0004**	**IA04-BM0004**	**IA04-BM0004**	**IA04-BM0004**	**IA04-BM0004**
Sample No	**LUDU0094**	**LUDU0095**	**LUDU0096**	**LUDU0097**	**LUDU0098**	**LUDU0099**	**LUDU0100**	**LUDU0101**
Collection Date	**07/21/99**	**07/21/99**	**07/22/99**	**07/22/99**	**07/22/99**	**07/22/99**	**07/22/99**	**07/22/99**
Duplicate ID								
Metals								
Beryllium (mg/kg)	41.7 J	106 J	3.1	13.5	5	15.5	15.9	27.2
Station	**IA04-BM0004**	**IA04-BM0004**	**IA04-BM0004**	**IA04-BM0004**	**IA04-BM0004**	**IA04-BM0004**	**IA04-BM0004**	**IA04-BM0004**
Sample No	**LUDU0102**	**LUDU0103**	**LUDU0104**	**LUDU0105**	**LUDU0106**	**LUDU0107**	**LUDU0108**	**LUDU0109**
Collection Date	**07/23/99**	**07/23/99**	**07/23/99**	**07/23/99**	**07/23/99**	**07/24/99**	**07/24/99**	**07/24/99**
Duplicate ID								
Metals								
Beryllium (mg/kg)	20.2	13.9	13.2	13.4	13.7	13.5	9.5	14
Station	**IA04-BM0004**	**IA04-BM0005**	**IA04-BM0005**	**IA04-BM0005**	**IA04-BM0005**	**IA04-BM0005**	**IA04-BM0005**	**IA04-BM0005**
Sample No	**LUDU0110**	**LUDU0065**	**LUDU0066**	**LUDU0067**	**LUDU0068**	**LUDU0071**	**LUDU0072**	**LUDU0086**
Collection Date	**07/24/99**	**07/12/99**	**07/12/99**	**07/12/99**	**07/12/99**	**07/13/99**	**07/13/99**	**07/20/99**
Duplicate ID								
Metals								
Beryllium (mg/kg)	7.2	46.7	20.1	31.2	11.4	148	124	48.1 J
Station	**IA04-BM0005**	**IA04-BM0005**	**IA04-BM0005**	**IA04-BM0005**	**IA04-BM0005**	**IA04-BM0006**	**IA04-BM0006**	**IA04-BM0007**
Sample No	**LUDU0087**	**LUDU0088**	**LUDU0089**	**LUDU0090**	**LUDU0091**	**LUDU0010**	**LUDU0011**	**LUDU0041**
Collection Date	**07/20/99**	**07/20/99**	**07/20/99**	**07/20/99**	**07/21/99**	**06/18/99**	**06/18/99**	**07/07/99**
Duplicate ID								
Metals								
Beryllium (mg/kg)	71.8 J	196 J	52.7 J	113 J	116 J	15.4	12.4	8.3 J
Station	**IA04-BM0007**	**IA04-BM0007**	**IA04-BM0007**	**IA04-BM0007**	**IA04-BM0007**	**IA04-BM0008**	**IA04-BM0008**	**IA04-BM0009**
Sample No	**LUDU0042**	**LUDU0043**	**LUDU0044**	**LUDU0045**	**LUDU0046**	**LUDU0035**	**LUDU0036**	**LUDU0031**

Phase IV IA04 Bulk Dust

Collection Date	**07/07/99**	**07/08/99**	**07/08/99**	**07/08/99**	**07/08/99**	**07/02/99**	**07/02/99**	**07/01/99**
Depth (ft)	**0.0-0.0**	**0.0-0.0**	**0.0-0.0**	**0.0-0.0**	**0.0-0.0**	**0.0-0.0**	**0.0-0.0**	**0.0-0.0**
Duplicate ID								
Metals								
Beryllium (mg/kg)	18.2 J	5.8 E	9 E	11.1 E	5.3 E	9.8 J	14.2 J	5.7 J

Station	**IA04-BM0009**	**IA04-BM0011**	**IA04-BM0011**	**IA04-BM0012**	**IA04-BM0012**
Sample No	**LUDU0032**	**LUDU0029**	**LUDU0030**	**LUDU0033**	**LUDU0034**
Collection Date	**07/01/99**	**07/01/99**	**07/01/99**	**07/02/99**	**07/02/99**
Duplicate ID					
Metals					
Beryllium (mg/kg)	9.5 J	4.1 J	2.5 J	36.5 J	107 J

Phase IV IA04 Swipe Samples

Station	IA04-WP0004	IA04-WP0004	IA04-WP0005	IA04-WP0005	IA04-WP0005	IA04-WP0005	IA04-WP0005	IA04-WP0007	IA04-WP0007	IA04-WP0009
Sample No	**LUWP0322**	**LUWP0397**	**LUWP0404**	**LUWP0405**	**LUWP0428**	**LUWP0616**	**LUWP0617**	**LUWP0862**	**LUWP0863**	**LUWP0861**
Collection Date	**07/28/98**	**07/25/98**	**06/19/98**	**06/19/98**	**06/27/98**	**07/26/98**	**07/26/98**	**07/07/99**	**07/07/99**	**07/06/99**
Metals										
Beryllium (ug/sw)			0.03 B	0.31 B						
Radiological Parameters										
Gross Alpha (pci/s)								-0.00113 U	-0.759 U	-0.00149 U
Nonvolatile Beta (pci/s)								2.65 U	-2.21 U	0.238 U
Radium-226 (pci/s)	13.4	0.608 U	2.1	1.31 U	10.4	0.8 U	1.51 J	0.51899 U	1.48 U	1.5 U
Radium-228 (pci/s)	0.936 U	0.0347 U	-13.7 U	-26.3 U	-4.37 U	0.365 U	1.67 U	-2.42 U	1.6 U	-1.54 U
Radiological Parameters (AlphaSpec)										
Actinium-227 (pci/s)	0.922 J	0.162 U	0.527 U	0.218 U	0.678 U	-0.0011 U	0.279 J	-0.08739 U	0.16599 U	-0.06369 U
Thorium-228 (pci/s)	0.512 J	0.713 J	-0.0376 U	1.17	1.56	0.525 J	0.485 J	0.0344 U	-0.00975 U	-0.214 U
Thorium-230 (pci/s)	14.6	0.377 J	0.171 U	0.116 U	5.94	0.233 U	0.185 J	0.62599 J	0.34 J	0.409 J
Thorium-232 (pci/s)	0 U	-0.0141 U	0 U	-0.0278 U	0.15 U	-0.0147 U	0.0426 U	0.0996 U	0.0258 U	0.103 U
Uranium-233/234 (pci/s)	15.8	0.251 J	0.32 U	1.95	2.43	0.0866 U	0.168 J	-0.0588 U	0.06589 U	-0.133 U
Uranium-235 (pci/s)	0.507 J	0.0147 U	0.139 U	0.144 U	0.433 U	0.0348 U	0.028 U	-0.025 U	0.00851 U	0.0185 U
Uranium-238 (pci/s)	15.5	0.251 J	0.138 U	0.0985 U	4.64	-0.0175 U	0.0838 U	0.0728 J	0.00282 U	0.08009 U
Radiological Parameters (GammaSpec)										
Actinium-227 (pci/s)								-8.6 U	1.01 U	-4.75 U
Actinium-228 (pci/s)	-1.48 U	7.38 U	4.31 U	8.63 U	11.6 U	0.759 U	9.91 U	0 U	4.17 U	5.64 U
Cesium-137 (pci/s)	-0.922 U	0.228 U	0.837 U	0 U	0.0419 U	0 U	-0.851 U	0.79699 U	0.76999 U	1.91 J
Cobalt-60 (pci/s)	0.942 U	2.88 U	0.251 U	-0.552 U	5.03 U	0.0034 U	-1.08 U	0.342 U	-0.0684 U	-0.07289 U
Potassium-40 (pci/s)	36.5 U	9.56 U	51.3	0 U	76.2 U	24.5 U	31.6 U	5.95 U	23.8 U	0 U
Protactinium-231 (pci/s)	23 U	-30.5 U	26.3 U	12.3 U	127 U	8.33 U	73.5 U	-3.44 U	-36.5 U	9.37 U
Thorium-234 (pci/s)	60.6 U	61.6 U	72.2 U	25.5 U	91.4 U	0 U	58.5 U	0 U	0 U	4.23 U
Uranium-235 (pci/s)	8.48 U	8.66 U	13.9 U	14.2 U	16 U	7.65 U	5.38 U	0.935 U	5.02 U	1.79 U

Phase IV IA04 Swipe Samples

Station	**IA04-WP0001**	**IA04-WP0001**	**IA04-WP0001**	**IA04-WP0001**	**IA04-WP0001**	**IA04-WP0001**	**IA04-WP0001**	**IA04-WP0001**
Sample No	**LUWP0001**	**LUWP0002**	**LUWP0003**	**LUWP0004**	**LUWP0005**	**LUWP0006**	**LUWP0007**	**LUWP0008**
Collection Date	**07/11/98**	**07/11/98**	**07/11/98**	**07/11/98**	**07/11/98**	**07/11/98**	**07/12/98**	**07/12/98**
Metals								
Beryllium (ug/sw)	0.82	1.2	0.55	40.2	1.6	2.5	29	0.28

Station	**IA04-WP0001**	**IA04-WP0001**	**IA04-WP0001**	**IA04-WP0006**	**IA04-WP0006**	**IA04-WP0006**	**IA04-WP0006**	**IA04-WP0002**
Sample No	**LUWP0009**	**LUWP0010**	**LUWP0011**	**LUWP0059**	**LUWP0060**	**LUWP0061**	**LUWP0062**	**LUWP0116**
Collection Date	**07/12/98**	**07/12/98**	**07/12/98**	**07/14/98**	**07/14/98**	**07/14/98**	**07/14/98**	**07/13/98**
Metals								
Beryllium (ug/sw)	1.1	3.3	3.3	0.12 B	0.7	0.76	0.56	0.69

Station	**IA04-WP0002**	**IA04-WP0002**	**IA04-WP0002**	**IA04-WP0002**	**IA04-WP0002**	**IA04-WP0002**	**IA04-WP0002**	**IA04-WP0002**
Sample No	**LUWP0117**	**LUWP0118**	**LUWP0119**	**LUWP0120**	**LUWP0121**	**LUWP0122**	**LUWP0123**	**LUWP0124**
Collection Date	**07/13/98**	**07/13/98**	**07/13/98**	**07/13/98**	**07/13/98**	**07/13/98**	**07/13/98**	**07/13/98**
Metals								
Beryllium (ug/sw)	0.52	4.3	0.41	0.66	1.6	0.82	3.2	0.85

Station	**IA04-WP0002**	**IA04-WP0002**	**IA04-WP0002**	**IA04-WP0002**	**IA04-WP0002**	**IA04-WP0002**	**IA04-WP0002**	**IA04-WP0002**
Sample No	**LUWP0125**	**LUWP0126**	**LUWP0127**	**LUWP0128**	**LUWP0129**	**LUWP0130**	**LUWP0131**	**LUWP0132**
Collection Date	**07/13/98**	**07/13/98**	**07/13/98**	**07/13/98**	**07/13/98**	**07/13/98**	**07/13/98**	**07/13/98**
Metals								
Beryllium (ug/sw)	8.2	25.7	0.21	0.29	0.76	1.5	25.5	7.5

Station	**IA04-WP0002**	**IA04-WP0002**	**IA04-WP0002**	**IA04-WP0002**	**IA04-WP0002**	**IA04-WP0002**	**IA04-WP0002**	**IA04-WP0002**
Sample No	**LUWP0133**	**LUWP0134**	**LUWP0135**	**LUWP0136**	**LUWP0137**	**LUWP0138**	**LUWP0139**	**LUWP0140**
Collection Date	**07/13/98**	**07/13/98**	**07/13/98**	**07/13/98**	**07/13/98**	**07/13/98**	**07/13/98**	**07/13/98**
Metals								
Beryllium (ug/sw)	3	0.26	0.97	5.1	0.57	0.18 B	0.89	2.3

Station	**IA04-WP0002**	**IA04-WP0007**	**IA04-WP0007**	**IA04-WP0007**	**IA04-WP0007**	**IA04-WP0007**	**IA04-WP0007**	**IA04-WP0007**
Sample No	**LUWP0141**	**LUWP0142**	**LUWP0143**	**LUWP0144**	**LUWP0145**	**LUWP0146**	**LUWP0147**	**LUWP0148**
Collection Date	**07/13/98**	**10/26/98**	**10/26/98**	**10/26/98**	**10/26/98**	**10/26/98**	**10/26/98**	**10/26/98**
Metals								
Beryllium (ug/sw)	2.3	0.06 B	0.08 B	0.04 B	0.09 B	0.08 B	0.01 U	0.24 B

Station	**IA04-WP0007**	**IA04-WP0007**	**IA04-WP0007**	**IA04-WP0007**	**IA04-WP0007**	**IA04-WP0003**	**IA04-WP0003**	**IA04-WP0003**
Sample No	**LUWP0149**	**LUWP0150**	**LUWP0151**	**LUWP0152**	**LUWP0153**	**LUWP0174**	**LUWP0175**	**LUWP0176**

Collection Date	**10/26/98**	**10/26/98**	**10/26/98**	**10/26/98**	**10/26/98**	**07/20/98**	**07/20/98**	**07/20/98**
Metals								
Beryllium (ug/sw)	0.18 B	0.05 B	0.17 B	0.01 U	0.08 B	0.6 J	0.89 J	0.89 J

Station	**IA04-WP0003**	**IA04-WP0003**	**IA04-WP0003**	**IA04-WP0003**	**IA04-WP0003**	**IA04-WP0003**	**IA04-WP0003**	**IA04-WP0003**
Sample No	**LUWP0177**	**LUWP0178**	**LUWP0179**	**LUWP0180**	**LUWP0181**	**LUWP0182**	**LUWP0183**	**LUWP0184**
Collection Date	**07/20/98**	**07/20/98**	**07/20/98**	**07/20/98**	**07/20/98**	**07/20/98**	**07/20/98**	**07/20/98**
Metals								
Beryllium (ug/sw)	0.01 UJ	0.78 J	3.5 J	1.1 J	0.02 J	1.9 J	0.31 J	0.33 J

Station	**IA04-WP0003**	**IA04-WP0003**	**IA04-WP0003**	**IA04-WP0003**	**IA04-WP0003**	**IA04-WP0003**	**IA04-WP0003**	**IA04-WP0003**
Sample No	**LUWP0185**	**LUWP0186**	**LUWP0187**	**LUWP0188**	**LUWP0189**	**LUWP0190**	**LUWP0191**	**LUWP0192**
Collection Date	**07/20/98**	**07/20/98**	**07/20/98**	**07/20/98**	**07/20/98**	**07/20/98**	**07/20/98**	**07/20/98**
Metals								
Beryllium (ug/sw)	7.1 J	2.9 J	2 J	0.37 J	0.79 J	1.2 J	0.3 J	1.7

Station	**IA04-WP0003**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**
Sample No	**LUWP0193**	**LUWP0289**	**LUWP0290**	**LUWP0291**	**LUWP0292**	**LUWP0293**	**LUWP0294**	**LUWP0295**
Collection Date	**07/20/98**	**07/26/98**	**07/26/98**	**07/26/98**	**07/26/98**	**07/26/98**	**07/26/98**	**07/26/98**
Metals								
Beryllium (ug/sw)	1.5	1.9	2.7	0.48	2.6	0.6	2	1.1

Station	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**
Sample No	**LUWP0296**	**LUWP0297**	**LUWP0298**	**LUWP0299**	**LUWP0300**	**LUWP0301**	**LUWP0302**	**LUWP0303**
Collection Date	**07/26/98**	**07/26/98**	**07/26/98**	**07/26/98**	**07/26/98**	**07/26/98**	**07/26/98**	**07/26/98**
Metals								
Beryllium (ug/sw)	0.94	2.3	0.13	2.6	0.61	0.57	1.1	3.8

Station	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**
Sample No	**LUWP0304**	**LUWP0305**	**LUWP0306**	**LUWP0307**	**LUWP0308**	**LUWP0309**	**LUWP0310**	**LUWP0311**
Collection Date	**07/26/98**	**07/26/98**	**07/26/98**	**07/26/98**	**07/27/98**	**07/27/98**	**07/27/98**	**07/27/98**
Metals								
Beryllium (ug/sw)	0.13	9.2	4.8	0.43	2.3	27.3	2.1	201

Station	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**
Sample No	**LUWP0312**	**LUWP0313**	**LUWP0314**	**LUWP0315**	**LUWP0316**	**LUWP0317**	**LUWP0318**	**LUWP0319**
Collection Date	**07/27/98**	**07/27/98**	**07/27/98**	**07/27/98**	**07/28/98**	**07/28/98**	**07/28/98**	**07/28/98**
Metals								

Beryllium (ug/sw)	1.3	8.5	1.4	1.6	1.2	14.2	7.6	3.1
Station	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**
Sample No	**LUWP0320**	**LUWP0321**	**LUWP0323**	**LUWP0324**	**LUWP0325**	**LUWP0326**	**LUWP0327**	**LUWP0328**
Collection Date	**07/28/98**	**07/28/98**	**07/28/98**	**07/28/98**	**07/29/98**	**07/29/98**	**07/29/98**	**07/29/98**
Metals								
Beryllium (ug/sw)	12.3	1.8	1.3	2.1	9.9	0.79	4	1.1
Station	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**
Sample No	**LUWP0329**	**LUWP0346**	**LUWP0347**	**LUWP0348**	**LUWP0349**	**LUWP0350**	**LUWP0351**	**LUWP0352**
Collection Date	**07/29/98**	**07/23/98**	**07/23/98**	**07/23/98**	**07/23/98**	**07/23/98**	**07/23/98**	**07/23/98**
Metals								
Beryllium (ug/sw)	3.7	1.9	0.68	1.2	4	9.3	4.6	1.3
Station	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**
Sample No	**LUWP0353**	**LUWP0354**	**LUWP0355**	**LUWP0356**	**LUWP0357**	**LUWP0358**	**LUWP0359**	**LUWP0360**
Collection Date	**07/23/98**	**07/23/98**	**07/23/98**	**07/23/98**	**07/23/98**	**07/23/98**	**07/23/98**	**07/23/98**
Metals								
Beryllium (ug/sw)	1.4	1.8	0.05 B	0.08 B	2.1	1.1	0.1 B	1.7
Station	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**
Sample No	**LUWP0361**	**LUWP0362**	**LUWP0363**	**LUWP0364**	**LUWP0365**	**LUWP0366**	**LUWP0367**	**LUWP0368**
Collection Date	**07/23/98**	**07/23/98**	**07/23/98**	**07/23/98**	**07/23/98**	**07/23/98**	**07/23/98**	**07/23/98**
Metals								
Beryllium (ug/sw)	0.26	0.03 J	1.2 J	0.11 J	0.51 J	0.9 J	1.2 J	1.3 J
Station	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**
Sample No	**LUWP0369**	**LUWP0370**	**LUWP0371**	**LUWP0372**	**LUWP0373**	**LUWP0374**	**LUWP0375**	**LUWP0376**
Collection Date	**07/23/98**	**07/23/98**	**07/23/98**	**07/23/98**	**07/23/98**	**07/23/98**	**07/23/98**	**07/23/98**
Metals								
Beryllium (ug/sw)	1 J	1.1 J	6.5 J	1.2 J	1.6 J	4.9 J	4.2 J	10.9 J
Station	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**
Sample No	**LUWP0377**	**LUWP0378**	**LUWP0379**	**LUWP0380**	**LUWP0381**	**LUWP0382**	**LUWP0383**	**LUWP0384**
Collection Date	**07/23/98**	**07/23/98**	**07/23/98**	**07/23/98**	**07/23/98**	**07/23/98**	**07/23/98**	**07/23/98**
Metals								
Beryllium (ug/sw)	1.1 J	4.6 J	1.4 J	0.11 J	1.3 J	0.41	1.4	1.9

Station	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**
Sample No	**LUWP0385**	**LUWP0386**	**LUWP0387**	**LUWP0388**	**LUWP0389**	**LUWP0390**	**LUWP0391**	**LUWP0392**
Collection Date	**07/23/98**	**07/23/98**	**07/23/98**	**07/24/98**	**07/24/98**	**07/24/98**	**07/24/98**	**07/24/98**
Metals								
Beryllium (ug/sw)	1.7	0.01 U	0.01 U	4.7	0.72	1.8	0.58	15.9
Station	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0004**
Sample No	**LUWP0393**	**LUWP0394**	**LUWP0395**	**LUWP0396**	**LUWP0398**	**LUWP0399**	**LUWP0400**	**LUWP0401**
Collection Date	**07/25/98**	**07/25/98**	**07/25/98**	**07/25/98**	**07/25/98**	**07/25/98**	**07/25/98**	**07/25/98**
Metals								
Beryllium (ug/sw)	4.2	2	0.64	16	1.6	133	11.1	2.6
Station	**IA04-WP0004**	**IA04-WP0004**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**
Sample No	**LUWP0402**	**LUWP0403**	**LUWP0406**	**LUWP0407**	**LUWP0408**	**LUWP0409**	**LUWP0410**	**LUWP0411**
Collection Date	**07/25/98**	**07/25/98**	**06/24/98**	**06/24/98**	**06/24/98**	**06/24/98**	**06/24/98**	**06/24/98**
Metals								
Beryllium (ug/sw)	10.4	41.3	0.54 B	4 B	6.6 B	3.9 B	8 B	0.01 U
Station	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**
Sample No	**LUWP0412**	**LUWP0413**	**LUWP0414**	**LUWP0415**	**LUWP0416**	**LUWP0417**	**LUWP0418**	**LUWP0419**
Collection Date	**06/25/98**	**06/25/98**	**06/25/98**	**06/25/98**	**06/25/98**	**06/25/98**	**06/25/98**	**06/25/98**
Metals								
Beryllium (ug/sw)	8.9 B	12.7	640	106	37.7	31.2	89.7	25.7
Station	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**
Sample No	**LUWP0420**	**LUWP0421**	**LUWP0422**	**LUWP0423**	**LUWP0424**	**LUWP0425**	**LUWP0426**	**LUWP0427**
Collection Date	**06/25/98**	**06/26/98**	**06/26/98**	**06/26/98**	**06/26/98**	**06/26/98**	**06/26/98**	**06/27/98**
Metals								
Beryllium (ug/sw)	13.4	36.9	12.4	41.7	26	16	26.2	8.6
Station	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**
Sample No	**LUWP0429**	**LUWP0430**	**LUWP0431**	**LUWP0432**	**LUWP0433**	**LUWP0434**	**LUWP0435**	**LUWP0436**
Collection Date	**06/27/98**	**06/27/98**	**06/27/98**	**06/27/98**	**06/27/98**	**06/27/98**	**06/27/98**	**06/27/98**
Metals								
Beryllium (ug/sw)	18.2	26.8	3.4	14.4	4.3	17.3 J	22.8 J	4.7 J
Station	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**
Sample No	**LUWP0437**	**LUWP0438**	**LUWP0439**	**LUWP0440**	**LUWP0441**	**LUWP0442**	**LUWP0443**	**LUWP0444**

Collection Date	**06/27/98**	**06/27/98**	**06/27/98**	**06/27/98**	**06/27/98**	**06/27/98**	**06/27/98**	**06/27/98**
Metals								
Beryllium (ug/sw)	109 J	15.7 J	0.08 J	0.31 J	0.23 J	0.5 J	0.3 J	0.31 J
Station	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**
Sample No	**LUWP0445**	**LUWP0446**	**LUWP0447**	**LUWP0448**	**LUWP0457**	**LUWP0458**	**LUWP0459**	**LUWP0460**
Collection Date	**06/27/98**	**06/27/98**	**06/28/98**	**06/28/98**	**06/28/98**	**06/28/98**	**06/28/98**	**06/28/98**
Metals								
Beryllium (ug/sw)	0.09 J	0.57 J	0.23 J	0.33 J	29.1	36.5	17.9	8.9
Station	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**
Sample No	**LUWP0461**	**LUWP0462**	**LUWP0463**	**LUWP0464**	**LUWP0465**	**LUWP0466**	**LUWP0467**	**LUWP0468**
Collection Date	**06/28/98**	**06/28/98**	**06/28/98**	**06/28/98**	**06/28/98**	**06/28/98**	**06/28/98**	**06/28/98**
Metals								
Beryllium (ug/sw)	46.2	4.6	9.7	12.5	12.5	28.9	49	22.8
Station	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**
Sample No	**LUWP0469**	**LUWP0470**	**LUWP0471**	**LUWP0472**	**LUWP0473**	**LUWP0474**	**LUWP0475**	**LUWP0476**
Collection Date	**06/28/98**	**06/29/98**	**06/29/98**	**06/29/98**	**06/29/98**	**06/29/98**	**06/26/98**	**06/29/98**
Metals								
Beryllium (ug/sw)	41.9	4.1	4.8	5.2	3.2	12.8	0.07 B	3.1
Station	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**
Sample No	**LUWP0477**	**LUWP0478**	**LUWP0479**	**LUWP0480**	**LUWP0481**	**LUWP0482**	**LUWP0483**	**LUWP0484**
Collection Date	**06/29/98**	**06/29/98**	**06/29/98**	**06/29/98**	**06/29/98**	**06/29/98**	**06/29/98**	**06/29/98**
Metals								
Beryllium (ug/sw)	11.5	62.4	11.6	23.2	20.2	50.1	225	3
Station	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**
Sample No	**LUWP0485**	**LUWP0486**	**LUWP0487**	**LUWP0488**	**LUWP0489**	**LUWP0490**	**LUWP0491**	**LUWP0492**
Collection Date	**06/29/98**	**06/30/98**	**06/30/98**	**06/30/98**	**06/30/98**	**06/30/98**	**06/30/98**	**06/30/98**
Metals								
Beryllium (ug/sw)	25.2	0.01 UJ	0.53 J	47.1 J	5.2 J	0.3 J	21.5 J	0.23 J
Station	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**
Sample No	**LUWP0493**	**LUWP0494**	**LUWP0495**	**LUWP0496**	**LUWP0497**	**LUWP0498**	**LUWP0499**	**LUWP0500**
Collection Date	**06/30/98**	**06/30/98**	**06/30/98**	**06/30/98**	**06/30/98**	**06/30/98**	**06/30/98**	**06/30/98**
Metals								

Beryllium (ug/sw)	16.6 J	0.01 UJ	0.55 J	26.6 J	48.4 J	164 J	0.45 J	54 J
Station	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**
Sample No	**LUWP0501**	**LUWP0502**	**LUWP0503**	**LUWP0504**	**LUWP0505**	**LUWP0506**	**LUWP0507**	**LUWP0508**
Collection Date	**06/30/98**	**06/30/98**	**06/30/98**	**06/30/98**	**06/30/98**	**07/01/98**	**07/01/98**	**06/30/98**
Metals								
Beryllium (ug/sw)	0.03 J	15.5 J	0.02 J	1.5	82	2.7 J	0.43 J	8.3 J
Station	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**
Sample No	**LUWP0509**	**LUWP0510**	**LUWP0511**	**LUWP0512**	**LUWP0513**	**LUWP0514**	**LUWP0515**	**LUWP0516**
Collection Date	**07/01/98**	**07/01/98**	**07/01/98**	**07/01/98**	**07/01/98**	**07/01/98**	**07/01/98**	**07/01/98**
Metals								
Beryllium (ug/sw)	35.5 J	14 J	18.5 J	11.6 J	64.9 J	2.8 J	3.3 J	3.7 J
Station	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**
Sample No	**LUWP0517**	**LUWP0518**	**LUWP0519**	**LUWP0520**	**LUWP0521**	**LUWP0522**	**LUWP0523**	**LUWP0525**
Collection Date	**07/07/98**	**07/07/98**	**07/07/98**	**07/07/98**	**07/07/98**	**07/07/98**	**07/07/98**	**07/07/98**
Metals								
Beryllium (ug/sw)	10.4	7.8	138	15.7	25	14.4	7.8	20.2
Station	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**
Sample No	**LUWP0526**	**LUWP0527**	**LUWP0528**	**LUWP0529**	**LUWP0530**	**LUWP0531**	**LUWP0532**	**LUWP0533**
Collection Date	**07/07/98**	**07/07/98**	**07/07/98**	**07/07/98**	**07/07/98**	**07/07/98**	**07/07/98**	**07/08/98**
Metals								
Beryllium (ug/sw)	29.7	133	43.7	26.4	4.6	16.8	4.4	2.2
Station	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**
Sample No	**LUWP0534**	**LUWP0535**	**LUWP0536**	**LUWP0537**	**LUWP0538**	**LUWP0539**	**LUWP0540**	**LUWP0541**
Collection Date	**07/07/98**	**07/08/98**	**07/08/98**	**07/08/98**	**07/08/98**	**07/08/98**	**07/08/98**	**07/08/98**
Metals								
Beryllium (ug/sw)	11.1	9.5	11.7	4.7	10.1	3.9	52.4	109
Station	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**
Sample No	**LUWP0542**	**LUWP0543**	**LUWP0544**	**LUWP0545**	**LUWP0546**	**LUWP0547**	**LUWP0548**	**LUWP0549**
Collection Date	**07/08/98**	**07/08/98**	**07/08/98**	**07/08/98**	**07/08/98**	**07/08/98**	**07/08/98**	**07/08/98**
Metals								
Beryllium (ug/sw)	11	11.5	8.2	11.5	6.9	9.1	7.8 J	13.9 J

Station	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**
Sample No	**LUWP0550**	**LUWP0551**	**LUWP0552**	**LUWP0553**	**LUWP0554**	**LUWP0555**	**LUWP0556**	**LUWP0557**
Collection Date	**07/08/98**	**07/08/98**	**07/08/98**	**07/08/98**	**07/08/98**	**07/09/98**	**07/09/98**	**07/09/98**
Metals								
Beryllium (ug/sw)	5.7 J	7.1 J	4.9 J	10.4 J	11.2 J	9 J	7.6 J	14.6 J
Station	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**
Sample No	**LUWP0558**	**LUWP0559**	**LUWP0560**	**LUWP0561**	**LUWP0562**	**LUWP0563**	**LUWP0564**	**LUWP0565**
Collection Date	**07/09/98**	**07/09/98**	**07/08/98**	**07/08/98**	**07/08/98**	**07/09/98**	**07/09/98**	**07/09/98**
Metals								
Beryllium (ug/sw)	26 J	16.3 J	5.7 J	8.4 J	5.5 J	1.7 J	4.8 J	18.5 J
Station	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**
Sample No	**LUWP0566**	**LUWP0567**	**LUWP0568**	**LUWP0569**	**LUWP0570**	**LUWP0571**	**LUWP0572**	**LUWP0573**
Collection Date	**07/09/98**	**07/09/98**	**07/09/98**	**07/09/98**	**07/09/98**	**07/09/98**	**07/09/98**	**07/09/98**
Metals								
Beryllium (ug/sw)	10.9 J	8.8 J	36.9 J	32.2 J	14.6 J	12.6 J	4.2 J	6 J
Station	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**
Sample No	**LUWP0574**	**LUWP0575**	**LUWP0576**	**LUWP0577**	**LUWP0578**	**LUWP0579**	**LUWP0580**	**LUWP0581**
Collection Date	**07/09/98**	**07/09/98**	**07/09/98**	**07/09/98**	**07/09/98**	**07/09/98**	**07/09/98**	**07/10/90**
Metals								
Beryllium (ug/sw)	9.3 J	7.7 J	8.7 J	0.13 J	2.9 J	0.08 J	2.4 J	0.45
Station	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**
Sample No	**LUWP0582**	**LUWP0583**	**LUWP0584**	**LUWP0585**	**LUWP0586**	**LUWP0587**	**LUWP0588**	**LUWP0589**
Collection Date	**07/10/98**	**07/10/98**	**07/09/98**	**07/10/98**	**07/10/98**	**07/10/98**	**07/10/98**	**07/10/98**
Metals								
Beryllium (ug/sw)	0.42	0.26	148	17.1	140	20.2	20.5	23.7
Station	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**
Sample No	**LUWP0590**	**LUWP0591**	**LUWP0592**	**LUWP0593**	**LUWP0594**	**LUWP0595**	**LUWP0596**	**LUWP0597**
Collection Date	**07/10/98**	**07/10/98**	**07/10/98**	**07/10/98**	**07/10/98**	**07/10/98**	**07/10/98**	**07/10/98**
Metals								
Beryllium (ug/sw)	32.8	79.4	13.6	6.2	5.6	9	17.4	10.2
Station	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**
Sample No	**LUWP0598**	**LUWP0599**	**LUWP0600**	**LUWP0601**	**LUWP0602**	**LUWP0603**	**LUWP0604**	**LUWP0605**

Collection Date	**07/10/98**	**07/10/98**	**07/10/98**	**07/10/98**	**07/10/98**	**07/10/98**	**07/10/98**	**07/10/98**
Metals								
Beryllium (ug/sw)	8.4 J	83 J	34 J	3.2 J	66.6 J	7.9 J	36.9 J	8.8 J
Station	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0005**
Sample No	**LUWP0606**	**LUWP0607**	**LUWP0608**	**LUWP0609**	**LUWP0610**	**LUWP0611**	**LUWP0612**	**LUWP0613**
Collection Date	**07/10/98**	**07/10/98**	**07/10/98**	**07/10/98**	**07/11/98**	**07/10/98**	**07/11/98**	**07/10/98**
Metals								
Beryllium (ug/sw)	21.7 J	1.7 J	97.1	70.9	67.7	73.5	50.9	40.7
Station	**IA04-WP0005**	**IA04-WP0005**	**IA04-WP0007**	**IA04-WP0007**	**IA04-WP0007**	**IA04-WP0007**	**IA04-WP0007**	**IA04-WP0007**
Sample No	**LUWP0614**	**LUWP0615**	**LUWP0825**	**LUWP0826**	**LUWP0827**	**LUWP0828**	**LUWP0829**	**LUWP0830**
Collection Date	**07/11/98**	**07/11/98**	**07/07/99**	**07/07/99**	**07/07/99**	**07/07/99**	**07/07/99**	**07/07/99**
Metals								
Beryllium (ug/sw)	17.6	16.1	0.01999 B	0.05 B	0.07 B	0.37999	0.01999 B	0.17 B
Station	**IA04-WP0007**	**IA04-WP0007**	**IA04-WP0007**	**IA04-WP0007**	**IA04-WP0007**	**IA04-WP0007**	**IA04-WP0007**	**IA04-WP0007**
Sample No	**LUWP0831**	**LUWP0832**	**LUWP0833**	**LUWP0834**	**LUWP0835**	**LUWP0836**	**LUWP0837**	**LUWP0838**
Collection Date	**07/07/99**	**07/07/99**	**07/07/99**	**07/07/99**	**07/07/99**	**07/07/99**	**07/07/99**	**07/07/99**
Metals								
Beryllium (ug/sw)	0.15999 B	0.02999 B	0.00999 B	0.004 U	0.02999 B	0.07 B	0.01999 B	0.01999 B
Station	**IA04-WP0007**	**IA04-WP0007**	**IA04-WP0007**	**IA04-WP0007**	**IA04-WP0007**	**IA04-WP0007**	**IA04-WP0007**	**IA04-WP0007**
Sample No	**LUWP0839**	**LUWP0840**	**LUWP0841**	**LUWP0842**	**LUWP0843**	**LUWP0844**	**LUWP0845**	**LUWP0846**
Collection Date	**07/07/99**	**07/07/99**	**07/07/99**	**07/07/99**	**07/07/99**	**07/07/99**	**07/07/99**	**07/07/99**
Metals								
Beryllium (ug/sw)	0.01999 B	3.7 J	0.17 J	0.05999 J	0.05999 J	0.10999 J	0.03999 J	0.05 J
Station	**IA04-WP0007**	**IA04-WP0007**	**IA04-WP0007**	**IA04-WP0007**	**IA04-WP0007**	**IA04-WP0007**	**IA04-WP0007**	**IA04-WP0007**
Sample No	**LUWP0847**	**LUWP0848**	**LUWP0849**	**LUWP0850**	**LUWP0851**	**LUWP0852**	**LUWP0853**	**LUWP0854**
Collection Date	**07/07/99**	**07/07/99**	**07/07/99**	**07/07/99**	**07/07/99**	**07/07/99**	**07/07/99**	**07/07/99**
Metals								
Beryllium (ug/sw)	0.03999 J	0.1 J	0.07 J	0.01999 J	0.05999 J	0.01999 J	0.03999 J	0.07 J
Station	**IA04-WP0007**	**IA04-WP0007**	**IA04-WP0007**	**IA04-WP0007**	**IA04-WP0007**	**IA04-WP0007**	**IA04-WP0008**	**IA04-WP0008**
Sample No	**LUWP0855**	**LUWP0856**	**LUWP0857**	**LUWP0858**	**LUWP0859**	**LUWP0860**	**LUWP0810**	**LUWP0811**
Collection Date	**07/07/99**	**07/07/99**	**07/07/99**	**07/07/99**	**07/07/99**	**07/07/99**	**06/18/99**	**06/18/99**
Metals								

Beryllium (ug/sw)	0.07999 J	0.15 J	0.1 J	0.1 J	0.07 J	0.54 J	0.05 B	0.2 B
Station	**IA04-WP0008**	**IA04-WP0008**	**IA04-WP0009**	**IA04-WP0009**	**IA04-WP0010**	**IA04-WP0011**	**IA04-WP0011**	**IA04-WP0011**
Sample No	**LUWP0812**	**LUWP0813**	**LUWP0814**	**LUWP0815**	**LUWP0820**	**LUWP0816**	**LUWP0817**	**LUWP0818**
Collection Date	**06/18/99**	**06/18/99**	**06/18/99**	**06/18/99**	**06/18/99**	**06/18/99**	**06/18/99**	**06/18/99**
Metals								
Beryllium (ug/sw)	0.33	1.3	0.87	0.03999 B	0.15 B	0.01999 B	0.15999 B	0.38999

Station	**IA04-WP0011**	**IA04-WP0012**	**IA04-WP0012**	**IA04-WP0013**
Sample No	**LUWP0819**	**LUWP0822**	**LUWP0823**	**LUWP0821**
Collection Date	**06/18/99**	**06/18/99**	**06/18/99**	**06/18/99**
Metals				
Beryllium (ug/sw)	0.3	7	1.2	26.6

APPENDIX 4B.2:
Crosstalk Results

Appendix 4B.2: Crosstalk Results

Introduction

One complication in the interpretation of alpha scan results is the likelihood of false positive readings due to beta-gamma interference. During Phase IV activities in the buildings, thirteen locations (see the data sheets following this page) were scanned with an alpha meter and then rescanned with a sheet of paper between the surface and the alpha meter. The purpose of this exercise was to check for "crosstalk". The paper blocks alpha radiation therefore the second reading indicates "non-alpha" counts. A comparison of the "shielded" and "unshielded" alpha readings indicates that an average of 2.2% of the beta-gamma counts leaked through to the alpha channel. Because of the relatively low alpha readings, this amounts to an average of 80% of the alpha counts or 77% of the disintegrations per minute (dpm). As a practical matter this means that, on average, alpha readings of 434 dpm and lower would be below the 100 dpm NRC guideline.

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Production Bld. 2nd Flr, Overheads Coor. In meters from NE Corner Alpha Scans<61, see field notes for Beta Scans.

V 1.9

Reference No.:	LKYDT228
Survey No.:	315
Data Code:	CH-SURV
Grid ID:	See Description
Area:	IA04
Survey By:	S.R. Plemens
Survey Date:	07/27/98
Smears Counted By:	J. Kinstle
Smear Count Date:	08/05/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	SR Plemens			
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	672	672		685
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	143	143	68222	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/03/98
Bkgd CPM:	4.0	233.0	0.3	228.0
Efficiency:	0.13	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	36	105	2	110

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	Ovrhd Grid #AD 19 Beam W. Shldr	-29.5	-18.5	6.9	400-1700 cpm	36.0	246	95	1399.0	3429	233	3.0	7	8	224.0	<Lc -13	130
2	QC of #1					41.0	285	101	1429.0	3518	235	3.0	7	8	218.0	<Lc -31	129
3	#1 counted w/ papershield				chk for crosstalk	34.0	231	93	1386.0	3391	232						
4	Grid # AD 18 Beam E. Shldr	-29.5	-17.5	7.1	400-1000 cpm	34.0	231	93	1033.0	2353	205	11.0	26	16	266.0	119	136
5	#4 counted w/ papershield				chk for crosstalk	23.0	146	78	896.0	1950	194						
6	Grid # AD 17 Beam E. Shldr	-29.5	-16.5	6.9	400-1000 cpm	29.0	192	87	1136.0	2656	213	0.0	<Lc -1	0	242.0	<Lc 44	133
7	#6 counted w/ papershield				chk for crosstalk	23.0	146	78	1067.0	2453	208						
8	Grid # AC 16 Pipe	-28.5	-15.5	6.8	150-300 cpm	6.0	<Lc 15	48	268.0	<Lc 103	129	0.0	<Lc -1	0	262.0	<Lc 106	136
9	Grid # AC 17 Wrapped Pipes	-28.5	-16.5	6.8	150-300 cpm	8.0	<Lc 31	52	319.0	253	135	0.0	<Lc -1	0	254.0	<Lc 81	134
10	Grid # AD 16 Pipes	-29.5	-15.5	6.5	150-350 cpm	4.0	<Lc 0	43	284.0	150	131	1.0	<Lc 2	5	217.0	<Lc -34	129
11	Grid # AD 16 Beam E. Shldr	-29.5	-15.5	6.9	400-900 cpm	19.0	115	72	910.0	1991	195	0.0	<Lc -1	0	230.0	<Lc 6	131
12	Grid # AD 16 Angle Beam W. Shldr	-29.5	-15.5	5.8	200-500 cpm	9.0	38	54	294.0	179	132	0.0	<Lc -1	0	249.0	<Lc 66	134
13	Grid # AD 16 Pipe	-29.5	-15.5	6.8	150-250 cpm	3.0	<Lc -8	40	239.0	<Lc 18	125	0.0	<Lc -1	0	248.0	<Lc 63	134
14	Grid # AK 18 Insul. Pipe	-36.5	-17.5	6.3	225-300 cpm	5.0	<Lc 8	45	255.0	<Lc 65	127	0.0	<Lc -1	0	204.0	<Lc -75	127
15	Grid # AK 18 Support Beam	-36.5	-17.5	7.1	490-590 cpm	11.0	54	58	576.0	1009	164	1.0	<Lc 2	5	186.0	<Lc -131	125
16	Grid # AL 18 Cross Member	-37.5	-17.5	7.1	450-595 cpm	12.0	62	60	553.0	941	162	11.0	26	16	204.0	<Lc -75	127
17	Grid # AL 19 Cross Beam	-37.5	-18.5	7.2	190-300 cpm	4.0	<Lc 0	43	236.0	<Lc 9	125	0.0	<Lc -1	0	195.0	<Lc -103	126
18	Grid # AL 19 Light Shade	-37.5	-18.5	7.3	300-400 cpm	10.0	46	56	370.0	403	142	0.0	<Lc -1	0	214.0	<Lc -44	129
19	Grid # AM 18 Cross Beam	-38.5	-17.5	7.1	450-600 cpm	13.0	69	62	588.0	1044	165	4.0	9	10	209.0	<Lc -59	128
20	Grid # AM 18 Cross Member	-38.5	-17.5	6.9	275-400 cpm	7.0	<Lc 23	50	384.0	444	143	1.0	<Lc 2	5	192.0	<Lc -113	126
21	Grid # AN 18 Cross Member	-39.5	-17.5	7.1	400-550 cpm	16.0	92	67	521.0	847	158	6.0	14	12	233.0	<Lc 16	132
22	Grid # AN 18 Cross Member	-39.5	-17.5	6.9	475-550 cpm	16.0	92	67	510.0	815	157	5.0	11	11	223.0	<Lc -16	130
23	Grid # AN 19 Main Beam	-39.5	-18.5	6.9	325-400 cpm	1.0	<Lc -23	34	350.0	344	139	1.0	<Lc 2	5	240.0	<Lc 38	133

Data Entered By and Date: Robin Sanborn 11 Aug 98

Reviewed By and Date (Site Manager): 11 Aug 98

9-2-98

12/11/96

*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Production Bld. 2nd Flr,E.End Alpha Scans<141, see field notes for Beta Scans. Papershield used for crosstalk determin. (++)avg.cnts

V 1.9

Reference No.:	LKYDT216
Survey No.:	297
Data Code:	CH-SURV
Grid ID:	See Description
Area:	IA04
Survey By:	S.R. Plemens
Survey Date:	07/25/98
Smears Counted By:	J.Kinstle
Smear Count Date:	08/04/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	S.R. Plemens		J.Kinstle	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	672	672		685
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	143	143	68222	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/03/98
Bkgd CPM:	4.0	230.0	0.1	225.0
Efficiency:	0.13	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	36	104	1	109

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	Grid# X28 E/W Beam	-23.5	-27.3	7.05	800-2200 cpm	54.0	385	115	2040.0	5324	275	4.0	10	10	252.0	<Lc 84	134
2	Grid# X28 E/W Beam	-23.6	-27.3	7.05	1000-3000 cpm	51.0	362	112	2950.0	8000	325	3.0	7	8	234.0	<Lc 28	131
3	Grid# X28 E/W Beam	-23.5	-27.3	7.05	Paper Shield	40.0	277	100	1865.0	4809	264	4.0	10	10	252.0	<Lc 84	134
4	Grid# X28 E/W Beam	-23.6	-27.3	7.05	1000-3000 cpm	48.0	338	109	2840.0	7676	319	1.0	2	5	252.0	<Lc 84	134
5	Grid# X28 E/W Beam	-23.6	-27.3	7.05	Paper Shield	54.0	385	115	2710.0	7294	313	1.0	2	5	252.0	<Lc 84	134
6	Grid# X28 E/W Beam	-23.5	-27.4	7.05	xtra counts	24.0	154	80	1094.0	2541	210						
7	Grid# X28 E/W Beam	-23.5	-27.5	7.05	xtra counts	23.0	146	78	1125.0	2632	212						
8	Grid# X28 E/W Beam	-23.5	-27.6	7.05	xtra counts	17.0	100	69	808.0	1700	186						
9	Grid # X29 E/W Pipe	-23.5	-28.5	6.51	100-250 cpm	4.0	<Lc 0	43	183.0	<Lc -138	117	1.0	2	5	217.0	<Lc -25	129
10	QC of #13 (11-12')	-23.5	-27.3	7.05	800-2200 cpm	47.0	331	108	1879.0	4850	265	6.0	14	12	228.0	<Lc 9	130
11	Grid #Y28 E/W Beam	-24.5	-27.3	7.05	600-3000 cpm	62.0	446	122	3170.0	8647	336	4.0	10	10	251.0	<Lc 81	134
12	Grid #Y28 E/W Beam	-24.5	-27.3	7.05	600-3000 cpm	51.0	362	112	3060.0	8324	331	4.0	10	10	251.0	<Lc 81	134
13	Grid #Y28 E/W Beam	-24.5	-27.3	7.05	Paper Shield	64.0	462	124	2940.0	7971	325	4.0	10	10	251.0	<Lc 81	134
14	Grid #Y28 E/W Beam	-24.6	-27.3	7.05	600-2500 cpm	70.0	508	130	2210.0	5824	285	2.0	5	7	210.0	<Lc -47	128
15	Grid #Y28 E/W Beam	-24.6	-27.3	7.05	600-2500 cpm	53.0	377	114	2260.0	5971	288	2.0	5	7	210.0	<Lc -47	128
16	Grid #Y28 E/W Beam	-24.6	-27.3	7.05	Paper Shield	31.0	208	89	1866.0	4812	264	2.0	5	7	210.0	<Lc -47	128
17	Grid #Y28 E/W Beam	-24.6	-27.4	7.05	xtra counts	61.0	438	122	3050.0	8294	330						
18	Grid #Y28 E/W Beam	-24.6	-27.5	7.05	xtra counts	50.0	354	111	1442.0	3565	236						
19	Grid #Y28 E/W Beam	-24.6	-27.6	7.05	xtra counts	39.0	269	99	1433.0	3538	235						

Data Entered By and Date: 10 Aug 98 11 Aug 98

9-2-98

12/11/96

*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

V 1.9

Comments: Production Bld. 2nd Flr, Overheads Coor. In meters from NE Corner Alpha Scans<120, see field notes for Beta Scans.

Reference No.:	LKYDT231
Survey No.:	318
Data Code:	CH-SURV
Grid ID:	See Description
Area:	IA04
Survey By:	S.R. Plemens
Survey Date:	07/28/98
Smears Counted By:	J. Kinstle
Smear Count Date:	08/06/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	S.R. Plemens			
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	672	672		685
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	143	143	68222	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/03/98
Bkgd CPM:	5.0	265.0	0.2	181.0
Efficiency:	0.13	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	40	112	2	98

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	Grid# Y 26 Beam E. Shldr	-24.5	-25.5	6.9	800-2500 cpm	62.0	438	123	2610.0	6897	309	15.0	36	19	228.0	147	124
2	QC of #1					73.0	523	133	2330.0	6074	294	15.0	36	19	242.0	191	126
3	Recount of #1 w/ papershield	-24.5	-25.5	6.9	chk for crosstalk	53.0	369	115	2330.0	6074	294						
4	Grid# Y 28 Beam W. Shldr	-24.5	-27.5	6.9	900-3000 cpm	66.0	469	127	2680.0	7103	313	0.0	<Lc 0	0	223.0	131	123
5	#4(Y 28) recount w/ papershield	-24.5	-27.5	6.9	chk for crosstalk	52.0	362	114	2160.0	5574	284						
6	Grid# AY 14 Main cross beam	-50.5	-13.5	7.1	260-320 cpm	4.0	<Lc -8	45	298.0	<Lc 97	137	0.0	<Lc 0	0	205.0	<Lc 75	120
7	Grid# AY 15 Top of metal pipe	-50.5	-14.5	4.6	225-275 cpm	1.0	<Lc -31	37	253.0	<Lc -35	131	1.0	2	5	214.0	103	122
8	Grid# AY 15 Top of cncrt x membr	-50.5	-14.5	4.6	280-340 cpm	3.0	<Lc -15	43	317.0	153	139	1.0	2	5	182.0	<Lc 3	117
9	Grid# AY 15 Top of electrical bus duct	-50.5	-14.5	4.8	260-320 cpm	6.0	<Lc 8	50	271.0	<Lc 18	133	0.0	<Lc 0	0	198.0	<Lc 53	119
10	Grid# AZ 13 Main X (cross) beam	-51.5	-12.5	7.1	250-300 cpm	4.0	<Lc -8	45	280.0	<Lc 44	135	0.0	<Lc 0	0	209.0	<Lc 88	121
11	Grid# AZ 13 Metal light shade	-51.5	-12.5	7.3	350-425 cpm	9.0	<Lc 31	56	383.0	347	147	0.0	<Lc 0	0	178.0	<Lc -9	116
12	Grid# AZ 14 Main cross beam	-51.5	-13.5	7.1	275-325 cpm	9.0	<Lc 31	56	303.0	112	137	0.0	<Lc 0	0	203.0	<Lc 69	120
13	Grid# AZ 15 Top of metal pipes	-51.5	-14.5	4.6	220-280 cpm	5.0	<Lc 0	48	243.0	<Lc -65	130	0.0	<Lc 0	0	203.0	<Lc 69	120
14	Grid# AZ 15 Top of cncrt x membr	-51.5	-14.5	4.6	280-340 cpm	6.0	<Lc 8	50	313.0	141	139	0.0	<Lc 0	0	182.0	<Lc 3	117
15	Grid# AZ 16 Top of electrical bus duct	-51.5	-15.5	4.8	260-320 cpm	6.0	<Lc 8	50	272.0	<Lc 21	134	0.0	<Lc 0	0	174.0	<Lc -22	115
16	Grid# AT 17 Double pipe	-45.5	-16.1	6.7	200-450 cpm	5.0	<Lc 0	48	260.0	<Lc -15	132	1.0	2	5	230.0	153	124
17	Grid# AT 17 Beam E. shldr	-45.5	-16.5	6.9	200-500 cpm	9.0	<Lc 31	56	406.0	415	149	1.0	2	5	208.0	<Lc 84	121
18	Grid# AT 17 2" pipe	-45.5	-16.3	6.7	200--450 cpm	9.0	<Lc 31	56	255.0	<Lc -29	131	0.0	<Lc 0	0	224.0	134	123
19	Grid# AT 17 Wrapped pipes	-45.5	-16.5	6.7	150-300 cpm	13.0	62	64	280.0	<Lc 44	135	0.0	<Lc 0	0	196.0	<Lc 47	119
20	Grid# AU 17 Double pipes	-46.5	-16.1	6.7	200-400 cpm	4.0	<Lc -8	45	280.0	<Lc 44	135	0.0	<Lc 0	0	201.0	<Lc 63	120
21	Grid# AU 17 2" pipe	-46.5	-16.3	6.7	200-400 cpm	4.0	<Lc -8	45	221.0	<Lc -129	127	0.0	<Lc 0	0	230.0	153	124
22	Grid# AU 17 Support	-46.5	-16.5	7.1	150-300 cpm	7.0	<Lc 15	52	258.0	<Lc -21	132	0.0	<Lc 0	0	218.0	116	122
23	Grid# AU 17 Wrapped pipes	-46.5	-16.5	6.7	150-300 cpm	3.0	<Lc -15	43	288.0	<Lc 68	136	0.0	<Lc 0	0	206.0	<Lc 78	120

Data Entered By and Date: 11 Aug 98

9-2-98

12/11/96
*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Production Bld. 2nd Flr, Overheads Coor. In meters from NE Corner Alpha Scans<120, see field notes for Beta Scans.

V 1.9

Reference No.:	LKYDT231
Survey No.:	318
Data Code:	CH-SURV
Grid ID:	See Description
Area:	IA04
Survey By:	S.R. Plemens
Survey Date:	07/28/98
Smears Counted By:	J. Kinstle
Smear Count Date:	08/06/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	S.R. Plemens		[illegible]	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	672	672		685
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	143	143	68222	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/03/98
Bkgd CPM:	5.0	265.0	0.2	181.0
Efficiency:	0.13	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	40	112	2	98

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
24	Grid# AV 17 Double pipes	-47.5	-16.1	6.7	150-300 cpm	3.0	<Lc -15	43	249.0	<Lc -47	131	1.0	2	5	213.0	100	122
25	QC of #24					5.0	<Lc 0	48	274.0	<Lc 26	134	0.0	<Lc 0	0	214.0	103	122
26	Grid# AV 17 Wrapped pipes	-47.5	-16.5	6.7	150-300 cpm	5.0	<Lc 0	48	272.0	<Lc 21	134	0.0	<Lc 0	0	185.0	<Lc 13	117
27	Grid# AV 17 2" pipe	-47.5	-16.3	6.7	150-350 cpm	2.0	<Lc -23	40	239.0	<Lc -76	129	0.0	<Lc 0	0	222.0	128	123
28	Grid# AW 17 Support	-48.5	-16.5	7.1	150-250 cpm	7.0	<Lc 15	52	232.0	<Lc -97	129	0.0	<Lc 0	0	187.0	<Lc 19	117
29	Grid# AW 17 Double pipes	-48.5	-16.1	6.7	150-450 cpm	4.0	<Lc -8	45	267.0	<Lc 6	133	0.0	<Lc 0	0	205.0	<Lc 75	120
30	Grid# AW 17 2" pipe	-48.5	-16.3	6.7	150-350 cpm	4.0	<Lc -8	45	226.0	<Lc -115	128	2.0	4	7	205.0	<Lc 75	120
31	Grid# AW 17 Wrapped pipes	-48.5	-16.5	6.7	150-300 cpm	8.0	<Lc 23	54	245.0	<Lc -59	130	0.0	<Lc 0	0	197.0	<Lc 50	119
32	Grid# AX 17 Double pipes	-49.5	-16.1	6.7	150-400 cpm	7.0	<Lc 15	52	244.0	<Lc -62	130	0.0	<Lc 0	0	203.0	<Lc 69	120
33	Grid# AX 17 2" pipe	-49.5	-16.3	6.7	150-380 cpm	7.0	<Lc 15	52	232.0	<Lc -97	129	0.0	<Lc 0	0	200.0	<Lc 59	120
34	Grid# AX 17 Wrapped pipes	-49.5	-16.5	6.7	150-300 cpm	5.0	<Lc 0	48	224.0	<Lc -121	127	1.0	2	5	204.0	<Lc 72	120
35	Grid# AT 18 Beam W. shldr	-45.5	-17.5	6.9	300-500 cpm	9.0	<Lc 31	56	325.0	176	140	0.0	<Lc 0	0	201.0	<Lc 63	120
36	Grid# AT 18 Beam N. shldr	-45.5	-17.5	7.1	150-500 cpm	10.0	<Lc 38	58	321.0	165	140	0.0	<Lc 0	0	186.0	<Lc 16	117
37	Grid# AU 18 Beam S. shldr	-46.5	-17.5	7.1	150-350 cpm	8.0	<Lc 23	54	392.0	374	148	1.0	2	5	208.0	<Lc 84	121
38	Grid# AV 18 Beam N. shldr	-47.5	-17.5	7.1	200-500 cpm	6.0	<Lc 8	50	362.0	285	144	0.0	<Lc 0	0	197.0	<Lc 50	119
39	Grid# AV 18 Light	-47.5	-17.5	7.1	150-350 cpm	4.0	<Lc -8	45	345.0	235	142	0.0	<Lc 0	0	191.0	<Lc 31	118
40	Grid# AW 18 Beam	-48.5	-17.5	7.2	200-400 cpm	1.0	<Lc -31	37	247.0	<Lc -53	130	0.0	<Lc 0	0	187.0	<Lc 19	117
41	QC of #41					6.0	<Lc 8	50	256.0	<Lc -26	132	0.0	<Lc 0	0	198.0	<Lc 53	119
42	Grid# AW 18 Beam N. shldr	-48.5	-17.5	7.1	200-450 cpm	5.0	<Lc 0	48	374.0	321	146	1.0	2	5	218.0	116	122
43	Grid# AX 18 Beam N. shldr	-49.5	-17.5	7.1	200-450 cpm	2.0	<Lc -23	40	273.0	<Lc 24	134	0.0	<Lc 0	0	198.0	<Lc 53	119
44	Grid# H 23 Beam N. shldr	-7.5	-22.5	7.1	600-1300 cpm	35.0	231	95	1173.0	2671	219	2.0	4	7	228.0	147	124
45	QC of #44					36.0	238	97	1133.0	2553	216	4.0	9	10	234.0	166	125
46	#44 Recount w/ papershield				chk for crosstalk	23.0	138	80	1057.0	2329	210						

Data Entered By and Date: [illegible] 11 Aug 98

CB 9-2-98

12/11/96

*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Production Bld. 2nd Flr, Overneads Coor. In meters from NE Corner Alpha Scans<151, see field notes for Beta Scans.

V 1.9

Reference No.:	LKYDT230
Survey No.:	317
Data Code:	CH-SURV
Grid ID:	See Description
Area:	IA04
Survey By:	S.R. Plemens
Survey Date:	07/28/98
Smears Counted By:	J. Kinstle
Smear Count Date:	08/06/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	SRPlemens		J. Kinstle	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	672	672		685
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	143	143	68222	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/03/98
Bkgd CPM:	5.0	265.0	0.2	181.0
Efficiency:	0.13	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	40	112	2	98

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	Grid# Y 27 Beam W. Shldr	-24.5	-26.5	6.9	1600-4680 cpm	97.0	708	152	4400.0	12162	394	8.0	19	14	217.0	113	122
2	QC of #1					111.0	815	162	4350.0	12015	392	9.0	21	14	231.0	156	124
3	Recount #1 w/ paper shield	-24.5	-26.5	6.9	Chk for crosstalk	81.0	585	140	3780.0	10338	367						
4	Grid# Y 27 Beam	-24.5	-26.8	6.9	for Beta average	29.0	185	88	1056.0	2326	210						
5	Grid# Y 27 Beam	-24.5	-26.3	6.9	for Beta average	64.0	454	125	1664.0	4115	253						
6	Grid# Y 27 Beam	-24.5	-26.6	6.9	for Beta average	55.0	385	117	2590.0	6838	308						
7	Grid# Y 27 Beam	-24.5	-26.7	6.9	for Beta average	44.0	300	106	2400.0	6279	298						

#4-7 taken to average Beta fixed activity. Limit 5000 dpm/100sq.cm averaged in grid

CB 9-2-98

Data Entered By and Date: 11 AUG 98

Reviewed By and Date (Site Manager): 11 AUG 98

12/11/96

*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Production Bld. 2nd Flr, Overheads Coor. In meters from NE Corner Alpha Scans<120, see field notes for Beta Scans.

V 1.9

Reference No.:	LKYDT231
Survey No.:	318
Data Code:	CH-SURV
Grid ID:	See Description
Area:	IA04
Survey By:	S.R. Plemens
Survey Date:	07/28/98
Smears Counted By:	J. Kinstle
Smear Count Date:	08/06/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	SRPlemens		J.K.	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	672	672		685
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	143	143	68222	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/03/98
Bkgd CPM:	5.0	265.0	0.2	181.0
Efficiency:	0.13	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	40	112	2	98

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
47	Grid# I 23 Beam N. shldr	-8.5	-22.5	7.1	400-1180 cpm	24.0	146	81	747.0	1418	183	2.0	4	7	216.0	109	122
48	Grid# J 23 Beam N. shldr	-9.5	-22.5	7.1	300-800 cpm	16.0	85	69	672.0	1197	176	0.0	<Lc 0	0	194.0	<Lc 41	119
49	Grid# K 23 Beam N. shldr	-10.5	-22.5	7.1	300-650 cpm	8.0	<Lc 23	54	679.0	1218	177	1.0	2	5	215.0	106	122
50	Grid# L 23 Beam N. shldr	-11.5	-22.5	7.1	250-650 cpm	8.0	<Lc 23	54	593.0	965	169	1.0	2	5	198.0	<Lc 53	119
51	Grid# L 23 Beam S. shldr	-11.5	-22.5	7.1	250-600 cpm	7.0	<Lc 15	52	356.0	268	144	0.0	<Lc 0	0	210.0	<Lc 91	121
52	Grid# M 23 Beam N. shldr	-12.5	-22.5	7.1	300-800 cpm	18.0	100	72	656.0	1150	175	0.0	<Lc 0	0	210.0	<Lc 91	121
53	Grid# N 23 Beam N. shldr	-13.5	-22.5	7.1	300-1100 cpm	16.0	85	69	794.0	1556	188	0.0	<Lc 0	0	193.0	<Lc 38	118
54	Grid# O 23 Beam N. shldr	-14.5	-22.5	7.1	250-850 cpm	9.0	<Lc 31	56	673.0	1200	177	1.0	2	5	230.0	153	124
55	Grid# J 24 Beam W. shldr	-9.5	-23.5	6.9	300-1100 cpm	34.0	223	94	1112.0	2491	214	3.0	7	8	198.0	<Lc 53	119
56	#55 Recount w/ papershield				chk for crosstalk	24.0	146	81	1111.0	2488	214						
57	Grid# O 24 Beam W. shldr	-14.5	-23.5	6.9	600-1700 cpm	38.0	254	99	1398.0	3332	235	0.0	<Lc 0	0	210.0	<Lc 91	121
58	QC of #57					43.0	292	104	1466.0	3532	240	2.0	4	7	193.0	<Lc 38	118
59	#57 recount w/ papershield					27.0	169	85	1387.0	3300	234						

9-2-98

Data Entered By and Date: 11 Aug 98

12/11/96
*DPM units per 100 cm2

APPENDIX 4B.3:
Direct Surface and Transferable Contamination Surveys

Maintenance Building

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Maintenance Building Coo. ...es from NW Corner, Alpha Scans <10cpm, See Field Notes for Beta Scans

V 1.9

Reference No.:	LKYDT171
Survey No.:	234
Data Code:	CH-SURV
Grid ID:	See Description
Area:	IA04
Survey By:	E. Champagne
Survey Date:	07/20/98
Smears Counted By:	E. Champagne
Smear Count Date:	07/20/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	E Champagne		E Champagne	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	1162	1162		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	526	526	68222	532
Cal Due Date:	09/11/98	09/11/98	11/06/98	09/11/98
Bkgd CPM:	0.0	126.0	8Aug98 ~~0.4~~ 0.2	210.0
Efficiency:	0.14	0.30	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	0	87	3	106

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	E48 Floor	47.5	-4.5	0	100-200 cpm	0.0	0	0	101.0	<Lc -83	98	1.0	<Lc 1	5	252.0	131	132
2	F48 Floor	47.5	-5.5	0	100-200 cpm	2.0	14	20	117.0	<Lc -30	102	0.0	<Lc -1	0	218.0	<Lc 25	127
3	G52 Floor	51.5	-6.5	0	100-200 cpm	0.0	0	0	125.0	<Lc -3	104	0.0	<Lc -1	0	225.0	<Lc 47	128
4	H52 Floor	51.5	-7.5	0	100-200 cpm	0.0	0	0	120.0	<Lc -20	102	0.0	<Lc -1	0	214.0	<Lc 13	126
5	I 52 Floor	51.5	-8.5	0	100-200 cpm	2.0	14	20	106.0	<Lc -67	100	0.0	<Lc -1	0	209.0	<Lc -3	125
6	G56 Floor	55.5	-6.5	0	100-200 cpm	0.0	0	0	127.0	<Lc 3	104	0.0	<Lc -1	0	208.0	<Lc -6	125
7	H56 Floor	55.5	-7.5	0	100-200 cpm	0.0	0	0	127.0	<Lc 3	104	0.0	<Lc -1	0	201.0	<Lc -28	124
8	I 56 Floor	55.5	-8.5	0	100-200 cpm	0.0	0	0	139.0	<Lc 43	106	0.0	<Lc -1	0	191.0	<Lc -59	123
9	I 56 Floor	55.5	-9.5	0	100-200 cpm	1.0	7	14	124.0	<Lc -7	103	0.0	<Lc -1	0	207.0	<Lc -9	125
10	K56 Floor	55.5	-10.5	0	100-200 cpm	1.0	7	14	139.0	<Lc 43	106	2.0	4	7	216.0	<Lc 19	126
11	L56 Floor	55.5	-11.5	0	100-200 cpm	2.0	14	20	140.0	<Lc 47	107	0.0	<Lc -1	0	198.0	<Lc -38	124
12	QC of #11 (L56)	55.5	-11.5	0		1.0	7	14	113.0	<Lc -43	101	1.0	<Lc 1	5	216.0	<Lc 19	126
13	O 39 Wall	38.5	-14.5	0.5	100-200 cpm	0.0	0	0	268.0	473	130	0.0	<Lc -1	0	188.0	<Lc -69	122
14	O 48 Wall	47.5	-14.5	0.5	100-200 cpm	1.0	7	14	252.0	420	127	0.0	<Lc -1	0	208.0	<Lc -6	125
15	I 59 Wall	58.5	-8.5	0.5	100-200 cpm	0.0	0	0	82.0	<Lc -147	94	0.0	<Lc -1	0	212.0	<Lc 6	126
16	J59 Wall	58.5	-9.5	0.5	100-200 cpm	0.0	0	0	235.0	363	124	0.0	<Lc -1	0	235.0	<Lc 78	129
17	K59 Wall	58.5	-10.5	0.5	100-200 cpm	0.0	0	0	318.0	640	138	0.0	<Lc -1	0	194.0	<Lc -50	123

9-2-98

Data Entered By and Date: Richard Sanchez 3 Aug 98

Reviewed By and Date (Site Manager) 8 Aug 98

12/11/96
*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Maintenance Building Coc .es from NW Corner, Alpha Scans <10cpm, See Field Notes for Beta Scans

V 1.9

Reference No.:	LKYDT207
Survey No.:	285
Data Code:	CH-SURV
Grid ID:	See Description
Area:	IA04
Survey By:	E. Champagne
Survey Date:	07/20/98
Smears Counted By:	E. Champagne
Smear Count Date:	07/20/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	E Champagne		E Champagne	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	1162	1162		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	526	526	68222	532
Cal Due Date:	09/11/98	09/11/98	11/06/98	09/11/98
Bkgd CPM:	0.0	126.0	8 Aug 98 ~~0.4~~ 0.2	210.0
Efficiency:	0.14	0.30	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	0	87	3	106

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	G27 Floor	26.5	-6.5	0	100-200 cpm	1.0	7	14	106.0	<Lc -67	100	1.0	<Lc 1	5	106.0	<Lc -325	109
2	H27 Floor	26.5	-7.5	0	100-200 cpm	0.0	0	0	151.0	<Lc 83	109	0.0	<Lc -1	0	220.0	<Lc 31	127
3	I 27 Floor	26.5	-8.5	0	100-200 cpm	0.0	0	0	120.0	<Lc -20	102	0.0	<Lc -1	0	208.0	<Lc -6	125
4	H32 Floor	31.5	-7.5	0	100-200 cpm	2.0	14	20	143.0	<Lc 57	107	0.0	<Lc -1	0	198.0	<Lc -38	124
5	I 32 Floor	31.5	-8.5	0	100-200 cpm	0.0	0	0	104.0	<Lc -73	99	0.0	<Lc -1	0	192.0	<Lc -56	123
6	J32 Floor	31.5	-9.5	0	100-200 cpm	0.0	0	0	122.0	<Lc -13	103	0.0	<Lc -1	0	211.0	<Lc 3	126
7	K32 Floor	31.5	-10.5	0	100-200 cpm	1.0	7	14	132.0	<Lc 20	105	0.0	<Lc -1	0	223.0	<Lc 41	127
8	L32 Floor	31.5	-11.5	0	100-200 cpm	3.0	21	24	145.0	<Lc 63	108	0.0	<Lc -1	0	212.0	<Lc 6	126
9	M32 Floor	31.5	-12.5	0	100-200 cpm	0.0	0	0	165.0	130	111	0.0	<Lc -1	0	185.0	<Lc -78	122
10	N32 Floor	31.5	-13.5	0	100-200 cpm	2.0	14	20	163.0	123	111	0.0	<Lc -1	0	205.0	<Lc -16	125
11	F44 Floor	43.5	-5.5	0	100-200 cpm	0.0	0	0	109.0	<Lc -57	100	0.0	<Lc -1	0	193.0	<Lc -53	123
12	G44 Floor	43.5	-6.5	0	100-200 cpm	0.0	0	0	109.0	<Lc -57	100	0.0	<Lc -1	0	226.0	<Lc 50	128
13	H44 Floor	43.5	-7.5	0	100-200 cpm	0.0	0	0	119.0	<Lc -23	102	0.0	<Lc -1	0	203.0	<Lc -22	124
14	I 44 Floor	43.5	-8.5	0	100-200 cpm	1.0	7	14	103.0	<Lc -77	99	1.0	<Lc 1	5	199.0	<Lc -34	124
15	J44 Floor	43.5	-9.5	0	100-200 cpm	2.0	14	20	116.0	<Lc -33	102	0.0	<Lc -1	0	240.0	<Lc 94	130
16	K44 Floor	43.5	-10.5	0	100-200 cpm	1.0	7	14	111.0	<Lc -50	101	0.0	<Lc -1	0	210.0	<Lc 0	126
17	A48 Floor	47.5	-0.5	0	100-200 cpm	0.0	0	0	134.0	<Lc 27	105	0.0	<Lc -1	0	205.0	<Lc -16	125
18	B48 Floor	47.5	-1.5	0	100-200 cpm	0.0	0	0	114.0	<Lc -40	101	0.0	<Lc -1	0	208.0	<Lc -6	125
19	C48 Floor	47.5	-2.5	0	100-200 cpm	1.0	7	14	106.0	<Lc -67	100	1.0	<Lc 1	5	205.0	<Lc -16	125
20	D48 Floor	47.5	-3.5	0	100-200 cpm	0.0	0	0	106.0	<Lc -67	100	0.0	<Lc -1	0	222.0	<Lc 38	127
21	QC of #20 (D48)	47.5	-3.5	0		1.0	7	14	117.0	<Lc -30	102	0.0	<Lc -1	0	218.0	<Lc 25	127

Data Entered By and Date: Richard Sinclair 8 Aug 98

Revi[illegible]y and Date (Site Manager) [illegible] 8 Aug 98

9-2-98

12/11/96

*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Former Maintenance Build. oint of Origin NW Corner Alpha Scans <10cpm, See field notes for Beta Scans

V 1.9

Reference No.:	LKYDT170
Survey No.:	233
Data Code:	CH-SURV
Grid ID:	02D
Area:	Maintenance Bld.
Survey By:	E. Champagne
Survey Date:	07/20/98
Smears Counted By:	E. Champagne
Smear Count Date:	07/20/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	E. Champagne		E. Champagne	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	1162	1162		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	526	526	68222	532
Cal Due Date:	09/11/98	09/11/98	11/06/98	09/11/98
Bkgd CPM:	0.0	126.0	0.2	210.0
Efficiency:	0.14	0.30	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	0	87	2	106

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	Overhead A1	1	-1	5.5	100-200 cpm	1.0	7	14	237.0	370	124	0.0	<Lc 0	0	225.0	<Lc 47	128
2	Overhead B1	1	-2	5.5	100-200 cpm	3.0	21	24	165.0	130	111	0.0	<Lc 0	0	198.0	<Lc -38	124
3	Overhead C0	0	-3	5.5	100-200 cpm	0.0	0	0	294.0	560	134	0.0	<Lc 0	0	183.0	<Lc -84	121
4	Overhead E8	8	-5	4.3	100-200 cpm	0.0	0	0	95.0	<Lc -103	97	0.0	<Lc 0	0	218.0	<Lc 25	127
5	Overhead F8	8	-6	4.3	100-200 cpm	0.0	0	0	140.0	<Lc 47	107	0.0	<Lc 0	0	218.0	<Lc 25	127
6	Overhead G8	8	-7	4.3	100-200 cpm	1.0	7	14	130.0	<Lc 13	105	0.0	<Lc 0	0	201.0	<Lc -28	124
7	Overhead L12	12	-12	4.3	100-200 cpm	2.0	14	20	108.0	<Lc -60	100	0.0	<Lc 0	0	227.0	<Lc 53	128
8	Overhead M12	12	-13	4.3	100-200 cpm	1.0	7	14	99.0	<Lc -90	98	0.0	<Lc 0	0	179.0	<Lc -97	121
9	Overhead N12	12	-14	4.3	100-200 cpm	1.0	7	14	137.0	<Lc 37	106	0.0	<Lc 0	0	235.0	<Lc 78	129
10	Overhead O12	15	-15	4.3	100-200 cpm	0.0	0	0	149.0	<Lc 77	108	0.0	<Lc 0	0	205.0	<Lc -16	125
11	Overhead D15	16	-4	4.3	100-200 cpm	0.0	0	0	156.0	100	110	0.0	<Lc 0	0	201.0	<Lc -28	124
12	Overhead D16	17	-4	4.3	100-200 cpm	0.0	0	0	115.0	<Lc -37	101	0.0	<Lc 0	0	205.0	<Lc -16	125
13	Overhead D17	27	-4	4.3	100-200 cpm	0.0	0	0	122.0	<Lc -13	103	0.0	<Lc 0	0	221.0	<Lc 34	127
14	Overhead D27	27	-4	4.3	100-200 cpm	0.0	0	0	82.0	<Lc -147	94	0.0	<Lc 0	0	181.0	<Lc -91	121
15	Overhead E27	27	-5	4.3	100-200 cpm	1.0	7	14	79.0	<Lc -157	94	0.0	<Lc 0	0	206.0	<Lc -13	125
16	Overhead G27	27	-7	4.3	100-200 cpm	0.0	0	0	132.0	<Lc 20	105	0.0	<Lc 0	0	204.0	<Lc -19	125
17	Overhead H27	27	-8	4.3	100-200 cpm	0.0	0	0	133.0	<Lc 23	105	0.0	<Lc 0	0	224.0	<Lc 44	128
18	Overhead J27	27	-10	7.3	100-200 cpm	0.0	0	0	111.0	<Lc -50	101	0.0	<Lc 0	0	203.0	<Lc -22	124
19	Overhead J28	28	-10	7.3	100-200 cpm	0.0	0	0	104.0	<Lc -73	99	0.0	<Lc 0	0	224.0	<Lc 44	128
20	Overhead G32	32	-7	7.3	100-200 cpm	0.0	0	0	116.0	<Lc -33	102	0.0	<Lc 0	0	237.0	<Lc 84	129
21	QC of #20 (G32)	32	-7	7.3		0.0	0	0	128.0	<Lc 7	104	0.0	<Lc 0	0	207.0	<Lc -9	125

CH
9-2-98

Data Entered By and Date: Robin Sombrero 8 Aug 98

Reviewed By and Date (Site Manager) 8 Aug 98

12/11/96
*DPM units per 100 cm2

Bulk Storage Building

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Tank Building Coordinates SE Corner, Alpha Scans <10cpm, See Field Notes for Beta Scans

V 1.9

Reference No.:	LKYDT205
Survey No.:	283
Data Code:	CH-SURV
Grid ID:	04D
Area:	Tank Building
Survey By:	E. Champagne
Survey Date:	07/22/98
Smears Counted By:	E. Champagne
Smear Count Date:	07/22/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	E Champagne		E Champagne	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	1162	1162		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	526	526	68222	532
Cal Due Date:	09/11/98	09/11/98	11/06/98	09/11/98
Bkgd CPM:	0.0	147.0	0.1	213.0
Efficiency:	0.14	0.30	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	.1
Smpl CT Time:	1	1	1	1
Lc (DPM):	0	94	1	106

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	Brick Corner O 10	-10	15	0.5	150-350 cpm	0.0	0	0	361.0	713	147	0.0	<Lc 0	0	216.0	<Lc 9	127
2	Brick Wall O 10	-9.5	15	0.5	150-350 cpm	2.0	14	20	357.0	700	147	0.0	<Lc 0	0	214.0	<Lc 3	127
3	Brick Wall H1	0	7.5	0.5	100-300 cpm	0.0	0	0	288.0	470	136	0.0	<Lc 0	0	208.0	<Lc -16	126
4	Floor-Concrete D6	-5.5	3.5	0	100-200 cpm	1.0	7	14	175.0	<Lc 93	117	2.0	5	7	208.0	<Lc -16	126
5	Floor-Concrete H1	-1.5	7.5	0	100-200 cpm	1.0	7	14	177.0	100	118	0.0	<Lc 0	0	219.0	<Lc 19	127
6	Floor-Concrete H1	-0.5	7.5	0	100-200 cpm	0.0	0	0	170.0	<Lc 77	116	0.0	<Lc 0	0	192.0	<Lc -66	123
7	Floor-Concrete N8	-7.5	13.5	0	100-200 cpm	1.0	7	14	205.0	193	123	0.0	<Lc 0	0	202.0	<Lc -34	125
8	Floor-Concrete N9	-8.5	13.5	0	100-200 cpm	1.0	7	14	185.0	127	119	0.0	<Lc 0	0	205.0	<Lc -25	125
9	Wall-Concrete N7	-6.5	9	0.5	100-200 cpm	0.0	0	0	179.0	107	118	0.0	<Lc 0	0	198.0	<Lc -47	124
10	QC of #9					0.0	0	0	183.0	120	119	1.0	2	5	167.0	<Lc -144	119

Data Entered By and Date: _____

Reviewed By and Date (Site Manager) [illegible] 8 AUG 98

9-2-98

12/11/96
*DPM units per 100 cm2

Former Laboratory Building

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Lab Building Coordinates ... Corner, Alpha Scans <10cpm, See Field Notes for Beta Scans

V 1.9

Reference No.:	LKYDT206
Survey No.:	284
Data Code:	CH-SURV
Grid ID:	02B
Area:	Lab Building
Survey By:	E. Champagne
Survey Date:	07/14/98
Smears Counted By:	E. Champagne
Smear Count Date:	07/14/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	E Champagne		E C	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	1162	1162		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	526	526	68222	532
Cal Due Date:	09/11/98	09/11/98	11/06/98	09/11/98
Bkgd CPM:	0.0	177.0	0.1	225.0
Efficiency:	0.14	0.30	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	0	103	1	109

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	Floor 3N	-3	-14	0	150-200 cpm	0.0	0	0	181.0	<Lc 13	124	0.0	<Lc 0	0	205.0	<Lc -63	127
2	Floor 2K	-2	-11	0	150-200 cpm	0.0	0	0	193.0	<Lc 53	126	0.0	<Lc 0	0	214.0	<Lc -34	128
3	Floor 11J	-11	-10	0	150-200 cpm	5.0	36	31	174.0	<Lc -10	122	1.0	2	5	183.0	<Lc -131	124
4	Floor 7B	-7	-2	0	150-200 cpm	1.0	7	14	191.0	<Lc 47	125	0.0	<Lc 0	0	213.0	<Lc -38	128
5	Floor 7D	-7	-4	0	150-200 cpm	2.0	14	20	161.0	<Lc -53	120	1.0	2	5	203.0	<Lc -69	127
6	Floor 13G	-13	-7	0	150-200 cpm	3.0	21	24	180.0	<Lc 10	123	0.0	<Lc 0	0	195.0	<Lc -94	126
7	Floor 13E	-13	-4.5	0	150-200 cpm	0.0	0	0	191.0	<Lc 47	125	0.0	<Lc 0	0	233.0	<Lc 25	131
8	Floor 13D	-13	-3.5	0	150-200 cpm	2.0	14	20	172.0	<Lc -17	122	2.0	5	7	234.0	<Lc 28	131
9	Floor 13 I	-13	-8.5	0	150-200 cpm	2.0	14	20	165.0	<Lc -40	121	1.0	2	5	200.0	<Lc -78	126
10	Floor 22N	-22	-13.5	0	150-200 cpm	2.0	14	20	180.0	<Lc 10	123	1.0	2	5	190.0	<Lc -109	125
11	Floor 22M	-22	-12.5	0	150-200 cpm	1.0	7	14	172.0	<Lc -17	122	1.0	2	5	186.0	<Lc -122	124
12	Floor 22L	-22	-11.5	0	150-200 cpm	1.0	7	14	161.0	<Lc -53	120	0.0	<Lc 0	0	205.0	<Lc -63	127
13	Floor 13F	-13	-5.5	0	150-200 cpm	2.0	14	20	192.0	<Lc 50	126	0.0	<Lc 0	0	212.0	<Lc -41	128
14	Floor 13H	-13	-7.5	0	150-200 cpm	0.0	0	0	138.0	<Lc -130	116	0.0	<Lc 0	0	213.0	<Lc -38	128
15	Floor 19H	-19	-7.5	0	180-260 cpm	3.0	21	24	227.0	167	131	2.0	5	7	197.0	<Lc -88	126
16	Floor 1K	-1	-10.5	0	180-260 cpm	4.0	29	28	223.0	153	131	0.0	<Lc 0	0	200.0	<Lc -78	126
17	Floor 19G	-19	-6.5	0	180-260 cpm	1.0	7	14	220.0	143	130	0.0	<Lc 0	0	205.0	<Lc -63	127
18	Wall 0 D	0	-3.5	0.5	250-400 cpm	3.0	21	24	359.0	607	151	1.0	2	5	200.0	<Lc -78	126
19	Wall 19F	-19	-5.5	0.5	250-400 cpm	3.0	21	24	260.0	277	137	0.0	<Lc 0	0	190.0	<Lc -109	125
20	Wall 7 O	-7	-14.5	0.5	250-400 cpm	0.0	0	0	341.0	547	149	0.0	<Lc 0	0	210.0	<Lc -47	128
21	QC of #10	-22	-13.5	0		0.0	0	0	182.0	<Lc 17	124	1.0	2	5	186.0	<Lc -122	124

Data Entered By and Date: Rebecca Simpson 8 Aug 98

Reviewed By and Date (Site Manager) 8 Aug 98

9-2-98

12/11/96
*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Lab Building Coordinates ... Corner, Alpha Scans <10cpm, See Field Notes for Beta Scans

V 1.9

Reference No.:	LKYDT204
Survey No.:	282
Data Code:	CH-SURV
Grid ID:	2B
Area:	Lab Building
Survey By:	E. Champagne
Survey Date:	07/15/98
Smears Counted By:	E. Champagne
Smear Count Date:	07/15/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:				
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	1162	1162		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	526	526	68222	532
Cal Due Date:	09/11/98	09/11/98	11/06/98	09/11/98
Bkgd CPM:	3.0	234.0	0.1	191.0
Efficiency:	0.14	0.30	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	29	119	1	101

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	Floor J10	-9.5	-9.5	0	150-300 cpm	3.0	<Lc 0	34	282.0	160	148	0.0	<Lc 0	0	170.0	<Lc -66	116
2	Floor I 10	-9.5	-8.5	0	150-300 cpm	5.0	<Lc 14	40	303.0	230	151	1.0	2	5	205.0	<Lc 44	122
3	Floor C7	-6.5	-2.5	0	150-400 cpm	6.0	<Lc 21	42	351.0	390	158	0.0	<Lc 0	0	186.0	<Lc -16	119
4	QC of #3					4.0	<Lc 7	37	298.0	213	151	0.0	<Lc 0	0	180.0	<Lc -34	118

CHB 9-2-98

Data Entered By and Date: Rebecca Sanborn 8/4/98

Revie[illegible]y and Date (Site Manager) [illegible] 8/4/98

12/11/96

*DPM units per 100 cm2

[illegible] of 1

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Lab Building Coordinates , E Corner, Alpha Scans <10cpm, See Field Notes for Beta Scans

V 1.9

Reference No.:	LKYDT203
Survey No.:	281
Data Code:	CH-SURV
Grid ID:	2B
Area:	Lab Building
Survey By:	E. Champagne
Survey Date:	07/15/98
Smears Counted By:	E. Champagne
Smear Count Date:	07/15/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:				
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	1162	1162		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	526	526	68222	532
Cal Due Date:	09/11/98	09/11/98	11/06/98	09/11/98
Bkgd CPM:	0.0	177.0	0.1	225.0
Efficiency:	0.14	0.30	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	0	103	1	109

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	Brickwall N5	-4.5	-14	0.5	250-400 cpm	7.0	50	37	295.0	393	142	0.0	<Lc 0	0	197.0	<Lc -88	126
2	Brickwall E0	0	-4.5	0.5	250-400 cpm	2.0	14	20	328.0	503	147	0.0	<Lc 0	0	234.0	<Lc 28	131
3	Light E13	-12.5	-5	7.7	75-175 cpm	1.0	7	14	121.0	<Lc -187	113	0.0	<Lc 0	0	233.0	<Lc 25	131
4	AirDuct G13	-13	-7	8.2	75-175 cpm	1.0	7	14	168.0	<Lc -30	121	0.0	<Lc 0	0	213.0	<Lc -38	128
5	Truss G13	-13	-7	7.6	75-175 cpm	1.0	7	14	113.0	<Lc -213	111	0.0	<Lc 0	0	195.0	<Lc -94	126
6	Truss F13	-13	-6	7.6	75-175 cpm	1.0	7	14	105.0	<Lc -240	110	0.0	<Lc 0	0	205.0	<Lc -63	127
7	Truss D13	-12.5	-4	7.3	75-175 cpm	0.0	0	0	118.0	<Lc -197	112	0.0	<Lc 0	0	203.0	<Lc -69	127
8	Truss G13	-13	-7	7.3	75-175 cpm	1.0	7	14	168.0	<Lc -30	121	0.0	<Lc 0	0	205.0	<Lc -63	127
9	Truss D13	-12.5	-4	7.6	75-175 cpm	0.0	0	0	98.0	<Lc -263	108	0.0	<Lc 0	0	200.0	<Lc -78	126
10	Truss E13	-12.5	-5	7.6	75-175 cpm	0.0	0	0	136.0	<Lc -137	116	0.0	<Lc 0	0	213.0	<Lc -38	128
11	Truss C13	-12.5	-3	7.6	75-175 cpm	0.0	0	0	116.0	<Lc -203	112	0.0	<Lc 0	0	212.0	<Lc -41	128
12	Truss E13	-12.5	-5	7.3	75-175 cpm	1.0	7	14	136.0	<Lc -137	116	0.0	<Lc 0	0	183.0	<Lc -131	124
13	Truss F13	-13	-6	7.3	75-175 cpm	0.0	0	0	105.0	<Lc -240	110	0.0	<Lc 0	0	186.0	<Lc -122	124
14	Truss F13	-13	-6	7.3	75-175 cpm	0.0	0	0	109.0	<Lc -227	110	0.0	<Lc 0	0	205.0	<Lc -63	127
15	Truss C13	-12.5	-3	7.6	75-175 cpm	4.0	29	28	109.0	<Lc -227	110	0.0	<Lc 0	0	214.0	<Lc -34	128
16	Truss B7	-6.5	-2	8.2	75-175 cpm	1.0	7	14	140.0	<Lc -123	116	0.0	<Lc 0	0	190.0	<Lc -109	125
17	Truss B7	-6.5	-1.5	5.8	75-175 cpm	4.0	29	28	144.0	<Lc -110	117	0.0	<Lc 0	0	186.0	<Lc -122	124
18	Truss H16	-16	-8	8.2	75-175 cpm	2.0	14	20	156.0	<Lc -70	119	0.0	<Lc 0	0	200.0	<Lc -78	126
19	Truss G16	-16	-6.5	5.8	75-175 cpm	2.0	14	20	140.0	<Lc -123	116	0.0	<Lc 0	0	200.0	<Lc -78	126
20	Truss B7	-6.5	-1	2.8	200-350 cpm	4.0	29	28	298.0	403	142	0.0	<Lc 0	0	210.0	<Lc -47	128
21	QC of #15					0.0	0	0	126.0	<Lc -170	114	1.0	2	5	190.0	<Lc -109	125

Data Entered By and Date: Rebecca Scarborough 8 Aug 98

Reviewed By and Date (Site Manager) 8 Aug 98

9-2-98

12/11/96
*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Lab Building Coordinates NE Corner, Alpha Scans <10cpm, See Field Notes for Beta Scans V 1.9

Reference No.:	LKYDT202
Survey No.:	280
Data Code:	CH-SURV
Grid ID:	2B
Area:	Lab Building
Survey By:	E. Champagne
Survey Date:	07/14/98
Smears Counted By:	E. Champagne
Smear Count Date:	07/14/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	E. Champagne		E. Champagne	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	1162	1162		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	526	526	68222	532
Cal Due Date:	09/11/98	09/11/98	11/06/98	09/11/98
Bkgd CPM:	0.0	181.0	0.1	225.0
Efficiency:	0.14	0.30	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	0	105	1	109

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	Overhead 11J	-11	-10	5.8	75-200 cpm	3.0	21	24	110.0	<Lc -237	111	0.0	<Lc 0	0	196.0	<Lc -91	126
2	Overhead 7C	-6.5	-3	7.6	75-200 cpm	3.0	21	24	115.0	<Lc -220	112	0.0	<Lc 0	0	184.0	<Lc -128	124
3	Overhead 10G	-9.5	-7.5	6.7	75-200 cpm	4.0	29	28	138.0	<Lc -143	117	1.0	2	5	209.0	<Lc -50	128
4	Overhead 18H	-18	-8	8.2	75-200 cpm	0.0	0	0	136.0	<Lc -150	116	0.0	<Lc 0	0	175.0	<Lc -156	123
5	Overhead 19H	-19	-8	8.2	75-200 cpm	6.0	43	34	150.0	<Lc -103	119	1.0	2	5	191.0	<Lc -106	125
6	Overhead 16F	-16	-6	8.2	75-200 cpm	5.0	36	31	145.0	<Lc -120	118	0.0	<Lc 0	0	220.0	<Lc -16	129
7	Overhead 16G	-16	-7	8.2	75-200 cpm	2.0	14	20	145.0	<Lc -120	118	0.0	<Lc 0	0	183.0	<Lc -131	124
8	Overhead 19G	-19	-7	7.6	75-200 cpm	5.0	36	31	145.0	<Lc -120	118	0.0	<Lc 0	0	202.0	<Lc -72	127
9	Overhead 10J	-10	-10	6.4	75-200 cpm	3.0	21	24	117.0	<Lc -213	113	0.0	<Lc 0	0	186.0	<Lc -122	124
10	Overhead 18F	-18	-6	7.6	75-200 cpm	6.0	43	34	157.0	<Lc -80	120	0.0	<Lc 0	0	188.0	<Lc -116	124
11	Overhead 17H	-17	-8	8.2	75-200 cpm	2.0	14	20	171.0	<Lc -33	123	0.0	<Lc 0	0	208.0	<Lc -53	127
12	Overhead 10 I	-9.5	-9	5.5	75-200 cpm	2.0	14	20	124.0	<Lc -190	114	0.0	<Lc 0	0	213.0	<Lc -38	128
13	Overhead 10J	-9.5	-10	5.5	75-200 cpm	6.0	43	34	117.0	<Lc -213	113	0.0	<Lc 0	0	209.0	<Lc -50	128
14	Overhead 13H	-13	-8	7.6	75-200 cpm	3.0	21	24	117.0	<Lc -213	113	0.0	<Lc 0	0	230.0	<Lc 16	131
15	Overhead 13 I	-13	-9	7.3	75-200 cpm	4.0	29	28	197.0	<Lc 53	127	0.0	<Lc 0	0	194.0	<Lc -97	125
16	Overhead 13 H	-13	-8	7.9	75-200 cpm	2.0	14	20	202.0	<Lc 70	128	0.0	<Lc 0	0	233.0	<Lc 25	131
17	Overhead 13 I	-13	-8.5	7.6	75-200 cpm	8.0	57	40	162.0	<Lc -63	121	0.0	<Lc 0	0	181.0	<Lc -138	123
18	Overhead 13 I	-13	-9	7.8	75-200 cpm	6.0	43	34	145.0	<Lc -120	118	0.0	<Lc 0	0	202.0	<Lc -72	127
19	Overhead 10H	-9.5	-8	5.5	75-200 cpm	6.0	43	34	118.0	<Lc -210	113	0.0	<Lc 0	0	194.0	<Lc -97	125
20	Overhead 13 I	-13	-9	7.6	75-200 cpm	6.0	43	34	140.0	<Lc -137	117	1.0	2	5	206.0	<Lc -59	127
21	QC of #20					3.0	21	24	173.0	<Lc -27	123	0.0	<Lc 0	0	186.0	<Lc -122	124

Data Entered By and Date: Rehman Sambrano 8 Aug 98

Revi[illegible]y and Date (Site Manager) [illegible] 8 Au[illegible] 98

CH 9-2-98

12/11/96
*DPM units per 100 cm2
[illegible] of 1

Former Melting, Alloying, and Shipping Building

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Former Shipping / Receiving L ing First Level Alpha Scans <10cpm, See field notes for Beta Scans

V 1.9

Reference No.:	LKYDT184
Survey No.:	254
Data Code:	CH-SURV
Grid ID:	See Description
Area:	IA04
Survey By:	E. Champagne
Survey Date:	07/21/98
Smears Counted By:	E. Champagne
Smear Count Date:	07/21/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	E. Champagne		E. Champagne	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	1162	1162		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	526	526	68222	532
Cal Due Date:	09/11/98	09/11/98	11/06/98	09/11/98
Bkgd CPM:	0.0	154.0	0.1	210.0
Efficiency:	0.14	0.30	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	0	97	1	106

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	D2 Floor	3.5	-1.5	1.2	150-250 cpm	6.0	43	34	164.0	<Lc 33	117	0.0	<Lc 0	0	242.0	<Lc 100	130
2	E2 Floor	4.5	-1.5	1.2	150-250 cpm	0.0	0	0	156.0	<Lc 7	115	1.0	2	5	191.0	<Lc -59	123
3	F2 Floor	5.5	-1.5	1.2	150-250 cpm	0.0	0	0	173.0	<Lc 63	118	0.0	<Lc 0	0	225.0	<Lc 47	128
4	B8 Floor	1.5	-7.5	1.2	150-250 cpm	1.0	7	14	151.0	<Lc -10	114	0.0	<Lc 0	0	235.0	<Lc 78	129
5	C8 Floor	2.5	-7.5	1.2	150-250 cpm	0.0	0	0	139.0	<Lc -50	112	0.0	<Lc 0	0	204.0	<Lc -19	125
6	D8 Floor	3.5	-7.5	1.2	150-250 cpm	2.0	14	20	162.0	<Lc 27	116	0.0	<Lc 0	0	219.0	<Lc 28	127
7	D14 Floor	3.5	-13.5	1.2	150-250 cpm	2.0	14	20	144.0	<Lc -33	113	0.0	<Lc 0	0	189.0	<Lc -66	122
8	E14 Floor	4.5	-13.5	1.2	150-250 cpm	0.0	0	0	129.0	<Lc -83	110	0.0	<Lc 0	0	246.0	113	131
9	A20 Floor	0.5	-19.5	1.2	150-250 cpm	5.0	36	31	144.0	<Lc -33	113	0.0	<Lc 0	0	195.0	<Lc -47	123
10	B20 Floor	1.5	-19.5	1.2	150-250 cpm	6.0	43	34	150.0	<Lc -13	114	0.0	<Lc 0	0	223.0	<Lc 41	127
11	C23 Floor	2.5	-22.5	1.2	150-250 cpm	0.0	0	0	167.0	<Lc 43	117	0.0	<Lc 0	0	222.0	<Lc 38	127
12	D23 Floor	3.5	-22.5	1.2	150-250 cpm	0.0	0	0	156.0	<Lc 7	115	0.0	<Lc 0	0	220.0	<Lc 31	127
13	E23 Floor	4.5	-22.5	1.2	150-250 cpm	0.0	0	0	145.0	<Lc -30	113	0.0	<Lc 0	0	212.0	<Lc 6	126
14	B28 Floor	1.5	-27.5	1.2	150-250 cpm	1.0	7	14	150.0	<Lc -13	114	1.0	2	5	150.0	<Lc -188	116
15	C28 Foor	2.5	-27.5	1.2	150-250 cpm	1.0	7	14	148.0	<Lc -20	114	1.0	2	5	148.0	<Lc -194	116
16	QC of #15 (C28)	2.5	-27.5	1.2	~~150-250 cpm~~	1.0	7	14	141.0	<Lc -43	112	0.0	<Lc 0	0	147.0	<Lc -197	116

Data Entered By and Date: Robin Sanborn 27 July 98

Reviewed By and Date (Site Manager) 27 July 98

8-5-98

12/11/96
*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Former Shipping / Receiving L ..ing First Level Alpha Scans <10cpm, See field notes for Beta Scans

V 1.9

Reference No.:	LKYDT185
Survey No.:	255
Data Code:	CH-SURV
Grid ID:	See Description
Area:	IA04
Survey By:	E. Champagne
Survey Date:	07/22/98
Smears Counted By:	E. Champagne
Smear Count Date:	07/22/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	E Champagne		E Champagne	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	1162	1162		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	526	526	68222	532
Cal Due Date:	09/11/98	09/11/98	11/06/98	09/11/98
Bkgd CPM:	1.0	176.0	0.1	206.0
Efficiency:	0.14	0.30	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	17	103	1	105

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	H59 Floor	7.5	-58.5	0	150-200 cpm	1.0	<Lc 0	20	160.0	<Lc -53	120	1.0	2	5	160.0	<Lc -144	117
2	I 59 Floor	8.5	-58.5	0	150-200 cpm	1.0	<Lc 0	20	120.0	<Lc -187	112	0.0	<Lc 0	0	170.0	<Lc -113	119
3	H60 Floor	7.5	-59.5	0	150-200 cpm	0.0	<Lc -7	14	169.0	<Lc -23	121	0.0	<Lc 0	0	203.0	<Lc -9	124
4	I 60 Floor	8.5	-59.5	0	150-200 cpm	2.0	<Lc 7	24	169.0	<Lc -23	121	0.0	<Lc 0	0	176.0	<Lc -94	120
5	B64 Floor	1.5	-63.5	0	150-200 cpm	1.0	<Lc 0	20	160.0	<Lc -53	120	0.0	<Lc 0	0	195.0	<Lc -34	123
6	C64 Floor	2.5	-63.5	0	150-200 cpm	2.0	<Lc 7	24	170.0	<Lc -20	122	0.0	<Lc 0	0	210.0	<Lc 13	125
7	B65 Floor	1.5	-64.5	0	150-200 cpm	1.0	<Lc 0	20	169.0	<Lc -23	121	1.0	2	5	221.0	<Lc 47	127
8	C65 Floor	2.5	-64.5	0	150-200 cpm	1.0	<Lc 0	20	147.0	<Lc -97	117	0.0	<Lc 0	0	210.0	<Lc 13	125
9	D69 Floor	3.5	-68.5	0	150-200 cpm	4.0	21	31	160.0	<Lc -53	120	0.0	<Lc 0	0	200.0	<Lc -19	123
10	E69 Floor	4.5	-68.5	0	150-200 cpm	5.0	29	34	143.0	<Lc -110	117	0.0	<Lc 0	0	176.0	<Lc -94	120
11	A22 Wall	0	-21.5	1.7	220-300 cpm	1.0	<Lc 0	20	290.0	380	141	0.0	<Lc 0	0	187.0	<Lc -59	121
12	C25 Wall	3	-24.5	1.7	150-220 cpm	0.0	<Lc -7	14	125.0	<Lc -170	113	0.0	<Lc 0	0	198.0	<Lc -25	123
13	S33 Wall	19	-32.5	0.5	220-300 cpm	0.0	<Lc -7	14	289.0	377	141	0.0	<Lc 0	0	187.0	<Lc -59	121
14	A48 Wall	0	-47.5	0.5	220-320 cpm	0.0	<Lc -7	14	317.0	470	145	0.0	<Lc 0	0	202.0	<Lc -13	124
15	F60 Wall	5.5	-60	0.5	150-220 cpm	0.0	<Lc -7	14	156.0	<Lc -67	119	0.0	<Lc 0	0	188.0	<Lc -56	122
16	G60 Wall	6.5	-60	0.5	220-300 cpm	0.0	<Lc -7	14	272.0	320	138	3.0	7	8	197.0	<Lc -28	123
17	C61 Wall	2.5	-60	0.5	220-300 cpm	0.0	<Lc -7	14	267.0	303	138	1.0	2	5	190.0	<Lc -50	122
18	QC of #17 (C61 Wall)	2.5	-60	0.5	CB 8-5-98 ~~220-300 cpm~~	1.0	<Lc 0	20	273.0	323	138	0.0	<Lc 0	0	181.0	<Lc -78	120

CB 8-4-98

Data Entered By and Date: Robin Sunberg 27 July 98

Data Entry Job (File Manager) [illegible] 27 July 98

12/11/96

*DPM units pe ·2

F 1

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Former Shipping / Receiving Building First Level Alpha Scans <10cpm, See field notes for Beta Scans

V 1.9

Reference No.:	LKYDT186
Survey No.:	256
Data Code:	CH-SURV
Grid ID:	See Description
Area:	IA04
Survey By:	E. Champagne
Survey Date:	07/22/98
Smears Counted By:	E. Champagne
Smear Count Date:	07/22/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	E Champagne		E Champagne	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	1162	1162		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	526	526	68222	532
Cal Due Date:	09/11/98	09/11/98	11/06/98	09/11/98
Bkgd CPM:	1.0	155.0	0.1	208.0
Efficiency:	0.14	0.30	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	17	97	1	105

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	G32 Floor	6.5	-31.5	0	150-220 cpm	0.0	<Lc -7	14	146.0	<Lc -30	113	0.0	<Lc 0	0	212.0	<Lc 19	125
2	G33 Floor	6.5	-32.5	0	150-220 cpm	0.0	<Lc -7	14	135.0	<Lc -67	111	0.0	<Lc 0	0	243.0	116	130
3	H32 Floor	7.5	-31.5	0	150-220 cpm	0.0	<Lc -7	14	141.0	<Lc -47	112	0.0	<Lc 0	0	222.0	<Lc 50	127
4	H33 Floor	7.5	-32.5	0	150-220 cpm	0.0	<Lc -7	14	159.0	<Lc 13	116	0.0	<Lc 0	0	210.0	<Lc 13	125
5	R34 Floor	17.5	-33.5	0	150-220 cpm	2.0	<Lc 7	24	193.0	127	122	0.0	<Lc 0	0	244.0	119	130
6	R35 Floor	17.5	-34.5	0	150-220 cpm	0.0	<Lc -7	14	161.0	<Lc 20	116	1.0	2	5	225.0	<Lc 59	127
7	R36 Floor	17.5	-35.5	0	150-220 cpm	1.0	<Lc 0	20	192.0	123	122	1.0	2	5	211.0	<Lc 16	125
8	S34 Floor	18.5	-33.5	0	150-220 cpm	0.0	<Lc -7	14	161.0	<Lc 20	116	1.0	2	5	225.0	<Lc 59	127
9	S35 Floor	18.5	-34.5	0	150-220 cpm	1.0	<Lc 0	20	190.0	117	121	0.0	<Lc 0	0	221.0	<Lc 47	127
10	S36 Floor	18.5	-35.5	0	150-220 cpm	1.0	<Lc 0	20	192.0	123	122	1.0	2	5	211.0	<Lc 16	125
11	A41 Floor	0.5	-40.5	0	150-220 cpm	4.0	21	31	181.0	<Lc 87	120	0.0	<Lc 0	0	215.0	<Lc 28	126
12	B41 Floor	1.5	-40.5	0	150-220 cpm	1.0	<Lc 0	20	186.0	103	121	0.0	<Lc 0	0	228.0	<Lc 69	128
13	C41 Floor	2.5	-40.5	0	150-220 cpm	0.0	<Lc -7	14	115.0	<Lc -133	107	0.0	<Lc 0	0	212.0	<Lc 19	125
14	A42 Floor	0.5	-41.5	0	150-220 cpm	3.0	<Lc 14	28	133.0	<Lc -73	111	0.0	<Lc 0	0	217.0	<Lc 34	126
15	B42 Floor	1.5	-41.5	0	150-220 cpm	3.0	<Lc 14	28	138.0	<Lc -57	112	0.0	<Lc 0	0	215.0	<Lc 28	126
16	C42 Floor	2.5	-41.5	0	150-220 cpm	5.0	29	34	188.0	110	121	0.0	<Lc 0	0	195.0	<Lc -34	123
17	A43 Floor	0.5	-42.5	0	150-220 cpm	8.0	50	42	126.0	<Lc -97	110	0.0	<Lc 0	0	234.0	<Lc 88	128
18	B43 Floor	1.5	-42.5	0	150-220 cpm	1.0	<Lc 0	20	132.0	<Lc -77	111	0.0	<Lc 0	0	199.0	<Lc -22	123
19	C43 Floor	2.5	-42.5	0	150-220 cpm	3.0	<Lc 14	28	181.0	<Lc 87	120	0.0	<Lc 0	0	231.0	<Lc 78	128
20	F4 Wall	5.5	-3.5	0.5	250-400 cpm	2.0	<Lc 7	24	326.0	570	143	2.0	5	7	231.0	<Lc 78	128
21	QC of #20 (F4 Wall)	5.5	-3.5	0.5	8-5-98 250-400 cpm	2.0	<Lc 7	24	299.0	480	139	2.0	5	7	191.0	<Lc -47	122

Data Entered By and Date: [illegible] 29 July 98

Reviewed By and Date (Site Manager) [illegible] 29 July 98

8-5-98

12/11/96
*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Former Shipping / Receiving Building Second Level Alpha Scans <10cpm, See field notes for Beta Scans

V 1.9

Reference No.:	LKYDT189
Survey No.:	259
Data Code:	CH-SURV
Grid ID:	See Description
Area:	IA04
Survey By:	E. Champagne
Survey Date:	07/24/98
Smears Counted By:	E. Champagne
Smear Count Date:	07/24/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	E Champagne		E Champagne	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	1162	1162		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	526	526	68222	532
Cal Due Date:	09/11/98	09/11/98	11/06/98	09/11/98
Bkgd CPM:	0.0	147.0	0.1	195.0
Efficiency:	0.14	0.30	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	0	94	1	102

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	P30 Floor	15.5	-29.5	4.8	150-200 cpm	0.0	0	0	185.0	127	119	0.0	<Lc 0	0	161.0	<Lc -106	116
2	P31 Floor	15.5	-30.5	4.8	150-200 cpm	1.0	7	14	161.0	<Lc 47	115	0.0	<Lc 0	0	197.0	<Lc 6	121
3	P32 Floor	15.5	-31.5	4.8	150-200 cpm	0.0	0	0	193.0	153	120	0.0	<Lc 0	0	210.0	<Lc 47	123
4	P33 Floor	15.5	-32.5	4.8	150-220 cpm	1.0	7	14	175.0	<Lc 93	117	0.0	<Lc 0	0	214.0	<Lc 59	124
5	P34 Floor	15.5	-33.5	4.8	150-220 cpm	3.0	21	24	204.0	190	122	1.0	2	5	198.0	<Lc 9	121
6	P35 Floor	15.5	-34.5	4.8	150-220 cpm	1.0	7	14	172.0	<Lc 83	117	0.0	<Lc 0	0	196.0	<Lc 3	121
7	A39 Floor	0.5	-38.5	4.8	150-220 cpm	0.0	0	0	162.0	<Lc 50	115	0.0	<Lc 0	0	209.0	<Lc 44	123
8	B39 Floor	1.5	-38.5	4.8	150-220 cpm	1.0	7	14	155.0	<Lc 27	114	2.0	5	7	183.0	<Lc -38	119
9	C39 Floor	2.5	-38.5	4.8	150-220 cpm	0.0	0	0	184.0	123	119	0.0	<Lc 0	0	202.0	<Lc 22	122
10	D39 Floor	3.5	-38.5	4.8	150-220 cpm	0.0	0	0	181.0	113	118	0.0	<Lc 0	0	209.0	<Lc 44	123
11	E39 Floor	4.5	-38.5	4.8	150-220 cpm	0.0	0	0	158.0	<Lc 37	114	0.0	<Lc 0	0	221.0	<Lc 81	125
12	F39 Floor	5.5	-38.5	4.8	150-220 cpm	0.0	0	0	156.0	<Lc 30	114	1.0	2	5	203.0	<Lc 25	122
13	G39 Floor	6.5	-38.5	4.8	150-220 cpm	0.0	0	0	157.0	<Lc 33	114	0.0	<Lc 0	0	203.0	<Lc 25	122
14	H39 Floor	7.5	-38.5	4.8	150-220 cpm	2.0	14	20	162.0	117	119	0.0	<Lc 0	0	200.0	<Lc 16	122
15	I 39 Floor	8.5	-38.5	4.8	150-220 cpm	2.0	14	20	165.0	<Lc 60	115	1.0	2	5	195.0	<Lc 0	121
16	J39 Floor	9.5	-38.5	4.8	150-220 cpm	0.0	0	0	151.0	<Lc 13	113	0.0	<Lc 0	0	207.0	<Lc 38	123
17	K39 Floor	10.5	-38.5	4.8	150-220 cpm	0.0	0	0	168.0	<Lc 70	116	0.0	<Lc 0	0	203.0	<Lc 25	122
18	QC of #17 (K39)	10.5	-38.5	4.8	150-220 cpm	0.0	0	0	169.0	<Lc 73	116	1.0	2	5	186.0	<Lc -28	120
19	L39 Floor	11.5	-38.5	4.8	150-220 cpm	1.0	7	14	133.0	<Lc -47	109	0.0	<Lc 0	0	203.0	<Lc 25	122
20	M39 Floor	12.5	-38.5	4.8	150-220 cpm	1.0	7	14	192.0	150	120	0.0	<Lc 0	0	203.0	<Lc 25	122
21	N39 Floor	13.5	-38.5	4.8	150-220 cpm	0.0	0	0	182.0	117	119	0.0	<Lc 0	0	209.0	<Lc 44	123

9-2-98

Data Entered By and Date:_____

Reviewed and Date (Site Manager) – 28 Aug 98

12/11/96

*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Former Shipping / Receiving Building Second Level Alpha Scans <10cpm, See field notes for Beta Scans

V 1.9

Reference No.:	LKYDT188
Survey No.:	258
Data Code:	CH-SURV
Grid ID:	See Description
Area:	IA04
Survey By:	E. Champagne
Survey Date:	07/24/98
Smears Counted By:	E. Champagne
Smear Count Date:	07/24/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	E Champagne		E Champagne	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	1162	1162		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	526	526	68222	532
Cal Due Date:	09/11/98	09/11/98	11/06/98	09/11/98
Bkgd CPM:	0.0	147.0	0.1	195.0
Efficiency:	0.14	0.30	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	0	94	1	102

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	O39 Floor	14.5	-38.5	4.8	150-200 cpm	0.0	0	0	163.0	<Lc 53	115	0.0	<Lc 0	0	203.0	<Lc 25	122
2	P39 Floor	15.5	-38.5	4.8	150-200 cpm	4.0	29	28	130.0	<Lc -57	109	1.0	2	5	203.0	<Lc 25	122
3	Q39 Floor	16.5	-38.5	4.8	150-200 cpm	3.0	21	24	156.0	<Lc 30	114	0.0	<Lc 0	0	209.0	<Lc 44	123
4	R39 Floor	17.5	-38.5	4.8	150-200 cpm	0.0	0	0	170.0	<Lc 77	116	0.0	<Lc 0	0	202.0	<Lc 22	122
5	S39 Floor	18.5	-38.5	4.8	150-200 cpm	1.0	7	14	169.0	<Lc 73	116	0.0	<Lc 0	0	202.0	<Lc 22	122
6	A50 Floor	0.5	-49.5	4.8	150-200 cpm	0.0	0	0	196.0	163	121	0.0	<Lc 0	0	211.0	<Lc 50	123
7	B50 Floor	1.5	-49.5	4.8	150-200 cpm	2.0	14	20	152.0	<Lc 17	113	2.0	5	7	202.0	<Lc 22	122
8	C50 Floor	2.5	-49.5	4.8	150-200 cpm	0.0	0	0	198.0	170	121	1.0	2	5	178.0	<Lc -53	118
9	D50 Floor	3.5	-49.5	4.8	150-200 cpm	3.0	21	24	141.0	<Lc -20	111	0.0	<Lc 0	0	212.0	<Lc 53	124
10	E50 Floor	4.5	-49.5	4.8	150-200 cpm	3.0	21	24	148.0	<Lc 3	112	0.0	<Lc 0	0	185.0	<Lc -31	119
11	F50 Floor	5.5	-49.5	4.8	150-200 cpm	0.0	0	0	156.0	<Lc 30	114	0.0	<Lc 0	0	213.0	<Lc 56	124
12	G50 Floor	6.5	-49.5	4.8	150-200 cpm	0.0	0	0	144.0	<Lc -10	111	1.0	2	5	208.0	<Lc 41	123
13	H50 Floor	7.5	-49.5	4.8	150-200 cpm	0.0	0	0	144.0	<Lc -10	111	0.0	<Lc 0	0	196.0	<Lc 3	121
14	I 50 Floor	8.5	-49.5	4.8	150-200 cpm	0.0	0	0	152.0	<Lc 17	113	0.0	<Lc 0	0	203.0	<Lc 25	122
15	J50 Floor	9.5	-49.5	4.8	150-200 cpm	1.0	7	14	137.0	<Lc -33	110	0.0	<Lc 0	0	202.0	<Lc 22	122
16	K50 Floor	10.5	-49.5	4.8	150-200 cpm	0.0	0	0	142.0	<Lc -17	111	0.0	<Lc 0	0	180.0	<Lc -47	119
17	L50 Floor	11.5	-49.5	4.8	150-200 cpm	0.0	0	0	146.0	<Lc -3	112	0.0	<Lc 0	0	186.0	<Lc -28	120
18	QC of #17 (L50)	11.5	-49.5	4.8	150-200 cpm	0.0	0	0	152.0	<Lc 17	113	0.0	<Lc 0	0	188.0	<Lc -22	120
19	M50 Floor	12.5	-49.5	4.8	150-200 cpm	1.0	7	14	150.0	<Lc 10	113	0.0	<Lc 0	0	185.0	<Lc -31	119
20	N50 Floor	13.5	-49.5	4.8	150-200 cpm	0.0	0	0	165.0	<Lc 60	115	1.0	2	5	192.0	<Lc -9	120
21	O50 Floor	14.5	-49.5	4.8	150-200 cpm	0.0	0	0	132.0	<Lc -50	109	0.0	<Lc 0	0	195.0	<Lc 0	121

Data Entered By and Date: Robin Sanberg 29 July 98

Reviewed By and Date (Site Manager) 29 July 98

9-2-98

12/11/96

*DPM units per 100 cm2

Production Building

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Production Bld. 1st Flr, Overheads ~~Floor~~ Coor. In meters from NE Corner Alpha Scans<20, see field notes for Beta Scans. V 1.9

Reference No.:	LKYDT243
Survey No.:	335
Data Code:	CH-SURV
Grid ID:	See Description
Area:	IA04
Survey By:	J. Kinstle
Survey Date:	07/25/98
Smears Counted By:	J. Kinstle
Smear Count Date:	08/10/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:				
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	1175	1175		685
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	146	146	68222	532
Cal Due Date:	09/11/98	09/11/98	11/06/98	09/03/98
Bkgd CPM:	3.0	220.0	0.1	217.0
Efficiency:	0.13	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	31	102	1	107

No.	Description	E (x)	N (y)	Hl. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	Grid # AE 9 drain pipe	-30.5	-8.5	3.6	200-300 cpm	2.0	<Lc -8	34	259.0	115	126	0.0	<Lc 0	0	187.0	<Lc -94	123
2	Grid # AE 9 2" pipe	-30.5	-8.5	3.3	200-300 cpm	2.0	<Lc -8	34	219.0	<Lc -3	121	0.0	<Lc 0	0	220.0	<Lc 9	128
3	Grid # AE 9 2" conduit	-30.5	-8.5	3.4	200-300 cpm	5.0	<Lc 15	43	217.0	<Lc -9	121	0.0	<Lc 0	0	214.0	<Lc -9	127
4	Grid # AE 9 fire protection line	-30.5	-8.7	3.2	200-300 cpm	1.0	<Lc -15	30	243.0	<Lc 68	124	0.0	<Lc 0	0	192.0	<Lc -78	124
5	Grid # AF 9 2" conduit	-31.5	-8.5	3.4	200-300 cpm	1.0	<Lc -15	30	223.0	<Lc 9	121	0.0	<Lc 0	0	208.0	<Lc -28	126
6	Grid # AF 9 drain line	-31.5	-8.5	3.6	200-300 cpm	4.0	<Lc 8	40	268.0	141	127	1.0	2	5	226.0	<Lc 28	129
7	Grid # AF 9 2" pipe	-31.5	-8.5	3.3	200-300 cpm	2.0	<Lc -8	34	233.0	<Lc 38	123	0.0	<Lc 0	0	192.0	<Lc -78	124
8	Grid # AF 9 fire protection line	-31.5	-8.7	3.2	200-300 cpm	2.0	<Lc -8	34	215.0	<Lc -15	120	1.0	2	5	219.0	<Lc 6	128
9	Grid # AG 9 fire protection line	-32.5	-8.7	3.2	200-300 cpm	4.0	<Lc 8	40	231.0	<Lc 32	122	1.0	2	5	190.0	<Lc -84	124
10	Grid # AG 9 drain pipe	-32.5	-8.5	3.6	200-300 cpm	7.0	<Lc 31	48	252.0	<Lc 94	125	0.0	<Lc 0	0	199.0	<Lc -56	125
11	Grid # AG 9 2" pipe	-32.5	-8.5	3.3	150-250 cpm	6.0	<Lc 23	45	212.0	<Lc -24	120	0.0	<Lc 0	0	213.0	<Lc -13	127
12	QC of # 11					4.0	<Lc 8	40	219.0	<Lc -3	121	0.0	<Lc 0	0	210.0	<Lc -22	127
13	Grid # AG 9 2" conduit	-32.5	-8.5	3.4	200-300 cpm	1.0	<Lc -15	30	228.0	<Lc 24	122	1.0	2	5	217.0	<Lc 0	128
14	Grid # AH 8 sprinkler	-33.5	-7.8	3.8	200-300 cpm	6.0	<Lc 23	45	261.0	121	126	0.0	<Lc 0	0	182.0	<Lc -109	122
15	Grid # AH 8 1" pipe	-33.5	-7.6	3.6	200-300 cpm	5.0	<Lc 15	43	245.0	<Lc 74	124	0.0	<Lc 0	0	210.0	<Lc -22	127
16	Grid # AH 9 2" pipe	-33.5	-8.5	3.3	200-300 cpm	7.0	<Lc 31	48	215.0	<Lc -15	120	0.0	<Lc 0	0	195.0	<Lc -69	124
17	Grid # AH 9 2" conduit	-33.5	-8.5	3.4	200-300 cpm	5.0	<Lc 15	43	214.0	<Lc -18	120	0.0	<Lc 0	0	206.0	<Lc -34	126
18	Grid # AH 9 fire protection line	-33.5	-8.7	3.2	200-300 cpm	4.0	<Lc 8	40	240.0	<Lc 59	124	0.0	<Lc 0	0	208.0	<Lc -28	126
19	Grid # AH 9 drain pipe	-33.5	-8.5	3.6	200-300 cpm	4.0	<Lc 8	40	229.0	<Lc 26	122	0.0	<Lc 0	0	219.0	<Lc 6	128
20	Grid # AI 8 1" pipe	-34.5	-7.6	3.6	150-250 cpm	1.0	<Lc -15	30	232.0	<Lc 35	123	0.0	<Lc 0	0	191.0	<Lc -81	124
21	Grid # AI 8 1" conduit	-34.1	-7.6	3.8	150-250 cpm	6.0	<Lc 23	45	212.0	<Lc -24	120	0.0	<Lc 0	0	200.0	<Lc -53	125
22	Grid # AI 9 2" conduit	-34.5	-8.5	3.4	200-300 cpm	2.0	<Lc -8	34	226.0	<Lc 18	122	0.0	<Lc 0	0	224.0	<Lc 22	129
23	Grid # AI 9 2" pipe	-34.5	-8.5	3.3	200-300 cpm	2.0	<Lc -8	34	218.0	<Lc -6	121	0.0	<Lc 0	0	191.0	<Lc -81	124

Data Entered By and Date: 11 AUG 98

9-1-98

12/11/96
*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Production Bld. 1st Flr, Overheads ~~Floor~~ Coor. In meters from NE Corner Alpha Scans<20, see field notes for Beta Scans. V 1.9

Reference No.:	LKYDT243
Survey No.:	335
Data Code:	CH-SURV
Grid ID:	See Description
Area:	IA04
Survey By:	J. Kinstle
Survey Date:	07/25/98
Smears Counted By:	J. Kinstle
Smear Count Date:	08/10/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	J. Kinstle		J. Kinstle	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	1175	1175		685
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	146	146	68222	532
Cal Due Date:	09/11/98	09/11/98	11/06/98	09/03/98
Bkgd CPM:	3.0	220.0	0.1	217.0
Efficiency:	0.13	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	31	102	1	107

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
24	Grid # AI 9 drain pipe	-34.5	-8.5	3.6	200-300 cpm	5.0	<Lc 15	43	232.0	<Lc 35	123	0.0	<Lc 0	0	195.0	<Lc -69	124
25	Grid # AI 9 1" conduit	-34.1	-8.5	3.8	150-250 cpm	1.0	<Lc -15	30	224.0	<Lc 12	121	0.0	<Lc 0	0	201.0	<Lc -50	125
26	Grid # AI 9 fire protection line	-34.5	-8.7	3.2	200-300 cpm	3.0	<Lc 0	37	208.0	<Lc -35	119	0.0	<Lc 0	0	214.0	<Lc -9	127
27	Grid # Q 12 Light	-16.5	-11.9	3.6	200-300 cpm	4.0	<Lc 8	40	245.0	<Lc 74	124	0.0	<Lc 0	0	203.0	<Lc -44	126
28	Grid # Q 13 fire protection line	-16.5	-12.5	3.3	150-250 cpm	5.0	<Lc 15	43	208.0	<Lc -35	119	0.0	<Lc 0	0	197.0	<Lc -63	125
29	Grid # Q 14 pipe	-16.5	-13.8	3.6	150-250 cpm	7.0	<Lc 31	48	246.0	<Lc 76	124	0.0	<Lc 0	0	180.0	<Lc -116	122
30	Grid # Q 14 pipe	-16.5	-13.2	3.6	200-300 cpm	3.0	<Lc 0	37	267.0	138	127	0.0	<Lc 0	0	206.0	<Lc -34	126
31	QC of #30					4.0	<Lc 8	40	255.0	103	126	0.0	<Lc 0	0	197.0	<Lc -63	125
32	Grid# Q 15 1" pipe	-16.5	-14.5	3.7	150-200 cpm	4.0	<Lc 8	40	239.0	<Lc 56	124	1.0	2	5	185.0	<Lc -100	123
33	Grid# Q 15 1/2" pipe	-16.5	-14.8	3.6	150-250 cpm	1.0	<Lc -15	30	239.0	<Lc 56	124	0.0	<Lc 0	0	181.0	<Lc -113	122
34	Grid# Q 15 pipe	-16.6	-14.5	3.8	150-250 cpm	2.0	<Lc -8	34	240.0	<Lc 59	124	0.0	<Lc 0	0	182.0	<Lc -109	122
35	Grid# Q 15 pipe	-16.5	-14.5	3.2	150-250 cpm	4.0	<Lc 8	40	206.0	<Lc -41	119	1.0	2	5	195.0	<Lc -69	124
36	Grid# Q 16 pipe	-16.6	-15.5	3.8	200-300 cpm	2.0	<Lc -8	34	255.0	103	126	0.0	<Lc 0	0	193.0	<Lc -75	124
37	Grid# Q 16 pipe	-16.5	-15.3	3.2	200-300 cpm	3.0	<Lc 0	37	239.0	<Lc 56	124	0.0	<Lc 0	0	190.0	<Lc -84	124
38	Grid# Q 16 cable tray	-16.5	-15.7	3.2	200-350 cpm	5.0	<Lc 15	43	250.0	<Lc 88	125	0.0	<Lc 0	0	197.0	<Lc -63	125
39	QC of #38					5.0	<Lc 15	43	221.0	<Lc 3	121	0.0	<Lc 0	0	197.0	<Lc -63	125
40	Grid# Q 17 pipe	-16.6	-16.5	3.8	200-300 cpm	4.0	<Lc 8	40	256.0	106	126	0.0	<Lc 0	0	196.0	<Lc -66	124
41	Grid# Q 17 Light	-16.2	-16.5	3.6	150-250 cpm	7.0	<Lc 31	48	204.0	<Lc -47	119	0.0	<Lc 0	0	191.0	<Lc -81	124
42	Grid# Q 18 pipe	-16.6	-17.5	3.8	150-300 cpm	4.0	<Lc 8	40	231.0	<Lc 32	122	0.0	<Lc 0	0	208.0	<Lc -28	126
43	Grid# M 9 2" conduit	-12.5	-8.5	3.2	150-250 cpm	2.0	<Lc -8	34	231.0	<Lc 32	122	0.0	<Lc 0	0	207.0	<Lc -31	126
44	Grid# M 9 2" pipe	-12.5	-8.5	3.2	150-250 cpm	3.0	<Lc 0	37	200.0	<Lc -59	118	0.0	<Lc 0	0	202.0	<Lc -47	125
45	Grid# M 10 6" pipe	-12.5	-9.5	3	200-300 cpm	2.0	<Lc -8	34	244.0	<Lc 71	124	0.0	<Lc 0	0	208.0	<Lc -28	126
46	Grid# M 11 pipe	-12.5	-10.3	3.3	150-250 cpm	4.0	<Lc 8	40	246.0	<Lc 76	124	3.0	7	8	223.0	<Lc 19	128

Data Entered By and Date: R. Scanlon 11 AUG 98

9-1-98

12/11/96

*DPM units p[illegible] cm2

[illegible]4

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Production Bld. 1st Flr, Overheads ~~Floor~~ Coor. In meters from NE Corner Alpha Scans<20, see field notes for Beta Scans. V 1.9

Reference No.:	LKYDT243
Survey No.:	335
Data Code:	CH-SURV
Grid ID:	See Description
Area:	IA04
Survey By:	J. Kinstle
Survey Date:	07/25/98
Smears Counted By:	J. Kinstle
Smear Count Date:	08/10/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	J. Kinstle		J. Kinstle	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	1175	1175		685
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	146	146	68222	532
Cal Due Date:	09/11/98	09/11/98	11/06/98	09/03/98
Bkgd CPM:	3.0	220.0	0.1	217.0
Efficiency:	0.13	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	31	102	1	107

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
47	Grid# M 11 3/4" conduit	-12.5	-10.5	3.6	200-300 cpm	1.0	<Lc -15	30	248.0	<Lc 82	125	0.0	<Lc 0	0	203.0	<Lc -44	126
48	Grid# M 11 3/4" conduit	-12.5	-10.5	3.5	200-300 cpm	4.0	<Lc 8	40	243.0	<Lc 68	124	0.0	<Lc 0	0	199.0	<Lc -56	125
49	Grid# M 13 conduit	-12.5	-12.5	3.8	150-250 cpm	4.0	<Lc 8	40	242.0	<Lc 65	124	0.0	<Lc 0	0	211.0	<Lc -19	127
50	Grid# M 13 fire protection line	-12.5	-12.5	3.6	150-250 cpm	2.0	<Lc -8	34	210.0	<Lc -29	120	0.0	<Lc 0	0	214.0	<Lc -9	127
51	Grid# M 14 pipe	-12.5	-13.6	3.6	150-300 cpm	4.0	<Lc 8	40	240.0	<Lc 59	124	0.0	<Lc 0	0	197.0	<Lc -63	125
52	Grid# M 15 1/2" conduit	-12.7	-14.2	3.6	150-250 cpm	2.0	<Lc -8	34	180.0	<Lc -118	115	1.0	2	5	187.0	<Lc -94	123
53	Grid# M 15 conduit	-12.5	-14.5	3.8	150-250 cpm	4.0	<Lc 8	40	244.0	<Lc 71	124	0.0	<Lc 0	0	192.0	<Lc -78	124
54	Grid# M 15 fire protection line	-12.5	-14.3	3.8	150-250 cpm	2.0	<Lc -8	34	234.0	<Lc 41	123	1.0	2	5	194.0	<Lc -72	124
55	Grid# AR 23 sprinkler	-43.5	-22.5	3.7	200-300 cpm	2.0	<Lc -8	34	304.0	247	132	0.0	<Lc 0	0	186.0	<Lc -97	123
56	Grid# AR 25 sprinkler	-43.5	-24.5	3.7	200-300 cpm	3.0	<Lc 0	37	219.0	<Lc -3	121	1.0	2	5	173.0	<Lc -138	121
57	Grid# AR 25 1" conduit	-44.5	-24.5	4.1	200-300 cpm	8.0	38	50	267.0	138	127	2.0	5	7	209.0	<Lc -25	126
58	Grid# AS 23 sprinkler	-44.5	-22.5	3.7	200-300 cpm	5.0	<Lc 15	43	275.0	162	128	0.0	<Lc 0	0	207.0	<Lc -31	126
59	Grid# AS 25 sprinkler	-44.5	-24.5	3.7	200-300 cpm	4.0	<Lc 8	40	237.0	<Lc 50	123	0.0	<Lc 0	0	209.0	<Lc -25	126
60	Grid# AS 25 1" conduit	-44.5	-24.5	4.1	200-300 cpm	2.0	<Lc -8	34	231.0	<Lc 32	122	3.0	7	8	193.0	<Lc -75	124
61	Grid# AT 23 conduit	-45.2	-22.5	3.9	200-300 cpm	4.0	<Lc 8	40	278.0	171	129	2.0	5	7	184.0	<Lc -103	123
62	Grid# AT 23 pipe penetration @ wall	-45.5	-22.1	2.3	200-500 cpm	4.0	<Lc 8	40	297.0	226	131	0.0	<Lc 0	0	195.0	<Lc -69	124
63	Grid# AT 23 sprinkler	-45.5	-22.5	3.7	200-300 cpm	4.0	<Lc 8	40	275.0	162	128	0.0	<Lc 0	0	205.0	<Lc -38	126
64	Grid# AT 24 1" conduit	-45.2	-23.5	3.9	200-300 cpm	2.0	<Lc -8	34	262.0	124	127	0.0	<Lc 0	0	191.0	<Lc -81	124
65	Grid# AT 25 1" conduit	-45.2	-24.5	3.9	200-300 cpm	4.0	<Lc 8	40	270.0	147	128	0.0	<Lc 0	0	200.0	<Lc -53	125
66	Grid# AT 25 sprinkler	-45.5	-24.5	3.7	200-300 cpm	2.0	<Lc -8	34	237.0	<Lc 50	123	0.0	<Lc 0	0	207.0	<Lc -31	126
67	Grid# AT 25 conduit	-45.5	-24.5	4.1	200-300 cpm	5.0	<Lc 15	43	302.0	241	132	1.0	2	5	212.0	<Lc -16	127
68	QC of # 67					7.0	<Lc 31	48	275.0	162	128	4.0	10	10	185.0	<Lc -100	123
69	Grid# AT 26 conduit	-45.5	-25.5	4.1	200-300 cpm	4.0	<Lc 8	40	256.0	106	126	0.0	<Lc 0	0	183.0	<Lc -106	123

Data Entered By and Date: 11 Aug 98

9-1-98

12/11/96
*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Production Bld. 1st Flr, Overheads ~~Floor~~ Coor. In meters from NE Corner Alpha Scans<20, see field notes for Beta Scans. V 1.9

Reference No.:	LKYDT243
Survey No.:	335
Data Code:	CH-SURV
Grid ID:	See Description
Area:	IA04
Survey By:	J. Kinstle
Survey Date:	07/25/98
Smears Counted By:	J. Kinstle
Smear Count Date:	08/10/98

	DIRECT SURFACE						TRANSFERABLE CONTAMINATION					
Surveyor Sign:												
	Alpha			Beta-Gamma			Alpha			Beta-Gamma		
Scaler Model:	E-600			E-600						E-600		
Serial No.:	1175			1175						685		
Detector:	SHP-380			SHP-380			43-10			SHP-380		
Serial No.:	146			146			68222			532		
Cal Due Date:	09/11/98			09/11/98			11/06/98			09/03/98		
Bkgd CPM:	3.0			220.0			0.1			217.0		
Efficiency:	0.13			0.34			0.41			0.32		
Area Cor Fact:	1.000			1.000			N/A			N/A		
Bkgd CT Time:	1			1			50			1		
Smpl CT Time:	1			1			1			1		
Lc (DPM):	31			102			1			107		

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
70	Grid# AU 25 sprinkler	-46.5	-24.5	3.7	200-300 cpm	4.0	<Lc 8	40	232.0	<Lc 35	123	0.0	<Lc 0	0	194.0	<Lc -72	124
71	Grid# AU 25 conduit	-46.5	-24.5	4.1	200-300 cpm	3.0	<Lc 0	37	243.0	<Lc 68	124	0.0	<Lc 0	0	209.0	<Lc -25	126

Data Entered By and Date: 11 Aug 98

9-1-98

12/11/96

*DPM units p m2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Production Bld. 1st Flr, Over ... s Coor. In meters from NE Corner Alpha Scans<16, see field notes for Beta Scans.

V 1.9

Reference No.:	LKYDT238
Survey No.:	327
Data Code:	CH-SURV
Grid ID:	See Description
Area:	IA04
Survey By:	J. Kinstle
Survey Date:	07/28/98
Smears Counted By:	J. Caldwell
Smear Count Date:	08/08/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:				
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	1175	1175		685
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	146	146	68222	532
Cal Due Date:	09/11/98	09/11/98	11/06/98	09/03/98
Bkgd CPM:	2.0	243.0	0.2	222.0
Efficiency:	0.13	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	25	107	2	109

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	Grid # CM 1 2" pipe	-90.5	-0.5	3.3	150-300 cpm	1.0	<Lc -8	26	242.0	<Lc -3	127	0.0	<Lc 0	0	197.0	<Lc -78	125
2	QC of #11					3.0	<Lc 8	34	247.0	<Lc 12	128	0.0	<Lc 0	0	183.0	<Lc -122	123
3	Grid # CM 1 1" conduit	-90.5	-0.5	3.4	150-300 cpm	10.0	62	52	243.0	<Lc 0	127	0.0	<Lc 0	0	219.0	<Lc -9	129
4	Grid # CM 1 conduit pair	-90.5	-0.5	3.3	150-300 cpm	1.0	<Lc -8	26	208.0	<Lc -103	122	0.0	<Lc 0	0	230.0	<Lc 25	130
5	Grid # CM 1 sprinkler	-90.5	-0.9	4.1	150-300 cpm	3.0	<Lc 8	34	224.0	<Lc -56	125	0.0	<Lc 0	0	235.0	<Lc 41	131
6	Grid # CM 1 gas line	-90.5	-0.5	3.9	150-300 cpm	2.0	<Lc 0	30	213.0	<Lc -88	123	0.0	<Lc 0	0	201.0	<Lc -66	126
7	Grid # CM 2 8" pipe	-90.5	-1.5	3.6	150-300 cpm	9.0	54	50	239.0	<Lc -12	127	0.0	<Lc 0	0	202.0	<Lc -63	126
8	Grid # CM 2 4" gas line	-90.5	-1.8	3.9	150-300 cpm	6.0	31	43	251.0	<Lc 24	128	0.0	<Lc 0	0	209.0	<Lc -41	127
9	Grid # CM 2 conduit pair	-90.5	-1.5	3.3	150-300 cpm	6.0	31	43	214.0	<Lc -85	123	0.0	<Lc 0	0	204.0	<Lc -56	126
10	Grid # CM 2 2" line	-90.5	-1.5	3.3	150-300 cpm	5.0	<Lc 23	40	215.0	<Lc -82	123	0.0	<Lc 0	0	192.0	<Lc -94	125
11	Grid # CM 2 3/4" gas pipe	-90.5	-1.5	4	150-300 cpm	3.0	<Lc 8	34	246.0	<Lc 9	127	0.0	<Lc 0	0	210.0	<Lc -38	127
12	Grid # CM 3 speaker	-90.3	-2.3	3.2	150-250 cpm	5.0	<Lc 23	40	248.0	<Lc 15	128	0.0	<Lc 0	0	277.0	172	137
13	Grid # CM 3 1" conduit	-90.5	-2.5	3.3	150-250 cpm	4.0	<Lc 15	37	248.0	<Lc 15	128	0.0	<Lc 0	0	181.0	<Lc -128	123
14	Grid # CM 3 1" conduit	-90.5	-2.5	3.3	150-250 cpm	3.0	<Lc 8	34	212.0	<Lc -91	123	0.0	<Lc 0	0	186.0	<Lc -113	124
15	Grid # CM 4 sprinkler	-90.5	-3.8	3.6	150-250 cpm	6.0	31	43	231.0	<Lc -35	126	1.0	2	5	167.0	<Lc -172	121
16	Grid # CM 4 2" pipe	-90.5	-3.5	3.3	150-250 cpm	5.0	<Lc 23	40	247.0	<Lc 12	128	0.0	<Lc 0	0	194.0	<Lc -88	125
17	Grid # CM 4 1" conduit	-90.5	-3.5	3.3	150-250 cpm	4.0	<Lc 15	37	234.0	<Lc -26	126	0.0	<Lc 0	0	213.0	<Lc -28	128
18	Grid # CM 4 1" conduit	-90.5	-3.5	3.3	150-250 cpm	6.0	31	43	203.0	<Lc -118	122	0.0	<Lc 0	0	195.0	<Lc -84	125
19	Grid # CM 5 2" pipe	-90.5	-4.5	3.3	150-200 cpm	3.0	<Lc 8	34	266.0	<Lc 66	130	0.0	<Lc 0	0	185.0	<Lc -116	124
20	Grid # CM 5 1" conduit	-90.5	-4.8	3.8	150-250 cpm	2.0	<Lc 0	30	230.0	<Lc -38	125	0.0	<Lc 0	0	184.0	<Lc -119	123
21	Grid # CM 5 1" conduit	-90.5	-4.5	3.3	150-250 cpm	1.0	<Lc -8	26	233.0	<Lc -29	126	0.0	<Lc 0	0	191.0	<Lc -97	124
22	Grid # CM 3 2" pipe	-90.5	-2.5	3.3	150-250 cpm	2.0	<Lc 0	30	258.0	<Lc 44	129	0.0	<Lc 0	0	156.0	<Lc -206	119
23	Grid # CM 5 1" conduit	-90.5	-4.5	3.3	150-250 cpm	4.0	<Lc 15	37	236.0	<Lc -21	126	0.0	<Lc 0	0	206.0	<Lc -50	127

Data Entered By and Date: 13 Aug 98

Reviewed By and Date (Site Manager): 13 Aug 98

9-2-98

12/11/96
*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Production Bld. 1st Flr, Ove. 3 Coor. In meters from NE Corner Alpha Scans<16, see field notes for Beta Scans.

V 1.9

Reference No.:	LKYDT238
Survey No.:	327
Data Code:	CH-SURV
Grid ID:	See Description
Area:	IA04
Survey By:	J. Kinstle
Survey Date:	07/28/98
Smears Counted By:	J. Caldwell
Smear Count Date:	08/08/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	J. Kinstle		J. Caldwell	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	1175	1175		685
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	146	146	68222	532
Cal Due Date:	09/11/98	09/11/98	11/06/98	09/03/98
Bkgd CPM:	2.0	243.0	0.2	222.0
Efficiency:	0.13	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	25	107	2	109

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
24	Grid # CM 5 1/2" pipe	-90.5	-4.5	3.8	150-250 cpm	3.0	<Lc 8	34	248.0	<Lc 15	128	0.0	<Lc 0	0	176.0	<Lc -144	122
25	Grid # CM 6 1" conduit	-90.5	-5.5	3.3	150-250 cpm	4.0	<Lc 15	37	254.0	<Lc 32	129	0.0	<Lc 0	0	174.0	<Lc -150	122
26	Grid # CM 6 2" pipe	-90.5	-5.5	3.3	150-250 cpm	5.0	<Lc 23	40	258.0	<Lc 44	129	0.0	<Lc 0	0	188.0	<Lc -106	124
27	Grid # CM 6 1" conduit	-90.5	-5.5	3.3	150-250 cpm	1.0	<Lc -8	26	259.0	<Lc 47	129	0.0	<Lc 0	0	207.0	<Lc -47	127
28	Grid # CM 7 2" pipe	-90.5	-6.5	3.3	150-250 cpm	5.0	<Lc 23	40	229.0	<Lc -41	125	0.0	<Lc 0	0	200.0	<Lc -69	126
29	Grid # CM 7 sprinkler	-90.5	-6.5	3.6	150-250 cpm	3.0	<Lc 8	34	253.0	<Lc 29	128	0.0	<Lc 0	0	180.0	<Lc -131	123
30	Grid # CM 7 1/2" pipe	-90.8	-6.8	3.8	150-300 cpm	6.0	31	43	235.0	<Lc -24	126	0.0	<Lc 0	0	207.0	<Lc -47	127
31	Grid # CM 7 1" conduit	-90.5	-6.5	3.3	150-250 cpm	4.0	<Lc 15	37	223.0	<Lc -59	124	0.0	<Lc 0	0	206.0	<Lc -50	127
32	Grid # CM 7 1" conduit	-90.5	-6.5	3.3	150-250 cpm	5.0	<Lc 23	40	256.0	<Lc 38	129	0.0	<Lc 0	0	189.0	<Lc -103	124
33	Grid # CM 8 1" conduit	-90.5	-7.5	3.3	150-250 cpm	7.0	38	45	228.0	<Lc -44	125	1.0	2	5	213.0	<Lc -28	128
34	Grid # CM 8 1" conduit	-90.5	-7.5	3.3	150-250 cpm	6.0	31	43	223.0	<Lc -59	124	0.0	<Lc 0	0	212.0	<Lc -31	128
35	Grid # CM 8 2" pipe	-90.5	-7.5	3.3	150-250 cpm	5.0	<Lc 23	40	252.0	<Lc 26	128	0.0	<Lc 0	0	214.0	<Lc -25	128
36	Grid# CW 28 ceramic insulator	-100.1	-27.8	3	250-300 cpm	5.0	<Lc 23	40	253.0	<Lc 29	128	0.0	<Lc 0	0	178.0	<Lc -138	123
37	Grid# CW 29 2" pipe	-100.5	-28.5	3.8	150-300 cpm	1.0	<Lc -8	26	202.0	<Lc -121	122	0.0	<Lc 0	0	184.0	<Lc -119	123
38	Grid# CW 29 4" pipe	-100.5	-28.5	3.7	150-250 cpm	1.0	<Lc -8	26	172.0	<Lc -209	117	0.0	<Lc 0	0	193.0	<Lc -91	125
39	Grid# CW 29 6" pipe	-100.5	-28.8	3.9	150-250 cpm	2.0	<Lc 0	30	190.0	<Lc -156	120	1.0	2	5	189.0	<Lc -103	124
40	QC of #39					1.0	<Lc -8	26	202.0	<Lc -121	122	0.0	<Lc 0	0	201.0	<Lc -66	126
41	Grid# CW 30 3/4" conduit	-100.5	-29.5	3.9	200-300 cpm	2.0	<Lc 0	30	205.0	<Lc -112	122	1.0	2	5	197.0	<Lc -78	125
42	Grid# CX 28 1" pipe	-101.5	-27.5	3.6	200-300 cpm	4.0	<Lc 15	37	213.0	<Lc -88	123	2.0	4	7	223.0	<Lc 3	129
43	Grid# CX 29 3" pipe	-101.5	-28.5	3.7	150-250 cpm	5.0	<Lc 23	40	237.0	<Lc -18	126	0.0	<Lc 0	0	194.0	<Lc -88	125
44	Grid# CX 29 2" pipe	-101.5	-28.5	3.8	150-250 cpm	5.0	<Lc 23	40	236.0	<Lc -21	126	0.0	<Lc 0	0	183.0	<Lc -122	123
45	Grid# CX 29 6" pipe	-101.5	-28.8	3.9	150-250 cpm	3.0	<Lc 8	34	194.0	<Lc -144	121	0.0	<Lc 0	0	203.0	<Lc -59	126
46	Grid# CX 29 1" pipe	-101.9	-28.5	3.6	175-250 cpm	3.0	<Lc 8	34	214.0	<Lc -85	123	0.0	<Lc 0	0	209.0	<Lc -41	127

Data Entered By and Date: Robin Sanborn 13 Aug 98

Review and Date (Site Manager) [illegible] 13 Aug 98

12/11/96

*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Production Bld. 1st Flr, Ove[illegible] Coor. In meters from NE Corner Alpha Scans<16, see field notes for Beta Scans.

V 1.9

Reference No.:	LKYDT238
Survey No.:	327
Data Code:	CH-SURV
Grid ID:	See Description
Area:	IA04
Survey By:	J. Kinstle
Survey Date:	07/28/98
Smears Counted By:	J. Caldwell
Smear Count Date:	08/08/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:				
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	1175	1175		685
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	146	146	68222	532
Cal Due Date:	09/11/98	09/11/98	11/06/98	09/03/98
Bkgd CPM:	2.0	243.0	0.2	222.0
Efficiency:	0.13	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	25	107	2	109

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
47	Grid# CX 30 1" pipe	-102.9	-29.5	3.6	175-250 cpm	2.0	<Lc 0	30	204.0	<Lc -115	122	0.0	<Lc 0	0	228.0	<Lc 19	130
48	Grid# CX 30 3/4" conduit	-102.5	-29.5	3.9	200-300 cpm	3.0	<Lc 8	34	239.0	<Lc -12	127	0.0	<Lc 0	0	201.0	<Lc -66	126
49	Grid# CR 16 wall ledge & pipe stub	-95.5	-15.5	3.8	250-350 cpm	6.0	31	43	263.0	<Lc 59	130	0.0	<Lc 0	0	236.0	<Lc 44	131
50	Grid# CR 16 wire on wall	-95.2	-15.5	3.2	200-350 cpm	6.0	31	43	270.0	<Lc 79	131	0.0	<Lc 0	0	214.0	<Lc -25	128
51	Grid# CR 16 2" conduit	-95.3	-15.5	3.5	200-350 cpm	4.0	<Lc 15	37	282.0	115	132	0.0	<Lc 0	0	207.0	<Lc -47	127
52	Grid# CR 17 2" conduit	-95.3	-16.5	3.5	200-350 cpm	5.0	<Lc 23	40	254.0	<Lc 32	129	1.0	2	5	200.0	<Lc -69	126
53	Grid# CR 17 wall ledge	-95.2	-16.5	3.8	200-300 cpm	6.0	31	43	278.0	<Lc 103	132	0.0	<Lc 0	0	209.0	<Lc -41	127
54	QC of #53					6.0	31	43	245.0	<Lc 6	127	0.0	<Lc 0	0	191.0	<Lc -97	124
55	Grid# CR 17 wire on wall	-95.2	-16.5	3.2	200-300 cpm	8.0	46	48	251.0	<Lc 24	128	2.0	4	7	195.0	<Lc -84	125
56	Grid# CR 17 top edge of info board	-95.1	-16.5	2.1	200-300 cpm	6.0	31	43	297.0	159	134	0.0	<Lc 0	0	228.0	<Lc 19	130
57	Grid# CR 18 top edge of info board	-95.1	-17.5	2.1	200-300 cpm	2.0	<Lc 0	30	271.0	<Lc 82	131	1.0	2	5	211.0	<Lc -34	127
58	Grid# CR 18 wall ledge	-95.2	-17.5	3.8	200-300 cpm	4.0	<Lc 15	37	255.0	<Lc 35	129	0.0	<Lc 0	0	243.0	<Lc 66	132
59	Grid# CR 18 pipe stub on wall	-95.3	-17.8	3	200-300 cpm	5.0	<Lc 23	40	292.0	144	133	0.0	<Lc 0	0	209.0	<Lc -41	127
60	Grid# CR 18 2" conduit	-95.5	-17.5	3.5	200-300 cpm	4.0	<Lc 15	37	248.0	<Lc 15	128	1.0	2	5	194.0	<Lc -88	125
61	Grid# CR 18 wire on wall	-95.2	-17.5	3.2	200-300 cpm	6.0	31	43	241.0	<Lc -6	127	1.0	2	5	190.0	<Lc -100	124
62	Grid# CR 19 wire on wall	-95.2	-18.5	3.2	200-300 cpm	3.0	<Lc 8	34	259.0	<Lc 47	129	0.0	<Lc 0	0	192.0	<Lc -94	125
63	Grid# CR 19 2" conduit	-95.5	-18.5	3.5	200-300 cpm	4.0	<Lc 15	37	249.0	<Lc 18	128	0.0	<Lc 0	0	194.0	<Lc -88	125
64	Grid# CR 19 wall ledge	-95.2	-18.5	3.8	200-300 cpm	8.0	46	48	266.0	<Lc 68	130	0.0	<Lc 0	0	174.0	<Lc -150	122
65	Grid# CR 19 angle brace at wall	-95.1	-18.5	4.1	200-300 cpm	5.0	<Lc 23	40	262.0	<Lc 56	130	0.0	<Lc 0	0	191.0	<Lc -97	124
66	Grid# CR 19 1" conduit	-95.5	-18.5	3.8	200-300 cpm	9.0	54	50	261.0	<Lc 53	129	0.0	<Lc 0	0	231.0	<Lc 28	130
67	Grid# CR 19 2" conduit	-95.5	-18.3	3.6	200-300 cpm	4.0	<Lc 15	37	252.0	<Lc 26	128	0.0	<Lc 0	0	206.0	<Lc -50	127
68	Grid# CR 20 ledge of wall	-95.2	-19.5	3.8	200-300 cpm	7.0	38	45	250.0	<Lc 21	128	0.0	<Lc 0	0	198.0	<Lc -75	126
69	Grid# CR 20 wire on wall	-95.2	-19.5	3.2	200-300 cpm	8.0	46	48	283.0	118	132	1.0	2	5	221.0	<Lc -3	129

Data Entered By and Date: 13 Aug 98

Reviewed By and Date (Site Manager) 13 Aug 98

9-2-98

12/11/96
*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Production Bld. 1st Flr, Over... Coor. In meters from NE Corner Alpha Scans<16, see field notes for Beta Scans.

V 1.9

Reference No.:	LKYDT238
Survey No.:	327
Data Code:	CH-SURV
Grid ID:	See Description
Area:	IA04
Survey By:	J. Kinstle
Survey Date:	07/28/98
Smears Counted By:	J. Caldwell
Smear Count Date:	08/08/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:				
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	1175	1175		685
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	146	146	68222	532
Cal Due Date:	09/11/98	09/11/98	11/06/98	09/03/98
Bkgd CPM:	2.0	243.0	0.2	222.0
Efficiency:	0.13	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	25	107	2	109

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
70	Grid# CR 20 2" conduit	-95.5	-19.5	3.5	200-300 cpm	9.0	54	50	307.0	188	135	0.0	<Lc 0	0	220.0	<Lc -6	129
71	Grid# CR 21 locker top	-95.4	-20.5	2.1	200-300 cpm	5.0	<Lc 23	40	283.0	118	132	0.0	<Lc 0	0	198.0	<Lc -75	126
72	QC of #71					5.0	<Lc 23	40	294.0	150	134	0.0	<Lc 0	0	211.0	<Lc -34	127
73	Grid# CR 21 ledge of wall	-95.5	-20.5	3.8	200-300 cpm	6.0	31	43	277.0	<Lc 100	131	1.0	2	5	206.0	<Lc -50	127
74	Grid# CR 21 2" conduit	-95.5	-20.5	3.6	200-300 cpm	7.0	38	45	305.0	182	135	0.0	<Lc 0	0	199.0	<Lc -72	126
75	Grid# CR 21 wire on wall	-95.5	-20.5	3.2	200-300 cpm	5.0	<Lc 23	40	288.0	132	133	0.0	<Lc 0	0	218.0	<Lc -13	128
76	Grid# CR 22 wall ledge	-95.5	-21.5	3.8	200-300 cpm	5.0	<Lc 23	40	254.0	<Lc 32	129	0.0	<Lc 0	0	190.0	<Lc -100	124
77	Grid# CR 22 wire on wall	-95.5	-21.5	3.2	200-350 cpm	6.0	31	43	262.0	<Lc 56	130	0.0	<Lc 0	0	200.0	<Lc -69	126
78	Grid# CR 22 2" conduit	-95.5	-21.5	3.6	200-300 cpm	5.0	<Lc 23	40	225.0	<Lc -53	125	0.0	<Lc 0	0	192.0	<Lc -94	125
79	Grid# CR 22 pipe hanger	-95.5	-21.2	3.6	200-300 cpm	3.0	<Lc 8	34	288.0	132	133	1.0	2	5	174.0	<Lc -150	122
80	Grid# DG 1 2" pipe	-110.5	-0.5	3.3	150-250 cpm	8.0	46	48	285.0	124	132	0.0	<Lc 0	0	213.0	<Lc -28	128
81	Grid# DG 1 1/2" cinduit	-110.5	-0.5	3.5	150-250 cpm	7.0	38	45	288.0	132	133	1.0	2	5	175.0	<Lc -147	122
82	Grid# DG 2 8" line	-110.5	-1.5	3.8	150-250 cpm	3.0	<Lc 8	34	247.0	<Lc 12	128	1.0	2	5	187.0	<Lc -109	124
83	Grid# DG 2 sprinkler	-110.5	-1.5	3.9	150-250 cpm	3.0	<Lc 8	34	249.0	<Lc 18	128	0.0	<Lc 0	0	191.0	<Lc -97	124
84	Grid# DG 3 wire on beam	-110.5	-2.4	3.6	150-250 cpm	4.0	<Lc 15	37	236.0	<Lc -21	126	0.0	<Lc 0	0	208.0	<Lc -44	127
85	Grid# DG 3 4" pipe	-110.5	-2.2	3.6	150-250 cpm	4.0	<Lc 15	37	255.0	<Lc 35	129	0.0	<Lc 0	0	169.0	<Lc -166	121
86	Grid# DG 5 sprinkler	-110.5	-4.5	3.6	150-250 cpm	3.0	<Lc 8	34	244.0	<Lc 3	127	1.0	2	5	197.0	<Lc -78	125
87	Grid# DG 6 pipe	-110.5	-5.5	3.8	150-250 cpm	6.0	31	43	271.0	<Lc 82	131	1.0	2	5	198.0	<Lc -75	126
88	Grid# DG 7 sprinkler	-110.5	-6.8	3.6	150-250 cpm	3.0	<Lc 8	34	257.0	<Lc 41	129	0.0	<Lc 0	0	241.0	<Lc 59	132
89	Grid# DG 1 5" pipe	-110.5	-0.5	2.7	150-250 cpm	5.0	<Lc 23	40	276.0	<Lc 97	131	0.0	<Lc 0	0	206.0	<Lc -50	127
90	QC of #89					9.0	54	50	257.0	<Lc 41	129	0.0	<Lc 0	0	226.0	<Lc 13	130

Data Entered By and Date: 13 Aug 98

Revie... and Date (Site Manager) 13 Aug 98

9-2-98

12/11/96

*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Production Bld. 2nd Flr, Overheads Coor. In meters from NE Corner Alpha Scans<21, see field notes for Beta Scans.

V 1.9

Reference No.:	LKYDT229
Survey No.:	316
Data Code:	CH-SURV
Grid ID:	See Description
Area:	IA04
Survey By:	S.R. Plemens
Survey Date:	07/29/98
Smears Counted By:	J. Kinstle
Smear Count Date:	08/06/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	SRPlemens			
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	672	672		685
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	143	143	68222	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/03/98
Bkgd CPM:	5.0	238.0	0.2	181.0
Efficiency:	0.13	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	40	106	2	98

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	Ovrhd Grid #AE 9 Lower x angle beam	-30.5	-8.5	7.1	240-280 cpm	5.0	<Lc 0	48	265.0	<Lc 79	129	0.0	<Lc 0	0	213.0	100	122
2	Grid # AE 10 Main support beam	-30.5	-9.5	6.9	450-510 cpm	8.0	<Lc 23	54	518.0	824	159	1.0	2	5	180.0	<Lc -3	116
3	Grid # AE 11 Fire sprinkler pipe	-30.5	-10.5	6	190-240 cpm	5.0	<Lc 0	48	249.0	<Lc 32	127	0.0	<Lc 0	0	182.0	<Lc 3	117
4	Grid # AE 11 Main support beam	-30.5	-10.5	6.9	480-550 cpm	12.0	54	62	520.0	829	159	0.0	<Lc 0	0	186.0	<Lc 16	117
5	Grid # AE 12 Main support beam	-30.5	-11.5	6.9	550-650 cpm	13.0	62	64	684.0	1312	175	4.0	9	10	205.0	<Lc 75	120
6	QC of #5					10.0	<Lc 38	58	669.0	1268	174	7.0	17	13	201.0	<Lc 63	120
7	Grid# AE 12 Upper X angle beam	-30.5	-11.5	7.1	400-500 cpm	17.0	92	71	451.0	626	151	1.0	2	5	222.0	128	123
8	Grid # AE 9 Main support beam	-30.5	-8.5	6.9	280-320 cpm	8.0	<Lc 23	54	302.0	188	134	0.0	<Lc 0	0	231.0	156	124
9	Grid # AF 10 Lower x angle beam	-31.5	-9.5	7.1	375-425 cpm	12.0	54	62	403.0	485	146	3.0	7	8	188.0	<Lc 22	118
10	Grid # AF 10 Metal light shade	-31.5	-9.5	7.4	360-440 cpm	7.0	<Lc 15	52	423.0	544	148	0.0	<Lc 0	0	214.0	103	122
11	Grid # AF 11 Sprinkler system pipe	-31.5	-10.5	6	180-240 cpm	6.0	<Lc 8	50	231.0	<Lc -21	125	0.0	<Lc 0	0	190.0	<Lc 28	118
12	Grid # AF 12 Upper x angle beam	-31.5	-11.5	7.1	425-500 cpm	14.0	69	66	461.0	656	152	1.0	2	5	199.0	<Lc 56	119
13	Grid # AO 19 Main support beam	-40.5	-18.5	6.9	360-420 cpm	10.0	<Lc 38	58	389.0	444	144	0.0	<Lc 0	0	208.0	<Lc 84	121
14	Grid # AO 20 Main support beam	-40.5	-19.5	6.9	300-360 cpm	7.0	<Lc 15	52	328.0	265	137	0.0	<Lc 0	0	196.0	<Lc 47	119
15	Grid # AO 20 Channel iron	-40.5	-19.5	6.4	180-220 cpm	5.0	<Lc 0	48	214.0	<Lc -71	123	0.0	<Lc 0	0	193.0	<Lc 38	118
16	Grid # AO 21 Main support beam	-40.5	-20.5	6.9	280-340 cpm	9.0	<Lc 31	56	334.0	282	138	2.0	4	7	203.0	<Lc 69	120
17	Grid # AO 22 Main support beam	-40.5	-21.5	6.9	275-325 cpm	4.0	<Lc -8	45	314.0	224	135	1.0	2	5	221.0	125	123
18	Grid # AO 23 Upper x angle beam	-40.5	-22.5	7.1	325-375 cpm	6.0	<Lc 8	50	347.0	321	139	0.0	<Lc 0	0	191.0	<Lc 31	118
19	Grid # AO 23 Main x (cross) beam	-40.5	-22.5	7.1	330-400 cpm	7.0	<Lc 15	52	362.0	365	141	0.0	<Lc 0	0	222.0	128	123
20	Grid # AX 19 Main support beam	-49.5	-18.5	6.9	300-350 cpm	7.0	<Lc 15	52	334.0	282	138	1.0	2	5	229.0	150	124
21	Grid # AX 20 Main support beam	-49.5	-19.5	6.9	240-300 cpm	4.0	<Lc -8	45	270.0	<Lc 94	130	0.0	<Lc 0	0	199.0	<Lc 56	119
22	Grid # AX 21 Main support beam	-49.5	-20.5	6.9	280-320 cpm	15.0	77	67	306.0	200	134	0.0	<Lc 0	0	205.0	<Lc 75	120
23	QC of # 22					12.0	54	62	322.0	247	136	0.0	<Lc 0	0	199.0	<Lc 56	119

Data Entered By and Date: 11 Aug 98

9-2-98

12/11/96
*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Production Bld. 2nd Flr, Overheads Coor. In meters from NE Corner Alpha Scans<61, see field notes for Beta Scans.

V 1.9

Reference No.:	LKYDT228
Survey No.:	315
Data Code:	CH-SURV
Grid ID:	See Description
Area:	IA04
Survey By:	S.R. Plemens
Survey Date:	07/27/98
Smears Counted By:	J. Kinstle
Smear Count Date:	08/05/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	SR Plemens			
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	672	672		685
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	143	143	68222	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/03/98
Bkgd CPM:	4.0	233.0	0.3	228.0
Efficiency:	0.13	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	36	105	2	110

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	Ovrhd Grid #AD 19 Beam W. Shldr	-29.5	-18.5	6.9	400-1700 cpm	36.0	246	95	1399.0	3429	233	3.0	7	8	224.0	<Lc -13	130
2	QC of #1					41.0	285	101	1429.0	3518	235	3.0	7	8	218.0	<Lc -31	129
3	#1 counted w/ papershield				chk for crosstalk	34.0	231	93	1386.0	3391	232						
4	Grid # AD 18 Beam E. Shldr	-29.5	-17.5	7.1	400-1000 cpm	34.0	231	93	1033.0	2353	205	11.0	26	16	266.0	119	136
5	#4 counted w/ papershield				chk for crosstalk	23.0	146	78	896.0	1950	194						
6	Grid # AD 17 Beam E. Shldr	-29.5	-16.5	6.9	400-1000 cpm	29.0	192	87	1136.0	2656	213	0.0	<Lc -1	0	242.0	<Lc 44	133
7	#6 counted w/ papershield				chk for crosstalk	23.0	146	78	1067.0	2453	208						
8	Grid # AC 16 Pipe	-28.5	-15.5	6.8	150-300 cpm	6.0	<Lc 15	48	268.0	<Lc 103	129	0.0	<Lc -1	0	262.0	<Lc 106	136
9	Grid # AC 17 Wrapped Pipes	-28.5	-16.5	6.8	150-300 cpm	8.0	<Lc 31	52	319.0	253	135	0.0	<Lc -1	0	254.0	<Lc 81	134
10	Grid # AD 16 Pipes	-29.5	-15.5	6.5	150-350 cpm	4.0	<Lc 0	43	284.0	150	131	1.0	<Lc 2	5	217.0	<Lc -34	129
11	Grid # AD 16 Beam E. Shldr	-29.5	-15.5	6.9	400-900 cpm	19.0	115	72	910.0	1991	195	0.0	<Lc -1	0	230.0	<Lc 6	131
12	Grid # AD 16 Angle Beam W. Shldr	-29.5	-15.5	5.8	200-500 cpm	9.0	38	54	294.0	179	132	0.0	<Lc -1	0	249.0	<Lc 66	134
13	Grid # AD 16 Pipe	-29.5	-15.5	6.8	150-250 cpm	3.0	<Lc -8	40	239.0	<Lc 18	125	0.0	<Lc -1	0	248.0	<Lc 63	134
14	Grid # AK 18 Insul. Pipe	-36.5	-17.5	6.3	225-300 cpm	5.0	<Lc 8	45	255.0	<Lc 65	127	0.0	<Lc -1	0	204.0	<Lc -75	127
15	Grid # AK 18 Support Beam	-36.5	-17.5	7.1	490-590 cpm	11.0	54	58	576.0	1009	164	1.0	<Lc 2	5	186.0	<Lc -131	125
16	Grid # AL 18 Cross Member	-37.5	-17.5	7.1	450-595 cpm	12.0	62	60	553.0	941	162	11.0	26	16	204.0	<Lc -75	127
17	Grid # AL 19 Cross Beam	-37.5	-18.5	7.2	190-300 cpm	4.0	<Lc 0	43	236.0	<Lc 9	125	0.0	<Lc -1	0	195.0	<Lc -103	126
18	Grid # AL 19 Light Shade	-37.5	-18.5	7.3	300-400 cpm	10.0	46	56	370.0	403	142	0.0	<Lc -1	0	214.0	<Lc -44	129
19	Grid # AM 18 Cross Beam	-38.5	-17.5	7.1	450-600 cpm	13.0	69	62	588.0	1044	165	4.0	9	10	209.0	<Lc -59	128
20	Grid # AM 18 Cross Member	-38.5	-17.5	6.9	275-400 cpm	7.0	<Lc 23	50	384.0	444	143	1.0	<Lc 2	5	192.0	<Lc -113	126
21	Grid # AN 18 Cross Member	-39.5	-17.5	7.1	400-550 cpm	16.0	92	67	521.0	847	158	6.0	14	12	233.0	<Lc 16	132
22	Grid # AN 18 Cross Member	-39.5	-17.5	6.9	475-550 cpm	16.0	92	67	510.0	815	157	5.0	11	11	223.0	<Lc -16	130
23	Grid # AN 19 Main Beam	-39.5	-18.5	6.9	325-400 cpm	1.0	<Lc -23	34	350.0	344	139	1.0	<Lc 2	5	240.0	<Lc 38	133

Data Entered By and Date: Robin Sanborn 11 Aug 98

Reviewed By and Date (Site Manager): [illegible] 11 Aug 98

9-2-98

12/11/96

*DPM units p[illegible]m2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Production Bld. 2nd Flr, Overheads Coor. In meters from NE Corner Alpha Scans<61, see field notes for Beta Scans.

V 1.9

Reference No.:	LKYDT228
Survey No.:	315
Data Code:	CH-SURV
Grid ID:	See Description
Area:	IA04
Survey By:	S.R. Plemens
Survey Date:	07/27/98
Smears Counted By:	J. Kinstle
Smear Count Date:	08/05/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	SR Plemens			
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	672	672		685
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	143	143	68222	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/03/98
Bkgd CPM:	4.0	233.0	0.3	228.0
Efficiency:	0.13	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	36	105	2	110

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
24	Grid # AD 17 Pipe	-29.5	-16.5	6.5	150-350 cpm	6.0	<Lc 15	48	273.0	118	130	1.0	<Lc 2	5	218.0	<Lc -31	129
25	QC of # 24					3.0	<Lc -8	40	244.0	<Lc 32	126	1.0	<Lc 2	5	225.0	<Lc -9	130
26	Grid # AD 17 Angle Beam E. Shldr	-29.5	-16.5	6.4	200-350 cpm	8.0	<Lc 31	52	298.0	191	133	0.0	<Lc -1	0	234.0	<Lc 19	132
27	Grid # AD 17 Wrapped Pipes	-29.5	-16.5	6.8	150-250 cpm	11.0	54	58	260.0	<Lc 79	128	0.0	<Lc -1	0	260.0	<Lc 100	135
28	Grid # AD 18 Pipe	-29.5	-17.5	6.5	200-350 cpm	5.0	<Lc 8	45	255.0	<Lc 65	127	0.0	<Lc -1	0	219.0	<Lc -28	129
29	Grid # AD 18 Beam W. Shldr	-29.5	-17.5	6.9	400-900 cpm	19.0	115	72	768.0	1574	182	0.0	<Lc -1	0	219.0	<Lc -28	129
30	Grid # AD 19 Pipe	-29.5	-18.5	6.5	200-350 cpm	5.0	<Lc 8	45	226.0	<Lc -21	124	0.0	<Lc -1	0	248.0	<Lc 63	134
31	Grid # AO 29 Cross Angle Beam	-40.5	-28.5	7.2	275-350 cpm	5.0	<Lc 8	45	303.0	206	133	1.0	<Lc 2	5	209.0	<Lc -59	128
32	Grid # AO 29 Large Iron Pipe	-40.5	-28.5	6.6	170-240 cpm	5.0	<Lc 8	45	217.0	<Lc -47	122	1.0	<Lc 2	5	212.0	<Lc -50	128
33	Grid # AO 30 iron Pipe	-40.5	-29.5	6.9	200-260 cpm	6.0	<Lc 15	48	240.0	<Lc 21	125	1.0	<Lc 2	5	199.0	<Lc -91	127
34	Grid # AO 30 Main Beam South wall	-40.5	-30	7.1	350-425 cpm	8.0	<Lc 31	52	399.0	488	145	1.0	<Lc 2	5	227.0	<Lc -3	131
35	Grid # AO 30 Cross Angle Beam	-40.5	-29.5	7.1	325-400 cpm	8.0	<Lc 31	52	375.0	418	142	1.0	<Lc 2	5	207.0	<Lc -66	128
36	Grid # AO 30 Top of Cncrt. Pillar c-32	-40.5	-29.5	6.9	380-460 cpm	11.0	54	58	453.0	647	151	4.0	9	10	184.0	<Lc -138	124
37	Grid # AO 24 Main support Beam	-40.5	-23.5	6.9	325-400 cpm	8.0	<Lc 31	52	377.0	424	142	0.0	<Lc -1	0	229.0	<Lc 3	131
38	Grid # AO 25 Main Support Beam	-40.5	-24.5	6.9	450-525 cpm	5.0	<Lc 8	45	492.0	762	155	0.0	<Lc -1	0	218.0	<Lc -31	129
39	Grid # AO 26 Main Support Beam	-40.5	-25.5	6.9	350-450 cpm	9.0	38	54	403.0	500	145	4.0	9	10	209.0	<Lc -59	128
40	Grid # AO 27 Main Support Beam	-40.5	-26.5	6.9	400-500 cpm	10.0	46	56	493.0	765	155	3.0	7	8	215.0	<Lc -41	129
41	Grid # AO 27 Cross Angle Beam	-40.5	-26.5	6.9	450-550 cpm	12.0	62	60	565.0	976	163	8.0	19	14	227.0	<Lc -3	131
42	Grid # AO 28 Main Cross Beam	-40.5	-27.5	7.1	300-400 cpm	7.0	<Lc 23	50	381.0	435	143	0.0	<Lc -1	0	195.0	<Lc -103	126
43	Grid # AO 29 Main Support Beam	-40.5	-28.5	6.9	350-425 cpm	8.0	<Lc 31	52	412.0	526	146	2.0	4	7	215.0	<Lc -41	129
44	Grid # AF 18 Beam S. Shldr	-31.5	-17.5	7.1	500-1000 cpm	25.0	162	81	912.0	1997	195	1.0	<Lc 2	5	258.0	<Lc 94	135
45	QC of #44					24.0	154	80	922.0	2026	196	1.0	<Lc 2	5	247.0	<Lc 59	133

Data Entered By and Date: [illegible] 11 Aug 98

9-2-98

12/11/96
*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Production Bld. 2nd Flr, Ov... ...ads Coor. In meters from NE Corner Alpha Scans<36, see field notes for Beta Scans.

V 1.9

Reference No.:	LKYDT227
Survey No.:	314
Data Code:	CH-SURV
Grid ID:	See Description
Area:	IA04
Survey By:	S.R. Plemens
Survey Date:	07/26/98
Smears Counted By:	J. Kinstle
Smear Count Date:	08/05/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:				
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	672	672		685
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	143	143	68222	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/03/98
Bkgd CPM:	4.0	223.0	0.3	228.0
Efficiency:	0.13	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	36	102	2	110

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	Ovrhd Grid #DL 9 Beam E. Shldr	-115.5	-8.5	6.9	150-300 cpm	4.0	<Lc 0	43	260.0	109	127	1.0	<Lc 2	5	294.0	206	140
2	Grid # DL 10 Beam W. Shldr	-115.5	-9.5	6.9	150-300 cpm	6.0	<Lc 15	48	251.0	<Lc 82	126	0.0	<Lc -1	0	271.0	134	137
3	Grid # DL 11 Beam E. Shldr	-115.5	-10.5	6.9	150-300 cpm	4.0	<Lc 0	43	225.0	<Lc 6	122	1.0	<Lc 2	5	259.0	<Lc 97	135
4	Grid # DL 12 Beam W. Shldr	-115.5	-11.5	6.9	150-300 cpm	3.0	<Lc -8	40	216.0	<Lc -21	121	0.0	<Lc -1	0	280.0	163	138
5	Grid # DL 13 Beam W. Shldr	-115.5	-12.5	6.9	150-300 cpm	1.0	<Lc -23	34	223.0	<Lc 0	122	1.0	<Lc 2	5	293.0	203	140
6	Grid # DL 14 Beam W. Shldr	-115.5	-13.5	6.9	150-300 cpm	9.0	38	54	262.0	115	127	0.0	<Lc -1	0	287.0	184	139
7	Qc of #6					4.0	<Lc 0	43	231.0	<Lc 24	123	0.0	<Lc -1	0	299.0	222	141
8	Grid # DL 15 Beam	-115.5	-14.5	6.9	150-350 cpm	3.0	<Lc -8	40	272.0	144	128	0.0	<Lc -1	0	257.0	<Lc 91	135
9	Grid # GD 12 Top of support Beam	-185.5	-11.5	6.9	200-250 cpm	5.0	<Lc 8	45	267.0	129	128	0.0	<Lc -1	0	277.0	153	138
10	Grid # GD 13 Main Cross Beam	-185.5	-12.5	6.9	190-260 cpm	6.0	<Lc 15	48	255.0	<Lc 94	126	0.0	<Lc -1	0	260.0	<Lc 100	135
11	Grid # GD 13 Metal Pipe	-185.5	-12.5	6.1	170-240 cpm	5.0	<Lc 8	45	266.0	126	127	1.0	<Lc 2	5	252.0	<Lc 75	134
12	Grid # GD 14 Support Beam	-185.5	-13.5	6.5	200-280 cpm	4.0	<Lc 0	43	242.0	<Lc 56	124	0.0	<Lc -1	0	223.0	<Lc -16	130
13	Grid # GD 15 Support Beam	-185.5	-14.5	5.9	200-280 cpm	7.0	<Lc 23	50	256.0	<Lc 97	126	1.0	<Lc 2	5	257.0	<Lc 91	135
14	Grid # GD 15 Pipe	-185.5	-14.5	3.3	220-320 cpm	5.0	<Lc 8	45	276.0	156	129	0.0	<Lc -1	0	226.0	<Lc -6	131
15	Grid # GD 15 Concrete Cross Member	-185.5	-14.5	3.2	200-300 cpm	8.0	<Lc 31	52	353.0	382	138	0.0	<Lc -1	0	253.0	<Lc 78	134
16	Grid # GD 15 Pipe	-185.5	-14.5	2.9	180-280 cpm	1.0	<Lc -23	34	257.0	<Lc 100	126	1.0	<Lc 2	5	272.0	138	137
17	Grid # GE 12 Duct work	-186.5	-11.5	3.8	220-280 cpm	4.0	<Lc 0	43	260.0	109	127	0.0	<Lc -1	0	267.0	122	136
18	Grid # GE 13 Duct work	-186.5	-12.5	3.8	225-265 cpm	4.0	<Lc 0	43	279.0	165	129	0.0	<Lc -1	0	231.0	<Lc 9	131
19	Grid # GE 13 Pipe	-186.5	-12.5	6.1	225-275 cpm	2.0	<Lc -15	37	263.0	118	127	0.0	<Lc -1	0	243.0	<Lc 47	133
20	Grid # GE Top of Main Cross Beam	-186.5	-12.5	7.1	190-240 cpm	7.0	<Lc 23	50	253.0	<Lc 88	126	0.0	<Lc -1	0	241.0	<Lc 41	133
21	Grid # GE 14 Metal Duct	-186.5	-13.5	3.8	240-320 cpm	6.0	<Lc 15	48	283.0	176	130	0.0	<Lc -1	0	228.0	<Lc -9	130
22	Grid # GE 15 Conduit	-186.5	-14.5	3.3	250-320 cpm	6.0	<Lc 15	48	275.0	153	129	0.0	<Lc -1	0	269.0	128	137
23	Grid # GE 15 Concrete Cross Member	-186.5	-14.5	3.2	290-340 cpm	9.0	38	54	341.0	347	137	0.0	<Lc -1	0	256.0	<Lc 88	135

Data Entered By and Date: 11 Aug 98

9-2-98

Revie... and Date (Site Manager): 11 Aug 98

12/11/96

*DPM units p... m2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Production Bld. 2nd Flr, Overheads Coor. In meters from NE Corner Alpha Scans<36, see field notes for Beta Scans.

V 1.9

Reference No.:	LKYDT227
Survey No.:	314
Data Code:	CH-SURV
Grid ID:	See Description
Area:	IA04
Survey By:	S.R. Plemens
Survey Date:	07/26/98
Smears Counted By:	J. Kinstle
Smear Count Date:	08/05/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	SR Plemens		J. Kinstle	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	672	672		685
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	143	143	68222	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/03/98
Bkgd CPM:	4.0	223.0	0.3	228.0
Efficiency:	0.13	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	36	102	2	110

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
24	Grid # GF 12 Top of vent duct work	-187.5	-11.5	5	180-250 cpm	7.0	<Lc 23	50	256.0	<Lc 97	126	0.0	<Lc -1	0	231.0	<Lc 9	131
25	Grid # GF 12 inside vent duct	-187.5	-11.5	3.8	260-200 cpm	6.0	<Lc 15	48	288.0	191	130	0.0	<Lc -1	0	277.0	153	138
26	Grid # GF 13 Top of vent duct work	-187.5	-12.5	5	220-260 cpm	4.0	<Lc 0	43	255.0	<Lc 94	126	0.0	<Lc -1	0	257.0	<Lc 91	135
27	Grid # GF 13 inside vent duct	-187.5	-12.5	3.8	225-275 cpm	7.0	<Lc 23	50	267.0	129	128	0.0	<Lc -1	0	243.0	<Lc 47	133
28	Grid # GF 14 inside vent duct	-187.5	-13.5	3.8	240-300 cpm	12.0	62	60	269.0	135	128	0.0	<Lc -1	0	234.0	<Lc 19	132
29	Grid# GF 14 Top of vent duct work	-187.5	-13.5	5	200-300 cpm	4.0	<Lc 0	43	233.0	<Lc 29	123	0.0	<Lc -1	0	249.0	<Lc 66	134
30	Grid# GF 15 Top of vent duct work	-187.5	-14.5	5.1	185-235 cpm	7.0	<Lc 23	50	241.0	<Lc 53	124	0.0	<Lc -1	0	253.0	<Lc 78	134
31	Grid# GF 15 Top of concrete x membr	-187.5	-14.5	3.2	260-330 cpm	7.0	<Lc 23	50	317.0	276	134	0.0	<Lc -1	0	230.0	<Lc 6	131
32	Grid# FI 18 Main support beam	-164.5	-17.5	6.9	190-240 cpm	5.0	<Lc 8	45	264.0	121	127	0.0	<Lc -1	0	255.0	<Lc 84	135
33	Grid# FI 19 Main support beam	-164.5	-18.5	6.9	200-240 cpm	8.0	<Lc 31	52	262.0	115	127	1.0	<Lc 2	5	256.0	<Lc 88	135
34	Grid# FJ 16 Main support beam	-165.5	-15.5	6.9	260-320 cpm	6.0	<Lc 15	48	322.0	291	135	0.0	<Lc -1	0	251.0	<Lc 72	134
35	Grid# FJ 17 Main support beam	-165.5	-16.5	6.9	180-220 cpm	8.0	<Lc 31	52	218.0	<Lc -15	121	0.0	<Lc -1	0	256.0	<Lc 88	135
36	Grid# CX 1 Pipe	-101.5	-0.5	6.8	150-250 cpm	7.0	<Lc 23	50	200.0	<Lc -68	119	0.0	<Lc -1	0	246.0	<Lc 56	133
37	Grid# CX 2 Wood beam	-101.5	-1.5	7.1	150-300 cpm	10.0	46	56	234.0	<Lc 32	123	0.0	<Lc -1	0	276.0	150	138
38	Grid# CX3 Beam S. Shldr	-101.5	-2.5	7.1	150-300 cpm	6.0	<Lc 15	48	210.0	<Lc -38	120	0.0	<Lc -1	0	262.0	<Lc 106	136
39	QC of #38					5.0	<Lc 8	45	216.0	<Lc -21	121	0.0	<Lc -1	0	269.0	128	137
40	Grid# DZ 18 Beam E. Shldr	-129.5	-17.5	6.9	150-300 cpm	3.0	<Lc -8	40	195.0	<Lc -82	118	0.0	<Lc -1	0	274.0	144	137
41	Grid# DZ 19 Beam E. Shldr	-129.5	-18.5	6.9	150-300 cpm	0.0	<Lc -31	30	210.0	<Lc -38	120	0.0	<Lc -1	0	273.0	141	137
42	Grid# DZ 20 Beam E. Shldr	-129.5	-19.5	6.9	150-300 cpm	4.0	<Lc 0	43	228.0	<Lc 15	122	0.0	<Lc -1	0	289.0	191	139
43	Grid# CG 8 Beam W. Shldr	-84.5	-7.5	6.9	150-350 cpm	7.0	<Lc 23	50	233.0	<Lc 29	123	0.0	<Lc -1	0	276.0	150	138
44	Grid# CG9 Beam W. Shldr	-84.5	-8.5	6.9	150-350 cpm	9.0	38	54	236.0	<Lc 38	124	0.0	<Lc -1	0	229.0	<Lc 3	131
45	Grid# CG10 Beam W. Shldr	-84.5	-9.5	6.9	150-350 cpm	7.0	<Lc 23	50	222.0	<Lc -3	122	0.0	<Lc -1	0	243.0	<Lc 47	133
46	Grid# CG11 Beam W. Shldr	-84.5	-10.5	6.9	150-250 cpm	10.0	46	56	253.0	<Lc 88	126	0.0	<Lc -1	0	260.0	<Lc 100	135

Data Entered By and Date: 11 Aug 98

Reviewed By and Date (Site Manager): 11 Aug 98

9-2-98

12/11/96

*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Production Bld. 2nd Flr, Overheads Coor. In meters from NE Corner Alpha Scans<36, see field notes for Beta Scans.

V 1.9

Reference No.:	LKYDT227
Survey No.:	314
Data Code:	CH-SURV
Grid ID:	See Description
Area:	IA04
Survey By:	S.R. Plemens
Survey Date:	07/26/98
Smears Counted By:	J. Kinstle
Smear Count Date:	08/05/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	SR Plemens			
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	672	672		685
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	143	143	68222	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/03/98
Bkgd CPM:	4.0	223.0	0.3	228.0
Efficiency:	0.13	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	36	102	2	110

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
47	Grid# CG12 Beam W. Shldr	-84.5	-11.5	6.9	150-350 cpm	5.0	<Lc 8	45	221.0	<Lc -6	121	0.0	<Lc -1	0	267.0	122	136
48	Grid# CG13 Beam W. Shldr	-84.5	-12.5	6.9	150-300 cpm	2.0	<Lc -15	37	221.0	<Lc -6	121	0.0	<Lc -1	0	252.0	<Lc 75	134
49	Grid# EP 16 Beam W. Shldr	-145.5	-15.5	6.9	150-350 cpm	8.0	<Lc 31	52	246.0	<Lc 68	125	0.0	<Lc -1	0	265.0	116	136
50	Grid# EP 17 Beam W. Shldr	-145.5	-16.5	6.9	150-350 cpm	8.0	<Lc 31	52	241.0	<Lc 53	124	1.0	<Lc 2	5	248.0	<Lc 63	134
51	Grid# EP 18 Beam W. Shldr	-145.5	-17.5	6.9	200-300 cpm	2.0	<Lc -15	37	247.0	<Lc 71	125	0.0	<Lc -1	0	263.0	<Lc 109	136
52	QC of #51					3.0	<Lc -8	40	238.0	<Lc 44	124	0.0	<Lc -1	0	272.0	138	137
53	Grid# EP 19 Beam E. Shldr	-145.5	-18.5	6.9	150-300 cpm	3.0	<Lc -8	40	233.0	<Lc 29	123	1.0	<Lc 2	5	258.0	<Lc 94	135
54	Grid# EP 26 Beam W. Shldr	-145.5	-25.5	6.9	150-300 cpm	7.0	<Lc 23	50	230.0	<Lc 21	123	0.0	<Lc -1	0	259.0	<Lc 97	135
55	Grid# EP 26 Beam N. Shldr	-145.5	-25.5	7.1	150-300 cpm	5.0	<Lc 8	45	197.0	<Lc -76	118	0.0	<Lc -1	0	229.0	<Lc 3	131
56	Grid# EP 26 Beam Top	-145.5	-25.5	4.7	150-250 cpm	7.0	<Lc 23	50	228.0	<Lc 15	122	0.0	<Lc -1	0	279.0	159	138
57	Grid# EP 27 Beam W. Shldr	-145.5	-26.5	6.9	150-300 cpm	3.0	<Lc -8	40	211.0	<Lc -35	120	0.0	<Lc -1	0	250.0	<Lc 69	134
58	Grid# EP 28 Beam W. Shldr	-145.5	-27.5	6.9	150-300 cpm	5.0	<Lc 8	45	200.0	<Lc -68	119	0.0	<Lc -1	0	291.0	197	140
59	Grid# EP 28 Beam N. Shldr	-145.5	-27.5	7.1	150-300 cpm	3.0	<Lc -8	40	202.0	<Lc -62	119	0.0	<Lc -1	0	242.0	<Lc 44	133
60	Grid# EP 29 Pipe	-145.5	-28.5	6.6	100-280 cpm	3.0	<Lc -8	40	225.0	<Lc 6	122	0.0	<Lc -1	0	274.0	144	137
61	Grid# EP 29 Beam W. Shldr	-145.5	-28.5	6.9	150-300 cpm	5.0	<Lc 8	45	217.0	<Lc -18	121	0.0	<Lc -1	0	265.0	116	136
62	Grid# EP 29 Angle Beam W. Shldr	-145.5	-28.5	6.3	150-300 cpm	12.0	62	60	201.0	<Lc -65	119	0.0	<Lc -1	0	253.0	<Lc 78	134

CW 9-2-98

Data Entered By and Date: R. Scambray 11 Aug 98

11 Aug 98

*DPM units cm2

12/11/96

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Production Bld. 2nd Flr, Coordinates In meters from NE Corner Alpha Scans<36, see field notes for Beta Scans.

V 1.9

Reference No.:	LKYDT226
Survey No.:	313
Data Code:	CH-SURV
Grid ID:	See Description
Area:	IA04
Survey By:	R. Pennock
Survey Date:	07/29/98
Smears Counted By:	J. Kinstle
Smear Count Date:	08/03/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:			Surveyor Sign:	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	1193	1193		685
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	528	528	68222	532
Cal Due Date:	09/11/98	09/11/98	11/06/98	09/03/98
Bkgd CPM:	3.0	187.0	0.5	200.0
Efficiency:	0.15	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	27	94	3	103

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	Grid # AO 23 Floor	-40.5	-22.5	0	200-350 cpm	5.0	<Lc 13	37	157.0	<Lc -88	107	1.0	<Lc 1	5	205.0	<Lc 16	123
2	QC of #1					6.0	<Lc 20	39	173.0	<Lc -41	109	0.0	<Lc -1	0	211.0	<Lc 34	124
3	E. Wall A16	0	-15.5	0.5	300-550 cpm	9.0	40	45	387.0	588	138	0.0	<Lc -1	0	212.0	<Lc 38	124
4	E. Wall A17	0	-16.5	0.5	150-550 cpm	5.0	<Lc 13	37	211.0	<Lc 71	115	0.0	<Lc -1	0	203.0	<Lc 9	123
5	S. Wall CR 30	-95.5	-30	0.5	250-550 cpm	6.0	<Lc 20	39	397.0	618	139	0.0	<Lc -1	0	193.0	<Lc -22	121

9-2-98

Data Entered By and Date: 11 Aug 98

Reviewed By and Date (Site Manager) 11 Aug 98

12/11/96
*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

V 1.9

Comments: Production Bld. 1st Flr, Coor. in meters from NE Corner Alpha Scans<36, see field notes for Beta Scans.

Reference No.:	LKYDT225
Survey No.:	312
Data Code:	CH-SURV
Grid ID:	See Description
Area:	IA04
Survey By:	R. Pennock
Survey Date:	07/29/98
Smears Counted By:	J.Kinstle
Smear Count Date:	08/03/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:			Surveyor Sign:	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	1193	1193		685
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	528	528	68222	532
Cal Due Date:	09/11/98	09/11/98	11/06/98	09/03/98
Bkgd CPM:	5.0	207.0	0.5	200.0
Efficiency:	0.15	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	35	99	3	103

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	GD 1 Floor	-185.5	-0.5	0	Floor Monitor	6.0	<Lc 7	43	252.0	132	124	0.0	<Lc -1	0	177.0	<Lc -72	119
2	GD 2 Floor	-185.5	-1.5	0	Floor Monitor	3.0	<Lc -13	37	242.0	103	122	1.0	<Lc 1	5	244.0	138	129
3	GE 1 Floor	-186.5	-0.5	0	Floor Monitor	7.0	<Lc 13	45	231.0	<Lc 71	121	0.0	<Lc -1	0	206.0	<Lc 19	123
4	GE 2 Floor	-186.5	-1.5	0	Floor Monitor	7.0	<Lc 13	45	236.0	<Lc 85	121	0.0	<Lc -1	0	211.0	<Lc 34	124
5	GF 1 Floor	-187.5	-0.5	0	Floor Monitor	8.0	<Lc 20	47	210.0	<Lc 9	118	2.0	4	7	218.0	<Lc 56	125
6	GF 2 Floor	-187.5	-1.5	0	Floor Monitor	6.0	<Lc 7	43	241.0	100	122	0.0	<Lc -1	0	202.0	<Lc 6	123
7	GG 1 Floor	-188.5	-0.5	0	Floor Monitor	5.0	<Lc 0	41	239.0	<Lc 94	122	1.0	<Lc 1	5	204.0	<Lc 13	123
8	GG 2 Floor	-188.5	-1.5	0	Floor Monitor	6.0	<Lc 7	43	239.0	<Lc 94	122	0.0	<Lc -1	0	216.0	<Lc 50	125
9	GH 1 Floor	-189.5	-0.5	0	Floor Monitor	5.0	<Lc 0	41	236.0	<Lc 85	121	0.0	<Lc -1	0	171.0	<Lc -91	118
10	GH 2 Floor	-189.5	-1.5	0	Floor Monitor	6.0	<Lc 7	43	260.0	156	125	0.0	<Lc -1	0	201.0	<Lc 3	123
11	GI 14 Floor	-190.5	-13.5	0	Floor Monitor	8.0	<Lc 20	47	310.0	303	131	0.0	<Lc -1	0	205.0	<Lc 16	123
12	GI 15 Floor	-190.5	-14.5	0	Floor Monitor	6.0	<Lc 7	43	273.0	194	126	0.0	<Lc -1	0	194.0	<Lc -19	122
13	GI 16 Floor	-190.5	-15.5	0	Floor Monitor	11.0	40	52	278.0	209	127	1.0	<Lc 1	5	213.0	<Lc 41	124
14	GI 16 Wall	-190.5	-16	0.5	150-300 cpm	2.0	<Lc -20	35	192.0	<Lc -44	115	0.0	<Lc -1	0	207.0	<Lc 22	124
15	GJ 14 Floor	-191.5	-13.5	0	Floor Monitor	10.0	<Lc 33	51	302.0	279	130	0.0	<Lc -1	0	189.0	<Lc -34	121
16	GJ 15 Floor	-191.5	-14.5	0	Floor Monitor	7.0	<Lc 13	45	290.0	244	129	0.0	<Lc -1	0	222.0	<Lc 69	126
17	GJ 16 Floor	-191.5	-15.5	0	Floor Monitor	6.0	<Lc 7	43	282.0	221	127	0.0	<Lc -1	0	218.0	<Lc 56	125
18	GK 14 Floor	-192.5	-13.5	0	Floor Monitor	10.0	<Lc 33	51	308.0	297	131	0.0	<Lc -1	0	188.0	<Lc -38	121
19	GK 15 Floor	-192.5	-14.5	0	Floor Monitor	4.0	<Lc -7	39	294.0	256	129	0.0	<Lc -1	0	206.0	<Lc 19	123
20	GK 16 Floor	-192.5	-15.5	0	Floor Monitor	8.0	<Lc 20	47	295.0	259	129	0.0	<Lc -1	0	204.0	<Lc 13	123
21	QC of #20 (GK 16)	-192.5	-15.5	0	Floor Monitor	8.0	<Lc 20	47	288.0	238	128	0.0	<Lc -1	0	199.0	<Lc -3	122
22	GL 14 Floor	-193.5	-13.5	0	Floor Monitor	11.0	40	52	294.0	256	129	2.0	4	7	197.0	<Lc -9	122
23	QC of # 22 (GL 14)				Floor Monitor	11.0	40	52	277.0	206	127	1.0	<Lc 1	5	205.0	<Lc 16	123

Data En[illegible]d By and Date: [illegible] 11 Aug 98

9-2-98

12/11/96

*DPM units [illegible] cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Production Bld. 1st Flr, Coo. . meters from NE Corner Alpha Scans<36, see field notes for Beta Scans.

V 1.9

Reference No.:	LKYDT225
Survey No.:	312
Data Code:	CH-SURV
Grid ID:	See Description
Area:	IA04
Survey By:	R. Pennock
Survey Date:	07/29/98
Smears Counted By:	J.Kinstle
Smear Count Date:	08/03/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:			Surveyor Sign:	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	1193	1193		685
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	528	528	68222	532
Cal Due Date:	09/11/98	09/11/98	11/06/98	09/03/98
Bkgd CPM:	5.0	207.0	0.5	200.0
Efficiency:	0.15	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	35	99	3	103

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
24	GL 15 Floor	-193.5	-14.5	0	Floor Monitor	6.0	<Lc 7	43	295.0	259	129	0.0	<Lc -1	0	224.0	<Lc 75	126
25	GL 16 Floor	-193.5	-15.5	0	Floor Monitor	3.0	<Lc -13	37	289.0	241	128	0.0	<Lc -1	0	183.0	<Lc -53	120
26	GM 15 Floor	-194.5	-14.5	0	Floor Monitor	12.0	47	54	324.0	344	133	1.0	<Lc 1	5	206.0	<Lc 19	123
27	GM 16 Floor	-194.5	-15.5	0	Floor Monitor	9.0	<Lc 27	49	270.0	185	126	0.0	<Lc -1	0	201.0	<Lc 3	123

Data Entered By and Date: 11 Aug 98

Reviewed By and Date (Site Manager): 11 Aug 98

9-2-98

12/11/96

*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Production Bld. 1st Flr, Coor. in meters from NE Corner Alpha Scans<21, see field notes for Beta Scans.

V 1.9

Reference No.:	LKYDT221
Survey No.:	302
Data Code:	CH-SURV
Grid ID:	See Description
Area:	IA04
Survey By:	K. Beaton
Survey Date:	07/29/98
Smears Counted By:	J.Kinstle
Smear Count Date:	08/03/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	Beaton			
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	1198	1198		685
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	525	525	68222	532
Cal Due Date:	09/11/98	09/11/98	11/06/98	09/03/98
Bkgd CPM:	2.0	203.0	0.5	200.0
Efficiency:	0.15	0.33	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	22	101	3	103

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	A 17 Wall	-16.5	0	0.5	150-300 cpm	10.0	53	45	265.0	188	128	0.0	<Lc -1	0	193.0	<Lc -22	121
2	G 15 Wall	-14.5	-7	0.5	150-300 cpm	12.0	67	49	190.0	<Lc -39	118	0.0	<Lc -1	0	207.0	<Lc 22	124
3	D 8 Floor	-7.5	-3.5	0	150-300 cpm	11.0	60	47	260.0	173	128	0.0	<Lc -1	0	200.0	<Lc 0	123
4	E 8 Floor	-7.5	-4.5	0	150-300 cpm	5.0	<Lc 20	35	275.0	218	130	0.0	<Lc -1	0	192.0	<Lc -25	121
5	F 8 Floor	-7.5	-5.5	0	150-300 cpm	4.0	<Lc 13	32	289.0	261	132	0.0	<Lc -1	0	195.0	<Lc -16	122
6	G 8 Floor	-7.5	-6.5	0	150-300 cpm	7.0	33	39	278.0	227	130	0.0	<Lc -1	0	203.0	<Lc 9	123
7	G 9 Floor	-8.5	-6.5	0	150-300 cpm	7.0	33	39	241.0	115	125	0.0	<Lc -1	0	203.0	<Lc 9	123
8	G 10 Floor	-9.5	-6.5	0	150-300 cpm	9.0	47	43	267.0	194	129	0.0	<Lc -1	0	201.0	<Lc 3	123
9	G 11 Floor	-10.5	-6.5	0	150-300 cpm	5.0	<Lc 20	35	205.0	<Lc 6	120	0.0	<Lc -1	0	191.0	<Lc -28	121
10	F 35 Floor	-34.5	-5.5	0	150-300 cpm	4.0	<Lc 13	32	232.0	<Lc 88	124	1.0	<Lc 1	5	175.0	<Lc -78	119
11	F 36 Floor	-35.5	-5.5	0	150-300 cpm	7.0	33	39	267.0	194	129	0.0	<Lc -1	0	227.0	<Lc 84	127
12	G 35 Floor	-34.5	-6.5	0	150-300 cpm	9.0	47	43	261.0	176	128	1.0	<Lc 1	5	202.0	<Lc 6	123
13	G 36 Floor	-35.5	-6.5	0	150-300 cpm	7.0	33	39	233.0	<Lc 91	124	0.0	<Lc -1	0	212.0	<Lc 38	124
14	H 35 Floor	-34.5	-7.5	0	150-300 cpm	7.0	33	39	224.0	<Lc 64	123	0.0	<Lc -1	0	189.0	<Lc -34	121
15	H 36 Floor	-35.5	-7.5	0	150-300 cpm	3.0	<Lc 7	29	202.0	<Lc -3	120	0.0	<Lc -1	0	219.0	<Lc 59	125
16	I 35 Floor	-34.5	-8.5	0	150-300 cpm	11.0	60	47	284.0	245	131	0.0	<Lc -1	0	179.0	<Lc -66	119
17	I 36 Floor	-35.5	-8.5	0	150-300 cpm	7.0	33	39	229.0	<Lc 79	123	0.0	<Lc -1	0	216.0	<Lc 50	125
18	QC of #17 (I 36)	-35.5	-8.5	0		5.0	<Lc 20	35	237.0	103	125	0.0	<Lc -1	0	193.0	<Lc -22	121

Data Entered By and Date: 11 Aug 98

*DPM units r m2

12/11/96

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Production Bld. 1st Flr, Coor. In meters from NE Corner Alpha Scans<21, see field notes for Beta Scans.

V 1.9

Reference No.:	LKYDT220
Survey No.:	301
Data Code:	CH-SURV
Grid ID:	See Description
Area:	IA04
Survey By:	K. Beaton
Survey Date:	07/29/98
Smears Counted By:	J.Kinstle
Smear Count Date:	08/04/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	Beaton		[illegible]	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	1198	1198		685
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	525	525	68222	532
Cal Due Date:	09/11/98	09/11/98	11/06/98	09/03/98
Bkgd CPM:	3.0	207.0	0.1	225.0
Efficiency:	0.15	0.33	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	27	102	1	109

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	DM 22 Wall	-116	-21.5	0.5	250-450 cpm	7.0	<Lc 27	41	415.0	630	148	0.0	<Lc 0	0	227.0	<Lc 6	130
2	DZ 10 Floor	-129.5	-9.5	0	Floor Monitor	5.0	<Lc 13	37	253.0	139	127	1.0	2	5	242.0	<Lc 53	132
3	DZ 11 Floor	-129.5	-10.5	0	Floor Monitor	7.0	<Lc 27	41	321.0	345	136	1.0	2	5	195.0	<Lc -94	126
4	DZ 12 Floor	-129.5	-11.5	0	Floor Monitor	9.0	40	45	294.0	264	133	0.0	<Lc 0	0	207.0	<Lc -56	127
5	DZ 13 Floor	-129.5	-12.5	0	Floor Monitor	6.0	<Lc 20	39	295.0	267	133	1.0	2	5	211.0	<Lc -44	128
6	DZ 14 Floor	-129.5	-13.5	0	Floor Monitor	8.0	33	43	313.0	321	135	3.0	7	8	210.0	<Lc -47	128
7	DZ 15 Floor	-129.5	-14.5	0	Floor Monitor	5.0	<Lc 13	37	311.0	315	135	1.0	2	5	215.0	<Lc -31	128
8	DZ 16 Floor	-129.5	-15.5	0	Floor Monitor	9.0	40	45	282.0	227	131	0.0	<Lc 0	0	215.0	<Lc -31	128
9	DQ 21 Floor	-120.5	-20.5	0	Floor Monitor	9.0	40	45	293.0	261	133	1.0	2	5	215.0	<Lc -31	128
10	DR 21 Floor	-121.5	-20.5	0	Floor Monitor	10.0	47	47	287.0	242	132	0.0	<Lc 0	0	198.0	<Lc -84	126
11	DR 22 Floor	-121.5	-21.5	0	Floor Monitor	11.0	53	49	303.0	291	134	0.0	<Lc 0	0	190.0	<Lc -109	125
12	DS 21 Floor	-122.5	-20.5	0	Floor Monitor	16.0	87	57	335.0	388	138	1.0	2	5	201.0	<Lc -75	126
13	DS 22 Floor	-122.5	-21.5	0	300-400 cpm	7.0	<Lc 27	41	245.0	115	126	0.0	<Lc 0	0	216.0	<Lc -28	129
14	DT 21 Floor	-123.5	-20.5	0	Floor Monitor	15.0	80	55	313.0	321	135	0.0	<Lc 0	0	193.0	<Lc -100	125
15	DT 22 Floor	-123.5	-21.5	0	Floor Monitor	9.0	40	45	337.0	394	139	2.0	5	7	277.0	163	137
16	EA 17 Floor	-130.5	-16.5	0	Floor Monitor	5.0	<Lc 13	37	282.0	227	131	0.0	<Lc 0	0	201.0	<Lc -75	126
17	EB 17 Floor	-131.5	-16.5	0	Floor Monitor	7.0	<Lc 27	41	276.0	209	131	0.0	<Lc 0	0	220.0	<Lc -16	129
18	EC 17 Floor	-132.5	-16.5	0	Floor Monitor	10.0	47	47	330.0	373	138	0.0	<Lc 0	0	222.0	<Lc -9	129
19	ED17 Floor	-133.5	-16.5	0	Floor Monitor	10.0	47	47	318.0	336	136	0.0	<Lc 0	0	214.0	<Lc -34	128
20	EE 17 Floor	-134.5	-16.5	0	Floor Monitor	6.0	<Lc 20	39	310.0	312	135	1.0	2	5	195.0	<Lc -94	126
21	QC of #20 (EE 17)					7.0	<Lc 27	41	298.0	276	133	0.0	<Lc 0	0	199.0	<Lc -81	126
22	FI 1 Wall	-164.5	0	0.5	150-200 cpm	5.0	<Lc 13	37	183.0	<Lc -73	117	1.0	2	5	183.0	<Lc -131	124
23	EZ 2 Floor	-155.5	-1.5	0	Floor Monitor	5.0	<Lc 13	37	250.0	130	127	0.0	<Lc 0	0	217.0	<Lc -25	129

Data Entered By and Date: Rebecca Scarborough 11 AUG 98

09-2-98

12/11/96

*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Production Bld. 1st Flr, Coor. In meters from NE Corner Alpha Scans<21, see field notes for Beta Scans.

V 1.9

Reference No.:	LKYDT220
Survey No.:	301
Data Code:	CH-SURV
Grid ID:	See Description
Area:	IA04
Survey By:	K. Beaton
Survey Date:	07/29/98
Smears Counted By:	J.Kinstle
Smear Count Date:	08/04/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	KB eaton		Surveyor Sign:	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	1198	1198		685
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	525	525	68222	532
Cal Due Date:	09/11/98	09/11/98	11/06/98	09/03/98
Bkgd CPM:	3.0	207.0	0.1	225.0
Efficiency:	0.15	0.33	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	27	102	1	109

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
24	EZ 3 Floor	-155.5	-2.5	0	Floor Monitor	4.0	<Lc 7	35	279.0	218	131	2.0	5	7	199.0	<Lc -81	126
25	FA 2 Floor	-156.5	-1.5	0	Floor Monitor	9.0	40	45	258.0	155	128	1.0	2	5	207.0	<Lc -56	127
26	FA 3 Floor	-156.5	-2.5	0	Floor Monitor	4.0	<Lc 7	35	249.0	127	127	0.0	<Lc 0	0	218.0	<Lc -22	129
27	FB 2 Floor	-157.5	-1.5	0	Floor Monitor	10.0	47	47	245.0	115	126	0.0	<Lc 0	0	197.0	<Lc -88	126
28	FB 3 Floor	-157.5	-2.5	0	Floor Monitor	7.0	<Lc 27	41	268.0	185	129	0.0	<Lc 0	0	215.0	<Lc -31	128
29	FC 2 Floor	-158.5	-1.5	0	Floor Monitor	3.0	<Lc 0	32	252.0	136	127	0.0	<Lc 0	0	205.0	<Lc -63	127
30	FC 3 Floor	-158.5	-2.5	0	Floor Monitor	2.0	<Lc -7	29	278.0	215	131	0.0	<Lc 0	0	181.0	<Lc -138	123
31	FD 2 Floor	-159.5	-1.5	0	Floor Monitor	8.0	33	43	238.0	<Lc 94	125	1.0	2	5	203.0	<Lc -69	127
32	FD 3 Floor	-159.5	-2.5	0	Floor Monitor	7.0	<Lc 27	41	246.0	118	126	0.0	<Lc 0	0	194.0	<Lc -97	125
33	FN 21 Floor	-169.5	-20.5	0	Floor Monitor	1.0	<Lc -13	26	271.0	194	130	0.0	<Lc 0	0	231.0	<Lc 19	131
34	FN 22 Floor	-169.5	-21.5	0	Floor Monitor	9.0	40	45	312.0	318	135	0.0	<Lc 0	0	209.0	<Lc -50	128
35	FN 23 Floor	-169.5	-22.5	0	Floor Monitor	8.0	33	43	301.0	285	134	0.0	<Lc 0	0	205.0	<Lc -63	127
36	FN 24 Floor	-169.5	-23.5	0	Floor Monitor	5.0	<Lc 13	37	257.0	152	128	0.0	<Lc 0	0	175.0	<Lc -156	123
37	FN 25 Floor	-169.5	-24.5	0	Floor Monitor	10.0	47	47	264.0	173	129	2.0	5	7	225.0	<Lc 0	130
38	FN 26 Floor	-169.5	-25.5	0	Floor Monitor	3.0	<Lc 0	32	287.0	242	132	0.0	<Lc 0	0	233.0	<Lc 25	131
39	FN 27 Floor	-169.5	-26.5	0	Floor Monitor	9.0	40	45	255.0	145	128	0.0	<Lc 0	0	203.0	<Lc -69	127
40	FN 28 Floor	-169.5	-27.5	0	Floor Monitor	10.0	47	47	278.0	215	131	0.0	<Lc 0	0	203.0	<Lc -69	127
41	FN 29 Floor	-169.5	-28.5	0	Floor Monitor	4.0	<Lc 7	35	242.0	106	126	0.0	<Lc 0	0	174.0	<Lc -159	122
42	QC of #41 (FN 29)	-169.5	-28.5	0		6.0	<Lc 20	39	251.0	133	127	0.0	<Lc 0	0	193.0	<Lc -100	125
43	FN 30 Floor	-169.5	-29.5	0	Floor Monitor	13.0	67	52	227.0	<Lc 61	124	1.0	2	5	186.0	<Lc -122	124
44	FO 21 Floor	-170.5	-20.5	0	Floor Monitor	9.0	40	45	310.0	312	135	0.0	<Lc 0	0	202.0	<Lc -72	127
45	FP 21 Floor	-171.5	-20.5	0	Floor Monitor	15.0	80	55	287.0	242	132	0.0	<Lc 0	0	226.0	<Lc 3	130
46	FQ 21 Floor	-172.5	-20.5	0	Floor Monitor	11.0	53	49	276.0	209	131	1.0	2	5	246.0	<Lc 66	133

Data E[illegible]d By and Date: 11 Aug 98

9-2-98

12/11/96

*DPM units [illegible] m2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Production Bld. 1st Flr, Coor. In meters from NE Corner Alpha Scans<21, see field notes for Beta Scans.

V 1.9

Reference No.:	LKYDT220
Survey No.:	301
Data Code:	CH-SURV
Grid ID:	See Description
Area:	IA04
Survey By:	K. Beaton
Survey Date:	07/29/98
Smears Counted By:	J.Kinstle
Smear Count Date:	08/04/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	K Beaton			
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	1198	1198		685
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	525	525	68222	532
Cal Due Date:	09/11/98	09/11/98	11/06/98	09/03/98
Bkgd CPM:	3.0	207.0	0.1	225.0
Efficiency:	0.15	0.33	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	27	102	1	109

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
47	FR 21 Floor	-173.5	-20.5	0	Floor Monitor	10.0	47	47	304.0	294	134	0.0	<Lc 0	0	208.0	<Lc -53	127
48	FS 21 Floor	-174.5	-20.5	0	Floor Monitor	8.0	33	43	292.0	258	133	0.0	<Lc 0	0	205.0	<Lc -63	127
49	FT 21 Floor	-175.5	-20.5	0	Floor Monitor	10.0	47	47	286.0	239	132	1.0	2	5	210.0	<Lc -47	128
50	FU 21 Floor	-176.5	-20.5	0	Floor Monitor	6.0	<Lc 20	39	270.0	191	130	0.0	<Lc 0	0	214.0	<Lc -34	128
51	FV 21 Floor	-177.5	-20.5	0	Floor Monitor	13.0	67	52	291.0	255	133	1.0	2	5	229.0	<Lc 13	131
52	FW 21 Floor	-178.5	-20.5	0	Floor Monitor	10.0	47	47	277.0	212	131	0.0	<Lc 0	0	209.0	<Lc -50	128
53	FX 21 Floor	-179.5	-20.5	0	Floor Monitor	9.0	40	45	296.0	270	133	0.0	<Lc 0	0	197.0	<Lc -88	126
54	QC of # 53 (FX 21)	-179.5	-20.5	0		11.0	53	49	281.0	224	131	1.0	2	5	200.0	<Lc -78	126

Data Entered By and Date: 11 AUG 98

9-2-98

12/11/96

*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Production Bld. 1st Flr, Coor. In meters from NE Corner Alpha Scans<21, see field notes for Beta Scans.

V 1.9

Reference No.:	LKYDT219
Survey No.:	300
Data Code:	CH-SURV
Grid ID:	See Description
Area:	IA04
Survey By:	K. Beaton
Survey Date:	07/28/98
Smears Counted By:	J.Kinstle
Smear Count Date:	08/03/98

	DIRECT SURFACE						TRANSFERABLE CONTAMINATION					
Surveyor Sign:	KBeaton											
	Alpha			Beta-Gamma			Alpha			Beta-Gamma		
Scaler Model:	E-600			E-600						E-600		
Serial No.:	1198			1198						685		
Detector:	SHP-380			SHP-380			43-10			SHP-380		
Serial No.:	525			525			68222			532		
Cal Due Date:	09/11/98			09/11/98			11/06/98			09/03/98		
Bkgd CPM:	2.0			217.0			0.5			200.0		
Efficiency:	0.15			0.33			0.41			0.32		
Area Cor Fact:	1.000			1.000			N/A			N/A		
Bkgd CT Time:	1			1			50			1		
Smpl CT Time:	1			1			1			1		
Lc (DPM):	22			104			3			103		

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	BW 9 Floor	-74.5	-8.5	0	Floor Monitor	7.0	33	39	250.0	<Lc 100	128	0.0	<Lc -1	0	192.0	<Lc -25	121
2	BW 10 Floor	-74.5	-9.5	0	Floor Monitor	14.0	80	52	252.0	106	129	1.0	<Lc 1	5	198.0	<Lc -6	122
3	BW 11 Floor	-74.5	-10.5	0	Floor Monitor	10.0	53	45	317.0	303	137	0.0	<Lc -1	0	196.0	<Lc -13	122
4	BW 12 Floor	-74.5	-11.5	0	Floor Monitor	8.0	40	41	294.0	233	134	0.0	<Lc -1	0	190.0	<Lc -31	121
5	CE 13 Floor	-82.5	-12.5	0	Floor Monitor	16.0	93	55	307.0	273	136	0.0	<Lc -1	0	191.0	<Lc -28	121
6	CE 14 Floor	-82.5	-13.5	0	Floor Monitor	5.0	<Lc 20	35	331.0	345	139	0.0	<Lc -1	0	195.0	<Lc -16	122
7	CE 15 Floor	-82.5	-14.5	0	Floor Monitor	15.0	87	54	348.0	397	141	0.0	<Lc -1	0	194.0	<Lc -19	122
8	CF 13 Floor	-83.5	-12.5	0	Floor Monitor	7.0	33	39	281.0	194	133	0.0	<Lc -1	0	233.0	103	127
9	CF 14 Floor	-83.5	-13.5	0	Floor Monitor	10.0	53	45	368.0	458	144	0.0	<Lc -1	0	199.0	<Lc -3	122
10	CF 15 Floor	-83.5	-14.5	0	Floor Monitor	6.0	27	37	324.0	324	138	0.0	<Lc -1	0	197.0	<Lc -9	122
11	CG 13 Floor	-84.5	-12.5	0	Floor Monitor	10.0	53	45	296.0	239	135	0.0	<Lc -1	0	219.0	<Lc 59	125
12	CG 14 Floor	-84.5	-13.5	0	Floor Monitor	8.0	40	41	281.0	194	133	0.0	<Lc -1	0	204.0	<Lc 13	123
13	CG 15 Wall	-82.5	-15	0.5	300-400 cpm	10.0	53	45	385.0	509	146	0.0	<Lc -1	0	208.0	<Lc 25	124
14	CH 8 Floor	-85.5	-7.5	0	Floor Monitor	11.0	60	47	277.0	182	132	0.0	<Lc -1	0	166.0	<Lc -106	117
15	CI 8 Floor	-86.5	-7.5	0	Floor Monitor	7.0	33	39	307.0	273	136	0.0	<Lc -1	0	178.0	<Lc -69	119
16	CJ 8 Floor	-87.5	-7.5	0	Floor Monitor	5.0	<Lc 20	35	304.0	264	136	0.0	<Lc -1	0	181.0	<Lc -59	120
17	CK 8 Floor	-88.5	-7.5	0	Floor Monitor	8.0	40	41	347.0	394	141	0.0	<Lc -1	0	194.0	<Lc -19	122
18	CL8 Floor	-89.5	-7.5	0	Floor Monitor	5.0	<Lc 20	35	251.0	<Lc 103	128	0.0	<Lc -1	0	189.0	<Lc -34	121
19	CL7 Floor	-89.5	-6.5	0	Floor Monitor	9.0	47	43	220.0	<Lc 9	124	0.0	<Lc -1	0	230.0	<Lc 94	127
20	CL6 Floor	-89.5	-5.5	0	Floor Monitor	6.0	27	37	204.0	<Lc -39	122	0.0	<Lc -1	0	199.0	<Lc -3	122
21	QC of #20 (CL 6)	-89.5	-5.5	0	Floor Monitor	8.0	40	41	217.0	<Lc 0	124	1.0	<Lc 1	5	194.0	<Lc -19	122
22	BD 9 Floor	-55.5	-8.5	0	Floor Monitor	13.0	73	51	257.0	121	129	0.0	<Lc -1	0	237.0	116	128
23	BE 9 Floor	-56.5	-8.5	0	Floor Monitor	9.0	47	43	279.0	188	132	1.0	<Lc 1	5	229.0	<Lc 91	127

Data E 1 By and Date: 11 AUG 98

9-2-98

12/11/96

*DPM units m2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Production Bld. 1st Flr, Coor. In meters from NE Corner Alpha Scans<21, see field notes for Beta Scans.

V 1.9

Reference No.:	LKYDT219
Survey No.:	300
Data Code:	CH-SURV
Grid ID:	See Description
Area:	IA04
Survey By:	K. Beaton
Survey Date:	07/28/98
Smears Counted By:	J.Kinstle
Smear Count Date:	08/03/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	Beaton		Surveyor Sign:	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	1198	1198		685
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	525	525	68222	532
Cal Due Date:	09/11/98	09/11/98	11/06/98	09/03/98
Bkgd CPM:	2.0	217.0	0.5	200.0
Efficiency:	0.15	0.33	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	22	104	3	103

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
24	BF 9 Floor	-57.5	-8.5	0	Floor Monitor	10.0	53	45	293.0	230	134	1.0	<Lc 1	5	223.0	<Lc 72	126
25	BG 9 Floor	-58.5	-8.5	0	Floor Monitor	10.0	53	45	280.0	191	132	0.0	<Lc -1	0	232.0	<Lc 100	127
26	BH 9 Floor	-59.5	-8.5	0	Floor Monitor	5.0	<Lc 20	35	229.0	<Lc 36	125	1.0	<Lc 1	5	205.0	<Lc 16	123
27	BH 10 Floor	-59.5	-9.5	0	Floor Monitor	12.0	67	49	227.0	<Lc 30	125	0.0	<Lc -1	0	231.0	<Lc 97	127
28	BH 11 Floor	-59.5	-10.5	0	Floor Monitor	7.0	33	39	288.0	215	133	0.0	<Lc -1	0	210.0	<Lc 31	124
29	BH 12 Floor	-59.5	-11.5	0	Floor Monitor	9.0	47	43	292.0	227	134	1.0	<Lc 1	5	218.0	<Lc 56	125
30	BR 9 Floor	-69.5	-8.5	0	Floor Monitor	10.0	53	45	318.0	306	137	0.0	<Lc -1	0	181.0	<Lc -59	120
31	BR 10 Floor	-69.5	-9.5	0	Floor Monitor	11.0	60	47	275.0	176	132	0.0	<Lc -1	0	195.0	<Lc -16	122
32	BR 11 Floor	-69.5	-10.5	0	Floor Monitor	8.0	40	41	302.0	258	135	0.0	<Lc -1	0	228.0	<Lc 88	127
33	BR 12 Floor	-69.5	-11.5	0	Floor Monitor	9.0	47	43	289.0	218	134	0.0	<Lc -1	0	221.0	<Lc 66	126
34	BR 13 Floor	-69.5	-12.5	0	Floor Monitor	16.0	93	55	285.0	206	133	0.0	<Lc -1	0	200.0	<Lc 0	123
35	BR 14 Floor	-69.5	-13.5	0	Floor Monitor	9.0	47	43	295.0	236	134	1.0	<Lc 1	5	214.0	<Lc 44	125
36	BR 15 Floor	-69.5	-14.5	0	Floor Monitor	11.0	60	47	292.0	227	134	2.0	4	7	245.0	141	129
37	BR 16 Floor	-69.5	-15.5	0	Floor Monitor	12.0	67	49	293.0	230	134	0.0	<Lc -1	0	201.0	<Lc 3	123
38	BV 9 Floor	-73.5	-8.5	0	Floor Monitor	10.0	53	45	293.0	230	134	0.0	<Lc -1	0	189.0	<Lc -34	121
39	BV 10 Floor	-73.5	-9.5	0	Floor Monitor	10.0	53	45	327.0	333	139	0.0	<Lc -1	0	223.0	<Lc 72	126
40	BV 11 Floor	-73.5	-10.5	0	Floor Monitor	10.0	53	45	266.0	148	131	0.0	<Lc -1	0	249.0	153	130
41	BV 12 Floor	-73.5	-11.5	0	Floor Monitor	11.0	60	47	287.0	212	133	0.0	<Lc -1	0	213.0	<Lc 41	124
42	QC of #41 (BV 12)	-73.5	-11.5	0	Floor Monitor	13.0	73	51	308.0	276	136	0.0	<Lc -1	0	226.0	<Lc 81	126
43	EF 12 Floor	-135.5	-11.5	0	Floor Monitor	10.0	53	45	296.0	239	135	0.0	<Lc -1	0	203.0	<Lc 9	123
44	EF 13 Floor	-135.5	-12.5	0	Floor Monitor	7.0	33	39	314.0	294	137	0.0	<Lc -1	0	238.0	119	128
45	EG 12 Floor	-136.5	-11.5	0	Floor Monitor	9.0	47	43	281.0	194	133	0.0	<Lc -1	0	194.0	<Lc -19	122
46	EG 13 Floor	-136.5	-12.5	0	Floor Monitor	9.0	47	43	302.0	258	135	0.0	<Lc -1	0	195.0	<Lc -16	122

Data Entered By and Date: 11 AUG 98

9-2-98

12/11/96
*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Production Bld. 1st Flr, Coor. In meters from NE Corner Alpha Scans<21, see field notes for Beta Scans.

V 1.9

Reference No.:	LKYDT219
Survey No.:	300
Data Code:	CH-SURV
Grid ID:	See Description
Area:	IA04
Survey By:	K. Beaton
Survey Date:	07/28/98
Smears Counted By:	J.Kinstle
Smear Count Date:	08/03/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	Beaton		[illegible]	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	1198	1198		685
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	525	525	68222	532
Cal Due Date:	09/11/98	09/11/98	11/06/98	09/03/98
Bkgd CPM:	2.0	217.0	0.5	200.0
Efficiency:	0.15	0.33	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	22	104	3	103

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
47	EH 12 Floor	-137.5	-11.5	0	Floor Monitor	9.0	47	43	332.0	348	139	0.0	<Lc -1	0	224.0	<Lc 75	126
48	EH 13 Floor	-137.5	-12.5	0	Floor Monitor	9.0	47	43	317.0	303	137	0.0	<Lc -1	0	194.0	<Lc -19	122
49	EI 12 Floor	-138.5	-11.5	0	Floor Monitor	10.0	53	45	288.0	215	133	0.0	<Lc -1	0	172.0	<Lc -88	118
50	EI 13 Floor	-138.5	-12.5	0	Floor Monitor	11.0	60	47	299.0	248	135	1.0	<Lc 1	5	249.0	153	130
51	EJ 12 Floor	-139.5	-11.5	0	Floor Monitor	10.0	53	45	274.0	173	132	0.0	<Lc -1	0	200.0	<Lc 0	123
52	EJ 13 Floor	-139.5	-12.5	0	Floor Monitor	9.0	47	43	322.0	318	138	0.0	<Lc -1	0	212.0	<Lc 38	124
53	EP 12 Floor	-145.5	-11.5	0	Floor Monitor	8.0	40	41	288.0	215	133	0.0	<Lc -1	0	201.0	<Lc 3	123
54	EP 13 Floor	-145.5	-12.5	0	Floor Monitor	14.0	80	52	259.0	127	130	0.0	<Lc -1	0	202.0	<Lc 6	123
55	EQ 12 Floor	-146.5	-11.5	0	Floor Monitor	11.0	60	47	301.0	255	135	0.0	<Lc -1	0	192.0	<Lc -25	121
56	EQ 13 Floor	-146.5	-12.5	0	Floor Monitor	4.0	<Lc 13	32	289.0	218	134	1.0	<Lc 1	5	218.0	<Lc 56	125
57	ER 12 Floor	-147.5	-11.5	0	Floor Monitor	15.0	87	54	312.0	288	137	0.0	<Lc -1	0	245.0	141	129
58	ER 13 Floor	-147.5	-12.5	0	Floor Monitor	12.0	67	49	297.0	242	135	0.0	<Lc -1	0	211.0	<Lc 34	124
59	ES 12 Floor	-148.5	-11.5	0	Floor Monitor	11.0	60	47	284.0	203	133	0.0	<Lc -1	0	200.0	<Lc 0	123
60	ES 13 Floor	-148.5	-12.5	0	Floor Monitor	3.0	<Lc 7	29	314.0	294	137	0.0	<Lc -1	0	189.0	<Lc -34	121
61	ET 12 Floor	-149.5	-11.5	0	Floor Monitor	13.0	73	51	310.0	282	136	1.0	<Lc 1	5	191.0	<Lc -28	121
62	ET 13 Floor	-149.5	-12.5	0	Floor Monitor	9.0	47	43	286.0	209	133	0.0	<Lc -1	0	182.0	<Lc -56	120
63	QC of #62 (ET 13)	-149.5	-12.5	0	Floor Monitor	11.0	60	47	301.0	255	135	1.0	<Lc 1	5	194.0	<Lc -19	122

Data E[illegible] 1 By and Date: [illegible] 11 Aug 98

CH 9-2-98

*DPM units [illegible] m2

[illegible]2/11/96

Page [illegible] of 3

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Production Bld. 1st Flr, Coor. In meters from NE Corner Alpha Scans<26, see field notes for Beta Scans.

V 1.9

Reference No.:	LKYDT218
Survey No.:	299
Data Code:	CH-SURV
Grid ID:	See Description
Area:	IA04
Survey By:	K. Beaton
Survey Date:	07/27/98
Smears Counted By:	J.Kinstle
Smear Count Date:	08/04/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	Beaton			
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	1198	1198		685
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	525	525	68222	532
Cal Due Date:	09/11/98	09/11/98	11/06/98	09/03/98
Bkgd CPM:	3.0	223.0	0.1	225.0
Efficiency:	0.15	0.33	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	27	106	1	109

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	E23 Floor	-4.5	-22.5	0	Floor Monitor	15.0	80	55	296.0	221	135	1.0	2	5	213.0	<Lc -38	128
2	E24 Floor	-4.5	-23.5	0	Floor Monitor	6.0	<Lc 20	39	258.0	106	130	0.0	<Lc 0	0	223.0	<Lc -6	130
3	E25 Floor	-4.5	-24.5	0	Floor Monitor	9.0	40	45	299.0	230	136	0.0	<Lc 0	0	246.0	<Lc 66	133
4	E26 Floor	-4.5	-25.5	0	Floor Monitor	12.0	60	51	303.0	242	136	0.0	<Lc 0	0	214.0	<Lc -34	128
5	E27 Floor	-4.5	-26.5	0	Floor Monitor	7.0	<Lc 27	41	320.0	294	138	1.0	2	5	228.0	<Lc 9	130
6	E28 Floor	-4.5	-27.5	0	Floor Monitor	9.0	40	45	247.0	<Lc 73	129	1.0	2	5	245.0	<Lc 63	133
7	E29 Floor	-4.5	-28.5	0	Floor Monitor	10.0	47	47	311.0	267	137	0.0	<Lc 0	0	237.0	<Lc 38	132
8	E30 Floor	-4.5	-29.5	0	Floor Monitor	9.0	40	45	302.0	239	136	1.0	2	5	225.0	<Lc 0	130
9	Q11 Floor	-16.5	-10.5	0	Floor Monitor	10.0	47	47	289.0	200	134	1.0	2	5	206.0	<Lc -59	127
10	Q12 Floor	-16.5	-11.5	0	Floor Monitor	14.0	73	54	337.0	345	141	0.0	<Lc 0	0	248.0	<Lc 72	133
11	Q13 Floor	-16.5	-12.5	0	Floor Monitor	9.0	40	45	279.0	170	133	0.0	<Lc 0	0	250.0	<Lc 78	133
12	Q14 Floor	-16.5	-13.5	0	Floor Monitor	6.0	<Lc 20	39	296.0	221	135	0.0	<Lc 0	0	220.0	<Lc -16	129
13	Q15 Floor	-16.5	-14.5	0	Floor Monitor	10.0	47	47	288.0	197	134	0.0	<Lc 0	0	260.0	<Lc 109	135
14	Q16 Floor	-16.5	-15.5	0	Floor Monitor	10.0	47	47	298.0	227	136	0.0	<Lc 0	0	232.0	<Lc 22	131
15	Q17 Floor	-16.5	-16.5	0	Floor Monitor	8.0	33	43	281.0	176	133	0.0	<Lc 0	0	226.0	<Lc 3	130
16	Q18 Floor	-16.5	-17.5	0	Floor Monitor	9.0	40	45	302.0	239	136	0.0	<Lc 0	0	227.0	<Lc 6	130
17	AE 9 Floor	-30.5	-8.5	0	Floor Monitor	11.0	53	49	292.0	209	135	0.0	<Lc 0	0	227.0	<Lc 6	130
18	AF 9 Floor	-31.5	-8.5	0	Floor Monitor	8.0	33	43	257.0	<Lc 103	130	0.0	<Lc 0	0	213.0	<Lc -38	128
19	AG 9 Floor	-32.5	-8.5	0	Floor Monitor	9.0	40	45	295.0	218	135	1.0	2	5	232.0	<Lc 22	131
20	AH 8 Floor	-33.5	-7.5	0	Floor Monitor	9.0	40	45	341.0	358	141	0.0	<Lc 0	0	247.0	<Lc 69	133
21	QC of #20 (AH 8)	-33.5	-7.5	0	Floor Monitor	7.0	<Lc 27	41	336.0	342	140	1.0	2	5	234.0	<Lc 28	131
22	AH 9 Floor	-33.5	-8.5	0	Floor Monitor	9.0	40	45	305.0	248	136	0.0	<Lc 0	0	193.0	<Lc -100	125
23	AI 8 Floor	-34.5	-7.5	0	Floor Monitor	13.0	67	52	281.0	176	133	0.0	<Lc 0	0	199.0	<Lc -81	126

Data Entered By and Date: 11 AUG 98 11-Aug-98

9-2-98

12/11/96
*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

V 1.9

Comments: Production Bld. 1st Flr, Coor. In meters from NE Corner Alpha Scans<26, see field notes for Beta Scans.

Reference No.:	LKYDT218
Survey No.:	299
Data Code:	CH-SURV
Grid ID:	See Description
Area:	IA04
Survey By:	K. Beaton
Survey Date:	07/27/98
Smears Counted By:	J.Kinstle
Smear Count Date:	08/04/98

	DIRECT SURFACE						TRANSFERABLE CONTAMINATION					
Surveyor Sign:	Beaton						[illegible]					
	Alpha			Beta-Gamma			Alpha			Beta-Gamma		
Scaler Model:	E-600			E-600						E-600		
Serial No.:	1198			1198						685		
Detector:	SHP-380			SHP-380			43-10			SHP-380		
Serial No.:	525			525			68222			532		
Cal Due Date:	09/11/98			09/11/98			11/06/98			09/03/98		
Bkgd CPM:	3.0			223.0			0.1			225.0		
Efficiency:	0.15			0.33			0.41			0.32		
Area Cor Fact:	1.000			1.000			N/A			N/A		
Bkgd CT Time:	1			1			50			1		
Smpl CT Time:	1			1			1			1		
Lc (DPM):	27			106			1			109		

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
24	AI 9 Floor	-34.5	-8.5	0	Floor Monitor	10.0	47	47	305.0	248	136	0.0	<Lc 0	0	193.0	<Lc -100	125
25	AR 23 Floor	-43.5	-22.5	0	Floor Monitor	9.0	40	45	275.0	158	133	0.0	<Lc 0	0	193.0	<Lc -100	125
26	AR 24 Floor	-43.5	-23.5	0	Floor Monitor	5.0	<Lc 13	37	336.0	342	140	0.0	<Lc 0	0	203.0	<Lc -69	127
27	AR 25 Floor	-43.5	-24.5	0	Floor Monitor	7.0	<Lc 27	41	285.0	188	134	0.0	<Lc 0	0	214.0	<Lc -34	128
28	AR 26 Floor	-43.5	-25.5	0	Floor Monitor	6.0	<Lc 20	39	329.0	321	140	0.0	<Lc 0	0	206.0	<Lc -59	127
29	AS 23 Floor	-44.5	-22.5	0	Floor Monitor	5.0	<Lc 13	37	346.0	373	142	0.0	<Lc 0	0	212.0	<Lc -41	128
30	AS 24 Floor	-44.5	-23.5	0	Floor Monitor	6.0	<Lc 20	39	324.0	306	139	1.0	2	5	188.0	<Lc -116	124
31	AS 25 Floor	-44.5	-24.5	0	Floor Monitor	7.0	<Lc 27	41	303.0	242	136	0.0	<Lc 0	0	187.0	<Lc -119	124
32	AS 26 Floor	-44.5	-25.5	0	Floor Monitor	9.0	40	45	331.0	327	140	0.0	<Lc 0	0	210.0	<Lc -47	128
33	AT 24 Floor	-45.5	-23.5	0	Floor Monitor	10.0	47	47	329.0	321	140	2.0	5	7	208.0	<Lc -53	127
34	AT 25 Floor	-45.5	-24.5	0	Floor Monitor	3.0	<Lc 0	32	328.0	318	139	1.0	2	5	209.0	<Lc -50	128
35	AT 26 Floor	-45.5	-25.5	0	Floor Monitor	9.0	40	45	316.0	282	138	0.0	<Lc 0	0	203.0	<Lc -69	127
36	AU 24 Floor	-46.5	-23.5	0	Floor Monitor	9.0	40	45	312.0	270	137	1.0	2	5	223.0	<Lc -6	130
37	AU 25 Floor	-46.5	-24.5	0	Floor Monitor	6.0	<Lc 20	39	339.0	352	141	0.0	<Lc 0	0	180.0	<Lc -141	123
38	AU 26 Floor	-46.5	-25.5	0	Floor Monitor	7.0	<Lc 27	41	334.0	336	140	1.0	2	5	196.0	<Lc -91	126
39	F30 Wall	-5.5	-30	0.5	125-225 cpm	7.0	<Lc 27	41	180.0	<Lc -130	119	0.0	<Lc 0	0	182.0	<Lc -134	124
40	AR 23 Wall	-43.5	-22	0.5	250-400 cpm	13.0	67	52	408.0	561	149	0.0	<Lc 0	0	195.0	<Lc -94	126
41	AS 23 Wall	-44.5	-22	0.5	125-225 cpm	6.0	<Lc 20	39	169.0	<Lc -164	118	0.0	<Lc 0	0	205.0	<Lc -63	127
42	QC of #41 (AS 23)	-44.5	-22	0.5	125-225 cpm	7.0	<Lc 27	41	177.0	<Lc -139	119	0.0	<Lc 0	0	194.0	<Lc -97	125
43	CW 28 Floor	-100.5	-27.5	0	Floor Monitor	4.0	<Lc 7	35	337.0	345	141	0.0	<Lc 0	0	208.0	<Lc -53	127
44	CW 29 Floor	-100.5	-28.5	0	Floor Monitor	4.0	<Lc 7	35	258.0	106	130	0.0	<Lc 0	0	217.0	<Lc -25	129
45	CW 30 Floor	-100.5	-29.5	0	Floor Monitor	13.0	67	52	275.0	158	133	0.0	<Lc 0	0	228.0	<Lc 9	130
46	CX 28 Floor	-101.5	-27.5	0	Floor Monitor	7.0	<Lc 27	41	309.0	261	137	0.0	<Lc 0	0	206.0	<Lc -59	127

Data Er[illegible]d By and Date: [illegible] 11 Aug 98

[illegible] 11 Aug 98

9-2-98

*DPM units r[illegible]00 cm2

12/11/96

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Production Bld. 1st Flr, Coor. In meters from NE Corner Alpha Scans<26, see field notes for Beta Scans.

V 1.9

Reference No.:	LKYDT218
Survey No.:	299
Data Code:	CH-SURV
Grid ID:	See Description
Area:	IA04
Survey By:	K. Beaton
Survey Date:	07/27/98
Smears Counted By:	J.Kinstle
Smear Count Date:	08/04/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	Beaton		Surveyor Sign:	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	1198	1198		685
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	525	525	68222	532
Cal Due Date:	09/11/98	09/11/98	11/06/98	09/03/98
Bkgd CPM:	3.0	223.0	0.1	225.0
Efficiency:	0.15	0.33	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	27	106	1	109

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
47	CX 29 Floor	-101.5	-28.5	0	Floor Monitor	4.0	<Lc 7	35	353.0	394	143	0.0	<Lc 0	0	226.0	<Lc 3	130
48	CX 30 Floor	-101.5	-29.5	0	Floor Monitor	11.0	53	49	298.0	227	136	0.0	<Lc 0	0	202.0	<Lc -72	127
49	DC 1 Door	-106.5	-0.5	0.5	150-250 cpm	12.0	60	51	213.0	<Lc -30	124	0.0	<Lc 0	0	220.0	<Lc -16	129
50	DF 3 Floor	-109.5	-2.5	0	Floor Monitor	11.0	53	49	339.0	352	141	1.0	2	5	213.0	<Lc -38	128
51	DF 4 Floor	-109.5	-3.5	0	Floor Monitor	11.0	53	49	297.0	224	135	0.0	<Lc 0	0	228.0	<Lc 9	130
52	DF 5 Floor	-109.5	-4.5	0	Floor Monitor	7.0	<Lc 27	41	292.0	209	135	0.0	<Lc 0	0	230.0	<Lc 16	131
53	DF 6 Floor	-109.5	-5.5	0	Floor Monitor	9.0	40	45	280.0	173	133	0.0	<Lc 0	0	242.0	<Lc 53	132
54	DF 7 Floor	-109.5	-6.5	0	Floor Monitor	9.0	40	45	286.0	191	134	0.0	<Lc 0	0	200.0	<Lc -78	126
55	DF 8 Floor	-109.5	-7.5	0	Floor Monitor	10.0	47	47	279.0	170	133	0.0	<Lc 0	0	222.0	<Lc -9	129
56	DG 28 Floor	-110.5	-27.5	0	Floor Monitor	10.0	47	47	321.0	297	139	0.0	<Lc 0	0	213.0	<Lc -38	128
57	DH 28 Floor	-111.5	-27.5	0	Floor Monitor	3.0	<Lc 0	32	282.0	179	133	0.0	<Lc 0	0	240.0	<Lc 47	132
58	DI 28 Floor	-112.5	-27.5	0	Floor Monitor	3.0	<Lc 0	32	343.0	364	141	0.0	<Lc 0	0	209.0	<Lc -50	128
59	DJ 28 Floor	-113.5	-27.5	0	Floor Monitor	18.0	100	60	351.0	388	142	0.0	<Lc 0	0	226.0	<Lc 3	130
60	DK 28 Floor	-114.5	-27.5	0	Floor Monitor	8.0	33	43	286.0	197	134	0.0	<Lc 0	0	211.0	<Lc -44	128
61	DK 29 Floor	-114.5	-28.5	0	Floor Monitor	7.0	<Lc 27	41	349.0	382	142	0.0	<Lc 0	0	211.0	<Lc -44	128
62	DK 30 Floor	-114.5	-29.5	0	Floor Monitor	7.0	<Lc 27	41	264.0	124	131	0.0	<Lc 0	0	208.0	<Lc -53	127
63	QC of #62 (DK 30)	-114.5	-29.5	0	Floor Monitor	9.0	40	45	282.0	179	133	0.0	<Lc 0	0	191.0	<Lc -106	125

Data Entered By and Date: 11 AUG 98

9-2-98

12/11/96
*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

V 1.9

Comments: Production Bld. 2nd Flr,E.End Alpha Scans<61, see field notes for Beta Scans.

Reference No.:	LKYDT217
Survey No.:	298
Data Code:	CH-SURV
Grid ID:	See Description
Area:	IA04
Survey By:	S.R. Plemens
Survey Date:	07/25/98
Smears Counted By:	J.Kinstle
Smear Count Date:	08/04/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	SR Plemens			
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	672	672		685
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	143	143	68222	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/03/98
Bkgd CPM:	4.0	230.0	0.1	225.0
Efficiency:	0.13	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	36	104	1	109

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	Overhead Grid # C1 Top	-2.5	0	6.93	230-280 cpm	3.0	<Lc -8	40	235.0	<Lc 15	124	2.0	5	7	250.0	<Lc 78	133
2	Grid # C2 Pipe	-2.5	-1.5	6.78	180-240 cpm	4.0	<Lc 0	43	198.0	<Lc -94	119	0.0	<Lc 0	0	205.0	<Lc -63	127
3	Grid# C2 Beam E. Shoulder	-2.5	-1.5	7.05	270-320 cpm	4.0	<Lc 0	43	313.0	244	134	0.0	<Lc 0	0	203.0	<Lc -69	127
4	Grid# C2 Beam E. Shoulder	-2.5	-2	7.05	280-400 cpm	6.0	<Lc 15	48	418.0	553	147	1.0	2	5	218.0	<Lc -22	129
5	Grid# C3 Beam E. Shoulder	-2.5	-2.5	7.05	260-350 cpm	10.0	46	56	367.0	403	141	0.0	<Lc 0	0	238.0	<Lc 41	132
6	Grid# C3 Beam E. Shoulder	-2.5	-2.9	7.05	300-450 cpm	5.0	<Lc 8	45	468.0	700	152	2.0	5	7	207.0	<Lc -56	127
7	Grid# C3 Light Shade	-2.8	-2.9	7.2	270-400 cpm	13.0	69	62	383.0	450	143	0.0	<Lc 0	0	212.0	<Lc -41	128
8	Grid # C5 Beam E. Shoulder	-2.5	-4.2	7.05	260-340 cpm	4.0	<Lc 0	43	307.0	226	134	0.0	<Lc 0	0	209.0	<Lc -50	128
9	Grid # C6 Light Fixture	-2.5	-5.5	6.45	250-325 cpm	9.0	38	54	277.0	138	130	0.0	<Lc 0	0	224.0	<Lc -3	130
10	Grid # C6 Beam E. Shoulder	-2.5	-5.5	7.05	250-325 cpm	7.0	<Lc 23	50	295.0	191	132	0.0	<Lc 0	0	193.0	<Lc -100	125
11	Grid # C7 Light Shade	-2.8	-6.9	7.2	280-360 cpm	10.0	46	56	363.0	391	140	0.0	<Lc 0	0	244.0	<Lc 59	133
12	Grid # C8 Beam E. Shoulder	-2.5	-7.5	7.05	275-325 cpm	2.0	<Lc -15	37	331.0	297	137	0.0	<Lc 0	0	214.0	<Lc -34	128
13	Grid # O 8 N/S Beam	-14.5	-7.5	6.93	200-450 cpm	10.0	46	56	246.0	<Lc 47	126	0.0	<Lc 0	0	198.0	<Lc -84	126
14	Grid # O 8 E/W Beam	-14.5	-7.5	7.05	200-350 cpm	11.0	54	58	285.0	162	131	0.0	<Lc 0	0	227.0	<Lc 6	130
15	Grid # O 9 N/S Beam	-14.5	-8.5	6.93	200-450 cpm	4.0	<Lc 0	43	263.0	<Lc 97	128	0.0	<Lc 0	0	194.0	<Lc -97	125
16	Grid # O 10 N/S Beam	-14.5	-9.8	6.93	200-400 cpm	10.0	46	56	332.0	300	137	0.0	<Lc 0	0	209.0	<Lc -50	128
17	Grid # O 11 N/S Beam	-14.5	-10.7	6.93	200-400 cpm	9.0	38	54	289.0	174	131	1.0	2	5	223.0	<Lc -6	130
18	Grid # O 12 N/S Beam	-14.5	-11.5	6.93	300-550 cpm	10.0	46	56	538.0	906	160	1.0	2	5	216.0	<Lc -28	129
19	Grid # O 13 E/W Beam	-14.5	-12.2	7.05	400-600 cpm	13.0	69	62	540.0	912	160	0.0	<Lc 0	0	213.0	<Lc -38	128
20	Grid # O 13 N/S Beam	-14.5	-12.5	6.93	350-550 cpm	13.0	69	62	535.0	897	159	2.0	5	7	215.0	<Lc -31	128
21	QC of #10	-2.5	-5.5	7.05		8.0	<Lc 31	52	315.0	250	135	1.0	2	5	209.0	<Lc -50	128
22	Grid # O 14 N/S Beam	-14.5	-13.7	6.93	350-850 cpm	12.0	62	60	797.0	1668	185	0.0	<Lc 0	0	231.0	<Lc 19	131
23	Grid # O 15 E/W Beam	-14.5	-14.5	4.92	100-350 cpm	4.0	<Lc 0	43	216.0	<Lc -41	122	0.0	<Lc 0	0	239.0	<Lc 44	132

Data Entered By and Date: 10 Aug 98

Reviewed By and Date (Site Manager): 10 Aug 98

9-2-98

12/11/96

*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Production Bld. 2nd Flr,E.End Alpha Scans<61, see field notes for Beta Scans.

V 1.9

Reference No.:	LKYDT217
Survey No.:	298
Data Code:	CH-SURV
Grid ID:	See Description
Area:	IA04
Survey By:	S.R. Plemens
Survey Date:	07/25/98
Smears Counted By:	J.Kinstle
Smear Count Date:	08/04/98

	DIRECT SURFACE						TRANSFERABLE CONTAMINATION					
Surveyor Sign:	SR Plemens											
	Alpha			Beta-Gamma			Alpha			Beta-Gamma		
Scaler Model:	E-600			E-600						E-600		
Serial No.:	672			672						685		
Detector:	SHP-380			SHP-380			43-10			SHP-380		
Serial No.:	143			143			68222			532		
Cal Due Date:	09/03/98			09/03/98			11/06/98			09/03/98		
Bkgd CPM:	4.0			230.0			0.1			225.0		
Efficiency:	0.13			0.34			0.41			0.32		
Area Cor Fact:	1.000			1.000			N/A			N/A		
Bkgd CT Time:	1			1			50			1		
Smpl CT Time:	1			1			1			1		
Lc (DPM):	36			104			1			109		

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
24	Grid # O 15 E/W Beam	-14.5	-14.9	5.67	150-350 cpm	5.0	<Lc 8	45	241.0	<Lc 32	125	0.0	<Lc 0	0	214.0	<Lc -34	128
25	Grid # O 15 N/S Beam	-14.5	-14.7	6.93	300-500 cpm	12.0	62	60	434.0	600	149	0.0	<Lc 0	0	222.0	<Lc -9	129
26	QC of #25	-14.5	-14.7	6.93		10.0	46	56	420.0	559	147	1.0	2	5	218.0	<Lc -22	129

Data Entered By and Date: 10 Aug 98

Reviewed By and Date (Site Manager) 10 Aug 98

9-2-98

12/11/96
*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Production Bld. 2nd Flr,E.End Alpha Scans<141, see field notes for Beta Scans. Papershield used for crosstalk determin. (++)avg.cnts

V 1.9

Reference No.:	LKYDT216
Survey No.:	297
Data Code:	CH-SURV
Grid ID:	See Description
Area:	IA04
Survey By:	S.R. Plemens
Survey Date:	07/25/98
Smears Counted By:	J.Kinstle
Smear Count Date:	08/04/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	SR Plemens		Surveyor Sign: J Kinstle	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	672	672		685
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	143	143	68222	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/03/98
Bkgd CPM:	4.0	230.0	0.1	225.0
Efficiency:	0.13	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	36	104	1	109

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	Grid# X28 E/W Beam	-23.5	-27.3	7.05	800-2200 cpm	54.0	385	115	2040.0	5324	275	4.0	10	10	252.0	<Lc 84	134
2	Grid# X28 E/W Beam	-23.6	-27.3	7.05	1000-3000 cpm	51.0	362	112	2950.0	8000	325	3.0	7	8	234.0	<Lc 28	131
3	Grid# X28 E/W Beam	-23.5	-27.3	7.05	Paper Shield	40.0	277	100	1865.0	4809	264	4.0	10	10	252.0	<Lc 84	134
4	Grid# X28 E/W Beam	-23.6	-27.3	7.05	1000-3000 cpm	48.0	338	109	2840.0	7676	319	1.0	2	5	252.0	<Lc 84	134
5	Grid# X28 E/W Beam	-23.6	-27.3	7.05	Paper Shield	54.0	385	115	2710.0	7294	313	1.0	2	5	252.0	<Lc 84	134
6	Grid# X28 E/W Beam	-23.5	-27.4	7.05	xtra counts	24.0	154	80	1094.0	2541	210						
7	Grid# X28 E/W Beam	-23.5	-27.5	7.05	xtra counts	23.0	146	78	1125.0	2632	212						
8	Grid# X28 E/W Beam	-23.5	-27.6	7.05	xtra counts	17.0	100	69	808.0	1700	186						
9	Grid # X29 E/W Pipe	-23.5	-28.5	6.51	100-250 cpm	4.0	<Lc 0	43	183.0	<Lc -138	117	1.0	2	5	217.0	<Lc -25	129
10	QC of #13 (11-12')	-23.5	-27.3	7.05	800-2200 cpm	47.0	331	108	1879.0	4850	265	6.0	14	12	228.0	<Lc 9	130
11	Grid #Y28 E/W Beam	-24.5	-27.3	7.05	600-3000 cpm	62.0	446	122	3170.0	8647	336	4.0	10	10	251.0	<Lc 81	134
12	Grid #Y28 E/W Beam	-24.5	-27.3	7.05	600-3000 cpm	51.0	362	112	3060.0	8324	331	4.0	10	10	251.0	<Lc 81	134
13	Grid #Y28 E/W Beam	-24.5	-27.3	7.05	Paper Shield	64.0	462	124	2940.0	7971	325	4.0	10	10	251.0	<Lc 81	134
14	Grid #Y28 E/W Beam	-24.6	-27.3	7.05	600-2500 cpm	70.0	508	130	2210.0	5824	285	2.0	5	7	210.0	<Lc -47	128
15	Grid #Y28 E/W Beam	-24.6	-27.3	7.05	600-2500 cpm	53.0	377	114	2260.0	5971	288	2.0	5	7	210.0	<Lc -47	128
16	Grid #Y28 E/W Beam	-24.6	-27.3	7.05	Paper Shield	31.0	208	89	1866.0	4812	264	2.0	5	7	210.0	<Lc -47	128
17	Grid #Y28 E/W Beam	-24.6	-27.4	7.05	xtra counts	61.0	438	122	3050.0	8294	330						
18	Grid #Y28 E/W Beam	-24.6	-27.5	7.05	xtra counts	50.0	354	111	1442.0	3565	236						
19	Grid #Y28 E/W Beam	-24.6	-27.6	7.05	xtra counts	39.0	269	99	1433.0	3538	235						

Data Entered By and Date: 10 Aug 98

11 Aug

9-2-98

*DPM units per 100cm2

12/11/96

THERMO NUtech
Direct Surface and Transferable Contamination Survey

V 1.9

Comments: Production Bld. 2nd Flr, Floor Coor. In meters from NE Corner Alpha Scans<36, see field notes for Beta Scans.

Reference No.:	LKYDT236
Survey No.:	323
Data Code:	CH-SURV
Grid ID:	See Description
Area:	IA04
Survey By:	S.R. Plemens
Survey Date:	07/28/98
Smears Counted By:	J. Caldwell
Smear Count Date:	08/07/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	S.R. Plemens		J. McCaldwell	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	1193	1193		685
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	528	528	68222	532
Cal Due Date:	09/11/98	09/11/98	11/06/98	09/03/98
Bkgd CPM:	7.0	289.0	0.2	201.0
Efficiency:	0.15	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	41	117	2	103

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	Grid # AT 17 Floor	-45.5	-16.5	0	Floor Monitor	7.0	<Lc 0	49	275.0	<Lc -41	137	0.0	<Lc 0	0	163.0	<Lc -119	117
2	Grid # AT 18	-45.5	-17.5	0	Floor Monitor	6.0	<Lc -7	47	224.0	<Lc -191	131	0.0	<Lc 0	0	193.0	<Lc -25	122
3	Grid # AU 17	-46.5	-16.5	0	Floor Monitor	3.0	<Lc -27	41	259.0	<Lc -88	135	0.0	<Lc 0	0	199.0	<Lc -6	123
4	Grid # AU 18	-46.5	-17.5	0	Floor Monitor	14.0	47	60	266.0	<Lc -68	136	1.0	2	5	222.0	<Lc 68	126
5	Grid # AV 17	-47.5	-16.5	0	Floor Monitor	12.0	<Lc 33	57	243.0	<Lc -135	133	0.0	<Lc 0	0	200.0	<Lc -3	123
6	Grid # AV 18	-47.5	-17.5	0	Floor Monitor	6.0	<Lc -7	47	241.0	<Lc -141	133	0.0	<Lc 0	0	189.0	<Lc -38	121
7	Grid # AW 17	-48.5	-16.5	0	Floor Monitor	6.0	<Lc -7	47	236.0	<Lc -156	132	1.0	2	5	206.0	<Lc 16	124
8	Grid # AW 18	-48.5	-17.5	0	Floor Monitor	9.0	<Lc 13	52	261.0	<Lc -82	135	0.0	<Lc 0	0	213.0	<Lc 38	125
9	Grid # AX 17	-49.5	-16.5	0	Floor Monitor	2.0	<Lc -33	39	242.0	<Lc -138	133	0.0	<Lc 0	0	220.0	<Lc 59	126
10	QC of #9					4.0	<Lc -20	43	259.0	<Lc -88	135	0.0	<Lc 0	0	203.0	<Lc 6	123
11	Grid # AX 18	-49.5	-17.5	0	Floor Monitor	7.0	<Lc 0	49	279.0	<Lc -29	137	0.0	<Lc 0	0	196.0	<Lc -16	122
12	Grid # AY 12	-50.5	-11.5	0	Floor Monitor	4.0	<Lc -20	43	303.0	<Lc 41	140	0.0	<Lc 0	0	202.0	<Lc 3	123
13	Grid # AY 13	-50.5	-12.5	0	Floor Monitor	5.0	<Lc -13	45	279.0	<Lc -29	137	0.0	<Lc 0	0	177.0	<Lc -75	119
14	Grid # AY 14	-50.5	-13.5	0	Floor Monitor	9.0	<Lc 13	52	274.0	<Lc -44	137	1.0	2	5	206.0	<Lc 16	124
15	Grid # AY 15	-50.5	-14.5	0	Floor Monitor	5.0	<Lc -13	45	246.0	<Lc -126	133	0.0	<Lc 0	0	208.0	<Lc 22	124
16	Grid # AZ 12	-51.5	-11.5	0	Floor Monitor	6.0	<Lc -7	47	272.0	<Lc -50	137	1.0	2	5	181.0	<Lc -63	120
17	Grid # AZ 13	-51.5	-12.5	0	Floor Monitor	9.0	<Lc 13	52	251.0	<Lc -112	134	0.0	<Lc 0	0	224.0	<Lc 72	126
18	Grid # AZ 14	-51.5	-13.5	0	Floor Monitor	5.0	<Lc -13	45	171.0	<Lc -347	124	0.0	<Lc 0	0	190.0	<Lc -34	121
19	Grid # AZ 15	-51.5	-14.5	0	Floor Monitor	8.0	<Lc 7	51	237.0	<Lc -153	132	0.0	<Lc 0	0	193.0	<Lc -25	122
20	Grid # O 14	-14.5	-13.5	0	Floor Monitor	3.0	<Lc -27	41	253.0	<Lc -106	134	0.0	<Lc 0	0	186.0	<Lc -47	120
21	Grid # P 14	-15.5	-13.5	0	Floor Monitor	8.0	<Lc 7	51	264.0	<Lc -74	136	0.0	<Lc 0	0	201.0	<Lc 0	123
22	Grid # P 15 Floor	-15.5	-14.5	0	150-250 cpm	5.0	<Lc -13	45	269.0	<Lc -59	136	0.0	<Lc 0	0	207.0	<Lc 19	124
23	Grid # Q 14	-16.5	-13.5	0	Floor Monitor	7.0	<Lc 0	49	237.0	<Lc -153	132	0.0	<Lc 0	0	212.0	<Lc 34	124

Data Entered By and Date: 12 Aug 98 12 Aug 98

9-1-98

12/11/96
*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Production Bld. 2nd Flr, Floor Coor. In meters from NE Corner Alpha Scans<36, see field notes for Beta Scans.

V 1.9

Reference No.:	LKYDT236
Survey No.:	323
Data Code:	CH-SURV
Grid ID:	See Description
Area:	IA04
Survey By:	S.R. Plemens
Survey Date:	07/28/98
Smears Counted By:	J. Caldwell
Smear Count Date:	08/07/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	SR Plemens		J. Caldwell	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	1193	1193		685
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	528	528	68222	532
Cal Due Date:	09/11/98	09/11/98	11/06/98	09/03/98
Bkgd CPM:	7.0	289.0	0.2	201.0
Efficiency:	0.15	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	41	117	2	103

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
24	Grid # Q 15	-16.5	-14.5	0	180-220 cpm	5.0	<Lc -13	45	210.0	<Lc -232	129	0.0	<Lc 0	0	194.0	<Lc -22	122
25	Grid # R 14	-17.5	-13.5	0	Floor Monitor	11.0	<Lc 27	55	269.0	<Lc -59	136	0.0	<Lc 0	0	184.0	<Lc -53	120
26	Grid # R 15	-17.5	-14.5	0	Floor Monitor	7.0	<Lc 0	49	252.0	<Lc -109	134	0.0	<Lc 0	0	185.0	<Lc -50	120
27	Grid # S 14	-18.5	-13.5	0	Floor Monitor	8.0	<Lc 7	51	260.0	<Lc -85	135	0.0	<Lc 0	0	202.0	<Lc 3	123
28	Grid # S 15	-18.5	-14.5	0	Floor Monitor	10.0	<Lc 20	54	270.0	<Lc -56	136	1.0	2	5	216.0	<Lc 47	125
29	Grid# T 15	-19.5	-14.5	0	Floor Monitor	15.0	53	61	264.0	<Lc -74	136	0.0	<Lc 0	0	188.0	<Lc -41	121
30	Grid# T 14	-19.5	-13.5	0	Floor Monitor	6.0	<Lc -7	47	266.0	<Lc -68	136	0.0	<Lc 0	0	224.0	<Lc 72	126
31	Grid# AL 1 North Wall	-37.5	0	0.5	300-650 cpm	14.0	47	60	472.0	538	159	0.0	<Lc 0	0	209.0	<Lc 25	124
32	Grid# CY -1 Hall Wall	-103	0.5	0.5	100-450 cpm	5.0	<Lc -13	45	312.0	<Lc 68	141	0.0	<Lc 0	0	191.0	<Lc -31	121
33	Grid# DC 1 North Wall Elevator	-106.5	0	0.5	150-350 cpm	1.0	<Lc -40	37	231.0	<Lc -171	131	0.0	<Lc 0	0	186.0	<Lc -47	120
34	Grid# GM 12 West Wall	-195	-11.5	0.5	300-600 cpm	15.0	53	61	446.0	462	156	0.0	<Lc 0	0	182.0	<Lc -59	120
35	QC of #34					13.0	<Lc 40	58	433.0	424	155	0.0	<Lc 0	0	197.0	<Lc -13	122

Data E[illegible] 1 By and Date: Robert Sawhney 12 Aug 98

[illegible] 12 Aug 98

[illegible] 8-1-98

*DPM units p[illegible] m2

12/11/96

[illegible] of 2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Production Bld. 2nd Flr, Floor Coor. In meters from NE Corner Alpha Scans<26, see field notes for Beta Scans.

V 1.9

Reference No.:	LKYDT235
Survey No.:	322
Data Code:	CH-SURV
Grid ID:	See Description
Area:	IA04
Survey By:	S.R. Plemens
Survey Date:	07/27/98
Smears Counted By:	J. Caldwell
Smear Count Date:	08/07/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	S.R. Plemens		J. Caldwell	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	1162	1162		685
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	526	526	68222	532
Cal Due Date:	09/11/98	09/11/98	11/06/98	09/03/98
Bkgd CPM:	1.0	161.0	0.2	201.0
Efficiency:	0.14	0.30	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	17	99	2	103

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	Grid # C 1	-2.5	-0.5	0	Floor Monitor	3.0	<Lc 14	28	181.0	<Lc 67	121	0.0	<Lc 0	0	197.0	<Lc -13	122
2	QC of #1					7.0	43	40	181.0	<Lc 67	121	0.0	<Lc 0	0	195.0	<Lc -19	122
3	Grid # C 2	-2.5	-1.5	0	Floor Monitor	1.0	<Lc 0	20	161.0	<Lc 0	117	0.0	<Lc 0	0	191.0	<Lc -31	121
4	Grid # C 3	-2.5	-2.5	0	Floor Monitor	1.0	<Lc 0	20	154.0	<Lc -23	116	0.0	<Lc 0	0	206.0	<Lc 16	124
5	Grid # C 4	-2.5	-3.5	0	Floor Monitor	1.0	<Lc 0	20	121.0	<Lc -133	110	1.0	2	5	188.0	<Lc -41	121
6	Grid # C 5	-2.5	-4.5	0	Floor Monitor	0.0	<Lc -7	14	151.0	<Lc -33	115	0.0	<Lc 0	0	180.0	<Lc -66	120
7	Grid # C 6	-2.5	-5.5	0	Floor Monitor	0.0	<Lc -7	14	151.0	<Lc -33	115	0.0	<Lc 0	0	181.0	<Lc -63	120
8	Grid # C 7	-2.5	-6.5	0	Floor Monitor	0.0	<Lc -7	14	161.0	<Lc 0	117	0.0	<Lc 0	0	230.0	<Lc 91	127
9	Grid # C 8	-2.5	-7.5	0	Floor Monitor	1.0	<Lc 0	20	174.0	<Lc 43	120	0.0	<Lc 0	0	191.0	<Lc -31	121
10	Grid # CG 3	-84.5	-2.5	0	Floor Monitor	1.0	<Lc 0	20	118.0	<Lc -143	109	0.0	<Lc 0	0	208.0	<Lc 22	124
11	Grid # CG 4	-84.5	-3.5	0	Floor Monitor	4.0	21	31	127.0	<Lc -113	111	0.0	<Lc 0	0	173.0	<Lc -88	118
12	Grid # CG 5	-84.5	-4.5	0	Floor Monitor	0.0	<Lc -7	14	145.0	<Lc -53	114	0.0	<Lc 0	0	192.0	<Lc -28	121
13	Grid # CG 6	-84.5	-5.5	0	Floor Monitor	2.0	<Lc 7	24	137.0	<Lc -80	113	0.0	<Lc 0	0	193.0	<Lc -25	122
14	Grid # CG 7	-84.5	-6.5	0	Floor Monitor	2.0	<Lc 7	24	165.0	<Lc 13	118	0.0	<Lc 0	0	203.0	<Lc 6	123
15	Grid # CG 8	-84.5	-7.5	0	Floor Monitor	0.0	<Lc -7	14	124.0	<Lc -123	110	0.0	<Lc 0	0	167.0	<Lc -106	117
16	Grid # CG 9	-84.5	-8.5	0	Floor Monitor	1.0	<Lc 0	20	153.0	<Lc -27	116	0.0	<Lc 0	0	207.0	<Lc 19	124
17	Grid # CG 10	-84.5	-9.5	0	Floor Monitor	1.0	<Lc 0	20	143.0	<Lc -60	114	0.0	<Lc 0	0	190.0	<Lc -34	121
18	Grid # CG 11	-84.5	-10.5	0	Floor Monitor	2.0	<Lc 7	24	173.0	<Lc 40	119	0.0	<Lc 0	0	194.0	<Lc -22	122
19	Grid # CG 12	-84.5	-11.5	0	Floor Monitor	1.0	<Lc 0	20	131.0	<Lc -100	112	1.0	2	5	173.0	<Lc -88	118
20	Grid # CG 13	-84.5	-12.5	0	Floor Monitor	0.0	<Lc -7	14	166.0	<Lc 17	118	0.0	<Lc 0	0	174.0	<Lc -84	119
21	Grid #CM -5	-90.5	4.5	0	Floor Monitor	1.0	<Lc 0	20	123.0	<Lc -127	110	0.0	<Lc 0	0	182.0	<Lc -59	120
22	Grid #CM -6	-90.5	5.5	0	Floor Monitor	0.0	<Lc -7	14	144.0	<Lc -57	114	0.0	<Lc 0	0	190.0	<Lc -34	121
23	Grid #CX -1	-101.5	0.5	0	Floor Monitor	1.0	<Lc 0	20	141.0	<Lc -67	114	0.0	<Lc 0	0	171.0	<Lc -94	118

Data Entered By and Date: [illegible] 11 Aug 98

9 . 198

12/11/96

*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Production Bld. 2nd Flr, Floor Coor. In meters from NE Corner Alpha Scans<26, see field notes for Beta Scans.

V 1.9

Reference No.:	LKYDT235
Survey No.:	322
Data Code:	CH-SURV
Grid ID:	See Description
Area:	IA04
Survey By:	S.R. Plemens
Survey Date:	07/27/98
Smears Counted By:	J. Caldwell
Smear Count Date:	08/07/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	S.R. Plemens		J. Caldwell	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	1162	1162		685
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	526	526	68222	532
Cal Due Date:	09/11/98	09/11/98	11/06/98	09/03/98
Bkgd CPM:	1.0	161.0	0.2	201.0
Efficiency:	0.14	0.30	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	17	99	2	103

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
24	Grid #CX -2	-101.5	1.5	0	Floor Monitor	3.0	<Lc 14	28	125.0	<Lc -120	110	0.0	<Lc 0	0	179.0	<Lc -69	119
25	Grid #CX -3	-101.5	2.5	0	Floor Monitor	3.0	<Lc 14	28	164.0	<Lc 10	118	0.0	<Lc 0	0	186.0	<Lc -47	120
26	Grid # CX 1	-101.5	-0.5	0	Floor Monitor	0.0	<Lc -7	14	137.0	<Lc -80	113	0.0	<Lc 0	0	176.0	<Lc -78	119
27	Grid # CX 2	-101.5	-1.5	0	Floor Monitor	1.0	<Lc 0	20	135.0	<Lc -87	112	0.0	<Lc 0	0	203.0	<Lc 6	123
28	Grid # CX 3	-101.5	-2.5	0	Floor Monitor	2.0	<Lc 7	24	179.0	<Lc 60	120	0.0	<Lc 0	0	221.0	<Lc 63	126
29	Grid# O 8 Concrete & Metal Plate	-14.5	-7.5	0	50-200 cpm	4.0	21	31	132.0	<Lc -97	112	0.0	<Lc 0	0	184.0	<Lc -53	120
30	Grid# O 9 Metal & Brick	-14.5	-8.5	0	50-300 cpm	0.0	<Lc -7	14	272.0	370	136	0.0	<Lc 0	0	164.0	<Lc -116	117
31	Grid# O 10 Brick	-14.5	-9.5	0	250-350 cpm	1.0	<Lc 0	20	235.0	247	130	0.0	<Lc 0	0	187.0	<Lc -44	121
32	Grid# O 11 Brick	-14.5	-10.5	0	200-350 cpm	0.0	<Lc -7	14	262.0	337	134	0.0	<Lc 0	0	194.0	<Lc -22	122
33	Grid# O 12 Concrete	-14.5	-11.5	0	100-200 cpm	1.0	<Lc 0	20	124.0	<Lc -123	110	0.0	<Lc 0	0	178.0	<Lc -72	119
34	Grid# O 13 Concrete	-14.5	-12.5	0	Floor Monitor	0.0	<Lc -7	14	135.0	<Lc -87	112	0.0	<Lc 0	0	196.0	<Lc -16	122
35	Grid# O 14 Concrete	-14.5	-13.5	0	Floor Monitor	1.0	<Lc 0	20	121.0	<Lc -133	110	0.0	<Lc 0	0	205.0	<Lc 13	123
36	Grid# O 15 Concrete	-14.5	-14.5	0	Floor Monitor	0.0	<Lc -7	14	127.0	<Lc -113	111	0.0	<Lc 0	0	190.0	<Lc -34	121
37	Grid# P 14	-15.5	-13.5	0	Floor Monitor	0.0	<Lc -7	14	136.0	<Lc -83	113	0.0	<Lc 0	0	190.0	<Lc -34	121
38	QC of #37					1.0	<Lc 0	20	151.0	<Lc -33	115	0.0	<Lc 0	0	197.0	<Lc -13	122
39	Grid# P15	-15.5	-14.5	0	Floor Monitor	0.0	<Lc -7	14	116.0	<Lc -150	109	0.0	<Lc 0	0	200.0	<Lc -3	123

9-1-98

Data Entered By and Date: 11 Aug 98

12/11/96

*DPM units p m2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Production Bld. 2nd Flr, : Coor. In meters from NE Corner Alpha Scans<36, see field notes for Beta Scans. V 1.9

Reference No.:	LKYDT234
Survey No.:	321
Data Code:	CH-SURV
Grid ID:	See Description
Area:	IA04
Survey By:	S.R. Plemens
Survey Date:	07/26/98
Smears Counted By:	J. Caldwell
Smear Count Date:	08/07/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:				
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	1162	1162		685
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	526	526	68222	532
Cal Due Date:	09/11/98	09/11/98	11/06/98	09/03/98
Bkgd CPM:	2.0	116.0	0.2	201.0
Efficiency:	0.14	0.30	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	24	84	2	103

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	Grid # DZ 16 Floor	-129.5	-15.5	0	Floor Monitor	0.0	<Lc -14	20	125.0	<Lc 30	101	0.0	<Lc 0	0	194.0	<Lc -22	122
2	Grid # DZ 17	-129.5	-16.5	0	Floor Monitor	0.0	<Lc -14	20	134.0	<Lc 60	103	0.0	<Lc 0	0	200.0	<Lc -3	123
3	Grid # DZ 18	-129.5	-17.5	0	Floor Monitor	2.0	<Lc 0	28	99.0	<Lc -57	96	0.0	<Lc 0	0	182.0	<Lc -59	120
4	Grid # DZ 19	-129.5	-18.5	0	Floor Monitor	2.0	<Lc 0	28	108.0	<Lc -27	98	2.0	4	7	187.0	<Lc -44	121
5	Grid # DZ 20 Brick Floor	-129.5	-19.5	0	160-350 cpm	0.0	<Lc -14	20	245.0	430	124	1.0	2	5	209.0	<Lc 25	124
6	Grid # DO 21 Brick Floor	-118.5	-20.5	0	150-500 cpm	3.0	<Lc 7	31	277.0	537	130	0.0	<Lc 0	0	214.0	<Lc 41	125
7	Grid # DO 22 Brick Floor	-118.5	-21.5	0	150-500 cpm	0.0	<Lc -14	20	259.0	477	127	0.0	<Lc 0	0	201.0	<Lc 0	123
8	Grid # EP 26 Floor	-145.5	-25.5	0	Floor Monitor	1.0	<Lc -7	24	117.0	<Lc 3	100	0.0	<Lc 0	0	199.0	<Lc -6	123
9	QC of #8					0.0	<Lc -14	20	107.0	<Lc -30	98	0.0	<Lc 0	0	202.0	<Lc 3	123
10	Grid # EP 27	-145.5	-26.5	0	Floor Monitor	2.0	<Lc 0	28	123.0	<Lc 23	101	0.0	<Lc 0	0	193.0	<Lc -25	122
11	Grid # EP 28	-145.5	-27.5	0	Floor Monitor	2.0	<Lc 0	28	110.0	<Lc -20	98	1.0	2	5	200.0	<Lc -3	123
12	Grid # EP 29	-145.5	-28.5	0	Floor Monitor	0.0	<Lc -14	20	100.0	<Lc -53	96	0.0	<Lc 0	0	182.0	<Lc -59	120
13	Grid # EQ 26	-146.5	-25.5	0	Floor Monitor	0.0	<Lc -14	20	120.0	<Lc 13	100	0.0	<Lc 0	0	189.0	<Lc -38	121
14	Grid # EQ 27	-146.5	-26.5	0	Floor Monitor	1.0	<Lc -7	24	113.0	<Lc -10	99	0.0	<Lc 0	0	191.0	<Lc -31	121
15	Grid # EQ 28	-146.5	-27.5	0	Floor Monitor	0.0	<Lc -14	20	91.0	<Lc -83	94	0.0	<Lc 0	0	196.0	<Lc -16	122
16	Grid # EQ 29	-146.5	-28.5	0	Floor Monitor	0.0	<Lc -14	20	107.0	<Lc -30	98	1.0	2	5	208.0	<Lc 22	124
17	Grid # ER 26	-147.5	-25.5	0	Floor Monitor	2.0	<Lc 0	28	123.0	<Lc 23	101	0.0	<Lc 0	0	207.0	<Lc 19	124
18	Grid # ER 27	-147.5	26.5	0	Floor Monitor	0.0	<Lc -14	20	101.0	<Lc -50	96	1.0	2	5	195.0	<Lc -19	122
19	Grid # ER 28	-147.5	-27.5	0	Floor Monitor	0.0	<Lc -14	20	72.0	<Lc -147	90	0.0	<Lc 0	0	193.0	<Lc -25	122
20	Grid # ER 29	-147.5	-28.5	0	Floor Monitor	0.0	<Lc -14	20	112.0	<Lc -13	99	0.0	<Lc 0	0	180.0	<Lc -66	120
21	Grid # ES 27	-148.5	-26.5	0	Floor Monitor	1.0	<Lc -7	24	99.0	<Lc -57	96	0.0	<Lc 0	0	208.0	<Lc 22	124
22	Grid # ES 28 Floor	-148.5	-27.5	0	Floor Monitor	3.0	<Lc 7	31	110.0	<Lc -20	98	0.0	<Lc 0	0	186.0	<Lc -47	120
23	Grid # ES 29	-148.5	-28.5	0	Floor Monitor	0.0	<Lc -14	20	93.0	<Lc -77	94	0.0	<Lc 0	0	188.0	<Lc -41	121

Data Entered By and Date: 11 Aug 98

Reviewed By and Date (Site Manager) 11 Aug 98

9-1-98

12/11/96
*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Production Bld. 2nd Flr, Floor Coor. In meters from NE Corner Alpha Scans<36, see field notes for Beta Scans.

V 1.9

Reference No.:	LKYDT234
Survey No.:	321
Data Code:	CH-SURV
Grid ID:	See Description
Area:	IA04
Survey By:	S.R. Plemens
Survey Date:	07/26/98
Smears Counted By:	J. Caldwell
Smear Count Date:	08/07/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	S.R. Plemens		J. Caldwell	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	1162	1162		685
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	526	526	68222	532
Cal Due Date:	09/11/98	09/11/98	11/06/98	09/03/98
Bkgd CPM:	2.0	116.0	0.2	201.0
Efficiency:	0.14	0.30	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	24	84	2	103

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
24	Grid # ET 27	-149.5	-26.5	0	Floor Monitor	0.0	<Lc -14	20	110.0	<Lc -20	98	0.0	<Lc 0	0	177.0	<Lc -75	119
25	Grid # ET 28	-149.5	-27.5	0	Floor Monitor	0.0	<Lc -14	20	102.0	<Lc -47	96	0.0	<Lc 0	0	169.0	<Lc -100	118
26	Grid # ET 29	-149.5	-28.5	0	Floor Monitor	4.0	<Lc 14	34	106.0	<Lc -33	97	0.0	<Lc 0	0	198.0	<Lc -9	122
27	Grid# CQ 1	-94.5	-0.5	0	Floor Monitor	2.0	<Lc 0	28	112.0	<Lc -13	99	0.0	<Lc 0	0	193.0	<Lc -25	122
28	Grid# CQ 2	-94.5	-1.5	0	Floor Monitor	0.0	<Lc -14	20	109.0	<Lc -23	98	0.0	<Lc 0	0	187.0	<Lc -44	121
29	Grid# CQ 3	-94.5	-2.5	0	Floor Monitor	0.0	<Lc -14	20	93.0	<Lc -77	94	0.0	<Lc 0	0	202.0	<Lc 3	123
30	Grid# CQ 4	-94.5	-3.5	0	Floor Monitor	0.0	<Lc -14	20	102.0	<Lc -47	96	0.0	<Lc 0	0	186.0	<Lc -47	120
31	Grid# GD 12	-185.5	-11.5	0	Floor Monitor	0.0	<Lc -14	20	99.0	<Lc -57	96	0.0	<Lc 0	0	204.0	<Lc 9	123
32	Grid# GD 13	-185.5	-12.5	0	Floor Monitor	0.0	<Lc -14	20	75.0	<Lc -137	90	0.0	<Lc 0	0	175.0	<Lc -81	119
33	Grid# GD 14	-185.5	-13.5	0	Floor Monitor	0.0	<Lc -14	20	124.0	<Lc 27	101	0.0	<Lc 0	0	224.0	<Lc 72	126
34	Grid# GD 15	-185.5	-14.5	0	Floor Monitor	0.0	<Lc -14	20	140.0	<Lc 80	105	0.0	<Lc 0	0	207.0	<Lc 19	124
35	Grid# GE 12	-186.5	-11.5	0	Floor Monitor	0.0	<Lc -14	20	89.0	<Lc -90	94	0.0	<Lc 0	0	170.0	<Lc -97	118
36	Grid# GE 13	-186.5	-12.5	0	Floor Monitor	0.0	<Lc -14	20	99.0	<Lc -57	96	0.0	<Lc 0	0	201.0	<Lc 0	123
37	Grid# GE 14	-186.5	-13.5	0	Floor Monitor	0.0	<Lc -14	20	92.0	<Lc -80	94	1.0	2	5	183.0	<Lc -56	120
38	Grid# GE 15	-186.5	-14.5	0	Floor Monitor	0.0	<Lc -14	20	159.0	143	108	0.0	<Lc 0	0	183.0	<Lc -56	120
39	Grid# GF 12	-187.5	-11.5	0	Floor Monitor	0.0	<Lc -14	20	101.0	<Lc -50	96	0.0	<Lc 0	0	175.0	<Lc -81	119
40	Grid# GF 13	-187.5	-12.5	0	Floor Monitor	0.0	<Lc -14	20	96.0	<Lc -67	95	0.0	<Lc 0	0	200.0	<Lc -3	123
41	Grid# GF 15	-187.5	-14.5	0	Floor Monitor	0.0	<Lc -14	20	167.0	170	110	1.0	2	5	225.0	<Lc 75	126
42	QC of #41					1.0	<Lc -7	24	140.0	<Lc 80	105	0.0	<Lc 0	0	179.0	<Lc -69	119
43	Grid# GF 14 Floor	-187.5	-13.5	0	Floor Monitor	0.0	<Lc -14	20	89.0	<Lc -90	94	0.0	<Lc 0	0	181.0	<Lc -63	120
44	Grid# EN 30 South Wall	-143.5	-30	0.5	100-300 cpm	0.0	<Lc -14	20	233.0	390	122	0.0	<Lc 0	0	195.0	<Lc -19	122
45	QC of #44					1.0	<Lc -7	24	219.0	343	120	0.0	<Lc 0	0	201.0	<Lc 0	123

9-1-98

Data E[illegible]ed By and Date: [illegible] 11AUG98

12/11/96

*DPM units [illegible]m2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Production Bld. 2nd Flr, Floor Coor. In meters from NE Corner Alpha Scans<26, see field notes for Beta Scans.

V 1.9

Reference No.:	LKYDT233
Survey No.:	320
Data Code:	CH-SURV
Grid ID:	See Description
Area:	IA04
Survey By:	S.R. Plemens
Survey Date:	07/25/98
Smears Counted By:	J. Caldwell
Smear Count Date:	08/07/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	S.R. Plemens			
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	1162	1162		685
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	526	526	68222	532
Cal Due Date:	09/11/98	09/11/98	11/06/98	09/03/98
Bkgd CPM:	1.0	72.0	0.2	201.0
Efficiency:	0.14	0.30	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	17	66	2	103

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	Grid # AC 16	-28.5	-15.5	0	Floor Monitor	0.0	<Lc -7	14	115.0	143	89	0.0	<Lc 0	0	180.0	<Lc -66	120
2	Grid # AC 17	-28.5	-16.5	0	Floor Monitor	1.0	<Lc 0	20	161.0	297	100	0.0	<Lc 0	0	215.0	<Lc 44	125
3	Grid # AC 18	-28.5	-17.5	0	Floor Monitor	3.0	<Lc 14	28	147.0	250	97	0.0	<Lc 0	0	198.0	<Lc -9	122
4	Grid # AC 19	-28.5	-18.5	0	Floor Monitor	0.0	<Lc -7	14	166.0	313	101	0.0	<Lc 0	0	185.0	<Lc -50	120
5	Grid # AD 16	-29.5	-15.5	0	Floor Monitor	2.0	<Lc 7	24	139.0	223	95	0.0	<Lc 0	0	216.0	<Lc 47	125
6	Grid # AD 17	-29.5	-16.5	0	Floor Monitor	2.0	<Lc 7	24	146.0	247	96	0.0	<Lc 0	0	222.0	<Lc 66	126
7	Grid # AD 18	-29.5	-17.5	0	Floor Monitor	3.0	<Lc 14	28	163.0	303	100	0.0	<Lc 0	0	173.0	<Lc -88	118
8	Grid # AD 19	-29.5	-18.5	0	Floor Monitor	2.0	<Lc 7	24	149.0	257	97	0.0	<Lc 0	0	222.0	<Lc 66	126
9	QC of #8					1.0	<Lc 0	20	140.0	227	95	0.0	<Lc 0	0	212.0	<Lc 34	124
10	Grid # AE 9	-30.5	-8.5	0	Floor Monitor	0.0	<Lc -7	14	259.0	623	119	0.0	<Lc 0	0	201.0	<Lc 0	123
11	Grid # AE 10	-30.5	-9.5	0	Floor Monitor	1.0	<Lc 0	20	284.0	707	123	0.0	<Lc 0	0	197.0	<Lc -13	122
12	Grid # AE 11	-30.5	-10.5	0	Floor Monitor	0.0	<Lc -7	14	293.0	737	125	0.0	<Lc 0	0	216.0	<Lc 47	125
13	Grid # AE 12	-30.5	-11.5	0	Floor Monitor	0.0	<Lc -7	14	156.0	280	99	0.0	<Lc 0	0	191.0	<Lc -31	121
14	Grid # AF 9	-31.5	-8.5	0	Floor Monitor	0.0	<Lc -7	14	277.0	683	122	0.0	<Lc 0	0	190.0	<Lc -34	121
15	Grid # AF 10	-31.5	-9.5	0	Floor Monitor	4.0	21	31	281.0	697	123	0.0	<Lc 0	0	204.0	<Lc 9	123
16	Grid # AF 11	-31.5	-10.5	0	Floor Monitor	1.0	<Lc 0	20	267.0	650	120	0.0	<Lc 0	0	170.0	<Lc -97	118
17	Grid # AF 12	-31.5	-11.5	0	Floor Monitor	1.0	<Lc 0	20	130.0	193	93	0.0	<Lc 0	0	180.0	<Lc -66	120
18	Grid # AK 18	-36.5	-17.5	0	Floor Monitor	0.0	<Lc -7	14	125.0	177	92	0.0	<Lc 0	0	222.0	<Lc 66	126
19	Grid # AK 19	-36.5	-18.5	0	Floor Monitor	0.0	<Lc -7	14	121.0	163	91	0.0	<Lc 0	0	207.0	<Lc 19	124
20	Grid # AL 18	-37.5	-17.5	0	Floor Monitor	0.0	<Lc -7	14	145.0	243	96	1.0	2	5	212.0	<Lc 34	124
21	Grid # AL 19	-37.5	-18.5	0	Floor Monitor	2.0	<Lc 7	24	126.0	180	92	0.0	<Lc 0	0	198.0	<Lc -9	122
22	Grid # AM 18	-38.5	-17.5	0	Floor Monitor	0.0	<Lc -7	14	134.0	207	94	0.0	<Lc 0	0	189.0	<Lc -38	121
23	Grid # AM 19	-38.5	-18.5	0	Floor Monitor	0.0	<Lc -7	14	112.0	133	89	0.0	<Lc 0	0	192.0	<Lc -28	121

Data Entered By and Date: Rob Sanborn 11 Aug 98

CB 9-1-98

12/11/96

*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Production Bld. 2nd Flr, Floor Coor. In meters from NE Corner Alpha Scans<26, see field notes for Beta Scans.

V 1.9

Reference No.:	LKYDT233
Survey No.:	320
Data Code:	CH-SURV
Grid ID:	See Description
Area:	IA04
Survey By:	S.R. Plemens
Survey Date:	07/25/98
Smears Counted By:	J. Caldwell
Smear Count Date:	08/07/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	S.R. Plemens		L. Caldwell	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	1162	1162		685
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	526	526	68222	532
Cal Due Date:	09/11/98	09/11/98	11/06/98	09/03/98
Bkgd CPM:	1.0	72.0	0.2	201.0
Efficiency:	0.14	0.30	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	17	66	2	103

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
24	Grid # AN 18	-39.5	-17.5	0	Floor Monitor	0.0	<Lc -7	14	148.0	253	97	0.0	<Lc 0	0	217.0	<Lc 50	125
25	Grid # AN 19	-39.5	-18.5	0	Floor Monitor	0.0	<Lc -7	14	142.0	233	96	0.0	<Lc 0	0	196.0	<Lc -16	122
26	Grid # H 25	-7.5	-24.5	0	Floor Monitor	4.0	21	31	138.0	220	95	0.0	<Lc 0	0	173.0	<Lc -88	118
27	Grid# H 26	-7.5	-25.5	0	Floor Monitor	3.0	<Lc 14	28	149.0	257	97	0.0	<Lc 0	0	205.0	<Lc 13	123
28	Grid# I 25	-8.5	-24.5	0	Floor Monitor	1.0	<Lc 0	20	121.0	163	91	0.0	<Lc 0	0	186.0	<Lc -47	120
29	Grid# I 26	-8.5	-25.5	0	Floor Monitor	1.0	<Lc 0	20	144.0	240	96	0.0	<Lc 0	0	216.0	<Lc 47	125
30	Grid# J 25	-9.5	-24.5	0	Floor Monitor	2.0	<Lc 7	24	141.0	230	95	0.0	<Lc 0	0	198.0	<Lc -9	122
31	Grid# J 26	-9.5	-25.5	0	Floor Monitor	1.0	<Lc 0	20	145.0	243	96	0.0	<Lc 0	0	206.0	<Lc 16	124
32	Grid# X 26	-23.5	-25.5	0	Floor Monitor	1.0	<Lc 0	20	157.0	283	99	0.0	<Lc 0	0	206.0	<Lc 16	124
33	Grid# X 27	-23.5	-26.5	0	Floor Monitor	0.0	<Lc -7	14	160.0	293	100	0.0	<Lc 0	0	198.0	<Lc -9	122
34	Grid# X 28	-23.5	-27.5	0	Floor Monitor	0.0	<Lc -7	14	130.0	193	93	0.0	<Lc 0	0	213.0	<Lc 38	125
35	Grid# X 29	-23.5	-28.5	0	Floor Monitor	0.0	<Lc -7	14	145.0	243	96	0.0	<Lc 0	0	198.0	<Lc -9	122
36	QC of #35					0.0	<Lc -7	14	158.0	287	99	0.0	<Lc 0	0	207.0	<Lc 19	124
37	Grid# X 30	-23.5	-29.5	0	Floor Monitor	0.0	<Lc -7	14	88.0	<Lc 53	83	0.0	<Lc 0	0	192.0	<Lc -28	121
38	Grid# Y 26	-24.5	-25.5	0	Floor Monitor	1.0	<Lc 0	20	147.0	250	97	0.0	<Lc 0	0	197.0	<Lc -13	122
39	Grid# Y 27	-24.5	-26.5	0	Floor Monitor	1.0	<Lc 0	20	135.0	210	94	0.0	<Lc 0	0	179.0	<Lc -69	119
40	Grid# Y 28	-24.5	-27.5	0	Floor Monitor	1.0	<Lc 0	20	142.0	233	96	0.0	<Lc 0	0	183.0	<Lc -56	120
41	Grid# Y 29	-24.5	-28.5	0	Floor Monitor	0.0	<Lc -7	14	151.0	263	98	1.0	2	5	198.0	<Lc -9	122
42	Grid# Y 30	-24.5	-29.5	0	Floor Monitor	0.0	<Lc -7	14	109.0	123	88	0.0	<Lc 0	0	192.0	<Lc -28	121

CB
9-1-98

Data Entered By and Date: Robin Scarborough 11 Aug 98

11 Aug 98

12/11/96

*DPM units r cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Production Bld. 2nd Flr, Overheads Coor. In meters from NE Corner Alpha Scans<120, see field notes for Beta Scans.

V 1.9

Reference No.:	LKYDT231
Survey No.:	318
Data Code:	CH-SURV
Grid ID:	See Description
Area:	IA04
Survey By:	S.R. Plemens
Survey Date:	07/28/98
Smears Counted By:	J. Kinstle
Smear Count Date:	08/06/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	SR Plemens			
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	672	672		685
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	143	143	68222	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/03/98
Bkgd CPM:	5.0	265.0	0.2	181.0
Efficiency:	0.13	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	40	112	2	98

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	Grid# Y 26 Beam E. Shldr	-24.5	-25.5	6.9	800-2500 cpm	62.0	438	123	2610.0	6897	309	15.0	36	19	228.0	147	124
2	QC of #1					73.0	523	133	2330.0	6074	294	15.0	36	19	242.0	191	126
3	Recount of #1 w/ papershield	-24.5	-25.5	6.9	chk for crosstalk	53.0	369	115	2330.0	6074	294						
4	Grid# Y 28 Beam W. Shldr	-24.5	-27.5	6.9	900-3000 cpm	66.0	469	127	2680.0	7103	313	0.0	<Lc 0	0	223.0	131	123
5	#4(Y 28) recount w/ papershield	-24.5	-27.5	6.9	chk for crosstalk	52.0	362	114	2160.0	5574	284						
6	Grid# AY 14 Main cross beam	-50.5	-13.5	7.1	260-320 cpm	4.0	<Lc -8	45	298.0	<Lc 97	137	0.0	<Lc 0	0	205.0	<Lc 75	120
7	Grid# AY 15 Top of metal pipe	-50.5	-14.5	4.6	225-275 cpm	1.0	<Lc -31	37	253.0	<Lc -35	131	1.0	2	5	214.0	103	122
8	Grid# AY 15 Top of cncrt x membr	-50.5	-14.5	4.6	280-340 cpm	3.0	<Lc -15	43	317.0	153	139	1.0	2	5	182.0	<Lc 3	117
9	Grid# AY 15 Top of electrical bus duct	-50.5	-14.5	4.8	260-320 cpm	6.0	<Lc 8	50	271.0	<Lc 18	133	0.0	<Lc 0	0	198.0	<Lc 53	119
10	Grid# AZ 13 Main X (cross) beam	-51.5	-12.5	7.1	250-300 cpm	4.0	<Lc -8	45	280.0	<Lc 44	135	0.0	<Lc 0	0	209.0	<Lc 88	121
11	Grid# AZ 13 Metal light shade	-51.5	-12.5	7.3	350-425 cpm	9.0	<Lc 31	56	383.0	347	147	0.0	<Lc 0	0	178.0	<Lc -9	116
12	Grid# AZ 14 Main cross beam	-51.5	-13.5	7.1	275-325 cpm	9.0	<Lc 31	56	303.0	112	137	0.0	<Lc 0	0	203.0	<Lc 69	120
13	Grid# AZ 15 Top of metal pipes	-51.5	-14.5	4.6	220-280 cpm	5.0	<Lc 0	48	243.0	<Lc -65	130	0.0	<Lc 0	0	203.0	<Lc 69	120
14	Grid# AZ 15 Top of cncrt x membr	-51.5	-14.5	4.6	280-340 cpm	6.0	<Lc 8	50	313.0	141	139	0.0	<Lc 0	0	182.0	<Lc 3	117
15	Grid# AZ 16 Top of electrical bus duct	-51.5	-15.5	4.8	260-320 cpm	6.0	<Lc 8	50	272.0	<Lc 21	134	0.0	<Lc 0	0	174.0	<Lc -22	115
16	Grid# AT 17 Double pipe	-45.5	-16.1	6.7	200-450 cpm	5.0	<Lc 0	48	260.0	<Lc -15	132	1.0	2	5	230.0	153	124
17	Grid# AT 17 Beam E. shldr	-45.5	-16.5	6.9	200-500 cpm	9.0	<Lc 31	56	406.0	415	149	1.0	2	5	208.0	<Lc 84	121
18	Grid# AT 17 2" pipe	-45.5	-16.3	6.7	200--450 cpm	9.0	<Lc 31	56	255.0	<Lc -29	131	0.0	<Lc 0	0	224.0	134	123
19	Grid# AT 17 Wrapped pipes	-45.5	-16.5	6.7	150-300 cpm	13.0	62	64	280.0	<Lc 44	135	0.0	<Lc 0	0	196.0	<Lc 47	119
20	Grid# AU 17 Double pipes	-46.5	-16.1	6.7	200-400 cpm	4.0	<Lc -8	45	280.0	<Lc 44	135	0.0	<Lc 0	0	201.0	<Lc 63	120
21	Grid# AU 17 2" pipe	-46.5	-16.3	6.7	200-400 cpm	4.0	<Lc -8	45	221.0	<Lc -129	127	0.0	<Lc 0	0	230.0	153	124
22	Grid# AU 17 Support	-46.5	-16.5	7.1	150-300 cpm	7.0	<Lc 15	52	258.0	<Lc -21	132	0.0	<Lc 0	0	218.0	116	122
23	Grid# AU 17 Wrapped pipes	-46.5	-16.5	6.7	150-300 cpm	3.0	<Lc -15	43	288.0	<Lc 68	136	0.0	<Lc 0	0	206.0	<Lc 78	120

Data Entered By and Date: 11 Aug 98

9-2-98

12/11/96
*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Production Bld. 2nd Flr, Overheads Coor. In meters from NE Corner Alpha Scans<120, see field notes for Beta Scans.

V 1.9

Reference No.:	LKYDT231
Survey No.:	318
Data Code:	CH-SURV
Grid ID:	See Description
Area:	IA04
Survey By:	S.R. Plemens
Survey Date:	07/28/98
Smears Counted By:	J. Kinstle
Smear Count Date:	08/06/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	S.R. Plemens			
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	672	672		685
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	143	143	68222	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/03/98
Bkgd CPM:	5.0	265.0	0.2	181.0
Efficiency:	0.13	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	40	112	2	98

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
24	Grid# AV 17 Double pipes	-47.5	-16.1	6.7	150-300 cpm	3.0	<Lc -15	43	249.0	<Lc -47	131	1.0	2	5	213.0	100	122
25	QC of #24					5.0	<Lc 0	48	274.0	<Lc 26	134	0.0	<Lc 0	0	214.0	103	122
26	Grid# AV 17 Wrapped pipes	-47.5	-16.5	6.7	150-300 cpm	5.0	<Lc 0	48	272.0	<Lc 21	134	0.0	<Lc 0	0	185.0	<Lc 13	117
27	Grid# AV 17 2" pipe	-47.5	-16.3	6.7	150-350 cpm	2.0	<Lc -23	40	239.0	<Lc -76	129	0.0	<Lc 0	0	222.0	128	123
28	Grid# AW 17 Support	-48.5	-16.5	7.1	150-250 cpm	7.0	<Lc 15	52	232.0	<Lc -97	129	0.0	<Lc 0	0	187.0	<Lc 19	117
29	Grid# AW 17 Double pipes	-48.5	-16.1	6.7	150-450 cpm	4.0	<Lc -8	45	267.0	<Lc 6	133	0.0	<Lc 0	0	205.0	<Lc 75	120
30	Grid# AW 17 2" pipe	-48.5	-16.3	6.7	150-350 cpm	4.0	<Lc -8	45	226.0	<Lc -115	128	2.0	4	7	205.0	<Lc 75	120
31	Grid# AW 17 Wrapped pipes	-48.5	-16.5	6.7	150-300 cpm	8.0	<Lc 23	54	245.0	<Lc -59	130	0.0	<Lc 0	0	197.0	<Lc 50	119
32	Grid# AX 17 Double pipes	-49.5	-16.1	6.7	150-400 cpm	7.0	<Lc 15	52	244.0	<Lc -62	130	0.0	<Lc 0	0	203.0	<Lc 69	120
33	Grid# AX 17 2" pipe	-49.5	-16.3	6.7	150-380 cpm	7.0	<Lc 15	52	232.0	<Lc -97	129	0.0	<Lc 0	0	200.0	<Lc 59	120
34	Grid# AX 17 Wrapped pipes	-49.5	-16.5	6.7	150-300 cpm	5.0	<Lc 0	48	224.0	<Lc -121	127	1.0	2	5	204.0	<Lc 72	120
35	Grid# AT 18 Beam W. shldr	-45.5	-17.5	6.9	300-500 cpm	9.0	<Lc 31	56	325.0	176	140	0.0	<Lc 0	0	201.0	<Lc 63	120
36	Grid# AT 18 Beam N. shldr	-45.5	-17.5	7.1	150-500 cpm	10.0	<Lc 38	58	321.0	165	140	0.0	<Lc 0	0	186.0	<Lc 16	117
37	Grid# AU 18 Beam S. shldr	-46.5	-17.5	7.1	150-350 cpm	8.0	<Lc 23	54	392.0	374	148	1.0	2	5	208.0	<Lc 84	121
38	Grid# AV 18 Beam N. shldr	-47.5	-17.5	7.1	200-500 cpm	6.0	<Lc 8	50	362.0	285	144	0.0	<Lc 0	0	197.0	<Lc 50	119
39	Grid# AV 18 Light	-47.5	-17.5	7.1	150-350 cpm	4.0	<Lc -8	45	345.0	235	142	0.0	<Lc 0	0	191.0	<Lc 31	118
40	Grid# AW 18 Beam	-48.5	-17.5	7.2	200-400 cpm	1.0	<Lc -31	37	247.0	<Lc -53	130	0.0	<Lc 0	0	187.0	<Lc 19	117
41	QC of #41					6.0	<Lc 8	50	256.0	<Lc -26	132	0.0	<Lc 0	0	198.0	<Lc 53	119
42	Grid# AW 18 Beam N. shldr	-48.5	-17.5	7.1	200-450 cpm	5.0	<Lc 0	48	374.0	321	146	1.0	2	5	218.0	116	122
43	Grid# AX 18 Beam N. shldr	-49.5	-17.5	7.1	200-450 cpm	2.0	<Lc -23	40	273.0	<Lc 24	134	0.0	<Lc 0	0	198.0	<Lc 53	119
44	Grid# H 23 Beam N. shldr	-7.5	-22.5	7.1	600-1300 cpm	35.0	231	95	1173.0	2671	219	2.0	4	7	228.0	147	124
45	QC of #44					36.0	238	97	1133.0	2553	216	4.0	9	10	234.0	166	125
46	#44 Recount w/ papershield				chk for crosstalk	23.0	138	80	1057.0	2329	210						

Data Entered By and Date: Robert Scambray 11 Aug 98

CH 9-2-98

*DPM units dpm/100cm2

12/11/96

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Production Bld. 2nd Flr, Overheads Coor. In meters from NE Corner Alpha Scans<120, see field notes for Beta Scans.

V 1.9

Reference No.:	LKYDT231
Survey No.:	318
Data Code:	CH-SURV
Grid ID:	See Description
Area:	IA04
Survey By:	S.R. Plemens
Survey Date:	07/28/98
Smears Counted By:	J. Kinstle
Smear Count Date:	08/06/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	SRPlemens		J. K. [illegible]	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	672	672		685
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	143	143	68222	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/03/98
Bkgd CPM:	5.0	265.0	0.2	181.0
Efficiency:	0.13	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	40	112	2	98

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
47	Grid# I 23 Beam N. shldr	-8.5	-22.5	7.1	400-1180 cpm	24.0	146	81	747.0	1418	183	2.0	4	7	216.0	109	122
48	Grid# J 23 Beam N. shldr	-9.5	-22.5	7.1	300-800 cpm	16.0	85	69	672.0	1197	176	0.0	<Lc 0	0	194.0	<Lc 41	119
49	Grid# K 23 Beam N. shldr	-10.5	-22.5	7.1	300-650 cpm	8.0	<Lc 23	54	679.0	1218	177	1.0	2	5	215.0	106	122
50	Grid# L 23 Beam N. shldr	-11.5	-22.5	7.1	250-650 cpm	8.0	<Lc 23	54	593.0	965	169	1.0	2	5	198.0	<Lc 53	119
51	Grid# L 23 Beam S. shldr	-11.5	-22.5	7.1	250-600 cpm	7.0	<Lc 15	52	356.0	268	144	0.0	<Lc 0	0	210.0	<Lc 91	121
52	Grid# M 23 Beam N. shldr	-12.5	-22.5	7.1	300-800 cpm	18.0	100	72	656.0	1150	175	0.0	<Lc 0	0	210.0	<Lc 91	121
53	Grid# N 23 Beam N. shldr	-13.5	-22.5	7.1	300-1100 cpm	16.0	85	69	794.0	1556	188	0.0	<Lc 0	0	193.0	<Lc 38	118
54	Grid# O 23 Beam N. shldr	-14.5	-22.5	7.1	250-850 cpm	9.0	<Lc 31	56	673.0	1200	177	1.0	2	5	230.0	153	124
55	Grid# J 24 Beam W. shldr	-9.5	-23.5	6.9	300-1100 cpm	34.0	223	94	1112.0	2491	214	3.0	7	8	198.0	<Lc 53	119
56	#55 Recount w/ papershield				chk for crosstalk	24.0	146	81	1111.0	2488	214						
57	Grid# O 24 Beam W. shldr	-14.5	-23.5	6.9	600-1700 cpm	38.0	254	99	1398.0	3332	235	0.0	<Lc 0	0	210.0	<Lc 91	121
58	QC of #57					43.0	292	104	1466.0	3532	240	2.0	4	7	193.0	<Lc 38	118
59	#57 recount w/ papershield					27.0	169	85	1387.0	3300	234						

9-2-98

Data Entered By and Date: [illegible] 11 Aug 98

[illegible] (Site Manager) [illegible]

12/11/96
*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Production Bld. 2nd Flr, Overneads Coor. In meters from NE Corner Alpha Scans<151, see field notes for Beta Scans.

V 1.9

Reference No.:	LKYDT230
Survey No.:	317
Data Code:	CH-SURV
Grid ID:	See Description
Area:	IA04
Survey By:	S.R. Plemens
Survey Date:	07/28/98
Smears Counted By:	J. Kinstle
Smear Count Date:	08/06/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	SRPlemens		J. Kinstle	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	672	672		685
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	143	143	68222	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/03/98
Bkgd CPM:	5.0	265.0	0.2	181.0
Efficiency:	0.13	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	40	112	2	98

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	Grid# Y 27 Beam W. Shldr	-24.5	-26.5	6.9	1600-4680 cpm	97.0	708	152	4400.0	12162	394	8.0	19	14	217.0	113	122
2	QC of #1					111.0	815	162	4350.0	12015	392	9.0	21	14	231.0	156	124
3	Recount #1 w/ paper shield	-24.5	-26.5	6.9	Chk for crosstalk	81.0	585	140	3780.0	10338	367						
4	Grid# Y 27 Beam	-24.5	-26.8	6.9	for Beta average	29.0	185	88	1056.0	2326	210						
5	Grid# Y 27 Beam	-24.5	-26.3	6.9	for Beta average	64.0	454	125	1664.0	4115	253						
6	Grid# Y 27 Beam	-24.5	-26.6	6.9	for Beta average	55.0	385	117	2590.0	6838	308						
7	Grid# Y 27 Beam	-24.5	-26.7	6.9	for Beta average	44.0	300	106	2400.0	6279	298						

#4-7 taken to average Beta fixed activity. Limit 5000 dpm/100sq.cm averaged in grid

CB 9-2-98

Data Entered By and Date: 11 AUG 98

Reviewed By and Date (Site Manager) 11 AUG 98

*DPM units 100 cm2

12/11/96

Annex

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annex Building Survey, Coordinates in Meters from the S. E. Corner, See field notes for Beta scans

V 1.9

Reference No.:	LKYDT053
Survey No.:	88
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	Jim Kinstle
Survey Date:	06/19/98
Smears Counted By:	K. Beaton
Smear Count Date:	06/19/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	KBeaton		KBeaton	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	672	672		1175
Detector:	SHP-380	SHP-380	Ludlum 43-10	SHP-380
Serial No.:	143	143	68225	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Bkgd CPM:	3.0	279.0	0.2	173.0
Efficiency:	0.13	0.34	0.40	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	31	115	2	96

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	East Wall Grid # F	0	5.5	1.7	250-350	2.0	<Lc -8	34	273.0	<Lc -18	135	0.0	<Lc -1	0	213.0	125	120
2	East Wall Grid # G	0	6.5	1.7	250-350	5.0	<Lc 15	43	308.0	<Lc 85	140	0.0	<Lc -1	0	178.0	<Lc 16	115
	QC of #G	0	6.5	1.7	~~250-350 cpm~~	8.0	38	50	287.0	<Lc 24	137	0.0	<Lc -1	0	186.0	<Lc 41	116
3	East Wall Grid # H	0	7.5	2.1	250-400 cpm	2.0	<Lc -8	34	183.0	<Lc -282	124	0.0	<Lc -1	0	182.0	<Lc 28	115
4	East Wall Grid # I	0	8.5	1.9	250-350 cpm	5.0	<Lc 15	43	206.0	<Lc -215	127	0.0	<Lc -1	0	218.0	141	121
5	East Wall Grid # J	0	9.5	1.7	300-400 cpm	5.0	<Lc 15	43	181.0	<Lc -288	124	0.0	<Lc -1	0	201.0	<Lc 88	118
6	East Wall Grid # K	0	10.7	1.9	300-400 cpm	4.0	<Lc 8	40	182.0	<Lc -285	124	0.0	<Lc -1	0	182.0	<Lc 28	115
7	East Wall Grid # N	0	13.5	1.7	200-350 cpm	5.0	<Lc 15	43	234.0	<Lc -132	131	0.0	<Lc -1	0	217.0	138	121
8	Interior Ramp Wall Grid #46	-45.5	3.8	0.5	250-350 cpm	10.0	54	54	294.0	<Lc 44	138	0.0	<Lc -1	0	189.0	<Lc 50	117
9	Interior Ramp Wall Grid #47	-46.5	3.8	0.5	250-350 cpm	5.0	<Lc 15	43	277.0	<Lc -6	136	0.0	<Lc -1	0	200.0	<Lc 84	118
10	Interior Ramp Wall Grid #48	-47.5	3.8	0.14	250-400 cpm	5.0	<Lc 15	43	273.0	<Lc -18	135	0.0	<Lc -1	0	212.0	122	120
11	Interior Ramp Wall Grid #49	-48.5	3.8	0.03	300-400 cpm	13.0	77	60	289.0	<Lc 29	137	0.0	<Lc -1	0	208.0	109	120
12	Floor Grid # L1	-0.5	11.5	1.2	300-500 cpm	8.0	38	50	375.0	282	147	0.0	<Lc -1	0	208.0	109	120
13	Floor Grid # M1	-0.5	12.5	1.2	300-450 cpm	8.0	38	50	351.0	212	145	0.0	<Lc -1	0	217.0	138	121
14	Floor Grid # K1	-0.5	10.5	1.2	300-400 cpm	5.0	<Lc 15	43	354.0	221	145	0.0	<Lc -1	0	208.0	109	120
15	Floor Grid # N1	-0.5	13.5	1.2	300-450 cpm	9.0	46	52	380.0	297	148	0.0	<Lc -1	0	233.0	188	123
16	Floor Grid # N12	-11.5	13.5	1.2	300-400 cpm	7.0	<Lc 31	48	360.0	238	146	0.0	<Lc -1	0	224.0	159	122
17	Floor Grid # N11	-10.5	13.5	1.2	300-400 cpm	10.0	54	54	377.0	288	148	0.0	<Lc -1	0	214.0	128	120
18	Floor Grid # N10	-9.5	13.5	1.2	300-400 cpm	9.0	46	52	406.0	374	151	0.0	<Lc -1	0	196.0	<Lc 72	118
19	Floor Grid # N09	-8.5	13.5	1.2	300-400 cpm	8.0	38	50	380.0	297	148	0.0	<Lc -1	0	206.0	103	119
20	Floor Grid # N08	-7.9	13.2	1.2	300-400 cpm	9.0	46	52	352.0	215	145	0.0	<Lc -1	0	214.0	128	120
21	Floor Grid # D19	-18.5	3.5	1.2	250-400 cpm	6.0	<Lc 23	45	323.0	129	141	1.0	2	5	221.0	150	122
22	Floor Grid # D20	-19.5	3.5	1.2	200-400 cpm	3.0	<Lc 0	37	366.0	256	146	0.0	<Lc -1	0	207.0	106	119

Data Entered By and Date: 7 July 98

Reviewed By and Date (Site Manager) 7 July 98

7-15-98

12/11/96

*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annex Building Survey, Coordinates in Meters from the S. E. Corner, See field notes for Beta scans

V 1.9

Reference No.:	LKYDT053
Survey No.:	88
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	Jim Kinstle
Survey Date:	06/19/98
Smears Counted By:	K. Beaton
Smear Count Date:	06/19/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:				
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	672	672		1175
Detector:	SHP-380	SHP-380	Ludlum 43-10	SHP-380
Serial No.:	143	143	68225	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Bkgd CPM:	3.0	279.0	0.2	173.0
Efficiency:	0.13	0.34	0.40	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	31	115	2	96

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
23	Floor Grid # D21	-20.8	3.5	1.2	200-400 cpm	9.0	46	52	347.0	200	144	0.0	<Lc -1	0	214.0	128	120
24	Floor Grid # D22	-21.5	3.5	1.2	300-400 cpm	6.0	<Lc 23	45	340.0	179	143	0.0	<Lc -1	0	177.0	<Lc 13	115
25	Floor Grid # D23	-22.5	3.5	1.2	300-400 cpm	9.0	46	52	363.0	247	146	0.0	<Lc -1	0	219.0	144	121
	QC of #D23	-22.5	3.5	1.2	~~300-400 cpm~~ CB 7-15-98	11.0	62	56	380.0	297	148	0.0	<Lc -1	0	204.0	97	119
26	Floor Grid # D24	-23.5	3.5	1.2	300-400 cpm	13.0	77	60	369.0	265	147	0.0	<Lc -1	0	206.0	103	119

Data Entered By and Date: [signature] 7 July 98

Review and Date (Site Manager) [signature] 7 July 98

CB 7-15-98

12/11/96
*DPM units per 100 cm2
F 2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annex Building Survey, Coordinates in Meters from the S. E. Corner, See field notes for Beta scans

V 1.9

			DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
		Surveyor Sign:			Surveyor Sign:	
			Alpha	Beta-Gamma	Alpha	Beta-Gamma
		Scaler Model:	E-600	E-600		E-600
		Serial No.:	672	672		1175
Reference No.:	LKYDT054	Detector:	SHP-380	SHP-380	Ludlum 43-10	SHP-380
Survey No.:	89	Serial No.:	143	143	68225	532
Data Code:	CH-SURV	Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Grid ID:	See Below	Bkgd CPM:	2.0	301.0	0.2	175.0
Area:	Annex Building	Efficiency:	0.13	0.34	0.40	0.32
Survey By:	Jim Kinstle	Area Cor Fact:	1.000	1.000	N/A	N/A
Survey Date:	06/18/98	Bkgd CT Time:	1	1	50	1
Smears Counted By:	K. Beaton	Smpl CT Time:	1	1	1	1
Smear Count Date:	06/18/98	Lc (DPM):	25	119	2	96

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	South Wall Grid #1	-0.5	0	1.7	200-300 cpm	11.0	69	54	254.0	<Lc -138	136	0.0	<Lc -1	0	139.0	<Lc -113	109
2	South Wall Grid #2	-1.5	0	1.5	200-300 cpm	8.0	46	48	243.0	<Lc -171	134	0.0	<Lc -1	0	181.0	<Lc 19	116
3	South Wall Grid #3	-2.5	0	1.7	200-350 cpm	4.0	<Lc 15	37	214.0	<Lc -256	131	0.0	<Lc -1	0	175.0	<Lc 0	115
4	South Wall Grid #4	-3.5	0	1.5	200-300 cpm	3.0	<Lc 8	34	203.0	<Lc -288	129	0.0	<Lc -1	0	157.0	<Lc -56	112
5	South Wall Grid #5	-4.7	0	1.5	200-350 cpm	8.0	46	48	245.0	<Lc -165	135	2.0	5	7	169.0	<Lc -19	114
6	South Wall Grid #6	-5.5	0	1.5	250-300 cpm	8.0	46	48	316.0	<Lc 44	143	0.0	<Lc -1	0	152.0	<Lc -72	111
	QC of #6	-5.5	0	1.5	~~250-300 cpm~~ CB 8-5-98	6.0	31	43	303.0	<Lc 6	142	0.0	<Lc -1	0	164.0	<Lc -34	113
7	South Wall Grid #7	-6.3	0	1.3	300-400 cpm	5.0	<Lc 23	40	302.0	<Lc 3	142	0.0	<Lc -1	0	169.0	<Lc -19	114
8	South Wall Grid #8	-7.6	0	1.7	300-350 cpm	3.0	<Lc 8	34	306.0	<Lc 15	142	0.0	<Lc -1	0	159.0	<Lc -50	112
9	South Wall Grid #9	-8.5	0	1.7	300-400 cpm	9.0	54	50	322.0	<Lc 62	144	0.0	<Lc -1	0	177.0	<Lc 6	115
10	South Wall Grid #10	-9.5	0	1.7	300-350 cpm	8.0	46	48	365.0	188	149	1.0	2	5	167.0	<Lc -25	113
11	South Wall Grid #11	-10.3	0	1.7	300-350 cpm	5.0	<Lc 23	40	327.0	<Lc 76	144	1.0	2	5	175.0	<Lc 0	115
12	South Wall Grid #12	-11.5	0	1.7	200-500 cpm	5.0	<Lc 23	40	355.0	159	148	0.0	<Lc -1	0	162.0	<Lc -41	112
13	South Wall Grid #13	-12.7	0	1.3	200-400 cpm	7.0	38	45	273.0	<Lc -82	138	0.0	<Lc -1	0	167.0	<Lc -25	113
14	South Wall Grid #14	-13.5	0	1.7	200-350 cpm	7.0	38	45	363.0	182	149	0.0	<Lc -1	0	169.0	<Lc -19	114
15	South Wall Grid #15	-14.5	0	1.7	200-300 cpm	11.0	69	54	312.0	<Lc 32	143	0.0	<Lc -1	0	165.0	<Lc -31	113
16	South Wall Grid #16	-15.3	0	1.7	200-400 cpm	5.0	<Lc 23	40	302.0	<Lc 3	142	2.0	5	7	163.0	<Lc -38	113

Data Entered By and Date: 7 July 98 CB 7-15-98

Reviewed By and Date (Site Manager) 7 July 98

12/11/96
*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annex Building Survey, Coordinates in Meters from the S. E. Corner, See field notes for Beta scans

V 1.9

			DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
		Surveyor Sign:				
			Alpha	Beta-Gamma	Alpha	Beta-Gamma
		Scaler Model:	E-600	E-600		E-600
		Serial No.:	672	672		1175
Reference No.:	LKYDT054	Detector:	SHP-380	SHP-380	Ludlum 43-10	SHP-380
Survey No.:	89	Serial No.:	143	143	68225	532
Data Code:	CH-SURV	Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Grid ID:	See Below	Bkgd CPM:	2.0	301.0	0.2	175.0
Area:	Annex Building	Efficiency:	0.13	0.34	0.40	0.32
Survey By:	Jim Kinstle	Area Cor Fact:	1.000	1.000	N/A	N/A
Survey Date:	06/18/98	Bkgd CT Time:	1	1	50	1
Smears Counted By:	K. Beaton	Smpl CT Time:	1	1	1	1
Smear Count Date:	06/18/98	Lc (DPM):	25	119	2	96

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
17	South Wall Grid #21	-20.9	0	1.7	200-350 cpm	6.0	31	43	327.0	<Lc 76	144	1.0	2	5	174.0	<Lc -3	114
18	South Wall Grid #22	-21.5	0	1.7	300-400 cpm	12.0	77	56	311.0	<Lc 29	143	1.0	2	5	159.0	<Lc -50	112
19	South Wall Grid #23	-22.5	0	1.7	300-500 cpm	8.0	46	48	381.0	235	151	0.0	<Lc -1	0	190.0	<Lc 47	117
20	South Wall Grid #24	-23.1	0	1.7	400-800 cpm	8.0	46	48	663.0	1065	179	1.0	2	5	155.0	<Lc -63	111

Data Entered By and Date: 7 July 98

7-15-98

Revie[illegible]w and Date (Site Manager) 7 July 9[illegible]

12/11/96

*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annex Building Survey, Coordinates in Meters from the S. E. Corner, See field notes for Beta scans

V 1.9

Reference No.:	LKYDT054a
Survey No.:	115
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	K. Beaton
Survey Date:	06/18/98
Smears Counted By:	K. Beaton
Smear Count Date:	06/18/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	Beaton		Beaton	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	685	685		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	146	146	68225	532
Cal Due Date:	09/11/98	09/11/98	11/06/98	09/11/98
Bkgd CPM:	2.0	189.0	0.2	175.0
Efficiency:	0.13	0.34	0.40	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	25	94	2	96

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
21	South Wall Grid #25	-24.5	0	1.7	200-300 cpm	2.0	<Lc 0	30	310.0	356	129	0.0	<Lc -1	0	186.0	<Lc 34	116
22	South Wall Grid #26	-25.5	0	1.7	200-300 cpm	7.0	38	45	247.0	171	120	1.0	2	5	197.0	<Lc 69	118
23	South Wall Grid #27	-26.5	0	1.5	200-300 cpm	5.0	<Lc 23	40	268.0	232	123	0.0	<Lc -1	0	170.0	<Lc -16	114
24	South Wall Grid #28	-27.5	0	1.5	200-300 cpm	6.0	31	43	272.0	244	124	0.0	<Lc -1	0	178.0	<Lc 9	115
25	South Wall Grid #29	-28.5	0	1.7	200-300 cpm	12.0	77	56	308.0	350	129	0.0	<Lc -1	0	184.0	<Lc 28	116
	QC of #29	-28.5	0	1.7	~~200-300 cpm~~ 8.8 2-5-98	9.0	54	50	326.0	403	131	0.0	<Lc -1	0	182.0	<Lc 22	116
26	South Wall Grid #30	-29.5	0	1.7	200-300 cpm	6.0	31	43	261.0	212	122	0.0	<Lc -1	0	191.0	<Lc 50	117
27	South Wall Grid #31	-30.5	0	1.7	200-300 cpm	6.0	31	43	232.0	126	118	0.0	<Lc -1	0	184.0	<Lc 28	116
28	South Wall Grid #32	-31.5	0	1.7	200-300 cpm	6.0	31	43	191.0	<Lc 6	112	1.0	2	5	166.0	<Lc -28	113
29	South Wall Grid #35	-34.9	0	1.7	200-300 cpm	4.0	<Lc 15	37	206.0	<Lc 50	115	0.0	<Lc -1	0	169.0	<Lc -19	114
30	South Wall Grid #36	-35.5	0	1.7	200-400 cpm	4.0	<Lc 15	37	252.0	185	121	1.0	2	5	152.0	<Lc -72	111
31	South Wall Grid #37	-36.5	0	1.7	200-400 cpm	6.0	31	43	293.0	306	127	1.0	2	5	167.0	<Lc -25	113
32	South Wall Grid #38	-37.5	0	1.7	150-300 cpm	7.0	38	45	311.0	359	129	1.0	2	5	176.0	<Lc 3	115
33	South Wall Grid #39	-38.7	0	1.9	200-400 cpm	8.0	46	48	267.0	229	123	0.0	<Lc -1	0	167.0	<Lc -25	113
34	South Wall Grid #40	-39.7	0	1.9	200-300 cpm	8.0	46	48	271.0	241	124	1.0	2	5	154.0	<Lc -66	111
35	South Wall Grid #41	-40.7	0	1.9	200-300 cpm	7.0	38	45	270.0	238	124	0.0	<Lc -1	0	190.0	<Lc 47	117
36	South Wall Grid #42	-41.5	0	1.7	200-300 cpm	4.0	<Lc 15	37	226.0	109	117	0.0	<Lc -1	0	190.0	<Lc 47	117
37	South Wall Grid #43	-42.5	0	1.7	200-300 cpm	5.0	<Lc 23	40	204.0	<Lc 44	114	0.0	<Lc -1	0	158.0	<Lc -53	112
38	South Wall Grid #44	-43.5	0	1.7	200-300 cpm	4.0	<Lc 15	37	284.0	279	125	0.0	<Lc -1	0	157.0	<Lc -56	112
39	South Wall Grid #45	-44.5	0	1.7	200-300 cpm	7.0	38	45	285.0	282	126	1.0	2	5	146.0	<Lc -91	110
40	South Wall Grid #46	-45.5	0	1.7	200-300 cpm	4.0	<Lc 15	37	298.0	321	127	0.0	<Lc -1	0	189.0	<Lc 44	117
41	South Wall Grid #47	-46.5	0	1.7	200-300 cpm	4.0	<Lc 15	37	288.0	291	126	0.0	<Lc -1	0	208.0	103	120
42	South Wall Grid #48	-47.5	0	1.7	200-300 cpm	10.0	62	52	283.0	276	125	0.0	<Lc -1	0	199.0	<Lc 75	118

Data Entered By and Date: 7 July 98

Reviewed By and Date (Site Manager): 7 July 98

7-15-98

12/11/96

*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annex Building Survey, Coordinates in Meters from the S. E. Corner, See field notes for Beta scans

V 1.9

Reference No.:	LKYDT054a
Survey No.:	115
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	K. Beaton
Survey Date:	06/18/98
Smears Counted By:	K. Beaton
Smear Count Date:	06/18/98

	DIRECT SURFACE			TRANSFERABLE CONTAMINATION		
Surveyor Sign:	Beaton			Beaton		
	Alpha		Beta-Gamma	Alpha		Beta-Gamma
Scaler Model:	E-600		E-600			E-600
Serial No.:	685		685			1175
Detector:	SHP-380		SHP-380	43-10		SHP-380
Serial No.:	146		146	68225		532
Cal Due Date:	09/11/98		09/11/98	11/06/98		09/11/98
Bkgd CPM:	2.0		189.0	0.2		175.0
Efficiency:	0.13		0.34	0.40		0.32
Area Cor Fact:	1.000		1.000	N/A		N/A
Bkgd CT Time:	1		1	50		1
Smpl CT Time:	1		1	1		1
Lc (DPM):	25		94	2		96

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
43	South Wall Grid #49	-48.5	0	1.7	200-400 cpm	11.0	69	54	279.0	265	125	0.0	<Lc -1	0	216.0	128	121
44	South Wall Grid #50	-49.5	0	1.1	200-300 cpm	5.0	<Lc 23	40	307.0	347	128	0.0	<Lc -1	0	167.0	<Lc -25	113
45	South Wall Grid #51	-50.5	0	1.2	200-300 cpm	8.0	46	48	308.0	350	129	0.0	<Lc -1	0	195.0	<Lc 63	118
46	South Wall Grid #52	-51.5	0	1.1	200-300 cpm	3.0	<Lc 8	34	315.0	371	129	0.0	<Lc -1	0	206.0	97	120
47	South Wall Grid #53	-52.5	0	0.8	200-300 cpm	11.0	69	54	293.0	306	127	1.0	2	5	209.0	106	120
48	South Wall Grid #54	-53.5	0	0.5	200-300 cpm	5.0	<Lc 23	40	266.0	226	123	1.0	2	5	196.0	<Lc 66	118
49	South Wall Grid #55	-54.5	0	0.1	200-300 cpm	9.0	54	50	229.0	118	118	1.0	2	5	202.0	<Lc 84	119
	QC of #55	-54.5	0	0.1	~~200-300 cpm~~ 08-8-5-98	8.0	46	48	228.0	115	118	0.0	<Lc -1	0	208.0	103	120
50	South Wall Grid #56	-55.5	0	0.5	200-300 cpm	9.0	54	50	243.0	159	120	0.0	<Lc -1	0	201.0	<Lc 81	119
51	South Wall Grid #57	-56.5	0	0.5	200-300 cpm	8.0	46	48	270.0	238	124	0.0	<Lc -1	0	186.0	<Lc 34	116

Data Entered By and Date: 7 July 98

Review and Date (Site Manager) 7 July 98

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*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annex Building Survey, Coordinates in Meters from the S. E. Corner, See field notes for Beta scans

V 1.9

Reference No.:	LKYDT055
Survey No.:	90
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	Jim Kinstle
Survey Date:	06/22/98
Smears Counted By:	K. Beaton
Smear Count Date:	06/22/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	J. Kinstle		K. Beaton	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	672	672		1175
Detector:	SHP-380	SHP-380	Ludlum 43-10	SHP-380
Serial No.:	143	143	68225	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Bkgd CPM:	5.0	303.0	0.4	189.0
Efficiency:	0.13	0.34	0.40	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	40	119	3	100

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	Floor Grid # D25	-24.5	3.5	1.2	300-450 cpm	7.0	<Lc 15	52	350.0	138	147	0.0	<Lc -1	0	172.0	<Lc -53	116
2	Floor Grid # D26	-25.5	3.5	1.2	250-400 cpm	11.0	46	60	318.0	<Lc 44	144	0.0	<Lc -1	0	209.0	<Lc 63	122
3	Floor Grid # D27	-26.5	3.5	1.2	300-400 cpm	8.0	<Lc 23	54	350.0	138	147	0.0	<Lc -1	0	209.0	<Lc 63	122
4	Floor Grid # D28	-27.5	3.5	1.2	300-450 cpm	4.0	<Lc -8	45	346.0	126	147	0.0	<Lc -1	0	187.0	<Lc -6	119
5	Floor Grid # D29	-28.5	3.5	1.2	300-450 cpm	7.0	<Lc 15	52	340.0	<Lc 109	146	0.0	<Lc -1	0	236.0	147	126
6	Floor Grid # D30	-29.5	3.5	1.2	300-400 cpm	2.0	<Lc -23	40	324.0	<Lc 62	144	0.0	<Lc -1	0	205.0	<Lc 50	122
7	Floor Grid # D31	-30.5	3.5	1.2	250-400 cpm	6.0	<Lc 8	50	361.0	171	149	1.0	<Lc 2	5	238.0	153	127
8	Floor Grid # N30	-29.5	13.5	1.2	300-450 cpm	6.0	<Lc 8	50	320.0	<Lc 50	144	1.0	<Lc 2	5	215.0	<Lc 81	123
9	Floor Grid # M30	-29.5	12.5	1.2	300-500 cpm	10.0	<Lc 38	58	381.0	229	151	1.0	<Lc 2	5	196.0	<Lc 22	120
10	Floor Grid # M29	-28.5	12.5	1.2	300-400 cpm	11.0	46	60	337.0	<Lc 100	146	0.0	<Lc -1	0	227.0	119	125
	QC OF #10	-28.5	12.5	1.2	~~300-400 cpm~~ 98-5-98	7.0	<Lc 15	52	361.0	171	149	0.0	<Lc -1	0	214.0	<Lc 78	123
11	Floor Grid # L29	-28.5	11.5	1.2	300-400 cpm	3.0	<Lc -15	43	350.0	138	147	0.0	<Lc -1	0	188.0	<Lc -3	119
12	Floor Grid # K29	-28.5	10.5	1.2	250-450 cpm	9.0	<Lc 31	56	362.0	174	149	0.0	<Lc -1	0	223.0	106	124
13	Floor Grid # N31	-30.3	13.5	1.2	350-450 cpm	7.0	<Lc 15	52	367.0	188	149	0.0	<Lc -1	0	181.0	<Lc -25	118
14	Floor Grid # N32	-31.8	13.5	1.2	300-400 cpm	6.0	<Lc 8	50	347.0	129	147	0.0	<Lc -1	0	197.0	<Lc 25	120

Data Entered By and Date: 7 July 98

Reviewed By and Date (Site Manager): 7 July 98

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*DPM units per 100 cm2
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THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annex Building Survey Coordinates in Meters from S. E. Corner, See field notes for Beta scans

V 1.9

Reference No.:	LKYDT056
Survey No.:	91
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	K. Beaton
Survey Date:	06/19/98
Smears Counted By:	K. Beaton
Smear Count Date:	06/19/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:				
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	685	685		1175
Detector:	SHP-380	SHP-380	Ludlum 43-10	SHP-380
Serial No.:	146	146	68225	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Bkgd CPM:	2.0	198.0	0.2	173.0
Efficiency:	0.13	0.34	0.40	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	25	97	2	96

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	East Wall Grid # A	0	0.5	1.2	200-400 cpm	11.0	69	54	280.0	241	126	0.0	<Lc -1	0	218.0	141	121
2	East Wall Grid # D	0	3.5	1.2	200-400 cpm	5.0	<Lc 23	40	270.0	212	125	1.0	2	5	222.0	153	122
3	East Wall Grid # E	0	4.5	1.2	200-400 cpm	6.0	31	43	248.0	147	122	0.0	<Lc -1	0	207.0	106	119
4	East Wall Grid # L	0	11.5	1.2	200-400 cpm	8.0	46	48	210.0	<Lc 35	116	1.0	2	5	178.0	<Lc 16	115
5	East Wall Grid # M	0	12.5	1.2	200-400 cpm	9.0	54	50	205.0	<Lc 21	116	0.0	<Lc -1	0	181.0	<Lc 25	115
6	Interior Ramp Wall #50	-49.3	3.8	0.7	200-400 cpm	5.0	<Lc 23	40	268.0	206	124	0.0	<Lc -1	0	197.0	<Lc 75	118
	QC of #50	-49.3	3.8	0.7	~~200-400 cpm~~ KB 8-5-98	4.0	<Lc 15	37	294.0	282	128	0.0	<Lc -1	0	188.0	<Lc 47	116
7	Interior Ramp Wall #51	-50.5	3.8	0.3	200-350 cpm	6.0	31	43	242.0	129	121	0.0	<Lc -1	0	191.0	<Lc 56	117
8	Interior Ramp Wall #52	-51.5	3.8	0.1	200-350 cpm	9.0	54	50	264.0	194	124	0.0	<Lc -1	0	219.0	144	121
9	Interior Ramp Wall #53	-52.5	3.8	0.3	200-350 cpm	3.0	<Lc 8	34	268.0	206	124	0.0	<Lc -1	0	194.0	<Lc 66	117
10	Interior Ramp Wall #54	-53.5	3.8	0.3	200-350 cpm	2.0	<Lc 0	30	250.0	153	122	0.0	<Lc -1	0	218.0	141	121
11	Interior Ramp Wall #55	-54.5	3.8	0.1	200-350 cpm	3.0	<Lc 8	34	253.0	162	122	0.0	<Lc -1	0	207.0	106	119
12	Floor Grid # A1	-0.5	0.5	1.2	200-400 cpm	3.0	<Lc 8	34	296.0	288	128	0.0	<Lc -1	0	184.0	<Lc 34	116
13	Floor Grid # B1	-0.5	1.5	1.2	200-400 cpm	7.0	38	45	272.0	218	125	1.0	2	5	189.0	<Lc 50	117
14	Floor Grid # C1	-0.5	2.5	1.2	200-400 cpm	4.0	<Lc 15	37	311.0	332	130	1.0	2	5	204.0	97	119
15	Floor Grid # D1	-0.5	3.5	1.2	200-400 cpm	0.0	<Lc -15	21	283.0	250	126	0.0	<Lc -1	0	183.0	<Lc 31	116
16	Floor Grid # E1	-0.5	4.5	1.2	200-500 cpm	7.0	38	45	324.0	371	132	0.0	<Lc -1	0	217.0	138	121
17	Floor Grid # F1	-0.5	5.5	1.2	200-500 cpm	10.0	62	52	374.0	518	138	1.0	2	5	210.0	116	120
18	Floor Grid # G1	0	6.5	1.2	200-500 cpm	7.0	38	45	340.0	418	134	0.0	<Lc -1	0	211.0	119	120
19	Floor Grid # H1	0.5	7.5	1.2	200-500 cpm	4.0	<Lc 15	37	281.0	244	126	0.0	<Lc -1	0	192.0	<Lc 59	117
20	Floor Grid # I1	-0.5	8.5	1.2	200-500 cpm	3.0	<Lc 8	34	323.0	368	132	0.0	<Lc -1	0	224.0	159	122
21	Floor Grid # J1	-0.5	9.5	1.2	200-500 cpm	5.0	<Lc 23	40	327.0	379	132	0.0	<Lc -1	0	192.0	<Lc 59	117
22	Floor Grid # N2	-1.5	13.5	1.2	200-400 cpm	11.0	69	54	313.0	338	130	0.0	<Lc -1	0	234.0	191	124

Data Entered By and Date: [illegible] 9 July 98

Review and Date (Site Manager) [illegible] 9 July 98

KB 7-17-98

12/11/96

*DPM units per 100 cm2

F 2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annex Building Survey Coordinates in Meters from S. E. Corner, See field notes for Beta scans

V 1.9

Reference No.:	LKYDT056
Survey No.:	91
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	K. Beaton
Survey Date:	06/19/98
Smears Counted By:	K. Beaton
Smear Count Date:	06/19/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:				
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	685	685		1175
Detector:	SHP-380	SHP-380	Ludlum 43-10	SHP-380
Serial No.:	146	146	68225	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Bkgd CPM:	2.0	198.0	0.2	173.0
Efficiency:	0.13	0.34	0.40	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	25	97	2	96

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
23	Floor Grid # N3	-2.5	13.5	1.2	200-400 cpm	1.0	<Lc -8	26	208.0	<Lc 29	116	0.0	<Lc -1	0	226.0	166	122
24	Floor Grid # N4	-3.5	13.5	1.2	200-400 cpm	4.0	<Lc 15	37	185.0	<Lc -38	113	0.0	<Lc -1	0	204.0	97	119
25	Floor Grid # N5	-4.5	13.5	1.2	200-400 cpm	4.0	<Lc 15	37	327.0	379	132	0.0	<Lc -1	0	225.0	163	122
26	Floor Grid # N6	-5.5	13.5	1.2	200-400 cpm	9.0	54	50	356.0	465	136	0.0	<Lc -1	0	201.0	<Lc 88	118
27	Floor Grid # N7	-6.5	13.5	1.2	200-400 cpm	7.0	38	45	289.0	268	127	1.0	2	5	242.0	216	125
28	Floor Grid # D18	-17.5	3.5	1.2	200-400 cpm	3.0	<Lc 8	34	268.0	206	124	1.0	2	5	204.0	97	119
29	Floor Grid # E18	-17.5	4.5	1.2	200-400 cpm	6.0	31	43	275.0	226	125	0.0	<Lc -1	0	226.0	166	122
30	Floor Grid # F18	-17.5	5.5	1.2	200-400 cpm	6.0	31	43	316.0	347	131	0.0	<Lc -1	0	183.0	<Lc 31	116
31	Floor Grid # F19	-18.5	5.5	1.2	200-400 cpm	3.0	<Lc 8	34	278.0	235	126	0.0	<Lc -1	0	220.0	147	121
32	Floor Grid # F20	-19.5	5.5	1.2	200-400 cpm	5.0	<Lc 23	40	305.0	315	129	0.0	<Lc -1	0	215.0	131	121
33	Floor Grid # F21	-20.5	5.5	1.2	200-400 cpm	4.0	<Lc 15	37	295.0	285	128	1.0	2	5	218.0	141	121
34	Floor Grid # F22	-21.5	5.5	1.2	200-400 cpm	6.0	31	43	286.0	259	127	0.0	<Lc -1	0	180.0	<Lc 22	115
35	Floor Grid # D32	-31.5	3.5	1.2	200-400 cpm	2.0	<Lc 0	30	324.0	371	132	0.0	<Lc -1	0	190.0	<Lc 53	117
36	Floor Grid # E32	-31.5	4.5	1.2	200-400 cpm	5.0	<Lc 23	40	302.0	306	129	0.0	<Lc -1	0	210.0	116	120
37	Floor Grid # F32	-31.5	5.5	1.2	200-400 cpm	3.0	<Lc 8	34	309.0	326	130	0.0	<Lc -1	0	207.0	106	119
	QC OF #37	-31.5	5.5	1.2	~~200-400 cpm~~ 8-5-98	4.0	<Lc 15	37	317.0	350	131	0.0	<Lc -1	0	199.0	<Lc 81	118
38	Floor Grid # F33	-32.5	5.5	1.2	200-400 cpm	8.0	46	48	309.0	326	130	0.0	<Lc -1	0	201.0	<Lc 88	118
39	Floor Grid # F34	-33.5	5.5	1.2	200-400 cpm	7.0	38	45	294.0	282	128	1.0	2	5	226.0	166	122
40	Floor Grid # F35	-34.5	5.5	1.2	200-400 cpm	3.0	<Lc 8	34	296.0	288	128	0.0	<Lc -1	0	219.0	144	121
41	Floor Grid # F36	-35.5	5.5	1.2	200-400 cpm	2.0	<Lc 0	30	317.0	350	131	0.0	<Lc -1	0	190.0	<Lc 53	117

Data Entered By and Date: [signature] 9 July 98

Reviewed By and Date (Site Manager) [signature] 9 July 98

CHB 7-17-98

12/11/96
*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annex Building Survey Coordinates are in Meters from the South East Corner

V 1.9

Reference No.:	LKYDT057
Survey No.:	92
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	K. Beaton
Survey Date:	06/22/98
Smears Counted By:	K. Beaton
Smear Count Date:	06/22/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	K Beaton		K Beaton	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	685	685		1175
Detector:	SHP-380	SHP-380	Ludlum 43-10	SHP-380
Serial No.:	146	146	68225	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Bkgd CPM:	2.0	191.0	0.4	189.0
Efficiency:	0.13	0.34	0.40	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	25	95	3	100

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	Floor Grid # J29	-28.5	9.5	1.2	200-400 beta scan	4.0	<Lc 15	37	317.0	371	130	0.0	<Lc -1	0	216.0	<Lc 84	123
2	Floor Grid # I 29	-28.5	8.5	1.2	200-400 "	3.0	<Lc 8	34	322.0	385	131	0.0	<Lc -1	0	208.0	<Lc 59	122
3	Floor Grid # I 30	-29.5	8.5	1.2	200-400 "	4.0	<Lc 15	37	326.0	397	131	0.0	<Lc -1	0	179.0	<Lc -31	117
4	Floor Grid # I 31	-30.5	8.5	1.2	200-400 "	5.0	<Lc 23	40	281.0	265	125	0.0	<Lc -1	0	191.0	<Lc 6	119
5	Floor Grid # H31	-30.5	7.5	1.2	200-400 "	4.0	<Lc 15	37	316.0	368	130	0.0	<Lc -1	0	219.0	<Lc 94	124
6	Floor Grid # H33	-32.5	7.5	1.2	200-400 "	4.0	<Lc 15	37	298.0	315	127	0.0	<Lc -1	0	183.0	<Lc -19	118
7	Floor Grid # H34	-33.5	7.5	1.2	200-400 "	4.0	<Lc 15	37	309.0	347	129	0.0	<Lc -1	0	256.0	209	129
	QC OF #7	-33.5	7.5	1.2	~~200-400~~ CB 7-15-98	3.0	<Lc 8	34	296.0	309	127	0.0	<Lc -1	0	231.0	131	126
8	Floor Grid # H35	-34.5	7.5	1.2	200-400 "	4.0	<Lc 15	37	308.0	344	129	0.0	<Lc -1	0	194.0	<Lc 16	120
9	Floor Grid # H32	-31.5	7.5	1.2	200-400 "	4.0	<Lc 15	37	302.0	326	128	0.0	<Lc -1	0	215.0	<Lc 81	123
10	Floor Grid # H36	-35.5	7.5	1.2	200-400 "	4.0	<Lc 15	37	335.0	424	132	0.0	<Lc -1	0	208.0	<Lc 59	122

CB 7-15-98

Data Entered By and Date: [signature] 7 July 98

Review and Date (Site Manager) [signature] 7 July 98

12/11/96

*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annex Building Survey Coordinates in Meters from S. E. Corner, Alpha scans range betwn 1-30cpm; See field notes for Beta scans

V 1.9

Reference No.:	LKYDT060
Survey No.:	96
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	Jim Kinstle
Survey Date:	06/29/98
Smears Counted By:	Jim Kinstle
Smear Count Date:	06/29/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:		E-600		E-600
Serial No.:	685	685		1175
Detector:	SHP-380	SHP-380	Ludlum 43-10	SHP-380
Serial No.:	146	146	68225	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Bkgd CPM:	1.0	134.0	0.3	223.0
Efficiency:	0.13	0.34	0.40	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	18	79	2	109

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	Overhead Beams Grid I 36 Top	-35.7	8.5	10	150-350 cpm	13.0	92	56	305.0	503	121	0.0	<Lc -1	0	202.0	<Lc -66	126
2	QC of #1	-35.7	8.5	10	CJB 8-5-98 ~~150-350 cpm~~	10.0	69	50	283.0	438	118	1.0	<Lc 2	5	213.0	<Lc -31	128
3	Grid J36 E. Shoulder	-35.7	9.5	9.3	150-300 cpm	3.0	<Lc 15	30	326.0	565	124	0.0	<Lc -1	0	189.0	<Lc -106	124
4	H36 Top	-35.7	7.5	10	150-300 cpm	6.0	38	40	274.0	412	116	0.0	<Lc -1	0	213.0	<Lc -31	128
5	K36 W. Shoulder	-35.7	10.5	9.3	150-300 cpm	2.0	<Lc 8	26	267.0	391	115	1.0	<Lc 2	5	183.0	<Lc -125	123
6	L36 Top	-35.7	11.5	10	150-450 cpm	12.0	85	54	416.0	829	135	4.0	9	10	196.0	<Lc -84	125
7	M36 Top	-35.7	12.5	10	200-350 cpm	4.0	23	34	354.0	647	127	0.0	<Lc -1	0	207.0	<Lc -50	127
8	N36 Top	-35.7	13.2	10	200-400 cpm	6.0	38	40	395.0	768	133	0.0	<Lc -1	0	193.0	<Lc -94	125
9	B41 E. Shoulder	-40.8	1.5	9.3	150-300 cpm	3.0	<Lc 15	30	198.0	188	105	0.0	<Lc -1	0	216.0	<Lc -22	128
10	C41 Top	-40.8	2.5	10	150-300 cpm	2.0	<Lc 8	26	262.0	376	115	0.0	<Lc -1	0	224.0	<Lc 3	129
11	D41 Top	-40.8	3.5	10	150-300 cpm	3.0	<Lc 15	30	203.0	203	106	0.0	<Lc -1	0	214.0	<Lc -28	128
12	E41 W. Shoulder	-40.8	4.5	9.3	150-300 cpm	5.0	31	37	208.0	218	107	0.0	<Lc -1	0	206.0	<Lc -53	127
13	G41 E. Shoulder	-40.8	6.5	9.3	150-300 cpm	3.0	<Lc 15	30	208.0	218	107	0.0	<Lc -1	0	204.0	<Lc -59	127
14	H41 Part E Shoulder	-40.8	7.5	9.3	150-300 cpm	5.0	31	37	232.0	288	110	1.0	<Lc 2	5	206.0	<Lc -53	127
15	I 41 Top	-40.8	8.5	10	150-300 cpm	8.0	54	45	302.0	494	120	0.0	<Lc -1	0	205.0	<Lc -56	127
16	J41 Top	-40.8	9.5	10	150-400 cpm	10.0	69	50	288.0	453	118	0.0	<Lc -1	0	244.0	<Lc 66	132
17	K41 E. Shoulder	-40.8	10.5	9.3	200-400 cpm	6.0	38	40	245.0	326	112	1.0	<Lc 2	5	216.0	<Lc -22	128
18	L41 Top	-40.8	11.5	10	200-400 cpm	15.0	108	60	256.0	359	114	0.0	<Lc -1	0	213.0	<Lc -31	128
19	M41 Top	-40.8	12.5	10	150-300 cpm	7.0	46	43	212.0	229	107	2.0	4	7	227.0	<Lc 13	130
20	N41 W. Shoulder	-40.8	13.5	9.3	150-300 cpm	3.0	<Lc 15	30	212.0	229	107	0.0	<Lc -1	0	217.0	<Lc -19	128

CJB 7-15-98

Data Entered By and Date: 7 July 98

Reviewed By and Date (Site Manager) 7 July 98

12/11/96
*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

V 1.9

Comments: Annex Building Survey Coordinates in Meters from S. E. Corner, See field notes for Beta scans

Reference No.:	LKYDT061
Survey No.:	97
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	J. Kinstle
Survey Date:	06/23/98
Smears Counted By:	K. Beaton
Smear Count Date:	06/23/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:				
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	672	672		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	143	143	68225	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Bkgd CPM:	5.0	279.0	0.2	208.0
Efficiency:	0.13	0.34	0.40	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	40	115	2	105

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	Floor Grid #N34	-33.5	13.5	1.2	300-400 cpm	4.0	<Lc -8	45	401.0	359	150	0.0	<Lc -1	0	207.0	<Lc -3	125
2	Floor Grid #N35	-34.5	13.5	1.2	300-400 cpm	8.0	<Lc 23	54	384.0	309	148	0.0	<Lc -1	0	221.0	<Lc 41	127
3	Floor Grid #N36	-35.5	13.5	1.2	300-450 cpm	6.0	<Lc 23	54	397.0	347	150	0.0	<Lc -1	0	195.0	<Lc -41	123
4	QC of #3	-35.5	13.5	1.2	~~300-450 cpm~~ 8-8-98	10.0	<Lc 38	58	389.0	324	149	0.0	<Lc -1	0	211.0	<Lc 9	125
5	Floor Grid #A2	-1.5	0.5	1.2	250-350 cpm	5.0	<Lc 0	48	353.0	218	145	0.0	<Lc -1	0	219.0	<Lc 34	127
6	Floor Grid #B2	-1.5	1.5	1.2	250-400 cpm	7.0	<Lc 15	52	293.0	<Lc 41	138	0.0	<Lc -1	0	223.0	<Lc 47	127
7	Floor Grid #C2	-1.5	2.5	1.2	300-450 cpm	6.0	<Lc 8	50	345.0	194	144	0.0	<Lc -1	0	218.0	<Lc 31	126
8	Floor Grid #D2	-1.5	3.5	1.2	250-350 cpm	2.0	<Lc -23	40	343.0	188	144	0.0	<Lc -1	0	222.0	<Lc 44	127
9	Floor Grid #E2	-1.5	4.5	1.2	250-400 cpm	7.0	<Lc 15	52	371.0	271	147	0.0	<Lc -1	0	229.0	<Lc 66	128
10	Floor Grid #F2	-1.5	5.5	1.2	300-400 cpm	5.0	<Lc 0	48	377.0	288	148	0.0	<Lc -1	0	190.0	<Lc -56	122
11	Floor Grid #G2	-1.5	6.5	1.2	300-400 cpm	5.0	<Lc 0	48	369.0	265	147	0.0	<Lc -1	0	218.0	<Lc 31	126
12	Floor Grid #H2	-1.5	7.5	1.2	300-400 cpm	6.0	<Lc 8	50	387.0	318	149	0.0	<Lc -1	0	228.0	<Lc 63	128
13	Floor Grid #I 2	-1.5	8.5	1.2	350-450 cpm	5.0	<Lc 0	48	351.0	212	145	0.0	<Lc -1	0	205.0	<Lc -9	124
14	Floor Grid #J2	-1.5	9.5	1.2	350-450 cpm	9.0	<Lc 31	56	375.0	282	147	0.0	<Lc -1	0	184.0	<Lc -75	121
15	Floor Grid #K2	-1.5	10.5	1.2	300-400 cpm	7.0	<Lc 15	52	412.0	391	152	0.0	<Lc -1	0	217.0	<Lc 28	126
16	Floor Grid #L2	-1.5	11.5	1.2	350-450 cpm	4.0	<Lc -8	45	360.0	238	146	0.0	<Lc -1	0	204.0	<Lc -13	124
17	Floor Grid #M2	-1.5	12.5	1.2	300-400 cpm	3.0	<Lc -15	43	371.0	271	147	1.0	2	5	207.0	<Lc -3	125
18	Floor Grid #A3	-2.5	0.5	1.2	300-400 cpm	9.0	<Lc 31	56	288.0	<Lc 26	137	0.0	<Lc -1	0	202.0	<Lc -19	124
19	Floor Grid #B3	-2.5	1.5	1.2	300-400 cpm	8.0	<Lc 23	54	313.0	<Lc 100	140	0.0	<Lc -1	0	213.0	<Lc 16	126
20	Floor Grid #C3	-2.5	2.5	1.2	300-400 cpm	7.0	<Lc 15	52	327.0	141	142	1.0	2	5	199.0	<Lc -28	124
21	Floor Grid #D3	-2.5	3.5	1.2	300-400 cpm	5.0	<Lc 0	48	363.0	247	146	0.0	<Lc -1	0	213.0	<Lc 16	126
22	Floor Grid #L24	-23.5	11.5	1.2	250-400 cpm	5.0	<Lc 0	48	361.0	241	146	0.0	<Lc -1	0	209.0	<Lc 3	125
23	Floor Grid #K24	-23.5	10.5	1.2	300-400 cpm	7.0	<Lc 15	52	353.0	218	145	1.0	2	5	217.0	<Lc 28	126

Data Entered By and Date: R. L. Simmons 8 July 98

Review and Date (Site Manager) [illegible] 8 July 98

CJB 7-17-98

12/11/96

*DPM units per 100 cm2

P 2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annex Building Survey Coordinates in Meters from S. E. Corner, See field notes for Beta scans

V 1.9

Reference No.:	LKYDT061
Survey No.:	97
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	J. Kinstle
Survey Date:	06/23/98
Smears Counted By:	K. Beaton
Smear Count Date:	06/23/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:				
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	672	672		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	143	143	68225	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Bkgd CPM:	5.0	279.0	0.2	208.0
Efficiency:	0.13	0.34	0.40	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	40	115	2	105

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
24	Floor Grid #J24	-23.5	9.5	1.2	300-400 cpm	10.0	<Lc 38	58	386.0	315	149	0.0	<Lc -1	0	200.0	<Lc -25	124
25	QC of #24	-23.5	9.5	1.2	~~300-400 cpm~~ 8-5-98	7.0	<Lc 15	52	395.0	341	150	0.0	<Lc -1	0	193.0	<Lc -47	123
26	Floor Grid #I 24	-23.5	8.5	1.2	250-450 cpm	9.0	<Lc 31	56	344.0	191	144	0.0	<Lc -1	0	218.0	<Lc 31	126
27	Floor Grid #I 23	-22.5	8.5	1.2	300-400 cpm	7.0	<Lc 15	52	345.0	194	144	0.0	<Lc -1	0	208.0	<Lc 0	125
28	Floor Grid #J23	-22.5	9.5	1.2	300-400 cpm	8.0	<Lc 23	54	351.0	212	145	0.0	<Lc -1	0	206.0	<Lc -6	125
29	Floor Grid #K23	-22.5	10.5	1.2	300-400 cpm	5.0	<Lc 0	48	400.0	356	150	0.0	<Lc -1	0	212.0	<Lc 13	126
30	Floor Grid #L23	-22.5	11.5	1.2	300-400 cpm	7.0	<Lc 15	52	274.0	<Lc -15	136	0.0	<Lc -1	0	181.0	<Lc -84	121
31	Floor Grid #M23	-22.5	12.5	1.2	200-400 cpm	6.0	<Lc 8	50	238.0	<Lc -121	131	0.0	<Lc -1	0	236.0	<Lc 88	129
32	Floor Grid #N23	-22.5	13.5	1.2	200-400 cpm	5.0	<Lc 0	48	292.0	<Lc 38	138	0.0	<Lc -1	0	187.0	<Lc -66	122
33	Floor Grid #N24	-23.5	13.5	1.2	200-300 cpm	1.0	<Lc -31	37	252.0	<Lc -79	133	0.0	<Lc -1	0	189.0	<Lc -59	122
34	Floor Grid #N25	-24.5	13.5	1.2	200-300 cpm	9.0	<Lc 31	56	251.0	<Lc -82	133	0.0	<Lc -1	0	216.0	<Lc 25	126
35	Floor Grid #N26	-25.5	13.5	1.2	300-400 cpm	9.0	<Lc 31	56	348.0	203	144	0.0	<Lc -1	0	206.0	<Lc -6	125
36	Floor Grid #N27	-26.5	13.5	1.2	300-450 cpm	4.0	<Lc -8	45	338.0	174	143	0.0	<Lc -1	0	195.0	<Lc -41	123
37	Floor Grid #M27	-26.5	12.5	1.2	300-400 cpm	14.0	69	66	344.0	191	144	0.0	<Lc -1	0	218.0	<Lc 31	126
38	Floor Grid #M26	-25.5	12.5	1.2	300-400 cpm	7.0	<Lc 15	52	364.0	250	146	0.0	<Lc -1	0	209.0	<Lc 3	125
39	Floor Grid #M28	-27.5	12.5	1.2	300-400 cpm	13.0	62	64	327.0	141	142	0.0	<Lc -1	0	207.0	<Lc -3	125
40	Floor Grid #N28	-27.5	13.5	1.2	300-400 cpm	8.0	<Lc 23	54	351.0	212	145	0.0	<Lc -1	0	172.0	<Lc -113	119
41	Floor Grid #N29	-28.5	13.5	1.2	300-400 cpm	7.0	<Lc 15	52	377.0	288	148	0.0	<Lc -1	0	187.0	<Lc -66	122

Data Entered By and Date: R. L. Sinclair 8 July 98

Reviewed By and Date (Site Manager) [signature] 8 July 98

CB 7-17-98

12/11/96
*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annx BldSrvy Coord.in Meters from SE Corner, Alpha scans <31cpm;See field notes for Beta scans, Beam20, Band 100,

V 1.9

Reference No.:	LKYDT150
Survey No.:	203
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	R. Pennock
Survey Date:	07/10/98
Smears Counted By:	J. Kinstle
Smear Count Date:	07/11/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:				
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	672	672		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	143	143	68222	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Bkgd CPM:	3.0	257.0	0.1	196.0
Efficiency:	0.13	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	31	110	1	102

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	100A Pipe E-W	-99.5	0.5	9.2	150-400 cpm	4.0	<Lc 8	40	254.0	<Lc -9	130	1.0	2	5	197.0	<Lc 3	121
2	100A Top of door	-99.5	0.1	4.2	250-450 cpm	3.0	<Lc 0	37	286.0	<Lc 85	134	1.0	2	5	202.0	<Lc 19	122
3	100A Conduit E-W	-99.5	0.1	7.3	250-450 cpm	2.0	<Lc -8	34	293.0	<Lc 106	135	0.0	<Lc 0	0	213.0	<Lc 53	124
4	100B Pipe E-W	-99.5	1.5	9.2	200-300 cpm	5.0	<Lc 15	43	229.0	<Lc -82	127	0.0	<Lc 0	0	205.0	<Lc 28	123
5	100A Board on Wall	-99.5	0.1	9.8	200-350 cpm	2.0	<Lc -8	34	259.0	<Lc 6	131	2.0	5	7	192.0	<Lc -13	121
6	100C Roof Beam	-99.5	2.5	10	200-350 cpm	5.0	<Lc 15	43	244.0	<Lc -38	129	2.0	5	7	195.0	<Lc -3	121
7	100F Heater Top	-99.5	5.5	6.1	150-450 cpm	6.0	<Lc 23	45	273.0	<Lc 47	133	0.0	<Lc 0	0	227.0	<Lc 97	126
8	103A Beam E. Shoulder	-102.1	0.5	9.3	150-400 cpm	8.0	38	50	286.0	<Lc 85	134	0.0	<Lc 0	0	208.0	<Lc 38	123
9	103B Beam W. Shoulder	-102.1	1.5	9.3	200-350 cpm	9.0	46	52	231.0	<Lc -76	127	0.0	<Lc 0	0	212.0	<Lc 50	124
10	103C Beam W. Shoulder	-102.1	2.5	9.3	150-350 cpm	8.0	38	50	250.0	<Lc -21	130	0.0	<Lc 0	0	170.0	<Lc -81	117
11	103D Beam W. Shoulder	-102.1	3.5	9.3	200-350 cpm	7.0	<Lc 31	48	234.0	<Lc -68	128	0.0	<Lc 0	0	227.0	<Lc 97	126
12	QC of # 11					5.0	<Lc 15	43	213.0	<Lc -129	125	0.0	<Lc 0	0	232.0	113	127
13	103E Beam W. Shoulder	-102.1	4.5	9.3	200-350 cpm	2.0	<Lc -8	34	230.0	<Lc -79	127	0.0	<Lc 0	0	179.0	<Lc -53	119
14	103F Beam E. Shoulder	-102.1	5.5	9.3	150-300 cpm	5.0	<Lc 15	43	234.0	<Lc -68	128	1.0	2	5	203.0	<Lc 22	122
15	103G Beam W. Shoulder	-102.1	6.5	9.3	200-450 cpm	8.0	38	50	234.0	<Lc -68	128	0.0	<Lc 0	0	191.0	<Lc -16	120
16	103H Beam W. Shoulder	-102.1	7.5	9.3	200-350 cpm	7.0	<Lc 31	48	230.0	<Lc -79	127	0.0	<Lc 0	0	219.0	<Lc 72	125
17	103 I Beam E. Shoulder	-102.1	8.5	9.3	150-350 cpm	4.0	<Lc 8	40	248.0	<Lc -26	130	0.0	<Lc 0	0	217.0	<Lc 66	124
18	103J Beam W. Shoulder	-102.1	9.5	9.3	150-350 cpm	12.0	69	58	259.0	<Lc 6	131	0.0	<Lc 0	0	211.0	<Lc 47	124
19	103K Beam E. Shoulder	-102.1	10.5	9.3	200-350 cpm	11.0	62	56	220.0	<Lc -109	126	0.0	<Lc 0	0	211.0	<Lc 47	124
20	103L Beam E. Shoulder	-102.1	11.5	9.3	150-350 cpm	8.0	38	50	231.0	<Lc -76	127	0.0	<Lc 0	0	195.0	<Lc -3	121
21	103M Beam W. Shoulder	-102.1	12.5	9.3	150-400 cpm	6.0	<Lc 23	45	256.0	<Lc -3	131	0.0	<Lc 0	0	211.0	<Lc 47	124
22	120A Pipe	-119.5	0.5	9.2	200-350 cpm	11.0	62	56	271.0	<Lc 41	132	0.0	<Lc 0	0	208.0	<Lc 38	123
23	120A Wall Beam	-119.5	0.1	4.4	200-350 cpm	10.0	54	54	287.0	<Lc 88	134	0.0	<Lc 0	0	209.0	<Lc 41	123

Data Entr[illegible] By and Date: [illegible] 24 July 98

[illegible] 24 Jul 98

9-1-98

12/11/96

*DPM units p[illegible] m2

[illegible]2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annx BldSrvy Coord.in Meters from SE Corner, Alpha scans <31cpm;See field notes for Beta scans, Beam20, Band 100,

V 1.9

Reference No.:	LKYDT150
Survey No.:	203
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	R. Pennock
Survey Date:	07/10/98
Smears Counted By:	J. Kinstle
Smear Count Date:	07/11/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:				
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	672	672		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	143	143	68222	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Bkgd CPM:	3.0	257.0	0.1	196.0
Efficiency:	0.13	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	31	110	1	102

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
24	120A Gas Line	-119.5	0.5	8.4	200-350 cpm	7.0	<Lc 31	48	259.0	<Lc 6	131	0.0	<Lc 0	0	202.0	<Lc 19	122
25	120A Beam on Wall Top	-119.5	0.1	2.9	200-350 cpm	6.0	<Lc 23	45	272.0	<Lc 44	133	0.0	<Lc 0	0	206.0	<Lc 31	123
26	120B Water Pipe	-119.5	1.5	9.2	150-300 cpm	8.0	38	50	245.0	<Lc -35	129	0.0	<Lc 0	0	233.0	116	127
27	120B Gas Line	-119.5	1.5	8.4	150-300 cpm	4.0	<Lc 8	40	277.0	<Lc 59	133	0.0	<Lc 0	0	200.0	<Lc 13	122
28	120C Gas Line	-119.5	2.5	8.4	200-400 cpm	9.0	46	52	291.0	<Lc 100	135	0.0	<Lc 0	0	204.0	<Lc 25	123
29	120D Gas Line	-119.5	3.5	8.4	250-400 cpm	10.0	54	54	306.0	144	137	0.0	<Lc 0	0	222.0	<Lc 81	125
30	120E Gas Line	-119.5	4.5	8.4	250-400 cpm	6.0	<Lc 23	45	284.0	<Lc 79	134	0.0	<Lc 0	0	199.0	<Lc 9	122
31	120E Light	-119.8	4.5	7.1	150-400 cpm	9.0	46	52	233.0	<Lc -71	128	1.0	2	5	195.0	<Lc -3	121
32	120F Gas Line	-119.5	5.5	8.4	200-300 cpm	6.0	<Lc 23	45	270.0	<Lc 38	132	0.0	<Lc 0	0	183.0	<Lc -41	119
33	120F Gas Line E-W	-119.5	5.9	8.4	200-350 cpm	10.0	54	54	260.0	<Lc 9	131	1.0	2	5	202.0	<Lc 19	122
34	120H Gas Line	-119.5	7.1	8.6	200-350 cpm	8.0	38	50	234.0	<Lc -68	128	0.0	<Lc 0	0	203.0	<Lc 22	122
35	120H Pipe	-119.5	7.7	8.9	250-400 cpm	6.0	<Lc 23	45	242.0	<Lc -44	129	0.0	<Lc 0	0	214.0	<Lc 56	124
36	QC of #35					8.0	38	50	257.0	<Lc 0	131	0.0	<Lc 0	0	201.0	<Lc 16	122
37	120H Gas Line	-119.5	7.5	5.7	150-300 cpm	7.0	<Lc 31	48	302.0	132	136	1.0	2	5	214.0	<Lc 56	124
38	120 I Heater Top	-119.5	8.1	6.1	200-450 cpm	9.0	46	52	296.0	115	136	1.0	2	5	206.0	<Lc 31	123
39	120K Light	-119.8	10.8	7.1	200-350 cpm	8.0	38	50	250.0	<Lc -21	130	0.0	<Lc 0	0	198.0	<Lc 6	122
40	120N Beam on Wall	-119.5	13.9	4.6	150-400 cpm	6.0	<Lc 23	45	319.0	182	138	1.0	2	5	216.0	<Lc 63	124

CJS
9-1-98

Data Entered By and Date: R. Sunberg 24 July 98

12/11/96
*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annex Building Survey Coordi...s In Meters from S. E. Corner, Alpha scans range from 1-20cpm;See field notes for Beta scans

V 1.9

Reference No.:	LKYDT151				DIRECT SURFACE						TRANSFERABLE CONTAMINATION					
Survey No.:	204				Surveyor Sign:						Surveyor Sign:					
Data Code:	CH-SURV				Alpha			Beta-Gamma			Alpha			Beta-Gamma		
Grid ID:	See Below				Scaler Model:	E-600			E-600					E-600		
Area:	Annex Building				Serial No.:	685			685					1175		
Survey By:	J. Kinstle				Detector:	SHP-380			SHP-380			43-10			SHP-380	
Survey Date:	07/12/98				Serial No.:	146			146			68225			532	
Smears Counted By:	R. Pennock				Cal Due Date:	09/03/98			09/03/98			11/06/98			09/11/98	
Smear Count Date:	07/12/98				Bkgd CPM:	4.0			284.0			0.2			211.0	
					Efficiency:	0.13			0.34			0.40			0.32	
					Area Cor Fact:	1.000			1.000			N/A			N/A	
					Bkgd CT Time:	1			1			50			1	
					Smpl CT Time:	1			1			1			1	
					Lc (DPM):	36			116			2			106	
No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	South Wall Grid #113	-112.5	0	0.5	200-400 cpm	6.0	<Lc 15	48	295.0	<Lc 32	139	0.0	<Lc -1	0	200.0	<Lc -34	124
2	South Wall Grid #114	-113.5	0	0.5	200-350 cpm	8.0	<Lc 31	52	253.0	<Lc -91	134	0.0	<Lc -1	0	212.0	<Lc 3	126
3	QC of #2	-113.5	0	0.5	200-350 cpm	10.0	46	56	254.0	<Lc -88	134	0.0	<Lc -1	0	212.0	<Lc 3	126
4	South Wall Grid #115	-114.5	0	0.5	200-350 cpm	6.0	<Lc 15	48	285.0	<Lc 3	138	3.0	7	8	241.0	<Lc 94	130
5	South Wall Grid #116	-115.5	0	0.5	200-350 cpm	1.0	<Lc -23	34	246.0	<Lc -112	133	1.0	2	5	214.0	<Lc 9	126
6	South Wall Grid #117	-116.5	0	0.5	200-350 cpm	12.0	62	60	270.0	<Lc -41	136	0.0	<Lc -1	0	243.0	<Lc 100	131
7	South Wall Grid #118	-117.5	0	0.5	200-350 cpm	11.0	54	58	288.0	<Lc 12	138	4.0	10	10	219.0	<Lc 25	127
8	South Wall Grid #119	-118.5	0	0.5	200-350 cpm	6.0	<Lc 15	48	310.0	<Lc 76	140	0.0	<Lc -1	0	218.0	<Lc 22	127
9	South Wall Grid #120	-119.5	0	0.5	200-350 cpm	10.0	46	56	315.0	<Lc 91	141	1.0	2	5	203.0	<Lc -25	125

Data Entered By and Date: 20 July 98

7-23-98

Review ... and Date (Site Manager)

12/11/96

*DPM units per ... 2

P. ... 1

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annex Building Survey Coordinates in Meters from S. E. Corner, Alpha scans < 36cpm;See field notes for Beta scans West wall & Ramp

V 1.9

Reference No.:	LKYDT152
Survey No.:	205
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	R. Pennock
Survey Date:	07/12/98
Smears Counted By:	R. Pennock
Smear Count Date:	07/12/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	Robert Pennock		Robert Pennock	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	672	672		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	143	143	68222	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Bkgd CPM:	3.0	254.0	0.2	211.0
Efficiency:	0.13	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	31	109	2	106

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	N West Wall	-122	11.5	0.5	150-300 cpm	6.0	<Lc 23	45	207.0	<Lc -138	124	0.0	<Lc 0	0	236.0	<Lc 78	129
2	M West Wall	-122	12.5	0.5	150-300 cpm	6.0	<Lc 23	45	210.0	<Lc -129	124	0.0	<Lc 0	0	220.0	<Lc 28	127
3	L West Wall	-122	13.5	0.5	150-300 cpm	5.0	<Lc 15	43	229.0	<Lc -74	127	1.0	2	5	213.0	<Lc 6	126
4	46D Ramp	-45.5	3.5	0.9	250-500 cpm	12.0	69	58	336.0	241	140	0.0	<Lc 0	0	216.0	<Lc 16	127
5	47D Ramp	-46.5	3.5	0.8	250-500 cpm	5.0	<Lc 15	43	399.0	426	147	1.0	2	5	186.0	<Lc -78	122
6	48D Ramp	-47.5	3.5	0.7	250-500 cpm	11.0	62	56	361.0	315	143	0.0	<Lc 0	0	229.0	<Lc 56	128
7	49D Ramp	-48.5	3.5	0.6	300-450 cpm	10.0	54	54	350.0	282	142	0.0	<Lc 0	0	234.0	<Lc 72	129
8	50D Ramp	-49.5	3.5	0.5	300-450 cpm	8.0	38	50	376.0	359	145	1.0	2	5	234.0	<Lc 72	129
9	51D Ramp	-50.5	3.5	0.4	250-450 cpm	13.0	77	60	390.0	400	146	0.0	<Lc 0	0	194.0	<Lc -53	123
10	52D Ramp	-51.5	3.5	0.3	250-450 cpm	11.0	62	56	369.0	338	144	0.0	<Lc 0	0	202.0	<Lc -28	124
11	QC of #10					13.0	77	60	345.0	268	141	0.0	<Lc 0	0	211.0	<Lc 0	126
12	53D Ramp	-52.5	3.5	0.2	300-550 cpm	9.0	46	52	364.0	324	143	2.0	4	7	211.0	<Lc 0	126
13	54D Ramp	-53.5	3.5	0.1	300-550 cpm	10.0	54	54	411.0	462	149	0.0	<Lc 0	0	194.0	<Lc -53	123

Data Entered By and Date: [signature] 20 July 98

[signature] 7-23-98

Reviewed By and Date (Site Manager) [signature] 20 July 98

12/11/96
*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annx BldSrvy Coord.In Meters . SE Corner,Alpha scans<21cpm;See field notes 4 Beta scans,Top of beams inaccessible due 2 . ..mit ! V 1.9

Reference No.:	LKYDT153
Survey No.:	206
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	J. Kinstle
Survey Date:	07/13/98
Smears Counted By:	J. Kinstle
Smear Count Date:	07/13/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:				
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	685	685		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	146	146	68222	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Bkgd CPM:	3.0	244.0	0.2	217.0
Efficiency:	0.13	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	31	107	2	107

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	South Wall Grid #112	-111.5	0	0.5	200-400 cpm	5.0	<Lc 15	43	254.0	<Lc 29	129	0.0	<Lc 0	0	232.0	<Lc 47	130
2	South Wall Grid #111	-110.5	0	0.5	200-350 cpm	10.0	54	54	244.0	<Lc 0	127	0.0	<Lc 0	0	233.0	<Lc 50	130
3	South Wall Grid #110	-109.5	0	0.5	200-400 cpm	5.0	<Lc 15	43	274.0	<Lc 88	131	0.0	<Lc 0	0	207.0	<Lc -31	126
4	South Wall Grid #109	-108.5	0	0.5	200-350 cpm	2.0	<Lc -8	34	193.0	<Lc -150	121	0.0	<Lc 0	0	211.0	<Lc -19	127
5	South Wall Grid #108	-107.5	0	0.5	200-350 cpm	4.0	<Lc 8	40	220.0	<Lc -71	124	0.0	<Lc 0	0	227.0	<Lc 31	129
6	South Wall Grid #107	-106.5	0	0.5	200-350 cpm	5.0	<Lc 15	43	254.0	<Lc 29	129	0.0	<Lc 0	0	211.0	<Lc -19	127
7	South Wall Grid #106	-105.5	0	0.5	200-350 cpm	7.0	<Lc 31	48	296.0	153	134	1.0	2	5	221.0	<Lc 13	128
8	QC of #7	-105.5	0	0.5	108.5-98 ~~200-350 cpm~~	5.0	<Lc 15	43	268.0	<Lc 71	130	0.0	<Lc 0	0	229.0	<Lc 38	129
9	South Wall Grid #105	-104.5	0	0.5	200-350 cpm	4.0	<Lc 8	40	271.0	<Lc 79	131	0.0	<Lc 0	0	223.0	<Lc 19	128
10	South Wall Grid #104	-103.5	0	0.5	200-350 cpm	8.0	38	50	285.0	121	133	0.0	<Lc 0	0	214.0	<Lc -9	127
11	South Wall Grid #103	-102.5	0	0.5	200-350 cpm	11.0	62	56	250.0	<Lc 18	128	3.0	7	8	218.0	<Lc 3	128
12	Grid #102 partial Roll-up door edge	-101.5	0	0.5	200-350 cpm	4.0	<Lc 8	40	253.0	<Lc 26	129	0.0	<Lc 0	0	220.0	<Lc 9	128
13	Grid #58 Door	-57.5	0	0.5	200-300 cpm	7.0	<Lc 31	48	186.0	<Lc -171	120	0.0	<Lc 0	0	217.0	<Lc 0	128
14	Grid #59 Door	-58.5	0	0.5	200-350 cpm	5.0	<Lc 15	43	236.0	<Lc -24	126	1.0	2	5	201.0	<Lc -50	125
15	Grid #60 Door	-59.5	0	0.5	200-350 cpm	6.0	<Lc 23	45	271.0	<Lc 79	131	0.0	<Lc 0	0	190.0	<Lc -84	124
16	Grid #61 Door	-60.5	0	0.5	200-350 cpm	5.0	<Lc 15	43	255.0	<Lc 32	129	1.0	2	5	217.0	<Lc 0	128
17	Grid #62 Door	-61.5	0	0.5	200-350 cpm	3.0	<Lc 0	37	235.0	<Lc -26	126	0.0	<Lc 0	0	205.0	<Lc -38	126
18	Grid #63 Door	-62.5	0	0.5	200-350 cpm	6.0	<Lc 23	45	239.0	<Lc -15	127	0.0	<Lc 0	0	214.0	<Lc -9	127
19	Grid #64 Door	-63.5	0	0.5	200-350 cpm	5.0	<Lc 15	43	247.0	<Lc 9	128	0.0	<Lc 0	0	198.0	<Lc -59	125
20	Grid #65 Door	-64.5	0	0.5	200-350 cpm	10.0	54	54	265.0	<Lc 62	130	1.0	2	5	200.0	<Lc -53	125
21	Grid #66 Door	-65.5	0	0.5	200-350 cpm	11.0	62	56	236.0	<Lc -24	126	0.0	<Lc 0	0	209.0	<Lc -25	126

Data Entered By and Date: 22 July 98

Reviewed and Date (Site Manager): 22 July 98 8-4-98

12/11/96

*DPM units per 100 cm2

F 1

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annx BldSrvy Coord.in Meters ... SE Corner, Alpha scans <36cpm;See field notes for Beta scans, Annex Floor & Wall

V 1.9

Reference No.:	LKYDT154
Survey No.:	207
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	R. Pennock
Survey Date:	07/13/98
Smears Counted By:	R. Pennock
Smear Count Date:	07/13/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	Rob Pennock		Rob Pennock	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	672	672		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	143	143	68222	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Bkgd CPM:	6.0	291.0	0.2	217.0
Efficiency:	0.13	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	44	117	2	107

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	45D Ramp Wall N	-44.5	3.5	0.9	250-500 cpm	14.0	62	67	307.0	<Lc 47	141	0.0	<Lc 0	0	207.0	<Lc -31	126
2	44D Ramp Wall N	-43.5	3.5	1	250-500 cpm	10.0	<Lc 31	60	326.0	<Lc 103	143	0.0	<Lc 0	0	218.0	<Lc 3	128
3	43D Ramp Wall N	-42.5	3.5	1.1	250-500 cpm	8.0	<Lc 15	56	310.0	<Lc 56	141	0.0	<Lc 0	0	176.0	<Lc -128	121
4	42D Ramp Wall N	-41.5	3.5	1.2	250-500 cpm	8.0	<Lc 15	56	303.0	<Lc 35	140	0.0	<Lc 0	0	210.0	<Lc -22	127
5	42D	-41.5	3.5	1.2	350-550 cpm	7.0	<Lc 8	54	382.0	268	150	0.0	<Lc 0	0	210.0	<Lc -22	127
6	43D	-42.5	3.5	1.2	300-500 cpm	8.0	<Lc 15	56	373.0	241	149	0.0	<Lc 0	0	206.0	<Lc -34	126
7	44D	-43.5	3.5	1.2	200-450 cpm	8.0	<Lc 15	56	365.0	218	148	0.0	<Lc 0	0	212.0	<Lc -16	127
8	45D	-44.5	3.5	1.2	250-500 cpm	7.0	<Lc 8	54	374.0	244	149	0.0	<Lc 0	0	197.0	<Lc -63	125
9	QC of # 8					8.0	<Lc 15	56	337.0	135	144	0.0	<Lc 0	0	223.0	<Lc 19	128
10	45E	-44.5	4.5	1.2	300-450 cpm	5.0	<Lc -8	50	384.0	274	150	0.0	<Lc 0	0	194.0	<Lc -72	124
11	45F	-44.5	5.5	1.2	300-450 cpm	11.0	<Lc 38	62	342.0	150	145	0.0	<Lc 0	0	203.0	<Lc -44	126
12	45G	-44.5	6.5	1.2	300-450 cpm	11.0	<Lc 38	62	359.0	200	147	0.0	<Lc 0	0	200.0	<Lc -53	125
13	45H	-44.5	7.5	1.2	300-450 cpm	3.0	<Lc -23	45	388.0	285	150	0.0	<Lc 0	0	209.0	<Lc -25	126
14	45 I	-44.5	8.5	1.2	300-450 cpm	5.0	<Lc -8	50	405.0	335	152	0.0	<Lc 0	0	216.0	<Lc -3	127
15	45J	-44.5	9.5	1.2	250-550 cpm	8.0	<Lc 15	56	342.0	150	145	0.0	<Lc 0	0	192.0	<Lc -78	124
16	45K	-44.5	10.5	1.2	250-550 cpm	13.0	54	66	366.0	221	148	0.0	<Lc 0	0	191.0	<Lc -81	124
17	45L	-44.5	11.5	1.2	200-550 cpm	9.0	<Lc 23	58	349.0	171	146	0.0	<Lc 0	0	184.0	<Lc -103	123
18	45M	-44.5	12.5	1.2	250-450 cpm	7.0	<Lc 8	54	384.0	274	150	0.0	<Lc 0	0	203.0	<Lc -44	126
19	45N	-44.5	13.5	1.2	200-600 cpm	6.0	<Lc 0	52	384.0	274	150	0.0	<Lc 0	0	206.0	<Lc -34	126
20	38N	-37.5	13.5	1.2	300-550 cpm	6.0	<Lc 0	52	373.0	241	149	0.0	<Lc 0	0	220.0	<Lc 9	128
21	39N	-38.5	13.5	1.2	250-500 cpm	9.0	<Lc 23	58	405.0	335	152	0.0	<Lc 0	0	201.0	<Lc -50	125
22	40N	-39.5	13.5	1.2	250-500 cpm	10.0	<Lc 31	60	387.0	282	150	0.0	<Lc 0	0	201.0	<Lc -50	125
23	41N	-40.5	13.5	1.2	300-450 cpm	7.0	<Lc 8	54	359.0	200	147	0.0	<Lc 0	0	215.0	<Lc -6	127

Data Entered By and Date: Robin Stanberry 24 July 98

Reviewed By and Date (Site Manager) 24 July 98

12/11/96

*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annx BldSrvy Coord.In Meters ...n SE Corner, Alpha scans <36cpm;See field notes for Beta scans, Annex Floor & Wall

V 1.9

Reference No.:	LKYDT154
Survey No.:	207
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	R. Pennock
Survey Date:	07/13/98
Smears Counted By:	R. Pennock
Smear Count Date:	07/13/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	Robert Pennock		Robert Pennock	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	672	672		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	143	143	68222	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Bkgd CPM:	6.0	291.0	0.2	217.0
Efficiency:	0.13	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	44	117	2	107

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
24	42N	-41.5	13.5	1.2	300-450 cpm	9.0	<Lc 23	58	387.0	282	150	0.0	<Lc 0	0	249.0	<Lc 100	132
25	43N	-42.5	13.5	1.2	250-450 cpm	6.0	<Lc 0	52	363.0	212	147	0.0	<Lc 0	0	214.0	<Lc -9	127
26	44N	-43.5	13.5	1.2	300-450 cpm	6.0	<Lc 0	52	359.0	200	147	0.0	<Lc 0	0	216.0	<Lc -3	127
27	67 S. Wall	-66.5	0	0.5	150-500 cpm	7.0	<Lc 8	54	335.0	129	144	0.0	<Lc 0	0	215.0	<Lc -6	127
28	68 S. Wall	-67.5	0	0.5	200-450 cpm	13.0	54	66	299.0	<Lc 24	140	0.0	<Lc 0	0	215.0	<Lc -6	127
29	69 S. Wall	-68.5	0	0.5	250-450 cpm	9.0	<Lc 23	58	331.0	118	144	0.0	<Lc 0	0	216.0	<Lc -3	127
30	QC of #29					8.0	<Lc 15	56	357.0	194	147	2.0	4	7	225.0	<Lc 25	129
31	70 S. Wall	-69.5	0	0.5	200-400 cpm	6.0	<Lc 0	52	327.0	<Lc 106	143	0.0	<Lc 0	0	197.0	<Lc -63	125

Data Entered By and Date: Robin Sanborn 24 July 98

Reviewed and Date (Site Manager) [illegible] 27 July 98

[illegible] 8-4-98

12/11/96

*DPM units per 100 cm2

F 2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annex Bld Srvy Coord. In Meters from S.E.Corner, Alpha scans < 15cpm;See field notes for Beta scans, Top of Beams not accessible du

V 1.9

Reference No.:	LKYDT155
Survey No.:	208
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	J. Kinstle
Survey Date:	07/11/98
Smears Counted By:	R. Pennock
Smear Count Date:	07/11/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	J. Kinstle		Rob R Pennock	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	685	685		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	146	146	68222	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Bkgd CPM:	2.0	187.0	0.1	196.0
Efficiency:	0.13	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	25	94	1	102

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	Ovrhead Main I bms Grid A118 W.Shld	-117.4	0.5	9.3	150-300 cpm	3.0	<Lc 8	34	219.0	94	116	0.0	<Lc 0	0	208.0	<Lc 38	123
2	B118 E. Shoulder	-117.4	1.5	9.3	150-300 cpm	6.0	31	43	218.0	<Lc 91	116	0.0	<Lc 0	0	219.0	<Lc 72	125
3	C118 W. Shoulder	-117.4	2.5	9.3	150-300 cpm	1.0	<Lc -8	26	210.0	<Lc 68	115	1.0	2	5	209.0	<Lc 41	123
4	QC of #3	-117.4	2.5	9.3	~~150-300 cpm~~ CB & S-Cont	1.0	<Lc -8	26	206.0	<Lc 56	114	0.0	<Lc 0	0	205.0	<Lc 28	123
5	D118 E. Shoulder	-117.4	3.5	9.3	150-300 cpm	3.0	<Lc 8	34	208.0	<Lc 62	115	0.0	<Lc 0	0	185.0	<Lc -34	120
6	E118 W. Shoulder	-117.4	4.5	9.3	150-300 cpm	5.0	<Lc 23	40	208.0	<Lc 62	115	0.0	<Lc 0	0	216.0	<Lc 63	124
7	F118 E. Shoulder	-117.4	5.5	9.3	150-300 cpm	4.0	<Lc 15	37	198.0	<Lc 32	113	0.0	<Lc 0	0	210.0	<Lc 44	123

7-23-98

Data Entered By and Date: 20 July 98

Reviewed By and Date (Site Manager) 20 July 98

12/11/96
*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annex Bld Srvy Coord. In Meters from S.E.Corner, Alpha scans < 20cpm;See field notes for Beta scans, Top of Beams not accessible du

V 1.9

Reference No.:	LKYDT156
Survey No.:	209
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	J. Kinstle
Survey Date:	07/10/98
Smears Counted By:	R. Pennock
Smear Count Date:	07/11/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	J. Kinstle		Robert Pennock	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	685	685		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	146	146	68222	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Bkgd CPM:	1.0	252.0	0.1	196.0
Efficiency:	0.13	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	18	109	1	102

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	Ovrhead Main I bms Grid A108E.Shld	-107.2	0.5	9.3	150-250 cpm	4.0	23	34	224.0	<Lc -82	126	0.0	<Lc 0	0	204.0	<Lc 25	123
2	B108 W. Shoulder	-107.2	1.5	9.3	200-300 cpm	5.0	31	37	222.0	<Lc -88	126	0.0	<Lc 0	0	202.0	<Lc 19	122
3	C108 E. Shoulder	-107.2	2.5	9.3	200-300 cpm	6.0	38	40	203.0	<Lc -144	123	0.0	<Lc 0	0	207.0	<Lc 34	123
4	QC of #3	-107.2	2.5	9.3	QD 8-5-98 ~~200-300 cpm~~	2.0	<Lc 8	26	210.0	<Lc -124	124	0.0	<Lc 0	0	197.0	<Lc 3	121
5	D108 W. Shoulder	-107.2	3.5	9.3	150-300 cpm	1.0	<Lc 0	21	190.0	<Lc -182	121	1.0	2	5	199.0	<Lc 9	122
6	E108 E. Shoulder	-107.2	4.5	9.3	150-250 cpm	5.0	31	37	218.0	<Lc -100	125	1.0	2	5	209.0	<Lc 41	123
7	F108 W. Shoulder	-107.2	5.5	9.3	150-300 cpm	2.0	<Lc 8	26	211.0	<Lc -121	124	0.0	<Lc 0	0	207.0	<Lc 34	123
8	G108 E. Shoulder	-107.2	6.5	9.3	150-250 cpm	6.0	38	40	194.0	<Lc -171	122	0.0	<Lc 0	0	226.0	<Lc 94	126
9	H108 E. Shoulder	-107.2	7.5	9.3	150-250 cpm	2.0	<Lc 8	26	199.0	<Lc -156	122	0.0	<Lc 0	0	209.0	<Lc 41	123
10	I 108 W. Shoulder	-107.2	8.5	9.3	150-250 cpm	4.0	23	34	205.0	<Lc -138	123	0.0	<Lc 0	0	208.0	<Lc 38	123
11	J108 W. Shoulder	-107.2	9.5	9.3	150-250 cpm	5.0	31	37	205.0	<Lc -138	123	0.0	<Lc 0	0	199.0	<Lc 9	122
12	K108 E. Shoulder	-107.2	10.5	9.3	150-250 cpm	1.0	<Lc 0	21	216.0	<Lc -106	125	0.0	<Lc 0	0	203.0	<Lc 22	122
13	L108 W. Shoulder	-107.2	11.5	9.3	150-250 cpm	2.0	<Lc 8	26	179.0	<Lc -215	120	0.0	<Lc 0	0	207.0	<Lc 34	123
14	M108 E. Shoulder	-107.2	12.5	9.3	150-250 cpm	3.0	<Lc 15	30	181.0	<Lc -209	120	0.0	<Lc 0	0	178.0	<Lc -56	118
15	N108 Partial W. Shoulder	-107.2	13.4	9.3	150-250 cpm	4.0	23	34	184.0	<Lc -200	120	0.0	<Lc 0	0	187.0	<Lc -28	120
16	A113 W. Shoulder	-112.1	0.5	9.3	150-300 cpm	6.0	38	40	197.0	<Lc -162	122	0.0	<Lc 0	0	179.0	<Lc -53	119
17	B113 W. Shoulder	-112.1	1.5	9.3	150-300 cpm	11.0	77	52	245.0	<Lc -21	129	1.0	2	5	231.0	109	127
18	C113 E. Shoulder	-112.1	2.5	9.3	150-300 cpm	3.0	<Lc 15	30	203.0	<Lc -144	123	0.0	<Lc 0	0	182.0	<Lc -44	119
19	D113 E. Shoulder	-112.1	3.5	9.3	150-300 cpm	8.0	54	45	179.0	<Lc -215	120	0.0	<Lc 0	0	212.0	<Lc 50	124
20	E113 E. Shoulder	-112.1	4.5	9.3	150-300 cpm	9.0	62	48	179.0	<Lc -215	120	0.0	<Lc 0	0	214.0	<Lc 56	124
21	F113 W. Shoulder	-112.1	5.5	9.3	150-250 cpm	9.0	62	48	172.0	<Lc -235	119	0.0	<Lc 0	0	201.0	<Lc 16	122
22	H 113 E. Shoulder	-112.1	7.5	9.3	150-250 cpm	4.0	23	34	200.0	<Lc -153	123	0.0	<Lc 0	0	212.0	<Lc 50	124
23	I 113 E. Shoulder	-112.1	8.5	9.3	150-250 cpm	4.0	23	34	182.0	<Lc -206	120	0.0	<Lc 0	0	209.0	<Lc 41	123

Data Ent[illegible] By and Date: [illegible] 20 July 98

[illegible] 20 July [illegible]

12/11/96

*DPM units pe[illegible]2

P[illegible]2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annex Bld Srvy Coord. in Meters from S.E.Corner, Alpha scans < 20cpm;See field notes for Beta scans, Top of Beams not access.. Ju V 1.9

Reference No.:	LKYDT156
Survey No.:	209
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	J. Kinstle
Survey Date:	07/10/98
Smears Counted By:	R. Pennock
Smear Count Date:	07/11/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	J. Kinstle		Rob Pennock	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	685	685		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	146	146	68222	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Bkgd CPM:	1.0	252.0	0.1	196.0
Efficiency:	0.13	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	18	109	1	102

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
24	J113 W. Shoulder	-112.1	9.5	9.3	150-250 cpm	3.0	<Lc 15	30	190.0	<Lc -182	121	0.0	<Lc 0	0	199.0	<Lc 9	122
25	K113 E. Shoulder	-112.1	10.5	9.3	150-250 cpm	6.0	38	40	177.0	<Lc -221	119	0.0	<Lc 0	0	220.0	<Lc 75	125
26	L113 E. Shoulder	-112.1	11.5	9.3	150-250 cpm	7.0	46	43	179.0	<Lc -215	120	0.0	<Lc 0	0	217.0	<Lc 66	124
27	M113 W. Shoulder	-112.1	12.5	9.3	150-250 cpm	5.0	31	37	201.0	<Lc -150	123	0.0	<Lc 0	0	223.0	<Lc 84	125
28	N 113 E. Shoulder	-112.1	13.5	9.3	150-250 cpm	4.0	23	34	171.0	<Lc -238	119	0.0	<Lc 0	0	176.0	<Lc -63	118
29	QC of #28	-112.1	13.5	9.3	150-250 cpm	6.0	38	40	187.0	<Lc -191	121	1.0	2	5	221.0	<Lc 78	125

Data Entered By and Date: 20 Jul 98

Reviewed By and Date (Site Manager) 20 July 98

12/11/96
*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annx BldSrvy Coord.In Meters ..: NW Corner, Alpha scans <26cpm;See field notes for Beta scans,

V 1.9

Reference No.:	LKYDT168
Survey No.:	227
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	J. Kinstle
Survey Date:	07/14/98
Smears Counted By:	R. Pennock
Smear Count Date:	07/15/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	J. Kinstle		Robert Pennock	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	685	685		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	146	146	68222	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Bkgd CPM:	5.0	284.0	0.1	221.0
Efficiency:	0.13	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	40	116	1	108

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	Floor Grid A1	0.5	-0.5	0	300-450 cpm	4.0	<Lc -8	45	376.0	271	148	0.0	<Lc 0	0	220.0	<Lc -3	129
2	B1	0.5	-1.5	0	300-450 cpm	3.0	<Lc -15	43	335.0	150	143	0.0	<Lc 0	0	220.0	<Lc -3	129
3	C1	0.5	-2.5	0	300-450 cpm	5.0	<Lc 0	48	348.0	188	145	2.0	5	7	201.0	<Lc -63	126
4	QC of #3	0.5	-2.5	0	~~300-450 cpm~~ GP 8-5-98	6.0	<Lc 8	50	366.0	241	147	1.0	2	5	218.0	<Lc -9	128
5	E8	7.5	-4.5	0	300-450 cpm	8.0	<Lc 23	54	338.0	159	144	1.0	2	5	200.0	<Lc -66	126
6	F8	7.5	-5.5	0	300-450 cpm	5.0	<Lc 0	48	376.0	271	148	0.0	<Lc 0	0	199.0	<Lc -69	126
7	G8	7.5	-6.5	0	300-450 cpm	5.0	<Lc 0	48	341.0	168	144	0.0	<Lc 0	0	201.0	<Lc -63	126
8	L12	11.5	-11.5	0	300-450 cpm	6.0	<Lc 8	50	352.0	200	145	0.0	<Lc 0	0	213.0	<Lc -25	128
9	M12	11.5	-12.5	0	300-450 cpm	6.0	<Lc 8	50	367.0	244	147	0.0	<Lc 0	0	224.0	<Lc 9	129
10	N12	11.5	-13.5	0	300-450 cpm	6.0	<Lc 8	50	334.0	147	143	0.0	<Lc 0	0	220.0	<Lc -3	129
11	D15	14.5	-3.5	0	300-450 cpm	6.0	<Lc 8	50	334.0	147	143	0.0	<Lc 0	0	217.0	<Lc -13	128
12	D16	15.5	-3.5	0	300-450 cpm	5.0	<Lc 0	48	314.0	<Lc 88	141	0.0	<Lc 0	0	219.0	<Lc -6	128
13	D17	16.5	-3.5	0	300-450 cpm	5.0	<Lc 0	48	338.0	159	144	1.0	2	5	186.0	<Lc -109	124
14	C27 Wood Floor	26.5	-2.5	0	200-300 cpm	5.0	<Lc 0	48	214.0	<Lc -206	129	1.0	2	5	218.0	<Lc -9	128
15	D27	26.5	-3.5	0	200-300 cpm	4.0	<Lc -8	45	269.0	<Lc -44	136	0.0	<Lc 0	0	211.0	<Lc -31	127
16	E27	26.5	-4.5	0	200-300 cpm	3.0	<Lc -15	43	219.0	<Lc -191	129	0.0	<Lc 0	0	195.0	<Lc -81	125
17	F27	26.5	-5.5	0	200-300 cpm	1.0	<Lc -31	37	218.0	<Lc -194	129	0.0	<Lc 0	0	193.0	<Lc -88	125
18	N. Wall Brick Grid #8	7.5	0	0.5	400-600 cpm	10.0	<Lc 38	58	576.0	859	169	0.0	<Lc 0	0	234.0	<Lc 41	131
19	N. Wall Brick Grid #9	8.5	0	0.5	400-600 cpm	10.0	<Lc 38	58	571.0	844	169	0.0	<Lc 0	0	176.0	<Lc -141	122
20	N. Wall Brick Grid #10	9.5	0	0.5	400-600 cpm	10.0	<Lc 38	58	537.0	744	165	0.0	<Lc 0	0	201.0	<Lc -63	126
21	E. side Interior Wall G19	18.5	-6.5	0.5	400-600 cpm	9.0	<Lc 31	56	484.0	588	160	1.0	2	5	240.0	<Lc 59	132

Data Entered By and Date: [illegible] 23 July 98

[illegible] (Site Manager) [illegible] 23 July 98

GP 8-4-98

12/11/96

*DPM units per [illegible]2

Pa[illegible]

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annx BldSrvy Coord.In Meters ...n SE Corner, Alpha scans <21cpm;See field notes for Beta scans, Floor grids elevated by floor ...tor

V 1.9

Reference No.:	LKYDT169
Survey No.:	230
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	J. Kinstle
Survey Date:	07/20/98
Smears Counted By:	R. Pennock
Smear Count Date:	07/20/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	J. K. [illegible]		Surveyor Sign: Robt E Pennock	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	685	685		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	146	146	68222	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Bkgd CPM:	4.0	215.0	0.2	211.0
Efficiency:	0.13	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	36	101	2	106

No.	Description	E (x)	N (y)	Ht (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	North Wall Grid #65	-64.5	14	0.5	150-250 cpm	2.0	<Lc -15	37	203.0	<Lc -35	118	0.0	<Lc 0	0	190.0	<Lc -66	123
2	North Wall Grid #66	-65.5	14	0.5	150-250 cpm	8.0	<Lc 31	52	206.0	<Lc -26	118	0.0	<Lc 0	0	193.0	<Lc -56	123
3	North Wall Grid #67	-66.5	14	0.5	150-300 cpm	4.0	<Lc 0	43	227.0	<Lc 35	121	0.0	<Lc 0	0	198.0	<Lc -41	124
4	QC of #3	-66.5	14	0.5	08-5-98 ~~150-300 cpm~~	6.0	<Lc 15	48	228.0	<Lc 38	121	0.0	<Lc 0	0	196.0	<Lc -47	124
5	North Wall Grid #68	-67.5	14	0.5	150-250 cpm	4.0	<Lc 0	43	205.0	<Lc -29	118	0.0	<Lc 0	0	208.0	<Lc -9	125
6	North Wall Grid #69	-68.5	14	0.5	150-250 cpm	3.0	<Lc -8	40	211.0	<Lc -12	119	0.0	<Lc 0	0	194.0	<Lc -53	123
7	North Wall Grid #70	-69.5	14	0.5	150-250 cpm	5.0	<Lc 8	45	169.0	<Lc -135	113	0.0	<Lc 0	0	201.0	<Lc -31	124
8	North Wall Grid #71	-70.5	14	0.5	150-300 cpm	5.0	<Lc 8	45	211.0	<Lc -12	119	0.0	<Lc 0	0	213.0	<Lc 6	126
9	North Wall Grid #72	-71.5	14	0.5	150-300 cpm	11.0	54	58	226.0	<Lc 32	121	1.0	2	5	223.0	<Lc 38	128
10	Floor Grid #54F	-53.9	5.5	0	200-1000 cpm	25.0	162	81	950.0	2162	197	0.0	<Lc 0	0	222.0	<Lc 34	127
11	QC of #10 (Floor Grid #54F)	-53.9	5.5	0	08-5-98 ~~200-1000 cpm~~	19.0	115	72	951.0	2165	197	0.0	<Lc 0	0	209.0	<Lc -6	126
12	Floor Grid #52H	-53.9	7.5	0	200-750 cpm	6.0	<Lc 15	48	430.0	632	146	1.0	2	5	201.0	<Lc -31	124

Data Entered By and Date: [illegible] 23 July 98

[illegible] 8-4-98

[illegible] 23 July 98

12/11/96
*DPM units per 100 cm2
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THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annx BldSrvy Coord.in Meters . .n SE Corner, Alpha scans <36cpm;See field notes for Beta scans, Floor & Wall Grids

V 1.9

Reference No.:	LKYDT172
Survey No.:	235
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	R. Pennock
Survey Date:	07/21/98
Smears Counted By:	R. Pennock
Smear Count Date:	07/21/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	Rob Pennock		Rob Pennock	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	685	685		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	146	146	68222	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Bkgd CPM:	3.0	232.0	0.2	207.0
Efficiency:	0.13	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	31	105	2	105

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	North Wall Grid #57	-56.5	14	0.5	100-250 cpm	2.0	<Lc -8	34	257.0	<Lc 74	127	1.0	2	5	197.0	<Lc -31	123
2	North Wall Grid #58	-57.5	14	0.5	150-300 cpm	1.0	<Lc -15	30	184.0	<Lc -141	118	0.0	<Lc 0	0	222.0	<Lc 47	127
3	North Wall Grid #59	-58.5	14	0.5	100-350 cpm	5.0	<Lc 15	43	154.0	<Lc -229	113	1.0	2	5	215.0	<Lc 25	126
4	North Wall Grid #60	-59.5	14	0.5	150-300 cpm	7.0	<Lc 31	48	170.0	<Lc -182	116	0.0	<Lc 0	0	226.0	<Lc 59	127
5	North Wall Grid #61	-60.5	14	0.5	150-300 cpm	4.0	<Lc 8	40	152.0	<Lc -235	113	0.0	<Lc 0	0	174.0	<Lc -103	120
6	North Wall Grid #62	-61.5	14	0.5	150-300 cpm	3.0	<Lc 0	37	197.0	<Lc -103	119	0.0	<Lc 0	0	189.0	<Lc -56	122
7	North Wall Grid #63	-62.5	14	0.5	100-300 cpm	3.0	<Lc 0	37	215.0	<Lc -50	122	0.0	<Lc 0	0	230.0	<Lc 72	128
8	North Wall Grid #64	-63.5	14	0.5	100-300 cpm	6.0	<Lc 23	45	220.0	<Lc -35	123	0.0	<Lc 0	0	199.0	<Lc -25	123
9	F42 Floor	-41.5	5.8	1.2	200-400 cpm	2.0	<Lc -8	34	315.0	244	135	0.0	<Lc 0	0	235.0	<Lc 88	129
10	QC of #9					9.0	46	52	306.0	218	134	0.0	<Lc 0	0	223.0	<Lc 50	127
11	D46 Floor	-45.2	3.2	0.8	250-450 cpm	7.0	<Lc 31	48	342.0	324	138	1.0	2	5	183.0	<Lc -75	121
12	QC of #11					6.0	<Lc 23	45	282.0	147	131	0.0	<Lc 0	0	197.0	<Lc -31	123
13	J66 Floor	-65.5	9.5	0	200-500 cpm	3.0	<Lc 0	37	325.0	274	136	0.0	<Lc 0	0	219.0	<Lc 38	126
14	7B Floor	-6.5	1.5	1.2	200-400 cpm	6.0	<Lc 23	45	301.0	203	133	0.0	<Lc 0	0	213.0	<Lc 19	126
15	7C Floor	-6.5	2.5	1.2	200-400 cpm	2.0	<Lc -8	34	323.0	268	136	0.0	<Lc 0	0	201.0	<Lc -19	124
16	7D Floor	-6.5	3.5	1.2	200-400 cpm	2.0	<Lc -8	34	288.0	165	131	1.0	2	5	196.0	<Lc -34	123
17	8B Floor	-7.5	1.5	1.2	200-400 cpm	2.0	<Lc -8	34	305.0	215	134	0.0	<Lc 0	0	209.0	<Lc 6	125
18	8C Floor	-7.5	2.5	1.2	200-400 cpm	3.0	<Lc 0	37	290.0	171	132	0.0	<Lc 0	0	225.0	<Lc 56	127
19	8D Floor	-7.5	3.5	1.2	200-400 cpm	7.0	<Lc 31	48	289.0	168	132	0.0	<Lc 0	0	207.0	<Lc 0	125

Data Entered By and Date: Rob Sembroy 23 July 98

23 July 98

5-4-98

12/11/96

*DPM units per 100cm2

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THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annx BldSrvy Coord.In Meter... ...m SE Corner, Alpha scans <26cpm;See field notes for Beta scans, Floor grid

V 1.9

Reference No.:	LKYDT173
Survey No.:	236
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	J. Kinstle
Survey Date:	07/22/98
Smears Counted By:	R. Pennock
Smear Count Date:	07/22/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:				
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	685	685		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	146	146	68222	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Bkgd CPM:	5.0	250.0	0.1	213.0
Efficiency:	0.13	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	40	109	1	106

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	Floor Grid C13	-12.8	2.3	1.2	250-400 cpm	7.0	<Lc 15	52	315.0	191	137	0.0	<Lc 0	0	203.0	<Lc -31	125
2	QC of #1 (Floor Grid #C13)	-12.8	2.3	1.2	~~250-400 cpm~~ 8-5-98	5.0	<Lc 0	48	343.0	274	140	0.0	<Lc 0	0	210.0	<Lc -9	128

Data Entered By and Date: 23 July 98

23 July 98

8-4-98

12/11/96
*DPM units per 100 cm2
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THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annx BldSrvy Coord.in Meters ...n SE Corner, Alpha scans <21cpm;See field notes for Beta scans, South Wall

V 1.9

		DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
		Surveyor Sign: J. K. [illegible]		Surveyor Sign: Robert Pennock	
		Alpha	Beta-Gamma	Alpha	Beta-Gamma
	Scaler Model:	E-600	E-600		E-600
	Serial No.:	672	672		685
	Detector:	SHP-380	SHP-380	43-10	SHP-380
	Serial No.:	143	143	68222	532
	Cal Due Date:	09/03/98	09/03/98	11/06/98	09/03/98
	Bkgd CPM:	4.0	265.0	0.0	187.0
	Efficiency:	0.13	0.34	0.41	0.32
	Area Cor Fact:	1.000	1.000	N/A	N/A
	Bkgd CT Time:	1	1	50	1
	Smpl CT Time:	1	1	1	1
	Lc (DPM):	36	112	0	100

Reference No.:	LKYDT176	
Survey No.:	240	
Data Code:	CH-SURV	
Grid ID:	See Below	
Area:	Annex Building	
Survey By:	J. Kinstle	
Survey Date:	07/23/98	
Smears Counted By:	R. Pennock	
Smear Count Date:	07/23/98	

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	South Wall Grid #80	-79.5	0	0.5	200-400 cpm	8.0	<Lc 31	52	355.0	265	144	0.0	0	0	211.0	<Lc 75	122
2	South Wall Grid #81	-80.5	0	0.5	200-350 cpm	3.0	<Lc -8	40	241.0	<Lc -71	130	0.0	0	0	208.0	<Lc 66	122
3	South Wall Grid #82	-81.5	0	0.5	200-350 cpm	9.0	38	54	243.0	<Lc -65	130	0.0	0	0	199.0	<Lc 38	120
4	South Wall Grid #83	-82.5	0	0.5	200-350 cpm	9.0	38	54	244.0	<Lc -62	130	0.0	0	0	213.0	<Lc 81	123
5	QC of #4	-82.5	0	0.5	~~200-350 cpm~~ JBK 7-5-98	7.0	<Lc 23	50	249.0	<Lc -47	131	0.0	0	0	170.0	<Lc -53	116

(4)
8-4-98

Data Entered By and Date: [illegible] 25 July 98

Review and Date (Site Manager) [illegible] 25 July 98

12/11/96
*DPM units per 100 cm2
F 1

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annx BldSrvy Coord.In Meters ... ...n SE Corner, Alpha scans <31cpm;See field notes for Beta scans, South Wall

V 1.9

Reference No.:	LKYDT177
Survey No.:	241
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	R. Pennock
Survey Date:	07/23/98
Smears Counted By:	R. Pennock
Smear Count Date:	07/23/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	Rob R Pennock		Rob R Pennock	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	1162	1162		685
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	526	526	68222	532
Cal Due Date:	09/11/98	09/11/98	11/06/98	09/03/98
Bkgd CPM:	0.0	94.0	0.0	187.0
Efficiency:	0.14	0.30	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	0	75	0	100

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	South Wall Grid #79	-78.5	0	0.5	100-300 cpm	0.0	0	0	146.0	173	101	0.0	0	0	200.0	<Lc 41	120
2	South Wall Grid #78	-77.5	0	0.5	100-200 cpm	0.0	0	0	111.0	<Lc 57	94	0.0	0	0	204.0	<Lc 53	121
3	South Wall Grid #77	-76.5	0	0.5	50-200 cpm	0.0	0	0	137.0	143	99	0.0	0	0	191.0	<Lc 13	119
4	North Wall Grid #74	-73.5	14	0.5	50-200 cpm	1.0	7	14	103.0	<Lc 30	92	0.0	0	0	221.0	106	124
5	North Wall Grid #75	-74.5	14	0.5	50-250 cpm	2.0	14	20	106.0	<Lc 40	92	0.0	0	0	171.0	<Lc -50	116
6	North Wall Grid #73	-72.5	14	0.5	50-150 cpm	0.0	0	0	114.0	<Lc 67	94	1.0	2	5	214.0	<Lc 84	123
7	North Wall Grid #76	-75.5	14	0.5	50-200 cpm	2.0	14	20	98.0	<Lc 13	91	0.0	0	0	181.0	<Lc -19	117
8	North Wall Grid #77	-76.5	14	0.5	100-200 cpm	0.0	0	0	144.0	167	101	0.0	0	0	194.0	<Lc 22	120
9	QC of #8	-76.5	14	0.5		1.0	7	14	129.0	117	98	1.0	2	5	188.0	<Lc 3	119

8-4-98

Data Entered By and Date: 25 Jul 98

25 Jul 98

12/11/96
*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annx BldSrvy Coord.In Meters ...n SE Corner, Annex floor elevated readings of grid investigation of cross talk

V 1.9

Reference No.:	LKYDT178
Survey No.:	242
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	J. Kinstle
Survey Date:	07/23/98
Smears Counted By:	
Smear Count Date:	

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:			Surveyor Sign:	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		
Serial No.:	672	672		
Detector:	SHP-380	SHP-380		
Serial No.:	143	143		
Cal Due Date:	09/03/98	09/03/98		
Bkgd CPM:	4.0	265.0		
Efficiency:	0.13	0.34		
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1		
Smpl CT Time:	1	1		
Lc (DPM):	36	112		

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	Without paper F54	-53.8	5.5	0		20.0	123	74	1058.0	2332	210						
2	Without paper F54	-53.8	5.5	0		19.0	115	72	977.0	2094	203						
3	With Paper F54	-53.8	5.5	0		23.0	146	78	908.0	1891	197						
4	With Paper F54	-53.8	5.5	0		11.0	54	58	950.0	2015	201						
5	With Paper F54	-53.8	5.5	0		21.0	131	75	909.0	1894	198						
6	With Paper F54	-53.8	5.5	0		16.0	92	67	954.0	2026	201						

Data Entered By and Date: 24 July 98

8-4-98

24 July 98

12/11/96

*DPM units per ...m2

F 1

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: AnnxBldSrvy Coord.In Meters ... SE Corner, Alpha scans <36cpm;See field notes for Beta scans, Floor Grids

V 1.9

Reference No.:	LKYDT183
Survey No.:	250
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	R. Pennock
Survey Date:	07/24/98
Smears Counted By:	R. Pennock
Smear Count Date:	07/24/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	Robert Pennock		Robert Pennock	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	1162	1162		685
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	526	526	68222	532
Cal Due Date:	09/11/98	09/11/98	11/06/98	09/03/98
Bkgd CPM:	0.0	80.0	0.1	195.0
Efficiency:	0.14	0.30	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	0	70	1	102

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	80E	-79.5	4.5	0	50-250 cpm	0.0	0	0	176.0	320	105	0.0	<Lc 0	0	214.0	<Lc 59	124
2	79E	-78.5	4.5	0	100-250 cpm	0.0	0	0	163.0	277	102	0.0	<Lc 0	0	230.0	109	126
3	89K	-88.5	10.5	0	50-200 cpm	0.0	0	0	145.0	217	98	0.0	<Lc 0	0	180.0	<Lc -47	119
4	87K	-86.5	10.5	0	50-200 cpm	0.0	0	0	121.0	137	93	0.0	<Lc 0	0	211.0	<Lc 50	123
5	88K	-87.5	10.5	0	100-200 cpm	0.0	0	0	145.0	217	98	0.0	<Lc 0	0	209.0	<Lc 44	123
6	74A	-73.5	0.5	0	100-250 cpm	1.0	7	14	157.0	257	101	0.0	<Lc 0	0	222.0	<Lc 84	125
7	Qc of #6					0.0	0	0	179.0	330	105	0.0	<Lc 0	0	167.0	<Lc -88	117
8	75A	-74.5	0.5	0	100-250 cpm	1.0	7	14	166.0	287	102	0.0	<Lc 0	0	208.0	<Lc 41	123
9	75B	-74.5	1.5	0	100-250 cpm	1.0	7	14	153.0	243	100	0.0	<Lc 0	0	180.0	<Lc -47	119
10	76A	-75.5	0.5	0	100-300 cpm	0.0	0	0	169.0	297	103	0.0	<Lc 0	0	194.0	<Lc -3	121
11	76B	-75.5	1.5	0	50-200 cpm	1.0	7	14	153.0	243	100	0.0	<Lc 0	0	198.0	<Lc 9	121
12	77A	-76.5	0.5	0	100-250 cpm	0.0	0	0	135.0	183	96	2.0	5	7	218.0	<Lc 72	124
13	77B	-76.5	1.5	0	100-250 cpm	5.0	36	31	185.0	350	106	0.0	<Lc 0	0	189.0	<Lc -19	120
14	77C	-76.5	2.5	0	100-250 cpm	2.0	14	20	172.0	307	104	0.0	<Lc 0	0	163.0	<Lc -100	116
15	78A	-77.5	0.5	0	100-250 cpm	1.0	7	14	204.0	413	110	0.0	<Lc 0	0	205.0	<Lc 31	123

Data Entered By and Date: 24 July 98

Reviewed By and Date (Site Manager): 24 July 98

8-4-98

12/11/96
*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Former Shipping / Receiving Building First Level Alpha Scans <10cpm, See field notes for Beta Scans

V 1.9

Reference No.:	LKYDT187
Survey No.:	257
Data Code:	CH-SURV
Grid ID:	See Description
Area:	IA04
Survey By:	E. Champagne
Survey Date:	07/23/98
Smears Counted By:	E. Champagne
Smear Count Date:	07/23/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:				
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	1162	1162		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	526	526	68222	532
Cal Due Date:	09/11/98	09/11/98	11/06/98	09/11/98
Bkgd CPM:	1.0	155.0	0.0	187.0
Efficiency:	0.14	0.30	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	17	97	0	100

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	P50 Floor	15.5	-49.5	4.8	150-200 cpm	0.0	<Lc -7	14	150.0	<Lc -17	114	0.0	0	0	169.0	<Lc -56	116
2	Q50 Floor	16.5	-49.5	4.8	150-200 cpm	0.0	<Lc -7	14	156.0	<Lc 3	115	1.0	2	5	194.0	<Lc 22	120
3	R50 Floor	17.5	-49.5	4.8	150-200 cpm	0.0	<Lc -7	14	187.0	107	121	0.0	0	0	181.0	<Lc -19	117
4	S50 Floor	18.5	-49.5	4.8	150-200 cpm	1.0	<Lc 0	20	202.0	157	123	1.0	2	5	200.0	<Lc 41	120
5	C57 Floor	2.5	-56.5	4.8	150-200 cpm	1.0	<Lc 0	20	169.0	<Lc 47	118	0.0	0	0	182.0	<Lc -16	118
6	D57 Floor	3.5	-56.5	4.8	150-200 cpm	1.0	<Lc 0	20	163.0	<Lc 27	117	0.0	0	0	183.0	<Lc -13	118
7	E57 Floor	3.5	-56.5	4.8	150-200 cpm	0.0	<Lc -7	14	142.0	<Lc -43	113	0.0	0	0	234.0	147	126
8	F57 Floor	3.5	-56.5	4.8	150-200 cpm	0.0	<Lc -7	14	137.0	<Lc -60	112	0.0	0	0	192.0	<Lc 16	119
9	G57 Floor	3.5	-56.5	4.8	150-200 cpm	0.0	<Lc -7	14	165.0	<Lc 33	117	1.0	2	5	192.0	<Lc 16	119
10	H57 Floor	3.5	-56.5	4.8	150-200 cpm	0.0	<Lc -7	14	146.0	<Lc -30	113	0.0	0	0	196.0	<Lc 28	120
11	I57 Floor	3.5	-56.5	4.8	150-200 cpm	1.0	<Lc 0	20	164.0	<Lc 30	117	0.0	0	0	186.0	<Lc -3	118
12	J57 Floor	3.5	-56.5	4.8	150-200 cpm	0.0	<Lc -7	14	157.0	<Lc 7	115	0.0	0	0	205.0	<Lc 56	121
13	K57 Floor	3.5	-56.5	4.8	150-200 cpm	0.0	<Lc -7	14	156.0	<Lc 3	115	0.0	0	0	180.0	<Lc -22	117
14	A39 Wall	0	-38.5	5.3	220-320 cpm	0.0	<Lc -7	14	286.0	437	137	0.0	0	0	192.0	<Lc 16	119
15	A43 Wall	0	-42.5	5.3	220-320 cpm	2.0	<Lc 7	24	287.0	440	137	0.0	0	0	203.0	<Lc 50	121
16	C60 Wall	2.5	-60	5.3	220-320 cpm	1.0	<Lc 0	20	250.0	317	131	0.0	0	0	181.0	<Lc -19	117
17	P29 Wall	15.5	-29	5.3	220-320 cpm	0.0	<Lc -7	14	315.0	533	142	0.0	0	0	209.0	<Lc 69	122
18	QC of #17 (P29)	15.5	-29	5.3	220-320 cpm	0.0	<Lc -7	14	298.0	477	139	0.0	0	0	188.0	<Lc 3	119
19	S39 Wall	19	-38.5	5.3	150-200 cpm	0.0	<Lc -7	14	119.0	<Lc -120	108	0.0	0	0	195.0	<Lc 25	120
20	S50 Wall	19	-49.5	5.3	220-320 cpm	0.0	<Lc -7	14	291.0	453	138	0.0	0	0	185.0	<Lc -6	118
21	S60 Wall	19	-59.5	5.3	220-320 cpm	0.0	<Lc -7	14	306.0	503	140	0.0	0	0	194.0	<Lc 22	120

9-9-98
9-1-98

Data Entered By and Date: 29 July 98

12/11/96

*DPM units p 12

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THERMO NUtech
Direct Surface and Transferable Contamination Survey

V 1.9

Comments: Annex Building Survey Coordinates in Meters from S. E. Corner, See field notes for Beta scans

Reference No.:	LKYDT062
Survey No.:	98
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	K. Beaton
Survey Date:	06/23/98
Smears Counted By:	K. Beaton
Smear Count Date:	06/23/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:				
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	685	685		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	146	146	68225	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Bkgd CPM:	2.0	185.0	0.2	208.0
Efficiency:	0.13	0.34	0.40	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	25	93	2	105

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	Floor Grid #H23	-22.5	7.5	1.2	200-400 cpm	7.0	38	45	322.0	403	130	0.0	<Lc -1	0	191.0	<Lc -53	122
2	Floor Grid #H24	-23.5	7.5	1.2	200-400 cpm	4.0	<Lc 15	37	302.0	344	127	0.0	<Lc -1	0	222.0	<Lc 44	127
3	Floor Grid #H25	-24.5	7.5	1.2	200-400 cpm	6.0	31	43	305.0	353	128	0.0	<Lc -1	0	193.0	<Lc -47	123
4	Floor Grid #H26	-25.5	7.5	1.2	200-400 cpm	2.0	<Lc 0	30	341.0	459	132	1.0	2	5	205.0	<Lc -9	124
5	Floor Grid #H27	-26.5	7.5	1.2	200-400 cpm	4.0	<Lc 15	37	308.0	362	128	1.0	2	5	192.0	<Lc -50	123
6	Floor Grid #H28	-27.5	7.5	1.2	200-400 cpm	6.0	31	43	310.0	368	128	0.0	<Lc -1	0	211.0	<Lc 9	125
7	QC of #6	-27.5	7.5	1.2	~~200-400 cpm~~ 8-5-98	4.0	<Lc 15	37	322.0	403	130	0.0	<Lc -1	0	202.0	<Lc -19	124
8	Floor Grid #H29	-28.5	7.5	1.2	200-400 cpm	2.0	<Lc 0	30	288.0	303	125	0.0	<Lc -1	0	184.0	<Lc -75	121
9	Floor Grid #I 25	-24.5	8.5	1.2	200-400 cpm	3.0	<Lc 8	34	254.0	203	121	0.0	<Lc -1	0	214.0	<Lc 19	126
10	Floor Grid #I 26	-25.5	8.5	1.2	200-400 cpm	7.0	38	45	294.0	321	126	1.0	2	5	193.0	<Lc -47	123
11	Floor Grid #I 27	-26.5	8.5	1.2	200-400 cpm	7.0	38	45	329.0	424	131	1.0	2	5	201.0	<Lc -22	124
12	Floor Grid #I 28	-27.5	8.5	1.2	200-400 cpm	4.0	<Lc 15	37	273.0	259	123	0.0	<Lc -1	0	235.0	<Lc 84	129
13	Floor Grid #J25	-24.5	9.5	1.2	200-400 cpm	4.0	<Lc 15	37	276.0	268	124	0.0	<Lc -1	0	229.0	<Lc 66	128
14	Floor Grid #J26	-25.5	9.5	1.2	200-400 cpm	2.0	<Lc 0	30	191.0	<Lc 18	112	0.0	<Lc -1	0	190.0	<Lc -56	122
15	Floor Grid #J27	-26.5	9.5	1.2	200-400 cpm	5.0	<Lc 23	40	290.0	309	126	0.0	<Lc -1	0	212.0	<Lc 13	126
16	Floor Grid #J28	-27.5	9.5	1.2	200-400 cpm	5.0	<Lc 23	40	288.0	303	125	0.0	<Lc -1	0	197.0	<Lc -34	123
17	Floor Grid #K25	-24.5	10.5	1.2	200-400 cpm	6.0	31	43	311.0	371	128	0.0	<Lc -1	0	189.0	<Lc -59	122
18	Floor Grid #K26	-25.5	10.5	1.2	200-400 cpm	4.0	<Lc 15	37	321.0	400	130	0.0	<Lc -1	0	204.0	<Lc -13	124
19	Floor Grid #K27	-26.5	10.5	1.2	200-400 cpm	3.0	<Lc 8	34	316.0	385	129	0.0	<Lc -1	0	189.0	<Lc -59	122
20	Floor Grid #K28	-27.5	10.5	1.2	200-400 cpm	6.0	31	43	277.0	271	124	1.0	2	5	235.0	<Lc 84	129
21	Floor Grid #L25	-24.5	11.5	1.2	200-400 cpm	3.0	<Lc 8	34	300.0	338	127	0.0	<Lc -1	0	186.0	<Lc -69	122
22	Floor Grid #L26	-25.5	11.5	1.2	200-400 cpm	8.0	46	48	283.0	288	125	0.0	<Lc -1	0	210.0	<Lc 6	125
23	Floor Grid #L27	-26.5	11.5	1.2	200-400 cpm	4.0	<Lc 15	37	311.0	371	128	0.0	<Lc -1	0	219.0	<Lc 34	127

Data Entered By and Date: [signature] 9 July 98

Reviewed By and Date (Site Manager) [signature] 9 July 98

[signature] 7-17-98

12/11/96
*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

V 1.9

Comments: Annex Building Survey Coordinates in Meters from S. E. Corner, See field notes for Beta scans

Reference No.:	LKYDT062
Survey No.:	98
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	K. Beaton
Survey Date:	06/23/98
Smears Counted By:	K. Beaton
Smear Count Date:	06/23/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:				
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	685	685		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	146	146	68225	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Bkgd CPM:	2.0	185.0	0.2	208.0
Efficiency:	0.13	0.34	0.40	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	25	93	2	105

No.	Description	E (x)	N (y)	Ht (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
24	Floor Grid #L28	-27.5	11.5	1.2	200-400 cpm	4.0	<Lc 15	37	319.0	394	129	1.0	2	5	210.0	<Lc 6	125
25	Floor Grid of #E26	-25.5	4.5	1.2	200-400 cpm	4.0	<Lc 15	37	309.0	365	128	0.0	<Lc -1	0	202.0	<Lc -19	124
26	Floor Grid of #E27	-26.5	4.5	1.2	200-400 cpm	3.0	<Lc 8	34	287.0	300	125	0.0	<Lc -1	0	205.0	<Lc -9	124
27	Floor Grid of #E28	-27.5	4.5	1.2	200-400 cpm	5.0	<Lc 23	40	292.0	315	126	1.0	2	5	200.0	<Lc -25	124
28	Floor Grid of #E29	-28.5	4.5	1.2	200-400 cpm	6.0	31	43	323.0	406	130	0.0	<Lc -1	0	184.0	<Lc -75	121
29	QC of #28	-28.5	4.5	1.2	CB 7-5-98 ~~200-400 cpm~~	8.0	46	48	344.0	468	133	1.0	2	5	202.0	<Lc -19	124
30	Floor Grid #E30	-29.5	4.5	1.2	200-400 cpm	4.0	<Lc 15	37	269.0	247	123	1.0	2	5	210.0	<Lc 6	125
31	Floor Grid #E31	-30.5	4.5	1.2	200-400 cpm	6.0	31	43	272.0	256	123	0.0	<Lc -1	0	176.0	<Lc -100	120
32	Floor Grid #F23	-22.5	5.5	1.2	200-400 cpm	4.0	<Lc 15	37	275.0	265	124	1.0	2	5	206.0	<Lc -6	125
33	Floor Grid #F24	-23.5	5.5	1.2	200-400 cpm	3.0	<Lc 8	34	280.0	279	124	0.0	<Lc -1	0	195.0	<Lc -41	123
34	Floor Grid #F25	-24.5	5.5	1.2	200-400 cpm	4.0	<Lc 15	37	242.0	168	119	0.0	<Lc -1	0	212.0	<Lc 13	126
35	Floor Grid #F26	-25.5	5.5	1.2	200-400 cpm	6.0	31	43	307.0	359	128	0.0	<Lc -1	0	198.0	<Lc -31	123
36	Floor Grid #F27	-26.5	5.5	1.2	200-400 cpm	1.0	<Lc -8	26	339.0	453	132	0.0	<Lc -1	0	222.0	<Lc 44	127
37	Floor Grid #F28	-27.5	5.5	1.2	200-400 cpm	7.0	38	45	286.0	297	125	0.0	<Lc -1	0	210.0	<Lc 6	125
38	Floor Grid #F29	-28.5	5.5	1.2	200-400 cpm	6.0	31	43	304.0	350	127	0.0	<Lc -1	0	217.0	<Lc 28	126
39	Floor Grid #G26	-25.5	6.5	1.2	200-400 cpm	5.0	<Lc 23	40	309.0	365	128	0.0	<Lc -1	0	185.0	<Lc -72	121
40	Floor Grid #G27	-26.5	6.5	1.2	200-400 cpm	4.0	<Lc 15	37	326.0	415	130	0.0	<Lc -1	0	195.0	<Lc -41	123
41	Floor Grid #G23	-22.5	6.5	1.2	200-400 cpm	5.0	<Lc 23	40	285.0	294	125	0.0	<Lc -1	0	215.0	<Lc 22	126
42	Floor Grid #G24	-23.5	6.5	1.2	200-400 cpm	4.0	<Lc 15	37	296.0	326	126	0.0	<Lc -1	0	200.0	<Lc -25	124
43	Floor Grid #G25	-24.5	6.5	1.2	200-400 cpm	4.0	<Lc 15	37	238.0	156	119	0.0	<Lc -1	0	206.0	<Lc -6	125
44	Floor Grid #G29	-28.5	6.5	1.2	200-400 cpm	2.0	<Lc 0	30	278.0	274	124	0.0	<Lc -1	0	203.0	<Lc -16	124
45	Floor Grid #G28	-27.5	6.5	1.2	200-400 cpm	6.0	31	43	307.0	359	128	0.0	<Lc -1	0	186.0	<Lc -69	122
46	QC of #45	-27.5	6.5	1.2	CB 7-5-98 ~~200-400 cpm~~	4.0	<Lc 15	37	299.0	335	127	0.0	<Lc -1	0	192.0	<Lc -50	123

Data Entered By and Date: [illegible] 9 July 98

Review and Date (Site Manager) [illegible] 8 July 98

CB 7-17-98

12/11/96

*DPM units per [illegible] cm2

F [illegible] 2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

V 1.9

Comments: Annex Building Survey Coordinates in Meters from S. E. Corner, See field notes for Beta scans

Reference No.:	LKYDT063
Survey No.:	99
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	K. Beaton
Survey Date:	06/24/98
Smears Counted By:	K. Beaton
Smear Count Date:	06/24/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	Beaton		Beaton	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	685	685		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	146	146	68225	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Bkgd CPM:	1.0	255.0	0.6	183.0
Efficiency:	0.13	0.34	0.40	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	18	110	3	99

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	Floor Grid #A21	-20.5	0.5	1.2	200-400 cpm	6.0	38	40	281.0	<Lc 76	133	0.0	<Lc -2	1	211.0	<Lc 88	122
2	Floor Grid #A22	-21.5	0.5	1.2	200-400 cpm	5.0	31	37	296.0	121	135	0.0	<Lc -2	1	226.0	134	124
3	Floor Grid #A23	-22.5	0.5	1.2	200-400 cpm	5.0	31	37	338.0	244	140	0.0	<Lc -2	1	215.0	100	122
4	Floor Grid #A24	-23.5	0.5	1.2	200-400 cpm	5.0	31	37	310.0	162	137	1.0	<Lc 1	5	231.0	150	125
5	Floor Grid #A25	-24.5	0.5	1.2	200-400 cpm	5.0	31	37	295.0	118	135	0.0	<Lc -2	1	200.0	<Lc 53	120
6	Floor Grid #A26	-25.5	0.5	1.2	200-400 cpm	6.0	38	40	301.0	135	136	0.0	<Lc -2	1	242.0	184	126
7	Floor Grid #A27	-26.5	0.5	1.2	200-400 cpm	5.0	31	37	317.0	182	138	0.0	<Lc -2	1	216.0	103	122
8	Floor Grid #A28	-27.5	0.5	1.2	200-400 cpm	7.0	46	43	298.0	126	136	0.0	<Lc -2	1	203.0	<Lc 63	120
9	Floor Grid #A29	-28.5	0.5	1.2	200-400 cpm	6.0	38	40	328.0	215	139	0.0	<Lc -2	1	236.0	166	125
10	Floor Grid #A30	-29.5	0.5	1.2	200-400 cpm	5.0	31	37	276.0	<Lc 62	133	0.0	<Lc -2	1	227.0	138	124
11	Floor Grid #A31	-30.5	0.5	1.2	200-400 cpm	7.0	46	43	295.0	118	135	1.0	<Lc 1	5	212.0	<Lc 91	122
12	Floor Grid #A32	-31.5	0.5	1.2	200-400 cpm	9.0	62	48	285.0	<Lc 88	134	1.0	<Lc 1	5	221.0	119	123
13	Floor Grid #A33	-32.5	0.5	1.2	200-400 cpm	2.0	<Lc 8	26	262.0	<Lc 21	131	1.0	<Lc 1	5	212.0	<Lc 91	122
14	Floor Grid #A34	-33.5	0.5	1.2	200-400 cpm	7.0	46	43	290.0	<Lc 103	135	2.0	4	7	236.0	166	125
15	Floor Grid #A35	-34.5	0.5	1.2	200-400 cpm	5.0	31	37	301.0	135	136	0.0	<Lc -2	1	234.0	159	125
16	Floor Grid #A36	-35.5	0.5	1.2	200-400 cpm	3.0	<Lc 15	30	295.0	118	135	0.0	<Lc -2	1	221.0	119	123
17	Floor Grid #A37	-36.5	0.5	1.2	200-400 cpm	4.0	23	34	323.0	200	139	1.0	<Lc 1	5	214.0	<Lc 97	122
18	QC of #17	-36.5	0.5	1.2	200-400 cpm 7-8-98	7.0	46	43	303.0	141	136	1.0	<Lc 1	5	226.0	134	124
19	Floor Grid #A38	-37.5	0.5	1.2	200-400 cpm	7.0	46	43	306.0	150	137	0.0	<Lc -2	1	206.0	<Lc 72	121
20	Floor Grid #A39	-38.5	0.5	1.2	200-400 cpm	6.0	38	40	289.0	<Lc 100	134	0.0	<Lc -2	1	221.0	119	123
21	Floor Grid #A40	-39.5	0.5	1.2	200-400 cpm	4.0	23	34	302.0	138	136	0.0	<Lc -2	1	204.0	<Lc 66	120
22	Floor Grid #A41	-40.5	0.5	1.2	200-400 cpm	3.0	<Lc 15	30	287.0	<Lc 94	134	0.0	<Lc -2	1	210.0	<Lc 84	121
23	Floor Grid #A42	-41.5	0.5	1.2	200-400 cpm	3.0	<Lc 15	30	285.0	<Lc 88	134	1.0	<Lc 1	5	208.0	<Lc 78	121

Data Entered By and Date: 9 July 98

Reviewed By and Date (Site Manager): 9 July 98

7-15-98

12/11/96

*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annex Building Survey Coordinates in Meters from S. E. Corner, See field notes for Beta scans

V 1.9

Reference No.:	LKYDT063
Survey No.:	99
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	K. Beaton
Survey Date:	06/24/98
Smears Counted By:	K. Beaton
Smear Count Date:	06/24/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	KBeaton		KBeaton	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	685	685		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	146	146	68225	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Bkgd CPM:	1.0	255.0	0.6	183.0
Efficiency:	0.13	0.34	0.40	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	18	110	3	99

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
24	Floor Grid #A43	-42.5	0.5	1.2	200-400 cpm	7.0	46	43	277.0	<Lc 65	133	0.0	<Lc -2	1	201.0	<Lc 56	120
25	Floor Grid #A44	-43.5	0.5	1.2	200-400 cpm	4.0	23	34	321.0	194	138	0.0	<Lc -2	1	228.0	141	124
26	Floor Grid #A45	-44.5	0.5	1.2	200-400 cpm	5.0	31	37	318.0	185	138	2.0	4	7	205.0	<Lc 69	121
27	Floor Grid #A46	-45.5	0.5	1.2	200-400 cpm	6.0	38	40	285.0	<Lc 88	134	0.0	<Lc -2	1	220.0	116	123
28	Floor Grid #A47	-46.5	0.5	1.2	200-400 cpm	7.0	46	43	326.0	209	139	0.0	<Lc -2	1	235.0	163	125
29	Floor Grid #A48	-47.5	0.5	1.2	200-400 cpm	3.0	<Lc 15	30	273.0	<Lc 53	132	0.0	<Lc -2	1	225.0	131	124
30	Floor Grid #A49	-48.5	0.5	1.2	200-400 cpm	7.0	46	43	305.0	147	136	0.0	<Lc -2	1	183.0	<Lc 0	117
31	Floor Grid #A50	-49.5	0.5	1.2	200-400 cpm	6.0	38	40	289.0	<Lc 100	134	1.0	<Lc 1	5	212.0	<Lc 91	122
32	Floor Grid #A51	-50.5	0.5	1.2	200-400 cpm	6.0	38	40	309.0	159	137	0.0	<Lc -2	1	213.0	<Lc 94	122
33	Floor Grid #A52	-51.5	0.5	1.2	200-400 cpm	7.0	46	43	313.0	171	137	1.0	<Lc 1	5	236.0	166	125
34	Floor Grid #A53	-52.5	0.5	1.2	200-400 cpm	6.0	38	40	308.0	156	137	0.0	<Lc -2	1	215.0	100	122
35	QC of # 34	-52.5	0.5	1.2	~~200-400 cpm~~ KBS 7-15-98	3.0	<Lc 15	30	324.0	203	139	0.0	<Lc -2	1	195.0	<Lc 38	119
36	Floor Grid #A54	-53.5	0.5	1.2	200-400 cpm	3.0	<Lc 15	30	286.0	<Lc 91	134	0.0	<Lc -2	1	208.0	<Lc 78	121
37	Floor Grid #A55	-54.5	0.5	1.2	200-400 cpm	3.0	<Lc 15	30	295.0	118	135	0.0	<Lc -2	1	215.0	100	122
38	Floor Grid #A56	-55.5	0.5	1.2	200-400 cpm	5.0	31	37	324.0	203	139	2.0	4	7	257.0	231	128
39	Floor Grid #A57	-56.5	0.5	1.2	200-400 cpm	8.0	54	45	277.0	<Lc 65	133	0.0	<Lc -2	1	209.0	<Lc 81	121
40	Floor Grid #A58	-57.5	0.5	1.2	200-400 cpm	2.0	<Lc 8	26	291.0	<Lc 106	135	0.0	<Lc -2	1	213.0	<Lc 94	122

7-15-98

Data Entered By and Date: 9 July 98

Reviewed and Date (Site Manager): 9 July 98

12/11/96

*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annex Building Survey Coordinates in Meters from S. E. Corner, See field notes for Beta scans

V 1.9

Reference No.:	LKYDT064
Survey No.:	100
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	J. Kinstle
Survey Date:	06/24/98
Smears Counted By:	K. Beaton
Smear Count Date:	06/24/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:			Surveyor Sign: KBeaton	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	672	672		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	143	143	68225	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Bkgd CPM:	5.0	301.0	0.6	183.0
Efficiency:	0.13	0.34	0.40	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	40	119	3	99

No.	Description	E (x)	N (y)	HL (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	Floor Grid #A4	-3.5	0.5	1.2	300-400 cpm	7.0	<Lc 15	52	359.0	171	148	1.0	<Lc 1	5	193.0	<Lc 31	119
2	Floor Grid #A5	-4.5	0.5	1.2	300-400 cpm	8.0	<Lc 23	54	333.0	<Lc 94	145	0.0	<Lc -2	1	189.0	<Lc 19	118
3	Floor Grid #A6	-5.5	0.5	1.2	300-400 cpm	8.0	<Lc 23	54	343.0	124	146	0.0	<Lc -2	1	204.0	<Lc 66	120
4	Floor Grid #A7	-6.5	0.5	1.2	300-400 cpm	8.0	<Lc 23	54	385.0	247	151	0.0	<Lc -2	1	185.0	<Lc 6	117
5	Floor Grid #A8	-7.5	0.5	1.2	300-450 cpm	8.0	<Lc 23	54	357.0	165	148	0.0	<Lc -2	1	235.0	163	125
6	Floor Grid #A9	-8.5	0.5	1.2	300-450 cpm	6.0	<Lc 8	50	377.0	224	150	2.0	4	7	195.0	<Lc 38	119
7	Floor Grid #A10	-9.5	0.5	1.2	300-400 cpm	5.0	<Lc 0	48	368.0	197	149	0.0	<Lc -2	1	216.0	103	122
8	Floor Grid #A11	-10.5	0.5	1.2	300-400 cpm	6.0	<Lc 8	50	360.0	174	148	1.0	<Lc 1	5	197.0	<Lc 44	119
9	Floor Grid #A12	-11.5	0.5	1.2	300-400 cpm	2.0	<Lc -23	40	331.0	<Lc 88	145	0.0	<Lc -2	1	178.0	<Lc -16	116
10	Floor Grid #A13	-12.5	0.5	1.2	300-400 cpm	6.0	<Lc 8	50	347.0	135	147	0.0	<Lc -2	1	184.0	<Lc 3	117
11	Floor Grid #A14	-13.5	0.5	1.2	300-400 cpm	3.0	<Lc -15	43	335.0	<Lc 100	145	0.0	<Lc -2	1	210.0	<Lc 84	121
12	Floor Grid #A15	-14.5	0.5	1.2	300-400 cpm	5.0	<Lc 0	48	384.0	244	151	0.0	<Lc -2	1	203.0	<Lc 63	120
13	QC of #12	-14.5	0.5	1.2	~~300-400 cpm~~ 7-15-98	7.0	<Lc 15	52	357.0	165	148	0.0	<Lc -2	1	186.0	<Lc 9	118
14	Floor Grid #A16	-15.5	0.5	1.2	300-400 cpm	3.0	<Lc -15	43	326.0	<Lc 74	144	0.0	<Lc -2	1	208.0	<Lc 78	121
15	Floor Grid #A17	-16.5	0.5	1.2	300-400 cpm	3.0	<Lc -15	43	339.0	<Lc 112	146	2.0	4	7	232.0	153	125
16	Floor Grid #A18	-17.5	0.5	1.2	300-400 cpm	7.0	<Lc 15	52	340.0	<Lc 115	146	1.0	<Lc 1	5	214.0	<Lc 97	122
17	Floor Grid #A19	-18.5	0.5	1.2	300-400 cpm	9.0	<Lc 31	56	333.0	<Lc 94	145	1.0	<Lc 1	5	199.0	<Lc 50	120
18	Floor Grid #A20	-19.5	0.5	1.2	300-400 cpm	4.0	<Lc -8	45	342.0	121	146	0.0	<Lc -2	1	200.0	<Lc 53	120
19	Floor Grid #E3	-2.5	4.5	1.2	300-400 cpm	7.0	<Lc 15	52	368.0	197	149	0.0	<Lc -2	1	193.0	<Lc 31	119
20	Floor Grid #F3	-2.5	5.5	1.2	300-400 cpm	4.0	<Lc -8	45	381.0	235	151	0.0	<Lc -2	1	216.0	103	122
21	Floor Grid #G3	-2.5	6.5	1.2	300-400 cpm	3.0	<Lc -15	43	390.0	262	152	0.0	<Lc -2	1	218.0	109	123
22	Floor Grid #H3	-2.5	7.5	1.2	300-400 cpm	4.0	<Lc -8	45	384.0	244	151	0.0	<Lc -2	1	188.0	<Lc 16	118
23	Floor Grid #I 3	-2.5	8.5	1.2	300-400 cpm	8.0	<Lc 23	54	359.0	171	148	0.0	<Lc -2	1	177.0	<Lc -19	116

Data Entered By and Date: 9 July 98

Reviewed By and Date (Site Manager) 9 July 98

7-15-98

12/11/96
*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

V 1.9

Comments: Annex Building Survey Coordinates in Meters from S. E. Corner, See field notes for Beta scans

Reference No.:	LKYDT064
Survey No.:	100
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	J. Kinstle
Survey Date:	06/24/98
Smears Counted By:	K. Beaton
Smear Count Date:	06/24/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:			KBeaton	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	672	672		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	143	143	68225	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Bkgd CPM:	5.0	301.0	0.6	183.0
Efficiency:	0.13	0.34	0.40	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	40	119	3	99

No.	Description	E (x)	N (y)	HL (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
24	Floor Grid #J3	-2.5	9.5	1.2	300-450 cpm	11.0	46	60	378.0	226	150	0.0	<Lc -2	1	194.0	<Lc 34	119
25	Floor Grid #K3	-2.5	10.5	1.2	300-450 cpm	8.0	<Lc 23	54	348.0	138	147	0.0	<Lc -2	1	222.0	122	123
26	Floor Grid #L3	-2.5	11.5	1.2	300-400 cpm	5.0	<Lc 0	48	329.0	<Lc 82	145	0.0	<Lc -2	1	214.0	<Lc 97	122
27	Floor Grid #M3	-2.5	12.5	1.2	300-400 cpm	5.0	<Lc 0	48	349.0	141	147	1.0	<Lc 1	5	203.0	<Lc 63	120
28	QC of #27	-2.5	12.5	1.2	~~300-400 cpm~~ 0	7.0	<Lc 15	52	336.0	<Lc 103	145	0.0	<Lc -2	1	196.0	<Lc 41	119

KB 7-15-98

Data Entered By and Date: 9 July 98

Review and Date (Site Manager): 9 July 9

7-15-98

12/11/96

*DPM units per 100 cm2

F 2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annex Building Survey Coordinates in Meters from S. E. Corner, Alpha scans range from 2-60cpm;See field notes for Beta scans

V 1.9

Reference No.:	LKYDT065
Survey No.:	101
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	J. Kinstle
Survey Date:	06/27/98
Smears Counted By:	J. Kinstle
Smear Count Date:	06/27/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	J. Kinstle		J. Kinstle	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	672	672		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	143	143	68225	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Bkgd CPM:	1.0	318.0	0.2	221.0
Efficiency:	0.13	0.34	0.40	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	18	122	2	108

No.	Description	E (x)	N (y)	HL (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	Overhead I Beams Grid #I 5 Top	-4.9	8.5	10	250-800 cpm	21.0	154	71	578.0	765	173	0.0	<Lc -1	0	212.0	<Lc -28	127
2	H5 E. Shoulder	-4.9	7.5	9.3	600-1500 cpm	72.0	546	129	1431.0	3274	241	7.0	17	13	217.0	<Lc -13	128
3	QC of #2	-4.9	7.5	9.3	~~600-1500 cpm~~ JR 12-5-98	69.0	523	126	1434.0	3282	241	11.0	27	16	219.0	<Lc -6	128
4	G5 W. Shoulder	-4.9	6.5	9.3	400-900 cpm	33.0	246	88	463.0	426	161	8.0	20	14	217.0	<Lc -13	128
5	F5 E. Shoulder	-4.9	5.5	9.3	300-700 cpm	32.0	238	87	777.0	1350	191	4.0	10	10	213.0	<Lc -25	128
6	E5 Top	-4.9	4.5	10	400-800 cpm	33.0	246	88	729.0	1209	187	4.0	10	10	218.0	<Lc -9	128
7	D5 Top	-4.9	3.5	10	400-1000 cpm	33.0	246	88	794.0	1400	192	4.0	10	10	228.0	<Lc 22	130
8	C5 W. Shoulder	-4.9	2.5	9.3	300-700 cpm	10.0	69	50	349.0	<Lc 91	149	3.0	7	8	214.0	<Lc -22	128
9	H21 E. Shoulder	-20.5	7.5	9.3	200-450 cpm	11.0	77	52	285.0	<Lc -97	142	0.0	<Lc -1	0	214.0	<Lc -22	128
10	I 21 Top	-20.5	8.5	10	250-500 cpm	11.0	77	52	382.0	188	153	1.0	2	5	194.0	<Lc -84	125
11	J21 Top	-20.5	9.5	10	200-450 cpm	10.0	69	50	433.0	338	158	1.0	2	5	178.0	<Lc -134	122
12	K21 Top	-20.5	10.5	10	200-400 cpm	6.0	38	40	351.0	<Lc 97	149	1.0	2	5	223.0	<Lc 6	129
13	L21 E. Shoulder	-20.5	11.5	9.3	200-400 cpm	8.0	54	45	324.0	<Lc 18	146	5.0	12	11	231.0	<Lc 31	130
14	B21 E. Shouler	-20.5	1.5	9.3	200-400 cpm	8.0	54	45	240.0	<Lc -229	136	0.0	<Lc -1	0	192.0	<Lc -91	124
15	C21 Top	-20.5	2.5	10	200-400 cpm	12.0	85	54	300.0	<Lc -53	143	0.0	<Lc -1	0	207.0	<Lc -44	127
16	D21 Top	-20.5	3.5	10	200-450 cpm	16.0	115	62	401.0	244	155	6.0	15	12	204.0	<Lc -53	126
17	M21 Top	-20.5	12.5	10	250-500 cpm	19.0	138	67	488.0	500	164	3.0	7	8	229.0	<Lc 25	130
18	N21 Top	-20.5	13.5	10	250-600 cpm	19.0	138	67	467.0	438	162	11.0	27	16	199.0	<Lc -69	126

JR 12-15-98

Data Entered By and Date: 8 July 98

Reviewed By and Date (Site Manager): 8 July 98

12/11/96
*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annex Building Survey Coordinates in Meters from S. E. Corner, Alpha scans range from 10-70cpm;See field notes for Beta scans

V 1.9

Reference No.:	LKYDT066
Survey No.:	102
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	J. Kinstle
Survey Date:	06/26/98
Smears Counted By:	J. Kinstle
Smear Count Date:	06/26/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:				
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	1198	1198		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	525	525	68225	532
Cal Due Date:	09/11/98	09/11/98	11/06/98	09/11/98
Bkgd CPM:	3.0	207.0	0.1	206.0
Efficiency:	0.15	0.33	0.40	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	27	102	1	105

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
	Overhead Beams 1st frm the East																
1	J5 E. Shoulder	-4.9	9.5	9.3	500-800 cpm	46.0	287	91	716.0	1542	180	3.0	7	8	216.0	<Lc 31	126
2	K5 E. Shoulder	-4.9	10.5	9.3	500-800 cpm	53.0	333	98	780.0	1736	187	5.0	12	11	221.0	<Lc 47	127
3	QC of #2	-4.9	10.5	9.3	~~500-800 cpm~~ 7-15-98	48.0	300	93	754.0	1658	184	7.0	17	13	242.0	113	130
4	M5 W. Shoulder	-4.9	12.5	9.3	500-1000 cpm	34.0	207	79	905.0	2115	198	9.0	22	15	221.0	<Lc 47	127
5	L5 Top	-4.9	11.5	10	400-800 cpm	45.0	280	91	687.0	1455	178	14.0	35	18	192.0	<Lc -44	122
6	L5 W. Shoulder	-4.9	11.5	9.3	500-1000 cpm	42.0	260	88	707.0	1515	180	11.0	27	16	215.0	<Lc 28	126

Data Entered By and Date: 8 July 98

Review and Date (Site Manager) 8 July 98

7-15-98

12/11/96

*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annex Building Survey Coordinates in Meters from S. E. Corner, Alpha scans range from 0-25cpm;See field notes for Beta scans

V 1.9

Reference No.:	LKYDT067
Survey No.:	103
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	J. Kinstle
Survey Date:	06/26/98
Smears Counted By:	J. Kinstle
Smear Count Date:	06/26/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	J. Kinstle		J. Kinstle	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	1198	1198		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	525	525	68225	532
Cal Due Date:	09/11/98	09/11/98	11/06/98	09/11/98
Bkgd CPM:	3.0	207.0	0.1	206.0
Efficiency:	0.15	0.33	0.40	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	27	102	1	105

No.	Description	E (x)	N (y)	HL (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	Floor Grid #N33	-32.5	13.5	1.2	250-400 cpm	7.0	<Lc 27	41	269.0	188	130	0.0	<Lc 0	0	226.0	<Lc 63	127
2	Floor Grid #N37	-36.5	13.5	1.2	250-400 cpm	5.0	<Lc 13	37	311.0	315	135	0.0	<Lc 0	0	208.0	<Lc 6	125
3	QC of #2	-36.5	13.5	1.2	~~250-400 cpm~~ JJB 8-5-98	11.0	53	49	312.0	318	135	0.0	<Lc 0	0	217.0	<Lc 34	126
4	Floor Grid #N22	-21.5	13.5	1.2	250-350 cpm	5.0	<Lc 13	37	248.0	124	127	0.0	<Lc 0	0	206.0	<Lc 0	124
5	Floor Grid #N21	-20.5	13.5	1.2	250-350 cpm	12.0	60	51	254.0	142	128	0.0	<Lc 0	0	199.0	<Lc -22	123
6	Floor Grid #N20	-19.5	13.5	1.2	250-400 cpm	6.0	<Lc 20	39	289.0	248	132	0.0	<Lc 0	0	214.0	<Lc 25	126
7	Floor Grid #N15	-14.5	13.5	1.2	200-400 cpm	4.0	<Lc 7	35	268.0	185	129	0.0	<Lc 0	0	234.0	<Lc 88	128
8	Floor Grid #N16	-15.5	13.5	1.2	200-400 cpm	11.0	53	49	289.0	248	132	1.0	2	5	221.0	<Lc 47	127
9	Floor Grid #N13	-12.5	13.5	1.2	200-350 cpm	7.0	<Lc 27	41	322.0	348	137	0.0	<Lc 0	0	211.0	<Lc 16	125
10	Floor Grid #N14	-13.5	13.5	1.2	200-350 cpm	4.0	<Lc 7	35	276.0	209	131	0.0	<Lc 0	0	209.0	<Lc 9	125

Data Entered By and Date: 8 July 98

8 July 98

JJB 7-15-98

12/11/96
*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annex Building Survey Coordinates in Meters from S. E. Corner, Alpha scans range from 2-20cpm;See field notes for Beta scans

V 1.9

Reference No.:	LKYDT068
Survey No.:	104
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	K. Beaton
Survey Date:	06/28/98
Smears Counted By:	K. Beaton
Smear Count Date:	06/28/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	KBeaton		KBeaton	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	672	672		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	143	143	68225	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Bkgd CPM:	4.0	240.0	0.3	216.0
Efficiency:	0.13	0.34	0.40	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	36	106	2	107

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	Floor Grid #B4	-3.5	1.5	1.2	200-450 cpm	8.0	<Lc 31	52	328.0	259	137	0.0	<Lc -1	0	191.0	<Lc -78	124
2	Floor Grid #B5	-4.5	1.5	1.2	200-450 cpm	1.0	<Lc -23	34	205.0	<Lc -103	122	1.0	<Lc 2	5	198.0	<Lc -56	125
3	Floor Grid #B6	-5.5	1.5	1.2	200-450 cpm	8.0	<Lc 31	52	319.0	232	136	0.0	<Lc -1	0	204.0	<Lc -38	126
4	Floor Grid #C4	-3.5	2.5	1.2	200-450 cpm	4.0	<Lc 0	43	313.0	215	136	1.0	<Lc 2	5	209.0	<Lc -22	126
5	Floor Grid #C5	-4.5	2.5	1.2	200-450 cpm	6.0	<Lc 15	48	349.0	321	140	1.0	<Lc 2	5	187.0	<Lc -91	123
6	Floor Grid #C6	-5.5	2.5	1.2	200-450 cpm	3.0	<Lc -8	40	335.0	279	138	0.0	<Lc -1	0	220.0	<Lc 13	128
7	Floor Grid #D4	-3.5	3.5	1.2	200-450 cpm	4.0	<Lc 0	43	318.0	229	136	0.0	<Lc -1	0	197.0	<Lc -59	124
8	Floor Grid #D5	-4.5	3.5	1.2	200-450 cpm	5.0	<Lc 8	45	357.0	344	141	1.0	<Lc 2	5	193.0	<Lc -72	124
9	Floor Grid #D6	-5.5	3.5	1.2	200-450 cpm	2.0	<Lc -15	37	362.0	359	141	0.0	<Lc -1	0	241.0	<Lc 78	131
10	Floor Grid #E4	-3.5	4.5	1.2	200-450 cpm	8.0	<Lc 31	52	347.0	315	140	0.0	<Lc -1	0	193.0	<Lc -72	124
11	Floor Grid #E5	-4.5	4.5	1.2	200-450 cpm	3.0	<Lc -8	40	320.0	235	136	0.0	<Lc -1	0	210.0	<Lc -19	126
12	Floor Grid #E6	-5.5	4.5	1.2	200-450 cpm	3.0	<Lc -8	40	323.0	244	137	1.0	<Lc 2	5	201.0	<Lc -47	125
13	Floor Grid #F4	-3.5	5.5	1.2	200-450 cpm	4.0	<Lc 0	43	328.0	259	137	1.0	<Lc 2	5	208.0	<Lc -25	126
14	QC of #13	-3.5	5.5	1.2	~~200-450 cpm~~ KB 8-5-98	5.0	<Lc 8	45	337.0	285	138	0.0	<Lc -1	0	194.0	<Lc -69	124
15	Floor Grid #F5	-4.5	5.5	1.2	200-450 cpm	5.0	<Lc 8	45	356.0	341	141	0.0	<Lc -1	0	193.0	<Lc -72	124
16	Floor Grid #F6	-5.5	5.5	1.2	200-450 cpm	6.0	<Lc 15	48	351.0	326	140	1.0	<Lc 2	5	202.0	<Lc -44	125
17	Floor Grid #G4	-3.5	6.5	1.2	200-450 cpm	5.0	<Lc 8	45	341.0	297	139	0.0	<Lc -1	0	222.0	<Lc 19	128
18	Floor Grid #G5	-4.5	6.5	1.2	200-450 cpm	6.0	<Lc 15	48	362.0	359	141	0.0	<Lc -1	0	224.0	<Lc 25	128
19	Floor Grid #G6	-5.5	6.5	1.2	200-450 cpm	7.0	<Lc 23	50	348.0	318	140	1.0	<Lc 2	5	196.0	<Lc -63	124
20	Floor Grid #H4	-3.5	7.5	1.2	200-450 cpm	6.0	<Lc 15	48	334.0	276	138	0.0	<Lc -1	0	249.0	<Lc 103	132
21	Floor Grid #H5	-4.5	7.5	1.2	200-450 cpm	6.0	<Lc 15	48	372.0	388	143	0.0	<Lc -1	0	202.0	<Lc -44	125
22	Floor Grid #H6	-5.5	7.5	1.2	200-450 cpm	4.0	<Lc 0	43	349.0	321	140	0.0	<Lc -1	0	199.0	<Lc -53	125
23	Floor Grid #I 4	-3.5	8.5	1.2	200-450 cpm	3.0	<Lc -8	40	342.0	300	139	0.0	<Lc -1	0	192.0	<Lc -75	124

Data Entered By and Date: [illegible] 9 July 98

Review and Date (Site Manager) [illegible] 9 July 98

7-15-98

12/11/96

*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annex Building Survey Coordinates in Meters from S. E. Corner, Alpha scans range from 2-20cpm;See field notes for Beta scans

V 1.9

Reference No.:	LKYDT068
Survey No.:	104
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	K. Beaton
Survey Date:	06/28/98
Smears Counted By:	K. Beaton
Smear Count Date:	06/28/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	KBeaton		KBeaton	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	672	672		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	143	143	68225	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Bkgd CPM:	4.0	240.0	0.3	216.0
Efficiency:	0.13	0.34	0.40	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	36	106	2	107

No.	Description	E (x)	N (y)	HL (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
24	Floor Grid #I 5	-4.5	8.5	1.2	200-450 cpm	8.0	<Lc 31	52	364.0	365	142	0.0	<Lc -1	0	193.0	<Lc -72	124
25	Floor Grid #I 6	-5.5	8.5	1.2	200-450 cpm	8.0	<Lc 31	52	377.0	403	143	0.0	<Lc -1	0	185.0	<Lc -97	123
26	Floor Grid #J4	-3.5	9.5	1.2	200-450 cpm	5.0	<Lc 8	45	325.0	250	137	1.0	<Lc 2	5	206.0	<Lc -31	126
27	Floor Grid #J5	-4.5	9.5	1.2	200-450 cpm	7.0	<Lc 23	50	339.0	291	139	0.0	<Lc -1	0	203.0	<Lc -41	125
28	Floor Grid #J6	-5.5	9.5	1.2	200-450 cpm	2.0	<Lc -15	37	333.0	274	138	2.0	4	7	222.0	<Lc 19	128
29	Floor Grid #K4	-3.5	10.5	1.2	200-450 cpm	4.0	<Lc 0	43	336.0	282	138	0.0	<Lc -1	0	206.0	<Lc -31	126
30	Floor Grid #K5	-4.5	10.5	1.2	200-450 cpm	4.0	<Lc 0	43	361.0	356	141	0.0	<Lc -1	0	203.0	<Lc -41	125
31	Floor Grid #K6	-5.5	10.5	1.2	200-450 cpm	4.0	<Lc 0	43	367.0	374	142	0.0	<Lc -1	0	208.0	<Lc -25	126
32	Floor Grid #L4	-3.5	11.5	1.2	200-450 cpm	4.0	<Lc 0	43	345.0	309	139	0.0	<Lc -1	0	205.0	<Lc -34	126
33	QC of #33	-3.5	11.5	1.2	~~200-450 cpm~~ KB 8-5-98	3.0	<Lc -8	40	359.0	350	141	1.0	<Lc 2	5	201.0	<Lc -47	125
34	Floor Grid #L5	-4.5	11.5	1.2	200-450 cpm	7.0	<Lc 23	50	352.0	329	140	1.0	<Lc 2	5	189.0	<Lc -84	123
35	Floor Grid #L6	-5.5	11.5	1.2	200-450 cpm	10.0	46	56	286.0	135	132	0.0	<Lc -1	0	213.0	<Lc -9	127
36	Floor Grid #M4	-3.5	12.5	1.2	200-450 cpm	5.0	<Lc 8	45	360.0	353	141	0.0	<Lc -1	0	219.0	<Lc 9	128
37	Floor Grid #M5	-3.5	12.5	1.2	200-450 cpm	7.0	<Lc 23	50	348.0	318	140	1.0	<Lc 2	5	206.0	<Lc -31	126
38	Floor Grid #M6	-5.5	12.5	1.2	200-450 cpm	6.0	<Lc 15	48	321.0	238	137	0.0	<Lc -1	0	187.0	<Lc -91	123

Data Entered By and Date: [signature] 9 July 98

[signature] 9 July 98

KB 7-15-98

12/11/96
*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annex Building Survey Coordinates in Meters from S. E. Corner, Alpha scans range from 0-30cpm;See field notes for Beta scans

V 1.9

Reference No.:	LKYDT069
Survey No.:	105
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	R. Pennock
Survey Date:	06/30/98
Smears Counted By:	R. Pennock
Smear Count Date:	06/30/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	R. B. Pennock		R. B. Pennock	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	672	672		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	143	143	68225	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Bkgd CPM:	2.0	282.0	0.2	228.0
Efficiency:	0.13	0.34	0.40	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	25	115	2	110

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	N. Wall 56	-55.5	14.3	0.5	200-300cpm	5.0	<Lc 23	40	183.0	<Lc -291	124	0.0	<Lc -1	0	213.0	<Lc -47	129
2	N. Wall 55	-54.5	14.3	0.5	200-350 cpm	6.0	31	43	204.0	<Lc -229	127	0.0	<Lc -1	0	190.0	<Lc -119	125
3	N. Wall 54	-53.5	14.3	0.5	200-300 cpm	6.0	31	43	238.0	<Lc -129	131	0.0	<Lc -1	0	213.0	<Lc -47	129
4	N. Wall 53	-52.5	14.3	0.5	150-300 cpm	3.0	<Lc 8	34	243.0	<Lc -115	132	0.0	<Lc -1	0	220.0	<Lc -25	130
5	N. Wall 52	-51.5	14.3	0.5	150-300 cpm	3.0	<Lc 8	34	219.0	<Lc -185	129	0.0	<Lc -1	0	213.0	<Lc -47	129
6	N. Wall 51	-50.5	14.3	0.5	150-300 cpm	5.0	<Lc 23	40	245.0	<Lc -109	132	0.0	<Lc -1	0	203.0	<Lc -78	127
7	N. Wall 46	-45.5	14.3	0.5	150-350 cpm	8.0	46	48	248.0	<Lc -100	133	0.0	<Lc -1	0	216.0	<Lc -38	129
8	QC of #6	-45.5	14.3	0.5	~~150-300 cpm~~ GB 8-5-98	4.0	<Lc 15	37	258.0	<Lc -71	134	0.0	<Lc -1	0	214.0	<Lc -44	129
9	E. Wall #46N	-45	13.5	0.5	200-400 cpm	7.0	38	45	233.0	<Lc -144	131	0.0	<Lc -1	0	209.0	<Lc -59	128
10	E. Wall #46M	-45	12.5	0.5	200-300 cpm	8.0	46	48	267.0	<Lc -44	135	0.0	<Lc -1	0	230.0	<Lc 6	131
11	E. Wall #46L	-45	11.5	0.5	200-350 cpm	7.0	38	45	259.0	<Lc -68	134	0.0	<Lc -1	0	192.0	<Lc -113	126
12	E. Wall #46K	-45	10.5	0.5	150-250 cpm	7.0	38	45	250.0	<Lc -94	133	0.0	<Lc -1	0	199.0	<Lc -91	127
13	E. Wall #46J	-45	9.5	0.5	150-300 cpm	7.0	38	45	272.0	<Lc -29	136	0.0	<Lc -1	0	213.0	<Lc -47	129
14	Floor #46N	-45.5	13.5	0	250-350 cpm	10.0	62	52	345.0	185	144	1.0	2	5	226.0	<Lc -6	131
15	Floor #46M	-45.5	12.5	0	250-350 cpm	12.0	77	56	330.0	141	143	0.0	<Lc -1	0	237.0	<Lc 28	132
16	Floor #46L	-45.5	11.5	0	250-400 cpm	9.0	54	50	345.0	185	144	0.0	<Lc -1	0	189.0	<Lc -122	125
17	Floor #46K	-45.5	10.5	0	250-400 cpm	8.0	46	48	328.0	135	142	0.0	<Lc -1	0	196.0	<Lc -100	126
18	Floor #46J	-45.5	9.5	0	300-400 cpm	11.0	69	54	356.0	218	146	0.0	<Lc -1	0	227.0	<Lc -3	131
19	Floor #46 I	-45.5	8.5	0	300-400 cpm	4.0	<Lc 15	37	344.0	182	144	0.0	<Lc -1	0	206.0	<Lc -69	128

GB 8-3-98

Data Entered By and Date: [illegible] 9 July 98

Reviewed By and Date (Site Manager) [illegible] 9 July 98

12/11/96
*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annex Building Survey Coordinates in Meters from S. E. Corner, Alpha scans range from 0-25cpm;See field notes for Beta scans

V 1.9

Reference No.:	LKYDT070
Survey No.:	106
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	J.Kinstle
Survey Date:	07/01/98
Smears Counted By:	J.Kinstle
Smear Count Date:	07/01/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	J.K.		J.K.	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	685	685		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	146	146	68225	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Bkgd CPM:	3.0	226.0	0.1	214.0
Efficiency:	0.13	0.34	0.40	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	31	103	1	107

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	E.Wall Main Flr-Brake Area Grid#D46	-45	3.5	0.5	200-300 cpm	5.0	<Lc 15	43	208.0	<Lc -53	120	0.0	<Lc 0	0	188.0	<Lc -81	123
2	Grid #E46	-45	4.5	0.5	200-300 cpm	9.0	46	52	223.0	<Lc -9	122	0.0	<Lc 0	0	208.0	<Lc -19	126
3	Grid #F46	-45	5.5	0.5	200-300 cpm	2.0	<Lc -8	34	216.0	<Lc -29	121	0.0	<Lc 0	0	198.0	<Lc -50	124
4	Grid #G46	-45	6.5	0.5	200-300 cpm	7.0	<Lc 31	48	240.0	<Lc 41	124	0.0	<Lc 0	0	206.0	<Lc -25	126
5	Grid #H46	-45	7.5	0.5	200-300 cpm	7.0	<Lc 31	48	218.0	<Lc -24	121	0.0	<Lc 0	0	209.0	<Lc -16	126
6	Grid #I 46	-45	8.5	0.5	200-300 cpm	4.0	<Lc 8	40	221.0	<Lc -15	122	0.0	<Lc 0	0	236.0	<Lc 69	130
7	Floor Grid #G46	-45.5	6.5	0	200-400 cpm	7.0	<Lc 31	48	298.0	212	132	1.0	2	5	223.0	<Lc 28	128
8	QC of #7	-45.5	6.5	0	~~200-400 cpm~~ 98-8-5-98	3.0	<Lc 0	37	262.0	106	127	1.0	2	5	238.0	<Lc 75	130
9	Floor Grid #H46	-45.5	7.5	0	200-400 cpm	6.0	<Lc 23	45	241.0	<Lc 44	125	0.0	<Lc 0	0	200.0	<Lc -44	125
10	Floor Grid #G47	-46.5	6.5	0	250-350 cpm	7.0	<Lc 31	48	317.0	268	134	0.0	<Lc 0	0	204.0	<Lc -31	125
11	Floor Grid #H47	-46.5	7.5	0	250-400 cpm	3.0	<Lc 0	37	271.0	132	129	0.0	<Lc 0	0	216.0	<Lc 6	127
12	Floor Grid #I 47	-46.5	8.5	0	250-350 cpm	7.0	<Lc 31	48	296.0	206	132	0.0	<Lc 0	0	220.0	<Lc 19	128
13	Floor Grid #J47	-46.5	9.5	0	250-350 cpm	9.0	46	52	277.0	150	129	0.0	<Lc 0	0	209.0	<Lc -16	126
14	Floor Grid #K47	-46.5	10.5	0	250-350 cpm	4.0	<Lc 8	40	301.0	221	132	1.0	2	5	180.0	<Lc -106	122
15	Floor Grid #G48	-47.5	6.5	0	200-400 cpm	6.0	<Lc 23	45	283.0	168	130	0.0	<Lc 0	0	214.0	<Lc 0	127
16	Floor Grid #H48	-47.5	7.5	0	200-400 cpm	3.0	<Lc 0	37	315.0	262	134	1.0	2	5	189.0	<Lc -78	123
17	Floor Grid #I 48	-47.5	8.5	0	200-400 cpm	10.0	54	54	313.0	256	134	0.0	<Lc 0	0	221.0	<Lc 22	128
18	Floor Grid #J48	-47.5	9.5	0	200-400 cpm	12.0	69	58	367.0	415	140	0.0	<Lc 0	0	181.0	<Lc -103	122
19	Floor Grid #K48	-47.5	10.5	0	200-400 cpm	7.0	<Lc 31	48	320.0	276	135	0.0	<Lc 0	0	182.0	<Lc -100	122
20	Floor Grid #L48	-47.5	11.5	0	200-400 cpm	5.0	<Lc 15	43	331.0	309	136	0.0	<Lc 0	0	204.0	<Lc -31	125
21	Floor Grid #M48	-47.5	12.5	0	200-400 cpm	6.0	<Lc 23	45	308.0	241	133	0.0	<Lc 0	0	189.0	<Lc -78	123
22	Floor Grid #N48	-47.5	13.5	0	200-400 cpm	7.0	<Lc 31	48	311.0	250	134	0.0	<Lc 0	0	209.0	<Lc -16	126
23	QC of #22	-47.5	13.5	0	~~200-400 cpm~~ 98-8-5-98	10.0	54	54	307.0	238	133	0.0	<Lc 0	0	218.0	<Lc 13	127

Data Entered By and Date: 9 July 98

Reviewed By and Date (Site Manager): 9 July 98

7-17-98

12/11/96

*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annex Building Survey Coordinates in Meters from S. E. Corner, Alpha scans range from 0-35cpm;See field notes for Beta scans

V 1.9

Reference No.:	LKYDT071
Survey No.:	107
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	R. Pennock
Survey Date:	07/01/98
Smears Counted By:	R. Pennock
Smear Count Date:	07/01/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	Robert E Pennock		Robert E Pennock	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	672	672		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	143	143	68225	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Bkgd CPM:	4.0	219.0	0.1	214.0
Efficiency:	0.13	0.34	0.40	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	36	102	1	107

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	Overhead Beams M62 E.Shoulder	-61.3	12.5	9.3	150-350 cpm	10.0	46	56	308.0	262	132	0.0	<Lc 0	0	211.0	<Lc -9	126
2	Grid #62L W. Shoulder	-61.3	11.5	9.3	200-350 cpm	5.0	<Lc 8	45	222.0	<Lc 9	121	0.0	<Lc 0	0	206.0	<Lc -25	126
3	Grid #62K E. Shoulder	-61.3	10.5	9.3	200-350 cpm	7.0	<Lc 23	50	303.0	247	132	0.0	<Lc 0	0	233.0	<Lc 59	129
4	Grid #62J W. Shoulder	-61.3	9.5	9.3	200-350 cpm	8.0	<Lc 31	52	232.0	<Lc 38	122	0.0	<Lc 0	0	204.0	<Lc -31	125
5	Grid #62 I E. Shlouder	-61.3	8.5	9.3	150-250 cpm	5.0	<Lc 8	45	311.0	271	133	0.0	<Lc 0	0	190.0	<Lc -75	123
6	QC of #5	-61.3	8.5	9.3	~~150-250 cpm~~ CB 8-5-98	5.0	<Lc 8	45	298.0	232	131	0.0	<Lc 0	0	208.0	<Lc -19	126
7	Grid #62H E. Shoulder	-61.3	7.5	9.3	200-300 cpm	13.0	69	62	223.0	<Lc 12	121	0.0	<Lc 0	0	213.0	<Lc -3	127
8	Grid #62G E. Shoulder	-61.3	6.5	9.3	200-350 cpm	9.0	38	54	258.0	115	126	0.0	<Lc 0	0	202.0	<Lc -38	125
9	Grid #62D E. Shoulder	-61.3	3.5	9.3	200-350 cpm	4.0	<Lc 0	43	236.0	<Lc 50	123	0.0	<Lc 0	0	216.0	<Lc 6	127
10	Grid #62C E. Shoulder	-61.3	2.5	9.3	200-300 cpm	7.0	<Lc 23	50	258.0	115	126	0.0	<Lc 0	0	210.0	<Lc -13	126
11	Grid #62B W. Shoulder	-61.3	1.5	9.3	150-300 cpm	6.0	<Lc 15	48	265.0	135	127	0.0	<Lc 0	0	212.0	<Lc -6	126
12	Grid #67J W. Shoulder	-66.4	9.5	9.3	200-300 cpm	9.0	38	54	237.0	<Lc 53	123	0.0	<Lc 0	0	227.0	<Lc 41	129
13	Grid #67K E. Shoulder	-66.4	10.5	9.3	200-300 cpm	9.0	38	54	242.0	<Lc 68	124	0.0	<Lc 0	0	202.0	<Lc -38	125
14	Grid #67L W. Shoulder	-66.4	11.5	9.3	200-300 cpm	7.0	<Lc 23	50	222.0	<Lc 9	121	0.0	<Lc 0	0	189.0	<Lc -78	123
15	Grid #60N Pipe	-59.5	14	4.7	200-300 cpm	4.0	<Lc 0	43	276.0	168	128	0.0	<Lc 0	0	221.0	<Lc 22	128
16	Grid #60M Vent	-59.5	12.5	7.2	200-300 cpm	4.0	<Lc 0	43	227.0	<Lc 24	122	0.0	<Lc 0	0	204.0	<Lc -31	125
17	Grid #60L Pipe	-59.5	11.5	8.6	200-300 cpm	5.0	<Lc 8	45	246.0	<Lc 79	124	1.0	2	5	195.0	<Lc -59	124
18	Grid #60K Pipe	-59.5	10.5	8.6	150-300 cpm	5.0	<Lc 8	45	222.0	<Lc 9	121	0.0	<Lc 0	0	200.0	<Lc -44	125
19	Grid #60J Pipe	-59.5	9.5	8.6	200-300 cpm	7.0	<Lc 23	50	224.0	<Lc 15	121	0.0	<Lc 0	0	201.0	<Lc -41	125
20	Grid #60 I Pipe	-59.5	8.5	8.6	200-350 cpm	4.0	<Lc 0	43	248.0	<Lc 85	125	0.0	<Lc 0	0	220.0	<Lc 19	128
21	Grid #60 H Pipe	-59.5	7.5	8.6	150-300 cpm	3.0	<Lc -8	40	233.0	<Lc 41	123	0.0	<Lc 0	0	216.0	<Lc 6	127
22	Grid #60 G Pipe	-59.5	6.5	8.6	150-300 cpm	6.0	<Lc 15	48	250.0	<Lc 91	125	0.0	<Lc 0	0	193.0	<Lc -66	124
23	QC of #22	-59.5	6.5	8.6	~~150-300 cpm~~ CB 8-5-98	3.0	<Lc -8	40	227.0	<Lc 24	122	0.0	<Lc 0	0	201.0	<Lc -41	125

Data Entered By and Date: 9 July 98

Data (Site Manager) 9 July 98

-17-98

12/11/96

*DPM units per 100 cm2

1 2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annex Building Survey Coordinates in Meters from S. E. Corner, Alpha scans range from 0-35cpm;See field notes for Beta scans

V 1.9

Reference No.:	LKYDT071
Survey No.:	107
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	R. Pennock
Survey Date:	07/01/98
Smears Counted By:	R. Pennock
Smear Count Date:	07/01/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	Robert E Pennock		Robert E Pennock	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	672	672		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	143	143	68225	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Bkgd CPM:	4.0	219.0	0.1	214.0
Efficiency:	0.13	0.34	0.40	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	36	102	1	107

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
24	Grid #60 F Pipe	-59.5	5.5	8.6	200-300 cpm	5.0	<Lc 8	45	223.0	<Lc 12	121	0.0	<Lc 0	0	196.0	<Lc -56	124
25	Grid #60 E Pipe	-59.5	4.5	8.6	200-300 cpm	0.0	<Lc -31	30	200.0	<Lc -56	118	0.0	<Lc 0	0	223.0	<Lc 28	128
26	Grid #60 E Pipe	-59.5	4.5	8.8	200-300 cpm	5.0	<Lc 8	45	254.0	103	125	0.0	<Lc 0	0	201.0	<Lc -41	125
27	Grid #60 D Pipe	-59.5	3.5	8.6	200-300 cpm	8.0	<Lc 31	52	208.0	<Lc -32	119	0.0	<Lc 0	0	219.0	<Lc 16	127
28	Grid #60 C Pipe	-59.5	2.5	8.6	200-300 cpm	6.0	<Lc 15	48	233.0	<Lc 41	123	0.0	<Lc 0	0	209.0	<Lc -16	126
29	Grid #60 B Pipe	-59.5	1.5	8.5	200-300 cpm	5.0	<Lc 8	45	235.0	<Lc 47	123	0.0	<Lc 0	0	200.0	<Lc -44	125
30	Grid #60 B Pipe E-W	-59.5	1.5	8.9	200-300 cpm	3.0	<Lc -8	40	239.0	<Lc 59	123	0.0	<Lc 0	0	178.0	<Lc -113	121
31	Grid #60 A Pipe E-W	-59.5	0.5	8.9	200-300 cpm	4.0	<Lc 0	43	250.0	<Lc 91	125	0.0	<Lc 0	0	187.0	<Lc -84	123
32	QC of #31	-59.5	0.5	8.9	~~200-300 cpm~~	5.0	<Lc 8	45	261.0	124	126	0.0	<Lc 0	0	180.0	<Lc -106	122
33	Grid # 60A Beam in wall	-59.5	0	4.5	250-350 cpm	6.0	<Lc 15	48	283.0	188	129	0.0	<Lc 0	0	215.0	<Lc 3	127
34	Grid # 60A Pipe E-W	-59.5	0.5	7.8	200-300 cpm	9.0	38	54	263.0	129	127	1.0	2	5	225.0	<Lc 34	128
35	Grid # 60A Pipe 1	-59.5	0.5	8.6	200-300 cpm	8.0	<Lc 31	52	251.0	<Lc 94	125	0.0	<Lc 0	0	217.0	<Lc 9	127
36	Grid # 60A Pipe E-W	-59.5	0.3	7.8	200-350 cpm	7.0	<Lc 23	50	285.0	194	129	0.0	<Lc 0	0	218.0	<Lc 13	127

Data Entered By and Date: 9 July 98

Reviewed By and Date (Site Manager): 9 July 98

12/11/96
*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annex Building Survey, Coordinates in Meters from S. E. Corner, Alpha scans range betwn 0-20cpm; See field notes for Beta scans

V 1.9

Reference No.:	LKYDT075
Survey No.:	113
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	Jim Kinstle
Survey Date:	06/30/98
Smears Counted By:	Jim Kinstle
Smear Count Date:	06/30/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:				
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:		E-600		E-600
Serial No.:	685	685		1175
Detector:	SHP-380	SHP-380	Ludlum 43-10	SHP-380
Serial No.:	146	146	68225	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Bkgd CPM:	1.0	195.0	0.2	228.0
Efficiency:	0.13	0.34	0.40	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	18	96	2	110

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	Overhead Beams Grid G46 W.Shldr	-45.9	6.5	9.3	150-300 cpm	5.0	31	37	213.0	<Lc 53	116	0.0	<Lc -1	0	213.0	<Lc -47	129
2	H46 E. Shoulder	-45.9	7.5	9.3	150-300 cpm	7.0	46	43	213.0	<Lc 53	116	0.0	<Lc -1	0	206.0	<Lc -69	128
3	I 46 E. Shoulder	-45.9	8.5	9.3	150-300 cpm	2.0	<Lc 8	26	187.0	<Lc -24	113	0.0	<Lc -1	0	184.0	<Lc -138	124
4	J46 W. Shoulder	-45.9	9.5	9.3	150-300 cpm	7.0	46	43	268.0	215	124	0.0	<Lc -1	0	200.0	<Lc -88	127
5	K46 W. Shoulder	-45.9	10.5	9.3	150-300 cpm	5.0	31	37	257.0	182	123	0.0	<Lc -1	0	197.0	<Lc -97	126
6	L46 E. Shoulder	-45.9	11.5	9.3	150-300 cpm	5.0	31	37	216.0	<Lc 62	117	0.0	<Lc -1	0	206.0	<Lc -69	128
7	M46 E. Shoulder	-45.9	12.5	9.3	150-300 cpm	10.0	69	50	227.0	<Lc 94	118	0.0	<Lc -1	0	213.0	<Lc -47	129
8	D51 E. Shoulder	-51.1	3.5	9.3	150-300 cpm	4.0	23	34	257.0	182	123	0.0	<Lc -1	0	192.0	<Lc -113	126
9	E51 W. Shoulder	-51.1	4.5	9.3	200-350 cpm	5.0	31	37	241.0	135	120	0.0	<Lc -1	0	206.0	<Lc -69	128
10	F51 W. Shoulder	-51.1	5.5	9.3	200-300 cpm	7.0	46	43	202.0	<Lc 21	115	0.0	<Lc -1	0	209.0	<Lc -59	128
11	G51 E. Shoulder	-51.1	6.5	9.3	200-300 cpm	5.0	31	37	242.0	138	121	0.0	<Lc -1	0	205.0	<Lc -72	127
12	H51 E. Shoulder	-51.1	7.5	9.3	150-300 cpm	5.0	31	37	241.0	135	120	0.0	<Lc -1	0	209.0	<Lc -59	128
13	I 51 W. Shoulder	-51.1	8.5	9.3	150-300 cpm	6.0	38	40	223.0	<Lc 82	118	0.0	<Lc -1	0	216.0	<Lc -38	129
14	J51 E. Shoulder	-51.1	9.5	9.3	150-250 cpm	11.0	77	52	260.0	191	123	0.0	<Lc -1	0	212.0	<Lc -50	128
15	K51 E. Shoulder	-51.1	10.5	9.3	150-300 cpm	4.0	23	34	244.0	144	121	0.0	<Lc -1	0	232.0	<Lc 13	131
16	QC of #15	-51.1	10.5	9.3	~~150-300 cpm~~ 8-3-98	3.0	<Lc 15	30	252.0	168	122	1.0	2	5	221.0	<Lc -22	130
17	L51 W. Shoulder	-51.1	11.5	9.3	150-300 cpm	7.0	46	43	225.0	<Lc 88	118	0.0	<Lc -1	0	212.0	<Lc -50	128
18	M51 E. Shoulder	-51.1	12.5	9.3	150-300 cpm	7.0	46	43	249.0	159	121	0.0	<Lc -1	0	199.0	<Lc -91	127

Data Entered By and Date: 9 July 98

Reviewed and Date (Site Manager) 9 July 98

8-3-98

12/11/96

*DPM units per cm2

Page

THERMO NUtech
Direct Surface and Transferable Contamination Survey

V 1.9

Comments: Annex Building Survey, Coordinates in Meters from the S. E. Corner, Alpha scans range betwn 1-20cpm; See field notes for Beta

Reference No.:	LKYDT076
Survey No.:	114
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	Jim Kinstle
Survey Date:	06/30/98
Smears Counted By:	Jim Kinstle
Smear Count Date:	06/30/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:				
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	685	685		1175
Detector:	SHP-380	SHP-380	Ludlum 43-10	SHP-380
Serial No.:	146	146	68225	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Bkgd CPM:	3.0	228.0	0.2	228.0
Efficiency:	0.13	0.34	0.40	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	31	104	2	110

No.	Description	E (x)	N (y)	HL (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	Floor Grid N47	-46.5	13.5	0	200-350 cpm	5.0	<Lc 15	43	305.0	226	133	0.0	<Lc -1	0	218.0	<Lc -31	129
2	QC of #15	-46.5	13.5	0	~~200-350 cpm~~ 08-3-98	8.0	38	50	306.0	229	133	0.0	<Lc -1	0	229.0	<Lc 3	131
3	M47	-46.5	12.5	0	200-350 cpm	6.0	<Lc 23	45	294.0	194	132	0.0	<Lc -1	0	196.0	<Lc -100	126
4	L47	-46.5	11.5	0	200-350 cpm	12.0	69	58	303.0	221	133	0.0	<Lc -1	0	193.0	<Lc -109	126

7-17-98

Data Entered By and Date: 7 July 98

Reviewed By and Date (Site Manager) 7 July 98

12/11/96
*DPM units per 100 cm2
Page 1 of 1

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annex Building Survey Coordinates in Meters from S. E. Corner, Alpha scans range from 1-20cpm;See field notes for Beta scans

V 1.9

Reference No.:	LKYDT094
Survey No.:	135
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	J. Kinstle
Survey Date:	06/28/98
Smears Counted By:	K. Beaton
Smear Count Date:	06/28/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	J. Kinstle		K. Beaton	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	685	685		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	146	146	68225	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Bkgd CPM:	5.0	206.0	0.3	216.0
Efficiency:	0.13	0.34	0.40	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	40	99	2	107

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	Overhead Grid #A26 W. Shoulder	-25.4	0.8	9.3	150-300 cpm	3.0	<Lc -15	43	203.0	<Lc -9	117	0.0	<Lc -1	0	214.0	<Lc -6	127
2	Grid #B26 Top	-25.4	1.5	10	150-300 cpm	7.0	<Lc 15	52	250.0	129	123	0.0	<Lc -1	0	215.0	<Lc -3	127
3	Grid #C26 Top	-25.4	2.5	10	150-350 cpm	5.0	<Lc 0	48	262.0	165	125	1.0	<Lc 2	5	199.0	<Lc -53	125
4	Grid #D26 partial E.Shoulder	-25.4	3.2	9.3	150-300 cpm	9.0	<Lc 31	56	219.0	<Lc 38	119	1.0	<Lc 2	5	208.0	<Lc -25	126
5	Grid #A31 partial E.Shoulder	-30.5	0.8	9.3	150-300 cpm	6.0	<Lc 8	50	277.0	209	127	0.0	<Lc -1	0	178.0	<Lc -119	122
6	Grid #B31 Top	-30.5	1.5	10	150-300 cpm	4.0	<Lc -8	45	252.0	135	123	1.0	<Lc 2	5	213.0	<Lc -9	127
7	Grid #C31 Top	-30.5	2.5	10	150-300 cpm	6.0	<Lc 8	50	279.0	215	127	0.0	<Lc -1	0	222.0	<Lc 19	128
8	Grid #D31 partial W.Shoulder	-30.5	3.3	9.3	150-300 cpm	6.0	<Lc 8	50	226.0	<Lc 59	120	1.0	<Lc 2	5	195.0	<Lc -66	124
9	Grid #J31 E.Shoulder	-30.5	9.5	9.3	150-300 cpm	7.0	<Lc 15	52	251.0	132	123	2.0	4	7	182.0	<Lc -106	122
10	Grid #K31 Top	-30.5	10.5	10	150-300 cpm	3.0	<Lc -15	43	254.0	141	124	0.0	<Lc -1	0	224.0	<Lc 25	128
11	Grid #L31 Top	-30.5	11.5	10	150-300 cpm	3.0	<Lc -15	43	251.0	132	123	1.0	<Lc 2	5	211.0	<Lc -16	127
12	Grid #M31 Top	-30.5	12.5	10	150-500 cpm	9.0	<Lc 31	56	509.0	891	154	0.0	<Lc -1	0	216.0	<Lc 0	127
13	Grid #A36 partial E.Shoulder	-35.7	0.7	9.3	150-300 cpm	4.0	<Lc -8	45	254.0	141	124	0.0	<Lc -1	0	210.0	<Lc -19	126
14	Grid #B36 Top	-35.7	1.5	10	150-300 cpm	2.0	<Lc -23	40	211.0	<Lc 15	118	0.0	<Lc -1	0	190.0	<Lc -81	123
15	QC of #14	-35.7	1.5	10	~~150-300 cpm~~ KBT-5-98	5.0	<Lc 0	48	206.0	<Lc 0	117	1.0	<Lc 2	5	201.0	<Lc -47	125
16	Grid #C36 W.Shoulder	-35.7	2.5	9.3	150-300 cpm	8.0	<Lc 23	54	265.0	174	125	1.0	<Lc 2	5	206.0	<Lc -31	126
17	Grid #D36 E.Shoulder	-35.7	3.5	9.3	150-300 cpm	6.0	<Lc 8	50	292.0	253	129	0.0	<Lc -1	0	231.0	<Lc 47	129
18	Grid #E36 Top	-35.7	4.5	10	150-300 cpm	5.0	<Lc 0	48	286.0	235	128	2.0	4	7	188.0	<Lc -88	123

CH 8-3-98

Data Entered By and Date: Robin Sunberg 9 July 98

Review and Date (Site Manager) 9 July 98

12/11/96

*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annex Building Survey Coordinates in Meters from S. E. Corner, Alpha scans range from 1-60cpm;See field notes for Beta scans

V 1.9

Reference No.:	LKYDT100
Survey No.:	144
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	J. Kinstle
Survey Date:	07/06/98
Smears Counted By:	J. Kinstle
Smear Count Date:	07/06/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	J. Kinstle		J. Kinstle	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	685	685		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	146	146	68225	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Bkgd CPM:	3.0	174.0	0.2	197.0
Efficiency:	0.13	0.34	0.40	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	31	91	2	102

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	Overhead Grid #C11 Top	-10.2	2.5	10	250-900 cpm	31.0	215	88	844.0	1971	184	0.0	<Lc -1	0	184.0	<Lc -41	120
2	Grid #E11 Top	-10.2	4.3	10	200-850 cpm	12.0	69	58	461.0	844	145	5.0	12	11	231.0	106	127
3	Grid #F11 E.Shoulder	-10.2	5.5	9.3	200-400 cpm	9.0	46	52	281.0	315	123	0.0	<Lc -1	0	237.0	125	128
4	Grid #J11 Top	-10.2	9.5	10	300-600 cpm	13.0	77	60	506.0	976	150	4.0	10	10	236.0	122	127
5	Grid #J11 E.Shoulder	-10.2	9.5	9.3	300-800 cpm	25.0	169	80	570.0	1165	157	1.0	2	5	218.0	<Lc 66	125
6	Grid #M11 Top	-10.2	12.5	10	300-700 cpm	46.0	331	106	525.0	1032	152	2.0	5	7	182.0	<Lc -47	119
7	QC of #6	-10.2	12.5	10	~~300-700 cpm~~	48.0	346	108	535.0	1062	153	3.0	7	8	196.0	<Lc -3	121
8	Grid #N11 part Top	-10.2	13.2	10	300-900 cpm	25.0	169	80	636.0	1359	164	3.0	7	8	213.0	<Lc 50	124
9	Grid #D16 Top	-15.3	3.5	10	250-600 cpm	19.0	123	71	446.0	800	144	2.0	5	7	205.0	<Lc 25	123
10	Grid #E16 Top	-15.3	4.3	10	200-400 cpm	14.0	85	62	349.0	515	132	9.0	22	15	221.0	<Lc 75	125
11	Grid #H16 W. Shoulder	-15.3	7.5	9.3	200-350 cpm	8.0	38	50	220.0	135	114	0.0	<Lc -1	0	204.0	<Lc 22	123
12	Grid #J16 Top	-15.3	9.5	10	200-400 cpm	6.0	<Lc 23	45	252.0	229	119	0.0	<Lc -1	0	198.0	<Lc 3	122
13	Grid #K16 E.Shoulder	-15.3	10.5	9.3	200-350 cpm	6.0	<Lc 23	45	227.0	156	115	1.0	2	5	197.0	<Lc 0	122
14	Grid #M16 Top	-15.3	12.5	10	200-400 cpm	1.0	<Lc -15	30	299.0	368	125	0.0	<Lc -1	0	225.0	<Lc 88	126
15	Grid #N16 part W. Shoulder	-15.3	13.5	9.3	200-400 cpm	7.0	<Lc 31	48	345.0	503	131	4.0	10	10	228.0	<Lc 97	126

Data Entered By and Date: [illegible] 10 July 98

[illegible] (Site Manager) [illegible] 10 July 98

7-17-98

12/11/96
*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annex Building Survey Coordinates in Meters from S. E. Corner, Alpha scans range from 0-60cpm;See field notes for Beta scans

V 1.9

Reference No.:	LKYDT101
Survey No.:	145
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	R. Pennock
Survey Date:	07/06/98
Smears Counted By:	R. Pennock
Smear Count Date:	07/06/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	Robert E Pennock		Robert E Pennock	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	672	672		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	143	143	68225	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Bkgd CPM:	4.0	277.0	0.2	197.0
Efficiency:	0.13	0.34	0.40	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	36	114	2	102

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	Overhead Grid #B16 Top	-15.5	1.3	10	300-800 cpm	19.0	115	72	536.0	762	164	0.0	<Lc -1	0	210.0	<Lc 41	124
2	Grid #C16 W. Shoulder	-15.5	2.5	9.3	200-400 cpm	3.0	<Lc -8	40	295.0	<Lc 53	138	0.0	<Lc -1	0	213.0	<Lc 50	124
3	Grid #F16 ToP	-15.5	5.3	10	300-400 cpm	24.0	154	80	362.0	250	146	0.0	<Lc -1	0	215.0	<Lc 56	124
4	Grid #G16 E. Shoulder	-15.5	6.5	9.3	250-400 cpm	8.0	<Lc 31	52	255.0	<Lc -65	133	0.0	<Lc -1	0	197.0	<Lc 0	122
5	Grid #I 16 E. Shoulder	-15.5	8.5	9.3	200-400 cpm	7.0	<Lc 23	50	263.0	<Lc -41	134	0.0	<Lc -1	0	191.0	<Lc -19	121
6	Grid #L16 Top	-15.5	11.5	10	250-450 cpm	27.0	177	84	451.0	512	156	1.0	2	5	207.0	<Lc 31	123
7	Grid #B11 W. Shoulder	-10.5	1.5	9.3	300-400 cpm	20.0	123	74	343.0	194	144	0.0	<Lc -1	0	207.0	<Lc 31	123
8	Grid #D11 W. Shoulder	-10.5	3.5	9.3	300-450 cpm	20.0	123	74	444.0	491	155	0.0	<Lc -1	0	220.0	<Lc 72	125
9	Grid #D11 Top	-10.5	3.2	10	300-900 cpm	22.0	138	77	667.0	1147	177	0.0	<Lc -1	0	230.0	103	127
10	Grid #H11 Top	-10.5	7.5	10	300-550 cpm	10.0	46	56	290.0	<Lc 38	137	1.0	2	5	198.0	<Lc 3	122
11	Grid #I 11 E. Shoulder	-10.5	8.8	9.3	300-700 cpm	27.0	177	84	471.0	571	158	0.0	<Lc -1	0	198.0	<Lc 3	122
12	Grid #I 11 Top	-10.5	8.5	10	300-550 cpm	11.0	54	58	320.0	126	141	1.0	2	5	213.0	<Lc 50	124
13	Grid #K11 Top	-10.5	10.9	10	300-1000 cpm	47.0	331	108	912.0	1868	199	8.0	20	14	204.0	<Lc 22	123
14	QC of #13					56.0	400	117	917.0	1882	199	5.0	12	11	223.0	<Lc 81	126
15	Grid #K11 Top	-10.5	10.5	10	300-500 cpm	20.0	123	74	520.0	715	163	0.0	<Lc -1	0	213.0	<Lc 50	124
16	Grid #L11 Top	-10.5	11.3	10	300-1100 cpm	47.0	331	108	1263.0	2900	226	10.0	25	15	208.0	<Lc 34	123

7-17-98

Data Entered By and Date: 10 July 98

12/11/96

*DPM units per 100 cm2

f1

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annex Building Survey Coordinates in Meters from the S.E.Corner, Alpha scans <45cpm , See field notes for Beta scans

V 1.9

Reference No.:	LKYDT102
Survey No.:	146
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	R. Pennock
Survey Date:	07/07/98
Smears Counted By:	J. Caldwell
Smear Count Date:	07/08/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:				
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	672	672		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	143	143	68222	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Bkgd CPM:	4.0	271.0	0.1	196.0
Efficiency:	0.13	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	36	113	1	102

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	40G Roof BeamN.Shoulder & Pipe	-39.5	6.5	10	250-350 cpm	4.0	<Lc 0	43	240.0	<Lc -91	130	0.0	<Lc 0	0	220.0	<Lc 75	125
2	40H Pipe Sprinkler	-39.5	7.5	9.7	200-350 cpm	6.0	<Lc 15	48	211.0	<Lc -176	127	0.0	<Lc 0	0	194.0	<Lc -6	121
3	40 I Pipe Sprinkler	-39.5	8.5	9.7	200-350 cpm	1.0	<Lc -23	34	232.0	<Lc -115	129	0.0	<Lc 0	0	205.0	<Lc 28	123
4	40J Pipe Sprinkler	-39.5	9.5	9.7	200-350 cpm	6.0	<Lc 15	48	252.0	<Lc -56	132	0.0	<Lc 0	0	222.0	<Lc 81	125
5	40J Roof Beam S. Shoulder	-39.5	9.5	10	200-350 cpm	4.0	<Lc 0	43	272.0	<Lc 3	134	0.0	<Lc 0	0	206.0	<Lc 31	123
6	40K Pipe Sprinkler	-39.5	10.5	9.7	200-300 cpm	4.0	<Lc 0	43	251.0	<Lc -59	132	1.0	2	5	194.0	<Lc -6	121
7	40L Roof Beam S. Shoulder	-39.5	11.5	10	250-400 cpm	5.0	<Lc 8	45	291.0	<Lc 59	137	1.0	2	5	193.0	<Lc -9	121
8	40L Light	-39.2	11.7	7.2	250-350 cpm	10.0	46	56	223.0	<Lc -141	128	0.0	<Lc 0	0	193.0	<Lc -9	121
9	40L Pipe Sprinkler	-39.5	11.5	9.7	200-300 cpm	5.0	<Lc 8	45	254.0	<Lc -50	132	1.0	2	5	202.0	<Lc 19	122
10	40M Pipe Sprinkler	-39.5	12.5	9.7	200-300 cpm	4.0	<Lc 0	43	262.0	<Lc -26	133	0.0	<Lc 0	0	228.0	<Lc 100	126
11	40N Top Of Duct	-39.5	13.5	8	150-350 cpm	4.0	<Lc 0	43	276.0	<Lc 15	135	1.0	2	5	197.0	<Lc 3	121
12	20A Board on Wall	-19.5	0	9.7	200-300 cpm	4.0	<Lc 0	43	268.0	<Lc -9	134	0.0	<Lc 0	0	215.0	<Lc 59	124
13	20A Top of Door	-19.5	0.1	5.8	300-500 cpm	13.0	69	62	436.0	485	153	0.0	<Lc 0	0	198.0	<Lc 6	122
14	20A Door Ridge 1st @ Top	-19.5	0.1	5.7	250-350 cpm	4.0	<Lc 0	43	325.0	159	141	1.0	2	5	189.0	<Lc -22	120
15	20A Door Ridge 2nd	-19.5	0.1	5.2	250-450 cpm	11.0	54	58	386.0	338	148	0.0	<Lc 0	0	202.0	<Lc 19	122
16	20A Door Ridge 3rd	-19.5	0.1	4.6	250-450 cpm	5.0	<Lc 8	45	323.0	153	140	3.0	7	8	207.0	<Lc 34	123
17	QC of #16					5.0	<Lc 8	45	339.0	200	142	0.0	<Lc 0	0	213.0	<Lc 53	124
18	20A Door Ridge 4th	-19.5	0.1	4	250-350 cpm	7.0	<Lc 23	50	315.0	129	140	0.0	<Lc 0	0	216.0	<Lc 63	124
19	20A Door Ridge 5th	-19.5	0.1	3.5	250-400 cpm	5.0	<Lc 8	45	321.0	147	140	0.0	<Lc 0	0	194.0	<Lc -6	121
20	20A Pipe Sprinkler	-19.5	0.5	9.7	200-300 cpm	6.0	<Lc 15	48	249.0	<Lc -65	131	0.0	<Lc 0	0	218.0	<Lc 69	125
21	20A Pipe	-19.5	0.5	9.1	200-300 cpm	5.0	<Lc 8	45	229.0	<Lc -124	129	1.0	2	5	213.0	<Lc 53	124
22	20 A Water Pipe E-W	-19.5	0.5	9.1	250-350 cpm	1.0	<Lc -23	34	253.0	<Lc -53	132	0.0	<Lc 0	0	213.0	<Lc 53	124
23	20B Pipe Sprinkler	-19.5	1.5	9.7	200-300 cpm	5.0	<Lc 8	45	251.0	<Lc -59	132	0.0	<Lc 0	0	182.0	<Lc -44	119

Data Entered By and Date: 12 July 98

9-1-98

12/11/96
*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annex Building Survey Coordinates in Meters from the S.E.Corner, Alpha scans <45cpm , See field notes for Beta scans

V 1.9

Reference No.:	LKYDT102
Survey No.:	146
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	R. Pennock
Survey Date:	07/07/98
Smears Counted By:	J. Caldwell
Smear Count Date:	07/08/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:				
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	672	672		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	143	143	68222	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Bkgd CPM:	4.0	271.0	0.1	196.0
Efficiency:	0.13	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	36	113	1	102

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
24	20B Pipe Large E-W	-19.5	1.5	9	150-300 cpm	7.0	<Lc 23	50	239.0	<Lc -94	130	0.0	<Lc 0	0	224.0	<Lc 88	126
25	20B Pipe	-19.5	1.5	9.1	200-300 cpm	2.0	<Lc -15	37	241.0	<Lc -88	130	0.0	<Lc 0	0	197.0	<Lc 3	121
26	QC of #25					3.0	<Lc -8	40	260.0	<Lc -32	133	0.0	<Lc 0	0	203.0	<Lc 22	122
27	20C Pipe	-19.5	2.5	9.1	150-350 cpm	3.0	<Lc -8	40	262.0	<Lc -26	133	0.0	<Lc 0	0	203.0	<Lc 22	122
28	20C Pipe Sprinkler	-19.5	2.5	9.7	150-350 cpm	3.0	<Lc -8	40	267.0	<Lc -12	134	0.0	<Lc 0	0	193.0	<Lc -9	121
29	20CRoof Beam N. Shoulder	-19.5	2.5	10	250-350 cpm	5.0	<Lc 8	45	271.0	<Lc 0	134	0.0	<Lc 0	0	184.0	<Lc -38	119
30	20D Pipe Sprinkler	-19.5	3.5	9.7	150-350 cpm	4.0	<Lc 0	43	296.0	<Lc 74	137	0.0	<Lc 0	0	202.0	<Lc 19	122
31	20D Pipe	-19.5	3.5	9.1	150-350 cpm	5.0	<Lc 8	45	271.0	<Lc 0	134	0.0	<Lc 0	0	222.0	<Lc 81	125
32	20F Mpno Rail	-19.5	5.5	9	200-400 cpm	3.0	<Lc -8	40	293.0	<Lc 65	137	0.0	<Lc 0	0	194.0	<Lc -6	121
33	20F Pipe E-W	-19.5	5.5	8.8	200-350 cpm	7.0	<Lc 23	50	251.0	<Lc -59	132	0.0	<Lc 0	0	207.0	<Lc 34	123
34	20G pipe	-19.5	6.5	9.1	200-450 cpm	1.0	<Lc -23	34	245.0	<Lc -76	131	0.0	<Lc 0	0	213.0	<Lc 53	124
35	20F Pipe	-19.5	5.5	9.1	200-450 cpm	7.0	<Lc 23	50	253.0	<Lc -53	132	0.0	<Lc 0	0	211.0	<Lc 47	124
36	20F Pipe Sprinkler	-19.5	5.5	9.7	200-450 cpm	3.0	<Lc -8	40	255.0	<Lc -47	132	0.0	<Lc 0	0	201.0	<Lc 16	122
37	20G Pipe Sprinkler	-19.5	6.5	9.7	200-450 cpm	9.0	38	54	258.0	<Lc -38	133	0.0	<Lc 0	0	197.0	<Lc 3	121
38	20H Pipe Sprinkler	-19.5	7.5	9.7	250-400 cpm	2.0	<Lc -15	37	265.0	<Lc -18	133	1.0	2	5	220.0	<Lc 75	125
39	20H Pipe	-19.5	7.5	9.1	250-350 cpm	8.0	<Lc 31	52	289.0	<Lc 53	136	0.0	<Lc 0	0	235.0	122	127
40	20 I Pipe Sprinkler	-19.5	8.5	9.7	250-400 cpm	6.0	<Lc 15	48	259.0	<Lc -35	133	1.0	2	5	186.0	<Lc -31	120
41	20 I Pipe	-19.5	8.5	9.1	250-350 cpm	5.0	<Lc 8	45	255.0	<Lc -47	132	1.0	2	5	217.0	<Lc 66	124
42	20J Pipe	-19.5	9.5	9.1	250-350 cpm	1.0	<Lc -23	34	268.0	<Lc -9	134	1.0	2	5	232.0	113	127
43	20J Roof Beam S. Shoulder	-19.5	9.5	10	250-350 cpm	10.0	46	56	293.0	<Lc 65	137	0.0	<Lc 0	0	178.0	<Lc -56	118
44	20J Pipe Sprinkler	-19.5	9.5	9.7	250-350 cpm	3.0	<Lc -8	40	255.0	<Lc -47	132	0.0	<Lc 0	0	181.0	<Lc -47	119
45	20G Aroof Beam N. Shoulder	-19.5	6.9	10	250-350 cpm	9.0	38	54	279.0	<Lc 24	135	1.0	2	5	222.0	<Lc 81	125
46	QC of #45					5.0	<Lc 8	45	297.0	<Lc 76	137	0.0	<Lc 0	0	199.0	<Lc 9	122

Data Er[illegible] By and Date: [illegible] 12 July 98

9-1-98

12/11/96

*DPM units p[illegible] m2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annex Building Survey Coordinates in Meters from the S.E.Corner, Alpha scans <45cpm , See field notes for Beta scans

V 1.9

Reference No.:	LKYDT102
Survey No.:	146
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	R. Pennock
Survey Date:	07/07/98
Smears Counted By:	J. Caldwell
Smear Count Date:	07/08/98

	DIRECT SURFACE						TRANSFERABLE CONTAMINATION					
Surveyor Sign:												
	Alpha			Beta-Gamma			Alpha			Beta-Gamma		
Scaler Model:	E-600			E-600						E-600		
Serial No.:	672			672						1175		
Detector:	SHP-380			SHP-380			43-10			SHP-380		
Serial No.:	143			143			68222			532		
Cal Due Date:	09/03/98			09/03/98			11/06/98			09/11/98		
Bkgd CPM:	4.0			271.0			0.1			196.0		
Efficiency:	0.13			0.34			0.41			0.32		
Area Cor Fact:	1.000			1.000			N/A			N/A		
Bkgd CT Time:	1			1			50			1		
Smpl CT Time:	1			1			1			1		
Lc (DPM):	36			113			1			102		

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
47	20K Pipe Sprinkler	-19.5	10.5	9.7	150-400 cpm	6.0	<Lc 15	48	259.0	<Lc -35	133	1.0	2	5	199.0	<Lc 9	122
48	20K Pipe	-19.5	10.5	9.1	150-400 cpm	6.0	<Lc 15	48	261.0	<Lc -29	133	1.0	2	5	197.0	<Lc 3	121
49	20L Pipe	-19.5	11.5	9.1	150-350 cpm	6.0	<Lc 15	48	220.0	<Lc -150	128	0.0	<Lc 0	0	211.0	<Lc 47	124
50	20L Roof Beam S. Shoulder	-19.5	11.5	10	200-400 cpm	11.0	54	58	313.0	124	139	1.0	2	5	197.0	<Lc 3	121
51	20L Pipe Sprinkler	-19.5	11.5	9.7	150-350 cpm	6.0	<Lc 15	48	268.0	<Lc -9	134	0.0	<Lc 0	0	213.0	<Lc 53	124
52	20L Light	-19.9	11.5	7.3	250-350 cpm	16.0	92	67	371.0	294	146	0.0	<Lc 0	0	187.0	<Lc -28	120
53	20M Pipe	-19.5	12.5	9.1	250-400 cpm	5.0	<Lc 8	45	260.0	<Lc -32	133	0.0	<Lc 0	0	203.0	<Lc 22	122
54	20N Pipe	-19.5	13.5	9.1	250-350 cpm	8.0	<Lc 31	52	258.0	<Lc -38	133	0.0	<Lc 0	0	204.0	<Lc 25	123
55	20N Duct Vent	-19.5	13.5	7.6	250-400 cpm	3.0	<Lc -8	40	261.0	<Lc -29	133	0.0	<Lc 0	0	228.0	<Lc 100	126

Data Entered By and Date: [illegible] 12 July 98

[illegible] 12 July 98

CB 9-1-98

12/11/96
*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annex Building Survey Coordinates in Meters from S. E. Corner, Alpha scans range from 0-30cpm;See field notes for Beta scans

V 1.9

Reference No.:	LKYDT103
Survey No.:	147
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	J. Kinstle
Survey Date:	07/08/98
Smears Counted By:	J.Caldwell
Smear Count Date:	07/08/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	J. Kinstle		L. Caldwell	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	685	685		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	146	146	68222	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Bkgd CPM:	3.0	264.0	0.1	196.0
Efficiency:	0.13	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	31	112	1	102

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	Main annex Floor Grid #D46	-45.5	3.7	0	200-400 cpm	4.0	<Lc 8	40	280.0	<Lc 47	134	0.0	<Lc 0	0	182.0	<Lc -44	119
2	Floor Grid #D47	-46.5	3.7	0	200-400 cpm	4.0	<Lc 8	40	300.0	<Lc 106	137	0.0	<Lc 0	0	206.0	<Lc 31	123
3	Floor Grid #D48	-47.5	3.7	0	200-400 cpm	1.0	<Lc -15	30	277.0	<Lc 38	134	1.0	2	5	210.0	<Lc 44	123
4	Floor Grid #E46	-45.5	4.5	0	200-400 cpm	6.0	<Lc 23	45	276.0	<Lc 35	134	0.0	<Lc 0	0	199.0	<Lc 9	122
5	QC of #4	-45.5	4.5	0	~~200-400 cpm~~ JB 7-5-98	5.0	<Lc 15	43	281.0	<Lc 50	135	0.0	<Lc 0	0	206.0	<Lc 31	123
6	Floor Grid #E47	-46.5	4.5	0	200-500 cpm	3.0	<Lc 0	37	380.0	341	146	0.0	<Lc 0	0	208.0	<Lc 38	123
7	Floor Grid #E48	-47.5	4.5	0	200-400 cpm	7.0	<Lc 31	48	270.0	<Lc 18	133	0.0	<Lc 0	0	207.0	<Lc 34	123
8	Floor Grid #F46	-45.5	5.5	0	200-400 cpm	4.0	<Lc 8	40	281.0	<Lc 50	135	0.0	<Lc 0	0	208.0	<Lc 38	123
9	Floor Grid #F47	-46.5	5.5	0	200-400 cpm	8.0	38	50	317.0	156	139	1.0	2	5	201.0	<Lc 16	122
10	Floor Grid #F48	-47.5	5.5	0	200-400 cpm	9.0	46	52	343.0	232	142	0.0	<Lc 0	0	208.0	<Lc 38	123

JB 7-17-98

Data Entered By and Date: 10 July 98

10 July 98

12/11/96

*DPM units per 100cm2

F 1

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annx Bldg Srvy Coord. In Meters frm S.E.Corner,Alpha scans <20cpm See field notes 4 Beta scans,Top of beam inaccess.due to lift limits

V 1.9

Reference No.:	LKYDT104
Survey No.:	148
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	J. Kinstle
Survey Date:	07/08/98
Smears Counted By:	J. Caldwell
Smear Count Date:	07/08/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	J. Kinstle		J. Caldwell	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	685	685		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	146	146	68222	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Bkgd CPM:	4.0	235.0	0.1	196.0
Efficiency:	0.13	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	36	105	1	102

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	Overhead Grid #C72 E.Shoulder	-71.5	2.5	9.3	150-300 cpm	3.0	<Lc -8	40	207.0	<Lc -82	121	0.0	<Lc 0	0	208.0	<Lc 38	123
2	Grid #D72 E. Shoulder	-71.5	3.5	9.3	150-300 cpm	3.0	<Lc -8	40	222.0	<Lc -38	123	0.0	<Lc 0	0	201.0	<Lc 16	122
3	Grid #E72 E.Shoulder	-71.5	4.5	9.3	150-250 cpm	8.0	<Lc 31	52	229.0	<Lc -18	124	0.0	<Lc 0	0	207.0	<Lc 34	123
4	Grid #F72 W. Shoulder	-71.5	5.5	9.3	150-300 cpm	3.0	<Lc -8	40	201.0	<Lc -100	120	0.0	<Lc 0	0	203.0	<Lc 22	122
5	QC of #4	-71.5	5.5	9.3	CJD 7-5-98 ~~150-300 cpm~~	3.0	<Lc -8	40	199.0	<Lc -106	120	0.0	<Lc 0	0	198.0	<Lc 6	122
6	Grid #G72 W.Shoulder	-71.5	6.5	9.3	150-300 cpm	2.0	<Lc -15	37	189.0	<Lc -135	119	0.0	<Lc 0	0	187.0	<Lc -28	120
7	Grid #H72 E. Shoulder	-71.5	7.5	9.3	150-300 cpm	6.0	<Lc 15	48	201.0	<Lc -100	120	0.0	<Lc 0	0	234.0	119	127
8	Grid #I 72 W. Shoulder	-71.5	8.5	9.3	150-300 cpm	7.0	<Lc 23	50	200.0	<Lc -103	120	0.0	<Lc 0	0	196.0	<Lc 0	121
9	Grid #J72 E. Shoulder	-71.5	9.5	9.3	150-300 cpm	3.0	<Lc -8	40	190.0	<Lc -132	119	0.0	<Lc 0	0	211.0	<Lc 47	124
10	Grid #K72 W.Shoulder	-71.5	10.5	9.3	150-300 cpm	4.0	<Lc 0	43	188.0	<Lc -138	119	0.0	<Lc 0	0	203.0	<Lc 22	122
11	Grid #L W. Shoulder	-71.5	11.5	9.3	200-300 cpm	5.0	<Lc 8	45	212.0	<Lc -68	122	0.0	<Lc 0	0	219.0	<Lc 72	125
12	Grid #M72 W.Shoulder	-71.5	12.5	9.3	200-300 cpm	6.0	<Lc 15	48	287.0	153	132	0.0	<Lc 0	0	185.0	<Lc -34	120
13	Grid #B77 E.Shoulder	-76.8	1.5	9.3	200-300 cpm	3.0	<Lc -8	40	197.0	<Lc -112	120	0.0	<Lc 0	0	209.0	<Lc 41	123
14	Grid #C77 E.Shoulder	-76.8	2.5	9.3	200-300 cpm	3.0	<Lc -8	40	202.0	<Lc -97	121	0.0	<Lc 0	0	206.0	<Lc 31	123
15	Grid #D77 E.Shoulder	-76.8	3.5	9.3	200-300 cpm	3.0	<Lc -8	40	203.0	<Lc -94	121	1.0	2	5	211.0	<Lc 47	124
16	Grid #E77 E.Shoulder	-76.8	4.5	9.3	150-300 cpm	7.0	<Lc 23	50	221.0	<Lc -41	123	0.0	<Lc 0	0	218.0	<Lc 69	125
17	Grid #M77 E.Shoulder	-76.8	12.5	9.3	150-300 cpm	5.0	<Lc 8	45	232.0	<Lc -9	125	0.0	<Lc 0	0	218.0	<Lc 69	125
18	Grid #L77 W.Shoulder	-76.8	11.5	9.3	150-300 cpm	5.0	<Lc 8	45	191.0	<Lc -129	119	1.0	2	5	220.0	<Lc 75	125
19	Grid #K77 E.Shoulder	-76.8	10.5	9.3	150-300 cpm	7.0	<Lc 23	50	193.0	<Lc -124	119	0.0	<Lc 0	0	217.0	<Lc 66	124
20	Grid #J77 W.Shoulder	-76.8	9.5	9.3	150-300 cpm	4.0	<Lc 0	43	194.0	<Lc -121	119	0.0	<Lc 0	0	208.0	<Lc 38	123
21	Grid #I 77 E.Shoulder	-76.8	8.5	9.3	150-300 cpm	5.0	<Lc 8	45	178.0	<Lc -168	117	0.0	<Lc 0	0	205.0	<Lc 28	123
22	Grid #H77 W.Shoulder	-76.8	7.5	9.3	150-300 cpm	5.0	<Lc 8	45	191.0	<Lc -129	119	0.0	<Lc 0	0	188.0	<Lc -25	120
23	QC of #22	-76.8	7.5	9.3	CJD 7-5-98 ~~150-300 cpm~~	3.0	<Lc -8	40	187.0	<Lc -141	118	1.0	2	5	197.0	<Lc 3	121

Data Entered By and Date: 11 July 98 11 July 98

CJB 7-17-98

12/11/96
*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annx Bldg Srvy Coord. in Meters frm S.E.Corner,Alpha scans <20cpm See field notes 4 Beta scans,Top of beam inaccess.due to lift limits

V 1.9

Reference No.:	LKYDT104
Survey No.:	148
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	J. Kinstle
Survey Date:	07/08/98
Smears Counted By:	J. Caldwell
Smear Count Date:	07/08/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:				
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	685	685		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	146	146	68222	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Bkgd CPM:	4.0	235.0	0.1	196.0
Efficiency:	0.13	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	36	105	1	102

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
24	Grid #G77 E.Shoulder	-76.8	6.5	9.3	150-300 cpm	6.0	<Lc 15	48	192.0	<Lc -126	119	1.0	2	5	236.0	125	127
25	Grid #F77 W.Shoulder	-76.8	5.5	9.3	200-300 cpm	6.0	<Lc 15	48	216.0	<Lc -56	122	2.0	5	7	211.0	<Lc 47	124

Data Entered By and Date: _____ 11 June 98 7-17-98

12/11/96

*DPM units per 100cm2

F 2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annx BldSrvy Coord.In Meters ..ı SE Corner,Alpha scans<20cpm;See field note 4 Beta scans,Top of Beams Inaccessible due 2 ..mit V 1.9

Reference No.:	LKYDT116
Survey No.:	161
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	J. Kinstle
Survey Date:	07/07/98
Smears Counted By:	J. Kinstle
Smear Count Date:	07/09/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	J. Kinstle		J. Kinstle	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	685	685		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	146	146	68222	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Bkgd CPM:	3.0	245.0	0.1	191.0
Efficiency:	0.13	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	31	107	1	101

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	Ovrhead I beams Grid B67 E.Shoulder	-66.4	1.5	9.3	150-250 cpm	5.0	<Lc 15	43	207.0	<Lc -112	123	0.0	<Lc 0	0	205.0	<Lc 44	122
2	C67 W. Shoulder	-66.4	2.5	9.3	150-300 cpm	3.0	<Lc 0	37	203.0	<Lc -124	122	0.0	<Lc 0	0	198.0	<Lc 22	121
3	D67 E. Shoulder	-66.4	3.5	9.3	150-250 cpm	2.0	<Lc -8	34	182.0	<Lc -185	119	1.0	2	5	224.0	103	125
4	E67 W. Shoulder	-66.4	4.5	9.3	150-250 cpm	2.0	<Lc -8	34	209.0	<Lc -106	123	2.0	5	7	209.0	<Lc 56	123
5	F67 W. Shoulder	-66.4	5.5	9.3	150-300 cpm	3.0	<Lc 0	37	196.0	<Lc -144	121	0.0	<Lc 0	0	241.0	156	127
6	G67 E. Shoulder	-66.4	6.5	9.3	200-350 cpm	3.0	<Lc 0	37	184.0	<Lc -179	119	1.0	2	5	229.0	119	126
7	H67 W. Shoulder	-66.4	7.5	9.3	200-350 cpm	3.0	<Lc 0	37	204.0	<Lc -121	122	1.0	2	5	216.0	<Lc 78	124
8	I 67 E. Shoulder	-66.4	8.5	9.3	200-300 cpm	9.0	46	52	213.0	<Lc -94	123	0.0	<Lc 0	0	230.0	122	126
9	QC of #8	-66.4	8.5	9.3	~~200-300 cpm~~	6.0	<Lc 23	45	197.0	<Lc -141	121	0.0	<Lc 0	0	228.0	116	125
10	B57 W. Shoulder	-56.2	1.5	9.3	200-300 cpm	5.0	<Lc 15	43	208.0	<Lc -109	123	0.0	<Lc 0	0	224.0	103	125
11	C57 E. Shoulder	-56.2	2.5	9.3	200-350 cpm	2.0	<Lc -8	34	230.0	<Lc -44	126	1.0	2	5	203.0	<Lc 38	122
12	D57 E. Shoulder	-56.2	3.5	9.3	200-350 cpm	11.0	62	56	208.0	<Lc -109	123	0.0	<Lc 0	0	228.0	116	125
13	E57 W. Shoulder	-56.2	4.5	9.3	200-350 cpm	7.0	<Lc 31	48	251.0	<Lc 18	128	0.0	<Lc 0	0	231.0	125	126
14	F57 E. Shoulder	-56.2	5.5	9.3	200-300 cpm	11.0	62	56	237.0	<Lc -24	127	0.0	<Lc 0	0	214.0	<Lc 72	123
15	G57 W. Shoulder	-56.2	6.5	9.3	200-350 cpm	8.0	38	50	223.0	<Lc -65	125	0.0	<Lc 0	0	213.0	<Lc 69	123
16	H57 E. Shoulder	-56.2	7.5	9.3	200-300 cpm	8.0	38	50	191.0	<Lc -159	120	0.0	<Lc 0	0	223.0	<Lc 100	125
17	I 57 W. Shoulder	-56.2	8.5	9.3	200-300 cpm	2.0	<Lc -8	34	263.0	<Lc 53	130	2.0	5	7	195.0	<Lc 13	120
18	K57 W. Shoulder	-56.2	9.5	9.3	200-300 cpm	3.0	<Lc 0	37	201.0	<Lc -129	122	0.0	<Lc 0	0	215.0	<Lc 75	123
19	J57 E. Shoulder	-56.2	10.5	9.3	200-300 cpm	9.0	46	52	229.0	<Lc -47	126	0.0	<Lc 0	0	245.0	169	128
20	L57 E. Shoulder	-56.2	11.5	9.3	200-300 cpm	6.0	<Lc 23	45	282.0	109	132	1.0	2	5	200.0	<Lc 28	121
21	Grid Bnd n OvrHead Grid 40 A Sprinklr	-39.5	0.5	9.7	150-250 cpm	1.0	<Lc -15	30	209.0	<Lc -106	123	0.0	<Lc 0	0	200.0	<Lc 28	121
22	40A 4" Pipe	-39.5	0.5	9.2	200-300 cpm	5.0	<Lc 15	43	204.0	<Lc -121	122	1.0	2	5	220.0	<Lc 91	124
23	40B Sprnklr	-39.5	1.5	9.7	150-250 cpm	2.0	<Lc -8	34	208.0	<Lc -109	123	1.0	2	5	217.0	<Lc 81	124

Data Entered By and Date: [signature] 22 July 98 8-4-98

Reviewed By and Date (Site Manager) [signature] 22 July 98

12/11/96
*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annx BldSrvy Coord.In Meters . ..ı SE Corner,Alpha scans<20cpm;See field note 4 Beta scans,Top of Beams inaccessible due 2 .... ..mit

V 1.9

Reference No.:	LKYDT116
Survey No.:	161
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	J. Kinstle
Survey Date:	07/07/98
Smears Counted By:	J. Kinstle
Smear Count Date:	07/09/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	J. K.		J. K.	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	685	685		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	146	146	68222	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Bkgd CPM:	3.0	245.0	0.1	191.0
Efficiency:	0.13	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	31	107	1	101

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
24	40B 8" Rain Pipe	-39.5	1.5	9.2	150-300 cpm	4.0	<Lc 8	40	215.0	<Lc -88	124	1.0	2	5	205.0	<Lc 44	122
25	40C Sprnklr	-39.5	2.5	9.7	150-250 cpm	3.0	<Lc 0	37	206.0	<Lc -115	122	0.0	<Lc 0	0	213.0	<Lc 69	123
26	QC of #25	-39.5	2.5	9.7	~~150-250 cpm~~ 8-5-98	4.0	<Lc 8	40	177.0	<Lc -200	118	0.0	<Lc 0	0	205.0	<Lc 44	122
27	40C Roof beam	-39.5	2.2	10	200-300 cpm	7.0	<Lc 31	48	216.0	<Lc -85	124	0.0	<Lc 0	0	194.0	<Lc 9	120
28	40D Sprinklr	-39.5	3.5	9.7	150-250 cpm	3.0	<Lc 0	37	201.0	<Lc -129	122	1.0	2	5	175.0	<Lc -50	117

Data Entered By and Date: Robin Sanborn 22 July 98

Reviewed and Date (Site Manager) 22 July 98

8-4-98

12/11/96

*DPM units per 100 cm2

F 2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annx BldSrvy Coord.In Meters . .n SE Corner,Alphascans<41cpm;See field notes 4 Betascans,Top of beams inaccessible due 2 .... ..mit

V 1.9

Reference No.:	LKYDT117
Survey No.:	162
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	R. Pennock
Survey Date:	07/08/98
Smears Counted By:	J. Kinstle
Smear Count Date:	07/09/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	Robert Kennah		Surveyor Sign:	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	672	672		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	143	143	68222	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Bkgd CPM:	4.0	293.0	0.1	191.0
Efficiency:	0.13	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	36	117	1	101

No.	Description	E (x)	N (y)	RL (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	40E Pipe Sprinkler	-39.5	4.5	9.7	200-350 cpm	5.0	<Lc 8	45	268.0	<Lc -74	137	0.0	<Lc 0	0	201.0	<Lc 31	121
2	40E Pipe E-W	-39.5	4.5	8.8	200-350 cpm	6.0	<Lc 15	48	249.0	<Lc -129	134	3.0	7	8	193.0	<Lc 6	120
3	40E Roof Beam N.Shldr	-39.5	4.5	10	200-400 cpm	5.0	<Lc 8	45	246.0	<Lc -138	134	1.0	2	5	229.0	119	126
4	40F Pipe Sprinkler	-39.5	5.5	9.7	200-400 cpm	2.0	<Lc -15	37	252.0	<Lc -121	135	1.0	2	5	252.0	191	129
5	40G Mono Rail	-39.5	6.5	8.6	150-350 cpm	8.0	<Lc 31	52	247.0	<Lc -135	134	1.0	2	5	214.0	<Lc 72	123
6	40G Gas Line E-W	-39.5	6.9	8.6	200-300 cpm	6.0	<Lc 15	48	254.0	<Lc -115	135	1.0	2	5	201.0	<Lc 31	121
7	40G Pipe Sprinkler	-39.5	6.5	9.7	250-350 cpm	8.0	<Lc 31	52	307.0	<Lc 41	141	0.0	<Lc 0	0	217.0	<Lc 81	124
8	82B Beam E. Shldr	-81.5	1.5	9.3	200-300 cpm	2.0	<Lc -15	37	242.0	<Lc -150	133	0.0	<Lc 0	0	214.0	<Lc 72	123
9	82D Beam E. Shldr	-81.5	3.5	9.3	250-350 cpm	4.0	<Lc 0	43	229.0	<Lc -188	132	0.0	<Lc 0	0	211.0	<Lc 63	123
10	82C Beam W. Shldr	-81.5	2.5	9.3	200-300 cpm	6.0	<Lc 15	48	223.0	<Lc -206	131	1.0	2	5	204.0	<Lc 41	122
11	QC of #10					5.0	<Lc 8	45	241.0	<Lc -153	133	0.0	<Lc 0	0	231.0	125	126
12	82E Beam E. Shldr	-81.5	4.5	9.3	250-350 cpm	6.0	<Lc 15	48	251.0	<Lc -124	134	1.0	2	5	209.0	<Lc 56	123
13	82F Beam W. Shldr	-81.5	5.5	9.3	200-350 cpm	5.0	<Lc 8	45	254.0	<Lc -115	135	1.0	2	5	204.0	<Lc 41	122
14	82G Beam E. Shldr	-81.5	6.5	9.3	200-350 cpm	6.0	<Lc 15	48	238.0	<Lc -162	133	1.0	2	5	217.0	<Lc 81	124
15	82H Beam W. Shldr	-81.5	7.5	9.3	150-400 cpm	4.0	<Lc 0	43	235.0	<Lc -171	132	0.0	<Lc 0	0	214.0	<Lc 72	123
16	82 I Beam W. Shldr	-81.5	8.5	9.3	150-350 cpm	3.0	<Lc -8	40	222.0	<Lc -209	131	0.0	<Lc 0	0	209.0	<Lc 56	123
17	82J Beam W. Shldr	-81.5	9.5	9.3	150-350 cpm	7.0	<Lc 23	50	229.0	<Lc -188	132	1.0	2	5	210.0	<Lc 59	123
18	82K Beam W. Shldr	-81.5	10.5	9.3	200-350 cpm	4.0	<Lc 0	43	231.0	<Lc -182	132	1.0	2	5	215.0	<Lc 75	123
19	82L Beam W. Shldr	-81.5	11.5	9.3	150-350 cpm	3.0	<Lc -8	40	254.0	<Lc -115	135	0.0	<Lc 0	0	220.0	<Lc 91	124
20	82M Beam W. Shldr	-81.5	12.5	9.3	150-350 cpm	4.0	<Lc 0	43	211.0	<Lc -241	129	0.0	<Lc 0	0	232.0	128	126
21	80A Wall Beam	-79.5	0.5	4.4	200-350 cpm	3.0	<Lc -8	40	265.0	<Lc -82	136	1.0	2	5	205.0	<Lc 44	122
22	80A Pipe	-79.5	0.2	7.7	150-300 cpm	7.0	<Lc 23	50	271.0	<Lc -65	137	1.0	2	5	225.0	106	125
23	80A Pipe E-W	-79.5	0.5	9	150-250 cpm	2.0	<Lc -15	37	251.0	<Lc -124	134	0.0	<Lc 0	0	224.0	103	125

8-9-98

Data Entered By and Date: 23 July 98

Reviewed By and Date (Site Manager): 23 July 98

12/11/96
*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annx BldSrvy Coord.in Meter. .n SE Corner,Alphascans<41cpm;See field notes 4 Betascans,Top of beams inaccessible due 2 . ..nit V 1.9

Reference No.:	LKYDT117
Survey No.:	162
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	R. Pennock
Survey Date:	07/08/98
Smears Counted By:	J. Kinstle
Smear Count Date:	07/09/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	R. Pennock			
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	672	672		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	143	143	68222	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Bkgd CPM:	4.0	293.0	0.1	191.0
Efficiency:	0.13	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	36	117	1	101

No.	Description	E (x)	N (y)	HL (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
24	80B Pipe E-W	-79.5	1.2	8.3	150-300 cpm	5.0	<Lc 8	45	264.0	<Lc -85	136	0.0	<Lc 0	0	201.0	<Lc 31	121
25	80B Pipe E-W	-79.5	1.5	9.3	150-250 cpm	2.0	<Lc -15	37	264.0	<Lc -85	136	1.0	2	5	239.0	150	127
26	80B Mono Rail Top	-79.5	1.5	9.3	150-300 cpm	3.0	<Lc -8	40	220.0	<Lc -215	131	0.0	<Lc 0	0	191.0	<Lc 0	120
27	80D Mono Rail Top	-79.5	3.5	9.3	150-300 cpm	6.0	<Lc 15	48	247.0	<Lc -135	134	1.0	2	5	234.0	134	126
28	80E Light	-79.5	4.5	7	200-250 cpm	8.0	<Lc 31	52	232.0	<Lc -179	132	0.0	<Lc 0	0	190.0	<Lc -3	120
29	80E Pipe E-W	-79.5	4.9	8.6	200-250 cpm	7.0	<Lc 23	50	253.0	<Lc -116	135	1.0	2	5	197.0	<Lc 19	121
30	80F Mono Rail	-79.5	5.5	9.3	200-300 cpm	12.0	62	60	241.0	<Lc -153	133	0.0	<Lc 0	0	218.0	<Lc 84	124
31	80G Pipe 10"	-79.5	6.9	8.8	150-250 cpm	5.0	<Lc 8	45	215.0	<Lc -229	130	2.0	5	7	225.0	106	125
32	QC of #31 (80G)					4.0	<Lc 0	43	230.0	<Lc -185	132	0.0	<Lc 0	0	215.0	<Lc 75	123
33	80K Light	-79.5	10.7	7.2	200-250 cpm	6.0	<Lc 15	48	239.0	<Lc -159	133	0.0	<Lc 0	0	207.0	<Lc 50	122
34	80M Duct top	-79.5	12.5	8.1	200-350 cpm	8.0	<Lc 31	52	276.0	<Lc -50	138	0.0	<Lc 0	0	197.0	<Lc 19	121
35	80N Pipe E-W	-79.5	13.8	4.7	250-350 cpm	8.0	<Lc 31	52	334.0	121	144	0.0	<Lc 0	0	215.0	<Lc 75	123
36	80N+ Pipe on Wall	-79.5	13.9	4.2	200-350 cpm	4.0	<Lc 0	43	247.0	<Lc -135	134	2.0	5	7	220.0	<Lc 91	124
37	80N+ Pipe on Wall	-79.5	13.9	4	200-350 cpm	7.0	<Lc 23	50	242.0	<Lc -150	133	0.0	<Lc 0	0	231.0	125	126
38	80N+ Pipe on Wall	-79.5	13.9	4.3	200-350 cpm	10.0	46	56	243.0	<Lc -147	133	0.0	<Lc 0	0	211.0	<Lc 63	123
39	80N+ Beam E-W	-79.5	13.9	4.7	200-350 cpm	7.0	<Lc 23	50	354.0	179	147	0.0	<Lc 0	0	179.0	<Lc -38	118

8-4-98

Data Entered By and Date: _____

Review and Date (Site Manager) 23 July 98

12/11/96

*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: AnnxBldSrvy Crd.in Meters fn.. .. Corner, Alphascan<36cpm;See field note 4 Betascan,Beam18,Band100,Top&West side inacc... V 1.9

Reference No.:	LKYDT118
Survey No.:	163
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	R. Pennock
Survey Date:	07/09/98
Smears Counted By:	J. Caldwell
Smear Count Date:	07/09/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:			Surveyor Sign:	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	672	672		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	143	143	68222	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Bkgd CPM:	3.0	230.0	0.1	191.0
Efficiency:	0.13	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	31	104	1	101

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	92A Beam	-91.9	0.5	9.3	200-300 cpm	4.0	<Lc 8	40	258.0	<Lc 82	127	0.0	<Lc 0	0	210.0	<Lc 59	123
2	92B Beam	-91.9	1.5	9.3	150-300 cpm	4.0	<Lc 8	40	226.0	<Lc -12	123	0.0	<Lc 0	0	177.0	<Lc -44	117
3	92C Beam	-91.9	2.5	9.3	150-300 cpm	3.0	<Lc 0	37	252.0	<Lc 65	127	1.0	2	5	182.0	<Lc -28	118
4	92D Beam	-91.9	3.5	9.3	200-300 cpm	12.0	69	58	232.0	<Lc 6	124	0.0	<Lc 0	0	196.0	<Lc 16	120
5	QC of #4					9.0	46	52	240.0	<Lc 29	125	0.0	<Lc 0	0	201.0	<Lc 31	121
6	92E Beam	-91.9	4.5	9.3	200-350 cpm	6.0	<Lc 23	45	226.0	<Lc -12	123	0.0	<Lc 0	0	203.0	<Lc 38	122
7	92F Beam	-91.9	5.5	9.3	150-300 cpm	7.0	<Lc 31	48	230.0	<Lc 0	124	0.0	<Lc 0	0	221.0	<Lc 94	124
8	92G Beam	-91.9	6.5	9.3	150-300 cpm	7.0	<Lc 31	48	219.0	<Lc -32	122	0.0	<Lc 0	0	200.0	<Lc 28	121
9	92H Beam	-91.9	7.5	9.3	150-300 cpm	7.0	<Lc 31	48	188.0	<Lc -124	118	0.0	<Lc 0	0	197.0	<Lc 19	121
10	92 I Beam	-91.9	8.5	9.3	200-350 cpm	6.0	<Lc 23	45	243.0	<Lc 38	125	0.0	<Lc 0	0	178.0	<Lc -41	118
11	92J Beam	-91.9	9.5	9.3	150-250 cpm	9.0	46	52	239.0	<Lc 26	125	0.0	<Lc 0	0	211.0	<Lc 63	123
12	92K Beam	-91.9	10.5	9.3	200-350 cpm	5.0	<Lc 15	43	229.0	<Lc -3	124	0.0	<Lc 0	0	179.0	<Lc -38	118
13	92L Beam	-91.9	11.5	9.3	200-350 cpm	3.0	<Lc 0	37	240.0	<Lc 29	125	0.0	<Lc 0	0	210.0	<Lc 59	123
14	92M Beam	-91.9	12.5	9.3	200-300 cpm	5.0	<Lc 15	43	240.0	<Lc 29	125	0.0	<Lc 0	0	177.0	<Lc -44	117
15	100N+ Beam on Wall	-99.5	13.9	4.6	200-400 cpm	9.0	46	52	305.0	221	133	1.0	2	5	194.0	<Lc 9	120
16	100N Channel Rail	-99.5	13.8	4.5	200-300 cpm	9.0	46	52	261.0	<Lc 91	128	1.0	2	5	206.0	<Lc 47	122
17	100N Duct	-99.5	13.5	7.7	200-350 cpm	3.0	<Lc 0	37	253.0	<Lc 68	127	0.0	<Lc 0	0	178.0	<Lc -41	118
18	100N Mono Rail	-99.5	13.5	8.6	200-350 cpm	6.0	<Lc 23	45	277.0	138	130	0.0	<Lc 0	0	180.0	<Lc -34	118
19	100N Pipe	-99.5	13.9	4.5	200-400 cpm	5.0	<Lc 15	43	289.0	174	131	0.0	<Lc 0	0	193.0	<Lc 6	120
20	100M Mono Rail	-99.5	12.5	8.6	200-350 cpm	5.0	<Lc 15	43	266.0	106	128	0.0	<Lc 0	0	208.0	<Lc 53	122
21	100L Mono Rail	-99.5	11.5	8.6	200-450 cpm	7.0	<Lc 31	48	230.0	<Lc 0	124	0.0	<Lc 0	0	193.0	<Lc 6	120
22	100K Lights	-99.5	10.5	7.1	200-400 cpm	10.0	54	54	366.0	400	141	1.0	2	5	196.0	<Lc 16	120
23	100J Support Beam	-99.5	9.8	9.3	200-350 cpm	7.0	<Lc 31	48	279.0	144	130	0.0	<Lc 0	0	205.0	<Lc 44	122

Data Entered By and Date: Robin Scarborough 24 July 98

Reviewed By and Date (Site Manager) [illegible] 24 July 98

8-4-98

12/11/96
*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: AnnxBldSrvy Crd.In Meters fm. SE Corner, Alphascan<36cpm;See field note 4 Betascan,Beam18,Band100,Top&West side Inaccessible

V 1.9

Reference No.:	LKYDT118
Survey No.:	163
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	R. Pennock
Survey Date:	07/09/98
Smears Counted By:	J. Caldwell
Smear Count Date:	07/09/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:				
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	672	672		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	143	143	68222	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Bkgd CPM:	3.0	230.0	0.1	191.0
Efficiency:	0.13	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	31	104	1	101

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
24	100J Monorail	-99.5	9.5	8.6	200-300 cpm	4.0	<Lc 8	40	246.0	<Lc 47	126	0.0	<Lc 0	0	211.0	<Lc 63	123
25	100 I Mono Rail	-99.5	8.5	8.6	200-400 cpm	10.0	54	54	211.0	<Lc -56	121	1.0	2	5	199.0	<Lc 25	121
26	100H Mono Rail	-99.5	7.5	8.6	200-350 cpm	5.0	<Lc 15	43	264.0	<Lc 100	128	0.0	<Lc 0	0	234.0	134	126
27	QC of # 25					5.0	<Lc 15	43	238.0	<Lc 24	125	0.0	<Lc 0	0	187.0	<Lc -13	119
28	100G Pipe E-W	-99.5	6.5	9.2	150-250 cpm	6.0	<Lc 23	45	217.0	<Lc -38	122	0.0	<Lc 0	0	213.0	<Lc 69	123
29	100G Support Beam	-99.5	6.5	9.3	150-350 cpm	5.0	<Lc 15	43	231.0	<Lc 3	124	0.0	<Lc 0	0	217.0	<Lc 81	124
30	100G Mono Rail	-99.5	6.5	8.6	150-350 cpm	3.0	<Lc 0	37	230.0	<Lc 0	124	0.0	<Lc 0	0	220.0	<Lc 91	124
31	100E Light	-99.5	4.5	7.1	150-300 cpm	9.0	46	52	244.0	<Lc 41	126	1.0	2	5	214.0	<Lc 72	123
32	100E Pipe E-W	-99.5	4.9	8.6	150-250 cpm	3.0	<Lc 0	37	254.0	<Lc 71	127	0.0	<Lc 0	0	199.0	<Lc 25	121

Data Entered By and Date: 24 July 98

8-4-98

24 July 98

12/11/96

*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annx BldSrvy Coord.in Meters .... SE Corner,Alpha scans<20cpm;See field notes 4 Beta scans,Top of beams inaccessible due 2 ... ...nit | V 1.9

Reference No.:	LKYDT119
Survey No.:	164
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	J. Kinstle
Survey Date:	07/09/98
Smears Counted By:	J. Caldwell
Smear Count Date:	07/09/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	Jkinstle		J. Caldwell	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	685	685		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	146	146	68222	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Bkgd CPM:	2.0	228.0	0.1	191.0
Efficiency:	0.13	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	25	104	1	101

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	Overhead I Beams Grid B87 E. Shldr	-86.8	1.5	9.3	150-300 cpm	6.0	31	43	213.0	<Lc -44	121	0.0	<Lc 0	0	188.0	<Lc -9	119
2	C87 W.Shoulder	-86.8	2.5	9.3	150-300 cpm	2.0	<Lc 0	30	194.0	<Lc -100	118	1.0	2	5	207.0	<Lc 50	122
3	D87 E. Shoulder	-86.8	3.5	9.3	150-300 cpm	8.0	46	48	197.0	<Lc -91	119	0.0	<Lc 0	0	190.0	<Lc -3	120
4	E87 W. Shoulder	-86.8	4.5	9.3	150-300 cpm	5.0	<Lc 23	40	184.0	<Lc -129	117	0.0	<Lc 0	0	185.0	<Lc -19	119
5	F87 W. Shoulder	-86.8	5.5	9.3	150-250 cpm	5.0	<Lc 23	40	209.0	<Lc -56	121	0.0	<Lc 0	0	197.0	<Lc 19	121
6	G87 W. Shoulder	-86.8	6.5	9.3	150-250 cpm	4.0	<Lc 15	37	183.0	<Lc -132	117	0.0	<Lc 0	0	193.0	<Lc 6	120
7	H87 E. Shoulder	-86.8	7.5	9.3	150-250 cpm	7.0	38	45	164.0	<Lc -188	114	0.0	<Lc 0	0	213.0	<Lc 69	123
8	I 87 W. Shoulder	-86.8	8.5	9.3	150-250 cpm	4.0	<Lc 15	37	166.0	<Lc -182	114	1.0	2	5	209.0	<Lc 56	123
9	J87 W. Shoulder	-86.8	9.5	9.3	150-250 cpm	1.0	<Lc -8	26	167.0	<Lc -179	115	2.0	5	7	195.0	<Lc 13	120
10	QC of #9	-86.8	9.5	9.3	~~150-250 cpm~~ 08-5-98	4.0	<Lc 15	37	186.0	<Lc -124	117	1.0	2	5	206.0	<Lc 47	122
11	K87 E. Shoulder	-86.8	10.5	9.3	150-250 cpm	6.0	31	43	195.0	<Lc -97	119	0.0	<Lc 0	0	192.0	<Lc 3	120
12	L87 W. Shoulder	-86.8	11.5	9.3	150-300 cpm	5.0	<Lc 23	40	177.0	<Lc -150	116	0.0	<Lc 0	0	205.0	<Lc 44	122
13	M87 E. Shoulder	-86.8	12.5	9.3	150-300 cpm	6.0	31	43	196.0	<Lc -94	119	0.0	<Lc 0	0	185.0	<Lc -19	119
14	B97 W. Shoulder	-96.9	1.5	9.3	150-300 cpm	5.0	<Lc 23	40	188.0	<Lc -118	118	1.0	2	5	176.0	<Lc -47	117
15	C97 E. Shoulder	-96.9	2.5	9.3	150-250 cpm	7.0	38	45	215.0	<Lc -38	121	1.0	2	5	183.0	<Lc -25	118
16	D97 W. Shoulder	-96.9	3.5	9.3	150-300 cpm	6.0	31	43	185.0	<Lc -126	117	1.0	2	5	213.0	<Lc 69	123
17	E97 W. Shoulder	-96.9	4.5	9.3	150-250 cpm	5.0	<Lc 23	40	198.0	<Lc -88	119	2.0	5	7	192.0	<Lc 3	120
18	F97 E. Shoulder	-96.9	5.5	9.3	150-250 cpm	4.0	<Lc 15	37	207.0	<Lc -62	120	1.0	2	5	215.0	<Lc 75	123
19	G97 E. Shoulder	-96.9	6.5	9.3	150-300 cpm	7.0	38	45	195.0	<Lc -97	119	1.0	2	5	214.0	<Lc 72	123
20	H97 E. Shoulder	-96.9	7.5	9.3	150-250 cpm	7.0	38	45	191.0	<Lc -109	118	0.0	<Lc 0	0	226.0	109	125
21	I 97 E. Shoulder	-96.9	8.5	9.3	150-300 cpm	3.0	<Lc 8	34	253.0	<Lc 74	126	1.0	2	5	242.0	159	127
22	J97 W. Shoulder	-96.9	9.5	9.3	150-300 cpm	9.0	54	50	186.0	<Lc -124	117	0.0	<Lc 0	0	182.0	<Lc -28	118
23	K97 E. Shoulder	-96.9	10.5	9.3	200-300 cpm	8.0	46	48	215.0	<Lc -38	121	0.0	<Lc 0	0	206.0	<Lc 47	122

Data Entered By and Date: 22 July 98

Reviewed By and Date (Site Manager) 22 July 98

8-4-98

12/11/96
*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annx BldSrvy Coord.In Meters ..... SE Corner,Alpha scans<20cpm;See field notes 4 Beta scans,Top of beams inaccessible due 2 lin limit

V 1.9

Reference No.:	LKYDT119
Survey No.:	164
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	J. Kinstle
Survey Date:	07/09/98
Smears Counted By:	J. Caldwell
Smear Count Date:	07/09/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:				
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	685	685		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	146	146	68222	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Bkgd CPM:	2.0	228.0	0.1	191.0
Efficiency:	0.13	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	25	104	1	101

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
24	L97 W. Shoulder	-96.9	11.5	9.3	200-300 cpm	6.0	31	43	210.0	<Lc -53	121	0.0	<Lc 0	0	199.0	<Lc 25	121
25	QC of #24	-96.9	11.5	9.3	~~200-300 cpm~~ JB 8-5-98	5.0	<Lc 23	40	209.0	<Lc -56	121	0.0	<Lc 0	0	205.0	<Lc 44	122
26	M97 E. Shoulder	-96.9	12.5	9.3	200-300 cpm	5.0	<Lc 23	40	210.0	<Lc -53	121	0.0	<Lc 0	0	209.0	<Lc 56	123
27	N97 W. Shoulder	-96.9	13.5	9.3	200-300 cpm	4.0	<Lc 15	37	216.0	<Lc -35	121	0.0	<Lc 0	0	191.0	<Lc 0	120

Data Entered By and Date: 22 July 98

Review and Date (Site Manager) 22 July 98

8-4-98

12/11/96

*DPM units per 100cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annex Building Survey Coordinates in Meters from S. E. Corner, Alpha scans range from 0-35cpm;See field notes for Beta scans

V 1.9

Reference No.:	LKYDT139
Survey No.:	188
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	R. Pennock
Survey Date:	07/11/98
Smears Counted By:	J. Kinstle
Smear Count Date:	07/11/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	Rob R Pennock		J. Kinstle	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	672	672		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	143	143	68222	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Bkgd CPM:	9.0	302.0	0.1	196.0
Efficiency:	0.13	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	54	119	1	102

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	49D Floor	-48.5	3.5	0	200-450 cpm	4.0	<Lc -38	54	360.0	171	148	0.0	<Lc 0	0	213.0	<Lc 53	124
2	49E Floor	-48.5	4.5	0	200-550 cpm	9.0	<Lc 0	64	314.0	<Lc 35	143	0.0	<Lc 0	0	206.0	<Lc 31	123
3	49F Floor	-48.5	5.5	0	200-500 cpm	12.0	<Lc 23	69	331.0	<Lc 85	145	0.0	<Lc 0	0	229.0	103	126
4	QC of #3					6.0	<Lc -23	58	352.0	147	147	0.0	<Lc 0	0	197.0	<Lc 3	121
5	49G Floor	-48.5	6.5	0	200-450 cpm	13.0	<Lc 31	71	337.0	<Lc 103	146	0.0	<Lc 0	0	178.0	<Lc -56	118
6	49H Floor	-48.5	7.5	0	200-500 cpm	5.0	<Lc -31	56	305.0	<Lc 9	142	0.0	<Lc 0	0	193.0	<Lc -9	121
7	49 I Floor	-48.5	8.5	0	200-400 cpm	11.0	<Lc 15	67	334.0	<Lc 94	145	0.0	<Lc 0	0	203.0	<Lc 22	122
8	49J Floor	-48.5	9.5	0	200-500 cpm	4.0	<Lc -38	54	262.0	<Lc -118	137	0.0	<Lc 0	0	186.0	<Lc -31	120
9	49K Floor	-48.5	10.5	0	200-400 cpm	4.0	<Lc -38	54	292.0	<Lc -29	140	0.0	<Lc 0	0	197.0	<Lc 3	121
10	49L Floor	-48.5	11.5	0	200-400 cpm	6.0	<Lc -23	58	282.0	<Lc -59	139	0.0	<Lc 0	0	217.0	<Lc 66	124
11	49M Floor	-48.5	12.5	0	200-400 cpm	6.0	<Lc -23	58	308.0	<Lc 18	142	0.0	<Lc 0	0	203.0	<Lc 22	122
12	49N Floor	-48.5	13.5	0	200-400 cpm	11.0	<Lc 15	67	337.0	<Lc 103	146	0.0	<Lc 0	0	188.0	<Lc -25	120

Data Entered By and Date: 20 July 98 7-23-98

Reviewed By and Date (Site Manager): 20 July 98

12/11/96
*DPM units per 100 cm2

THERMO NUtech
Direct Surface and Transferable Contamination Survey

Comments: Annex Building Survey Coordinates in Meters from S. E. Corner, Alpha scans range from 0-20cpm;See field notes for Beta scans Beam23 V 1.9

Reference No.:	LKYDT148
Survey No.:	201
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	R. Pennock
Survey Date:	07/11/98
Smears Counted By:	J. Kinstle
Smear Count Date:	07/11/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	672	672		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	143	143	68222	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Bkgd CPM:	1.0	263.0	0.1	196.0
Efficiency:	0.13	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	18	111	1	102

No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	118G Beam E. Shoulder	-117.4	6.5	9.3	200-300 cpm	4.0	23	34	228.0	<Lc -103	128	0.0	<Lc 0	0	204.0	<Lc 25	123
2	118H Beam W. Shoulder	-117.4	7.5	9.3	150-250 cpm	6.0	38	40	250.0	<Lc -38	131	0.0	<Lc 0	0	209.0	<Lc 41	123
3	118 I Beam W. Shoulder	-117.4	8.5	9.3	150-250 cpm	4.0	23	34	215.0	<Lc -141	126	0.0	<Lc 0	0	203.0	<Lc 22	122
4	118J Beam E. Shoulder	-117.4	9.5	9.3	200-300 cpm	8.0	54	45	201.0	<Lc -182	124	0.0	<Lc 0	0	220.0	<Lc 75	125
5	QC of #4					9.0	62	48	257.0	<Lc -18	131	0.0	<Lc 0	0	190.0	<Lc -19	120
6	118K Beam W. Shoulder	-117.4	10.5	9.3	200-300 cpm	9.0	62	48	255.0	<Lc -24	131	0.0	<Lc 0	0	225.0	<Lc 91	126
7	118L Beam E. Shoulder	-117.4	11.5	9.3	200-350 cpm	5.0	31	37	223.0	<Lc -118	127	0.0	<Lc 0	0	184.0	<Lc -38	119
8	118M Beam W. Shoulder	-117.4	12.2	9.3	200-350 cpm	2.0	<Lc 8	26	219.0	<Lc -129	127	0.0	<Lc 0	0	169.0	<Lc -84	117
9	118N Beam W. Shoulder	-117.4	13.5	9.3	200-300 cpm	5.0	31	37	255.0	<Lc -24	131	0.0	<Lc 0	0	194.0	<Lc -6	121

Data Entered By and Date: 20 July 98

Revi[illegible] and Date (Site Manager) 20 July 9[illegible]

7-23-98

12/11/96
*DPM units per 100 cm2
[illegible] of 1

THERMO NUtech
Direct Surface and Transferable Contamination Survey

V 1.9

Comments: Annex Building Survey Coordinates in Meters from S. E. Corner, Alpha scans < 26cpm;See field notes for Beta scans,

Reference No.:	LKYDT149
Survey No.:	202
Data Code:	CH-SURV
Grid ID:	See Below
Area:	Annex Building
Survey By:	J. Kinstle
Survey Date:	07/11/98
Smears Counted By:	R. Pennock
Smear Count Date:	07/11/98

	DIRECT SURFACE		TRANSFERABLE CONTAMINATION	
Surveyor Sign:	J. Kinstle		Robt Pennock	
	Alpha	Beta-Gamma	Alpha	Beta-Gamma
Scaler Model:	E-600	E-600		E-600
Serial No.:	685	685		1175
Detector:	SHP-380	SHP-380	43-10	SHP-380
Serial No.:	146	146	68222	532
Cal Due Date:	09/03/98	09/03/98	11/06/98	09/11/98
Bkgd CPM:	3.0	218.0	0.1	196.0
Efficiency:	0.13	0.34	0.41	0.32
Area Cor Fact:	1.000	1.000	N/A	N/A
Bkgd CT Time:	1	1	50	1
Smpl CT Time:	1	1	1	1
Lc (DPM):	31	101	1	102

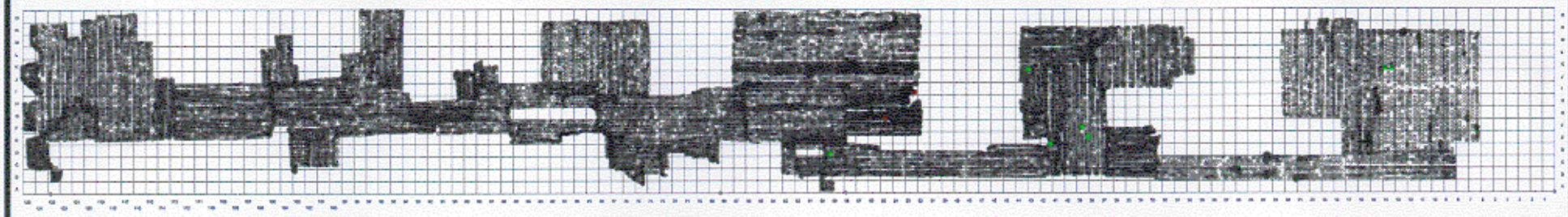
No.	Description	E (x)	N (y)	Ht. (z)	Field Notes	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV	Gross CPM	Smpl DPM*	STD DEV
1	Floor Grid N50	-49.5	13.5	0	200-350 cpm	7.0	<Lc 31	48	293.0	221	130	0.0	<Lc 0	0	218.0	<Lc 69	125
2	M50	-49.5	12.5	0	200-350 cpm	6.0	<Lc 23	45	303.0	250	132	0.0	<Lc 0	0	197.0	<Lc 3	121
3	QC of #2	-49.5	12.5	0	GB 7-23-98 ~~200-350 cpm~~	5.0	<Lc 15	43	269.0	150	127	1.0	2	5	212.0	<Lc 50	124
4	L50	-49.5	11.5	0	200-350 cpm	5.0	<Lc 15	43	295.0	226	131	0.0	<Lc 0	0	189.0	<Lc -22	120
5	K50	-49.5	10.5	0	200-400 cpm	4.0	<Lc 8	40	239.0	<Lc 62	123	0.0	<Lc 0	0	199.0	<Lc 9	122
6	J50	-49.5	9.5	0	200-400 cpm	10.0	54	54	267.0	144	127	0.0	<Lc 0	0	190.0	<Lc -19	120
7	I 50	-49.5	8.5	0	200-400 cpm	8.0	38	50	303.0	250	132	0.0	<Lc 0	0	192.0	<Lc -13	121
8	H50	-49.5	7.5	0	200-450 cpm	4.0	<Lc 8	40	412.0	571	145	0.0	<Lc 0	0	191.0	<Lc -16	120
9	G50	-49.5	6.5	0	200-400 cpm	10.0	54	54	305.0	256	132	1.0	2	5	218.0	<Lc 69	125
10	F50	-49.5	5.5	0	200-400 cpm	7.0	<Lc 31	48	322.0	306	134	0.0	<Lc 0	0	200.0	<Lc 13	122
11	E50	-49.5	4.5	0	200-400 cpm	8.0	38	50	298.0	235	131	1.0	2	5	187.0	<Lc -28	120
12	D50 Main Floor Partial	-49.5	3.7	0	200-400 cpm	3.0	<Lc 0	37	307.0	262	132	0.0	<Lc 0	0	210.0	<Lc 44	123

GB 7-23-98

Data Entered By and Date: 20 July 98

Reviewed By and Date (Site Manager) 20 July 98

12/11/96
*DPM units per 100 cm2



Beta dpm

- < 5k
- > 5k
- 60 Second Reading

Summary Statistics

Survey File: Composite
Survey Date: 7/20 thru 24/98
E600 #: 1243, NE-FLP3 #: 0001
Meter Time Constant: 10
Cs137 Efficency (Static): 0.307
Survey Background (cpm): 2000 avg.
Data Points Acquired: 34,335
Data Points > 5k: 11
Meters2 Surveyed: 1,030
Project File: BETA798
PDF File: L_URE_F1

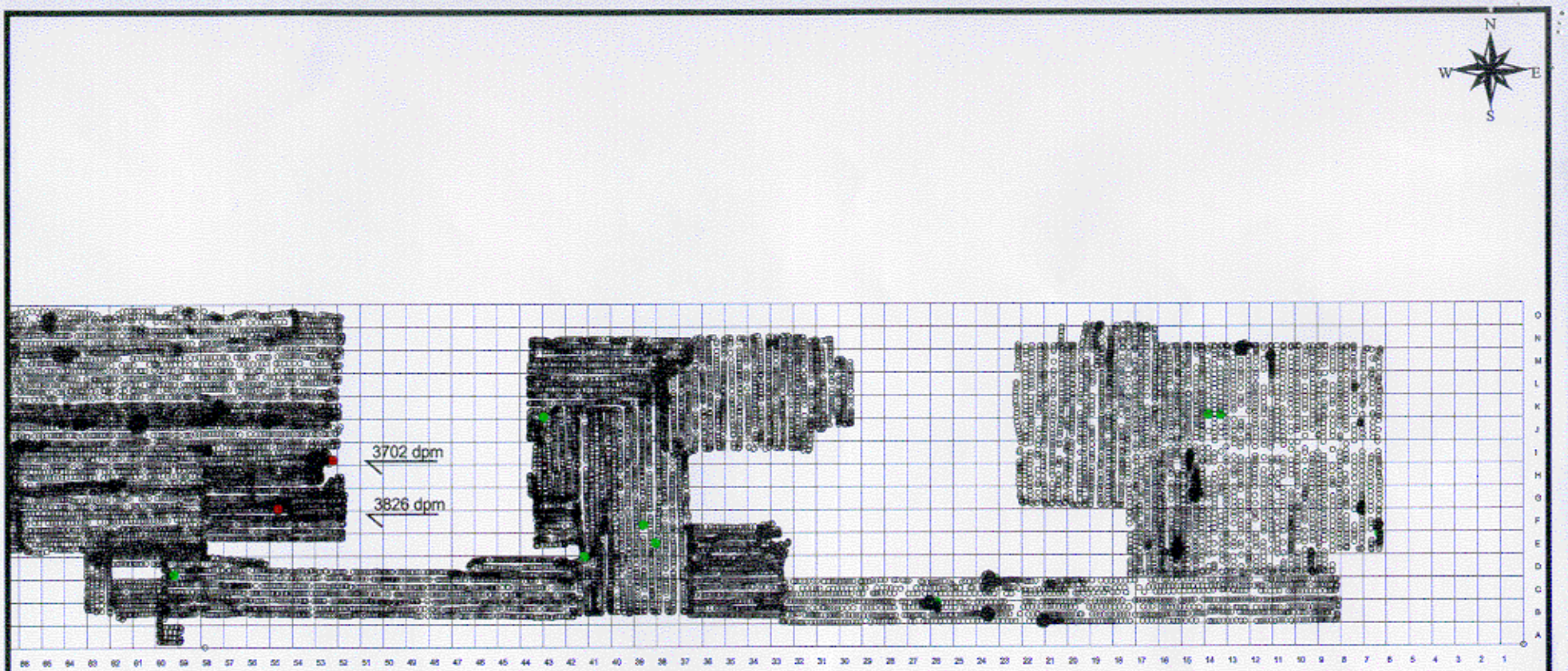
URETECH Facility
LARADS Radiological Surveys
Annex Building
Beta Survey of Floor Area

5 0 5 10 15 Meters

LARADS
Laser Assisted Ranging And Data System

Thermo NUtech

Prepared By: Marc Wendling



Beta dpm

- < 5k
- > 5k
- 60 Second Reading

Summary Statistics

Survey File: Composite
Survey Date: 7/20 thru 24/98
E600 #: 1243, NE-FLP3 #: 0001
Meter Time Constant: 10
Cs137 Efficency (Static): 0.307
Survey Background (cpm): 2000 avg.
Data Points Acquired: 34,335
Data Points > 5k: 11
Meters2 Surveyed: 1,030
Project File: BETA798
PDF File: L_URE_F2

URETECH Facility
LARADS Radiological Surveys
Annex Building - Eastern Sec.
Beta Survey of Floor Area

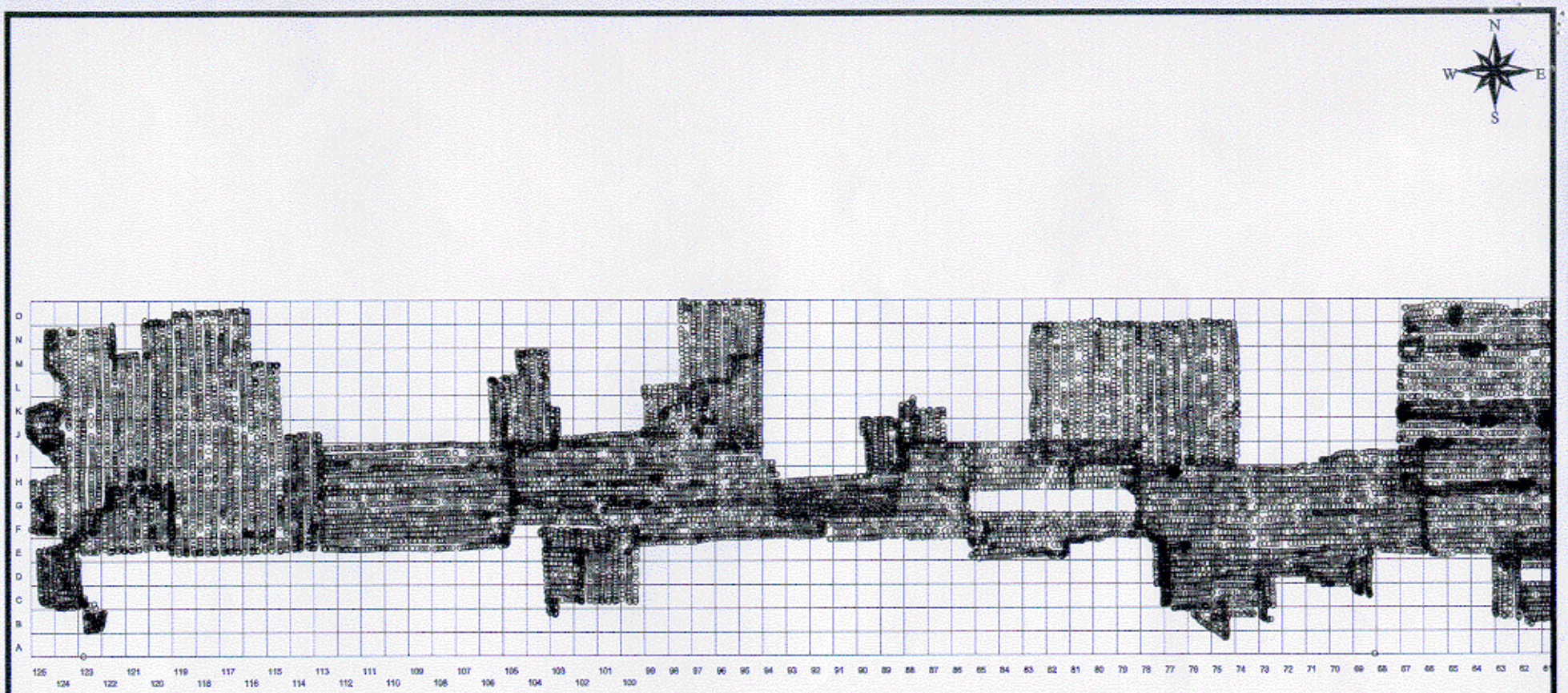
5 0 5 Meters

LARADS

Laser Assisted Ranging And Data System

Thermo NUtech

Prepared By: Marc Wendling



Beta dpm

- < 5k
- > 5k
- 60 Second Reading

Summary Statistics

Survey File: Composite
Survey Date: 7/20 thru 24/98
E600 #: 1243, NE-FLP3 #: 0001
Meter Time Constant: 10
Cs137 Efficency (Static): 0.307
Survey Background (cpm): 2000 avg.
Data Points Acquired: 34,335
Data Points > 5k: 11
Meters2 Surveyed: 1,030
Project File: BETA798
PDF File: L_URE_F3

URETECH Facility
LARADS Radiological Surveys
Annex Building - Western Sec.
Beta Survey of Floor Area

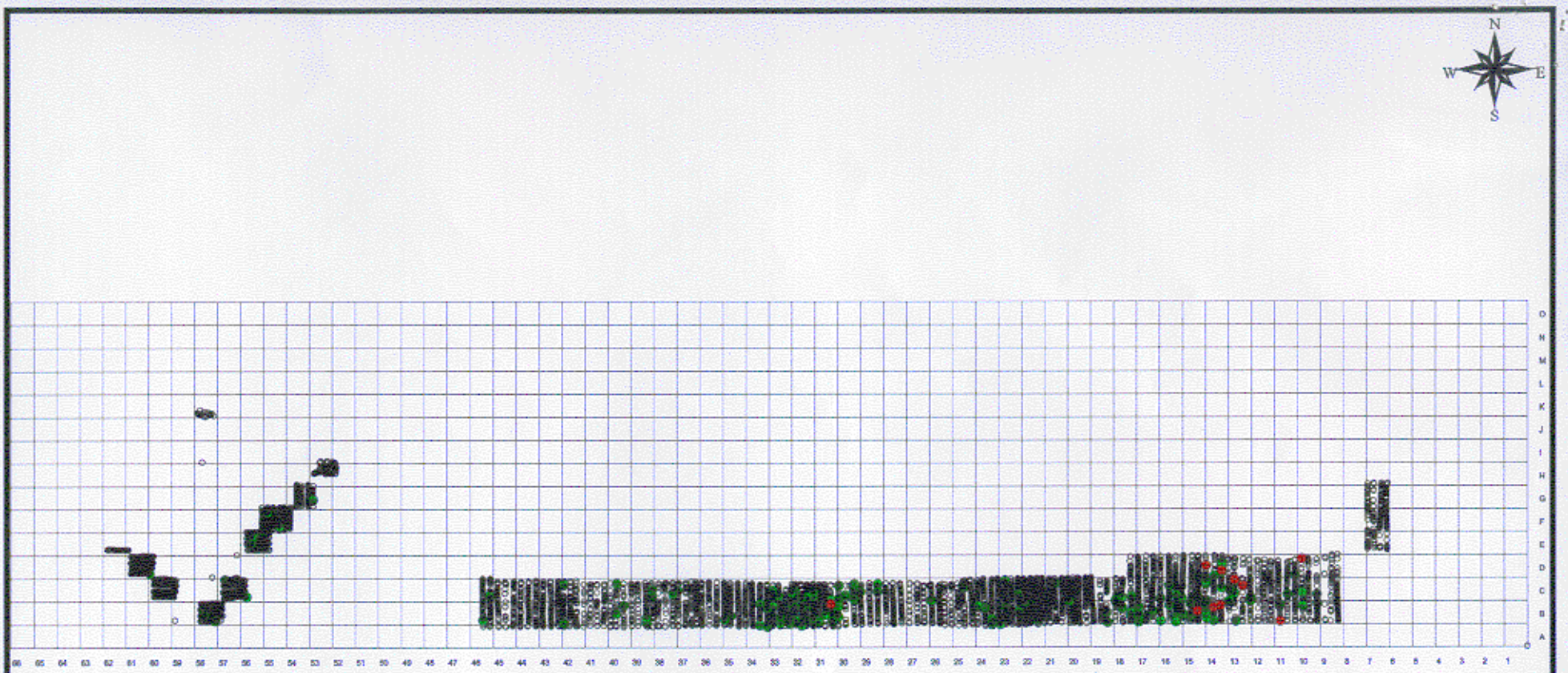
5 0 5 Meters

LARADS

Laser Assisted Ranging And Data System

Thermo NUtech

Prepared By: Marc Wendling



Beta dpm

○ < 300

● > 300

● 60 Second Static

Summary Statistics

Survey File: Composite
Survey Date: 7/22&24/98
E600 #: 1245, NE- #: 0001
Meter Time Constant: 20
Cs137 Efficency (Static): 0.05
Survey Background (cpm): 9.6 avg.
Data Points Acquired: 10,977
Data Points > 300: 201
Meters2 Surveyed: 112.5
Project File: ALPHA798
PDF File: L_URE_F4

URETECH Facility
LARADS Radiological Surveys
Annex Building
Alpha Survey of Floor Area

5 0 5 Meters

LARADS

Laser Assisted Ranging And Data System

Thermo NUtech

Prepared By: Marc Wendling

APPENDIX 4C:
Dose Rate Survey Information

SAIC EEMG RADIOLOGICAL SURVEY

HSWP NUMBER LK-99-01.01
TECHNICIAN NAME R. Alan DUFF
DATE 6/24/99 TIME 1400
AREA Production & Annex Bldgs.

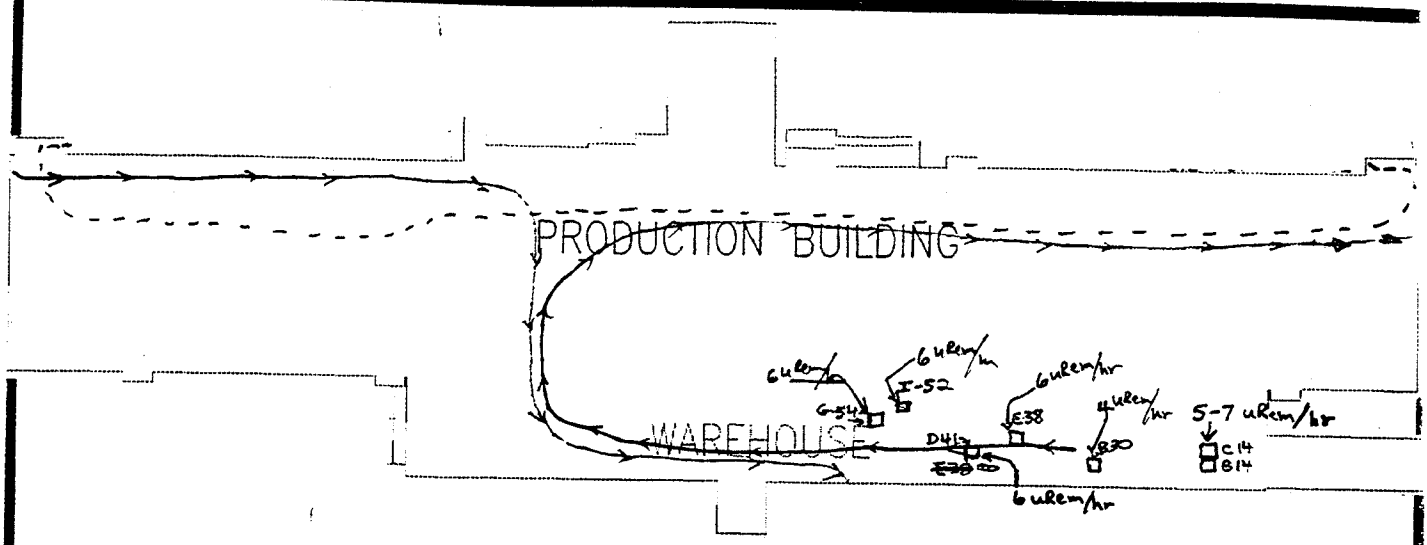
LEGEND
Δ = Smear Location
= G/A Dose Rate (~~mR~~ uRem/hr)
xx/xx β/γ contact
xx/xx β/γ at 12"

PAGE 1 OF 1

REASON FOR SURVEY
Dose Rate Surveys - Inside Bldgs.

RAD levels from 4 ~~mR~~ uRem/hr to 7 ~~mR~~ uRem/hr G/A
File # Prod./Annex Bldgs.

INSTRUMENT Bicron MicroRem w/ Lud Mod 2241 S/N B296W CAL DUE 19MAR00
INSTRUMENT w/ 44-10 S/N 114535/132520 CAL DUE 14JAN00
INSTRUMENT _____ S/N _____ CAL DUE _____



→→→ Denotes path taken on 1ST Floor
- - - - Denotes path taken on 2ND Floor

All readings on 1ST Floor ranged between 4-6 uRem/hr
All readings on 2ND Floor ranged between 5-7 uRem/hr

ITEM	α dpm/100 cm²	β dpm/100 cm²	ITEM	α dpm/100 cm²	β dpm/100 cm²
1.			13.		
2.			14.		
3.			15.		
4.			16.		
5.			17.		
6.			18.		
7.			19.		
8.			20.		
9.			21.		
10.			22.		
11.			23.		
12.			24.		

COMMENTS

Performed dose rate surveys at prior survey grid locations I52, G54, D41, E38, B14, B30 & C14 in annex bldg. on Floors (grid marks still visible). Bicron held @ waist height. Then performed a walk through γ survey in major aisleways on 1ST & 2ND Floors of production bldg. along path shown. Meter held at waist height, walked at a pace of 2-3 ft/sec.

Reviewed By: D Allan Date: 8-14-99

SAIC EEMG RADIOLOGICAL SURVEY

HSWP NUMBER LK-99-01.01
TECHNICIAN NAME R. Alan Duff
DATE 6/22/99 TIME 1000
AREA NW corner of production bldg.

LEGEND
Δ = Smear Location
~~# = G/A Dose Rate (mR/hr)~~
xx/xx β/γ contact
xx/xx β/γ at 12"
- G/A Dose Rate in uRem/hr

PAGE 1 OF 6

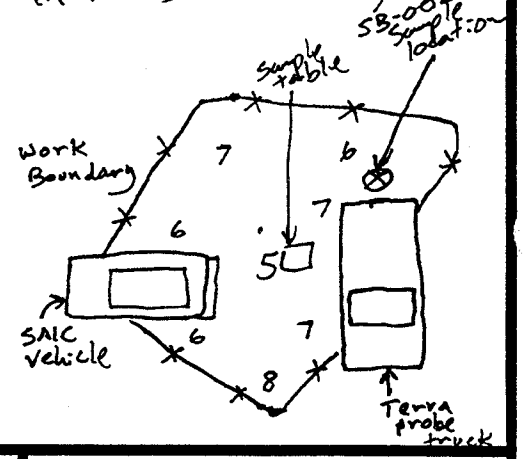
REASON FOR SURVEY
Geoprobe sampling

RAD levels from 5 ~~mR~~ uRem/hr to 8 ~~mR~~ uRem/hr G/A
File # SB-0029

INSTRUMENT Bicron MicroRem S/N B296W CAL
Ludlum 2224 DUE 19 MAR 00
INSTRUMENT w/43-89 S/N 116239/120411 CAL
Ludlum 2929 DUE 30 APR 00
INSTRUMENT Scaler S/N 126129 CAL
DUE 19 MAR 00

1000 1ST 4' section obtained - No α or β⁻ detectable greater than bkgd. levels. (Bkgd = 3 cpm α, 325 cpm β⁻) on scan of surface of sample core.
1020 2ND 4' section obtained - No α or β⁻ detectable greater than bkgd. levels on scan of surface of sample core.
1033 3rd 4' section obtained, No α or β⁻ detectable greater than bkgd. levels on scans of surface of sample core.
1045 Surveyed sample work area table, plastic, empty sample tubes, workers gloves & feet, no α or β⁻ detected above bkgd. Moved geoprobe truck NE 10' to new sample location

N Survey below conducted prior to work start. Survey upon completion of work showed no ~~detectable~~ appreciable changes in levels (All ± 1 uRem/hr)



ITEM	α dpm/100 cm²	β dpm/100 cm²	ITEM	α dpm/100 cm²	β dpm/100 cm²
1.			13.		
2.			14.		
3.			15.		
4.			16.		
5.			17.		
6.			18.		
7.			19.		
8.			20.		
9.			21.		
10.			22.		
11.			23.		
12.			24.		

COMMENTS

Reviewed By: [signature] Date: 8-14-99

SAIC EEMG RADIOLOGICAL SURVEY

HSWP NUMBER LK-99-01.01
TECHNICIAN NAME R. Alan Duff
DATE 6/22/99 **TIME** 1100
AREA NW Corner of Production bldg.

LEGEND
Δ = Smear Location
= G/A Dose Rate ~~(mR/hr)~~ uRem/hr
xx/xx β/γ contact
xx/xx β/γ at 12"

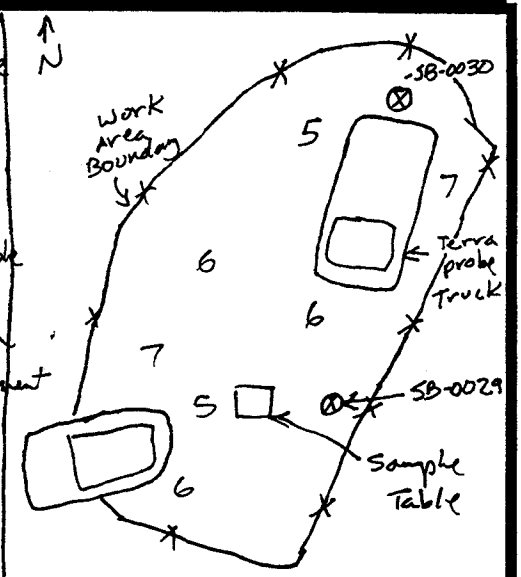
PAGE 2 **OF** 6

REASON FOR SURVEY
Geoprobe Sampling

RAD levels from 5 ~~mR~~ uRem/hr **to** 8 ~~mR~~ uRem/hr **G/A**
File # SB-0030

INSTRUMENT Bicron Microrem Wd/Un 2224 S/N B296W CAL DUE 19 MAR 00
INSTRUMENT w/43-89 S/N 116239/120411 CAL DUE 30 APR 00
INSTRUMENT _____ S/N _____ CAL DUE _____

1108 Commenced coring SB-0030
1130 Scanned 1ST 4' section of core, no detectable α or β⁻ greater than background.
1147 Scanned 2ND 4' section of core, no detectable α or β⁻ greater than bkgd.
1200 Scanned 3rd 4' section of core, no detectable α or β⁻ greater than bkgd.
1205 Moved geoprobe vehicle to sample location SB-0031. α & β⁻ scans of geoprobe equipment workers gloves, sample table area showed no detectable α or β⁻ above bkgd.



ITEM	α dpm/100 cm²	β dpm/100 cm²	ITEM	α dpm/100 cm²	β dpm/100 cm²
1.			13.		
2.			14.		
3.			15.		
4.			16.		
5.			17.		
6.			18.		
7.			19.		
8.			20.		
9.			21.		
10.			22.		
11.			23.		
12.			24.		

COMMENTS

Reviewed By: [signature] Date: 8-14-99

SAIC EEMG RADIOLOGICAL SURVEY

HSWP NUMBER LK-99-01.01
TECHNICIAN NAME R. Alan Duff
DATE 6/22/99 TIME
AREA NW Corner of production bldg.

LEGEND
Δ = Smear Location
= G/A Dose Rate ~~(mR/hr)~~ uRem/hr
xx/xx β/γ contact
xx/xx β/γ at 12"

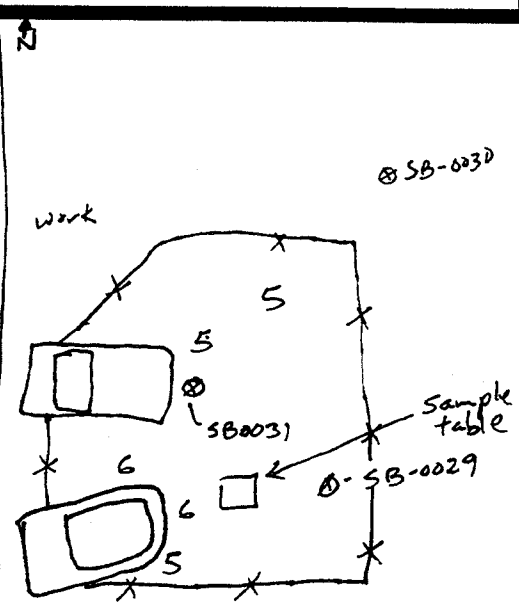
PAGE 3 OF 6

REASON FOR SURVEY
Geoprobe Sampling

RAD levels from 5 ~~mR~~ uRem/hr to 8 ~~mR~~ uRem/hr G/A
File # SB-0031

INSTRUMENT Bicron Microrem S/N B296W CAL
Ludlum 2224 DUE 19 MAR 00
INSTRUMENT W43-89 S/N 116239/120411 CAL
DUE 30 APR 00
INSTRUMENT S/N CAL
DUE

1210 Commenced coring at SB-0031
1215 Scanned 1ST 4' section of core, no detectable α or β⁻ greater than bkgd.
1223 Scanned 2ND 4' section of core, no detectable α or β⁻ greater than bkgd.
1240 Scanned 3rd 4' section of core, no detectable α or β⁻ greater than bkgd.
1250 Scanned geoprobe vehicle, empty tubes, used gloves & alum. foil, work table, no detectable α or β⁻ above bkgd.
1255 Moved geoprobe vehicle to location for SB-0032.



ITEM	α dpm/100 cm²	β dpm/100 cm²	ITEM	α dpm/100 cm²	β dpm/100 cm²
1.			13.		
2.			14.		
3.			15.		
4.			16.		
5.			17.		
6.			18.		
7.			19.		
8.			20.		
9.			21.		
10.			22.		
11.			23.		
12.			24.		

COMMENTS

Reviewed By: [signature] Date: 8-14-99

SAIC EEMG RADIOLOGICAL SURVEY

HSWP NUMBER LK-99-01.01
TECHNICIAN NAME R. Alan Duff
DATE 6/22/99 TIME 1300
AREA NW Corner of production bldg

LEGEND
Δ = Smear Location
= G/A Dose Rate (~~mR~~ uRem/hr)
xx/xx β/γ contact
xx/xx β/γ at 12"

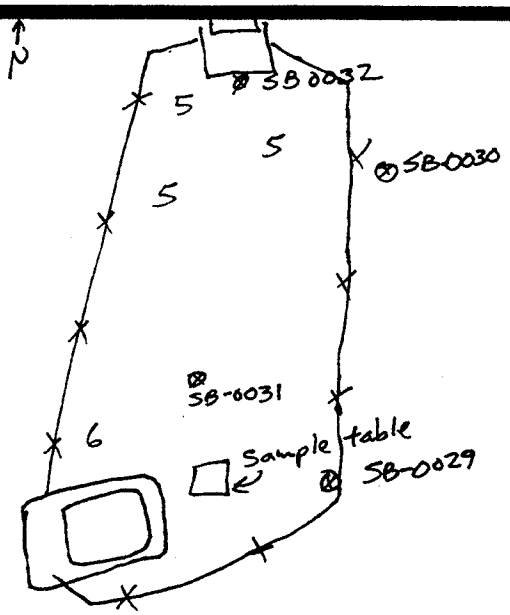
PAGE 4 OF 6

REASON FOR SURVEY
Geoprobe Sampling

RAD levels from 5 ~~mR~~ uRem/hr to 8 ~~mR~~ uRem/hr G/A
File # SB-0032

INSTRUMENT Bicron MicroRem Ludlum-2224 S/N B296W CAL DUE 19MAR00
INSTRUMENT w/43-89 S/N 116239/120411 CAL DUE 30APR00
INSTRUMENT _____ S/N _____ CAL DUE _____

1300 Commenced coring SB-0032
1305 Scanned 1ST 4' section of core, no α or B⁻ detected above bkgd.
1310 Scanned 2ND 4' section of core, no α or B⁻ detected above bkgd.
1325 Scanned 3rd 4' section of sample core, no α or B⁻ detected above bkgd.
1335 Disestablished work area, scanned all geoprobe equipment, trash, worker's gloves, sampling equipment. No α or B⁻ detected above background



ITEM	α dpm/100 cm²	β dpm/100 cm²	ITEM	α dpm/100 cm²	β dpm/100 cm²
1.			13.		
2.			14.		
3.			15.		
4.			16.		
5.			17.		
6.			18.		
7.			19.		
8.			20.		
9.			21.		
10.			22.		
11.			23.		
12.			24.		

COMMENTS

Reviewed By: [signature] Date: 8-14-99

SAIC EEMG RADIOLOGICAL SURVEY

HSWP NUMBER LK-99-01.01
TECHNICIAN NAME R. Alan Duff
DATE 6/22/99 TIME 1430
AREA SB-0033 NE ~~Gd~~ of production bldg.

LEGEND
Δ = Smear Location
= G/A Dose Rate (~~mR/hr~~ uRem/hr)
xx/xx β/γ contact
xx/xx β/γ at 12"

PAGE 5 OF 6

REASON FOR SURVEY
Geoprobe Sampling

RAD levels from 5 ~~mR~~ uRem/hr to 6 mR/hr G/A
File # SB-0033

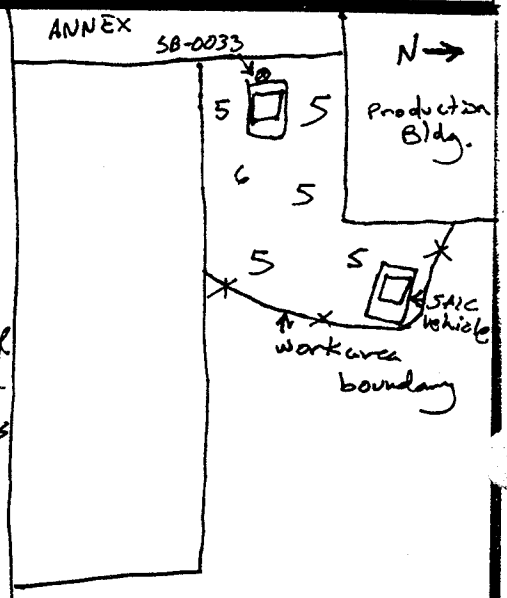
INSTRUMENT Bicron Microrem S/N B296W CAL DUE 15 MAR 00
INSTRUMENT Ludlum 222W W/43-89 S/N ~~125~~ 116239 / 120411 CAL DUE 30 APR 00
INSTRUMENT _____ S/N _____ CAL DUE _____

1430 Scanned 1ST 4' section of sample core, no α or β⁻ detected above background.

1450 Scanned 2ND 4' section of sample core, no α or β⁻ detected greater than bkgd.

1515 Scanned 3rd 4' section of sample core, no α or β⁻ detected greater than bkgd.

1530 Completed sampling SB-0033, Moved geoprobe vehicle to new sampling location. Performed α & β⁻ scans of geoprobe rig & truck, work tools gloves, alum. foil, plastic & table, nothing noted above background.



ITEM	α dpm/100 cm²	β dpm/100 cm²	ITEM	α dpm/100 cm²	β dpm/100 cm²
1.			13.		
2.			14.		
3.			15.		
4.			16.		
5.			17.		
6.			18.		
7.			19.		
8.			20.		
9.			21.		
10.			22.		
11.			23.		
12.			24.		

COMMENTS

Reviewed By: [signature] Date: 8-14-99

SAIC EEMG RADIOLOGICAL SURVEY

HSWP NUMBER LK-99-01.01
TECHNICIAN NAME R. Alan Duff
DATE 6/22/99 TIME 1600
AREA South of Galvanized Bldg.

LEGEND
Δ = Smear Location
= G/A Dose Rate (~~mR/hr~~ uRem)
xx/xx β/γ contact
xx/xx β/γ at 12"

PAGE 6 OF 6

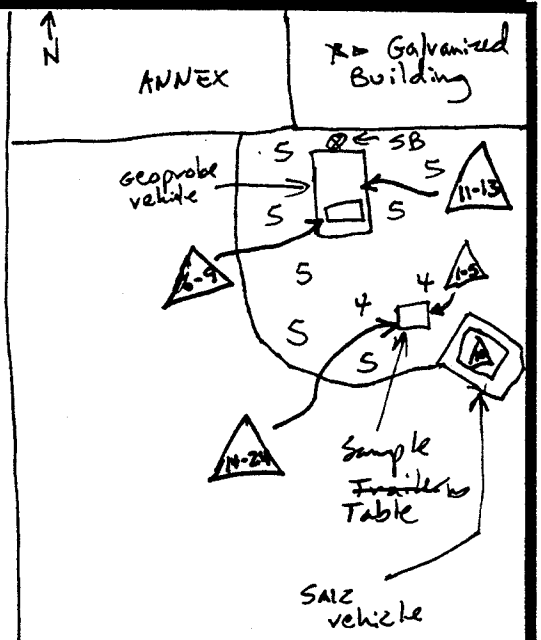
REASON FOR SURVEY
Geoprobe sampling

RAD levels from 4 ~~mR~~ uRem/hr to 5 ~~mR~~ uRem/hr G/A
File # SB-0034

INSTRUMENT Bicron Microrem Ludlum 2224 S/N B296W CAL DUE 19MAR 00
INSTRUMENT W/43-89 Ludlum 2929 S/N 125607/132117 CAL DUE 14 JAN 00
INSTRUMENT W/43-10-1 S/N 126129/132239 CAL DUE 9MAR00

B⁻ Bkgd = 450 cpm, α = 3cpm

1605 Scanned 1ST 4' section of sample core no α or B⁻ noted above background
1627 Scanned 2ND 4' section of sample core no α or B⁻ noted above background.
1635 Scanned 3rd 4' section of sample core no α or B⁻ noted above background.
1640 Disestablished area, scanned all g/s geoprobe equipment, worker's gloves, sampling equipment & trash. No α or B⁻ detected above background. Smeared geoprobe sampling equipment that came in contact w/ soil, vehicles, tools, & sampling equipment.



ITEM	α dpm/100 cm²	β dpm/100 cm²	ITEM	α dpm/100 cm²	β dpm/100 cm²
1. 4' geoprobe section	<13.5	<113	13. vise	<13.5	<113
2. "			14. sample bowls		
3. "			15. sample bowls		
4. "			16. sample bowls		
5. "			17. sample bowls		
6. geoprobe mast			18. sample spoons		
7. geoprobe mast			19. sample spoons		
8. geoprobe truck			20. sample spoons		
9. sample table			21. sample tubes		
10. SAIC truck			22. sample tubes		
11. geoprobe tool			23. sample tubes		
12. geoprobe tool	<13.5	<113	24. sample tubes	<13.5	<113

COMMENTS

Reviewed By: [signature] Date: 8-14-99

APPENDIX 6A:
HHRA Chemical Risk Calculations

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Constituent	EPC mg/kg	CANCER EFFECTS: Route-Specific Risk: Oral	Dermal	Inhalation Dust	Inhalation VOCs	Cancer Risk Total	Percent of Total	NON-CANCER EFFECTS: Route-Specific HQ: Oral	Dermal	Inhalation Dust	Inhalation VOCs	Non-Cancer HI Total	Percent of Total
PCBs													
Aroclor-1254	3.2	3.0E-07	9.0E-07	5.5E-12	NAP	**1.2E-06**	2%	NA	NA	1.5E-06	NAP	1.5E-06	0%
SVOCs													
Benzo(a)anthracene	47.2	1.6E-06	4.5E-06	1.3E-11	NAP	**6.1E-06**	9%	NA	NA	NA	NAP	0.0E+00	--
Benzo(a)pyrene	39.1	1.3E-05	3.7E-05	1.0E-10	NAP	**5.1E-05**	76%	NA	NA	NA	NAP	0.0E+00	--
Benzo(b)fluoranthene	59.9	2.0E-06	5.7E-06	1.6E-11	NAP	**7.7E-06**	12%	NA	NA	NA	NAP	0.0E+00	--
Dibenz(a,h)anthracene	0.458	1.5E-07	4.4E-07	1.2E-12	NAP	5.9E-07	1%	NA	NA	NA	NAP	0.0E+00	--
Indeno(1,2,3-c,d)pyrene	2.01	6.8E-08	1.9E-07	5.4E-13	NAP	2.6E-07	0%	NA	NA	NA	NAP	0.0E+00	--
Metals/Inorganics													
Beryllium	68.3	NA	NA	5.0E-10	NAP	5.0E-10	0%	1.7E-02	NA	1.1E-04	NAP	1.7E-02	63%
Cadmium	3.89	NA	NA	2.1E-11	NAP	2.1E-11	0%	3.8E-03	1.7E-03	NA	NAP	5.5E-03	20%
Lead	218	NA	NA	NA	NAP	0.0E+00	--	NA	NA	NA	NAP	0.0E+00	--
Uranium	27.05	NA	NA	NA	NAP	0.0E+00	0%	4.4E-03	NA	NA	NAP	4.4E-03	17%
TOTAL		1.7E-05	4.9E-05	6.6E-10	0.0E+00	**6.6E-05**		2.5E-02	1.7E-03	1.1E-04	0.0E+00	2.7E-02	

Bold	Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer.
RME	Reasonable maximum exposure
EPC	Exposure point concentration
mg/kg	Milligram per kilogram.
NA	Not available; insufficient toxicity data.
NAP	Not applicable pathway; not a VOC.
PCBs	Polychlorinated biphenyls.
SVOCs	Semi-volatile organic compounds.
VOCs	Volatile organic compounds.

Table 6A.2 Exposure Unit #1. Current/Future RME Total Groundwater Risk for Industrial Worker Scenario (Non-Radiologicals)

Constituent	EPC mg/L	CANCER EFFECTS Route-Specific Risk Oral	Risk Cancer Risk Total	Percent of Total	NON-CANCER EFFECTS Route-Specific HQ Oral	Non-Cancer HI Total	Percent of Total
Metals/Inorganics							
Beryllium	0.00484	NA	0.0E+00	--	2.8E-02	2.8E-02	9%
Manganese	0.373	NA	0.0E+00	--	1.8E-01	1.8E-01	58%
Nickel	0.176	NA	0.0E+00	--	NA	0.0E+00	--
Uranium	0.026	NA	0.0E+00	--	1.0E-01	1.0E-01	33%
TOTAL		0.0E+00	0.0E+00		3.1E-01	3.1E-01	

Bold Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer.
RME Reasonable maximum exposure
EPC Exposure point concentration
mg/kg Milligram per kilogram.
NA Not available; insufficient toxicity data.

Table 6A.3 Exposure Unit #1. Current/Future - RME - Risk Summary for Industrial Worker (Non-Radiologicals)

	CANCER EFFECTS						NON-CANCER EFFECTS					
	Route-Specific Risk				Cancer		Route-Specific HQ				Non-Cancer	
Media	Oral	Dermal	Inhalation Dust	Inhalation VOCs	Risk Total	Percent of Total	Oral	Dermal	Inhalation Dust	Inhalation VOCs	HI Total	Percent of Total
Soil	1.7E-05	4.9E-05	6.6E-10	0.0E+00	**6.6E-05**	100%	2.5E-02	1.7E-03	1.1E-04	0.0E+00	2.7E-02	8%
Groundwater	0.0E+00	NAP	NAP	NAP	0.0E+00	--	3.1E-01	NAP	NAP	NAP	3.1E-01	92%
TOTAL					**6.6E-05**						3.4E-01	

Bold Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for r

NAP - Not an Applicable Pathway

Table 6A.4a Exposure Unit #1. Future - RME - Surface Soil (0 - 2 ft.) Risk for Resident Farmer - Adult (Non-Radiologicals)

Constituent	EPC mg/kg	CANCER EFFECTS Route-Specific Risk Oral	Dermal	Inhalation Dust	Inhalation VOCs	Cancer Risk Total	Percent of Total	NON-CANCER EFFECTS Route-Specific HQ Oral	Dermal	Inhalation Dust	Inhalation VOCs	Non-Cancer HI Total	Percent of Total
PCBs													
Aroclor-1254	3.2	3.8E-06	1.1E-05	7.3E-11	NAP	**1.5E-05**	2%	2.2E-01	2.9E-01	4.2E-06	NAP	5.1E-01	88%
SVOCs													
Benzo(a)anthracene	47.2	2.0E-05	5.7E-05	1.7E-10	NAP	**7.8E-05**	9%	NA	NA	NA	NAP	0.0E+00	--
Benzo(a)pyrene	39.1	1.7E-04	4.8E-04	1.4E-09	NAP	**6.4E-04**	76%	NA	NA	NA	NAP	0.0E+00	--
Benzo(b)fluoranthene	59.9	2.6E-05	7.3E-05	2.1E-10	NAP	**9.9E-05**	12%	NA	NA	NA	NAP	0.0E+00	--
Dibenz(a,h)anthracene	0.458	2.0E-06	5.6E-06	1.6E-11	NAP	**7.5E-06**	1%	NA	NA	NA	NAP	0.0E+00	--
Indeno(1,2,3-c,d)pyrene	2.01	8.6E-07	2.4E-06	7.1E-12	NAP	**3.3E-06**	0%	NA	NA	NA	NAP	0.0E+00	--
Metals/Inorganics													
Beryllium	68.3	NA	NA	6.5E-09	NAP	6.5E-09	0%	4.7E-02	NA	3.2E-04	NAP	4.7E-02	8%
Cadmium	3.89	NA	NA	2.8E-10	NAP	2.8E-10	0%	1.1E-02	2.0E-03	NA	NAP	1.3E-02	2%
Lead	218	NA	NA	NA	NAP	0.0E+00	--	NA	NA	NA	NAP	0.0E+00	--
Uranium	27.05	NA	NA	NA	NAP	0.0E+00	0%	1.2E-02	NA	NA	NAP	1.2E-02	2%
TOTAL		2.2E-04	6.3E-04	8.6E-09	0.0E+00	**8.5E-04**		2.9E-01	2.9E-01	3.2E-04	0.0E+00	5.8E-01	

Bold	Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer.
--	No percentage of total risk was calculated
RME	Reasonable maximum exposure
EPC	Exposure point concentration
mg/kg	Milligram per kilogram.
NA	Not available; insufficient toxicity data.
NAP	Not applicable pathway; not a VOC.
PCBs	Polychlorinated biphenyls
SVOCs	Semi-volatile organic compounds.
VOCs	Volatile organic compounds.

Table 6A.4b Exposure Unit #1. Future - RME - Total Soil (0 - 10 ft.) Risk for Resident Farmer - Adult (Non-Radiologicals)

Constituent	EPC mg/kg	CANCER EFFECTS Route-Specific Risk Oral	Dermal	Inhalation Dust	Inhalation VOCs	Cancer Risk Total	Percent of Total	NON-CANCER EFFECTS Route-Specific HQ Oral	Dermal	Inhalation Dust	Inhalation VOCs	Non-Cancer HI Total	Percent of Total
PCBs													
Aroclor-1254	3.43	4.0E-06	1.2E-05	7.8E-11	NAP	**1.6E-05**	5%	2.3E-01	3.1E-01	4.5E-06	NAP	5.4E-01	95%
SVOCs													
Benzo(a)anthracene	17.7	7.6E-06	2.2E-05	6.2E-11	NAP	**2.9E-05**	9%	NA	NA	NA	NAP	0.0E+00	--
Benzo(a)pyrene	14.7	6.3E-05	1.8E-04	5.2E-10	NAP	**2.4E-04**	72%	NA	NA	NA	NAP	0.0E+00	--
Benzo(b)fluoranthene	22.3	9.6E-06	2.7E-05	7.8E-11	NAP	**3.7E-05**	11%	NA	NA	NA	NAP	0.0E+00	--
Dibenz(a,h)anthracene	0.458	2.0E-06	5.6E-06	1.6E-11	NAP	**7.5E-06**	2%	NA	NA	NA	NAP	0.0E+00	--
Indeno(1,2,3-c,d)pyrene	2.01	8.6E-07	2.4E-06	7.1E-12	NAP	**3.3E-06**	1%	NA	NA	NA	NAP	0.0E+00	--
Metals/Inorganics													
Beryllium	36.4	NA	NA	3.5E-09	NAP	3.5E-09	0%	2.5E-02	NA	1.7E-04	NAP	2.5E-02	4%
Lead	106	NA	NA	NA	NAP	0.0E+00	--	NA	NA	NA	NAP	0.0E+00	--
Uranium	14.2	NA	NA	NA	NAP	0.0E+00	0%	6.5E-03	NA	NA	NAP	6.5E-03	1%
TOTAL		8.7E-05	2.5E-04	4.2E-09	0.0E+00	**3.4E-04**		2.7E-01	3.1E-01	1.7E-04	0.0E+00	5.7E-01	

Bold	Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer.
--	No percentage of total risk was calculated
RME	Reasonable maximum exposure
EPC	Exposure point concentration
mg/kg	Milligram per kilogram.
NA	Not available; insufficient toxicity data.
NAP	Not applicable pathway; not a VOC.
PCBs	Polychlorinated biphenyls
SVOCs	Semi-volatile organic compounds.
VOCs	Volatile organic compounds.

Table 6A.5 Exposure Unit #1. Future - RME - Total Groundwater Risk for Resident Farmer - Adult (Non-Radiologicals)

Constituent	EPC mg/L	CANCER EFFECTS Route-Specific Risk Oral	Dermal	Inhalation VOCs	Cancer Risk Total	Percent of Total	NON-CANCER EFFECTS Route-Specific HQ Oral	Dermal	Inhalation VOCs	Non-Cancer HI Total	Percent of Total
Metals											
Beryllium	0.0048	NA	NA	NAP	0.0E+00	--	7.6E-02	6.0E-02	NAP	1.4E-01	11%
Manganese	0.373	NA	NA	NAP	0.0E+00	--	4.9E-01	6.7E-02	NAP	5.6E-01	43%
Nickel	0.176	NC	NC	NAP	0.0E+00	--	2.8E-01	3.8E-02	NAP	3.2E-01	25%
Uranium	0.026	NC	NC	NAP	0.0E+00	--	2.7E-01	NA	NAP	2.7E-01	21%
TOTAL		0.0E+00	0.0E+00	0.0E+00	0.0E+00		1.1E+00	1.7E-01	0.0E+00	**1.3E+00**	

Bold Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer.
-- No percentage of total risk was calculated
EPC Exposure point concentration.
mg/L Milligram per liter.
NA Not available; insufficient toxicity data.
NAP Not applicable pathway; not a VOC.
NC Not a suspected carcinogen.
RME Reasonable maximum exposure.

Table 6A.6 Exposure Unit #1. Future - RME - Risk Summary for Resident Farmer - Adult (Non-Radiologicals)

	CANCER EFFECTS						NON-CANCER EFFECTS					
	Route-Specific Risk				Cancer		Route-Specific HQ				Non-Cancer	
Media	Oral	Dermal	Inhalation Dust	Inhalation VOCs	Risk Total	Percent of Total	Oral	Dermal	Inhalation Dust	Inhalation VOCs	HI Total	Percent of Total
Soil	8.7E-05	2.5E-04	4.2E-09	0.0E+00	**3.4E-04**	100%	2.7E-01	3.1E-01	1.7E-04	0.0E+00	5.7E-01	31%
Groundwater	0.0E+00	0.0E+00	NAP	0.0E+00	0.0E+00	--	1.1E+00	1.7E-01	NAP	0.0E+00	1.3E+00	69%
TOTAL					**3.4E-04**						**1.9E+00**	

Bold Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer.

-- No percentage of total risk was calculated

NAP Not an Applicable Pathway

Table 6A.7a Exposure Unit #1. Future - RME - Surface Soil (0 - 2 ft.) Risk for Resident Farmer - Child (Non-Radiologicals)

Constituent	EPC mg/kg	CANCER EFFECTS Route-Specific Risk Oral	Dermal	Inhalation Dust	Inhalation VOCs	Cancer Risk Total	Percent of Total	NON-CANCER EFFECTS Route-Specific HQ Oral	Dermal	Inhalation Dust	Inhalation VOCs	Non-Cancer HI Total	Percent of Total
PCBs													
Aroclor-1254	3.2	7.0E-06	2.1E-06	4.5E-11	NAP	**9.1E-06**	2%	2.0E+00	5.2E-02	1.3E-05	NAP	**2.1E+00**	76%
SVOCs													
Benzo(a)anthracene	47.2	3.8E-05	1.0E-05	1.0E-10	NAP	**4.8E-05**	9%	NA	NA	NA	NAP	0.0E+00	--
Benzo(a)pyrene	39.1	3.1E-04	8.6E-05	8.6E-10	NAP	**4.0E-04**	76%	NA	NA	NA	NAP	0.0E+00	--
Benzo(b)fluoranthene	59.9	4.8E-05	1.3E-05	1.3E-10	NAP	**6.1E-05**	12%	NA	NA	NA	NAP	0.0E+00	--
Dibenz(a,h)anthracene	0.458	3.7E-06	1.0E-06	1.0E-11	NAP	**4.7E-06**	1%	NA	NA	NA	NAP	0.0E+00	--
Indeno(1,2,3-c,d)pyrene	2.01	1.6E-06	4.4E-07	4.4E-12	NAP	**2.1E-06**	0%	NA	NA	NA	NAP	0.0E+00	--
Metals/Inorganics													
Beryllium	68.3	NA	NA	4.1E-09	NAP	4.1E-09	0%	4.4E-01	NA	9.9E-04	NAP	4.4E-01	16%
Cadmium	3.89	NA	NA	1.7E-10	NAP	1.7E-10	0%	9.9E-02	NA	NA	NAP	9.9E-02	4%
Lead	218	NA	NA	NA	NAP	0.0E+00	--	NA	NA	NA	NAP	0.0E+00	--
Uranium	27.05	NA	NA	NA	NAP	0.0E+00	0%	1.2E-01	NA	NA	NAP	1.2E-01	4%
TOTAL		4.1E-04	1.1E-04	5.4E-09	0.0E+00	**5.2E-04**		2.7E+00	5.2E-02	1.0E-03	0.0E+00	**2.7E+00**	

Bold	Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer
EPC	Exposure point concentration
mg/kg	Milligram per kilogram.
NA	Not available; insufficient toxicity data.
NAP	Not applicable pathway; not a VOC.
RME	Reasonable maximum exposure.
PCBs	Polychlorinated biphenyls.
SVOCs	Semi-volatile organic compounds.
VOCs	Volatile organic compounds.

Table 6A.7b Exposure Unit #1. Future - RME - Total Soil (0 - 10 ft.) Risk for Resident Farmer - Child (Non-Radiologicals)

Constituent	EPC mg/kg	CANCER EFFECTS Route-Specific Risk Oral	Dermal	Inhalation Dust	Inhalation VOCs	Cancer Risk Total	Percent of Total	NON-CANCER EFFECTS Route-Specific HQ Oral	Dermal	Inhalation Dust	Inhalation VOCs	Non-Cancer HI Total	Percent of Total
PCBs													
Aroclor-1254	3.43	7.5E-06	2.2E-06	4.9E-11	NAP	**9.7E-06**	5%	2.2E+00	5.6E-02	1.4E-05	NAP	**2.2E+00**	88%
SVOCs													
Benzo(a)anthracene	17.7	1.4E-05	3.9E-06	3.9E-11	NAP	**1.8E-05**	9%	NA	NA	NA	NAP	0.0E+00	--
Benzo(a)pyrene	14.7	1.2E-04	3.2E-05	3.2E-10	NAP	**1.5E-04**	72%	NA	NA	NA	NAP	0.0E+00	--
Benzo(b)fluoranthene	22.3	1.8E-05	4.9E-06	4.9E-11	NAP	**2.3E-05**	11%	NA	NA	NA	NAP	0.0E+00	--
Dibenz(a,h)anthracene	0.458	3.7E-06	1.0E-06	1.0E-11	NAP	**4.7E-06**	2%	NA	NA	NA	NAP	0.0E+00	--
Indeno(1,2,3-c,d)pyrene	2.01	1.6E-06	4.4E-07	4.4E-12	NAP	**2.1E-06**	1%	NA	NA	NA	NAP	0.0E+00	--
Metals/Inorganics													
Beryllium	36.4	NA	NA	2.2E-09	NAP	2.2E-09	0%	2.3E-01	NA	5.3E-04	NAP	2.3E-01	9%
Lead	106	NA	NA	NA	NAP	0.0E+00	--	NA	NA	NA	NAP	0.0E+00	--
Uranium	14.2	NA	NA	NA	NAP	0.0E+00	0%	6.1E-02	NA	NA	NAP	6.1E-02	2%
TOTAL		1.6E-04	4.5E-05	2.6E-09	0.0E+00	**2.1E-04**		2.5E+00	5.6E-02	5.4E-04	0.0E+00	**2.5E+00**	

Bold	Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer
EPC	Exposure point concentration
mg/kg	Milligram per kilogram.
NA	Not available; insufficient toxicity data.
NAP	Not applicable pathway; not a VOC.
RME	Reasonable maximum exposure.
PCBs	Polychlorinated biphenyls.
SVOCs	Semi-volatile organic compounds.
VOCs	Volatile organic compounds.

Table 6A.8 Exposure Unit #1. Future - Total Groundwater Risk for Resident Farmer - Child (Non-Radiologicals)

Constituent	EPC mg/L	CANCER EFFECTS Route-Specific Risk Oral	Dermal	Inhalation VOCs	Cancer Risk Total	Percent of Total	NON-CANCER EFFECTS Route-Specific HQ Oral	Dermal	Inhalation VOCs	Non-Cancer HI Total	Percent of Total
Metals											
Beryllium	0.0048	NA	NA	NAP	0.0E+00	--	2.0E-01	1.1E-01	NAP	3.1E-01	10%
Manganese	0.373	NA	NA	NAP	0.0E+00	--	1.3E+00	1.2E-01	NAP	**1.4E+00**	44%
Nickel	0.176	NC	NC	NAP	0.0E+00	--	7.3E-01	6.9E-02	NAP	8.0E-01	25%
Uranium	0.026	NC	NC	NAP	0.0E+00	--	7.2E-01	NA	NAP	7.2E-01	22%
TOTAL		0.0E+00	0.0E+00	0.0E+00	0.0E+00		2.9E+00	3.0E-01	0.0E+00	**3.2E+00**	

Bold Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer.
EPC Exposure point concentration.
mg/L Milligram per liter.
NA Not available; insufficient toxicity data.
NAP Not applicable pathway; not a VOC.
NC Not a suspected carcinogen.
RME Reasonable maximum exposure.
SVOCs Semi-volatile organic compounds.

Table 6A.9 Exposure Unit #1. Future - RME - Risk Summary for Resident Farmer - Child (Non-Radiologicals)

	CANCER EFFECTS						NON-CANCER EFFECTS					
	Route-Specific Risk				Cancer		Route-Specific HQ				Non-Cancer	
Media	Oral	Dermal	Inhalation Dust	Inhalation VOCs	Risk Total	Percent of Total	Oral	Dermal	Inhalation Dust	Inhalation VOCs	HI Total	Percent of Total
Soil	1.6E-04	4.5E-05	2.6E-09	0.0E+00	2.1E-04	100%	2.5E+00	5.6E-02	5.4E-04	0.0E+00	**2.5E+00**	44%
Groundwater	0.0E+00	0.0E+00	NAP	0.0E+00	0.0E+00	--	2.9E+00	3.0E-01	NAP	0.0E+00	**3.2E+00**	56%
TOTAL					**2.1E-04**						**5.8E+00**	

NAP Not an Applicable Pathway

Bold Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer.

Table 6A.10 Exposure Unit #2. Current/Future RME Surface Soil (0 - 2 ft) Risk for Industrial Worker Scenario (Non-Radiologicals)

Constituent	EPC mg/kg	CANCER EFFECTS						NON-CANCER EFFECTS					
		Route-Specific Risk				Cancer Risk Total	Percent of Total	Route-Specific HQ				Non-Cancer HI Total	Percent of Total
		Oral	Dermal	Inhalation Dust	Inhalation VOCs			Oral	Dermal	Inhalation Dust	Inhalation VOCs		
SVOCs													
Benzo(a)anthracene	0.887	3.0E-08	8.5E-08	2.4E-13	NAP	1.1E-07	7%	NA	NA	NA	NAP	0.0E+00	--
Benzo(a)pyrene	0.921	3.1E-07	8.8E-07	2.5E-12	NAP	**1.2E-06**	77%	NA	NA	NA	NAP	0.0E+00	--
Benzo(b)fluoranthene	1.14	3.8E-08	1.1E-07	3.1E-13	NAP	1.5E-07	9%	NA	NA	NA	NAP	0.0E+00	--
Indeno(1,2,3-c,d)pyrene	0.721	2.4E-08	6.9E-08	1.9E-13	NAP	9.3E-08	6%	NA	NA	NA	NAP	0.0E+00	--
Metals/Inorganics													
Beryllium	765	NA	NA	5.5E-09	NAP	5.5E-09	0%	1.9E-01	NA	1.2E-03	NAP	1.9E-01	58%
Cadmium	83.5	NA	NA	4.5E-10	NAP	4.5E-10	0%	8.2E-02	3.6E-02	NA	NAP	1.2E-01	36%
Lead	1380	NC	NC	NC	NAP	0.0E+00	--	NA	NA	NA	NAP	0.0E+00	--
Thallium	2.4	NA	NA	NA	NAP	0.0E+00	--	1.5E-02	NA	NA	NAP	1.5E-02	5%
Uranium	20.16	NA	NA	NA	NAP	0.0E+00	--	3.3E-03	NA	NA	NAP	3.3E-03	1%
TOTAL		4.0E-07	1.1E-06	6.0E-09	0.0E+00	**1.6E-06**	100%	2.9E-01	3.6E-02	1.2E-03	0.0E+00	3.2E-01	100%

Bold	Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer
EPC	Exposure point concentration
mg/kg	Milligram per kilogram.
NA	Not available; insufficient toxicity data.
NAP	Not applicable pathway; not a VOC.
NC	Not a suspected carcinogen.
RME	Reasonable maximum exposure
VOCs	Volatile organic compounds.
SVOCs	Semi-volatile organic compounds.

Table 6A.11 Exposure Unit #2. Current/Future RME Total Groundwater Risk for Industrial Worker Scenario (Non-Radiologicals)

Constituent	EPC mg/L	CANCER EFFECTS Route-Specific Risk Oral	Cancer Risk Total	Percent of Total	NON-CANCER EFFECTS Route-Specific HQ Oral	Non-Cancer HI Total	Percent of Total
Metals/Inorganics							
Beryllium	0.00484	NA	0.0E+00	--	2.8E-02	2.8E-02	7%
Manganese	0.373	NA	0.0E+00	--	1.8E-01	1.8E-01	44%
Nickel	0.176	NA	0.0E+00	--	1.0E-01	1.0E-01	25%
Uranium	0.026	NA	0.0E+00	--	1.0E-01	1.0E-01	24%
TOTAL		0.0E+00	0.0E+00	--	4.2E-01	4.2E-01	100%

Bold	Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer
EPC	Exposure point concentration
mg/kg	Milligram per kilogram.
NA	Not available; insufficient toxicity data.
RME	Reasonable maximum exposure.

Table 6A.12 Exposure Unit #2. Current/Future - RME - Risk Summary for Industrial Worker (Non-Radiologicals)

	CANCER EFFECTS						NON-CANCER EFFECTS					
	Route-Specific Risk				Cancer	Percent	Route-Specific HQ				Non-Cancer	Percent
Media	Oral	Dermal	Inhalation Dust	Inhalation VOCs	Risk Total	of Total	Oral	Dermal	Inhalation Dust	Inhalation VOCs	HI Total	of Total
Soil	4.0E-07	1.1E-06	6.0E-09	0.0E+00	**1.6E-06**	100%	2.9E-01	3.6E-02	1.2E-03	0.0E+00	3.2E-01	44%
Groundwater	0.0E+00	NAP	NAP	NAP	0.0E+00	0%	4.2E-01	NAP	NAP	NAP	4.2E-01	56%
TOTAL					**1.6E-06**	100%					7.4E-01	100%

Bold Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer

NAP Not an Applicable Pathway

Table 6A.13a Exposure Unit #2. Future - RME - Surface Soil (0 - 2 ft.) Risk for Resident Farmer - Adult (Non-Radiologicals)

Constituent	EPC mg/kg	CANCER EFFECTS Route-Specific Risk Oral	Dermal	Inhalation Dust	Inhalation VOCs	Cancer Risk Total	Percent of Total	NON-CANCER EFFECTS Route-Specific HQ Oral	Dermal	Inhalation Dust	Inhalation VOCs	Non-Cancer HI Total	Percent of Total
SVOCs													
Benzo(a)anthracene	0.887	3.8E-07	1.1E-06	3.1E-12	NAP	**1.5E-06**	7%	NA	NA	NA	NAP	0.0E+00	--
Benzo(a)pyrene	0.921	3.9E-06	1.1E-05	3.2E-11	NAP	**1.5E-05**	77%	NA	NA	NA	NAP	0.0E+00	--
Benzo(b)fluoranthene	1.14	4.9E-07	1.4E-06	4.0E-12	NAP	**1.9E-06**	9%	NA	NA	NA	NAP	0.0E+00	--
Indeno(1,2,3-c,d)pyrene	0.721	3.1E-07	8.8E-07	2.5E-12	NAP	**1.2E-06**	6%	NA	NA	NA	NAP	0.0E+00	--
Metals/Inorganics													
Beryllium	765	NA	NA	7.3E-08	NAP	7.3E-08	0%	5.2E-01	NA	3.6E-03	NAP	5.3E-01	59%
Cadmium	83.5	NA	NA	6.0E-09	NAP	6.0E-09	0%	2.3E-01	1.0E-01	NA	NAP	3.3E-01	37%
Lead	1380	NA	NA	NA	NAP	0.0E+00	--	NA	NA	NA	NAP	0.0E+00	--
Thallium	2.4	NA	NA	NA	NAP	0.0E+00	--	4.1E-02	NA	NA	NAP	4.1E-02	5%
Uranium	20.16	NA	NA	NA	NAP	0.0E+00	--	9.2E-03	NA	NA	NAP	9.2E-03	1%
TOTAL		5.1E-06	1.5E-05	7.9E-08	0.0E+00	**2.0E-05**	100%	7.9E-01	1.0E-01	3.6E-03	0.0E+00	9.0E-01	100%

Bold	Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer
EPC	Exposure point concentration
mg/kg	Milligram per kilogram.
NA	Not available; insufficient toxicity data.
NAP	Not applicable pathway; not a VOC.
NC	Not a suspected carcinogen.
RME	Reasonable maximum exposure.
SVOCs	Semi-volatile organic compounds.
VOCs	Volatile organic compounds.

Table 6A.13b Exposure Unit #2. Future - RME - Total Soil (0 - 10 ft.) Risk for Resident Farmer - Adult (Non-Radiologicals)

Constituent	EPC mg/kg	CANCER EFFECTS						NON-CANCER EFFECTS					
		Route-Specific Risk				Cancer Risk Total	Percent of Total	Route-Specific HQ				Non-Cancer HI Total	Percent of Total
		Oral	Dermal	Inhalation Dust	Inhalation VOCs			Oral	Dermal	Inhalation Dust	Inhalation VOCs		
SVOCs													
Benzo(a)anthracene	0.919	3.9E-07	1.1E-06	3.2E-12	NAP	**1.5E-06**	8%	NA	NA	NA	NAP	0.0E+00	--
Benzo(a)pyrene	0.888	3.8E-06	1.1E-05	3.1E-11	NAP	**1.5E-05**	77%	NA	NA	NA	NAP	0.0E+00	--
Benzo(b)fluoranthene	1.01	4.3E-07	1.2E-06	3.6E-12	NAP	**1.7E-06**	9%	NA	NA	NA	NAP	0.0E+00	--
Indeno(1,2,3-c,d)pyrene	0.653	2.8E-07	8.0E-07	2.3E-12	NAP	**1.1E-06**	6%	NA	NA	NA	NAP	0.0E+00	--
Metals/Inorganics													
Aluminum	26100	NA	NA	NA	NAP	0.0E+00	--	3.6E-02	NA	4.9E-04	NAP	3.6E-02	7%
Beryllium	514	NA	NA	4.9E-08	NAP	4.9E-08	0%	3.5E-01	NA	2.4E-03	NAP	3.5E-01	66%
Cadmium	28.3	NA	NA	2.0E-09	NAP	2.0E-09	0%	7.8E-02	3.4E-02	NA	NAP	1.1E-01	21%
Lead	561	NA	NA	NA	NAP	0.0E+00	--	NA	NA	NA	NAP	0.0E+00	--
Thallium	2.18	NA	NA	NA	NAP	0.0E+00	--	3.7E-02	NA	NA	NAP	3.7E-02	7%
Uranium	13.3	NA	NA	NA	NAP	0.0E+00	--	6.1E-03	NA	NA	NAP	6.1E-03	1%
TOTAL		4.9E-06	1.4E-05	5.1E-08	0.0E+00	**1.9E-05**	100%	5.0E-01	3.4E-02	2.9E-03	0.0E+00	5.4E-01	100%

Bold	Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer
EPC	Exposure point concentration
mg/kg	Milligram per kilogram.
NA	Not available; insufficient toxicity data.
NAP	Not applicable pathway; not a VOC.
NC	Not a suspected carcinogen.
RME	Reasonable maximum exposure.
SVOCs	Semi-volatile organic compounds.
VOCs	Volatile organic compounds.

Table 6A.14 Exposure Unit #2. Future - RME - Total Groundwater Risk for Resident Farmer - Adult (Non-Radiologicals)

Constituent	EPC mg/L	CANCER EFFECTS					NON-CANCER EFFECTS				
		Route-Specific Risk			Cancer Risk Total	Percent of Total	Route-Specific HQ			Non-Cancer HI Total	Percent of Total
		Oral	Dermal	Inhalation VOCs			Oral	Dermal	Inhalation VOCs		
Metals											
Beryllium	0.0048	NA	NA	NAP	0.0E+00	--	7.6E-02	6.0E-02	NAP	1.4E-01	11%
Manganese	0.373	NA	NA	NAP	0.0E+00	--	4.9E-01	6.7E-02	NAP	5.6E-01	43%
Nickel	0.176	NC	NC	NAP	0.0E+00	--	2.8E-01	3.8E-02	NAP	3.2E-01	25%
Uranium	0.026	NC	NC	NAP	0.0E+00	--	2.7E-01	NA	NAP	2.7E-01	21%
TOTAL		0.0E+00	0.0E+00	0.0E+00	0.0E+00	--	1.1E+00	1.7E-01	0.0E+00	**1.3E+00**	100%

Bold Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for n

EPC Exposure point concentration.

mg/L Milligram per liter.

NA Not available; insufficient toxicity data.

NAP Not applicable pathway; not a VOC.

NC Not a suspected carcinogen.

RME Reasonable maximum exposure.

VOCs Volatile organic compounds.

Table 6A.15 Exposure Unit #2. Future - RME - Risk Summary for Resident Farmer - Adult (Non-Radiologicals)

	CANCER EFFECTS						NON-CANCER EFFECTS					
	Route-Specific Risk				Cancer	Percent	Route-Specific HQ				Non-Cancer	Percent
Media	Oral	Dermal	Inhalation Dust	Inhalation VOCs	Risk Total	of Total	Oral	Dermal	Inhalation Dust	Inhalation VOCs	HI Total	of Total
Soil	4.9E-06	1.4E-05	5.1E-08	0.0E+00	**1.9E-05**	100%	5.0E-01	3.4E-02	2.9E-03	0.0E+00	5.4E-01	30%
Groundwater	0.0E+00	0.0E+00	NAP	0.0E+00	0.0E+00	0%	1.1E+00	1.7E-01	NAP	0.0E+00	**1.3E+00**	70%
TOTAL					**1.9E-05**	100%					**1.8E+00**	100%

Bold Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-ca

NAP Not and Applicable Pathway

Table 6A.16a Exposure Unit #2. Future - RME - Surface Soil (0 - 2 ft.) Risk for Resident Farmer - Child (Non-Radiologicals)

Constituent	EPC mg/kg	CANCER EFFECTS Route-Specific Risk Oral	Dermal	Inhalation Dust	Inhalation VOCs	Cancer Risk Total	Percent of Total	NON-CANCER EFFECTS Route-Specific HQ Oral	Dermal	Inhalation Dust	Inhalation VOCs	Non-Cancer HI Total	Percent of Total
SVOCs													
Benzo(a)anthracene	0.887	7.1E-07	2.0E-07	2.0E-12	NAP	9.0E-07	7%	NA	NA	NA	NAP	0.0E+00	--
Benzo(a)pyrene	0.921	7.4E-06	2.0E-06	2.0E-11	NAP	**9.4E-06**	77%	NA	NA	NA	NAP	0.0E+00	--
Benzo(b)fluoranthene	1.14	9.1E-07	2.5E-07	2.5E-12	NAP	**1.2E-06**	9%	NA	NA	NA	NAP	0.0E+00	--
Indeno(1,2,3-c,d)pyrene	0.721	5.8E-07	1.6E-07	1.6E-12	NAP	7.4E-07	6%	NA	NA	NA	NAP	0.0E+00	--
Metals/Inorganics													
Beryllium	765	NA	NA	4.6E-08	NAP	4.6E-08	0%	4.9E+00	NA	1.1E-02	NAP	**4.9E+00**	65%
Cadmium	83.5	NA	NA	3.7E-09	NAP	3.7E-09	0%	2.1E+00	9.0E-02	NA	NAP	**2.2E+00**	29%
Lead	1380	NA	NA	NA	NAP	0.0E+00	--	NA	NA	NA	NAP	0.0E+00	0%
Thallium	2.4	NA	NA	NA	NAP	0.0E+00	--	3.8E-01	NA	NA	NAP	3.8E-01	5%
Uranium	20.16	NA	NA	NA	NAP	0.0E+00	--	8.6E-02	NA	NA	NAP	8.6E-02	1%
TOTAL		9.6E-06	2.6E-06	4.9E-08	0.0E+00	**1.2E-05**	100%	7.5E+00	9.0E-02	1.1E-02	0.0E+00	**7.6E+00**	100%

Bold	Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer
EPC	Exposure point concentration
mg/kg	Milligram per kilogram.
NA	Not available; insufficient toxicity data.
NAP	Not applicable pathway; not a VOC.
NC	Not a suspected carcinogen.
RME	Reasonable maximum exposure.
SVOCs	Semi-volatile organic compounds.
VOCs	Volatile organic compounds.

Table 6A.16b Exposure Unit #2. Future - RME - Total Soil (0 - 10 ft.) Risk for Resident Farmer - Child (Non-Radiologicals)

Constituent	EPC mg/kg	CANCER EFFECTS						NON-CANCER EFFECTS					
		Route-Specific Risk				Cancer Risk Total	Percent of Total	Route-Specific HQ				Non-Cancer HI Total	Percent of Total
		Oral	Dermal	Inhalation Dust	Inhalation VOCs			Oral	Dermal	Inhalation Dust	Inhalation VOCs		
SVOCs													
Benzo(a)anthracene	0.919	7.4E-07	2.0E-07	2.0E-12	NAP	9.4E-07	8%	NA	NA	NA	NAP	0.0E+00	--
Benzo(a)pyrene	0.888	7.1E-06	2.0E-06	2.0E-11	NAP	**9.1E-06**	77%	NA	NA	NA	NAP	0.0E+00	--
Benzo(b)fluoranthene	1.01	8.1E-07	2.2E-07	2.2E-12	NAP	**1.0E-06**	9%	NA	NA	NA	NAP	0.0E+00	--
Indeno(1,2,3-c,d)pyrene	0.653	5.2E-07	1.4E-07	1.4E-12	NAP	6.7E-07	6%	NA	NA	NA	NAP	0.0E+00	--
Metals/Inorganics													
Aluminum	26100	NA	NA	NA	NAP	0.0E+00	--	3.3E-01	NA	1.5E-03	NAP	3.4E-01	7%
Beryllium	514	NA	NA	3.1E-08	NAP	3.1E-08	0%	3.3E+00	NA	7.5E-03	NAP	**3.3E+00**	69%
Cadmium	28.3	NA	NA	1.3E-09	NAP	1.3E-09	0%	7.2E-01	3.1E-02	NA	NAP	7.5E-01	16%
Lead	561	NA	NA	NA	NAP	0.0E+00	--	NA	NA	NA	NAP	0.0E+00	0%
Thallium	2.18	NA	NA	NA	NAP	0.0E+00	--	3.5E-01	NA	NA	NAP	3.5E-01	7%
Uranium	13.3	NA	NA	NA	NAP	0.0E+00	--	5.7E-02	NA	NA	NAP	5.7E-02	1%
TOTAL		9.2E-06	2.5E-06	3.2E-08	0.0E+00	**1.2E-05**	100%	4.7E+00	3.1E-02	9.0E-03	0.0E+00	**4.8E+00**	100%

Bold	Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer
EPC	Exposure point concentration
mg/kg	Milligram per kilogram.
NA	Not available; insufficient toxicity data.
NAP	Not applicable pathway; not a VOC.
NC	Not a suspected carcinogen.
RME	Reasonable maximum exposure.
SVOCs	Semi-volatile organic compounds.
VOCs	Volatile organic compounds.

Table 6A.17 Exposure Unit #2. Future - RME - Total Groundwater Risk for Resident Farmer - Child (Non-Radiologicals)

Constituent	EPC mg/L	CANCER EFFECTS Route-Specific Risk Oral	Dermal	Inhalation VOCs	Cancer Risk Total	Percent of Total	NON-CANCER EFFECTS Route-Specific HQ Oral	Dermal	Inhalation VOCs	Non-Cancer HI Total	Percent of Total
Metals											
Beryllium	0.0048	NA	NA	NAP	0.0E+00	--	2.0E-01	1.1E-01	NAP	3.1E-01	10%
Manganese	0.373	NA	NA	NAP	0.0E+00	--	1.3E+00	1.2E-01	NAP	**1.4E+00**	44%
Nickel	0.176	NC	NC	NAP	0.0E+00	--	7.3E-01	6.9E-02	NAP	8.0E-01	25%
Uranium	0.026	NC	NC	NAP	0.0E+00	--	7.2E-01	NA	NAP	7.2E-01	22%
TOTAL		0.0E+00	0.0E+00	0.0E+00	0.0E+00	--	2.9E+00	3.0E-01	0.0E+00	**3.2E+00**	100%

Bold	Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer
EPC	Exposure point concentration.
mg/L	Milligram per liter.
NA	Not available; insufficient toxicity data.
NAP	Not applicable pathway; not a VOC.
NC	Not a suspected carcinogen.
RME	Reasonable maximum exposure.
SVOCs	Semi-volatile organic compounds.

Table 6A.18 Exposure Unit #2. Future - RME - Risk Summary for Resident Farmer - Child (Non-Radiologicals)

	CANCER EFFECTS						NON-CANCER EFFECTS					
	Route-Specific Risk				Cancer	Percent	Route-Specific HQ				Non-Cancer	Percent
Media	Oral	Dermal	Inhalation Dust	Inhalation VOCs	Risk Total	of Total	Oral	Dermal	Inhalation Dust	Inhalation VOCs	HI Total	of Total
Soil	9.2E-06	2.5E-06	3.2E-08	0.0E+00	**1.2E-05**	100%	4.7E+00	3.1E-02	9.0E-03	0.0E+00	**4.8E+00**	60%
Groundwater	0.0E+00	0.0E+00	NAP	0.0E+00	0.0E+00	0%	2.9E+00	3.0E-01	NAP	0.0E+00	**3.2E+00**	40%
TOTAL					**1.2E-05**	100%					**8.0E+00**	100%

Bold Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer

NAP Not an Applicable Pathway

Table 6A.19a Exposure Unit #3. Current/Future - RME - Surface Soil (0 - 2 ft.) Risk for Resident Farmer - Adult (Non-Radiologicals)

		CANCER EFFECTS						NON-CANCER EFFECTS					
		Route-Specific Risk				Cancer		Route-Specific HQ				Non-Cancer	
Constituent		Oral	Dermal	Inhalation Dust	Inhalation VOCs	Risk Total	Percent of Total	Oral	Dermal	Inhalation Dust	Inhalation VOCs	HI Total	Percent of Total
	EPC mg/kg												
Metals/Inorganics													
Beryllium	155	NA	NA	1.5E-08	NAP	1.5E-08	100%	1.1E-01	NA	7.2E-04	NAP	1.1E-01	100%
Lead	74	NA	NA	NA	NAP	0.0E+00	--	NA	NA	NA	NAP	0.0E+00	--
TOTAL		0.0E+00	0.0E+00	1.5E-08	0.0E+00	1.5E-08		1.1E-01	0.0E+00	7.2E-04	0.0E+00	1.1E-01	

Bold	Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer
EPC	Exposure point concentration
mg/kg	Milligram per kilogram.
NA	Not available; insufficient toxicity data.
NAP	Not applicable pathway; not a VOC.
RME	Reasonable maximum exposure.
VOCs	Volatile organic compounds.

Table 6A.19b Exposure Unit #3. Current/Future - RME - Total Soil (0 - 10 ft.) Risk for Resident Farmer - Adult (Non-Radiologicals)

		CANCER EFFECTS						NON-CANCER EFFECTS					
		Route-Specific Risk				Cancer		Route-Specific HQ				Non-Cancer	
Constituent		Oral	Dermal	Inhalation Dust	Inhalation VOCs	Risk Total	Percent of Total	Oral	Dermal	Inhalation Dust	Inhalation VOCs	HI Total	Percent of Total
	EPC mg/kg												
Metals/Inorganics													
Beryllium	144	NA	NA	1.4E-08	NAP	1.4E-08	100%	9.9E-02	NA	6.7E-04	NAP	9.9E-02	100%
Lead	71.9	NA	NA	NA	NAP	0.0E+00	--	NA	NA	NA	NAP	0.0E+00	--
TOTAL		0.0E+00	0.0E+00	1.4E-08	0.0E+00	1.4E-08		9.9E-02	0.0E+00	6.7E-04	0.0E+00	9.9E-02	

Bold	Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer
EPC	Exposure point concentration
mg/kg	Milligram per kilogram.
NA	Not available; insufficient toxicity data.
NAP	Not applicable pathway; not a VOC.
RME	Reasonable maximum exposure.
VOCs	Volatile organic compounds.

Table 6A.20 Exposure Unit #3. Current/Future - RME - Total Groundwater Risk for Resident Farmer - Adult (Non-Radiologicals)

Constituent	EPC mg/L	CANCER EFFECTS Route-Specific Risk Oral	Dermal	Inhalation VOCs	Cancer Risk Total	Percent Total	NON-CANCER EFFECTS Route-Specific HQ Oral	Dermal	Inhalation VOCs	Non-Cancer HI Total	Percent Total
Metals											
Beryllium	0.0048	NA	NA	NAP	0.0E+00	--	7.6E-02	6.0E-02	NAP	1.4E-01	11%
Manganese	0.373	NA	NA	NAP	0.0E+00	--	4.9E-01	6.7E-02	NAP	5.6E-01	43%
Nickel	0.176	NC	NC	NAP	0.0E+00	--	2.8E-01	3.8E-02	NAP	3.2E-01	25%
Uranium	0.026	NC	NC	NAP	0.0E+00	--	2.7E-01	NA	NAP	2.7E-01	21%
TOTAL		0.0E+00	0.0E+00	0.0E+00	0.0E+00		1.1E+00	1.7E-01	0.0E+00	**1.3E+00**	

Bold	Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer
EPC	Exposure point concentration.
mg/L	Milligram per liter.
NA	Not available; insufficient toxicity data.
NAP	Not applicable pathway; not a VOC.
NC	Not a suspected carcinogen.
RME	Reasonable maximum exposure.
VOCs	Volatile organic compounds.

Table 6A.21 Exposure Unit #3. Current/Future - RME - Total Surface Water Risk for Resident Farmer - Adult (Non-Radiologicals)

Constituent	EPC mg/L	CANCER EFFECTS Route-Specific Risk Oral	Dermal	Cancer Risk Total	Percent of Total	NON-CANCER EFFECTS Route-Specific HQ Oral	Dermal	Non-Cancer HI Total	Percent of Total
SVOCs									
Di-n-octylphthalate	0.0102	NA	NA	0.0E+00	--	1.2E-05	4.1E-05	5.3E-05	0%
Diethyl phthalate	0.0051	NA	NA	0.0E+00	--	1.5E-07	6.7E-07	8.1E-07	0%
Phenol	0.0064	NA	NA	0.0E+00	--	2.5E-07	8.1E-07	1.1E-06	0%
Bis(2-ethylhexyl)phthalate	0.0226	3.2E-09	1.9E-07	1.9E-07	46%	2.6E-05	1.6E-03	1.6E-03	4%
m,p-cresol	0.0111	NA	NA	0.0E+00	--	5.2E-05	3.7E-04	4.2E-04	1%
VOCs									
2-Butanone	0.00575	NA	NA	0.0E+00	--	2.2E-07	3.9E-07	6.2E-07	0%
Acetone	0.0188	NA	NA	0.0E+00	--	4.4E-06	2.3E-06	6.7E-06	0%
Bromodichloromethane	0.0006	3.7E-10	1.3E-09	1.7E-09	0%	7.0E-07	2.5E-06	3.2E-06	0%
Chloroform	0.00076	4.7E-11	2.7E-09	2.8E-09	1%	1.8E-06	1.0E-04	1.1E-04	0%
Dibromochloromethane	0.0034	2.9E-09	5.6E-09	8.5E-09	2%	4.0E-06	7.8E-06	1.2E-05	0%
Tetrachloroethene	0.0013	6.8E-10	1.6E-07	1.6E-07	37%	3.0E-06	7.0E-04	7.0E-04	2%
Tribromomethane	0.006	4.8E-10	1.4E-09	1.9E-09	0%	7.0E-06	2.1E-05	2.8E-05	0%
Metals									
Aluminum	1.09	NA	NA	0.0E+00	--	2.6E-05	NA	2.6E-05	0%
Arsenic	0.00308	4.6E-08	1.1E-08	5.7E-08	14%	2.4E-04	5.7E-05	3.0E-04	1%
Barium	0.188	NA	NA	0.0E+00	--	6.3E-05	2.1E-04	2.8E-04	1%
Beryllium	0.0836	NA	NA	0.0E+00	--	9.8E-04	3.3E-02	3.4E-02	80%
Boron	0.2350	NA	NA	0.0E+00	--	6.1E-05	NA	6.1E-05	0%
Cadmium	0.00106	NA	NA	0.0E+00	--	5.0E-05	2.4E-04	2.9E-04	1%
Chromium	0.00227	NA	NA	0.0E+00	--	3.5E-08	3.4E-07	3.7E-07	0%
Cobalt	0.00121	NA	NA	0.0E+00	--	4.7E-07	NA	4.7E-07	0%
Copper	0.0233	NA	NA	0.0E+00	--	1.5E-05	NA	1.5E-05	0%
Lead	0.0458	NA	NA	0.0E+00	--	NA	NA	0.0E+00	--
Manganese	0.2480	NA	NA	0.0E+00	--	2.4E-04	1.4E-03	1.7E-03	4%
Mercury	0.00013	NA	NA	0.0E+00	--	1.0E-05	2.4E-06	1.3E-05	0%
Molybdenum	0.0226	NA	NA	0.0E+00	--	1.1E-04	NA	1.1E-04	0%
Nickel	0.0427	NA	NA	0.0E+00	--	5.0E-05	3.0E-04	3.5E-04	1%
Selenium	0.00132	NA	NA	0.0E+00	--	6.2E-06	1.5E-06	7.6E-06	0%
Silver	0.00088	NA	NA	0.0E+00	--	4.1E-06	2.4E-05	2.9E-05	0%

Table 6A.21 Exposure Unit #3. Current/Future - RME - Total Surface Water Risk for Resident Farmer - Adult (Non-Radiologicals)

Constituent	EPC mg/L	CANCER EFFECTS Route-Specific Risk Oral	Dermal	Cancer Risk Total	Percent of Total	NON-CANCER EFFECTS Route-Specific HQ Oral	Dermal	Non-Cancer HI Total	Percent of Total
Strontium	10.400	NA	NA	0.0E+00	--	4.1E-04	NA	4.1E-04	1%
Thallium	0.00198	NA	NA	0.0E+00	--	5.8E-04	1.4E-04	7.2E-04	2%
Uranium	0.00366	NA	NA	0.0E+00	--	1.1E-03	2.5E-04	1.3E-03	3%
Vanadium	0.00325	NA	NA	0.0E+00	--	1.1E-05	9.9E-05	1.1E-04	0%
Zinc	0.0463	NA	NA	0.0E+00	--	3.6E-06	8.6E-07	4.5E-06	0%
TOTAL		5.4E-08	3.7E-07	4.2E-07		4.0E-03	3.9E-02	4.3E-02	

Bold	Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cance
EPC	Exposure point concentration.
mg/L	Milligram per liter.
NA	Not available; insufficient toxicity data.
NAP	Not applicable pathway; not a VOC.
NC	Not a suspected carcinogen.
RME	Reasonable maximum exposure.
VOCs	Volatile organic compounds.

Table 6A.22 Exposure Unit #3. Current/Future - RME - Total Sediment Risk for Resident Farmer - Adult (Non-Radiologicals)

Constituent	EPC mg/kg	CANCER EFFECTS Route-Specific Risk Oral	Dermal	Cancer Risk Total	Percent of Total	NON-CANCER EFFECTS Route-Specific HQ Oral	Dermal	Non-Cancer HI Total	Percent of Total
SVOCs									
3,3'-Dichlorobenzidine	0.42	8.2E-11	1.8E-08	1.8E-08	1%	NA	NA	0.0E+00	--
Benzo(a)anthracene	1.83	5.8E-10	1.7E-07	1.7E-07	8%	NA	NA	0.0E+00	--
Benzo(a)pyrene	1.78	5.7E-09	1.6E-06	**1.6E-06**	78%	NA	NA	0.0E+00	--
Benzo(b)fluoranthene	2.25	7.2E-10	2.0E-07	2.0E-07	10%	NA	NA	0.0E+00	--
Benzo(g,h,i)perylene	0.448	NA	NA	0.0E+00	0%	1.5E-08	3.3E-06	3.3E-06	0%
Benzo(k)fluoranthene	1.13	3.6E-11	1.0E-08	1.0E-08	0%	NA	NA	0.0E+00	--
Chrysene	2.05	6.5E-12	1.9E-09	1.9E-09	0%	NA	NA	0.0E+00	--
Di-n-octylphthalate	0.479	NA	NA	0.0E+00	--	2.4E-08	5.3E-06	5.4E-06	0%
Fluoranthene	4.83	NA	NA	0.0E+00	--	1.2E-07	3.5E-05	3.5E-05	1%
Indeno(1,2,3-cd)pyrene	0.452	1.4E-10	4.1E-08	4.1E-08	2%	NA	NA	0.0E+00	--
Phenanthrene	3.63	NA	NA	0.0E+00	--	1.2E-07	2.7E-05	2.7E-05	0%
Pyrene	3.64	NA	NA	0.0E+00	--	1.2E-07	2.7E-05	2.7E-05	0%
Bis(2-ethylhexyl)phthalate	5.19	3.2E-11	6.9E-09	7.0E-09	0%	2.6E-07	5.8E-05	5.8E-05	1%
VOCs									
2-Butanone	0.00737	NA	NA	0.0E+00	--	1.2E-11	NA	1.2E-11	0%
Acetone	0.221	NA	NA	0.0E+00	--	2.2E-09	NA	2.2E-09	0%
Benzene	0.00313	4.0E-14	NA	4.0E-14	0%	1.1E-09	NA	1.1E-09	0%
Carbon disulfide	0.0148	NA	NA	0.0E+00	--	1.5E-10	NA	1.5E-10	0%
Chloroethane	0.0103	1.3E-14	NA	1.3E-14	0%	2.6E-11	NA	2.6E-11	0%
Ethylbenzene	0.0032	NA	NA	0.0E+00	--	3.3E-11	NA	3.3E-11	0%
Methylene chloride	0.00086	2.8E-15	NA	2.8E-15	0%	1.5E-11	NA	1.5E-11	0%
Toluene	0.0546	NA	NA	0.0E+00	--	2.8E-10	NA	2.8E-10	0%
Xylenes (total)	0.0099	NA	NA	0.0E+00	--	5.0E-12	NA	5.0E-12	0%
Metals/Inorganics									
Aluminum	12200	NA	NA	0.0E+00	--	1.2E-05	NA	1.2E-05	0%
Barium	153	NA	NA	0.0E+00	--	2.2E-06	NA	2.2E-06	0%
Beryllium	2020	NA	NA	0.0E+00	--	1.0E-03	NA	1.0E-03	16%
Boron	37	NA	NA	0.0E+00	--	4.2E-07	NA	4.2E-07	0%
Cadmium	56.8	NA	NA	0.0E+00	--	1.2E-04	5.1E-03	5.2E-03	81%
Chromium	23.2	NA	NA	0.0E+00	--	1.6E-08	NA	1.6E-08	0%
Copper	208	NA	NA	0.0E+00	--	5.7E-06	NA	5.7E-06	0%
Lead	339	NA	NA	0.0E+00	--	NA	NA	0.0E+00	--
Mercury	0.25	NA	NA	0.0E+00	--	8.5E-07	NA	8.5E-07	0%
Molybdenum	3.46	NA	NA	0.0E+00	--	7.0E-07	NA	7.0E-07	0%
Nickel	42.1	NA	NA	0.0E+00	--	2.1E-06	NA	2.1E-06	0%
Silver	2.83	NA	NA	0.0E+00	--	5.8E-07	NA	5.8E-07	0%
Strontium	335	NA	NA	0.0E+00	--	5.7E-07	NA	5.7E-07	0%

Table 6A.22 Exposure Unit #3. Current/Future - RME - Total Sediment Risk for Resident Farmer - Adult (Non-Radiologicals)

		CANCER EFFECTS				NON-CANCER EFFECTS			
		Route-Specific Risk		Cancer		Route-Specific HQ		Non-Cancer	
Constituent		Oral	Dermal	Risk Total	Percent of Total	Oral	Dermal	HI Total	Percent of Total
Uranium	7.19	NA	NA	0.0E+00	--	2.4E-06	NA	2.4E-06	0%
Zinc	549	NA	NA	0.0E+00	--	1.9E-06	NA	1.9E-06	0%
TOTAL		7.3E-09	2.1E-06	**2.1E-06**		1.2E-03	5.2E-03	6.4E-03	

Bold	Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer
EPC	Exposure point concentration
mg/kg	Milligram per kilogram.
NA	Not available; insufficient toxicity data.
NAP	Not applicable pathway; not a VOC.
NC	Not a suspected carcinogen.
RME	Reasonable maximum exposure.
SVOCs	Semi-volatile organic compounds.
VOCs	Volatile organic compounds.

Table 6A.23 Exposure Unit #3. Current/Future - RME - Risk Summary for Resident Farmer - Adult (Non-Radiologicals)

	CANCER EFFECTS						NON-CANCER EFFECTS					
	Route-Specific Risk				Cancer		Route-Specific HQ				Non-Cancer	
Media	Oral	Dermal	Inhalation Dust	Inhalation VOCs	Risk Total	Percent of Total	Oral	Dermal	Inhalation Dust	Inhalation VOCs	HI Total	Percent of Total
Soil	0.0E+00	0.0E+00	1.4E-08	0.0E+00	1.4E-08	1%	9.9E-02	0.0E+00	6.7E-04	0.0E+00	9.9E-02	7%
Groundwater	0.0E+00	0.0E+00	NAP	0.0E+00	0.0E+00	--	1.1E+00	1.7E-01	NAP	0.0E+00	**1.3E+00**	90%
Surface Water	5.4E-08	3.7E-07	NAP	NAP	4.2E-07	17%	4.0E-03	3.9E-02	NAP	NAP	4.3E-02	3%
Sediment	7.3E-09	2.1E-06	NAP	NAP	**2.1E-06**	83%	1.2E-03	5.2E-03	NAP	NAP	6.4E-03	0%
TOTAL					**2.5E-06**						**1.4E+00**	

Bold Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer
NAP Not an Applicable Pathway

Table 6A.24a Exposure Unit #3. Current/Future - RME - Surface Soil (0 - 2 ft.) Risk for Resident Farmer - Child (Non-Radiologicals)

		CANCER EFFECTS						NON-CANCER EFFECTS					
		Route-Specific Risk				Cancer		Route-Specific HQ				Non-Cancer	
Constituent		Oral	Dermal	Inhalation Dust	Inhalation VOCs	Risk Total	Percent of Total	Oral	Dermal	Inhalation Dust	Inhalation VOCs	HI Total	Percent of Total
	EPC mg/kg												
Metals/Inorganics													
Beryllium	155	NA	NA	9.2E-09	NAP	9.2E-09	100%	9.9E-01	NA	2.2E-03	NAP	9.9E-01	100%
Lead	74	NA	NA	NA	NAP	0.0E+00	--	NA	NA	NA	NAP	0.0E+00	--
TOTAL		0.0E+00	0.0E+00	9.2E-09	0.0E+00	9.2E-09		9.9E-01	0.0E+00	2.2E-03	0.0E+00	9.9E-01	

Bold	Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer
EPC	Exposure point concentration
mg/kg	Milligram per kilogram.
NA	Not available; insufficient toxicity data.
NAP	Not applicable pathway; not a VOC.
NC	Not a suspected carcinogen.
RME	Reasonable maximum exposure.
VOCs	Volatile organic compounds.

Table 6A.24b Exposure Unit #3. Current/Future - RME - Total Soil (0 - 10 ft.) Risk for Resident Farmer - Child (Non-Radiologicals)

		CANCER EFFECTS						NON-CANCER EFFECTS					
		Route-Specific Risk				Cancer		Route-Specific HQ				Non-Cancer	
Constituent		Oral	Dermal	Inhalation Dust	Inhalation VOCs	Risk Total	Percent of Total	Oral	Dermal	Inhalation Dust	Inhalation VOCs	HI Total	Percent of Total
	EPC mg/kg												
Metals/Inorganics													
Beryllium	144	NA	NA	8.6E-09	NAP	8.6E-09	100%	9.2E-01	NA	2.1E-03	NAP	9.2E-01	100%
Lead	71.9	NA	NA	NA	NAP	0.0E+00	--	NA	NA	NA	NAP	0.0E+00	--
TOTAL		0.0E+00	0.0E+00	8.6E-09	0.0E+00	8.6E-09		9.2E-01	0.0E+00	2.1E-03	0.0E+00	9.2E-01	

Bold	Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer
EPC	Exposure point concentration
mg/kg	Milligram per kilogram.
NA	Not available; insufficient toxicity data.
NAP	Not applicable pathway; not a VOC.
NC	Not a suspected carcinogen.
RME	Reasonable maximum exposure.
VOCs	Volatile organic compounds.

Table 6A.25 Exposure Unit #3. Current/Future - RME - Total Groundwater Risk for Resident Farmer - Child (Non-Radiologicals)

Constituent	EPC mg/L	CANCER EFFECTS Route-Specific Risk Oral	Dermal	Inhalation VOCs	Cancer Risk Total	Percent of Total	NON-CANCER EFFECTS Route-Specific HQ Oral	Dermal	Inhalation VOCs	Non-Cancer HI Total	Percent of Total
Metals											
Beryllium	0.0048	NA	NA	NAP	0.0E+00	--	2.0E-01	1.1E-01	NAP	3.1E-01	10%
Manganese	0.373	NA	NA	NAP	0.0E+00	--	1.3E+00	1.2E-01	NAP	**1.4E+00**	44%
Nickel	0.176	NC	NC	NAP	0.0E+00	--	7.3E-01	6.9E-02	NAP	8.0E-01	25%
Uranium	0.026	NC	NC	NAP	0.0E+00	--	7.2E-01	NA	NAP	7.2E-01	22%
TOTAL		0.0E+00	0.0E+00	0.0E+00	0.0E+00		2.9E+00	3.0E-01	0.0E+00	**3.2E+00**	

Bold	Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer
EPC	Exposure point concentration.
mg/L	Milligram per liter.
NA	Not available; insufficient toxicity data.
NAP	Not applicable pathway; not a VOC.
NC	Not a suspected carcinogen.
RME	Reasonable maximum exposure.
VOCs	Volatile organic compounds.

Table 6A.26 Exposure Unit #3. Current/Future - RME - Total Surface Water Risk for Resident Farmer - Child (Non-Radiologicals)

Constituent	EPC mg/L	CANCER EFFECTS Route-Specific Risk Oral	Dermal	Cancer Risk Total	Percent of Total	NON-CANCER EFFECTS Route-Specific HQ Oral	Dermal	Non-Cancer HI Total	Percent of Total
SVOCs									
Di-n-octylphthalate	0.0102	NA	NA	0.0E+00	--	6.3E-05	1.5E-04	2.1E-04	0%
Diethyl phthalate	0.0051	NA	NA	0.0E+00	--	7.9E-07	2.4E-06	3.2E-06	0%
Phenol	0.0064	NA	NA	0.0E+00	--	1.3E-06	2.9E-06	4.2E-06	0%
Bis(2-ethylhexyl)phthalate	0.0226	3.3E-09	1.4E-07	1.4E-07	43%	1.4E-04	5.7E-03	5.8E-03	4%
m,p-cresol	0.0111	NA	NA	0.0E+00	--	2.7E-04	1.3E-03	1.6E-03	1%
VOCs									
2-Butanone	0.00575	NA	NA	0.0E+00	--	1.2E-06	1.4E-06	2.6E-06	0%
Acetone	0.0188	NA	NA	0.0E+00	--	2.3E-05	8.2E-06	3.1E-05	0%
Bromodichloromethane	0.0006	3.9E-10	9.6E-10	1.4E-09	0%	3.7E-06	9.0E-06	1.3E-05	0%
Chloroform	0.00076	4.9E-11	2.0E-09	2.0E-09	1%	9.4E-06	3.8E-04	3.9E-04	0%
Dibromochloromethane	0.0034	3.0E-09	4.0E-09	7.1E-09	2%	2.1E-05	2.8E-05	4.9E-05	0%
Tetrachloroethene	0.0013	7.2E-10	1.1E-07	1.1E-07	35%	1.6E-05	2.5E-03	2.6E-03	2%
Tribromomethane	0.006	5.0E-10	1.0E-09	1.5E-09	0%	3.7E-05	7.5E-05	1.1E-04	0%
Metals									
Aluminum	1.09	NA	NA	0.0E+00	--	1.3E-04	NA	1.3E-04	0%
Arsenic	0.00308	4.9E-08	8.0E-09	5.7E-08	18%	1.3E-03	2.1E-04	1.5E-03	1%
Barium	0.188	NA	NA	0.0E+00	--	3.3E-04	7.7E-04	1.1E-03	1%
Beryllium	0.0836	NA	NA	0.0E+00	--	5.2E-03	1.2E-01	1.3E-01	81%
Boron	0.2350	NA	NA	0.0E+00	--	3.2E-04	NA	3.2E-04	0%
Cadmium	0.00106	NA	NA	0.0E+00	--	2.6E-04	8.5E-04	1.1E-03	1%
Chromium	0.00227	NA	NA	0.0E+00	--	1.9E-07	1.2E-06	1.4E-06	0%
Cobalt	0.00121	NA	NA	0.0E+00	--	2.5E-06	NA	2.5E-06	0%
Copper	0.0233	NA	NA	0.0E+00	--	7.8E-05	NA	7.8E-05	0%
Lead	0.0458	NA	NA	0.0E+00	--	NA	NA	0.0E+00	--
Manganese	0.2480	NA	NA	0.0E+00	--	1.3E-03	5.2E-03	6.5E-03	4%
Mercury	0.00013	NA	NA	0.0E+00	--	5.4E-05	8.7E-06	6.2E-05	0%
Molybdenum	0.0226	NA	NA	0.0E+00	--	5.6E-04	NA	5.6E-04	0%
Nickel	0.0427	NA	NA	0.0E+00	--	2.6E-04	1.1E-03	1.3E-03	1%
Selenium	0.00132	NA	NA	0.0E+00	--	3.3E-05	5.3E-06	3.8E-05	0%
Silver	0.00088	NA	NA	0.0E+00	--	2.2E-05	8.8E-05	1.1E-04	0%
Strontium	10.400	NA	NA	0.0E+00	--	2.1E-03	NA	2.1E-03	1%

Table 6A.26 Exposure Unit #3. Current/Future - RME - Total Surface Water Risk for Resident Farmer - Child (Non-Radiologicals)

Constituent	EPC mg/L	CANCER EFFECTS Route-Specific Risk Oral	Dermal	Cancer Risk Total	Percent of Total	NON-CANCER EFFECTS Route-Specific HQ Oral	Dermal	Non-Cancer HI Total	Percent of Total
Thallium	0.00198	NA	NA	0.0E+00	--	3.1E-03	5.0E-04	3.6E-03	2%
Uranium	0.00366	NA	NA	0.0E+00	--	1.5E-04	NA	1.5E-04	0%
Vanadium	0.00325	NA	NA	0.0E+00	--	5.7E-05	3.6E-04	4.2E-04	0%
Zinc	0.0463	NA	NA	0.0E+00	--	1.9E-05	3.1E-06	2.2E-05	0%
TOTAL		5.7E-08	2.7E-07	3.2E-07		1.6E-02	1.4E-01	1.5E-01	

Bold	Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer
EPC	Exposure point concentration.
mg/L	Milligram per liter.
NA	Not available; insufficient toxicity data.
NAP	Not applicable pathway; not a VOC.
NC	Not a suspected carcinogen.
RME	Reasonable maximum exposure.
SVOCs	Semi-volatile organic compounds.
VOCs	Volatile organic compounds.

Table 6A.27 Exposure Unit #3. Current/Future - RME - Total Sediment Risk for Resident Farmer - Child (Non-Radiologicals)

Constituent	EPC mg/kg	CANCER EFFECTS Route-Specific Risk Oral	Dermal	Cancer Risk Total	Percent of Total	NON-CANCER EFFECTS Route-Specific HQ Oral	Dermal	Non-Cancer HI Total	Percent of Total
SVOCs									
3,3'-Dichlorobenzidine	0.42	3.1E-10	6.5E-09	6.8E-09	1%	NA	NA	0.0E+00	--
Benzo(a)anthracene	1.83	2.2E-09	6.0E-08	6.2E-08	8%	NA	NA	0.0E+00	--
Benzo(a)pyrene	1.78	2.1E-08	5.8E-07	6.0E-07	78%	NA	NA	0.0E+00	--
Benzo(b)fluoranthene	2.25	2.7E-09	7.4E-08	7.6E-08	10%	NA	NA	0.0E+00	--
Benzo(g,h,i)perylene	0.448	NA	NA	0.0E+00	--	2.8E-07	6.0E-06	6.3E-06	0%
Benzo(k)fluoranthene	1.13	1.3E-10	3.7E-09	3.8E-09	0%	NA	NA	0.0E+00	--
Chrysene	2.05	2.4E-11	6.7E-10	6.9E-10	0%	NA	NA	0.0E+00	--
Di-n-octylphthalate	0.479	NA	NA	0.0E+00	--	4.5E-07	9.6E-06	1.0E-05	0%
Fluoranthene	4.83	NA	NA	0.0E+00	--	2.3E-06	6.3E-05	6.5E-05	0%
Indeno(1,2,3-cd)pyrene	0.452	5.4E-10	1.5E-08	1.5E-08	2%	NA	NA	0.0E+00	--
Phenanthrene	3.63	NA	NA	0.0E+00	--	2.3E-06	4.9E-05	5.1E-05	0%
Pyrene	3.64	NA	NA	0.0E+00	--	2.3E-06	4.9E-05	5.1E-05	0%
Bis(2-ethylhexyl)phthalate	5.19	1.2E-10	2.5E-09	2.6E-09	0%	4.9E-06	1.0E-04	1.1E-04	0%
VOCs									
2-Butanone	0.00737	NA	NA	0.0E+00	--	2.3E-10	NA	2.3E-10	0%
Acetone	0.221	NA	NA	0.0E+00	--	4.2E-08	NA	4.2E-08	0%
Benzene	0.00313	1.5E-13	NA	1.5E-13	0%	2.0E-08	NA	2.0E-08	0%
Carbon disulfide	0.0148	NA	NA	0.0E+00	--	2.8E-09	NA	2.8E-09	0%
Chloroethane	0.0103	4.9E-14	NA	4.9E-14	0%	4.9E-10	NA	4.9E-10	0%
Ethylbenzene	0.0032	NA	NA	0.0E+00	--	6.1E-10	NA	6.1E-10	0%
Methylene chloride	0.00086	1.1E-14	NA	1.1E-14	0%	2.7E-10	NA	2.7E-10	0%
Toluene	0.0546	NA	NA	0.0E+00	--	5.2E-09	NA	5.2E-09	0%
Xylenes (total)	0.0099	NA	NA	0.0E+00	--	9.4E-11	NA	9.4E-11	0%
Metals/Inorganics									
Aluminum	12200	NA	NA	0.0E+00	--	2.3E-04	NA	2.3E-04	1%
Barium	153	NA	NA	0.0E+00	--	4.2E-05	NA	4.2E-05	0%
Beryllium	2020	NA	NA	0.0E+00	--	1.9E-02	NA	1.9E-02	61%
Boron	37	NA	NA	0.0E+00	--	7.8E-06	NA	7.8E-06	0%
Cadmium	56.8	NA	NA	0.0E+00	--	2.2E-03	9.1E-03	1.1E-02	36%
Chromium	23.2	NA	NA	0.0E+00	--	2.9E-07	NA	2.9E-07	0%
Copper	208	NA	NA	0.0E+00	--	1.1E-04	NA	1.1E-04	0%
Lead	339	NA	NA	0.0E+00	--	NA	NA	0.0E+00	--
Mercury	0.25	NA	NA	0.0E+00	--	1.6E-05	NA	1.6E-05	0%
Molybdenum	3.46	NA	NA	0.0E+00	--	1.3E-05	NA	1.3E-05	0%
Nickel	42.1	NA	NA	0.0E+00	--	4.0E-05	NA	4.0E-05	0%
Silver	2.83	NA	NA	0.0E+00	--	1.1E-05	NA	1.1E-05	0%
Strontium	335	NA	NA	0.0E+00	--	1.1E-05	NA	1.1E-05	0%
Uranium	7.19	NA	NA	0.0E+00	--	4.6E-05	NA	4.6E-05	0%
Zinc	549	NA	NA	0.0E+00	--	3.5E-05	NA	3.5E-05	0%

Table 6A.27 Exposure Unit #3. Current/Future - RME - Total Sediment Risk for Resident Farmer - Child (Non-Radiologicals)

Constituent	CANCER EFFECTS				NON-CANCER EFFECTS			
	Route-Specific Risk		Cancer		Route-Specific HQ		Non-Cancer	
	Oral	Dermal	Risk Total	Percent of Total	Oral	Dermal	HI Total	Percent of Total
TOTAL	2.7E-08	7.4E-07	7.7E-07		2.2E-02	9.4E-03	3.1E-02	

Bold	Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer
EPC	Exposure point concentration
mg/kg	Milligram per kilogram.
NA	Not available; insufficient toxicity data.
NAP	Not applicable pathway; not a VOC.
NC	Not a suspected carcinogen.
RME	Reasonable maximum exposure.
SVOCs	Semi-volatile organic compounds.
VOCs	Volatile organic compounds.

Table 6A.28 Exposure Unit #3. Current/Future - RME - Risk Summary for Resident Farmer - Child (Non-Radiologicals)

	CANCER EFFECTS						NON-CANCER EFFECTS					
	Route-Specific Risk				Cancer		Route-Specific HQ				Non-Cancer	
Media	Oral	Dermal	Inhalation Dust	Inhalation VOCs	Risk Total	Percent of Total	Oral	Dermal	Inhalation Dust	Inhalation VOCs	HI Total	Percent of Total
Soil	0.0E+00	0.0E+00	8.6E-09	0.0E+00	8.6E-09	--	9.2E-01	0.0E+00	2.1E-03	0.0E+00	9.2E-01	21%
Groundwater	0.0E+00	0.0E+00	NAP	0.0E+00	0.0E+00	--	2.9E+00	3.0E-01	NAP	0.0E+00	3.2E+00	75%
Surface Water	5.7E-08	2.7E-07	NAP	NAP	3.2E-07	29%	1.6E-02	1.4E-01	NAP	NAP	1.5E-01	4%
Sediment	2.7E-08	7.4E-07	NAP	NAP	7.7E-07	70%	2.2E-02	9.4E-03	NAP	NAP	3.1E-02	1%
TOTAL					**1.1E-06**						**4.4E+00**	

Bold Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer
NAP Not and Applicable Pathway

Table 6A.29 Exposure Unit #4. Current/Future RME Soil (0 - 2 ft) Risk for Adolescent Trespasser Scenario (Non-Radiologicals)

Constituent	EPC mg/kg	CANCER EFFECTS						NON-CANCER EFFECTS					
		Route-Specific Risk				Cancer Risk Total	Percent of Total	Route-Specific HQ				Non-Cancer HI Total	Percent of Total
		Oral	Dermal	Inhalation Dust	Inhalation VOCs			Oral	Dermal	Inhalation Dust	Inhalation VOCs		
Metals/Inorganics													
Beryllium	28.9	NA	NA	1.3E-11	NAP	1.3E-11	100%	4.9E-03	NA	1.9E-06	NAP	4.9E-03	33%
Thallium	2.3	NA	NA	NA	NAP	0.0E+00	--	9.8E-03	NA	NA	NAP	9.8E-03	67%
TOTAL		0.0E+00	0.0E+00	1.3E-11	0.0E+00	1.3E-11		1.5E-02	0.0E+00	1.9E-06	0.0E+00	1.5E-02	

Bold Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer.
EPC Exposure point concentration
mg/kg Milligram per kilogram.
NA Not available; insufficient toxicity data.
NAP Not applicable pathway; not a VOC.
RME Reasonable maximum exposure.
VOCs Volatile organic compounds.

Table 6A.30 Exposure Unit #4. Current/Future RME Surface Water Risk for Adolescent Trespasser Scenario (Non-Radiologicals)

Constituent	EPC	CANCER EFFECTS				NON-CANCER EFFECTS			
		Route-Specific Risk		Cancer Risk Total	Percent of Total	Route-Specific HQ		Non-Cancer HI Total	Percent of Total
		Oral	Dermal			Oral	Dermal		
	mg/L								
VOCs									
Acetone	0.0044	NA	NA	0.0E+00	--	3.4E-06	1.3E-06	4.7E-06	0%
Chloroform	0.00016	1.1E-11	4.7E-10	4.8E-10	0.41%	1.2E-06	5.4E-05	5.5E-05	0%
Toluene	0.001	NA	NA	0.0E+00	--	3.9E-07	1.1E-04	1.1E-04	1%
SVOCs									
bis(2-ethylhexyl)phthalate	0.0169	2.6E-09	1.2E-07	1.2E-07	99.59%	6.6E-05	2.9E-03	3.0E-03	19%
Metals									
Manganese	0.662	NA	NA	0.0E+00	--	2.2E-03	9.5E-03	1.2E-02	74%
Strontium	6.61	NA	NA	0.0E+00	--	8.6E-04	NA	8.6E-04	5%
Uranium	0.00335	NA	NA	0.0E+00	--	8.7E-05	NA	8.7E-05	1%
TOTAL		2.6E-09	1.2E-07	1.2E-07		3.2E-03	1.3E-02	1.6E-02	

Bold	Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer.
mg/L	Milligram per liter.
NA	Not available; insufficient toxicity data.
NAP	Not applicable pathway; not a VOC.
NC	Not a suspected carcinogen.
RME	Reasonable maximum exposure.
SVOCs	Semi-volatile organic compounds.
VOCs	Volatile organic compounds.

Table 6A.31 Exposure Unit #4. Current/Future RME Sediment Risk for Adolescent Trespasser Scenario (Non-Radiologicals)

Constituent	EPC mg/kg	CANCER EFFECTS Route-Specific Risk Oral	Dermal	Cancer Risk Total	Percent of Total	NON-CANCER EFFECTS Route-Specific HQ Oral	Dermal	Non-Cancer HI Total	Percent of Total
SVOCs									
Acenaphthene	0.0489	NA	NA	0.0E+00	--	5.5E-09	3.0E-06	3.0E-06	0%
Anthracene	0.116	NA	NA	0.0E+00	--	2.6E-09	1.4E-06	1.4E-06	0%
Benzo(a)anthracene	0.0745	5.3E-11	3.7E-08	3.7E-08	3%	NA	NA	0.0E+00	--
Benzo(a)pyrene	0.199	1.4E-09	1.0E-06	**1.0E-06**	79%	NA	NA	0.0E+00	--
Benzo(b)fluoranthene	0.271	1.9E-10	1.4E-07	1.4E-07	11%	NA	NA	0.0E+00	--
Benzo(ghi)perylene	0.088	NA	NA	0.0E+00	--	2.0E-08	1.1E-05	1.1E-05	0%
Benzo(k)fluoranthene	0.109	7.7E-12	5.5E-09	5.5E-09	0%	NA	NA	0.0E+00	--
Carbazole	0.164	3.2E-12	1.7E-09	1.7E-09	0%	NA	NA	0.0E+00	--
Chrysene	0.253	1.8E-12	1.3E-09	1.3E-09	0%	NA	NA	0.0E+00	--
Dibenz(a,h)anthracene	0.0092	6.5E-11	4.6E-08	4.6E-08	4%	NA	NA	0.0E+00	--
Dibenzofuran	0.0189	NA	NA	0.0E+00	--	3.2E-08	1.7E-05	1.8E-05	0%
Diethyl phthalate	0.0482	NA	NA	0.0E+00	--	4.1E-10	2.2E-07	2.2E-07	0%
Fluoranthene	0.534	NA	NA	0.0E+00	--	9.1E-08	6.4E-05	6.4E-05	0%
Fluorene	0.064	NA	NA	0.0E+00	--	1.1E-08	5.9E-06	5.9E-06	0%
Indeno(1,2,3-c,d)pyrene	0.0862	6.1E-11	4.3E-08	4.3E-08	3%	NA	NA	0.0E+00	--
Phenanthrene	0.402	NA	NA	0.0E+00	--	9.1E-08	5.0E-05	5.0E-05	0%
Pyrene	0.42	NA	NA	0.0E+00	--	9.5E-08	5.2E-05	5.2E-05	0%
bis(2-ethylhexyl)phthalate	0.0847	1.1E-12	6.3E-10	6.3E-10	0%	2.9E-08	1.6E-05	1.6E-05	0%
VOCs									
2-Butanone	0.0047	NA	NA	0.0E+00	--	5.3E-11	NA	5.3E-11	0%
Acetone	0.0584	NA	NA	0.0E+00	--	4.0E-09	NA	4.0E-09	0%
Toluene	0.024	NA	NA	0.0E+00	--	8.1E-10	NA	8.1E-10	0%
Metals/Inorganics									
Beryllium	17.6	NA	NA	0.0E+00	--	6.0E-05	NA	6.0E-05	0%
Cadmium	27.5	NA	NA	0.0E+00	--	3.7E-04	4.1E-02	4.1E-02	99%
Lead	107	NA	NA	0.0E+00	--	NA	NA	0.0E+00	--
Mercury	0.07	NA	NA	0.0E+00	--	1.6E-06	NA	1.6E-06	0%
TOTAL		1.8E-09	1.3E-06	**1.3E-06**		4.3E-04	4.1E-02	4.1E-02	100%

Bold Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer.
EPC Exposure point concentration
mg/kg Milligram per kilogram.
NA Not available; insufficient toxicity data.
RME Reasonable maximum exposure.
SVOCs Semi-volatile organic compounds.
VOCs Volatile organic compounds.

Table 6A.32 Exposure Unit #4. Current/Future - RME - Risk Summary for Adolescent Trespasser (Non-Radiologicals)

	CANCER EFFECTS						NON-CANCER EFFECTS					
	Route-Specific Risk				Cancer	Percent	Route-Specific HQ				Non-Cancer	Percent
Media	Oral	Dermal	Inhalation Dust	Inhalation VOCs	Risk Total	of Total	Oral	Dermal	Inhalation Dust	Inhalation VOCs	HI Total	of Total
Surface Soil	0.0E+00	0.0E+00	1.3E-11	0.0E+00	1.3E-11	0%	1.5E-02	0.0E+00	1.9E-06	0.0E+00	1.5E-02	20%
Surface Water	2.6E-09	1.2E-07	NAP	NAP	1.2E-07	9%	3.2E-03	1.3E-02	NAP	NAP	1.6E-02	22%
Sediment	1.8E-09	1.3E-06	NAP	NAP	**1.3E-06**	91%	4.3E-04	4.1E-02	NAP	NAP	4.1E-02	58%
TOTAL					**1.4E-06**						7.2E-02	

Bold Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer.
NAP Not an applicable Pathway

Table 6A.33 Exposure Unit #5. Current/Future RME Soil (0 - 2 ft) Risk for Adolescent Trespasser Scenario (Non-Radiologicals)

Constituent	EPC mg/kg	CANCER EFFECTS					NON-CANCER EFFECTS				
		Route-Specific Risk				Cancer Risk Total	Route-Specific HQ				Non-Cancer HI Total
		Oral	Dermal	Inhalation Dust	Inhalation VOCs		Oral	Dermal	Inhalation Dust	Inhalation VOCs	
VOCs											
2-Hexanone	0.0099	NA	NA	NA	NAP	0.0E+00	NA	NA	NA	NAP	0.0E+00
Metals											
Lead	61.9	NA	NA	NA	NAP	0.0E+00	NA	NA	NA	NAP	0.0E+00
TOTAL		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00

Bold Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer.
EPC Exposure point concentration
mg/kg Milligram per kilogram.
NA Not available; insufficient toxicity data.
NAP Not applicable pathway; not a VOC.
RME Reasonable maximum exposure.
VOCs Volatile organic compounds.

Table 6A.34 Exposure Unit #5. Current/Future RME Surface Water Risk for Adolescent Trespasser Scenario (Non-Radiologicals)

Constituent	EPC mg/L	CANCER EFFECTS Route-Specific Risk Oral	Dermal	Cancer Risk Total	Percent of Total	NON-CANCER EFFECTS Route-Specific HQ Oral	Dermal	Non-Cancer HI Total	Percent of Total
Metals									
Nickel	0.00130	NA	NA	0.0E+00	--	5.1E-06	0.0E+00	5.1E-06	3%
Selenium	0.00250	NA	NA	0.0E+00	--	3.9E-05	0.0E+00	3.9E-05	25%
Uranium	0.00426	NA	NA	0.0E+00	--	1.1E-04	NA	1.1E-04	71%
Zinc	0.00530	NA	NA	0.0E+00	--	1.4E-06	0.0E+00	1.4E-06	1%
TOTAL		0.0E+00	0.0E+00	0.0E+00		1.6E-04	0.0E+00	1.6E-04	

Bold Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer.
EPC Exposure point concentration.
mg/L Milligram per liter.
NA Not available; insufficient toxicity data.
REM Reasonable maximum exposure.

Table 6A.35 Exposure Unit #5. Current/Future - RME - Risk Summary for Adolescent Trespasser (Non-Radiologicals)

	CANCER EFFECTS						NON-CANCER EFFECTS					
	Route-Specific Risk				Cancer		Route-Specific HQ				Non-Cancer	
Media	Oral	Dermal	Inhalation Dust	Inhalation VOCs	Risk Total	Percent of Total	Oral	Dermal	Inhalation Dust	Inhalation VOCs	HI Total	Percent of Total
Surface Soil	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	--	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	--
Surface Water	0.0E+00	0.0E+00	NAP	NAP	0.0E+00	--	1.6E-04	0.0E+00	NAP	NAP	1.6E-04	100%
TOTAL					0.0E+00						1.6E-04	

Bold Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer.
NAP Not an Applicable Pathway

Table 6A.36 Exposure Unit #6. Current/Future RME Soil (0 - 2 ft) Risk for Adolescent Trespasser Scenario (Non-Radiologicals)

Constituent	EPC mg/kg	CANCER EFFECTS					NON-CANCER EFFECTS				
		Route-Specific Risk				Cancer Risk Total	Route-Specific HQ				Non-Cancer HI Total
		Oral	Dermal	Inhalation Dust	Inhalation VOCs		Oral	Dermal	Inhalation Dust	Inhalation VOCs	
No COPCs											
TOTAL		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00

Bold Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer.
EPC Exposure point concentration
mg/kg Milligram per kilogram.
RME Reasonable maximum exposure.

Table 6A.37 Exposure Unit #6. Current/Future - RME - Risk Summary for Adolescent Trespasser (Non-Radiologicals)
No COPCs

	CANCER EFFECTS					NON-CANCER EFFECTS				
	Route-Specific Risk				Cancer	Route-Specific HQ				Non-Cancer
Media	Oral	Dermal	Inhalation Dust	Inhalation VOCs	Risk Total	Oral	Dermal	Inhalation Dust	Inhalation VOCs	HI Total
Surface Soil	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
TOTAL					0.E+00					0.E+00

Bold Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer.

Table 6A.38 Exposure Unit #1. Current/Future CT Surface Soil (0 - 2 ft) Risk for Industrial Worker Scenario (Non-Radiologicals)

Constituent	EPC mg/kg	CANCER EFFECTS Route-Specific Risk Oral	Dermal	Inhalation Dust	Inhalation VOCs	Cancer Risk Total	Percent of Total	NON-CANCER EFFECTS Route-Specific HQ Oral	Dermal	Inhalation Dust	Inhalation VOCs	Non-Cancer HI Total	Percent of Total
PCBs													
Aroclor-1254	3.2	6.1E-08	1.6E-08	1.1E-12	NAP	7.7E-08	2%	1.6E-02	4.1E-03	3.0E-07	NAP	2.0E-02	80%
SVOCs													
Benzo(a)anthracene	47.2	3.3E-07	7.8E-08	2.6E-12	NAP	4.1E-07	9%	NA	NA	NA	NAP	0.0E+00	--
Benzo(a)pyrene	39.1	2.7E-06	6.5E-07	2.2E-11	NAP	**3.4E-06**	76%	NA	NA	NA	NAP	0.0E+00	--
Benzo(b)fluoranthene	59.9	4.2E-07	9.9E-08	3.3E-12	NAP	5.2E-07	12%	NA	NA	NA	NAP	0.0E+00	--
Dibenz(a,h)anthracene	0.458	3.2E-08	7.6E-09	2.5E-13	NAP	4.0E-08	1%	NA	NA	NA	NAP	0.0E+00	--
Indeno(1,2,3-c,d)pyrene	2.01	1.4E-08	3.3E-09	1.1E-13	NAP	1.7E-08	0%	NA	NA	NA	NAP	0.0E+00	--
Metals/Inorganics													
Beryllium	68.3	NA	NA	1.0E-10	NAP	1.0E-10	0%	3.5E-03	NA	2.3E-05	NAP	3.5E-03	14%
Cadmium	3.89	NA	NA	4.4E-12	NAP	4.4E-12	0%	7.9E-04	2.9E-05	NA	NAP	8.2E-04	3%
Lead	218	NA	NA	NA	NAP	0.0E+00	--	NA	NA	NA	NAP	0.0E+00	--
Uranium	27.05	NA	NA	NA	NAP	0.0E+00	0%	9.2E-04	NA	NA	NAP	9.2E-04	4%
TOTAL		3.6E-06	8.5E-07	1.4E-10	0.0E+00	**4.4E-06**		2.1E-02	4.2E-03	2.3E-05	0.0E+00	2.6E-02	

Bold	Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer.
CT	Central tendancy.
EPC	Exposure point concentration.
mg/kg	Milligram per kilogram.
NA	Not available; insufficient toxicity data.
NAP	Not applicable pathway; not a VOC.
PCBs	Polychlorinated biphenyls.
SVOCs	Semi-Volatile organic compounds.
VOCs	Volatile organic compounds.

Table 6A.39 Exposure Unit #1. Current/Future CT Total Groundwater Risk for Industrial Worker Scenario (Non-Radiologicals)

Constituent	EPC mg/L	CANCER EFFECTS Route-Specific Risk Oral	Cancer Risk Total	Percent of Total	NON-CANCER EFFECTS Route-Specific HQ Oral	Non-Cancer HI Total	Percent of Total
Metals/Inorganics							
Beryllium	0.00484	NA	0.0E+00	--	1.7E-02	1.7E-02	9%
Manganese	0.373	NA	0.0E+00	--	1.1E-01	1.1E-01	58%
Nickel	0.176	NA	0.0E+00	--	NA	0.0E+00	--
Uranium	0.026	NA	0.0E+00	--	5.9E-02	5.9E-02	--
TOTAL		0.0E+00	0.0E+00		1.8E-01	1.8E-01	

Bold Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer.
CT Central tendancy.
EPC Exposure point concentration
mg/kg Milligram per kilogram.
NA Not available; insufficient toxicity data.

Table 6A.40 Exposure Unit #1. Current/Future - CT - Risk Summary for Industrial Worker (Non-Radiologicals)

	CANCER EFFECTS						NON-CANCER EFFECTS					
	Route-Specific Risk				Cancer		Route-Specific HQ				Non-Cancer	
Media	Oral	Dermal	Inhalation Dust	Inhalation VOCs	Risk Total	Percent of Total	Oral	Dermal	Inhalation Dust	Inhalation VOCs	HI Total	Percent of Total
Soil	3.6E-06	8.5E-07	1.4E-10	0.0E+00	**4.4E-06**	100%	2.1E-02	4.2E-03	2.3E-05	0.0E+00	2.6E-02	12%
Groundwater	0.0E+00	NAP	NAP	NAP	0.0E+00	--	1.8E-01	NAP	NAP	NAP	1.8E-01	88%
TOTAL					**4.4E-06**						2.1E-01	

Bold Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer.
NAP Not an Applicable Pathway

Table 6A.41a Exposure Unit #1. Future - CT - Surface Soil (0 - 2 ft.) Risk for Resident Farmer - Adult (Non-Radiologicals)

Constituent	EPC mg/kg	CANCER EFFECTS Route-Specific Risk Oral	Dermal	Inhalation Dust	Inhalation VOCs	Cancer Risk Total	Percent of Total	NON-CANCER EFFECTS Route-Specific HQ Oral	Dermal	Inhalation Dust	Inhalation VOCs	Non-Cancer HI Total	Percent of Total
PCBs													
Aroclor-1254	3.2	3.4E-07	4.3E-07	1.3E-11	NAP	7.7E-07	2%	6.6E-02	8.4E-02	2.5E-06	NAP	1.5E-01	88%
SVOCs													
Benzo(a)anthracene	47.2	1.8E-06	2.1E-06	3.0E-11	NAP	**4.0E-06**	9%	NA	NA	NA	NAP	0.0E+00	--
Benzo(a)pyrene	39.1	1.5E-05	1.8E-05	2.5E-10	NAP	**3.3E-05**	76%	NA	NA	NA	NAP	0.0E+00	--
Benzo(b)fluoranthene	59.9	2.3E-06	2.7E-06	3.8E-11	NAP	**5.0E-06**	12%	NA	NA	NA	NAP	0.0E+00	--
Dibenz(a,h)anthracene	0.458	1.8E-07	2.1E-07	2.9E-12	NAP	3.9E-07	1%	NA	NA	NA	NAP	0.0E+00	--
Indeno(1,2,3-c,d)pyrene	2.01	7.8E-08	9.1E-08	1.3E-12	NAP	1.7E-07	0%	NA	NA	NA	NAP	0.0E+00	--
Metals/Inorganics													
Beryllium	68.3	NA	NA	1.2E-09	NAP	1.2E-09	0%	1.4E-02	NA	1.9E-04	NAP	1.4E-02	8%
Cadmium	3.89	NA	NA	5.0E-11	NAP	5.0E-11	0%	3.2E-03	NA	NA	NAP	3.2E-03	2%
Lead	218	NA	NA	NA	NAP	0.0E+00	--	NA	NA	NA	NAP	0.0E+00	--
Uranium	27.05	NA	NA	NA	NAP	0.0E+00	--	3.7E-03	NA	NA	NAP	3.7E-03	--
TOTAL		2.0E-05	2.3E-05	1.6E-09	0.0E+00	**4.3E-05**		8.7E-02	8.4E-02	1.9E-04	0.0E+00	1.7E-01	

Bold	Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer.
--	No percentage of total risk was calculated
CT	Central tendancy
EPC	Exposure point concentration
mg/kg	Milligram per kilogram.
NA	Not available; insufficient toxicity data.
NAP	Not applicable pathway; not a VOC.
NC	Not a suspected carcinogen.
PCBs	Polychlorinated biphenyls
SVOCs	Semi-volatile organic compounds.
VOCs	Volatile organic compounds

Table 6A.41b Exposure Unit #1. Future - CT - Total Soil (0 - 10 ft.) Risk for Resident Farmer - Adult (Non-Radiologicals)

		CANCER EFFECTS						NON-CANCER EFFECTS					
		Route-Specific Risk				Cancer		Route-Specific HQ				Non-Cancer	
Constituent		Oral	Dermal	Inhalation Dust	Inhalation VOCs	Risk Total	Percent of Total	Oral	Dermal	Inhalation Dust	Inhalation VOCs	HI Total	Percent of Total
	EPC mg/kg												
PCBs													
Aroclor-1254	3.43	3.6E-07	4.6E-07	1.4E-11	NAP	8.2E-07	5%	7.0E-02	9.0E-02	2.7E-06	NAP	1.6E-01	94%
SVOCs													
Benzo(a)anthracene	17.7	6.8E-07	8.1E-07	1.1E-11	NAP	**1.5E-06**	9%	NA	NA	NA	NAP	0.0E+00	--
Benzo(a)pyrene	14.7	5.7E-06	6.7E-06	9.3E-11	NAP	**1.2E-05**	72%	NA	NA	NA	NAP	0.0E+00	--
Benzo(b)fluoranthene	22.3	8.6E-07	1.0E-06	1.4E-11	NAP	**1.9E-06**	11%	NA	NA	NA	NAP	0.0E+00	--
Dibenz(a,h)anthracene	0.458	1.8E-07	2.1E-07	2.9E-12	NAP	3.9E-07	2%	NA	NA	NA	NAP	0.0E+00	--
Indeno(1,2,3-c,d)pyrene	2.01	7.8E-08	9.1E-08	1.3E-12	NAP	1.7E-07	1%	NA	NA	NA	NAP	0.0E+00	--
Metals/Inorganics													
Beryllium	36.4	NA	NA	6.2E-10	NAP	6.2E-10	0%	7.5E-03	NA	1.0E-04	NAP	7.6E-03	4%
Lead	106	NA	NA	NA	NAP	0.0E+00	--	NA	NA	NA	NAP	0.0E+00	--
Uranium	14.2	NA	NA	NA	NAP	0.0E+00	--	1.9E-03	NA	NA	NAP	1.9E-03	--
TOTAL		7.8E-06	9.3E-06	7.6E-10	0.0E+00	**1.7E-05**		8.0E-02	9.0E-02	1.0E-04	0.0E+00	1.7E-01	

Bold	Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer.
--	No percentage of total risk was calculated
CT	Central tendancy
EPC	Exposure point concentration
mg/kg	Milligram per kilogram.
NA	Not available; insufficient toxicity data.
NAP	Not applicable pathway; not a VOC.
NC	Not a suspected carcinogen.
PCBs	Polychlorinated biphenyls
SVOCs	Semi-volatile organic compounds.
VOCs	Volatile organic compounds

Table 6A.42 Exposure Unit #1. Future - CT - Total Groundwater Risk for Resident Farmer - Adult (Non-Radiologicals)

Constituent	EPC mg/L	CANCER EFFECTS Route-Specific Risk Oral	Dermal	Inhalation VOCs	Cancer Risk Total	Percent of Total	NON-CANCER EFFECTS Route-Specific HQ Oral	Dermal	Inhalation VOCs	Non-Cancer HI Total	Percent of Total
Metals											
Beryllium	0.0048	NA	NA	NAP	0.0E+00	--	4.6E-02	1.4E-02	NAP	6.0E-02	8%
Manganese	0.373	NA	NA	NAP	0.0E+00	--	3.0E-01	1.5E-02	NAP	3.1E-01	44%
Nickel	0.176	NC	NC	NAP	0.0E+00	--	1.7E-01	8.8E-03	NAP	1.8E-01	25%
Uranium	0.026	NA	NA	NAP	0.0E+00	--	1.7E-01	NA	NAP	1.7E-01	23%
TOTAL		0.0E+00	0.0E+00	0.0E+00	0.0E+00		6.8E-01	3.8E-02	0.0E+00	7.2E-01	

Bold	Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer.
--	No percentage of total risk was calculated
CT	Central tendancy
EPC	Exposure point concentration
mg/L	Milligram per liter.
NA	Not available; insufficient toxicity data.
NAP	Not applicable pathway; not a VOC.
NC	Not a suspected carcinogen.
VOCs	Volatile organic compounds.

Table 6A.43 Exposure Unit #1. Future - CT - Risk Summary for Resident Farmer - Adult (Non-Radiologicals)

	CANCER EFFECTS						NON-CANCER EFFECTS					
	Route-Specific Risk				Cancer		Route-Specific HQ				Non-Cancer	
Media	Oral	Dermal	Inhalation Dust	Inhalation VOCs	Risk Total	Percent of Total	Oral	Dermal	Inhalation Dust	Inhalation VOCs	HI Total	Percent of Total
Soil	7.8E-06	9.3E-06	7.6E-10	0.0E+00	**1.7E-05**	100%	8.0E-02	9.0E-02	1.0E-04	0.0E+00	1.7E-01	19%
Groundwater	0.0E+00	0.0E+00	NAP	0.0E+00	0.0E+00	--	6.8E-01	3.8E-02	NAP	0.0E+00	7.2E-01	81%
TOTAL					**1.7E-05**						8.9E-01	

Bold Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer.

-- No percentage of total risk was calculated

NAP Not an Applicable Pathway

Table 6A.44a Exposure Unit #1. Future - CT - Surface Soil (0 - 2 ft.) Risk for Resident Farmer - Child (Non-Radiologicals)

Constituent	EPC mg/kg	CANCER EFFECTS Route-Specific Risk Oral	Dermal	Inhalation Dust	Inhalation VOCs	Cancer Risk Total	Percent of Total	NON-CANCER EFFECTS Route-Specific HQ Oral	Dermal	Inhalation Dust	Inhalation VOCs	Non-Cancer HI Total	Percent of Total
PCBs													
Aroclor-1254	3.2	2.1E-06	3.2E-07	2.7E-11	NAP	**2.4E-06**	2%	6.1E-01	NA	7.9E-06	NAP	6.1E-01	76%
SVOCs													
Benzo(a)anthracene	47.2	1.1E-05	1.6E-06	6.2E-11	NAP	**1.3E-05**	9%	NA	NA	NA	NAP	0.0E+00	--
Benzo(a)pyrene	39.1	9.4E-05	1.3E-05	5.2E-10	NAP	**1.1E-04**	76%	NA	NA	NA	NAP	0.0E+00	--
Benzo(b)fluoranthene	59.9	1.4E-05	2.0E-06	7.9E-11	NAP	**1.6E-05**	12%	NA	NA	NA	NAP	0.0E+00	--
Dibenz(a,h)anthracene	0.458	1.1E-06	1.5E-07	6.0E-12	NAP	**1.3E-06**	1%	NA	NA	NA	NAP	0.0E+00	--
Indeno(1,2,3-c,d)pyrene	2.01	4.8E-07	6.8E-08	2.7E-12	NAP	5.5E-07	0%	NA	NA	NA	NAP	0.0E+00	--
Metals/Inorganics													
Beryllium	68.3	NA	NA	2.4E-09	NAP	2.4E-09	0%	1.3E-01	NA	5.9E-04	NAP	1.3E-01	16%
Cadmium	3.89	NA	NA	1.0E-10	NAP	1.0E-10	0%	3.0E-02	NA	NA	NAP	3.0E-02	4%
Lead	218	NA	NA	NA	NAP	0.0E+00	--	NA	NA	NA	NAP	0.0E+00	--
Uranium	27.05	NA	NA	NA	NAP	0.0E+00	0%	3.5E-02	NA	NA	NAP	3.5E-02	4%
TOTAL		1.2E-04	1.7E-05	3.2E-09	0.0E+00	**1.4E-04**		8.1E-01	0.0E+00	6.0E-04	0.0E+00	8.1E-01	

Bold	Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer.
CT	Central tendancy
EPC	Exposure point concentration
mg/kg	Milligram per kilogram.
NA	Not available; insufficient toxicity data.
NAP	Not applicable pathway; not a VOC.
PCBs	Polychlorinated biphenyls
SVOCs	Semi-volatile organic compounds.

Table 6A.44b Exposure Unit #1. Future - CT - Total Soil (0 - 10 ft.) Risk for Resident Farmer - Child (Non-Radiologicals)

Constituent	EPC mg/kg	CANCER EFFECTS Route-Specific Risk Oral	Dermal	Inhalation Dust	Inhalation VOCs	Cancer Risk Total	Percent of Total	NON-CANCER EFFECTS Route-Specific HQ Oral	Dermal	Inhalation Dust	Inhalation VOCs	Non-Cancer HI Total	Percent of Total
PCBs													
Aroclor-1254	3.43	2.3E-06	3.4E-07	2.9E-11	NAP	**2.6E-06**	5%	6.6E-01	NA	8.5E-06	NAP	6.6E-01	88%
SVOCs													
Benzo(a)anthracene	17.7	4.2E-06	6.0E-07	2.3E-11	NAP	**4.8E-06**	9%	NA	NA	NA	NAP	0.0E+00	--
Benzo(a)pyrene	14.7	3.5E-05	5.0E-06	1.9E-10	NAP	**4.0E-05**	72%	NA	NA	NA	NAP	0.0E+00	--
Benzo(b)fluoranthene	22.3	5.4E-06	7.5E-07	2.9E-11	NAP	**6.1E-06**	11%	NA	NA	NA	NAP	0.0E+00	--
Dibenz(a,h)anthracene	0.458	1.1E-06	1.5E-07	6.0E-12	NAP	**1.3E-06**	2%	NA	NA	NA	NAP	0.0E+00	--
Indeno(1,2,3-c,d)pyrene	2.01	4.8E-07	6.8E-08	2.7E-12	NAP	5.5E-07	1%	NA	NA	NA	NAP	0.0E+00	--
Metals/Inorganics													
Beryllium	36.4	NA	NA	1.3E-09	NAP	1.3E-09	0%	7.0E-02	NA	3.2E-04	NAP	7.0E-02	9%
Lead	106	NA	NA	NA	NAP	0.0E+00	--	NA	NA	NA	NAP	0.0E+00	--
Uranium	14.2	NA	NA	NA	NAP	0.0E+00	0%	1.8E-02	NA	NA	NAP	1.8E-02	2%
TOTAL		4.9E-05	6.9E-06	1.6E-09	0.0E+00	**5.6E-05**		7.5E-01	0.0E+00	3.3E-04	0.0E+00	7.5E-01	

Bold	Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer.
CT	Central tendancy
EPC	Exposure point concentration
mg/kg	Milligram per kilogram.
NA	Not available; insufficient toxicity data.
NAP	Not applicable pathway; not a VOC.
PCBs	Polychlorinated biphenyls
SVOCs	Semi-volatile organic compounds.

Table 6A.45 Exposure Unit #1. Future - CT - Total Groundwater Risk for Resident Farmer - Child (Non-Radiologicals)

Constituent	EPC mg/L	CANCER EFFECTS Route-Specific Risk Oral	Dermal	Inhalation VOCs	Cancer Risk Total	Percent of Total	NON-CANCER EFFECTS Route-Specific HQ Oral	Dermal	Inhalation VOCs	Non-Cancer HI Total	Percent of Total
Metals											
Beryllium	0.0048	NA	NA	NAP	0.0E+00	--	1.0E-01	2.6E-02	NAP	1.3E-01	8%
Manganese	0.373	NA	NA	NAP	0.0E+00	--	6.6E-01	2.9E-02	NAP	6.8E-01	44%
Nickel	0.176	NC	NC	NAP	0.0E+00	--	3.7E-01	1.6E-02	NAP	3.9E-01	25%
Uranium	0.026	NC	NC	NAP	0.0E+00	--	3.7E-01	NA	NAP	3.7E-01	23%
TOTAL		0.0E+00	0.0E+00	0.0E+00	0.0E+00		1.5E+00	7.0E-02	0.0E+00	**1.6E+00**	

Bold	Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer.
CT	Central tendancy
EPC	Exposure point concentration
mg/L	Milligram per liter.
NA	Not available; insufficient toxicity data.
NAP	Not applicable pathway; not a VOC.
NC	Not a suspected carcinogen.
VOCs	Volatile organic compounds.

Table 6A.46 Exposure Unit #1. Future - CT - Risk Summary for Resident Farmer - Child (Non-Radiologicals)

	CANCER EFFECTS						NON-CANCER EFFECTS					
	Route-Specific Risk				Cancer		Route-Specific HQ				Non-Cancer	
Media	Oral	Dermal	Inhalation Dust	Inhalation VOCs	Risk Total	Percent of Total	Oral	Dermal	Inhalation Dust	Inhalation VOCs	HI Total	Percent of Total
Soil	4.9E-05	6.9E-06	1.6E-09	0.0E+00	**5.6E-05**	100%	7.5E-01	0.0E+00	3.3E-04	0.0E+00	7.5E-01	32%
Groundwater	0.0E+00	0.0E+00	NAP	0.0E+00	0.0E+00	--	1.5E+00	7.0E-02	NAP	0.0E+00	**1.6E+00**	68%
TOTAL					**5.6E-05**						**2.3E+00**	

Bold Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer.
NAP Not an Applicable Pathway

Table 6A.47 Exposure Unit #2. Current/Future CT Surface Soil (0 - 2 ft) Risk for Industrial Worker Scenario (Non-Radiologicals)

Constituent	EPC mg/kg	CANCER EFFECTS						NON-CANCER EFFECTS					
		Route-Specific Risk				Cancer Risk Total	Percent of Total	Route-Specific HQ				Non-Cancer HI Total	Percent of Total
		Oral	Dermal	Inhalation Dust	Inhalation VOCs			Oral	Dermal	Inhalation Dust	Inhalation VOCs		
SVOCs													
Benzo(a)anthracene	0.887	6.2E-09	1.5E-09	4.9E-14	NAP	7.7E-09	7%	NA	NA	NA	NAP	0.0E+00	--
Benzo(a)pyrene	0.921	6.5E-08	1.5E-08	5.1E-13	NAP	8.0E-08	76%	NA	NA	NA	NAP	0.0E+00	--
Benzo(b)fluoranthene	1.14	8.0E-09	1.9E-09	6.3E-14	NAP	9.9E-09	9%	NA	NA	NA	NAP	0.0E+00	--
Indeno(1,2,3-c,d)pyrene	0.721	5.0E-09	1.2E-09	4.0E-14	NAP	6.2E-09	6%	NA	NA	NA	NAP	0.0E+00	--
Metals/Inorganics													
Beryllium	765	NA	NA	1.2E-09	NAP	1.2E-09	1%	3.9E-02	NA	2.6E-04	NAP	3.9E-02	65%
Cadmium	83.5	NA	NA	9.4E-11	NAP	9.4E-11	0%	1.7E-02	6.2E-04	NA	NAP	1.8E-02	29%
Lead	1380	NA	NA	NA	NAP	0.0E+00	--	NA	NA	NA	NAP	0.0E+00	--
Thallium	2.4	NA	NA	NA	NAP	0.0E+00	--	3.1E-03	NA	NA	NAP	3.1E-03	5%
Uranium	20.16	NA	NA	NA	NAP	0.0E+00	--	6.8E-04	NA	NA	NAP	6.8E-04	1%
TOTAL		8.4E-08	2.0E-08	1.2E-09	0.0E+00	1.0E-07	100%	6.0E-02	6.2E-04	2.6E-04	0.0E+00	6.1E-02	100%

Bold	Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer
CT	Central tendancy
EPC	Exposure point concentration
mg/kg	Milligram per kilogram.
NA	Not available; insufficient toxicity data.
NAP	Not applicable pathway; not a VOC.
SVOCs	Semi-volatile organic compounds.
VOCs	Volatile organic compounds.

Table 6A.48 Exposure Unit #2. Current/Future CT Total Groundwater Risk for Industrial Worker Scenario (Non-Radiologicals)

Constituent	EPC mg/L	CANCER EFFECTS Route-Specific Risk Oral	Cancer Risk Total	Percent of Total	NON-CANCER EFFECTS Route-Specific HQ Oral	Non-Cancer HI Total	Percent of Total
Metals/Inorganics							
Beryllium	0.00484	NA	0.0E+00	--	1.7E-02	1.7E-02	9%
Manganese	0.373	NA	0.0E+00	--	1.1E-01	1.1E-01	55%
Nickel	0.176	NA	0.0E+00	--	6.0E-02	6.0E-02	31%
Uranium	0.026	NA	0.0E+00	--	8.9E-03	8.9E-03	5%
TOTAL		0.0E+00	0.0E+00	--	1.9E-01	1.9E-01	100%

Bold	Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer
CT	Central tendancy
EPC	Exposure point concentration
mg/kg	Milligram per kilogram.
NA	Not available; insufficient toxicity data.

Table 6A.49 Exposure Unit #2. Current/Future - CT - Risk Summary for Industrial Worker (Non-Radiologicals)

	CANCER EFFECTS						NON-CANCER EFFECTS					
	Route-Specific Risk				Cancer	Percent	Route-Specific HQ				Non-Cancer	Percent
Media	Oral	Dermal	Inhalation Dust	Inhalation VOCs	Risk Total	of Total	Oral	Dermal	Inhalation Dust	Inhalation VOCs	HI Total	of Total
Soil	8.4E-08	2.0E-08	1.2E-09	0.0E+00	1.0E-07	100%	6.0E-02	6.2E-04	2.6E-04	0.0E+00	6.1E-02	24%
Groundwater	0.0E+00	NAP	NAP	NAP	0.0E+00	0%	1.9E-01	NAP	NAP	NAP	1.9E-01	76%
TOTAL					1.0E-07	100%					2.5E-01	100%

Bold Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-ca

NAP Not an Applicable Pathway

Table 6A.50a Exposure Unit #2. Future - CT - Surface Soil (0 - 2 ft.) Risk for Resident Farmer - Adult (Non-Radiologicals)

Constituent	EPC mg/kg	CANCER EFFECTS Route-Specific Risk Oral	Dermal	Inhalation Dust	Inhalation VOCs	Cancer Risk Total	Percent of Total	NON-CANCER EFFECTS Route-Specific HQ Oral	Dermal	Inhalation Dust	Inhalation VOCs	Non-Cancer HI Total	Percent of Total
SVOCs													
Benzo(a)anthracene	0.887	3.4E-08	4.0E-08	5.6E-13	NAP	7.5E-08	7%	NA	NA	NA	NAP	0.0E+00	--
Benzo(a)pyrene	0.921	3.6E-07	4.2E-07	5.8E-12	NAP	7.7E-07	76%	NA	NA	NA	NAP	0.0E+00	--
Benzo(b)fluoranthene	1.14	4.4E-08	5.2E-08	7.2E-13	NAP	9.6E-08	9%	NA	NA	NA	NAP	0.0E+00	--
Indeno(1,2,3-c,d)pyrene	0.721	2.8E-08	3.3E-08	4.6E-13	NAP	6.1E-08	6%	NA	NA	NA	NAP	0.0E+00	--
Metals/Inorganics													
Beryllium	765	NA	NA	1.3E-08	NAP	1.3E-08	1%	1.6E-01	NA	2.1E-03	NAP	1.6E-01	63%
Cadmium	83.5	NA	NA	1.1E-09	NAP	1.1E-09	0%	6.9E-02	1.2E-02	NA	NAP	8.1E-02	32%
Lead	1380	NA	NA	NA	NAP	0.0E+00	--	NA	NA	NA	NAP	0.0E+00	--
Thallium	2.4	NA	NA	NA	NAP	0.0E+00	--	1.2E-02	NA	NA	NAP	1.2E-02	5%
Uranium	20.16	NA	NA	NA	NAP	0.0E+00	--	2.8E-03	NA	NA	NAP	2.8E-03	1%
TOTAL		4.6E-07	5.4E-07	1.4E-08	0.0E+00	**1.0E-06**	100%	2.4E-01	1.2E-02	2.1E-03	0.0E+00	2.5E-01	100%

Bold	Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer.
CT	Central tendancy
EPC	Exposure point concentration
mg/kg	Milligram per kilogram.
NA	Not available; insufficient toxicity data.
NAP	Not applicable pathway; not a VOC.
SVOCs	Semi-volatile organic compounds.
VOCs	Volatile organic compounds.

Table 6A.50b Exposure Unit #2. Future - CT - Total Soil (0 - 10 ft.) Risk for Resident Farmer - Adult (Non-Radiologicals)

Constituent	EPC mg/kg	CANCER EFFECTS						NON-CANCER EFFECTS					
		Route-Specific Risk				Cancer Risk Total	Percent of Total	Route-Specific HQ				Non-Cancer HI Total	Percent of Total
		Oral	Dermal	Inhalation Dust	Inhalation VOCs			Oral	Dermal	Inhalation Dust	Inhalation VOCs		
SVOCs													
Benzo(a)anthracene	0.919	3.5E-08	4.2E-08	5.8E-13	NAP	7.7E-08	8%	NA	NA	NA	NAP	0.0E+00	--
Benzo(a)pyrene	0.888	3.4E-07	4.0E-07	5.6E-12	NAP	7.5E-07	77%	NA	NA	NA	NAP	0.0E+00	--
Benzo(b)fluoranthene	1.01	3.9E-08	4.6E-08	6.4E-13	NAP	8.5E-08	9%	NA	NA	NA	NAP	0.0E+00	--
Indeno(1,2,3-c,d)pyrene	0.653	2.5E-08	3.0E-08	4.1E-13	NAP	5.5E-08	6%	NA	NA	NA	NAP	0.0E+00	--
Metals/Inorganics													
Aluminum	26100	NA	NA	NA	NAP	0.0E+00	--	1.1E-02	NA	3.0E-04	NAP	1.1E-02	7%
Beryllium	514	NA	NA	8.8E-09	NAP	8.8E-09	1%	1.1E-01	NA	1.4E-03	NAP	1.1E-01	68%
Cadmium	28.3	NA	NA	3.6E-10	NAP	3.6E-10	0%	2.3E-02	4.2E-03	NA	NAP	2.7E-02	18%
Lead	561	NA	NA	NA	NAP	0.0E+00	--	NA	NA	NA	NAP	0.0E+00	--
Thallium	2.18	NA	NA	NA	NAP	0.0E+00	--	1.1E-02	NA	NA	NAP	1.1E-02	7%
Uranium	13.3	NA	NA	NA	NAP	0.0E+00	--	1.8E-03	NA	NA	NAP	1.8E-03	1%
TOTAL		4.4E-07	5.2E-07	9.2E-09	0.0E+00	9.7E-07	100%	1.5E-01	4.2E-03	1.7E-03	0.0E+00	1.6E-01	100%

Bold	Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer.
CT	Central tendancy
EPC	Exposure point concentration
mg/kg	Milligram per kilogram.
NA	Not available; insufficient toxicity data.
NAP	Not applicable pathway; not a VOC.
SVOCs	Semi-volatile organic compounds.
VOCs	Volatile organic compounds.

Table 6A.51 Exposure Unit #2. Future - CT - Total Groundwater Risk for Resident Farmer - Adult (Non-Radiologicals)

Constituent	EPC mg/L	CANCER EFFECTS					NON-CANCER EFFECTS				
		Route-Specific Risk			Cancer Risk Total	Percent of Total	Route-Specific HQ			Non-Cancer HI Total	Percent of Total
		Oral	Dermal	Inhalation VOCs			Oral	Dermal	Inhalation VOCs		
Metals											
Beryllium	0.0048	NA	NA	NAP	0.0E+00	--	4.6E-02	1.4E-02	NAP	6.0E-02	8%
Manganese	0.373	NA	NA	NAP	0.0E+00	--	3.0E-01	1.5E-02	NAP	3.1E-01	44%
Nickel	0.176	NC	NC	NAP	0.0E+00	--	1.7E-01	8.8E-03	NAP	1.8E-01	25%
Uranium	0.026	NC	NC	NAP	0.0E+00	--	1.7E-01	NA	NAP	1.7E-01	23%
TOTAL		0.0E+00	0.0E+00	0.0E+00	0.0E+00	--	6.8E-01	3.8E-02	0.0E+00	7.2E-01	100%

Bold Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer.
CT Central tendancy.
EPC Exposure point concentration.
mg/L Milligram per liter.
NA Not available; insufficient toxicity data.
NAP Not applicable pathway; not a VOC.
NC Not a suspected carcinogen.
VOCs Volatile organic compounds.

Table 6A.52 Exposure Unit #2. Future - CT - Risk Summary for Resident Farmer - Adult (Non-Radiologicals)

	CANCER EFFECTS						NON-CANCER EFFECTS					
	Route-Specific Risk				Cancer	Percent	Route-Specific HQ				Non-Cancer	Percent
Media	Oral	Dermal	Inhalation Dust	Inhalation VOCs	Risk Total	of Total	Oral	Dermal	Inhalation Dust	Inhalation VOCs	HI Total	of Total
Soil	4.4E-07	5.2E-07	9.2E-09	0.0E+00	9.7E-07	100%	1.5E-01	4.2E-03	1.7E-03	0.0E+00	1.6E-01	18%
Groundwater	0.0E+00	0.0E+00	NAP	0.0E+00	0.0E+00	0%	6.8E-01	3.8E-02	NAP	0.0E+00	7.2E-01	82%
TOTAL					9.7E-07	100%					8.7E-01	100%

Bold Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer.

NAP Not an Applicable Pathway

Table 6A.53a Exposure Unit #2. Future - CT - Surface Soil (0 - 2 ft.) Risk for Resident Farmer - Child (Non-Radiologicals)

Constituent	EPC mg/kg	CANCER EFFECTS Route-Specific Risk Oral	Dermal	Inhalation Dust	Inhalation VOCs	Cancer Risk Total	Percent of Total	NON-CANCER EFFECTS Route-Specific HQ Oral	Dermal	Inhalation Dust	Inhalation VOCs	Non-Cancer HI Total	Percent of Total
SVOCs													
Benzo(a)anthracene	0.887	2.1E-07	3.0E-08	1.2E-12	NAP	2.4E-07	7%	NA	NA	NA	NAP	0.0E+00	--
Benzo(a)pyrene	0.921	2.2E-06	3.1E-07	1.2E-11	NAP	**2.5E-06**	76%	NA	NA	NA	NAP	0.0E+00	--
Benzo(b)fluoranthene	1.14	2.7E-07	3.8E-08	1.5E-12	NAP	3.1E-07	9%	NA	NA	NA	NAP	0.0E+00	--
Indeno(1,2,3-c,d)pyrene	0.721	1.7E-07	2.4E-08	9.5E-13	NAP	2.0E-07	6%	NA	NA	NA	NAP	0.0E+00	--
Metals/Inorganics													
Beryllium	765	NA	NA	2.7E-08	NAP	2.7E-08	1%	1.5E+00	NA	6.7E-03	NAP	**1.5E+00**	65%
Cadmium	83.5	NA	NA	2.2E-09	NAP	2.2E-09	0%	6.4E-01	1.4E-02	NA	NAP	6.5E-01	29%
Lead	1380	NA	NA	NA	NAP	0.0E+00	--	NA	NA	NA	NAP	0.0E+00	--
Thallium	2.4	NA	NA	NA	NAP	0.0E+00	--	1.2E-01	NA	NA	NAP	1.2E-01	5%
Uranium	20.16	NA	NA	NA	NAP	0.0E+00	--	2.6E-02	NA	NA	NAP	2.6E-02	1%
TOTAL		2.9E-06	4.0E-07	3.0E-08	0.0E+00	**3.3E-06**	100%	2.2E+00	1.4E-02	6.7E-03	0.0E+00	**2.3E+00**	100%

Bold	Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer.
CT	Central tendancy
EPC	Exposure point concentration
mg/kg	Milligram per kilogram.
NA	Not available; insufficient toxicity data.
NAP	Not applicable pathway; not a VOC.
SVOCs	Semi-volatile organic compounds.
VOCs	Volatile organic compounds.

Table 6A.53b Exposure Unit #2. Future - CT - Total Soil (0 - 10 ft.) Risk for Resident Farmer - Child (Non-Radiologicals)

Constituent	EPC mg/kg	CANCER EFFECTS Route-Specific Risk Oral	Dermal	Inhalation Dust	Inhalation VOCs	Cancer Risk Total	Percent of Total	NON-CANCER EFFECTS Route-Specific HQ Oral	Dermal	Inhalation Dust	Inhalation VOCs	Non-Cancer HI Total	Percent of Total
SVOCs													
Benzo(a)anthracene	0.919	2.2E-07	3.1E-08	1.2E-12	NAP	2.5E-07	8%	NA	NA	NA	NAP	0.0E+00	--
Benzo(a)pyrene	0.888	2.1E-06	3.0E-07	1.2E-11	NAP	**2.4E-06**	77%	NA	NA	NA	NAP	0.0E+00	--
Benzo(b)fluoranthene	1.01	2.4E-07	3.4E-08	1.3E-12	NAP	2.8E-07	9%	NA	NA	NA	NAP	0.0E+00	--
Indeno(1,2,3-c,d)pyrene	0.653	1.6E-07	2.2E-08	8.6E-13	NAP	1.8E-07	6%	NA	NA	NA	NAP	0.0E+00	--
Metals/Inorganics													
Aluminum	26100	NA	NA	NA	NAP	0.0E+00	--	1.0E-01	NA	9.3E-04	NAP	1.0E-01	7%
Beryllium	514	NA	NA	1.8E-08	NAP	1.8E-08	1%	9.9E-01	NA	4.5E-03	NAP	**9.9E-01**	69%
Cadmium	28.3	NA	NA	7.6E-10	NAP	7.6E-10	0%	2.2E-01	4.7E-03	NA	NAP	2.2E-01	15%
Lead	561	NA	NA	NA	NAP	0.0E+00	--	NA	NA	NA	NAP	0.0E+00	--
Thallium	2.18	NA	NA	NA	NAP	0.0E+00	--	1.0E-01	NA	NA	NAP	1.0E-01	7%
Uranium	13.3	NA	NA	NA	NAP	0.0E+00	--	1.7E-02	NA	NA	NAP	1.7E-02	1%
TOTAL		2.8E-06	3.9E-07	1.9E-08	0.0E+00	**3.2E-06**	100%	1.4E+00	4.7E-03	5.4E-03	0.0E+00	**1.4E+00**	100%

Bold	Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer.
CT	Central tendancy
EPC	Exposure point concentration
mg/kg	Milligram per kilogram.
NA	Not available; insufficient toxicity data.
NAP	Not applicable pathway; not a VOC.
SVOCs	Semi-volatile organic compounds.
VOCs	Volatile organic compounds.

Table 6A.54 Exposure Unit #2. Future - CT - Total Groundwater Risk for Resident Farmer - Child (Non-Radiologicals)

Constituent	EPC mg/L	CANCER EFFECTS Route-Specific Risk Oral	Dermal	Inhalation VOCs	Cancer Risk Total	Percent of Total	NON-CANCER EFFECTS Route-Specific HQ Oral	Dermal	Inhalation VOCs	Non-Cancer HI Total	Percent of Total
Metals											
Beryllium	0.0048	NA	NA	NAP	0.0E+00	--	1.0E-01	2.6E-02	NAP	1.3E-01	8%
Manganese	0.373	NA	NA	NAP	0.0E+00	--	6.6E-01	2.9E-02	NAP	6.8E-01	44%
Nickel	0.176	NC	NC	NAP	0.0E+00	--	3.7E-01	1.6E-02	NAP	3.9E-01	25%
Uranium	0.026	NC	NC	NAP	0.0E+00	--	3.7E-01	NA	NAP	3.7E-01	23%
TOTAL		0.0E+00	0.0E+00	0.0E+00	0.0E+00	--	1.5E+00	7.0E-02	0.0E+00	**1.6E+00**	100%

Bold Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer.
CT Central tendancy.
EPC Exposure point concentration.
mg/L Milligram per liter.
NA Not available; insufficient toxicity data.
NAP Not applicable pathway; not a VOC.
NC Not a suspected carcinogen.
VOCs Volatile organic compounds.

Table 6A.55 Exposure Unit #2. Future - CT - Risk Summary for Resident Farmer - Child (Non-Radiologicals)

	CANCER EFFECTS						NON-CANCER EFFECTS					
	Route-Specific Risk				Cancer	Percent	Route-Specific HQ				Non-Cancer	Percent
Media	Oral	Dermal	Inhalation Dust	Inhalation VOCs	Risk Total	of Total	Oral	Dermal	Inhalation Dust	Inhalation VOCs	HI Total	of Total
Soil	2.8E-06	3.9E-07	1.9E-08	0.0E+00	**3.2E-06**	100%	1.4E+00	4.7E-03	5.4E-03	0.0E+00	**1.4E+00**	48%
Groundwater	0.0E+00	0.0E+00	NAP	0.0E+00	0.0E+00	0%	1.5E+00	7.0E-02	NAP	0.0E+00	**1.6E+00**	52%
TOTAL					**3.2E-06**						**3.0E+00**	

Bold Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer.
NAP Not and Applicable Pathway

Table 6A.56a Exposure Unit #3. Current/Future - CT - Surface Soil (0 - 2 ft.) Risk for Resident Farmer - Adult (Non-Radiologicals)

Constituent	EPC mg/kg	CANCER EFFECTS Route-Specific Risk Oral	Dermal	Inhalation Dust	Inhalation VOCs	Cancer Risk Total	Percent of Total	NON-CANCER EFFECTS Route-Specific HQ Oral	Dermal	Inhalation Dust	Inhalation VOCs	Non-Cancer HI Total	Percent of Total
Metals/Inorganics													
Beryllium	155	NA	NA	2.7E-09	NAP	2.7E-09	100%	3.2E-02	NA	4.3E-04	NAP	3.2E-02	100%
Lead	74	NA	NA	NA	NAP	0.0E+00	--	NA	NA	NA	NAP	--	--
TOTAL		0.0E+00	0.0E+00	2.7E-09	0.0E+00	2.7E-09		3.2E-02	0.0E+00	4.3E-04	0.0E+00	3.2E-02	

Bold	Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer.
CT	Central tendancy
EPC	Exposure point concentration
mg/kg	Milligram per kilogram.
NA	Not available; insufficient toxicity data.
NAP	Not applicable pathway; not a VOC.
VOCs	Volatile organic compounds.

Table 6A.56b Exposure Unit #3. Current/Future - CT - Total Soil (0 - 10 ft.) Risk for Resident Farmer - Adult (Non-Radiologicals)

		CANCER EFFECTS						NON-CANCER EFFECTS					
		Route-Specific Risk				Cancer		Route-Specific HQ				Non-Cancer	
Constituent		Oral	Dermal	Inhalation Dust	Inhalation VOCs	Risk Total	Percent of Total	Oral	Dermal	Inhalation Dust	Inhalation VOCs	HI Total	Percent of Total
	EPC mg/kg												
Metals/Inorganics													
Beryllium	144	NA	NA	2.5E-09	NAP	2.5E-09	100%	3.0E-02	NA	4.0E-04	NAP	3.0E-02	100%
Lead	71.9	NA	NA	NA	NAP	0.0E+00	--	NA	NA	NA	NAP	--	--
TOTAL		0.0E+00	0.0E+00	2.5E-09	0.0E+00	2.5E-09		3.0E-02	0.0E+00	4.0E-04	0.0E+00	3.0E-02	

Bold	Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer.
CT	Central tendancy
EPC	Exposure point concentration
mg/kg	Milligram per kilogram.
NA	Not available; insufficient toxicity data.
NAP	Not applicable pathway; not a VOC.
VOCs	Volatile organic compounds.

Table 6A.57 Exposure Unit #3. Current/Future - CT - Total Groundwater Risk for Resident Farmer - Adult (Non-Radiologicals)

Constituent	EPC mg/L	CANCER EFFECTS Route-Specific Risk Oral	Dermal	Inhalation VOCs	Cancer Risk Total	Percent of Total	NON-CANCER EFFECTS Route-Specific HQ Oral	Dermal	Inhalation VOCs	Non-Cancer HI Total	Percent of Total
Metals											
Beryllium	0.0048	NA	NA	NAP	0.0E+00	--	4.6E-02	1.4E-02	NAP	6.0E-02	8%
Manganese	0.373	NA	NA	NAP	0.0E+00	--	3.0E-01	1.5E-02	NAP	3.1E-01	44%
Nickel	0.176	NC	NC	NAP	0.0E+00	--	1.7E-01	8.8E-03	NAP	1.8E-01	25%
Uranium	0.026	NC	NC	NAP	0.0E+00	--	1.7E-01	NA	NAP	1.7E-01	23%
TOTAL		0.0E+00	0.0E+00	0.0E+00	0.0E+00		6.8E-01	3.8E-02	0.0E+00	7.2E-01	

Bold Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer.
CT Central tendancy.
EPC Exposure point concentration.
mg/L Milligram per liter.
NA Not available; insufficient toxicity data.
NAP Not applicable pathway; not a VOC.
NC Not a suspected carcinogen.
VOCs Volatile organic compounds.

Table 6A.58 Exposure Unit #3. Current/Future - CT - Total Surface Water Risk for Resident Farmer - Adult (Non-Radiologicals)

Constituent	EPC mg/L	CANCER EFFECTS Route-Specific Risk Oral	Dermal	Cancer Risk Total	Percent of Total	NON-CANCER EFFECTS Route-Specific HQ Oral	Dermal	Non-Cancer HI Total	Percent of Total
SVOCs									
Di-n-octylphthalate	0.0102	NA	NA	0.0E+00	--	7.3E-06	3.4E-05	4.1E-05	0%
Diethyl phthalate	0.0051	NA	NA	0.0E+00	--	9.1E-08	5.5E-07	6.4E-07	0%
Phenol	0.0064	NA	NA	0.0E+00	--	1.5E-07	6.7E-07	8.2E-07	0%
Bis(2-ethylhexyl)phthalate	0.0226	5.8E-10	4.7E-08	4.8E-08	47%	1.6E-05	1.3E-03	1.3E-03	4%
m,p-cresol	0.0111	NA	NA	0.0E+00	--	3.2E-05	3.1E-04	3.4E-04	1%
VOCs									
2-Butanone	0.00575	NA	NA	0.0E+00	--	1.4E-07	3.3E-07	4.6E-07	0%
Acetone	0.0188	NA	NA	0.0E+00	--	2.7E-06	1.9E-06	4.6E-06	0%
Bromodichloromethane	0.0006	6.8E-11	3.3E-10	4.0E-10	--	4.3E-07	2.1E-06	2.5E-06	0%
Chloroform	0.00076	8.5E-12	6.8E-10	6.9E-10	1%	1.1E-06	8.6E-05	8.8E-05	0%
Dibromochloromethane	0.0034	5.2E-10	1.4E-09	1.9E-09	2%	2.4E-06	6.5E-06	8.9E-06	0%
Tetrachloroethene	0.0013	1.2E-10	3.9E-08	3.9E-08	39%	1.9E-06	5.8E-04	5.8E-04	2%
Tribromomethane	0.006	8.7E-11	3.5E-10	4.4E-10	--	4.3E-06	1.7E-05	2.2E-05	0%
Metals									
Aluminum	1.09	NA	NA	0.0E+00	--	1.6E-05	NA	1.6E-05	0%
Arsenic	0.00308	8.5E-09	2.7E-09	1.1E-08	--	1.5E-04	4.7E-05	1.9E-04	1%
Barium	0.188	NA	NA	0.0E+00	--	3.8E-05	1.8E-04	2.2E-04	1%
Beryllium	0.0836	NA	NA	0.0E+00	--	6.0E-04	2.8E-02	2.8E-02	83%
Boron	0.2350	NA	NA	0.0E+00	--	3.7E-05	NA	3.7E-05	0%
Cadmium	0.00106	NA	NA	0.0E+00	--	3.0E-05	2.0E-04	2.3E-04	1%
Chromium	0.00227	NA	NA	0.0E+00	--	2.2E-08	2.8E-07	3.0E-07	0%
Cobalt	0.00121	NA	NA	0.0E+00	--	2.9E-07	NA	2.9E-07	0%
Copper	0.0233	NA	NA	0.0E+00	--	9.0E-06	NA	9.0E-06	0%
Lead	0.0458	NA	NA	0.0E+00	--	NA	NA	0.0E+00	--
Manganese	0.2480	NA	NA	0.0E+00	--	1.5E-04	1.2E-03	1.3E-03	4%
Mercury	0.00013	NA	NA	0.0E+00	--	6.2E-06	2.0E-06	8.2E-06	0%
Molybdenum	0.0226	NA	NA	0.0E+00	--	6.4E-05	NA	6.4E-05	0%
Nickel	0.0427	NA	NA	0.0E+00	--	3.0E-05	2.5E-04	2.8E-04	1%
Selenium	0.00132	NA	NA	0.0E+00	--	3.8E-06	1.2E-06	5.0E-06	0%
Silver	0.00088	NA	NA	0.0E+00	--	2.5E-06	2.0E-05	2.3E-05	0%
Strontium	10.400	NA	NA	0.0E+00	--	2.5E-04	NA	2.5E-04	1%

Table 6A.58 Exposure Unit #3. Current/Future - CT - Total Surface Water Risk for Resident Farmer - Adult (Non-Radiologicals)

		CANCER EFFECTS				NON-CANCER EFFECTS			
		Route-Specific Risk		Cancer		Route-Specific HQ		Non-Cancer	
Constituent		Oral	Dermal	Risk Total	Percent of Total	Oral	Dermal	HI Total	Percent of Total
Thallium	0.00198	NA	NA	0.0E+00	--	3.5E-04	1.1E-04	4.7E-04	1%
Uranium	0.00366	NA	NA	0.0E+00	--	1.7E-05	NA	1.7E-05	0%
Vanadium	0.00325	NA	NA	0.0E+00	--	6.6E-06	8.2E-05	8.9E-05	0%
Zinc	0.0463	NA	NA	0.0E+00	--	2.2E-06	7.1E-07	2.9E-06	0%
TOTAL		9.9E-09	9.1E-08	1.0E-07		1.8E-03	3.2E-02	3.4E-02	

Bold	Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer.
CT	Central tendancy
EPC	Exposure point concentration.
mg/L	Milligram per liter.
NA	Not available; insufficient toxicity data.
NAP	Not applicable pathway; not a VOC.
SVOCs	Semi-volatile organic compounds.
VOCs	Volatile organic compounds.

Table 6A.59 Exposure Unit #3. Current/Future - CT - Total Sediment Risk for Resident Farmer - Adult (Non-Radiologicals)

Constituent	EPC mg/kg	CANCER EFFECTS Route-Specific Risk Oral	Dermal	Cancer Risk Total	Percent of Total	NON-CANCER EFFECTS Route-Specific HQ Oral	Dermal	Non-Cancer HI Total	Percent of Total
SVOCs									
3,3'-Dichlorobenzidine	0.42	1.2E-11	1.1E-09	1.1E-09	1%	NA	NA	0.0E+00	--
Benzo(a)anthracene	1.83	8.7E-11	1.0E-08	1.0E-08	8%	NA	NA	0.0E+00	--
Benzo(a)pyrene	1.78	8.5E-10	1.0E-07	1.0E-07	78%	NA	NA	0.0E+00	--
Benzo(b)fluoranthene	2.25	1.1E-10	1.3E-08	1.3E-08	10%	NA	NA	0.0E+00	--
Benzo(g,h,i)perylene	0.448	NA	NA	0.0E+00	--	7.6E-09	6.9E-07	7.0E-07	0%
Benzo(k)fluoranthene	1.13	5.4E-12	6.4E-10	6.4E-10	0%	NA	NA	0.0E+00	--
Chrysene	2.05	9.8E-13	1.2E-10	1.2E-10	0%	NA	NA	0.0E+00	--
Di-n-octylphthalate	0.479	NA	NA	0.0E+00	--	1.2E-08	1.1E-06	1.1E-06	0%
Fluoranthene	4.83	NA	NA	0.0E+00	--	6.1E-08	7.2E-06	7.3E-06	0%
Indeno(1,2,3-cd)pyrene	0.452	2.2E-11	2.5E-09	2.6E-09	2%	NA	NA	0.0E+00	--
Phenanthrene	3.63	NA	NA	0.0E+00	--	6.2E-08	5.6E-06	5.6E-06	0%
Pyrene	3.64	NA	NA	0.0E+00	--	6.2E-08	5.6E-06	5.7E-06	0%
Bis(2-ethylhexyl)phthalate	5.19	4.8E-12	4.3E-10	4.4E-10	0%	1.3E-07	1.2E-05	1.2E-05	1%
VOCs									
2-Butanone	0.00737	NA	NA	0.0E+00	--	6.2E-12	NA	6.2E-12	0%
Acetone	0.221	NA	NA	0.0E+00	--	1.1E-09	NA	1.1E-09	0%
Benzene	0.00313	5.9E-15	NA	5.9E-15	--	5.3E-10	NA	5.3E-10	0%
Carbon disulfide	0.0148	NA	NA	0.0E+00	--	7.5E-11	NA	7.5E-11	0%
Chloroethane	0.0103	2.0E-15	NA	2.0E-15	--	1.3E-11	NA	1.3E-11	0%
Ethylbenzene	0.0032	NA	NA	0.0E+00	--	1.6E-11	NA	1.6E-11	0%
Methylene chloride	0.00086	4.2E-16	NA	4.2E-16	--	7.3E-12	NA	7.3E-12	0%
Toluene	0.0546	NA	NA	0.0E+00	--	1.4E-10	NA	1.4E-10	0%
Xylenes (total)	0.0099	NA	NA	0.0E+00	--	2.5E-12	NA	2.5E-12	0%
Metals/Inorganics									
Aluminum	12200	NA	NA	0.0E+00	--	6.2E-06	NA	6.2E-06	0%
Barium	153	NA	NA	0.0E+00	--	1.1E-06	NA	1.1E-06	0%
Beryllium	2020	NA	NA	0.0E+00	--	5.1E-04	NA	5.1E-04	31%
Boron	37	NA	NA	0.0E+00	--	2.1E-07	NA	2.1E-07	0%
Cadmium	56.8	NA	NA	0.0E+00	--	5.8E-05	1.0E-03	1.1E-03	66%
Chromium	23.2	NA	NA	0.0E+00	--	7.9E-09	NA	7.9E-09	0%
Copper	208	NA	NA	0.0E+00	--	2.9E-06	NA	2.9E-06	0%
Lead	339	NA	NA	0.0E+00	--	NA	NA	0.0E+00	--
Mercury	0.25	NA	NA	0.0E+00	--	4.2E-07	NA	4.2E-07	0%
Molybdenum	3.46	NA	NA	0.0E+00	--	3.5E-07	NA	3.5E-07	0%
Nickel	42.1	NA	NA	0.0E+00	--	1.1E-06	NA	1.1E-06	0%
Silver	2.83	NA	NA	0.0E+00	--	2.9E-07	NA	2.9E-07	0%
Strontium	335	NA	NA	0.0E+00	--	2.8E-07	NA	2.8E-07	0%

Table 6A.59 Exposure Unit #3. Current/Future - CT - Total Sediment Risk for Resident Farmer - Adult (Non-Radiologicals)

		CANCER EFFECTS				NON-CANCER EFFECTS			
		Route-Specific Risk		Cancer		Route-Specific HQ		Non-Cancer	
Constituent		Oral	Dermal	Risk Total	Percent of Total	Oral	Dermal	HI Total	Percent of Total
Uranium	7.19	NA	NA	0.0E+00	--	1.2E-06	NA	1.2E-06	0%
Zinc	549	NA	NA	0.0E+00	--	9.3E-07	NA	9.3E-07	0%
TOTAL		1.1E-09	1.3E-07	1.3E-07		5.9E-04	1.1E-03	1.7E-03	

Bold	Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer.
CT	Central tendancy
EPC	Exposure point concentration
mg/kg	Milligram per kilogram.
NA	Not available; insufficient toxicity data.
NAP	Not applicable pathway; not a VOC.
NC	Not a suspected carcinogen.
SVOCs	Semi-volatile organic compounds.
VOCs	Volatile organic compounds.

Table 6A.60 Exposure Unit #3. Current/Future - CT - Risk Summary for Resident Farmer - Adult (Non-Radiologicals)

	CANCER EFFECTS						NON-CANCER EFFECTS					
	Route-Specific Risk				Cancer		Route-Specific HQ				Non-Cancer	
Media	Oral	Dermal	Inhalation Dust	Inhalation VOCs	Risk Total	Percent of Total	Oral	Dermal	Inhalation Dust	Inhalation VOCs	HI Total	Percent of Total
Soil	0.0E+00	0.0E+00	2.5E-09	0.0E+00	2.5E-09	1%	3.0E-02	0.0E+00	4.0E-04	0.0E+00	3.0E-02	4%
Groundwater	0.0E+00	0.0E+00	NAP	0.0E+00	0.0E+00	--	6.8E-01	3.8E-02	NAP	0.0E+00	7.2E-01	92%
Surface Water	9.9E-09	9.1E-08	NAP	NAP	1.0E-07	43%	1.8E-03	3.2E-02	NAP	NAP	3.4E-02	4%
Sediment	1.1E-09	1.3E-07	NAP	NAP	1.3E-07	55%	5.9E-04	1.1E-03	NAP	NAP	1.7E-03	0%
TOTAL					2.3E-07						7.8E-01	

Bold Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer.

NAP Not an Applicable Pathway

Table 6A.61a Exposure Unit #3. Current/Future - CT - Surface Soil (0 - 2 ft.) Risk for Resident Farmer - Child (Non-Radiologicals)

Constituent	EPC mg/kg	CANCER EFFECTS Route-Specific Risk Oral	Dermal	Inhalation Dust	Inhalation VOCs	Cancer Risk Total	Percent of Total	NON-CANCER EFFECTS Route-Specific HQ Oral	Dermal	Inhalation Dust	Inhalation VOCs	Non-Cancer HI Total	Percent of Total
Metals/Inorganics													
Beryllium	155	NA	NA	5.5E-09	NAP	5.5E-09	100%	3.0E-01	NA	1.3E-03	NAP	3.0E-01	100%
Lead	74	NA	NA	NA	NAP	0.0E+00	--	NA	NA	NA	NAP	0.0E+00	--
TOTAL		0.0E+00	0.0E+00	5.5E-09	0.0E+00	5.5E-09		3.0E-01	0.0E+00	1.3E-03	0.0E+00	3.0E-01	

Bold	Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer.
CT	Central tendancy
EPC	Exposure point concentration
mg/kg	Milligram per kilogram.
NA	Not available; insufficient toxicity data.
NAP	Not applicable pathway; not a VOC.
VOCs	Volatile organic compounds.

Table 6A.61b Exposure Unit #3. Current/Future - CT - Total Soil (0 - 10 ft.) Risk for Resident Farmer - Child (Non-Radiologicals)

		CANCER EFFECTS						NON-CANCER EFFECTS					
		Route-Specific Risk				Cancer		Route-Specific HQ				Non-Cancer	
Constituent		Oral	Dermal	Inhalation Dust	Inhalation VOCs	Risk Total	Percent of Total	Oral	Dermal	Inhalation Dust	Inhalation VOCs	HI Total	Percent of Total
	EPC mg/kg												
Metals/Inorganics													
Beryllium	144	NA	NA	5.1E-09	NAP	5.1E-09	100%	2.8E-01	NA	1.3E-03	NAP	2.8E-01	100%
Lead	71.9	NA	NA	NA	NAP	0.0E+00	--	NA	NA	NA	NAP	0.0E+00	--
TOTAL		0.0E+00	0.0E+00	5.1E-09	0.0E+00	5.1E-09		2.8E-01	0.0E+00	1.3E-03	0.0E+00	2.8E-01	

Bold	Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer.
CT	Central tendancy
EPC	Exposure point concentration
mg/kg	Milligram per kilogram.
NA	Not available; insufficient toxicity data.
NAP	Not applicable pathway; not a VOC.
VOCs	Volatile organic compounds.

Table 6A.62 Exposure Unit #3. Current/Future - CT - Total Groundwater Risk for Resident Farmer - Child (Non-Radiologicals)

Constituent	EPC mg/L	CANCER EFFECTS Route-Specific Risk Oral	Dermal	Inhalation VOCs	Cancer Risk Total	Percent of Total	NON-CANCER EFFECTS Route-Specific HQ Oral	Dermal	Inhalation VOCs	Non-Cancer HI Total	Percent of Total
Metals											
Beryllium	0.0048	NA	NA	NAP	0.0E+00	--	1.0E-01	2.6E-02	NAP	1.3E-01	8%
Manganese	0.373	NA	NA	NAP	0.0E+00	--	6.6E-01	2.9E-02	NAP	6.8E-01	44%
Nickel	0.176	NC	NC	NAP	0.0E+00	--	3.7E-01	1.6E-02	NAP	3.9E-01	25%
Uranium	0.026	NC	NC	NAP	0.0E+00	--	3.7E-01	NA	NAP	3.7E-01	23%
TOTAL		0.0E+00	0.0E+00	0.0E+00	0.0E+00		1.5E+00	7.0E-02	0.0E+00	**1.6E+00**	

Bold Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer.
CT Central tendancy.
EPC Exposure point concentration.
mg/L Milligram per liter.
NA Not available; insufficient toxicity data.
NAP Not applicable pathway; not a VOC.
NC Not a suspected carcinogen.
VOCs Volatile organic compounds.

Table 6A.63 Exposure Unit #3. Current/Future - CT - Total Surface Water Risk for Resident Farmer - Child (Non-Radiologicals)

Constituent	EPC mg/L	CANCER EFFECTS Route-Specific Risk Oral	Dermal	Cancer Risk Total	Percent of Total	NON-CANCER EFFECTS Route-Specific HQ Oral	Dermal	Non-Cancer HI Total	Percent of Total
SVOCs									
Di-n-octylphthalate	0.0102	NA	NA	0.0E+00	--	3.2E-05	1.3E-04	1.6E-04	0%
Diethyl phthalate	0.0051	NA	NA	0.0E+00	--	4.0E-07	2.0E-06	2.4E-06	0%
Phenol	0.0064	NA	NA	0.0E+00	--	6.7E-07	2.5E-06	3.2E-06	0%
Bis(2-ethylhexyl)phthalate	0.0226	1.7E-09	1.2E-07	1.2E-07	46%	7.1E-05	4.8E-03	4.9E-03	4%
m,p-cresol	0.0111	NA	NA	0.0E+00	--	1.4E-04	1.1E-03	1.3E-03	1%
VOCs									
2-Butanone	0.00575	NA	NA	0.0E+00	--	6.0E-07	1.2E-06	1.8E-06	0%
Acetone	0.0188	NA	NA	0.0E+00	--	1.2E-05	7.0E-06	1.9E-05	0%
Bromodichloromethane	0.0006	2.0E-10	8.2E-10	1.0E-09	0%	1.9E-06	7.7E-06	9.6E-06	0%
Chloroform	0.00076	2.5E-11	1.7E-09	1.7E-09	1%	4.8E-06	3.2E-04	3.3E-04	0%
Dibromochloromethane	0.0034	1.5E-09	3.4E-09	5.0E-09	2%	1.1E-05	2.4E-05	3.5E-05	0%
Tetrachloroethene	0.0013	3.6E-10	9.6E-08	9.7E-08	38%	8.1E-06	2.2E-03	2.2E-03	2%
Tribromomethane	0.006	2.5E-10	8.7E-10	1.1E-09	0%	1.9E-05	6.4E-05	8.3E-05	0%
Metals									
Aluminum	1.09	NA	NA	0.0E+00	--	6.8E-05	NA	6.8E-05	0%
Arsenic	0.00308	2.5E-08	6.8E-09	3.2E-08	12%	6.4E-04	1.8E-04	8.2E-04	1%
Barium	0.188	NA	NA	0.0E+00	--	1.7E-04	6.6E-04	8.3E-04	1%
Beryllium	0.0836	NA	NA	0.0E+00	--	2.6E-03	1.0E-01	1.0E-01	83%
Boron	0.2350	NA	NA	0.0E+00	--	1.6E-04	NA	1.6E-04	0%
Cadmium	0.00106	NA	NA	0.0E+00	--	1.3E-04	7.3E-04	8.6E-04	1%
Chromium	0.00227	NA	NA	0.0E+00	--	9.5E-08	1.0E-06	1.1E-06	0%
Cobalt	0.00121	NA	NA	0.0E+00	--	1.3E-06	NA	1.3E-06	0%
Copper	0.0233	NA	NA	0.0E+00	--	3.9E-05	NA	3.9E-05	0%
Lead	0.0458	NA	NA	0.0E+00	--	NA	NA	0.0E+00	--
Manganese	0.2480	NA	NA	0.0E+00	--	6.5E-04	4.4E-03	5.1E-03	4%
Mercury	0.00013	NA	NA	0.0E+00	--	2.7E-05	7.4E-06	3.5E-05	0%
Molybdenum	0.0226	NA	NA	0.0E+00	--	2.8E-04	NA	2.8E-04	0%
Nickel	0.0427	NA	NA	0.0E+00	--	1.3E-04	9.1E-04	1.0E-03	1%
Selenium	0.00132	NA	NA	0.0E+00	--	1.7E-05	4.5E-06	2.1E-05	0%
Silver	0.00088	NA	NA	0.0E+00	--	1.1E-05	7.5E-05	8.6E-05	0%
Strontium	10.400	NA	NA	0.0E+00	--	1.1E-03	NA	1.1E-03	1%

Table 6A.63 Exposure Unit #3. Current/Future - CT - Total Surface Water Risk for Resident Farmer - Child (Non-Radiologicals)

Constituent	EPC mg/L	CANCER EFFECTS Route-Specific Risk Oral	Dermal	Cancer Risk Total	Percent of Total	NON-CANCER EFFECTS Route-Specific HQ Oral	Dermal	Non-Cancer HI Total	Percent of Total
Thallium	0.00198	NA	NA	0.0E+00	--	1.6E-03	4.2E-04	2.0E-03	2%
Uranium	0.00366	NA	NA	0.0E+00	--	7.6E-05	NA	7.6E-05	0%
Vanadium	0.00325	NA	NA	0.0E+00	--	2.9E-05	3.1E-04	3.3E-04	0%
Zinc	0.0463	NA	NA	0.0E+00	--	9.7E-06	2.6E-06	1.2E-05	0%
TOTAL		2.9E-08	2.3E-07	2.5E-07		8.0E-03	1.2E-01	1.3E-01	

Bold	Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer.
CT	Central tendancy.
EPC	Exposure point concentration.
mg/L	Milligram per liter.
NA	Not available; insufficient toxicity data.
NAP	Not applicable pathway; not a VOC.
NC	Not a suspected carcinogen.
SVOCs	Semi-volatile organic compounds.
VOCs	Volatile organic compounds.

Table 6A.64 Exposure Unit #3. Current/Future - CT - Total Sediment Risk for Resident Farmer - Child (Non-Radiologicals)

Constituent	EPC mg/kg	CANCER EFFECTS Route-Specific Risk Oral	Dermal	Cancer Risk Total	Percent of Total	NON-CANCER EFFECTS Route-Specific HQ Oral	Dermal	Non-Cancer HI Total	Percent of Total
SVOCs									
3,3'-Dichlorobenzidine	0.42	1.5E-10	1.7E-09	1.8E-09	1%	NA	NA	0.0E+00	--
Benzo(a)anthracene	1.83	1.1E-09	1.5E-08	1.6E-08	8%	NA	NA	0.0E+00	--
Benzo(a)pyrene	1.78	1.1E-08	1.5E-07	1.6E-07	78%	NA	NA	0.0E+00	--
Benzo(b)fluoranthene	2.25	1.3E-09	1.9E-08	2.0E-08	10%	NA	NA	0.0E+00	--
Benzo(g,h,i)perylene	0.448	NA	NA	0.0E+00	--	1.4E-07	1.5E-06	1.7E-06	0%
Benzo(k)fluoranthene	1.13	6.7E-11	9.4E-10	1.0E-09	0%	NA	NA	0.0E+00	--
Chrysene	2.05	1.2E-11	1.7E-10	1.8E-10	0%	NA	NA	0.0E+00	--
Di-n-octylphthalate	0.479	NA	NA	0.0E+00	--	2.3E-07	2.5E-06	2.7E-06	0%
Fluoranthene	4.83	NA	NA	0.0E+00	--	1.1E-06	1.6E-05	1.7E-05	0%
Indeno(1,2,3-cd)pyrene	0.452	2.7E-10	3.8E-09	4.0E-09	2%	NA	NA	0.0E+00	--
Phenanthrene	3.63	NA	NA	0.0E+00	--	1.1E-06	1.2E-05	1.4E-05	0%
Pyrene	3.64	NA	NA	0.0E+00	--	1.2E-06	1.2E-05	1.4E-05	0%
Bis(2-ethylhexyl)phthalate	5.19	5.9E-11	6.4E-10	7.0E-10	0%	2.5E-06	2.7E-05	2.9E-05	0%
VOCs									
2-Butanone	0.00737	NA	NA	0.0E+00	--	1.2E-10	NA	1.2E-10	0%
Acetone	0.221	NA	NA	0.0E+00	--	2.1E-08	NA	2.1E-08	0%
Benzene	0.00313	7.4E-14	NA	7.4E-14	0%	9.9E-09	NA	9.9E-09	0%
Carbon disulfide	0.0148	NA	NA	0.0E+00	--	1.4E-09	NA	1.4E-09	0%
Chloroethane	0.0103	2.4E-14	NA	2.4E-14	0%	2.4E-10	NA	2.4E-10	0%
Ethylbenzene	0.0032	NA	NA	0.0E+00	--	3.0E-10	NA	3.0E-10	0%
Methylene chloride	0.00086	5.3E-15	NA	5.3E-15	0%	1.4E-10	NA	1.4E-10	0%
Toluene	0.0546	NA	NA	0.0E+00	--	2.6E-09	NA	2.6E-09	0%
Xylenes (total)	0.0099	NA	NA	0.0E+00	--	4.7E-11	NA	4.7E-11	0%
Metals/Inorganics									
Aluminum	12200	NA	NA	0.0E+00	--	1.2E-04	NA	1.2E-04	1%
Barium	153	NA	NA	0.0E+00	--	2.1E-05	NA	2.1E-05	0%
Beryllium	2020	NA	NA	0.0E+00	--	9.6E-03	NA	9.6E-03	72%
Boron	37	NA	NA	0.0E+00	--	3.9E-06	NA	3.9E-06	0%
Cadmium	56.8	NA	NA	0.0E+00	--	1.1E-03	2.3E-03	3.4E-03	26%
Chromium	23.2	NA	NA	0.0E+00	--	1.5E-07	NA	1.5E-07	0%
Copper	208	NA	NA	0.0E+00	--	5.3E-05	NA	5.3E-05	0%
Lead	339	NA	NA	0.0E+00	--	NA	NA	0.0E+00	--
Mercury	0.25	NA	NA	0.0E+00	--	7.9E-06	NA	7.9E-06	0%
Molybdenum	3.46	NA	NA	0.0E+00	--	6.6E-06	NA	6.6E-06	0%
Nickel	42.1	NA	NA	0.0E+00	--	2.0E-05	NA	2.0E-05	0%
Silver	2.83	NA	NA	0.0E+00	--	5.4E-06	NA	5.4E-06	0%
Strontium	335	NA	NA	0.0E+00	--	5.3E-06	NA	5.3E-06	0%
Uranium	7.19	NA	NA	0.0E+00	--	2.3E-05	NA	2.3E-05	0%
Zinc	549	NA	NA	0.0E+00	--	1.7E-05	NA	1.7E-05	0%

Table 6A.64 Exposure Unit #3. Current/Future - CT - Total Sediment Risk for Resident Farmer - Child (Non-Radiologicals)

Constituent	CANCER EFFECTS				NON-CANCER EFFECTS			
	Route-Specific Risk		Cancer		Route-Specific HQ		Non-Cancer	
	Oral	Dermal	Risk Total	Percent of Total	Oral	Dermal	HI Total	Percent of Total
TOTAL	1.4E-08	1.9E-07	2.0E-07		1.1E-02	2.4E-03	1.3E-02	

Bold	Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer.
CT	Central tendancy.
EPC	Exposure point concentration
mg/kg	Milligram per kilogram.
NA	Not available; insufficient toxicity data.
NAP	Not applicable pathway; not a VOC.
NC	Not a suspected carcinogen.
SVOCs	Semi-volatile organic compounds.
VOCs	Volatile organic compounds.

Table 6A.65 Exposure Unit #3. Current/Future - CT - Risk Summary for Resident Farmer - Child (Non-Radiologicals)

	CANCER EFFECTS						NON-CANCER EFFECTS					
	Route-Specific Risk				Cancer		Route-Specific HQ				Non-Cancer	
Media	Oral	Dermal	Inhalation Dust	Inhalation VOCs	Risk Total	Percent of Total	Oral	Dermal	Inhalation Dust	Inhalation VOCs	HI Total	Percent of Total
Soil	0.0E+00	0.0E+00	5.1E-09	0.0E+00	5.1E-09	1%	2.8E-01	0.0E+00	1.3E-03	0.0E+00	2.8E-01	14%
Groundwater	0.0E+00	0.0E+00	NAP	0.0E+00	0.0E+00	--	1.5E+00	7.0E-02	NAP	0.0E+00	**1.6E+00**	79%
Surface Water	2.9E-08	2.3E-07	NAP	NAP	2.5E-07	55%	8.0E-03	1.2E-01	NAP	NAP	1.3E-01	6%
Sediment	1.4E-08	1.9E-07	NAP	NAP	2.0E-07	44%	1.1E-02	2.4E-03	NAP	NAP	1.3E-02	1%
TOTAL					4.6E-07						**2.0E+00**	

Bold Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer.
NAP Not an applicable pathway.

Table 6A.66 Exposure Unit #4. Current/Future CT Soil (0 - 2 ft) Risk for Adolescent Tresspasser Scenario (Non-Radiologicals)

Constituent	EPC mg/kg	CANCER EFFECTS						NON-CANCER EFFECTS					
		Route-Specific Risk				Cancer Risk Total	Percent of Total	Route-Specific HQ				Non-Cancer HI Total	Percent of Total
		Oral	Dermal	Inhalation Dust	Inhalation VOCs			Oral	Dermal	Inhalation Dust	Inhalation VOCs		
Metals/Inorganics													
Beryllium	28.9	NA	NA	1.3E-11	NAP	1.3E-11	100%	2.5E-03	NA	1.9E-06	NAP	2.5E-03	33%
Thallium	2.3	NA	NA	NA	NAP	0.0E+00	--	4.9E-03	NA	NA	NAP	4.9E-03	67%
TOTAL		0.0E+00	0.0E+00	1.3E-11	0.0E+00	1.3E-11	100%	7.3E-03	0.0E+00	1.9E-06	0.0E+00	7.3E-03	100%

Bold	Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer.
CT	Central tendancy.
EPC	Exposure point concentration
mg/kg	Milligram per kilogram.
NA	Not available; insufficient toxicity data.
NAP	Not applicable pathway; not a VOC.
VOCs	Volatile organic compounds.

Table 6A.67 Exposure Unit #4. Current/Future CT Surface Water Risk for Adolescent Trespasser Scenario (Non-Radiologicals)

Constituent	EPC	CANCER EFFECTS				NON-CANCER EFFECTS			
		Route-Specific Risk		Cancer Risk Total	Percent of Total	Route-Specific HQ		Non-Cancer HI Total	Percent of Total
		Oral	Dermal			Oral	Dermal		
	mg/L								
VOCs									
Acetone	0.0044	NA	NA	0.0E+00	--	2.1E-06	1.1E-06	3.2E-06	0%
Chloroform	0.00016	6.6E-12	3.8E-10	3.9E-10	0%	7.6E-07	4.4E-05	4.5E-05	0%
Toluene	0.001	NA	NA	0.0E+00	--	2.4E-07	9.2E-05	9.3E-05	1%
SVOCs									
bis(2-ethylhexyl)phthalate	0.0169	1.6E-09	9.4E-08	9.6E-08	100%	4.0E-05	2.4E-03	2.4E-03	20%
Metals									
Manganese	0.662	NA	NA	0.0E+00	--	1.3E-03	7.7E-03	9.0E-03	74%
Strontium	6.61	NA	NA	0.0E+00	--	5.2E-04	NA	5.2E-04	4%
Uranium	0.00335	NA	NA	0.0E+00	--	5.3E-05	NA	5.3E-05	0%
TOTAL		1.6E-09	9.5E-08	9.6E-08	100%	1.9E-03	1.0E-02	1.2E-02	100%

Bold	Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer.
CT	Central tendancy.
EPC	Exposure point concentration.
mg/L	Milligram per liter.
NA	Not available; insufficient toxicity data.
NAP	Not applicable pathway; not a VOC.
NC	Not a suspected carcinogen.
SVOCs	Semi-volatile organic compounds.
VOCs	Volatile organic compounds.

Table 6A.68 Exposure Unit #4. Current/Future CT Sediment Risk for Adolescent Trespasser Scenario (Non-Radiologicals)

Constituent	EPC mg/kg	CANCER EFFECTS Route-Specific Risk Oral	Dermal	Cancer Risk Total	Percent of Total	NON-CANCER EFFECTS Route-Specific HQ Oral	Dermal	Non-Cancer HI Total	Percent of Total
SVOCs									
Acenaphthene	0.0489	NA	NA	0.0E+00	--	1.4E-09	1.8E-07	1.8E-07	0%
Anthracene	0.116	NA	NA	0.0E+00	--	6.6E-10	8.6E-08	8.7E-08	0%
Benzo(a)anthracene	0.0745	1.3E-11	2.3E-09	2.3E-09	3%	NA	NA	0.0E+00	--
Benzo(a)pyrene	0.199	3.5E-10	6.0E-08	6.1E-08	79%	NA	NA	0.0E+00	--
Benzo(b)fluoranthene	0.271	4.8E-11	8.2E-09	8.3E-09	11%	NA	NA	0.0E+00	--
Benzo(ghi)perylene	0.088	NA	NA	0.0E+00	--	5.0E-09	6.6E-07	6.6E-07	0%
Benzo(k)fluoranthene	0.109	1.9E-12	3.3E-10	3.3E-10	0%	NA	NA	0.0E+00	--
Carbazole	0.164	7.9E-13	1.0E-10	1.1E-10	0%	NA	NA	0.0E+00	--
Chrysene	0.253	4.5E-13	7.7E-11	7.7E-11	0%	NA	NA	0.0E+00	--
Dibenz(a,h)anthracene	0.0092	1.6E-11	2.8E-09	2.8E-09	4%	NA	NA	0.0E+00	--
Dibenzofuran	0.0189	NA	NA	0.0E+00	--	8.0E-09	1.1E-06	1.1E-06	0%
Diethyl phthalate	0.0482	NA	NA	0.0E+00	--	1.0E-10	1.3E-08	1.4E-08	0%
Fluoranthene	0.534	NA	NA	0.0E+00	--	2.3E-08	3.9E-06	3.9E-06	0%
Fluorene	0.064	NA	NA	0.0E+00	--	2.7E-09	3.6E-07	3.6E-07	0%
Indeno(1,2,3-c,d)pyrene	0.0862	1.5E-11	2.6E-09	2.6E-09	3%	NA	NA	0.0E+00	--
Phenanthrene	0.402	NA	NA	0.0E+00	--	2.3E-08	3.0E-06	3.0E-06	0%
Pyrene	0.42	NA	NA	0.0E+00	--	2.4E-08	3.1E-06	3.2E-06	0%
bis(2-ethylhexyl)phthalate	0.0847	2.9E-13	3.8E-11	3.8E-11	0%	7.2E-09	9.5E-07	9.5E-07	0%
VOCs									
2-Butanone	0.0047	NA	NA	0.0E+00	--	1.3E-11	NA	1.3E-11	0%
Acetone	0.0584	NA	NA	0.0E+00	--	9.9E-10	NA	9.9E-10	0%
Toluene	0.024	NA	NA	0.0E+00	--	2.0E-10	NA	2.0E-10	0%
Metals/Inorganics									
Beryllium	17.6	NA	NA	0.0E+00	--	1.5E-05	NA	1.5E-05	1%
Cadmium	27.5	NA	NA	0.0E+00	--	9.3E-05	2.5E-03	2.6E-03	99%
Lead	107	NA	NA	0.0E+00	--	NA	NA	0.0E+00	--
Mercury	0.07	NA	NA	0.0E+00	--	4.0E-07	NA	4.0E-07	0%
TOTAL		4.5E-10	7.7E-08	7.7E-08	100%	1.1E-04	2.5E-03	2.6E-03	100%

Bold Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer.
CT Central tendancy.
EPC Exposure point concentration
mg/kg Milligram per kilogram.
NA Not available; insufficient toxicity data.
SVOCs Semi-volatile organic coumpounds.

Table 6A.69 Exposure Unit #4. Current/Future CT- Risk Summary for Adolescent Trespasser (Non-Radiologicals)

	CANCER EFFECTS						NON-CANCER EFFECTS					
	Route-Specific Risk				Cancer	Percent	Route-Specific HQ				Non-Cancer	Percent
Media	Oral	Dermal	Inhalation Dust	Inhalation VOCs	Risk Total	of Total	Oral	Dermal	Inhalation Dust	Inhalation VOCs	HI Total	of Total
Surface Soil	0.0E+00	0.0E+00	1.3E-11	0.0E+00	1.3E-11	0%	7.3E-03	0.0E+00	1.9E-06	0.0E+00	7.3E-03	33%
Surface Water	1.6E-09	9.5E-08	NAP	NAP	9.6E-08	56%	1.9E-03	1.0E-02	NAP	NAP	1.2E-02	55%
Sediment	4.5E-10	7.7E-08	NAP	NAP	7.7E-08	44%	1.1E-04	2.5E-03	NAP	NAP	2.6E-03	12%
TOTAL					1.7E-07						2.2E-02	

Bold Indicates risk values that exceed criteria of 1.0E-06 for cancer or an HI of 1.0E+00 for non-cancer.
NAP Not an applicable pathway.

APPENDIX 6B:
HHRA Radionuclides Risk Calculations

APPENDIX 6B: LIST OF TABLES

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Table 6B.1. Soil (0-2 ft) Risk Calculations for Radionuclides

									Risk-to-Source Ratios (risk per pCi/g)			Risk Estimates			
Medium	Location	Receptor	Year	Parameter	Gross EPC	BKG UTL	BKG AVG	Net EPC	External Gamma	Inhalation	Soil	External Gamma	Inhalation	Soil	Total
0-2 ft Soil	EXP1	IW	0	Actinium-227	0.547	1.76	0.30	0	9.63E-07	3.99E-09	1.52E-08				
0-2 ft Soil	EXP1	IW	0	Protactinium-231	-0.33	0	0	0	1.36E-07	1.80E-09	5.74E-09				
0-2 ft Soil	EXP1	IW	0	Radium-226	11.4	2.97	1.75	9.65	7.78E-06	3.77E-10	3.55E-08	7.5E-05	3.6E-09	3.4E-07	**7.5E-05**
0-2 ft Soil	EXP1	IW	0	Radium-228	0.893	1.48	1.10	0	6.00E-06	2.61E-09	7.63E-09				
0-2 ft Soil	EXP1	IW	0	Thorium-228	1.04	1.6	1.15	0	2.76E-06	2.12E-09	2.41E-09				
0-2 ft Soil	EXP1	IW	0	Thorium-230	10.5	3.2	2.11	8.39	1.12E-08	9.78E-10	1.06E-09	9.4E-08	8.2E-09	8.9E-09	1.1E-07
0-2 ft Soil	EXP1	IW	0	Thorium-232	0.833	1.48	1.03	0	2.32E-06	1.98E-09	4.02E-09				
0-2 ft Soil	EXP1	IW	0	Uranium-234	8.87	2.36	1.48	7.39	2.53E-11	7.97E-10	1.20E-09	1.9E-10	5.9E-09	8.9E-09	1.5E-08
0-2 ft Soil	EXP1	IW	0	Uranium-235	0.359	0.26	0.09	0.27	3.16E-07	7.40E-10	1.28E-09	8.5E-08	2.0E-10	3.4E-10	8.6E-08
0-2 ft Soil	EXP1	IW	0	Uranium-238	8.95	2.63	1.63	7.32	7.66E-08	6.83E-10	1.69E-09	5.6E-07	5.0E-09	1.2E-08	5.8E-07
											Pathway Totals	7.6E-05	2.3E-08	3.7E-07	7.6E-05
0-2 ft Soil	EXP1	IW	1000	Actinium-227	0.547	1.76	0.30	0	3.77E-24	1.57E-26	5.97E-26				
0-2 ft Soil	EXP1	IW	1000	Protactinium-231	-0.33	0	0	0	3.44E-08	1.86E-10	6.71E-10				
0-2 ft Soil	EXP1	IW	1000	Radium-226	11.4	2.97	1.75	9.65	4.70E-07	2.32E-11	2.20E-09	4.5E-06	2.2E-10	2.1E-08	**4.6E-06**
0-2 ft Soil	EXP1	IW	1000	Radium-228	0.893	1.48	1.10	0	0.00E+00	0.00E+00	0.00E+00				
0-2 ft Soil	EXP1	IW	1000	Thorium-228	1.04	1.6	1.15	0	0.00E+00	0.00E+00	0.00E+00				
0-2 ft Soil	EXP1	IW	1000	Thorium-230	10.5	3.2	2.11	8.39	1.13E-06	1.02E-09	5.96E-09	9.5E-06	8.5E-09	5.0E-08	**9.5E-06**
0-2 ft Soil	EXP1	IW	1000	Thorium-232	0.833	1.48	1.03	0	1.09E-05	6.60E-09	1.38E-08				
0-2 ft Soil	EXP1	IW	1000	Uranium-234	8.87	2.36	1.48	7.39	2.64E-09	3.14E-11	5.73E-11	2.0E-08	2.3E-10	4.2E-10	2.0E-08
0-2 ft Soil	EXP1	IW	1000	Uranium-235	0.359	0.26	0.09	0.27	1.22E-08	3.07E-11	6.04E-11	3.3E-09	8.3E-12	1.6E-11	3.3E-09
0-2 ft Soil	EXP1	IW	1000	Uranium-238	8.95	2.63	1.63	7.32	2.77E-09	2.48E-11	6.12E-11	2.0E-08	1.8E-10	4.5E-10	2.1E-08
											Pathway Totals	1.4E-05	9.2E-09	7.2E-08	1.4E-05

Maximum Risk 7.6E-05

Radium-226 results include contrubutions from lead-210

IW - industrial worker
RFA - adult resident farmer
RFC - child resident farmer
AT - adolescent trespasser

Table 6B.1. Soil (0-2 ft) Risk Calculations for Radionuclides

									Risk-to-Source Ratios (risk per pCi/g)			Risk Estimates			
Medium	Location	Receptor	Year	Parameter	Gross EPC	BKG UTL	BKG AVG	Net EPC	External Gamma	Inhalation	Soil	External Gamma	Inhalation	Soil	Total
0-2 ft Soil	EXP2	IW	0	Actinium-227	0.502	1.76	0.30	0	9.63E-07	3.99E-09	1.52E-08				
0-2 ft Soil	EXP2	IW	0	Protactinium-231	-0.51	0	0	0	1.36E-07	1.80E-09	5.74E-09				
0-2 ft Soil	EXP2	IW	0	Radium-226	8.28	2.97	1.75	6.53	7.78E-06	3.77E-10	3.55E-08	5.1E-05	2.5E-09	2.3E-07	**5.1E-05**
0-2 ft Soil	EXP2	IW	0	Radium-228	0.868	1.48	1.10	0	6.00E-06	2.61E-09	7.63E-09				
0-2 ft Soil	EXP2	IW	0	Thorium-228	0.944	1.6	1.15	0	2.76E-06	2.12E-09	2.41E-09				
0-2 ft Soil	EXP2	IW	0	Thorium-230	12.3	3.2	2.11	10.2	1.12E-08	9.78E-10	1.06E-09	1.1E-07	1.0E-08	1.1E-08	1.3E-07
0-2 ft Soil	EXP2	IW	0	Thorium-232	0.774	1.48	1.03	0	2.32E-06	1.98E-09	4.02E-09				
0-2 ft Soil	EXP2	IW	0	Uranium-234	6.71	2.36	1.48	5.23	2.53E-11	7.97E-10	1.20E-09	1.3E-10	4.2E-09	6.3E-09	1.1E-08
0-2 ft Soil	EXP2	IW	0	Uranium-235	0.379	0.26	0.09	0.29	3.16E-07	7.40E-10	1.28E-09	9.1E-08	2.1E-10	3.7E-10	9.2E-08
0-2 ft Soil	EXP2	IW	0	Uranium-238	6.67	2.63	1.63	5.04	7.66E-08	6.83E-10	1.69E-09	3.9E-07	3.4E-09	8.5E-09	4.0E-07
											Pathway Totals	5.1E-05	2.0E-08	2.6E-07	5.2E-05
0-2 ft Soil	EXP2	IW	1000	Actinium-227	0.502	1.76	0.30	0	3.77E-24	1.57E-26	5.97E-26				
0-2 ft Soil	EXP2	IW	1000	Protactinium-231	-0.51	0	0	0	3.44E-08	1.86E-10	6.71E-10				
0-2 ft Soil	EXP2	IW	1000	Radium-226	8.28	2.97	1.75	6.53	4.70E-07	2.32E-11	2.20E-09	3.1E-06	1.5E-10	1.4E-08	**3.1E-06**
0-2 ft Soil	EXP2	IW	1000	Radium-228	0.868	1.48	1.10	0	0.00E+00	0.00E+00	0.00E+00				
0-2 ft Soil	EXP2	IW	1000	Thorium-228	0.944	1.6	1.15	0	0.00E+00	0.00E+00	0.00E+00				
0-2 ft Soil	EXP2	IW	1000	Thorium-230	12.3	3.2	2.11	10.2	1.13E-06	1.02E-09	5.96E-09	1.2E-05	1.0E-08	6.1E-08	**1.2E-05**
0-2 ft Soil	EXP2	IW	1000	Thorium-232	0.774	1.48	1.03	0	1.09E-05	6.60E-09	1.38E-08				
0-2 ft Soil	EXP2	IW	1000	Uranium-234	6.71	2.36	1.48	5.23	2.64E-09	3.14E-11	5.73E-11	1.4E-08	1.6E-10	3.0E-10	1.4E-08
0-2 ft Soil	EXP2	IW	1000	Uranium-235	0.379	0.26	0.09	0.29	1.22E-08	3.07E-11	6.04E-11	3.5E-09	8.9E-12	1.7E-11	3.5E-09
0-2 ft Soil	EXP2	IW	1000	Uranium-238	6.67	2.63	1.63	5.04	2.77E-09	2.48E-11	6.12E-11	1.4E-08	1.2E-10	3.1E-10	1.4E-08
											Pathway Totals	1.5E-05	1.1E-08	7.6E-08	1.5E-05

Maximum Risk 5.2E-05

Radium-226 results include contrubutions from lead-210

IW - industrial worker
RFA - adult resident farmer
RFC - child resident farmer
AT - adolescent trespasser

Table 6B.1. Soil (0-2 ft) Risk Calculations for Radionuclides

									Risk-to-Source Ratios (risk per pCi/g)			Risk Estimates			
Medium	Location	Receptor	Year	Parameter	Gross EPC	BKG UTL	BKG AVG	Net EPC	External Gamma	Inhalation	Soil	External Gamma	Inhalation	Soil	Total
0-2 ft Soil	EXP1	RFA	0	Actinium-227	0.547	1.76	0.30	0	9.13E-06	3.68E-08	2.91E-07				
0-2 ft Soil	EXP1	RFA	0	Protactinium-231	-0.33	0	0	0	5.46E-06	3.85E-08	2.74E-07				
0-2 ft Soil	EXP1	RFA	0	Radium-226	11.4	2.97	1.75	9.65	1.08E-04	5.10E-09	1.00E-06	1.0E-03	4.9E-08	9.6E-06	**1.0E-03**
0-2 ft Soil	EXP1	RFA	0	Radium-228	0.893	1.48	1.10	0	3.98E-05	1.89E-08	9.67E-08				
0-2 ft Soil	EXP1	RFA	0	Thorium-228	1.04	1.6	1.15	0	1.11E-05	8.24E-09	1.94E-08				
0-2 ft Soil	EXP1	RFA	0	Thorium-230	10.5	3.2	2.11	8.39	7.11E-07	1.36E-08	3.29E-08	6.0E-06	1.1E-07	2.8E-07	**6.4E-06**
0-2 ft Soil	EXP1	RFA	0	Thorium-232	0.833	1.48	1.03	0	1.07E-04	6.55E-08	2.86E-07				
0-2 ft Soil	EXP1	RFA	0	Uranium-234	8.87	2.36	1.48	7.39	4.08E-10	1.07E-08	3.33E-08	3.0E-09	7.9E-08	2.5E-07	3.3E-07
0-2 ft Soil	EXP1	RFA	0	Uranium-235	0.359	0.26	0.09	0.27	4.36E-06	9.91E-09	3.56E-08	1.2E-06	2.7E-09	9.6E-09	**1.2E-06**
0-2 ft Soil	EXP1	RFA	0	Uranium-238	8.95	2.63	1.63	7.32	1.06E-06	9.14E-09	4.69E-08	7.7E-06	6.7E-08	3.4E-07	**8.1E-06**
											Pathway Totals	1.1E-03	3.1E-07	1.1E-05	1.1E-03
0-2 ft Soil	EXP1	RFA	1000	Actinium-227	0.547	1.76	0.30	0	3.58E-23	1.44E-25	1.14E-24				
0-2 ft Soil	EXP1	RFA	1000	Protactinium-231	-0.33	0	0	0	4.74E-07	2.49E-09	1.86E-08				
0-2 ft Soil	EXP1	RFA	1000	Radium-226	11.4	2.97	1.75	9.65	6.51E-06	3.13E-10	6.15E-08	6.3E-05	3.0E-09	5.9E-07	**6.3E-05**
0-2 ft Soil	EXP1	RFA	1000	Radium-228	0.893	1.48	1.10	0	0.00E+00	0.00E+00	0.00E+00				
0-2 ft Soil	EXP1	RFA	1000	Thorium-228	1.04	1.6	1.15	0	0.00E+00	0.00E+00	0.00E+00				
0-2 ft Soil	EXP1	RFA	1000	Thorium-230	10.5	3.2	2.11	8.39	1.62E-05	1.42E-08	1.72E-07	1.4E-04	1.2E-07	1.4E-06	**1.4E-04**
0-2 ft Soil	EXP1	RFA	1000	Thorium-232	0.833	1.48	1.03	0	1.56E-04	9.18E-08	3.99E-07				
0-2 ft Soil	EXP1	RFA	1000	Uranium-234	8.87	2.36	1.48	7.39	3.80E-08	4.22E-10	1.61E-09	2.8E-07	3.1E-09	1.2E-08	3.0E-07
0-2 ft Soil	EXP1	RFA	1000	Uranium-235	0.359	0.26	0.09	0.27	1.68E-07	4.11E-10	1.68E-09	4.5E-08	1.1E-10	4.5E-10	4.6E-08
0-2 ft Soil	EXP1	RFA	1000	Uranium-238	8.95	2.63	1.63	7.32	3.82E-08	3.32E-10	1.70E-09	2.8E-07	2.4E-09	1.2E-08	2.9E-07
											Pathway Totals	2.0E-04	1.3E-07	2.1E-06	2.0E-04

Maximum Risk 1.1E-03

Radium-226 results include contrubutions from lead-210

IW - industrial worker
RFA - adult resident farmer
RFC - child resident farmer
AT - adolescent trespasser

Table 6B.1. Soil (0-2 ft) Risk Calculations for Radionuclides

									Risk-to-Source Ratios (risk per pCi/g)			Risk Estimates			
Medium	Location	Receptor	Year	Parameter	Gross EPC	BKG UTL	BKG AVG	Net EPC	External Gamma	Inhalation	Soil	External Gamma	Inhalation	Soil	Total
0-2 ft Soil	EXP2	RFA	0	Actinium-227	0.502	1.76	0.30	0	9.13E-06	3.68E-08	2.91E-07				
0-2 ft Soil	EXP2	RFA	0	Protactinium-231	-0.51	0	0	0	5.46E-06	3.85E-08	2.74E-07				
0-2 ft Soil	EXP2	RFA	0	Radium-226	8.28	2.97	1.75	6.53	1.08E-04	5.10E-09	1.00E-06	7.0E-04	3.3E-08	6.5E-06	**7.1E-04**
0-2 ft Soil	EXP2	RFA	0	Radium-228	0.868	1.48	1.10	0	3.98E-05	1.89E-08	9.67E-08				
0-2 ft Soil	EXP2	RFA	0	Thorium-228	0.944	1.6	1.15	0	1.11E-05	8.24E-09	1.94E-08				
0-2 ft Soil	EXP2	RFA	0	Thorium-230	12.3	3.2	2.11	10.2	7.11E-07	1.36E-08	3.29E-08	7.2E-06	1.4E-07	3.4E-07	**7.7E-06**
0-2 ft Soil	EXP2	RFA	0	Thorium-232	0.774	1.48	1.03	0	1.07E-04	6.55E-08	2.86E-07				
0-2 ft Soil	EXP2	RFA	0	Uranium-234	6.71	2.36	1.48	5.23	4.08E-10	1.07E-08	3.33E-08	2.1E-09	5.6E-08	1.7E-07	2.3E-07
0-2 ft Soil	EXP2	RFA	0	Uranium-235	0.379	0.26	0.09	0.29	4.36E-06	9.91E-09	3.56E-08	1.3E-06	2.9E-09	1.0E-08	**1.3E-06**
0-2 ft Soil	EXP2	RFA	0	Uranium-238	6.67	2.63	1.63	5.04	1.06E-06	9.14E-09	4.69E-08	5.3E-06	4.6E-08	2.4E-07	**5.6E-06**
											Pathway Totals	7.2E-04	2.8E-07	7.3E-06	7.3E-04
0-2 ft Soil	EXP2	RFA	1000	Actinium-227	0.502	1.76	0.30	0	3.58E-23	1.44E-25	1.14E-24				
0-2 ft Soil	EXP2	RFA	1000	Protactinium-231	-0.51	0	0	0	4.74E-07	2.49E-09	1.86E-08				
0-2 ft Soil	EXP2	RFA	1000	Radium-226	8.28	2.97	1.75	6.53	6.51E-06	3.13E-10	6.15E-08	4.3E-05	2.0E-09	4.0E-07	**4.3E-05**
0-2 ft Soil	EXP2	RFA	1000	Radium-228	0.868	1.48	1.10	0	0.00E+00	0.00E+00	0.00E+00				
0-2 ft Soil	EXP2	RFA	1000	Thorium-228	0.944	1.6	1.15	0	0.00E+00	0.00E+00	0.00E+00				
0-2 ft Soil	EXP2	RFA	1000	Thorium-230	12.3	3.2	2.11	10.2	1.62E-05	1.42E-08	1.72E-07	1.7E-04	1.4E-07	1.8E-06	**1.7E-04**
0-2 ft Soil	EXP2	RFA	1000	Thorium-232	0.774	1.48	1.03	0	1.56E-04	9.18E-08	3.99E-07				
0-2 ft Soil	EXP2	RFA	1000	Uranium-234	6.71	2.36	1.48	5.23	3.80E-08	4.22E-10	1.61E-09	2.0E-07	2.2E-09	8.4E-09	2.1E-07
0-2 ft Soil	EXP2	RFA	1000	Uranium-235	0.379	0.26	0.09	0.29	1.68E-07	4.11E-10	1.68E-09	4.8E-08	1.2E-10	4.9E-10	4.9E-08
0-2 ft Soil	EXP2	RFA	1000	Uranium-238	6.67	2.63	1.63	5.04	3.82E-08	3.32E-10	1.70E-09	1.9E-07	1.7E-09	8.6E-09	2.0E-07
											Pathway Totals	2.1E-04	1.5E-07	2.2E-06	2.1E-04

Maximum Risk 7.3E-04

Radium-226 results include contrubutions from lead-210

IW - industrial worker
RFA - adult resident farmer
RFC - child resident farmer
AT - adolescent trespasser

Table 6B.1. Soil (0-2 ft) Risk Calculations for Radionuclides

									Risk-to-Source Ratios (risk per pCi/g)			Risk Estimates			
Medium	Location	Receptor	Year	Parameter	Gross EPC	BKG UTL	BKG AVG	Net EPC	External Gamma	Inhalation	Soil	External Gamma	Inhalation	Soil	Total
0-2 ft Soil	EXP3	RFA	0	Actinium-227	0.166	1.76	0.30	0	9.13E-06	3.68E-08	2.91E-07				
0-2 ft Soil	EXP3	RFA	0	Protactinium-231	0.204	0	0	0.2	5.46E-06	3.85E-08	2.74E-07	1.1E-06	7.9E-09	5.6E-08	**1.2E-06**
0-2 ft Soil	EXP3	RFA	0	Radium-226	3.32	2.97	1.75	1.57	1.08E-04	5.10E-09	1.00E-06	1.7E-04	8.0E-09	1.6E-06	**1.7E-04**
0-2 ft Soil	EXP3	RFA	0	Radium-228	1.11	1.48	1.10	0	3.98E-05	1.89E-08	9.67E-08				
0-2 ft Soil	EXP3	RFA	0	Thorium-228	1.2	1.6	1.15	0	1.11E-05	8.24E-09	1.94E-08				
0-2 ft Soil	EXP3	RFA	0	Thorium-230	3.02	3.2	2.11	0	7.11E-07	1.36E-08	3.29E-08				
0-2 ft Soil	EXP3	RFA	0	Thorium-232	0.941	1.48	1.03	0	1.07E-04	6.55E-08	2.86E-07				
0-2 ft Soil	EXP3	RFA	0	Uranium-234	2.61	2.36	1.48	1.13	4.08E-10	1.07E-08	3.33E-08	4.6E-10	1.2E-08	3.8E-08	5.0E-08
0-2 ft Soil	EXP3	RFA	0	Uranium-235	0.155	0.26	0.09	0	4.36E-06	9.91E-09	3.56E-08				
0-2 ft Soil	EXP3	RFA	0	Uranium-238	2.51	2.63	1.63	0	1.06E-06	9.14E-09	4.69E-08				
											Pathway Totals	1.7E-04	2.8E-08	1.7E-06	1.7E-04
0-2 ft Soil	EXP3	RFA	1000	Actinium-227	0.166	1.76	0.30	0	3.58E-23	1.44E-25	1.14E-24				
0-2 ft Soil	EXP3	RFA	1000	Protactinium-231	0.204	0	0	0.2	4.74E-07	2.49E-09	1.86E-08	9.7E-08	5.1E-10	3.8E-09	1.0E-07
0-2 ft Soil	EXP3	RFA	1000	Radium-226	3.32	2.97	1.75	1.57	6.51E-06	3.13E-10	6.15E-08	1.0E-05	4.9E-10	9.7E-08	**1.0E-05**
0-2 ft Soil	EXP3	RFA	1000	Radium-228	1.11	1.48	1.10	0	0.00E+00	0.00E+00	0.00E+00				
0-2 ft Soil	EXP3	RFA	1000	Thorium-228	1.2	1.6	1.15	0	0.00E+00	0.00E+00	0.00E+00				
0-2 ft Soil	EXP3	RFA	1000	Thorium-230	3.02	3.2	2.11	0	1.62E-05	1.42E-08	1.72E-07				
0-2 ft Soil	EXP3	RFA	1000	Thorium-232	0.941	1.48	1.03	0	1.56E-04	9.18E-08	3.99E-07				
0-2 ft Soil	EXP3	RFA	1000	Uranium-234	2.61	2.36	1.48	1.13	3.80E-08	4.22E-10	1.61E-09	4.3E-08	4.8E-10	1.8E-09	4.5E-08
0-2 ft Soil	EXP3	RFA	1000	Uranium-235	0.155	0.26	0.09	0	1.68E-07	4.11E-10	1.68E-09				
0-2 ft Soil	EXP3	RFA	1000	Uranium-238	2.51	2.63	1.63	0	3.82E-08	3.32E-10	1.70E-09				
											Pathway Totals	1.0E-05	1.5E-09	1.0E-07	1.0E-05

Maximum Risk 1.7E-04

Radium-226 results include contrubutions from lead-210

IW - industrial worker
RFA - adult resident farmer
RFC - child resident farmer
AT - adolescent trespasser

Table 6B.1. Soil (0-2 ft) Risk Calculations for Radionuclides

									Risk-to-Source Ratios (risk per pCi/g)			Risk Estimates			
Medium	Location	Receptor	Year	Parameter	Gross EPC	BKG UTL	BKG AVG	Net EPC	External Gamma	Inhalation	Soil	External Gamma	Inhalation	Soil	Total
0-2 ft Soil	EXP1	RFC	0	Actinium-227	0.547	1.76	0.30	0	2.79E-06	7.52E-09	1.78E-07				
0-2 ft Soil	EXP1	RFC	0	Protactinium-231	-0.33	0	0	0	3.66E-07	3.29E-09	6.47E-08				
0-2 ft Soil	EXP1	RFC	0	Radium-226	11.4	2.97	1.75	9.65	2.23E-05	7.02E-10	4.10E-07	2.2E-04	6.8E-09	4.0E-06	**2.2E-04**
0-2 ft Soil	EXP1	RFC	0	Radium-228	0.893	1.48	1.10	0	1.73E-05	4.78E-09	8.93E-08				
0-2 ft Soil	EXP1	RFC	0	Thorium-228	1.04	1.6	1.15	0	8.50E-06	4.24E-09	2.98E-08				
0-2 ft Soil	EXP1	RFC	0	Thorium-230	10.5	3.2	2.11	8.39	2.92E-08	1.82E-09	1.22E-08	2.5E-07	1.5E-08	1.0E-07	3.6E-07
0-2 ft Soil	EXP1	RFC	0	Thorium-232	0.833	1.48	1.03	0	6.01E-06	3.48E-09	4.32E-08				
0-2 ft Soil	EXP1	RFC	0	Uranium-234	8.87	2.36	1.48	7.39	7.24E-11	1.49E-09	1.38E-08	5.3E-10	1.1E-08	1.0E-07	1.1E-07
0-2 ft Soil	EXP1	RFC	0	Uranium-235	0.359	0.26	0.09	0.27	9.07E-07	1.38E-09	1.48E-08	2.4E-07	3.7E-10	4.0E-09	2.5E-07
0-2 ft Soil	EXP1	RFC	0	Uranium-238	8.95	2.63	1.63	7.32	2.20E-07	1.27E-09	1.95E-08	1.6E-06	9.3E-09	1.4E-07	**1.8E-06**
											Pathway Totals	2.2E-04	4.3E-08	4.3E-06	2.2E-04
0-2 ft Soil	EXP1	RFC	1000	Actinium-227	0.547	1.76	0.30	0	1.09E-23	2.95E-26	6.97E-25				
0-2 ft Soil	EXP1	RFC	1000	Protactinium-231	-0.33	0	0	0	9.86E-08	3.47E-10	7.75E-09				
0-2 ft Soil	EXP1	RFC	1000	Radium-226	11.4	2.97	1.75	9.65	1.35E-06	4.33E-11	2.55E-08	1.3E-05	4.2E-10	2.5E-07	**1.3E-05**
0-2 ft Soil	EXP1	RFC	1000	Radium-228	0.893	1.48	1.10	0	0.00E+00	0.00E+00	0.00E+00				
0-2 ft Soil	EXP1	RFC	1000	Thorium-228	1.04	1.6	1.15	0	0.00E+00	0.00E+00	0.00E+00				
0-2 ft Soil	EXP1	RFC	1000	Thorium-230	10.5	3.2	2.11	8.39	3.24E-06	1.90E-09	6.88E-08	2.7E-05	1.6E-08	5.8E-07	**2.8E-05**
0-2 ft Soil	EXP1	RFC	1000	Thorium-232	0.833	1.48	1.03	0	3.12E-05	1.23E-08	1.60E-07				
0-2 ft Soil	EXP1	RFC	1000	Uranium-234	8.87	2.36	1.48	7.39	7.56E-09	5.85E-11	6.62E-10	5.6E-08	4.3E-10	4.9E-09	6.1E-08
0-2 ft Soil	EXP1	RFC	1000	Uranium-235	0.359	0.26	0.09	0.27	3.49E-08	5.72E-11	6.97E-10	9.4E-09	1.5E-11	1.9E-10	9.6E-09
0-2 ft Soil	EXP1	RFC	1000	Uranium-238	8.95	2.63	1.63	7.32	7.95E-09	4.62E-11	7.07E-10	5.8E-08	3.4E-10	5.2E-09	6.4E-08
											Pathway Totals	4.0E-05	1.7E-08	8.3E-07	4.1E-05

Maximum Risk 2.2E-04

Radium-226 results include contrubutions from lead-210

IW - industrial worker
RFA - adult resident farmer
RFC - child resident farmer
AT - adolescent trespasser

Table 6B.1. Soil (0-2 ft) Risk Calculations for Radionuclides

									Risk-to-Source Ratios (risk per pCi/g)			Risk Estimates			
Medium	Location	Receptor	Year	Parameter	Gross EPC	BKG UTL	BKG AVG	Net EPC	External Gamma	Inhalation	Soil	External Gamma	Inhalation	Soil	Total
0-2 ft Soil	EXP2	RFC	0	Actinium-227	0.502	1.76	0.30	0	2.79E-06	7.52E-09	1.78E-07				
0-2 ft Soil	EXP2	RFC	0	Protactinium-231	-0.51	0	0	0	3.66E-07	3.29E-09	6.47E-08				
0-2 ft Soil	EXP2	RFC	0	Radium-226	8.28	2.97	1.75	6.53	2.23E-05	7.02E-10	4.10E-07	1.5E-04	4.6E-09	2.7E-06	**1.5E-04**
0-2 ft Soil	EXP2	RFC	0	Radium-228	0.868	1.48	1.10	0	1.73E-05	4.78E-09	8.93E-08				
0-2 ft Soil	EXP2	RFC	0	Thorium-228	0.944	1.6	1.15	0	8.50E-06	4.24E-09	2.98E-08				
0-2 ft Soil	EXP2	RFC	0	Thorium-230	12.3	3.2	2.11	10.2	2.92E-08	1.82E-09	1.22E-08	3.0E-07	1.9E-08	1.2E-07	4.4E-07
0-2 ft Soil	EXP2	RFC	0	Thorium-232	0.774	1.48	1.03	0	6.01E-06	3.48E-09	4.32E-08				
0-2 ft Soil	EXP2	RFC	0	Uranium-234	6.71	2.36	1.48	5.23	7.24E-11	1.49E-09	1.38E-08	3.8E-10	7.8E-09	7.2E-08	8.0E-08
0-2 ft Soil	EXP2	RFC	0	Uranium-235	0.379	0.26	0.09	0.29	9.07E-07	1.38E-09	1.48E-08	2.6E-07	4.0E-10	4.3E-09	2.7E-07
0-2 ft Soil	EXP2	RFC	0	Uranium-238	6.67	2.63	1.63	5.04	2.20E-07	1.27E-09	1.95E-08	1.1E-06	6.4E-09	9.8E-08	**1.2E-06**
											Pathway Totals	1.5E-04	3.8E-08	3.0E-06	1.5E-04
0-2 ft Soil	EXP2	RFC	1000	Actinium-227	0.502	1.76	0.30	0	1.09E-23	2.95E-26	6.97E-25				
0-2 ft Soil	EXP2	RFC	1000	Protactinium-231	-0.51	0	0	0	9.86E-08	3.47E-10	7.75E-09				
0-2 ft Soil	EXP2	RFC	1000	Radium-226	8.28	2.97	1.75	6.53	1.35E-06	4.33E-11	2.55E-08	8.8E-06	2.8E-10	1.7E-07	**9.0E-06**
0-2 ft Soil	EXP2	RFC	1000	Radium-228	0.868	1.48	1.10	0	0.00E+00	0.00E+00	0.00E+00				
0-2 ft Soil	EXP2	RFC	1000	Thorium-228	0.944	1.6	1.15	0	0.00E+00	0.00E+00	0.00E+00				
0-2 ft Soil	EXP2	RFC	1000	Thorium-230	12.3	3.2	2.11	10.2	3.24E-06	1.90E-09	6.88E-08	3.3E-05	1.9E-08	7.0E-07	**3.4E-05**
0-2 ft Soil	EXP2	RFC	1000	Thorium-232	0.774	1.48	1.03	0	3.12E-05	1.23E-08	1.60E-07				
0-2 ft Soil	EXP2	RFC	1000	Uranium-234	6.71	2.36	1.48	5.23	7.56E-09	5.85E-11	6.62E-10	4.0E-08	3.1E-10	3.5E-09	4.3E-08
0-2 ft Soil	EXP2	RFC	1000	Uranium-235	0.379	0.26	0.09	0.29	3.49E-08	5.72E-11	6.97E-10	1.0E-08	1.7E-11	2.0E-10	1.0E-08
0-2 ft Soil	EXP2	RFC	1000	Uranium-238	6.67	2.63	1.63	5.04	7.95E-09	4.62E-11	7.07E-10	4.0E-08	2.3E-10	3.6E-09	4.4E-08
											Pathway Totals	4.2E-05	2.0E-08	8.7E-07	4.3E-05

Maximum Risk 1.5E-04

Radium-226 results include contrubutions from lead-210

IW - industrial worker
RFA - adult resident farmer
RFC - child resident farmer
AT - adolescent trespasser

Table 6B.1. Soil (0-2 ft) Risk Calculations for Radionuclides

									Risk-to-Source Ratios (risk per pCi/g)			Risk Estimates			
Medium	Location	Receptor	Year	Parameter	Gross EPC	BKG UTL	BKG AVG	Net EPC	External Gamma	Inhalation	Soil	External Gamma	Inhalation	Soil	Total
0-2 ft Soil	EXP3	RFC	0	Actinium-227	0.166	1.76	0.30	0	2.79E-06	7.52E-09	1.78E-07				
0-2 ft Soil	EXP3	RFC	0	Protactinium-231	0.204	0	0	0.2	3.66E-07	3.29E-09	6.47E-08	7.5E-08	6.7E-10	1.3E-08	8.8E-08
0-2 ft Soil	EXP3	RFC	0	Radium-226	3.32	2.97	1.75	1.57	2.23E-05	7.02E-10	4.10E-07	3.5E-05	1.1E-09	6.4E-07	**3.6E-05**
0-2 ft Soil	EXP3	RFC	0	Radium-228	1.11	1.48	1.10	0	1.73E-05	4.78E-09	8.93E-08				
0-2 ft Soil	EXP3	RFC	0	Thorium-228	1.2	1.6	1.15	0	8.50E-06	4.24E-09	2.98E-08				
0-2 ft Soil	EXP3	RFC	0	Thorium-230	3.02	3.2	2.11	0	2.92E-08	1.82E-09	1.22E-08				
0-2 ft Soil	EXP3	RFC	0	Thorium-232	0.941	1.48	1.03	0	6.01E-06	3.48E-09	4.32E-08				
0-2 ft Soil	EXP3	RFC	0	Uranium-234	2.61	2.36	1.48	1.13	7.24E-11	1.49E-09	1.38E-08	8.2E-11	1.7E-09	1.6E-08	1.7E-08
0-2 ft Soil	EXP3	RFC	0	Uranium-235	0.155	0.26	0.09	0	9.07E-07	1.38E-09	1.48E-08				
0-2 ft Soil	EXP3	RFC	0	Uranium-238	2.51	2.63	1.63	0	2.20E-07	1.27E-09	1.95E-08				
											Pathway Totals	3.5E-05	3.5E-09	6.7E-07	3.6E-05
0-2 ft Soil	EXP3	RFC	1000	Actinium-227	0.166	1.76	0.30	0	1.09E-23	2.95E-26	6.97E-25				
0-2 ft Soil	EXP3	RFC	1000	Protactinium-231	0.204	0	0	0.2	9.86E-08	3.47E-10	7.75E-09	2.0E-08	7.1E-11	1.6E-09	2.2E-08
0-2 ft Soil	EXP3	RFC	1000	Radium-226	3.32	2.97	1.75	1.57	1.35E-06	4.33E-11	2.55E-08	2.1E-06	6.8E-11	4.0E-08	**2.2E-06**
0-2 ft Soil	EXP3	RFC	1000	Radium-228	1.11	1.48	1.10	0	0.00E+00	0.00E+00	0.00E+00				
0-2 ft Soil	EXP3	RFC	1000	Thorium-228	1.2	1.6	1.15	0	0.00E+00	0.00E+00	0.00E+00				
0-2 ft Soil	EXP3	RFC	1000	Thorium-230	3.02	3.2	2.11	0	3.24E-06	1.90E-09	6.88E-08				
0-2 ft Soil	EXP3	RFC	1000	Thorium-232	0.941	1.48	1.03	0	3.12E-05	1.23E-08	1.60E-07				
0-2 ft Soil	EXP3	RFC	1000	Uranium-234	2.61	2.36	1.48	1.13	7.56E-09	5.85E-11	6.62E-10	8.5E-09	6.6E-11	7.5E-10	9.4E-09
0-2 ft Soil	EXP3	RFC	1000	Uranium-235	0.155	0.26	0.09	0	3.49E-08	5.72E-11	6.97E-10				
0-2 ft Soil	EXP3	RFC	1000	Uranium-238	2.51	2.63	1.63	0	7.95E-09	4.62E-11	7.07E-10				
											Pathway Totals	2.1E-06	2.0E-10	4.2E-08	2.2E-06

Maximum Risk 3.6E-05

Radium-226 results include contrubutions from lead-210

IW - industrial worker
RFA - adult resident farmer
RFC - child resident farmer
AT - adolescent trespasser

Table 6B.1. Soil (0-2 ft) Risk Calculations for Radionuclides

									Risk-to-Source Ratios (risk per pCi/g)			Risk Estimates			
Medium	Location	Receptor	Year	Parameter	Gross EPC	BKG UTL	BKG AVG	Net EPC	External Gamma	Inhalation	Soil	External Gamma	Inhalation	Soil	Total
0-2 ft Soil	EXP4	AT	0	Actinium-227	0.215	1.76	0.30	0	4.31E-08	2.87E-10	1.13E-09				
0-2 ft Soil	EXP4	AT	0	Protactinium-231	0.404	0	0	0.4	8.73E-09	1.52E-10	5.08E-10	3.5E-09	6.1E-11	2.1E-10	3.8E-09
0-2 ft Soil	EXP4	AT	0	Radium-226	1.58	2.97	1.75	0	3.69E-07	2.87E-11	2.79E-09				
0-2 ft Soil	EXP4	AT	0	Radium-228	0.927	1.48	1.10	0	2.67E-07	2.00E-10	5.43E-10				
0-2 ft Soil	EXP4	AT	0	Thorium-228	0.886	1.6	1.15	0	9.35E-08	1.15E-10	1.34E-10				
0-2 ft Soil	EXP4	AT	0	Thorium-230	1.58	3.2	2.11	0	8.06E-10	7.49E-11	8.42E-11				
0-2 ft Soil	EXP4	AT	0	Thorium-232	0.754	1.48	1.03	0	1.68E-07	1.97E-10	4.28E-10				
0-2 ft Soil	EXP4	AT	0	Uranium-234	1.18	2.36	1.48	0	1.21E-12	6.06E-11	9.38E-11				
0-2 ft Soil	EXP4	AT	0	Uranium-235	0.064	0.26	0.09	0	1.50E-08	5.63E-11	1.00E-10				
0-2 ft Soil	EXP4	AT	0	Uranium-238	1.15	2.63	1.63	0	3.63E-09	5.20E-11	1.32E-10				
											Pathway Totals	3.5E-09	6.1E-11	2.1E-10	3.8E-09
0-2 ft Soil	EXP4	AT	1000	Actinium-227	0.215	1.76	0.30	0	1.69E-25	1.12E-27	4.41E-27				
0-2 ft Soil	EXP4	AT	1000	Protactinium-231	0.404	0	0	0.4	1.63E-09	1.42E-11	5.25E-11	6.6E-10	5.7E-12	2.1E-11	6.9E-10
0-2 ft Soil	EXP4	AT	1000	Radium-226	1.58	2.97	1.75	0	2.23E-08	1.77E-12	1.73E-10				
0-2 ft Soil	EXP4	AT	1000	Radium-228	0.927	1.48	1.10	0	0.00E+00	0.00E+00	0.00E+00				
0-2 ft Soil	EXP4	AT	1000	Thorium-228	0.886	1.6	1.15	0	0.00E+00	0.00E+00	0.00E+00				
0-2 ft Soil	EXP4	AT	1000	Thorium-230	1.58	3.2	2.11	0	5.39E-08	7.80E-11	4.69E-10				
0-2 ft Soil	EXP4	AT	1000	Thorium-232	0.754	1.48	1.03	0	5.20E-07	5.05E-10	1.09E-09				
0-2 ft Soil	EXP4	AT	1000	Uranium-234	1.18	2.36	1.48	0	1.26E-10	2.39E-12	4.50E-12				
0-2 ft Soil	EXP4	AT	1000	Uranium-235	0.064	0.26	0.09	0	5.77E-10	2.34E-12	4.73E-12				
0-2 ft Soil	EXP4	AT	1000	Uranium-238	1.15	2.63	1.63	0	1.32E-10	1.89E-12	4.79E-12				
											Pathway Totals	6.6E-10	5.7E-12	2.1E-11	6.9E-10

Maximum Risk 3.8E-09

Radium-226 results include contrubutions from lead-210

IW - industrial worker
RFA - adult resident farmer
RFC - child resident farmer
AT - adolescent trespasser

Table 6B.1. Soil (0-2 ft) Risk Calculations for Radionuclides

									Risk-to-Source Ratios (risk per pCi/g)			Risk Estimates			
Medium	Location	Receptor	Year	Parameter	Gross EPC	BKG UTL	BKG AVG	Net EPC	External Gamma	Inhalation	Soil	External Gamma	Inhalation	Soil	Total
0-2 ft Soil	EXP5	AT	0	Actinium-227	0.131	1.76	0.30	0	4.31E-08	2.87E-10	1.13E-09				
0-2 ft Soil	EXP5	AT	0	Protactinium-231	0.208	0	0	0.21	8.73E-09	1.52E-10	5.08E-10	1.8E-09	3.2E-11	1.1E-10	2.0E-09
0-2 ft Soil	EXP5	AT	0	Radium-226	2.12	2.97	1.75	0	3.69E-07	2.87E-11	2.79E-09				
0-2 ft Soil	EXP5	AT	0	Radium-228	0.512	1.48	1.10	0	2.67E-07	2.00E-10	5.43E-10				
0-2 ft Soil	EXP5	AT	0	Thorium-228	0.582	1.6	1.15	0	9.35E-08	1.15E-10	1.34E-10				
0-2 ft Soil	EXP5	AT	0	Thorium-230	1.61	3.2	2.11	0	8.06E-10	7.49E-11	8.42E-11				
0-2 ft Soil	EXP5	AT	0	Thorium-232	0.518	1.48	1.03	0	1.68E-07	1.97E-10	4.28E-10				
0-2 ft Soil	EXP5	AT	0	Uranium-234	1.3	2.36	1.48	0	1.21E-12	6.06E-11	9.38E-11				
0-2 ft Soil	EXP5	AT	0	Uranium-235	0.088	0.26	0.09	0	1.50E-08	5.63E-11	1.00E-10				
0-2 ft Soil	EXP5	AT	0	Uranium-238	1.76	2.63	1.63	0	3.63E-09	5.20E-11	1.32E-10				
											Pathway Totals	1.8E-09	3.2E-11	1.1E-10	2.0E-09
0-2 ft Soil	EXP5	AT	1000	Actinium-227	0.131	1.76	0.30	0	1.69E-25	1.12E-27	4.41E-27				
0-2 ft Soil	EXP5	AT	1000	Protactinium-231	0.208	0	0	0.21	1.63E-09	1.42E-11	5.25E-11	3.4E-10	2.9E-12	1.1E-11	3.5E-10
0-2 ft Soil	EXP5	AT	1000	Radium-226	2.12	2.97	1.75	0	2.23E-08	1.77E-12	1.73E-10				
0-2 ft Soil	EXP5	AT	1000	Radium-228	0.512	1.48	1.10	0	0.00E+00	0.00E+00	0.00E+00				
0-2 ft Soil	EXP5	AT	1000	Thorium-228	0.582	1.6	1.15	0	0.00E+00	0.00E+00	0.00E+00				
0-2 ft Soil	EXP5	AT	1000	Thorium-230	1.61	3.2	2.11	0	5.39E-08	7.80E-11	4.69E-10				
0-2 ft Soil	EXP5	AT	1000	Thorium-232	0.518	1.48	1.03	0	5.20E-07	5.05E-10	1.09E-09				
0-2 ft Soil	EXP5	AT	1000	Uranium-234	1.3	2.36	1.48	0	1.26E-10	2.39E-12	4.50E-12				
0-2 ft Soil	EXP5	AT	1000	Uranium-235	0.088	0.26	0.09	0	5.77E-10	2.34E-12	4.73E-12				
0-2 ft Soil	EXP5	AT	1000	Uranium-238	1.76	2.63	1.63	0	1.32E-10	1.89E-12	4.79E-12				
											Pathway Totals	3.4E-10	2.9E-12	1.1E-11	3.5E-10

Maximum Risk 2.0E-09

Radium-226 results include contrubutions from lead-210

IW - industrial worker
RFA - adult resident farmer
RFC - child resident farmer
AT - adolescent trespasser

Table 6B.2. Soil (0-10 ft) Risk Calculations for Radionuclides

									Risk-to-Source Ratios (risk per pCi/g)			Risk Estimates			
Medium	Location	Receptor	Year	Parameter	Gross EPC	BKG UTL	BKG AVG	Net EPC	External Gamma	Inhalation	Soil	External Gamma	Inhalation	Soil	Total
0-10 ft Soil	EXP1	RFA	0	Actinium-227	0.297	1.76	0.30	0	9.13E-06	3.68E-08	2.91E-07				
0-10 ft Soil	EXP1	RFA	0	Protactinium-231	-0.14	0	0	0	5.46E-06	3.85E-08	2.74E-07				
0-10 ft Soil	EXP1	RFA	0	Radium-226	5.95	2.97	1.75	4.2	1.08E-04	5.10E-09	1.00E-06	4.5E-04	2.1E-08	4.2E-06	**4.6E-04**
0-10 ft Soil	EXP1	RFA	0	Radium-228	0.879	1.48	1.10	0	3.98E-05	1.89E-08	9.67E-08				
0-10 ft Soil	EXP1	RFA	0	Thorium-228	1.08	1.6	1.15	0	1.11E-05	8.24E-09	1.94E-08				
0-10 ft Soil	EXP1	RFA	0	Thorium-230	5.63	3.2	2.11	3.52	7.11E-07	1.36E-08	3.29E-08	2.5E-06	4.8E-08	1.2E-07	**2.7E-06**
0-10 ft Soil	EXP1	RFA	0	Thorium-232	0.842	1.48	1.03	0	1.07E-04	6.55E-08	2.86E-07				
0-10 ft Soil	EXP1	RFA	0	Uranium-234	4.65	2.36	1.48	3.17	4.08E-10	1.07E-08	3.33E-08	1.3E-09	3.4E-08	1.1E-07	1.4E-07
0-10 ft Soil	EXP1	RFA	0	Uranium-235	0.202	0.26	0.09	0	4.36E-06	9.91E-09	3.56E-08				
0-10 ft Soil	EXP1	RFA	0	Uranium-238	4.69	2.63	1.63	3.06	1.06E-06	9.14E-09	4.69E-08	3.2E-06	2.8E-08	1.4E-07	**3.4E-06**
											Pathway Totals	4.6E-04	1.3E-07	4.6E-06	4.6E-04
0-10 ft Soil	EXP1	RFA	1000	Actinium-227	0.297	1.76	0.30	0	3.58E-23	1.44E-25	1.14E-24				
0-10 ft Soil	EXP1	RFA	1000	Protactinium-231	-0.14	0	0	0	4.74E-07	2.49E-09	1.86E-08				
0-10 ft Soil	EXP1	RFA	1000	Radium-226	5.95	2.97	1.75	4.2	6.51E-06	3.13E-10	6.15E-08	2.7E-05	1.3E-09	2.6E-07	**2.8E-05**
0-10 ft Soil	EXP1	RFA	1000	Radium-228	0.879	1.48	1.10	0	0.00E+00	0.00E+00	0.00E+00				
0-10 ft Soil	EXP1	RFA	1000	Thorium-228	1.08	1.6	1.15	0	0.00E+00	0.00E+00	0.00E+00				
0-10 ft Soil	EXP1	RFA	1000	Thorium-230	5.63	3.2	2.11	3.52	1.62E-05	1.42E-08	1.72E-07	5.7E-05	5.0E-08	6.1E-07	**5.8E-05**
0-10 ft Soil	EXP1	RFA	1000	Thorium-232	0.842	1.48	1.03	0	1.56E-04	9.18E-08	3.99E-07				
0-10 ft Soil	EXP1	RFA	1000	Uranium-234	4.65	2.36	1.48	3.17	3.80E-08	4.22E-10	1.61E-09	1.2E-07	1.3E-09	5.1E-09	1.3E-07
0-10 ft Soil	EXP1	RFA	1000	Uranium-235	0.202	0.26	0.09	0	1.68E-07	4.11E-10	1.68E-09				
0-10 ft Soil	EXP1	RFA	1000	Uranium-238	4.69	2.63	1.63	3.06	3.82E-08	3.32E-10	1.70E-09	1.2E-07	1.0E-09	5.2E-09	1.2E-07
											Pathway Totals	8.5E-05	5.4E-08	8.7E-07	8.6E-05

Maximum Risk 4.6E-04

Radium-226 results include contrubutions from lead-210

RFA - adult resident farmer
RFC - child resident farmer
AT - adolescent trespasser

Table 6B.2. Soil (0-10 ft) Risk Calculations for Radionuclides

									Risk-to-Source Ratios (risk per pCi/g)			Risk Estimates			
Medium	Location	Receptor	Year	Parameter	Gross EPC	BKG UTL	BKG AVG	Net EPC	External Gamma	Inhalation	Soil	External Gamma	Inhalation	Soil	Total
0-10 ft Soil	EXP2	RFA	0	Actinium-227	0.335	1.76	0.30	0	9.13E-06	3.68E-08	2.91E-07				
0-10 ft Soil	EXP2	RFA	0	Protactinium-231	-0.29	0	0	0	5.46E-06	3.85E-08	2.74E-07				
0-10 ft Soil	EXP2	RFA	0	Radium-226	7.02	2.97	1.75	5.27	1.08E-04	5.10E-09	1.00E-06	5.7E-04	2.7E-08	5.3E-06	**5.7E-04**
0-10 ft Soil	EXP2	RFA	0	Radium-228	0.925	1.48	1.10	0	3.98E-05	1.89E-08	9.67E-08				
0-10 ft Soil	EXP2	RFA	0	Thorium-228	1.02	1.6	1.15	0	1.11E-05	8.24E-09	1.94E-08				
0-10 ft Soil	EXP2	RFA	0	Thorium-230	6.85	3.2	2.11	4.74	7.11E-07	1.36E-08	3.29E-08	3.4E-06	6.5E-08	1.6E-07	**3.6E-06**
0-10 ft Soil	EXP2	RFA	0	Thorium-232	0.8	1.48	1.03	0	1.07E-04	6.55E-08	2.86E-07				
0-10 ft Soil	EXP2	RFA	0	Uranium-234	4.37	2.36	1.48	2.89	4.08E-10	1.07E-08	3.33E-08	1.2E-09	3.1E-08	9.6E-08	1.3E-07
0-10 ft Soil	EXP2	RFA	0	Uranium-235	0.219	0.26	0.09	0	4.36E-06	9.91E-09	3.56E-08				
0-10 ft Soil	EXP2	RFA	0	Uranium-238	4.4	2.63	1.63	2.77	1.06E-06	9.14E-09	4.69E-08	2.9E-06	2.5E-08	1.3E-07	**3.1E-06**
											Pathway Totals	5.7E-04	1.5E-07	5.6E-06	5.8E-04
0-10 ft Soil	EXP2	RFA	1000	Actinium-227	0.335	1.76	0.30	0	3.58E-23	1.44E-25	1.14E-24				
0-10 ft Soil	EXP2	RFA	1000	Protactinium-231	-0.29	0	0	0	4.74E-07	2.49E-09	1.86E-08				
0-10 ft Soil	EXP2	RFA	1000	Radium-226	7.02	2.97	1.75	5.27	6.51E-06	3.13E-10	6.15E-08	3.4E-05	1.6E-09	3.2E-07	**3.5E-05**
0-10 ft Soil	EXP2	RFA	1000	Radium-228	0.925	1.48	1.10	0	0.00E+00	0.00E+00	0.00E+00				
0-10 ft Soil	EXP2	RFA	1000	Thorium-228	1.02	1.6	1.15	0	0.00E+00	0.00E+00	0.00E+00				
0-10 ft Soil	EXP2	RFA	1000	Thorium-230	6.85	3.2	2.11	4.74	1.62E-05	1.42E-08	1.72E-07	7.7E-05	6.7E-08	8.2E-07	**7.8E-05**
0-10 ft Soil	EXP2	RFA	1000	Thorium-232	0.8	1.48	1.03	0	1.56E-04	9.18E-08	3.99E-07				
0-10 ft Soil	EXP2	RFA	1000	Uranium-234	4.37	2.36	1.48	2.89	3.80E-08	4.22E-10	1.61E-09	1.1E-07	1.2E-09	4.7E-09	1.2E-07
0-10 ft Soil	EXP2	RFA	1000	Uranium-235	0.219	0.26	0.09	0	1.68E-07	4.11E-10	1.68E-09				
0-10 ft Soil	EXP2	RFA	1000	Uranium-238	4.4	2.63	1.63	2.77	3.82E-08	3.32E-10	1.70E-09	1.1E-07	9.2E-10	4.7E-09	1.1E-07
											Pathway Totals	1.1E-04	7.1E-08	1.1E-06	1.1E-04

Maximum Risk 5.8E-04

Radium-226 results include contrubutions from lead-210

RFA - adult resident farmer
RFC - child resident farmer
AT - adolescent trespasser

Table 6B.2. Soil (0-10 ft) Risk Calculations for Radionuclides

									Risk-to-Source Ratios (risk per pCi/g)			Risk Estimates			
Medium	Location	Receptor	Year	Parameter	Gross EPC	BKG UTL	BKG AVG	Net EPC	External Gamma	Inhalation	Soil	External Gamma	Inhalation	Soil	Total
0-10 ft Soil	EXP3	RFA	0	Actinium-227	0.165	1.76	0.30	0	9.13E-06	3.68E-08	2.91E-07				
0-10 ft Soil	EXP3	RFA	0	Protactinium-231	0.193	0	0	0.19	5.46E-06	3.85E-08	2.74E-07	1.1E-06	7.4E-09	5.3E-08	**1.1E-06**
0-10 ft Soil	EXP3	RFA	0	Radium-226	3.27	2.97	1.75	1.52	1.08E-04	5.10E-09	1.00E-06	1.6E-04	7.8E-09	1.5E-06	**1.7E-04**
0-10 ft Soil	EXP3	RFA	0	Radium-228	1.1	1.48	1.10	0	3.98E-05	1.89E-08	9.67E-08				
0-10 ft Soil	EXP3	RFA	0	Thorium-228	1.2	1.6	1.15	0	1.11E-05	8.24E-09	1.94E-08				
0-10 ft Soil	EXP3	RFA	0	Thorium-230	3.01	3.2	2.11	0	7.11E-07	1.36E-08	3.29E-08				
0-10 ft Soil	EXP3	RFA	0	Thorium-232	0.961	1.48	1.03	0	1.07E-04	6.55E-08	2.86E-07				
0-10 ft Soil	EXP3	RFA	0	Uranium-234	2.58	2.36	1.48	1.1	4.08E-10	1.07E-08	3.33E-08	4.5E-10	1.2E-08	3.7E-08	4.9E-08
0-10 ft Soil	EXP3	RFA	0	Uranium-235	0.15	0.26	0.09	0	4.36E-06	9.91E-09	3.56E-08				
0-10 ft Soil	EXP3	RFA	0	Uranium-238	2.49	2.63	1.63	0	1.06E-06	9.14E-09	4.69E-08				
											Pathway Totals	1.6E-04	2.7E-08	1.6E-06	1.7E-04
0-10 ft Soil	EXP3	RFA	1000	Actinium-227	0.165	1.76	0.30	0	3.58E-23	1.44E-25	1.14E-24				
0-10 ft Soil	EXP3	RFA	1000	Protactinium-231	0.193	0	0	0.19	4.74E-07	2.49E-09	1.86E-08	9.1E-08	4.8E-10	3.6E-09	9.6E-08
0-10 ft Soil	EXP3	RFA	1000	Radium-226	3.27	2.97	1.75	1.52	6.51E-06	3.13E-10	6.15E-08	9.9E-06	4.8E-10	9.4E-08	**1.0E-05**
0-10 ft Soil	EXP3	RFA	1000	Radium-228	1.1	1.48	1.10	0	0.00E+00	0.00E+00	0.00E+00				
0-10 ft Soil	EXP3	RFA	1000	Thorium-228	1.2	1.6	1.15	0	0.00E+00	0.00E+00	0.00E+00				
0-10 ft Soil	EXP3	RFA	1000	Thorium-230	3.01	3.2	2.11	0	1.62E-05	1.42E-08	1.72E-07				
0-10 ft Soil	EXP3	RFA	1000	Thorium-232	0.961	1.48	1.03	0	1.56E-04	9.18E-08	3.99E-07				
0-10 ft Soil	EXP3	RFA	1000	Uranium-234	2.58	2.36	1.48	1.1	3.80E-08	4.22E-10	1.61E-09	4.2E-08	4.6E-10	1.8E-09	4.4E-08
0-10 ft Soil	EXP3	RFA	1000	Uranium-235	0.15	0.26	0.09	0	1.68E-07	4.11E-10	1.68E-09				
0-10 ft Soil	EXP3	RFA	1000	Uranium-238	2.49	2.63	1.63	0	3.82E-08	3.32E-10	1.70E-09				
											Pathway Totals	1.0E-05	1.4E-09	9.9E-08	1.0E-05

Maximum Risk 1.7E-04

Radium-226 results include contrubutions from lead-210

RFA - adult resident farmer
RFC - child resident farmer
AT - adolescent trespasser

Table 6B.2. Soil (0-10 ft) Risk Calculations for Radionuclides

									Risk-to-Source Ratios (risk per pCi/g)			Risk Estimates			
Medium	Location	Receptor	Year	Parameter	Gross EPC	BKG UTL	BKG AVG	Net EPC	External Gamma	Inhalation	Soil	External Gamma	Inhalation	Soil	Total
0-10 ft Soil	EXP1	RFC	0	Actinium-227	0.297	1.76	0.30	0	2.79E-06	7.52E-09	1.78E-07				
0-10 ft Soil	EXP1	RFC	0	Protactinium-231	-0.14	0	0	0	3.66E-07	3.29E-09	6.47E-08				
0-10 ft Soil	EXP1	RFC	0	Radium-226	5.95	2.97	1.75	4.2	2.23E-05	7.02E-10	4.10E-07	9.4E-05	2.9E-09	1.7E-06	**9.5E-05**
0-10 ft Soil	EXP1	RFC	0	Radium-228	0.879	1.48	1.10	0	1.73E-05	4.78E-09	8.93E-08				
0-10 ft Soil	EXP1	RFC	0	Thorium-228	1.08	1.6	1.15	0	8.50E-06	4.24E-09	2.98E-08				
0-10 ft Soil	EXP1	RFC	0	Thorium-230	5.63	3.2	2.11	3.52	2.92E-08	1.82E-09	1.22E-08	1.0E-07	6.4E-09	4.3E-08	1.5E-07
0-10 ft Soil	EXP1	RFC	0	Thorium-232	0.842	1.48	1.03	0	6.01E-06	3.48E-09	4.32E-08				
0-10 ft Soil	EXP1	RFC	0	Uranium-234	4.65	2.36	1.48	3.17	7.24E-11	1.49E-09	1.38E-08	2.3E-10	4.7E-09	4.4E-08	4.9E-08
0-10 ft Soil	EXP1	RFC	0	Uranium-235	0.202	0.26	0.09	0	9.07E-07	1.38E-09	1.48E-08				
0-10 ft Soil	EXP1	RFC	0	Uranium-238	4.69	2.63	1.63	3.06	2.20E-07	1.27E-09	1.95E-08	6.7E-07	3.9E-09	6.0E-08	7.4E-07
											Pathway Totals	9.4E-05	1.8E-08	1.9E-06	9.6E-05
0-10 ft Soil	EXP1	RFC	1000	Actinium-227	0.297	1.76	0.30	0	1.09E-23	2.95E-26	6.97E-25				
0-10 ft Soil	EXP1	RFC	1000	Protactinium-231	-0.14	0	0	0	9.86E-08	3.47E-10	7.75E-09				
0-10 ft Soil	EXP1	RFC	1000	Radium-226	5.95	2.97	1.75	4.2	1.35E-06	4.33E-11	2.55E-08	5.7E-06	1.8E-10	1.1E-07	**5.8E-06**
0-10 ft Soil	EXP1	RFC	1000	Radium-228	0.879	1.48	1.10	0	0.00E+00	0.00E+00	0.00E+00				
0-10 ft Soil	EXP1	RFC	1000	Thorium-228	1.08	1.6	1.15	0	0.00E+00	0.00E+00	0.00E+00				
0-10 ft Soil	EXP1	RFC	1000	Thorium-230	5.63	3.2	2.11	3.52	3.24E-06	1.90E-09	6.88E-08	1.1E-05	6.7E-09	2.4E-07	**1.2E-05**
0-10 ft Soil	EXP1	RFC	1000	Thorium-232	0.842	1.48	1.03	0	3.12E-05	1.23E-08	1.60E-07				
0-10 ft Soil	EXP1	RFC	1000	Uranium-234	4.65	2.36	1.48	3.17	7.56E-09	5.85E-11	6.62E-10	2.4E-08	1.9E-10	2.1E-09	2.6E-08
0-10 ft Soil	EXP1	RFC	1000	Uranium-235	0.202	0.26	0.09	0	3.49E-08	5.72E-11	6.97E-10				
0-10 ft Soil	EXP1	RFC	1000	Uranium-238	4.69	2.63	1.63	3.06	7.95E-09	4.62E-11	7.07E-10	2.4E-08	1.4E-10	2.2E-09	2.7E-08
											Pathway Totals	1.7E-05	7.2E-09	3.5E-07	1.7E-05

Maximum Risk 9.6E-05

Radium-226 results include contrubutions from lead-210

RFA - adult resident farmer
RFC - child resident farmer
AT - adolescent trespasser

Table 6B.2. Soil (0-10 ft) Risk Calculations for Radionuclides

									Risk-to-Source Ratios (risk per pCi/g)			Risk Estimates			
Medium	Location	Receptor	Year	Parameter	Gross EPC	BKG UTL	BKG AVG	Net EPC	External Gamma	Inhalation	Soil	External Gamma	Inhalation	Soil	Total
0-10 ft Soil	EXP2	RFC	0	Actinium-227	0.335	1.76	0.30	0	2.79E-06	7.52E-09	1.78E-07				
0-10 ft Soil	EXP2	RFC	0	Protactinium-231	-0.29	0	0	0	3.66E-07	3.29E-09	6.47E-08				
0-10 ft Soil	EXP2	RFC	0	Radium-226	7.02	2.97	1.75	5.27	2.23E-05	7.02E-10	4.10E-07	1.2E-04	3.7E-09	2.2E-06	**1.2E-04**
0-10 ft Soil	EXP2	RFC	0	Radium-228	0.925	1.48	1.10	0	1.73E-05	4.78E-09	8.93E-08				
0-10 ft Soil	EXP2	RFC	0	Thorium-228	1.02	1.6	1.15	0	8.50E-06	4.24E-09	2.98E-08				
0-10 ft Soil	EXP2	RFC	0	Thorium-230	6.85	3.2	2.11	4.74	2.92E-08	1.82E-09	1.22E-08	1.4E-07	8.6E-09	5.8E-08	2.0E-07
0-10 ft Soil	EXP2	RFC	0	Thorium-232	0.8	1.48	1.03	0	6.01E-06	3.48E-09	4.32E-08				
0-10 ft Soil	EXP2	RFC	0	Uranium-234	4.37	2.36	1.48	2.89	7.24E-11	1.49E-09	1.38E-08	2.1E-10	4.3E-09	4.0E-08	4.4E-08
0-10 ft Soil	EXP2	RFC	0	Uranium-235	0.219	0.26	0.09	0	9.07E-07	1.38E-09	1.48E-08				
0-10 ft Soil	EXP2	RFC	0	Uranium-238	4.4	2.63	1.63	2.77	2.20E-07	1.27E-09	1.95E-08	6.1E-07	3.5E-09	5.4E-08	6.7E-07
											Pathway Totals	1.2E-04	2.0E-08	2.3E-06	1.2E-04
0-10 ft Soil	EXP2	RFC	1000	Actinium-227	0.335	1.76	0.30	0	1.09E-23	2.95E-26	6.97E-25				
0-10 ft Soil	EXP2	RFC	1000	Protactinium-231	-0.29	0	0	0	9.86E-08	3.47E-10	7.75E-09				
0-10 ft Soil	EXP2	RFC	1000	Radium-226	7.02	2.97	1.75	5.27	1.35E-06	4.33E-11	2.55E-08	7.1E-06	2.3E-10	1.3E-07	**7.2E-06**
0-10 ft Soil	EXP2	RFC	1000	Radium-228	0.925	1.48	1.10	0	0.00E+00	0.00E+00	0.00E+00				
0-10 ft Soil	EXP2	RFC	1000	Thorium-228	1.02	1.6	1.15	0	0.00E+00	0.00E+00	0.00E+00				
0-10 ft Soil	EXP2	RFC	1000	Thorium-230	6.85	3.2	2.11	4.74	3.24E-06	1.90E-09	6.88E-08	1.5E-05	9.0E-09	3.3E-07	**1.6E-05**
0-10 ft Soil	EXP2	RFC	1000	Thorium-232	0.8	1.48	1.03	0	3.12E-05	1.23E-08	1.60E-07				
0-10 ft Soil	EXP2	RFC	1000	Uranium-234	4.37	2.36	1.48	2.89	7.56E-09	5.85E-11	6.62E-10	2.2E-08	1.7E-10	1.9E-09	2.4E-08
0-10 ft Soil	EXP2	RFC	1000	Uranium-235	0.219	0.26	0.09	0	3.49E-08	5.72E-11	6.97E-10				
0-10 ft Soil	EXP2	RFC	1000	Uranium-238	4.4	2.63	1.63	2.77	7.95E-09	4.62E-11	7.07E-10	2.2E-08	1.3E-10	2.0E-09	2.4E-08
											Pathway Totals	2.2E-05	9.5E-09	4.6E-07	2.3E-05

Maximum Risk 1.2E-04

Radium-226 results include contrubutions from lead-210

RFA - adult resident farmer
RFC - child resident farmer
AT - adolescent trespasser

Table 6B.2. Soil (0-10 ft) Risk Calculations for Radionuclides

									Risk-to-Source Ratios (risk per pCi/g)			Risk Estimates			
Medium	Location	Receptor	Year	Parameter	Gross EPC	BKG UTL	BKG AVG	Net EPC	External Gamma	Inhalation	Soil	External Gamma	Inhalation	Soil	Total
0-10 ft Soil	EXP3	RFC	0	Actinium-227	0.165	1.76	0.30	0	2.79E-06	7.52E-09	1.78E-07				
0-10 ft Soil	EXP3	RFC	0	Protactinium-231	0.193	0	0	0.19	3.66E-07	3.29E-09	6.47E-08	7.1E-08	6.3E-10	1.2E-08	8.4E-08
0-10 ft Soil	EXP3	RFC	0	Radium-226	3.27	2.97	1.75	1.52	2.23E-05	7.02E-10	4.10E-07	3.4E-05	1.1E-09	6.2E-07	**3.5E-05**
0-10 ft Soil	EXP3	RFC	0	Radium-228	1.1	1.48	1.10	0	1.73E-05	4.78E-09	8.93E-08				
0-10 ft Soil	EXP3	RFC	0	Thorium-228	1.2	1.6	1.15	0	8.50E-06	4.24E-09	2.98E-08				
0-10 ft Soil	EXP3	RFC	0	Thorium-230	3.01	3.2	2.11	0	2.92E-08	1.82E-09	1.22E-08				
0-10 ft Soil	EXP3	RFC	0	Thorium-232	0.961	1.48	1.03	0	6.01E-06	3.48E-09	4.32E-08				
0-10 ft Soil	EXP3	RFC	0	Uranium-234	2.58	2.36	1.48	1.1	7.24E-11	1.49E-09	1.38E-08	8.0E-11	1.6E-09	1.5E-08	1.7E-08
0-10 ft Soil	EXP3	RFC	0	Uranium-235	0.15	0.26	0.09	0	9.07E-07	1.38E-09	1.48E-08				
0-10 ft Soil	EXP3	RFC	0	Uranium-238	2.49	2.63	1.63	0	2.20E-07	1.27E-09	1.95E-08				
											Pathway Totals	3.4E-05	3.3E-09	6.5E-07	3.5E-05
0-10 ft Soil	EXP3	RFC	1000	Actinium-227	0.165	1.76	0.30	0	1.09E-23	2.95E-26	6.97E-25				
0-10 ft Soil	EXP3	RFC	1000	Protactinium-231	0.193	0	0	0.19	9.86E-08	3.47E-10	7.75E-09	1.9E-08	6.7E-11	1.5E-09	2.1E-08
0-10 ft Soil	EXP3	RFC	1000	Radium-226	3.27	2.97	1.75	1.52	1.35E-06	4.33E-11	2.55E-08	2.0E-06	6.6E-11	3.9E-08	**2.1E-06**
0-10 ft Soil	EXP3	RFC	1000	Radium-228	1.1	1.48	1.10	0	0.00E+00	0.00E+00	0.00E+00				
0-10 ft Soil	EXP3	RFC	1000	Thorium-228	1.2	1.6	1.15	0	0.00E+00	0.00E+00	0.00E+00				
0-10 ft Soil	EXP3	RFC	1000	Thorium-230	3.01	3.2	2.11	0	3.24E-06	1.90E-09	6.88E-08				
0-10 ft Soil	EXP3	RFC	1000	Thorium-232	0.961	1.48	1.03	0	3.12E-05	1.23E-08	1.60E-07				
0-10 ft Soil	EXP3	RFC	1000	Uranium-234	2.58	2.36	1.48	1.1	7.56E-09	5.85E-11	6.62E-10	8.3E-09	6.4E-11	7.3E-10	9.1E-09
0-10 ft Soil	EXP3	RFC	1000	Uranium-235	0.15	0.26	0.09	0	3.49E-08	5.72E-11	6.97E-10				
0-10 ft Soil	EXP3	RFC	1000	Uranium-238	2.49	2.63	1.63	0	7.95E-09	4.62E-11	7.07E-10				
											Pathway Totals	2.1E-06	2.0E-10	4.1E-08	2.1E-06

Maximum Risk 3.5E-05

Radium-226 results include contrubutions from lead-210

RFA - adult resident farmer
RFC - child resident farmer
AT - adolescent trespasser

Table 6B.3. Sediment Risk Calculations for Radionuclides

									Risk-to-Source Ratios (risk per pCi/g)		Risk Estimates		
Medium	Location	Receptor	Year	Parameter	Gross EPC	BKG UTL	BKG	Net EPC	External Gamma	Soil	External Gamma	Soil	Total
Sediment	EXP3	RFA	0	Actinium-227	0.221	0.4	0.1	0	4.56E-08	1.19E-11			
Sediment	EXP3	RFA	0	Protactinium-23	-0.14	0	0	0	2.73E-08	1.12E-11			
Sediment	EXP3	RFA	0	Radium-226	5.69	1.63	1.2	4.47	5.39E-07	4.09E-11	2.4E-06	1.8E-10	**2.4E-06**
Sediment	EXP3	RFA	0	Radium-228	0.689	1.11	0.6	0	1.99E-07	3.96E-12			
Sediment	EXP3	RFA	0	Thorium-228	0.7	1.19	0.8	0	5.53E-08	7.94E-13			
Sediment	EXP3	RFA	0	Thorium-230	2.53	1.89	1.5	1.08	3.55E-09	1.35E-12	3.8E-09	1.5E-12	3.8E-09
Sediment	EXP3	RFA	0	Thorium-232	0.538	0.84	0.5	0	5.33E-07	1.17E-11			
Sediment	EXP3	RFA	0	Uranium-234	2.24	1.8	1.1	1.16	2.04E-12	1.36E-12	2.4E-12	1.6E-12	3.9E-12
Sediment	EXP3	RFA	0	Uranium-235	0.07	0.059	0	0.03	2.18E-08	1.46E-12	6.5E-10	4.4E-14	6.5E-10
Sediment	EXP3	RFA	0	Uranium-238	2.38	2.08	1.1	1.29	5.28E-09	1.92E-12	6.8E-09	2.5E-12	6.8E-09
										Pathway Totals	2.4E-06	1.9E-10	2.4E-06
Sediment	EXP3	RFA	1000	Actinium-227	0.221	0.4	0.1	0	1.79E-25	4.27E-29			
Sediment	EXP3	RFA	1000	Protactinium-23	-0.14	0	0	0	2.37E-09	7.62E-13			
Sediment	EXP3	RFA	1000	Radium-226	5.69	1.63	1.2	4.47	3.25E-08	2.52E-12	1.5E-07	1.1E-11	1.5E-07
Sediment	EXP3	RFA	1000	Radium-228	0.689	1.11	0.6	0	0.00E+00	0.00E+00			
Sediment	EXP3	RFA	1000	Thorium-228	0.7	1.19	0.8	0	0.00E+00	0.00E+00			
Sediment	EXP3	RFA	1000	Thorium-230	2.53	1.89	1.5	1.08	8.10E-08	7.05E-12	8.7E-08	7.6E-12	8.7E-08
Sediment	EXP3	RFA	1000	Thorium-232	0.538	0.84	0.5	0	7.80E-07	1.63E-11			
Sediment	EXP3	RFA	1000	Uranium-234	2.24	1.8	1.1	1.16	1.90E-10	6.59E-14	2.2E-10	7.6E-14	2.2E-10
Sediment	EXP3	RFA	1000	Uranium-235	0.07	0.059	0	0.03	8.38E-10	6.88E-14	2.5E-11	2.1E-15	2.5E-11
Sediment	EXP3	RFA	1000	Uranium-238	2.38	2.08	1.1	1.29	1.91E-10	6.96E-14	2.5E-10	9.0E-14	2.5E-10
										Pathway Totals	2.3E-07	1.9E-11	2.3E-07

Maximum Risk 2.4E-06

Radium-226 results include contributions from lead-210

RFA - adult resident farmer
RFC - child resident farmer
AT - adolescent trespasser

Table 6B.3. Sediment Risk Calculations for Radionuclides

									Risk-to-Source Ratios (risk per pCi/g)		Risk Estimates		
Medium	Location	Receptor	Year	Parameter	Gross EPC	BKG UTL	BKG	Net EPC	External Gamma	Soil	External Gamma	Soil	Total
Sediment	EXP3	RFC	0	Actinium-227	0.221	0.4	0.1	0	2.79E-08	1.46E-11			
Sediment	EXP3	RFC	0	Protactinium-23	-0.14	0	0	0	3.66E-09	5.30E-12			
Sediment	EXP3	RFC	0	Radium-226	5.69	1.63	1.2	4.47	2.23E-07	3.36E-11	1.0E-06	1.5E-10	**1.0E-06**
Sediment	EXP3	RFC	0	Radium-228	0.689	1.11	0.6	0	1.73E-07	7.31E-12			
Sediment	EXP3	RFC	0	Thorium-228	0.7	1.19	0.8	0	8.49E-08	2.44E-12			
Sediment	EXP3	RFC	0	Thorium-230	2.53	1.89	1.5	1.08	2.92E-10	1.00E-12	3.2E-10	1.1E-12	3.2E-10
Sediment	EXP3	RFC	0	Thorium-232	0.538	0.84	0.5	0	6.01E-08	3.54E-12			
Sediment	EXP3	RFC	0	Uranium-234	2.24	1.8	1.1	1.16	7.23E-13	1.13E-12	8.4E-13	1.3E-12	2.2E-12
Sediment	EXP3	RFC	0	Uranium-235	0.07	0.059	0	0.03	9.07E-09	1.21E-12	2.7E-10	3.6E-14	2.7E-10
Sediment	EXP3	RFC	0	Uranium-238	2.38	2.08	1.1	1.29	2.20E-09	1.60E-12	2.8E-09	2.1E-12	2.8E-09
										Pathway Totals	1.0E-06	1.5E-10	1.0E-06
Sediment	EXP3	RFC	1000	Actinium-227	0.221	0.4	0.1	0	1.09E-25	5.71E-29			
Sediment	EXP3	RFC	1000	Protactinium-23	-0.14	0	0	0	9.85E-10	6.35E-13			
Sediment	EXP3	RFC	1000	Radium-226	5.69	1.63	1.2	4.47	1.35E-08	2.08E-12	6.0E-08	9.3E-12	6.0E-08
Sediment	EXP3	RFC	1000	Radium-228	0.689	1.11	0.6	0	0.00E+00	0.00E+00			
Sediment	EXP3	RFC	1000	Thorium-228	0.7	1.19	0.8	0	0.00E+00	0.00E+00			
Sediment	EXP3	RFC	1000	Thorium-230	2.53	1.89	1.5	1.08	3.23E-08	5.63E-12	3.5E-08	6.1E-12	3.5E-08
Sediment	EXP3	RFC	1000	Thorium-232	0.538	0.84	0.5	0	3.12E-07	1.31E-11			
Sediment	EXP3	RFC	1000	Uranium-234	2.24	1.8	1.1	1.16	7.55E-11	5.42E-14	8.8E-11	6.3E-14	8.8E-11
Sediment	EXP3	RFC	1000	Uranium-235	0.07	0.059	0	0.03	3.49E-10	5.71E-14	1.0E-11	1.7E-15	1.0E-11
Sediment	EXP3	RFC	1000	Uranium-238	2.38	2.08	1.1	1.29	7.95E-11	5.79E-14	1.0E-10	7.5E-14	1.0E-10
										Pathway Totals	9.5E-08	1.6E-11	9.5E-08

Maximum Risk 1.0E-06

Radium-226 results include contributions from lead-210

RFA - adult resident farmer
RFC - child resident farmer
AT - adolescent trespasser

Table 6B.3. Sediment Risk Calculations for Radionuclides

									Risk-to-Source Ratios (risk per pCi/g)		Risk Estimates		
Medium	Location	Receptor	Year	Parameter	Gross EPC	BKG UTL	BKG	Net EPC	External Gamma	Soil	External Gamma	Soil	Total
Sediment	EXP4	AT	0	Actinium-227	0.083	0.4	0.1	0	4.31E-08	1.13E-11			
Sediment	EXP4	AT	0	Protactinium-23	0.092	0	0	0.092	8.73E-09	5.08E-12	8.0E-10	4.7E-13	8.0E-10
Sediment	EXP4	AT	0	Radium-226	1.19	1.63	1.2	0	3.69E-07	2.79E-11			
Sediment	EXP4	AT	0	Radium-228	0.615	1.11	0.6	0	2.67E-07	5.43E-12			
Sediment	EXP4	AT	0	Thorium-228	0.767	1.19	0.8	0	9.35E-08	1.34E-12			
Sediment	EXP4	AT	0	Thorium-230	1.33	1.89	1.5	0	8.06E-10	8.42E-13			
Sediment	EXP4	AT	0	Thorium-232	0.573	0.84	0.5	0	1.68E-07	4.28E-12			
Sediment	EXP4	AT	0	Uranium-234	1.34	1.8	1.1	0	1.21E-12	9.38E-13			
Sediment	EXP4	AT	0	Uranium-235	0.058	0.059	0	0	1.50E-08	1.00E-12			
Sediment	EXP4	AT	0	Uranium-238	1.38	2.08	1.1	0	3.63E-09	1.32E-12			
										Pathway Totals	8.0E-10	4.7E-13	8.0E-10
Sediment	EXP4	AT	1000	Actinium-227	0.083	0.4	0.1	0	1.69E-25	4.41E-29			
Sediment	EXP4	AT	1000	Protactinium-23	0.092	0	0	0.092	1.63E-09	5.25E-13	1.5E-10	4.8E-14	1.5E-10
Sediment	EXP4	AT	1000	Radium-226	1.19	1.63	1.2	0	2.23E-08	1.73E-12			
Sediment	EXP4	AT	1000	Radium-228	0.615	1.11	0.6	0	0.00E+00	0.00E+00			
Sediment	EXP4	AT	1000	Thorium-228	0.767	1.19	0.8	0	0.00E+00	0.00E+00			
Sediment	EXP4	AT	1000	Thorium-230	1.33	1.89	1.5	0	5.39E-08	4.69E-12			
Sediment	EXP4	AT	1000	Thorium-232	0.573	0.84	0.5	0	5.20E-07	1.09E-11			
Sediment	EXP4	AT	1000	Uranium-234	1.34	1.8	1.1	0	1.26E-10	4.50E-14			
Sediment	EXP4	AT	1000	Uranium-235	0.058	0.059	0	0	5.77E-10	4.73E-14			
Sediment	EXP4	AT	1000	Uranium-238	1.38	2.08	1.1	0	1.32E-10	4.79E-14			
										Pathway Totals	1.5E-10	4.8E-14	1.5E-10

Maximum Risk 8.0E-10

Radium-226 results include contributions from lead-210

RFA - adult resident farmer
RFC - child resident farmer
AT - adolescent trespasser

Table 6B.4. Soil and Sediment Action Levels by Receptor

			10-6 Risk			40 CFR 192 [a]	Criterion 6(6) [b]			10 CFR 20 [c]	
Scenario	Analyte	Medium	RSR (risk/pCi/g)	Criterion (risk)	Action Level (pCi/g) [d]	Action Level	DSR (mrem/yr/pCi/g)	Criterion (mrem/yr)	Action Level (pCi/g) [e]	Criterion (mrem/yr)	Action Level (pCi/g) [e]
RFA	Pa-231	soil	5.78E-06	1E-06	0.17	-	4.22E-01	32.5	77	25	59
RFA	Ra-226	soil	1.09E-04	1E-06	0.0092	5.0	6.50E+00	32.5	5.0	25	3.8
RFA	Th-230	soil	1.64E-05	1E-06	0.061	-	9.56E-01	32.5	34	25	26
RFA	U-235	soil	4.41E-06	1E-06	0.23	-	4.38E-01	32.5	74	25	57
RFA	U-238 [f]	soil	1.11E-06	1E-06	0.90	-	8.70E-02	32.5	370	25	290
RFC	Ra-226	soil	2.27E-05	1E-06	0.044	5.0	6.72E+00	33.6	5.0	25	3.7
RFC	Th-230	soil	3.31E-06	1E-06	0.30	-	9.99E-01	33.6	34	25	25
RFC	U-238 [f]	soil	2.40E-07	1E-06	4.2	-	9.31E-02	33.6	360	25	270
IW	Ra-226	soil	7.81E-06	1E-06	0.13	5.0	2.03E+00	10.1	5.0	25	12
IW	Th-230	soil	1.14E-06	1E-06	0.88	-	2.96E-01	10.1	34	25	84
RFA	Ra-226	sediment	5.39E-07	1E-06	1.9	5.0	3.13E-02	0.157	5.0	25	800
RFC	Ra-226	sediment	2.23E-07	1E-06	4.5	5.0	6.27E-02	0.313	5.0	25	400

All action levels rounded to two significant digits.

[a] Regulation defines limit for Ra-226 only; surface soils value shown. Subsurface limit is 15 pCi/g

[b] Regulation defines limit based on benchmark dose (dose from 5.0 pCi/g of Ra-226)
32.5 mrem/yr = RFA benchmark
33.6 mrem/yr = RFC benchmark

[c] Regulation limits unconditional released dose to 25 mrem/yr

[d] Action Level = Criterion / RSR; RSR = risk-to-source ration as calculated using RESRAD

[e] Action Level = Criterion / DSR; DSR = dose-to-source ration as calculated using RESRAD

[f] Concentration may be reduced if U-238 is used as a surrogate for other uranium isotopes

Table 6B.5. Surface Water Risk Calculations for Radionuclides

Medium	Location	Receptor	Parameter	Gross EPC (pCi/L)	BKG UTL (pCi/L)	BKG AVG (pCi/L)	Net EPC (pCi/L)	IR (L/hr)	ET (hr/day)	EF (days/yr)	ED (years)	CSF (risk/pCi)	Cancer Risk
Surf. Water	EXP3	RFA	Actinium-227	0.2	0.36	0.31	0	0.023	1	26	30	6.3E-10	
Surf. Water	EXP3	RFA	Radium-226	2.52	0.24	0.28	2.24	0.023	1	26	30	3.0E-10	1.2E-08
Surf. Water	EXP3	RFA	Thorium-230	0.21	0.57	0.49	0	0.023	1	26	30	3.8E-11	
Surf. Water	EXP3	RFA	Uranium-234	0.77	0.78	0.65	0	0.023	1	26	30	4.4E-11	
Surf. Water	EXP3	RFA	Uranium-238	1.21	1.02	0.82	0.39	0.023	1	26	30	6.2E-11	4.3E-10

Total Risk = 1.2E-08

Medium	Location	Receptor	Parameter	Gross EPC (pCi/L)	BKG UTL (pCi/L)	BKG AVG (pCi/L)	Net EPC (pCi/L)	IR (L/hr)	ET (hr/day)	EF (days/yr)	ED (years)	CSF (risk/pCi)	Cancer Risk
Surf. Water	EXP3	RFC	Actinium-227	0.2	0.36	0.31	0	0.013	1	52	6	6.3E-10	
Surf. Water	EXP3	RFC	Radium-226	2.52	0.24	0.28	2.24	0.013	1	52	6	3.0E-10	2.7E-09
Surf. Water	EXP3	RFC	Thorium-230	0.21	0.57	0.49	0	0.013	1	52	6	3.8E-11	
Surf. Water	EXP3	RFC	Uranium-234	0.77	0.78	0.65	0	0.013	1	52	6	4.4E-11	
Surf. Water	EXP3	RFC	Uranium-238	1.21	1.02	0.82	0.39	0.013	1	52	6	6.2E-11	9.8E-11

Total Risk = 2.8E-09

Medium	Location	Receptor	Parameter	Gross EPC (pCi/L)	BKG UTL (pCi/L)	BKG AVG (pCi/L)	Net EPC (pCi/L)	IR (L/hr)	ET (hr/day)	EF (days/yr)	ED (years)	CSF (risk/pCi)	Cancer Risk
Surf. Water	EXP4	AT	Actinium-227	0.25	0.36	0.31	0	0.023	1	52	10	6.3E-10	
Surf. Water	EXP4	AT	Radium-226	0.57	0.24	0.28	0.29	0.023	1	52	10	3.0E-10	1.0E-09
Surf. Water	EXP4	AT	Thorium-230	0.16	0.57	0.49	0	0.023	1	52	10	3.8E-11	
Surf. Water	EXP4	AT	Uranium-234	0.98	0.78	0.65	0	0.023	1	52	10	4.4E-11	
Surf. Water	EXP4	AT	Uranium-235	0.30	0.32	0.22	0	0.023	1	52	10	4.7E-11	
Surf. Water	EXP4	AT	Uranium-238	1.11	1.02	0.82	0.29	0.023	1	52	10	6.2E-11	2.2E-10

Total Risk = 1.3E-09

Medium	Location	Receptor	Parameter	Gross EPC (pCi/L)	BKG UTL (pCi/L)	BKG AVG (pCi/L)	Net EPC (pCi/L)	IR (L/hr)	ET (hr/day)	EF (days/yr)	ED (years)	CSF (risk/pCi)	Cancer Risk
Surf. Water	EXP5	AT	Uranium-234	1.56	0.78	0.65	0.91	0.013	1	6	10	4.4E-11	3.1E-11
Surf. Water	EXP5	AT	Uranium-238	1.41	1.02	0.82	0.59	0.013	1	6	10	6.2E-11	2.9E-11

Total Risk = 6.0E-11

Net EPC = 0 if (BKG UTL) > (Gross EPC), else = (Gross EPC) - (BKG AVG)

Risk = Net EPC x IR x ET x EF x ED x CSF
EPC = exposure point concentration
BKG UTL = background 95% upper tolerance limit of background data
BKG AVG = average background concentration
IR = ingestion rate
ET = exposure time
EF = exposure frequency
ED = exposure duration
CSF = cancer slope factor

Table 6B.6. Groundwater Risk Calculations for Radionuclides

Medium	Location	Receptor	Parameter	Gross EPC (pCi/L)	BKG UTL (pCi/L)	BKG AVG (pCi/L)	Net EPC (pCi/L)	IR (L/day)	EF (days/yr)	ED (years)	CSF (risk/pCi)	Cancer Risk
Groundwater	EXP7	IW	Actinium-227	0.06	0.35	0.07	0	1.2	250	6.6	6.3E-10	
Groundwater	EXP7	IW	Radium-226	1.56	1.86	1.05	0	1.2	250	6.6	3.0E-10	
Groundwater	EXP7	IW	Thorium-230	0.14	14.7	0.98	0	1.2	250	6.6	3.8E-11	
Groundwater	EXP7	IW	Uranium-234	9.01	1.62	0.69	8.32	1.2	250	6.6	4.4E-11	7.2E-07
Groundwater	EXP7	IW	Uranium-235	3.98	0.12	0.03	3.95	1.2	250	6.6	4.7E-11	3.7E-07
Groundwater	EXP7	IW	Uranium-238	8.59	1.4	0.44	8.15	1.2	250	6.6	6.2E-11	**1.0E-06**

Total Risk = 2.1E-06

Medium	Location	Receptor	Parameter	Gross EPC (pCi/L)	BKG UTL (pCi/L)	BKG AVG (pCi/L)	Net EPC (pCi/L)	IR (L/day)	EF (days/yr)	ED (years)	CSF (risk/pCi)	Cancer Risk
Groundwater	EXP7	RFA	Actinium-227	0.06	0.35	0.07	0	2.3	350	30	6.3E-10	
Groundwater	EXP7	RFA	Radium-226	1.56	1.86	1.05	0	2.3	350	30	3.0E-10	
Groundwater	EXP7	RFA	Thorium-230	0.14	14.7	0.98	0	2.3	350	30	3.8E-11	
Groundwater	EXP7	RFA	Uranium-234	9.01	1.62	0.69	8.32	2.3	350	30	4.4E-11	**8.8E-06**
Groundwater	EXP7	RFA	Uranium-235	3.98	0.12	0.03	3.95	2.3	350	30	4.7E-11	**4.5E-06**
Groundwater	EXP7	RFA	Uranium-238	8.59	1.4	0.44	8.15	2.3	350	30	6.2E-11	**1.2E-05**

Total Risk = 2.6E-05

Medium	Location	Receptor	Parameter	Gross EPC (pCi/L)	BKG UTL (pCi/L)	BKG AVG (pCi/L)	Net EPC (pCi/L)	IR (L/day)	EF (days/yr)	ED (years)	CSF (risk/pCi)	Cancer Risk
Groundwater	EXP7	RFC	Actinium-227	0.06	0.35	0.07	0	1.3	350	6	6.3E-10	
Groundwater	EXP7	RFC	Radium-226	1.56	1.86	1.05	0	1.3	350	6	3.0E-10	
Groundwater	EXP7	RFC	Thorium-230	0.14	14.7	0.98	0	1.3	350	6	3.8E-11	
Groundwater	EXP7	RFC	Uranium-234	9.01	1.62	0.69	8.32	1.3	350	6	4.4E-11	**1.0E-06**
Groundwater	EXP7	RFC	Uranium-235	3.98	0.12	0.03	3.95	1.3	350	6	4.7E-11	5.1E-07
Groundwater	EXP7	RFC	Uranium-238	8.59	1.4	0.44	8.15	1.3	350	6	6.2E-11	**1.4E-06**

Total Risk = 2.9E-06

Net EPC = 0 if (BKG UTL) > (Gross EPC), else = (Gross EPC) - (BKG AVG)

Risk = Net EPC x IR x EF x ED x CSF
EPC = exposure point concentration
BKG UTL = background 95% upper tolerance limit of background data
BKG AVG = average background concentration
IR = ingestion rate
EF = exposure frequency
ED = exposure duration
CSF = cancer slope factor

Table 6B.7. Groundwater Dose-Based Action Levels by Receptor

Medium	Receptor	Parameter	IR (L/day)	EF (days/yr)	DCF (mrem/pCi)	Target Dose (mrem/yr)	Action Level (pCi/L)	Target Dose (mrem/yr)	Action Level (pCi/L)
Groundwater	IW	Uranium-238	1.2	250	2.69E-04	25	310	10.1	130

Medium	Receptor	Parameter	IR (L/day)	EF (days/yr)	DCF (mrem/pCi)	Target Dose (mrem/yr)	Action Level (pCi/L)	Target Dose (mrem/yr)	Action Level (pCi/L)
Groundwater	RFA	Uranium-234	2.3	350	2.83E-04	25	110	32.5	140
Groundwater	RFA	Uranium-235	2.3	350	2.67E-04	25	120	32.5	150
Groundwater	RFA	Uranium-238	2.3	350	2.69E-04	25	120	32.5	150

Medium	Receptor	Parameter	IR (L/day)	EF (days/yr)	DCF (mrem/pCi)	Target Dose (mrem/yr)	Action Level (pCi/L)	Target Dose (mrem/yr)	Action Level (pCi/L)
Groundwater	RFC	Uranium-234	1.3	350	2.83E-04	25	190	33.6	260
Groundwater	RFC	Uranium-238	1.3	350	2.69E-04	25	200	33.6	270

Action Level (pCi/L) = (Target Dose) / (IR x EF x DCF)
IR = ingetsion rate
EF = exposure frequency
DCF = dose conversion factor (same as use by the RESRAD code)

Table 6B.8. Groundwater Risk-Based Action Levels by Receptor

Medium	Receptor	Parameter	IR (L/day)	EF (days/yr)	ED (years)	CSF (risk/pCi)	Target Risk	Action Level (pCi/L)
Groundwater	IW	Uranium-238	1.2	250	6.6	6.2E-11	1.E-06	8.1

Medium	Receptor	Parameter	IR (L/day)	EF (days/yr)	ED (years)	CSF (risk/pCi)	Target Risk	Action Level (pCi/L)
Groundwater	RFA	Uranium-234	2.3	350	30	4.4E-11	1.E-06	0.94
Groundwater	RFA	Uranium-235	2.3	350	30	4.7E-11	1.E-06	0.88
Groundwater	RFA	Uranium-238	2.3	350	30	6.2E-11	1.E-06	0.67

Medium	Receptor	Parameter	IR (L/day)	EF (days/yr)	ED (years)	CSF (risk/pCi)	Target Risk	Action Level (pCi/L)
Groundwater	RFC	Uranium-234	1.3	350	6	4.4E-11	1.E-06	8.3
Groundwater	RFC	Uranium-238	1.3	350	6	6.2E-11	1.E-06	5.9

Action Level (pCi/L) = (Target Risk) / (IR x EF x ED x DF)
IR = ingetsion rate
EF = exposure frequency
ED = exposure duration
CSF = cancer slope factor

APPENDIX 6C:
Clarifying Guidance on Quantification of Exposure Concentrations for Dermal Exposures

APPENDIX 6C: CLARIFYING GUIDANCE ON QUANTIFICATION OF EXPOSURE CONCENTRATION FOR DERMAL EXPOSURES PROVIDED BY DR. MARK JOHNSON – U.S. EPA, REGION 5 TOXICOLOGIST

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- Section 3.2.2.3 Recommended Soil Adherence Factors
- Exhibit 3.3 Activity Specific-Surface Area Weighted Soil Adherence Factors
- Exhibit 3.4 Recommended Dermal Absorption Fraction from Soil
- Exhibit 3.5 Recommended Dermal Exposure Values for Central Tendency and RME Residential and Industrial Scenarios – Soil Contact
- Exhibit 4.1 Summary of Gastrointestinal Absorption Efficiencies and Recommendations for Adjustment of Toxicity Factors for Specific Compounds

3.2.2.3 Recommended soil adherence factors

This section recommends default soil AFs for the child resident, the adult resident, and the adult commercial/industrial worker and provide the basis for the recommendations. EPA suggests selecting an activity from AF data which best represents the exposure scenario of concern and using the corresponding weighted AF in the dermal exposure calculations (U.S. EPA, 1997a). To make this selection, activities with available AFs were categorized as those that a typical residential child, residential adult, and commercial/industrial adult worker would be likely to engage in (see Appendix C). Within each receptor category, activities were ranked in order from the activity with the lowest to highest weighted AF (50th percentile). The 50th percentile weighted AF was used in ranking the activities from those with the lowest to highest weighted AFs, because the 50th percentile is a more stable estimation of the true AF (i.e., it is not affected as significantly by outliers as the 95th percentile).

Typically with other contact rates (e.g., soil ingestion), the recommended default value is a conservative, health protective value. To maintain consistency with this approach (i.e. recommending a high-end of a mean), two options exist when recommending default weighted AFs: (1) select a central tendency (i.e., typical) soil contact activity and use the high-end weighted AF (i.e., 95th percentile) for that activity; or (2) select a high-end (i.e., reasonable but higher exposure) soil contact activity and use the central tendency weighted AF (i.e., 50th percentile) for that activity.

It is not recommended that a high-end soil contact activity be used with a high-end weighted AF for that activity, as this use would not be consistent with the use of a reasonable maximum exposure (RME) scenario. The use of these values also needs to be evaluated when combining multiple exposure pathways to insure that an overall RME is being maintained.

Adult resident. Given that there were data available for a wide variety of activities that an adult resident may engage in, a high-end soil contact activity was selected and the central tendency weighted AF (50th percentile) derived for that activity. In so doing, the recommended weighted AF for an adult resident is 0.07 mg/cm^2 and is based on the 50th percentile weighted AF for gardeners (the activity determined to represent a reasonable, high-end activity). The basis for this recommendation is as follows: (1) although no single activity would represent the activities an adult resident engages in, a comparison of the gardener 50th percentile weighted AF with the other residential-type activities (Appendix C) shows that the gardener represents a high-end soil contact activity; (2) common sense suggests that gardening represents a high-end soil contact activity, whereas, determining which of the other activities (i.e., grounds keeping and landscaping/rockery) would represent a reasonable, central tendency (i.e., typical) soil contact activity would be difficult; and (3) selecting the central tendency weighted AF (i.e., 50th percentile) of a high-end soil contact activity is consistent with an RME for contact rates.

Child resident (<1 to <6 years old*).* Available data on soil AFs for children were limited to children (1-6 ½ years old) playing indoors and outdoors (3.5-4 hours) at a day care center (reviewed in U.S. EPA, 1997a) and children (8-12 year old) playing for 20 minutes with an assortment of toys and implements in a preconstructed 8'x8' soil bed (i.e., "staged" activity) containing dry or wet soil (see Kissel *et al.*, 1998, and Appendix C). Therefore, it was not possible to identify a reasonable worst-case soil contact activity as was done for the adult resident. As such, both approaches: (1) selecting a central tendency (i.e., typical) soil contact activity and using the high-end weighted AF (i.e., 95th percentile) for that activity; and, (2) selecting a high-end soil contact activity and using the central tendency weighted AF (i.e., 50th percentile) for that activity were used in determining the appropriate weighted AF for children. The recommended weighted AF for a child resident (<1 to <6 years old) is 0.2 mg/cm^2 and is based on the 95th percentile weighted AF for children playing at a day care center (central tendency soil contact activity) or the 50th percentile for children playing in wet soil (high-end soil contact activity).

Children playing at a day care center represents a central tendency (i.e. typical) activity given that: (1) the children played both indoors and outdoors; (2) the clothing worn was not controlled (i.e., some subjects wore long pants, long-sleeve shirts, and/or shoes); and (3) soil conditions were not controlled (e.g., other soil types, moisture content, etc., could result in higher AFs). The 95th percentile weighted AF for children playing at the day care center is a known, reasonable, "real-life" activity that represents the majority of the population, given that children 1 to 6 years old are either in day care or at home and are likely engaging in activities similar to those at the day care center and represents a high-end of a typical activity.

The "staged" activity of children playing in wet soil for 20 minutes under controlled conditions (i.e., all subjects were clothed similarly, the duration of soil contact was controlled, and the soil properties were characterized) is a high-end soil contact activity because: (1) the children were in direct contact with soil for the full duration of the activity; and(2) the children played in wet soil, which is known to have higher AFs than dry soil, for the duration of the activity. The 50th percentile weighted AF for children playing in wet soil is a central tendency estimate of a high-end soil contact activity.

Use of the 95th percentile weighted AF for children playing at a day care center (0.2 mg/cm^2) or the 50th percentile for children playing in wet soil (0.2 mg/cm^2) as a recommended weighted AF for a child resident (<1 to <6 years old) is consistent with recommending a high-end of a mean for contact rates.

While this value (0.2 mg/cm^2) is at the lower end of the range of soil adherence factors reported in U.S. EPA (1992a) and based on Lepow *et al.* (1975) and Roels *et al.* (1980) studies, note that those studies were not designed to study soil adherence and only allowed calculation of soil adherence to hands. In addition, the central-tendency adherence factor of 0.2 mg/cm^2 estimated here is based on soil adherence studies for all of the relevant body parts (i.e., head, hands, forearms, lower-legs, and feet). Kissel *et al.* (1998) reports soil adherence factors for children's hands of 0.5-3 mg/cm^2 (median of 1 mg/cm^2) for relatively moist soil, which is comparable to the range of values previously reported for soil adherence to children's hands (0.5-1.5 mg/cm^2; U.S. EPA, 1997a). Table C.4 contains data used to calculate the central tendency and high end AFs for children.

Commercial/industrial adult worker. Given that there were data available for a wide variety of activities that a commercial/industrial adult worker may engage in, a high-end soil contact activity was selected and the central tendency weighted AF (50th percentile) derived for that activity. In so doing, the recommended weighted AF for a commercial/industrial adult worker is 0.2 mg/cm^2 and is based on the 50th percentile weighted AF for utility workers (the activity determined to represent a high-end contact activity). The bases for this recommendation are as follows: (1) although no single activity would be representative of activities a commercial/ industrial adult worker engages in, a comparison of the utility worker 50th percentile weighted AF with other commercial/industrial-type activities *(Exhibit* 3.3) shows that the utility worker represents a high-end soil contact activity (i.e., grounds keepers, landscaper/rockery, irrigation installers, gardeners, construction workers); (2) a combination of common sense and data on the weighted AFs supports the assumption that utility worker activities represent a high-end soil contact activity, whereas, determining which of other measured activities might represent a reasonable, central tendency (i.e., typical) soil contact activity would be difficult; and (3) selecting the central tendency weighted AF (i.e., 50th percentile) of a high-end soil contact activity is consistent with a RME for contact rates.

Recreational. No specific default values are being recommended for a recreational scenario since many site-specific concerns will impact the choice of exposure variables, such as, climate,

geography, location, and land-use. The risk assessors, in consultation with the project team, should reach consensus on the need to evaluate this scenario and the inputs before incorporating this into the risk assessment. The *Exposure Factors Handbook* (U.S. EPA, 1997a) should be consulted to obtain appropriate exposure estimates.

EXHIBIT 3.3. ACTIVITY SPECIFIC-SURFACE AREA WEIGHTED SOIL ADHERENCE FACTORS

EXPOSURE SCENARIO		Weighted AF (mg/cm^2)	
	Age (yr)	50th %	95th %
CHILDREN[1]			
Children Playing (dry soil)	8-12	0.04	0.2
Day care Kids	1-6.5	0.06	0.2
Children Playing (wet soil)	8-12	0.2	2.7
Kids-in-mud[5]	9-14	(22)	(123)
RESIDENTIAL ADULTS[2]			
Grounds keepers	>18	0.01	0.5
Landscape/Rockery	>18	0.04	0.1
Gardeners	>16	0.07	0.3
COMMERCIAL/INDUSTRIAL ADULTS[3]			
Grounds keepers	>18	0.02	0.7
Landscape/Rockery	>18	0.04	0.1
Irrigation Installers	>18	0.08	0.2
Gardeners	>16	0.1	0.4
Construction Workers	>18	0.1	0.3
Equip. Operators	>18	0.2	0.6
Utility Workers	>18	0.2	0.8
OTHER RECEPTORS[4]			
Soccer No. 1 (teens:moist conditions)	13-15	0.04	0.2
Soccer Nos. 2&3 (adults)	>18	0.01	0.07
Archeologists	>16	0.09	0.3
Farmers	>18	0.1	0.4
Rugby	>18	0.1	0.6
Reed Gatherers	>18	0.3	6.3

[1] Weighted AF based on exposure to face, forearms, hands, lower legs, & feet.

[2] Weighted AF based on exposure to face, forearms, hands, & lower legs.

[3] Weighted AF based on exposure to face, forearms, & hands.
Note: this results in different weighted AFs for similar activities between residential and commercial/industrial exposure scenarios.

[4]Weighted AF based on all body parts for which data were available.

[5]Information on soil adherence values for the Kids-in-mud scenario is provided to illustrate the range of values for this type of activity. However, the application of these data to the dermal dose equations in this guidance will result in a significant overestimation of dermal risk. Therefore, it is recommended that these AF values not be used in a quantitative dermal risk assessment.

EXHIBIT 3.4. RECOMMENDED DERMAL ABSORPTION FRACTION FROM SOIL

Compound	**Dermal Absorption Fraction (ABS_d)[1]**	**Reference**
Arsenic	0.03	Wester, et al. (1993a)
Cadmium	0.001	Wester, et al. (1992a) U.S. EPA (1992a)
Chlordane	0.04	Wester, et al. (1992b)
2,4-Dichlorophenoxyacetic acid	0.05	Wester, et al. (1996)
DDT	0.03	Wester, et al. (1990)
TCDD and other dioxins -if soil organic content is >10%	0.03 0.001	U.S. EPA (1992a)
Lindane	0.04	Duff & Kissel (1996)
Benzo(a)pyrene and other PAHs	0.13	Wester, et al. (1990)
Aroclors 1254/1242 and other PCBs	0.14	Wester, et al.(1993b)
Pentachlorophenol	0.25	Wester, et al. (1993c)
Generic default *for screening*		
Semivolatile organic compounds	0.1	--

1 The values presented are experimental mean values.

EXHIBIT 3.5 RECOMMENDED DERMAL EXPOSURE VALUES FOR CENTRAL TENDENCY AND RME RESIDENTIAL AND INDUSTRIAL SCENARIOS - SOIL CONTACT

Exposure parameters		Central Tendency		RME Scenario	
		Residential	Industrial	Residential	Industrial
Concentration- Csoil (mg/kg)		site-specific values			
Event frequency (events/day)		1	1	1	1
Exposure frequency (days/yr)		site-specific	219	350	250
Exposure duration (yr)		9	9	30	25
Skin surface area (cm2)	Adult	5,700	3,300	5,700	3,300
	Child	2,800	-	2,800	-
Soil adherence factor (mg/cm2)	Adult	0.01	0.02	0.07	0.2
	Child	0.06	-	0.2	-
Dermal absorption fraction		chemical-specific values (Exhibit 3.4)			

– does not apply

EXHIBIT 4.1. SUMMARY OF GASTROINTESTINAL ABSORPTION EFFICIENCIES AND RECOMMENDATIONS FOR ADJUSTMENT OF TOXICITY FACTORS FOR SPECIFIC COMPOUNDS

Compound	GI Absorption				IRIS Critical Toxicity Study			Adjust?
	Ref[1]	Species[2]	Dosing Regimen	% Absorbed	Species[2]	Dosing Regimen	Toxicity Factor	
Organics								
Chlordane	13,27	R	assume aqueous gavage	80%	M	diet	SF	No
					M	inhalation	RfD	
2,4-Dichlorophenoxyacetic acid (2,4-D)	21, 28	R	assume aqueous gavage	>90%	R	diet	RfD	No
DDT	20	R	vegetable oil	70-90%	R	dissolved in oil, mixed with diet	RfD	No
Pentachlorophenol	22	R	diet	76%	R	diet	RfD	No
	25	R	water	100%				
Polychlorinated biphenyls (PCBs)	2	R	squalene	96%	R	diet	SF	No
	26	R	emulsion	80%				
	33	R	corn oil	81%				
Polycyclic aromatic hydrocarbons (PAH)	7	R	starch solt'n	58%	M	diet	SF	No
	17	R	diet	89%				
TCDD	16	R	diet	50-60%	under review			No
	29	R	diet	70%				
	31	R	corn oil	70-83%				

Compound	GI Absorption				IRIS Critical Toxicity Study			Adjust?
	Ref[1]	Species[2]	Dosing Regimen	% Absorbed	Species[2]	Dosing Regimen	Toxicity Factor	
Other Dioxins/ Dibenzofurans	3	multiple studies		>50%	under review			No
All other organic compounds	multiple references			generally >50%	multiple studies		RfD or SF	No
Inorganics								
Antimony	35	R	water	15%	R	water	RfD	Yes
Arsenic (arsenite)	6	H	assume aqueous	95%	H	water	SF	No
Barium	9, 34	D	water	7%	H	water	RfD	Yes
Beryllium	30	R	water	0.7%	R	water	RfD	Yes
Cadmium	18	H	diet	2.5%	H	diet and water	RfD	Yes
		H	water	5%				Yes
Chromium (III)	11,19	R	diet/water	1.3%	R	diet	RfD	Yes
Chromium (VI)	11,24,32	R	water	2.5%	R	water	RfD	Yes
Cyanate	14	R	assume aqueous	>47%	R	diet	RfD	No
Manganese	10,18	H	diet/water	4%	H	diet/water	RfD	Yes
Mercuric chloride (other soluble salts)	18	R	water	7%	R	oral gavage in water; 2X/week	RfD	Yes

Compound	GI Absorption				IRIS Critical Toxicity Study			Adjust?
	Ref[1]	Species[2]	Dosing Regimen	% Absorbed	Species[2]	Dosing Regimen	Toxicity Factor	
Insoluble or metallic mercury	4	H	acute inhalation of Hg vapor	74-80%	H	Inhalation	RfC	Yes
Methyl mercury	1	H	aqueous	95%	H	diet	RfD	No
Nickel	12	H	diet/water	4%	R	diet	RfD	Yes
Selenium	36	H	diet	30-80%	H	diet	RfD	No
Silver	16,18	D	aqueous	4%	H	i.v. dose	RfD (based on estimated oral dose)	Yes
Thallium	23	R	aqeuous	100%	R	water gavage	RfD	No
Vanadium	8	R	gavage	2.6%	R	diet as V_2O_5	RfD	Yes
Zinc	5	H	diet	highly variable	H	diet supplement	RfD	No

[1] Literature references are listed here by first author. Complete citations are provided in Reference Section.

(1) Aberg, 1969; (2) Albro, 1972; (3) ATSDR, 1994a; (4) ATSDR, 1994b; (5) Bettley, 1975; (6) Chang, 1943; (7) Conklin, 1982; (8) Cuddihy and Griffith, 1972; (9) Davidson, 1989 (Mn); (10) Donaldson and Barreras, 1996; (11) Elakhovskaya, 1972; (12) Ewing, 1985; (13) Farooqui and Ahmed, 1982; (14) Fries, 1975; (15) Furchner, 1968; (16) Hecht, 1979; (17) IRIS, 1999; (18) Keim, 1987; (19) Keller, 1980; (20) Knopp, 1992; (21) Korte, 1978; (22) Lie, 1960; (23) MacKenzie, 1959; (24) Meerman, 1983; (25) Muhlebach, 1981; (26) Ohno, 1986; (27) Pelletier, 1989; (28) Piper, 1973; (29) Reeves, 1965; (30) Rose, 1976; (31) Ruoff, 1995; (32) Sayato, 1980; (33) Tanabe, 1981; (34) Taylor, 1962; (35) Waitz, 1965; (36) Young, 1982

[2] Species abbreviations are as follows: H- human, D- dog, R- rat, M- mice

APPENDIX 7A:
Ecological Risk Assessment
Risk Calculation Tables

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Exposure Unit 4 – Toussaint Creek Downstream of Luckey (1 to3 miles)
Exposure Unit 4 – Toussaint Creek Downstream of Luckey (3 to 15 miles)
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Table 7A.76 Exposure Unit 5 Surface Soil CPECs for Shrews at the Luckey Site, Luckey, Ohio

Table 7A.77 Exposure Unit 5 Surface Soil CPECs for Robins at the Luckey Site, Luckey, Ohio

Table 7A.78 Exposure Unit 5 Surface Soil CPECs for Cottontail Rabbits at the Luckey Site, Luckey, Ohio

Table 7A.79 Exposure Unit 5 Surface Soil CPECs for White-Tailed Deer at the Luckey Site, Luckey, Ohio

Table 7A.80 Exposure Unit 5Surface Soil CPECs for Red-Tailed Hawks at the Luckey Site, Luckey, Ohio

Table 7A.81 Exposure Unit 5 Surface Soil CPECs for Red Foxes at the Luckey Site, Luckey, Ohio

Table 7A.82 Exposure Unit 6 Surface Soil, CPECs for Plants at the Luckey Site, Luckey, Ohio

Table 7A.83 Exposure Unit 6 Surface Soil, CPECs for Earthworms at the Luckey Site, Luckey, Ohio

Table 7A.84 Exposure Unit 6 Surface Soil CPECs for Shrews at the Luckey Site, Luckey, Ohio

Table 7A.85 Exposure Unit 6 Surface Soil CPECs for Robbins at the Luckey Site, Luckey, Ohio

Table 7A.86 Exposure Unit 6 Surface Soil CPECs for Cottontail Rabbits at the Luckey Site, Luckey, Ohio

Table 7A.87 Exposure Unit 6 Surface Soil CPECs for White-Tailed Deer at the Luckey Site, Luckey, Ohio

Table 7A.88 Exposure Unit 6 Surface Soil CPECs for Red-Tailed Hawks at the Luckey Site, Luckey, Ohio

Table 7A.89 Exposure Unit 6 Surface Soil CPECs for Red Foxes at the Luckey Site, Luckey, Ohio

Table 7A.90 Exposure Unit 3 Sediment CPEC for Sediment-dwelling Biota at the Luckey Site, Luckey, Ohio

Table 7A.91 Exposure Unit 4 (0 to 1 mile) Sediment CPECs for Sediment-dwelling Biota at the Luckey Site, Luckey, Ohio

Table 7A.92 Exposure Unit 4 (1 to 3 miles) Sediment CPECs for Sediment-dwelling Biota at the Luckey Site, Luckey, Ohio

Table 7A.93 Exposure Unit 4 (3 to 15 miles) Sediment CPECs for Sediment-dwelling Biota at the Luckey Site, Luckey, Ohio

Table 7A.94 Exposure Unit 3 Surface Water CPECs for Aquatic Biota at the Luckey Site, Luckey, Ohio

Table 7A.95 Exposure Unit 3 Surface Water CPECs for Great Blue Heron at the Luckey Site, Luckey, Ohio

Table 7A.96 Exposure Unit 4 (0 to 1 mile) Surface Water CPECs for Aquatic Biota at the Luckey Site, Luckey, Ohio

Table 7A.97 Exposure Unit 4 (0 to 1 mile) Surface Water Great Blue Heron at the Luckey Site, Luckey, Ohio

Table 7A.98 Exposure Unit 5 Surface Water CPECs for Aquatic Biota at the Luckey Site, Luckey, Ohio

Table 7A.99 Exposure Unit 5 Surface Water CPECs for Great Blue Heron at the Luckey Site, Luckey, Ohio

Table 7A.100 Exposure Unit 1 Surface Soil Radionuclide CPECs for Plants at the Luckey Site, Luckey, Ohio

Table 7A.101 Exposure Unit 1 Surface Soil Radionuclide CPECs for Plants at the Luckey Site, Luckey, Ohio

Table 7A.102 Exposure Unit 1 Surface Soil Radionuclide CPECs for Plants at the Luckey Site, Luckey, Ohio

Table 7A.103 Exposure Unit 1 Surface Soil Radionuclide CPECs for Plants at the Luckey Site, Luckey, Ohio

Table 7A.104 Exposure Unit 1 Surface Soil Radionuclide CPECs for Plants at the Luckey Site, Luckey, Ohio

Table 7A.105 Exposure Unit 1 Surface Soil Radionuclide CPECs for Plants at the Luckey Site, Luckey, Ohio

Table 7A.106 Exposure Unit 1 Surface Soil Radionuclide CPECs for Plants at the Luckey Site, Luckey, Ohio

Table 7A.107 Exposure Unit 1 Surface Soil Radionuclide CPECs for Plants at the Luckey Site, Luckey, Ohio

Table 7A.108 Exposure Unit 2 Surface Soil Radionuclide CPECs for Plants at the Luckey Site, Luckey, Ohio

Table 7A.109 Exposure Unit 2 Surface Soil Radionuclide CPECs for Earthworms at the Luckey Site, Luckey, Ohio

Table 7A.110 Exposure Unit 2 Surface Soil Radionuclide CPECs for Shrews at the Luckey Site, Luckey, Ohio

Table 7A.111 Exposure Unit 2 Surface Soil Radionuclide CPECs for Robins at the Luckey Site, Luckey, Ohio

Table 7A.112 Exposure Unit 2 Surface Soil Radionuclide CPECs for Cottontail Rabbits at the Luckey Site, Luckey, Ohio

Table 7A.113 Exposure Unit 2 Surface Soil Radionuclide CPECs for White-Tailed Deer at the Luckey Site, Luckey, Ohio

Table 7A.114 Exposure Unit 2 Surface Soil Radionuclide CPECs for Red-Tailed Hawks at the Luckey Site, Luckey, Ohio

Table 7A.115 Exposure Unit 2 Surface Soil Radionuclide CPECs for Red Foxes at the Luckey Site, Luckey, Ohio

Table 7A.116 Surface Soil Exposure Unit 3 Radionuclide CPECs for Plants at the Luckey Site, Luckey, Ohio

Table 7A.117 Surface Soil Exposure Unit 3 Radionuclide CPECs for Earthworms at the Luckey Site, Luckey, Ohio

Table 7A.118 Exposure Unit 3 Surface Soil Radionuclide CPECs for Shrews at the Luckey Site, Luckey, Ohio

Table 7A.119 Exposure Unit 3 Surface Soil Radionuclide CPECs for Robins at the Luckey Site, Luckey, Ohio

Table 7A.120 Exposure Unit 3 Surface Soil Radionuclide CPECs for Cottontail Rabbits at the Luckey Site, Luckey, Ohio

Table 7A.121 Exposure Unit 3 Surface Soil Radionuclide CPECs for White-Tailed Deer at the Luckey Site, Luckey, Ohio

Table 7A.122 Exposure Unit 3 Surface Soil Radionuclide CPECs for Red-Tailed Hawks at the Luckey Site, Luckey, Ohio

Table 7A.123 Exposure Unit 3 Surface Soil Radionuclide CPECs for Red Foxes at the Luckey Site, Luckey, Ohio

Appendix Table 7A.1. Identification of Chemicals of Potential Concern for Ecological Receptors Exposure Unit 1 - Onsite Undisturbed Soil Area

Medium	CAS Number	Parameter	Minimum Detection		Maximum Detection		Mean	Units	Location of Maximum	Detection Frequency	UCL95	Value for Comparison	Background Value	COPC
Soil (0-10 ft)	7429-90-5	Aluminum	1030		22100		12507.31	MG/KG	IA08-SB0001	52/ 52	13600	13600	23700	NO:1
Soil (0-10 ft)	7440-36-0	Antimony	0.3	J	0.71		0.18	MG/KG	IA08-SB0002	5/ 21	0.26	0.26	0.9	NO:1
Soil (0-10 ft)	7440-38-2	Arsenic	1		30.3		7.61	MG/KG	04EY00	89/ 91	8.32	8.32	24.1	NO:1
Soil (0-10 ft)	7440-39-3	Barium	1.6		563		104.05	MG/KG	IA04-SB0028	60/ 60	120	120	209	NO:1
Soil (0-10 ft)	7440-41-7	Beryllium	0.26		619		18.37	MG/KG	09DI00	161/161	36.4	36.4	1.13	YES
Soil (0-10 ft)	7440-42-8	Boron	11.4	B	15.9		10.86	MG/KG	03EQ01	5/ 6	15	15	13.4	YES
Soil (0-10 ft)	7440-43-9	Cadmium	0.24		12.6		1.35	MG/KG	09DI00	18/ 20	2.47	2.47	0.98	YES
Soil (0-10 ft)	7440-70-2	Calcium	3610		132000		45619.5	MG/KG	IA04-SB0021	20/ 20	61000	61000	55100	YES
Soil (0-10 ft)	7440-47-3	Chromium	5.2	*	27		19.34	MG/KG	IA08-SB0001	21/ 21	21.1	21.1	29.6	NO:1
Soil (0-10 ft)	7440-48-4	Cobalt	1.2		16.5		9	MG/KG	09DI00	21/ 21	10.3	10.3	19.1	NO:1
Soil (0-10 ft)	7440-50-8	Copper	3.7	*	41.4		23.35	MG/KG	IA04-SB0019	21/ 21	26.3	26.3	42	NO:1
Soil (0-10 ft)	7439-89-6	Iron	4230		31600	J	21472.86	MG/KG	09DI00	21/ 21	23900	23900	38600	NO:1
Soil (0-10 ft)	7439-92-1	Lead	2.2		797	J	82.53	MG/KG	05EE00	91/ 91	106	106	23.2	YES
Soil (0-10 ft)	7439-95-4	Magnesium	1030	J	106000	J	20366.47	MG/KG	05DT00	51/ 51	26500	26500	17100	YES
Soil (0-10 ft)	7439-96-5	Manganese	96.1	N*	913		356.72	MG/KG	09DI00	21/ 21	492	492	2340	NO:1
Soil (0-10 ft)	7439-94-7	Mercury	0.02		2.7		0.17	MG/KG	IA08-TR0001	15/ 21	0.39	0.39	0.19	YES
Soil (0-10 ft)	7439-98-7	Molybdenum	2.8	B	5		3.98	MG/KG	09DI00	6/ 6	4.58	4.58	11.3	NO:1
Soil (0-10 ft)	7440-02-0	Nickel	4.3	*	39.4		25.61	MG/KG	09DI00	21/ 21	28.6	28.6	46.1	NO:1
Soil (0-10 ft)	7440-00-0	Phosphorus	221		1160	*	487.53	MG/KG	IA08-TR0001	15/ 15	567	567	808	NO:1
Soil (0-10 ft)	7440-09-7	Potassium	235		3860		2044.52	MG/KG	IA08-SB0001	21/ 21	2340	2340	3410	NO:1
Soil (0-10 ft)	7782-49-2	Selenium	0.97		2.1		0.71	MG/KG	IA04-SB0019	10/ 21	0.99	0.99	2.33	NO:1
Soil (0-10 ft)		Silicon	1050	J	2500	J	1731.67	MG/KG	03EQ01	6/ 6	2130	2130	595	YES
Soil (0-10 ft)	7440-22-4	Silver	0.11	B	0.5		0.2	MG/KG	IA04-SB0021	11/ 21	0.23	0.23	0.51	NO:1
Soil (0-10 ft)	7440-23-5	Sodium	53.5	J	425		160.89	MG/KG	09DI00	16/ 17	243	243	285	NO:1
Soil (0-10 ft)	7440-24-6	Strontium	35		2980		882.75	MG/KG	03EQ01	6/ 6	1870	1870	75.6	YES
Soil (0-10 ft)	7440-28-0	Thallium	0.49	B	2	B	0.6	MG/KG	09DI00	9/ 21	0.82	0.82	2.1	NO:1
Soil (0-10 ft)	7440-62-2	Vanadium	6.3		51.1		27.23	MG/KG	IA08-SB0001	21/ 21	30.6	30.6	42.8	NO:1
Soil (0-10 ft)	7440-66-6	Zinc	12.7	*	152	*	77.08	MG/KG	IA08-TR0001	21/ 21	87.8	87.8	110	NO:1
Soil (0-10 ft)	7782-50-5	Chloride	4.39		43.3		30.23	MG/KG	03EQ01	3/ 3	50	43.3	--	YES
Soil (0-10 ft)	16984-48-8	Fluoride	0.75		40.4		6	MG/KG	IA07-SB0007	42/ 42	8.01	8.01	6.94	YES
Soil (0-10 ft)		Nitrate, as N	0.173	J	1.37	J	0.59	MG/KG	09DI00	3/ 3	1.49	1.37	--	YES
Soil (0-10 ft)	7664-41-7	Nitrogen, Ammonia	0.92	J	40.4		10.12	MG/KG	IA08-SB0005	37/ 39	13.1	13.1	--	YES
Soil (0-10 ft)	SO4	Sulfate	149		348		230.33	MG/KG	03EQ01	3/ 3	340	340	--	YES
Soil (0-10 ft)	91-57-6	2-Methylnaphthalene	887		4100		5686.84	UG/KG	IA04-SB0030	2/ 37	14500	4100	--	YES
Soil (0-10 ft)	83-32-9	Acenaphthene	82.3	J	377	J	5564.47	UG/KG	05EI00	2/ 37	14300	377	--	YES
Soil (0-10 ft)	208-96-8	Acenaphthylene	90.8	J	91.9	J	5555.24	UG/KG	IA04-SB0034	2/ 37	14300	91.9	--	YES
Soil (0-10 ft)	120-12-7	Anthracene	179	J	249000	J	7146.19	UG/KG	IA04-SB0021	4/ 37	18500	18500	--	YES

Appendix Table 7A.1. Identification of Chemicals of Potential Concern for Ecological Receptors Exposure Unit 1 - Onsite Undisturbed Soil Area (continued)

Medium	CAS Number	Parameter	Minimum Detection		Maximum Detection		Mean	Units	Location of Maximum	Detection Frequency	UCL95	Value for Comparison	Background Value	COPC
Soil (0-10 ft)	56-55-3	Benzo(a)anthracene	685		236000	J	6897.59	UG/KG	IA04-SB0021	4/ 37	17700	17700	--	YES
Soil (0-10 ft)	50-32-8	Benzo(a)pyrene	1450		195000	J	5788.54	UG/KG	IA04-SB0021	4/ 37	14700	14700	--	YES
Soil (0-10 ft)	205-99-2	Benzo(b)fluoranthene	2430		299000	J	8685.3	UG/KG	IA04-SB0021	4/ 37	22300	22300	--	YES
Soil (0-10 ft)	191-24-2	Benzo(ghi)perylene	865		1810		5630.03	UG/KG	IA04-SB0018	3/ 37	14400	1810	--	YES
Soil (0-10 ft)	207-08-9	Benzo(k)fluoranthene	1040		1750		5649.35	UG/KG	IA04-SB0018	3/ 37	14400	1750	--	YES
Soil (0-10 ft)	218-01-9	Chrysene	1050		237000	J	6937.46	UG/KG	IA04-SB0021	4/ 37	17800	17800	--	YES
Soil (0-10 ft)	53-70-3	Dibenz(a,h)anthracene	428		458		5574.24	UG/KG	IA04-SB0033	2/ 37	14400	458	--	YES
Soil (0-10 ft)	206-44-0	Fluoranthene	197	J	762000		21311.14	UG/KG	IA04-SB0021	6/ 37	56100	56100	--	YES
Soil (0-10 ft)	86-73-7	Fluorene	160	J	216000	J	6211.14	UG/KG	IA04-SB0021	3/ 37	16100	16100	--	YES
Soil (0-10 ft)	193-39-5	Indeno(1,2,3-c,d)pyrene	891		2010		5631.89	UG/KG	IA04-SB0018	3/ 37	14400	2010	--	YES
Soil (0-10 ft)	85-01-8	Phenanthrene	189	J	891000		24670.14	UG/KG	IA04-SB0021	5/ 37	65300	65300	--	YES
Soil (0-10 ft)	129-00-0	Pyrene	633		513000		14503.14	UG/KG	IA04-SB0021	5/ 37	37900	37900	--	YES
Soil (0-10 ft)	117-81-7	bis(2-ethylhexyl)phthalate	408	J	2360		5631.74	UG/KG	IA04-SB0034	3/ 37	14400	2360	--	YES
Soil (0-10 ft)	71-55-6	1,1,1-Trichloroethane	7.3		7.3		3.92	UG/KG	IA04-SB0019	1/ 24	14.4	7.3	--	NO:0
Soil (0-10 ft)	108-10-1	4-Methyl-2-pentanone	21.4		21.4		12.78	UG/KG	IA04-SB0021	1/ 24	29.1	21.4	--	NO:0
Soil (0-10 ft)	67-64-1	Acetone	11.7		493	J	33.14	UG/KG	05EI00	3/ 21	80.1	80.1	--	YES
Soil (0-10 ft)	71-43-2	Benzene	0.57	J	4.4	J	3.08	UG/KG	IA04-SB0021	14/ 24	13.8	4.4	--	YES
Soil (0-10 ft)	75-15-0	Carbon disulfide	0.69	J	61.5		11.97	UG/KG	IA07-SB0008	9/ 24	22.8	22.8	--	YES
Soil (0-10 ft)	67-66-3	Chloroform	0.62	J	2.7	J	3.44	UG/KG	03EQ01	3/ 24	12.7	2.7	--	YES
Soil (0-10 ft)	74-87-3	Chloromethane	60.6	J	211		49.41	UG/KG	09DI00	2/ 6	98.7	98.7	--	YES
Soil (0-10 ft)	100-41-4	Ethylbenzene	1.3	J	14.4	J	4.24	UG/KG	05EI00	5/ 24	13.5	13.5	--	YES
Soil (0-10 ft)	75-09-2	Methylene chloride	0.56	JB	6	J	3.4	UG/KG	05EI00	4/ 24	9.58	6	--	YES
Soil (0-10 ft)	108-88-3	Toluene	0.64999	J	586	J	62.66	UG/KG	05EI00	18/ 24	113	113	--	YES
Soil (0-10 ft)	79-01-6	Trichloroethene	1.3	J	1.3	J	3.67	UG/KG	IA04-SB0019	1/ 24	14.2	1.3	--	NO:0
Soil (0-10 ft)	75-01-4	Vinyl chloride	3.8		3.8		2.54	UG/KG	IA04-SB0036	1/ 24	25.8	3.8	--	NO:0
Soil (0-10 ft)	1330-20-7	Xylenes (total)	0.83	J	26		5.5	UG/KG	IA04-SB0021	9/ 24	14.9	14.9	--	YES
Soil (0-10 ft)	12674-11-2	Aroclor-1016	14.1	P	14.1	P	3.01	UG/KG	IA04-SB0024	1/ 10	157	14.1	--	YES
Soil (0-10 ft)	11104-28-2	Aroclor-1221	290	EP	290	EP	30.6	UG/KG	IA04-SB0024	1/ 10	192	192	--	YES
Soil (0-10 ft)	12672-29-6	Aroclor-1248	15.4	P	15.6	P	4.49	UG/KG	IA04-SB0024	2/ 10	158	15.6	--	YES
Soil (0-10 ft)	11097-69-1	Aroclor-1254	9.8		10100		1563.44	UG/KG	IA04-SB0033	6/ 10	3430	3430	--	YES
Soil (0-10 ft)	11096-82-5	Aroclor-1260	13.3		23.1	P	6.3	UG/KG	IA04-SB0022	3/ 10	159	23.1	--	YES
Soil (0-10 ft)	AC-227	Actinium-227	0.144		3.18		3.88	PCI/G	09DA02	13/ 69	0.31	0.31	1.76	NO:1
Soil (0-10 ft)	14331-83-0	Actinium-228	0.338	J	1.45		0.92	PCI/G	IA03-SB0008	48/ 54	0.95	0.95	1.35	NO:1
Soil (0-10 ft)	10045-97-3	Cesium-137	0.0497	J	1.34		0.17	PCI/G	09DC02	20/ 70	0.26	0.26	0.72	NO:1
Soil (0-10 ft)	13966-00-2	Potassium-40	0.627	J	29.6		21.32	PCI/G	IA07-SB0009	69/ 70	19.8	19.8	27.2	NO:1
Soil (0-10 ft)	13982-63-3	Radium-226	0.0887	J	58.6	J	4.07	PCI/G	09DA02	70/ 70	12.3	12.3	2.97	YES
Soil (0-10 ft)	RA-228	Radium-228	0.338	J	1.45		0.85	PCI/G	IA03-SB0008	64/ 70	1.06	1.06	1.48	NO:1

Appendix Table 7A.1. Identification of Chemicals of Potential Concern for Ecological Receptors Exposure Unit 1 - Onsite Undisturbed Soil Area (continued)

Medium	CAS Number	Parameter	Minimum Detection		Maximum Detection		Mean	Units	Location of Maximum	Detection Frequency	UCL95	Value for Comparison	Background Value	COPC
Soil (0-10 ft)		Thorium-227	0.144		3.18		0.75	PCI/G	09DA02	11/ 16	1.96	1.96	1.76	YES
Soil (0-10 ft)	14274-82-9	Thorium-228	0.316	J	2.72		1.01	PCI/G	IA08-SB0003	66/ 70	1.17	1.17	1.6	NO:1
Soil (0-10 ft)	14269-63-7	Thorium-230	0.162	J	69.4		3.83	PCI/G	09DA02	69/ 70	127	69.4	3.2	YES
Soil (0-10 ft)	7440-29-1	Thorium-232	0.325	J	1.75		0.81	PCI/G	IA03-SB0009	65/ 70	1.03	1.03	1.48	NO:1
Soil (0-10 ft)	15065-10-8	Thorium-234	0.393	J	3.22	J	1.99	PCI/G	IA04-SB0019	31/ 54	1.49	1.49	3.07	NO:1
Soil (0-10 ft)	U-233/234	Uranium-233/234	0.122	J	1.75		1.01	PCI/G	IA04-SB0018	53/ 54	1.08	1.08	2.01	NO:1
Soil (0-10 ft)		Uranium-234	0.35		51.9		10.29	PCI/G	09DA02	16/ 16	17.4	17.4	2.61	YES
Soil (0-10 ft)	15117-96-1	Uranium-235	0.0517		2.03		0.45	PCI/G	09DA02	23/ 70	0.91	0.91	1.56	NO:1
Soil (0-10 ft)	24678-82-8	Uranium-238	0.0977	J	50.9		3.17	PCI/G	09DA02	70/ 70	9.8	9.8	2.63	YES
Soil (0-10 ft)	TRPHYDRO	Total Rec. Petro. Hydrocarbons	11.5	J	6190		435.21	MG/KG	IA04-SB0030	9/ 16	1110	1110	--	YES
Soil (0-2 ft)	7429-90-5	Aluminum	1030		22100		12963.49	MG/KG	IA08-SB0001	43/ 43	14200	14200	23700	NO:1
Soil (0-2 ft)	7440-36-0	Antimony	0.3	J	0.71		0.23	MG/KG	IA08-SB0002	4/ 12	0.33	0.33	0.9	NO:1
Soil (0-2 ft)	7440-38-2	Arsenic	1.6		30.3		7.85	MG/KG	04EY00	52/ 53	8.89	8.89	24.1	NO:1
Soil (0-2 ft)	7440-39-3	Barium	1.6		563		130.03	MG/KG	IA04-SB0028	22/ 22	170	170	209	NO:1
Soil (0-2 ft)	7440-41-7	Beryllium	0.36		619		38.36	MG/KG	09DI00	66/ 66	68.3	68.3	1.13	YES
Soil (0-2 ft)	7440-42-8	Boron	11.9		11.9		11.9	MG/KG	09DI00	1/ 1	--	11.9	13.4	NO:1
Soil (0-2 ft)	7440-43-9	Cadmium	0.24		5.4		1.02	MG/KG	09DI00	10/ 11	3.89	3.89	0.98	YES
Soil (0-2 ft)	7440-70-2	Calcium	3610		132000		32126.36	MG/KG	IA04-SB0021	11/ 11	197000	132000	55100	YES
Soil (0-2 ft)	7440-47-3	Chromium	14.7		27		21.12	MG/KG	IA08-SB0001	12/ 12	23	23	29.6	NO:1
Soil (0-2 ft)	7440-48-4	Cobalt	4.5		12.9		8.96	MG/KG	IA07-SB0008	12/ 12	10.4	10.4	19.1	NO:1
Soil (0-2 ft)	7440-50-8	Copper	9.6		41.4		23.44	MG/KG	IA04-SB0019	12/ 12	27.6	27.6	42	NO:1
Soil (0-2 ft)	7439-89-6	Iron	13900		30500		23041.67	MG/KG	IA08-SB0001	12/ 12	25600	25600	38600	NO:1
Soil (0-2 ft)	7439-92-1	Lead	6.5		797	J	131.31	MG/KG	05EE00	53/ 53	218	218	23.2	YES
Soil (0-2 ft)	7439-95-4	Magnesium	1030	J	106000	J	22032.14	MG/KG	05DT00	42/ 42	31400	31400	17100	YES
Soil (0-2 ft)	7439-96-5	Manganese	127		677	J	330.75	MG/KG	IA07-SB0008	12/ 12	476	476	2340	NO:1
Soil (0-2 ft)	7439-94-7	Mercury	0.02		0.2		0.04	MG/KG	09DI00	9/ 12	0.09	0.09	0.19	NO:1
Soil (0-2 ft)	7439-98-7	Molybdenum	3.7	B	3.7	B	3.7	MG/KG	09DI00	1/ 1	--	3.7	11.3	NO:1
Soil (0-2 ft)	7440-02-0	Nickel	15.8		34.9		26.08	MG/KG	IA07-SB0008	12/ 12	29.3	29.3	46.1	NO:1
Soil (0-2 ft)	7440-00-0	Phosphorus	290		723		458.36	MG/KG	IA08-SB0002	11/ 11	543	543	808	NO:1
Soil (0-2 ft)	7440-09-7	Potassium	1400	J	3860		2098.33	MG/KG	IA08-SB0001	12/ 12	2550	2550	3410	NO:1
Soil (0-2 ft)	7782-49-2	Selenium	0.97		2.1		0.95	MG/KG	IA04-SB0019	8/ 12	1.31	1.31	2.33	NO:1
Soil (0-2 ft)		Silicon	1400	J	1400	J	1400	MG/KG	09DI00	1/ 1	--	1400	595	YES
Soil (0-2 ft)	7440-22-4	Silver	0.11	B	0.5		0.2	MG/KG	IA04-SB0021	5/ 12	0.27	0.27	0.51	NO:1
Soil (0-2 ft)	7440-23-5	Sodium	53.5	J	425		142.34	MG/KG	09DI00	9/ 9	279	279	285	NO:1
Soil (0-2 ft)	7440-24-6	Strontium	65.5		65.5		65.5	MG/KG	09DI00	1/ 1	--	65.5	75.6	NO:1
Soil (0-2 ft)	7440-28-0	Thallium	0.58	B	1.7		0.61	MG/KG	IA04-SB0018	5/ 12	0.88	0.88	2.1	NO:1
Soil (0-2 ft)	7440-62-2	Vanadium	18.9		51.1		30.83	MG/KG	IA08-SB0001	12/ 12	35.7	35.7	42.8	NO:1

Appendix Table 7A.1. Identification of Chemicals of Potential Concern for Ecological Receptors Exposure Unit 1 - Onsite Undisturbed Soil Area (continued)

Medium	CAS Number	Parameter	Minimum Detection		Maximum Detection		Mean	Units	Location of Maximum	Detection Frequency	UCL95	Value for Comparison	Background Value	COPC
Soil (0-2 ft)	7440-66-6	Zinc	63.3		136		84.33	MG/KG	IA04-SB0021	12/ 12	95.4	95.4	110	NO:1
Soil (0-2 ft)	16984-48-8	Fluoride	1.62		20.1		6.07	MG/KG	IA03-SB0008	10/ 10	11.6	11.6	6.94	YES
Soil (0-2 ft)	7664-41-7	Nitrogen, Ammonia	1.17	J	31.5		13.7	MG/KG	IA08-SB0004	9/ 10	20.3	20.3	--	YES
Soil (0-2 ft)	83-32-9	Acenaphthene	82.3	J	82.3	J	13921.34	UG/KG	IA04-SB0033	1/ 14	38200	82.3	--	YES
Soil (0-2 ft)	208-96-8	Acenaphthylene	90.8	J	91.9	J	13916.73	UG/KG	IA04-SB0034	2/ 14	38200	91.9	--	YES
Soil (0-2 ft)	120-12-7	Anthracene	179	J	249000	J	18121.39	UG/KG	IA04-SB0021	4/ 14	49600	49600	--	YES
Soil (0-2 ft)	56-55-3	Benzo(a)anthracene	685		236000	J	17464.39	UG/KG	IA04-SB0021	4/ 14	47200	47200	--	YES
Soil (0-2 ft)	50-32-8	Benzo(a)pyrene	1450		195000	J	14533.32	UG/KG	IA04-SB0021	4/ 14	39100	39100	--	YES
Soil (0-2 ft)	205-99-2	Benzo(b)fluoranthene	2430		299000	J	22189.04	UG/KG	IA04-SB0021	4/ 14	59900	59900	--	YES
Soil (0-2 ft)	191-24-2	Benzo(ghi)perylene	865		1810		14114.39	UG/KG	IA04-SB0018	3/ 14	38400	1810	--	YES
Soil (0-2 ft)	207-08-9	Benzo(k)fluoranthene	1040		1750		14165.46	UG/KG	IA04-SB0018	3/ 14	38400	1750	--	YES
Soil (0-2 ft)	218-01-9	Chrysene	1050		237000	J	17569.75	UG/KG	IA04-SB0021	4/ 14	47500	47500	--	YES
Soil (0-2 ft)	53-70-3	Dibenz(a,h)anthracene	428		458		13966.96	UG/KG	IA04-SB0033	2/ 14	38200	458	--	YES
Soil (0-2 ft)	206-44-0	Fluoranthene	197	J	762000		55524.11	UG/KG	IA04-SB0021	5/ 14	152000	152000	--	YES
Soil (0-2 ft)	86-73-7	Fluorene	160	J	216000	J	15650.18	UG/KG	IA04-SB0021	3/ 14	43000	43000	--	YES
Soil (0-2 ft)	193-39-5	Indeno(1,2,3-c,d)pyrene	891		2010		14119.32	UG/KG	IA04-SB0018	3/ 14	38400	2010	--	YES
Soil (0-2 ft)	85-01-8	Phenanthrene	189	J	891000		64346.82	UG/KG	IA04-SB0021	4/ 14	177000	177000	--	YES
Soil (0-2 ft)	129-00-0	Pyrene	633		513000		37507.11	UG/KG	IA04-SB0021	4/ 14	102000	102000	--	YES
Soil (0-2 ft)	117-81-7	bis(2-ethylhexyl)phthalate	408	J	2360		14118.93	UG/KG	IA04-SB0034	3/ 14	38400	2360	--	YES
Soil (0-2 ft)	71-55-6	1,1,1-Trichloroethane	7.3		7.3		3.38	UG/KG	IA04-SB0019	1/ 12	9.4	7.3	--	YES
Soil (0-2 ft)	108-10-1	4-Methyl-2-pentanone	21.4		21.4		8.83	UG/KG	IA04-SB0021	1/ 12	19.5	19.5	--	YES
Soil (0-2 ft)	67-64-1	Acetone	11.7		11.7		8.05	UG/KG	IA08-SB0001	1/ 12	27	11.7	--	YES
Soil (0-2 ft)	71-43-2	Benzene	0.57	J	4.4	J	2	UG/KG	IA04-SB0021	10/ 12	8.23	4.4	--	YES
Soil (0-2 ft)	75-15-0	Carbon disulfide	0.69	J	61.5		13.42	UG/KG	IA07-SB0008	5/ 12	26.3	26.3	--	YES
Soil (0-2 ft)	67-66-3	Chloroform	0.62	J	1.2	JB	2.72	UG/KG	IA08-SB0001	2/ 12	8.81	1.2	--	YES
Soil (0-2 ft)	74-87-3	Chloromethane	211		211		211	UG/KG	09DI00	1/ 1	--	211	--	YES
Soil (0-2 ft)	100-41-4	Ethylbenzene	1.3	J	9.1		3.3	UG/KG	IA04-SB0021	3/ 12	9.41	9.1	--	YES
Soil (0-2 ft)	75-09-2	Methylene chloride	0.56	JB	0.56	JB	2.82	UG/KG	IA04-SB0018	1/ 12	8.73	0.56	--	YES
Soil (0-2 ft)	108-88-3	Toluene	1.1	J	182		21.36	UG/KG	09DI00	8/ 12	306	182	--	YES
Soil (0-2 ft)	79-01-6	Trichloroethene	1.3	J	1.3	J	2.88	UG/KG	IA04-SB0019	1/ 12	8.93	1.3	--	YES
Soil (0-2 ft)	1330-20-7	Xylenes (total)	1.2	J	26		4.8	UG/KG	IA04-SB0021	3/ 12	11.7	11.7	--	YES
Soil (0-2 ft)	11097-69-1	Aroclor-1254	2270		3200		1823.98	UG/KG	IA04-SB0033	2/ 3	4600	3200	--	YES
Soil (0-2 ft)	11096-82-5	Aroclor-1260	23.1	P	23.1	P	8.81	UG/KG	IA04-SB0022	1/ 3	225	23.1	--	YES
Soil (0-2 ft)	AC-227	Actinium-227	0.144		3.18		3.58	PCI/G	09DA02	11/ 32	0.56	0.56	1.76	NO:1
Soil (0-2 ft)	14331-83-0	Actinium-228	0.649	J	1.25		0.95	PCI/G	IA04-SB0017	19/ 21	1.02	1.02	1.35	NO:1
Soil (0-2 ft)	10045-97-3	Cesium-137	0.0679	J	1.34		0.23	PCI/G	09DC02	16/ 32	0.39	0.39	0.72	NO:1
Soil (0-2 ft)	13966-00-2	Potassium-40	0.797	J	27.6		20.96	PCI/G	IA07-SB0006	32/ 32	18.3	18.3	27.2	NO:1

Appendix Table 7A.1. Identification of Chemicals of Potential Concern for Ecological Receptors Exposure Unit 1 - Onsite Undisturbed Soil Area (continued)

Medium	CAS Number	Parameter	Minimum Detection		Maximum Detection		Mean	Units	Location of Maximum	Detection Frequency	UCL95	Value for Comparison	Background Value	COPC
Soil (0-2 ft)	13982-63-3	Radium-226	0.217	J	58.6	J	7.41	PCI/G	09DA02	32/ 32	18.4	18.4	2.97	YES
Soil (0-2 ft)	RA-228	Radium-228	0.466		1.25		0.83	PCI/G	IA04-SB0017	30/ 32	1.18	1.18	1.48	NO:1
Soil (0-2 ft)		Thorium-227	0.144		3.18		0.87	PCI/G	09DA02	11/ 11	1.86	1.86	1.76	YES
Soil (0-2 ft)	14274-82-9	Thorium-228	0.466		1.81		0.93	PCI/G	IA03-SB0009	30/ 32	1.23	1.23	1.6	NO:1
Soil (0-2 ft)	14269-63-7	Thorium-230	0.522	J	69.4		6.57	PCI/G	09DA02	32/ 32	193	69.4	3.2	YES
Soil (0-2 ft)	7440-29-1	Thorium-232	0.528		1.17		0.78	PCI/G	IA03-SB0009	30/ 32	1.16	1.16	1.48	NO:1
Soil (0-2 ft)	15065-10-8	Thorium-234	0.393	J	3.22	J	2.04	PCI/G	IA04-SB0019	14/ 21	1.98	1.98	3.07	NO:1
Soil (0-2 ft)	U-233/234	Uranium-233/234	0.137	J	1.75		1.06	PCI/G	IA04-SB0018	21/ 21	1.21	1.21	2.01	NO:1
Soil (0-2 ft)		Uranium-234	0.45		51.9		14.3	PCI/G	09DA02	11/ 11	218	51.9	2.61	YES
Soil (0-2 ft)	15117-96-1	Uranium-235	0.0517		2.03		0.5	PCI/G	09DA02	13/ 32	1.54	1.54	1.56	NO:1
Soil (0-2 ft)	24678-82-8	Uranium-238	0.208	J	50.9		5.7	PCI/G	09DA02	32/ 32	14.5	14.5	2.63	YES
Soil (0-2 ft)	TRPHYDRO	Total Rec. Petro. Hydrocarbons	141		418		279.5	MG/KG	IA04-SB0033	2/ 2	1150	418	--	YES

NO:0 = Frequency of Detection Less than 5%
NO:1 = Comparison value less than background value
YES = Chemical is a COPC

Appendix Table 7A.1. Identification of Chemicals of Potential Concern for Ecological Receptors Exposure Unit 2 - Onsite Disturbed Soil Area (continued)

Medium	CAS Number	Parameter	Minimum Detection		Maximum Detection		Mean	Units	Location of Maximum	Detection Frequency	UCL95	Value for Comparison	Background Value	COPC
Soil (0-10 ft)	7429-90-5	Aluminum	4940		179000		21368.53	MG/KG	04AX00	75/ 75	26100	26100	23700	YES
Soil (0-10 ft)	7440-36-0	Antimony	0.26	J	9.1		0.66	MG/KG	IA05-SB0007	17/ 50	1.14	1.14	0.9	YES
Soil (0-10 ft)	7440-38-2	Arsenic	1.5		98.7		9.1	MG/KG	08AW00	230/235	9.84	9.84	24.1	NO:1
Soil (0-10 ft)	7440-39-3	Barium	12.4		2440	J	119.02	MG/KG	06FD00	209/209	146	146	209	NO:1
Soil (0-10 ft)	7440-41-7	Beryllium	0.07		13300		353.94	MG/KG	IA05-SB0009	462/462	514	514	1.13	YES
Soil (0-10 ft)	7440-42-8	Boron	3.2	J	56.8	J	13.91	MG/KG	08AW00	19/ 25	28	28	13.4	YES
Soil (0-10 ft)	7440-43-9	Cadmium	0.2	B	438		12.75	MG/KG	IA02-SB0001	37/ 54	28.3	28.3	0.98	YES
Soil (0-10 ft)	7440-70-2	Calcium	792		206000		39785.22	MG/KG	IA05-SB0004	54/ 54	51700	51700	55100	NO:1
Soil (0-10 ft)	7440-47-3	Chromium	8		172		38.87	MG/KG	04AX00	54/ 54	46.8	46.8	29.6	YES
Soil (0-10 ft)	7440-48-4	Cobalt	0.92		59.2		11.95	MG/KG	08AW00	54/ 54	15.2	15.2	19.1	NO:1
Soil (0-10 ft)	7440-50-8	Copper	6.1	J	1970		84.45	MG/KG	IA03-SB0002	54/ 54	151	151	42	YES
Soil (0-10 ft)	7439-89-6	Iron	2210		159000	J	31006.67	MG/KG	08AW00	54/ 54	40600	40600	38600	YES
Soil (0-10 ft)	7439-92-1	Lead	4.9	*	28900	J	326.74	MG/KG	10FD01	232/232	561	561	23.2	YES
Soil (0-10 ft)	7439-95-4	Magnesium	26.8		53700		11823.46	MG/KG	BH0015	75/ 75	14200	14200	17100	NO:1
Soil (0-10 ft)	7439-96-5	Manganese	31.5		2720		622.08	MG/KG	BH0016	54/ 54	718	718	2340	NO:1
Soil (0-10 ft)	7439-94-7	Mercury	0.02		1.8		0.26	MG/KG	BH0015	45/ 54	0.34	0.34	0.19	YES
Soil (0-10 ft)	7439-98-7	Molybdenum	0.14	B	16.5	J	4.16	MG/KG	08AW00	21/ 25	10.4	10.4	11.3	NO:1
Soil (0-10 ft)	7440-02-0	Nickel	8.6	B	194		43.89	MG/KG	10DD00	54/ 54	52.9	52.9	46.1	YES
Soil (0-10 ft)	7440-00-0	Phosphorus	0.391	J	866		311.76	MG/KG	IA05-SB0003	30/ 39	342	342	808	NO:1
Soil (0-10 ft)	7440-09-7	Potassium	324		9920		2455.43	MG/KG	08AW00	54/ 54	3100	3100	3410	NO:1
Soil (0-10 ft)	7782-49-2	Selenium	0.34		5.1	B	1.08	MG/KG	08AW00	38/ 54	1.34	1.34	2.33	NO:1
Soil (0-10 ft)		Silicon	680	J	5150	J	1931.52	MG/KG	10DD00	25/ 25	2540	2540	595	YES
Soil (0-10 ft)	7440-22-4	Silver	0.08	B	3.6	B	0.28	MG/KG	04AX00	16/ 54	0.43	0.43	0.51	NO:1
Soil (0-10 ft)	7440-23-5	Sodium	37.4	J	37000		3513.23	MG/KG	04AX00	53/ 53	5240	5240	285	YES
Soil (0-10 ft)	7440-24-6	Strontium	0.125	J	1180		188.03	MG/KG	BH0015	25/ 25	312	312	75.6	YES
Soil (0-10 ft)	7440-28-0	Thallium	0.44		19.3	B	1.74	MG/KG	08AW00	27/ 54	2.18	2.18	2.1	YES
Soil (0-10 ft)	7440-62-2	Vanadium	1.5		186		30.56	MG/KG	08AW00	54/ 54	36.6	36.6	42.8	NO:1
Soil (0-10 ft)	7440-66-6	Zinc	6.5		1840		234.87	MG/KG	IA02-SB0001	54/ 54	351	351	110	YES
Soil (0-10 ft)	7782-50-5	Chloride	3.92	J	320		41.41	MG/KG	09EZ01	10/ 15	1660	320	--	YES
Soil (0-10 ft)	16984-48-8	Fluoride	0.19	J	576		46.34	MG/KG	10FD01	170/170	65.6	65.6	6.94	YES
Soil (0-10 ft)		Nitrate, as N	0.769	J	521		57.06	MG/KG	09EZ01	13/ 15	122	122	--	YES
Soil (0-10 ft)	7664-41-7	Nitrogen, Ammonia	0.65	J	765		27.42	MG/KG	IA07-SB0003	153/155	37.7	37.7	--	YES
Soil (0-10 ft)	SO4	Sulfate	36.8		24800		2852.26	MG/KG	09EZ01	14/ 15	41100	24800	--	YES
Soil (0-10 ft)	91-57-6	2-Methylnaphthalene	246	J	246	J	301.47	UG/KG	IA03-SB0002	1/ 52	421	246	--	NO:0
Soil (0-10 ft)	120-12-7	Anthracene	75.3	J	7220	J	447.91	UG/KG	07FR00	4/ 53	698	698	--	YES
Soil (0-10 ft)	56-55-3	Benzo(a)anthracene	73.3	J	10200	J	582.49	UG/KG	07FR00	10/ 53	919	919	--	YES

Appendix Table 7A.1. Identification of Chemicals of Potential Concern for Ecological Receptors Exposure Unit 2 - Onsite Disturbed Soil Area (continued)

Medium	CAS Number	Parameter	Minimum Detection		Maximum Detection		Mean	Units	Location of Maximum	Detection Frequency	UCL95	Value for Comparison	Background Value	COPC
Soil (0-10 ft)	50-32-8	Benzo(a)pyrene	187	J	9190	J	580.1	UG/KG	07FR00	10/ 53	888	888	--	YES
Soil (0-10 ft)	205-99-2	Benzo(b)fluoranthene	275	J	10000	J	670.92	UG/KG	07FR00	10/ 53	1010	1010	--	YES
Soil (0-10 ft)	191-24-2	Benzo(ghi)perylene	176	J	4470	J	416.4	UG/KG	07FR00	5/ 53	599	599	--	YES
Soil (0-10 ft)	207-08-9	Benzo(k)fluoranthene	94.1	J	5530	J	426.87	UG/KG	07FR00	4/ 53	634	634	--	YES
Soil (0-10 ft)	86-74-8	Carbazole	4440	J	4440	J	379.32	UG/KG	07FR00	1/ 53	563	563	--	NO:0
Soil (0-10 ft)	218-01-9	Chrysene	66.7	J	9590	J	577.68	UG/KG	07FR00	11/ 53	893	893	--	YES
Soil (0-10 ft)	53-70-3	Dibenz(a,h)anthracene	51.6	J	51.6	J	297.99	UG/KG	IA05-SB0007	1/ 52	418	51.6	--	NO:0
Soil (0-10 ft)	206-44-0	Fluoranthene	181	J	23400	J	1084.83	UG/KG	07FR00	13/ 53	1790	1790	--	YES
Soil (0-10 ft)	86-73-7	Fluorene	3160	J	3160	J	355.17	UG/KG	07FR00	1/ 53	509	509	--	NO:0
Soil (0-10 ft)	193-39-5	Indeno(1,2,3-c,d)pyrene	183	J	5510	J	443.29	UG/KG	07FR00	6/ 53	653	653	--	YES
Soil (0-10 ft)	85-01-8	Phenanthrene	129	J	21400	J	862.94	UG/KG	07FR00	10/ 53	1500	1500	--	YES
Soil (0-10 ft)	129-00-0	Pyrene	147	J	19400	J	926.3	UG/KG	07FR00	11/ 53	1630	1630	--	YES
Soil (0-10 ft)	117-81-7	bis(2-ethylhexyl)phthalate	219	J	246	J	306.37	UG/KG	09EZ01	3/ 52	421	246	--	YES
Soil (0-10 ft)	78-93-3	2-Butanone	3.8	J	3.8	J	5.15	UG/KG	IA01-SB0002	1/ 49	15.1	3.8	--	NO:0
Soil (0-10 ft)	591-78-6	2-Hexanone	1.1	J	1.1	J	6.82	UG/KG	IA01-SB0003	1/ 49	15.7	1.1	--	NO:0
Soil (0-10 ft)	67-64-1	Acetone	9	J	9	J	7.26	UG/KG	IA07-SB0005	1/ 45	19.8	9	--	NO:0
Soil (0-10 ft)	71-43-2	Benzene	0.7	J	5.7	J	2.13	UG/KG	IA05-SB0007	26/ 49	8.71	5.7	--	YES
Soil (0-10 ft)	75-27-4	Bromodichloromethane	1.2	J	1.2	J	1.42	UG/KG	10FI01	1/ 20	16.8	1.2	--	YES
Soil (0-10 ft)	75-15-0	Carbon disulfide	2	J	43.2		6.03	UG/KG	IA02-SB0003	10/ 49	10.9	10.9	--	YES
Soil (0-10 ft)	67-66-3	Chloroform	0.84	J	7.9	J	2.46	UG/KG	10FI01	4/ 49	9.79	7.9	--	YES
Soil (0-10 ft)	74-87-3	Chloromethane	115	J	115	J	6.86	UG/KG	10DD00	1/ 20	30.7	30.7	--	YES
Soil (0-10 ft)	100-41-4	Ethylbenzene	0.28	J	49.7		3.22	UG/KG	IA01-SB0002	27/ 49	9.89	9.89	--	YES
Soil (0-10 ft)	74-83-9	Methyl Bromide	6.7	J	6.7	J	6.82	UG/KG	IA05-SB0008	1/ 29	7.74	6.7	--	NO:0
Soil (0-10 ft)	74-87-3	Methyl Chloride	5.9	J	5.9	J	6.79	UG/KG	IA05-SB0008	1/ 29	7.71	5.9	--	NO:0
Soil (0-10 ft)	75-09-2	Methylene chloride	0.55	BJ	37.1	B	4.85	UG/KG	08AW00	18/ 49	10.5	10.5	--	YES
Soil (0-10 ft)	108-88-3	Toluene	0.44	J	422	J	32.69	UG/KG	10DD00	46/ 49	56.2	56.2	--	YES
Soil (0-10 ft)	1330-20-7	Xylenes (total)	0.71	J	35.8		4.84	UG/KG	IA03-SB0002	23/ 49	20.4	20.4	--	YES
Soil (0-10 ft)	AC-227	Actinium-227	0.099	J	3.37	J	2.97	PCI/G	IA05-SB0009	95/242	0.34	0.34	1.76	NO:1
Soil (0-10 ft)	14331-83-0	Actinium-228	0.293	J	1.6		0.99	PCI/G	IA05-SB0009	176/184	1.01	1.01	1.35	NO:1
Soil (0-10 ft)		Americium-241	0.27		1.21		0.05	PCI/G	11FA00	5/ 63	1.4	1.21	--	YES
Soil (0-10 ft)	10045-97-3	Cesium-137	0.03		4.69		0.19	PCI/G	BH0016	62/247	0.09	0.09	0.72	NO:1
Soil (0-10 ft)	13966-00-2	Potassium-40	0.72		31.3		20.67	PCI/G	IA01-SB0007	244/246	20.2	20.2	27.2	NO:1
Soil (0-10 ft)	13982-63-3	Radium-226	0.35		193	J	5.55	PCI/G	10FI01	246/246	6.93	6.93	2.97	YES
Soil (0-10 ft)	RA-228	Radium-228	0.0945		1.6		0.9	PCI/G	IA05-SB0009	240/246	0.88	0.88	1.48	NO:1
Soil (0-10 ft)		Thorium-227	0.162		2.08		0.62	PCI/G	10FI01	42/ 58	0.61	0.61	1.76	NO:1
Soil (0-10 ft)	14274-82-9	Thorium-228	0.0945		2.11		0.98	PCI/G	IA01-SB0003	246/246	0.96	0.96	1.6	NO:1

Appendix Table 7A.1. Identification of Chemicals of Potential Concern for Ecological Receptors Exposure Unit 2 - Onsite Disturbed Soil Area (continued)

Medium	CAS Number	Parameter	Minimum Detection		Maximum Detection		Mean	Units	Location of Maximum	Detection Frequency	UCL95	Value for Comparison	Background Value	COPC
Soil (0-10 ft)	14269-63-7	Thorium-230	0.42		88.5		5.66	PCI/G	IA05-SB0009	246/246	35.9	35.9	3.2	YES
Soil (0-10 ft)	7440-29-1	Thorium-232	0.091		1.48		0.77	PCI/G	IA03-SB0006	245/246	0.77	0.77	1.48	NO:1
Soil (0-10 ft)	15065-10-8	Thorium-234	0.676	J	43.3		3.66	PCI/G	IA01-SB0018	106/184	3.71	3.71	3.07	YES
Soil (0-10 ft)	U-233/234	Uranium-233/234	0.54	J	43.2		2.7	PCI/G	IA01-SB0018	184/184	3.38	3.38	2.01	YES
Soil (0-10 ft)		Uranium-234	0.327		52.3		6.55	PCI/G	04AX00	58/ 58	8.45	8.45	2.61	YES
Soil (0-10 ft)	15117-96-1	Uranium-235	0.0377		2.88	J	0.39	PCI/G	IA05-SB0009	135/246	0.35	0.35	1.56	NO:1
Soil (0-10 ft)	24678-82-8	Uranium-238	0.256		51.1		3.67	PCI/G	04AX00	246/246	5.37	5.37	2.63	YES
Soil (0-2 ft)	7429-90-5	Aluminum	4940		80900		18325	MG/KG	IA02-SB0001	50/ 50	21700	21700	23700	NO:1
Soil (0-2 ft)	7440-36-0	Antimony	0.27	J	5.1	J	0.58	MG/KG	06FD00	10/ 26	0.99	0.99	0.9	YES
Soil (0-2 ft)	7440-38-2	Arsenic	1.5		39.4		8.91	MG/KG	10DD00	86/ 88	9.64	9.64	24.1	NO:1
Soil (0-2 ft)	7440-39-3	Barium	17.8	*	2440	J	142.1	MG/KG	06FD00	67/ 67	204	204	209	NO:1
Soil (0-2 ft)	7440-41-7	Beryllium	0.54		8760		596.44	MG/KG	IA01-SB0035	129/129	765	765	1.13	YES
Soil (0-2 ft)	7440-42-8	Boron	11.2	B	43.1		17.6	MG/KG	06FD00	7/ 9	30.8	30.8	13.4	YES
Soil (0-2 ft)	7440-43-9	Cadmium	0.2		438		17.18	MG/KG	IA02-SB0001	20/ 29	83.5	83.5	0.98	YES
Soil (0-2 ft)	7440-70-2	Calcium	1690		206000		50430.34	MG/KG	IA05-SB0004	29/ 29	97700	97700	55100	YES
Soil (0-2 ft)	7440-47-3	Chromium	8		153	J	38.67	MG/KG	10DD00	29/ 29	50.8	50.8	29.6	YES
Soil (0-2 ft)	7440-48-4	Cobalt	3		35.3		12.08	MG/KG	10DD00	29/ 29	14.3	14.3	19.1	NO:1
Soil (0-2 ft)	7440-50-8	Copper	6.1	J	420	J	54.93	MG/KG	10DD00	29/ 29	85.5	85.5	42	YES
Soil (0-2 ft)	7439-89-6	Iron	7990		119000	J	29631.72	MG/KG	10DD00	29/ 29	38100	38100	38600	NO:1
Soil (0-2 ft)	7439-92-1	Lead	9.8		28900	J	750.4	MG/KG	10FD01	88/ 88	1380	1380	23.2	YES
Soil (0-2 ft)	7439-95-4	Magnesium	588		53700		12735.56	MG/KG	BH0015	50/ 50	16200	16200	17100	NO:1
Soil (0-2 ft)	7439-96-5	Manganese	166		2720		792.93	MG/KG	BH0016	29/ 29	884	884	2340	NO:1
Soil (0-2 ft)	7439-94-7	Mercury	0.02		1.8		0.41	MG/KG	BH0015	24/ 29	0.54	0.54	0.19	YES
Soil (0-2 ft)	7439-98-7	Molybdenum	0.14	B	15.8		5.58	MG/KG	10DD00	9/ 9	11.2	11.2	11.3	NO:1
Soil (0-2 ft)	7440-02-0	Nickel	8.9		194		46.28	MG/KG	10DD00	29/ 29	63.5	63.5	46.1	YES
Soil (0-2 ft)	7440-00-0	Phosphorus	0.391	J	866		346.49	MG/KG	IA05-SB0003	19/ 23	415	415	808	NO:1
Soil (0-2 ft)	7440-09-7	Potassium	684	J	7520	J	2507.76	MG/KG	10DD00	29/ 29	3260	3260	3410	NO:1
Soil (0-2 ft)	7782-49-2	Selenium	0.54		3.7	J	1.12	MG/KG	BH0016	21/ 29	1.23	1.23	2.33	NO:1
Soil (0-2 ft)		Silicon	1080	J	5150	J	2734.44	MG/KG	10DD00	9/ 9	4310	4310	595	YES
Soil (0-2 ft)	7440-22-4	Silver	0.2	B	1.2	B	0.25	MG/KG	10DD00	8/ 29	0.35	0.35	0.51	NO:1
Soil (0-2 ft)	7440-23-5	Sodium	37.4	J	22300		2186.19	MG/KG	09EZ01	29/ 29	4080	4080	285	YES
Soil (0-2 ft)	7440-24-6	Strontium	0.125	J	1180		217.08	MG/KG	BH0015	9/ 9	574	574	75.6	YES
Soil (0-2 ft)	7440-28-0	Thallium	0.44		12	B	2.04	MG/KG	BH0016	18/ 29	2.4	2.4	2.1	YES
Soil (0-2 ft)	7440-62-2	Vanadium	5.8		71		28.05	MG/KG	10DD00	29/ 29	35.1	35.1	42.8	NO:1
Soil (0-2 ft)	7440-66-6	Zinc	20.4	J	1840		322.14	MG/KG	IA02-SB0001	29/ 29	509	509	110	YES
Soil (0-2 ft)	7782-50-5	Chloride	7.76	J	320		95.37	MG/KG	09EZ01	3/ 5	178	178	--	YES

Appendix Table 7A.1. Identification of Chemicals of Potential Concern for Ecological Receptors Exposure Unit 2 - Onsite Disturbed Soil Area (continued)

Medium	CAS Number	Parameter	Minimum Detection		Maximum Detection		Mean	Units	Location of Maximum	Detection Frequency	UCL95	Value for Comparison	Background Value	COPC
Soil (0-2 ft)	16984-48-8	Fluoride	0.93		576		81.41	MG/KG	10FD01	43/ 43	144	144	6.94	YES
Soil (0-2 ft)		Nitrate, as N	1.06		521		168.05	MG/KG	09EZ01	5/ 5	319	319	--	YES
Soil (0-2 ft)	7664-41-7	Nitrogen, Ammonia	5.26		116		23.5	MG/KG	IA01-SB0012	38/ 38	30.7	30.7	--	YES
Soil (0-2 ft)	SO4	Sulfate	124		24800		5745.45	MG/KG	09EZ01	4/ 5	286000000	24800	--	YES
Soil (0-2 ft)	120-12-7	Anthracene	975	J	1100	J	464.52	UG/KG	BH0015	2/ 27	639	639	--	YES
Soil (0-2 ft)	56-55-3	Benzo(a)anthracene	73.3	J	3170		613.29	UG/KG	BH0015	8/ 27	887	887	--	YES
Soil (0-2 ft)	50-32-8	Benzo(a)pyrene	187	J	3230		645.24	UG/KG	BH0015	8/ 27	921	921	--	YES
Soil (0-2 ft)	205-99-2	Benzo(b)fluoranthene	275	J	4050		785.02	UG/KG	BH0015	8/ 27	1140	1140	--	YES
Soil (0-2 ft)	191-24-2	Benzo(ghi)perylene	714	J	1680		500.78	UG/KG	BH0015	3/ 27	696	696	--	YES
Soil (0-2 ft)	207-08-9	Benzo(k)fluoranthene	94.1	J	1630		480.45	UG/KG	BH0015	3/ 27	669	669	--	YES
Soil (0-2 ft)	218-01-9	Chrysene	66.7	J	2890	J	622.56	UG/KG	BH0015	9/ 27	876	876	--	YES
Soil (0-2 ft)	206-44-0	Fluoranthene	181	J	6980		1081.28	UG/KG	BH0015	10/ 27	1640	1640	--	YES
Soil (0-2 ft)	193-39-5	Indeno(1,2,3-c,d)pyrene	421	J	1980	J	514.8	UG/KG	BH0015	4/ 27	721	721	--	YES
Soil (0-2 ft)	85-01-8	Phenanthrene	129	J	3870		723.35	UG/KG	BH0015	7/ 27	1060	1060	--	YES
Soil (0-2 ft)	129-00-0	Pyrene	147	J	6920		922.54	UG/KG	BH0015	8/ 27	1430	1430	--	YES
Soil (0-2 ft)	117-81-7	bis(2-ethylhexyl)phthalate	242	J	246	J	437.41	UG/KG	09EZ01	2/ 27	608	246	--	YES
Soil (0-2 ft)	71-43-2	Benzene	0.92	J	5.7	J	3.23	UG/KG	IA05-SB0007	18/ 24	9.97	5.7	--	YES
Soil (0-2 ft)	75-15-0	Carbon disulfide	3.2	J	43.2		9.1	UG/KG	IA02-SB0003	7/ 24	16	16	--	YES
Soil (0-2 ft)	67-66-3	Chloroform	1.9	J	1.9	J	3.41	UG/KG	IA02-SB0001	1/ 24	10.1	1.9	--	NO:0
Soil (0-2 ft)	74-87-3	Chloromethane	115	J	115	J	32.16	UG/KG	10DD00	1/ 4	116	115	--	YES
Soil (0-2 ft)	100-41-4	Ethylbenzene	0.52	J	3.4	J	2.94	UG/KG	IA05-SB0002	15/ 24	8.22	3.4	--	YES
Soil (0-2 ft)	75-09-2	Methylene chloride	0.55	BJ	4.7	J	3.51	UG/KG	BH0015	5/ 24	9.69	4.7	--	YES
Soil (0-2 ft)	108-88-3	Toluene	1.3	J	422	J	33.19	UG/KG	10DD00	23/ 24	64.3	64.3	--	YES
Soil (0-2 ft)	1330-20-7	Xylenes (total)	0.91	J	26.9		5.67	UG/KG	IA01-SB0003	14/ 24	15	15	--	YES
Soil (0-2 ft)	AC-227	Actinium-227	0.162	J	3.37	J	2.5	PCI/G	IA05-SB0009	49/100	0.51	0.51	1.76	NO:1
Soil (0-2 ft)	14331-83-0	Actinium-228	0.314	J	1.6		0.96	PCI/G	IA05-SB0009	55/ 58	1.01	1.01	1.35	NO:1
Soil (0-2 ft)		Americium-241	0.27		1.21		0.07	PCI/G	11FA00	5/ 47	1.7	1.21	--	YES
Soil (0-2 ft)	10045-97-3	Cesium-137	0.03		4.69		0.3	PCI/G	BH0016	49/105	0.17	0.17	0.72	NO:1
Soil (0-2 ft)	13966-00-2	Potassium-40	0.72		28.1		18.04	PCI/G	IA03-SB0005	104/104	17.2	17.2	27.2	NO:1
Soil (0-2 ft)	13982-63-3	Radium-226	0.35		55.4		6.78	PCI/G	IA01-SB0018	104/104	7.95	7.95	2.97	YES
Soil (0-2 ft)	RA-228	Radium-228	0.18		1.6		0.83	PCI/G	IA05-SB0009	101/104	0.79	0.79	1.48	NO:1
Soil (0-2 ft)		Thorium-227	0.163		1.98		0.6	PCI/G	09EJ01	33/ 42	0.66	0.66	1.76	NO:1
Soil (0-2 ft)	14274-82-9	Thorium-228	0.18		1.69		0.89	PCI/G	IA01-SB0012	104/104	0.85	0.85	1.6	NO:1
Soil (0-2 ft)	14269-63-7	Thorium-230	0.45		88.5		9.55	PCI/G	IA05-SB0009	104/104	70.3	70.3	3.2	YES
Soil (0-2 ft)	7440-29-1	Thorium-232	0.162	J	1.48		0.73	PCI/G	IA03-SB0006	103/104	0.72	0.72	1.48	NO:1
Soil (0-2 ft)	15065-10-8	Thorium-234	1.16	J	43.3		5.73	PCI/G	IA01-SB0018	37/ 58	7.21	7.21	3.07	YES

Appendix Table 7A.1. Identification of Chemicals of Potential Concern for Ecological Receptors Exposure Unit 2 - Onsite Disturbed Soil Area (continued)

Medium	CAS Number	Parameter	Minimum Detection		Maximum Detection		Mean	Units	Location of Maximum	Detection Frequency	UCL95	Value for Comparison	Background Value	COPC
Soil (0-2 ft)	U-233/234	Uranium-233/234	0.54	J	43.2		4.75	PCI/G	IA01-SB0018	58/ 58	6.76	6.76	2.01	YES
Soil (0-2 ft)		Uranium-234	0.327		31.1		5.86	PCI/G	09EJ01	42/ 42	11.4	11.4	2.61	YES
Soil (0-2 ft)	15117-96-1	Uranium-235	0.0425		2.88	J	0.44	PCI/G	IA05-SB0009	67/104	0.62	0.62	1.56	NO:1
Soil (0-2 ft)	24678-82-8	Uranium-238	0.256		41.5		5.23	PCI/G	IA01-SB0018	104/104	8.09	8.09	2.63	YES

NO:0 = Frequency of Detection Less than 5%
NO:1 = Comparison value less than background value
YES = Chemical is a COPC

Appendix Table 7A.1. Identification of Chemicals of Potential Concern for Ecolgoical Receptors Exposure Unit 3 - Offiste Residential/Agricultural Lands (continued)

Medium	CAS Number	Parameter	Minimum Detection		Maximum Detection		Mean	Units	Location of Maximum	Detection Frequency	UCL95	Value for Comparison	Background Value	COPC
Soil (0-10 ft)	7429-90-5	Aluminum	19900		19900		19900	MG/KG	IA10-SB0024	1/ 1	--	19900	23700	NO:1
Soil (0-10 ft)	7440-38-2	Arsenic	2.4	N	15.6	N	7.54	MG/KG	IA10-SB0045	43/ 43	8.22	8.22	24.1	NO:1
Soil (0-10 ft)	7440-39-3	Barium	25.4		479		111.23	MG/KG	IA10-SB0045	43/ 43	127	127	209	NO:1
Soil (0-10 ft)	7440-41-7	Beryllium	0.63		2560	N	89.31	MG/KG	IA10-SB0051	86/ 86	144	144	1.13	YES
Soil (0-10 ft)	7440-70-2	Calcium	4650		4650		4650	MG/KG	IA10-SB0024	1/ 1	--	4650	55100	NO:1
Soil (0-10 ft)	7440-47-3	Chromium	28.8		28.8		28.8	MG/KG	IA10-SB0024	1/ 1	--	28.8	29.6	NO:1
Soil (0-10 ft)	7440-48-4	Cobalt	12.9	*	12.9	*	12.9	MG/KG	IA10-SB0024	1/ 1	--	12.9	19.1	NO:1
Soil (0-10 ft)	7440-50-8	Copper	25.4		25.4		25.4	MG/KG	IA10-SB0024	1/ 1	--	25.4	42	NO:1
Soil (0-10 ft)	7439-89-6	Iron	33600		33600		33600	MG/KG	IA10-SB0024	1/ 1	--	33600	38600	NO:1
Soil (0-10 ft)	7439-92-1	Lead	8.9	N	338	N	52.17	MG/KG	IA10-SB0050	43/ 43	71.9	71.9	23.2	YES
Soil (0-10 ft)	7439-95-4	Magnesium	6400		6400		6400	MG/KG	IA10-SB0024	1/ 1	--	6400	17100	NO:1
Soil (0-10 ft)	7439-96-5	Manganese	371	*	371	*	371	MG/KG	IA10-SB0024	1/ 1	--	371	2340	NO:1
Soil (0-10 ft)	7439-94-7	Mercury	0.03		0.03		0.03	MG/KG	IA10-SB0024	1/ 1	--	0.03	0.19	NO:1
Soil (0-10 ft)	7440-02-0	Nickel	34.6	*	34.6	*	34.6	MG/KG	IA10-SB0024	1/ 1	--	34.6	46.1	NO:1
Soil (0-10 ft)	7440-00-0	Phosphorus	514		514		514	MG/KG	IA10-SB0024	1/ 1	--	514	808	NO:1
Soil (0-10 ft)	7440-09-7	Potassium	2600		2600		2600	MG/KG	IA10-SB0024	1/ 1	--	2600	3410	NO:1
Soil (0-10 ft)	7782-49-2	Selenium	2.7		2.7		2.7	MG/KG	IA10-SB0024	1/ 1	--	2.7	2.33	YES
Soil (0-10 ft)	7440-23-5	Sodium	77.2	E	77.2	E	77.2	MG/KG	IA10-SB0024	1/ 1	--	77.2	285	NO:1
Soil (0-10 ft)	7440-28-0	Thallium	0.84		0.84		0.84	MG/KG	IA10-SB0024	1/ 1	--	0.84	2.1	NO:1
Soil (0-10 ft)	7440-62-2	Vanadium	41.2		41.2		41.2	MG/KG	IA10-SB0024	1/ 1	--	41.2	42.8	NO:1
Soil (0-10 ft)	7440-66-6	Zinc	91.2		91.2		91.2	MG/KG	IA10-SB0024	1/ 1	--	91.2	110	NO:1
Soil (0-10 ft)	67-64-1	Acetone	19.3	B	19.3	B	19.3	UG/KG	IA10-SB0024	1/ 1	--	19.3	--	YES
Soil (0-10 ft)	67-66-3	Chloroform	0.58	JB	0.58	JB	0.58	UG/KG	IA10-SB0024	1/ 1	--	0.58	--	YES
Soil (0-10 ft)	108-88-3	Toluene	0.9	J	0.9	J	0.9	UG/KG	IA10-SB0024	1/ 1	--	0.9	--	YES
Soil (0-10 ft)	AC-227	Actinium-227	0.159	J	1.05	J	4.09	PCI/G	IA10-SB0051	10/ 52	0.17	0.17	1.76	NO:1
Soil (0-10 ft)	14331-83-0	Actinium-228	0.527	J	1.42		1.06	PCI/G	IA10-SB0058	51/ 52	1.1	1.1	1.35	NO:1
Soil (0-10 ft)	10045-97-3	Cesium-137	0.0872	J	0.984		0.25	PCI/G	IA10-SB0047	46/ 52	0.29	0.29	0.72	NO:1
Soil (0-10 ft)	13966-00-2	Potassium-40	2.1		28.7		22.57	PCI/G	IA10-SB0064	52/ 52	23.8	23.8	27.2	NO:1
Soil (0-10 ft)	13982-63-3	Radium-226	1.09		24.7		2.5	PCI/G	IA10-SB0051	52/ 52	3.27	3.27	2.97	YES
Soil (0-10 ft)	RA-228	Radium-228	0.527	J	1.42		1.06	PCI/G	IA10-SB0058	51/ 52	1.1	1.1	1.48	NO:1
Soil (0-10 ft)	14274-82-9	Thorium-228	0.248	J	4.09		1.09	PCI/G	IA10-SB0067	52/ 52	1.2	1.2	1.6	NO:1
Soil (0-10 ft)	14269-63-7	Thorium-230	0.951	J	14.8		2.49	PCI/G	IA10-SB0051	52/ 52	3.01	3.01	3.2	NO:1
Soil (0-10 ft)	7440-29-1	Thorium-232	0.508	J	1.46		0.91	PCI/G	IA10-SB0024	51/ 52	0.96	0.96	1.48	NO:1
Soil (0-10 ft)	15065-10-8	Thorium-234	1.26	J	16.3		2.78	PCI/G	IA10-SB0051	36/ 52	2.72	2.72	3.07	NO:1
Soil (0-10 ft)	U-233/234	Uranium-233/234	0.761	J	17.8		1.99	PCI/G	IA10-SB0051	52/ 52	2.58	2.58	2.01	YES
Soil (0-10 ft)	15117-96-1	Uranium-235	0.0516	J	1.42		0.38	PCI/G	IA10-SB0051	21/ 52	0.2	0.2	1.56	NO:1
Soil (0-10 ft)	24678-82-8	Uranium-238	0.908	J	16.6		1.94	PCI/G	IA10-SB0051	52/ 52	2.49	2.49	2.63	NO:1

Appendix Table 7A.1. Identification of Chemicals of Potential Concern for Ecolgoical Receptors Exposure Unit 3 - Offiste Residential/Agricultural Lands (continued)

Medium	CAS Number	Parameter	Minimum Detection		Maximum Detection		Mean	Units	Location of Maximum	Detection Frequency	UCL95	Value for Comparison	Background Value	COPC
Sediment	7429-90-5	Aluminum	3600		18400		11874.67	MG/KG	SWSD0022	15/ 15	12200	12200	12000	YES
Sediment	7440-36-0	Antimony	0.36	J	0.7	J	0.18	MG/KG	SWSD0016	5/ 15	0.39	0.39	0.88	NO:1
Sediment	7440-38-2	Arsenic	2.8	J	21.6		7.44	MG/KG	SWSD0022	18/ 18	6.71	6.71	12.1	NO:1
Sediment	7440-39-3	Barium	49.4	J	232	J	111.59	MG/KG	SWSD0019	18/ 18	153	153	94.3	YES
Sediment	7440-41-7	Beryllium	0.7	B	2020	J	286.19	MG/KG	SWSD0022	18/ 18	146000	2020	0.69	YES
Sediment	7440-42-8	Boron	9.3	J	47.2	J	12.36	MG/KG	SWSD0022	8/ 15	37	37	15.5	YES
Sediment	7440-43-9	Cadmium	0.11	B	56.8		5.97	MG/KG	SWSD0005	11/ 15	113	56.8	0.51	YES
Sediment	7440-70-2	Calcium	1480		166000	J	53180.67	MG/KG	SWSD0022	15/ 15	177000	166000	109000	YES
Sediment	7440-47-3	Chromium	9.8		36.3	J	22.1	MG/KG	SWSD0022	15/ 15	23.2	23.2	17.6	YES
Sediment	7440-48-4	Cobalt	2.9		28.5		11.91	MG/KG	SWSD0022	15/ 15	8.17	8.17	10	NO:1
Sediment	7440-50-8	Copper	7.3	J	228	J	60.68	MG/KG	SWSD0016	15/ 15	208	208	23	YES
Sediment	7439-89-6	Iron	6540	J	36200	J	20299.33	MG/KG	SWSD0022	15/ 15	22100	22100	20500	YES
Sediment	7439-92-1	Lead	13.1	J	453	J	107.52	MG/KG	SWSD0022	18/ 18	339	339	14.3	YES
Sediment	7439-95-4	Magnesium	718		72400	J	19041.2	MG/KG	SWSD0022	15/ 15	56300	56300	18900	YES
Sediment	7439-96-5	Manganese	137	J	2300		776.8	MG/KG	SWSD0022	15/ 15	280	280	563	NO:1
Sediment	7439-94-7	Mercury	0.06	J	0.72		0.21	MG/KG	SWSD0022	15/ 15	0.25	0.25	--	YES
Sediment	7439-98-7	Molybdenum	1.4	B	5.8	J	2.01	MG/KG	SWSD0016	11/ 15	3.46	3.46	2.6	YES
Sediment	7440-02-0	Nickel	10.2		60.1	J	23.61	MG/KG	SWSD0022	15/ 15	42.1	42.1	25.3	YES
Sediment	7440-00-0	Phosphorus	1.14	J	2.64	J	2.11	MG/KG	SWSD0004	3/ 3	3.32	2.64	680	NO:1
Sediment	7440-09-7	Potassium	719	J	2730	J	1545.4	MG/KG	SWSD0016	15/ 15	2130	2130	2390	NO:1
Sediment	7782-49-2	Selenium	0.5	B	3.3	B	1.15	MG/KG	SWSD0022	8/ 15	1.39	1.39	1.8	NO:1
Sediment		Silicon	897	J	3930	J	2039.8	MG/KG	SWSD0022	15/ 15	3250	3250	567	YES
Sediment	7440-22-4	Silver	9.8		9.8		0.67	MG/KG	SWSD0019	1/ 15	2.83	2.83	--	YES
Sediment	7440-23-5	Sodium	51.8	J	1070	J	446.05	MG/KG	SWSD0022	15/ 15	941	941	373	YES
Sediment	7440-24-6	Strontium	5.5		545		195.62	MG/KG	SWSD0005	15/ 15	335	335	98.3	YES
Sediment	7440-28-0	Thallium	0.95	B	9.6	B	2.74	MG/KG	SWSD0022	9/ 15	1.54	1.54	3.4	NO:1
Sediment	7440-62-2	Vanadium	8.3		36.7		24.18	MG/KG	SWSD0022	15/ 15	24.2	24.2	24.8	NO:1
Sediment	7440-66-6	Zinc	25.5		712	J	206.57	MG/KG	SWSD0016	15/ 15	549	549	108	YES
Sediment	7782-50-5	Chloride	14.6		779	J	195.33	MG/KG	SWSD0016	6/ 6	10600	779	--	YES
Sediment	16984-48-8	Fluoride	2.14		163		44.42	MG/KG	IA06-SD0001	9/ 9	678	163	5.35	YES
Sediment		Nitrate, as N	0.163	J	7.29	J	2.64	MG/KG	SWSD0004	6/ 6	58.3	7.29	--	YES
Sediment	SO4	Sulfate	76.7	J	4100	J	1542.62	MG/KG	SWSD0022	6/ 6	76800	4100	--	YES
Sediment		Total organic carbon	10700	J	89600	J	42945.45	MG/KG	SWSD0017	11/ 11	53000	53000	--	YES
Sediment	91-94-1	3,3'-Dichlorobenzidine	420	J	420	J	2733.93	UG/KG	IA06-SD0005	1/ 14	8700	420	--	YES
Sediment	56-55-3	Benzo(a)anthracene	819	J	1830	J	1564.46	UG/KG	SWSD0009	2/ 14	4330	1830	--	YES
Sediment	50-32-8	Benzo(a)pyrene	696	J	1780	J	1552.11	UG/KG	SWSD0009	2/ 14	4320	1780	--	YES
Sediment	205-99-2	Benzo(b)fluoranthene	1400	J	2250	J	1720.96	UG/KG	SWSD0016	3/ 14	4380	2250	--	YES

Appendix Table 7A.1. Identification of Chemicals of Potential Concern for Ecolgoical Receptors Exposure Unit 3 - Offiste Residential/Agricultural Lands (continued)

Medium	CAS Number	Parameter	Minimum Detection		Maximum Detection		Mean	Units	Location of Maximum	Detection Frequency	UCL95	Value for Comparison	Background Value	COPC
Sediment	191-24-2	Benzo(ghi)perylene	448	J	448	J	1442.61	UG/KG	IA06-SD0005	1/ 14	4030	448	--	YES
Sediment	207-08-9	Benzo(k)fluoranthene	1130	J	1130	J	1589.18	UG/KG	SWSD0009	1/ 14	4340	1130	--	YES
Sediment	218-01-9	Chrysene	1090	J	2050		1599.54	UG/KG	SWSD0009	2/ 14	4350	2050	--	YES
Sediment		Di-n-octylphthalate	479	J	479	J	1444.82	UG/KG	IA06-SD0005	1/ 14	4260	479	--	YES
Sediment	206-44-0	Fluoranthene	886	J	5430		2229.61	UG/KG	SWSD0009	4/ 14	4830	4830	--	YES
Sediment	193-39-5	Indeno(1,2,3-c,d)pyrene	452	J	452	J	1442.89	UG/KG	IA06-SD0005	1/ 14	4030	452	--	YES
Sediment	85-01-8	Phenanthrene	2510	J	3630		1913.82	UG/KG	SWSD0009	3/ 14	4550	3630	--	YES
Sediment	129-00-0	Pyrene	1750	J	3640		1760.25	UG/KG	SWSD0009	2/ 14	5070	3640	--	YES
Sediment	117-81-7	bis(2-ethylhexyl)phthalate	1030	J	11000		2431.32	UG/KG	IA06-SD0005	4/ 14	5190	5190	--	YES
Sediment	78-93-3	2-Butanone	4.3	J	14.9		4.89	UG/KG	IA06-SD0005	4/ 9	7.37	7.37	--	YES
Sediment	67-64-1	Acetone	21.5	J	365		71.44	UG/KG	IA06-SD0004	7/ 9	221	221	--	YES
Sediment	71-43-2	Benzene	0.83	J	5.2	J	1.66	UG/KG	IA06-SD0004	3/ 9	3.13	3.13	--	YES
Sediment	75-15-0	Carbon disulfide	3.6	J	41.2		7.94	UG/KG	IA06-SD0005	3/ 9	14.8	14.8	--	YES
Sediment	75-00-3	Chloroethane	32.4		32.4		5.51	UG/KG	IA06-SD0001	1/ 9	10.3	10.3	--	YES
Sediment	100-41-4	Ethylbenzene	0.67	J	3.2	J	1.18	UG/KG	IA06-SD0004	3/ 9	13.5	3.2	--	YES
Sediment	75-09-2	Methylene chloride	0.58	BJ	0.86	BJ	0.99	UG/KG	IA06-SD0004	2/ 9	13.4	0.86	--	YES
Sediment	108-88-3	Toluene	0.76	J	54.6		10.5	UG/KG	SWSD0009	8/ 9	296	54.6	--	YES
Sediment	1330-20-7	Xylenes (total)	0.77	J	9.9		2.46	UG/KG	IA06-SD0004	3/ 9	40.5	9.9	--	YES
Sediment	AC-227	Actinium-227	0.135		0.313		1.27	PCI/G	SWSD0006	7/ 15	0.22	0.22	0.4	NO:1
Sediment	14331-83-0	Actinium-228	0.154	J	0.994	J	0.67	PCI/G	IA06-SD0001	3/ 3	1.44	0.994	0.76	YES
Sediment	10045-97-3	Cesium-137	0.0773	J	4.95		0.69	PCI/G	SWSD0022	8/ 15	0.25	0.25	0.16	YES
Sediment	13966-00-2	Potassium-40	4.09		24		12.54	PCI/G	IA06-SD0001	13/ 15	16.1	16.1	18.1	NO:1
Sediment	13982-63-3	Radium-226	0.431	J	13.5	J	3.66	PCI/G	SWSD0022	12/ 12	4.17	4.17	1.63	YES
Sediment	RA-228	Radium-228	0.154	J	1.05		0.52	PCI/G	SWSD0022	14/ 15	0.59	0.59	1.11	NO:1
Sediment		Thorium-227	0.135		0.313		0.37	PCI/G	SWSD0006	5/ 10	0.23	0.23	0.4	NO:1
Sediment	14274-82-9	Thorium-228	0.198		1.07		0.55	PCI/G	IA06-SD0001	14/ 15	0.67	0.67	1.19	NO:1
Sediment	14269-63-7	Thorium-230	0.488	J	3.35		1.48	PCI/G	SWSD0022	15/ 15	2.12	2.12	1.89	YES
Sediment	7440-29-1	Thorium-232	0.178		0.831		0.47	PCI/G	SWSD0022	15/ 15	0.55	0.55	0.84	NO:1
Sediment	15065-10-8	Thorium-234	0.791	J	1.85	J	1.71	PCI/G	IA06-SD0004	2/ 3	2.2	1.85	2.27	NO:1
Sediment	U-233/234	Uranium-233/234	0.536	J	1.33		0.99	PCI/G	IA06-SD0004	3/ 3	1.68	1.33	1.23	YES
Sediment		Uranium-234	0.262		5.14		1.7	PCI/G	SWSD0022	12/ 12	2.13	2.13	1.8	YES
Sediment	15117-96-1	Uranium-235	0.0366		0.184		0.37	PCI/G	SWSD0022	5/ 15	0.07	0.07	0.06	YES
Sediment	24678-82-8	Uranium-238	0.327		5.11		1.61	PCI/G	SWSD0022	15/ 15	1.92	1.92	2.08	NO:1
Soil (0-2 ft)	7429-90-5	Aluminum	19900		19900		19900	MG/KG	IA10-SB0024	1/ 1	--	19900	23700	NO:1
Soil (0-2 ft)	7440-38-2	Arsenic	2.4	N	15.6	N	7.2	MG/KG	IA10-SB0045	41/ 41	7.79	7.79	24.1	NO:1
Soil (0-2 ft)	7440-39-3	Barium	25.4		479		111.28	MG/KG	IA10-SB0045	41/ 41	128	128	209	NO:1
Soil (0-2 ft)	7440-41-7	Beryllium	0.63		2560	N	95.91	MG/KG	IA10-SB0051	79/ 79	155	155	1.13	YES

Appendix Table 7A.1. Identification of Chemicals of Potential Concern for Ecolgoical Receptors Exposure Unit 3 - Offiste Residential/Agricultural Lands (continued)

Medium	CAS Number	Parameter	Minimum Detection		Maximum Detection		Mean	Units	Location of Maximum	Detection Frequency	UCL95	Value for Comparison	Background Value	COPC
Soil (0-2 ft)	7440-70-2	Calcium	4650		4650		4650	MG/KG	IA10-SB0024	1/ 1	--	4650	55100	NO:1
Soil (0-2 ft)	7440-47-3	Chromium	28.8		28.8		28.8	MG/KG	IA10-SB0024	1/ 1	--	28.8	29.6	NO:1
Soil (0-2 ft)	7440-48-4	Cobalt	12.9	*	12.9	*	12.9	MG/KG	IA10-SB0024	1/ 1	--	12.9	19.1	NO:1
Soil (0-2 ft)	7440-50-8	Copper	25.4		25.4		25.4	MG/KG	IA10-SB0024	1/ 1	--	25.4	42	NO:1
Soil (0-2 ft)	7439-89-6	Iron	33600		33600		33600	MG/KG	IA10-SB0024	1/ 1	--	33600	38600	NO:1
Soil (0-2 ft)	7439-92-1	Lead	8.9	N	338	N	53.37	MG/KG	IA10-SB0050	41/ 41	74	74	23.2	YES
Soil (0-2 ft)	7439-95-4	Magnesium	6400		6400		6400	MG/KG	IA10-SB0024	1/ 1	--	6400	17100	NO:1
Soil (0-2 ft)	7439-96-5	Manganese	371	*	371	*	371	MG/KG	IA10-SB0024	1/ 1	--	371	2340	NO:1
Soil (0-2 ft)	7439-94-7	Mercury	0.03		0.03		0.03	MG/KG	IA10-SB0024	1/ 1	--	0.03	0.19	NO:1
Soil (0-2 ft)	7440-02-0	Nickel	34.6	*	34.6	*	34.6	MG/KG	IA10-SB0024	1/ 1	--	34.6	46.1	NO:1
Soil (0-2 ft)	7440-00-0	Phosphorus	514		514		514	MG/KG	IA10-SB0024	1/ 1	--	514	808	NO:1
Soil (0-2 ft)	7440-09-7	Potassium	2600		2600		2600	MG/KG	IA10-SB0024	1/ 1	--	2600	3410	NO:1
Soil (0-2 ft)	7782-49-2	Selenium	2.7		2.7		2.7	MG/KG	IA10-SB0024	1/ 1	--	2.7	2.33	YES
Soil (0-2 ft)	7440-23-5	Sodium	77.2	E	77.2	E	77.2	MG/KG	IA10-SB0024	1/ 1	--	77.2	285	NO:1
Soil (0-2 ft)	7440-28-0	Thallium	0.84		0.84		0.84	MG/KG	IA10-SB0024	1/ 1	--	0.84	2.1	NO:1
Soil (0-2 ft)	7440-62-2	Vanadium	41.2		41.2		41.2	MG/KG	IA10-SB0024	1/ 1	--	41.2	42.8	NO:1
Soil (0-2 ft)	7440-66-6	Zinc	91.2		91.2		91.2	MG/KG	IA10-SB0024	1/ 1	--	91.2	110	NO:1
Soil (0-2 ft)	67-64-1	Acetone	19.3	B	19.3	B	19.3	UG/KG	IA10-SB0024	1/ 1	--	19.3	--	YES
Soil (0-2 ft)	67-66-3	Chloroform	0.58	JB	0.58	JB	0.58	UG/KG	IA10-SB0024	1/ 1	--	0.58	--	YES
Soil (0-2 ft)	108-88-3	Toluene	0.9	J	0.9	J	0.9	UG/KG	IA10-SB0024	1/ 1	--	0.9	--	YES
Soil (0-2 ft)	AC-227	Actinium-227	0.159	J	1.05	J	4.15	PCI/G	IA10-SB0051	9/ 50	0.17	0.17	1.76	NO:1
Soil (0-2 ft)	14331-83-0	Actinium-228	0.527	J	1.42		1.06	PCI/G	IA10-SB0058	49/ 50	1.11	1.11	1.35	NO:1
Soil (0-2 ft)	10045-97-3	Cesium-137	0.0872	J	0.984		0.25	PCI/G	IA10-SB0047	46/ 50	0.3	0.3	0.72	NO:1
Soil (0-2 ft)	13966-00-2	Potassium-40	2.1		28.7		22.42	PCI/G	IA10-SB0064	50/ 50	23.7	23.7	27.2	NO:1
Soil (0-2 ft)	13982-63-3	Radium-226	1.09		24.7		2.51	PCI/G	IA10-SB0051	50/ 50	3.32	3.32	2.97	YES
Soil (0-2 ft)	RA-228	Radium-228	0.527	J	1.42		1.06	PCI/G	IA10-SB0058	49/ 50	1.11	1.11	1.48	NO:1
Soil (0-2 ft)	14274-82-9	Thorium-228	0.248	J	4.09		1.08	PCI/G	IA10-SB0067	50/ 50	1.2	1.2	1.6	NO:1
Soil (0-2 ft)	14269-63-7	Thorium-230	0.951	J	14.8		2.49	PCI/G	IA10-SB0051	50/ 50	3.02	3.02	3.2	NO:1
Soil (0-2 ft)	7440-29-1	Thorium-232	0.508	J	1.32		0.9	PCI/G	IA10-SB0038	49/ 50	0.94	0.94	1.48	NO:1
Soil (0-2 ft)	15065-10-8	Thorium-234	1.26	J	16.3		2.79	PCI/G	IA10-SB0051	34/ 50	2.73	2.73	3.07	NO:1
Soil (0-2 ft)	U-233/234	Uranium-233/234	0.761	J	17.8		2.01	PCI/G	IA10-SB0051	50/ 50	2.61	2.61	2.01	YES
Soil (0-2 ft)	15117-96-1	Uranium-235	0.0516	J	1.42		0.38	PCI/G	IA10-SB0051	20/ 50	0.2	0.2	1.56	NO:1
Soil (0-2 ft)	24678-82-8	Uranium-238	0.908	J	16.6		1.95	PCI/G	IA10-SB0051	50/ 50	2.51	2.51	2.63	NO:1
Surf. Water	7429-90-5	Aluminum	132		3340		467.4	UG/L	SWSD0009	7/ 11	1090	1090	733	YES
Surf. Water	7440-38-2	Arsenic	2.6	B	125		10.89	UG/L	SWSD0022	3/ 14	3.08	3.08	--	YES
Surf. Water	7440-39-3	Barium	13.4		219		81.62	UG/L	IA06-SD0005	14/ 14	188	188	38.8	YES
Surf. Water	7440-41-7	Beryllium	0.23	B	83.6		14.78	UG/L	IA06-SD0004	13/ 14	283	83.6	--	YES

Appendix Table 7A.1. Identification of Chemicals of Potential Concern for Ecolgoical Receptors Exposure Unit 3 - Offiste Residential/Agricultural Lands (continued)

Medium	CAS Number	Parameter	Minimum Detection		Maximum Detection		Mean	Units	Location of Maximum	Detection Frequency	UCL95	Value for Comparison	Background Value	COPC
Surf. Water	7440-42-8	Boron	53.8		475		134.99	UG/L	SWSD0016	10/ 11	235	235	--	YES
Surf. Water	7440-43-9	Cadmium	0.47	B	42.2		4.3	UG/L	SWSD0022	5/ 11	1.06	1.06	--	YES
Surf. Water	7440-70-2	Calcium	40600		158000		79410.5	UG/L	SWSD0010	9/ 11	118000	118000	89400	YES
Surf. Water	7440-47-3	Chromium	0.78	B	125		12.58	UG/L	SWSD0022	6/ 11	2.27	2.27	1.2	YES
Surf. Water	7440-48-4	Cobalt	0.95	B	126		12.17	UG/L	SWSD0022	5/ 11	1.21	1.21	--	YES
Surf. Water	7440-50-8	Copper	4.3	B	127		26.31	UG/L	SWSD0022	10/ 11	23.3	23.3	4.6	YES
Surf. Water	7439-89-6	Iron	156		5890		1005.79	UG/L	SWSD0009	9/ 11	2100	2100	871	YES
Surf. Water	7439-92-1	Lead	1.8		181		28.26	UG/L	IA06-SD0005	7/ 14	45.8	45.8	1.2	YES
Surf. Water	7439-95-4	Magnesium	615		104000		44839.61	UG/L	SWSD0009	10/ 11	67600	67600	27000	YES
Surf. Water	7439-96-5	Manganese	2.6	B	248		72.35	UG/L	SWSD0006	11/ 11	1540	248	19.7	YES
Surf. Water	7439-94-7	Mercury	0.13	B	0.27		0.1	UG/L	SWSD0012	3/ 11	0.13	0.13	--	YES
Surf. Water	7439-98-7	Molybdenum	48.8		49		9.07	UG/L	SWSD0022	2/ 11	22.6	22.6	11.1	YES
Surf. Water	7440-02-0	Nickel	3.9	B	131		41.4	UG/L	SWSD0022	10/ 11	42.7	42.7	--	YES
Surf. Water	7440-00-0	Phosphorus	0.039	J	5.96		1.32	UG/L	SWSD0016	5/ 6	3.57	3.57	--	YES
Surf. Water	7440-09-7	Potassium	4280		25400		10598.45	UG/L	SWSD0022	10/ 11	21200	21200	1570	YES
Surf. Water	7782-49-2	Selenium	124		124		11.91	UG/L	SWSD0022	1/ 11	1.32	1.32	--	YES
Surf. Water		Silicon	2340		8830		4270.06	UG/L	SWSD0009	10/ 11	6400	6400	3620	YES
Surf. Water	7440-22-4	Silver	43.2		43.2		4.21	UG/L	SWSD0022	1/ 11	0.88	0.88	--	YES
Surf. Water	7440-23-5	Sodium	97900		848000		259537.69	UG/L	SWSD0009	10/ 11	573000	573000	18500	YES
Surf. Water	7440-24-6	Strontium	409		16800		6266.2	UG/L	SWSD0009	10/ 11	10400	10400	1450	YES
Surf. Water	7440-28-0	Thallium	251		251		24.05	UG/L	SWSD0022	1/ 11	1.98	1.98	--	YES
Surf. Water	7440-62-2	Vanadium	0.47	B	124		12.84	UG/L	SWSD0022	6/ 11	3.25	3.25	2.2	YES
Surf. Water	7440-66-6	Zinc	12.2		129		44.1	UG/L	SWSD0022	11/ 11	46.3	46.3	--	YES
Surf. Water	ALK	Alkalinity	69		522		294.8	MG/L	SWSD0016	10/ 10	369	369	--	YES
Surf. Water		Ammonia	0.08		26.8		5.6	MG/L	SWSD0012	10/ 10	10.8	10.8	--	YES
Surf. Water	7782-50-5	Chloride	12.8		961		271.95	MG/L	SWSD0010	6/ 6	49800	961	--	YES
Surf. Water	16984-48-8	Fluoride	0.58		9.11		2.66	MG/L	SWSD0022	8/ 9	72.3	9.11	0.18	YES
Surf. Water		Nitrate, as N	0.015	J	1.47	J	0.43	MG/L	SWSD0004	4/ 6	0.73	0.73	--	YES
Surf. Water	SO4	Sulfate	50.2		378		310.7	MG/L	SWSD0022	6/ 6	383	378	--	YES
Surf. Water	TDS	Total dissolved solids	646		3240		1328.6	MG/L	SWSD0009	10/ 10	1780	1780	--	YES
Surf. Water	TSS	Total suspended solids	8.6		70		28.83	MG/L	SWSD0004	10/ 10	45.6	45.6	--	YES
Surf. Water		Di-n-octylphthalate	10.8		10.8		5.7	UG/L	SWSD0016	1/ 13	10.2	10.2	--	YES
Surf. Water	84-66-2	Diethyl phthalate	5.1	J	5.1	J	5.27	UG/L	SWSD0012	1/ 13	9.88	5.1	--	YES
Surf. Water	108-95-2	Phenol	6.4	J	6.4	J	5.2	UG/L	SWSD0012	1/ 11	11.6	6.4	--	YES
Surf. Water	117-81-7	bis(2-ethylhexyl)phthalate	25.4		25.4		6.83	UG/L	SWSD0004	1/ 13	22.6	22.6	--	YES
Surf. Water	106-44-5	m,p-cresol	17.3		17.3		6.36	UG/L	SWSD0012	1/ 8	11.1	11.1	--	YES
Surf. Water	78-93-3	2-Butanone	9.1	J	9.1	J	2.24	UG/L	IA06-SD0004	1/ 13	5.75	5.75	--	YES

Appendix Table 7A.1. Identification of Chemicals of Potential Concern for Ecolgoical Receptors Exposure Unit 3 - Offiste Residential/Agricultural Lands (continued)

Medium	CAS Number	Parameter	Minimum Detection		Maximum Detection		Mean	Units	Location of Maximum	Detection Frequency	UCL95	Value for Comparison	Background Value	COPC
Surf. Water	67-64-1	Acetone	4.4	J	59	J	9.82	UG/L	SWSD0012	2/ 9	18.8	18.8	--	YES
Surf. Water	75-27-4	Bromodichloromethane	0.33	J	0.6	J	0.49	UG/L	SWSD0019	2/ 10	9.34	0.6	--	YES
Surf. Water	67-66-3	Chloroform	0.44	J	0.76	J	0.98	UG/L	SWSD0005	2/ 13	8.16	0.76	--	YES
Surf. Water	124-48-1	Dibromochloromethane	0.22	J	3.4	J	0.76	UG/L	SWSD0019	2/ 10	9.25	3.4	--	YES
Surf. Water	127-18-4	Tetrachloroethene	1.3	J	1.3	J	0.87	UG/L	IA06-SD0001	1/ 13	8.41	1.3	--	YES
Surf. Water		Tribromomethane	6	J	6	J	1.05	UG/L	SWSD0019	1/ 10	8.75	6	--	YES
Surf. Water	AC-227	Actinium-227	0.598		0.598		1.11	PCI/L	SWSD0005	1/ 14	0.2	0.2	0.36	NO:1
Surf. Water	13966-00-2	Potassium-40	397		519		83.15	PCI/L	SWSD0012	2/ 13	229	229	--	YES
Surf. Water	13982-63-3	Radium-226	0.239		2.52		0.73	PCI/L	IA06-SD0004	10/ 14	2.86	2.52	0.24	YES
Surf. Water	RA-228	Radium-228	0.324		0.715	J	0.5	PCI/L	IA06-SD0004	2/ 14	0.21	0.21	--	YES
Surf. Water		Thorium-227	0.598		0.598		0.51	PCI/L	SWSD0005	1/ 11	0.24	0.24	0.36	NO:1
Surf. Water	14274-82-9	Thorium-228	0.246	J	0.324		0.47	PCI/L	SWSD0009	2/ 14	0.09	0.09	--	YES
Surf. Water	14269-63-7	Thorium-230	0.286	J	0.459	J	0.47	PCI/L	IA06-SD0001	4/ 14	0.21	0.21	0.57	NO:1
Surf. Water	7440-29-1	Thorium-232	0.105	J	0.105	J	0.47	PCI/L	IA06-SD0004	1/ 14	0.05	0.05	--	YES
Surf. Water	U-233/234	Uranium-233/234	0.18	J	0.18	J	0.39	PCI/L	IA06-SD0001	1/ 3	0.42	0.18	--	YES
Surf. Water		Uranium-234	0.308		3.87		0.97	PCI/L	SWSD0022	7/ 11	0.77	0.77	0.78	NO:1
Surf. Water	24678-82-8	Uranium-238	0.31		4.5		1	PCI/L	SWSD0022	8/ 14	1.21	1.21	1.02	YES

NO:0 = Frequency of Detection Less than 5%
NO:1 = Comparison value less than background value
YES = Chemical is a COPC

Appendix Table 7A.1. Identification of Chemicals of Potential Concern for Ecological Receptors Exposure Unit 4 - Toussaint Creek Downstream of luckey (0 to 1 mile) (continued)

Medium	CAS Number	Parameter	Minimum Detection		Maximum Detection		Mean	Units	Location of Maximum	Detection Frequency	UCL95	Value for Comparison	Background Value	COPC
Sediment	7429-90-5	Aluminum	4610		10700		7504	MG/KG	BH0018	10/ 10	8920	8920	12000	NO:1
Sediment	7440-38-2	Arsenic	2.8	J	9.6	B	5.23	MG/KG	SWSD0015	12/ 12	6.3	6.3	12.1	NO:1
Sediment	7440-39-3	Barium	45.2	J	75		56.72	MG/KG	IA06-SD0038	6/ 6	67.2	67.2	94.3	NO:1
Sediment	7440-41-7	Beryllium	1.9		223		42.13	MG/KG	SWSD0015	12/ 12	93.5	93.5	0.69	YES
Sediment	7440-42-8	Boron	7.3	B	10.1	J	8.68	MG/KG	SWSD0014	4/ 4	10.5	10.1	15.5	NO:1
Sediment	7440-43-9	Cadmium	0.56	B	32.3		9.64	MG/KG	SWSD0013	4/ 4	27.5	27.5	0.51	YES
Sediment	7440-70-2	Calcium	45400		62300		50525	MG/KG	SWSD0008	4/ 4	59800	59800	109000	NO:1
Sediment	7440-47-3	Chromium	10.9		13.1		11.6	MG/KG	SWSD0013	4/ 4	12.8	12.8	17.6	NO:1
Sediment	7440-48-4	Cobalt	6.8		9.6		7.83	MG/KG	SWSD0015	4/ 4	9.27	9.27	10	NO:1
Sediment	7440-50-8	Copper	14.6	J	23.1		19.05	MG/KG	SWSD0015	4/ 4	23.8	23.1	23	YES
Sediment	7439-89-6	Iron	11900	J	15000	J	13725	MG/KG	SWSD0013	4/ 4	15400	15000	20500	NO:1
Sediment	7439-92-1	Lead	9.5	B*	2170	*	199.48	MG/KG	BH0018	12/ 12	521	521	14.3	YES
Sediment	7439-95-4	Magnesium	7550		21700		11625	MG/KG	SWSD0008	10/ 10	14800	14800	18900	NO:1
Sediment	7439-96-5	Manganese	271		351	J	311.5	MG/KG	SWSD0008	4/ 4	350	350	563	NO:1
Sediment	7439-94-7	Mercury	0.03	B	0.07		0.05	MG/KG	SWSD0015	4/ 4	0.07	0.07	--	YES
Sediment	7439-98-7	Molybdenum	2.3	B	5	B	3.25	MG/KG	SWSD0015	4/ 4	4.66	4.66	2.6	YES
Sediment	7440-02-0	Nickel	15.8		19.2		17.23	MG/KG	SWSD0015	4/ 4	19	19	25.3	NO:1
Sediment	7440-00-0	Phosphorus	2.68	J	2.68	J	2.68	MG/KG	SWSD0013	1/ 1	2.68	2.68	680	NO:1
Sediment	7440-09-7	Potassium	1060	J	1480		1310	MG/KG	SWSD0014	4/ 4	1540	1480	2390	NO:1
Sediment	7782-49-2	Selenium	0.42	B	0.5	B	0.25	MG/KG	SWSD0008	2/ 4	0.52	0.5	1.8	NO:1
Sediment		Silicon	602	J	1290	J	962.75	MG/KG	SWSD0008	4/ 4	1310	1290	567	YES
Sediment	7440-22-4	Silver	0.27	B	0.76	B	0.33	MG/KG	SWSD0015	3/ 4	0.68	0.68	--	YES
Sediment	7440-23-5	Sodium	155		221		193	MG/KG	SWSD0013	4/ 4	226	221	373	NO:1
Sediment	7440-24-6	Strontium	115		192	J	145.5	MG/KG	SWSD0013	4/ 4	185	185	98.3	YES
Sediment	7440-28-0	Thallium	1.1	B	1.1	B	0.33	MG/KG	SWSD0008	1/ 4	1.03	1.03	3.4	NO:1
Sediment	7440-62-2	Vanadium	15.3		18.1		17.23	MG/KG	SWSD0015	4/ 4	18.7	18.1	24.8	NO:1
Sediment	7440-66-6	Zinc	52		79.4		63.43	MG/KG	SWSD0013	4/ 4	76.9	76.9	108	NO:1
Sediment	7782-50-5	Chloride	16.5		16.5		16.5	MG/KG	SWSD0013	1/ 1	22.7	16.5	--	YES
Sediment	16984-48-8	Fluoride	4.61		13.6		6.09	MG/KG	IA06-SD0038	2/ 3	12.1	12.1	5.35	YES
Sediment		Nitrate, as N	0.281	J	0.281	J	0.28	MG/KG	SWSD0013	1/ 1	1.7	0.281	--	YES
Sediment	7664-41-7	Nitrogen, Ammonia	57.4		73.9		65.65	MG/KG	IA06-SD0038	2/ 2	118	73.9	8.1	YES
Sediment	SO4	Sulfate	91.5		91.5		91.5	MG/KG	SWSD0013	1/ 1	91.9	91.5	--	YES
Sediment		Total organic carbon	16000	J	21600	J	18725	MG/KG	SWSD0013	4/ 4	20500	20500	--	YES
Sediment	83-32-9	Acenaphthene	48.9	J	48.9	J	137.23	UG/KG	SWSD0015	1/ 4	503	48.9	--	YES
Sediment	120-12-7	Anthracene	116	J	116	J	154	UG/KG	SWSD0015	1/ 4	535	116	--	YES
Sediment	56-55-3	Benzo(a)anthracene	74.5	J	74.5	J	134.88	UG/KG	SWSD0014	1/ 4	534	74.5	--	YES
Sediment	50-32-8	Benzo(a)pyrene	34	J	199	J	144.88	UG/KG	SWSD0015	3/ 4	531	199	--	YES

Appendix Table 7A.1. Identification of Chemicals of Potential Concern for Ecological Receptors Exposure Unit 4 - Toussaint Creek Downstream of luckey (0 to 1 mile) (continued)

Medium	CAS Number	Parameter	Minimum Detection		Maximum Detection		Mean	Units	Location of Maximum	Detection Frequency	UCL95	Value for Comparison	Background Value	COPC
Sediment	205-99-2	Benzo(b)fluoranthene	52.5	J	271	J	176.38	UG/KG	SWSD0015	3/ 4	538	271	--	YES
Sediment	191-24-2	Benzo(ghi)perylene	44.6	J	88	J	129.4	UG/KG	SWSD0015	2/ 4	534	88	--	YES
Sediment	207-08-9	Benzo(k)fluoranthene	48.6	J	109	J	135.65	UG/KG	SWSD0015	2/ 4	534	109	--	YES
Sediment	86-74-8	Carbazole	164	J	164	J	166	UG/KG	SWSD0015	1/ 4	533	164	--	YES
Sediment	218-01-9	Chrysene	45.3	J	253	J	167.08	UG/KG	SWSD0015	3/ 4	536	253	--	YES
Sediment	53-70-3	Dibenz(a,h)anthracene	9.2	J	9.2	J	127.3	UG/KG	SWSD0015	1/ 4	541	9.2	--	YES
Sediment	132-64-9	Dibenzofuran	18.9	J	18.9	J	129.73	UG/KG	SWSD0015	1/ 4	541	18.9	--	YES
Sediment	84-66-2	Diethyl phthalate	25.5	J	48.2	J	96.98	UG/KG	SWSD0014	3/ 4	523	48.2	--	YES
Sediment	206-44-0	Fluoranthene	59.6	J	534		259.15	UG/KG	SWSD0015	3/ 4	586	534	--	YES
Sediment	86-73-7	Fluorene	64	J	64	J	141	UG/KG	SWSD0015	1/ 4	538	64	--	YES
Sediment	193-39-5	Indeno(1,2,3-c,d)pyrene	14	J	86.2	J	121.3	UG/KG	SWSD0015	2/ 4	535	86.2	--	YES
Sediment	85-01-8	Phenanthrene	81	J	402		217	UG/KG	SWSD0015	2/ 4	556	402	--	YES
Sediment	129-00-0	Pyrene	62.7	J	420		226.18	UG/KG	SWSD0015	3/ 4	557	420	--	YES
Sediment	117-81-7	bis(2-ethylhexyl)phthalate	56.8	J	84.7	J	122.88	UG/KG	SWSD0014	2/ 4	528	84.7	--	YES
Sediment	78-93-3	2-Butanone	4.7	J	4.7	J	4.7	UG/KG	SWSD0008	1/ 1	--	4.7	--	YES
Sediment	67-64-1	Acetone	58.4	J	58.4	J	58.4	UG/KG	SWSD0008	1/ 1	--	58.4	--	YES
Sediment	108-88-3	Toluene	24		24		24	UG/KG	SWSD0008	1/ 1	--	24	--	YES
Sediment	AC-227	Actinium-227	0.133		0.217		0.36	PCI/G	SWSD0015	4/ 12	0.15	0.15	0.4	NO:1
Sediment	14331-83-0	Actinium-228	0.49799	J	0.62099	J	0.56	PCI/G	IA06-SD0038	2/ 2	0.95	0.621	0.76	NO:1
Sediment	10045-97-3	Cesium-137	0.0894	J	0.3		0.29	PCI/G	BH0018	8/ 12	0.2	0.2	0.16	YES
Sediment		Gross Alpha	13.3		14.7		14	PCI/G	IA06-SD0038	2/ 2	18.4	14.7	16.5	NO:1
Sediment		Nonvolatile Beta	21.3		24.6		22.95	PCI/G	IA06-SD0039	2/ 2	33.4	24.6	20.8	YES
Sediment	13966-00-2	Potassium-40	11.7		21		15.74	PCI/G	BH0018	12/ 12	16.7	16.7	18.1	NO:1
Sediment	13982-63-3	Radium-226	0.68	J	1.85		1.22	PCI/G	SWSD0013	11/ 11	1.46	1.46	1.63	NO:1
Sediment	RA-228	Radium-228	0.269		0.652	J	0.48	PCI/G	BH0018	12/ 12	0.56	0.56	1.11	NO:1
Sediment		Thorium-227	0.151		0.217		0.41	PCI/G	SWSD0015	3/ 10	0.18	0.18	0.4	NO:1
Sediment	14274-82-9	Thorium-228	0.269		0.71899		0.5	PCI/G	IA06-SD0039	12/ 12	0.59	0.59	1.19	NO:1
Sediment	14269-63-7	Thorium-230	0.411		1.41		0.86	PCI/G	SWSD0013	12/ 12	1.06	1.06	1.89	NO:1
Sediment	7440-29-1	Thorium-232	0.187		0.67599		0.43	PCI/G	IA06-SD0039	12/ 12	0.54	0.54	0.84	NO:1
Sediment	15065-10-8	Thorium-234	1.3	J	1.3	J	1.9	PCI/G	IA06-SD0038	1/ 2	3.81	1.3	2.27	NO:1
Sediment	U-233/234	Uranium-233/234	0.91799		0.95899		0.94	PCI/G	IA06-SD0039	2/ 2	1.07	0.959	1.23	NO:1
Sediment		Uranium-234	0.291	J	1.01		0.52	PCI/G	SWSD0015	10/ 10	0.65	0.65	1.8	NO:1
Sediment	15117-96-1	Uranium-235	0.03799	J	0.03799	J	0.44	PCI/G	IA06-SD0039	1/ 12	0.04	0.038	0.06	NO:1
Sediment	24678-82-8	Uranium-238	0.385		1.1		0.64	PCI/G	SWSD0015	12/ 12	0.79	0.79	2.08	NO:1
Sediment		Total Organic Carbon	20200		28600		24400	MG/KG	IA06-SD0038	2/ 2	50900	28600	--	YES
Surf. Water	7429-90-5	Aluminum	194		1700		475.81	UG/L	IA06-SW0002	5/ 6	981	981	733	YES
Surf. Water	7440-38-2	Arsenic	2.7	B	8.7		2.79	UG/L	IA06-SW0002	5/ 14	3.91	3.91	--	YES

Appendix Table 7A.1. Identification of Chemicals of Potential Concern for Ecological Receptors Exposure Unit 4 - Toussaint Creek Downstream of luckey (0 to 1 mile) (continued)

Medium	CAS Number	Parameter	Minimum Detection		Maximum Detection		Mean	Units	Location of Maximum	Detection Frequency	UCL95	Value for Comparison	Background Value	COPC
Surf. Water	7440-39-3	Barium	41.4		109		60.04	UG/L	IA06-SW0002	14/ 14	69.3	69.3	38.8	YES
Surf. Water	7440-41-7	Beryllium	0.39		5.1		1.31	UG/L	IA06-SW0002	11/ 14	2.55	2.55	--	YES
Surf. Water	7440-42-8	Boron	76.4	J	160	J	112.78	UG/L	SWSD0014	5/ 5	151	151	--	YES
Surf. Water	7440-43-9	Cadmium	0.43	B	1	B	0.51	UG/L	SWSD0013	3/ 6	0.81	0.81	--	YES
Surf. Water	7440-70-2	Calcium	61600		96500		83850	UG/L	SWSD0013	6/ 6	94500	94500	89400	YES
Surf. Water	7440-47-3	Chromium	0.86	B	0.89	B	0.54	UG/L	SWSD0008	2/ 6	1.34	0.89	1.2	NO:1
Surf. Water	7440-48-4	Cobalt	0.7	B	1.6		1.07	UG/L	IA06-SW0002	5/ 6	1.47	1.47	--	YES
Surf. Water	7440-50-8	Copper	8.4		8.4		1.98	UG/L	IA06-SW0002	1/ 6	5.64	5.64	4.6	YES
Surf. Water	7439-89-6	Iron	205		1960		850.33	UG/L	IA06-SW0002	6/ 6	1360	1360	871	YES
Surf. Water	7439-92-1	Lead	2		10.3	B	2.09	UG/L	SWSD0015	6/ 14	3.56	3.56	1.2	YES
Surf. Water	7439-95-4	Magnesium	13900		48100		33716.67	UG/L	SWSD0013	6/ 6	43600	43600	27000	YES
Surf. Water	7439-96-5	Manganese	28.4		720		386.53	UG/L	SWSD0008	6/ 6	662	662	19.7	YES
Surf. Water	7439-98-7	Molybdenum	6.4	B	16.4	B	7.29	UG/L	SWSD0008	3/ 5	14.3	14.3	11.1	YES
Surf. Water	7440-02-0	Nickel	4.8		36.4		16.88	UG/L	SWSD0013	6/ 6	26.8	26.8	--	YES
Surf. Water	7440-00-0	Phosphorus	0.134	J	287		143.57	UG/L	IA06-SW0002	2/ 2	0.38	0.38	--	YES
Surf. Water	7440-09-7	Potassium	4080		7430		5738.33	UG/L	SWSD0015	6/ 6	6870	6870	1570	YES
Surf. Water		Silicon	1820		4160		2936	UG/L	SWSD0013	5/ 5	3860	3860	3620	YES
Surf. Water	7440-23-5	Sodium	6270		162000		105095	UG/L	SWSD0014	6/ 6	150000	150000	18500	YES
Surf. Water	7440-24-6	Strontium	3110		7820		4776	UG/L	SWSD0013	5/ 5	6610	6610	1450	YES
Surf. Water	7440-28-0	Thallium	5.3		5.3		2.01	UG/L	IA06-SW0002	1/ 6	4.75	4.75	--	YES
Surf. Water	7440-62-2	Vanadium	1.2	B	5.5		1.66	UG/L	IA06-SW0002	4/ 6	3.31	3.31	2.2	YES
Surf. Water	7440-66-6	Zinc	11.8		14.4		4.69	UG/L	IA06-SW0002	2/ 6	12.9	12.9	--	YES
Surf. Water	ALK	Alkalinity	187		298	J	247.4	MG/L	SWSD0014	5/ 5	301	298	--	YES
Surf. Water		Ammonia	0.04	J	5.55		1.85	MG/L	SWSD0014	4/ 5	4.15	4.15	--	YES
Surf. Water	7782-50-5	Chloride	63.3		63.3		63.3	MG/L	SWSD0013	1/ 1	--	63.3	--	YES
Surf. Water	16984-48-8	Fluoride	0.18		0.979		0.34	MG/L	SWSD0013	10/ 10	0.56	0.56	0.18	YES
Surf. Water		Nitrate, as N	1.31		1.31		1.31	MG/L	SWSD0013	1/ 1	1.31	1.31	--	YES
Surf. Water	SO4	Sulfate	355		355		355	MG/L	SWSD0013	1/ 1	--	355	--	YES
Surf. Water	TDS	Total dissolved solids	622		920		785.6	MG/L	SWSD0014	5/ 5	877	877	--	YES
Surf. Water	TSS	Total suspended solids	9.67		18.3		13.69	MG/L	SWSD0008	5/ 5	16.3	16.3	--	YES
Surf. Water	117-81-7	bis(2-ethylhexyl)phthalate	35.9		35.9		9.18	UG/L	SWSD0008	1/ 5	16.9	16.9	--	YES
Surf. Water	67-64-1	Acetone	4.4	J	4.4	J	2.88	UG/L	SWSD0008	1/ 5	15.6	4.4	--	YES
Surf. Water	67-66-3	Chloroform	0.16	J	0.16	J	0.43	UG/L	SWSD0008	1/ 5	13.9	0.16	--	YES
Surf. Water	108-88-3	Toluene	1	J	1	J	0.6	UG/L	SWSD0015	1/ 5	13	1	--	YES
Surf. Water	AC-227	Actinium-227	0.426		0.523		3.32	PCI/L	SWSD0015	3/ 14	0.25	0.25	0.36	NO:1
Surf. Water		Gross Alpha	2.02	J	10.2		4.89	PCI/L	IA06-SW0002	3/ 3	12.6	10.2	--	YES
Surf. Water		Nonvolatile Beta	4.21	J	84.4		31.99	PCI/L	IA06-SW0002	3/ 3	109	84.4	--	YES

Appendix Table 7A.1. Identification of Chemicals of Potential Concern for Ecological Receptors Exposure Unit 4 - Toussaint Creek Downstream of luckey (0 to 1 mile) (continued)

Medium	CAS Number	Parameter	Minimum Detection		Maximum Detection		Mean	Units	Location of Maximum	Detection Frequency	UCL95	Value for Comparison	Background Value	COPC
Surf. Water	13966-00-2	Potassium-40	36.7	J	451		66.26	PCI/L	SWSD0008	2/ 14	134	134	--	YES
Surf. Water	13982-63-3	Radium-226	0.198		1.1		0.48	PCI/L	IA06-SW0002	9/ 14	0.57	0.57	0.24	YES
Surf. Water	RA-228	Radium-228	1.31		1.31		0.56	PCI/L	IA06-SW0002	1/ 14	0.4	0.4	--	YES
Surf. Water		Thorium-227	0.426		0.523		0.49	PCI/L	SWSD0015	3/ 5	0.44	0.44	0.36	YES
Surf. Water	14274-82-9	Thorium-228	0.14	J	0.326	J	0.43	PCI/L	IA06-SW0002	4/ 14	0.18	0.18	--	YES
Surf. Water	14269-63-7	Thorium-230	0.0793	J	0.438	J	0.4	PCI/L	IA06-SW0002	5/ 14	0.16	0.16	0.57	NO:1
Surf. Water	U-233/234	Uranium-233/234	0.276	J	2.86		0.79	PCI/L	IA06-SW0002	9/ 9	1.71	1.71	--	YES
Surf. Water		Uranium-234	0.286		0.672		0.46	PCI/L	SWSD0008	5/ 5	0.63	0.63	0.78	NO:1
Surf. Water	15117-96-1	Uranium-235	0.3	J	0.3	J	0.48	PCI/L	IA06-SW0002	1/ 9	6.67	0.3	--	YES
Surf. Water	24678-82-8	Uranium-238	0.144	J	3.19		0.68	PCI/L	IA06-SW0002	12/ 14	1.11	1.11	1.02	YES

NO:0 = Frequency of Detection Less than 5%
NO:1 = Comparison value less than background value
YES = Chemical is a COPC

Appendix Table 7A.1. Identification of Chemicals of Potential Concern for Ecological Receptors Exposure Unit 4 - Toussaint Creek Downstream of Luckey (1 to 3 miles) (continued)

Medium	CAS Number	Parameter	Minimum Detection		Maximum Detection		Mean	Units	Location of Maximum	Detection Frequency	UCL95	Value for Comparison	Background Value	COPC
Soil (0-10 ft)	7429-90-5	Aluminum	8210		15500		13003.33	MG/KG	IA10-SB0015	3/ 3	20000	15500	23700	NO:1
Soil (0-10 ft)	7440-36-0	Antimony	1.5	BN	1.5	BN	0.67	MG/KG	IA10-SB0015	1/ 3	1.9	1.5	0.9	YES
Soil (0-10 ft)	7440-38-2	Arsenic	5.1		12		7.2	MG/KG	IA10-SB0008	30/ 30	7.81	7.81	24.1	NO:1
Soil (0-10 ft)	7440-39-3	Barium	58.9	N	92.9		80.13	MG/KG	IA10-SB0019	30/ 30	82.9	82.9	209	NO:1
Soil (0-10 ft)	7440-41-7	Beryllium	0.29		89.7		16.39	MG/KG	IA10-SB0011	47/ 47	20.7	20.7	1.13	YES
Soil (0-10 ft)	7440-43-9	Cadmium	0.19		2.1		1.3	MG/KG	IA10-SB0015	3/ 3	2.97	2.1	0.98	YES
Soil (0-10 ft)	7440-70-2	Calcium	39000		64100		48633.33	MG/KG	IA10-SB0008	3/ 3	71400	64100	55100	YES
Soil (0-10 ft)	7440-47-3	Chromium	13.4		22		18.87	MG/KG	IA10-SB0015	3/ 3	26.9	22	29.6	NO:1
Soil (0-10 ft)	7440-48-4	Cobalt	9.7		10.2		10	MG/KG	IA10-SB0008	3/ 3	10.4	10.2	19.1	NO:1
Soil (0-10 ft)	7440-50-8	Copper	23.3		25.4		24.4	MG/KG	IA10-SB0020	3/ 3	26.2	25.4	42	NO:1
Soil (0-10 ft)	7439-89-6	Iron	22100		24600		23100	MG/KG	IA10-SB0008	3/ 3	25300	24600	38600	NO:1
Soil (0-10 ft)	7439-92-1	Lead	10.4		34.7		23.27	MG/KG	IA10-SB0010	30/ 30	25.3	25.3	23.2	YES
Soil (0-10 ft)	7439-95-4	Magnesium	10900		15800	*	12900	MG/KG	IA10-SB0008	3/ 3	17200	15800	17100	NO:1
Soil (0-10 ft)	7439-96-5	Manganese	480		550		514.67	MG/KG	IA10-SB0015	3/ 3	574	550	2340	NO:1
Soil (0-10 ft)	7439-94-7	Mercury	0.04	B*	0.08	B*	0.06	MG/KG	IA10-SB0015	3/ 3	0.09	0.08	0.19	NO:1
Soil (0-10 ft)	7440-02-0	Nickel	26.6		28.1		27.1	MG/KG	IA10-SB0008	3/ 3	28.6	28.1	46.1	NO:1
Soil (0-10 ft)	7440-00-0	Phosphorus	430		703		587.67	MG/KG	IA10-SB0020	3/ 3	826	703	808	NO:1
Soil (0-10 ft)	7440-09-7	Potassium	1540		2780		2340	MG/KG	IA10-SB0020	3/ 3	3510	2780	3410	NO:1
Soil (0-10 ft)	7782-49-2	Selenium	1.4		1.8		1.57	MG/KG	IA10-SB0008	3/ 3	1.92	1.8	2.33	NO:1
Soil (0-10 ft)	7440-23-5	Sodium	133	E	143	E	136.33	MG/KG	IA10-SB0015	3/ 3	146	143	285	NO:1
Soil (0-10 ft)	7440-28-0	Thallium	2.3		2.3		1.04	MG/KG	IA10-SB0015	1/ 3	2.91	2.3	2.1	YES
Soil (0-10 ft)	7440-62-2	Vanadium	17.5		32.2		27.2	MG/KG	IA10-SB0020	3/ 3	41.4	32.2	42.8	NO:1
Soil (0-10 ft)	7440-66-6	Zinc	72.3		98.7		89.07	MG/KG	IA10-SB0020	3/ 3	114	98.7	110	NO:1
Soil (0-10 ft)	100-41-4	Ethylbenzene	0.76	J	1	J	1.37	UG/KG	IA10-SB0015	2/ 3	2.82	1	--	YES
Soil (0-10 ft)	108-88-3	Toluene	0.86	J	2.6		1.72	UG/KG	IA10-SB0020	3/ 3	3.19	2.6	--	YES
Soil (0-10 ft)	1330-20-7	Xylenes (total)	0.52	J	2.7	J	1.54	UG/KG	IA10-SB0015	3/ 3	3.39	2.7	--	YES
Soil (0-10 ft)	AC-227	Actinium-227	0.527	J	0.708	J	4.41	PCI/G	IA10-SB0008	4/ 30	0.21	0.21	1.76	NO:1
Soil (0-10 ft)	14331-83-0	Actinium-228	0.595	J	1.22		0.86	PCI/G	IA10-SB0018	29/ 30	0.91	0.91	1.35	NO:1
Soil (0-10 ft)	10045-97-3	Cesium-137	0.0374	J	0.681		0.27	PCI/G	IA10-SB0019	29/ 30	0.32	0.32	0.72	NO:1
Soil (0-10 ft)	13966-00-2	Potassium-40	16.7		25.4		21.5	PCI/G	IA10-SB0014	30/ 30	22.1	22.1	27.2	NO:1
Soil (0-10 ft)	13982-63-3	Radium-226	1.24		1.82		1.52	PCI/G	IA10-SB0019	30/ 30	1.57	1.57	2.97	NO:1
Soil (0-10 ft)	RA-228	Radium-228	0.595	J	1.22		0.87	PCI/G	IA10-SB0018	30/ 30	0.92	0.92	1.48	NO:1
Soil (0-10 ft)	14274-82-9	Thorium-228	0.429	J	1.27		0.84	PCI/G	IA10-SB0008	30/ 30	0.9	0.9	1.6	NO:1
Soil (0-10 ft)	14269-63-7	Thorium-230	0.937	J	2.42		1.52	PCI/G	IA10-SB0008	30/ 30	1.62	1.62	3.2	NO:1
Soil (0-10 ft)	7440-29-1	Thorium-232	0.399	J	1.02		0.69	PCI/G	IA10-SB0012	30/ 30	0.75	0.75	1.48	NO:1
Soil (0-10 ft)	15065-10-8	Thorium-234	0.8	J	3	J	1.93	PCI/G	IA10-SB0019	21/ 30	1.72	1.72	3.07	NO:1

Appendix Table 7A.1. Identification of Chemicals of Potential Concern for Ecological Receptors Exposure Unit 4 - Toussaint Creek Downstream of Luckey (1 to 3 miles) (continued)

Medium	CAS Number	Parameter	Minimum Detection		Maximum Detection		Mean	Units	Location of Maximum	Detection Frequency	UCL95	Value for Comparison	Background Value	COPC
Soil (0-10 ft)	U-233/234	Uranium-233/234	0.693	J	1.77		1.1	PCI/G	IA10-SB0017	30/ 30	1.19	1.19	2.01	NO:1
Soil (0-10 ft)	15117-96-1	Uranium-235	0.0804	J	0.129	J	0.42	PCI/G	IA10-SB0008	6/ 30	0.12	0.12	1.56	NO:1
Soil (0-10 ft)	24678-82-8	Uranium-238	0.594	J	1.5		1.09	PCI/G	IA10-SB0015	30/ 30	1.16	1.16	2.63	NO:1
Sediment	7429-90-5	Aluminum	4210		9130		6328.57	MG/KG	BH0019	7/ 7	7840	7840	12000	NO:1
Sediment	7440-38-2	Arsenic	3.7		9.5	J	5.91	MG/KG	BH0020	10/ 10	7.21	7.21	12.1	NO:1
Sediment	7440-39-3	Barium	42.4		55.5		46.93	MG/KG	IA06-SD0037	3/ 3	59.4	55.5	94.3	NO:1
Sediment	7440-41-7	Beryllium	0.96		32		9.5	MG/KG	BH0019	10/ 10	18.9	18.9	0.69	YES
Sediment	7439-92-1	Lead	7.9	B*	16.6	*	11.64	MG/KG	BH0019	10/ 10	13.4	13.4	14.3	NO:1
Sediment	7439-95-4	Magnesium	9000		21200		13144.29	MG/KG	BH0019	7/ 7	16700	16700	18900	NO:1
Sediment	16984-48-8	Fluoride	1.42		7.27		3.44	MG/KG	IA06-SD0037	3/ 3	9.04	7.27	5.35	YES
Sediment	7664-41-7	Nitrogen, Ammonia	27.3		27.3		27.3	MG/KG	IA06-SD0037	1/ 1	--	27.3	8.1	YES
Sediment	AC-227	Actinium-227	0.236		0.236		1.33	PCI/G	BH0019	1/ 10	0.11	0.11	0.4	NO:1
Sediment	14331-83-0	Actinium-228	0.399	J	0.686	J	0.5	PCI/G	IA06-SD0007	3/ 3	0.77	0.686	0.76	NO:1
Sediment	10045-97-3	Cesium-137	0.0359	J	0.344		0.35	PCI/G	BH0019	3/ 10	0.13	0.13	0.16	NO:1
Sediment		Gross Alpha	14		14		14	PCI/G	IA06-SD0037	1/ 1	--	14	16.5	NO:1
Sediment		Nonvolatile Beta	14.1		14.1		14.1	PCI/G	IA06-SD0037	1/ 1	--	14.1	20.8	NO:1
Sediment	13966-00-2	Potassium-40	10.1		22.2		14.86	PCI/G	BH0020	10/ 10	17.7	17.7	18.1	NO:1
Sediment	13982-63-3	Radium-226	0.838	J	1.47	J	1.07	PCI/G	BH0020	10/ 10	1.2	1.2	1.63	NO:1
Sediment	RA-228	Radium-228	0.268	J	0.686	J	0.43	PCI/G	IA06-SD0007	10/ 10	0.52	0.52	1.11	NO:1
Sediment		Thorium-227	0.236		0.236		0.46	PCI/G	BH0019	1/ 7	0.16	0.16	0.4	NO:1
Sediment	14274-82-9	Thorium-228	0.268	J	0.74	J	0.48	PCI/G	IA06-SD0007	10/ 10	0.62	0.62	1.19	NO:1
Sediment	14269-63-7	Thorium-230	0.519		1.62	J	0.85	PCI/G	IA06-SD0007	10/ 10	1.1	1.1	1.89	NO:1
Sediment	7440-29-1	Thorium-232	0.216		0.832	J	0.46	PCI/G	IA06-SD0007	10/ 10	0.66	0.66	0.84	NO:1
Sediment	15065-10-8	Thorium-234	1.47	J	2.13	J	1.89	PCI/G	IA06-SD0007	3/ 3	2.5	2.13	2.27	NO:1
Sediment	U-233/234	Uranium-233/234	0.706	J	1.22		1.03	PCI/G	IA06-SD0007	3/ 3	1.51	1.22	1.23	NO:1
Sediment		Uranium-234	0.414	J	0.545	J	0.47	PCI/G	BH0020	7/ 7	0.51	0.51	1.8	NO:1
Sediment	15117-96-1	Uranium-235	0.03319	J	0.0503	J	0.41	PCI/G	BH0019	2/ 10	0.08	0.05	0.06	NO:1
Sediment	24678-82-8	Uranium-238	0.431		1.35		0.73	PCI/G	IA06-SD0037	10/ 10	0.95	0.95	2.08	NO:1
Sediment		Total Organic Carbon	25100		25100		25100	MG/KG	IA06-SD0037	1/ 1	--	25100	--	YES
Soil (0-2 ft)	7429-90-5	Aluminum	15300		15500		15400	MG/KG	IA10-SB0015	2/ 2	16000	15500	23700	NO:1
Soil (0-2 ft)	7440-36-0	Antimony	1.5	BN	1.5	BN	0.94	MG/KG	IA10-SB0015	1/ 2	4.48	1.5	0.9	YES
Soil (0-2 ft)	7440-38-2	Arsenic	5.1		11.7		7.04	MG/KG	IA10-SB0010	29/ 29	7.6	7.6	24.1	NO:1
Soil (0-2 ft)	7440-39-3	Barium	58.9	N	92.9		80.49	MG/KG	IA10-SB0019	29/ 29	83.3	83.3	209	NO:1
Soil (0-2 ft)	7440-41-7	Beryllium	0.95		89.7		23.33	MG/KG	IA10-SB0011	30/ 30	28.9	28.9	1.13	YES
Soil (0-2 ft)	7440-43-9	Cadmium	1.6		2.1		1.85	MG/KG	IA10-SB0015	2/ 2	3.43	2.1	0.98	YES
Soil (0-2 ft)	7440-70-2	Calcium	39000		42800		40900	MG/KG	IA10-SB0015	2/ 2	52900	42800	55100	NO:1

Appendix Table 7A.1. Identification of Chemicals of Potential Concern for Ecological Receptors Exposure Unit 4 - Toussaint Creek Downstream of Luckey (1 to 3 miles) (continued)

Medium	CAS Number	Parameter	Minimum Detection		Maximum Detection		Mean	Units	Location of Maximum	Detection Frequency	UCL95	Value for Comparison	Background Value	COPC
Soil (0-2 ft)	7440-47-3	Chromium	21.2		22		21.6	MG/KG	IA10-SB0015	2/ 2	24.1	22	29.6	NO:1
Soil (0-2 ft)	7440-48-4	Cobalt	9.7		10.1		9.9	MG/KG	IA10-SB0015	2/ 2	11.2	10.1	19.1	NO:1
Soil (0-2 ft)	7440-50-8	Copper	23.3		25.4		24.35	MG/KG	IA10-SB0020	2/ 2	31	25.4	42	NO:1
Soil (0-2 ft)	7439-89-6	Iron	22100		22600		22350	MG/KG	IA10-SB0020	2/ 2	23900	22600	38600	NO:1
Soil (0-2 ft)	7439-92-1	Lead	10.4		34.7		23.68	MG/KG	IA10-SB0010	29/ 29	25.6	25.6	23.2	YES
Soil (0-2 ft)	7439-95-4	Magnesium	10900		12000		11450	MG/KG	IA10-SB0020	2/ 2	14900	12000	17100	NO:1
Soil (0-2 ft)	7439-96-5	Manganese	514		550		532	MG/KG	IA10-SB0015	2/ 2	646	550	2340	NO:1
Soil (0-2 ft)	7439-94-7	Mercury	0.06	B*	0.08	B*	0.07	MG/KG	IA10-SB0015	2/ 2	0.13	0.08	0.19	NO:1
Soil (0-2 ft)	7440-02-0	Nickel	26.6		26.6		26.6	MG/KG	IA10-SB0020	2/ 2	26.6	26.6	46.1	NO:1
Soil (0-2 ft)	7440-00-0	Phosphorus	630		703		666.5	MG/KG	IA10-SB0020	2/ 2	897	703	808	NO:1
Soil (0-2 ft)	7440-09-7	Potassium	2700		2780		2740	MG/KG	IA10-SB0020	2/ 2	2990	2780	3410	NO:1
Soil (0-2 ft)	7782-49-2	Selenium	1.4		1.5		1.45	MG/KG	IA10-SB0015	2/ 2	1.77	1.5	2.33	NO:1
Soil (0-2 ft)	7440-23-5	Sodium	133	E	143	E	138	MG/KG	IA10-SB0015	2/ 2	170	143	285	NO:1
Soil (0-2 ft)	7440-28-0	Thallium	2.3		2.3		1.46	MG/KG	IA10-SB0015	1/ 2	6.82	2.3	2.1	YES
Soil (0-2 ft)	7440-62-2	Vanadium	31.9		32.2		32.05	MG/KG	IA10-SB0020	2/ 2	33	32.2	42.8	NO:1
Soil (0-2 ft)	7440-66-6	Zinc	96.2		98.7		97.45	MG/KG	IA10-SB0020	2/ 2	105	98.7	110	NO:1
Soil (0-2 ft)	100-41-4	Ethylbenzene	0.76	J	1	J	0.88	UG/KG	IA10-SB0015	2/ 2	1.64	1	--	YES
Soil (0-2 ft)	108-88-3	Toluene	1.7	J	2.6		2.15	UG/KG	IA10-SB0020	2/ 2	4.99	2.6	--	YES
Soil (0-2 ft)	1330-20-7	Xylenes (total)	1.4	J	2.7	J	2.05	UG/KG	IA10-SB0015	2/ 2	6.15	2.7	--	YES
Soil (0-2 ft)	AC-227	Actinium-227	0.527	J	0.708	J	4.39	PCI/G	IA10-SB0008	4/ 29	0.22	0.22	1.76	NO:1
Soil (0-2 ft)	14331-83-0	Actinium-228	0.595	J	1.22		0.86	PCI/G	IA10-SB0018	28/ 29	0.92	0.92	1.35	NO:1
Soil (0-2 ft)	10045-97-3	Cesium-137	0.0374	J	0.681		0.28	PCI/G	IA10-SB0019	28/ 29	0.33	0.33	0.72	NO:1
Soil (0-2 ft)	13966-00-2	Potassium-40	16.7		25.4		21.57	PCI/G	IA10-SB0014	29/ 29	22.2	22.2	27.2	NO:1
Soil (0-2 ft)	13982-63-3	Radium-226	1.24		1.82		1.52	PCI/G	IA10-SB0019	29/ 29	1.58	1.58	2.97	NO:1
Soil (0-2 ft)	RA-228	Radium-228	0.595	J	1.22		0.88	PCI/G	IA10-SB0018	29/ 29	0.93	0.93	1.48	NO:1
Soil (0-2 ft)	14274-82-9	Thorium-228	0.429	J	1.2		0.83	PCI/G	IA10-SB0008	29/ 29	0.89	0.89	1.6	NO:1
Soil (0-2 ft)	14269-63-7	Thorium-230	0.937	J	2.08		1.49	PCI/G	IA10-SB0015	29/ 29	1.58	1.58	3.2	NO:1
Soil (0-2 ft)	7440-29-1	Thorium-232	0.399	J	1.02		0.7	PCI/G	IA10-SB0012	29/ 29	0.75	0.75	1.48	NO:1
Soil (0-2 ft)	15065-10-8	Thorium-234	0.8	J	3	J	1.92	PCI/G	IA10-SB0019	20/ 29	1.7	1.7	3.07	NO:1
Soil (0-2 ft)	U-233/234	Uranium-233/234	0.693	J	1.77		1.09	PCI/G	IA10-SB0017	29/ 29	1.18	1.18	2.01	NO:1
Soil (0-2 ft)	15117-96-1	Uranium-235	0.0804	J	0.125	J	0.43	PCI/G	IA10-SB0009	5/ 29	0.12	0.12	1.56	NO:1
Soil (0-2 ft)	24678-82-8	Uranium-238	0.594	J	1.5		1.08	PCI/G	IA10-SB0015	29/ 29	1.15	1.15	2.63	NO:1

NO:0 = Frequency of Detection Less than 5%
NO:1 = Comparison value less than background value
YES = Chemical is a COPC

Appendix Table 7A.1. Identification of Chemicals of Potential Concern for Ecological Receptors Exposure Unit 4 - Toussaint Creek Downstream of Luckey (3 to 15 miles) (continued)

Medium	CAS Number	Parameter	Minimum Detection		Maximum Detection		Mean	Units	Location of Maximum	Detection Frequency	UCL95	Value for Comparison	Background Value	COPC
Sediment	7440-38-2	Arsenic	2.8		31.3		7.35	MG/KG	IA06-SD0012	40/ 40	8.55	8.55	12.1	NO:1
Sediment	7440-39-3	Barium	15.3		145		47.04	MG/KG	IA06-SD0019	40/ 40	53.6	53.6	94.3	NO:1
Sediment	7440-41-7	Beryllium	0.43		14.5		2.51	MG/KG	IA06-SD0008	40/ 40	3.39	3.39	0.69	YES
Sediment	7439-92-1	Lead	6.2	J	67.1		12.62	MG/KG	IA06-SD0031	40/ 40	15.1	15.1	14.3	YES
Sediment	16984-48-8	Fluoride	0.58	J	6.5		2.57	MG/KG	IA06-SD0008	40/ 40	2.87	2.87	5.35	NO:1
Sediment	AC-227	Actinium-227	0.15	J	0.186	J	4.64	PCI/G	IA06-SD0018	3/ 40	0.07	0.07	0.4	NO:1
Sediment	14331-83-0	Actinium-228	0.343	J	1.8		0.64	PCI/G	IA06-SD0010	39/ 40	0.7	0.7	0.76	NO:1
Sediment	10045-97-3	Cesium-137	0.0329	J	0.451		0.07	PCI/G	IA06-SD0008	17/ 40	0.07	0.07	0.16	NO:1
Sediment	13966-00-2	Potassium-40	12.2		23.8		17.11	PCI/G	IA06-SD0014	40/ 40	17.9	17.9	18.1	NO:1
Sediment	13982-63-3	Radium-226	0.743	J	1.79		1.12	PCI/G	IA06-SD0033	40/ 40	1.19	1.19	1.63	NO:1
Sediment	RA-228	Radium-228	0.343	J	1.8		0.64	PCI/G	IA06-SD0010	39/ 40	0.7	0.7	1.11	NO:1
Sediment	14274-82-9	Thorium-228	0.342	J	1.97	J	0.79	PCI/G	IA06-SD0024	37/ 40	0.92	0.92	1.19	NO:1
Sediment	14269-63-7	Thorium-230	0.807	J	2.65	J	1.39	PCI/G	IA06-SD0024	40/ 40	1.51	1.51	1.89	NO:1
Sediment	7440-29-1	Thorium-232	0.18	J	1.09		0.56	PCI/G	IA06-SD0027	40/ 40	0.63	0.63	0.84	NO:1
Sediment	15065-10-8	Thorium-234	0.845	J	2.28	J	1.97	PCI/G	IA06-SD0027	21/ 40	1.34	1.34	2.27	NO:1
Sediment	U-233/234	Uranium-233/234	0.398	J	12.6		1.23	PCI/G	IA06-SD0029	40/ 40	1.73	1.73	1.23	YES
Sediment	15117-96-1	Uranium-235	0.0511	J	0.443	J	0.45	PCI/G	IA06-SD0029	6/ 40	0.11	0.11	0.06	YES
Sediment	24678-82-8	Uranium-238	0.327	J	13		1.25	PCI/G	IA06-SD0029	40/ 40	1.76	1.76	2.08	NO:1

NO:0 = Frequency of Detection Less than 5%
NO:1 = Comparison value less than background value
YES = Chemical is a COPC

Appendix Table 7A.1. Identification of Chemicals of Potential Concern for Ecological Receptors Exposure Unit 5 - France Stone Quarry (continued)

Medium	CAS Number	Parameter	Minimum Detection		Maximum Detection		Mean	Units	Location of Maximum	Detection Frequency	UCL95	Value for Comparison	Background Value	COPC
Soil (0-10 ft)	7440-38-2	Arsenic	1.4		12.5		5.33	MG/KG	IA10-SB0072	16/ 16	9.58	9.58	24.1	NO:1
Soil (0-10 ft)	7440-39-3	Barium	8.4		160		49.18	MG/KG	IA10-SB0072	16/ 16	94.8	94.8	209	NO:1
Soil (0-10 ft)	7440-41-7	Beryllium	0.11		2.5		0.65	MG/KG	IA10-SB0072	16/ 16	1.28	1.28	1.13	YES
Soil (0-10 ft)	7439-92-1	Lead	9.2		233		34.63	MG/KG	IA10-SB0072	16/ 16	58.6	58.6	23.2	YES
Soil (0-10 ft)	16984-48-8	Fluoride	0.5	J	5.47		2.02	MG/KG	IA10-SB0076	15/ 16	2.67	2.67	6.94	NO:1
Soil (0-10 ft)	591-78-6	2-Hexanone	9.9	J	9.9	J	9.9	UG/KG	IA10-SB0025	1/ 1	--	9.9	--	YES
Soil (0-10 ft)	71-43-2	Benzene	1.4	J	1.4	J	1.4	UG/KG	IA10-SB0025	1/ 1	--	1.4	--	YES
Soil (0-10 ft)	100-41-4	Ethylbenzene	1	J	1	J	1	UG/KG	IA10-SB0025	1/ 1	--	1	--	YES
Soil (0-10 ft)	108-88-3	Toluene	3	J	3	J	3	UG/KG	IA10-SB0025	1/ 1	--	3	--	YES
Soil (0-10 ft)	1330-20-7	Xylenes (total)	2.8	J	2.8	J	2.8	UG/KG	IA10-SB0025	1/ 1	--	2.8	--	YES
Soil (0-10 ft)	14331-83-0	Actinium-228	0.173	J	1.04		0.55	PCI/G	IA10-SB0072	8/ 16	0.48	0.48	1.35	NO:1
Soil (0-10 ft)	10045-97-3	Cesium-137	0.044	J	0.364		0.13	PCI/G	IA10-SB0075	13/ 16	0.17	0.17	0.72	NO:1
Soil (0-10 ft)	13966-00-2	Potassium-40	0.927	J	20.5		8.56	PCI/G	IA10-SB0079	15/ 16	11.6	11.6	27.2	NO:1
Soil (0-10 ft)	13982-63-3	Radium-226	0.0861	J	2.31		0.81	PCI/G	IA10-SB0072	16/ 16	2.07	2.07	2.97	NO:1
Soil (0-10 ft)	RA-228	Radium-228	0.173	J	1.04		0.55	PCI/G	IA10-SB0072	9/ 16	0.51	0.51	1.48	NO:1
Soil (0-10 ft)	14274-82-9	Thorium-228	0.166	J	1.06		0.57	PCI/G	IA10-SB0072	11/ 16	0.59	0.59	1.6	NO:1
Soil (0-10 ft)	14269-63-7	Thorium-230	0.231	J	1.97		0.9	PCI/G	IA10-SB0078	14/ 16	1.49	1.49	3.2	NO:1
Soil (0-10 ft)	7440-29-1	Thorium-232	0.154	J	1.04		0.49	PCI/G	IA10-SB0072	11/ 16	0.5	0.5	1.48	NO:1
Soil (0-10 ft)	15065-10-8	Thorium-234	0.662	J	2.95	J	2.23	PCI/G	IA10-SB0074	7/ 16	1.64	1.64	3.07	NO:1
Soil (0-10 ft)	U-233/234	Uranium-233/234	0.166	J	1.74		0.71	PCI/G	IA10-SB0072	14/ 16	1.28	1.28	2.01	NO:1
Soil (0-10 ft)	15117-96-1	Uranium-235	0.3	J	0.3	J	0.49	PCI/G	IA10-SB0072	1/ 16	0.09	0.09	1.56	NO:1
Soil (0-10 ft)	24678-82-8	Uranium-238	0.199	J	1.76		0.77	PCI/G	IA10-SB0072	14/ 16	1.89	1.76	2.63	NO:1
Soil (0-2 ft)	7440-38-2	Arsenic	1.4		12.5		5.2	MG/KG	IA10-SB0072	15/ 15	9.57	9.57	24.1	NO:1
Soil (0-2 ft)	7440-39-3	Barium	8.4		160		48.98	MG/KG	IA10-SB0072	15/ 15	102	102	209	NO:1
Soil (0-2 ft)	7440-41-7	Beryllium	0.11		2.5		0.67	MG/KG	IA10-SB0072	15/ 15	1.39	1.39	1.13	YES
Soil (0-2 ft)	7439-92-1	Lead	9.2		233		36.31	MG/KG	IA10-SB0072	15/ 15	61.9	61.9	23.2	YES
Soil (0-2 ft)	16984-48-8	Fluoride	0.5	J	5.47		1.94	MG/KG	IA10-SB0076	14/ 15	2.61	2.61	6.94	NO:1
Soil (0-2 ft)	591-78-6	2-Hexanone	9.9	J	9.9	J	9.9	UG/KG	IA10-SB0025	1/ 1	--	9.9	--	YES
Soil (0-2 ft)	71-43-2	Benzene	1.4	J	1.4	J	1.4	UG/KG	IA10-SB0025	1/ 1	--	1.4	--	YES
Soil (0-2 ft)	100-41-4	Ethylbenzene	1	J	1	J	1	UG/KG	IA10-SB0025	1/ 1	--	1	--	YES
Soil (0-2 ft)	108-88-3	Toluene	3	J	3	J	3	UG/KG	IA10-SB0025	1/ 1	--	3	--	YES
Soil (0-2 ft)	1330-20-7	Xylenes (total)	2.8	J	2.8	J	2.8	UG/KG	IA10-SB0025	1/ 1	--	2.8	--	YES
Soil (0-2 ft)	14331-83-0	Actinium-228	0.173	J	1.04		0.56	PCI/G	IA10-SB0072	7/ 15	0.48	0.48	1.35	NO:1
Soil (0-2 ft)	10045-97-3	Cesium-137	0.044	J	0.364		0.14	PCI/G	IA10-SB0075	13/ 15	0.25	0.25	0.72	NO:1
Soil (0-2 ft)	13966-00-2	Potassium-40	0.927	J	20.5		8.3	PCI/G	IA10-SB0079	14/ 15	39.3	20.5	27.2	NO:1
Soil (0-2 ft)	13982-63-3	Radium-226	0.0861	J	2.31		0.8	PCI/G	IA10-SB0072	15/ 15	2.12	2.12	2.97	NO:1
Soil (0-2 ft)	RA-228	Radium-228	0.173	J	1.04		0.56	PCI/G	IA10-SB0072	8/ 15	0.51	0.51	1.48	NO:1

Appendix Table 7A.1. Identification of Chemicals of Potential Concern for Ecological Receptors Exposure Unit 5 - France Stone Quarry (continued)

Medium	CAS Number	Parameter	Minimum Detection		Maximum Detection		Mean	Units	Location of Maximum	Detection Frequency	UCL95	Value for Comparison	Background Value	COPC
Soil (0-2 ft)	14274-82-9	Thorium-228	0.166	J	1.06		0.56	PCI/G	IA10-SB0072	10/ 15	0.58	0.58	1.6	NO:1
Soil (0-2 ft)	14269-63-7	Thorium-230	0.231	J	1.97		0.9	PCI/G	IA10-SB0078	13/ 15	1.61	1.61	3.2	NO:1
Soil (0-2 ft)	7440-29-1	Thorium-232	0.154	J	1.04		0.51	PCI/G	IA10-SB0072	10/ 15	0.52	0.52	1.48	NO:1
Soil (0-2 ft)	15065-10-8	Thorium-234	0.662	J	2.95	J	2.21	PCI/G	IA10-SB0074	7/ 15	1.69	1.69	3.07	NO:1
Soil (0-2 ft)	U-233/234	Uranium-233/234	0.166	J	1.74		0.71	PCI/G	IA10-SB0072	13/ 15	1.3	1.3	2.01	NO:1
Soil (0-2 ft)	15117-96-1	Uranium-235	0.3	J	0.3	J	0.49	PCI/G	IA10-SB0072	1/ 15	0.09	0.09	1.56	NO:1
Soil (0-2 ft)	24678-82-8	Uranium-238	0.199	J	1.76		0.77	PCI/G	IA10-SB0072	13/ 15	1.98	1.76	2.63	NO:1
Surf. Water	7429-90-5	Aluminum	36.3		53.2		44.75	UG/L	IA10-SW0003	2/ 2	98.1	53.2	733	NO:1
Surf. Water	7440-39-3	Barium	35.3		36.6		35.95	UG/L	IA10-SW0003	2/ 2	40.1	36.6	38.8	NO:1
Surf. Water	7440-70-2	Calcium	29500		30900		30200	UG/L	IA10-SW0003	2/ 2	34600	30900	89400	NO:1
Surf. Water	7440-50-8	Copper	2		2.1		2.05	UG/L	IA10-SW0004	2/ 2	2.37	2.1	4.6	NO:1
Surf. Water	7439-89-6	Iron	42.8		42.8		42.8	UG/L	IA10-SW0004	2/ 2	42.8	42.8	871	NO:1
Surf. Water	7439-95-4	Magnesium	43800		45800		44800	UG/L	IA10-SW0003	2/ 2	51100	45800	27000	YES
Surf. Water	7439-96-5	Manganese	1.7		2		1.85	UG/L	IA10-SW0004	2/ 2	2.8	2	19.7	NO:1
Surf. Water	7440-02-0	Nickel	1.3		1.3		0.93	UG/L	IA10-SW0003	1/ 2	3.29	1.3	--	YES
Surf. Water	7440-00-0	Phosphorus	46.1		59.5		52.8	UG/L	IA10-SW0004	2/ 2	95.1	59.5	--	YES
Surf. Water	7440-09-7	Potassium	8050		8480		8265	UG/L	IA10-SW0003	2/ 2	9620	8480	1570	YES
Surf. Water	7782-49-2	Selenium	2.5		2.5		1.86	UG/L	IA10-SW0003	1/ 2	5.95	2.5	--	YES
Surf. Water	7440-23-5	Sodium	19000		20100		19550	UG/L	IA10-SW0003	2/ 2	23000	20100	18500	YES
Surf. Water	7440-62-2	Vanadium	0.71		1		0.86	UG/L	IA10-SW0003	2/ 2	1.77	1	2.2	NO:1
Surf. Water	7440-66-6	Zinc	3.8		5.3		4.55	UG/L	IA10-SW0003	2/ 2	9.29	5.3	--	YES
Surf. Water	16984-48-8	Fluoride	0.16		0.17		0.17	MG/L	IA10-SW0003	2/ 2	0.2	0.17	0.18	NO:1
Surf. Water		Gross Alpha	2.02	J	2.88	J	2.45	PCI/L	IA10-SW0003	2/ 2	5.16	2.88	--	YES
Surf. Water		Nonvolatile Beta	5.02		7.33		6.18	PCI/L	IA10-SW0003	2/ 2	13.5	7.33	--	YES
Surf. Water	U-233/234	Uranium-233/234	1.35		1.56		1.46	PCI/L	IA10-SW0003	2/ 2	2.12	1.56	--	YES
Surf. Water	24678-82-8	Uranium-238	1.22		1.41		1.32	PCI/L	IA10-SW0004	2/ 2	1.91	1.41	1.02	YES

NO:0 = Frequency of Detection Less than 5%
NO:1 = Comparison value less than background value
YES = Chemical is a COPC

Appendix Table 7A.1. Identification of Chemicals of Potential Concern for Ecological Receptors Exposure Unit 6 - Luckey Dump

Medium	CAS Number	Parameter	Minimum Detection		Maximum Detection		Mean	Units	Location of Maximum	Detection Frequency	UCL95	Value for Comparison	Background Value	COPC
Soil (0-10 ft)	7440-38-2	Arsenic	5		18.3		11.42	MG/KG	IA10-SB0088	9/ 9	13.9	13.9	24.1	NO:1
Soil (0-10 ft)	7440-39-3	Barium	30.4		127	N	67.99	MG/KG	IA10-SB0088	9/ 9	105	105	209	NO:1
Soil (0-10 ft)	7440-41-7	Beryllium	0.17		46.7		4.93	MG/KG	IA10-SB0026	15/ 15	10.6	10.6	1.13	YES
Soil (0-10 ft)	7439-92-1	Lead	8.7		114		31.82	MG/KG	IA10-SB0026	9/ 9	90.1	90.1	23.2	YES
Soil (0-10 ft)	16984-48-8	Fluoride	0.7		9.83		2.7	MG/KG	IA10-SB0026	9/ 9	6.3	6.3	6.94	NO:1
Soil (0-10 ft)	7664-41-7	Nitrogen, Ammonia	2.5		33		11.48	MG/KG	IA10-SB0088	9/ 9	28.6	28.6	--	YES
Soil (0-10 ft)	AC-227	Actinium-227	0.362	J	1.15	J	3.07	PCI/G	IA10-SB0088	4/ 9	0.58	0.58	1.76	NO:1
Soil (0-10 ft)	14331-83-0	Actinium-228	0.493	J	1.19		0.88	PCI/G	IA10-SB0087	9/ 9	1.04	1.04	1.35	NO:1
Soil (0-10 ft)	10045-97-3	Cesium-137	0.1		0.349		0.1	PCI/G	IA10-SB0029	3/ 9	0.15	0.15	0.72	NO:1
Soil (0-10 ft)	13966-00-2	Potassium-40	7.74		29.9		20.19	PCI/G	IA10-SB0087	9/ 9	24.5	24.5	27.2	NO:1
Soil (0-10 ft)	13982-63-3	Radium-226	0.663	J	2.22		1.59	PCI/G	IA10-SB0087	9/ 9	1.9	1.9	2.97	NO:1
Soil (0-10 ft)	RA-228	Radium-228	0.493	J	1.19		0.88	PCI/G	IA10-SB0087	9/ 9	1.04	1.04	1.48	NO:1
Soil (0-10 ft)	14274-82-9	Thorium-228	0.17	J	1.04		0.7	PCI/G	IA10-SB0088	9/ 9	0.87	0.87	1.6	NO:1
Soil (0-10 ft)	14269-63-7	Thorium-230	0.446	J	2.21		1.49	PCI/G	IA10-SB0088	9/ 9	1.84	1.84	3.2	NO:1
Soil (0-10 ft)	7440-29-1	Thorium-232	0.261	J	1.23		0.68	PCI/G	IA10-SB0087	9/ 9	1.05	1.05	1.48	NO:1
Soil (0-10 ft)	15065-10-8	Thorium-234	1.29	J	2.42	J	2.05	PCI/G	IA10-SB0088	6/ 9	1.86	1.86	3.07	NO:1
Soil (0-10 ft)	U-233/234	Uranium-233/234	0.389	J	1.35		1.01	PCI/G	IA10-SB0087	9/ 9	1.21	1.21	2.01	NO:1
Soil (0-10 ft)	15117-96-1	Uranium-235	0.0859	J	0.122	J	0.37	PCI/G	IA10-SB0087	3/ 9	0.08	0.08	1.56	NO:1
Soil (0-10 ft)	24678-82-8	Uranium-238	0.267	J	1.75		1.09	PCI/G	IA10-SB0088	9/ 9	1.36	1.36	2.63	NO:1
Soil (0-2 ft)	7440-41-7	Beryllium	0.33		1.9		1.12	MG/KG	IA10-SB0026	2/ 2	6.07	1.9	1.13	YES

NO:0 = Frequency of Detection Less than 5%
NO:1 = Comparison value less than background value
YES = Chemical is a COPC

Appendix Table 7A.2. Organic Carbon Partitioning Coefficients for Chemical Constituents in Surface Soil, Sediment, and Surface Water at the Luckey Site, Luckey, Ohio

Chemical	CAS Number	K_{oc}[a] L/Kg	Comments		Source	Log K_{oc}[b] L/Kg
			method	controlling variable		
1,1,1-Trichloroethane	71-55-6	--[c]			EPA 1995a in Jones, et al 1996	2.44
2-Hexanone	591-78-6	--[c]			Syracuse 1996 in Jones, et al 1996	1.36
3,3'-Dichlorobenzidine	91-94-1	1100		soil type, pH	Howard 1990	3.04
4-Methyl-2-pentanone	108-10-1	23			Syracuse 1996 in Jones, et al 1996	1.29
Acenaphthylene	208-96-8	2500			EPA 1989	3.40
Acenapthene	83-32-9	--[c]			EPA 1995a in Jones, et al 1996	3.86
Acetone	67-64-1	--[c]			EPA 1995a in Jones, et al 1996	-0.23
Anthracene	120-12-7	--[c]			EPA 1995a in Jones, et al 1996	4.48
Antimony	7440-36-0	50000			EPA 1989	4.70
Aroclor 1254	27323-18-8	--[c]			ATSDR 1989 in Jones, et al 1996	6.39
Aroclor 1260	11096-82-5	--[c]			ATSDR 1989 in Jones, et al 1996	6.69
Arsenic	7440-38-2	5			EPA 1989	0.70
Barium	7440-39-3	50			EPA 1989	1.70
Benzo(a)anthracene	56-55-3	1380000			Lymen, et al 1982	6.14
Benzene	71-43-2	98			EPA 1995d[j]	1.99
Benzo(a)pyrene	50-32-8	--[c]			EPA 1995a in Jones, et al 1996	6.01
Benzo(b)fluoranthene	205-99-2	550000			EPA 1989	5.74
Bis(2-ethylhexyl)phthalate	117-81-7	--[c]			EPA 1995a in Jones, et al 1996[d]	7.47
Cadmium	7440-43-9	500			EPA 1989	2.70
Carbon disulfide	75-15-0	--[c]			EPA 1995a in Jones, et al 1996	1.97
Chloride	7782-50-5	0.05			EPA 1989	-1.30
Chloroform	67-66-3	--[c]			EPA 1995a in Jones, et al 1996	1.89
Chromium VI	1840-29-9	5			EPA 1989	0.70
Chrysene	218-01-9	200000			EPA 1989	5.30
Dibenzo(a,h)anthracene	53-70-3	3300000			EPA 1989[f]	6.52
Dibenzofuran	132-64-9	--[c]			EPA 1995a in Jones, et al 1996	4.05
Diethyl Phthalate	84-66-2	94	value estimated using Kow		Howard 1990	1.97
Ethylbenzene	100-41-4	164		soil type	Howard 1990	2.21
Fluoranthene	206-44-0	--[c]			EPA 1995a in Jones, et al 1996	5.04

Appendix Table 7A.2. Organic Carbon Partitioning Coefficients for Chemical Constituents in Surface Soil, Sediment, and Surface Water at the Luckey Site, Luckey, Ohio (continued)

Chemical	CAS Number	K_{oc}[a] L/Kg	Comments		Source	Log K_{oc}[b] L/Kg
			method	controlling variable		
Fluorene	86-73-7	--[c]			EPA 1995a in Jones, et al 1996	4.14
Methylene chloride	75-09-2	--[c]			EPA 1995a in Jones, et al 1996	1.23
Phenanthrene	85-01-8				EPA 1995a in Jones, et al 1996	4.48
Phenol	108-95-2	39-148			Howard 1990	1.59-2.17
Tetrachloroethene	127-18-4	--[c]			EPA 1995b in Jones, et al 1996	2.63
Toluene	108-88-3	--[c]			EPA 1995a in Jones, et al 1996	2.71
Tribromomethane	75-25-2	--[c]			EPA 1995b in Jones, et al 1996	2.31
Trichloroethene	79-01-6	--[c]			EPA 1995a in Jones, et al 1996	2.67
Xylene	1330-20-7	--[c]			EPA 1995a in Jones, et al 1996	3.08

[a] K_{oc} value indicated by source unless noted otherwise.

[b] Log K_{oc} calculated using Log_{10} equation.

[c] Value indicated by the source was Log K_{oc}.

[d] Jones, D.S., R.N. Hull, G.W. Suter II. 1996. *Toxicological Benchmarks for Screening Contaminants of Potential Concern for Effects on Sediment-Associated Biota. Lockheed Martin Energy Systems, Inc. Oak Ridge, TN 37831.*

[e] Lymen, Warren, William F. Reehl. 1982. *Handbook of Chemical Property Estimation Methods. p* . 4-24. American Chemical Society, Washington, D.C.

[f] EPA, 1989. *Determining Soil Response Action Level Based on Potential Contaminant Migration to Ground Water: A Conpendium of Examples. EPA/540/2-89-057*

[g] EPA, 1995c. National Primary Drinking Water Regulations: Contaminant Specific Fact Sheets, Synthetic Organic Chemicals, Technical Version. EPA 811-F-95-003-T. Office of Water, Washington, D.C.

[h] Howard, Philip. H. 1990. *Handbook of Environmental Fate and Exposure Data for Organic Chemicals VI. Lewis Publishers, Chelsea, Michigan.*

[i] Vogue, P.A., E.A. Kerle, J.J. Jenkins. 1994. *OSU Extension Pesticide Properties Database.* Oregon State University.

[j] Formula for calulating K_{oc} using octanol-water partition coefficient according to Lymen, et al 1982:

Log K_{oc} = 0.544 Log(K_{ow}) + 1.377, Log K_{oc} = .937 Log(K_{ow}) - .006,

Log Koc = 1.00 Log(Kow) - .21, Log Koc = .94 Log(Kow) + .02.

[k] United States Department of Agriculture, Agricultural Research Service (ARS) 1999. Remote Sensing and Modeling Lab, 10300 Baltimore Ave., Bldg. 007. Beltsville, MD. 20705.

[l] Formula for calculating K_{oc} using water solubility according to Lymen, et al 1982: Log K_{oc} = -0.55 Log(water solubility mg/L) +3.64, Log Koc = -.54 Log(water solubility mole fraction) + .44, Log Koc = -.557 Log(water solubility u moles/L).

[m] EPA 1995d. National Primary Drinking Water Regulations: Contaminant Specific Fact Sheets, Volatile Organic Chemicals, Technical Version. EPA 811-F-95-004-T. Office of Water, Washington, D.C.

[n] http:www.speclab.com. Spectrum Laboratories, Inc. Fort Lauderdale, Fla. And Savannah, Ga.

Appendix Table 7A.3. Octanol-water Partitioning Coefficients for Chemical Constituents in Surface Soil, Sediment, and Surface Water at the Luckey Site, Luckey, Ohio

Chemical	CAS Number	Log Kow[a] (L/kg)	Source
1,1,1-Trichloroethane	71-55-6	2.48	EPA 1995a in Jones, et al 1996
2-Hexanone	591-78-6	1.38	EPA 1995a in Jones, et al 1996
3,3'-Dimethoxybenzidine	119-90-4	1.81	Debnath, et al 1992 in Syracuse 1996
4-Methyl 2-Pentanone	108-10-1	1.31	Syracuse 1996 in Jones, et al 1996
Acenaphthene	83-32-9	3.92	EPA 1995a in Jones, et al 1996
Acenaphthylene	208-96-8	4.10	SCDM 1993 in HAZWRAP 1994
Acetone	67-64-1	-0.24	EPA 1995a in Jones, et al 1996
Anthracene	120-12-7	4.55	EPA 1995a in Jones, et al 1996
Aroclor 1254	27323-18-8	6.50	ATSDR 1989 in Jones, et al 1996
Aroclor 1260	11096-82-5	6.80	ATSDR 1989 in Jones, et al 1996
Benzene	71-43-2	2.13	EPA 1995a in Jones et al 1996
Benzo(a)anthracene	56-55-3	5.70	EPA 1995a in Jones et al 1996
Benzo(a)pyrene	50-32-8	6.11	EPA 1995a in Jones et al 1996
Benzo(b)fluoranthene	205-99-2	6.10	SCDM 1993 in HAZWRAP 1994
Benzo(g,h,I)Perylene	191-24-2	6.60	SCDM 1993 in HAZWRAP 1994[e]
Benzo(k)fluoranthene	207-08-9	6.10	SCDM 1993 in HAZWRAP 1994
Bis(2-ethylhexyl) phthalate	117-81-7	7.60	Syracuse 1996 in Jones, et al 1996[c]
Bromodichloromethane	75-27-4	1.41	Syracuse 1996 in Jones, et al 1996
Carbazole	86-74-8	3.76	Hansch and Leo 1979 in HAZWRAP 1994
Carbon Disulfide	75-15-0	2.00	EPA1995a in Jones, et al 1996
Chloroethane	75-00-3	1.43	Hansch and Leo 1985 in Syracuse 1996
Chloroform	67-66-3	1.92	EPA 1995e in Sample, et al 1996
Chloromethane	74-87-3	0.91	Schwarzenbch, et al 1993
Chrysene	218-01-9	5.70	SCDM 1993 in HAZWRAP 1994
Dibenz(a,h)anthracene	53-70-3	6.50	SCDM 1993 in HAZWRAP 1994
Dibenzofuran	132-64-9	4.12	EPA 1995a in Jones, et al 1996
Diethylphthalate	84-66-2	2.50	EPA 1995a in Jones, et al 1996
Di-n-octylphthalate	117-84-0	8.10	Ellington and Floyd 1996 in Syracuse 1996
Ethyl benzene	100-41-4	3.14	EPA 1995a in Jones, et al 1996
Fluoranthene	206-44-0	5.12	EPA 1995a in Jones, et al 1996
Fluorene	86-73-7	4.21	EPA 1995a in Jones, et al 1996
Methylene Chloride	75-09-2	1.25	EPA 1995a in Jones, et al 1996
Phenanthrene	85-01-8	4.55	EPA1995a in Jones, et al 1996
Phenol	108-95-2	1.48	EPA1995a in Jones, et al 1996
Pyrene	129-00-0	5.13	Schwarzenbch, et al 1993[g]
Tetrachloroethene	127-18-4	2.88	Schwarzenbch, et al 1993
Toluene	108-883	2.75	EPA 1995a in Jones, et al 1996
Tribromomethane	75-25-2	2.35	EPA 1995a in Jones, et al 1996
Trichloroethene	636-30-6	2.71	EPA 1995a in Jones, et al 1996
Xylene (mixed isomers)	1330-29-7	3.20	EPA 1995e in Sample, et al 1996

Appendix Table 7A.3. Octanol-water Partitioning Coefficients for Chemical Constituents in Surface Soil, Sediment, and Surface Water at the Luckey Site, Luckey, Ohio (continued)

[a] Log Octanol-Water partition coefficient.

[b] Syracuse 1996. Syracuse Research Corporation, Environmental Sciences Center's on-line experimental Log P database conducted June 7, 1996.

[c] Jones, D.S., R N. Hull, G.W. Suter II. 1996. *Toxicological Benchmarks for Screening Contaminants of Potential Concern for Effects on Sediment-Associated Biota: 1996 Revision.* Lockheed Martin Energy Systems, Inc. Oak Ridge, TN 37831.-

[d] EPA. 1995d. National Primary Drinking Water Regulations; Contaminated Specific Fact Sheets Volatile Organic Chemicals, Technical Version. USEPA Office of Water. EPA 811-F-95-004-T.

[e] HAZWRAP (Hazardous Waste Remedial Action Program). 1994. Loring Air Force Base. Ecological Risk Assessment Methodology.

[f] Sample, B.E., D.M. Opresko, G.W. Suter II. 1996. *Toxicological Benchmarks for Wildlife.* Lockheed Martin Energy Systems, Inc. Oak Ridge, Tn. 37381

[g] Schwarzenbach, R.E., P.M. Gschwend, D.M. Imboden. 1993. Environmental Organic Chemistry. John Wiley & Sons, New York.

[h] United States Department of Agriculture, Agricultural Research Service (ARS) 1999. Remote Sensing and Modeling Lab. 10300 Baltimore Ave. Bldg. 007. Beltsville, MD. 20705.

[i] Russon, C.L., S. Bradbury, S. Broderius. 1996. Environmental Toxicology and Chemistry. V. 16. No. 5, pp.948-967. *Predicting Modes of Toxic Action from chemical* Structure: Acute Toxicity in the Fathead Minnow (*pimephales Promelas*).

[j] Howard, Philip, H. 1990. *Handbook of Environmental Fate and Exposure Data for Organic Chemicals VI.* Lewis Publishers, Chelsea, Michigan.

[k] EPA. 1995c. National Primary Drinking Water Regulations; Contaminant Specific Fact Sheets. USEPA Ofice of Water. EPA 811-F-95-004-T.

Appendix Table 7A.4. Half-lives (days) of Chemical Constituents in Soil and Surface Water at the Luckey Site, Luckey, Ohio [a]

		Soil		Surface Water	
Chemical	**CAS no.**	**Soil High**	**Soil Low**	**S.W. High**	**S.W. Low**
Acenaphthene	83-32-9	102	12	13	0
Acenaphthylene	208-96-8	60	43	60	43
Acetone	67-64-1	7	1	7	1
Anthracene	120-12-7	460	50	0	0
Benzo(a)anthracene	56-55-3	680	102	0	0
Benzene	71-43-2	16	5	16	5
Benzo(a)pyrene	50-32-8	530	57	0	0
Benzo(b)fluroanthene	205-99-2	610	360	30	0
Benzo(ghi)perylene	191-24-2	650	590	650	590
Benzo(k)fluoranthene	207-08-9	2,140	910	21	0
Bis(2-ethylhexyl)phthalate	117-81-7	23	5	23	5
Chloroethane	75-00-3	28	7	28	7
Chloroform	67-66-3	180	28	180	28
Chrysene	218-01-9	1,000	371	1	0
p-Cresidine	120-71-8	180	28	180	3
o-Cresol	95-48-7	7	1	7	1
p-Cresol	106-44-5	1	0	1	0
m-Cresol	108-39-4	29	2	29	2
Cresol(s)	1319-77-3	29	0	29	0
Di(n-octyl)phthalate	117-84-0	28	7	28	7
Dibenzo(a,h)anthracene	53-70-3	940	361	33	0
Dibenzofuran	132-64-9	28	7	28	7
Dibromochloromethane	124-48-1	180	28	180	28
3,3'-Dichlorobenzidine	91-94-1	180	28	0	0
Diethyl phthalate	84-66-2	56	3	56	3
Ethylbenzene	100-41-4	10	3	10	3
Fluoranthene	206-44-0	440	140	3	1
Fluroene	86-73-7	60	32	60	32
Indeno(1,2,3-cd)pyrene	193-39-5	730	600	250	125
4-Methyl-2-pentanone	78-93-3	7	1	7	1
Phenanthrene	85-01-8	200	16	1	0
Phenol	108-95-2	10	1	2	0
Pyrene	129-00-0	1,900	210	0	0
Tetrachloroethylene	127-18-4	360	180	360	180
Toluene	108-88-3	22	4	22	4
1,1,1-Trichloroethane	71-55-6	273	140	273	140
Trichloroethylene	79-01-6	360	180	360	180
Xylenes	1330-20-7	28	7	28	7

[a] Howard, Phillip H. et al., *Handbook of Environmental Degradation Rates* , Michigan, Lewis Publishers, 1991

Appendix Table 7A.5. Soil-to-Plant Transfer Factors for Chemical Constituents at the Luckey Site, Luckey, Ohio

Ecological constituent of potential concern	Soil-to-plant (SP_v)				Soil-to-plant (SP_r)			
	C_t / C_s (kg_{soil} / kg_{tissue})	Reference	CF	SP_v C_t / C_s *x* CF	C_t / C_s (kg_{soil} / kg_{tissue})	Reference	CF	SP_r C_t / C_s *x* CF
Inorganics								
Alkalinity	1.00E+00	default value	1	1.00E+00	1.00E+00	default value	1	1.00E+00
Aluminum	4.00E-03	Baes et al. (1984)	0.2	8.00E-04	6.50E-04	Baes et al. (1984)	0.2	1.30E-04
Ammonia	1.00E+00	default value	1	1.00E+00	1.00E+00	default value	1	1.00E+00
Antimony	2.00E-01	Baes et al. (1984)	0.2	4.00E-02	3.00E-02	Baes et al. (1984)	0.2	6.00E-03
Arsenic	4.00E-02	Baes et al. (1984)	0.2	8.00E-03	6.00E-03	Baes et al. (1984)	0.2	1.20E-03
Barium	1.50E-01	Baes et al. (1984)	0.2	3.00E-02	1.50E-02	Baes et al. (1984)	0.2	3.00E-03
Beryllium	1.00E-02	Baes et al. (1984)	0.2	2.00E-03	1.50E-03	Baes et al. (1984)	0.2	3.00E-04
Boron	4.00E+00	Baes et al. (1984)	0.2	8.00E-01	2.00E+00	Baes et al. (1984)	0.2	4.00E-01
Cadmium	5.50E-01	Baes et al. (1984)	0.2	1.10E-01	1.50E-01	Baes et al. (1984)	0.2	3.00E-02
Calcium	3.50E+00	Baes et al. (1984)	0.2	7.00E-01	3.50E-01	Baes et al. (1984)	0.2	7.00E-02
Chloride	1.00E+00	default value	1	1.00E+00	1.00E+00	default value	1	1.00E+00
Chromium	7.50E-03	Baes et al. (1984)	0.2	1.50E-03	4.50E-03	Baes et al. (1984)	0.2	9.00E-04
Cobalt	2.00E-02	Baes et al. (1984)	0.2	4.00E-03	7.00E-03	Baes et al. (1984)	0.2	1.40E-03
Copper	4.00E-01	Baes et al. (1984)	0.2	8.00E-02	2.50E-01	Baes et al. (1984)	0.2	5.00E-02
Fluoride	1.00E+00	default value	1	1.00E+00	1.00E+00	default value	1	1.00E+00
Iron	4.00E-03	Baes et al. (1984)	0.2	8.00E-04	1.00E-03	Baes et al. (1984)	0.2	2.00E-04
Lead	4.50E-02	Baes et al. (1984)	0.2	9.00E-03	9.00E-03	Baes et al. (1984)	0.2	1.80E-03
Magnesium	1.00E+00	Baes et al. (1984)	0.2	2.00E-01	5.50E-01	Baes et al. (1984)	0.2	1.10E-01
Manganese	2.50E-01	Baes et al. (1984)	0.2	5.00E-02	5.00E-02	Baes et al. (1984)	0.2	1.00E-02
Mercury	9.00E-01	Baes et al. (1984)	0.2	1.80E-01	2.00E-01	Baes et al. (1984)	0.2	4.00E-02
Molybdenum	2.50E-01	Baes et al. (1984)	0.2	5.00E-02	6.00E-02	Baes et al. (1984)	0.2	1.20E-02
Nickel	6.00E-02	Baes et al. (1984)	0.2	1.20E-02	6.00E-02	Baes et al. (1984)	0.2	1.20E-02
Nitrate	1.00E+00	default value	1	1.00E+00	1.00E+00	default value	1	1.00E+00
Phosphorus	3.50E+00	Baes et al. (1984)	0.2	7.00E-01	3.50E+00	Baes et al. (1984)	0.2	7.00E-01
Potassium	1.00E+00	Baes et al. (1984)	0.2	2.00E-01	5.50E-01	Baes et al. (1984)	0.2	1.10E-01
Selenium	2.50E-02	Baes et al. (1984)	0.2	5.00E-03	2.50E-02	Baes et al. (1984)	0.2	5.00E-03
Silicon	1.00E+00	default value	1	1.00E+00	1.00E+00	default value	1	1.00E+00
Silver	4.00E-01	Baes et al. (1984)	0.2	8.00E-02	1.00E-01	Baes et al. (1984)	0.2	2.00E-02
Sodium	7.50E-02	Baes et al. (1984)	0.2	1.50E-02	5.50E-02	Baes et al. (1984)	0.2	1.10E-02
Thallium	4.00E-03	Baes et al. (1984)	0.2	8.00E-04	4.00E-04	Baes et al. (1984)	0.2	8.00E-05

Appendix Table 7A.5. Soil-to-Plant Transfer Factors for Chemical Constituents at the Luckey Site, Luckey, Ohio (continued)

Ecological constituent of potential concern	Soil-to-plant (SP_v)				Soil-to-plant (SP_r)			
	C_t / C_s (kg_{soil} / kg_{tissue})	Reference	CF	SP_v C_t / C_s *x* CF	C_t / C_s (kg_{soil} / kg_{tissue})	Reference	CF	SP_r C_t / C_s *x* CF
Inorganics								
Vanadium	5.50E-03	Baes et al. (1984)	0.2	1.10E-03	3.00E-03	Baes et al. (1984)	0.2	6.00E-04
Zinc	1.50E+00	Baes et al. (1984)	0.2	3.00E-01	9.00E-01	Baes et al. (1984)	0.2	1.80E-01
Organics								
Acenaphthene	2.00E-02	HAZWRAP (1994)	1	2.00E-02	2.00E-02	HAZWRAP (1994)	1	2.00E-02
Acenaphthylene	2.00E-02	HAZWRAP (1994)	1	2.00E-02	2.00E-02	HAZWRAP (1994)	1	2.00E-02
Acetone	2.00E-02	HAZWRAP (1994)	1	2.00E-02	2.00E-02	HAZWRAP (1994)	1	2.00E-02
Anthracene	2.00E-02	HAZWRAP (1994)	1	2.00E-02	2.00E-02	HAZWRAP (1994)	1	2.00E-02
Aroclor-1254	3.80E-01	HAZWRAP (1994)	1	3.80E-01	3.80E-01	HAZWRAP (1994)	1	3.80E-01
Aroclor-1260	3.80E-01	HAZWRAP (1994)	1	3.80E-01	3.80E-01	HAZWRAP (1994)	1	3.80E-01
Benzene	2.00E-02	HAZWRAP (1994)	1	2.00E-02	2.00E-02	HAZWRAP (1994)	1	2.00E-02
Benzo(a)anthracene	3.90E-03	HAZWRAP (1994)	1	3.90E-03	3.90E-03	HAZWRAP (1994)	1	3.90E-03
Benzo(a)pyrene	2.60E-03	HAZWRAP (1994)	1	2.60E-03	2.60E-03	HAZWRAP (1994)	1	2.60E-03
Benzo(b)fluoranthene	2.30E-03	HAZWRAP (1994)	1	2.30E-03	2.30E-03	HAZWRAP (1994)	1	2.30E-03
Benzo(g,h,i)perylene	1.20E-03	HAZWRAP (1994)	1	1.20E-03	1.20E-03	HAZWRAP (1994)	1	1.20E-03
Benzo(k)fluoranthene	2.30E-03	HAZWRAP (1994)	1	2.30E-03	2.30E-03	HAZWRAP (1994)	1	2.30E-03
Bis(2-ethylhexyl)phthalate	8.70E-03	HAZWRAP (1994)	1	8.70E-03	8.70E-03	HAZWRAP (1994)	1	8.70E-03
Carbazole	2.00E-02	HAZWRAP (1994)	1	2.00E-02	2.00E-02	HAZWRAP (1994)	1	2.00E-02
Carbon disulfide	1.00E+00	default value	1	1.00E+00	1.00E+00	default value	1	1.00E+00
Chloroform	2.00E-02	HAZWRAP (1994)	1	2.00E-02	2.00E-02	HAZWRAP (1994)	1	2.00E-02
Chrysene	3.90E-03	HAZWRAP (1994)	1	3.90E-03	3.90E-03	HAZWRAP (1994)	1	3.90E-03
m,p-cresol	1.00E+00	default value	1	1.00E+00	1.00E+00	default value	1	1.00E+00
Dibenzo(a,h)anthracene	1.40E-03	HAZWRAP (1994)	1	1.40E-03	1.40E-03	HAZWRAP (1994)	1	1.40E-03
Dibenzofuran	2.00E-02	HAZWRAP (1994)	1	2.00E-02	2.00E-02	HAZWRAP (1994)	1	2.00E-02
Diethylphthalate	2.00E-02	HAZWRAP (1994)	1	2.00E-02	2.00E-02	HAZWRAP (1994)	1	2.00E-02
Di-n-octylphthalate	3.70E-05	HAZWRAP (1994)	1	3.70E-05	3.70E-05	HAZWRAP (1994)	1	3.70E-05
Ethylbenzene	2.00E-02	HAZWRAP (1994)	1	2.00E-02	2.00E-02	HAZWRAP (1994)	1	2.00E-02
Fluoranthene	2.00E-02	HAZWRAP (1994)	1	2.00E-02	2.00E-02	HAZWRAP (1994)	1	2.00E-02
Fluorene	2.00E-02	HAZWRAP (1994)	1	2.00E-02	2.00E-02	HAZWRAP (1994)	1	2.00E-02
2-Hexanone	1.00E+00	default value	1	1.00E+00	1.00E+00	default value	1	1.00E+00

Appendix Table 7A.5. Soil-to-Plant Transfer Factors for Chemical Constituents at the Luckey Site, Luckey, Ohio (continued)

Ecological constituent of potential concern	Soil-to-plant (SP_v)				Soil-to-plant (SP_r)			
	C_t / C_s (kg_{soil} / kg_{tissue})	Reference	CF	SP_v C_t / C_s *x* CF	C_t / C_s (kg_{soil} / kg_{tissue})	Reference	CF	SP_r C_t / C_s *x* CF
Organics								
Indeno(1,2,3-cd)pyrene	1.20E-03	HAZWRAP (1994)	1	1.20E-03	1.20E-03	HAZWRAP (1994)	1	1.20E-03
Methylene chloride	2.00E-02	HAZWRAP (1994)	1	2.00E-02	2.00E-02	HAZWRAP (1994)	1	2.00E-02
Methyl ethyl ketone (2-butanone)	2.00E-02	HAZWRAP (1994)	1	2.00E-02	2.00E-02	HAZWRAP (1994)	1	2.00E-02
4-Methyl-2-pentanone	2.00E-02	HAZWRAP (1994)	1	2.00E-02	2.00E-02	HAZWRAP (1994)	1	2.00E-02
Phenanthrene	2.00E-02	HAZWRAP (1994)	1	2.00E-02	2.00E-02	HAZWRAP (1994)	1	2.00E-02
Phenol	2.00E-02	HAZWRAP (1994)	1	2.00E-02	2.00E-02	HAZWRAP (1994)	1	2.00E-02
Pyrene	6.70E-03	HAZWRAP (1994)	1	6.70E-03	6.70E-03	HAZWRAP (1994)	1	6.70E-03
Tetrachloroethene	2.00E-02	HAZWRAP (1994)	1	2.00E-02	2.00E-02	HAZWRAP (1994)	1	2.00E-02
Toluene	2.00E-02	HAZWRAP (1994)	1	2.00E-02	2.00E-02	HAZWRAP (1994)	1	2.00E-02
1,1,1-Trichloroethane	1.00E+00	default value	1	1.00E+00	1.00E+00	default value	1	1.00E+00
Trichloroethene	2.00E-02	HAZWRAP (1994)	1	2.00E-02	2.00E-02	HAZWRAP (1994)	1	2.00E-02
Xylenes	2.00E-02	HAZWRAP (1994)	1	2.00E-02	2.00E-02	HAZWRAP (1994)	1	2.00E-02

SP = Soil-to-plant transfer (kg_{soil}/kg_{tissue}); v = vegetative parts, r = reproductive parts

C_t = Constituent concentration in tissue (mg/kg_{tissue})

C_s = Constituent concentration in soil (mg/kg_{soil})

CF = Conversion factor, dry weight to wet weight; 0.2 for dry weight values assuming tissue is 80% water (HAZWRAP 1994) and 1 for wet weight values.

Default value (wet weight) is assumed when no published value available.

Appendix Table 7A.6. Terrestrial Bioaccumulation Factors for Chemical Contstituents at the Luckey Site, Luckey, Ohio

Ecological constituent of potential concern	Soil-to-animal (BAF_i)				Animal-to-animal (BAF_v)	
	C_t / C_s (kg_{soil} / kg_{tissue})	Reference	CF	BAF_i C_t / C_s *x* CF	BAF_v	Reference
Inorganics						
Aluminum	7.50E-02	HAZWRAP (1994)	1	7.50E-02	7.50E-02	HAZWRAP (1994)
Ammonia	1.00E+00	default value	1	1.00E+00	1.00E+00	default value
Antimony	5.00E-02	HAZWRAP (1994)	1	5.00E-02	5.00E-02	HAZWRAP (1994)
Arsenic	6.60E-03	HAZWRAP (1994)	1	6.60E-03	1.00E-01	HAZWRAP (1994)
Barium	7.50E-03	HAZWRAP (1994)	1	7.50E-03	7.50E-03	HAZWRAP (1994)
Beryllium	5.00E-02	HAZWRAP (1994)	1	5.00E-02	5.00E-02	HAZWRAP (1994)
Boron	1.00E+00	default value	1	1.00E+00	1.00E+00	default value
Cadmium	1.10E+01	HAZWRAP (1994)	1	1.10E+01	2.80E-02	HAZWRAP (1994)
Calcium	1.00E+00	default value	1	1.00E+00	1.00E+00	default value
Chloride	1.00E+00	default value	1	1.00E+00	1.00E+00	default value
Chromium	1.60E-01	HAZWRAP (1994)	1	1.60E-01	2.80E-01	HAZWRAP (1994)
Cobalt	1.00E+00	HAZWRAP (1994)	1	1.00E+00	1.00E+00	HAZWRAP (1994)
Copper	1.60E-01	HAZWRAP (1994)	1	1.60E-01	5.00E-01	HAZWRAP (1994)
Fluoride	1.00E+00	default value	1	1.00E+00	1.00E+00	default value
Iron	1.00E+00	default value	1	1.00E+00	1.00E+00	default value
Lead	2.00E+00	default value[a]	1	2.00E+00	1.50E-02	HAZWRAP (1994)
Magnesium	1.00E+00	default value	1	1.00E+00	1.00E+00	default value
Manganese	2.00E-02	HAZWRAP (1994)	1	2.00E-02	2.00E-02	HAZWRAP (1994)
Mercury	3.40E-01	HAZWRAP (1994)	1	3.40E-01	1.30E+01	HAZWRAP (1994)
Molybdenum	1.00E+00	default value	1	1.00E+00	1.00E+00	default value
Nickel	2.30E-01	HAZWRAP (1994)	1	2.30E-01	3.00E-01	HAZWRAP (1994)
Nitrate	1.00E+00	default value	1	1.00E+00	1.00E+00	default value
Phosphorus	1.00E+00	default value	1	1.00E+00	1.00E+00	default value
Potassium	1.00E+00	default value	1	1.00E+00	1.00E+00	default value
Selenium	7.60E-01	HAZWRAP (1994)	1	7.60E-01	7.50E-01	HAZWRAP (1994)
Silicon	1.00E+00	default value	1	1.00E+00	1.00E+00	default value
Silver	1.50E-01	HAZWRAP (1994)	1	1.50E-01	1.50E-01	HAZWRAP (1994)
Sodium	1.00E+00	default value	1	1.00E+00	1.00E+00	default value
Thallium	1.00E+00	default value	1	1.00E+00	1.00E+00	default value

Appendix Table 7A.6. Terrestrial Bioaccumulation Factors for Chemical Contstituents at the Luckey Site, Luckey, Ohio (continued)

Ecological constituent of potential concern	Soil-to-animal (BAF_i)				Animal-to-animal (BAF_v)	
	C_t / C_s (kg_{soil} / kg_{tissue})	Reference	CF	BAF_i C_t / C_s *x* CF	BAF_v	Reference
Inorganics						
Vanadium	1.30E-01	HAZWRAP (1994)	1	1.30E-01	1.30E-01	HAZWRAP (1994)
Zinc	1.80E+00	HAZWRAP (1994)	1	1.80E+00	5.00E+00	HAZWRAP (1994)
Organics						
Acenaphthene	5.00E-02	HAZWRAP (1994)	1	5.00E-02	1.20E-02	HAZWRAP (1994)
Acenaphthylene	5.00E-02	HAZWRAP (1994)	1	5.00E-02	1.90E-02	HAZWRAP (1994)
Acetone	5.00E-02	HAZWRAP (1994)	1	5.00E-02	8.70E-07	HAZWRAP (1994)
Anthracene	5.00E-02	HAZWRAP (1994)	1	5.00E-02	4.80E-02	HAZWRAP (1994)
Aroclor-1254	5.80E+00	HAZWRAP (1994)	1	5.80E+00	2.90E+00	HAZWRAP (1994)
Aroclor-1260	5.80E+00	HAZWRAP (1994)	1	5.80E+00	2.90E+00	HAZWRAP (1994)
Benzene	5.00E-02	HAZWRAP (1994)	1	5.00E-02	1.90E-04	HAZWRAP (1994)
Benzo(a)anthracene	5.00E-02	HAZWRAP (1994)	1	5.00E-02	7.60E-01	HAZWRAP (1994)
Benzo(a)pyrene	5.00E-02	HAZWRAP (1994)	1	5.00E-02	1.50E+00	HAZWRAP (1994)
Benzo(b)fluoranthene	5.00E-02	HAZWRAP (1994)	1	5.00E-02	1.90E+00	HAZWRAP (1994)
Benzo(g,h,i)perylene	5.00E-02	HAZWRAP (1994)	1	5.00E-02	6.00E+00	HAZWRAP (1994)
Benzo(k)fluoranthene	5.00E-02	HAZWRAP (1994)	1	5.00E-02	1.90E+00	HAZWRAP (1994)
Bis(2-ethylhexyl)phthalate	5.00E-02	HAZWRAP (1994)	1	5.00E-02	1.90E-01	HAZWRAP (1994)
Carbazole	5.00E-02	HAZWRAP (1994)	1	5.00E-02	8.70E-03	HAZWRAP (1994)
Carbon disulfide	1.00E+00	default value	1	1.00E+00	1.00E+00	default value
Chloroform	5.00E-02	HAZWRAP (1994)	1	5.00E-02	1.50E-04	HAZWRAP (1994)
Chrysene	5.00E-02	HAZWRAP (1994)	1	5.00E-02	7.60E-01	HAZWRAP (1994)
Dibenzo(a,h)anthracene	5.00E-02	HAZWRAP (1994)	1	5.00E-02	4.80E+00	HAZWRAP (1994)
Dibenzofuran	5.00E-02	HAZWRAP (1994)	1	5.00E-02	1.90E-02	HAZWRAP (1994)
Diethylphthalate	5.00E-02	HAZWRAP (1994)	1	5.00E-02	2.40E-03	HAZWRAP (1994)

Appendix Table 7A.6. Terrestrial Bioaccumulation Factors for Chemical Contstituents at the Luckey Site, Luckey, Ohio (continued)

Ecological constituent of potential concern	Soil-to-animal (BAF_i)				Animal-to-animal (BAF_v)	
	C_t / C_s (kg_{soil} / kg_{tissue})	Reference	CF	BAF_i C_t / C_s *x* CF	BAF_v	Reference
Organics						
Di-n-octylphthalate	5.00E-02	HAZWRAP (1994)	1	5.00E-02	2.40E+03	HAZWRAP (1994)
Ethylbenzene	5.00E-02	HAZWRAP (1994)	1	5.00E-02	2.40E-03	HAZWRAP (1994)
Fluoranthene	5.00E-02	HAZWRAP (1994)	1	5.00E-02	1.30E-01	HAZWRAP (1994)
Fluorene	5.00E-02	HAZWRAP (1994)	1	5.00E-02	2.40E-02	HAZWRAP (1994)
2-Hexanone	1.00E+00	default value	1	1.00E+00	1.00E+00	default value
Indeno(1,2,3-cd)pyrene	5.00E-02	HAZWRAP (1994)	1	5.00E-02	6.00E+00	HAZWRAP (1994)
Methylene chloride	5.00E-02	HAZWRAP (1994)	1	5.00E-02	3.00E-05	HAZWRAP (1994)
Methyl ethyl ketone (2-butanone)	5.00E-02	HAZWRAP (1994)	1	5.00E-02	2.90E-06	HAZWRAP (1994)
4-Methyl-2-pentanone	5.00E-02	HAZWRAP (1994)	1	5.00E-02	2.40E-05	HAZWRAP (1994)
Phenanthrene	5.00E-02	HAZWRAP (1994)	1	5.00E-02	4.80E-02	HAZWRAP (1994)
Phenol	5.00E-02	HAZWRAP (1994)	1	5.00E-02	4.80E-05	HAZWRAP (1994)
Pyrene	5.00E-02	HAZWRAP (1994)	1	5.00E-02	3.00E-01	HAZWRAP (1994)
Tetrachloroethene	5.00E-02	HAZWRAP (1994)	1	5.00E-02	3.80E-03	HAZWRAP (1994)
Toluene	5.00E-02	HAZWRAP (1994)	1	5.00E-02	7.60E-04	HAZWRAP (1994)
1,1,1-Trichloroethane	1.00E+00	default value	1	1.00E+00	1.00E+00	default value
Trichloroethene	5.00E-02	HAZWRAP (1994)	1	5.00E-02	3.80E-04	HAZWRAP (1994)
Xylenes	5.00E-02	HAZWRAP (1994)	1	5.00E-02	2.40E-03	HAZWRAP (1994)

BAF = Bioaccumulation factor; i = invertebrate (kg_{soil}/kg_{tissue}), v = vertebrate (kg_{tissue}/kg_{tissue})

C_t = Constituent concentration in tissue (mg/kg_{tissue})

C_s = Constituent concentration in soil (mg/kg_{soil})

CF = Conversion factor, dry weight to wet weight; 0.2 for dry weight values assuming tissue is 80% water (HAZWRAP 1994) and 1 for wet weight values.

Default value (wet weight) is assumed when no published value available.

[a] Assumes calcium-dependent BAF for lead (Corp and Morgan 1991); default value = 2, assumes calcium concentration in soil > 500 mg/kg and lead concentration > 1 mg/kg.

Appendix Table 7A.7. Aquatic Bioaccumulation Factors for Chemical Constituents at the Luckey Site, Luckey, Ohio

Ecological constituent of potential concern	Sediment-to-animal (BAF_i)		Water-to-animal (BCF)	
	BAF_i	Reference	BCF	Reference
Inorganics				
Alkalinity	1.00E+00	default value	5.00E+02	default value
Aluminum	7.50E-02	HAZWRAP (1994)	1.00E+01	HAZWRAP (1994)
Ammonia	1.00E+00	default value	5.00E+02	default value
Antimony	5.00E-02	HAZWRAP (1994)	1.00E+00	HAZWRAP (1994)
Arsenic	6.60E-03	HAZWRAP (1994)	2.80E+02	HAZWRAP (1994)
Barium	7.50E-03	HAZWRAP (1994)	4.00E+00	HAZWRAP (1994)
Beryllium	5.00E-02	HAZWRAP (1994)	2.00E+00	HAZWRAP (1994)
Boron	1.00E+00	default value	5.00E+02	default value
Cadmium	1.10E+01	HAZWRAP (1994)	5.00E+01	HAZWRAP (1994)
Calcium	1.00E+00	default value	4.00E+01	NRC (1992)
Chloride	1.00E+00	default value	5.00E+02	default value
Chromium	1.60E-01	HAZWRAP (1994)	2.00E+02	HAZWRAP (1994)
Cobalt	1.00E+00	HAZWRAP (1994)	3.00E+02	HAZWRAP (1994)
Copper	1.60E-01	HAZWRAP (1994)	2.10E+02	HAZWRAP (1994)
Flouride	1.00E+00	default value	5.00E+02	default value
Iron	1.00E+00	default value	3.00E+02	NRC (1992)
Lead	2.00E+00	default value[a]	3.00E+02	HAZWRAP (1994)
Magnesium	1.00E+00	default value	5.00E+02	default value
Manganese	2.00E-02	HAZWRAP (1994)	4.00E+02	HAZWRAP (1994)
Mercury	3.40E-01	HAZWRAP (1994)	6.30E+04	HAZWRAP (1994)
Molybdenum	1.00E+00	default value	5.00E+02	default value
Nickel	2.30E-01	HAZWRAP (1994)	1.00E+02	HAZWRAP (1994)
Nitrate	1.00E+00	default value	5.00E+02	default value
Phosphorus	1.00E+00	default value	5.00E+02	default value
Potassium	1.00E+00	default value	1.00E+03	NRC (1992)
Selenium	7.60E-01	HAZWRAP (1994)	8.00E+00	HAZWRAP (1994)
Silver	1.50E-01	HAZWRAP (1994)	2.00E+00	HAZWRAP (1994)
Silicon	1.00E+00	default value	5.00E+02	default value
Sodium	1.00E+00	default value	1.00E+02	NRC (1992)
Sulfate	1.00E+00	default value	5.00E+02	default value
Thallium	1.00E+00	default value	5.00E+02	default value
Vanadium	1.30E-01	HAZWRAP (1994)	1.00E-02	HAZWRAP (1994)
Zinc	1.80E+00	HAZWRAP (1994)	1.00E+03	HAZWRAP (1994)
Organics				
Acenaphthene	5.00E-02	HAZWRAP (1994)	3.90E+02	HAZWRAP (1994)
Acenaphthylene	5.00E-02	HAZWRAP (1994)	6.90E+02	HAZWRAP (1994)
Acetone	5.00E-02	HAZWRAP (1994)	2.00E-01	HAZWRAP (1994)
Anthracene	5.00E-02	HAZWRAP (1994)	1.40E+03	HAZWRAP (1994)
Aroclor-1254	5.80E+00	HAZWRAP (1994)	1.00E+07	HAZWRAP (1994)
Aroclor-1260	5.80E+00	HAZWRAP (1994)	1.00E+07	HAZWRAP (1994)
Benzene	5.00E-02	HAZWRAP (1994)	3.20E+01	HAZWRAP (1994)

Appendix Table 7A.7 Aquatic Bioaccumulation Factors for Chemical Constituents at the Luckey Site, Luckey, Ohio (continued)

Ecological constituent of potential concern	Sediment-to-animal (BAF_i)		Water-to-animal (BCF)	
	BAF_i	Reference	BCF	Reference
Organics				
Benzo(a)anthracene	5.00E-02	HAZWRAP (1994)	1.30E+04	HAZWRAP (1994)
Benzo(a)pyrene	5.00E-02	HAZWRAP (1994)	3.00E+01	HAZWRAP (1994)
Benzo(b)fluoranthene	5.00E-02	HAZWRAP (1994)	2.60E+04	HAZWRAP (1994)
Benzo(g,h,i)perylene	5.00E-02	HAZWRAP (1994)	6.50E+04	HAZWRAP (1994)
Benzo(k)fluoranthene	5.00E-02	HAZWRAP (1994)	2.60E+04	HAZWRAP (1994)
Carbazole	5.00E-02	HAZWRAP (1994)	3.70E+02	HAZWRAP (1994)
Carbon disulfide	1.00E+00	default value	1.00E+05	default value
Chloroethane	1.00E+00	default value	1.00E+05	default value
Chloroform	5.00E-02	HAZWRAP (1994)	6.00E+00	HAZWRAP (1994)
Chrysene	5.00E-02	HAZWRAP (1994)	1.30E+04	HAZWRAP (1994)
m,p-cresol	1.00E+00	default value	5.00E+02	default value
Dibenzo(a,h)anthracene	5.00E-02	HAZWRAP (1994)	5.40E+04	HAZWRAP (1994)
Dibenzofuran	5.00E-02	HAZWRAP (1994)	6.90E+02	HAZWRAP (1994)
Diethylphthalate	5.00E-02	HAZWRAP (1994)	1.20E+02	HAZWRAP (1994)
Di-n-octylphthalate	5.00E-02	HAZWRAP (1994)	9.30E+03	HAZWRAP (1994)
Ethylbenzene	5.00E-02	HAZWRAP (1994)	2.90E+02	HAZWRAP (1994)
Fluoranthene	5.00E-02	HAZWRAP (1994)	3.20E+03	HAZWRAP (1994)
Fluorene	5.00E-02	HAZWRAP (1994)	8.30E+02	HAZWRAP (1994)
2-Hexanone	1.00E+00	default value	1.00E+05	default value
Indeno(1,2,3-cd)pyrene	5.00E-02	HAZWRAP (1994)	6.50E+04	HAZWRAP (1994)
Methylene chloride	5.00E-02	HAZWRAP (1994)	4.00E+00	HAZWRAP (1994)
2-Butanone			6.00E-01	HAZWRAP (1994)
4-Methyl-2-pentanone	5.00E-02	HAZWRAP (1994)	6.00E+00	HAZWRAP (1994)
Phenanthrene	5.00E-02	HAZWRAP (1994)	1.40E+03	HAZWRAP (1994)
Phenol	5.00E-02	HAZWRAP (1994)	7.80E+02	HAZWRAP (1994)
Pyrene	5.00E-02	HAZWRAP (1994)	6.10E+03	HAZWRAP (1994)
Tetrachloroethene	5.00E-02	HAZWRAP (1994)	4.40E+01	HAZWRAP (1994)
Toluene	5.00E-02	HAZWRAP (1994)	8.30E+01	HAZWRAP (1994)
1,1,1-Trichloroethane	1.00E+00	default value	1.00E+05	default value
Trichloroethene	5.00E-02	HAZWRAP (1994)	1.70E+01	HAZWRAP (1994)
Xylenes	5.00E-02	HAZWRAP (1994)	1.70E+01	HAZWRAP (1994)

BAF_i = Bioaccumulation factor for transfer from sediment to invertebrate animals ($kg_{sediment}/kg_{tissue}$)

BCF = Bioconcentration factor for transfer from water to fish and other aquatic biota ($mg/kg_{tissue}/mg/L$)

Default value (wet weight) is assumed when no published value available.

[a] Assumes calcium-dependent BAF for lead (Corp and Morgan 1991); default value = 2, assumes calcium concentration in soil > 500 mg/kg and lead concentration > 1 mg/kg.

Appendix Table 7A.8. Hal-lives of Radionuclides in Surface Soil, Sediment, and Surface Water at the Luckey Site, Luckey, Ohio

Analyte	CAS Number	$T_{1/2}$ (years)[a]	$T_{1/2}$ (days)
Radionuclides			
Actinium-228	14331-83-0	7.00E-04	2.55E-01
Cesium-137	10045-97-3	3.00E+01	1.10E+04
Americium-241	86954-36-1	4.3E+02	1.6E+05
Potassium-40	13966-00-2	1.3E+09	4.7E+11
Radium-226	13982-63-3	1.6E+03	5.8E+05
Radium-228	15262-20-1	5.8E+00	2.1E+03
Thorium-227	15623-47-9	5.1E-02	1.9E+01
Thorium-228	14274-82-9	5.1E-02	1.9E+01
Thorium-230	14269-63-7	1.9E+00	7.0E+02
Thorium-232	7440-29-1	1.4E+10	5.1E+12
Thorium-234	15065-10-8	6.6E-02	2.4E+01
Uranium-233/234	U-233/234	1.6E+05	5.8E+07
Uranium-234	13966-29-5	2.4E+05	8.9E+07
Uranium-235	15117-96-1	7.0E+08	2.6E+11
Uranium-238	24678-82-8	4.47E+09	1.63E+12

[a] HEW 1970

Appendix Table 7A.9. Soil-to-Plant Transfer Factors for Ecological Radiological Contstituents of Potential Concern

Ecological constituent of potential concern	Soil-to-plant (SP_v)				Soil-to-plant (SP_r)			
	C_t / C_s (g_{soil} / g_{tissue})	Reference	CF	SP_v C_t / C_s *x* CF	C_t / C_s (g_{soil} / g_{tissue})	Reference	CF	SP_r C_t / C_s *x* CF
Radionuclides								
Americium-241	5.50E-03	Baes et al. (1984)	0.2	1.10E-03	2.50E-04	Baes et al. (1984)	0.2	5.00E-05
Radium-226	1.50E-02	Baes et al. (1984)	0.2	3.00E-03	1.50E-03	Baes et al. (1984)	0.2	3.00E-04
Thorium-227	8.50E-04	Baes et al. (1984)	0.2	1.70E-04	8.50E-05	Baes et al. (1984)	0.2	1.70E-05
Thorium-230	8.50E-04	Baes et al. (1984)	0.2	1.70E-04	8.50E-05	Baes et al. (1984)	0.2	1.70E-05
Thorium-234	8.50E-04	Baes et al. (1984)	0.2	1.70E-04	8.50E-05	Baes et al. (1984)	0.2	1.70E-05
Uranium-233/234	8.50E-03	Baes et al. (1984)	0.2	1.70E-03	4.00E-03	Baes et al. (1984)	0.2	8.00E-04
Uranium-234	8.50E-03	Baes et al. (1984)	0.2	1.70E-03	4.00E-03	Baes et al. (1984)	0.2	8.00E-04
Uranium-238	8.50E-03	Baes et al. (1984)	0.2	1.70E-03	4.00E-03	Baes et al. (1984)	0.2	8.00E-04

SP = Soil-to-plant transfer (g_{soil}/g_{tissue}); v = vegetative parts, r = reproductive parts

C_t = Constituent concentration in tissue (pCi/g_{tissue})

C_s = Constituent concentration in soil (pCi/g_{soil})

CF = Conversion factor, dry weight to wet weight; 0.2 for dry weight values assuming tissue is 80% water (HAZWRAP 1994) and 1 for wet weight values.

Appendix Table 7A.10. Terrestrial Bioaccumulation Factors for Ecological Radiological Contstituents of Potential Concern

Ecological constituent of potential concern	Soil-to-animal (BAF_i)				Animal-to-animal (BAF_v)			
	Ct / Cs (gsoil / gtissue)	**Reference**	**CF**	**BAFi** C_t / C_s *x* CF	**Ct / Ingest.** (days / kgtissue)	**Reference**	**CF**	**BAFi** C_t / Ingest. *x* CF
Radionuclides								
Americium-241	3.15E+00	DOE 1997	1	3.15E+00	3.50E-04	Baes et al. (1984)	50	1.75E-02
Radium-226	1.25E-02	default value, BAF_v	1	1.25E-02	2.50E-04	Baes et al. (1984)	50	1.25E-02
Thorium-227	3.00E-04	default value, BAF_v	1	3.00E-04	6.00E-06	Baes et al. (1984)	50	3.00E-04
Thorium-230	3.00E-04	default value, BAF_v	1	3.00E-04	6.00E-06	Baes et al. (1984)	50	3.00E-04
Thorium-234	3.00E-04	default value, BAF_v	1	3.00E-04	6.00E-06	Baes et al. (1984)	50	3.00E-04
Uranium-233/234	6.30E-02	DOE (1997)	1	6.30E-02	2.00E-04	Baes et al. (1984)	50	1.00E-02
Uranium-234	6.30E-02	DOE (1997)	1	6.30E-02	2.00E-04	Baes et al. (1984)	50	1.00E-02
Uranium-238	6.30E-02	DOE (1997)	1	6.30E-02	2.00E-04	Baes et al. (1984)	50	1.00E-02

BAF = Bioaccumulation factor; i = invertebrate (g_{soil}/g_{tissue}), v = vertebrate (g_{tissue}/g_{tissue})
C_t = Constituent concentration in tissue (pCi/g_{tissue})
C_s = Constituent concentration in soil (pCi/g_{soil})
Ingest. = Ingestion rate (pCi/d)
CF1 = Conversion factor, dry weight to wet weight; 0.2 for dry weight values assuming tissue is 80% water (HAZWRAP 1994) and 1 for wet weight values.
CF2 = Conversion factor for rate of consumption of food by cattle (50 kg/d) (HAZWRAP 1994)
Default value (wet weight) is assumed when no published value available.

Appendix Table 7A.11. Aquatic Bioaccumulation Factors for Ecological Radiological Contstituents of Potential Concern

Ecological constituent of potential concern	Sediment-to-animal (BAF_i)			Water-to-animal (BCF)	
	Kd	BAF_i	Reference	BCF	Reference
Radionuclides					
Actinium-228	1.50E+03	1.67E-02	Baes et al. (1984)	2.50E+01	NRC (1992)
Cesium-137	1.00E+03	2.00E+00	Baes et al. (1984)	2.00E+03	NRC (1992)
Potassium-40	5.50E+00	1.82E+02	Baes et al. (1984)	1.00E+03	NRC (1992)
Radium-226	4.50E+02	1.56E-01	Baes et al. (1984)	7.00E+01	NRC (1992)
Radium-228	4.50E+02	1.56E-01	Baes et al. (1984)	7.00E+01	NRC (1992)
Thorium-227	1.50E+05	6.67E-04	Baes et al. (1984)	1.00E+02	NRC (1992)
Thorium-230	1.50E+05	6.67E-04	Baes et al. (1984)	1.00E+02	NRC (1992)
Thorium-234	1.50E+05	6.67E-04	Baes et al. (1984)	1.00E+02	NRC (1992)
Uranium-233/234	4.50E+02	1.11E-01	Baes et al. (1984)	5.00E+01	NRC (1992)
Uranium-234	4.50E+02	1.11E-01	Baes et al. (1984)	5.00E+01	NRC (1992)
Uranium-235	4.50E+02	1.11E-01	Baes et al. (1984)	5.00E+01	NRC (1992)
Uranium-238	4.50E+02	1.11E-01	Baes et al. (1984)	5.00E+01	NRC (1992)

Appendix Table 7A.12. Ecological Abiotic Screening Table for Surface Soil at Luckey Site

Analyte	Surface Soil Max (mg/kg)	Log Koc		Log Kow		T1/2		BAF		CEPC?
		Log K_{oc} L/kg	Above or below max (3.5 L/kg)	Log K_{ow} L/kg	Above or below max (3.5 L/kg)	$T_{1/2}$ (days)	Above or below max (14)	BAF	Above or below max (0.01)	
Inorganics										
Antimony	5.1	4.7	above	--	no Kow	--	no T1/2	5.00E-02	above	yes
Beryllium	8760	--	no Koc	--	no Kow	--	no T1/2	5.00E-02	above	yes
Boron	43.1	--	no Koc	--	no Kow	--	no T1/2	1.00E+00	above	yes
Cadmium	438	2.70E+00	below	--	no Kow	--	no T1/2	1.10E+01	above	yes
Calcium	206000	--	no Koc	--	no Kow	--	no T1/2	1.00E+00	above	yes
Chromium	153	7.00E-01	below	--	no Kow	--	no T1/2	1.60E-01	above	yes
Copper	420	--	no Koc	--	no Kow	--	no T1/2	5.00E-01	above	yes
Lead	28900	--	no Koc	--	no Kow	--	no T1/2	2.00E+00	above	yes
Magnesium	106000	--	no Koc	--	no Kow	--	no T1/2	1.00E+00	above	yes
Mercury	1.8	--	no Koc	--	no Kow	--	no T1/2	1.30E+01	above	yes
Nickel	194	--	no Koc	--	no Kow	--	no T1/2	3.00E-01	above	yes
Selenium	2.7	--	no Koc	--	no Kow	--	no T1/2	7.60E-01	above	yes
Silicon	5150	--	no Koc	--	no Kow	--	no T1/2	1.00E+00	above	yes
Sodium	22300	--	no Koc	--	no Kow	--	no T1/2	1.00E+00	above	yes
Strontium	1180	--	no Koc	--	no Kow	--	no T1/2	1.00E+00	above	yes
Thallium	12	--	no Koc	--	no Kow	--	no T1/2	1.00E+00	above	yes
Zinc	1840	--	no Koc	--	no Kow	--	no T1/2	5.00E+00	above	yes
Anions										
Chloride	320	-1.30E+00	below	--	no Kow	--	no T1/2	1.00E+00	above	yes
Fluoride	576	--	no Koc	--	no Kow	--	no T1/2	1.00E+00	above	yes
Nitrate, as N	521	--	no Koc	--	no Kow	--	no T1/2	1.00E+00	above	yes
Nitrogen, Ammonia	116	--	no Koc	--	no Kow	--	no T1/2	1.00E+00	above	yes
Sulfate	24800	--	no Koc	--	no Kow	--	no T1/2	1.00E+00	above	yes
Organics										
Semi-Volatiles										
Acenaphthene	0.0823	3.86E+00	above	3.92	above	102	above	5.00E-02	above	yes
Acenaphthylene	0.0919	3.40	below	4.10	above	60	above	5.00E-02	above	yes
Anthracene	249	4.48E+00	above	4.55	above	460	above	5.00E-02	above	yes
Benzo(a)anthracene	236	6.14	above	5.70	above	680	above	7.60E-01	above	yes
Benzo(a)pyrene	195	6.01	above	6.11	above	530	above	1.50E+00	above	yes
Benzo(b)fluoranthene	299	5.74	above	6.10	above	610	above	1.90E+00	above	yes
Benzo(ghi)perylene	1.81	--	no Koc	6.60	above	650	above	6.00E+00	above	yes
Benzo(k)fluoranthene	1.75	--	no Koc	6.10	above	2140	above	1.90E+00	above	yes
bis(2-ethylhexyl)phthalate	2.36	7.47	above	7.60	above	22.92	above	1.90E-01	above	yes
Chrysene	237	5.30	above	5.70	above	1000	above	7.60E-01	above	yes
Dibenz(a,h)anthracene	1.18	6.52	above	6.50	above	940	above	4.80E+00	above	yes
Fluoranthene	762	5.04	above	5.12	above	440	above	1.30E-01	above	yes
Fluorene	216	4.14	above	4.21	above	60	above	5.00E-02	above	yes
Indeno(1,2,3-c,d)pyrene	2.01	--	no Koc	--	no Kow	730	above	6.00E+00	above	yes
Phenanthrene	891	4.48	above	4.55	above	200	above	5.00E-02	above	yes
Pyrene	513	--	no Koc	5.13	above	1900	above	3.00E-01	above	yes

Appendix Table 7A.12. Ecological Abiotic Screening Table for Surface Soil at Luckey Site (continued)

Analyte	Surface Soil Max (mg/kg)	Log Koc		Log Kow		T1/2		BAF		CEPC?
		Log K_{oc} L/kg	Above or below max (3.5 L/kg)	Log K_{ow} L/kg	Above or below max (3.5 L/kg)	$T_{1/2}$ (days)	Above or below max (14)	BAF	Above or below max (0.01)	
Volatiles										
1,1,1-Trichloroethane	0.0073	2.44	below	2.48	below	273	above	1.00E+00	above	yes
2-Hexanone	0.0099	1.36	below	1.38	below	--	no T1/2	1.00E+00	above	yes
4-Methyl-2-pentanone	0.0214	1.29	below	1.31	below	--	no T1/2	5.00E-02	above	yes
Acetone	0.0193	-0.23	below	-0.24	below	7	below	5.00E-02	above	yes
Benzene	0.0057	1.99	below	2.13	below	16	above	5.00E-02	above	yes
Carbon disulfide	0.0615	1.97	below	2.00	below	--	no T1/2	1.00E+00	above	yes
Chloroform	0.0012	1.89	below	1.92	below	180	above	5.00E-02	above	yes
Chloromethane	0.211	--	no Koc	0.91	below	--	no T1/2	1.00E+00	above	yes
Ethylbenzene	0.0091	2.21	below	3.14	below	10	below	5.00E-02	above	yes
Methylene chloride	0.0047	1.23	below	1.25	below	28	above	5.00E-02	above	yes
Toluene	0.422	2.71	below	2.75	below	22	above	5.00E-02	above	yes
Trichloroethene	0.0013	2.67	below	2.71	below	--	no T1/2	5.00E-02	above	yes
Xylenes (total)	0.0269	3.08	below	3.13	below	28	above	5.00E-02	above	yes
Pesticides/PCBs										
Aroclor-1254	3.2	6.39	above	6.50	above	--	no T1/2	5.80E+00	above	yes
Aroclor-1260	0.0231	6.69	above	6.80	above	--	no T1/2	5.80E+00	above	yes

CEPC = contaminant of ecological potential concern
TRV = Toxicity reference value
Yes = RME highest value > TRV
No = RME highest value < TRV
(Cr VI) value used for Chromium
A Range of 1.59- 2.17 for Phenol

Appendix Table 7A.13. Ecological Abiotic Screening Table for Sediment at Luckey Site

Analyte	Sediment Max (mg/kg)	Log Koc		Log Kow		T1/2		BAF		CEPC?
		Log K_{oc} L/kg	Above or below max (3.5 L/kg)	Log K_{ow} L/kg	Above or below max (3.5 L/kg)	$T_{1/2}$ (days)	Above or below max (14)	BAF	Above or below max (0.01)	
Inorganics										
Aluminum	18400	--	no Koc	--	no Kow	--	no T1/2	7.50E-02	above	yes
Barium	232	1.70	below	--	no Kow	--	no T1/2	7.50E-03	below	yes
Beryllium	2020	--	no Koc	--	no Kow	--	no T1/2	5.00E-02	above	yes
Boron	47.2	--	no Koc	--	no Kow	--	no T1/2	1.00E+00	above	yes
Cadmium	56.8	2.70	below	--	no Kow	--	no T1/2	1.10E+01	above	yes
Calcium	166000	--	no Koc	--	no Kow	--	no T1/2	1.00E+00	above	yes
Chromium	36.3	0.70	below	--	no Kow	--	no T1/2	2.80E-01	above	yes
Copper	228	--	no Koc	--	no Kow	--	no T1/2	5.00E-01	above	yes
Iron	36200	--	no Koc	--	no Kow	--	no T1/2	1.00E+00	above	yes
Lead	2170	--	no Koc	--	no Kow	--	no T1/2	2.00E+00	above	yes
Magnesium	72400	--	no Koc	--	no Kow	--	no T1/2	1.00E+00	above	yes
Mercury	0.72	--	no Koc	--	no Kow	--	no T1/2	1.30E+01	above	yes
Molybdenum	5.8	--	no Koc	--	no Kow	--	no T1/2	1.00E+00	above	yes
Nickel	60.1	--	no Koc	--	no Kow	--	no T1/2	3.00E-01	above	yes
Silicon	3930	--	no Koc	--	no Kow	--	no T1/2	1.00E+00	above	yes
Silver	9.8	--	no Koc	--	no Kow	--	no T1/2	1.50E-01	above	yes
Sodium	1070	--	no Koc	--	no Kow	--	no T1/2	1.00E+00	above	yes
Strontium	545	--	no Koc	--	no Kow	--	no T1/2	1.00E+00	above	yes
Zinc	712	--	no Koc	--	no Kow	--	no T1/2	5.00E+00	above	yes
Other Anions										
Chloride	779	-1.30	below	--	no Kow	--	no T1/2	1.00E+00	above	yes
Fluoride	163	--	no Koc	--	no Kow	--	no T1/2	1.00E+00	above	yes
Nitrate, as N	7.29	--	no Koc	--	no Kow	--	no T1/2	1.00E+00	above	yes
Nitrogen, Ammonia	73.9	--	no Koc	--	no Kow	--	no T1/2	1.00E+00	above	yes
Sulfate	4100	--	no Koc	--	no Kow	--	no T1/2	1.00E+00	above	yes
Organics										
Semi-Volatiles										
3,3'-Dichlorobenzidine	0.42	3.04	below	3.51	above	180	above	1.00E+00	above	yes
Acenaphthene	0.0489	3.86	above	3.92	above	102	above	5.00E-02	above	yes
Anthracene	0.116	4.48	above	4.55	above	--	no T1/2	5.00E-02	above	yes
Benzo(a)anthracene	1.83	6.14	above	5.70	above	680	above	7.60E-01	above	yes
Benzo(a)pyrene	1.78	6.01	above	6.11	above	530	above	1.50E+00	above	yes
Benzo(b)fluoranthene	2.25	5.74	above	6.10	above	610	above	1.90E+00	above	yes
Benzo(ghi)perylene	0.448	--	no Koc	6.60	above	650	above	6.00E+00	above	yes
Benzo(k)fluoranthene	1.13	--	no Koc	6.10	above	2140	above	1.90E+00	above	yes
bis(2-ethylhexyl)phthalate	11	7.47	above	7.60	above	22.92	above	1.90E-01	above	yes
Carbazole	0.164	--	no Koc	3.76	above	--	no T1/2	5.00E-02	above	yes
Chrysene	2.05	5.30	above	5.70	above	1000	above	7.60E-01	above	yes
Dibenz(a,h)anthracene	0.0092	6.52	above	6.50	above	940	above	4.80E+00	above	yes
Dibenzofuran	0.0189	4.05	above	4.12	above	28	above	5.00E-02	above	yes
Diethyl phthalate	0.0482	1.97	below	2.50	below	56	above	5.00E-02	above	yes
Di-n-octylphthalate	0.479	--	no Koc	8.10	above	28	above	2.40E+03	above	yes
Fluoranthene	5.43	5.04	above	5.12	above	440	above	1.30E-01	above	yes

Appendix Table 7A.13. Ecological Abiotic Screening Table for Sediment at Luckey Site (continued)

Analyte	Sediment Max (mg/kg)	Log Koc		Log Kow		T1/2		BAF		CEPC?
		Log K_{oc} L/kg	Above or below max (3.5 L/kg)	Log K_{ow} L/kg	Above or below max (3.5 L/kg)	$T_{1/2}$ (days)	Above or below max (14)	BAF	Above or below max (0.01)	
Organics										
Semi-Volatiles										
Fluorene	0.064	4.14	above	4.21	above	60	above	5.00E-02	above	yes
Indeno(1,2,3-c,d)pyrene	0.452	--	no Koc	--	no Kow	730	above	6.00E+00	above	yes
Phenanthrene	3.63	4.48	above	4.55	above	200	above	5.00E-02	above	yes
Pyrene	3.64	--	no Koc	5.13	above	1900	above	3.00E-01	above	yes
Volatiles										
2-Butanone	0.0149	0.29	below	0.29	below	--	no T1/2	5.00E-02	above	yes
Acetone	0.365	-0.23	below	-0.24	below	7	below	5.00E-02	above	yes
Benzene	0.0052	1.99	below	2.13	below	16	above	5.00E-02	above	yes
Carbon disulfide	0.0412	1.97	below	2.00	below	--	no T1/2	1.00E+00	above	yes
Chloroethane	0.0324	--	no Koc	1.43	below	28	above	1.00E+00	above	yes
Ethylbenzene	0.0032	2.21	below	3.14	below	10	below	5.00E-02	above	yes
Methylene chloride	0.00086	1.23	below	1.25	below	28	above	5.00E-02	above	yes
Toluene	0.0546	2.71	below	2.75	below	22	above	5.00E-02	above	yes
Xylenes (total)	0.0099	3.08	below	3.13	below	28	above	5.00E-02	above	yes

CEPC = contaminant of ecological potential concern
TRV = Toxicity reference value
Yes = RME highest value > TRV
No = RME highest value < TRV
(Cr VI) value used for Chromium
A Range of 1.59- 2.17 for Phenol

Appendix Table 7A.14. Ecological Abiotic Screening Table for Surfacewater at Luckey Site

Analyte	Surfacewater Max (mg/L)	Log Koc		Log Kow		T1/2		BCF		CEPC?
		Log K_{oc} L/kg	Above or below max (3.5 L/kg)	Log K_{ow} L/kg	Above or below max (3.5 L/kg)	$T_{1/2}$ (days)	Above or below max (14)	BCF	Above or below max (0.01)	
Inorganics										
Aluminum	3.34	--	no Koc	--	no Kow	--	no T1/2	1.00E+01	above	yes
Arsenic	0.125	0.70	below	--	no Kow	--	no T1/2	2.80E+02	above	yes
Barium	0.219	1.70	below	--	no Kow	--	no T1/2	4.00E+00	above	yes
Beryllium	0.0836	--	no Koc	--	no Kow	--	no T1/2	2.00E+00	above	yes
Boron	0.475	--	no Koc	--	no Kow	--	no T1/2	5.00E+02	above	yes
Cadmium	0.042	2.70	below	--	no Kow	--	no T1/2	5.00E+01	above	yes
Calcium	158	--	no Koc	--	no Kow	--	no T1/2	4.00E+01	above	yes
Chromium	0.125	0.70	below	--	no Kow	--	no T1/2	2.00E+02	above	yes
Cobalt	0.126	--	no Koc	--	no Kow	--	no T1/2	3.00E+02	above	yes
Copper	0.127	--	no Koc	--	no Kow	--	no T1/2	2.10E+02	above	yes
Iron	5.89	--	no Koc	--	no Kow	--	no T1/2	3.00E+02	above	yes
Lead	0.181	--	no Koc	--	no Kow	--	no T1/2	3.00E+02	above	yes
Magnesium	104	--	no Koc	--	no Kow	--	no T1/2	5.00E+02	above	yes
Manganese	0.72	--	no Koc	--	no Kow	--	no T1/2	4.00E+02	above	yes
Mercury	0.00027	--	no Koc	--	no Kow	--	no T1/2	6.30E+04	above	yes
Molybdenum	0.049	--	no Koc	--	no Kow	--	no T1/2	5.00E+02	above	yes
Nickel	0.131	--	no Koc	--	no Kow	--	no T1/2	1.00E+02	above	yes
Potassium	25.4	--	no Koc	--	no Kow	--	no T1/2	1.00E+03	above	yes
Selenium	0.124	--	no Koc	--	no Kow	--	no T1/2	8.00E+00	above	yes
Silver	0.0432	--	no Koc	--	no Kow	--	no T1/2	2.00E+00	above	yes
Thallium	0.251	--	no Koc	--	no Kow	--	no T1/2	5.00E+02	above	yes
Silicon	8.83	--	no Koc	--	no Kow	--	no T1/2	5.00E+02	above	yes
Sodium	848	--	no Koc	--	no Kow	--	no T1/2	1.00E+02	above	yes
Strontium	16.8	--	no Koc	--	no Kow	--	no T1/2	5.00E+02	above	yes
Phosphorus	0.287	--	no Koc	--	no Kow	--	no T1/2	5.00E+02	above	yes
Vanadium	0.124	--	no Koc	--	no Kow	--	no T1/2	1.00E-02	below	yes
Zinc	0.129	--	no Koc	--	no Kow	--	no T1/2	1.00E+03	above	yes
Other Anions										
Chloride	961	-1.30	below	--	no Kow	--	no T1/2	5.00E+02	above	yes
Fluoride	9.11	--	no Koc	--	no Kow	--	no T1/2	5.00E+02	above	yes
Nitrate, as N	1.47	--	no Koc	--	no Kow	--	no T1/2	5.00E+02	above	yes
Sulfate	378	--	no Koc	--	no Kow	--	no T1/2	5.00E+02	above	yes
Organics										
Semi-Volatiles										
bis(2-ethylhexyl)phthalate	0.0359	7.47	above	7.60	above	22.92	above	3.10E+02	above	yes
Diethyl phthalate	0.0051	1.97	below	2.50	below	56	above	1.20E+02	above	yes
Di-n-octylphthalate	0.0108	--	no Koc	8.10	above	28	above	9.30E+03	above	yes

Appendix Table 7A.14. Ecological Abiotic Screening Table for Surfacewater at Luckey Site (continued)

Analyte	Surfacewater Max (mg/L)	Log Koc		Log Kow		T1/2		BCF		CEPC?
		Log K_{oc} L/kg	Above or below max (3.5 L/kg)	Log K_{ow} L/kg	Above or below max (3.5 L/kg)	$T_{1/2}$ (days)	Above or below max (14)	BCF	Above or below max (0.01)	
Volatiles										
2-Butanone	0.0091	0.29	below	0.29	below	--	no T1/2	6.00E-01	above	yes
Acetone	0.059	-0.23	below	-0.24	below	7	below	2.00E-01	above	yes
Alkalinity	522	--	no Koc	--	no Kow	--	no T1/2	5.00E+02	above	yes
Ammonia	26.8	--	no Koc	--	no Kow	--	no T1/2	5.00E+02	above	yes
Bromodichloromethane	0.0006	--	no Koc	1.41	below	--	no T1/2	5.00E+02	above	yes
Chloroform	0.00076	1.89	below	1.92	below	180	above	6.00E+00	above	yes
Dibromochloromethane	0.0034	--	no Koc	2.16	below	180	above	5.00E+02	above	yes
m,p-cresol	0.0173	--	no Koc	1.96	below	29	above	5.00E+02	above	yes
Phenol	0.0064	2.17	below	1.48	below	10	below	7.80E+02	above	yes
Tetrachloroethene	0.0013	2.63	below	2.88	below	--	no T1/2	4.40E+01	above	yes
Toluene	0.001	2.71	below	2.75	below	22	above	8.30E+01	above	yes
Tribromomethane	0.006	2.31	below	2.35	below	--	no T1/2	5.00E+02	above	yes

CEPC = contaminant of ecological potential concern
TRV = Toxicity reference value
Yes = RME highest value > TRV
No = RME highest value < TRV
(Cr VI) value used for Chromium
A Range of 1.59- 2.17 for Phenol

Appendix Table 7A.15. Ecological Abiotic Screening Table for Radionuclides in Surface Soil at Luckey Site

Analyte	Surface Soil Max (pCi/g)	Log Koc		Log Kow		$T_{1/2}$ [a]		BAF[b]		CPEC?
		Log K_{oc} L/kg	Above or below max (3.5 L/kg)	Log K_{ow} L/kg	Above or below max (3.5 L/kg)	$T_{1/2}$ (days)	Above or below max (14)	BAF	below max (0.01)	
Radionuclides										
Americium-241	1.24E+00	--	no Koc	--	no Kow	1.6E+05	above	3.15E+00	above	yes
Radium-226	5.86E+01	--	no Koc	--	no Kow	5.8E+05	above	1.25E-02	above	yes
Thorium-227	3.18E+00	--	no Koc	--	no Kow	1.9E+01	above	3.00E-04	below	yes
Thorium-230	8.85E+01	--	no Koc	--	no Kow	7.0E+02	above	3.00E-04	below	yes
Thorium-234	4.33E+01	--	no Koc	--	no Kow	2.4E+01	above	3.00E-04	below	yes
Uranium-233/234	4.32E+01	--	no Koc	--	no Kow	5.8E+07	above	6.30E-02	above	yes
Uranium-234	5.19E+01	--	no Koc	--	no Kow	8.9E+07	above	6.30E-02	above	yes
Uranium-238	5.09E+01	--	no Koc	--	no Kow	1.63E+12	above	6.30E-02	above	yes

CPEC = contaminant of potential ecological concern

[a] HEW 1970

[b] Baes et al. 1984

Appendix Table 7A.16. Ecological Abiotic Screening Table for Radionuclides in Sediment at Luckey Site

Analyte	Sediment Max (pCi/g)	Log Koc		Log Kow		$T_{1/2}$ [a]		BAF[b]		CPEC?
		Log K_{oc} L/kg	Above or below max (3.5 L/kg)	Log K_{ow} L/kg	Above or below max (3.5 L/kg)	$T_{1/2}$ (days)	Above or below max (14)	BAF	Above or below max (0.01)	
Radionuclides										
Actinium-228	0.994	--	no Koc	--	no Kow	2.55E-01	below	1.67E-02	above	yes
Cesium-137	4.95	--	no Koc	--	no Kow	1.10E+04	above	2.00E+00	above	yes
Radium-226	13.5	--	no Koc	--	no Kow	5.84E+05	above	1.56E-01	above	yes
Thorium-230	3.35	--	no Koc	--	no Kow	2.81E+07	above	6.67E-04	below	yes
Uranium-233/234	12.60	--	no Koc	--	no Kow	5.79E+07	above	1.11E-01	above	yes
Uranium-234	5.14	--	no Koc	--	no Kow	89242500	above	1.11E-01	above	yes
Uranium-235	0.443	--	no Koc	--	no Kow	2.569E+11	above	1.11E-01	above	yes

CPEC = contaminant of potential ecological concern

[a] HEW 1970

[b] NRC 1992

Appendix Table 7A.17. Ecological Abiotic Screening Table for Radionuclides in Surface Water at Luckey Site

Analyte	Surface Water Max (pCi/L)	Log Koc		Log Kow		$T_{1/2}$ [a]		BAF[b]		CEPC?
		Log K_{oc} L/kg	Above or below max (3.5 L/kg)	Log K_{ow} L/kg	Above or below max (3.5 L/kg)	$T_{1/2}$ (days)	Above or below max (14)	BAF	Above or below max (2)	
Radionuclides										
Potassium-40	5.19E+02	--	no Koc	--	no Kow	4.7E+11	above	1.00E+03	above	yes
Radium-226	2.52E+00	--	no Koc	--	no Kow	5.8E+05	above	7.00E+01	above	yes
Radium-228	1.31E+00	--	no Koc	--	no Kow	2.1E+03	above	7.00E+01	above	yes
Thorium-227	5.23E-01	--	no Koc	--	no Kow	1.9E+01	above	1.00E+02	above	yes
Thorium-228	3.26E-01	--	no Koc	--	no Kow	7.0E+02	above	1.00E+02	above	yes
Thorium-232	1.05E-01	--	no Koc	--	no Kow	5.1E+12	above	1.00E+02	above	yes
Uranium-233/234	2.86E+00	--	no Koc	--	no Kow	5.8E+07	above	5.00E+01	above	yes
Uranium-235	3.00E-01	--	no Koc	--	no Kow	2.6E+11	above	5.00E+01	above	yes
Uranium-238	4.50E+00	--	no Koc	--	no Kow	1.6E+12	above	5.00E+01	above	yes

CPEC = contaminant of potential ecological concern

[a] HEW 1970

[b] NRC 1992

Table 7A.18. Ecological Biotic Screening Values for Chemical Constituents in Surface Soil at the Luckey Site, Luckey, Ohio

Chemicals	CAS Number	Soil									
		Screening Value for Earthworms and Soil Microorganisms (Efroymson et al. 1997)[a]				Soil Screening values for Plants (Efroymson et al. 1997)[b]		Ecological Data Quality Levels (EDQL)[c]		Preferred Soil[d] Value (PSV)	
		Benchmarks for Earthworm		Benchmarks for soil microorganism							
		Number (mg/kg)	Source	Number (mg/kg)	Source	Number mg/kg (Soil) mg/L (Solution)	Source	Number (mg/kg)	Source	Number (mg/kg) (Soil) mg/L (Solution)	Source
Metals											
(Target Analyte List)											
Aluminum	7429-90-5	--	--	600	LOEC	50	Soil, LOEC	--	--	50	Soil, LOEC
Antimony	7440-36-0	--	--	--	--	5	Soil, LOEC	0.1423	EDQL EPA Region 5 (1998)	0.1423	EDQL EPA Region 5 (1998)
Arsenic (Diss)	7440-38-2	60	LOEC	100	LOEC	10	Soil, NOEC	5.7	EDQL EPA Region 5 (1998)	5.7	EDQL EPA Region 5 (1998)
Barium	7440-39-3	--	--	3000	LOEC	500	Soil, LOEC	1.04	EDQL EPA Region 5 (1998)	1.04	EDQL EPA Region 5 (1998)
Bismuth	7440-69-9	--	--	--	--	20	No Soil only Solution, LOEC	--	--	20	No Soil only Solution, LOEC
Boron	7440-42-8	--	--	20	LOEC	0.5	Soil, LOEC	--	--	0.5	Soil, LOEC
Bromine	7726-95-6	--	--	--	--	10	Soil, LOEC	--	--	10	Soil, LOEC
Cadmium (Diss)	7440-43-9	20	LOEC	20	LOEC	4	Soil, LOEC	0.00222	EDQL EPA Region 5 (1998)	0.00222	EDQL EPA Region 5 (1998)
Calcium	7440-70-2	--	--	--	--	--	--	--	--	--	--
Chromium (Diss)	16065-83-1	0.4	LOEC	10	NOEC	1	Soil, LOEC	0.4	EDQL EPA Region 5 (1998)	0.4	EDQL EPA Region 5 (1998)
Cobalt	7440-48-4	--	--	1000	LOEC	20	Soil, LOEC	0.14033	EDQL EPA Region 5 (1998)	0.14033	EDQL EPA Region 5 (1998)
Copper (Diss)	7440-50-8	60	LOEC	100	LOEC	100	Soil ,NOEC	0.3132	EDQL EPA Region 5 (1998)	0.3132	EDQL EPA Region 5 (1998)
Cyanide	57-12-5	--	--	--	--	--	--	1.33	EDQL EPA Region 5 (1998)	1.33	EDQL EPA Region 5 (1998)
Fluorine	7782-41-4	--	--	30	LOEC	200	Soil, LOEC	--	--	30	LOEC (Will and Suter 1995)
Iodine	7553-56-2	--	--	--	--	4	Soil, LOEC	--	--	4	Soil, LOEC
Iron	7439-89-6	--	--	200	NOEC	10	No Soil, only Solution, LOEC	--	--	10	No Soil, only Solution, LOEC
Lanthanum	7439-91-0	--	--	50	LOEC	--	--	--	--	50	LOEC (Will and Suter 1995)
Lead (Diss)	7439-92-1	500	NOEC	900	NOEC	50	Soil ,NOEC	0.05373	EDQL EPA Region 5 (1998)	0.05373	EDQL EPA Region 5 (1998)
Lithium	7439-93-2	--	--	10	LOEC	2	Soil, LOEC	--	--	2	Soil, LOEC
Magnesium	7439-95-4	--	--	--	--	--	--	--	--	--	--
Manganese	7439-96-5	--	--	100	LOEC	500	Soil, LOEC	--	--	100	LOEC (Will and Suter 1995)
Mercury (CVAA) (Diss)	7439-97-6	0.1	LOEC	30	NOEC	0.3	Soil, LOEC	0.1	EDQL EPA Region 5 (1998)	0.1	EDQL EPA Region 5 (1998)
Molybdenum	7439-98-7	--	--	200	LOEC	2	Soil, LOEC	--		2	Soil, LOEC
Nickel (Diss)	7440-02-0	200	NOEC	90	LOEC	30	Soil ,NOEC	13.6	EDQL EPA Region 5 (1998)	13.6	EDQL EPA Region 5 (1998)
Potassium	7440-09-7	--	--	--	--	--	--	--	--	--	--
Selenium (Diss)	7782-49-2	70	LOEC	100	LOEC	1	Soil, LOEC	0.02765	EDQL EPA Region 5 (1998)	0.02765	EDQL EPA Region 5 (1998)
Silver (Diss)	7440-22-4	--	--	50	NOEC	2	Soil, LOEC	4.04	EDQL EPA Region 5 (1998)	2	Soil, LOEC
Sodium	7440-23-5	--	--	--	--	--	--	--	--	--	--
Sulfide	18496-25-8	--	--	--	--	--	--	0.00358	EDQL EPA Region 5 (1998)	0.00358	EDQL EPA Region 5 (1998)
Technetium	7440-26-8	--	--	--	--	0.2	Soil ,NOEC	--	--	0.2	Soil ,NOEC
Tellurium	13494-80-9	--	--	--	--	2	No Soil, only Solution, LOEC	--	--	2	No Soil, only Solution, LOEC
Thallium	7440-28-0	--	--	--	--	1	Soil, LOEC	0.05692	EDQL EPA Region 5 (1998)	0.05692	EDQL EPA Region 5 (1998)
Tin	7440-31-5	--	--	2000	LOEC	50	Soil, LOEC	7.62	EDQL EPA Region 5 (1998)	7.62	EDQL EPA Region 5 (1998)
Titanium	7440-32-6	--	--	1000	LOEC	0.06	No Soil, only Solution, LOEC	--	--	0.06	No Soil, only Solution, LOEC
Tungsten	7440-33-7	--	--	400	NOEC	--	--	--	--	400	NOEC (Will and Suter 1995)
Uranium	7440-61-1	--	--	--	--	5	Soil, NOEC	--	--	5	Soil, NOEC
Vanadium	7440-62-2	--	--	20	LOEC	2	Soil, LOEC	1.59	EDQL EPA Region 5 (1998)	1.59	EDQL EPA Region 5 (1998)
Zinc (Diss)	7440-66-6	200	LOEC	100	NOEC	50	Soil, NOEC	6.62	EDQL EPA Region 5 (1998)	6.62	EDQL EPA Region 5 (1998)
Organic Compounds		--	--	--	--	--	--	--	--	--	--
Acenaphthene	83-32-9	--	--	--	--	20	Soil, LOEC	--		20	Soil, LOEC
Acenaphthylene	208-96-8	--	--	--	--	--	--	--	--	--	--

Table 7A.18. Ecological Biotic Screening Values for Chemical Constituents in Surface Soil at the Luckey Site, Luckey, Ohio

Chemicals	CAS Number	Soil									
		Screening Value for Earthworms and Soil Microorganisms (Efroymson et al. 1997)[a]				Soil Screening values for Plants (Efroymson et al. 1997)[b]		Ecological Data Quality Levels (EDQL)[c]		Preferred Soil[d] Value (PSV)	
		Benchmarks for Earthworm		Benchmarks for soil microorganism							
		Number (mg/kg)	Source	Number (mg/kg)	Source	Number mg/kg (Soil) mg/L (Solution)	Source	Number (mg/kg)	Source	Number (mg/kg) (Soil) mg/L (Solution)	Source
Acetone	67-64-1	--	--	--	--	--	--	--	--	--	--
Acrylonitrile	107-13-1	--	--	1000	LOEC	--	--	--	--	1000	LOEC (Will and Suter 1995)
Aldrin	309-00-2	--	--	--	--	--	--	--	--	--	--
4-Aminobiphenyl	92-67-1	--	--	--	--	--	--	0.00305	EDQL EPA Region 5 (1998)	0.00305	EDQL EPA Region 5 (1998)
Aniline	62-53-3	--	--	--	--	200	No Soil, only Solution, LOEC	0.05678	EDQL EPA Region 5 (1998)	0.05678	EDQL EPA Region 5 (1998)
Anthracene	120-12-7	--	--	--	--	--	--	1480	EDQL EPA Region 5 (1998)	1480	EDQL EPA Region 5 (1998)
Arochlor-1016	12674-11-2	--	--	--	--	--	--	--	--	--	--
Arochlor-1221	11104-28-2	--	--	--	--	--	--	--	--	--	--
Arochlor-1232	11141-16-5	--	--	--	--	--	--	--	--	--	--
Arochlor-1242	53469-21-9	--	--	--	--	--	--	--	--	--	--
Arochlor-1248	12672-29-6	--	--	--	--	--	--	--	--	--	--
Arochlor-1254	11097-69-1	--	--	--	--	--	--	--	--	--	--
Arochlor-1260	11096-82-5	--	--	--	--	--	--	--	--	--	--
Benzene	71-43-2	--	--	--	--	--	--	0.25462	EDQL EPA Region 5 (1998)	0.25462	EDQL EPA Region 5 (1998)
Benzo(a)anthracene	56-55-3	--	--	--	--	--	--	5.21	EDQL EPA Region 5 (1998)	5.21	EDQL EPA Region 5 (1998)
Benzo(a)pyrene	50-32-8	--	--	--	--	--	--	1.52	EDQL EPA Region 5 (1998)	1.52	EDQL EPA Region 5 (1998)
Benzo(b)fluoranthene	205-99-2	--	--	--	--	--	--	59.8	EDQL EPA Region 5 (1998)	59.8	EDQL EPA Region 5 (1998)
Benzo(g,h,i)perylene	191-24-2	--	--	--	--	--	--	119	EDQL EPA Region 5 (1998)	119	EDQL EPA Region 5 (1998)
Benzo(k)fluoranthene	207-08-9	--	--	--	--	--	--	148	EDQL EPA Region 5 (1998)	148	EDQL EPA Region 5 (1998)
BHC	608-73-1	--	--	--	--	--	--	--	--	--	--
BHC, alpha	319-84-6	--	--	--	--	--	--	0.09939	EDQL EPA Region 5 (1998)	0.09939	EDQL EPA Region 5 (1998)
BHC, beta	319-85-7	--	--	--	--	--	--	0.00398	EDQL EPA Region 5 (1998)	0.00398	EDQL EPA Region 5 (1998)
BHC, delta	319-86-8	--	--	--	--	--	--	9.94	EDQL EPA Region 5 (1998)	9.94	EDQL EPA Region 5 (1998)
BHC, gamma	58-89-9	--	--	--	--	--	--	0.005	EDQL EPA Region 5 (1998)	0.005	EDQL EPA Region 5 (1998)
Biphenyl	92-52-4	--	--	--	--	60	Soil, LOEC	--	--	60	Soil, LOEC
bis(2-chloroethoxy) methane	111-91-1	--	--	--	--	--	--	0.30209	EDQL EPA Region 5 (1998)	0.30209	EDQL EPA Region 5 (1998)
bis(2-Chloroethyl) ether	111-44-4	--	--	--	--	--	--	23.7	EDQL EPA Region 5 (1998)	23.7	EDQL EPA Region 5 (1998)
bis(2-Ethylhexyl)phthalate	117-81-7	--	--	--	--	--	--	0.92594	EDQL EPA Region 5 (1998)	0.92594	EDQL EPA Region 5 (1998)
4-Bromoaniline	106-40-1	--	--	--	--	100	No Soil, only Solution, LOEC	--	--	100	No Soil, only Solution, LOEC
Bromodichloromethane	75-27-4	--	--	--	--	--	--	0.53978	EDQL EPA Region 5 (1998)	0.53978	EDQL EPA Region 5 (1998)
Bromoform	75-25-2	--	--	--	--	--	--	15.9	EDQL EPA Region 5 (1998)	15.9	EDQL EPA Region 5 (1998)
Bromomethane	74-83-9	--	--	--	--	--	--	--	--	--	--
4-bromophenyl-phenylether	101-55-3	--	--	--	--	--	--	--	--	--	--
2-Butanone	78-93-3	--	--	--	--	--	--	89.6	EDQL EPA Region 5 (1998)	89.6	EDQL EPA Region 5 (1998)
Butylbenzylphthalate	85-68-7	--	--	--	--	--	--	--	--	--	--
N-Nitrosodi-n-Butylamine	924-16-3	--	--	--	--	--	--	0.26707	EDQL EPA Region 5 (1998)	0.26707	EDQL EPA Region 5 (1998)
Carbazole	86-74-8	--	--	--	--	--	--	--	--	--	--
Carbon disulfide	75-15-0	--	--	--	--	--	--	0.09412	EDQL EPA Region 5 (1998)	0.09412	EDQL EPA Region 5 (1998)
Carbon tetrachloride	56-23-5	--	--	1000	LOEC	--	--	2.98	EDQL EPA Region 5 (1998)	2.98	EDQL EPA Region 5 (1998)
Chloroacetamide	79-07-2	2	LOEC	--	--	--	--	--	--	2	LOEC
p-chloroaniline	106-47-8	--	--	--	--	--	--	1.1	EDQL EPA Region 5 (1998)	1.1	EDQL EPA Region 5 (1998)
3-Chloroaniline	108-42-9	30	LOEC	--	--	20	Soil, LOEC	--	--	20	Soil, LOEC
4-Chloroaniline	106-47-8	--	--	--	--	40	No Soil, only Solution, LOEC	--	--	40	No Soil, only Solution, LOEC

Table 7A.18. Ecological Biotic Screening Values for Chemical Constituents in Surface Soil at the Luckey Site, Luckey, Ohio

Chemicals	CAS Number	Soil									
		Screening Value for Earthworms and Soil Microorganisms (Efroymson et al. 1997)[a]				Soil Screening values for Plants (Efroymson et al. 1997)[b]		Ecological Data Quality Levels (EDQL)[c]		Preferred Soil[d] Value (PSV)	
		Benchmarks for Earthworm		Benchmarks for soil microorganism							
		Number (mg/kg)	Source	Number (mg/kg)	Source	Number mg/kg (Soil) mg/L (Solution)	Source	Number (mg/kg)	Source	Number (mg/kg) (Soil) mg/L (Solution)	Source
Chlorobenzene	108-90-7	40	LOEC	--	--	--	--	13.1	EDQL EPA Region 5 (1998)	13.1	EDQL EPA Region 5 (1998)
Chlorobenzilate	510-15-6	--	--	--	--	--	--	5.05	EDQL EPA Region 5 (1998)	5.05	EDQL EPA Region 5 (1998)
Chlordane	12789-03-6	--	--	--	--	--	--	0.224	EDQL EPA Region 5 (1998)	0.224	EDQL EPA Region 5 (1998)
Chloroethane	75-00-3	--	--	--	--	--	--	--	--	--	--
Chloroform	67-66-3	--	--	--	--	--	--	1.19	EDQL EPA Region 5 (1998)	1.19	EDQL EPA Region 5 (1998)
Chloromethane	74-87-3	--	--	--	--	--	--	--	--	--	--
2-Chloronaphthalene	91-58-7	--	--	--	--	--	--	0.01218	EDQL EPA Region 5 (1998)	0.01218	EDQL EPA Region 5 (1998)
2-Chlorophenol	95-57-8	--	--	--	--	60	No Soil, only Solution, LOEC	0.24266	EDQL EPA Region 5 (1998)	0.24266	EDQL EPA Region 5 (1998)
3-Chlorophenol	108-43-0	10	LOEC	--	--	7	Soil, LOEC	--	--	7	Soil, LOEC
4-Chlorophenol	106-48-9	--	--	--	--	50	No Soil, only Solution, LOEC	--	--	50	No Soil, only Solution, LOEC
4-Chlorophenyl-phenyl ether	7005-72-3	--	--	--	--	--	--	--	--	--	--
4-chloro-3-methylphenol	59-50-7	--	--	--	--	--	--	--	--	--	--
Chloropropene	107-05-1	--	--	--	--	--	--	0.0029	EDQL EPA Region 5 (1998)	0.0029	EDQL EPA Region 5 (1998)
Chrysene	218-01-9	--	--	--	--	--	--	4.73	EDQL EPA Region 5 (1998)	4.73	EDQL EPA Region 5 (1998)
4,6-dinitro-o-Cresol	534-52-1	--	--	--	--	--	--	0.14408	EDQL EPA Region 5 (1998)	0.14408	EDQL EPA Region 5 (1998)
m-Cresol	108-39-4	--	--	--	--	--	--	3.49	EDQL EPA Region 5 (1998)	3.49	EDQL EPA Region 5 (1998)
o-Cresol	95-48-7	--	--	--	--	--	--	40.4	EDQL EPA Region 5 (1998)	40.4	EDQL EPA Region 5 (1998)
2-Cresol	95-48-7	--	--	--	--	50	No Soil, only Solution, LOEC	--	--	50	No Soil, only Solution, LOEC
p-chloro-m-Cresol	59-50-7	--	--	--	--	--	--	7.95	EDQL EPA Region 5 (1998)	7.95	EDQL EPA Region 5 (1998)
p-Cresol	106-44-5	--	--	--	--	--	--	163	EDQL EPA Region 5 (1998)	163	EDQL EPA Region 5 (1998)
Diallate	2303-16-4	--	--	--	--	--	--	0.45214	EDQL EPA Region 5 (1998)	0.45214	EDQL EPA Region 5 (1998)
2,4-D	94-75-7	--	--	--	--	--	--	0.02725	EDQL EPA Region 5 (1998)	0.02725	EDQL EPA Region 5 (1998)
4,4'-DDD	72-54-8	--	--	--	--	--	--	0.75815	EDQL EPA Region 5 (1998)	0.75815	EDQL EPA Region 5 (1998)
4,4'-DDE	72-55-9	--	--	--	--	--	--	0.59587	EDQL EPA Region 5 (1998)	0.59587	EDQL EPA Region 5 (1998)
4,4'-DDT	50-29-3	--	--	--	--	--	--	0.0175	EDQL EPA Region 5 (1998)	0.0175	EDQL EPA Region 5 (1998)
Diazinon	333-41-5	--	--	--	--	--	--	--	--	--	--
Dibenzo(a,h)anthracene	53-70-3	--	--	--	--	--	--	18.4	EDQL EPA Region 5 (1998)	18.4	EDQL EPA Region 5 (1998)
Dibenzofuran	132-64-9	--	--	--	--	--	--	--	--	--	--
1,2-Dibromo-3-Chloropropane	96-12-8	--	--	--	--	--	--	0.03518	EDQL EPA Region 5 (1998)	0.03518	EDQL EPA Region 5 (1998)
Dibromochloromethane	124-48-1	--	--	--	--	--	--	2.05	EDQL EPA Region 5 (1998)	2.05	EDQL EPA Region 5 (1998)
Dibromoethane	106-93-4	--	--	--	--	--	--	1.23	EDQL EPA Region 5 (1998)	1.23	EDQL EPA Region 5 (1998)
2,4-Dichloroaniline	554-00-7	100	NOEC	--	--	--	--	--	--	100	NOEC
3,4-Dichloroaniline	95-76-1	20	LOEC	--	--	10	No Soil, only Solution, LOEC	--	--	10	No Soil, only Solution, LOEC
o-Dichlorobenzene	95-50-1	--	--	--	--	--	--	2.96	EDQL EPA Region 5 (1998)	2.96	EDQL EPA Region 5 (1998)
p-Dichlorobenzene	106-46-7	--	--	--	--	--	--	0.54559	EDQL EPA Region 5 (1998)	0.54559	EDQL EPA Region 5 (1998)
1,2-Dichlorobenzene	95-50-1	--	--	--	--	--	--	--	--	--	--
1,3-Dichlorobenzene	541-73-1	--	--	--	--	--	--	--	--	--	--
1,4-Dichlorobenzene	106-46-7	20	LOEC	--	--	--	--	--	--	20	LOEC
3,3'-Dichlorobenzidine	91-94-1	--	--	--	--	--	--	0.64636	EDQL EPA Region 5 (1998)	0.64636	EDQL EPA Region 5 (1998)
Cis-1,4-dichloro-2-butene	1476-11-5	--	--	1000	LOEC	--	--	--	--	1000	LOEC (Will and Suter 1995)
Trans-1,4-dichloro-2-butene	110-57-6	--	--	1000	LOEC	--	--	--	--	1000	LOEC (Will and Suter 1995)
1,1-Dichloroethane	75-34-3	--	--	--	--	--	--	20.1	EDQL EPA Region 5 (1998)	20.1	EDQL EPA Region 5 (1998)
1,2-Dichloroethane	107-06-2	--	--	--	--	--	--	21.2	EDQL EPA Region 5 (1998)	21.2	EDQL EPA Region 5 (1998)

Table 7A.18. Ecological Biotic Screening Values for Chemical Constituents in Surface Soil at the Luckey Site, Luckey, Ohio

Chemicals	CAS Number	Soil									
		Screening Value for Earthworms and Soil Microorganisms (Efroymson et al. 1997)[a]				Soil Screening values for Plants (Efroymson et al. 1997)[b]		Ecological Data Quality Levels (EDQL)[c]		Preferred Soil[d] Value (PSV)	
		Benchmarks for Earthworm		Benchmarks for soil microorganism							
		Number (mg/kg)	Source	Number (mg/kg)	Source	Number mg/kg (Soil) mg/L (Solution)	Source	Number (mg/kg)	Source	Number (mg/kg) (Soil) mg/L (Solution)	Source
1,1-Dichloroethene	75-35-4	--	--	--	--	--	--	8.28	EDQL EPA Region 5 (1998)	8.28	EDQL EPA Region 5 (1998)
1,2-Dichloroethene (total)	540-59-0	--	--	--	--	--	--	0.78373	EDQL EPA Region 5 (1998)	0.78373	EDQL EPA Region 5 (1998)
Dichlorodifluromethane	75-71-8	--	--	--	--	--	--	39.5	EDQL EPA Region 5 (1998)	39.5	EDQL EPA Region 5 (1998)
2,4-Dichlorophenol	120-83-2	--	--	--	--	20	No Soil, only Solution, LOEC	87.5	EDQL EPA Region 5 (1998)	20	EDQL EPA Region 5 (1998)
2,6-Dichlorophenol	87-65-0	--	--	--	--	--	--	1.17	EDQL EPA Region 5 (1998)	1.17	EDQL EPA Region 5 (1998)
3,4-Dichlorophenol	95-77-2	20	LOEC	--	--	20	Soil, LOEC	--	--	20	Soil, LOEC
1,2-Dichloropropane	78-87-5	700	LOEC	--	--	--	--	32.7	EDQL EPA Region 5 (1998)	32.7	EDQL EPA Region 5 (1998)
cis-1,3-Dichloropropene	10061-01-5	--	--	--	--	--	--	0.39786	EDQL EPA Region 5 (1998)	0.39786	EDQL EPA Region 5 (1998)
trans-1,3-Dichloropropene	10061-02-6	--	--	--	--	--	--	0.39786	EDQL EPA Region 5 (1998)	0.39786	EDQL EPA Region 5 (1998)
Dieldrin	60-57-1	--	--	--	--	--	--	0.00238	EDQL EPA Region 5 (1998)	0.00238	EDQL EPA Region 5 (1998)
Diethylphthalate	84-66-2	--	--	--	--	100	Soil, LOEC	24.8	EDQL EPA Region 5 (1998)	24.8	EDQL EPA Region 5 (1998)
3,3'-Dimethylbenzidine	119-93-7	--	--	--	--	--	--	0.1042	EDQL EPA Region 5 (1998)	0.1042	EDQL EPA Region 5 (1998)
Dimethoate	60-51-5	--	--	--	--	--	--	0.21802	EDQL EPA Region 5 (1998)	0.21802	EDQL EPA Region 5 (1998)
7,12'-Dimethylbenz(a)anthracene	57-97-6	--	--	--	--	--	--	16.3	EDQL EPA Region 5 (1998)	16.3	EDQL EPA Region 5 (1998)
Dimethylphthalate	131-11-3	200	LOEC	--	--	--	--	734	EDQL EPA Region 5 (1998)	200	EDQL EPA Region 5 (1998)
alpha,alpha-Dimethylphenethylamine	122-09-8	--	--	--	--	--	--	0.30016	EDQL EPA Region 5 (1998)	0.30016	EDQL EPA Region 5 (1998)
2,4-Dimethylphenol	105-67-9	--	--	--	--	--	--	0.01	EDQL EPA Region 5 (1998)	0.01	EDQL EPA Region 5 (1998)
Di-n-butylphthalate	84-74-2	--	--	--	--	200	Soil, NOEC	0.14979	EDQL EPA Region 5 (1998)	0.14979	EDQL EPA Region 5 (1998)
Di-n-octylphthalate	117-84-0	--	--	--	--	--	--	709	EDQL EPA Region 5 (1998)	709	EDQL EPA Region 5 (1998)
m-Dinitrobenzene	99-65-0	--	--	--	--	--	--	0.6547	EDQL EPA Region 5 (1998)	0.6547	EDQL EPA Region 5 (1998)
1,3-Dinitrobenzene	99-65-0	--	--	--	--	--	--	--	EDQL EPA Region 5 (1998)	--	EDQL EPA Region 5 (1998)
2,4-Dinitrophenol	51-28-5	--	--	--	--	20	Soil, NOEC	0.06086	EDQL EPA Region 5 (1998)	0.06086	EDQL EPA Region 5 (1998)
2,4-Dinitrotoluene	121-14-2	--	--	--	--	--	--	1.28	EDQL EPA Region 5 (1998)	1.28	EDQL EPA Region 5 (1998)
2,6-Dinitrotoluene	606-20-2	--	--	--	--	--	--	0.03283	EDQL EPA Region 5 (1998)	0.03283	EDQL EPA Region 5 (1998)
4,6-Dinitro-2-methylphenol	534-52-1	--	--	--	--	--	--	--		--	--
Dinoseb	88-85-7	--	--	--	--	--	--	0.0218	EDQL EPA Region 5 (1998)	0.0218	EDQL EPA Region 5 (1998)
1,4-Dioxane	123-91-1	--	--	--	--	--	--	2.05	EDQL EPA Region 5 (1998)	2.05	EDQL EPA Region 5 (1998)
Diphenylamine	122-39-4	--	--	--	--	--	--	1.01	EDQL EPA Region 5 (1998)	1.01	EDQL EPA Region 5 (1998)
Disulfoton	298-04-4	--	--	--	--	--	--	0.01988	EDQL EPA Region 5 (1998)	0.01988	EDQL EPA Region 5 (1998)
Endosulfan, alpha	959-98-8	--	--	--	--	--	--	0.11927	EDQL EPA Region 5 (1998)	0.11927	EDQL EPA Region 5 (1998)
Endosulfan, beta	33213-65-9	--	--	--	--	--	--	0.11927	EDQL EPA Region 5 (1998)	0.11927	EDQL EPA Region 5 (1998)
Endosulfan, mixed isomers		--	--	--	--	--	--	--		--	--
Endosulfan sulfate	1031-07-8	--	--	--	--	--	--	0.03578	EDQL EPA Region 5 (1998)	0.03578	EDQL EPA Region 5 (1998)
Endrin	72-20-8	--	--	--	--	--	--	0.0101	EDQL EPA Region 5 (1998)	0.0101	EDQL EPA Region 5 (1998)
Endrin aldehyde	7421-93-4	--	--	--	--	--	--	0.0105	EDQL EPA Region 5 (1998)	0.0105	EDQL EPA Region 5 (1998)
Ethyl metharcrylate	97-63-2	--	--	--	--	--	--	30	EDQL EPA Region 5 (1998)	30	EDQL EPA Region 5 (1998)
Ethylbenzene	100-41-4	--	--	--	--	--	--	5.16	EDQL EPA Region 5 (1998)	5.16	EDQL EPA Region 5 (1998)
Famphur	52-85-7	--	--	--	--	--	--	0.0497	EDQL EPA Region 5 (1998)	0.0497	EDQL EPA Region 5 (1998)
Fluoranthene	206-44-0	--	--	--	--	--	--	122	EDQL EPA Region 5 (1998)	122	EDQL EPA Region 5 (1998)
Fluorene	86-73-7	30	LOEC	--	--	--	--	122	EDQL EPA Region 5 (1998)	30	EDQL EPA Region 5 (1998)
Furan	110-00-9	--	--	--	--	600	Soil, LOEC	--	--	600	Soil, LOEC
gamma-BHC (lindane)	58-89-9	--	--	--	--	--	--	0.005	EDQL EPA Region 5 (1998)	0.005	EDQL EPA Region 5 (1998)
Heptane	142-82-5	--	--	--	--	1	No Soil, only Solution, LOEC	--	--	1	No Soil, only Solution, LOEC

Table 7A.18. Ecological Biotic Screening Values for Chemical Constituents in Surface Soil at the Luckey Site, Luckey, Ohio

Chemicals	CAS Number	Soil									
		Screening Value for Earthworms and Soil Microorganisms (Efroymson et al. 1997)[a]				Soil Screening values for Plants (Efroymson et al. 1997)[b]		Ecological Data Quality Levels (EDQL)[c]		Preferred Soil[d] Value (PSV)	
		Benchmarks for Earthworm		Benchmarks for soil microorganism							
		Number (mg/kg)	Source	Number (mg/kg)	Source	Number mg/kg (Soil) mg/L (Solution)	Source	Number (mg/kg)	Source	Number (mg/kg) (Soil) mg/L (Solution)	Source
Heptachlor	76-44-8	--	--	--	--	--	--	0.00598	EDQL EPA Region 5 (1998)	0.00598	EDQL EPA Region 5 (1998)
Heptachlor Epoxide	1024-57-3	--	--	--	--	--	--	0.15188	EDQL EPA Region 5 (1998)	0.15188	EDQL EPA Region 5 (1998)
Hexachlorobenzene	118-74-1	--	--	1000	LOEC	--	--	0.19878	EDQL EPA Region 5 (1998)	0.19878	EDQL EPA Region 5 (1998)
Hexachlorobutadiene	87-68-3	--	--	--	--	--	--	0.03976	EDQL EPA Region 5 (1998)	0.03976	EDQL EPA Region 5 (1998)
Hexachlorocyclopentadiene	77-47-4	--	--	--	--	10	Soil, LOEC	0.75537	EDQL EPA Region 5 (1998)	0.75537	EDQL EPA Region 5 (1998)
Hexachloroethane	67-72-1	--	--	--	--	--	--	0.59634	EDQL EPA Region 5 (1998)	0.59634	EDQL EPA Region 5 (1998)
Hexachorophene	70-30-4	--	--	--	--	--	--	0.19878	EDQL EPA Region 5 (1998)	0.19878	EDQL EPA Region 5 (1998)
2-Hexanone	591-78-6	--	--	--	--	--	--	12.6	EDQL EPA Region 5 (1998)	12.6	EDQL EPA Region 5 (1998)
HMX Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine	2691-41-0	--	--	--	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	193-39-5	--	--	--	--	--	--	109	EDQL EPA Region 5 (1998)	109	EDQL EPA Region 5 (1998)
Isobutyl alcohol	78-83-1	--	--	--	--	--	--	20.8	EDQL EPA Region 5 (1998)	20.8	EDQL EPA Region 5 (1998)
Isodrin	465-73-6	--	--	--	--	--	--	0.00332	EDQL EPA Region 5 (1998)	0.00332	EDQL EPA Region 5 (1998)
Isophorone	78-59-1	--	--	--	--	--	--	139	EDQL EPA Region 5 (1998)	139	EDQL EPA Region 5 (1998)
Isosafrole	120-58-1	--	--	--	--	--	--	9.94	EDQL EPA Region 5 (1998)	9.94	EDQL EPA Region 5 (1998)
Kepone	143-50-0	--	--	--	--	--	--	0.03272	EDQL EPA Region 5 (1998)	0.03272	EDQL EPA Region 5 (1998)
Malathion	121-75-5	--	--	--	--	--	--	--	--	--	--
Methacrylonitrile	126-98-7	--	--	--	--	--	--	0.05705	EDQL EPA Region 5 (1998)	0.05705	EDQL EPA Region 5 (1998)
Methapyrilene	91-80-5	--	--	--	--	--	--	2.78	EDQL EPA Region 5 (1998)	2.78	EDQL EPA Region 5 (1998)
Methoxychlor	72-43-5	--	--	--	--	--	--	0.01988	EDQL EPA Region 5 (1998)	0.01988	EDQL EPA Region 5 (1998)
Methyl bromide	74-83-9	--	--	--	--	--	--	0.23516	EDQL EPA Region 5 (1998)	0.23516	EDQL EPA Region 5 (1998)
Methyl chloride	74-87-3	--	--	--	--	--	--	10.4	EDQL EPA Region 5 (1998)	10.4	EDQL EPA Region 5 (1998)
Methyl iodide	74-88-4	--	--	--	--	--	--	1.23	EDQL EPA Region 5 (1998)	1.23	EDQL EPA Region 5 (1998)
Methylene chloride	75-09-2	--	--	--	--	--	--	--	--	--	--
2-Methylnaphthalene	91-57-6	--	--	--	--	--	--	3.24	EDQL EPA Region 5 (1998)	3.24	EDQL EPA Region 5 (1998)
2-Methylphenol	95-48-7	--	--	--	--	--	--	--	--	--	--
4-Methylphenol	106-44-5	--	--	--	--	--	--	--	--	--	--
4-Methyl-2-pentanone	108-10-1	--	--	--	--	--	--	--	--	--	--
Mirex	2385-85-5	--	--	--	--	--	--	--	--	--	--
Naphthalene	91-20-3	--	--	--	--	10	No Soil, only Solution, LOEC	0.09939	EDQL EPA Region 5 (1998)	0.09939	EDQL EPA Region 5 (1998)
1-Naphthylamine	134-32-7	--	--	--	--	--	--	9.34	EDQL EPA Region 5 (1998)	9.34	EDQL EPA Region 5 (1998)
2-Naphthylamine	91-59-8	--	--	--	--	--	--	3.03	EDQL EPA Region 5 (1998)	3.03	EDQL EPA Region 5 (1998)
1,4-Naphthoquinone	130-15-4	--	--	--	--	--	--	1.67	EDQL EPA Region 5 (1998)	1.67	EDQL EPA Region 5 (1998)
m-Nitroaniline	99-09-2	--	--	--	--	--	--	3.16	EDQL EPA Region 5 (1998)	3.16	EDQL EPA Region 5 (1998)
o-Nitroaniline	88-74-4	--	--	--	--	--	--	74.1	EDQL EPA Region 5 (1998)	74.1	EDQL EPA Region 5 (1998)
p-Nitroaniline	100-01-6	--	--	--	--	--	--	21.9	EDQL EPA Region 5 (1998)	21.9	EDQL EPA Region 5 (1998)
2-Nitroaniline	88-74-4	--	--	--	--	--	--	--	--	--	--
3-Nitroaniline	99-09-2	--	--	--	--	70	No Soil, only Solution, LOEC	--	--	70	No Soil, only Solution, LOEC
4-Nitroaniline	100-01-6	--	--	--	--	40	No Soil, only Solution, LOEC	--	--	40	No Soil, only Solution, LOEC
Nitrobenzene	99-95-3	40	LOEC	1000	LOEC	8	No Soil, only Solution, LOEC	1.31	EDQL EPA Region 5 (1998)	1.31	EDQL EPA Region 5 (1998)
Nitrocellulose	9004-70-0	--	--	--	--	--	--	--	--	--	--
Nitroglycerin	55-63-0	--	--	--	--	--	--	--	--	--	--
Nitroquanidine		--	--	--	--	--	--	--	--	--	--
o-Nitrophenol	88-75-5	--	--	--	--	--	--	1.6	EDQL EPA Region 5 (1998)	1.6	EDQL EPA Region 5 (1998)

Table 7A.18. Ecological Biotic Screening Values for Chemical Constituents in Surface Soil at the Luckey Site, Luckey, Ohio

Chemicals	CAS Number	Soil									
		Screening Value for Earthworms and Soil Microorganisms (Efroymson et al. 1997)[a]				Soil Screening values for Plants (Efroymson et al. 1997)[b]		Ecological Data Quality Levels (EDQL)[c]		Preferred Soil[d] Value (PSV)	
		Benchmarks for Earthworm		Benchmarks for soil microorganism							
		Number (mg/kg)	Source	Number (mg/kg)	Source	Number mg/kg (Soil) mg/L (Solution)	Source	Number (mg/kg)	Source	Number (mg/kg) (Soil) mg/L (Solution)	Source
p-Nitrophenol	100-02-7	--	--	--	--	--	--	5.12	EDQL EPA Region 5 (1998)	5.12	EDQL EPA Region 5 (1998)
2-Nitrophenol	88-75-5	--	--	--	--	--	--	--	--	--	--
4-Nitrophenol	100-02-7	7	LOEC	--	--	10	No Soil, only Solution, LOEC	--	--	7	LOEC
4-Nitroquinoline-1-oxide	56-57-5	--	--	--	--	--	--	0.12222	EDQL EPA Region 5 (1998)	0.12222	EDQL EPA Region 5 (1998)
m-Nitrotoluene	99-08-1	--	--	--	--	--	--	--	--	--	--
N-Nitrosodiethylamine	55-18-5	--	--	--	--	--	--	0.06933	EDQL EPA Region 5 (1998)	0.06933	EDQL EPA Region 5 (1998)
N-Nitrosodimethylamine	62-75-9	--	--	--	--	--	--	0.0000321	EDQL EPA Region 5 (1998)	0.0000321	EDQL EPA Region 5 (1998)
N-Nitrosomethylamine	10595-95-6	--	--	--	--	--	--	0.00166	EDQL EPA Region 5 (1998)	0.00166	EDQL EPA Region 5 (1998)
N-Nitrosomorpholine	59-89-2	--	--	--	--	--	--	0.07057	EDQL EPA Region 5 (1998)	0.07057	EDQL EPA Region 5 (1998)
N-Nitrosopiperidine	100-75-4	--	--	--	--	--	--	0.00665	EDQL EPA Region 5 (1998)	0.00665	EDQL EPA Region 5 (1998)
N-Nitrosopyrrolidine	930-55-2	--	--	--	--	--	--	0.01256	EDQL EPA Region 5 (1998)	0.01256	EDQL EPA Region 5 (1998)
N-nitroso-di-n-dipropylamine	621-64-7	--	--	--	--	--	--	0.54368	EDQL EPA Region 5 (1998)	0.54368	EDQL EPA Region 5 (1998)
N-nitrosodiphenylamine	86-30-6	20	LOEC	--	--	--	--	0.54514	EDQL EPA Region 5 (1998)	0.54514	EDQL EPA Region 5 (1998)
o-Nitrotoluene	88-72-2	--	--	--	--	--	--	--	--	--	--
5-nitro-o-Toluidine	99-55-8	--	--	--	--	--	--	8.73	EDQL EPA Region 5 (1998)	8.73	EDQL EPA Region 5 (1998)
2,2'- oxybis(1-Chloropropane)	108-60-1	--	--	--	--	--	--	--	--	--	--
Parathion	56-38-2	--	--	--	--	--	--	0.00034	EDQL EPA Region 5 (1998)	0.00034	EDQL EPA Region 5 (1998)
PCDD-S		--	--	--	--	--	--	0.000000199	EDQL EPA Region 5 (1998)	0.000000199	EDQL EPA Region 5 (1998)
Pentachlorophenol	87-86-5	6	NOEC	400	LOEC	3	Soil, LOEC	0.11927	EDQL EPA Region 5 (1998)	0.11927	EDQL EPA Region 5 (1998)
Pentachloroaniline	527-20-8	100	LOEC	--	--	--	--	--	--	100	LOEC
Pentachlorobenzene	608-93-5	20	LOEC	--	--	--	--	0.49695	EDQL EPA Region 5 (1998)	0.49695	EDQL EPA Region 5 (1998)
Pentachloroethane	76-01-7	--	--	--	--	--	--	10.7	EDQL EPA Region 5 (1998)	10.7	EDQL EPA Region 5 (1998)
Pentachloronitrobenzene	82-68-8	--	--	--	--	--	--	7.09	EDQL EPA Region 5 (1998)	7.09	EDQL EPA Region 5 (1998)
Phenacetin	62-44-2	--	--	--	--	--	--	11.7	EDQL EPA Region 5 (1998)	11.7	EDQL EPA Region 5 (1998)
Phenanthrene	85-01-8	--	--	--	--	--	--	45.7	EDQL EPA Region 5 (1998)	45.7	EDQL EPA Region 5 (1998)
Phenol	108-95-2	30	LOEC	100	LOEC	70	Soil, LOEC	120	EDQL EPA Region 5 (1998)	30	LOEC
p-Phenylenediamine	106-50-3	--	--	--	--	--	--	6.16	EDQL EPA Region 5 (1998)	6.16	EDQL EPA Region 5 (1998)
phorate	298-02-2	--	--	--	--	--	--	0.000496	EDQL EPA Region 5 (1998)	0.000496	EDQL EPA Region 5 (1998)
2-Picoline	109-06-8	--	--	--	--	--	--	9.9	EDQL EPA Region 5 (1998)	9.9	EDQL EPA Region 5 (1998)
Polynuclear aromatic hydrocarbons		--	--	--	--	--	--	--	--	--	--
Polychlorinated biphenyls	1336-36-3	--	--	--	--	40	Soil, NOEC	0.000332	EDQL EPA Region 5 (1998)	0.000332	EDQL EPA Region 5 (1998)
Polychlorinated dibenzofurans	51207-31-9	--	--	--	--	--	--	0.0000386	EDQL EPA Region 5 (1998)	0.0000386	EDQL EPA Region 5 (1998)
Pronamide	23950-58-5	--	--	--	--	--	--	0.0136	EDQL EPA Region 5 (1998)	0.0136	EDQL EPA Region 5 (1998)
Propionitrile	107-12-0	--	--	--	--	--	--	0.04983	EDQL EPA Region 5 (1998)	0.04983	EDQL EPA Region 5 (1998)
p-Nitrotoluene	99-99-0	--	--	--	--	--	--	--	--	--	--
Pyrene	129-00-0	--	--	--	--	--	--	78.5	EDQL EPA Region 5 (1998)	78.5	EDQL EPA Region 5 (1998)
Pryidine	110-86-1	--	--	--	--	--	--	1.03	EDQL EPA Region 5 (1998)	1.03	EDQL EPA Region 5 (1998)
RDX (cyclonite) Hexahydro-1,3,5-trinitro-1,3,5-triazine	121-82-4	--	--	--	--	--	--	--	--	--	--
Safrole	94-59-7	--	--	--	--	--	--	0.40398	EDQL EPA Region 5 (1998)	0.40398	EDQL EPA Region 5 (1998)
Silvex	93-72-1	--	--	--	--	--	--	0.1088	EDQL EPA Region 5 (1998)	0.1088	EDQL EPA Region 5 (1998)
Styrene	100-42-5	--	--	--	--	300	Soil	4.69	EDQL EPA Region 5 (1998)	4.69	EDQL EPA Region 5 (1998)
2,3,5,6-Tetrachloroaniline	3481-20-7	20	LOEC	--	--	20	Soil, LOEC	--	--	20	Soil, LOEC
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	--	--	--	--	--	--	0.000000199	EDQL EPA Region 5 (1998)	0.000000199	EDQL EPA Region 5 (1998)

Table 7A.18. Ecological Biotic Screening Values for Chemical Constituents in Surface Soil at the Luckey Site, Luckey, Ohio

Chemicals	CAS Number	Soil									
		Screening Value for Earthworms and Soil Microorganisms (Efroymson et al. 1997)[a]				Soil Screening values for Plants (Efroymson et al. 1997)[b]		Ecological Data Quality Levels (EDQL)[c]		Preferred Soil[d] Value (PSV)	
		Benchmarks for Earthworm		Benchmarks for soil microorganism							
		Number (mg/kg)	Source	Number (mg/kg)	Source	Number mg/kg (Soil) mg/L (Solution)	Source	Number (mg/kg)	Source	Number (mg/kg) (Soil) mg/L (Solution)	Source
1,2,4,5-Tetrachlorobenzene	95-94-3	--	--	--	--	--	--	2.02	EDQL EPA Region 5 (1998)	2.02	EDQL EPA Region 5 (1998)
1,2,3,4-Tetrachlorobenzene	634-66-2	10	LOEC	--	--	--	--	--	--	10	LOEC
Tetrachloroethene	127-18-4	--	--	--	--	10	No Soil, only Solution	9.92	EDQL EPA Region 5 (1998)	9.92	EDQL EPA Region 5 (1998)
Tetrachloroethylene	127-18-4	--	--	--	--	--	--	--	--	--	--
1,1,1,2-Tetrachloroethane	630-20-6	--	--	--	--	--	--	225	EDQL EPA Region 5 (1998)	225	EDQL EPA Region 5 (1998)
1,1,2,2-Tetrachloroethane	79-34-5	--	--	--	--	--	--	0.12722	EDQL EPA Region 5 (1998)	0.12722	EDQL EPA Region 5 (1998)
Tetrachloromethane	56-23-5	--	--	--	--	--	--	--	--	--	--
2,3,4,5-Tetrachlorophenol	4901-51-3	20	LOEC	--	--	--	--	--	--	20	LOEC
2,3,4,6-Tetrachlorophenol	58-90-2	--	--	--	--	--	--	0.19878	EDQL EPA Region 5 (1998)	0.19878	EDQL EPA Region 5 (1998)
Tetraethyl dithiopyrophosphate	3689-24-5	--	--	--	--	--	--	0.59634	EDQL EPA Region 5 (1998)	0.59634	EDQL EPA Region 5 (1998)
Tetryl	479-45-8	--	--	--	--	--	--	--	--	--	--
Toluene	108-88-3	--	--	--	--	200	Soil, NOEC	5.45	EDQL EPA Region 5 (1998)	5.45	EDQL EPA Region 5 (1998)
o-Toluidine	95-53-4	--	--	--	--	--	--	2.97	EDQL EPA Region 5 (1998)	2.97	EDQL EPA Region 5 (1998)
4-Toluidine	106-49-0	--	--	--	--	100	No Soil, only Solution, LOEC	--	--	100	No Soil, only Solution, LOEC
Toxaphene	8001-35-2	--	--	--	--	--	--	0.11927	EDQL EPA Region 5 (1998)	0.11927	EDQL EPA Region 5 (1998)
Tribromomethane	75-25-2	--	--	--	--	--	--	--	--	--	--
2,4,5-Trichloroaniline	636-30-6	20	LOEC	--	--	20	Soil, LOEC	--	--	20	Soil, LOEC
Trichloroethene	79-01-6	--	--	--	--	100	No Soil, only Solution	--	--	100	No Soil, only Solution
1,2,3-Trichlorobenzene	87-61-6	20	LOEC	--	--	--	--	--	--	20	LOEC
1,2,4-Trichlorobenzene	120-82-1	20	LOEC	--	--	--	--	11.1	EDQL EPA Region 5 (1998)	11.1	EDQL EPA Region 5 (1998)
1,1,1-Trichloroethane	71-55-6	--	--	--	--	--	--	29.8	EDQL EPA Region 5 (1998)	29.8	EDQL EPA Region 5 (1998)
1,1,2-Trichloroethane	79-00-5	--	--	--	--	--	--	28.6	EDQL EPA Region 5 (1998)	28.6	EDQL EPA Region 5 (1998)
Trichloroethylene	79-01-6	--	--	--	--	--	--	12.4	EDQL EPA Region 5 (1998)	12.4	EDQL EPA Region 5 (1998)
Trichlorofluoromethane	75-69-4	--	--	--	--	--	--	16.4	EDQL EPA Region 5 (1998)	16.4	EDQL EPA Region 5 (1998)
2,4,5-Trichlorophenol	95-95-4	9	LOEC	--	--	4	Soil, LOEC	14.1	EDQL EPA Region 5 (1998)	4	Soil, LOEC
2,4,6-Trichlorophenol	88-06-2	10	LOEC	--	--	10	No Soil, only Solution, LOEC	9.94	EDQL EPA Region 5 (1998)	9.94	EDQL EPA Region 5 (1998)
1,2,3-Trichloropropane	96-18-4	--	--	--	--	--	--	3.36	EDQL EPA Region 5 (1998)	3.36	EDQL EPA Region 5 (1998)
2,4,5-Trichlorophenoxyacetic acid	93-76-5	--	--	--	--	--	--	0.59634	EDQL EPA Region 5 (1998)	0.59634	EDQL EPA Region 5 (1998)
1,3,5-Trinitrobenzene	99-35-4	--	--	--	--	--	--	0.37615	EDQL EPA Region 5 (1998)	0.37615	EDQL EPA Region 5 (1998)
2,4,6-Trinitrotoluene	118-96-7	--	--	--	--	--	--	--	--	--	--
Vinyl acetate	108-05-4	--	--	--	--	--	--	12.7	EDQL EPA Region 5 (1998)	12.7	EDQL EPA Region 5 (1998)
Vinyl chloride	75-01-4	--	--	--	--	--	--	0.64614	EDQL EPA Region 5 (1998)	0.64614	EDQL EPA Region 5 (1998)
Xylenes (total)	1330-20-7	--	--	--	--	100	No Soil, only Solution, LOEC	10	EDQL EPA Region 5 (1998)	10	EDQL EPA Region 5 (1998)

[a] Efrroymson, R.A, M.E Will., and G.W Suter, 1997 Toxicological Benchmarks for Potential Contaminants of Concern for Effects on Soil and Litter Invertebrates and Heterotrophic Process
Martin Marietta Energy Systems, INC. ES/ER/TM-126/R1 Oak Ridge National Laboratory, Oak Ridge, TN

[b] Efroymson,R. A., M.E. Will, G.W. Suter , and A.C. Wooten, 1997 Toxicological Benchmarks for Screening Contaminants of Concern for Effects on Terrestrial Plants: 1997 Revision
Lockheed Martin Energy Systems, INC. ES/ER/TM-85/R3 Oak Ridge National Laboratory, Oak Ridge, TN.

[c] EPA. 1998d. RCRA QAPP Instructions, USEPA Region 5, Chicago, IL, April 1998 revision. Http://www.epa.gov/reg5rcra/wptdiv/cars/cars.htm

[d] The Preferred surface soil value is the lowest among the EDQL, soil screening values for plants, earthworm benchmarks, and soil microorganism values.

NOEC = No Observed Effect Concentration

LOEC = Lowest Observed Effect Concentration

Diss = Dissociated Analyte

-- = no value

Appendix Table 7A.19. Ecological Biotic Screening Values for Chemical Constituents in Sediment at the Luckey Site, Luckey, Ohio

Chemicals	CAS Number	Sediment			
		Ecological Data Quality Levels (EDQL)[a]		Ontario MOE[b] Low	
		Number	Source	Number	Source
Metals					
(Target Analyte List)				(mg/kg)	
Aluminum	7429-90-5				--
Antimony	7440-36-0				--
Arsenic (Diss)	7440-38-2	5.9	EDQL EPA Region 5 (1998)	6	Ontario MOE low
Barium	7440-39-3				--
Beryllium	7440-41-7				--
Cadmium (Diss)	7440-43-9	0.596	EDQL EPA Region 5 (1998)	0.6	Ontario MOE low
Calcium	7440-70-2				--
Chromium (Diss)	7440-47-3	26	EDQL EPA Region 5 (1998)	26	Ontario MOE low
Cobalt	7440-48-4	50	EDQL EPA Region 5 (1998)		--
Copper (Diss)	7440-50-8	16	EDQL EPA Region 5 (1998)	16	Ontario MOE low
Cyanide	57-12-5	0.0001	EDQL EPA Region 5 (1998)		--
Iron	7439-89-6			20	Ontario MOE low
Lead (Diss)	7439-92-1	31	EDQL EPA Region 5 (1998)	31	Ontario MOE low
Magnesium	7439-95-4				--
Manganese	7439-96-5			460	Ontario MOE low
Mercury	7439-97-6	0.174	EDQL EPA Region 5 (1998)	0.2	Ontario MOE low
Nickel (Diss)	7440-02-0	16	EDQL EPA Region 5 (1998)	16	Ontario MOE low
Potassium	7440-07-7				--
Selenium (Diss)	7782-49-2				--
Silver (Diss)	7440-22-4	0.5	EDQL EPA Region 5 (1998)		--
Sodium	7440-23-5				--
Thallium	7440-28-0				--
Vanadium	7440-62-2				--
Zinc (Diss)	7440-66-6	120	EDQL EPA Region 5 (1998)	120	Ontario MOE low
Organic Compounds		(ug/kg)		(ug/kg)	
Acenaphthene	83-32-9	6.71	EDQL EPA Region 5 (1998)		--
Acenaphthylene	208-96-8	5.87	EDQL EPA Region 5 (1998)		--
Acetone	67-64-1	453.37	EDQL EPA Region 5 (1998)		--
Aldrin	309-00-2	2	EDQL EPA Region 5 (1998)	2	Ontario MOE low
Anthracene	120-12-7	46.9	EDQL EPA Region 5 (1998)	220	Ontario MOE low
Arochlor-1016	12674-11-2			7	Ontario MOE low

Appendix Table 7A.19. Ecological Biotic Screening Values for Chemical Constituents in Sediment at the Luckey Site, Luckey, Ohio

Chemicals	CAS Number	Sediment					
		NOAA SQuiRTs[c] Threshold Effects Level (TEL)		NOAA[d] Effects Range-Low (ER-L)		Preferred Sediment[e] Value (PSV)	
		Number	Source	Number	Source	Number	Source
Metals							
(Target Analyte List)		(mg/kg)		(mg/kg)		(mg/kg)	
Aluminum	7429-90-5		--		--		--
Antimony	7440-36-0		--	2	NOAA ER-L	2	NOAA ER-L
Arsenic (Diss)	7440-38-2	5.9	SQuiRTs TEL (1998)	8.2	NOAA ER-L	5.9	EDQL EPA Region 5 (1998)
Barium	7440-39-3		--		--	0	
Beryllium	7440-41-7		--		--	0	
Cadmium (Diss)	7440-43-9	0.596	SQuiRTs TEL (1998)	1.2	NOAA ER-L	0.596	EDQL EPA Region 5 (1998)
Calcium	7440-70-2		--		--	0	
Chromium (Diss)	7440-47-3	37.3	SQuiRTs TEL (1998)	81	NOAA ER-L	26	EDQL EPA Region 5 (1998)
Cobalt	7440-48-4		--		--	50	EDQL EPA Region 5 (1998)
Copper (Diss)	7440-50-8	35.7	SQuiRTs TEL (1998)	34	NOAA ER-L	16	EDQL EPA Region 5 (1998)
Cyanide	57-12-5		--		--	0.0001	EDQL EPA Region 5 (1998)
Iron	7439-89-6		--		--	20	Ontario MOE low
Lead (Diss)	7439-92-1	35	SQuiRTs TEL (1998)	46.7	NOAA ER-L	31	EDQL EPA Region 5 (1998)
Magnesium	7439-95-4		--		--	0	
Manganese	7439-96-5		--		--	460	Ontario MOE low
Mercury	7439-97-6	0.174	SQuiRTs TEL (1998)	0.15	NOAA ER-L	0.15	NOAA ER-L
Nickel (Diss)	7440-02-0	18	SQuiRTs TEL (1998)	20.9	NOAA ER-L	16	EDQL EPA Region 5 (1998)
Potassium	7440-07-7		--		--	0	
Selenium (Diss)	7782-49-2		--		--	0	
Silver (Diss)	7440-22-4		--	1	NOAA ER-L	0.5	EDQL EPA Region 5 (1998)
Sodium	7440-23-5		--		--	0	
Thallium	7440-28-0		--		--	0	
Vanadium	7440-62-2		--		--	0	
Zinc (Diss)	7440-66-6	123.1	SQuiRTs TEL (1998)	150	NOAA ER-L	120	EDQL EPA Region 5 (1998)
Organic Compounds		(ug/kg)		(ug/kg)		0	
Acenaphthene	83-32-9		--	16	NOAA ER-L	6.71	EDQL EPA Region 5 (1998)
Acenaphthylene	208-96-8		--	44	NOAA ER-L	5.87	EDQL EPA Region 5 (1998)
Acetone	67-64-1		--		--	453.37	EDQL EPA Region 5 (1998)
Aldrin	309-00-2		--			2	EDQL EPA Region 5 (1998)
Anthracene	120-12-7		--	85.3	NOAA ER-L	46.9	EDQL EPA Region 5 (1998)
Arochlor-1016	12674-11-2		--		--	7	Ontario MOE low

Appendix Table 7A.19. Ecological Biotic Screening Values for Chemical Constituents in Sediment at the Luckey Site, Luckey, Ohio

Chemicals	CAS Number	Sediment			
		Ecological Data Quality Levels (EDQL)[a]		Ontario MOE[b] Low	
		Number	Source	Number	Source
Arochlor-1221	11104-28-2				--
Arochlor-1232	11141-16-5				--
Arochlor-1242	53469-21-9				--
Arochlor-1248	12672-29-6			30	Ontario MOE low
Arochlor-1254	11097-69-1			60	Ontario MOE low
Arochlor-1260	11096-82-5			5	Ontario MOE low
Benzene	71-43-2	141.57	EDQL EPA Region 5 (1998)		--
Benzo(a)anthracene	56-55-3	31.7	EDQL EPA Region 5 (1998)	320	Ontario MOE low
Benzo(a)pyrene	50-32-8	31.9	EDQL EPA Region 5 (1998)	370	Ontario MOE low
Benzo(b)fluoranthene	205-99-2	10400	EDQL EPA Region 5 (1998)		--
Benzo(g,h,i)perylene	191-24-2	170	EDQL EPA Region 5 (1998)	170	Ontario MOE low
Benzo(k)fluoranthene	207-08-9	240	EDQL EPA Region 5 (1998)	240	Ontario MOE low
BHC	608-73-1			3	Ontario MOE low
BHC, alpha	319-84-6	6	EDQL EPA Region 5 (1998)	6	Ontario MOE low
BHC, beta	319-85-7	5	EDQL EPA Region 5 (1998)	5	Ontario MOE low
Biphenyl	92-52-4				--
bis(2-chloroethoxy) methane	111-91-1	349.71	EDQL EPA Region 5 (1998)		--
bis(2-Chloroethyl) ether	111-44-4	211.96	EDQL EPA Region 5 (1998)		--
bis(2-Ethylhexyl)phthalate	117-81-7	182	EDQL EPA Region 5 (1998)		--
Bromodichloromethane	74-97-5	1.13	EDQL EPA Region 5 (1998)		--
Bromomethane	74-83-9	0.148	EDQL EPA Region 5 (1998)		--
4-bromophenyl-phenylether	101-55-3	1550	EDQL EPA Region 5 (1998)		--
2-Butanone	78-93-3	136.96	EDQL EPA Region 5 (1998)		--
Butylbenzylphthalate	85-68-7	4190	EDQL EPA Region 5 (1998)		--
Carbazole	86-74-8				--
Carbon disulfide	75-15-0	133.97	EDQL EPA Region 5 (1998)		--
Carbon tetrachloride	56-23-5	35.73	EDQL EPA Region 5 (1998)		--
4-Chloroaniline	106-47-8	146.08	EDQL EPA Region 5 (1998)		--
Chlorobenzene	108-90-7	61.94	EDQL EPA Region 5 (1998)		--
Chlordane	12789-03-6			7	Ontario MOE low
Chloroethane	75-00-3	58600	EDQL EPA Region 5 (1998)		--
Chloroform	67-66-3	27	EDQL EPA Region 5 (1998)		--
Chloromethane	74-87-3	0.0785	EDQL EPA Region 5 (1998)		--

Appendix Table 7A.19. Ecological Biotic Screening Values for Chemical Constituents in Sediment at the Luckey Site, Luckey, Ohio

		Sediment					
		NOAA SQuiRTs[c] Threshold Effects Level (TEL)		NOAA[d] Effects Range-Low (ER-L)		Preferred Sediment[e] Value (PSV)	
Chemicals	CAS Number	Number	Source	Number	Source	Number	Source
Arochlor-1221	11104-28-2		--		--	0	
Arochlor-1232	11141-16-5		--		--	0	
Arochlor-1242	53469-21-9		--		--	0	
Arochlor-1248	12672-29-6		--		--	30	Ontario MOE low
Arochlor-1254	11097-69-1		--		--	60	Ontario MOE low
Arochlor-1260	11096-82-5		--		--	5	Ontario MOE low
Benzene	71-43-2		--		--	141.57	EDQL EPA Region 5 (1998)
Benzo(a)anthracene	56-55-3	31.7	SQuiRTs TEL (1998)	261	NOAA ER-L	31.7	EDQL EPA Region 5 (1998)
Benzo(a)pyrene	50-32-8	31.9	SQuiRTs TEL (1998)	430	NOAA ER-L	31.9	EDQL EPA Region 5 (1998)
Benzo(b)fluoranthene	205-99-2		--		--	10400	EDQL EPA Region 5 (1998)
Benzo(g,h,i)perylene	191-24-2		--		--	170	EDQL EPA Region 5 (1998)
Benzo(k)fluoranthene	207-08-9		--		--	240	EDQL EPA Region 5 (1998)
BHC	608-73-1		--		--	3	Ontario MOE low
BHC, alpha	319-84-6		--		--	6	EDQL EPA Region 5 (1998)
BHC, beta	319-85-7		--		--	5	EDQL EPA Region 5 (1998)
Biphenyl	92-52-4		--		--	0	
bis(2-chloroethoxy) methane	111-91-1		--		--	349.71	EDQL EPA Region 5 (1998)
bis(2-Chloroethyl) ether	111-44-4		--		--	211.96	EDQL EPA Region 5 (1998)
bis(2-Ethylhexyl)phthalate	117-81-7		--		--	182	EDQL EPA Region 5 (1998)
Bromodichloromethane	74-97-5		--		--	1.13	EDQL EPA Region 5 (1998)
Bromomethane	74-83-9		--		--	0.148	EDQL EPA Region 5 (1998)
4-bromophenyl-phenylether	101-55-3		--		--	1550	EDQL EPA Region 5 (1998)
2-Butanone	78-93-3		--		--	136.96	EDQL EPA Region 5 (1998)
Butylbenzylphthalate	85-68-7		--		--	4190	EDQL EPA Region 5 (1998)
Carbazole	86-74-8		--		--	0	
Carbon disulfide	75-15-0		--		--	133.97	EDQL EPA Region 5 (1998)
Carbon tetrachloride	56-23-5		--		--	35.73	EDQL EPA Region 5 (1998)
4-Chloroaniline	106-47-8		--		--	146.08	EDQL EPA Region 5 (1998)
Chlorobenzene	108-90-7		--		--	61.94	EDQL EPA Region 5 (1998)
Chlordane	12789-03-6	4.5	SQuiRTs TEL (1998)	0.5	NOAA ER-L	0.5	NOAA ER-L
Chloroethane	75-00-3		--		--	58600	EDQL EPA Region 5 (1998)
Chloroform	67-66-3		--		--	27	EDQL EPA Region 5 (1998)
Chloromethane	74-87-3		--		--	0.0785	EDQL EPA Region 5 (1998)

Appendix Table 7A.19. Ecological Biotic Screening Values for Chemical Constituents in Sediment at the Luckey Site, Luckey, Ohio

Chemicals	CAS Number	Sediment			
		Ecological Data Quality Levels (EDQL)[a]		Ontario MOE[b] Low	
		Number	Source	Number	Source
2-Chloronaphthalene	91-58-7	417.23	EDQL EPA Region 5 (1998)		--
2-Chlorophenol	95-57-8	11.7	EDQL EPA Region 5 (1998)		--
4-Chlorophenyl-phenyl ether	7005-72-3	656.12	EDQL EPA Region 5 (1998)		--
4-chloro-3-methylphenol	59-50-7	388.18	EDQL EPA Region 5 (1998)		--
Chrysene	218-01-9	57.1	EDQL EPA Region 5 (1998)	340	Ontario MOE low
4,4'-DDD	72-54-8	5.53	EDQL EPA Region 5 (1998)	8	Ontario MOE low
4,4'-DDE	72-55-9	1.42	EDQL EPA Region 5 (1998)	5	Ontario MOE low
4,4'-DDT	50-29-3	1.19	EDQL EPA Region 5 (1998)	7	Ontario MOE low
Diazinon	333-41-5				--
Dibenzo(a,h)anthracene	53-70-3	6.22	EDQL EPA Region 5 (1998)	60	Ontario MOE low
Dibenzofuran	132-64-9	1520	EDQL EPA Region 5 (1998)		--
Dibromochloromethane	124-48-1	267.61	EDQL EPA Region 5 (1998)		--
1,2-Dichlorobenzene	95-50-1	231.32	EDQL EPA Region 5 (1998)		--
1,3-Dichlorobenzene	541-73-1	3010	EDQL EPA Region 5 (1998)		--
1,4-Dichlorobenzene	106-46-7	1450	EDQL EPA Region 5 (1998)		--
3,3'-Dichlorobenzidine	91-94-1	28.22	EDQL EPA Region 5 (1998)		--
1,1-Dichloroethane	75-34-3	0.575	EDQL EPA Region 5 (1998)		--
1,2-Dichloroethane	107-06-2	54.18	EDQL EPA Region 5 (1998)		--
1,1-Dichloroethene	75-35-4	23.27	EDQL EPA Region 5 (1998)		--
1,2-Dichloroethene (total)	540-59-0				--
2,4-Dichlorophenol	120-83-2	133.63	EDQL EPA Region 5 (1998)		--
1,2-Dichloropropane	78-87-5	351.61	EDQL EPA Region 5 (1998)		--
cis-1,3-Dichloropropene	10061-02-6	2.96	EDQL EPA Region 5 (1998)		--
trans-1,3-Dichloropropene	10061-02-6	2.96	EDQL EPA Region 5 (1998)		--
Dieldrin	60-57-1	2	EDQL EPA Region 5 (1998)	2	Ontario MOE low
Diethylphthalate	84-66-2	8.04	EDQL EPA Region 5 (1998)		--
Dimethylphthalate	131-11-3	24.95	EDQL EPA Region 5 (1998)		--
2,4-Dimethylphenol	105-67-9	304.53	EDQL EPA Region 5 (1998)		--
Di-n-butylphthalate	84-74-2	110.5	EDQL EPA Region 5 (1998)		--
Di-n-octylphthalate	117-84-0	40600	EDQL EPA Region 5 (1998)		--
1,3-Dinitrobenzene	99-65-0	0.924	EDQL EPA Region 5 (1998)		--
2,4-Dinitrophenol	51-28-5	1.33	EDQL EPA Region 5 (1998)		--
2,4-Dinitrotoluene	121-14-2	75.13	EDQL EPA Region 5 (1998)		--

Appendix Table 7A.19. Ecological Biotic Screening Values for Chemical Constituents in Sediment at the Luckey Site, Luckey, Ohio

		Sediment					
		NOAA SQuiRTs[c] Threshold Effects Level (TEL)		NOAA[d] Effects Range-Low (ER-L)		Preferred Sediment[e] Value (PSV)	
Chemicals	CAS Number	Number	Source	Number	Source	Number	Source
2-Chloronaphthalene	91-58-7		--		--	417.23	EDQL EPA Region 5 (1998)
2-Chlorophenol	95-57-8		--		--	11.7	EDQL EPA Region 5 (1998)
4-Chlorophenyl-phenyl ether	7005-72-3		--		--	656.12	EDQL EPA Region 5 (1998)
4-chloro-3-methylphenol	59-50-7		--		--	388.18	EDQL EPA Region 5 (1998)
Chrysene	218-01-9	57.1	SQuiRTs TEL (1998)	384	NOAA ER-L	57.1	EDQL EPA Region 5 (1998)
4,4'-DDD	72-54-8	3.54	SQuiRTs TEL (1998)	2	NOAA ER-L	2	NOAA ER-L
4,4'-DDE	72-55-9	1.42	SQuiRTs TEL (1998)	2.2	NOAA ER-L	1.42	EDQL EPA Region 5 (1998)
4,4'-DDT	50-29-3	6.98	SQuiRTs TEL (1998)	1.58	NOAA ER-L	1.19	EDQL EPA Region 5 (1998)
Diazinon	333-41-5		--		--	0	
Dibenzo(a,h)anthracene	53-70-3		--	63.4	NOAA ER-L	6.22	EDQL EPA Region 5 (1998)
Dibenzofuran	132-64-9		--		--	1520	EDQL EPA Region 5 (1998)
Dibromochloromethane	124-48-1		--		--	267.61	EDQL EPA Region 5 (1998)
1,2-Dichlorobenzene	95-50-1		--		--	231.32	EDQL EPA Region 5 (1998)
1,3-Dichlorobenzene	541-73-1		--		--	3010	EDQL EPA Region 5 (1998)
1,4-Dichlorobenzene	106-46-7		--		--	1450	EDQL EPA Region 5 (1998)
3,3'-Dichlorobenzidine	91-94-1		--		--	28.22	EDQL EPA Region 5 (1998)
1,1-Dichloroethane	75-34-3		--		--	0.575	EDQL EPA Region 5 (1998)
1,2-Dichloroethane	107-06-2		--		--	54.18	EDQL EPA Region 5 (1998)
1,1-Dichloroethene	75-35-4		--		--	23.27	EDQL EPA Region 5 (1998)
1,2-Dichloroethene (total)	540-59-0		--		--	0	
2,4-Dichlorophenol	120-83-2		--		--	133.63	EDQL EPA Region 5 (1998)
1,2-Dichloropropane	78-87-5		--		--	351.61	EDQL EPA Region 5 (1998)
cis-1,3-Dichloropropene	10061-02-6		--		--	2.96	EDQL EPA Region 5 (1998)
trans-1,3-Dichloropropene	10061-02-6		--		--	2.96	EDQL EPA Region 5 (1998)
Dieldrin	60-57-1	2.85	SQuiRTs TEL (1998)	0.02	NOAA ER-L	0.02	NOAA ER-L
Diethylphthalate	84-66-2		--		--	8.04	EDQL EPA Region 5 (1998)
Dimethylphthalate	131-11-3		--		--	24.95	EDQL EPA Region 5 (1998)
2,4-Dimethylphenol	105-67-9		--		--	304.53	EDQL EPA Region 5 (1998)
Di-n-butylphthalate	84-74-2		--		--	110.5	EDQL EPA Region 5 (1998)
Di-n-octylphthalate	117-84-0		--		--	40600	EDQL EPA Region 5 (1998)
1,3-Dinitrobenzene	99-65-0		--		--	0.924	EDQL EPA Region 5 (1998)
2,4-Dinitrophenol	51-28-5		--		--	1.33	EDQL EPA Region 5 (1998)
2,4-Dinitrotoluene	121-14-2		--		--	75.13	EDQL EPA Region 5 (1998)

Appendix Table 7A.19. Ecological Biotic Screening Values for Chemical Constituents in Sediment at the Luckey Site, Luckey, Ohio

Chemicals	CAS Number	Sediment			
		Ecological Data Quality Levels (EDQL)[a]		Ontario MOE[b] Low	
		Number	Source	Number	Source
2,6-Dinitrotoluene	606-20-2	20.62	EDQL EPA Region 5 (1998)		--
4,6-Dinitro-2-methylphenol	534-52-1	10.38	EDQL EPA Region 5 (1998)		--
Endosulfan, alpha	959-98-8	0.175	EDQL EPA Region 5 (1998)		--
Endosulfan, beta	33213-65-9	0.104	EDQL EPA Region 5 (1998)		--
Endosulfan, mixed isomers	--				--
Endosulfan sulfate	1031-07-8	34.6	EDQL EPA Region 5 (1998)		--
Endrin	72-20-8	2.67	EDQL EPA Region 5 (1998)	3	Ontario MOE low
Ethylbenzene	100-41-4	0.1	EDQL EPA Region 5 (1998)		--
Fluoranthene	206-44-0	111.3	EDQL EPA Region 5 (1998)	750	Ontario MOE low
Fluorene	86-73-7	21.2	EDQL EPA Region 5 (1998)	190	Ontario MOE low
gamma-BHC (lindane)	58-89-9	0.94	EDQL EPA Region 5 (1998)	3	Ontario MOE low
Heptachlor Epoxide	1024-57-3	0.6	EDQL EPA Region 5 (1998)	5	Ontario MOE low
Hexachlorobenzene	118-74-1	20	EDQL EPA Region 5 (1998)	20	Ontario MOE low
Hexachlorobutadiene	87-68-3	1380	EDQL EPA Region 5 (1998)		--
Hexachlorocyclopentadiene	77-47-4	900.74	EDQL EPA Region 5 (1998)		--
Hexachloroethane	67-72-1	2230	EDQL EPA Region 5 (1998)		--
2-Hexanone	591-78-6	1010	EDQL EPA Region 5 (1998)		--
HMX Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine	2691-41-0				--
Indeno(1,2,3-cd)pyrene	193-39-5	200	EDQL EPA Region 5 (1998)	200	Ontario MOE low
Isophorone	78-59-1	422.3	EDQL EPA Region 5 (1998)		--
Malathion	121-75-5				--
Methoxychlor	72-43-5	3.59	EDQL EPA Region 5 (1998)		--
Methylene chloride	75-09-2	1260	EDQL EPA Region 5 (1998)		--
2-Methylnaphthalene	91-57-6	20.2	EDQL EPA Region 5 (1998)		--
2-Methylphenol	95-48-7	0.826	EDQL EPA Region 5 (1998)		--
4-Methylphenol	106-44-5	0.808	EDQL EPA Region 5 (1998)		--
4-Methyl-2-pentanone	108-10-1	544.37	EDQL EPA Region 5 (1998)		--
Mirex	2385-85-5			7	Ontario MOE low
Naphthalene	91-20-3	34.6	EDQL EPA Region 5 (1998)		--
2-Nitroaniline	88-74-4	0.222	EDQL EPA Region 5 (1998)		--
3-Nitroaniline	99-09-2	0.222	EDQL EPA Region 5 (1998)		--
4-Nitroaniline	100-01-6	0.222	EDQL EPA Region 5 (1998)		--
Nitrobenzene	99-95-3	487.6	EDQL EPA Region 5 (1998)		--

Appendix Table 7A.19. Ecological Biotic Screening Values for Chemical Constituents in Sediment at the Luckey Site, Luckey, Ohio

		Sediment					
		NOAA SQuiRTs[c] Threshold Effects Level (TEL)		NOAA[d] Effects Range-Low (ER-L)		Preferred Sediment[e] Value (PSV)	
Chemicals	CAS Number	Number	Source	Number	Source	Number	Source
2,6-Dinitrotoluene	606-20-2		--		--	20.62	EDQL EPA Region 5 (1998)
4,6-Dinitro-2-methylphenol	534-52-1		--		--	10.38	EDQL EPA Region 5 (1998)
Endosulfan, alpha	959-98-8		--		--	0.175	EDQL EPA Region 5 (1998)
Endosulfan, beta	33213-65-9		--		--	0.104	EDQL EPA Region 5 (1998)
Endosulfan, mixed isomers	--		--		--	0	
Endosulfan sulfate	1031-07-8		--		--	34.6	EDQL EPA Region 5 (1998)
Endrin	72-20-8	2.67	SQuiRTs TEL (1998)	0.02	NOAA ER-L	0.02	NOAA ER-L
Ethylbenzene	100-41-4		--		--	0.1	EDQL EPA Region 5 (1998)
Fluoranthene	206-44-0	111	SQuiRTs TEL (1998)	600	NOAA ER-L	111	SQuiRTs TEL (1998)
Fluorene	86-73-7		--	19	NOAA ER-L	19	NOAA ER-L
gamma-BHC (lindane)	58-89-9	0.94	SQuiRTs TEL (1998)		--	0.94	EDQL EPA Region 5 (1998)
Heptachlor Epoxide	1024-57-3	0.6	SQuiRTs TEL (1998)		--	0.6	EDQL EPA Region 5 (1998)
Hexachlorobenzene	118-74-1		--		--	20	EDQL EPA Region 5 (1998)
Hexachlorobutadiene	87-68-3		--		--	1380	EDQL EPA Region 5 (1998)
Hexachlorocyclopentadiene	77-47-4		--		--	900.74	EDQL EPA Region 5 (1998)
Hexachloroethane	67-72-1		--		--	2230	EDQL EPA Region 5 (1998)
2-Hexanone	591-78-6		--		--	1010	EDQL EPA Region 5 (1998)
HMX Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine	2691-41-0		--		--	0	
Indeno(1,2,3-cd)pyrene	193-39-5		--		--	200	EDQL EPA Region 5 (1998)
Isophorone	78-59-1		--		--	422.3	EDQL EPA Region 5 (1998)
Malathion	121-75-5		--		--	0	
Methoxychlor	72-43-5		--		--	3.59	EDQL EPA Region 5 (1998)
Methylene chloride	75-09-2		--		--	1260	EDQL EPA Region 5 (1998)
2-Methylnaphthalene	91-57-6		--	70	NOAA ER-L	20.2	EDQL EPA Region 5 (1998)
2-Methylphenol	95-48-7		--		--	0.826	EDQL EPA Region 5 (1998)
4-Methylphenol	106-44-5		--		--	0.808	EDQL EPA Region 5 (1998)
4-Methyl-2-pentanone	108-10-1		--		--	544.37	EDQL EPA Region 5 (1998)
Mirex	2385-85-5		--		--	7	Ontario MOE low
Naphthalene	91-20-3		--	160	NOAA ER-L	34.6	EDQL EPA Region 5 (1998)
2-Nitroaniline	88-74-4		--		--	0.222	EDQL EPA Region 5 (1998)
3-Nitroaniline	99-09-2		--		--	0.222	EDQL EPA Region 5 (1998)
4-Nitroaniline	100-01-6		--		--	0.222	EDQL EPA Region 5 (1998)
Nitrobenzene	99-95-3		--		--	487.6	EDQL EPA Region 5 (1998)

Appendix Table 7A.19. Ecological Biotic Screening Values for Chemical Constituents in Sediment at the Luckey Site, Luckey, Ohio

Chemicals	CAS Number	Sediment			
		Ecological Data Quality Levels (EDQL)[a]		Ontario MOE[b] Low	
		Number	Source	Number	Source
Nitrobenzene	99-95-3				--
Nitrocellulose	9004-70-0				--
Nitroglycerin	55-63-0				--
Nitroquanidine	--				--
2-Nitrophenol	88-75-5	7.77	EDQL EPA Region 5 (1998)		--
4-Nitrophenol	100-02-7	7.78	EDQL EPA Region 5 (1998)		--
m-Nitrotoluene	99-08-1				--
N-nitroso-di-n-dipropylamine	621-64-7	0.217	EDQL EPA Region 5 (1998)		--
N-nitrosodiphenylamine	86-30-6	155.24	EDQL EPA Region 5 (1998)		--
o-Nitrotoluene	88-72-2				--
2,2'- oxybis(1-Chloropropane)	108-60-1	68.78	EDQL EPA Region 5 (1998)		--
Pentachlorophenol	87-86-5	30100	EDQL EPA Region 5 (1998)		--
Pentachlorobenzene	608-93-5	1260	EDQL EPA Region 5 (1998)		--
Phenanthrene	85-01-8	41.9	EDQL EPA Region 5 (1998)	560	Ontario MOE low
Phenol	108-95-2	27.26	EDQL EPA Region 5 (1998)		--
Polynuclear aromatic hydrocarbons				4000	Ontario MOE low
Polychorinated biphenyls	1336-36-3	34.1	EDQL EPA Region 5 (1998)	70	Ontario MOE low
p-Nitrotoluene	99-99-0				--
Pyrene	129-00-0	53	EDQL EPA Region 5 (1998)	490	Ontario MOE low
RDX (cyclonite) Hexahydro-1,3,5-trinitro-1,3,5-triazine	121-82-4				--
Styrene	100-42-5	444.96	EDQL EPA Region 5 (1998)		--
Tetrachloroethene	127-18-4	195.83	EDQL EPA Region 5 (1998)		--
Tetrachloroethylene	127-18-4	195.83	EDQL EPA Region 5 (1998)		--
1,1,2,2-Tetrachloroethane	79-34-5	29.08	EDQL EPA Region 5 (1998)		--
Tetrachloromethane	56-23-5	35.73	EDQL EPA Region 5 (1998)		--
Tetryl	479-45-8				--
Toluene	108-88-3	52500	EDQL EPA Region 5 (1998)		--
Toxaphene	8001-35-2	0.109	EDQL EPA Region 5 (1998)		--
Tribromomethane	75-25-2	996.27	EDQL EPA Region 5 (1998)		--
Trichloroethene	79-01-6	179.56	EDQL EPA Region 5 (1998)		--
1,2,4-Trichlorobenzene	120-82-1	11700	EDQL EPA Region 5 (1998)		--
1,1,1-Trichloroethane	71-55-6	246.85	EDQL EPA Region 5 (1998)		--
1,1,2-Trichloroethane	79-00-5	673.51	EDQL EPA Region 5 (1998)		--

Appendix Table 7A.19. Ecological Biotic Screening Values for Chemical Constituents in Sediment at the Luckey Site, Luckey, Ohio

		Sediment					
		NOAA SQuiRTs[c] Threshold Effects Level (TEL)		NOAA[d] Effects Range-Low (ER-L)		Preferred Sediment[e] Value (PSV)	
Chemicals	CAS Number	Number	Source	Number	Source	Number	Source
Nitrobenzene	99-95-3		--		--	0	
Nitrocellulose	9004-70-0		--		--	0	
Nitroglycerin	55-63-0		--		--	0	
Nitroquanidine	--		--		--	0	
2-Nitrophenol	88-75-5		--		--	7.77	EDQL EPA Region 5 (1998)
4-Nitrophenol	100-02-7		--		--	7.78	EDQL EPA Region 5 (1998)
m-Nitrotoluene	99-08-1		--		--	0	
N-nitroso-di-n-dipropylamine	621-64-7		--		--	0.217	EDQL EPA Region 5 (1998)
N-nitrosodiphenylamine	86-30-6		--		--	155.24	EDQL EPA Region 5 (1998)
o-Nitrotoluene	88-72-2		--		--	0	
2,2'- oxybis(1-Chloropropane)	108-60-1		--		--	68.78	EDQL EPA Region 5 (1998)
Pentachlorophenol	87-86-5		--		--	30100	EDQL EPA Region 5 (1998)
Pentachlorobenzene	608-93-5		--		--	1260	EDQL EPA Region 5 (1998)
Phenanthrene	85-01-8	41.9	SQuiRTs TEL (1998)	240	NOAA ER-L	41.9	EDQL EPA Region 5 (1998)
Phenol	108-95-2		--		--	27.26	EDQL EPA Region 5 (1998)
Polynuclear aromatic hydrocarbons			--	4022	NOAA ER-L	4000	Ontario MOE low
Polychorinated biphenyls	1336-36-3	34.1	SQuiRTs TEL (1998)	22.7	NOAA ER-L	22.7	NOAA ER-L
p-Nitrotoluene	99-99-0		--		--	0	
Pyrene	129-00-0	53	SQuiRTs TEL (1998)	665	NOAA ER-L	53	EDQL EPA Region 5 (1998)
RDX (cyclonite) Hexahydro-1,3,5-trinitro-1,3,5-triazine	121-82-4		--		--	0	
Styrene	100-42-5		--		--	444.96	EDQL EPA Region 5 (1998)
Tetrachloroethene	127-18-4		--		--	195.83	EDQL EPA Region 5 (1998)
Tetrachloroethylene	127-18-4		--		--	195.83	EDQL EPA Region 5 (1998)
1,1,2,2-Tetrachloroethane	79-34-5		--		--	29.08	EDQL EPA Region 5 (1998)
Tetrachloromethane	56-23-5		--		--	35.73	EDQL EPA Region 5 (1998)
Tetryl	479-45-8		--		--	0	
Toluene	108-88-3		--		--	52500	EDQL EPA Region 5 (1998)
Toxaphene	8001-35-2		--		--	0.109	EDQL EPA Region 5 (1998)
Tribromomethane	75-25-2		--		--	996.27	EDQL EPA Region 5 (1998)
Trichloroethene	79-01-6		--		--	179.56	EDQL EPA Region 5 (1998)
1,2,4-Trichlorobenzene	120-82-1		--		--	11700	EDQL EPA Region 5 (1998)
1,1,1-Trichloroethane	71-55-6		--		--	246.85	EDQL EPA Region 5 (1998)
1,1,2-Trichloroethane	79-00-5		--		--	673.51	EDQL EPA Region 5 (1998)

Appendix Table 7A.19. Ecological Biotic Screening Values for Chemical Constituents in Sediment at the Luckey Site, Luckey, Ohio

Chemicals	CAS Number	Sediment			
		Ecological Data Quality Levels (EDQL)[a]		Ontario MOE[b] Low	
		Number	Source	Number	Source
Trichloroethylene	79-01-6	179.56	EDQL EPA Region 5 (1998)		--
2,4,5-Trichlorophenol	95-95-4	85.56	EDQL EPA Region 5 (1998)		--
2,4,6-Trichlorophenol	88-06-2	84.84	EDQL EPA Region 5 (1998)		--
1,3,5-Trinitrobenzene	99-35-4	0.121	EDQL EPA Region 5 (1998)		--
2,4,6-Trinitrotoluene	118-96-7				--
Vinyl chloride	75-01-4	2	EDQL EPA Region 5 (1998)		--
Xylenes (total)	1330-20-7	1880	EDQL EPA Region 5 (1998)		--

[a] EPA, 1998d. RCRA QAPP Instructions, USEPA Region 5, Chicago, IL, April 1998 revision. Http://www.epa.gov/reg5rcra/wptdiv/cars/cars.htm
[b] Jones, D.S., G.W. Suter II, and R.N. Hull. 1997. Toxicological Benchmarks for Screening Constituents of Potential Concern for Effects on Sediment-Associated Biota: 1997 Revision. ES/ER/TM-95/R4. Lockheed Martin Energy Systems, Inc. November
[c] Buchman, M.F., 1998. NOAA Screening Quick Reference Tables, NOAA HAZMAT Report 97-2, Hazardous Material Response and Assessment Division, National Oceanic and Atmospheric Administration, 12 pages, Seattle, WA.
[d] Jones, D.S., G.W. Suter II, and R.N. Hull. 1997. Toxicological Benchmarks for Screening Constituents of Potential Concern for Effects on Sediment-Associated Biota: 1997 Revision. ES/ER/TM-95/R4. Lockheed Martin Energy Systems, Inc. November
[e] The Preferred Sediment Value is the lowest value among the Ecotox Thersholds, the MOE, NOAA SQuiRTs, and NOAA ER-L Sediment values
-- = no value

Appendix Table 7A.19. Ecological Biotic Screening Values for Chemical Constituents in Sediment at the Luckey Site, Luckey, Ohio

		Sediment					
		NOAA SQuiRTs[c] Threshold Effects Level (TEL)		NOAA[d] Effects Range-Low (ER-L)		Preferred Sediment[e] Value (PSV)	
Chemicals	CAS Number	Number	Source	Number	Source	Number	Source
Trichloroethylene	79-01-6		--		--	179.56	EDQL EPA Region 5 (1998)
2,4,5-Trichlorophenol	95-95-4		--		--	85.56	EDQL EPA Region 5 (1998)
2,4,6-Trichlorophenol	88-06-2		--		--	84.84	EDQL EPA Region 5 (1998)
1,3,5-Trinitrobenzene	99-35-4		--		--	0.121	EDQL EPA Region 5 (1998)
2,4,6-Trinitrotoluene	118-96-7		--		--	0	
Vinyl chloride	75-01-4		--		--	2	EDQL EPA Region 5 (1998)
Xylenes (total)	1330-20-7		--		--	1880	EDQL EPA Region 5 (1998)

[a] EPA, 1998d. RCRA QAPP Instructions, USEPA Region 5, Chicago,
[b] Jones, D.S., G.W. Suter II, and R.N. Hull. 1997. Toxicological Benc
Effects on Sediment-Associated Biota: 1997 Revision. ES/ER/TM-9
[c] Buchman, M.F., 1998. NOAA Screening Quick Reference Tables, N
and Assessment Division, National Oceanic and Atmospheric Admin
[d] Jones, D.S., G.W. Suter II, and R.N. Hull. 1997. Toxicological Benc
Effects on Sediment-Associated Biota: 1997 Revision. ES/ER/TM-9
[e] The Preferred Sediment Value is the lowest value among the Ecotox
Sediment values
-- = no value

Appendix Table 7A.20. Ecological Biotic Screening Values for Chemical Constituents in Surface Water at the Luckey Site, Luckey, Ohio (continued)

Chemicals	CAS Number	Ecological Data Quality Levels (EDQL)[a] Number (ug/L)	Ecological Data Quality Levels (EDQL)[a] Source	Ohio EPA OMZA (Outside Mixing Zone Average)[b] Number (ug/L)	Ohio EPA OMZA (Outside Mixing Zone Average)[b] Source	Suter and Tsao 1996[c] Number (ug/L)	Suter and Tsao 1996[c] Source	Prefered Surface Water Value[d] Number (ug/L)	Prefered Surface Water Value[d] Source
Metals									
(Target Analyte List)								0	
Aluminum	7429-90-5		EDQL EPA Region 5 (1998)		--	87	NAWQC (Suter & Tsao 1996)	87	NAWQC (Suter & Tsao 1996)
Antimony	7440-36-0	31	EDQL EPA Region 5 (1998)	190	Ohio Administrative Code	30	in Suter & Tsao 1996)	30	& Tsao 1996)
Arsenic III (Diss)	7440-38-2	53	EDQL EPA Region 5 (1998)	150	Ohio Administrative Code	190	NAWQC (Suter & Tsao 1996)	53	EDQL EPA Region 5 (1998)
Arsenic (TR)	7440-38-2	53	EDQL EPA Region 5 (1998)	150	Ohio Administrative Code		--	53	EDQL EPA Region 5 (1998)
Arsenic V (Diss)	7440-38-2	53	EDQL EPA Region 5 (1998)		--	3.1	Tier II (Suter & Tsao 1996)	3.1	Tier II (Suter & Tsao 1996)
Barium	7440-39-3	5000	EDQL EPA Region 5 (1998)	220	Ohio Administrative Code	4.0	Tier II (Suter & Tsao 1996)	4	Tier II (Suter & Tsao 1996)
Beryllium (TR)	7440-41-7	7.6	EDQL EPA Region 5 (1998)	11[e]	Ohio Administrative Code	0.66	Tier II (Suter & Tsao 1996)	0.66	Tier II (Suter & Tsao 1996)
Boron	7440-42-8			950	Ohio Administrative Code	1.6	Tier II (Suter & Tsao 1996)	1.6	Tier II (Suter & Tsao 1996)
Cadmium (Diss)	7440-43-9	0.7	EDQL EPA Region 5 (1998)	2.2[e]	Ohio Administrative Code	1.1	NAWQC (Suter & Tsao 1996)	0.7	EDQL EPA Region 5 (1998)
Cadmium (TR)	7440-43-9	0.7	EDQL EPA Region 5 (1998)	2.5[e]	Ohio Administrative Code		--	0.7	EDQL EPA Region 5 (1998)
Calcium	7440-70-2				--		--	0	--
Chlorine (TR)	7782-50-5			11	Ohio Administrative Code		--	11	Ohio Administrative Code
Chromium III (Diss)	7440-47-3	42	EDQL EPA Region 5 (1998)	74[e]	Ohio Administrative Code	210	Tier II (Suter & Tsao 1996)	42	EDQL EPA Region 5 (1998)
Chromium (TR)	7440-47-3	42	EDQL EPA Region 5 (1998)	86[e]	Ohio Administrative Code		--	42	EDQL EPA Region 5 (1998)
Chromium VI (Diss)	7440-47-3	42	EDQL EPA Region 5 (1998)		--	11	Tier II (Suter & Tsao 1996)	11	Tier II (Suter & Tsao 1996)
Cobalt	7440-48-4	5	EDQL EPA Region 5 (1998)	24	Ohio Administrative Code	23	Tier II (Suter & Tsao 1996)	5	EDQL EPA Region 5 (1998)
Copper (Diss)	7440-50-8	5	EDQL EPA Region 5 (1998)	9.0[e]	Ohio Administrative Code	12	NAWQC (Suter & Tsao 1996)	5	EDQL EPA Region 5 (1998)
Copper (TR)	7440-50-8	5	EDQL EPA Region 5 (1998)	9.3[e]	Ohio Administrative Code		--	5	EDQL EPA Region 5 (1998)
Cyanide	57-12-5	5.2	EDQL EPA Region 5 (1998)	5.2	Ohio Administrative Code	5.2	NAWQC (Suter & Tsao 1996)	5.2	EDQL EPA Region 5 (1998)
Iron	7439-89-6				--	1000	NAWQC (Suter & Tsao 1996)	1000	NAWQC (Suter & Tsao 1996)
Lead (Diss)	7439-92-1	1.3	EDQL EPA Region 5 (1998)	5.1[e]	Ohio Administrative Code	3.2	NAWQC (Suter & Tsao 1996)	1.3	EDQL EPA Region 5 (1998)
Lead (TR)	7439-92-1	1.3	EDQL EPA Region 5 (1998)	6.4[e]	Ohio Administrative Code		--	1.3	EDQL EPA Region 5 (1998)
Magnesium	7439-95-4				--		--	0	--
Manganese (TR)	7439-96-5			180	Ohio Administrative Code	120	Tier II (Suter & Tsao 1996)	120	Tier II (Suter & Tsao 1996)
Mercury (CVAA) (Diss)	7439-97-6	0.0013	EDQL EPA Region 5 (1998)	0.77	Ohio Administrative Code	1.3	Tier II (Suter & Tsao 1996)	0.0013	EDQL EPA Region 5 (1998)
Mercury (TR)	7439-97-6	0.0013	EDQL EPA Region 5 (1998)	0.91	Ohio Administrative Code		--	0.0013	EDQL EPA Region 5 (1998)
Mercury, Methyl	7439-97-6	0.0013	EDQL EPA Region 5 (1998)		--	0.0028	Tier II (Suter & Tsao 1996)	0.0013	EDQL EPA Region 5 (1998)
Molybdenum	7439-98-7			110	Ohio Administrative Code	370	Tier II (Suter & Tsao 1996)	110	Ohio Administrative Code
Nickel (Diss)	7440-02-0	29	EDQL EPA Region 5 (1998)	52[e]	Ohio Administrative Code	160	NAWQC (Suter & Tsao 1996)	29	EDQL EPA Region 5 (1998)
Nickel (TR)	7440-02-1	29	EDQL EPA Region 5 (1998)	52[e]	Ohio Administrative Code		--	29	EDQL EPA Region 5 (1998)
Potassium	7440-09-7				--		--	0	--
Selenium (Diss)	7782-49-2	5	EDQL EPA Region 5 (1998)	4.6	Ohio Administrative Code	5.0	NAWQC (Suter & Tsao 1996)	4.6	Ohio Administrative Code
Selenium (TR)	7782-49-2	5	EDQL EPA Region 5 (1998)	5.0	Ohio Administrative Code		--	5	EDQL EPA Region 5 (1998)
Silver (Diss)	7440-22-4	1	EDQL EPA Region 5 (1998)		--	0.36	Tier II (Suter & Tsao 1996)	0.36	Tier II (Suter & Tsao 1996)
Silver (TR)	7440-22-4	1	EDQL EPA Region 5 (1998)	0.06	Ohio Administrative Code		--	0.06	Ohio Administrative Code
Sodium	7440-23-5				--		--	0	--
Strontium	7440-24-6			770	Ohio Administrative Code	1500	Tier II (Suter & Tsao 1996)	770	Ohio Administrative Code
Thallium	7440-28-0	0.6	EDQL EPA Region 5 (1998)	17	Ohio Administrative Code	12	Tier II (Suter & Tsao 1996)	0.6	EDQL EPA Region 5 (1998)
Tin	7440-31-5	73	EDQL EPA Region 5 (1998)	180	Ohio Administrative Code	73	Tier II (Suter & Tsao 1996)	73	EDQL EPA Region 5 (1998)
Uranium	7440-61-1				--	2.6	Tier II (Suter & Tsao 1996)	2.6	Tier II (Suter & Tsao 1996)
Vanadium	7440-62-2	19	EDQL EPA Region 5 (1998)	26	Ohio Administrative Code	20	Tier II (Suter & Tsao 1996)	19	EDQL EPA Region 5 (1998)
Zinc (Diss)	7440-66-6	59	EDQL EPA Region 5 (1998)	120[e]	Ohio Administrative Code	110	NAWQC (Suter & Tsao 1996)	59	EDQL EPA Region 5 (1998)
Zinc (TR)	7440-66-6	59	EDQL EPA Region 5 (1998)	120[e]	Ohio Administrative Code		--	59	EDQL EPA Region 5 (1998)
Zirconium	7440-67-7				--	17	Tier II (Suter & Tsao 1996)	17	Tier II (Suter & Tsao 1996)

Appendix Table 7A.20. Ecological Biotic Screening Values for Chemical Constituents in Surface Water at the Luckey Site, Luckey, Ohio (continued)

Chemicals	CAS Number	Ecological Data Quality Levels (EDQL)[a] Number (ug/L)	Source	Ohio EPA OMZA (Outside Mixing Zone Average)[b] Number (ug/L)	Source	Suter and Tsao 1996[c] Number (ug/L)	Source	Prefered Surface Water Value[d] Number (ug/L)	Source
Volatile Organic Compounds								0	
Acenaphthene	83-32-9	10	EDQL EPA Region 5 (1998)	9.4	Ohio Administrative Code	23	1996)[f]	9.4	Ohio Administrative Code
Acenaphthylene	208-96-8	4840	EDQL EPA Region 5 (1998)		--		--	4840	EDQL EPA Region 5 (1998)
Acetonitile	75-05-8	30000	EDQL EPA Region 5 (1998)	12000	Ohio Administrative Code		--	12000	Ohio Administrative Code
Acetone	67-64-1	78000	EDQL EPA Region 5 (1998)		--	1500	Tier II (Suter & Tsao 1996)	1500	Tier II (Suter & Tsao 1996)
Acrylonitrile	107-13-1	0.9	EDQL EPA Region 5 (1998)	78	Ohio Administrative Code		--	0.9	EDQL EPA Region 5 (1998)
Anthracene	120-12-7	0.3	EDQL EPA Region 5 (1998)	0.02	Ohio Administrative Code	0.73	Tier II (Suter & Tsao 1996)	0.02	Ohio Administrative Code
Arochlor-1016	12674-11-2				--		--	0	--
Arochlor-1221	11104-28-2				--	0.28	Tier II (Suter & Tsao 1996)	0.28	Tier II (Suter & Tsao 1996)
Arochlor-1232	11141-16-5				--	0.58	Tier II (Suter & Tsao 1996)	0.58	Tier II (Suter & Tsao 1996)
Arochlor-1242	53469-21-9				--	0.053	Tier II (Suter & Tsao 1996)	0.053	Tier II (Suter & Tsao 1996)
Arochlor-1248	12672-29-6				--	0.081	Tier II (Suter & Tsao 1996)	0.081	Tier II (Suter & Tsao 1996)
Arochlor-1254	11097-69-1				--	0.033	Tier II (Suter & Tsao 1996)	0.033	Tier II (Suter & Tsao 1996)
Arochlor-1260	11096-82-5				--	94	Tier II (Suter & Tsao 1996)	94	Tier II (Suter & Tsao 1996)
Benzene	71-43-2	114	EDQL EPA Region 5 (1998)	160	Ohio Administrative Code	130	Tier II (Suter & Tsao 1996)	114	EDQL EPA Region 5 (1998)
Benzidene	92-87-5				--	3.9	Tier II (Suter & Tsao 1996)	3.9	Tier II (Suter & Tsao 1996)
Benzo(a)anthracene	56-55-3	0.9	EDQL EPA Region 5 (1998)		--	0.027	Tier II (Suter & Tsao 1996)	0.027	Tier II (Suter & Tsao 1996)
Benzo(a)pyrene	50-32-8	0.1	EDQL EPA Region 5 (1998)		--	0.014	Tier II (Suter & Tsao 1996)	0.014	Tier II (Suter & Tsao 1996)
Benzo(b)fluoranthene	205-99-2	9.1	EDQL EPA Region 5 (1998)		--		--	9.1	EDQL EPA Region 5 (1998)
Benzo(g,h,i)perylene	191-24-2	7.6	EDQL EPA Region 5 (1998)		--		--	7.6	EDQL EPA Region 5 (1998)
Benzo(k)fluoranthene	207-08-9	0.0056	EDQL EPA Region 5 (1998)		--		--	0.0056	EDQL EPA Region 5 (1998)
Benzoic Acid	65-85-0				--	42	Tier II (Suter & Tsao 1996)	42	Tier II (Suter & Tsao 1996)
Benzyl Alcohol	100-51-6	281	EDQL EPA Region 5 (1998)		--	8.6	Tier II (Suter & Tsao 1996)	8.6	Tier II (Suter & Tsao 1996)
bis(2-chloroethoxy) methane	111-91-1	6400	EDQL EPA Region 5 (1998)		--		--	6400	EDQL EPA Region 5 (1998)
bis(2-Chloroethyl) ether	111-44-4	1140	EDQL EPA Region 5 (1998)		--		--	1140	EDQL EPA Region 5 (1998)
bis(2-Ethylhexyl)phthalate	117-81-7	2.1	EDQL EPA Region 5 (1998)	8.4	Ohio Administrative Code	3.0	Tier II (Suter & Tsao 1996)	2.1	EDQL EPA Region 5 (1998)
Biphenyl	92-52-4				--	14.0	OSWER 1996 (in Suter & Tsao 1996)	14	OSWER 1996 (in Suter & Tsao 1996)
Bromodichloromethane	75-27-4			340	Ohio Administrative Code		--	340	Ohio Administrative Code
Bromoform	75-25-2	466	EDQL EPA Region 5 (1998)	230	Ohio Administrative Code		--	230	Ohio Administrative Code
Bromomethane	74-83-9			16	Ohio Administrative Code		--	16	Ohio Administrative Code
4-bromophenyl-phenylether	101-55-3	1.5	EDQL EPA Region 5 (1998)		--	1.5	OSWER 1996 (in Suter & Tsao 1996)	1.5	EDQL EPA Region 5 (1998)
2-Butanone	78-93-3	7100	EDQL EPA Region 5 (1998)	22000	Ohio Administrative Code	14000	Tier II (Suter & Tsao 1996)	7100	EDQL EPA Region 5 (1998)
Butylbenzylphthalate	85-68-7	49	EDQL EPA Region 5 (1998)	23	Ohio Administrative Code	19	OSWER 1996 (in Suter & Tsao 1996)	19	OSWER 1996 (in Suter & Tsao 1996)
Carbazole	86-74-8				--		--	0	--
Carbon disulfide	75-15-0	84	EDQL EPA Region 5 (1998)		--	0.92	Tier II (Suter & Tsao 1996)	0.92	Tier II (Suter & Tsao 1996)
Carbon tetrachloride	56-23-5	5.9	EDQL EPA Region 5 (1998)	240	Ohio Administrative Code	9.8	Tier II (Suter & Tsao 1996)	5.9	EDQL EPA Region 5 (1998)
4-Chloroaniline	106-47-8	232	EDQL EPA Region 5 (1998)		--		--	232	EDQL EPA Region 5 (1998)
Chlorobenzene	108-90-7	10	EDQL EPA Region 5 (1998)	47	Ohio Administrative Code	64	Tier II (Suter & Tsao 1996)	10	EDQL EPA Region 5 (1998)
Chlordane	12789-03-6				--	0.17	1996)	0.17	1996)
Chloroethane	75-00-3	230000	EDQL EPA Region 5 (1998)		--		--	230000	EDQL EPA Region 5 (1998)
Chloroform	67-66-3	79	EDQL EPA Region 5 (1998)	140	Ohio Administrative Code	28	Tier II (Suter & Tsao 1996)	28	Tier II (Suter & Tsao 1996)
Chloromethane	74-87-3				--		--	0	
2-Chloronaphthalene	91-58-7	0.396	EDQL EPA Region 5 (1998)		--		--	0.396	EDQL EPA Region 5 (1998)
2-Chlorophenol	95-57-8	8.8	EDQL EPA Region 5 (1998)	32	Ohio Administrative Code		--	8.8	EDQL EPA Region 5 (1998)
4-Chlorophenyl-phenyl ether	7005-72-3				--		--	0	
4-chloro-3-methylphenol	59-50-7	34.79	EDQL EPA Region 5 (1998)		--		--	34.79	EDQL EPA Region 5 (1998)
Chrysene	218-01-9	0.033	EDQL EPA Region 5 (1998)		--		--	0.033	EDQL EPA Region 5 (1998)

Appendix Table 7A.20. Ecological Biotic Screening Values for Chemical Constituents in Surface Water at the Luckey Site, Luckey, Ohio (continued)

Chemicals	CAS Number	Ecological Data Quality Levels (EDQL)[a] Number (ug/L)	Ecological Data Quality Levels (EDQL)[a] Source	Ohio EPA OMZA (Outside Mixing Zone Average)[b] Number (ug/L)	Ohio EPA OMZA (Outside Mixing Zone Average)[b] Source	Suter and Tsao 1996[c] Number (ug/L)	Suter and Tsao 1996[c] Source	Prefered Surface Water Value[d] Number (ug/L)	Prefered Surface Water Value[d] Source
Decane	124-18-5				--	49	Tier II (Suter & Tsao 1996)	49	Tier II (Suter & Tsao 1996)
Diazinon	333-41-5				--	0.043	Suter & Tsao 1996)	0.043	Suter & Tsao 1996)
Dibenzo(a,h)anthracene	53-70-3	0.0016	EDQL EPA Region 5 (1998)		--		--	0.0016	EDQL EPA Region 5 (1998)
Dibromochloromethane	124-48-1	6400	EDQL EPA Region 5 (1998)	320	Ohio Administrative Code		--	320	Ohio Administrative Code
1,2-Dichlorobenzene	95-50-1	11	EDQL EPA Region 5 (1998)	23	Ohio Administrative Code	14	OSWER 1996 (in Suter & Tsao 1996)	11	EDQL EPA Region 5 (1998)
1,3-Dichlorobenzene	541-73-1	87	EDQL EPA Region 5 (1998)	22	Ohio Administrative Code	71	OSWER 1996 (in Suter & Tsao 1996)	22	Ohio Administrative Code
1,4-Dichlorobenzene	106-46-7	43	EDQL EPA Region 5 (1998)	9.4	Ohio Administrative Code	15	OSWER 1996 (in Suter & Tsao 1996)	9.4	Ohio Administrative Code
3,3'-Dichlorobenzidine	91-94-1	99.75	EDQL EPA Region 5 (1998)		--		--	99.75	EDQL EPA Region 5 (1998)
Dibenzofuran	132-64-9	20	EDQL EPA Region 5 (1998)		--	3.7	Tier II (Suter & Tsao 1996)	3.7	Tier II (Suter & Tsao 1996)
1,1-Dichloroethane	75-34-3	47	EDQL EPA Region 5 (1998)	410	Ohio Administrative Code	47	Tier II (Suter & Tsao 1996)	47	EDQL EPA Region 5 (1998)
1,2-Dichloroethane	107-06-2	190	EDQL EPA Region 5 (1998)	2000	Ohio Administrative Code	910	Tier II (Suter & Tsao 1996)	190	EDQL EPA Region 5 (1998)
1,1-Dichloroethene	75-35-4	78	EDQL EPA Region 5 (1998)		--	25	Tier II (Suter & Tsao 1996)	25	Tier II (Suter & Tsao 1996)
1,2-Dichloroethene (total)	540-59-0				--	590	Tier II (Suter & Tsao 1996)	590	Tier II (Suter & Tsao 1996)
1,1-Dichloroethylene	75-35-4	78	EDQL EPA Region 5 (1998)	210	Ohio Administrative Code		--	78	EDQL EPA Region 5 (1998)
2,4-Dichlorophenol	120-83-2	18	EDQL EPA Region 5 (1998)	11	Ohio Administrative Code		--	11	Ohio Administrative Code
1,2-Dichloropropane	78-87-5	380	EDQL EPA Region 5 (1998)	520	Ohio Administrative Code		--	380	EDQL EPA Region 5 (1998)
cis-1,3-Dichloropropene	10061-02-6	7.9	EDQL EPA Region 5 (1998)	1.7	Ohio Administrative Code	0.055	Tier II (Suter & Tsao 1996)	0.055	Tier II (Suter & Tsao 1996)
trans-1,3-Dichloropropene	10061-02-6	7.9	EDQL EPA Region 5 (1998)	1.7	Ohio Administrative Code	0.055	Tier II (Suter & Tsao 1996)	0.055	Tier II (Suter & Tsao 1996)
4,4'-DDD	72-54-8	0.0011	EDQL EPA Region 5 (1998)		--	0.011	Tier II (Suter & Tsao 1996)	0.0011	EDQL EPA Region 5 (1998)
4,4'-DDT	50-29-3	0.001	EDQL EPA Region 5 (1998)		--	0.013	Tier II (Suter & Tsao 1996)	0.001	EDQL EPA Region 5 (1998)
Dieldrin	60-57-1	0.000026	EDQL EPA Region 5 (1998)	0.056	Ohio Administrative Code	0.062	in Suter & Tsao 1996)	0.000026	EDQL EPA Region 5 (1998)
Diethylphthalate	84-66-2	3	EDQL EPA Region 5 (1998)	220	Ohio Administrative Code	210	Tier II (Suter & Tsao 1996)	3	EDQL EPA Region 5 (1998)
Dimethylphthalate	131-11-3	73	EDQL EPA Region 5 (1998)		--		--	73	EDQL EPA Region 5 (1998)
2,4-Dimethylphenol	105-67-9	100.17	EDQL EPA Region 5 (1998)	15	Ohio Administrative Code		--	15	Ohio Administrative Code
Di-n-butylphthalate	84-74-2	3	EDQL EPA Region 5 (1998)	UR	Ohio Administrative Code		--	3	EDQL EPA Region 5 (1998)
Di-n-octylphthalate	117-84-0	30	EDQL EPA Region 5 (1998)		--		--	30	EDQL EPA Region 5 (1998)
1,3-Dinitrobenzene	99-65-0	2.36	EDQL EPA Region 5 (1998)		--		--	2.36	EDQL EPA Region 5 (1998)
2,4-Dinitrophenol	51-28-5	4.07	EDQL EPA Region 5 (1998)		--		--	4.07	EDQL EPA Region 5 (1998)
2,4-Dinitrotoluene	121-14-2	230	EDQL EPA Region 5 (1998)	44	Ohio Administrative Code		--	44	Ohio Administrative Code
2,6-Dinitrotoluene	606-20-2	42	EDQL EPA Region 5 (1998)	81	Ohio Administrative Code		--	42	EDQL EPA Region 5 (1998)
4,6-Dinitro-2-methylphenol	534-52-1	2.3	EDQL EPA Region 5 (1998)		--		--	2.3	EDQL EPA Region 5 (1998)
Endosulfan, mixed isomers					--	0.051	Tier II (Suter & Tsao 1996)	0.051	Tier II (Suter & Tsao 1996)
Endosulfan, alpha	959-98-8	0.003	EDQL EPA Region 5 (1998)		--		--	0.003	EDQL EPA Region 5 (1998)
Ethylene Glycol	107-21-1			140000	Ohio Administrative Code		--	140000	Ohio Administrative Code
Endosulfan, beta	33213-65-9	0.003	EDQL EPA Region 5 (1998)		--		--	0.003	EDQL EPA Region 5 (1998)
Endrin	72-20-8	0.002		0.036	Ohio Administrative Code	0.061	in Suter & Tsao 1996)	0.002	
Ethylbenzene	100-41-4	17.2	EDQL EPA Region 5 (1998)	61	Ohio Administrative Code	7.3	Tier II (Suter & Tsao 1996)	7.3	Tier II (Suter & Tsao 1996)
Fluoranthene	206-44-0	8.1	EDQL EPA Region 5 (1998)	0.48	Ohio Administrative Code	6.16	in Suter & Tsao 1996)	0.48	Ohio Administrative Code
Fluorene	86-73-7	3.9	EDQL EPA Region 5 (1998)	19	Ohio Administrative Code	3.9	OSWER 1996 (in Suter & Tsao 1996)	3.9	EDQL EPA Region 5 (1998)
gamma-BHC (lindane)	58-89-9	0.01	EDQL EPA Region 5 (1998)	0.057	Ohio Administrative Code	0.08	in Suter & Tsao 1996)	0.01	EDQL EPA Region 5 (1998)
Heptachlor	76-44-8	0.00039	EDQL EPA Region 5 (1998)		--	12	Tier II (Suter & Tsao 1996)	0.00039	EDQL EPA Region 5 (1998)
Hexachlorobenzene	118-74-1	0.00024	EDQL EPA Region 5 (1998)		--		--	0.00024	EDQL EPA Region 5 (1998)
Hexachlorobutadiene	87-68-3	0.223	EDQL EPA Region 5 (1998)		--		--	0.223	EDQL EPA Region 5 (1998)
Hexachlorocyclopentadiene	77-47-4	77.04	EDQL EPA Region 5 (1998)		--		--	77.04	EDQL EPA Region 5 (1998)
Hexachloroethane	67-72-1	30.5	EDQL EPA Region 5 (1998)		--	12	OSWER 1996 (in Suter & Tsao 1996)	12	OSWER 1996 (in Suter & Tsao 1996)
Hexane	110-54-3				--	0.58	Tier II (Suter & Tsao 1996)	0.58	Tier II (Suter & Tsao 1996)

Appendix Table 7A.20. Ecological Biotic Screening Values for Chemical Constituents in Surface Water at the Luckey Site, Luckey, Ohio (continued)

Chemicals	CAS Number	Ecological Data Quality Levels (EDQL)[a] Number (ug/L)	Source	Ohio EPA OMZA (Outside Mixing Zone Average)[b] Number (ug/L)	Source	Suter and Tsao 1996[c] Number (ug/L)	Source	Prefered Surface Water Value[d] Number (ug/L)	Source
2-Hexanone	591-78-6	1710	EDQL EPA Region 5 (1998)		--	99	Tier II (Suter & Tsao 1996)	99	Tier II (Suter & Tsao 1996)
HMX Octahydro-1,3,5,7-	2691-41-0				--		--	0	--
Indeno(1,2,3-cd)pyrene	193-39-5	4.31	EDQL EPA Region 5 (1998)		--		--	4.31	EDQL EPA Region 5 (1998)
Isophorone	78-59-1	900	EDQL EPA Region 5 (1998)	920	Ohio Administrative Code		--	900	EDQL EPA Region 5 (1998)
Isopropylbenzene	98-82-8			4.8	Ohio Administrative Code		--	4.8	Ohio Administrative Code
Malathion	121-75-5				--		--	0	Tier II (Region 5)
Methoxychlor	72-43-5	0.005	EDQL EPA Region 5 (1998)		--	0.019	Tier II (Suter & Tsao 1996)	0.005	EDQL EPA Region 5 (1998)
Methylene chloride	75-09-2	430	EDQL EPA Region 5 (1998)	1900	Ohio Administrative Code	2200	Tier II (Suter & Tsao 1996)	430	EDQL EPA Region 5 (1998)
1-Methylnaphthalene	90-12-0				--	2.1	Tier II (Suter & Tsao 1996)	2.1	Tier II (Suter & Tsao 1996)
2-Methylnaphthalene	91-57-6	329.55	EDQL EPA Region 5 (1998)		--		--	329.55	EDQL EPA Region 5 (1998)
2-Methylphenol	95-48-7			ID	Ohio Administrative Code	13	Tier II (Suter & Tsao 1996)	13	Tier II (Suter & Tsao 1996)
4-Methylphenol	106-44-5			53	Ohio Administrative Code		--	53	Ohio Administrative Code
4-Methyl-2-pentanone	108-10-1	3680	EDQL EPA Region 5 (1998)		--		--	3680	EDQL EPA Region 5 (1998)
Naphthalene	91-20-3	44	EDQL EPA Region 5 (1998)	21	Ohio Administrative Code	12	Tier II (Suter & Tsao 1996)	12	Tier II (Suter & Tsao 1996)
2-Nitroaniline	88-74-4				--		--	0	
3-Nitroaniline	99-09-2				--		--	0	
4-Nitroaniline	100-01-6				--		--	0	
Nitrobenzene	99-95-3			330	Ohio Administrative Code		--	330	Ohio Administrative Code
Nitrobenzene	99-95-3			330	Ohio Administrative Code		--	330	Ohio Administrative Code
Nitrocellulose	9004-70-0				--		--	0	--
Nitroglycerin	55-63-0				--		--	0	--
Nitroquanidine					--		--	0	--
2-Nitrophenol	88-75-5	13.5	EDQL EPA Region 5 (1998)	73	Ohio Administrative Code		--	13.5	EDQL EPA Region 5 (1998)
4-Nitrophenol	100-02-7	35	EDQL EPA Region 5 (1998)		--	300	Tier II (Suter & Tsao 1996)	35	EDQL EPA Region 5 (1998)
m-Nitrotoluene	99-08-1				--		--	0	--
N-nitroso-di-n-dipropylamine	621-64-7				--		--	0	
N-nitrosodiphenylamine	86-30-6	13	EDQL EPA Region 5 (1998)		--	210	Tier II (Suter & Tsao 1996)	13	EDQL EPA Region 5 (1998)
o-Nitrotoluene	88-72-2				--		--	0	--
2-Octanone	111-13-7				--	8.3	Tier II (Suter & Tsao 1996)	8.3	Tier II (Suter & Tsao 1996)
2,2'- oxybis(1-Chloropropane)	108-60-1	20	EDQL EPA Region 5 (1998)		--		--	20	EDQL EPA Region 5 (1998)
Parathion	56-38-2	0.008	EDQL EPA Region 5 (1998)	0.013	Ohio Administrative Code		--	0.008	EDQL EPA Region 5 (1998)
Pentachlorobenzene	608-93-5	0.47	EDQL EPA Region 5 (1998)		--		--	0.47	EDQL EPA Region 5 (1998)
Pentachlorophenol	87-86-5	5.23	EDQL EPA Region 5 (1998)	11[t]	Ohio Administrative Code		--	5.23	EDQL EPA Region 5 (1998)
Phenanthrene	85-01-8	2.1	EDQL EPA Region 5 (1998)		--	6.3	in Suter & Tsao 1996)	2.1	EDQL EPA Region 5 (1998)
1-Pentanol	71-41-0				--	110	Tier II (Suter & Tsao 1996)	110	Tier II (Suter & Tsao 1996)
Phenol	108-95-2	100	EDQL EPA Region 5 (1998)		--	110	Suter & Tsao 1996)	100	EDQL EPA Region 5 (1998)
p-Nitrotoluene	99-99-0				--		--	0	--
Polychlorinated biphenyls	1336-36-3	0.000029	EDQL EPA Region 5 (1998)		--		--	0.000029	EDQL EPA Region 5 (1998)
Polynuclear aromatic					--		--	0	
2-Propanol	67-63-0				--	7.5	Tier II (Suter & Tsao 1996)	7.5	Tier II (Suter & Tsao 1996)
Propylene glycol	57-55-6			78000	Ohio Administrative Code		--	78000	Ohio Administrative Code
Pyrene	129-00-0	0.3	EDQL EPA Region 5 (1998)	4.6	Ohio Administrative Code		--	0.3	EDQL EPA Region 5 (1998)
RDX (cyclonite) Hexahydro-1,3,5-	121-82-4				--		--	0	--
Styrene	100-42-5	56	EDQL EPA Region 5 (1998)	32	Ohio Administrative Code		--	32	Ohio Administrative Code
Tetryl	479-45-8				--		--	0	--
Tetrachloroethene	127-18-4	8.9	EDQL EPA Region 5 (1998)		--	98	Tier II (Suter & Tsao 1996)	8.9	EDQL EPA Region 5 (1998)

Appendix Table 7A.20. Ecological Biotic Screening Values for Chemical Constituents in Surface Water at the Luckey Site, Luckey, Ohio (continued)

Chemicals	CAS Number	Ecological Data Quality Levels (EDQL)[a]		Ohio EPA OMZA (Outside Mixing Zone Average)[b]		Suter and Tsao 1996[c]		Prefered Surface Water Value[d]	
		Number (ug/L)	Source	Number (ug/L)	Source	Number (ug/L)	Source	Number (ug/L)	Source
1,1,1,2-Tetrachoroethane	630-20-6	90.25	EDQL EPA Region 5 (1998)	85	Ohio Administrative Code		--	85	Ohio Administrative Code
1,1,2,2-Tetrachloroethane	79-34-5	13	EDQL EPA Region 5 (1998)	260	Ohio Administrative Code	610	Tier II (Suter & Tsao 1996)	13	EDQL EPA Region 5 (1998)
Tetrachloroethylene	127-18-4	8.9	EDQL EPA Region 5 (1998)	53	Ohio Administrative Code		--	8.9	EDQL EPA Region 5 (1998)
Tetrachloromethane	56-23-5	5.9	EDQL EPA Region 5 (1998)		--	240	OSWER 1996 (in Suter & Tsao 1996)	5.9	EDQL EPA Region 5 (1998)
Toluene	108-88-3	253	EDQL EPA Region 5 (1998)	62	Ohio Administrative Code	9.8	Tier II (Suter & Tsao 1996)	9.8	Tier II (Suter & Tsao 1996)
Toxaphene	8001-35-2	0.0002	EDQL EPA Region 5 (1998)		--		--	0.0002	EDQL EPA Region 5 (1998)
Tribromomethane	75-25-2	466	EDQL EPA Region 5 (1998)		--	320	OSWER 1996 (in Suter & Tsao 1996)	320	OSWER 1996 (in Suter & Tsao 1996)
Trichloroethene	79-01-6	75	EDQL EPA Region 5 (1998)		--	47	Tier II (Suter & Tsao 1996)	47	Tier II (Suter & Tsao 1996)
1,2,4-Trichlorobenzene	120-82-1	69.2	EDQL EPA Region 5 (1998)		--	110	OSWER 1996 (in Suter & Tsao 1996)	69.2	EDQL EPA Region 5 (1998)
1,1,1-Trichloroethane	71-55-6	88	EDQL EPA Region 5 (1998)	76	Ohio Administrative Code	11	Tier II (Suter & Tsao 1996)	11	Tier II (Suter & Tsao 1996)
1,1,2-Trichloroethane	79-00-5	650	EDQL EPA Region 5 (1998)		--	1200	Tier II (Suter & Tsao 1996)	650	EDQL EPA Region 5 (1998)
Trichloroethylene	79-01-6	75	EDQL EPA Region 5 (1998)	220	Ohio Administrative Code		--	75	EDQL EPA Region 5 (1998)
2,4,5-Trichlorophenol	95-95-4				--		--	0	
2,4,6-Trichlorophenol	88-06-2	2	EDQL EPA Region 5 (1998)	4.9	Ohio Administrative Code		--	2	EDQL EPA Region 5 (1998)
1,2,4-Trimethylbenzene	95-63-6			15	Ohio Administrative Code		--	15	Ohio Administrative Code
1,3,5-Trimethylbenzene	108-67-8			26	Ohio Administrative Code		--	26	Ohio Administrative Code
1,3,5-Trinitrobenzene	99-35-4				--		--	0	
2,4,6-Trinitrotoluene	118-96-7				--		--	0	--
Urea	57-13-6			17000	Ohio Administrative Code		--	17000	Ohio Administrative Code
Vinyl acetate	108-05-4	248.03	EDQL EPA Region 5 (1998)		--	16	Tier II (Suter & Tsao 1996)	16	Tier II (Suter & Tsao 1996)
Vinyl chloride	75-01-4	9.2	EDQL EPA Region 5 (1998)		--		--	9.2	EDQL EPA Region 5 (1998)
o-Xylene	95-47-6			35	Ohio Administrative Code		--	35	Ohio Administrative Code
m-Xylene	108-38-3			67	Ohio Administrative Code	1.8	Tier II (Suter & Tsao 1996)	1.8	Tier II (Suter & Tsao 1996)
p-Xylene	106-42-3			18	Ohio Administrative Code		--	18	Ohio Administrative Code
Xylenes (total)	1330-20-7	117	EDQL EPA Region 5 (1998)		--	13	Tier II (Suter & Tsao 1996)	13	Tier II (Suter & Tsao 1996)

[a] EPA, 1998d. RCRA QAPP Instructions, USEPA Region 5, Chicago, IL, April 1998 revision. Http://www.epa.gov/reg5rcra/wptdiv/cars/cars.htm
[b] Ohio EPA, Division of Surface Water. 1999. Ohio Administrative Code, Chapters 3745-1, 3745-2, May 11
[c] Suter, G. W., C.L. Tsao, Toxicological Benchmarks for Screening Potential Contaminants of Concern for Effects on Aquatic Biota: 1996 Revision, ES/ER/TM-96/R2
Lockheed Martin Energy Systems, Oak Ridge National Laboratory
[d] The Prefered Surface Water Value is the lowest among the Ecotox, the Ohio Administrative Code, and Suter and Tsao Surface Water Values
[e] Hardness adjusted to 100 mg/L CaCO3
[t] pH dependent, unless otherwise specified value is adjusted to 7.5 pH for all Ohio Administrative Code criteria
-- = no value

Appendix Table 7A.21. Ecological Biotic Screening Values for Radionuclides in Sediment at the Luckey Site, Luckey, Ohio

Analytes remaining after background and abiotic screens	CAS Number	Screening Value (pCi/g)	Reference
Radionuclides			
Actinium-228[a]	14331-83-0	5.47E+04	Bechtel Jacobs 1998
Cesium-137	10045-97-3	9.32E+04	Bechtel Jacobs 1998
Radium-226	13982-63-3	2.82E+04	Bechtel Jacobs 1998
Thorium-230	14269-63-7	1.12E+08	Bechtel Jacobs 1998
Uranium-233/234	U-233/234	1.00E+08	Bechtel Jacobs 1998
Uranium-234	13966-29-5	1.00E+08	Bechtel Jacobs 1998
Uranium-235	15117-96-1	2.96E+05	Bechtel Jacobs 1998

[a] Th-232 daughter

Appendix Table 7A.22. Ecological Biotic Screening Values for Radionuclides in Surface Water at the Luckey Site, Luckey, Ohio

Analytes remaining after background and abiotic screens	CAS Number	Screening Value (pCi/L)	References
Radionuclides			
Potassium-40	13966-00-2	7.61E+02	Bechtel Jacobs 1998
Radium-226	13982-63-3	2.82E+04	Bechtel Jacobs 1998
Radium-228[a]	15262-20-1	4.78E+02	Bechtel Jacobs 1998
Thorium-227[b]	15623-47-9	2.82E+04	Bechtel Jacobs 1998
Thorium-228	14274-82-9	6.01E+01	Bechtel Jacobs 1998
Thorium-232	7440-29-1	4.78E+02	Bechtel Jacobs 1998
Uranium-233/234	U-233/234	4.00E+03	Bechtel Jacobs 1998
Uranium-235	15117-96-1	4.37E+03	Bechtel Jacobs 1998
Uranium-238	24678-82-8	4.55E+03	Bechtel Jacobs 1998

[a] Thorium-232 daughter

[b] Radium-226 daughter

Appendix Table 7A.23. Ecological Biotic Screening Table for Surface Soil at Luckey Site

Analytes remaining after the background and abiotic screens	Surface Soil Site-wide EPC (mg/kg)	Screening Value (mg/L)	References	Is EPC above or below the screening value?	CPEC?
Inorganics					
Antimony	1.50E+00	1.42E-01	EDQL EPA Region 5 (1998)	above	yes
Beryllium	7.65E+02	none	none	no screening value	yes
Boron	3.08E+01	5.00E-01	Soil, LOEC	above	yes
Cadmium	8.35E+01	2.22E-03	EDQL EPA Region 5 (1998)	above	yes
Calcium	9.77E+04	none	none	no screening value	yes
Chromium	5.08E+01	4.00E-01	EDQL EPA Region 5 (1998)	above	yes
Copper	8.55E+01	3.13E-01	EDQL EPA Region 5 (1998)	above	yes
Lead	1.38E+03	5.37E-02	EDQL EPA Region 5 (1998)	above	yes
Magnesium	3.14E+04	none	none	no screening value	yes
Mercury	5.40E-01	1.00E-01	EDQL EPA Region 5 (1998)	above	yes
Nickel	6.35E+01	1.36E+01	EDQL EPA Region 5 (1998)	above	yes
Selenium	2.70E+00	2.77E-02	EDQL EPA Region 5 (1998)	above	yes
Silicon	4.31E+03	none	none	no screening value	yes
Sodium	4.08E+03	none	none	no screening value	yes
Strontium	5.74E+02	none	none	no screening value	yes
Thallium	2.40E+00	5.69E-02	EDQL EPA Region 5 (1998)	above	yes
Zinc	5.09E+02	6.62E+00	EDQL EPA Region 5 (1998)	above	yes
Anions					
Chloride	1.78E+02	none	none	no screening value	yes
Fluoride	1.44E+02	none	none	no screening value	yes
Nitrate, as N	3.19E+02	none	none	no screening value	yes
Sulfate	2.48E+04	none	none	no screening value	yes
Miscellaneous					
Ammonia, nitrogen	3.07E+01	none	none	no screening value	yes
Organics					
Semi-Volatiles					
Acenaphthene	8.23E-02	2.00E+01	Soil, LOEC	below	no
Acenaphthylene	9.19E-02	none	none	no screening value	yes
Anthracene	4.96E+01	1.48E+03	EDQL EPA Region 5 (1998)	below	no
Benzo(a)anthracene	4.72E+01	5.21E+00	EDQL EPA Region 5 (1998)	above	yes
Benzo(a)pyrene	3.91E+01	1.52E+00	EDQL EPA Region 5 (1998)	above	yes
Benzo(b)fluoranthene	5.99E+01	5.98E+01	EDQL EPA Region 5 (1998)	above	yes
Benzo(g,h,i)perylene	1.81E+00	1.19E+02	EDQL EPA Region 5 (1998)	below	no
Benzo(k)fluoranthene	1.75E+00	1.48E+02	EDQL EPA Region 5 (1998)	below	no
bis(2-ethylhexyl)phthalate	2.36E+00	9.26E-01	EDQL EPA Region 5 (1998)	above	yes
Chrysene	4.75E+01	4.73E+00	EDQL EPA Region 5 (1998)	above	yes
Dibenzo(a,h)anthracene	4.58E-01	1.84E+01	EDQL EPA Region 5 (1998)	below	no
Fluoranthene	1.52E+02	1.22E+02	EDQL EPA Region 5 (1998)	above	yes
Fluorene	4.30E+01	1.22E+02	EDQL EPA Region 5 (1998)	below	no
Indeno(1,2,3-cd)pyrene	2.01E+00	1.09E+02	EDQL EPA Region 5 (1998)	below	no
Phenanthrene	1.77E+02	4.57E+01	EDQL EPA Region 5 (1998)	above	yes
Pyrene	1.02E+02	7.85E+01	EDQL EPA Region 5 (1998)	above	yes

Appendix Table 7A.23. Ecological Biotic Screening Table for Surface Soil at Luckey Site (continued)

Analytes remaining after the background and abiotic screens	Surface Soil Site-wide EPC (mg/kg)	Screening Value (mg/L)	References	Is EPC above or below the screening value?	CPEC?
Volatiles					
Acetone	1.93E-02	none	none	no screening value	yes
Benzene	5.70E-03	2.55E-01	EDQL EPA Region 5 (1998)	below	no
Carbon disulfide	2.63E-02	9.41E-02	EDQL EPA Region 5 (1998)	below	no
Chloroform	5.80E-04	1.19E+00	EDQL EPA Region 5 (1998)	below	no
Ethylbenzene	9.10E-03	5.16E+00	EDQL EPA Region 5 (1998)	below	no
Methylene chloride	4.70E-03	none	none	no screening value	yes
4-Methyl-2-pentanone	1.95E-02	none	none	no screening value	yes
Toluene	1.82E+02	5.45E+00	EDQL EPA Region 5 (1998)	above	yes
1,1,1-Trichloroethane	7.30E-03	2.98E+01	EDQL EPA Region 5 (1998)	below	no
Trichloroethene	1.30E-03	1.00E+02	No soil, only solution	below	no
Xylenes (total)	1.50E-02	1.00E+01	EDQL EPA Region 5 (1998)	below	no
Pesticides/PCBs					
Aroclor-1254	3.20E+00	none	none	no screening value	yes
Aroclor-1260	2.31E-02	none	none	no screening value	yes

EPC = Exposure point concentration
CPEC = contaminant of potential ecological concern
Yes = Site-wide EPC > screening value
No = Site-wide EPC < screening value

Appendix Table 7A.24. Ecological Biotic Screening Table for Sediment at Luckey Site

Analytes remaining after background and abiotic screens	Sediment Site-wide EPC (mg/kg)	Screening Value (mg/kg)	Reference	Is EPC above or below the screening value?	CPEC?
Inorganics					
Aluminum	1.22E+04	none	none	no screening value	yes
Barium	1.53E+02	none	none	no screening value	yes
Beryllium	2.02E+03	none	none	no screening value	yes
Boron	3.70E+01	none	none	no screening value	yes
Cadmium	5.68E+01	5.96E-01	EDQL EPA Region 5 (1998)	above	yes
Calcium	1.66E+05	none	none	no screening value	yes
Chromium	2.32E+01	2.60E+01	EDQL EPA Region 5 (1998)	below	no
Copper	2.08E+02	1.60E+01	EDQL EPA Region 5 (1998)	above	yes
Iron	2.21E+04	2.00E+01	Ontario MOE low	above	yes
Lead	5.21E+02	3.10E+01	EDQL EPA Region 5 (1998)	above	yes
Magnesium	5.63E+04	none	none	no screening value	yes
Mercury	2.50E-01	1.50E-01	ER-L (Region 5)	above	yes
Molybdenum	4.66E+00	none	none	no screening value	yes
Nickel	4.21E+01	1.60E+01	EDQL EPA Region 5 (1998)	above	yes
Silicon	3.25E+03	none	none	no screening value	yes
Silver	2.83E+00	5.00E-01	EDQL EPA Region 5 (1998)	above	yes
Sodium	9.41E+02	none	none	no screening value	yes
Strontium	3.35E+02	none	none	no screening value	yes
Zinc	5.49E+02	1.20E+02	EDQL EPA Region 5 (1998)	above	yes
Anions					
Chloride	7.79E+02	none	none	no screening value	yes
Fluoride	1.63E+02	none	none	no screening value	yes
Nitrate, as N	7.29E+00	none	none	no screening value	yes
Sulfate	4.10E+03	none	none	no screening value	yes
Miscellaneous					
Ammonia, nitrogen	7.39E+01	none	none	no screening value	yes
Organics					
Semi-Volatiles					
Acenaphthene	4.89E-02	6.71E+00	EDQL EPA Region 5 (1998)	below	no
Anthracene	1.16E-01	4.69E+01	EDQL EPA Region 5 (1998)	below	no
Benzo(a)anthracene	1.83E+00	3.17E+01	EDQL EPA Region 5 (1998)	below	no
Benzo(a)pyrene	1.78E+00	3.19E+01	EDQL EPA Region 5 (1998)	below	no
Benzo(b)fluoranthene	2.25E+00	1.04E+04	EDQL EPA Region 5 (1998)	below	no
Benzo(g,h,i)perylene	4.48E-01	1.70E+02	EDQL EPA Region 5 (1998)	below	no
Benzo(k)fluoranthene	1.13E+00	2.40E+02	EDQL EPA Region 5 (1998)	below	no
bis(2-ethylhexyl)phthalate	5.19E+00	1.82E+02	EDQL EPA Region 5 (1998)	below	no
Carbazole	1.64E-01	none	none	no screening value	yes
Chrysene	2.05E+00	5.71E+01	EDQL EPA Region 5 (1998)	below	no
Dibenzo(a,h)anthracene	9.20E-03	6.22E+00	EDQL EPA Region 5 (1998)	below	no
Dibenzofuran	1.89E-02	1.52E+03	EDQL EPA Region 5 (1998)	below	no
3,3'-Dichlorobenzidine	4.20E-01	2.82E+01	EDQL EPA Region 5 (1998)	below	no

Appendix Table 7A.24. Ecological Biotic Screening Table for Sediment at Luckey Site (continued)

Analytes remaining after background and abiotic screens	Sediment Site-wide EPC (mg/kg)	Screening Value (mg/kg)	Reference	Is EPC above or below the screening value?	CPEC?
Diethylphthalate	4.82E-02	8.04E+00	EDQL EPA Region 5 (1998)	below	no
Di-n-octylphthalate	4.79E-01	4.06E+04	EDQL EPA Region 5 (1998)	below	no
Fluoranthene	4.83E+00	1.11E+02	SQuiRTs TEL (1998)	below	no
Fluorene	6.40E-02	1.90E+01	NOAA ER-L	below	no
Indeno(1,2,3-c,d)pyrene	4.52E-01	2.00E+02	EDQL EPA Region 5 (1998)	below	no
Phenanthrene	3.63E+00	4.19E+01	EDQL EPA Region 5 (1998)	below	no
Pyrene	3.64E+00	5.30E+01	EDQL EPA Region 5 (1998)	below	no
Volatiles					
Acetone	2.21E-01	4.53E+02	EDQL EPA Region 5 (1998)	below	no
Benzene	3.13E-03	5.70E+01	EPA SQB (Region 5)	below	no
2-Butanone	7.37E-03	1.37E+02	EDQL EPA Region 5 (1998)	below	no
Carbon disulfide	1.48E-02	1.34E+02	EDQL EPA Region 5 (1998)	below	no
Chloroethane	1.03E-02	5.86E+04	EDQL EPA Region 5 (1998)	below	no
Ethylbenzene	3.20E-03	1.00E-01	EDQL EPA Region 5 (1998)	below	no
Methylene chloride	8.60E-04	1.26E+03	EDQL EPA Region 5 (1998)	below	no
Toluene	5.46E-02	6.70E+02	EPA SQB (Region 5)	below	no
Xylenes (total)	9.90E-03	2.50E+01	EPA SQB (Region 5)	below	no

EPC = Exposure point concentration
CPEC = contaminant of potential ecological concern
Yes = EPC highest value > screening value
No = EPC highest value < screening value

Appendix Table 7A.25. Ecological Biotic Screening Table for Surface water at Luckey Site

Analytes remaining after background and abiotic screens	Surfacewater Site-wide EPC (mg/L)	Screening Value (mg/L)	References	Is EPC above or below the screening value?	CPEC?
Inorganics					
Aluminum	1.09	8.70E-02	NAWQC (Suter & Tsao 1996)	above	yes
Arsenic	0.00391	5.30E-02	EDQL EPA Region 5 (1998)	below	no
Barium	0.188	3.90E-03	Tier II (Region 5)	above	yes
Beryllium	0.0836	6.60E-04	Tier II (Suter & Tsao 1996)	above	yes
Boron	0.235	1.60E-03	Tier II (Suter & Tsao 1996)	above	yes
Cadmium	0.00106	7.00E-04	EDQL EPA Region 5 (1998)	above	yes
Calcium	1.18E+02	none	none	no screening value	yes
Chromium	2.27E-03	4.20E-02	EDQL EPA Region 5 (1998)	below	no
Cobalt	1.47E-03	3.00E-03	Tier II (Region 5)	below	no
Copper	2.33E-02	5.00E-03	EDQL EPA Region 5 (1998)	above	yes
Iron	2.10E+00	1.00E+00	AWQC (Region 5)	above	yes
Lead	4.58E-02	1.30E-03	EDQL EPA Region 5 (1998)	above	yes
Magnesium	6.76E+01	none	none	no screening value	yes
Manganese	6.62E-01	8.00E-02	Tier II (Region 5)	above	yes
Mercury	1.30E-04	1.30E-06	EDQL EPA Region 5 (1998)	above	yes
Molybdenum	2.26E-02	1.10E-01	Ohio Administrative Code	below	no
Nickel	4.27E-02	2.90E-02	EDQL EPA Region 5 (1998)	above	yes
Selenium	2.50E-03	5.00E-03	EDQL EPA Region 5 (1998)	below	no
Silver	8.80E-04	6.00E-05	Ohio Administrative Code	above	yes
Thallium	4.75E-03	6.00E-04	EDQL EPA Region 5 (1998)	above	yes
Silicon	6.40E+00	none	none	no screening value	yes
Sodium	5.73E+02	none	none	no screening value	yes
Strontium	1.04E+01	7.70E-01	Ohio Administrative Code	above	yes
Vanadium	3.31E-03	1.90E-02	EDQL EPA Region 5 (1998)	below	no
Zinc	4.63E-02	5.90E-02	EDQL EPA Region 5 (1998)	below	no
Anions					
Chloride	9.61E+02	none	none	no screening value	yes
Fluoride	9.11E+00	none	none	no screening value	yes
Nitrate, as N	1.31E+00	none	none	no screening value	yes
Phosphorus	5.95E-02	none	none	no screening value	yes
Sulfate	3.78E+02	none	none	no screening value	yes

Appendix Table 7A.25. Ecological Biotic Screening Table for Surface water at Luckey Site (continued)

Analytes remaining after background and abiotic screens	Surfacewater Site-wide EPC (mg/L)	Screening Value (mg/L)	References	Is EPC above or below the screening value?	CPEC?
Miscellaneous					
Alkalinity	3.69E+02	none	none	no screening value	yes
Ammonia, nitrogen	1.08E+01	none	none	no screening value	yes
Organics					
Semi-Volatiles					
Acetone	1.88E-02	1.50E+00	Tier II (Suter & Tsao 1996)	below	no
bis(2-ethylhexyl)phthalate	2.26E-02	2.10E-03	EDQL EPA Region 5 (1998)	above	yes
Bromodichloromethane	6.00E-01	3.40E-01	Ohio Administrative Code	above	yes
2-Butanone	5.75E-03	7.10E+00	EDQL EPA Region 5 (1998)	below	no
Chloroform	7.60E-04	2.80E-02	Tier II (Suter & Tsao 1996)	below	no
Dibromochloromethane	3.40E-03	3.20E-01	Ohio Administrative Code	below	no
Diethyl phthalate	5.10E-03	3.00E-03	EDQL EPA Region 5 (1998)	above	yes
Di-n-octylphthalate	1.02E-02	3.00E-02	EDQL EPA Region 5 (1998)	below	no
m,p-cresol	1.11E-02	none	none	no screening value	yes
Phenol	6.40E-03	1.00E-01	EDQL EPA Region 5 (1998)	below	no
Tetrachloroethene	1.30E-03	8.90E-03	EDQL EPA Region 5 (1998)	below	no
Tribromomethane	6.00E-03	3.20E-01	Tier II (Region 5)	below	no

EPC = Exposure point concentration
CPEC = contaminant of potential ecological concern
Yes = EPC highest value > screening value
No = EPC highest value < screening value

Appendix Table 7A.26. Ecological Biotic Screening Table for Radionuclides in Sediment at Luckey Site

Analytes remaining after background and abiotic screens	Sediment Site-wide EPC (pCi/g)	Screening Value (pCi/g)	Reference	Is EPC above or below the screening value?	CPEC?
Radionuclides					
Actinium-228[a]	9.94E-01	5.47E+04	Bechtel Jacobs 1998	below	no
Cesium-137	2.50E-01	9.32E+04	Bechtel Jacobs 1998	below	no
Radium-226	4.17E+00	2.82E+04	Bechtel Jacobs 1998	below	no
Thorium-230	2.12E+00	1.12E+08	Bechtel Jacobs 1998	below	no
Uranium-233/234	1.73E+00	1.00E+08	Bechtel Jacobs 1998	below	no
Uranium-234	2.13E+00	1.00E+08	Bechtel Jacobs 1998	below	no
Uranium-235	1.10E-01	2.96E+05	Bechtel Jacobs 1998	below	no

[a] Th-232 daughter
EPC = Exposure point concentration
CPEC = contaminant of potential ecological concern
Yes = EPC highest value > screening value
No = EPC highest value < screening value

Appendix Table 7A.27. Ecological Biotic Screening Table for Radionuclides in Surface Water at the Luckey Site

Analytes remaining after background and abiotic screens	Surface Water Site-wide EPC (pCi/L)	Screening Value (pCi/L)	References	Is EPC above or below the screening value?	CPEC?
Radionuclides					
Potassium-40	2.29E+02	7.61E+02	Bechtel Jacobs 1998	below	no
Radium-226	2.52E+00	2.82E+04	Bechtel Jacobs 1998	below	no
Radium-228[a]	4.00E-01	4.78E+02	Bechtel Jacobs 1998	below	no
Thorium-227[b]	4.40E-01	2.82E+04	Bechtel Jacobs 1998	below	no
Thorium-228	1.80E-01	6.01E+01	Bechtel Jacobs 1998	below	no
Thorium-232	5.00E-02	4.78E+02	Bechtel Jacobs 1998	below	no
Uranium-233/234	1.71E+00	4.00E+03	Bechtel Jacobs 1998	below	no
Uranium-235	3.00E-01	4.37E+03	Bechtel Jacobs 1998	below	no
Uranium-238	1.41E+00	4.55E+03	Bechtel Jacobs 1998	below	no

[a] Thorium-232 daughter

[b] Radium-226 daughter

EPC = Exposure point concentration

CPEC = contaminant of potential ecological concern

Yes = EPC highest value > screening value

No = EPC highest value < screening value

Appendix Table 7A.28. Receptor Parameters for Short-tailed shrew

Parameter	Definition	Receptor: Short-tailed shrew *(Blarina brevicauda)* Value	Reference / Notes
BW	Body weight (kg)	0.017	Arithmetic mean of means, both sexes, fall and summer, western Pennsylvania (EPA 1993c)
HR	Home range (ha)	0.36	Maximum, adult female, summer, Michigan (EPA 1993c)
TUF	Temporal use factor	1	Will be 1 unless a specific value exists for a receptor
IR_F	Food ingestion rate (g/g-d = kg/kgBW/d)[a]	0.56	Arithmetic mean of adults, both sexes, 25°C, Wisconsin (EPA 1993c)
PF	Plant fraction of diet	0.13	June through October, New York (EPA 1993c); assuming vegetative parts and fungi
AF	Animal fraction of diet	0.87	June through October, New York (EPA 1993c); assuming 100% earthworms
SF	Soil fraction of diet	0.13	Talmage and Walton (1993c)
IR_w	Water ingestion rate (g/g-d = L/kgBW/d)	0.223	Adult, both sexes, Illinois, lab (EPA 1993c)

[a] Food ingestion rate (g/g-d) reexpressed as kg/kgBW/d is assumed not to include ingested soil; therefore, PF+AF = 1.0

Appendix Table 7A.29. Receptor Parameters for American Robin

Parameter	Definition	Receptor: American robin (*Turdus migratorius*) Value	Reference / Notes
BW	Body weight (kg)	0.08	Adult breeding female, New York (EPA 1993c)
HR	Home range (ha)	0.42	Adult, both sexes, spring, mean, Tennessee (EPA 1993c)
TUF	Temporal use factor	1	Will be 1 unless a specific value exists for a receptor
IR_F	Food ingestion rate (g/g-d = kg/kgBW/d)[a]	1.52	Mean, both sexes, free living, Kansas (EPA 1993c)
PF	Plant fraction of diet	0.5	Arithmetic mean, 4 seasons, central U.S., % of stomach contents that is plant material (EPA 1993c); assumed to be plant reproductive tissue
AF	Animal fraction of diet	0.5	Arithmetic mean, 4 seasons, central US, % of stomach contents that is animal material (EPA 1993c); assumed to be earthworm
SF	Soil fraction of diet	0.104	Value for American woodcock (*Scolopax minor*), estimated percent soil in diet, dry weight (Beyer et al. 1994)
IR_w	Water ingestion rate (g/g-d = L/kgBW/d)	0.14	Adult, both sexes, estimated (EPA 1993c)

[a] Food ingestion rate (g/g-d) reexpressed as kg/kgBW/d is assumed not to include ingested soil; therefore, PF+AF = 1.0

Appendix Table 7A.30. Receptor Parameters for Eastern Cottontail

Parameter	Definition	Receptor: Eastern cottontail (*Sylvilagus floridanus*) Value	Reference / Notes
BW	Body weight (kg)	1.23	Arithmetic mean of 4 seasonal means, adult, both sexes, Georgia, all areas (EPA 1993c)
HR	Home range (ha)	3	Arithmetic mean of winter means, adult, both sexes, Wisconsin (EPA 1993c)
TUF	Temporal use factor	1	Will be 1 unless a specific value exists for a receptor
IR_F	Food ingestion rate (g/g-d = kg/kgBW/d)[a]	0.205	Estimated by dividing free-living metabolic rate (203 kcal/kgBW/d) by the product of the energy composition of young grasses (1.3 kcal/g wet wt.) and assimilation efficiency (0.76) per Table 4-7 (EPA 1993c)
PF	Plant fraction of diet	1	EPA (1993c); assumed to be vegetative parts
AF	Animal fraction of diet	0	Not reported in EPA (1993c); assumed to be negligible
SF	Soil fraction of diet	0.063	Value for jackrabbit, estimated percent soil in diet, dry weight (EPA 1993c)
IR_w	Water ingestion rate (g/g-d = L/kgBW/d)	0.097	Adult, both sexes (EPA 1993c)

[a] Food ingestion rate (g/g-d) reexpressed as kg/kgBW/d is assumed not to include ingested soil; therefore, PF+AF = 1.0

Appendix Table 7A.31. Receptor Parameters for White-tailed Deer

Parameter	Definition	Receptor: White-tailed deer (*Odocoileus virginianus*) Value	Reference / Notes
BW	Body weight (kg)	56.5	Sample and Suter (1994)
HR	Home range (ha)	175	Geometric mean of minimum (59) and maximum (520) reported in Sample and Suter (1994)
TUF	Temporal use factor	1	Will be 1 unless a specific value exists for a receptor
IR_F	Food ingestion rate (g/g-d = kg/kgBW/d)[a]	0.031	1.74 kg/d (Sample and Suter 1994) converted to g/g-d (=kg/kgBW/d) by dividing by body weight of 56.5 kg
PF	Plant fraction of diet	1	Exclusively herbivorous (Sample and Suter 1994); assumed to be vegetative parts
AF	Animal fraction of diet	0	Not reported in Sample and Suter (1994); assumed to be negligible
SF	Soil fraction of diet	0.02	Sample and Suter (1994)
IR_w	Water ingestion rate (g/g-d = L/kgBW/d)	0.065	3.7 L/d (Sample and Suter 1994) converted to g/g-d (= L/kgBW/d) by dividing by body weight of 56.5 kg

[a] Food ingestion rate (g/g-d) reexpresses as kg/kgBW/d is assumed not to include ingested soil; therefore, PF+AF = 1.0

Appendix Table 7A.32. Receptor Parameters for Red-tailed Hawk

Parameter	Definition	Receptor: Red-tailed hawk *(Buteo jamaicensis)* Value	Reference / Notes
BW	Body weight (kg)	1.13	Arithmetic mean, female and male, Michigan (EPA 1993c)
HR	Home range (ha)	697	Mean, adults, both sexes, winter, Michigan (EPA 1993c)
TUF	Temporal use factor	1	Will be 1 unless a specific value exists for a receptor
IR_F	Food ingestion rate (g/g-d = kg/kgBW/d)[a]	0.11	Adult female, winter, Michigan, captive outdoors (EPA 1993c)
PF	Plant fraction of diet	0	Not stated in EPA (1993c); assumed to be negligible
AF	Animal fraction of diet	1	Prey brought to nests (EPA 1993c)
SF	Soil fraction of diet	0	Not stated in EPA (1993c) and Beyer et al. (1994); assumed to be negligible.
IR_w	Water ingestion rate (g/g-d = L/kgBW/d)	0.057	Arithmetic mean, both sexes, estimated (EPA 1993c)

[a] Food ingestion rate (g/g/-d) reexpressed as kg/kgBW/d is assumed not to include ingested soil; therefore, PF+AF = 1.0

Appendix Table 7A.33. Receptor Parameters for Red Fox

Parameter	Definition	Receptor: Red fox *(Vulpes vulpes)* Value	Reference / Notes
BW	Body weight (kg)	4.69	Arithmetic average of means, both sexes, spring, Illinois (EPA 1993c)
HR	Home range (ha)	596	Adult, female, spring, minimum, Minnesota (EPA 1993c)
TUF	Temporal use factor	1	Will be 1 unless a specific value exists for a receptor
IR_F	Food ingestion rate (g/g-d = kg/kgBW/d)[a]	0.069	Adult, non-breeding, North Dakota (EPA 1993c)
PF	Plant fraction of diet	0.046	Illinois farm/woods, spring, % wet weight (EPA 1993c); assumed to be reproductive parts
AF	Animal fraction of diet	0.954	Illinois farm/woods, spring, % wet weight, including unspecified/other (EPA 1993c)
SF	Soil fraction of diet	0.028	Estimated percent soil in diet, dry weight (EPA 1993c)
IR_w	Water ingestion rate (g/g-d = L/kgBW/d)	0.085	Arithmetic mean, adult, both sexes (EPA 1993c)

[a] Food ingestion rate (g/g-d) reexpressed as kg/kgBW/d is assumed not to include ingested soil; therefore, PF+AF = 1.0

Appendix Table 7A.34. Receptor Parameters for Great Blue Heron

Parameter	Definition	Receptor: Great blue heron *(Ardea herodias)* Value	Reference / Notes
BW	Body weight (kg)	2.39	Arithmetic mean, adult, both sexes, location not stated (EPA 1993c)
HR	Home range (km)	3.1	Foraging distance, mean, adults, both sexes, South Dakota, stream (EPA 1993c)
TUF	Temporal use factor	1	Will be 1 unless a specific value exists for a receptor
IR_F	Food ingestion rate (g/g-d = kg/kgBW/d)[a]	0.18	EPA (1993c)
PF	Plant fraction	0	None listed as dietary intake in EPA (1993c)
AF	Animal fraction	1	98% Aquatic vertebrates, lower Michigan, river (EPA 1993c)
SF	Soil fraction	0	Not reported in EPA (1993c); assumed to be negligible
IR_w	Water ingestion rate (g/g-d = L/kgBW/d)	0.045	Estimated (EPA 1993c)

[a] Food ingestion rate (g/g-d) reexpressed as kg/kgBW/d is assumed not to include ingested soil; therefore, PF+AF = 1.0

Appendix Table 7A.35. Radiological Exposure Parameters for Ecological Radiological Constituents at the Luckey Site, Luckey, Ohio

Ecological constituent of potential concern	External DCF[a]		Internal					n_g[e]				
	Soil	Water	E_a[b]	n_a[c]	E_b[d]	n_b[e]	E_g[f]	Worms, plants	Shrew	Robin, hawk	Fox, cottontail	Deer
Radionuclides												
Americium-241	2.02E-14	1.62E-13	5.48E+00	1.00E+00	5.20E-02	1.00E+00	3.30E-02	4.00E-02	5.00E-02	1.20E-01	1.60E-01	3.00E-01
Radium-226	1.43E-14	6.00E-14	4.77E+00	1.00E+00	4.00E-03	1.00E+00	7.00E-03	6.30E-01	7.90E-01	9.30E-01	9.30E-01	9.30E-01
Thorium-227	2.29E-13	9.24E-13	5.88E+00	1.00E+00	5.30E-02	1.00E+00	1.10E-01	8.05E-03	1.04E-02	4.00E-02	6.00E-02	1.50E-01
Thorium-230	5.52E-16	3.40E-15	4.67E+00	1.00E+00	1.50E-02	1.00E+00	2.00E-03	6.30E-01	7.90E-01	9.40E-01	9.40E-01	9.40E-01
Thorium-234	1.11E-14	6.60E-14	0.00E+00	1.00E+00	6.00E-02	1.00E+00	9.00E-03	6.30E-01	7.90E-01	9.40E-01	9.40E-01	9.40E-01
Uranium-233/234	6.26E-16	3.14E-15	4.82E+00	1.00E+00	1.30E-02	1.00E+00	2.00E-03	6.30E-01	7.90E-01	9.40E-01	9.40E-01	9.40E-01
Uranium-234	1.85E-16	1.51E-15	4.76E+00	1.00E+00	1.30E-02	1.00E+00	2.00E-03	6.30E-01	7.90E-01	9.40E-01	9.40E-01	9.40E-01
Uranium-238	4.77E-17	6.87E-16	4.19E+00	1.00E+00	1.00E-02	1.00E+00	1.00E-03	6.30E-01	7.90E-01	9.40E-01	9.40E-01	9.40E-01

[a] Dose conversion factor for exposure to soil contaminated to a depth of 15 cm (NRC 1992 or Table III.6, Eckerman and Ryman 1993 converted to Sv/d per Bq/m^3) or for immersion in water (Table III.2, Eckerman and Ryman 1993 converted to Sv/d per Bq/m^3)

[b] Alpha energy of the radionuclide (MeV) x proportion of disintegrations producing an α-particle (Table A.1, Eckerman and Ryman 1993)

[c] Absorbed fraction of energy E_α (assumed to be 1.0 for alpha radiations)

[d] Beta energy of the radionuclide (MeV) x proportion of disintegrations producing a β-particle (Table A.1, Eckerman and Ryman 1993)

[e] Absorbed fraction of energy E_β or E_γ (Blaylock, Frank, and O'Neal 1993; DOE 1997)

[f] Photon energy emitted during transition from a higher to a lower energy state (MeV) x proportion of disintegrations producing a γ-particle (Table A.1, Eckerman and Ryman 1993)

Appendix Table 7A.36. Toxicity Reference Values for Plants at the Luckey Site, Luckey, Ohio

Analytes	Plant TRV (mg/kg soil)	Reference
Inorganics		
Antimony	5.00E+00	Efroymson et al. (1997a)
Beryllium	1.00E+01	Efroymson et al. (1997a)
Boron	5.00E-01	Efroymson et al. (1997a)
Cadmium	4.00E+00	Efroymson et al. (1997a)
Calcium	No TRV	None
Chromium	1.00E+00	Efroymson et al. (1997a)
Copper	1.00E+02	Efroymson et al. (1997a)
Lead	5.00E+01	Efroymson et al. (1997a)
Magnesium	No TRV	None
Mercury	3.00E-01	Efroymson et al. (1997a)
Nickel	3.00E+01	Efroymson et al. (1997a)
Selenium	1.00E+00	Efroymson et al. (1997a)
Silicon	No TRV	None
Sodium	No TRV	None
Strontium	No TRV	None
Thallium	1.00E+00	Efroymson et al. (1997a)
Zinc	5.00E+01	Efroymson et al. (1997a)
Anions		
Chloride	No TRV	None
Fluoride	2.00E+02	Will and Suter 1995
Nitrate, as N	No TRV	None
Sulfate	No TRV	None
Miscellaneous		
Ammonia, nitrogen	No TRV	None
Organics		
Semi-Volatiles		
Acenaphthylene	No TRV	None
Acetone	1.00E+00	Efroymson et al. (1997a)
Benzo(a)anthracene	No TRV	None
Benzo(a)pyrene	No TRV	None
Benzo(b)fluoranthene	No TRV	None
bis(2-ethylhexyl)phthalate	No TRV	None
Chrysene	No TRV	None
Fluoranthene	No TRV	None
Phenanthrene	No TRV	None
Pyrene	No TRV	None
Volatiles		
Acetone	1.00E+00	Efroymson et al. (1997a)
4-Methyl-2-pentanone	No TRV	Efroymson et al. (1997a)
Toluene	2.00E+02	Efroymson et al. (1997a)

Appendix Table 7A.36. Toxicity Reference Values for Plants at the Luckey Site, Luckey, Ohio (continued)

Analytes	Plant TRV (mg/kg soil)	Reference
Pesticides/PCBs		
Aroclor-1254	No TRV	None
Aroclor-1260	No TRV	None

TRV = toxicity reference value

Appendix Table 7A.37. Toxicity Reference Values for Earthworms at the Luckey Site, Luckey, Ohio

Analytes	Earthworm TRV (mg/kg)	Reference
Inorganics		
Antimony	No TRV	Efroymson et al. (1997b)
Beryllium	No TRV	Efroymson et al. (1997b)
Boron	No TRV	Efroymson et al. (1997b)
Cadmium	2.00E+01	Efroymson et al. (1997b)
Calcium	No TRV	Efroymson et al. (1997b)
Chromium	4.00E-01	Efroymson et al. (1997b)
Copper	6.00E+01	Efroymson et al. (1997b)
Lead	5.00E+02	Efroymson et al. (1997b)
Magnesium	No TRV	Efroymson et al. (1997b)
Mercury	1.00E-01	Efroymson et al. (1997b)
Nickel	2.00E+02	Efroymson et al. (1997b)
Selenium	3.86E-02	Efroymson et al. (1997b)
Silicon	No TRV	Efroymson et al. (1997b)
Sodium	No TRV	Efroymson et al. (1997b)
Strontium	No TRV	Efroymson et al. (1997b)
Thallium	No TRV	Efroymson et al. (1997b)
Zinc	2.00E+02	Efroymson et al. (1997b)
Anions		Efroymson et al. (1997b)
Chloride	No TRV	Efroymson et al. (1997b)
Fluoride	No TRV	Efroymson et al. (1997b)
Nitrate, as N	No TRV	Efroymson et al. (1997b)
Sulfate	No TRV	Efroymson et al. (1997b)
Miscellaneous		Efroymson et al. (1997b)
Ammonia, nitrogen	No TRV	Efroymson et al. (1997b)
Organics		
Semi-Volatiles		
Acenaphthylene	No TRV	Efroymson et al. (1997b)
Benzo(a)anthracene	No TRV	Efroymson et al. (1997b)
Benzo(a)pyrene	No TRV	Efroymson et al. (1997b)
Benzo(b)fluoranthene	No TRV	Efroymson et al. (1997b)
bis(2-ethylhexyl)phthalate	No TRV	Efroymson et al. (1997b)
Chrysene	No TRV	Efroymson et al. (1997b)
Fluoranthene	No TRV	Efroymson et al. (1997b)
Phenanthrene	No TRV	Efroymson et al. (1997b)
Pyrene	3.00E+01	Will and Suter 1995
Volatiles		
Acetone	No TRV	Efroymson et al. (1997b)
4-Methyl-2-pentanone	No TRV	Efroymson et al. (1997b)
Toluene	No TRV	Efroymson et al. (1997b)
Pesticides/PCBs		
Aroclor-1254	No TRV	Efroymson et al. (1997b)
Aroclor-1260	No TRV	Efroymson et al. (1997b)

TRV = toxicity reference value

Appendix Table 7A.38a. Derivation of Toxicity Reference Values (TRVs) for Mammal Test Species

Ecological constituent of potential concern	Test species	Test species body weight (kg) BW_t	Benchmark (mg/kgBW/d)	Test duration	Endpoint	Effect	Source	Duration conversion factor DCF	Endpoint conversion factor ECF	TRV (mg/kgBW/d) benchmark *x* DCF *x* ECF
Inorganics										
Ammonia	none	none	none	none	none	none	none	none	none	No TRV
Antimony	Mouse	3.00E-02	1.25E+00	chronic	LOAEL	Longevity	Schroeder et al. (1968b) in [1]	1.0	0.1	1.25E-01
Beryllium	Rat	3.50E-01	6.60E-01	chronic	NOAEL	Longevity	Schroeder and Mitchner (1975) in [1]	1.0	1.0	6.60E-01
Boron	Rat	3.50E-01	2.80E+01	chronic	NOAEL	Reproduction	Weir and Fisher (1972) in [1]	1.0	1.0	2.80E+01
Cadmium	Rat	3.03E-01	1.00E+00	chronic	NOAEL	Reproduction	Sutou et al. (1980b) in [1]	1.0	1.0	1.00E+00
Calcium	none	none	none	none	none	none	none	none	none	No TRV
Chloride	none	none	none	none	none	none	none	none	none	No TRV
Chromium	Rat	3.50E-01	2.74E+03	chronic	NOAEL	Reproduction	Ivankovic and Preussmann (1975) in [1]	1.0	1.0	2.74E+03
Chromium, hexavalent	none	none	none	none	none	none	none	none	none	No TRV
Copper	Mink	1.00E+00	1.17E+01	chronic	NOAEL	Reproduction	Aulerich et al. (1982) in [1]	1.0	1.0	1.17E+01
Fluoride	Mink	1.00E+00	3.14E+01	chronic	NOAEL	Reproduction	Bleavinss et Aulerich (1981) in [1]	1.0	1.0	3.14E+01
Lead	Rat	3.50E-01	8.00E+00	chronic	NOAEL	Reproduction	Azar et al. (1973) in [1]	1.0	1.0	8.00E+00
Magnesium	none	none	none	none	none	none	none	none	none	No TRV
Mercury	Mink	1.00E+00	1.01E+00	chronic	NOAEL	Reproduction	Aulerich et al. (1974) in [1]	1.0	1.0	1.01E+00
Nickel	Rat	3.50E-01	4.00E+01	chronic	NOAEL	Reproduction	Ambrose et al. (1976) in [1]	1.0	1.0	4.00E+01
Nitrate	none	none	none	none	none	none	none	none	none	No TRV
Selenium	Rat	3.50E-01	2.00E-01	chronic	NOAEL	Reproduction	Rosenfeld and Beath (1954) in [1]	1.0	1.0	2.00E-01
Silicon	none	none	none	none	none	none	none	none	none	No TRV
Sodium	none	none	none	none	none	none	none	none	none	No TRV
Thallium	Rat	3.65E-01	7.40E-01	subchronic	LOAEL	Reproduction	Formigli et al. (1986) in [1]	0.1	0.1	7.40E-03
Zinc	Rat	3.50E-01	1.60E+02	chronic	NOAEL	Reproduction	Schlicker and Cox (1968) in [1]	1.0	1.0	1.60E+02
Organics										
4-Methyl-2-pentanone	Rat	3.50E-01	2.50E+02	subchronic	NOAEL	Liver/Kidney	Microbiological Associates (1986) in [1]	0.1	1.0	2.50E+01
Acenaphthene	none	none	none	none	none	none	none	none	none	No TRV
Acenaphthylene	none	none	none	none	none	none	none	none	none	No TRV
Acetone	Rat	3.50E-01	1.00E+02	subchronic	NOAEL	Reproduction	EPA (1986c) in [1]	0.1	1.0	1.00E+01
Aroclor-1254	Oldfield mouse	1.40E-02	6.80E-01	chronic	LOAEL	Reproduction	McCoy et al. (1995) in [1]	1.0	0.1	6.80E-02
Aroclor-1260	none	none	none	none	none	none	none	none	none	No TRV
Benzene	Mouse	3.00E-02	2.64E+02	chronic	LOAEL	Reproduction	Nawrot and Staples (1979) in [1]	1.0	0.1	2.64E+01
Benzo(a)anthracene	none	none	none	none	none	none	none	none	none	No TRV
Benzo(a)pyrene	Mouse	3.00E-02	1.00E+01	chronic	LOAEL	Reproduction	Mackenzie and Angevine (1981) in [1]	1.0	0.1	1.00E+00
Benzo(b)fluoranthene	none	none	none	none	none	none	none	none	none	No TRV

Appendix Table 7A.38a. Derivation of Toxicity Reference Values (TRVs) for Mammal Test Species (continued)

Ecological constituent of potential concern	Test species	Test species body weight (kg) BW_t	Benchmark (mg/kgBW/d)	Test duration	Endpoint	Effect	Source	Duration conversion factor DCF	Endpoint conversion factor ECF	TRV (mg/kgBW/d) benchmark *x* DCF *x* ECF
Organics										
Benzo(g,h,i)perylene	none	none	none	none	none	none	none	none	none	No TRV
Benzo(k)fluoranthene	none	none	none	none	none	none	none	none	none	No TRV
Bis(2-ethylhexyl)phthalate	Mouse	3.00E-02	1.83E+01	chronic	NOAEL	Reproduction	Lamb et al. (1987) in [1]	1.0	1.0	1.83E+01
m,p-cresol	none	none	none	none	none	none	none	none	none	No TRV
Chrysene	none	none	none	none	none	none	none	none	none	No TRV
Ethylbenzene	none	none	none	none	none	none	none	none	none	No TRV
Fluoranthene	none	none	none	none	none	none	none	none	none	No TRV
Fluorene	none	none	none	none	none	none	none	none	none	No TRV
Phenanthrene	none	none	none	none	none	none	none	none	none	No TRV
Pyrene	none	none	none	none	none	none	none	none	none	No TRV
Toluene	Mouse	3.00E-02	2.60E+02	chronic	LOAEL	Reproduction	Nawrot and Staples (1979) in [1]	1.0	0.1	2.60E+01
Xylenes	Mouse	3.00E-02	2.06E+00	chronic	NOAEL	Reproduction	Marks et al. (1982) in [1]	1.0	1.0	2.06E+00

TRV = toxicity reference value
DCF = Duration conversion factor; 1 if chronic, 0.1 if subchronic (Sample et al. 1996)
ECF = Endpoint conversion factor; 1 if NOAEL, 0.1 if LOAEL (Sample et al. 1996)
NOAEL = No observed adverse effect level
LOAEL = Lowest observed adverse effect level
[1] = Sample et al. (1996)
[2] = Clayton and Clayton (1981)
[3] = IRIS (1996)

Appendix Table 7A.38b. Derivation of Toxicity Reference Values (TRVs) for Mammal Receptors at the Luckey Site, Luckey, Ohio

Ecological constituent of potential concern	Test species	Test species body weight (kg)	TRV_t (mg/kgBW/d)	Short-tailed shrew		Eastern cottontail		White-tailed deer		Red fox	
				Body-weight conversion factor BW_{conv} $(BW_t / BW)^{0.25}$	TRV (mg/kgBW/d) $TRV_t x\ BW_{conv}$	Body-weight conversion factor BW_{conv} $(BW_t / BW)^{0.25}$	TRV (mg/kgBW/d) $TRV_t x\ BW_{conv}$	Body-weight conversion factor BW_{conv} $(BW_t / BW)^{0.25}$	TRV (mg/kgBW/d) $TRV_t x\ BW_{conv}$	Body-weight conversion factor BW_{conv} $(BW_t / BW)^{0.25}$	TRV (mg/kgBW/d) $TRV_t x\ BW_{conv}$
Inorganics											
Ammonia	none	none	No TRV	none	none	none	none	none	none	none	none
Antimony	Mouse	3.00E-02	1.25E-01	1.15E+00	1.44E-01	3.95E-01	4.94E-02	1.52E-01	1.90E-02	2.83E-01	3.54E-02
Beryllium	Rat	3.50E-01	6.60E-01	2.13E+00	1.41E+00	7.30E-01	4.82E-01	2.81E-01	1.85E-01	5.23E-01	3.45E-01
Boron	Rat	3.50E-01	2.80E+01	2.13E+00	5.96E+01	7.30E-01	2.05E+01	2.81E-01	7.86E+00	5.23E-01	1.46E+01
Cadmium	Rat	3.03E-01	1.00E+00	2.05E+00	2.05E+00	7.05E-01	7.05E-01	2.71E-01	2.71E-01	5.04E-01	5.04E-01
Calcium	none	none	No TRV	none	none	none	none	none	none	none	none
Chloride	none	none	No TRV	none	none	none	none	none	none	none	none
Chromium	Rat	3.50E-01	2.74E+03	2.13E+00	5.83E+03	7.30E-01	2.00E+03	2.81E-01	7.68E+02	5.23E-01	1.43E+03
Chromium, hexavalent	none	none	No TRV	none	none	none	none	none	none	none	none
Copper	Mink	1.00E+00	1.17E+01	2.77E+00	3.24E+01	9.50E-01	1.11E+01	3.65E-01	4.27E+00	6.80E-01	7.96E+00
Fluoride	Mink	1.00E+00	3.14E+01	2.77E+00	8.69E+01	9.50E-01	2.98E+01	3.65E-01	1.14E+01	6.80E-01	2.13E+01
Lead	Rat	3.50E-01	8.00E+00	2.13E+00	1.70E+01	7.30E-01	5.84E+00	2.81E-01	2.24E+00	5.23E-01	4.18E+00
Magnesium	none	none	No TRV	none	none	none	none	none	none	none	none
Mercury	Mink	1.00E+00	1.01E+00	2.77E+00	2.80E+00	9.50E-01	9.59E-01	3.65E-01	3.68E-01	6.80E-01	6.86E-01
Nickel	Rat	3.50E-01	4.00E+01	2.13E+00	8.52E+01	7.30E-01	2.92E+01	2.81E-01	1.12E+01	5.23E-01	2.09E+01
Nitrate	none	none	No TRV	none	none	none	none	none	none	none	none
Selenium	Rat	3.50E-01	2.00E-01	2.13E+00	4.26E-01	7.30E-01	1.46E-01	2.81E-01	5.61E-02	5.23E-01	1.05E-01
Silicon	none	none	No TRV	none	none	none	none	none	none	none	none
Sodium	none	none	No TRV	none	none	none	none	none	none	none	none
Thallium	Rat	3.65E-01	7.40E-03	2.15E+00	1.59E-02	7.38E-01	5.46E-03	2.84E-01	2.10E-03	5.28E-01	3.91E-03
Zinc	Rat	3.50E-01	1.60E+02	2.13E+00	3.41E+02	7.30E-01	1.17E+02	2.81E-01	4.49E+01	5.23E-01	8.36E+01
Organics											
4-Methyl-2-pentanone	Rat	3.50E-01	2.50E+01	2.13E+00	5.33E+01	7.30E-01	1.83E+01	2.81E-01	7.01E+00	5.23E-01	1.31E+01
Acenaphthene	none	none	No TRV	none	none	none	none	none	none	none	none
Acenaphthylene	none	none	No TRV	none	none	none	none	none	none	none	none
Acetone	Rat	3.50E-01	1.00E+01	2.13E+00	2.13E+01	7.30E-01	7.30E+00	2.81E-01	2.81E+00	5.23E-01	5.23E+00
Aroclor-1254	Oldfield mouse	1.40E-02	6.80E-02	9.53E-01	6.48E-02	3.27E-01	2.22E-02	1.25E-01	8.53E-03	2.34E-01	1.59E-02
Aroclor-1260	none	none	No TRV	none	none	none	none	none	none	none	none
Benzene	Mouse	3.00E-02	2.64E+01	1.15E+00	3.04E+01	3.95E-01	1.04E+01	1.52E-01	4.00E+00	2.83E-01	7.45E+00
Benzo(a)anthracene	none	none	No TRV	none	none	none	none	none	none	none	none
Benzo(a)pyrene	Mouse	3.00E-02	1.00E+00	1.15E+00	1.15E+00	3.95E-01	3.95E-01	1.52E-01	1.52E-01	2.83E-01	2.83E-01
Benzo(b)fluoranthene	none	none	No TRV	none	none	none	none	none	none	none	none

Appendix Table 7A.38b. Derivation of Toxicity Reference Values (TRVs) for Mammal Receptors at the Luckey Site, Luckey, Ohio (continued)

Ecological constituent of potential concern	Test species	Test species body weight (kg)	TRV_t (mg/kgBW/d)	Short-tailed shrew		Eastern cottontail		White-tailed deer		Red fox	
				Body-weight conversion factor BW_{conv} $(BW_t / BW)^{0.25}$	TRV (mg/kgBW/d) $TRV_t x\ BW_{conv}$	Body-weight conversion factor BW_{conv} $(BW_t / BW)^{0.25}$	TRV (mg/kgBW/d) $TRV_t x\ BW_{conv}$	Body-weight conversion factor BW_{conv} $(BW_t / BW)^{0.25}$	TRV (mg/kgBW/d) $TRV_t x\ BW_{conv}$	Body-weight conversion factor BW_{conv} $(BW_t / BW)^{0.25}$	TRV (mg/kgBW/d) $TRV_t x\ BW_{conv}$
Organics											
Benzo(g,h,i)perylene	none	none	No TRV	none	none	none	none	none	none	none	none
Benzo(k)fluoranthene	none	none	No TRV	none	none	none	none	none	none	none	none
Bis(2-ethylhexyl)phthalate	Mouse	3.00E-02	1.83E+01	1.15E+00	2.11E+01	3.95E-01	7.23E+00	1.52E-01	2.78E+00	2.83E-01	5.18E+00
m,p-cresol	none	none	No TRV	none	none	none	none	none	none	none	none
Chrysene	none	none	No TRV	none	none	none	none	none	none	none	none
Ethylbenzene	none	none	No TRV	none	none	none	none	none	none	none	none
Fluoranthene	none	none	No TRV	none	none	none	none	none	none	none	none
Fluorene	none	none	No TRV	none	none	none	none	none	none	none	none
Phenanthrene	none	none	No TRV	none	none	none	none	none	none	none	none
Pyrene	none	none	No TRV	none	none	none	none	none	none	none	none
Toluene	Mouse	3.00E-02	2.60E+01	1.15E+00	2.99E+01	3.95E-01	1.03E+01	1.52E-01	3.94E+00	2.83E-01	7.35E+00
Xylenes	Mouse	3.00E-02	2.06E+00	1.15E+00	2.37E+00	3.95E-01	8.14E-01	1.52E-01	3.13E-01	2.83E-01	5.83E-01

BW(kg) Short-tailed shrew = 0.017
BW(kg) Eastern cottontail = 1.23
BW(kg) White-tailed deer = 56.5
BW(kg) Red fox = 4.69

Appendix Table 7A.39a. Derivation of Toxicity Reference Values (TRVs) for Bird Test Species

Ecological constituent of potential concern	**Test species**	**Test species body weight** (kg) **BW_t**	**Benchmark** (mg/kgBW/d)	**Test duration**	**Endpoint**	**Effect**	**Source**	**Duration conversion factor DCF**	**Endpoint conversion factor ECF**	**TRV** (mg/kgBW/d) benchmark *x* DCF *x* ECF
Inorganics										
Ammonia	none	none	none	none	none	none	none	none	none	No TRV
Antimony	none	none	none	none	none	none	none	none	none	No TRV
Beryllium	none	none	none	none	none	none	none	none	none	No TRV
Boron	Mallard duck	1.00E+00	2.88E+01	chronic	NOAEL	Reproduction	Smith and Anders (1989) in [1]	1.0	1.0	2.88E+01
Cadmium	Mallard duck	1.15E+00	1.45E+00	chronic	NOAEL	Reproduction	White and Finley (1978) in [1]	1.0	1.0	1.45E+00
Calcium	none	none	none	none	none	none	none	none	none	No TRV
Chloride	none	none	none	none	none	none	none	none	none	No TRV
Chromium	Black duck	1.25E+00	1.00E+00	chronic	NOAEL	Reproduction	Haseltine et al. (unpubl.) in [1]	1.0	1.0	1.00E+00
Chromium, hexavalent	none	none	none	none	none	none	none	none	none	No TRV
Copper	Chick (5 week old)	5.34E-01	4.70E+01	chronic	NOAEL	Mortality	Mehring et al. (1960) in [1]	1.0	1.0	4.70E+01
Fluoride	Screech Owl	1.81E-01	7.80E+00	chronic	NOAEL	Reproduction	Pattee et al. 1988	1.0	1.0	7.80E+00
Lead	Quail	1.50E-01	1.13E+00	chronic	NOAEL	Reproduction	Edens et al. (1976) in [1]	1.0	1.0	1.13E+00
Magnesium	none	none	none	none	none	none	none	none	none	No TRV
Mercury	Quail	1.50E-01	4.50E-01	chronic	NOAEL	Reproduction	Hill and Schaffner (1976) in [1]	1.0	1.0	4.50E-01
Nickel	Mallard duckling	7.82E-01	7.74E+01	chronic	NOAEL	Growth	Cain and Pafford (1981) in [1]	1.0	1.0	7.74E+01
Nitrate	none	none	none	none	none	none	none	none	none	No TRV
Selenium	Mallard duck	1.00E+00	5.00E-01	chronic	NOAEL	Reproduction	Heinz et al. (1989) in [1]	1.0	1.0	5.00E-01
Silicon	none	none	none	none	none	none	none	none	none	No TRV
Sodium	none	none	none	none	none	none	none	none	none	No TRV
Thallium	none	none	none	none	none	none	none	none	none	No TRV
Zinc	Leghorn chicken	1.94E+00	1.45E+01	chronic	NOAEL	Reproduction	Stahl et al. (1990) in [1]	1.0	1.0	1.45E+01
Organics										
4-Methyl-2-pentanone	none	none	none	none	none	none	none	none	none	No TRV
Acenaphthene	none	none	none	none	none	none	none	none	none	No TRV
Acenaphthylene	none	none	none	none	none	none	none	none	none	No TRV
Acetone	none	none	none	none	none	none	none	none	none	No TRV
Aroclor-1254	Ring-necked pheasant	1.00E+00	1.80E+00	chronic	LOAEL	Reproduction	Dahlgren et al. (1972) in [1]	1.0	0.1	1.80E-01
Aroclor-1260	none	none	none	none	none	none	none	none	none	No TRV
Benzene	none	none	none	none	none	none	none	none	none	No TRV
Benzo(a)anthracene	none	none	none	none	none	none	none	none	none	No TRV
Benzo(a)pyrene	none	none	none	none	none	none	none	none	none	No TRV

Appendix Table 7A.39a. Derivation of Toxicity Reference Values (TRVs) for Bird Test Species (continued)

Ecological constituent of potential concern	**Test species**	**Test species body weight** (kg) **BW_t**	**Benchmark** (mg/kgBW/d)	**Test duration**	**Endpoint**	**Effect**	**Source**	**Duration conversion factor DCF**	**Endpoint conversion factor ECF**	**TRV** (mg/kgBW/d) benchmark *x* DCF *x* ECF
Organics										
Benzo(b)fluoranthene	none	none	none	none	none	none	none	none	none	No TRV
Benzo(g,h,i)perylene	none	none	none	none	none	none	none	none	none	No TRV
Benzo(k)fluoranthene	none	none	none	none	none	none	none	none	none	No TRV
Bis(2-ethylhexyl)phthalate	Ringed dove	1.55E-01	1.10E+00	chronic	NOAEL	Reproduction	Peakall (1974) in [1]	1.0	1.0	1.10E+00
Chrysene	none	none	none	none	none	none	none	none	none	No TRV
m,p-cresol	none	none	none	none	none	none	none	none	none	No TRV
Ethylbenzene	none	none	none	none	none	none	none	none	none	No TRV
Fluoranthene	none	none	none	none	none	none	none	none	none	No TRV
Fluorene	none	none	none	none	none	none	none	none	none	No TRV
Phenanthrene	none	none	none	none	none	none	none	none	none	No TRV
Pyrene	none	none	none	none	none	none	none	none	none	No TRV
Toluene	none	none	none	none	none	none	none	none	none	No TRV
Xylenes	none	none	none	none	none	none	none	none	none	No TRV

TRV = toxicity reference value
DCF = Duration conversion factor; 1 if chronic, 0.1 if subchronic (Sample et al. 1996)
ECF = Endpoint conversion factor; 1 if NOAEL, 0.1 if LOAEL (Sample et al. 1996)
NOAEL = No observed adverse effect level
LOAEL = Lowest observed adverse effect level
[1] = Sample et al. (1996)

Appendix Table 7A.39b. Derivation of Toxicity Reference Values (TRVs) for Bird Receptors at the Luckey Site, Luckey, Ohio

Ecological constituent of potential concern	Test species	Test species body weight (kg)	TRV_t (mg/kgBW/d)	Red-tailed hawk		American Robin		Great Blue Heron	
				Body-weight conversion factor BW_{conv} $(BW_t / BW)^{0.25}$	TRV (mg/kgBW/d) $TRV_t x\ BW_{conv}$	Body-weight conversion factor BW_{conv} $(BW_t / BW)^{0.25}$	TRV (mg/kgBW/d) $TRV_t x\ BW_{conv}$	Body-weight conversion factor BW_{conv} $(BW_t / BW)^{0.25}$	TRV (mg/kgBW/d) $TRV_t x\ BW_{conv}$
Inorganics									
Ammonia	none	none	No TRV	none	none	none	none	none	none
Antimony	none	none	No TRV	none	none	none	none	none	none
Beryllium	none	none	No TRV	none	none	none	none	none	none
Boron	Mallard duck	1.00E+00	2.88E+01	9.70E-01	2.79E+01	1.88E+00	5.42E+01	8.04E-01	2.32E+01
Cadmium	Mallard duck	1.15E+00	1.45E+00	1.01E+00	1.46E+00	1.95E+00	2.83E+00	8.33E-01	1.21E+00
Calcium	none	none	No TRV	none	none	none	none	none	none
Chloride	none	none	No TRV	none	none	none	none	none	none
Chromium	Black duck	1.25E+00	1.00E+00	1.03E+00	1.03E+00	1.99E+00	1.99E+00	8.50E-01	8.50E-01
Chromium, hexavalent	none	none	No TRV	none	none	none	none	none	none
Copper	Chick (5 week old)	5.34E-01	4.70E+01	8.29E-01	3.89E+01	1.61E+00	7.55E+01	6.88E-01	3.23E+01
Fluoride	Screech Owl	1.81E-01	7.80E+00	6.33E-01	4.93E+00	1.23E+00	9.57E+00	5.25E-01	4.09E+00
Lead	Quail	1.50E-01	1.13E+00	6.04E-01	6.82E-01	1.17E+00	1.32E+00	5.01E-01	5.66E-01
Magnesium	none	none	No TRV	none	none	none	none	none	none
Nickel	Mallard duckling	7.82E-01	7.74E+01	9.12E-01	7.06E+01	1.77E+00	1.37E+02	7.56E-01	5.85E+01
Nitrate	none	none	No TRV	none	none	none	none	none	none
Selenium	Mallard duck	1.00E+00	5.00E-01	9.70E-01	4.85E-01	1.88E+00	9.40E-01	8.04E-01	4.02E-01
Thallium	none	none	No TRV	none	none	none	none	none	none
Zinc	Leghorn chicken	1.94E+00	1.45E+01	1.14E+00	1.66E+01	2.22E+00	3.21E+01	9.49E-01	1.37E+01
Organics									
4-Methyl-2-pentanone	none	none	No TRV	none	none	none	none	none	none
Acenaphthene	none	none	No TRV	none	none	none	none	none	none
Acenaphthylene	none	none	No TRV	none	none	none	none	none	none
Acetone	none	none	No TRV	none	none	none	none	none	none
Aroclor-1254	Ring-necked pheasant	1.00E+00	1.80E-01	9.70E-01	1.75E-01	1.88E+00	3.38E-01	8.04E-01	1.45E-01
Aroclor-1260	none	none	No TRV	none	none	none	none	none	none
Benzene	none	none	No TRV	none	none	none	none	none	none
Benzo(a)anthracene	none	none	No TRV	none	none	none	none	none	none

Appendix Table 7A.39b. Derivation of Toxicity Reference Values (TRVs) for Bird Receptors at the Luckey Site, Luckey, Ohio (continued)

Ecological constituent of potential concern	Test species	Test species body weight (kg)	TRV_t (mg/kgBW/d)	Red-tailed hawk		American Robin		Great Blue Heron	
				Body-weight conversion factor BW_{conv} $(BW_t / BW)^{0.25}$	TRV (mg/kgBW/d) $TRV_t x\ BW_{conv}$	Body-weight conversion factor BW_{conv} $(BW_t / BW)^{0.25}$	TRV (mg/kgBW/d) $TRV_t x\ BW_{conv}$	Body-weight conversion factor BW_{conv} $(BW_t / BW)^{0.25}$	TRV (mg/kgBW/d) $TRV_t x\ BW_{conv}$
Organics									
Benzo(a)pyrene	none	none	No TRV	none	none	none	none	none	none
Benzo(b)fluoranthene	none	none	No TRV	none	none	none	none	none	none
Benzo(g,h,i)perylene	none	none	No TRV	none	none	none	none	none	none
Benzo(k)fluoranthene	none	none	No TRV	none	none	none	none	none	none
Bis(2-ethylhexyl)phthalate	Ringed dove	1.55E-01	1.10E+00	6.09E-01	6.69E-01	1.18E+00	1.30E+00	5.05E-01	5.55E-01
Chrysene	none	none	No TRV	none	none	none	none	none	none
m,p-cresol	none	none	No TRV	none	none	none	none	none	none
Ethylbenzene	none	none	No TRV	none	none	none	none	none	none
Fluoranthene	none	none	No TRV	none	none	none	none	none	none
Fluorene	none	none	No TRV	none	none	none	none	none	none
Phenanthrene	none	none	No TRV	none	none	none	none	none	none
Pyrene	none	none	No TRV	none	none	none	none	none	none
Toluene	none	none	No TRV	none	none	none	none	none	none
Xylenes	none	none	No TRV	none	none	none	none	none	none

TRV = toxicity reference value
DCF = Duration conversion factor; 1 if chronic, 0.1 if subchronic (Sample et al. 1996)
BW(kg) American robin = 0.08
BW(kg) Great blue heron = 2.39
BW(kg) Red-tailed hawk = 1.13
BW(kg) Bald Eagle = 3.75

Appendix Table 7A.40. Sediment Toxicity Reference Values (TRVs) for Sediment-Dwelling Biota at the Luckey Site, Luckey, Ohio

Analyte remaining after site-wide screening	CAS Number	Sediment-dwelling Biota TRV (mg/kg)	Reference
Inorganics			
Aluminum	7429-90-5	No TRV	None
Barium	7440-39-3	No TRV	None
Beryllium	7440-41-7	No TRV	None
Boron	7440-42-8	No TRV	None
Cadmium	7440-43-9	6.00E-01	EDQL EPA Region 5 (1998)
Calcium	7440-70-2	No TRV	None
Copper	7440-50-8	1.60E+01	EDQL EPA Region 5 (1998)
Iron	7439-89-6	2.00E+01	Ontario MOE low
Lead	7439-92-1	3.10E+01	EDQL EPA Region 5 (1998)
Magnesium	7439-95-4	No TRV	None
Mercury	7439-97-6	1.50E-01	NOAA ER-L
Molybdenum	7439-98-7	No TRV	None
Nickel	7440-02-0	1.60E+01	EDQL EPA Region 5 (1998)
Silicon	7440-21-3	No TRV	None
Silver	7440-22-4	1.00E+00	NOAA ER-L
Sodium	7440-23-5	No TRV	None
Strontium	7440-24-6	No TRV	None
Zinc		1.20E+02	EDQL EPA Region 5 (1998)
Anions			
Chloride	16887-00-6	No TRV	None
Fluoride	16984-48-8	No TRV	None
Nitrate, as N		No TRV	None
Sulfate	14808-89-8	No TRV	None
Miscellaneous			
Ammonia, nitrogen	7664-41-7	No TRV	None
Organics			
Semi-Volatiles			
Carbazole	86-74-8	No TRV	None

TRV = toxicity reference value

Appendix Table 7A.41. Surface Water Toxicity Reference Values (TRVs) for Aquatic Biota at the Luckey Site, Luckey, Ohio

Analyte remaining after site-wide screening	CAS Number	Aquatic Biota TRV (mg/L)	Reference
Inorganics			
Aluminum	7429-90-5	8.70E-02	NAWQC (Suter & Tsao 1996)
Barium	7440-39-3	4.00E-03	Tier II (Suter & Tsao 1996)
Beryllium	7440-41-7	5.10E-03	
Boron	7440-42-8	1.60E-03	
Cadmium	7440-43-9	1.00E-03	NAWQC (Suter & Tsao 1996)
Calcium	7440-70-2	No TRV	None
Copper	7440-50-8	1.10E-02	NAWQC (Suter & Tsao 1996)
Iron	7439-89-6	1.00E+00	NAWQC (Suter & Tsao 1996)
Lead	7439-92-1	2.50E-03	
Magnesium	7439-95-4	No TRV	None
Manganese	7439-96-5	8.00E-02	
Mercury	7439-97-6	1.30E-03	EDQL EPA Region 5 (1998)
Nickel	7440-02-0	1.60E-01	NAWQC (Suter & Tsao 1996)
Silicon	7440-21-3	No TRV	None
Silver	7440-22-4	3.60E-04	Tier II (Suter & Tsao 1996)
Sodium	7440-23-5	No TRV	None
Strontium	7440-24-6	1.50E+00	Tier II (Suter & Tsao 1996)
Thallium	7440-28-0	1.20E-02	Tier II (Suter & Tsao 1996)
Anions			
Chloride	16887-00-6	No TRV	None
Fluoride	16984-48-8	No TRV	None
Nitrate, as N		No TRV	None
Phosphorus	7723-14-0	No TRV	None
Sulfate	14808-89-8	No TRV	None
Miscellaneous			
Alkalinity		No TRV	None
Ammonia, nitrogen	7664-41-7	No TRV	None
Organics			
Semi-Volatiles			
bis(2-ethylhexyl)phthalate	117-81-7	3.20E-02	
Bromodichloromethane	75-27-4	No TRV	None
Diethyl phthalate	84-66-2	2.10E-01	Tier II (Suter & Tsao 1996)
m,p-cresol	1319-77-3	No TRV	None

TRV = toxicity reference value

Appendix Table 7A.42. Exposure Unit 1 Surface Soil, CPECs for Plants at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	EPC (mg/kg)	Plants			
		Plant TRV (mg/kg)	Plant EEQ	EEQ>1? Yes or No	CPEC?
Inorganics					
Beryllium	6.83E+01	1.00E+01	6.83E+00	yes	yes
Cadmium	3.89E+00	4.00E+00	9.73E-01	no	no
Calcium	1.32E+05	No TRV	No TRV	yes	yes
Lead	2.18E+02	5.00E+01	4.36E+00	yes	yes
Magnesium	3.14E+04	No TRV	No TRV	yes	yes
Anions					
Fluoride	1.16E+01	2.00E+02	5.80E-02	no	no
Miscellaneous					
Ammonia, nitrogen	2.03E+01	No TRV	No TRV	yes	yes
Organics					
Semi-Volatiles					
Acenaphthylene	9.19E-02	No TRV	No TRV	yes	yes
Benzo(a)anthracene	4.72E+01	No TRV	No TRV	yes	yes
Benzo(a)pyrene	3.91E+01	No TRV	No TRV	yes	yes
Benzo(b)fluoranthene	5.99E+01	No TRV	No TRV	yes	yes
bis(2-ethylhexyl)phthalate	2.36E+00	No TRV	No TRV	yes	yes
Chrysene	4.75E+01	No TRV	No TRV	yes	yes
Fluoranthene	1.52E+02	No TRV	No TRV	yes	yes
Phenanthrene	1.77E+02	No TRV	No TRV	yes	yes
Pyrene	1.02E+02	No TRV	No TRV	yes	yes
Volatiles					
Acetone	1.17E-02	1.00E+00	1.17E-02	no	no
4-Methyl-2-pentanone	1.95E-02	No TRV	No TRV	yes	yes
Toluene	1.82E-01	2.00E+02	9.10E-04	no	no
Pesticides/PCBs					
Aroclor-1254	3.20E+00	No TRV	No TRV	yes	yes
Aroclor-1260	2.31E-02	No TRV	No TRV	yes	yes

EPC = Exposure point concentration
TRV = toxicity reference value
EEQ = Environmental effects quotient
CPEC = Contaminant of Potential Ecological Concern
Plant TRVs from Efroymson et al (1997a)

Appendix Table 7A.43. Exposure Unit 1 Surface Soil, CPECs for Earthworms at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	EPC (mg/kg)	Earthworms			
		Earthworm TRV (mg/kg)	Earthworm EEQ	EEQ>1?	CPEC?
Inorganics					
Beryllium	6.83E+01	No TRV	No TRV	yes	yes
Cadmium	3.89E+00	2.00E+01	1.95E-01	no	no
Calcium	1.32E+05	No TRV	No TRV	yes	yes
Lead	2.18E+02	5.00E+02	4.36E-01	no	no
Magnesium	3.14E+04	No TRV	No TRV	yes	yes
Anions					
Fluoride	1.16E+01	No TRV	No TRV	yes	yes
Miscellaneous					
Ammonia, nitrogen	2.03E+01	No TRV	No TRV	yes	yes
Organics					
Semi-Volatiles					
Acenaphthylene	9.19E-02	No TRV	No TRV	yes	yes
Benzo(a)anthracene	4.72E+01	No TRV	No TRV	yes	yes
Benzo(a)pyrene	3.91E+01	No TRV	No TRV	yes	yes
Benzo(b)fluoranthene	5.99E+01	No TRV	No TRV	yes	yes
bis(2-ethylhexyl)phthalate	2.36E+00	No TRV	No TRV	yes	yes
Chrysene	4.75E+01	No TRV	No TRV	yes	yes
Fluoranthene	1.52E+02	No TRV	No TRV	yes	yes
Phenanthrene	1.77E+02	No TRV	No TRV	yes	yes
Pyrene	1.02E+02	No TRV	No TRV	yes	yes
Volatiles					
Acetone	1.17E-02	No TRV	No TRV	yes	yes
4-Methyl-2-pentanone	1.95E-02	No TRV	No TRV	yes	yes
Toluene	1.82E-01	No TRV	No TRV	yes	yes
Pesticides/PCBs					
Aroclor-1254	3.20E+00	No TRV	No TRV	yes	yes
Aroclor-1260	2.31E-02	No TRV	No TRV	yes	yes

EPC = Exposure point concentration
TRV = toxicity reference value
EEQ = Environmental effects quotient
CPEC = Contaminant of Potential Ecological Concern
Earthworm TRVs from Efroymson et al (1997b)

Appendix Table 7A.44. Exposure Unit 1 Surface Soil CPECs for Shrews at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	EPC (mg/kg)	SPv	ADD_P (mg/kgBW/d) RME *x* SP_r *x* I_P *x* AUF	BAF_i	ADD_A (mg/kgBW/d) RME *x* BAF_i *x* I_A *x* AUF	ADD_S (mg/kgBW/d) RME *x* I_S *x* AUF	ADD_{total} (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$	TRV (mg/kgBW/d)	Site EEQ ADD_{total} / TRV	CPEC?
Inorganics										
Beryllium	6.83E+01	2.00E-03	9.94E-03	5.00E-02	1.66E+00	4.97E+00	6.65E+00	1.41E+00	4.73E+00	yes
Cadmium	3.89E+00	1.10E-01	3.12E-02	1.10E+01	2.08E+01	2.83E-01	2.12E+01	2.05E+00	1.03E+01	yes
Calcium	1.32E+05	7.00E-01	6.73E+03	1.00E+00	6.43E+04	9.61E+03	8.06E+04	No TRV	No TRV	yes
Lead	2.18E+02	9.00E-03	1.43E-01	2.00E+00	2.12E+02	1.59E+01	2.28E+02	1.70E+01	1.34E+01	yes
Magnesium	3.14E+04	2.00E-01	4.57E+02	1.00E+00	1.53E+04	2.29E+03	1.80E+04	No TRV	No TRV	yes
Silicon	1.40E+03	1.00E+00	1.02E+02	1.00E+00	6.82E+02	1.02E+02	8.86E+02	No TRV	No TRV	yes
Anions										
Fluoride	1.16E+01	1.00E+00	8.44E-01	1.00E+00	5.65E+00	8.44E-01	7.34E+00	8.69E+01	8.45E-02	no
Miscellaneous										
Ammonia, nitrogen	2.03E+01	1.00E+00	1.48E+00	1.00E+00	9.89E+00	1.48E+00	1.28E+01	No TRV	No TRV	yes
Organics										
Semi-Volatiles										
Acenaphthylene	9.19E-02	2.00E-02	1.34E-04	5.00E-02	2.24E-03	6.69E-03	9.06E-03	No TRV	No TRV	yes
Benzo(a)anthracene	4.72E+01	3.90E-03	1.34E-02	5.00E-02	1.15E+00	3.44E+00	4.60E+00	No TRV	No TRV	yes
Benzo(a)pyrene	3.91E+01	2.60E-03	7.40E-03	5.00E-02	9.52E-01	2.85E+00	3.81E+00	1.15E+00	3.30E+00	yes
Benzo(b)fluoranthene	5.99E+01	2.30E-03	1.00E-02	5.00E-02	1.46E+00	4.36E+00	5.83E+00	No TRV	No TRV	yes
bis(2-ethylhexyl)phthalate	2.36E+00	8.70E-03	1.49E-03	5.00E-02	5.75E-02	1.72E-01	2.31E-01	2.11E+01	1.09E-02	no
Chrysene	4.75E+01	3.90E-03	1.35E-02	5.00E-02	1.16E+00	3.46E+00	4.63E+00	No TRV	No TRV	yes
Fluoranthene	1.52E+02	2.00E-02	2.21E-01	5.00E-02	3.70E+00	1.11E+01	1.50E+01	No TRV	No TRV	yes
Phenanthrene	1.77E+02	2.00E-02	2.58E-01	5.00E-02	4.31E+00	1.29E+01	1.75E+01	No TRV	No TRV	yes
Pyrene	1.02E+02	6.70E-03	4.98E-02	5.00E-02	2.48E+00	7.43E+00	9.96E+00	No TRV	No TRV	yes
Volatiles										
Acetone	1.17E-02	2.00E-02	1.70E-05	5.00E-02	2.85E-04	8.52E-04	1.15E-03	2.13E+01	5.42E-05	no
4-Methyl-2-pentanone	1.95E-02	2.00E-02	2.84E-05	5.00E-02	4.75E-04	1.42E-03	1.92E-03	5.33E+01	3.61E-05	no
Toluene	1.82E-01	2.00E-02	2.65E-04	5.00E-02	4.43E-03	1.32E-02	1.79E-02	2.99E+01	5.99E-04	no

Appendix Table 7A.44. Exposure Unit 1 Surface Soil CPECs for Shrews at the Luckey Site, Luckey Ohio (continued)

Analytes remaining after the site-wide screens	EPC (mg/kg)	SPv	ADD_P (mg/kgBW/d) RME *x* SP_r *x* I_P *x* AUF	BAF_i	ADD_A (mg/kgBW/d) RME *x* BAF_i *x* I_A *x* AUF	ADD_S (mg/kgBW/d) RME *x* I_S *x* AUF	ADD_{total} (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$	TRV (mg/kgBW/d)	Site EEQ ADD_{total} / TRV	CPEC?
Pesticides/PCBs										
Aroclor-1254	3.20E+00	3.80E-01	8.85E-02	5.80E+00	9.04E+00	2.33E-01	9.36E+00	6.48E-02	1.45E+02	yes
Aroclor-1260	2.31E-02	3.80E-01	6.39E-04	5.80E+00	6.53E-02	1.68E-03	6.76E-02	No TRV	No TRV	yes

EPC = Exposure point concentration
SP_v = Soil-to-plant; vegetative
I_P (kg/kgBW/d) = Plant ingestion rate for shrews = 0.0728
ADD_P = Average daily dose; plant
AUF = Area use factor (1.0)
BAF_i = Soil-to-animal; invertebrates
ADD_A = Average daily dose; animal
I_A (kg/kgBW/d) = Animal ingestion rate for shrews = 0.487
ADD_S = Average daily dose; soil
I_S (kg/kgBW/d) = Soil ingestion rate for shrews = 0.0728
ADD_{total} = Average daily dose; total
TRV (mg/kgBW/d) = toxicity reference value
nd= not detected, na= not applicable
CPEC = Constituents of potential ecological concern
EEQ = Environmental effects quotient

Appendix Table 7A.45. Exposure Unit 1 Surface Soil CPECs for Robins at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	EPC (mg/kg)	SP_r	ADD_P (mg/kgBW/d) RME *x* SP_r *x* I_P *x* AUF	BAF_i	ADD_A (mg/kgBW/d) RME *x* BAF_i *x* I_A *x* AUF	ADD_S (mg/kgBW/d) RME *x* I_S *x* AUF	ADD_{total} (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$	TRV (mg/kgBW/d)	Site EEQ ADD_{total} / TRV	CPEC?
Inorganics										
Beryllium	6.83E+01	3.00E-04	1.56E-02	5.00E-02	2.60E+00	1.08E+01	1.34E+01	No TRV	No TRV	yes
Cadmium	3.89E+00	3.00E-02	8.87E-02	1.10E+01	3.25E+01	6.15E-01	3.32E+01	2.83E+00	1.18E+01	yes
Calcium	1.32E+05	7.00E-02	7.02E+03	1.00E+00	1.00E+05	2.09E+04	1.28E+05	No TRV	No TRV	yes
Lead	2.18E+02	1.80E-03	2.98E-01	2.00E+00	3.31E+02	3.45E+01	3.66E+02	1.32E+00	2.77E+02	yes
Magnesium	3.14E+04	1.10E-01	2.63E+03	1.00E+00	2.39E+04	4.96E+03	3.15E+04	No TRV	No TRV	yes
Silicon	1.40E+03	1.00E+00	1.06E+03	1.00E+00	1.06E+03	2.21E+02	2.35E+03	No TRV	No TRV	yes
Anions										
Fluoride	1.16E+01	1.00E+00	8.82E+00	1.00E+00	8.82E+00	1.83E+00	1.95E+01	9.57E+00	2.03E+00	yes
Miscellaneous										
Ammonia, nitrogen	2.03E+01	1.00E+00	1.54E+01	1.00E+00	1.54E+01	3.21E+00	3.41E+01	No TRV	No TRV	yes
Organics										
Semi-Volatiles										
Acenaphthylene	9.19E-02	2.00E-02	1.40E-03	5.00E-02	3.49E-03	1.45E-02	1.94E-02	No TRV	No TRV	yes
Benzo(a)anthracene	4.72E+01	3.90E-03	1.40E-01	5.00E-02	1.79E+00	7.46E+00	9.39E+00	No TRV	No TRV	yes
Benzo(a)pyrene	3.91E+01	2.60E-03	7.73E-02	5.00E-02	1.49E+00	6.18E+00	7.74E+00	No TRV	No TRV	yes
Benzo(b)fluoranthene	5.99E+01	2.30E-03	1.05E-01	5.00E-02	2.28E+00	9.47E+00	1.18E+01	No TRV	No TRV	yes
bis(2-ethylhexyl)phthalate	2.36E+00	8.70E-03	1.56E-02	5.00E-02	8.97E-02	3.73E-01	4.78E-01	1.30E+00	3.69E-01	no
Chrysene	4.75E+01	3.90E-03	1.41E-01	5.00E-02	1.81E+00	7.51E+00	9.45E+00	No TRV	No TRV	yes
Fluoranthene	1.52E+02	2.00E-02	2.31E+00	5.00E-02	5.78E+00	2.40E+01	3.21E+01	No TRV	No TRV	yes
Phenanthrene	1.77E+02	2.00E-02	2.69E+00	5.00E-02	6.73E+00	2.80E+01	3.74E+01	No TRV	No TRV	yes
Pyrene	1.02E+02	6.70E-03	5.19E-01	5.00E-02	3.88E+00	1.61E+01	2.05E+01	No TRV	No TRV	yes
Volatiles										
Acetone	1.17E-02	2.00E-02	1.78E-04	5.00E-02	4.45E-04	1.85E-03	2.47E-03	No TRV	No TRV	yes
4-Methyl-2-pentanone	1.95E-02	2.00E-02	2.96E-04	5.00E-02	7.41E-04	3.08E-03	4.12E-03	No TRV	No TRV	yes
Toluene	1.82E-01	2.00E-02	2.77E-03	5.00E-02	6.92E-03	2.88E-02	3.85E-02	No TRV	No TRV	yes

Appendix Table 7A.45. Exposure Unit 1 Surface Soil CPECs for Robins at the Luckey Site, Luckey Ohio (continued)

Analytes remaining after the site-wide screens	**EPC** (mg/kg)	**SP_r**	**ADD_P** (mg/kgBW/d) RME *x* SP_r *x* I_P *x* AUF	**BAF_i**	**ADD_A** (mg/kgBW/d) RME *x* BAF_i *x* I_A *x* AUF	**ADD_S** (mg/kgBW/d) RME *x* I_S *x* AUF	**ADD_{total}** (mg/kgBW/d) ADD_P + ADD_A + ADD_S	**TRV** (mg/kgBW/d)	**Site EEQ** ADD_{total} / TRV	**CPEC?**
Pesticides/PCBs										
Aroclor-1254	3.20E+00	3.80E-01	9.24E-01	5.80E+00	1.41E+01	5.06E-01	1.55E+01	3.38E-01	4.59E+01	yes
Aroclor-1260	2.31E-02	3.80E-01	6.67E-03	5.80E+00	1.02E-01	3.65E-03	1.12E-01	No TRV	No TRV	yes

EPC = Exposure point concentration
SP_r = Soil-to-plant; reproductive
I_P (kg/kgBW/d) = Plant ingestion rate for robins = 0.76
ADD_P = Average daily dose; plant
AUF = Area use factor (1.0)
BAF_i = Soil-to-animal; invertebrates
ADD_A = Average daily dose; animal
I_A (kg/kgBW/d) = Animal ingestion rate for robins = 0.76
ADD_S = Average daily dose; soil
I_S (kg/kgBW/d) = Soil ingestion rate for robins = 0.158
ADD_{total} = Average daily dose; total
TRV (mg/kgBW/d) = toxicity reference value
nd= not detected, na= not applicable
CPEC = Constituents of potential ecological concern
EEQ = Environmental effects quotient

Appendix Table 7A.46. Exposure Unit 1 Surface Soil CPECs for Cottontail Rabbits at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	EPC (mg/kg)	SPv	ADD_P (mg/kgBW/d) RME x SP_r x I_P x AUF	BAF_i	ADD_A (mg/kgBW/d) RME x BAF_i x I_A x AUF	ADD_S (mg/kgBW/d) RME x I_S x AUF	ADD_{total} (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$	TRV (mg/kgBW/d)	Site EEQ ADD_{total} / TRV	CPEC?
Inorganics										
Beryllium	6.83E+01	2.00E-03	2.80E-02	5.00E-02	0.00E+00	8.82E-01	9.10E-01	4.82E-01	1.89E+00	yes
Cadmium	3.89E+00	1.10E-01	8.77E-02	1.10E+01	0.00E+00	5.02E-02	1.38E-01	7.05E-01	1.96E-01	no
Calcium	1.32E+05	7.00E-01	1.89E+04	1.00E+00	0.00E+00	1.70E+03	2.06E+04	No TRV	No TRV	yes
Lead	2.18E+02	9.00E-03	4.02E-01	2.00E+00	0.00E+00	2.82E+00	3.22E+00	5.84E+00	5.51E-01	no
Magnesium	3.14E+04	2.00E-01	1.29E+03	1.00E+00	0.00E+00	4.06E+02	1.69E+03	No TRV	No TRV	yes
Silicon	1.40E+03	1.00E+00	2.87E+02	1.00E+00	0.00E+00	1.81E+01	3.05E+02	No TRV	No TRV	yes
Anions										
Fluoride	1.16E+01	1.00E+00	2.38E+00	1.00E+00	0.00E+00	1.50E-01	2.53E+00	2.98E+01	8.49E-02	no
Miscellaneous										
Ammonia, nitrogen	2.03E+01	1.00E+00	4.16E+00	1.00E+00	0.00E+00	2.62E-01	4.42E+00	No TRV	No TRV	yes
Organics										
Semi-Volatiles										
Acenaphthylene	9.19E-02	2.00E-02	3.77E-04	5.00E-02	0.00E+00	1.19E-03	1.56E-03	No TRV	No TRV	yes
Benzo(a)anthracene	4.72E+01	3.90E-03	3.77E-02	5.00E-02	0.00E+00	6.10E-01	6.47E-01	No TRV	No TRV	yes
Benzo(a)pyrene	3.91E+01	2.60E-03	2.08E-02	5.00E-02	0.00E+00	5.05E-01	5.26E-01	3.95E-01	1.33E+00	yes
Benzo(b)fluoranthene	5.99E+01	2.30E-03	2.82E-02	5.00E-02	0.00E+00	7.74E-01	8.02E-01	No TRV	No TRV	yes
bis(2-ethylhexyl)phthalate	2.36E+00	8.70E-03	4.21E-03	5.00E-02	0.00E+00	3.05E-02	3.47E-02	7.23E+00	4.80E-03	no
Chrysene	4.75E+01	3.90E-03	3.80E-02	5.00E-02	0.00E+00	6.13E-01	6.51E-01	No TRV	No TRV	yes
Fluoranthene	1.52E+02	2.00E-02	6.23E-01	5.00E-02	0.00E+00	1.96E+00	2.59E+00	No TRV	No TRV	yes
Phenanthrene	1.77E+02	2.00E-02	7.26E-01	5.00E-02	0.00E+00	2.29E+00	3.01E+00	No TRV	No TRV	yes
Pyrene	1.02E+02	6.70E-03	1.40E-01	5.00E-02	0.00E+00	1.32E+00	1.46E+00	No TRV	No TRV	yes
Volatiles										
Acetone	1.17E-02	2.00E-02	4.80E-05	5.00E-02	0.00E+00	1.51E-04	1.99E-04	7.30E+00	2.73E-05	no
4-Methyl-2-pentanone	1.95E-02	2.00E-02	8.00E-05	5.00E-02	0.00E+00	2.52E-04	3.32E-04	1.83E+01	1.82E-05	no
Toluene	1.82E-01	2.00E-02	7.46E-04	5.00E-02	0.00E+00	2.35E-03	3.10E-03	1.03E+01	3.02E-04	no

Appendix Table 7A.46. Exposure Unit 1 Surface Soil CPECs for Cottontail Rabbits at the Luckey Site, Luckey Ohio (continued)

Analytes remaining after the site-wide screens	**EPC** (mg/kg)	**SPv**	**ADD_P** (mg/kgBW/d) RME *x* SP_r *x* I_P *x* AUF	**BAF_i**	**ADD_A** (mg/kgBW/d) RME *x* BAF_i *x* I_A *x* AUF	**ADD_S** (mg/kgBW/d) RME *x* I_S *x* AUF	**ADD_{total}** (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$	**TRV** (mg/kgBW/d)	**Site EEQ** ADD_{total} / TRV	**CPEC?**
Pesticides/PCBs										
Aroclor-1254	3.20E+00	3.80E-01	2.49E-01	5.80E+00	0.00E+00	4.13E-02	2.91E-01	2.22E-02	1.31E+01	yes
Aroclor-1260	2.31E-02	3.80E-01	1.80E-03	5.80E+00	0.00E+00	2.98E-04	2.10E-03	No TRV	No TRV	yes

EPC = Exposure point concentration
SP_v = Soil-to-plant; vegetative
I_P (kg/kgBW/d) = Plant ingestion rate for cottontail rabbits = 0.205
ADD_P = Average daily dose; plant
AUF = Area use factor (1.0)
BAF_i = Soil-to-animal; invertebrates
ADD_A = Average daily dose; animal
I_A (kg/kgBW/d) = Animal ingestion rate for cottontail rabbits = 0.00
ADD_S = Average daily dose; soil
I_S (kg/kgBW/d) = Soil ingestion rate for cottontail rabbits = 0.0129
ADD_{total} = Average daily dose; total
TRV (mg/kgBW/d) = toxicity reference value
nd= not detected, na= not applicable
CPEC = Constituents of potential ecological concern
EEQ = Environmental effects quotient

Appendix Table 7A.47. Exposure Unit 1 Surface Soil CPECs for White-Tailed Deer at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	EPC (mg/kg)	SPv	ADD_P (mg/kgBW/d) RME x SP_r x I_P x AUF	BAF_i	ADD_A (mg/kgBW/d) RME x BAF_i x I_A x AUF	ADD_S (mg/kgBW/d) RME x I_S x AUF	ADD_{total} (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$	TRV (mg/kgBW/d)	Site EEQ ADD_{total} / TRV	CPEC?
Inorganics										
Beryllium	6.83E+01	2.00E-03	4.23E-03	5.00E-02	0.00E+00	4.23E-02	4.66E-02	1.85E-01	2.52E-01	no
Cadmium	3.89E+00	1.10E-01	1.33E-02	1.10E+01	0.00E+00	2.41E-03	1.57E-02	2.71E-01	5.79E-02	no
Calcium	1.32E+05	7.00E-01	2.86E+03	1.00E+00	0.00E+00	8.18E+01	2.95E+03	No TRV	No TRV	yes
Lead	2.18E+02	9.00E-03	6.08E-02	2.00E+00	0.00E+00	1.35E-01	1.96E-01	2.24E+00	8.73E-02	no
Magnesium	3.14E+04	2.00E-01	1.95E+02	1.00E+00	0.00E+00	1.95E+01	2.14E+02	No TRV	No TRV	yes
Silicon	1.40E+03	1.00E+00	4.34E+01	1.00E+00	0.00E+00	8.68E-01	4.43E+01	No TRV	No TRV	yes
Anions										
Fluoride	1.16E+01	1.00E+00	3.60E-01	1.00E+00	0.00E+00	7.19E-03	3.67E-01	1.14E+01	3.21E-02	no
Miscellaneous										
Ammonia, nitrogen	2.03E+01	1.00E+00	6.29E-01	1.00E+00	0.00E+00	1.26E-02	6.42E-01	No TRV	No TRV	yes
Organics										
Semi-Volatiles										
Acenaphthylene	9.19E-02	2.00E-02	5.70E-05	5.00E-02	0.00E+00	5.70E-05	1.14E-04	No TRV	No TRV	yes
Benzo(a)anthracene	4.72E+01	3.90E-03	5.71E-03	5.00E-02	0.00E+00	2.93E-02	3.50E-02	No TRV	No TRV	yes
Benzo(a)pyrene	3.91E+01	2.60E-03	3.15E-03	5.00E-02	0.00E+00	2.42E-02	2.74E-02	1.52E-01	1.80E-01	no
Benzo(b)fluoranthene	5.99E+01	2.30E-03	4.27E-03	5.00E-02	0.00E+00	3.71E-02	4.14E-02	No TRV	No TRV	yes
bis(2-ethylhexyl)phthalate	2.36E+00	8.70E-03	6.36E-04	5.00E-02	0.00E+00	1.46E-03	2.10E-03	2.78E+00	7.56E-04	no
Chrysene	4.75E+01	3.90E-03	5.74E-03	5.00E-02	0.00E+00	2.95E-02	3.52E-02	No TRV	No TRV	yes
Fluoranthene	1.52E+02	2.00E-02	9.42E-02	5.00E-02	0.00E+00	9.42E-02	1.88E-01	No TRV	No TRV	yes
Phenanthrene	1.77E+02	2.00E-02	1.10E-01	5.00E-02	0.00E+00	1.10E-01	2.19E-01	No TRV	No TRV	yes
Pyrene	1.02E+02	6.70E-03	2.12E-02	5.00E-02	0.00E+00	6.32E-02	8.44E-02	No TRV	No TRV	yes
Volatiles										
Acetone	1.17E-02	2.00E-02	7.25E-06	5.00E-02	0.00E+00	7.25E-06	1.45E-05	2.81E+00	5.17E-06	no
4-Methyl-2-pentanone	1.95E-02	2.00E-02	1.21E-05	5.00E-02	0.00E+00	1.21E-05	2.42E-05	7.01E+00	3.45E-06	no
Toluene	1.82E-01	2.00E-02	1.13E-04	5.00E-02	0.00E+00	1.13E-04	2.26E-04	3.94E+00	5.72E-05	no

Appendix Table 7A.47. Exposure Unit 1 Surface Soil CPECs for White-Tailed Deer at the Luckey Site, Luckey Ohio (continued)

Analytes remaining after the site-wide screens	**EPC** (mg/kg)	**SPv**	**ADD_P** (mg/kgBW/d) RME *x* SP_r *x* I_P *x* AUF	**BAF_i**	**ADD_A** (mg/kgBW/d) RME *x* BAF_i *x* I_A *x* AUF	**ADD_S** (mg/kgBW/d) RME *x* I_S *x* AUF	**ADD_{total}** (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$	**TRV** (mg/kgBW/d)	**Site EEQ** ADD_{total} / TRV	**CPEC?**
Pesticides/PCBs										
Aroclor-1254	3.20E+00	3.80E-01	3.77E-02	5.80E+00	0.00E+00	1.98E-03	3.97E-02	8.53E-03	4.65E+00	yes
Aroclor-1260	2.31E-02	3.80E-01	2.72E-04	5.80E+00	0.00E+00	1.43E-05	2.86E-04	No TRV	No TRV	yes

EPC = Exposure point concentration
SP_v = Soil-to-plant; vegetative
I_P (kg/kgBW/d) = Plant ingestion rate for white-tailed deer = 0.031
ADD_P = Average daily dose; plant
AUF = Area use factor (1.0)
BAF_i = Soil-to-animal; invertebrates
ADD_A = Average daily dose; animal
I_A (kg/kgBW/d) = Animal ingestion rate for white-tailed deer = 0.00
ADD_S = Average daily dose; soil
I_S (kg/kgBW/d) = Soil ingestion rate for white-tailed deer = 0.00062
ADD_{total} = Average daily dose; total
TRV (mg/kgBW/d) = toxicity reference value
nd= not detected, na= not applicable
CPEC = Constituents of potential ecological concern
EEQ = Environmental effects quotient

Appendix Table 7A.48. Exposure Unit 1 Surface Soil CPECs for Red-Tailed Hawks at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	EPC (mg/kg)	SP_v	ADD_P (mg/kgBW/d) RME *x* SP_v *x* I_P *x* AUF	SP_v	Prey ADD_P (mg/kgBW/d) RME *x* SP_v *x* I_{P-s} *x* AUF-s	BAF_i	Prey ADD_A (mg/kgBW/d) RME *x* BAF_i *x* I_{A-s} *x* AUF-s	Prey ADD_S (mg/kgBW/d) RME *x* I_{S-s} *x* AUF-s	Prey ADD_{total} (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$
Inorganics									
Beryllium	6.83E+01	2.00E-03	0.00E+00	2.00E-03	9.94E-03	5.00E-02	1.66E+00	4.97E+00	6.65E+00
Cadmium	3.89E+00	1.10E-01	0.00E+00	1.10E-01	3.12E-02	1.10E+01	2.08E+01	2.83E-01	2.12E+01
Calcium	1.32E+05	7.00E-01	0.00E+00	7.00E-01	6.73E+03	1.00E+00	6.43E+04	9.61E+03	8.06E+04
Lead	2.18E+02	9.00E-03	0.00E+00	9.00E-03	1.43E-01	2.00E+00	2.12E+02	1.59E+01	2.28E+02
Magnesium	3.14E+04	2.00E-01	0.00E+00	2.00E-01	4.57E+02	1.00E+00	1.53E+04	2.29E+03	1.80E+04
Silicon	1.40E+03	1.00E+00	0.00E+00	1.00E+00	1.02E+02	1.00E+00	6.82E+02	1.02E+02	8.86E+02
Anions									
Fluoride	1.16E+01	1.00E+00	0.00E+00	1.00E+00	8.44E-01	1.00E+00	5.65E+00	8.44E-01	7.34E+00
Miscellaneous									
Ammonia, nitrogen	2.03E+01	1.00E+00	0.00E+00	1.00E+00	1.48E+00	1.00E+00	9.89E+00	1.48E+00	1.28E+01
Organics									
Semi-Volatiles									
Acenaphthylene	9.19E-02	2.00E-02	0.00E+00	2.00E-02	1.34E-04	5.00E-02	2.24E-03	6.69E-03	9.06E-03
Benzo(a)anthracene	4.72E+01	3.90E-03	0.00E+00	3.90E-03	1.34E-02	5.00E-02	1.15E+00	3.44E+00	4.60E+00
Benzo(a)pyrene	3.91E+01	2.60E-03	0.00E+00	2.60E-03	7.40E-03	5.00E-02	9.52E-01	2.85E+00	3.81E+00
Benzo(b)fluoranthene	5.99E+01	2.30E-03	0.00E+00	2.30E-03	1.00E-02	5.00E-02	1.46E+00	4.36E+00	5.83E+00
bis(2-ethylhexyl)phthalate	2.36E+00	8.70E-03	0.00E+00	8.70E-03	1.49E-03	5.00E-02	5.75E-02	1.72E-01	2.31E-01
Chrysene	4.75E+01	3.90E-03	0.00E+00	3.90E-03	1.35E-02	5.00E-02	1.16E+00	3.46E+00	4.63E+00
Fluoranthene	1.52E+02	2.00E-02	0.00E+00	2.00E-02	2.21E-01	5.00E-02	3.70E+00	1.11E+01	1.50E+01
Phenanthrene	1.77E+02	2.00E-02	0.00E+00	2.00E-02	2.58E-01	5.00E-02	4.31E+00	1.29E+01	1.75E+01
Pyrene	1.02E+02	6.70E-03	0.00E+00	6.70E-03	4.98E-02	5.00E-02	2.48E+00	7.43E+00	9.96E+00
Volatiles									
Acetone	1.17E-02	2.00E-02	0.00E+00	2.00E-02	1.70E-05	5.00E-02	2.85E-04	8.52E-04	1.15E-03
4-Methyl-2-pentanone	1.95E-02	2.00E-02	0.00E+00	2.00E-02	2.84E-05	5.00E-02	4.75E-04	1.42E-03	1.92E-03
Toluene	1.82E-01	2.00E-02	0.00E+00	2.00E-02	2.65E-04	5.00E-02	4.43E-03	1.32E-02	1.79E-02

Appendix Table 7A.48. Exposure Unit 1 Surface Soil CPECs for Red-Tailed Hawks at the Luckey Site, Luckey Ohio (continued)

Analytes remaining after the site-wide screens	**EPC** (mg/kg)	**SP_v**	**ADD_P** (mg/kgBW/d) RME *x* SP_v *x* I_P *x* AUF	**SP_v**	**Prey ADD_P** (mg/kgBW/d) RME *x* SP_v *x* I_{P-s} *x* AUF-s	**BAF_i**	**Prey ADD_A** (mg/kgBW/d) RME *x* BAF_i *x* I_{A-s} *x* AUF-s	**Prey ADD_S** (mg/kgBW/d) RME *x* I_{S-s} *x* AUF-s	**Prey ADD_{total}** (mg/kgBW/d) ADD_P + ADD_A + ADD_S
Pesticides/PCBs									
Aroclor-1254	3.20E+00	3.80E-01	0.00E+00	3.80E-01	8.85E-02	5.80E+00	9.04E+00	2.33E-01	9.36E+00
Aroclor-1260	2.31E-02	3.80E-01	0.00E+00	3.80E-01	6.39E-04	5.80E+00	6.53E-02	1.68E-03	6.76E-02

EPC = Exposure point concentration

SP_r = Soil-to-plant; reproductive

SP_v = Soil-to-plant; vegetative

I_P (kg/kgBW/d) = Plant ingestion rate for red-tailed hawks = 0.00

ADD_P = Average daily dose; plant

Cs (mg/kg) = Concentration in the prey

IR_f (kg/kgBW/d)= Ingestion rate of food for shrews = 0.56

BAF_v = Animal-to-mammal

I_A (kg/kgBW/d) = Animal ingestion rate for red-tailed hawks = 0.11

I_S (kg/kgBW/d) = Soil ingestion rate for red-tailed hawks = 0.00

Appendix Table 7A.48. Exposure Unit 1 Surface Soil CPECs for Red-Tailed Hawks at the Luckey Site, Luckey Ohio (continued)

Analytes remaining after the site-wide screens	Cs (mg/kg) ADD_{total}/IR_f	BAF_v	ADD_A (mg/kgBW/d) Cs *x* BAF_v *x* I_A *x* AUF	ADD_S (mg/kgBW/d) RME *x* I_S *x* AUF	ADD_{total} (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$	TRV (mg/kgBW/d)	Site EEQ ADD_{total} / TRV	CPEC?
Inorganics								
Beryllium	1.19E+01	5.00E-02	6.53E-02	0.00E+00	6.53E-02	No TRV	No TRV	yes
Cadmium	3.78E+01	2.80E-02	1.16E-01	0.00E+00	1.16E-01	1.46E+00	7.99E-02	no
Calcium	1.44E+05	1.00E+00	1.58E+04	0.00E+00	1.58E+04	No TRV	No TRV	yes
Lead	4.08E+02	1.50E-02	6.73E-01	0.00E+00	6.73E-01	6.82E-01	9.87E-01	no
Magnesium	3.22E+04	1.00E+00	3.54E+03	0.00E+00	3.54E+03	No TRV	No TRV	yes
Silicon	1.58E+03	1.00E+00	1.74E+02	0.00E+00	1.74E+02	No TRV	No TRV	yes
Anions								
Fluoride	1.31E+01	1.00E+00	1.44E+00	0.00E+00	1.44E+00	4.93E+00	2.92E-01	no
Miscellaneous								
Ammonia, nitrogen	2.29E+01	1.00E+00	2.52E+00	0.00E+00	2.52E+00	No TRV	No TRV	yes
Organics								
Semi-Volatiles								
Acenaphthylene	1.62E-02	1.90E-02	3.38E-05	0.00E+00	3.38E-05	No TRV	No TRV	yes
Benzo(a)anthracene	8.21E+00	7.60E-01	6.87E-01	0.00E+00	6.87E-01	No TRV	No TRV	yes
Benzo(a)pyrene	6.80E+00	1.50E+00	1.12E+00	0.00E+00	1.12E+00	No TRV	No TRV	yes
Benzo(b)fluoranthene	1.04E+01	1.90E+00	2.18E+00	0.00E+00	2.18E+00	No TRV	No TRV	yes
bis(2-ethylhexyl)phthalate	4.12E-01	1.90E-01	8.61E-03	0.00E+00	8.61E-03	6.69E-01	1.29E-02	no
Chrysene	8.27E+00	7.60E-01	6.91E-01	0.00E+00	6.91E-01	No TRV	No TRV	yes
Fluoranthene	2.68E+01	1.30E-01	3.83E-01	0.00E+00	3.83E-01	No TRV	No TRV	yes
Phenanthrene	3.12E+01	4.80E-02	1.65E-01	0.00E+00	1.65E-01	No TRV	No TRV	yes
Pyrene	1.78E+01	3.00E-01	5.87E-01	0.00E+00	5.87E-01	No TRV	No TRV	yes
Volatiles								
Acetone	2.06E-03	8.70E-07	1.97E-10	0.00E+00	1.97E-10	No TRV	No TRV	yes
4-Methyl-2-pentanone	3.43E-03	2.40E-05	9.07E-09	0.00E+00	9.07E-09	No TRV	No TRV	yes
Toluene	3.21E-02	7.60E-04	2.68E-06	0.00E+00	2.68E-06	No TRV	No TRV	yes

Appendix Table 7A.48. Exposure Unit 1 Surface Soil CPECs for Red-Tailed Hawks at the Luckey Site, Luckey Ohio (continued)

Analytes remaining after the site-wide screens	**Cs** (mg/kg) ADD_{total}/IR_f	**BAF_v**	**ADD_A** (mg/kgBW/d) Cs *x* BAF_v *x* I_A *x* AUF	**ADD_S** (mg/kgBW/d) RME *x* I_S *x* AUF	**ADD_{total}** (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$	**TRV** (mg/kgBW/d)	**Site EEQ** ADD_{total} / TRV	**CPEC?**
Pesticides/PCBs								
Aroclor-1254	1.67E+01	2.90E+00	5.33E+00	0.00E+00	5.33E+00	1.75E-01	3.06E+01	yes
Aroclor-1260	1.21E-01	2.90E+00	3.85E-02	0.00E+00	3.85E-02	No TRV	No TRV	yes

I_{P-s} (kg/kgBW/d) = Plant ingestion rate for shrews
AUF = Area use factor (1.0)
BAF_i = Soil-to-animal; invertebrates
ADD_A = Average daily dose; animal
I_{A-s} (kg/kgBW/d) = Animal ingestion rate for shrews
ADD_S = Average daily dose; soil

I_{S-s} (kg/kgBW/d) = Soil ingestion rate for shrews
ADD_{total} = Average daily dose; total
TRV (mg/kgBW/d) = toxicity reference value
HQ = Hazard quotient
nd= not detected, na= not applicable
CPEC = Constituents of potential ecological concern
EEQ = Environmental effects quotient

Appendix Table 7A.49. Exposure Unit 1 Surface Soil CPECs for Red Foxes at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	EPC (mg/kg)	SPr	ADD_P (mg/kgBW/d) RME x SP_r x I_P x AUF	SP_v	Prey ADD_P (mg/kgBW/d) RME x SP_v x I_{P-s} x AUF-s	BAF_i	Prey ADD_A (mg/kgBW/d) RME x BAF_i x I_{A-s} x AUF-s	Prey ADD_S (mg/kgBW/d) RME x I_{S-s} x AUF-s	Prey ADD_{total} (mg/kgBW/d) ADD_P + ADD_A + ADD_S
Inorganics									
Beryllium	6.83E+01	3.00E-04	6.50E-05	2.00E-03	9.94E-03	5.00E-02	1.66E+00	4.97E+00	6.65E+00
Cadmium	3.89E+00	3.00E-02	3.70E-04	1.10E-01	3.12E-02	1.10E+01	2.08E+01	2.83E-01	2.12E+01
Calcium	1.32E+05	7.00E-02	2.93E+01	7.00E-01	6.73E+03	1.00E+00	6.43E+04	9.61E+03	8.06E+04
Lead	2.18E+02	1.80E-03	1.25E-03	9.00E-03	1.43E-01	2.00E+00	2.12E+02	1.59E+01	2.28E+02
Magnesium	3.14E+04	1.10E-01	1.10E+01	2.00E-01	4.57E+02	1.00E+00	1.53E+04	2.29E+03	1.80E+04
Silicon	1.40E+03	1.00E+00	4.44E+00	1.00E+00	1.02E+02	1.00E+00	6.82E+02	1.02E+02	8.86E+02
Anions									
Fluoride	1.16E+01	1.00E+00	3.68E-02	1.00E+00	8.44E-01	1.00E+00	5.65E+00	8.44E-01	7.34E+00
Miscellaneous									
Ammonia, nitrogen	2.03E+01	1.00E+00	6.44E-02	1.00E+00	1.48E+00	1.00E+00	9.89E+00	1.48E+00	1.28E+01
Organics									
Semi-Volatiles									
Acenaphthylene	9.19E-02	2.00E-02	5.83E-06	2.00E-02	1.34E-04	5.00E-02	2.24E-03	6.69E-03	9.06E-03
Benzo(a)anthracene	4.72E+01	3.90E-03	5.84E-04	3.90E-03	1.34E-02	5.00E-02	1.15E+00	3.44E+00	4.60E+00
Benzo(a)pyrene	3.91E+01	2.60E-03	3.23E-04	2.60E-03	7.40E-03	5.00E-02	9.52E-01	2.85E+00	3.81E+00
Benzo(b)fluoranthene	5.99E+01	2.30E-03	4.37E-04	2.30E-03	1.00E-02	5.00E-02	1.46E+00	4.36E+00	5.83E+00
bis(2-ethylhexyl)phthalate	2.36E+00	8.70E-03	6.52E-05	8.70E-03	1.49E-03	5.00E-02	5.75E-02	1.72E-01	2.31E-01
Chrysene	4.75E+01	3.90E-03	5.88E-04	3.90E-03	1.35E-02	5.00E-02	1.16E+00	3.46E+00	4.63E+00
Fluoranthene	1.52E+02	2.00E-02	9.65E-03	2.00E-02	2.21E-01	5.00E-02	3.70E+00	1.11E+01	1.50E+01
Phenanthrene	1.77E+02	2.00E-02	1.12E-02	2.00E-02	2.58E-01	5.00E-02	4.31E+00	1.29E+01	1.75E+01
Pyrene	1.02E+02	6.70E-03	2.17E-03	6.70E-03	4.98E-02	5.00E-02	2.48E+00	7.43E+00	9.96E+00

Appendix Table 7A.49. Exposure Unit 1 Surface Soil CPECs for Red Foxes at the Luckey Site, Luckey Ohio (continued)

Analytes remaining after the site-wide screens	**EPC** (mg/kg)	**SPr**	**ADD_P** (mg/kgBW/d) RME *x* SP_r *x* I_P *x* AUF	**SP_v**	**Prey ADD_P** (mg/kgBW/d) RME *x* SP_v *x* I_{P-s} *x* AUF-s	**BAF_i**	**Prey ADD_A** (mg/kgBW/d) RME *x* BAF_i *x* I_{A-s} *x* AUF-s	**Prey ADD_S** (mg/kgBW/d) RME *x* I_{S-s} *x* AUF-s	**Prey ADD_{total}** (mg/kgBW/d) ADD_P + ADD_A + ADD_S
Volatiles									
Acetone	1.17E-02	2.00E-02	7.43E-07	2.00E-02	1.70E-05	5.00E-02	2.85E-04	8.52E-04	1.15E-03
4-Methyl-2-pentanone	1.95E-02	2.00E-02	1.24E-06	2.00E-02	2.84E-05	5.00E-02	4.75E-04	1.42E-03	1.92E-03
Toluene	1.82E-01	2.00E-02	1.16E-05	2.00E-02	2.65E-04	5.00E-02	4.43E-03	1.32E-02	1.79E-02
Pesticides/PCBs									
Aroclor-1254	3.20E+00	3.80E-01	3.86E-03	3.80E-01	8.85E-02	5.80E+00	9.04E+00	2.33E-01	9.36E+00
Aroclor-1260	2.31E-02	3.80E-01	2.79E-05	3.80E-01	6.39E-04	5.80E+00	6.53E-02	1.68E-03	6.76E-02

EPC = Exposure point concentration
SP_r = Soil-to-plant; reproductive
SP_v = Soil-to-plant; vegetative
I_P (kg/kgBW/d) = Plant ingestion rate for red foxes = 0.00317
ADD_P = Average daily dose; plant
I_{P-s} (kg/kgBW/d) = Plant ingestion rate for shrews = 0.0728
AUF = Area use factor (1.0)
BAF_i = Soil-to-animal; invertebrates
ADD_A = Average daily dose; animal
I_{A-s} (kg/kgBW/d) = Animal ingestion rate for shrews = 0.487
ADD_S = Average daily dose; soil
I_{S-s} (kg/kgBW/d) = Soil ingestion rate for shrews = 0.0728

Cs (mg/kg) = Concentration in the prey
IR_f = Ingestion rate of food for shrews
BAF_v = Anima 7.28E-02
I_A (kg/kgBW/d) = Animal ingestion rate for red foxes = 0.0658
I_S (kg/kgBW/d) = Soil ingestion rate for red foxes = 0.00193
ADD_{total} = Average daily dose; total
TRV (mg/kgBW/d) = toxicity reference value
HQ = Hazard quotient
nd= not detected, na= not applicable
CPEC = Constituents of potential ecological concern
EEQ = Environmental effects quotient

Appendix Table 7A.49. Exposure Unit 1 Surface Soil CPECs for Red Foxes at the Luckey Site, Luckey Ohio (continued)

Analytes remaining after the site-wide screens	**Cs** (mg/kg) ADD_{total}/IR_f	**BAF_v**	**ADD_A** (mg/kgBW/d) Cs *x* BAF_v *x* I_A *x* AUF	**ADD_S** (mg/kgBW/d) RME *x* I_S *x* AUF	**ADD_{total}** (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$	**TRV** (mg/kgBW/d)	**Site EEQ** ADD_{total} / TRV	**CPEC?**
Inorganics								
Beryllium	1.19E+01	5.00E-02	3.91E-02	1.32E-01	1.71E-01	3.45E-01	4.96E-01	no
Cadmium	3.78E+01	2.80E-02	6.96E-02	7.52E-03	7.75E-02	5.04E-01	1.54E-01	no
Calcium	1.44E+05	1.00E+00	9.48E+03	2.55E+02	9.76E+03	No TRV	No TRV	yes
Lead	4.08E+02	1.50E-02	4.03E-01	4.21E-01	8.25E-01	4.18E+00	1.97E-01	no
Magnesium	3.22E+04	1.00E+00	2.12E+03	6.07E+01	2.19E+03	No TRV	No TRV	yes
Silicon	1.58E+03	1.00E+00	1.04E+02	2.70E+00	1.11E+02	No TRV	No TRV	yes
Anions								
Fluoride	1.31E+01	1.00E+00	8.63E-01	2.24E-02	9.22E-01	2.13E+01	4.33E-02	no
Miscellaneous								
Ammonia, nitrogen	2.29E+01	1.00E+00	1.51E+00	3.92E-02	1.61E+00	No TRV	No TRV	yes
Organics								
Semi-Volatiles								
Acenaphthylene	1.62E-02	1.90E-02	2.02E-05	1.78E-04	2.04E-04	No TRV	No TRV	yes
Benzo(a)anthracene	8.21E+00	7.60E-01	4.11E-01	9.12E-02	5.03E-01	No TRV	No TRV	yes
Benzo(a)pyrene	6.80E+00	1.50E+00	6.71E-01	7.55E-02	7.47E-01	2.83E-01	2.64E+00	yes
Benzo(b)fluoranthene	1.04E+01	1.90E+00	1.30E+00	1.16E-01	1.42E+00	No TRV	No TRV	yes
bis(2-ethylhexyl)phthalate	4.12E-01	1.90E-01	5.15E-03	4.56E-03	9.78E-03	5.18E+00	1.89E-03	no
Chrysene	8.27E+00	7.60E-01	4.13E-01	9.18E-02	5.06E-01	No TRV	No TRV	yes
Fluoranthene	2.68E+01	1.30E-01	2.29E-01	2.94E-01	5.32E-01	No TRV	No TRV	yes
Phenanthrene	3.12E+01	4.80E-02	9.85E-02	3.42E-01	4.52E-01	No TRV	No TRV	yes
Pyrene	1.78E+01	3.00E-01	3.51E-01	1.97E-01	5.50E-01	No TRV	No TRV	yes

Appendix Table 7A.49. Exposure Unit 1 Surface Soil CPECs for Red Foxes at the Luckey Site, Luckey Ohio (continued)

Analytes remaining after the site-wide screens	**Cs** (mg/kg) ADD_{total}/IR_f	**BAF_v**	**ADD_A** (mg/kgBW/d) Cs *x* BAF_v *x* I_A *x* AUF	**ADD_S** (mg/kgBW/d) RME *x* I_S *x* AUF	**ADD_{total}** (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$	**TRV** (mg/kgBW/d)	**Site EEQ** ADD_{total} / TRV	**CPEC?**
Volatiles								
Acetone	2.06E-03	8.70E-07	1.18E-10	2.26E-05	2.33E-05	5.23E+00	4.47E-06	no
4-Methyl-2-pentanone	3.43E-03	2.40E-05	5.43E-09	3.77E-05	3.89E-05	1.31E+01	2.98E-06	no
Toluene	3.21E-02	7.60E-04	1.60E-06	3.52E-04	3.65E-04	7.35E+00	4.96E-05	no
Pesticides/PCBs								
Aroclor-1254	1.67E+01	2.90E+00	3.19E+00	6.18E-03	3.20E+00	1.59E-02	2.01E+02	yes
Aroclor-1260	1.21E-01	2.90E+00	2.30E-02	4.46E-05	2.31E-02	No TRV	No TRV	yes

Appendix Table 7A.50. Exposure Unit 2 Surface Soil, CPECs for Plants at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	EPC (mg/kg)	Plants			
		Plant TRV (mg/kg)	Plant EEQ	EEQ>1? Yes or No	CPEC?
Inorganics					
Antimony	9.90E-01	5.00E+00	1.98E-01	no	no
Beryllium	7.65E+02	1.00E+01	7.65E+01	yes	yes
Boron	3.08E+01	5.00E-01	6.16E+01	yes	yes
Cadmium	8.35E+01	4.00E+00	2.09E+01	yes	yes
Calcium	9.77E+04	No TRV	No TRV	yes	yes
Chromium	5.08E+01	1.00E+00	5.08E+01	yes	yes
Copper	8.55E+01	1.00E+02	8.55E-01	no	no
Lead	1.38E+03	5.00E+01	2.76E+01	yes	yes
Mercury	5.40E-01	3.00E-01	1.80E+00	yes	yes
Nickel	6.35E+01	3.00E+01	2.12E+00	yes	yes
Silicon	4.31E+03	No TRV	No TRV	yes	yes
Sodium	4.08E+03	No TRV	No TRV	yes	yes
Strontium	5.74E+02	No TRV	No TRV	yes	yes
Thallium	2.40E+00	1.00E+00	2.40E+00	yes	yes
Zinc	5.09E+02	5.00E+01	1.02E+01	yes	yes
Anions					
Chloride	1.78E+02	No TRV	No TRV	yes	yes
Fluoride	1.44E+02	2.00E+00	7.20E-01	no	no
Nitrate, as N	3.19E+02	No TRV	No TRV	yes	yes
Sulfate	2.48E+04	No TRV	No TRV	yes	yes
Miscellaneous					
Ammonia, nitrogen	3.07E+01	No TRV	No TRV	yes	yes
Organics					
Semi-Volatiles					
Benzo(a)anthracene	8.87E-01	No TRV	No TRV	yes	yes
Benzo(a)pyrene	9.21E-01	No TRV	No TRV	yes	yes
Benzo(b)fluoranthene	1.14E+00	No TRV	No TRV	yes	yes
bis(2-ethylhexyl)phthalate	2.46E-01	No TRV	No TRV	yes	yes
Fluoranthene	1.64E+00	No TRV	No TRV	yes	yes
Phenanthrene	1.06E+00	No TRV	No TRV	yes	yes
Pyrene	1.43E+00	No TRV	No TRV	yes	yes
Volatiles					
Toluene	6.43E-02	No TRV	No TRV	yes	yes

EPC = Exposure point concentration
TRV = toxicity reference value
EEQ = Environmental effects quotient
CPEC = Contaminant of Potential Ecological Concern
Plant TRVs from Efroymson et al (1997a)

Appendix Table 7A.51. Exposure Unit 2 Surface Soil, CPECs for Earthworms at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	EPC (mg/kg)	Earthworms			
		Earthworm TRV (mg/kg)	Earthworm EEQ	EEQ>1?	CPEC?
Inorganics					
Antimony	9.90E-01	No TRV	No TRV	yes	yes
Beryllium	7.65E+02	No TRV	No TRV	yes	yes
Boron	3.08E+01	No TRV	No TRV	yes	yes
Cadmium	8.35E+01	2.00E+01	4.18E+00	yes	yes
Calcium	9.77E+04	No TRV	No TRV	yes	yes
Chromium	5.08E+01	4.00E-01	1.27E+02	yes	yes
Copper	8.55E+01	6.00E+01	1.43E+00	yes	yes
Lead	1.38E+03	5.00E+02	2.76E+00	yes	yes
Mercury	5.40E-01	1.00E-01	5.40E+00	yes	yes
Nickel	6.35E+01	2.00E+02	3.18E-01	no	no
Silicon	4.31E+03	No TRV	No TRV	yes	yes
Sodium	4.08E+03	No TRV	No TRV	yes	yes
Strontium	5.74E+02	No TRV	No TRV	yes	yes
Thallium	2.40E+00	No TRV	No TRV	yes	yes
Zinc	5.09E+02	2.00E+02	2.55E+00	yes	yes
Anions					
Chloride	1.78E+02	No TRV	No TRV	yes	yes
Fluoride	1.44E+02	No TRV	No TRV	yes	yes
Nitrate, as N	3.19E+02	No TRV	No TRV	yes	yes
Sulfate	2.48E+04	No TRV	No TRV	yes	yes
Miscellaneous					
Ammonia, nitrogen	3.07E+01	No TRV	No TRV	yes	yes
Organics					
Semi-Volatiles					
Benzo(a)anthracene	8.87E-01	No TRV	No TRV	yes	yes
Benzo(a)pyrene	9.21E-01	No TRV	No TRV	yes	yes
Benzo(b)fluoranthene	1.14E+00	No TRV	No TRV	yes	yes
bis(2-ethylhexyl)phthalate	2.46E-01	No TRV	No TRV	yes	yes
Fluoranthene	1.64E+00	No TRV	No TRV	yes	yes
Phenanthrene	1.06E+00	No TRV	No TRV	yes	yes
Pyrene	1.43E+00	No TRV	No TRV	yes	yes
Volatiles					
Toluene	6.43E-02	No TRV	No TRV	yes	yes

EPC = Exposure point concentration
TRV = toxicity reference value
EEQ = Environmental effects quotient
CPEC = Contaminant of Potential Ecological Concern
Earthworm TRVs from Efroymson et al (1997b)

Appendix Table 7A.52. Exposure Unit 2 Surface Soil CPECs for Shrews at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	EPC (mg/kg)	SPv	ADD_P (mg/kgBW/d) RME x SP_r x I_P x AUF	BAF_i	ADD_A (mg/kgBW/d) RME x BAF_i x I_A x AUF	ADD_S (mg/kgBW/d) RME x I_S x AUF	ADD_{total} (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$	TRV (mg/kgBW/d)	Site EEQ ADD_{total} / TRV	CPEC?
Inorganics										
Antimony	9.90E-01	4.00E-02	2.88E-03	5.00E-02	2.41E-02	7.21E-02	9.91E-02	1.44E-01	6.88E-01	no
Beryllium	7.65E+02	2.00E-03	1.11E-01	5.00E-02	1.86E+01	5.57E+01	7.44E+01	1.41E+00	5.29E+01	yes
Boron	3.08E+01	8.00E-01	1.79E+00	1.00E+00	1.50E+01	2.24E+00	1.90E+01	5.96E+01	3.19E-01	no
Cadmium	8.35E+01	1.10E-01	6.69E-01	1.10E+01	4.47E+02	6.08E+00	4.54E+02	2.05E+00	2.21E+02	yes
Calcium	9.77E+04	7.00E-01	4.98E+03	1.00E+00	4.76E+04	7.11E+03	5.97E+04	No TRV	No TRV	yes
Chromium	5.08E+01	1.50E-03	5.55E-03	1.60E-01	3.96E+00	3.70E+00	7.66E+00	5.83E+03	1.31E-03	no
Copper	8.55E+01	8.00E-02	4.98E-01	1.60E-01	6.66E+00	6.22E+00	1.34E+01	3.24E+01	4.13E-01	no
Lead	1.38E+03	9.00E-03	9.04E-01	2.00E+00	1.34E+03	1.00E+02	1.45E+03	1.70E+01	8.49E+01	yes
Mercury	5.40E-01	1.80E-01	7.08E-03	3.40E-01	8.94E-02	3.93E-02	1.36E-01	2.80E+00	4.86E-02	no
Nickel	6.35E+01	1.20E-02	5.55E-02	2.30E-01	7.12E+00	4.62E+00	1.18E+01	8.52E+01	1.38E-01	no
Silicon	4.31E+03	1.00E+00	3.14E+02	1.00E+00	2.10E+03	3.14E+02	2.73E+03	No TRV	No TRV	yes
Sodium	4.08E+03	1.50E-02	4.46E+00	1.00E+00	1.99E+03	2.97E+02	2.29E+03	No TRV	No TRV	yes
Strontium	5.74E+02	1.00E+00	4.18E+01	1.00E+00	2.80E+02	4.18E+01	3.63E+02	No TRV	No TRV	yes
Thallium	2.40E+00	8.00E-04	1.40E-04	1.00E+00	1.17E+00	1.75E-01	1.34E+00	1.59E-02	8.44E+01	yes
Zinc	5.09E+02	3.00E-01	1.11E+01	1.80E+00	4.46E+02	3.71E+01	4.95E+02	3.41E+02	1.45E+00	yes
Anions										
Chloride	1.78E+02	1.00E+00	1.30E+01	1.00E+00	8.67E+01	1.30E+01	1.13E+02	No TRV	No TRV	yes
Fluoride	1.44E+02	1.00E+00	1.05E+01	1.00E+00	7.02E+01	1.05E+01	9.11E+01	8.69E+01	1.05E+00	yes
Nitrate, as N	3.19E+02	1.00E+00	2.32E+01	1.00E+00	1.55E+02	2.32E+01	2.02E+02	No TRV	No TRV	yes
Sulfate	2.48E+04	1.00E+00	1.81E+03	1.00E+00	1.21E+04	1.81E+03	1.57E+04	No TRV	No TRV	yes
Miscellaneous										
Ammonia, nitrogen	3.07E+01	1.00E+00	2.23E+00	1.00E+00	1.50E+01	2.23E+00	1.94E+01	No TRV	No TRV	yes

Appendix Table 7A.52. Exposure Unit 2 Surface Soil CPECs for Shrews at the Luckey Site, Luckey Ohio (continued)

Analytes remaining after the site-wide screens	EPC (mg/kg)	SPv	ADD_P (mg/kgBW/d) RME x SP_r x I_P x AUF	BAF_i	ADD_A (mg/kgBW/d) RME x BAF_i x I_A x AUF	ADD_S (mg/kgBW/d) RME x I_S x AUF	ADD_{total} (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$	TRV (mg/kgBW/d)	Site EEQ ADD_{total} / TRV	CPEC?
Organics										
Semi-Volatiles										
Benzo(a)anthracene	8.87E-01	3.90E-03	2.52E-04	5.00E-02	2.16E-02	6.46E-02	8.64E-02	No TRV	No TRV	yes
Benzo(a)pyrene	9.21E-01	2.60E-03	1.74E-04	5.00E-02	2.24E-02	6.70E-02	8.97E-02	1.15E+00	7.78E-02	no
Benzo(b)fluoranthene	1.14E+00	2.30E-03	1.91E-04	5.00E-02	2.78E-02	8.30E-02	1.11E-01	No TRV	No TRV	yes
bis(2-ethylhexyl)phthalate	2.46E-01	8.70E-03	1.56E-04	5.00E-02	5.99E-03	1.79E-02	2.41E-02	2.11E+01	1.14E-03	no
Chrysene	8.76E-01	3.90E-03	2.49E-04	5.00E-02	2.13E-02	6.38E-02	8.54E-02	No TRV	No TRV	yes
Fluoranthene	1.64E+00	2.00E-02	2.39E-03	5.00E-02	4.00E-02	1.19E-01	1.62E-01	No TRV	No TRV	yes
Phenanthrene	1.06E+00	2.00E-02	1.54E-03	5.00E-02	2.58E-02	7.72E-02	1.05E-01	No TRV	No TRV	yes
Pyrene	1.43E+00	6.70E-03	6.97E-04	5.00E-02	3.48E-02	1.04E-01	1.40E-01	No TRV	No TRV	yes
Volatiles										
Toluene	6.43E-02	2.00E-02	9.36E-05	5.00E-02	1.57E-03	4.68E-03	6.34E-03	2.99E+01	2.12E-04	no

EPC = Exposure point concentration
SP_v = Soil-to-plant; vegetative
I_P (kg/kgBW/d) = Plant ingestion rate for shrews = 0.0728
ADD_P = Average daily dose; plant
AUF = Area use factor (1.0)
BAF_i = Soil-to-animal; invertebrates
ADD_A = Average daily dose; animal

I_A (kg/kgBW/d) = Animal ingestion rate for shrews = 0.487
ADD_S = Average daily dose; soil
I_S (kg/kgBW/d) = Soil ingestion rate for shrews = 0.0728
ADD_{total} = Average daily dose; total
TRV (mg/kgBW/d) = toxicity reference value
nd= not detected, na= not applicable
CPEC = Constituents of potential ecological concern
EEQ = Environmental effects quotient

Appendix Table 7A.53. Exposure Unit 2 Surface Soil CPECs for Robins at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	EPC (mg/kg)	SP_r	ADD_P (mg/kgBW/d) RME *x* SP_r *x* I_P *x* AUF	BAF_i	ADD_A (mg/kgBW/d) RME *x* BAF_i *x* I_A *x* AUF	ADD_S (mg/kgBW/d) RME *x* I_S *x* AUF	ADD_{total} (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$	TRV (mg/kgBW/d)	Site EEQ ADD_{total} / TRV	CPEC?
Inorganics										
Antimony	9.90E-01	6.00E-03	4.51E-03	5.00E-02	3.76E-02	1.56E-01	1.99E-01	No TRV	No TRV	yes
Beryllium	7.65E+02	3.00E-04	1.74E-01	5.00E-02	2.91E+01	1.21E+02	1.50E+02	No TRV	No TRV	yes
Boron	3.08E+01	4.00E-01	9.36E+00	1.00E+00	2.34E+01	4.87E+00	3.76E+01	5.42E+01	6.95E-01	no
Cadmium	8.35E+01	3.00E-02	1.90E+00	1.10E+01	6.98E+02	1.32E+01	7.13E+02	2.83E+00	2.52E+02	yes
Calcium	9.77E+04	7.00E-02	5.20E+03	1.00E+00	7.43E+04	1.54E+04	9.49E+04	No TRV	No TRV	yes
Chromium	5.08E+01	9.00E-04	3.47E-02	1.60E-01	6.18E+00	8.03E+00	1.42E+01	1.99E+00	7.16E+00	yes
Copper	8.55E+01	5.00E-02	3.25E+00	1.60E-01	1.04E+01	1.35E+01	2.72E+01	7.55E+01	3.60E-01	no
Lead	1.38E+03	1.80E-03	1.89E+00	2.00E+00	2.10E+03	2.18E+02	2.32E+03	1.32E+00	1.75E+03	yes
Mercury	5.40E-01	4.00E-02	1.64E-02	3.40E-01	1.40E-01	8.54E-02	2.41E-01	5.27E-01	4.58E-01	no
Nickel	6.35E+01	1.20E-02	5.79E-01	2.30E-01	1.11E+01	1.00E+01	2.17E+01	1.37E+02	1.59E-01	no
Silicon	4.31E+03	1.00E+00	3.28E+03	1.00E+00	3.28E+03	6.81E+02	7.23E+03	No TRV	No TRV	yes
Sodium	4.08E+03	1.10E-02	3.41E+01	1.00E+00	3.10E+03	6.45E+02	3.78E+03	No TRV	No TRV	yes
Strontium	5.74E+02	1.00E+00	4.36E+02	1.00E+00	4.36E+02	9.07E+01	9.63E+02	No TRV	No TRV	yes
Thallium	2.40E+00	8.00E-05	1.46E-04	1.00E+00	1.82E+00	3.79E-01	2.20E+00	No TRV	No TRV	yes
Zinc	5.09E+02	1.80E-01	6.96E+01	1.80E+00	6.96E+02	8.05E+01	8.46E+02	3.21E+01	2.63E+01	yes
Anions										
Chloride	1.78E+02	1.00E+00	1.35E+02	1.00E+00	1.35E+02	2.81E+01	2.99E+02	No TRV	No TRV	yes
Fluoride	1.44E+02	1.00E+00	1.09E+02	1.00E+00	1.09E+02	2.28E+01	2.42E+02	9.57E+00	2.53E+01	yes
Nitrate, as N	3.19E+02	1.00E+00	2.42E+02	1.00E+00	2.42E+02	5.04E+01	5.35E+02	No TRV	No TRV	yes
Sulfate	2.48E+04	1.00E+00	1.88E+04	1.00E+00	1.88E+04	3.92E+03	4.16E+04	No TRV	No TRV	yes
Miscellaneous										
Ammonia, nitrogen	3.07E+01	1.00E+00	2.33E+01	1.00E+00	2.33E+01	4.85E+00	5.15E+01	No TRV	No TRV	yes

Appendix Table 7A.53. Exposure Unit 2 Surface Soil CPECs for Robins at the Luckey Site, Luckey Ohio (continued)

Analytes remaining after the site-wide screens	EPC (mg/kg)	SP_r	ADD_P (mg/kgBW/d) RME *x* SP_r *x* I_P *x* AUF	BAF_i	ADD_A (mg/kgBW/d) RME *x* BAF_i *x* I_A *x* AUF	ADD_S (mg/kgBW/d) RME *x* I_S *x* AUF	ADD_{total} (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$	TRV (mg/kgBW/d)	Site EEQ ADD_{total} / TRV	CPEC?
Organics										
Semi-Volatiles										
Benzo(a)anthracene	8.87E-01	3.90E-03	2.63E-03	5.00E-02	3.37E-02	1.40E-01	1.77E-01	No TRV	No TRV	yes
Benzo(a)pyrene	9.21E-01	2.60E-03	1.82E-03	5.00E-02	3.50E-02	1.46E-01	1.82E-01	No TRV	No TRV	yes
Benzo(b)fluoranthene	1.14E+00	2.30E-03	1.99E-03	5.00E-02	4.33E-02	1.80E-01	2.26E-01	No TRV	No TRV	yes
bis(2-ethylhexyl)phthalate	2.46E-01	8.70E-03	1.63E-03	5.00E-02	9.35E-03	3.89E-02	4.99E-02	1.30E+00	3.84E-02	no
Chrysene	8.76E-01	3.90E-03	2.60E-03	5.00E-02	3.33E-02	1.38E-01	1.74E-01	No TRV	No TRV	yes
Fluoranthene	1.64E+00	2.00E-02	2.49E-02	5.00E-02	6.23E-02	2.59E-01	3.46E-01	No TRV	No TRV	yes
Phenanthrene	1.06E+00	2.00E-02	1.61E-02	5.00E-02	4.03E-02	1.68E-01	2.24E-01	No TRV	No TRV	yes
Pyrene	1.43E+00	6.70E-03	7.28E-03	5.00E-02	5.43E-02	2.26E-01	2.88E-01	No TRV	No TRV	yes
Volatiles										
Toluene	6.43E-02	2.00E-02	9.77E-04	5.00E-02	2.44E-03	1.02E-02	1.36E-02	No TRV	No TRV	yes

EPC = Exposure point concentration
SP_r = Soil-to-plant; reproductive
I_P (kg/kgBW/d) = Plant ingestion rate for robins = 0.76
ADD_P = Average daily dose; plant
AUF = Area use factor (1.0)
BAF_i = Soil-to-animal; invertebrates
ADD_A = Average daily dose; animal

I_A (kg/kgBW/d) = Animal ingestion rate for robins = 0.76
ADD_S = Average daily dose; soil
I_S (kg/kgBW/d) = Soil ingestion rate for robins = 0.158
ADD_{total} = Average daily dose; total
TRV (mg/kgBW/d) = toxicity reference value
nd= not detected, na= not applicable
CPEC = Constituents of potential ecological concern
EEQ = Environmental effects quotient

Appendix Table 7A.54. Exposure Unit 2 Surface Soil CPECs for Cottontail Rabbits at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	EPC (mg/kg)	SPv	ADD_P (mg/kgBW/d) RME *x* SP_r *x* I_P *x* AUF	BAF_i	ADD_A (mg/kgBW/d) RME *x* BAF_i *x* I_A *x* AUF	ADD_S (mg/kgBW/d) RME *x* I_S *x* AUF	ADD_{total} (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$	TRV (mg/kgBW/d)	Site EEQ ADD_{total} / TRV	CPEC?
Inorganics										
Antimony	9.90E-01	4.00E-02	8.12E-03	5.00E-02	0.00E+00	1.28E-02	2.09E-02	4.94E-02	4.23E-01	no
Beryllium	7.65E+02	2.00E-03	3.14E-01	5.00E-02	0.00E+00	9.88E+00	1.02E+01	4.82E-01	2.11E+01	yes
Boron	3.08E+01	8.00E-01	5.05E+00	1.00E+00	0.00E+00	3.98E-01	5.45E+00	2.05E+01	2.66E-01	no
Cadmium	8.35E+01	1.10E-01	1.88E+00	1.10E+01	0.00E+00	1.08E+00	2.96E+00	7.05E-01	4.20E+00	yes
Calcium	9.77E+04	7.00E-01	1.40E+04	1.00E+00	0.00E+00	1.26E+03	1.53E+04	No TRV	No TRV	yes
Chromium	5.08E+01	1.50E-03	1.56E-02	1.60E-01	0.00E+00	6.56E-01	6.72E-01	2.00E+03	3.36E-04	no
Copper	8.55E+01	8.00E-02	1.40E+00	1.60E-01	0.00E+00	1.10E+00	2.51E+00	1.11E+01	2.25E-01	no
Lead	1.38E+03	9.00E-03	2.55E+00	2.00E+00	0.00E+00	1.78E+01	2.04E+01	5.84E+00	3.49E+00	yes
Mercury	5.40E-01	1.80E-01	1.99E-02	3.40E-01	0.00E+00	6.97E-03	2.69E-02	9.59E-01	2.80E-02	no
Nickel	6.35E+01	1.20E-02	1.56E-01	2.30E-01	0.00E+00	8.20E-01	9.76E-01	2.92E+01	3.34E-02	no
Silicon	4.31E+03	1.00E+00	8.84E+02	1.00E+00	0.00E+00	5.57E+01	9.39E+02	No TRV	No TRV	yes
Sodium	4.08E+03	1.50E-02	1.25E+01	1.00E+00	0.00E+00	5.27E+01	6.52E+01	No TRV	No TRV	yes
Strontium	5.74E+02	1.00E+00	1.18E+02	1.00E+00	0.00E+00	7.41E+00	1.25E+02	No TRV	No TRV	yes
Thallium	2.40E+00	8.00E-04	3.94E-04	1.00E+00	0.00E+00	3.10E-02	3.14E-02	5.46E-03	5.75E+00	yes
Zinc	5.09E+02	3.00E-01	3.13E+01	1.80E+00	0.00E+00	6.57E+00	3.79E+01	1.17E+02	3.24E-01	no
Anions										
Chloride	1.78E+02	1.00E+00	3.65E+01	1.00E+00	0.00E+00	2.30E+00	3.88E+01	No TRV	No TRV	yes
Fluoride	1.44E+02	1.00E+00	2.95E+01	1.00E+00	0.00E+00	1.86E+00	3.14E+01	2.98E+01	1.05E+00	yes
Nitrate, as N	3.19E+02	1.00E+00	6.54E+01	1.00E+00	0.00E+00	4.12E+00	6.95E+01	No TRV	No TRV	yes
Sulfate	2.48E+04	1.00E+00	5.08E+03	1.00E+00	0.00E+00	3.20E+02	5.40E+03	No TRV	No TRV	yes
Miscellaneous										
Ammonia, nitrogen	3.07E+01	1.00E+00	6.29E+00	1.00E+00	0.00E+00	3.96E-01	6.69E+00	No TRV	No TRV	yes

Appendix Table 7A.54. Exposure Unit 2 Surface Soil CPECs for Cottontail Rabbits at the Luckey Site, Luckey Ohio (continued)

Analytes remaining after the site-wide screens	EPC (mg/kg)	SPv	ADD_P (mg/kgBW/d) RME *x* SP_r *x* I_P *x* AUF	BAF_i	ADD_A (mg/kgBW/d) RME *x* BAF_i *x* I_A *x* AUF	ADD_S (mg/kgBW/d) RME *x* I_S *x* AUF	ADD_{total} (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$	TRV (mg/kgBW/d)	Site EEQ ADD_{total} / TRV	CPEC?
Organics										
Semi-Volatiles										
Benzo(a)anthracene	8.87E-01	3.90E-03	7.09E-04	5.00E-02	0.00E+00	1.15E-02	1.22E-02	No TRV	No TRV	yes
Benzo(a)pyrene	9.21E-01	2.60E-03	4.91E-04	5.00E-02	0.00E+00	1.19E-02	1.24E-02	3.95E-01	3.13E-02	no
Benzo(b)fluoranthene	1.14E+00	2.30E-03	5.38E-04	5.00E-02	0.00E+00	1.47E-02	1.53E-02	No TRV	No TRV	yes
bis(2-ethylhexyl)phthalate	2.46E-01	8.70E-03	4.39E-04	5.00E-02	0.00E+00	3.18E-03	3.62E-03	7.23E+00	5.00E-04	no
Chrysene	8.76E-01	3.90E-03	7.00E-04	5.00E-02	0.00E+00	1.13E-02	1.20E-02	No TRV	No TRV	yes
Fluoranthene	1.64E+00	2.00E-02	6.72E-03	5.00E-02	0.00E+00	2.12E-02	2.79E-02	No TRV	No TRV	yes
Phenanthrene	1.06E+00	2.00E-02	4.35E-03	5.00E-02	0.00E+00	1.37E-02	1.80E-02	No TRV	No TRV	yes
Pyrene	1.43E+00	6.70E-03	1.96E-03	5.00E-02	0.00E+00	1.85E-02	2.04E-02	No TRV	No TRV	yes
Volatiles										
Toluene	6.43E-02	2.00E-02	2.64E-04	5.00E-02	0.00E+00	8.30E-04	1.09E-03	1.03E+01	1.07E-04	no

EPC = Exposure point concentration
SP_v = Soil-to-plant; vegetative
I_P (kg/kgBW/d) = Plant ingestion rate for cottontail rabbits = 0.205
ADD_P = Average daily dose; plant
AUF = Area use factor (1.0)
BAF_i = Soil-to-animal; invertebrates
ADD_A = Average daily dose; animal

I_A (kg/kgBW/d) = Animal ingestion rate for cottontail rabbits = 0.00
ADD_S = Average daily dose; soil
I_S (kg/kgBW/d) = Soil ingestion rate for cottontail rabbits = 0.0129
ADD_{total} = Average daily dose; total
TRV (mg/kgBW/d) = toxicity reference value
nd= not detected, na= not applicable
CPEC = Constituents of potential ecological concern
EEQ = Environmental effects quotient

Appendix Table 7A.55. Exposure Unit 2 Surface Soil CPECs for White-Tailed Deer at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	EPC (mg/kg)	SPv	ADD_P (mg/kgBW/d) RME *x* SP_r *x* I_P *x* AUF	BAF_i	ADD_A (mg/kgBW/d) RME *x* BAF_i *x* I_A *x* AUF	ADD_S (mg/kgBW/d) RME *x* I_S *x* AUF	ADD_{total} (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$	TRV (mg/kgBW/d)	Site EEQ ADD_{total} / TRV	CPEC?
Inorganics										
Antimony	9.90E-01	4.00E-02	1.23E-03	5.00E-02	0.00E+00	6.14E-04	1.84E-03	1.90E-02	9.70E-02	no
Beryllium	7.65E+02	2.00E-03	4.74E-02	5.00E-02	0.00E+00	4.74E-01	5.22E-01	1.85E-01	2.82E+00	yes
Boron	3.08E+01	8.00E-01	7.64E-01	1.00E+00	0.00E+00	1.91E-02	7.83E-01	7.86E+00	9.97E-02	no
Cadmium	8.35E+01	1.10E-01	2.85E-01	1.10E+01	0.00E+00	5.18E-02	3.37E-01	2.71E-01	1.24E+00	yes
Calcium	9.77E+04	7.00E-01	2.12E+03	1.00E+00	0.00E+00	6.06E+01	2.17E+03	No TRV	No TRV	yes
Chromium	5.08E+01	1.50E-03	2.36E-03	1.60E-01	0.00E+00	3.15E-02	3.39E-02	7.68E+02	4.41E-05	no
Copper	8.55E+01	8.00E-02	2.12E-01	1.60E-01	0.00E+00	5.30E-02	2.65E-01	4.27E+00	6.21E-02	no
Lead	1.38E+03	9.00E-03	3.85E-01	2.00E+00	0.00E+00	8.56E-01	1.24E+00	2.24E+00	5.53E-01	no
Mercury	5.40E-01	1.80E-01	3.01E-03	3.40E-01	0.00E+00	3.35E-04	3.35E-03	3.68E-01	9.09E-03	no
Nickel	6.35E+01	1.20E-02	2.36E-02	2.30E-01	0.00E+00	3.94E-02	6.30E-02	1.12E+01	5.61E-03	no
Silicon	4.31E+03	1.00E+00	1.34E+02	1.00E+00	0.00E+00	2.67E+00	1.36E+02	No TRV	No TRV	yes
Sodium	4.08E+03	1.50E-02	1.90E+00	1.00E+00	0.00E+00	2.53E+00	4.43E+00	No TRV	No TRV	yes
Strontium	5.74E+02	1.00E+00	1.78E+01	1.00E+00	0.00E+00	3.56E-01	1.81E+01	No TRV	No TRV	yes
Thallium	2.40E+00	8.00E-04	5.95E-05	1.00E+00	0.00E+00	1.49E-03	1.55E-03	2.10E-03	7.38E-01	no
Zinc	5.09E+02	3.00E-01	4.73E+00	1.80E+00	0.00E+00	3.16E-01	5.05E+00	4.49E+01	1.12E-01	no
Anions										
Chloride	1.78E+02	1.00E+00	5.52E+00	1.00E+00	0.00E+00	1.10E-01	5.63E+00	No TRV	No TRV	yes
Fluoride	1.44E+02	1.00E+00	4.46E+00	1.00E+00	0.00E+00	8.93E-02	4.55E+00	1.14E+01	3.98E-01	no
Nitrate, as N	3.19E+02	1.00E+00	9.89E+00	1.00E+00	0.00E+00	1.98E-01	1.01E+01	No TRV	No TRV	yes
Sulfate	2.48E+04	1.00E+00	7.69E+02	1.00E+00	0.00E+00	1.54E+01	7.84E+02	No TRV	No TRV	yes
Miscellaneous										
Ammonia, nitrogen	3.07E+01	1.00E+00	9.52E-01	1.00E+00	0.00E+00	1.90E-02	9.71E-01	No TRV	No TRV	yes

Appendix Table 7A.55. Exposure Unit 2 Surface Soil CPECs for White-Tailed Deer at the Luckey Site, Luckey Ohio (continued)

Analytes remaining after the site-wide screens	**EPC** (mg/kg)	**SPv**	**ADD_P** (mg/kgBW/d) RME *x* SP_r *x* I_P *x* AUF	**BAF_i**	**ADD_A** (mg/kgBW/d) RME *x* BAF_i *x* I_A *x* AUF	**ADD_S** (mg/kgBW/d) RME *x* I_S *x* AUF	**ADD_{total}** (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$	**TRV** (mg/kgBW/d)	**Site EEQ** ADD_{total} / TRV	**CPEC?**
Organics										
Semi-Volatiles										
Benzo(a)anthracene	8.87E-01	3.90E-03	1.07E-04	5.00E-02	0.00E+00	5.50E-04	6.57E-04	No TRV	No TRV	yes
Benzo(a)pyrene	9.21E-01	2.60E-03	7.42E-05	5.00E-02	0.00E+00	5.71E-04	6.45E-04	1.52E-01	4.25E-03	no
Benzo(b)fluoranthene	1.14E+00	2.30E-03	8.13E-05	5.00E-02	0.00E+00	7.07E-04	7.88E-04	No TRV	No TRV	yes
bis(2-ethylhexyl)phthalate	2.46E-01	8.70E-03	6.63E-05	5.00E-02	0.00E+00	1.53E-04	2.19E-04	2.78E+00	7.88E-05	no
Chrysene	8.76E-01	3.90E-03	1.06E-04	5.00E-02	0.00E+00	5.43E-04	6.49E-04	No TRV	No TRV	yes
Fluoranthene	1.64E+00	2.00E-02	1.02E-03	5.00E-02	0.00E+00	1.02E-03	2.03E-03	No TRV	No TRV	yes
Phenanthrene	1.06E+00	2.00E-02	6.57E-04	5.00E-02	0.00E+00	6.57E-04	1.31E-03	No TRV	No TRV	yes
Pyrene	1.43E+00	6.70E-03	2.97E-04	5.00E-02	0.00E+00	8.87E-04	1.18E-03	No TRV	No TRV	yes
Volatiles										
Toluene	6.43E-02	2.00E-02	3.99E-05	5.00E-02	0.00E+00	3.99E-05	7.97E-05	3.94E+00	2.02E-05	no

EPC = Exposure point concentration
SP_v = Soil-to-plant; vegetative
I_P (kg/kgBW/d) = Plant ingestion rate for white-tailed deer = 0.031
ADD_P = Average daily dose; plant
AUF = Area use factor (1.0)
BAF_i = Soil-to-animal; invertebrates
ADD_A = Average daily dose; animal

I_A (kg/kgBW/d) = Animal ingestion rate for white-tailed deer = 0.00
ADD_S = Average daily dose; soil
I_S (kg/kgBW/d) = Soil ingestion rate for white-tailed deer = 0.00062
ADD_{total} = Average daily dose; total
TRV (mg/kgBW/d) = toxicity reference value
nd= not detected, na= not applicable
CPEC = Constituents of potential ecological concern
EEQ = Environmental effects quotient

Appendix Table 7A.56. Exposure Unit 2 Surface Soil CPECs for Red-Tailed Hawks at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	**EPC** (mg/kg)	**SP_v**	**ADD_P** (mg/kgBW/d) RME *x* SP_v *x* I_P *x* AUF	**SP_v**	**Prey ADD_P** (mg/kgBW/d) RME *x* SP_v *x* I_{P-s} *x* AUF-s	**BAF_i**	**Prey ADD_A** (mg/kgBW/d) RME *x* BAF_i *x* I_{A-s} *x* AUF-s	**Prey ADD_S** (mg/kgBW/d) RME *x* I_{S-s} *x* AUF-s	**Prey ADD_{total}** (mg/kgBW/d) ADD_P + ADD_A + ADD_S
Inorganics									
Antimony	9.90E-01	4.00E-02	0.00E+00	4.00E-02	2.88E-03	5.00E-02	2.41E-02	7.21E-02	9.91E-02
Beryllium	7.65E+02	2.00E-03	0.00E+00	2.00E-03	1.11E-01	5.00E-02	1.86E+01	5.57E+01	7.44E+01
Boron	3.08E+01	8.00E-01	0.00E+00	8.00E-01	1.79E+00	1.00E+00	1.50E+01	2.24E+00	1.90E+01
Cadmium	8.35E+01	1.10E-01	0.00E+00	1.10E-01	6.69E-01	1.10E+01	4.47E+02	6.08E+00	4.54E+02
Calcium	9.77E+04	7.00E-01	0.00E+00	7.00E-01	4.98E+03	1.00E+00	4.76E+04	7.11E+03	5.97E+04
Chromium	5.08E+01	1.50E-03	0.00E+00	1.50E-03	5.55E-03	1.60E-01	3.96E+00	3.70E+00	7.66E+00
Copper	8.55E+01	8.00E-02	0.00E+00	8.00E-02	4.98E-01	1.60E-01	6.66E+00	6.22E+00	1.34E+01
Lead	1.38E+03	9.00E-03	0.00E+00	9.00E-03	9.04E-01	2.00E+00	1.34E+03	1.00E+02	1.45E+03
Mercury	5.40E-01	1.80E-01	0.00E+00	1.80E-01	7.08E-03	3.40E-01	8.94E-02	3.93E-02	1.36E-01
Nickel	6.35E+01	1.20E-02	0.00E+00	1.20E-02	5.55E-02	2.30E-01	7.12E+00	4.62E+00	1.18E+01
Silicon	4.31E+03	1.00E+00	0.00E+00	1.00E+00	3.14E+02	1.00E+00	2.10E+03	3.14E+02	2.73E+03
Sodium	4.08E+03	1.50E-02	0.00E+00	1.50E-02	4.46E+00	1.00E+00	1.99E+03	2.97E+02	2.29E+03
Strontium	5.74E+02	1.00E+00	0.00E+00	1.00E+00	4.18E+01	1.00E+00	2.80E+02	4.18E+01	3.63E+02
Thallium	2.40E+00	8.00E-04	0.00E+00	8.00E-04	1.40E-04	1.00E+00	1.17E+00	1.75E-01	1.34E+00
Zinc	5.09E+02	3.00E-01	0.00E+00	3.00E-01	1.11E+01	1.80E+00	4.46E+02	3.71E+01	4.95E+02
Anions									
Chloride	1.78E+02	1.00E+00	0.00E+00	1.00E+00	1.30E+01	1.00E+00	8.67E+01	1.30E+01	1.13E+02
Fluoride	1.44E+02	1.00E+00	0.00E+00	1.00E+00	1.05E+01	1.00E+00	7.02E+01	1.05E+01	9.11E+01
Nitrate, as N	3.19E+02	1.00E+00	0.00E+00	1.00E+00	2.32E+01	1.00E+00	1.55E+02	2.32E+01	2.02E+02
Sulfate	2.48E+04	1.00E+00	0.00E+00	1.00E+00	1.81E+03	1.00E+00	1.21E+04	1.81E+03	1.57E+04
Miscellaneous									
Ammonia, nitrogen	3.07E+01	1.00E+00	0.00E+00	1.00E+00	2.23E+00	1.00E+00	1.50E+01	2.23E+00	1.94E+01

Appendix Table 7A.56. Exposure Unit 2 Surface Soil CPECs for Red-Tailed Hawks at the Luckey Site, Luckey Ohio (continued)

Analytes remaining after the site-wide screens	EPC (mg/kg)	SP_v	ADD_P (mg/kgBW/d) RME x SP_v x I_P x AUF	SP_v	Prey ADD_P (mg/kgBW/d) RME x SP_v x I_{P-s} x AUF-s	BAF_i	Prey ADD_A (mg/kgBW/d) RME x BAF_i x I_{A-s} x AUF-s	Prey ADD_S (mg/kgBW/d) RME x I_{S-s} x AUF-s	Prey ADD_{total} (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$
Organics									
Semi-Volatiles									
Benzo(a)anthracene	8.87E-01	3.90E-03	0.00E+00	3.90E-03	2.52E-04	5.00E-02	2.16E-02	6.46E-02	8.64E-02
Benzo(a)pyrene	9.21E-01	2.60E-03	0.00E+00	2.60E-03	1.74E-04	5.00E-02	2.24E-02	6.70E-02	8.97E-02
Benzo(b)fluoranthene	1.14E+00	2.30E-03	0.00E+00	2.30E-03	1.91E-04	5.00E-02	2.78E-02	8.30E-02	1.11E-01
bis(2-ethylhexyl)phthalate	2.46E-01	8.70E-03	0.00E+00	8.70E-03	1.56E-04	5.00E-02	5.99E-03	1.79E-02	2.41E-02
Chrysene	8.76E-01	3.90E-03	0.00E+00	3.90E-03	2.49E-04	5.00E-02	2.13E-02	6.38E-02	8.54E-02
Fluoranthene	1.64E+00	2.00E-02	0.00E+00	2.00E-02	2.39E-03	5.00E-02	4.00E-02	1.19E-01	1.62E-01
Phenanthrene	1.06E+00	2.00E-02	0.00E+00	2.00E-02	1.54E-03	5.00E-02	2.58E-02	7.72E-02	1.05E-01
Pyrene	1.43E+00	6.70E-03	0.00E+00	6.70E-03	6.97E-04	5.00E-02	3.48E-02	1.04E-01	1.40E-01
Volatiles									
Toluene	6.43E-02	2.00E-02	0.00E+00	2.00E-02	9.36E-05	5.00E-02	1.57E-03	4.68E-03	6.34E-03

EPC = Exposure point concentration
SP_r = Soil-to-plant; reproductive
SP_v = Soil-to-plant; vegetative
I_P (kg/kgBW/d) = Plant ingestion rate for red-tailed hawks = 0.00
ADD_P = Average daily dose; plant
I_{P-s} (kg/kgBW/d) = Plant ingestion rate for shrews
AUF = Area use factor (1.0)
BAF_i = Soil-to-animal; invertebrates
ADD_A = Average daily dose; animal
I_{A-s} (kg/kgBW/d) = Animal ingestion rate for shrews
ADD_S = Average daily dose; soil
I_{S-s} (kg/kgBW/d) = Soil ingestion rate for shrews

Cs (mg/kg) = Concentration in the prey
IR_f (kg/kgBW/d)= Ingestion rate of food for shrews = 0.56
BAF_v = Animal-to-mammal
I_A (kg/kgBW/d) = Animal ingestion rate for red-tailed hawks = 0.11
I_S (kg/kgBW/d) = Soil ingestion rate for red-tailed hawks = 0.00
ADD_{total} = Average daily dose; total
TRV (mg/kgBW/d) = toxicity reference value
HQ = Hazard quotient
nd= not detected, na= not applicable
CPEC = Constituents of potential ecological concern
EEQ = Environmental effects quotient

Appendix Table B.56. Exposure Unit 2 Surface Soil CPECs for Red-Tailed Hawks at the Luckey Site, Luckey Ohio (continued)

Analyte	**Cs** (mg/kg) ADD_{total}/IR_f	**BAF_v**	**ADD_A** (mg/kgBW/d) $Cs \times BAF_v \times I_A \times AUF$	**ADD_S** (mg/kgBW/d) $RME \times I_S \times AUF$	**ADD_{total}** (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$	**TRV** (mg/kgBW/d)	**Site EEQ** ADD_{total} / TRV	**CPEC?**
Antimony	1.77E-01	5.00E-02	9.73E-04	0.00E+00	9.73E-04	No TRV	No TRV	yes
Beryllium	1.33E+02	5.00E-02	7.31E-01	0.00E+00	7.31E-01	No TRV	No TRV	yes
Boron	3.40E+01	1.00E+00	3.74E+00	0.00E+00	3.74E+00	2.79E+01	1.34E-01	no
Cadmium	8.11E+02	2.80E-02	2.50E+00	0.00E+00	2.50E+00	1.46E+00	1.71E+00	yes
Calcium	1.07E+05	1.00E+00	1.17E+04	0.00E+00	1.17E+04	No TRV	No TRV	yes
Chromium	1.37E+01	2.80E-01	4.22E-01	0.00E+00	4.22E-01	1.03E+00	4.11E-01	no
Copper	2.39E+01	5.00E-01	1.31E+00	0.00E+00	1.31E+00	3.89E+01	3.38E-02	no
Lead	2.58E+03	1.50E-02	4.26E+00	0.00E+00	4.26E+00	6.82E-01	6.25E+00	yes
Mercury	2.43E-01	1.30E+01	3.47E-01	0.00E+00	3.47E-01	2.72E-01	1.28E+00	yes
Nickel	2.11E+01	3.00E-01	6.95E-01	0.00E+00	6.95E-01	7.06E+01	9.84E-03	no
Silicon	4.87E+03	1.00E+00	5.36E+02	0.00E+00	5.36E+02	No TRV	No TRV	yes
Sodium	4.09E+03	1.00E+00	4.50E+02	0.00E+00	4.50E+02	No TRV	No TRV	yes
Strontium	6.49E+02	1.00E+00	7.13E+01	0.00E+00	7.13E+01	No TRV	No TRV	yes
Thallium	2.40E+00	1.00E+00	2.64E-01	0.00E+00	2.64E-01	No TRV	No TRV	yes
Zinc	8.83E+02	5.00E+00	4.86E+02	0.00E+00	4.86E+02	1.66E+01	2.93E+01	yes
Anions								
Chloride	2.01E+02	1.00E+00	2.21E+01	0.00E+00	2.21E+01	No TRV	No TRV	yes
Fluoride	1.63E+02	1.00E+00	1.79E+01	0.00E+00	1.79E+01	4.93E+00	3.63E+00	yes
Nitrate, as N	3.60E+02	1.00E+00	3.97E+01	0.00E+00	3.97E+01	No TRV	No TRV	yes
Sulfate	2.80E+04	1.00E+00	3.08E+03	0.00E+00	3.08E+03	No TRV	No TRV	yes
Miscellaneous								
Ammonia, nitrogen	3.47E+01	1.00E+00	3.82E+00	0.00E+00	3.82E+00	No TRV	No TRV	yes

Appendix Table B.56. Exposure Unit 2 Surface Soil CPECs for Red-Tailed Hawks at the Luckey Site, Luckey Ohio (continued)

Analyte	**Cs** (mg/kg) ADD_{total}/IR_f	**BAF_v**	**ADD_A** (mg/kgBW/d) Cs *x* BAF_v *x* I_A *x* AUF	**ADD_S** (mg/kgBW/d) RME *x* I_S *x* AUF	**ADD_{total}** (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$	**TRV** (mg/kgBW/d)	**Site EEQ** ADD_{total} / TRV	**CPEC?**
Organics								
Semi-Volatiles								
Benzo(a)anthracene	1.54E-01	7.60E-01	1.29E-02	0.00E+00	1.29E-02	No TRV	No TRV	yes
Benzo(a)pyrene	1.60E-01	1.50E+00	2.64E-02	0.00E+00	2.64E-02	No TRV	No TRV	yes
Benzo(b)fluoranthene	1.98E-01	1.90E+00	4.14E-02	0.00E+00	4.14E-02	No TRV	No TRV	yes
bis(2-ethylhexyl)phthalate	4.30E-02	1.90E-01	8.98E-04	0.00E+00	8.98E-04	6.69E-01	1.34E-03	no
Chrysene	1.52E-01	7.60E-01	1.27E-02	0.00E+00	1.27E-02	No TRV	No TRV	yes
Fluoranthene	2.89E-01	1.30E-01	4.13E-03	0.00E+00	4.13E-03	No TRV	No TRV	yes
Phenanthrene	1.87E-01	4.80E-02	9.86E-04	0.00E+00	9.86E-04	No TRV	No TRV	yes
Pyrene	2.49E-01	3.00E-01	8.23E-03	0.00E+00	8.23E-03	No TRV	No TRV	yes
Volatiles								
Toluene	1.13E-02	7.60E-04	9.47E-07	0.00E+00	9.47E-07	No TRV	No TRV	yes

Appendix Table 7A.57. Exposure Unit 2 Surface Soil CPECs for Red Foxes at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	EPC (mg/kg)	SPr	ADD_P (mg/kgBW/d) RME x SP_r x I_P x AUF	SP_v	Prey ADD_P (mg/kgBW/d) RME x SP_v x I_{P-s} x AUF-s	BAF_i	Prey ADD_A (mg/kgBW/d) RME x BAF_i x I_{A-s} x AUF-s	Prey ADD_S (mg/kgBW/d) RME x I_{S-s} x AUF-s	Prey ADD_{total} (mg/kgBW/d) ADD_P + ADD_A + ADD_S
Inorganics									
Antimony	9.90E-01	6.00E-03	1.89E-05	4.00E-02	2.88E-03	5.00E-02	2.41E-02	7.21E-02	9.91E-02
Beryllium	7.65E+02	3.00E-04	7.28E-04	2.00E-03	1.11E-01	5.00E-02	1.86E+01	5.57E+01	7.44E+01
Boron	3.08E+01	4.00E-01	3.91E-02	8.00E-01	1.79E+00	1.00E+00	1.50E+01	2.24E+00	1.90E+01
Cadmium	8.35E+01	3.00E-02	7.95E-03	1.10E-01	6.69E-01	1.10E+01	4.47E+02	6.08E+00	4.54E+02
Calcium	9.77E+04	7.00E-02	2.17E+01	7.00E-01	4.98E+03	1.00E+00	4.76E+04	7.11E+03	5.97E+04
Chromium	5.08E+01	9.00E-04	1.45E-04	1.50E-03	5.55E-03	1.60E-01	3.96E+00	3.70E+00	7.66E+00
Copper	8.55E+01	5.00E-02	1.36E-02	8.00E-02	4.98E-01	1.60E-01	6.66E+00	6.22E+00	1.34E+01
Lead	1.38E+03	1.80E-03	7.88E-03	9.00E-03	9.04E-01	2.00E+00	1.34E+03	1.00E+02	1.45E+03
Mercury	5.40E-01	4.00E-02	6.86E-05	1.80E-01	7.08E-03	3.40E-01	8.94E-02	3.93E-02	1.36E-01
Nickel	6.35E+01	1.20E-02	2.42E-03	1.20E-02	5.55E-02	2.30E-01	7.12E+00	4.62E+00	1.18E+01
Silicon	4.31E+03	1.00E+00	1.37E+01	1.00E+00	3.14E+02	1.00E+00	2.10E+03	3.14E+02	2.73E+03
Sodium	4.08E+03	1.10E-02	1.42E-01	1.50E-02	4.46E+00	1.00E+00	1.99E+03	2.97E+02	2.29E+03
Strontium	5.74E+02	1.00E+00	1.82E+00	1.00E+00	4.18E+01	1.00E+00	2.80E+02	4.18E+01	3.63E+02
Thallium	2.40E+00	8.00E-05	6.09E-07	8.00E-04	1.40E-04	1.00E+00	1.17E+00	1.75E-01	1.34E+00
Zinc	5.09E+02	1.80E-01	2.91E-01	3.00E-01	1.11E+01	1.80E+00	4.46E+02	3.71E+01	4.95E+02
Anions									
Chloride	1.78E+02	1.00E+00	5.65E-01	1.00E+00	1.30E+01	1.00E+00	8.67E+01	1.30E+01	1.13E+02
Fluoride	1.44E+02	1.00E+00	4.57E-01	1.00E+00	1.05E+01	1.00E+00	7.02E+01	1.05E+01	9.11E+01
Nitrate, as N	3.19E+02	1.00E+00	1.01E+00	1.00E+00	2.32E+01	1.00E+00	1.55E+02	2.32E+01	2.02E+02
Sulfate	2.48E+04	1.00E+00	7.87E+01	1.00E+00	1.81E+03	1.00E+00	1.21E+04	1.81E+03	1.57E+04
Miscellaneous									
Ammonia, nitrogen	3.07E+01	1.00E+00	9.74E-02	1.00E+00	2.23E+00	1.00E+00	1.50E+01	2.23E+00	1.94E+01

Appendix Table 7A.57. Exposure Unit 2 Surface Soil CPECs for Red Foxes at the Luckey Site, Luckey Ohio (continued)

Analytes remaining after the site-wide screens	EPC (mg/kg)	SPr	ADD_P (mg/kgBW/d) RME *x* SP_r *x* I_P *x* AUF	SP_v	Prey ADD_P (mg/kgBW/d) RME *x* SP_v *x* I_{P-s} *x* AUF-s	BAF_i	Prey ADD_A (mg/kgBW/d) RME *x* BAF_i *x* I_{A-s} *x* AUF-s	Prey ADD_S (mg/kgBW/d) RME *x* I_{S-s} *x* AUF-s	Prey ADD_{total} (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$
Organics									
Semi-Volatiles									
Benzo(a)anthracene	8.87E-01	3.90E-03	1.10E-05	3.90E-03	2.52E-04	5.00E-02	2.16E-02	6.46E-02	8.64E-02
Benzo(a)pyrene	9.21E-01	2.60E-03	7.60E-06	2.60E-03	1.74E-04	5.00E-02	2.24E-02	6.70E-02	8.97E-02
Benzo(b)fluoranthene	1.14E+00	2.30E-03	8.32E-06	2.30E-03	1.91E-04	5.00E-02	2.78E-02	8.30E-02	1.11E-01
bis(2-ethylhexyl)phthalate	2.46E-01	8.70E-03	6.79E-06	8.70E-03	1.56E-04	5.00E-02	5.99E-03	1.79E-02	2.41E-02
Chrysene	8.76E-01	3.90E-03	1.08E-05	3.90E-03	2.49E-04	5.00E-02	2.13E-02	6.38E-02	8.54E-02
Fluoranthene	1.64E+00	2.00E-02	1.04E-04	2.00E-02	2.39E-03	5.00E-02	4.00E-02	1.19E-01	1.62E-01
Phenanthrene	1.06E+00	2.00E-02	6.73E-05	2.00E-02	1.54E-03	5.00E-02	2.58E-02	7.72E-02	1.05E-01
Pyrene	1.43E+00	6.70E-03	3.04E-05	6.70E-03	6.97E-04	5.00E-02	3.48E-02	1.04E-01	1.40E-01
Volatiles									
Toluene	6.43E-02	2.00E-02	4.08E-06	2.00E-02	9.36E-05	5.00E-02	1.57E-03	4.68E-03	6.34E-03

EPC = Exposure point concentration
SP_r = Soil-to-plant; reproductive
SP_v = Soil-to-plant; vegetative
I_P (kg/kgBW/d) = Plant ingestion rate for red foxes = 0.00317
ADD_P = Average daily dose; plant
I_{P-s} (kg/kgBW/d) = Plant ingestion rate for shrews = 0.0728
AUF = Area use factor (1.0)
BAF_i = Soil-to-animal; invertebrates
ADD_A = Average daily dose; animal
I_{A-s} (kg/kgBW/d) = Animal ingestion rate for shrews = 0.487
ADD_S = Average daily dose; soil
I_{S-s} (kg/kgBW/d) = Soil ingestion rate for shrews = 0.0728

Cs (mg/kg) = Concentration in the prey
IR_f = Ingestion rate of food for shrews
BAF_v = Animal-to-mammal
I_A (kg/kgBW/d) = Animal ingestion rate for red foxes = 0.0658
I_S (kg/kgBW/d) = Soil ingestion rate for red foxes = 0.00193
ADD_{total} = Average daily dose; total
TRV (mg/kgBW/d) = toxicity reference value
HQ = Hazard quotient
nd= not detected, na= not applicable
CPEC = Constituents of potential ecological concern
EEQ = Environmental effects quotient

Appendix Table 7A.57. Exposure Unit 2 Surface Soil CPECs for Red Foxes at the Luckey Site, Luckey Ohio (continued)

Analyte	Cs (mg/kg) ADD_{total}/IR_f	BAF_v	ADD_A (mg/kgBW/d) Cs *x* BAF_v *x* I_A *x* AUF	ADD_S (mg/kgBW/d) RME *x* I_S *x* AUF	ADD_{total} (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$	TRV (mg/kgBW/d)	Site EEQ ADD_{total} / TRV	CPEC?
Inorganics								
Antimony	1.77E-01	5.00E-02	5.82E-04	1.91E-03	2.51E-03	3.54E-02	7.11E-02	no
Beryllium	1.33E+02	5.00E-02	4.38E-01	1.48E+00	1.92E+00	3.45E-01	5.55E+00	yes
Boron	3.40E+01	1.00E+00	2.24E+00	5.95E-02	2.34E+00	1.46E+01	1.60E-01	no
Cadmium	8.11E+02	2.80E-02	1.50E+00	1.61E-01	1.66E+00	5.04E-01	3.30E+00	yes
Calcium	1.07E+05	1.00E+00	7.02E+03	1.89E+02	7.23E+03	No TRV	No TRV	yes
Chromium	1.37E+01	2.80E-01	2.52E-01	9.81E-02	3.51E-01	1.43E+03	2.45E-04	no
Copper	2.39E+01	5.00E-01	7.87E-01	1.65E-01	9.66E-01	7.96E+00	1.21E-01	no
Lead	2.58E+03	1.50E-02	2.55E+00	2.67E+00	5.22E+00	4.18E+00	1.25E+00	yes
Mercury	2.43E-01	1.30E+01	2.08E-01	1.04E-03	2.09E-01	6.86E-01	3.04E-01	no
Nickel	2.11E+01	3.00E-01	4.16E-01	1.23E-01	5.41E-01	2.09E+01	2.59E-02	no
Silicon	4.87E+03	1.00E+00	3.21E+02	8.33E+00	3.43E+02	No TRV	No TRV	yes
Sodium	4.09E+03	1.00E+00	2.69E+02	7.88E+00	2.77E+02	No TRV	No TRV	yes
Strontium	6.49E+02	1.00E+00	4.27E+01	1.11E+00	4.56E+01	No TRV	No TRV	yes
Thallium	2.40E+00	1.00E+00	1.58E-01	4.64E-03	1.63E-01	3.91E-03	4.16E+01	yes
Zinc	8.83E+02	5.00E+00	2.91E+02	9.83E-01	2.92E+02	8.36E+01	3.49E+00	yes
Anions								
Chloride	2.01E+02	1.00E+00	1.32E+01	3.44E-01	1.41E+01	No TRV	No TRV	yes
Fluoride	1.63E+02	1.00E+00	1.07E+01	2.78E-01	1.14E+01	2.13E+01	5.37E-01	no
Nitrate, as N	3.60E+02	1.00E+00	2.37E+01	6.16E-01	2.54E+01	No TRV	No TRV	yes
Sulfate	2.80E+04	1.00E+00	1.84E+03	4.79E+01	1.97E+03	No TRV	No TRV	yes
Miscellaneous								
Ammonia, nitrogen	3.47E+01	1.00E+00	2.28E+00	5.93E-02	2.44E+00	No TRV	No TRV	yes

Appendix Table 7A.57. Exposure Unit 2 Surface Soil CPECs for Red Foxes at the Luckey Site, Luckey Ohio (continued)

Analyte	Cs (mg/kg) ADD_{total}/IR_f	BAF_v	ADD_A (mg/kgBW/d) Cs *x* BAF_v *x* I_A *x* AUF	ADD_S (mg/kgBW/d) RME *x* I_S *x* AUF	ADD_{total} (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$	TRV (mg/kgBW/d)	Site EEQ ADD_{total} / TRV	CPEC?
Organics								
Semi-Volatiles								
Benzo(a)anthracene	1.54E-01	7.60E-01	7.72E-03	1.71E-03	9.45E-03	No TRV	No TRV	yes
Benzo(a)pyrene	1.60E-01	1.50E+00	1.58E-02	1.78E-03	1.76E-02	2.83E-01	6.22E-02	no
Benzo(b)fluoranthene	1.98E-01	1.90E+00	2.48E-02	2.20E-03	2.70E-02	No TRV	No TRV	yes
bis(2-ethylhexyl)phthalate	4.30E-02	1.90E-01	5.37E-04	4.75E-04	1.02E-03	5.18E+00	1.97E-04	no
Chrysene	1.52E-01	7.60E-01	7.63E-03	1.69E-03	9.33E-03	No TRV	No TRV	yes
Fluoranthene	2.89E-01	1.30E-01	2.47E-03	3.17E-03	5.74E-03	No TRV	No TRV	yes
Phenanthrene	1.87E-01	4.80E-02	5.90E-04	2.05E-03	2.71E-03	No TRV	No TRV	yes
Pyrene	2.49E-01	3.00E-01	4.92E-03	2.76E-03	7.72E-03	No TRV	No TRV	yes
Volatiles								
Toluene	1.13E-02	7.60E-04	5.66E-07	1.24E-04	1.29E-04	7.35E+00	1.75E-05	no

Appendix Table 7A.58. Exposure Unit 3 Surface Soil, CPECs for Plants at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	EPC (mg/kg)	Plants			
		Plant TRV (mg/kg)	Plant EEQ	EEQ>1? Yes or No	CPEC?
Inorganics					
Beryllium	1.55E+02	1.00E+01	1.55E+01	yes	yes
Lead	7.40E+01	5.00E+01	1.48E+00	yes	yes
Selenium	2.70E+00	1.00E+00	2.70E+00	yes	yes
Organics					
Volatiles					
Acetone	1.93E-02	1.00E+00	1.93E-02	no	no
Toluene	9.00E-01	2.00E+02	4.50E-03	no	no

EPC = Exposure point concentration
TRV = toxicity reference value
EEQ = Environmental effects quotient
CPEC = Contaminant of Potential Ecological Concern
Plant TRVs from Efroymson et al (1997a)

Appendix Table 7A.59. Exposure Unit 3 Surface Soil, CPECs for Earthworms at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	EPC (mg/kg)	Earthworms			
		Earthworm TRV (mg/kg)	Earthworm EEQ	EEQ>1?	CPEC?
Inorganics					
Beryllium	1.55E+02	No TRV	No TRV	yes	yes
Lead	7.40E+01	5.00E+02	1.48E-01	no	no
Selenium	2.70E+00	7.00E+01	3.86E-02	no	no
Organics					
Volatiles					
Acetone	1.93E-02	No TRV	No TRV	yes	yes
Toluene	9.00E-01	No TRV	No TRV	yes	yes

EPC = Exposure point concentration
TRV = toxicity reference value
EEQ = Environmental effects quotient
CPEC = Contaminant of Potential Ecological Concern
Earthworm TRVs from Efroymson et al (1997b)

Appendix Table 7A.60. Exposure Unit 3 Surface Soil CPECs for Shrews at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	**EPC** (mg/kg)	**SPv**	**ADD_P** (mg/kgBW/d) RME *x* SP_r *x* I_P *x* AUF	**BAF_i**	**ADD_A** (mg/kgBW/d) RME *x* BAF_i *x* I_A *x* AUF	**ADD_S** (mg/kgBW/d) RME *x* I_S *x* AUF	**ADD_{total}** (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$	**TRV** (mg/kgBW/d)	**Site EEQ** ADD_{total} / TRV	**CPEC?**
Inorganics										
Beryllium	1.55E+02	2.00E-03	2.26E-02	5.00E-02	3.78E+00	1.13E+01	1.51E+01	1.41E+00	1.07E+01	yes
Lead	7.40E+01	9.00E-03	4.85E-02	2.00E+00	7.21E+01	5.39E+00	7.75E+01	1.70E+01	4.55E+00	yes
Selenium	2.70E+00	5.00E-03	9.83E-04	7.60E-01	1.00E+00	1.97E-01	1.20E+00	4.26E-01	2.81E+00	yes
Organics										
Volatiles										
Acetone	1.93E-02	2.00E-02	2.81E-05	5.00E-02	4.70E-04	1.41E-03	1.90E-03	2.13E+01	8.94E-05	no
Toluene	9.00E-01	2.00E-02	1.31E-03	5.00E-02	2.19E-02	6.55E-02	8.88E-02	2.99E+01	2.96E-03	no

EPC = Exposure point concentration
SP_v = Soil-to-plant; vegetative
I_P (kg/kgBW/d) = Plant ingestion rate for shrews = 0.0728
ADD_P = Average daily dose; plant
AUF = Area use factor (1.0)
BAF_i = Soil-to-animal; invertebrates
ADD_A = Average daily dose; animal

I_A (kg/kgBW/d) = Animal ingestion rate for shrews = 0.487
ADD_S = Average daily dose; soil
I_S (kg/kgBW/d) = Soil ingestion rate for shrews = 0.0728
ADD_{total} = Average daily dose; total
TRV (mg/kgBW/d) = toxicity reference value
nd= not detected, na= not applicable
CPEC = Constituents of potential ecological concern
EEQ = Environmental effects quotient

Appendix Table 7A.61. Exposure Unit 3 Surface Soil CPECs for Robins at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	**EPC** (mg/kg)	**SP_r**	**ADD_P** (mg/kgBW/d) RME *x* SP_r *x* I_P *x* AUF	**BAF_i**	**ADD_A** (mg/kgBW/d) RME *x* BAF_i *x* I_A *x* AUF	**ADD_S** (mg/kgBW/d) RME *x* I_S *x* AUF	**ADD_{total}** (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$	**TRV** (mg/kgBW/d)	**Site EEQ** ADD_{total} / TRV	**CPEC?**
Inorganics										
Beryllium	1.55E+02	3.00E-04	3.53E-02	5.00E-02	5.89E+00	2.45E+01	3.04E+01	No TRV	No TRV	yes
Lead	7.40E+01	1.80E-03	1.01E-01	2.00E+00	1.12E+02	1.17E+01	1.24E+02	1.32E+00	9.40E+01	yes
Selenium	2.70E+00	5.00E-03	1.03E-02	7.60E-01	1.56E+00	4.27E-01	2.00E+00	9.40E-01	2.12E+00	yes
Organics										
Volatiles										
Acetone	1.93E-02	2.00E-02	2.93E-04	5.00E-02	7.33E-04	3.05E-03	4.08E-03	No TRV	No TRV	yes
Toluene	9.00E-04	2.00E-02	1.37E-05	5.00E-02	3.42E-05	1.42E-04	1.90E-04	No TRV	No TRV	yes

EPC = Exposure point concentration
SP_r = Soil-to-plant; reproductive
I_P (kg/kgBW/d) = Plant ingestion rate for robins = 0.76
ADD_P = Average daily dose; plant
AUF = Area use factor (1.0)
BAF_i = Soil-to-animal; invertebrates
ADD_A = Average daily dose; animal

I_A (kg/kgBW/d) = Animal ingestion rate for robins = 0.76
ADD_S = Average daily dose; soil
I_S (kg/kgBW/d) = Soil ingestion rate for robins = 0.158
ADD_{total} = Average daily dose; total
TRV (mg/kgBW/d) = toxicity reference value
nd= not detected, na= not applicable
CPEC = Constituents of potential ecological concern
EEQ = Environmental effects quotient

Appendix Table 7A.62. Exposure Unit 3 Surface Soil CPECs for Cottontail Rabbits at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	EPC (mg/kg)	SPv	ADD_P (mg/kgBW/d) RME *x* SP_r *x* I_P *x* AUF	BAF_i	ADD_A (mg/kgBW/d) RME *x* BAF_i *x* I_A *x* AUF	ADD_S (mg/kgBW/d) RME *x* I_S *x* AUF	ADD_{total} (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$	TRV (mg/kgBW/d)	Site EEQ ADD_{total} / TRV	CPEC?
Inorganics										
Beryllium	1.55E+02	2.00E-03	6.36E-02	5.00E-02	0.00E+00	2.00E+00	2.07E+00	4.82E-01	4.28E+00	yes
Lead	7.40E+01	9.00E-03	1.37E-01	2.00E+00	0.00E+00	9.56E-01	1.09E+00	5.84E+00	1.87E-01	no
Selenium	2.70E+00	5.00E-03	2.77E-03	7.60E-01	0.00E+00	3.49E-02	3.76E-02	1.46E-01	2.58E-01	no
Organics										
Volatiles										
Acetone	1.93E-02	2.00E-02	7.91E-05	5.00E-02	0.00E+00	2.49E-04	3.28E-04	7.30E+00	4.50E-05	no
Toluene	9.00E-04	2.00E-02	3.96E-06	5.00E-02	0.00E+00	1.16E-05	1.53E-05	1.03E+01	1.49E-06	no

EPC = Exposure point concentration
SP_v = Soil-to-plant; vegetative
I_P (kg/kgBW/d) = Plant ingestion rate for cottontail rabbits = 0.205
ADD_P = Average daily dose; plant
AUF = Area use factor (1.0)
BAF_i = Soil-to-animal; invertebrates
ADD_A = Average daily dose; animal
I_A (kg/kgBW/d) = Animal ingestion rate for cottontail rabbits = 0.00
ADD_S = Average daily dose; soil
I_S (kg/kgBW/d) = Soil ingestion rate for cottontail rabbits = 0.0129
ADD_{total} = Average daily dose; total
TRV (mg/kgBW/d) = toxicity reference value
nd= not detected, na= not applicable
CPEC = Constituents of potential ecological concern
EEQ = Environmental effects quotient

Appendix Table 7A.63. Exposure Unit 3 Surface Soil CPECs for White-Tailed Deer at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	**EPC** (mg/kg)	**SPv**	**ADD_P** (mg/kgBW/d) RME *x* SP_r *x* I_P *x* AUF	**BAF_i**	**ADD_A** (mg/kgBW/d) RME *x* BAF_i *x* I_A *x* AUF	**ADD_S** (mg/kgBW/d) RME *x* I_S *x* AUF	**ADD_{total}** (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$	**TRV** (mg/kgBW/d)	**Site EEQ** ADD_{total} / TRV	**CPEC?**
Inorganics										
Beryllium	1.55E+02	2.00E-03	9.61E-03	5.00E-02	0.00E+00	9.61E-02	1.06E-01	1.85E-01	5.71E-01	no
Lead	7.40E+01	9.00E-03	2.06E-02	2.00E+00	0.00E+00	4.59E-02	6.65E-02	2.24E+00	2.96E-02	no
Selenium	2.70E+00	5.00E-03	4.19E-04	7.60E-01	0.00E+00	1.67E-03	2.09E-03	5.61E-02	3.73E-02	no
Organics										
Volatiles										
Acetone	1.93E-02	2.00E-02	1.20E-05	5.00E-02	0.00E+00	1.20E-05	2.39E-05	2.81E+00	8.53E-06	no
Toluene	9.00E-04	2.00E-02	5.58E-07	5.00E-02	0.00E+00	5.58E-07	1.12E-06	3.94E+00	2.83E-07	no

EPC = Exposure point concentration
SP_v = Soil-to-plant; vegetative
I_P (kg/kgBW/d) = Plant ingestion rate for white-tailed deer = 0.031
ADD_P = Average daily dose; plant
AUF = Area use factor (1.0)
BAF_i = Soil-to-animal; invertebrates
ADD_A = Average daily dose; animal
I_A (kg/kgBW/d) = Animal ingestion rate for white-tailed deer = 0.00
ADD_S = Average daily dose; soil
I_S (kg/kgBW/d) = Soil ingestion rate for white-tailed deer = 0.00062
ADD_{total} = Average daily dose; total
TRV (mg/kgBW/d) = toxicity reference value
nd= not detected, na= not applicable
CPEC = Constituents of potential ecological concern
EEQ = Environmental effects quotient

Appendix Table 7A.64. Exposure Unit 3 Surface Soil CPECs for Red-Tailed Hawks at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	EPC (mg/kg)	SP_v	ADD_P (mg/kgBW/d) RME x SP_v x I_P x AUF	SP_v	Prey ADD_P (mg/kgBW/d) RME x SP_v x I_{P-s} x AUF-s	BAF_i	Prey ADD_A (mg/kgBW/d) RME x BAF_i x I_{A-s} x AUF-s	Prey ADD_S (mg/kgBW/d) RME x I_{S-s} x AUF-s	Prey ADD_{total} (mg/kgBW/d) ADD_P + ADD_A + ADD_S
Inorganics									
Beryllium	1.55E+02	2.00E-03	0.00E+00	2.00E-03	2.26E-02	5.00E-02	3.78E+00	1.13E+01	1.51E+01
Lead	7.40E+01	9.00E-03	0.00E+00	9.00E-03	4.85E-02	2.00E+00	7.21E+01	5.39E+00	7.75E+01
Selenium	2.70E+00	5.00E-03	0.00E+00	5.00E-03	9.83E-04	7.60E-01	1.00E+00	1.97E-01	1.20E+00
Organics									
Volatiles									
Acetone	1.93E-02	2.00E-02	0.00E+00	2.00E-02	2.81E-05	5.00E-02	4.70E-04	1.41E-03	1.90E-03
Toluene	9.00E-04	2.00E-02	0.00E+00	2.00E-02	1.31E-06	5.00E-02	2.19E-05	6.55E-05	8.88E-05

EPC = Exposure point concentration
SP_r = Soil-to-plant; reproductive
SP_v = Soil-to-plant; vegetative
I_P (kg/kgBW/d) = Plant ingestion rate for red-tailed hawks = 0.00
ADD_P = Average daily dose; plant
I_{P-s} (kg/kgBW/d) = Plant ingestion rate for shrews
AUF = Area use factor (1.0)
BAF_i = Soil-to-animal; invertebrates
ADD_A = Average daily dose; animal
I_{A-s} (kg/kgBW/d) = Animal ingestion rate for shrews
ADD_S = Average daily dose; soil
I_{S-s} (kg/kgBW/d) = Soil ingestion rate for shrews

Cs (mg/kg) = Concentration in the prey
IR_f (kg/kgBW/d)= Ingestion rate of food for shrews = 0.56
BAF_v = Animal-to-mammal
I_A (kg/kgBW/d) = Animal ingestion rate for red-tailed hawks = 0.11
I_S (kg/kgBW/d) = Soil ingestion rate for red-tailed hawks = 0.00
ADD_{total} = Average daily dose; total
TRV (mg/kgBW/d) = toxicity reference value
HQ = Hazard quotient
nd= not detected, na= not applicable
CPEC = Constituents of potential ecological concern
EEQ = Environmental effects quotient

Appendix Table 7A.64. Exposure Unit 3 Surface Soil CPECs for Red-Tailed Hawks at the Luckey Site, Luckey Ohio (continued)

Analytes remaining after the site-wide screens	**Cs** (mg/kg) ADD_{total}/IR_f	**BAF_v**	**ADD_A** (mg/kgBW/d) $Cs \times BAF_v \times I_A \times AUF$	**ADD_S** (mg/kgBW/d) $RME \times I_S \times AUF$	**ADD_{total}** (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$	**TRV** (mg/kgBW/d)	**Site EEQ** ADD_{total} / TRV	**CPEC?**
Beryllium	2.69E+01	5.00E-02	1.48E-01	0.00E+00	1.48E-01	No TRV	No TRV	yes
Lead	1.38E+02	1.50E-02	2.28E-01	0.00E+00	2.28E-01	6.82E-01	3.35E-01	no
Selenium	2.14E+00	7.50E-01	1.76E-01	0.00E+00	1.76E-01	4.85E-01	3.64E-01	no
Organics								
Volatiles								
Acetone	3.40E-03	8.70E-07	3.25E-10	0.00E+00	3.25E-10	No TRV	No TRV	yes
Toluene	1.58E-04	7.60E-04	1.32E-08	0.00E+00	1.32E-08	No TRV	No TRV	yes

Appendix Table 7A.65. Exposure Unit 3 Surface Soil CPECs for Red Foxes at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	EPC (mg/kg)	SPr	ADD_P (mg/kgBW/d) RME x SP_r x I_P x AUF	SP_v	Prey ADD_P (mg/kgBW/d) RME x SP_v x I_{P-s} x AUF-s	BAF_i	Prey ADD_A (mg/kgBW/d) RME x BAF_i x I_{A-s} x AUF-s	Prey ADD_S (mg/kgBW/d) RME x I_{S-s} x AUF-s	Prey ADD_{total} (mg/kgBW/d) ADD_P + ADD_A + ADD_S
Inorganics									
Beryllium	1.55E+02	3.00E-04	1.48E-04	2.00E-03	2.26E-02	5.00E-02	3.78E+00	1.13E+01	1.51E+01
Lead	7.40E+01	1.80E-03	4.22E-04	9.00E-03	4.85E-02	2.00E+00	7.21E+01	5.39E+00	7.75E+01
Selenium	2.70E+00	5.00E-03	4.28E-05	5.00E-03	9.83E-04	7.60E-01	1.00E+00	1.97E-01	1.20E+00
Organics									
Volatiles									
Acetone	1.93E-02	2.00E-02	1.23E-06	2.00E-02	2.81E-05	5.00E-02	4.70E-04	1.41E-03	1.90E-03
Toluene	9.00E-04	2.00E-02	5.71E-08	2.00E-02	1.31E-06	5.00E-02	2.19E-05	6.55E-05	8.88E-05

EPC = Exposure point concentration
SP_r = Soil-to-plant; reproductive
SP_v = Soil-to-plant; vegetative
I_P (kg/kgBW/d) = Plant ingestion rate for red foxes = 0.00317
ADD_P = Average daily dose; plant
I_{P-s} (kg/kgBW/d) = Plant ingestion rate for shrews = 0.0728
AUF = Area use factor (1.0)
BAF_i = Soil-to-animal; invertebrates
ADD_A = Average daily dose; animal
I_{A-s} (kg/kgBW/d) = Animal ingestion rate for shrews = 0.487
ADD_S = Average daily dose; soil
I_{S-s} (kg/kgBW/d) = Soil ingestion rate for shrews = 0.0728

Cs (mg/kg) = Concentration in the prey
IR_f = Ingestion rate of food for shrews
BAF_v = Animal-to-mammal
I_A (kg/kgBW/d) = Animal ingestion rate for red foxes = 0.0658
I_S (kg/kgBW/d) = Soil ingestion rate for red foxes = 0.00193
ADD_{total} = Average daily dose; total
TRV (mg/kgBW/d) = toxicity reference value
HQ = Hazard quotient
nd= not detected, na= not applicable
CPEC = Constituents of potential ecological concern
EEQ = Environmental effects quotient

Appendix Table 7A.65. Exposure Unit 2 Surface Soil CPECs for Red Foxes at the Luckey Site, Luckey Ohio (continued)

Analytes remaining after the site-wide screens	**Cs** (mg/kg) ADD_{total}/IR_f	**BAF_v**	**ADD_A** (mg/kgBW/d) Cs *x* BAF_v *x* I_A *x* AUF	**ADD_S** (mg/kgBW/d) RME *x* I_S *x* AUF	**ADD_{total}** (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$	**TRV** (mg/kgBW/d)	**Site EEQ** ADD_{total} / TRV	**CPEC?**
Inorganics								
Beryllium	2.69E+01	5.00E-02	8.86E-02	2.99E-01	3.88E-01	3.45E-01	1.13E+00	yes
Lead	1.38E+02	1.50E-02	1.37E-01	1.43E-01	2.80E-01	4.18E+00	6.69E-02	no
Selenium	2.14E+00	7.50E-01	1.06E-01	5.22E-03	1.11E-01	1.05E-01	1.06E+00	yes
Organics								
Volatiles								
Acetone	3.40E-03	8.70E-07	1.95E-10	3.73E-05	3.85E-05	5.23E+00	7.37E-06	no
Toluene	1.58E-04	7.60E-04	7.93E-09	1.74E-06	1.80E-06	7.35E+00	2.46E-07	no

Appendix Table 7A.66. Exposure Unit 4 Surface Soil, CPECs for Plants at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	EPC (mg/kg)	Plants			
		Plant TRV (mg/kg)	Plant EEQ	EEQ>1? Yes or No	CPEC?
Inorganics					
Antimony	1.50E+00	5.00E+00	3.00E-01	no	no
Beryllium	2.89E+01	1.00E+01	2.89E+00	yes	yes
Cadmium	2.10E+00	4.00E+00	5.25E-01	no	no
Lead	2.56E+01	5.00E+01	5.12E-01	no	no
Thallium	2.30E+00	1.00E+00	2.30E+00	yes	yes
Volatiles					
Toluene	2.60E-03	2.00E+02	1.30E-05	no	no

EPC = Exposure point concentration
TRV = toxicity reference value
EEQ = Environmental effects quotient
CPEC = Contaminant of Potential Ecological Concern
Plant TRVs from Efroymson et al (1997a)

Appendix Table 7A.67. Exposure Unit 4 Surface Soil, CPECs for Earthworms at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	EPC (mg/kg)	Earthworms			
		Earthworm TRV (mg/kg)	Earthworm EEQ	EEQ>1?	CPEC?
Inorganics					
Antimony	1.50E+00	No TRV	No TRV	yes	yes
Beryllium	2.89E+01	No TRV	No TRV	yes	yes
Cadmium	2.10E+00	2.00E+01	1.05E-01	no	no
Lead	2.56E+01	5.00E+02	5.12E-02	no	no
Thallium	2.30E+00	No TRV	No TRV	yes	yes
Volatiles					
Toluene	2.60E-03	No TRV	No TRV	yes	yes

EPC = Exposure point concentration
TRV = toxicity reference value
EEQ = Environmental effects quotient
CPEC = Contaminant of Potential Ecological Concern
Earthworm TRVs from Efroymson et al (1997b)

Appendix Table 7A.68. Exposure Unit 4 Surface Soil CPECs for Shrews at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	EPC (mg/kg)	SPv	ADD_P (mg/kgBW/d) RME x SP_r x I_P x AUF	BAF_i	ADD_A (mg/kgBW/d) RME x BAF_i x I_A x AUF	ADD_S (mg/kgBW/d) RME x I_S x AUF	ADD_{total} (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$	TRV (mg/kgBW/d)	Site EEQ ADD_{total} / TRV	CPEC?
Inorganics										
Antimony	1.50E+00	4.00E-02	4.37E-03	5.00E-02	3.65E-02	1.09E-01	1.50E-01	1.44E-01	1.04E+00	yes
Beryllium	2.89E+01	2.00E-03	4.21E-03	5.00E-02	7.04E-01	2.10E+00	2.81E+00	1.41E+00	2.00E+00	yes
Cadmium	2.10E+00	1.10E-01	1.68E-02	1.10E+01	1.13E+01	1.53E-01	1.14E+01	2.05E+00	5.56E+00	yes
Lead	2.56E+01	9.00E-03	1.68E-02	2.00E+00	2.49E+01	1.86E+00	2.68E+01	1.70E+01	1.57E+00	yes
Thallium	2.30E+00	8.00E-04	1.34E-04	1.00E+00	1.12E+00	1.67E-01	1.29E+00	1.59E-02	8.09E+01	yes
Volatiles										
Toluene	2.60E-03	2.00E-02	3.79E-06	5.00E-02	6.33E-05	1.89E-04	2.56E-04	2.99E+01	8.56E-06	no

EPC = Exposure point concentration
SP_v = Soil-to-plant; vegetative
I_P (kg/kgBW/d) = Plant ingestion rate for shrews = 0.0728
ADD_P = Average daily dose; plant
AUF = Area use factor (1.0)
BAF_i = Soil-to-animal; invertebrates
ADD_A = Average daily dose; animal

I_A (kg/kgBW/d) = Animal ingestion rate for shrews = 0.487
ADD_S = Average daily dose; soil
I_S (kg/kgBW/d) = Soil ingestion rate for shrews = 0.0728
ADD_{total} = Average daily dose; total
TRV (mg/kgBW/d) = toxicity reference value
nd= not detected, na= not applicable
CPEC = Constituents of potential ecological concern
EEQ = Environmental effects quotient

Appendix Table 7A.69. Exposure Unit 4 Surface Soil CPECs for Robins at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	**EPC** (mg/kg)	**SP_r**	**ADD_P** (mg/kgBW/d) RME *x* SP_r *x* I_P *x* AUF	**BAF_i**	**ADD_A** (mg/kgBW/d) RME *x* BAF_i *x* I_A *x* AUF	**ADD_S** (mg/kgBW/d) RME *x* I_S *x* AUF	**ADD_{total}** (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$	**TRV** (mg/kgBW/d)	**Site EEQ** ADD_{total} / TRV	**CPEC?**
Inorganics										
Antimony	1.50E+00	6.00E-03	6.84E-03	5.00E-02	5.70E-02	2.37E-01	3.01E-01	No TRV	No TRV	yes
Beryllium	2.89E+01	3.00E-04	6.59E-03	5.00E-02	1.10E+00	4.57E+00	5.67E+00	No TRV	No TRV	yes
Cadmium	2.10E+00	3.00E-02	4.79E-02	1.10E+01	1.76E+01	3.32E-01	1.79E+01	2.83E+00	6.35E+00	yes
Lead	2.56E+01	1.80E-03	3.50E-02	2.00E+00	3.89E+01	4.05E+00	4.30E+01	1.32E+00	3.25E+01	yes
Thallium	2.30E+00	8.00E-05	1.40E-04	1.00E+00	1.75E+00	3.64E-01	2.11E+00	No TRV	No TRV	yes
Volatiles										
Toluene	2.60E-03	2.00E-02	3.95E-05	5.00E-02	9.88E-05	4.11E-04	5.49E-04	No TRV	No TRV	yes

EPC = Exposure point concentration
SP_r = Soil-to-plant; reproductive
I_P (kg/kgBW/d) = Plant ingestion rate for robins = 0.76
ADD_P = Average daily dose; plant
AUF = Area use factor (1.0)
BAF_i = Soil-to-animal; invertebrates
ADD_A = Average daily dose; animal

I_A (kg/kgBW/d) = Animal ingestion rate for robins = 0.76
ADD_S = Average daily dose; soil
I_S (kg/kgBW/d) = Soil ingestion rate for robins = 0.158
ADD_{total} = Average daily dose; total
TRV (mg/kgBW/d) = toxicity reference value
nd= not detected, na= not applicable
CPEC = Constituents of potential ecological concern
EEQ = Environmental effects quotient

Appendix Table 7A.70. Exposure Unit 4 Surface Soil CPECs for Cottontail Rabbits at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	EPC (mg/kg)	SPv	ADD_P (mg/kgBW/d) RME x SP_r x I_P x AUF	BAF_i	ADD_A (mg/kgBW/d) RME x BAF_i x I_A x AUF	ADD_S (mg/kgBW/d) RME x I_S x AUF	ADD_{total} (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$	TRV (mg/kgBW/d)	Site EEQ ADD_{total} / TRV	CPEC?
Inorganics										
Antimony	1.50E+00	4.00E-02	1.23E-02	5.00E-02	0.00E+00	1.94E-02	3.17E-02	4.94E-02	6.41E-01	no
Beryllium	2.89E+01	2.00E-03	1.18E-02	5.00E-02	0.00E+00	3.73E-01	3.85E-01	4.82E-01	7.99E-01	no
Cadmium	2.10E+00	1.10E-01	4.74E-02	1.10E+01	0.00E+00	2.71E-02	7.45E-02	7.05E-01	1.06E-01	no
Lead	2.56E+01	9.00E-03	4.72E-02	2.00E+00	0.00E+00	3.31E-01	3.78E-01	5.84E+00	6.47E-02	no
Thallium	2.30E+00	8.00E-04	3.77E-04	1.00E+00	0.00E+00	2.97E-02	3.01E-02	5.46E-03	5.51E+00	yes
Volatiles										
Toluene	2.60E-03	2.00E-02	1.07E-05	5.00E-02	0.00E+00	3.36E-05	4.42E-05	1.03E+01	4.31E-06	no

EPC = Exposure point concentration
SP_v = Soil-to-plant; vegetative
I_P (kg/kgBW/d) = Plant ingestion rate for cottontail rabbits = 0.205
ADD_P = Average daily dose; plant
AUF = Area use factor (1.0)
BAF_i = Soil-to-animal; invertebrates
ADD_A = Average daily dose; animal

I_A (kg/kgBW/d) = Animal ingestion rate for cottontail rabbits = 0.00
ADD_S = Average daily dose; soil
I_S (kg/kgBW/d) = Soil ingestion rate for cottontail rabbits = 0.0129
ADD_{total} = Average daily dose; total
TRV (mg/kgBW/d) = toxicity reference value
nd= not detected, na= not applicable
CPEC = Constituents of potential ecological concern
EEQ = Environmental effects quotient

Appendix Table 7A.71. Exposure Unit 4 Surface Soil CPECs for White-Tailed Deer at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	**EPC** (mg/kg)	**SPv**	**ADD_P** (mg/kgBW/d) RME *x* SP_r *x* I_P *x* AUF	**BAF_i**	**ADD_A** (mg/kgBW/d) RME *x* BAF_i *x* I_A *x* AUF	**ADD_S** (mg/kgBW/d) RME *x* I_S *x* AUF	**ADD_{total}** (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$	**TRV** (mg/kgBW/d)	**Site EEQ** ADD_{total} / TRV	**CPEC?**
Inorganics										
Antimony	1.50E+00	4.00E-02	1.86E-03	5.00E-02	0.00E+00	9.30E-04	2.79E-03	1.90E-02	1.47E-01	no
Beryllium	2.89E+01	2.00E-03	1.79E-03	5.00E-02	0.00E+00	1.79E-02	1.97E-02	1.85E-01	1.06E-01	no
Cadmium	2.10E+00	1.10E-01	7.16E-03	1.10E+01	0.00E+00	1.30E-03	8.46E-03	2.71E-01	3.13E-02	no
Lead	2.56E+01	9.00E-03	7.14E-03	2.00E+00	0.00E+00	1.59E-02	2.30E-02	2.24E+00	1.03E-02	no
Thallium	2.30E+00	8.00E-04	5.70E-05	1.00E+00	0.00E+00	1.43E-03	1.48E-03	2.10E-03	7.07E-01	no
Volatiles										
Toluene	2.60E-03	2.00E-02	1.61E-06	5.00E-02	0.00E+00	1.61E-06	3.22E-06	3.94E+00	8.17E-07	no

EPC = Exposure point concentration
SP_v = Soil-to-plant; vegetative
I_P (kg/kgBW/d) = Plant ingestion rate for white-tailed deer = 0.031
ADD_P = Average daily dose; plant
AUF = Area use factor (1.0)
BAF_i = Soil-to-animal; invertebrates
ADD_A = Average daily dose; animal

I_A (kg/kgBW/d) = Animal ingestion rate for white-tailed deer = 0.00
ADD_S = Average daily dose; soil
I_S (kg/kgBW/d) = Soil ingestion rate for white-tailed deer = 0.00062
ADD_{total} = Average daily dose; total
TRV (mg/kgBW/d) = toxicity reference value
nd= not detected, na= not applicable
CPEC = Constituents of potential ecological concern
EEQ = Environmental effects quotient

Appendix Table 7A.72. Exposure Unit 4 Surface Soil CPECs for Red-Tailed Hawks at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	EPC (mg/kg)	SP_v	ADD_P (mg/kgBW/d) RME x SP_v x I_P x AUF	SP_v	Prey ADD_P (mg/kgBW/d) RME x SP_v x I_{P-s} x AUF-s	BAF_i	Prey ADD_A (mg/kgBW/d) RME x BAF_i x I_{A-s} x AUF-s	Prey ADD_S (mg/kgBW/d) RME x I_{S-s} x AUF-s	Prey ADD_{total} (mg/kgBW/d) ADD_P + ADD_A + ADD_S
Inorganics									
Antimony	1.50E+00	4.00E-02	0.00E+00	4.00E-02	4.37E-03	5.00E-02	3.65E-02	1.09E-01	1.50E-01
Beryllium	2.89E+01	2.00E-03	0.00E+00	2.00E-03	4.21E-03	5.00E-02	7.04E-01	2.10E+00	2.81E+00
Cadmium	2.10E+00	1.10E-01	0.00E+00	1.10E-01	1.68E-02	1.10E+01	1.13E+01	1.53E-01	1.14E+01
Lead	2.56E+01	9.00E-03	0.00E+00	9.00E-03	1.68E-02	2.00E+00	2.49E+01	1.86E+00	2.68E+01
Thallium	2.30E+00	8.00E-04	0.00E+00	8.00E-04	1.34E-04	1.00E+00	1.12E+00	1.67E-01	1.29E+00
Volatiles									
Toluene	2.60E-03	2.00E-02	0.00E+00	2.00E-02	3.79E-06	5.00E-02	6.33E-05	1.89E-04	2.56E-04

EPC = Exposure point concentration
SP_r = Soil-to-plant; reproductive
SP_v = Soil-to-plant; vegetative
I_P (kg/kgBW/d) = Plant ingestion rate for red-tailed hawks = 0.00
ADD_P = Average daily dose; plant
I_{P-s} (kg/kgBW/d) = Plant ingestion rate for shrews
AUF = Area use factor (1.0)
BAF_i = Soil-to-animal; invertebrates
ADD_A = Average daily dose; animal
I_{A-s} (kg/kgBW/d) = Animal ingestion rate for shrews
ADD_S = Average daily dose; soil
I_{S-s} (kg/kgBW/d) = Soil ingestion rate for shrews

Cs (mg/kg) = Concentration in the prey
IR_f (kg/kgBW/d)= Ingestion rate of food for shrews = 0.56
BAF_v = Animal-to-mammal
I_A (kg/kgBW/d) = Animal ingestion rate for red-tailed hawks = 0.11
I_S (kg/kgBW/d) = Soil ingestion rate for red-tailed hawks = 0.00
ADD_{total} = Average daily dose; total
TRV (mg/kgBW/d) = toxicity reference value
HQ = Hazard quotient
nd= not detected, na= not applicable
CPEC = Constituents of potential ecological concern
EEQ = Environmental effects quotient

Appendix Table 7A.72. Exposure Unit 4 Surface Soil CPECs for Red-Tailed Hawks at the Luckey Site, Luckey Ohio (continued)

Analytes remaining after the site-wide screens	**Cs** (mg/kg) ADD_{total}/IR_f	**BAF_v**	**ADD_A** (mg/kgBW/d) Cs *x* BAF_v *x* I_A *x* AUF	**ADD_S** (mg/kgBW/d) RME *x* I_S *x* AUF	**ADD_{total}** (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$	**TRV** (mg/kgBW/d)	**Site EEQ** ADD_{total} / TRV	**CPEC?**
Antimony	2.68E-01	5.00E-02	1.47E-03	0.00E+00	1.47E-03	No TRV	No TRV	yes
Beryllium	5.02E+00	5.00E-02	2.76E-02	0.00E+00	2.76E-02	No TRV	No TRV	yes
Cadmium	2.04E+01	2.80E-02	6.28E-02	0.00E+00	6.28E-02	1.46E+00	4.31E-02	no
Lead	4.79E+01	1.50E-02	7.90E-02	0.00E+00	7.90E-02	6.82E-01	1.16E-01	no
Thallium	2.30E+00	1.00E+00	2.53E-01	0.00E+00	2.53E-01	No TRV	No TRV	yes
Volatiles								
Toluene	4.58E-04	7.60E-04	3.83E-08	0.00E+00	3.83E-08	No TRV	No TRV	yes

Appendix Table 7A.73. Exposure Unit 4 Surface Soil CPECs for Red Foxes at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	EPC (mg/kg)	SPr	ADD_P (mg/kgBW/d) RME *x* SP_r *x* I_P *x* AUF	SP_v	Prey ADD_P (mg/kgBW/d) RME *x* SP_v *x* I_{P-s} *x* AUF-s	BAF_i	Prey ADD_A (mg/kgBW/d) RME *x* BAF_i *x* I_{A-s} *x* AUF-s	Prey ADD_S (mg/kgBW/d) RME *x* I_{S-s} *x* AUF-s	Prey ADD_{total} (mg/kgBW/d) ADD_P + ADD_A + ADD_S
Inorganics									
Antimony	1.50E+00	6.00E-03	2.86E-05	4.00E-02	4.37E-03	5.00E-02	3.65E-02	1.09E-01	1.50E-01
Beryllium	2.89E+01	3.00E-04	2.75E-05	2.00E-03	4.21E-03	5.00E-02	7.04E-01	2.10E+00	2.81E+00
Cadmium	2.10E+00	3.00E-02	2.00E-04	1.10E-01	1.68E-02	1.10E+01	1.13E+01	1.53E-01	1.14E+01
Lead	2.56E+01	1.80E-03	1.46E-04	9.00E-03	1.68E-02	2.00E+00	2.49E+01	1.86E+00	2.68E+01
Thallium	2.30E+00	8.00E-05	5.84E-07	8.00E-04	1.34E-04	1.00E+00	1.12E+00	1.67E-01	1.29E+00
Volatiles									
Toluene	2.60E-03	2.00E-02	1.65E-07	2.00E-02	3.79E-06	5.00E-02	6.33E-05	1.89E-04	2.56E-04

EPC = Exposure point concentration
SP_r = Soil-to-plant; reproductive
SP_v = Soil-to-plant; vegetative
I_P (kg/kgBW/d) = Plant ingestion rate for red foxes = 0.00317
ADD_P = Average daily dose; plant
I_{P-s} (kg/kgBW/d) = Plant ingestion rate for shrews = 0.0728
AUF = Area use factor (1.0)
BAF_i = Soil-to-animal; invertebrates
ADD_A = Average daily dose; animal
I_{A-s} (kg/kgBW/d) = Animal ingestion rate for shrews = 0.487
ADD_S = Average daily dose; soil
I_{S-s} (kg/kgBW/d) = Soil ingestion rate for shrews = 0.0728

Cs (mg/kg) = Concentration in the prey
IR_f = Ingestion rate of food for shrews
BAF_v = Animal-to-mammal
I_A (kg/kgBW/d) = Animal ingestion rate for red foxes = 0.0658
I_S (kg/kgBW/d) = Soil ingestion rate for red foxes = 0.00193
ADD_{total} = Average daily dose; total
TRV (mg/kgBW/d) = toxicity reference value
HQ = Hazard quotient
nd= not detected, na= not applicable
CPEC = Constituents of potential ecological concern
EEQ = Environmental effects quotient

Appendix Table 7A.73. Exposure Unit 4 Surface Soil CPECs for Red Foxes at the Luckey Site, Luckey Ohio (continued)

Analytes remaining after the site-wide screens	**Cs** (mg/kg) ADD_{total}/IR_f	**BAF_v**	**ADD_A** (mg/kgBW/d) Cs *x* BAF_v *x* I_A *x* AUF	**ADD_S** (mg/kgBW/d) RME *x* I_S *x* AUF	**ADD_{total}** (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$	**TRV** (mg/kgBW/d)	**Site EEQ** ADD_{total} / TRV	**CPEC?**
Inorganics								
Antimony	2.68E-01	5.00E-02	8.82E-04	2.90E-03	3.81E-03	3.54E-02	1.08E-01	no
Beryllium	5.02E+00	5.00E-02	1.65E-02	5.58E-02	7.24E-02	3.45E-01	2.10E-01	no
Cadmium	2.04E+01	2.80E-02	3.76E-02	4.06E-03	4.19E-02	5.04E-01	8.30E-02	no
Lead	4.79E+01	1.50E-02	4.73E-02	4.95E-02	9.69E-02	4.18E+00	2.32E-02	no
Thallium	2.30E+00	1.00E+00	1.51E-01	4.44E-03	1.56E-01	3.91E-03	3.99E+01	yes
Volatiles								
Toluene	4.58E-04	7.60E-04	2.29E-08	5.02E-06	5.21E-06	7.35E+00	7.09E-07	no

Appendix Table 7A.74. Exposure Unit 5 Surface Soil, CPECs for Plants at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	EPC (mg/kg)	Plants			
		Plant TRV (mg/kg)	Plant EEQ	EEQ>1? Yes or No	CPEC?
Inorganics					
Beryllium	1.39E+00	1.00E+01	1.39E-01	no	no
Lead	6.19E+01	5.00E+01	1.24E+00	yes	yes
Volatiles					
Toluene	3.00E-03	2.00E+02	1.50E-05	no	no

EPC = Exposure point concentration
TRV = toxicity reference value
EEQ = Environmental effects quotient
CPEC = Contaminant of Potential Ecological Concern
Plant TRVs from Efroymson et al (1997a)

Appendix Table 7A.75. Exposure Unit 5 Surface Soil, CPECs for Earthworms at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	EPC (mg/kg)	Earthworms			
		Earthworm TRV (mg/kg)	Earthworm EEQ	EEQ>1?	CPEC?
Inorganics					
Beryllium	1.39E+00	5.00E+02	No TRV	yes	yes
Lead	6.19E+01	5.00E+02	1.24E-01	no	no
Volatiles					
Toluene	3.00E-03	No TRV	No TRV	yes	yes

EPC = Exposure point concentration
TRV = toxicity reference value
EEQ = Environmental effects quotient
CPEC = Contaminant of Potential Ecological Concern
Earthworm TRVs from Efroymson et al (1997b)

Appendix Table 7A.76. Exposure Unit 5 Surface Soil CPECs for Shrews at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	**EPC** (mg/kg)	**SPv**	**ADD_P** (mg/kgBW/d) RME *x* SP_r *x* I_P *x* AUF	**BAF_i**	**ADD_A** (mg/kgBW/d) RME *x* BAF_i *x* I_A *x* AUF	**ADD_S** (mg/kgBW/d) RME *x* I_S *x* AUF	**ADD_{total}** (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$	**TRV** (mg/kgBW/d)	**Site EEQ** ADD_{total} / TRV	**CPEC?**
Inorganics										
Beryllium	1.39E+00	2.00E-03	2.02E-04	5.00E-02	3.39E-02	1.01E-01	1.35E-01	1.41E+00	9.62E-02	no
Lead	6.19E+01	9.00E-03	4.06E-02	2.00E+00	6.03E+01	4.51E+00	6.49E+01	1.70E+01	3.81E+00	yes
Volatiles										
Toluene	3.00E-03	2.00E-02	4.37E-06	5.00E-02	7.31E-05	2.18E-04	2.96E-04	2.99E+01	9.88E-06	no

EPC = Exposure point concentration
SP_v = Soil-to-plant; vegetative
I_P (kg/kgBW/d) = Plant ingestion rate for shrews = 0.0728
ADD_P = Average daily dose; plant
AUF = Area use factor (1.0)
BAF_i = Soil-to-animal; invertebrates
ADD_A = Average daily dose; animal
I_A (kg/kgBW/d) = Animal ingestion rate for shrews = 0.487
ADD_S = Average daily dose; soil
I_S (kg/kgBW/d) = Soil ingestion rate for shrews = 0.0728
ADD_{total} = Average daily dose; total
TRV (mg/kgBW/d) = toxicity reference value
nd= not detected, na= not applicable
CPEC = Constituents of potential ecological concern
EEQ = Environmental effects quotient

Appendix Table 7A.77. Exposure Unit 5 Surface Soil CPECs for Robins at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	**EPC** (mg/kg)	**SP_r**	**ADD_P** (mg/kgBW/d) RME *x* SP_r *x* I_P *x* AUF	**BAF_i**	**ADD_A** (mg/kgBW/d) RME *x* BAF_i *x* I_A *x* AUF	**ADD_S** (mg/kgBW/d) RME *x* I_S *x* AUF	**ADD_{total}** (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$	**TRV** (mg/kgBW/d)	**Site EEQ** ADD_{total} / TRV	**CPEC?**
Inorganics										
Beryllium	1.39E+00	3.00E-04	3.17E-04	5.00E-02	5.28E-02	2.20E-01	2.73E-01	No TRV	No TRV	yes
Lead	6.19E+01	1.80E-03	8.47E-02	2.00E+00	9.41E+01	9.79E+00	1.04E+02	1.32E+00	7.86E+01	yes
Volatiles										
Toluene	3.00E-03	2.00E-02	4.56E-05	5.00E-02	1.14E-04	4.74E-04	6.34E-04	No TRV	No TRV	yes

EPC = Exposure point concentration
SP_r = Soil-to-plant; reproductive
I_P (kg/kgBW/d) = Plant ingestion rate for robins = 0.76
ADD_P = Average daily dose; plant
AUF = Area use factor (1.0)
BAF_i = Soil-to-animal; invertebrates
ADD_A = Average daily dose; animal

I_A (kg/kgBW/d) = Animal ingestion rate for robins = 0.76
ADD_S = Average daily dose; soil
I_S (kg/kgBW/d) = Soil ingestion rate for robins = 0.158
ADD_{total} = Average daily dose; total
TRV (mg/kgBW/d) = toxicity reference value
nd= not detected, na= not applicable
CPEC = Constituents of potential ecological concern
EEQ = Environmental effects quotient

Appendix Table 7A.78. Exposure Unit 5 Surface Soil CPECs for Cottontail Rabbits at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	**EPC** (mg/kg)	**SPv**	**ADD_P** (mg/kgBW/d) RME *x* SP_r *x* I_P *x* AUF	**BAF_i**	**ADD_A** (mg/kgBW/d) RME *x* BAF_i *x* I_A *x* AUF	**ADD_S** (mg/kgBW/d) RME *x* I_S *x* AUF	**ADD_{total}** (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$	**TRV** (mg/kgBW/d)	**Site EEQ** ADD_{total} / TRV	**CPEC?**
Inorganics										
Beryllium	1.39E+00	2.00E-03	5.70E-04	5.00E-02	0.00E+00	1.80E-02	1.85E-02	4.82E-01	3.84E-02	no
Lead	6.19E+01	9.00E-03	1.14E-01	2.00E+00	0.00E+00	7.99E-01	9.14E-01	5.84E+00	1.56E-01	no
Volatiles										
Toluene	3.00E-03	2.00E-02	1.23E-05	5.00E-02	0.00E+00	3.87E-05	5.10E-05	1.03E+01	4.97E-06	no

EPC = Exposure point concentration
SP_v = Soil-to-plant; vegetative
I_P (kg/kgBW/d) = Plant ingestion rate for cottontail rabbits = 0.205
ADD_P = Average daily dose; plant
AUF = Area use factor (1.0)
BAF_i = Soil-to-animal; invertebrates
ADD_A = Average daily dose; animal
I_A (kg/kgBW/d) = Animal ingestion rate for cottontail rabbits = 0.00
ADD_S = Average daily dose; soil
I_S (kg/kgBW/d) = Soil ingestion rate for cottontail rabbits = 0.0129
ADD_{total} = Average daily dose; total
TRV (mg/kgBW/d) = toxicity reference value
nd= not detected, na= not applicable
CPEC = Constituents of potential ecological concern
EEQ = Environmental effects quotient

Appendix Table 7A.79. Exposure Unit 5 Surface Soil CPECs for White-Tailed Deer at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	**EPC** (mg/kg)	**SPv**	**ADD_P** (mg/kgBW/d) RME *x* SP_r *x* I_P *x* AUF	**BAF_i**	**ADD_A** (mg/kgBW/d) RME *x* BAF_i *x* I_A *x* AUF	**ADD_S** (mg/kgBW/d) RME *x* I_S *x* AUF	**ADD_{total}** (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$	**TRV** (mg/kgBW/d)	**Site EEQ** ADD_{total} / TRV	**CPEC?**
Inorganics										
Beryllium	1.39E+00	2.00E-03	8.62E-05	5.00E-02	0.00E+00	8.62E-04	9.48E-04	1.85E-01	5.12E-03	no
Lead	6.19E+01	9.00E-03	1.73E-02	2.00E+00	0.00E+00	3.84E-02	5.56E-02	2.24E+00	2.48E-02	no
Volatiles										
Toluene	3.00E-03	2.00E-02	1.86E-06	5.00E-02	0.00E+00	1.86E-06	3.72E-06	3.94E+00	9.43E-07	no

EPC = Exposure point concentration
SP_v = Soil-to-plant; vegetative
I_P (kg/kgBW/d) = Plant ingestion rate for white-tailed deer = 0.031
ADD_P = Average daily dose; plant
AUF = Area use factor (1.0)
BAF_i = Soil-to-animal; invertebrates
ADD_A = Average daily dose; animal
I_A (kg/kgBW/d) = Animal ingestion rate for white-tailed deer = 0.00
ADD_S = Average daily dose; soil
I_S (kg/kgBW/d) = Soil ingestion rate for white-tailed deer = 0.00062
ADD_{total} = Average daily dose; total
TRV (mg/kgBW/d) = toxicity reference value
nd= not detected, na= not applicable
CPEC = Constituents of potential ecological concern
EEQ = Environmental effects quotient

Appendix Table 7A.80. Exposure Unit 5 Surface Soil CPECs for Red-Tailed Hawks at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	EPC (mg/kg)	SP_v	ADD_P (mg/kgBW/d) RME x SP_v x I_P x AUF	SP_v	Prey ADD_P (mg/kgBW/d) RME x SP_v x I_{P-s} x AUF-s	BAF_i	Prey ADD_A (mg/kgBW/d) RME x BAF_i x I_{A-s} x AUF-s	Prey ADD_S (mg/kgBW/d) RME x I_{S-s} x AUF-s	Prey ADD_{total} (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$
Inorganics									
Beryllium	1.39E+00	2.00E-03	0.00E+00	2.00E-03	2.02E-04	5.00E-02	3.39E-02	1.01E-01	1.35E-01
Lead	6.19E+01	9.00E-03	0.00E+00	9.00E-03	4.06E-02	2.00E+00	6.03E+01	4.51E+00	6.49E+01
Volatiles									
Toluene	3.00E-03	2.00E-02	0.00E+00	2.00E-02	4.37E-06	5.00E-02	7.31E-05	2.18E-04	2.96E-04

EPC = Exposure point concentration
SP_r = Soil-to-plant; reproductive
SP_v = Soil-to-plant; vegetative
I_P (kg/kgBW/d) = Plant ingestion rate for red-tailed hawks = 0.00
ADD_P = Average daily dose; plant
I_{P-s} (kg/kgBW/d) = Plant ingestion rate for shrews
AUF = Area use factor (1.0)
BAF_i = Soil-to-animal; invertebrates
ADD_A = Average daily dose; animal
I_{A-s} (kg/kgBW/d) = Animal ingestion rate for shrews
ADD_S = Average daily dose; soil
I_{S-s} (kg/kgBW/d) = Soil ingestion rate for shrews

Cs (mg/kg) = Concentration in the prey
IR_f (kg/kgBW/d)= Ingestion rate of food for shrews = 0.56
BAF_v = Animal-to-mammal
I_A (kg/kgBW/d) = Animal ingestion rate for red-tailed hawks = 0.11
I_S (kg/kgBW/d) = Soil ingestion rate for red-tailed hawks = 0.00
ADD_{total} = Average daily dose; total
TRV (mg/kgBW/d) = toxicity reference value
HQ = Hazard quotient
nd= not detected, na= not applicable
CPEC = Constituents of potential ecological concern
EEQ = Environmental effects quotient

Appendix Table 7A.80. Exposure Unit 5 Surface Soil CPECs for Red-Tailed Hawks at the Luckey Site, Luckey Ohio (continued)

Analytes remaining after the site-wide screens	**Cs** (mg/kg) ADD_{total}/IR_f	**BAF_v**	**ADD_A** (mg/kgBW/d) Cs *x* BAF_v *x* I_A *x* AUF	**ADD_S** (mg/kgBW/d) RME *x* I_S *x* AUF	**ADD_{total}** (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$	**TRV** (mg/kgBW/d)	**Site EEQ** ADD_{total} / TRV	**CPEC?**
Inorganics								
Beryllium	2.42E-01	5.00E-02	1.33E-03	0.00E+00	1.33E-03	No TRV	No TRV	yes
Lead	1.16E+02	1.50E-02	1.91E-01	0.00E+00	1.91E-01	6.82E-01	2.80E-01	no
Volatiles								
Toluene	5.28E-04	7.60E-04	4.42E-08	0.00E+00	4.42E-08	No TRV	No TRV	yes

Appendix Table 7A.81. Exposure Unit 5 Surface Soil CPECs for Red Foxes at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	EPC (mg/kg)	SPr	ADD_P (mg/kgBW/d) RME *x* SP_r *x* I_P *x* AUF	SP_v	Prey ADD_P (mg/kgBW/d) RME *x* SP_v *x* I_{P-s} *x* AUF-s	BAF_i	Prey ADD_A (mg/kgBW/d) RME *x* BAF_i *x* I_{A-s} *x* AUF-s	Prey ADD_S (mg/kgBW/d) RME *x* I_{S-s} *x* AUF-s	Prey ADD_{total} (mg/kgBW/d) ADD_P + ADD_A + ADD_S
Inorganics									
Beryllium	1.39E+00	3.00E-04	1.32E-06	2.00E-03	2.02E-04	5.00E-02	3.39E-02	1.01E-01	1.35E-01
Lead	6.19E+01	1.80E-03	3.54E-04	9.00E-03	4.06E-02	2.00E+00	6.03E+01	4.51E+00	6.49E+01
Volatiles									
Toluene	3.00E-03	2.00E-02	1.90E-07	2.00E-02	4.37E-06	5.00E-02	7.31E-05	2.18E-04	2.96E-04

EPC = Exposure point concentration
SP_r = Soil-to-plant; reproductive
SP_v = Soil-to-plant; vegetative
I_P (kg/kgBW/d) = Plant ingestion rate for red foxes = 0.00317
ADD_P = Average daily dose; plant
I_{P-s} (kg/kgBW/d) = Plant ingestion rate for shrews = 0.0728
AUF = Area use factor (1.0)
BAF_i = Soil-to-animal; invertebrates
ADD_A = Average daily dose; animal
I_{A-s} (kg/kgBW/d) = Animal ingestion rate for shrews = 0.487
ADD_S = Average daily dose; soil
I_{S-s} (kg/kgBW/d) = Soil ingestion rate for shrews = 0.0728

Cs (mg/kg) = Concentration in the prey
IR_f = Ingestion rate of food for shrews
BAF_v = Animal-to-mammal
I_A (kg/kgBW/d) = Animal ingestion rate for red foxes = 0.0658
I_S (kg/kgBW/d) = Soil ingestion rate for red foxes = 0.00193
ADD_{total} = Average daily dose; total
TRV (mg/kgBW/d) = toxicity reference value
HQ = Hazard quotient
nd= not detected, na= not applicable
CPEC = Constituents of potential ecological concern
EEQ = Environmental effects quotient

Appendix Table 7A.81. Exposure Unit 5 Surface Soil CPECs for Red Foxes at the Luckey Site, Luckey Ohio (continued)

Analytes remaining after the site-wide screens	**Cs** (mg/kg) ADD_{total}/IR_f	**BAF_v**	**ADD_A** (mg/kgBW/d) Cs *x* BAF_v *x* I_A *x* AUF	**ADD_S** (mg/kgBW/d) RME *x* I_S *x* AUF	**ADD_{total}** (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$	**TRV** (mg/kgBW/d)	**Site EEQ** ADD_{total} / TRV	**CPEC?**
Inorganics								
Beryllium	2.42E-01	5.00E-02	7.95E-04	2.69E-03	3.48E-03	3.45E-01	1.01E-02	no
Lead	1.16E+02	1.50E-02	1.14E-01	1.20E-01	2.34E-01	4.18E+00	5.60E-02	no
Volatiles								
Toluene	5.28E-04	7.60E-04	2.64E-08	5.80E-06	6.01E-06	7.35E+00	8.18E-07	no

Appendix Table 7A.82. Exposure Unit 6 Surface Soil, CPECs for Plants at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	EPC	Plants			
		Plant TRV (mg/kg)	Plant EEQ	EEQ>1? Yes or No	CPEC?
Inorganics					
Beryllium	1.90E+00	1.00E+01	1.90E-01	no	no

EPC = Exposure point concentration
TRV = toxicity reference value
EEQ = Environmental effects quotient
CPEC = Contaminant of Potential Ecological Concern
Plant TRVs from Efroymson et al (1997a)

Appendix Table 7A.83. Exposure Unit 6 Surface Soil, CPECs for Earthworms at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	EPC	Earthworms			
		Earthworm TRV	Earthworm EEQ	EEQ>1?	CPEC?
Inorganics					
Beryllium	1.90E+00	No TRV	No TRV	yes	yes

EPC = Exposure point concentration
TRV = toxicity reference value
EEQ = Environmental effects quotient
CPEC = Contaminant of Potential Ecological Concern
Earthworm TRVs from Efroymson et al (1997b)

Appendix Table 7A.84. Exposure Unit 6 Surface Soil CPECs for Shrews at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	**EPC** (mg/kg)	**SPv**	**ADD_P** (mg/kgBW/d) RME *x* SP_r *x* I_P *x* AUF	**BAF_i**	**ADD_A** (mg/kgBW/d) RME *x* BAF_i *x* I_A *x* AUF	**ADD_S** (mg/kgBW/d) RME *x* I_S *x* AUF	**ADD_{total}** (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$	**TRV** (mg/kgBW/d)	**Site EEQ** ADD_{total} / TRV	**CPEC?**
Inorganics										
Beryllium	1.90E+00	2.00E-03	2.77E-04	5.00E-02	4.63E-02	1.38E-01	1.85E-01	1.41E+00	1.32E-01	no

EPC = Exposure point concentration
SP_v = Soil-to-plant; vegetative
I_P (kg/kgBW/d) = Plant ingestion rate for shrews = 0.0728
ADD_P = Average daily dose; plant
AUF = Area use factor (1.0)
BAF_i = Soil-to-animal; invertebrates
ADD_A = Average daily dose; animal
I_A (kg/kgBW/d) = Animal ingestion rate for shrews = 0.487
ADD_S = Average daily dose; soil
I_S (kg/kgBW/d) = Soil ingestion rate for shrews = 0.0728
ADD_{total} = Average daily dose; total
TRV (mg/kgBW/d) = toxicity reference value
nd= not detected, na= not applicable
CPEC = Constituents of potential ecological concern
EEQ = Environmental effects quotient

Appendix Table 7A.85. Exposure Unit 6 Surface Soil CPECs for Robins at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	**EPC** (mg/kg)	**SP_r**	**ADD_P** (mg/kgBW/d) RME *x* SP_r *x* I_P *x* AUF	**BAF_i**	**ADD_A** (mg/kgBW/d) RME *x* BAF_i *x* I_A *x* AUF	**ADD_S** (mg/kgBW/d) RME *x* I_S *x* AUF	**ADD_{total}** (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$	**TRV** (mg/kgBW/d)	**Site EEQ** ADD_{total} / TRV	**CPEC?**
Inorganics										
Beryllium	1.90E+00	3.00E-04	4.33E-04	5.00E-02	7.22E-02	3.00E-01	3.73E-01	No TRV	No TRV	yes

EPC = Exposure point concentration
SP_r = Soil-to-plant; reproductive
I_P (kg/kgBW/d) = Plant ingestion rate for robins = 0.76
ADD_P = Average daily dose; plant
AUF = Area use factor (1.0)
BAF_i = Soil-to-animal; invertebrates
ADD_A = Average daily dose; animal

I_A (kg/kgBW/d) = Animal ingestion rate for robins = 0.76
ADD_S = Average daily dose; soil
I_S (kg/kgBW/d) = Soil ingestion rate for robins = 0.158
ADD_{total} = Average daily dose; total
TRV (mg/kgBW/d) = toxicity reference value
nd= not detected, na= not applicable
CPEC = Constituents of potential ecological concern
EEQ = Environmental effects quotient

Appendix Table 7A.86. Exposure Unit 6 Surface Soil CPECs for Cottontail Rabbits at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	**EPC** (mg/kg)	**SPv**	**ADD_P** (mg/kgBW/d) RME *x* SP_r *x* I_P *x* AUF	**BAF_i**	**ADD_A** (mg/kgBW/d) RME *x* BAF_i *x* I_A *x* AUF	**ADD_S** (mg/kgBW/d) RME *x* I_S *x* AUF	**ADD_{total}** (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$	**TRV** (mg/kgBW/d)	**Site EEQ** ADD_{total} / TRV	**CPEC?**
Inorganics										
Beryllium	1.90E+00	2.00E-03	7.79E-04	5.00E-02	0.00E+00	2.45E-02	2.53E-02	4.82E-01	5.25E-02	no

EPC = Exposure point concentration
SP_v = Soil-to-plant; vegetative
I_P (kg/kgBW/d) = Plant ingestion rate for cottontail rabbits = 0.205
ADD_P = Average daily dose; plant
AUF = Area use factor (1.0)
BAF_i = Soil-to-animal; invertebrates
ADD_A = Average daily dose; animal
I_A (kg/kgBW/d) = Animal ingestion rate for cottontail rabbits = 0.00
ADD_S = Average daily dose; soil
I_S (kg/kgBW/d) = Soil ingestion rate for cottontail rabbits = 0.0129
ADD_{total} = Average daily dose; total
TRV (mg/kgBW/d) = toxicity reference value
nd= not detected, na= not applicable
CPEC = Constituents of potential ecological concern
EEQ = Environmental effects quotient

Appendix Table 7A.87. Exposure Unit 6 Surface Soil CPECs for White-Tailed Deer at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	**EPC** (mg/kg)	**SPv**	**ADD_P** (mg/kgBW/d) RME *x* SP_r *x* I_P *x* AUF	**BAF_i**	**ADD_A** (mg/kgBW/d) RME *x* BAF_i *x* I_A *x* AUF	**ADD_S** (mg/kgBW/d) RME *x* I_S *x* AUF	**ADD_{total}** (mg/kgBW/d) ADD_P + ADD_A + ADD_S	**TRV** (mg/kgBW/d)	**Site EEQ** ADD_{total} / TRV	**CPEC?**
Inorganics										
Beryllium	1.90E+00	2.00E-03	1.18E-04	5.00E-02	0.00E+00	1.18E-03	1.30E-03	1.85E-01	7.00E-03	no

EPC = Exposure point concentration
SP_v = Soil-to-plant; vegetative
I_P (kg/kgBW/d) = Plant ingestion rate for white-tailed deer = 0.031
ADD_P = Average daily dose; plant
AUF = Area use factor (1.0)
BAF_i = Soil-to-animal; invertebrates
ADD_A = Average daily dose; animal
I_A (kg/kgBW/d) = Animal ingestion rate for white-tailed deer = 0.00
ADD_S = Average daily dose; soil
I_S (kg/kgBW/d) = Soil ingestion rate for white-tailed deer = 0.00062
ADD_{total} = Average daily dose; total
TRV (mg/kgBW/d) = toxicity reference value
nd= not detected, na= not applicable
CPEC = Constituents of potential ecological concern
EEQ = Environmental effects quotient

Appendix Table 7A.88. Exposure Unit 6 Surface Soil CPECs for Red-Tailed Hawks at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	**EPC** (mg/kg)	**SP_v**	**ADD_P** (mg/kgBW/d) RME *x* SP_v *x* I_P *x* AUF	**SP_v**	**Prey ADD_P** (mg/kgBW/d) RME *x* SP_v *x* I_{P-s} *x* AUF-s	**BAF_i**	**Prey ADD_A** (mg/kgBW/d) RME *x* BAF_i *x* I_{A-s} *x* AUF-s	**Prey ADD_S** (mg/kgBW/d) RME *x* I_{S-s} *x* AUF-s	**Prey ADD_{total}** (mg/kgBW/d) ADD_P + ADD_A + ADD_S
Inorganics									
Beryllium	1.90E+00	2.00E-03	0.00E+00	2.00E-03	2.77E-04	5.00E-02	4.63E-02	1.38E-01	1.85E-01

EPC = Exposure point concentration
SP_r = Soil-to-plant; reproductive
SP_v = Soil-to-plant; vegetative
I_P (kg/kgBW/d) = Plant ingestion rate for red-tailed hawks = 0.00
ADD_P = Average daily dose; plant
I_{P-s} (kg/kgBW/d) = Plant ingestion rate for shrews
AUF = Area use factor (1.0)
BAF_i = Soil-to-animal; invertebrates
ADD_A = Average daily dose; animal
I_{A-s} (kg/kgBW/d) = Animal ingestion rate for shrews
ADD_S = Average daily dose; soil
I_{S-s} (kg/kgBW/d) = Soil ingestion rate for shrews

Cs (mg/kg) = Concentration in the prey
IR_f (kg/kgBW/d)= Ingestion rate of food for shrews = 0.56
BAF_v = Animal-to-mammal
I_A (kg/kgBW/d) = Animal ingestion rate for red-tailed hawks = 0.11
I_S (kg/kgBW/d) = Soil ingestion rate for red-tailed hawks = 0.00
ADD_{total} = Average daily dose; total
TRV (mg/kgBW/d) = toxicity reference value
HQ = Hazard quotient
nd= not detected, na= not applicable
CPEC = Constituents of potential ecological concern
EEQ = Environmental effects quotient

Appendix Table 7A.88. Exposure Unit 6 Surface Soil CPECs for Red-Tailed Hawks at the Luckey Site, Luckey Ohio (continued)

Analytes remaining after the site-wide screens	**Cs** (mg/kg) ADD_{total}/IR_f	**BAF_v**	**ADD_A** (mg/kgBW/d) $Cs \times BAF_v \times I_A \times AUF$	**ADD_S** (mg/kgBW/d) $RME \times I_S \times AUF$	**ADD_{total}** (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$	**TRV** (mg/kgBW/d)	**Site EEQ** ADD_{total} / TRV	**CPEC?**
Inorganics								
Beryllium	3.30E-01	5.00E-02	1.82E-03	0.00E+00	1.82E-03	No TRV	No TRV	yes

Appendix Table 7A.89. Exposure Unit 6 Surface Soil CPECs for Red Foxes at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	**EPC** (mg/kg)	**SPr**	**ADD_P** (mg/kgBW/d) RME *x* SP_r *x* I_P *x* AUF	**SP_v**	**Prey ADD_P** (mg/kgBW/d) RME *x* SP_v *x* I_{P-s} *x* AUF-s	**BAF_i**	**Prey ADD_A** (mg/kgBW/d) RME *x* BAF_i *x* I_{A-s} *x* AUF-s	**Prey ADD_S** (mg/kgBW/d) RME *x* I_{S-s} *x* AUF-s	**Prey ADD_{total}** (mg/kgBW/d) ADD_P + ADD_A + ADD_S
Inorganics									
Beryllium	1.90E+00	3.00E-04	1.81E-06	2.00E-03	2.77E-04	5.00E-02	4.63E-02	1.38E-01	1.85E-01

RME = Reasonable maximum exposure
SP_r = Soil-to-plant; reproductive
SP_v = Soil-to-plant; vegetative
I_P (kg/kgBW/d) = Plant ingestion rate for red foxes = 0.00317
ADD_P = Average daily dose; plant
I_{P-s} (kg/kgBW/d) = Plant ingestion rate for shrews = 0.0728
AUF = Area use factor (1.0)
BAF_i = Soil-to-animal; invertebrates
ADD_A = Average daily dose; animal
I_{A-s} (kg/kgBW/d) = Animal ingestion rate for shrews = 0.487
ADD_S = Average daily dose; soil
I_{S-s} (kg/kgBW/d) = Soil ingestion rate for shrews = 0.0728

Cs (mg/kg) = Concentration in the prey
IR_f = Ingestion rate of food for shrews
BAF_v = Animal-to-mammal
I_A (kg/kgBW/d) = Animal ingestion rate for red foxes = 0.0658
I_S (kg/kgBW/d) = Soil ingestion rate for red foxes = 0.00193
ADD_{total} = Average daily dose; total
TRV (mg/kgBW/d) = toxicity reference value
HQ = Hazard quotient
nd= not detected, na= not applicable
CPEC = Constituents of potential ecological concern
EEQ = Environmental effects quotient

Appendix Table 7A.89. Exposure Unit 6 Surface Soil CPECs for Red Foxes at the Luckey Site, Luckey Ohio (continued)

Analytes remaining after the site-wide screens	**Cs** (mg/kg) ADD_{total}/IR_f	**BAF_v**	**ADD_A** (mg/kgBW/d) $Cs \times BAF_v \times I_A \times AUF$	**ADD_S** (mg/kgBW/d) $RME \times I_S \times AUF$	**ADD_{total}** (mg/kgBW/d) $ADD_P + ADD_A + ADD_S$	**TRV** (mg/kgBW/d)	**Site EEQ** ADD_{total} / TRV	**CPEC?**
Inorganics								
Beryllium	3.30E-01	5.00E-02	1.09E-03	3.67E-03	4.76E-03	3.45E-01	1.38E-02	no

Appendix Table 7A.90. Exposure Unit 3 Sediment CPEC for Sediment-dwelling Biota at the Luckey Site, Luckey Ohio

Analyte remaining after the site-wide screening	EPC (mg/kg)	Sediment-dwelling Biota TRV (mg/kg)	Sediment-dwelling Biota EEQ	EEQ>1? Yes or No	CPEC?
Inorganics					
Aluminum	1.22E+04	No TRV	No TRV	yes	yes
Barium	1.53E+02	No TRV	No TRV	yes	yes
Beryllium	2.02E+03	No TRV	No TRV	yes	yes
Boron	3.70E+01	No TRV	No TRV	yes	yes
Cadmium	5.68E+01	6.00E-01	9.47E+01	yes	yes
Calcium	1.66E+05	No TRV	No TRV	yes	yes
Copper	2.08E+02	1.60E+01	1.30E+01	yes	yes
Iron	2.21E+04	2.00E+01	1.10E+03	yes	yes
Lead	3.39E+02	3.10E+01	1.09E+01	yes	yes
Magnesium	5.63E+04	No TRV	No TRV	yes	yes
Mercury	2.50E-01	1.50E-01	1.67E+00	yes	yes
Molybdenum	3.46E+00	No TRV	No TRV	yes	yes
Nickel	4.21E+01	1.60E+01	2.63E+00	yes	yes
Silicon	3.25E+03	No TRV	No TRV	yes	yes
Silver	2.83E+00	1.00E+00	2.83E+00	yes	yes
Sodium	9.41E+02	No TRV	No TRV	yes	yes
Strontium	3.35E+02	No TRV	No TRV	yes	yes
Zinc	5.49E+02	1.20E+02	4.58E+00	yes	yes
Anions					
Chloride	7.79E+02	No TRV	No TRV	yes	yes
Fluoride	1.63E+02	No TRV	No TRV	yes	yes
Nitrate, as N	7.29E+00	No TRV	No TRV	yes	yes
Sulfate	4.10E+03	No TRV	No TRV	yes	yes

EPC = Exposure point concentration
TRV = toxicity reference value
EEQ = Environmental effects quotient
CPEC = Contaminant of Potential Ecological Concern

Appendix Table 7A.91. Exposure Unit 4 (0 to 1 mile) Sediment CPECs for Sediment-dwelling Biota at the Luckey Site, Luckey Ohio

Analyte remaining after the site-wide screening	EPC (mg/kg)	Sediment-dwelling Biota TRV (mg/kg)	Sediment-dwelling Biota EEQ	EEQ>1? Yes or No	CPEC?
Inorganics					
Beryllium	9.35E+01	No TRV	No TRV	yes	yes
Cadmium	2.75E+01	6.00E-01	4.58E+01	yes	yes
Copper	2.31E+01	1.60E+01	1.44E+00	yes	yes
Lead	5.21E+02	3.10E+01	1.68E+01	yes	yes
Mercury	7.00E-02	1.50E-01	1.67E-01	no	no
Molybdenum	4.66E+00	No TRV	No TRV	yes	yes
Silicon	1.29E+03	No TRV	No TRV	yes	yes
Silver	6.80E-01	5.00E-01	1.36E+00	yes	yes
Strontium	1.85E+02	No TRV	No TRV	yes	yes
Anions					
Chloride	1.65E+01	No TRV	No TRV	yes	yes
Fluoride	1.21E+01	No TRV	No TRV	yes	yes
Nitrate, as N	2.81E-01	No TRV	No TRV	yes	yes
Sulfate	9.15E+01	No TRV	No TRV	yes	yes
Miscellaneous					
Ammonia, nitrogen	7.39E+01	No TRV	No TRV	yes	yes
Organics					
Semi-Volatiles					
Carbazole	1.64E-01	No TRV	No TRV	yes	yes

EPC = Exposure point concentration
TRV = toxicity reference value
EEQ = Environmental effects quotient
CPEC = Contaminant of Potential Ecological Concern

Appendix Table 7A.92. Exposure Unit 4 (1 to 3 miles) Sediment CPECs for Sediment-dwelling Biota at the Luckey Site, Luckey Ohio

Analyte remaining after the site-wide screening	EPC (mg/kg)	Sediment-dwelling Biota TRV (mg/kg)	Sediment-dwelling Biota EEQ	EEQ>1? Yes or No	CPEC?
Inorganics					
Beryllium	1.89E+01	No TRV	No TRV	yes	yes
Anions					
Fluoride	7.27E+00	No TRV	No TRV	yes	yes
Miscellaneous					
Ammonia, nitrogen	2.73E+01	No TRV	No TRV	yes	yes

EPC = Exposure point concentration
TRV = toxicity reference value
EEQ = Environmental effects quotient
CPEC = Contaminant of Potential Ecological Concern

Appendix Table 7A.93. Exposure Unit 4 (3 to 15 miles) Sediment CPECs for Sediment-dwelling Biota at the Luckey Site, Luckey Ohio

Analyte remaining after the site-wide screening	**EPC** (mg/kg)	**Sediment-dwelling Biota TRV** (mg/kg)	**Sediment-dwelling Biota EEQ**	**EEQ>1? Yes or No**	**CPEC?**
Inorganics					
Beryllium	3.39E+00	No TRV	No TRV	yes	yes
Lead	1.51E+01	31	4.87E-01	no	no

EPC = Exposure point concentration
TRV = toxicity reference value
EEQ = Environmental effects quotient
CPEC = Contaminant of Potential Ecological Concern

Appendix Table 7A.94. Exposure Unit 3 Surface Water CPECs for Aquatic Biota at the Luckey Site, Luckey Ohio

Analyte remaining after the site-wide screening	EPC (mg/L)	Aquatic Biota TRV (mg/L)	Aquatic Biota EEQ	EEQ>1? Yes or No	CPEC?
Inorganics					
Aluminum	1.09E+00	8.70E-02	1.25E+01	yes	yes
Barium	1.88E-01	4.00E-03	4.70E+01	yes	yes
Beryllium	8.36E-02	5.10E-03	1.64E+01	yes	yes
Boron	2.35E-01	1.60E-03	1.47E+02	yes	yes
Cadmium	1.06E-03	1.00E-03	1.06E+00	yes	yes
Calcium	1.18E+02	No TRV	No TRV	yes	yes
Copper	2.33E-02	1.10E-02	2.12E+00	yes	yes
Iron	2.10E+00	1.00E+00	2.10E+00	yes	yes
Lead	4.58E-02	2.50E-03	1.83E+01	yes	yes
Magnesium	6.76E+01	No TRV	No TRV	yes	yes
Manganese	2.48E-01	8.00E-02	3.10E+00	yes	yes
Mercury	1.30E-04	1.30E-03	1.00E-01	no	no
Nickel	4.27E-02	1.60E-01	2.67E-01	no	no
Silver	8.80E-04	3.60E-04	2.44E+00	yes	yes
Thallium	1.98E-03	1.20E-02	1.65E-01	no	no
Silicon	6.40E+00	No TRV	No TRV	yes	yes
Sodium	5.73E+02	No TRV	No TRV	yes	yes
Strontium	1.04E+01	1.50E+00	6.93E+00	yes	yes
Anions					
Chloride	9.61E+02	No TRV	No TRV	yes	yes
Fluoride	9.11E+00	No TRV	No TRV	yes	yes
Nitrate, as N	7.30E-01	No TRV	No TRV	yes	yes
Phosphorus	3.57E-03	No TRV	No TRV	yes	yes
Sulfate	3.78E+02	No TRV	No TRV	yes	yes
Miscellaneous					
Alkalinity	3.69E+02	No TRV	No TRV	yes	yes
Ammonia, nitrogen	1.08E+01	No TRV	No TRV	yes	yes
Organics					
Semi-Volatiles					
bis(2-ethylhexyl)phthalate	2.26E-02	3.20E-02	7.06E-01	no	no
Bromodichloromethane	6.00E-04	No TRV	No TRV	yes	yes
Diethyl phthalate	5.10E-03	2.10E-01	2.43E-02	no	no
m,p-cresol	1.11E-02	No TRV	No TRV	yes	yes

EPC = Exposure point concentration
TRV = toxicity reference value
EEQ = Environmental effects quotient
CPEC = Contaminant of Potential Ecological Concern

Appendix Table 7A.95. Exposure Unit 3 Surface Water CPECs for Great Blue Heron at the Luckey Site, Luckey, Ohio

Analyte remaining after the site-wide screening	EPC (mg/L)	SP_v	ADD_P (mg/kgBW/d) RME *x* SP_v *x* I_P *x* AUF	BCF	ADD_A (mg/kgBW/d) RME *x* BCF *x* I_A *x* AUF	ADD_W (mg/kgBW/d) RME *x* IR_W *x* AUF	ADD_{total} (mg/kgBW/d) ADD_P + ADD_A + ADD_S	TRV (mg/kgBW/d)	Site EEQ ADD_{total} / TRV
Inorganics									
Aluminum	1.09E+00	8.00E-04	0.00E+00	1.00E+01	1.96E+00	4.91E-02	2.01E+00	5.54E+01	3.63E-02
Barium	1.88E-01	3.00E-02	0.00E+00	4.00E+00	1.35E-01	8.46E-03	1.44E-01	9.88E+00	1.46E-02
Beryllium	8.36E-02	2.00E-03	0.00E+00	2.00E+00	3.01E-02	3.76E-03	3.39E-02	No TRV	No TRV
Boron	2.35E-01	8.00E-01	0.00E+00	5.00E+02	2.12E+01	1.06E-02	2.12E+01	2.32E+01	9.14E-01
Cadmium	1.06E-03	1.10E-01	0.00E+00	5.00E+01	9.54E-03	4.77E-05	9.59E-03	1.21E+00	7.93E-03
Calcium	1.18E+02	7.00E-01	0.00E+00	4.00E+01	8.50E+02	5.31E+00	8.55E+02	No TRV	No TRV
Copper	2.33E-02	8.00E-02	0.00E+00	2.10E+02	8.81E-01	1.05E-03	8.82E-01	3.23E+01	2.73E-02
Iron	2.10E+00	8.00E-04	0.00E+00	3.00E+02	1.13E+02	9.45E-02	1.13E+02	No TRV	No TRV
Lead	4.58E-02	9.00E-03	0.00E+00	3.00E+02	2.47E+00	2.06E-03	2.48E+00	5.66E-01	4.38E+00
Magnesium	6.76E+01	2.00E-01	0.00E+00	5.00E+02	6.08E+03	3.04E+00	6.09E+03	No TRV	No TRV
Manganese	2.48E-01	5.00E-02	0.00E+00	4.00E+02	1.79E+01	1.12E-02	1.79E+01	4.07E+02	4.41E-02
Mercury	1.30E-04	1.80E-01	0.00E+00	6.30E+04	1.47E+00	5.85E-06	1.47E+00	2.25E-01	6.55E+00
Nickel	4.27E-02	1.20E-02	0.00E+00	1.00E+02	7.69E-01	1.92E-03	7.71E-01	5.85E+01	1.32E-02
Silver	8.80E-04	8.00E-02	0.00E+00	2.00E+00	3.17E-04	3.96E-05	3.56E-04	No TRV	No TRV
Silicon	6.40E+00	1.00E+00	0.00E+00	5.00E+02	5.76E+02	2.88E-01	5.76E+02	No TRV	No TRV
Sodium	5.73E+02	1.50E-02	0.00E+00	1.00E+02	1.03E+04	2.58E+01	1.03E+04	No TRV	No TRV
Strontium	1.04E+01	1.00E+00	0.00E+00	5.00E+02	9.36E+02	4.68E-01	9.36E+02	No TRV	No TRV
Thallium	1.98E-03	8.00E-04	0.00E+00	5.00E+02	1.78E-01	8.91E-05	1.78E-01	No TRV	No TRV
Anions									
Chloride	9.61E+02	1.00E+00	0.00E+00	5.00E+02	8.65E+04	4.32E+01	8.65E+04	No TRV	No TRV
Fluoride	9.11E+00	1.00E+00	0.00E+00	5.00E+02	8.20E+02	4.10E-01	8.20E+02	4.09E+00	2.00E+02
Nitrate, as N	7.30E-01	1.00E+00	0.00E+00	5.00E+02	6.57E+01	3.29E-02	6.57E+01	No TRV	No TRV
Phosphorus	3.57E-03	7.00E-01	0.00E+00	5.00E+02	3.21E-01	1.61E-04	3.21E-01	No TRV	No TRV
Sulfate	3.78E+02	1.00E+00	0.00E+00	5.00E+02	3.40E+04	1.70E+01	3.40E+04	No TRV	No TRV
Miscellaneous									
Alkalinity	3.69E+02	1.00E+00	0.00E+00	5.00E+02	3.32E+04	1.66E+01	3.32E+04	No TRV	No TRV
Ammonia	1.08E+01	No Value	na	No Value	na	4.86E-01	No Value	No TRV	No TRV

Appendix Table B.95. Exposure Unit 3 Surface Water CPECs for Great Blue Heron at the Luckey Site, Luckey, Ohio (continued)

Analyte remaining after the site-wide screening	**EPC** (mg/L)	**SP_v**	**ADD_P** (mg/kgBW/d) RME *x* SP_v *x* I_P *x* AUF	**BCF**	**ADD_A** (mg/kgBW/d) RME *x* BCF *x* I_A *x* AUF	**ADD_W** (mg/kgBW/d) RME *x* IR_W *x* AUF	**ADD_{total}** (mg/kgBW/d) ADD_P + ADD_A + ADD_S	**TRV** (mg/kgBW/d)	**Site EEQ** ADD_{total} / TRV
Organics									
Semi-Volatiles									
bis(2-ethylhexyl)phthalate	2.26E-02	8.70E-03	0.00E+00	3.10E+02	1.26E+00	1.02E-03	1.26E+00	5.55E-01	2.27E+00
Bromodichloromethane	6.00E-04	1.00E+00	0.00E+00	1.00E+05	1.08E+01	2.70E-05	1.08E+01	No TRV	No TRV
Diethylphthalate	5.10E-03	2.00E-02	0.00E+00	1.20E+02	1.10E-01	2.30E-04	1.10E-01	No TRV	No TRV
m,p-cresol	1.11E-02	1.00E+00	0.00E+00	5.00E+02	9.99E-01	5.00E-04	9.99E-01	No TRV	No TRV

EPC = Exposure point concentration
SP_r = Soil-to-plant; reproductive
ADD_P = Average daily dose; plant
I_P (kg/kgBW/d) = Plant ingestion rate
AUF = Area use factor
BCF = Water-to-animal
ADD_A = Average daily dose; animal
I_A (kg/kgBW/d) = Animal ingestion rate 1.80E-01

ADD_W = Average daily dose; drinking water
IR_W (L/kgBW/d) = Water ingestion rate
ADD_{total} = Average daily dose; total
TRV = Toxicity reference value
EEQ = Environmental effects quotient

Appendix Table 7A.96. Exposure Unit 4 (0 to 1 mile) Surface Water CPECs for Aquatic Biota at the Luckey Site, Luckey Ohio

Analyte remaining after the site-wide screening	EPC (mg/L)	Aquatic Biota TRV (mg/L)	Aquatic Biota EEQ	EEQ>1? Yes or No	CPEC?
Inorganics					
Aluminum	9.81E-01	8.70E-02	1.13E+01	yes	yes
Barium	6.93E-02	4.00E-03	1.73E+01	yes	yes
Beryllium	2.55E-03	5.10E-03	5.00E-01	no	no
Boron	1.51E-01	1.60E-03	9.44E+01	yes	yes
Cadmium	8.10E-04	1.00E-03	8.10E-01	no	no
Calcium	9.45E+01	No TRV	No TRV	yes	yes
Copper	5.64E-03	1.10E-02	5.13E-01	no	no
Iron	1.36E+00	1.00E+00	1.36E+00	yes	yes
Lead	3.56E-03	2.50E-03	1.42E+00	yes	yes
Magnesium	4.36E+01	No TRV	No TRV	yes	yes
Manganese	6.62E-01	8.00E-02	8.28E+00	yes	yes
Nickel	2.68E-02	1.60E-01	1.68E-01	no	no
Thallium	4.75E-03	1.20E-02	3.96E-01	no	no
Silicon	3.86E+00	No TRV	No TRV	yes	yes
Sodium	1.50E+02	No TRV	No TRV	yes	yes
Strontium	6.61E+00	1.50E+00	4.41E+00	yes	yes
Anions					
Chloride	6.33E+01	No TRV	No TRV	yes	yes
Fluoride	5.60E-01	No TRV	No TRV	yes	yes
Nitrate, as N	1.31E+00	No TRV	No TRV	yes	yes
Phosphorus	3.80E-04	No TRV	No TRV	yes	yes
Sulfate	3.55E+02	No TRV	No TRV	yes	yes
Miscellaneous					
Alkalinity	2.98E+02	No TRV	No TRV	yes	yes
Ammonia	4.15E+00	No TRV	No TRV	yes	yes
Organics					
Semi-Volatiles					
bis(2-ethylhexyl)phthalate	1.69E-02	3.20E-02	5.28E-01	no	no

EPC = Exposure point concentration
TRV = toxicity reference value
EEQ = Environmental effects quotient
CPEC = Contaminant of Potential Ecological Concern

Appendix Table 7A.97. Exposure Unit 4 (0 to 1 miles) Surface Water Great Blue Heron at the Luckey Site, Luckey, Ohio

Analyte remaining after the site-wide screening	EPC (mg/L)	SP_v	ADD_P (mg/kgBW/d) RME *x* SP_v *x* I_P *x* AUF	BCF	ADD_A (mg/kgBW/d) RME *x* BCF *x* I_A *x* AUF	ADD_W (mg/kgBW/d) RME *x* IR_W *x* AUF	ADD_{total} (mg/kgBW/d) ADD_P + ADD_A + ADD_S	TRV (mg/kgBW/d)	Site EEQ ADD_{total} / TRV
Inorganics									
Aluminum	9.81E-01	8.00E-04	0.00E+00	1.00E+01	1.77E+00	4.41E-02	1.81E+00	5.54E+01	3.27E-02
Barium	6.93E-02	3.00E-02	0.00E+00	4.00E+00	4.99E-02	3.12E-03	5.30E-02	9.88E+00	5.37E-03
Beryllium	0.00255	2.00E-03	0.00E+00	2.00E+00	9.18E-04	1.15E-04	1.03E-03	No TRV	No TRV
Cadmium	0.00081	1.10E-01	0.00E+00	5.00E+01	7.29E-03	3.65E-05	7.33E-03	1.21E+00	6.06E-03
Copper	5.64E-03	8.00E-02	0.00E+00	2.10E+02	2.13E-01	2.54E-04	2.13E-01	3.23E+01	6.61E-03
Iron	1.36E+00	8.00E-04	0.00E+00	3.00E+02	7.34E+01	6.12E-02	7.35E+01	No TRV	No TRV
Lead	3.56E-03	9.00E-03	0.00E+00	3.00E+02	1.92E-01	1.60E-04	1.92E-01	5.66E-01	3.40E-01
Magnesium	4.36E+01	2.00E-01	0.00E+00	5.00E+02	3.92E+03	1.96E+00	3.93E+03	No TRV	No TRV
Manganese	6.62E-01	5.00E-02	0.00E+00	4.00E+02	4.77E+01	2.98E-02	4.77E+01	4.07E+02	1.17E-01
Nickel	2.68E-02	1.20E-02	0.00E+00	1.00E+02	4.82E-01	1.21E-03	4.84E-01	5.85E+01	8.26E-03
Silicon	3.86E+00	1.00E+00	0.00E+00	5.00E+02	3.47E+02	1.74E-01	3.48E+02	No TRV	No TRV
Sodium	1.50E+02	1.50E-02	0.00E+00	1.00E+02	2.70E+03	6.75E+00	2.71E+03	No TRV	No TRV
Strontium	6.61E+00	1.00E+00	0.00E+00	5.00E+02	5.95E+02	2.97E-01	5.95E+02	No TRV	No TRV
Thallium	4.75E-03	8.00E-04	0.00E+00	5.00E+02	4.28E-01	2.14E-04	4.28E-01	No TRV	No TRV
Anions									
Chloride	6.33E+01	1.00E+00	0.00E+00	5.00E+02	5.70E+03	2.85E+00	5.70E+03	No TRV	No TRV
Fluoride	5.60E-01	1.00E+00	0.00E+00	5.00E+02	5.04E+01	2.52E-02	5.04E+01	4.09E+00	1.23E+01
Nitrate, as N	1.31E+00	1.00E+00	0.00E+00	5.00E+02	1.18E+02	5.90E-02	1.18E+02	No TRV	No TRV
Phosphorus	3.80E-04	7.00E-01	0.00E+00	5.00E+02	3.42E-02	1.71E-05	3.42E-02	No TRV	No TRV
Sulfate	3.55E+02	1.00E+00	0.00E+00	5.00E+02	3.20E+04	1.60E+01	3.20E+04	No TRV	No TRV
Miscellaneous									
Ammonia, nitrogen	4.15E+00	1.00E+00	0.00E+00	5.00E+02	3.74E+02	1.87E-01	3.74E+02	No TRV	No TRV
Organics									
Semi-Volatiles									
bis(2-ethylhexyl)phthalate	1.69E-02	8.70E-03	0.00E+00	3.10E+02	9.43E-01	7.61E-04	9.44E-01	5.55E-01	1.70E+00
Toluene	1.00E-03	2.00E-02	0.00E+00	8.30E+01	1.49E-02	4.50E-05	1.50E-02	No TRV	No TRV

EPC = Exposure point concentration
SP_r = Soil-to-plant; reproductive
ADD_P = Average daily dose; plant
I_P (kg/kgBW/d) = Plant ingestion rate
AUF = Area use factor
BCF = Water-to-animal
ADD_A = Average daily dose; animal
ADD_W = Average daily dose; drinking water
IR_W (L/kgBW/d) = Water ingestion rate
ADD_{total} = Average daily dose; total
TRV = Toxicity reference value
EEQ = Environmental effects quotient
I_A(kg/kgBW/d) = Animal ingestion rate

Appendix Table 7A.98. Exposure Unit 5 Surface Water CPECs for Aquatic Biota at the Luckey Site, Luckey Ohio

Analyte remaining after the site-wide screening	EPC (mg/L)	Aquatic Biota TRV (mg/L)	Aquatic Biota EEQ	EEQ>1? Yes or No	CPEC?
Inorganics					
Magnesium	4.58E+01	No TRV	No TRV	yes	yes
Nickel	1.30E-03	1.60E-01	8.13E-03	no	no
Sodium	2.01E+01	No TRV	No TRV	yes	yes
Anions					
Phosphorus	5.95E-02	No TRV	No TRV	yes	yes

EPC = Exposure point concentration
TRV = toxicity reference value
EEQ = Environmental effects quotient
CPEC = Contaminant of Potential Ecological Concern

Appendix Table 7A.99. Exposure Unit 5 Surface Water CPECs for Great Blue Heron at the Luckey Site, Luckey, Ohio

Analyte remaining after the site wide screening	**EPC** (mg/L)	**SP_v**	**ADD_P** (mg/kgBW/d) RME *x* SP_v *x* I_P *x* AUF	**BCF**	**ADD_A** (mg/kgBW/d) RME *x* BCF *x* I_A *x* AUF	**ADD_W** (mg/kgBW/d) RME *x* IR_W *x* AUF	**ADD_{total}** (mg/kgBW/d) ADD_P + ADD_A + ADD_S	**TRV** (mg/kgBW/d)	**Site EEQ** ADD_{total} / TRV
Inorganics									
Magnesium	4.58E+01	2.00E-01	0.00E+00	5.00E+02	4.12E+03	2.06E+00	4.12E+03	No TRV	No TRV
Nickel	1.30E-03	1.20E-02	0.00E+00	1.00E+02	2.34E-02	5.85E-05	2.35E-02	5.85E+01	4.01E-04
Sodium	2.01E+01	1.50E-02	0.00E+00	1.00E+02	3.62E+02	9.05E-01	3.63E+02	No TRV	No TRV
Anions									
Phosphorus	5.95E-02	7.00E-01	0.00E+00	5.00E+02	5.36E+00	2.68E-03	5.36E+00	No TRV	No TRV

EPC = Exposure point concentration
SP_r = Soil-to-plant; reproductive
ADD_P = Average daily dose; plant
I_P (kg/kgBW/d) = Plant ingestion rate
AUF = Area use factor
BCF = Water-to-animal
ADD_A = Average daily dose; animal
I_A(kg/kgBW/d) = Animal ingestion rate
ADD_W = Average daily dose; drinking water
IR_W (L/kgBW/d) = Water ingestion rate
ADD_{total} = Average daily dose; total
TRV = Toxicity reference value
EEQ = Environmental effects quotient

Appendix Table 7A.100. Exposure Unit 1 Surface Soil Radionuclide CPECs for Plants at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	EPC (pCi/g)	Plants							
		SPr	**C** (pCi/g) RME *x* SP_r	**Internal Dose** (rad/d)	**External Dose** (rad/d)	**Total Dose** (rad/d) Internal + External	**Plant TRV** (rad/d)	**Plant EEQ** (Total Dose/TRV)	**CPEC?**
Radionuclides									
Radium-226	1.84E+01	3.00E-04	5.52E-03	2.70E-05	1.05E-05	3.75E-05	1.00E+00	3.75E-05	no
Thorium-227	1.86E+00	1.70E-05	3.16E-05	1.91E-07	8.92E-06	9.11E-06	1.00E+00	9.11E-06	no
Thorium-230	6.94E+01	1.70E-05	1.18E-03	5.64E-06	6.10E-05	6.66E-05	1.00E+00	6.66E-05	no
Uranium-234	5.19E+01	8.00E-04	4.15E-02	2.02E-04	3.99E-05	2.42E-04	1.00E+00	2.42E-04	no
Uranium-238	1.45E+01	8.00E-04	1.16E-02	4.97E-05	8.29E-06	5.80E-05	1.00E+00	5.80E-05	no

EPC = Exposure Point Concentration
TRV = toxicity reference value
EEQ = Environmental Effects Quotient
CPEC = Contaminant of Potential Ecological Concern

Internal Dose (rad/d) = CF x ADD_{total} x $[(20 \times E_{\alpha}n_{\alpha}) + (E_{\beta}n_{\beta} \times \Phi_{\beta}) + (E_{\gamma}n_{\gamma} \times \Phi_{\gamma})]$
External Dose (rad/d) = EPC x $\{F_{ruf}$ x DCF x CFa x CFd x 2+ 1.05 x $\{E_{\beta}n_{\beta} \times \Phi_{\beta}) + E_{\gamma}n_{\gamma} \times \Phi_{\gamma})]$ x CF}

Appendix Table 7A.101. Exposure Unit 1 Surface Soil Radionuclide CPECs for Plants at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	EPC (pCi/g)	Earthworms							
		BAF_i	C (pCi/g) RME *x* SP_r	Internal Dose (rad/d)	External Dose (rad/d)	Total Dose (rad/d) Internal + External	Earthworm TRV (rad/d)	Earthworm EEQ (Total Dose/TRV)	CPEC?
Radionuclides									
Radium-226	1.84E+01	1.25E-02	2.30E-01	1.12E-03	8.32E-06	1.13E-03	1.00E+00	1.13E-03	no
Thorium-227	1.86E+00	3.00E-04	5.58E-04	3.36E-06	5.39E-06	8.75E-06	1.00E+00	8.75E-06	no
Thorium-230	6.94E+01	3.00E-04	2.08E-02	9.96E-05	6.07E-05	1.60E-04	1.00E+00	1.60E-04	no
Uranium-234	5.19E+01	6.30E-02	3.27E+00	1.59E-02	3.98E-05	1.60E-02	1.00E+00	1.60E-02	no
Uranium-238	1.45E+01	6.30E-02	9.14E-01	3.92E-03	8.29E-06	3.93E-03	1.00E+00	3.93E-03	no

EPC = Exposure Point Concentration
TRV = toxicity reference value
EEQ = Environmental Effects Quotient
CPEC = Contaminant of Potential Ecological Concern

Internal Dose (rad/d) = CF x ADD_{total} x $[(20 \times E_\alpha n_\alpha) + (E_\beta n_\beta \times \Phi_\beta) + (E_\gamma n_\gamma \times \Phi_\gamma)]$
External Dose (rad/d) = EPC x 1.05 x $[(E_\beta n_\beta \times \Phi_\beta) + (E_\gamma n_\gamma \times \Phi_\gamma)]$ x CF

Appendix Table 7A.102. Exposure Unit 1 Surface Soil Radionuclide CPECs for Plants at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	**Site EPC** (pCi/g)	**SPv**	**ADD_P** (pCi/gBW/d) RME *x* SP_r *x* I_P *x* AUF	**BAF_i**	**BAF_v**	**ADD_A** (pCi/gBW/d) RME *x* BAF_i *x* I_A *x* AUF	**ADD_S** (pCi/gBW/d) RME *x* I_S *x* AUF	**ADD_{total}** (pCi/gBW/d) ADD_P + ADD_A + ADD_S	**Internal Dose** (rad/d)	**External Dose** (rad/d)	**Total Dose** (rad/d) Internal + External	**TRV** (rad/d)	**Site EEQ** Total Dose / TRV	**CPEC?**
Radionuclides														
Radium-226	1.84E+01	3.00E-03	4.02E-03	1.25E-02	1.25E-02	1.12E-01	1.34E+00	1.46E+00	8.90E-05	3.99E-06	9.29E-05	1.00E-01	9.29E-04	no
Thorium-227	1.86E+00	1.70E-04	2.30E-05	3.00E-04	3.00E-04	2.72E-04	1.35E-01	1.36E-01	2.45E-07	4.00E-06	4.25E-06	1.00E-01	4.25E-05	no
Thorium-230	6.94E+01	1.70E-04	8.59E-04	3.00E-04	3.00E-04	1.01E-02	5.05E+00	5.06E+00	7.27E-06	1.57E-05	2.30E-05	1.00E-01	2.30E-04	no
Uranium-234	5.19E+01	1.70E-03	6.42E-03	6.30E-02	1.00E-02	1.59E+00	3.78E+00	5.38E+00	2.62E-04	1.02E-05	2.72E-04	1.00E-01	2.72E-03	no
Uranium-238	1.45E+01	1.70E-03	1.79E-03	6.30E-02	1.00E-02	4.45E-01	1.06E+00	1.50E+00	6.44E-05	2.11E-06	6.65E-05	1.00E-01	6.65E-04	no

EPC = Exposure Point Concentration
SP_v = Soil-to-plant; vegetative
I_P (kg/kgBW/d) = Plant ingestion rate for shrews = 0.0728
ADD_P = Average daily dose; plant
AUF = Area use factor (1.0)
BAF_i = Soil-to-animal; invertebrates
ADD_A = Average daily dose; animal
EEQ = Environmental Effects Quotient

I_A (kg/kgBW/d) = Animal ingestion rate for shrews = 0.487
ADD_S = Average daily dose; soil
I_S (kg/kgBW/d) = Soil ingestion rate for shrews = 0.0728
ADD_{total} = Average daily dose; total
TRV (rad/d) = toxicity reference value
nd= not detected, na= not applicable
CPEC = Constituents of potential ecological concern
Internal Dose (rad/d) = CF x ADD_{total} x $[(20 \times E_\alpha n_\alpha) + (E_\beta n_\beta \times \Phi_\beta) + (E_\gamma n_\gamma \times \Phi_\gamma)]$
External Dose (rad/d) = EPC x $\{F_{above} \times F_{ruf} \times DCF \times CFa \times CFd \times 2 + F_{below} \times 1.05 \times [(E_\beta n_\beta \times \Phi_\beta) + (E_\gamma n_\gamma \times \Phi_\gamma)] \times CF\}$

Appendix Table 7A.103. Exposure Unit 1 Surface Soil Radionuclide CPECs for Plants at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	**Site EPC** (pCi/g)	**SPr**	**ADD_P** (pCi/gBW/d) RME *x* SP_r *x* I_P *x* AUF	**BAF_i**	**BAF_v**	**ADD_A** (pCi/gBW/d) RME *x* BAF_i *x* I_A *x* AUF	**ADD_S** (pCi/gBW/d) RME *x* I_S *x* AUF	**ADD_{total}** (pCi/gBW/d) ADD_P + ADD_A + ADD_S	**Internal Dose** (rad/d)	**External Dose** (rad/d)	**Total Dose** (rad/d) Internal + External	**TRV** (rad/d)	**Site EEQ** Total Dose / TRV	**CPEC?**
Radionuclides														
Radium-226	1.84E+01	3.00E-04	4.20E-03	1.25E-02	1.25E-02	1.75E-01	2.91E+00	3.09E+00	1.89E-04	1.09E-06	1.91E-04	1.00E-01	1.91E-03	no
Thorium-227	1.86E+00	1.70E-05	2.40E-05	3.00E-04	3.00E-04	4.24E-04	2.94E-01	2.94E-01	5.33E-07	1.76E-06	4.06E-06	1.00E-01	4.06E-05	no
Thorium-230	6.94E+01	1.70E-05	8.97E-04	3.00E-04	3.00E-04	1.58E-02	1.10E+01	1.10E+01	1.58E-05	1.59E-07	1.61E-05	1.00E-01	1.61E-04	no
Uranium-234	5.19E+01	8.00E-04	3.16E-02	6.30E-02	1.00E-02	2.48E+00	8.20E+00	1.07E+01	5.22E-04	3.98E-08	5.23E-04	1.00E-01	5.23E-03	no
Uranium-238	1.45E+01	8.00E-04	8.82E-03	6.30E-02	1.00E-02	6.94E-01	2.29E+00	3.00E+00	1.28E-04	2.87E-09	1.28E-04	1.00E-01	1.28E-03	no

EPC = Exposure Point Concentration
SP_r = Soil-to-plant; reproductive
I_P (kg/kgBW/d) = Plant ingestion rate for robins = 0.76
ADD_P = Average daily dose; plant
AUF = Area use factor (1.0)
BAF_i = Soil-to-animal; invertebrates
ADD_A = Average daily dose; animal
EEQ = Environmental Effects Quotient

I_A (kg/kgBW/d) = Animal ingestion rate for robins = 0.76
ADD_S = Average daily dose; soil
I_S (kg/kgBW/d) = Soil ingestion rate for robins = 0.158
ADD_{total} = Average daily dose; total
TRV (rad/d) = toxicity reference value
nd= not detected, na= not applicable
CPEC = Constituents of potential ecological concern
Internal Dose (rad/d) = CF x ADD_{total} x $[(20 \times E_\alpha n_\alpha) + (E_\beta n_\beta \times \Phi_\beta) + (E_\gamma n_\gamma \times \Phi_\gamma)]$
External Dose (rad/d) = EPC x F_{above} x F_{ruf} x DCF x CFa x CFd x 2

Appendix Table 7A.104. Exposure Unit 1 Surface Soil Radionuclide CPECs for Plants at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	**Site EPC** (pCi/g)	**SPv**	**ADD_P** (pCi/gBW/d) RME *x* SP_r *x* I_P *x* AUF	**BAF_i**	**BAF_v**	**ADD_A** (pCi/gBW/d) RME *x* BAF_i *x* I_A *x* AUF	**ADD_S** (pCi/gBW/d) RME *x* I_S *x* AUF	**ADD_{total}** (pCi/gBW/d) ADD_P + ADD_A + ADD_S	**Internal Dose** (rad/d)	**External Dose** (rad/d)	**Total Dose** (rad/d) Internal + External	**TRV** (rad/d)	**Site EEQ** Total Dose / TRV	**CPEC?**
Radionuclides														
Radium-226	1.84E+01	3.00E-03	1.13E-02	1.25E-02	1.25E-02	0.00E+00	2.38E-01	2.49E-01	1.52E-05	4.23E-06	1.94E-05	1.00E-01	1.94E-04	no
Thorium-227	1.86E+00	1.70E-04	6.48E-05	3.00E-04	3.00E-04	0.00E+00	2.40E-02	2.41E-02	4.36E-08	4.08E-06	4.13E-06	1.00E-01	4.13E-05	no
Thorium-230	6.94E+01	1.70E-04	2.42E-03	3.00E-04	3.00E-04	0.00E+00	8.96E-01	8.99E-01	1.29E-06	1.60E-05	1.73E-05	1.00E-01	1.73E-04	no
Uranium-234	5.19E+01	1.70E-03	1.81E-02	6.30E-02	1.00E-02	0.00E+00	6.70E-01	6.88E-01	3.35E-05	1.04E-05	4.40E-05	1.00E-01	4.40E-04	no
Uranium-238	1.45E+01	1.70E-03	5.05E-03	6.30E-02	1.00E-02	0.00E+00	1.87E-01	1.92E-01	8.25E-06	2.14E-06	1.04E-05	1.00E-01	1.04E-04	no

EPC = Exposure Point Concentration
SP_v = Soil-to-plant; vegetative
I_P (kg/kgBW/d) = Plant ingestion rate for cottontail rabbits = 0.205
ADD_P = Average daily dose; plant
AUF = Area use factor (1.0)
BAF_i = Soil-to-animal; invertebrates
ADD_A = Average daily dose; animal
EEQ = Environmental Effects Quotient

I_A (kg/kgBW/d) = Animal ingestion rate for cottontail rabbits = 0.00
ADD_S = Average daily dose; soil
I_S (kg/kgBW/d) = Soil ingestion rate for cottontail rabbits = 0.0129
ADD_{total} = Average daily dose; total
TRV (rad/d) = toxicity reference value
nd= not detected, na= not applicable
CPEC = Constituents of potential ecological concern
Internal Dose (rad/d) = CF x ADD_{total} x $[(20 \times E_\alpha n_\alpha) + (E_\beta n_\beta \times \Phi_\beta) + (E_\gamma n_\gamma \times \Phi_\gamma)]$
External Dose (rad/d) = EPC x $\{F_{above} \times F_{ruf} \times DCF \times CFa \times CFd \times 2 + F_{below} \times 1.05 \times [(E_\beta n_\beta \times \Phi_\beta) + (E_\gamma n_\gamma \times \Phi_\gamma)] \times CF\}$

Appendix Table 7A.105. Exposure Unit 1 Surface Soil Radionuclide CPECs for Plants at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	**Site EPC** (pCi/g)	**SPv**	**ADD_P** (pCi/gBW/d) RME *x* SP_r *x* I_P *x* AUF	**BAF_i**	**BAF_v**	**ADD_A** (pCi/gBW/d) RME *x* BAF_i *x* I_A *x* AUF	**ADD_S** (pCi/gBW/d) RME *x* I_S *x* AUF	**ADD_{total}** (pCi/gBW/d) ADD_P + ADD_A + ADD_S	**Internal Dose** (rad/d)	**External Dose** (rad/d)	**Total Dose** (rad/d) Internal + External	**TRV** (rad/d)	**Site EEQ** Total Dose / TRV	**CPEC?**
Radionuclides														
Radium-226	1.84E+01	3.00E-03	1.71E-03	1.25E-02	1.25E-02	0.00E+00	1.14E-02	1.31E-02	8.02E-07	1.09E-06	1.89E-06	1.00E-01	1.89E-05	no
Thorium-227	1.86E+00	1.70E-04	9.80E-06	3.00E-04	3.00E-04	0.00E+00	1.15E-03	1.16E-03	2.10E-09	1.76E-06	1.77E-06	1.00E-01	1.77E-05	no
Thorium-230	6.94E+01	1.70E-04	3.66E-04	3.00E-04	3.00E-04	0.00E+00	4.30E-02	4.34E-02	6.23E-08	1.59E-07	2.21E-07	1.00E-01	2.21E-06	no
Uranium-234	5.19E+01	1.70E-03	2.74E-03	6.30E-02	1.00E-02	0.00E+00	3.22E-02	3.49E-02	1.70E-06	3.98E-08	1.74E-06	1.00E-01	1.74E-05	no
Uranium-238	1.45E+01	1.70E-03	7.64E-04	6.30E-02	1.00E-02	0.00E+00	8.99E-03	9.75E-03	4.18E-07	2.87E-09	4.21E-07	1.00E-01	4.21E-06	no

EPC = Exposure Point Concentration
SP_v = Soil-to-plant; vegetative
I_P (kg/kgBW/d) = Plant ingestion rate for white-tailed deer = 0.031
ADD_P = Average daily dose; plant
AUF = Area use factor (1.0)
BAF_i = Soil-to-animal; invertebrates
ADD_A = Average daily dose; animal
EEQ = Environmental Effects Quotient

I_A (kg/kgBW/d) = Animal ingestion rate for white-tailed deer = 0.00
ADD_S = Average daily dose; soil
I_S (kg/kgBW/d) = Soil ingestion rate for white-tailed deer = 0.00062
ADD_{total} = Average daily dose; total
TRV (rad/d) = toxicity reference value
nd= not detected, na= not applicable
CPEC = Constituents of potential ecological concern
Internal Dose (rad/d) = CF x ADD_{total} x $[(20 \times E_\alpha n_\alpha) + (E_\beta n_\beta \times \Phi_\beta) + (E_\gamma n_\gamma \times \Phi_\gamma)]$
External Dose (rad/d) = EPC x F_{above} x F_{ruf} x DCF x CFa x CFd x 2

Appendix Table 7A.106. Exposure Unit 1 Surface Soil Radionuclide CPECs for Plants at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	**EPC** (pCi/g)	**SPr**	**ADD_P** (pCi/gBW/d) RME *x* SP_r *x* I_P *x* AUF	**SP_v**	**Prey ADD_P** (pCi/gBW/d) RME *x* SP_v *x* I_{P-s} *x* AUF-s	**BAF_i**	**Prey ADD_A** (pCi/gBW/d) RME *x* BAF_i *x* I_{A-s} *x* AUF-s	**Prey ADD_S** (pCi/gBW/d) RME *x* I_{S-s} *x* AUF-s	**Prey ADD_{total}** (pCi/gBW/d) ADD_P + ADD_A + ADD_S
Radionuclides									
Radium-226	1.84E+01	3.00E-03	0.00E+00	3.00E-03	4.02E-03	1.25E-02	1.12E-01	1.34E+00	1.46E+00
Thorium-227	1.86E+00	1.70E-04	0.00E+00	1.70E-04	2.30E-05	3.00E-04	2.72E-04	1.35E-01	1.36E-01
Thorium-230	6.94E+01	1.70E-04	0.00E+00	1.70E-04	8.59E-04	3.00E-04	1.01E-02	5.05E+00	5.06E+00
Uranium-234	5.19E+01	1.70E-03	0.00E+00	1.70E-03	6.42E-03	6.30E-02	1.59E+00	3.78E+00	5.38E+00
Uranium-238	1.45E+01	1.70E-03	0.00E+00	1.70E-03	1.79E-03	6.30E-02	4.45E-01	1.06E+00	1.50E+00

EPC = Exposure point concentration
SP_r = Soil-to-plant; reproductive
SP_v = Soil-to-plant; vegetative
I_P (kg/kgBW/d) = Plant ingestion rate for red-tailed hawks = 0.00
ADD_P = Average daily dose; plant

I_{P-s} (kg/kgBW/d) = Plant ingestion rate for shrews
AUF = Area use factor (1.0)
BAF_i = Soil-to-animal; invertebrates
ADD_A = Average daily dose; animal
I_{A-s} (kg/kgBW/d) = Animal ingestion rate for shrews
ADD_S = Average daily dose; soil
I_{S-s} (kg/kgBW/d) = Soil ingestion rate for shrews
ADD_{total} = Average daily dose; total

Appendix Table 7A.106. Exposure Unit 1 Surface Soil Radionuclide CPECs for Red-Tailed Hawks at the Luckey Site, Luckey Ohio (continued)

Analytes remaining after the site-wide screens	**Cs** (pCi/g) ADD_{total}/IR_f	**BAF_v**	**ADD_A** (pCi/gBW/d) Cs *x* BAF_v *x* I_A *x* AUF	**ADD_S** (pCi/gBW/d) RME *x* I_S *x* AUF	**ADD_{total}** (pCi/gBW/d) $ADD_P + ADD_A + ADD_S$	**Internal Dose** (rad/d)	**External Dose** (rad/d)	**Total Dose** (rad/d) Internal + External	**TRV** (rad/d)	**Site EEQ** Total Dose / TRV	**CPEC?**
Radionuclides											
Radium-226	2.60E+00	1.25E-02	3.57E-03	0.00E+00	3.57E-03	2.18E-07	2.17E-07	4.36E-07	1.00E-01	4.36E-06	no
Thorium-227	2.42E-01	3.00E-04	8.00E-06	0.00E+00	8.00E-06	1.45E-11	3.53E-07	3.53E-07	1.00E-01	3.53E-06	no
Thorium-230	9.04E+00	3.00E-04	2.98E-04	0.00E+00	2.98E-04	4.28E-10	3.18E-08	3.22E-08	1.00E-01	3.22E-07	no
Uranium-234	9.60E+00	1.00E-02	1.06E-02	0.00E+00	1.06E-02	5.15E-07	7.95E-09	5.23E-07	1.00E-01	5.23E-06	no
Uranium-238	2.68E+00	1.00E-02	2.95E-03	0.00E+00	2.95E-03	1.27E-07	5.73E-10	1.27E-07	1.00E-01	1.27E-06	no

Cs (pCi/g) = Concentration in the prey
IR_f (kg/kgBW/d)= Ingestion rate of food for shrews = 0.56
BAF_v = Animal-to-mammal
I_A (kg/kgBW/d) = Animal ingestion rate for red-tailed hawks = 0.11
I_S (kg/kgBW/d) = Soil ingestion rate for red-tailed hawks = 0.00
TRV (rad/d) = toxicity reference value
EEQ = Environmental effects quotient
nd= not detected, na= not applicable
CPEC = Constituents of potential ecological concern

Internal Dose (rad/d) = CF x ADD_{total} x $[(20 \times E_\alpha n_\alpha) + (E_\beta n_\beta \times \Phi_\beta) + (E_\gamma n_\gamma \times \Phi_\gamma)]$
External Dose (rad/d) = EPC x F_{above} x F_{ruf} x DCF x CFa x CFd x 2

Appendix Table 7A.107. Exposure Unit 1 Surface Soil Radionuclide CPECs for Plants at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	**EPC** (pCi/g)	**SPr**	**ADD_P** (pCi/gBW/d) RME x SP_r x I_P x AUF	**SP_v**	**Prey ADD_P** (pCi/gBW/d) RME x SP_v x I_{P-s} x AUF-s	**BAF_i**	**Prey ADD_A** (pCi/gBW/d) RME x BAF_i x I_{A-s} x AUF-s	**Prey ADD_S** (pCi/gBW/d) RME x I_{S-s} x AUF-s	**Prey ADD_{total}** (pCi/gBW/d) ADD_P + ADD_A + ADD_S
Radionuclides									
Radium-226	1.84E+01	3.00E-04	1.75E-05	3.00E-03	4.02E-03	1.25E-02	1.12E-01	1.34E+00	1.46E+00
Thorium-227	1.86E+00	1.70E-05	1.00E-07	1.70E-04	2.30E-05	3.00E-04	2.72E-04	1.35E-01	1.36E-01
Thorium-230	6.94E+01	1.70E-05	3.74E-06	1.70E-04	8.59E-04	3.00E-04	1.01E-02	5.05E+00	5.06E+00
Uranium-234	5.19E+01	8.00E-04	1.32E-04	1.70E-03	6.42E-03	6.30E-02	1.59E+00	3.78E+00	5.38E+00
Uranium-238	1.45E+01	8.00E-04	3.68E-05	1.70E-03	1.79E-03	6.30E-02	4.45E-01	1.06E+00	1.50E+00

EPC = Exposure point concentration
SP_r = Soil-to-plant; reproductive
SP_v = Soil-to-plant; vegetative
I_P (kg/kgBW/d) = Plant ingestion rate for red foxes = 0.00317
ADD_P = Average daily dose; plant
I_{P-s} (kg/kgBW/d) = Plant ingestion rate for shrews = 0.0728
AUF = Area use factor (1.0)
BAF_i = Soil-to-animal; invertebrates
ADD_A = Average daily dose; animal
I_{A-s} (kg/kgBW/d) = Animal ingestion rate for shrews = 0.487
ADD_S = Average daily dose; soil
I_{S-s} (kg/kgBW/d) = Soil ingestion rate for shrews = 0.0728
ADD_{total} = Average daily dose; total

Appendix Table 7A.107. Exposure Unit 1 Surface Soil Radionuclide CPECs for Red Foxes at the Luckey Site, Luckey Ohio (continued)

Analytes remaining after the site-wide screens	**Cs** (pCi/g) ADD_{total}/IR_f	**BAF_v**	**ADD_A** (pCi/gBW/d) Cs *x* BAF_v *x* I_A *x* AUF	**ADD_S** (pCi/gBW/d) RME *x* I_S *x* AUF	**ADD_{total}** (pCi/gBW/d) $ADD_P + ADD_A + ADD_S$	**Internal Dose** (rad/d)	**External Dose** (rad/d)	**Total Dose** (rad/d) Internal + External	**TRV** (rad/d)	**Site EEQ** ADD_{total} / TRV	**CPEC?**
Radionuclides											
Radium-226	2.60E+00	1.25E-02	2.14E-03	3.55E-02	3.77E-02	2.30E-06	4.23E-06	6.53E-06	1.00E-01	6.53E-05	no
Thorium-227	2.42E-01	3.00E-04	4.79E-06	3.59E-03	3.60E-03	6.51E-09	4.14E-06	4.14E-06	1.00E-01	4.14E-05	no
Thorium-230	9.04E+00	3.00E-04	1.79E-04	1.34E-01	1.34E-01	1.93E-07	1.60E-05	1.62E-05	1.00E-01	1.62E-04	no
Uranium-234	9.60E+00	1.00E-02	6.32E-03	1.00E-01	1.07E-01	5.20E-06	1.04E-05	1.56E-05	1.00E-01	1.56E-04	no
Uranium-238	2.68E+00	1.00E-02	1.77E-03	2.80E-02	2.98E-02	1.28E-06	2.14E-06	3.41E-06	1.00E-01	3.41E-05	no

Cs (pCi/g) = Concentration in the prey
IR_f = Ingestion rate of food for shrews
BAF_v = Animal-to-mammal
I_A (kg/kgBW/d) = Animal ingestion rate for red foxes = 0.0658
I_S (kg/kgBW/d) = Soil ingestion rate for red foxes = 0.00193
TRV (rad/d) = toxicity reference value
EEQ = Environmental effects quotient
nd= not detected, na= not applicable
CPEC = Constituents of potential ecological concern

Internal Dose (rad/d) = CF x ADD_{total} x $[(20 \times E_\alpha n_\alpha) + (E_\beta n_\beta \times \Phi_\beta) + (E_\gamma n_\gamma \times \Phi_\gamma)]$
External Dose (rad/d) = EPC x $\{F_{above} \times F_{ruf} \times DCF \times CFa \times CFd \times 2 + F_{below} \times 1.05 \times [(E_\beta n_\beta \times \Phi_\beta) + (E_\gamma n_\gamma \times \Phi_\gamma)] \times CF\}$

Appendix Table 7A.108. Exposure Unit 2 Surface Soil Radionuclide CPECs for Plants at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	EPC (pCi/g)	Plants							
		SPr	C (pCi/g) RME *x* SP_r	Internal Dose (rad/d)	External Dose (rad/d)	Total Dose (rad/d) Internal + External	Plant TRV (rad/d)	Plant EEQ Total Dose/TRV	CPEC?
Radionuclides									
Americium-241	1.21E+00	5.00E-05	6.05E-05	3.40E-07	3.67E-06	4.01E-06	1.00E+00	4.01E-06	no
Radium-226	7.95E+00	3.00E-04	2.39E-03	1.17E-05	4.53E-06	1.62E-05	1.00E+00	1.62E-05	no
Thorium-230	7.03E+01	1.70E-05	1.20E-03	5.72E-06	6.18E-05	6.75E-05	1.00E+00	6.75E-05	no
Thorium-234	7.21E+00	1.70E-05	1.23E-04	4.12E-10	2.61E-05	2.61E-05	1.00E+00	2.61E-05	no
Uranium-233/234	6.76E+00	8.00E-04	5.41E-03	2.67E-05	5.22E-06	3.19E-05	1.00E+00	3.19E-05	no
Uranium-234	1.14E+01	8.00E-04	9.12E-03	4.44E-05	8.76E-06	5.32E-05	1.00E+00	5.32E-05	no
Uranium-238	8.09E+00	8.00E-04	6.47E-03	2.78E-05	4.63E-06	3.24E-05	1.00E+00	3.24E-05	no

EPC = Exposure Point Concentration

TRV = toxicity reference value

EEQ = Environmental Effects Quotient

CPEC = Contaminant of Potential Ecological Concern

Internal Dose (rad/d) = CF x ADD_{total} x $[(20 \times E_{\alpha}n_{\alpha}) + (E_{\beta}n_{\beta} \times \Phi_{\beta}) + (E_{\gamma}n_{\gamma} \times \Phi_{\gamma})]$

External Dose (rad/d) = EPC x $\{F_{ruf}$ x DCF x CFa x CFd x 2 + 1.05 x $\{E_{\beta}n_{\beta} \times \Phi_{\beta}) + E_{\gamma}n_{\gamma} \times \Phi_{\gamma})]$ x CF$\}$

Appendix Table 7A.109. Exposure Unit 2 Surface Soil Radionuclide CPECs for Earthworms at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	EPC (pCi/g)	Earthworms							
		BAF_i	C (pCi/g) RME *x* SP_r	Internal Dose (rad/d)	External Dose (rad/d)	Total Dose (rad/d) Internal + External	Earthworm TRV (rad/d)	Earthworm EEQ Total Dose/TRV	CPEC?
Radionuclides									
Americium-241	1.21E+00	3.15E+00	3.81E+00	2.14E-02	3.47E-06	2.14E-02	1.00E+00	2.14E-02	no
Radium-226	7.95E+00	1.25E-02	9.94E-02	4.86E-04	3.59E-06	4.89E-04	1.00E+00	4.89E-04	no
Thorium-230	7.03E+01	3.00E-04	2.11E-02	1.01E-04	6.15E-05	1.62E-04	1.00E+00	1.62E-04	no
Thorium-234	7.21E+00	3.00E-04	2.16E-03	7.27E-09	2.55E-05	2.55E-05	1.00E+00	2.55E-05	no
Uranium-233/234	6.76E+00	6.30E-02	4.26E-01	2.10E-03	5.18E-06	2.11E-03	1.00E+00	2.11E-03	no
Uranium-234	1.14E+01	6.30E-02	7.18E-01	3.50E-03	8.74E-06	3.51E-03	1.00E+00	3.51E-03	no
Uranium-238	8.09E+00	6.30E-02	5.10E-01	2.19E-03	4.62E-06	2.19E-03	1.00E+00	2.19E-03	no

EPC = Exposure Point Concentration

TRV = toxicity reference value

EEQ = Environmental Effects Quotient

CPEC = Contaminant of Potential Ecological Concern

Internal Dose (rad/d) = CF x ADD_{total} x $[(20 \times E_\alpha n_\alpha) + (E_\beta n_\beta \times \Phi_\beta) + (E_\gamma n_\gamma \times \Phi_\gamma)]$

External Dose (rad/d) = EPC x 1.05 x $[(E_\beta n_\beta \times \Phi_\beta) + E_\gamma n_\gamma \times \Phi_\gamma)]$ x CF

Appendix Table 7A.110. Exposure Unit 2 Surface Soil Radionuclide CPECs for Shrews at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	**EPC** (pCi/g)	**SPv**	**ADD_P** (pCi/gBW/d) RME *x* SP_r *x* I_P *x* AUF	**BAF_i**	**BAF_v**	**ADD_A** (pCi/gBW/d) RME *x* BAF_i *x* I_A *x* AUF	**ADD_S** (pCi/gBW/d) RME *x* I_S *x* AUF	**ADD_{total}** (pCi/gBW/d) ADD_P + ADD_A + ADD_S	**Internal Dose** (rad/d)	**External Dose** (rad/d)	**Total Dose** (rad/d) Internal + External	**TRV** (rad/d)	**Site EEQ** Total Dose / TRV	**CPEC?**
Radionuclides														
Americium-241	1.21E+00	1.10E-03	9.69E-05	3.15E+00	1.75E-02	1.86E+00	8.81E-02	1.94E+00	1.91E-04	1.02E-06	1.92E-04	1.00E-01	1.92E-03	no
Radium-226	7.95E+00	3.00E-03	1.74E-03	1.25E-02	1.25E-02	4.84E-02	5.79E-01	6.29E-01	3.84E-05	1.72E-06	4.02E-05	1.00E-01	4.02E-04	no
Thorium-230	7.03E+01	1.70E-04	8.70E-04	3.00E-04	3.00E-04	1.03E-02	5.12E+00	5.13E+00	7.36E-06	1.59E-05	2.33E-05	1.00E-01	2.33E-04	no
Thorium-234	7.21E+00	1.70E-04	8.92E-05	3.00E-04	3.00E-04	1.05E-03	5.25E-01	5.26E-01	5.42E-10	7.00E-06	7.00E-06	1.00E-01	7.00E-05	no
Uranium-233/234	6.76E+00	1.70E-03	8.37E-04	6.30E-02	1.00E-02	2.07E-01	4.92E-01	7.00E-01	3.46E-05	1.35E-06	3.59E-05	1.00E-01	3.59E-04	no
Uranium-234	1.14E+01	1.70E-03	1.41E-03	6.30E-02	1.00E-02	3.50E-01	8.30E-01	1.18E+00	5.76E-05	2.25E-06	5.98E-05	1.00E-01	5.98E-04	no
Uranium-238	8.09E+00	1.70E-03	1.00E-03	6.30E-02	1.00E-02	2.48E-01	5.89E-01	8.38E-01	3.59E-05	1.18E-06	3.71E-05	1.00E-01	3.71E-04	no

EPC = Exposure Point Concentration
SP_v = Soil-to-plant; vegetative
I_P (kg/kgBW/d) = Plant ingestion rate for shrews = 0.0728
ADD_P = Average daily dose; plant
AUF = Area use factor (1.0)
BAF_i = Soil-to-animal; invertebrates
ADD_A = Average daily dose; animal
EEQ = Environmental Effects Quotient

I_A (kg/kgBW/d) = Animal ingestion rate for shrews = 0.487
ADD_S = Average daily dose; soil
I_S (kg/kgBW/d) = Soil ingestion rate for shrews = 0.0728
ADD_{total} = Average daily dose; total
TRV (rad/d) = toxicity reference value
nd= not detected, na= not applicable
CPEC = Constituents of potential ecological concern
Internal Dose (rad/d) = CF x ADD_{total} x $[(20 \times E_\alpha n_\alpha) + (E_\beta n_\beta \times \Phi_\beta) + (E_\gamma n_\gamma \times \Phi_\gamma)]$
External Dose (rad/d) = EPC x $\{F_{above} \times F_{ruf} \times DCF \times CFa \times CFd \times 2 + F_{below} \times 1.05 \times [(E_\beta n_\beta \times \Phi_\beta) + (E_\gamma n_\gamma \times \Phi_\gamma)] \times CF\}$

Appendix Table 7A.111. Exposure Unit 2 Surface Soil Radionuclide CPECs for Robins at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	**EPC** (pCi/g)	**SPr**	**ADD_P** (pCi/gBW/d) RME *x* SP_r *x* I_P *x* AUF	**BAF_i**	**BAF_v**	**ADD_A** (pCi/gBW/d) RME *x* BAF_i *x* I_A *x* AUF	**ADD_S** (pCi/gBW/d) RME *x* I_S *x* AUF	**ADD_{total}** (pCi/gBW/d) ADD_P + ADD_A + ADD_S	**Internal Dose** (rad/d)	**External Dose** (rad/d)	**Total Dose** (rad/d) Internal + External	**TRV** (rad/d)	**Site EEQ** Total Dose / TRV	**CPEC?**
Radionuclides														
Americium-241	1.21E+00	5.00E-05	4.60E-05	3.15E+00	1.75E-02	2.89E+00	1.91E-01	3.09E+00	3.03E-04	1.01E-07	3.03E-04	1.00E-01	3.03E-03	no
Radium-226	7.95E+00	3.00E-04	1.81E-03	1.25E-02	1.25E-02	7.55E-02	1.26E+00	1.33E+00	8.15E-05	4.70E-07	8.25E-05	1.00E-01	8.25E-04	no
Thorium-230	7.03E+01	1.70E-05	9.08E-04	3.00E-04	3.00E-04	1.60E-02	1.11E+01	1.11E+01	1.60E-05	1.61E-07	1.63E-05	1.00E-01	1.63E-04	no
Thorium-234	7.21E+00	1.70E-05	9.32E-05	3.00E-04	3.00E-04	1.64E-03	1.14E+00	1.14E+00	1.20E-09	3.33E-07	6.67E-07	1.00E-01	6.67E-06	no
Uranium-233/234	6.76E+00	8.00E-04	4.11E-03	6.30E-02	1.00E-02	3.24E-01	1.07E+00	1.40E+00	6.89E-05	1.75E-08	6.89E-05	1.00E-01	6.89E-04	no
Uranium-234	1.14E+01	8.00E-04	6.93E-03	6.30E-02	1.00E-02	5.46E-01	1.80E+00	2.35E+00	1.15E-04	8.73E-08	1.15E-04	1.00E-01	1.15E-03	no
Uranium-238	8.09E+00	8.00E-04	4.92E-03	6.30E-02	1.00E-02	3.87E-01	1.28E+00	1.67E+00	7.17E-05	1.60E-09	7.17E-05	1.00E-01	7.17E-04	no

EPC = Exposure Point Concentration
SP_r = Soil-to-plant; reproductive
I_P (kg/kgBW/d) = Plant ingestion rate for robins = 0.76
ADD_P = Average daily dose; plant
AUF = Area use factor (1.0)
BAF_i = Soil-to-animal; invertebrates
ADD_A = Average daily dose; animal
EEQ = Environmental Effects Quotient

I_A (kg/kgBW/d) = Animal ingestion rate for robins = 0.76
ADD_S = Average daily dose; soil
I_S (kg/kgBW/d) = Soil ingestion rate for robins = 0.158
ADD_{total} = Average daily dose; total
TRV (rad/d) = toxicity reference value
nd= not detected, na= not applicable
CPEC = Constituents of potential ecological concern
Internal Dose (rad/d) = CF x ADD_{total} x $[(20 \times E_\alpha n_\alpha) + (E_\beta n_\beta \times \Phi_\beta) + (E_\gamma n_\gamma \times \Phi_\gamma)]$
External Dose (rad/d) = EPC x F_{above} x F_{ruf} x DCF x CFa x CFd x 2

Appendix Table 7A.112. Exposure Unit 2 Surface Soil Radionuclide CPECs for Cottontail Rabbits at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	**EPC** (pCi/g)	**SPv**	**ADD_P** (pCi/gBW/d) RME *x* SP_r *x* I_P *x* AUF	**BAF_i**	**BAF_v**	**ADD_A** (pCi/gBW/d) RME *x* BAF_i *x* I_A *x* AUF	**ADD_S** (pCi/gBW/d) RME *x* I_S *x* AUF	**ADD_{total}** (pCi/gBW/d) ADD_P + ADD_A + ADD_S	**Internal Dose** (rad/d)	**External Dose** (rad/d)	**Total Dose** (rad/d) Internal + External	**TRV** (rad/d)	**Site EEQ** Total Dose / TRV	**CPEC?**
Radionuclides														
Americium-241	1.21E+00	1.10E-03	2.73E-04	3.15E+00	1.75E-02	0.00E+00	1.56E-02	1.59E-02	1.56E-06	1.06E-06	2.62E-06	1.00E-01	2.62E-05	no
Radium-226	7.95E+00	3.00E-03	4.89E-03	1.25E-02	1.25E-02	0.00E+00	1.03E-01	1.08E-01	6.57E-06	1.83E-06	8.40E-06	1.00E-01	8.40E-05	no
Thorium-230	7.03E+01	1.70E-04	2.45E-03	3.00E-04	3.00E-04	0.00E+00	9.08E-01	9.10E-01	1.31E-06	1.62E-05	1.75E-05	1.00E-01	1.75E-04	no
Thorium-234	7.21E+00	1.70E-04	2.51E-04	3.00E-04	3.00E-04	0.00E+00	9.31E-02	9.34E-02	9.82E-11	7.13E-06	7.13E-06	1.00E-01	7.13E-05	no
Uranium-233/234	6.76E+00	1.70E-03	2.36E-03	6.30E-02	1.00E-02	0.00E+00	8.73E-02	8.97E-02	4.42E-06	1.38E-06	5.80E-06	1.00E-01	5.80E-05	no
Uranium-234	1.14E+01	1.70E-03	3.97E-03	6.30E-02	1.00E-02	0.00E+00	1.47E-01	1.51E-01	7.37E-06	2.29E-06	9.66E-06	1.00E-01	9.66E-05	no
Uranium-238	8.09E+00	1.70E-03	2.82E-03	6.30E-02	1.00E-02	0.00E+00	1.04E-01	1.07E-01	4.60E-06	1.19E-06	5.79E-06	1.00E-01	5.79E-05	no

EPC = Exposure Point Concentration
SP_v = Soil-to-plant; vegetative
I_P (kg/kgBW/d) = Plant ingestion rate for cottontail rabbits = 0.205
ADD_P = Average daily dose; plant
AUF = Area use factor (1.0)
BAF_i = Soil-to-animal; invertebrates
ADD_A = Average daily dose; animal
EEQ = Environmental Effects Quotient

I_A (kg/kgBW/d) = Animal ingestion rate for cottontail rabbits = 0.00
ADD_S = Average daily dose; soil
I_S (kg/kgBW/d) = Soil ingestion rate for cottontail rabbits = 0.0129
ADD_{total} = Average daily dose; total
TRV (rad/d) = toxicity reference value
nd= not detected, na= not applicable
CPEC = Constituents of potential ecological concern
Internal Dose (rad/d) = CF x ADD_{total} x $[(20 \times E_\alpha n_\alpha) + (E_\beta n_\beta \times \Phi_\beta) + (E_\gamma n_\gamma \times \Phi_\gamma)]$
External Dose (rad/d) = EPC x $\{F_{above} \times F_{ruf} \times DCF \times CFa \times CFd \times 2 + F_{below} \times 1.05 \times [(E_\beta n_\beta \times \Phi_\beta) + (E_\gamma n_\gamma \times \Phi_\gamma)] \times CF\}$

Appendix Table 7A.113. Exposure Unit 2 Surface Soil Radionuclide CPECs for White-Tailed Deer at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	**EPC** (pCi/g)	**SPv**	**ADD_P** (pCi/gBW/d) RME *x* SP_r *x* I_P *x* AUF	**BAF_i**	**BAF_v**	**ADD_A** (pCi/gBW/d) RME *x* BAF_i *x* I_A *x* AUF	**ADD_S** (pCi/gBW/d) RME *x* I_S *x* AUF	**ADD_{total}** (pCi/gBW/d) ADD_P + ADD_A + ADD_S	**Internal Dose** (rad/d)	**External Dose** (rad/d)	**Total Dose** (rad/d) Internal + External	**TRV** (rad/d)	**Site EEQ** Total Dose / TRV	**CPEC?**
Radionuclides														
Americium-241	1.21E+00	1.10E-03	4.13E-05	3.15E+00	1.75E-02	0.00E+00	7.50E-04	7.91E-04	7.78E-08	1.01E-07	1.79E-07	1.00E-01	1.79E-06	no
Radium-226	7.95E+00	3.00E-03	7.39E-04	1.25E-02	1.25E-02	0.00E+00	4.93E-03	5.67E-03	3.46E-07	4.70E-07	8.16E-07	1.00E-01	8.16E-06	no
Thorium-230	7.03E+01	1.70E-04	3.70E-04	3.00E-04	3.00E-04	0.00E+00	4.36E-02	4.40E-02	6.31E-08	1.61E-07	2.24E-07	1.00E-01	2.24E-06	no
Thorium-234	7.21E+00	1.70E-04	3.80E-05	3.00E-04	3.00E-04	0.00E+00	4.47E-03	4.51E-03	4.74E-12	3.33E-07	3.33E-07	1.00E-01	3.33E-06	no
Uranium-233/234	6.76E+00	1.70E-03	3.56E-04	6.30E-02	1.00E-02	0.00E+00	4.19E-03	4.55E-03	2.24E-07	1.75E-08	2.42E-07	1.00E-01	2.42E-06	no
Uranium-234	1.14E+01	1.70E-03	6.01E-04	6.30E-02	1.00E-02	0.00E+00	7.07E-03	7.67E-03	3.74E-07	8.73E-09	3.82E-07	1.00E-01	3.82E-06	no
Uranium-238	8.09E+00	1.70E-03	4.26E-04	6.30E-02	1.00E-02	0.00E+00	5.02E-03	5.44E-03	2.33E-07	1.60E-09	2.35E-07	1.00E-01	2.35E-06	no

EPC = Exposure Point Concentration
SP_v = Soil-to-plant; vegetative
I_P (kg/kgBW/d) = Plant ingestion rate for white-tailed deer = 0.031
ADD_P = Average daily dose; plant
AUF = Area use factor (1.0)
BAF_i = Soil-to-animal; invertebrates
ADD_A = Average daily dose; animal
EEQ = Environmental Effects Quotient

I_A (kg/kgBW/d) = Animal ingestion rate for white-tailed deer = 0.00
ADD_S = Average daily dose; soil
I_S (kg/kgBW/d) = Soil ingestion rate for white-tailed deer = 0.00062
ADD_{total} = Average daily dose; total
TRV (rad/d) = toxicity reference value
nd= not detected, na= not applicable
CPEC = Constituents of potential ecological concern
Internal Dose (rad/d) = CF x ADD_{total} x $[(20 \times E_\alpha n_\alpha) + (E_\beta n_\beta \times \Phi_\beta) + (E_\gamma n_\gamma \times \Phi_\gamma)]$
External Dose (rad/d) = EPC x F_{above} x F_{ruf} x DCF x CFa x CFd x 2

Appendix Table 7A.114. Exposure Unit 2 Surface Soil Radionuclide CPECs for Red-Tailed Hawks at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	**EPC** (pCi/g)	**SPr**	**ADD_P** (pCi/gBW/d) RME *x* SP_r *x* I_P *x* AUF	**SP_v**	**Prey ADD_P** (pCi/gBW/d) RME *x* SP_v *x* I_{P-s} *x* AUF-s	**BAF_i**	**Prey ADD_A** (pCi/gBW/d) RME *x* BAF_i *x* I_{A-s} *x* AUF-s	**Prey ADD_S** (pCi/gBW/d) RME *x* I_{S-s} *x* AUF-s	**Prey ADD_{total}** (pCi/gBW/d) ADD_P + ADD_A + ADD_S
Radionuclides									
Americium-241	1.21E+00	1.10E-03	0.00E+00	1.10E-03	9.69E-05	3.15E+00	1.86E+00	8.81E-02	1.94E+00
Radium-226	7.95E+00	3.00E-03	0.00E+00	3.00E-03	1.74E-03	1.25E-02	4.84E-02	5.79E-01	6.29E-01
Thorium-230	7.03E+01	1.70E-04	0.00E+00	1.70E-04	8.70E-04	3.00E-04	1.03E-02	5.12E+00	5.13E+00
Thorium-234	7.21E+00	1.70E-04	0.00E+00	1.70E-04	8.92E-05	3.00E-04	1.05E-03	5.25E-01	5.26E-01
Uranium-233/234	6.76E+00	1.70E-03	0.00E+00	1.70E-03	8.37E-04	6.30E-02	2.07E-01	4.92E-01	7.00E-01
Uranium-234	1.14E+01	1.70E-03	0.00E+00	1.70E-03	1.41E-03	6.30E-02	3.50E-01	8.30E-01	1.18E+00
Uranium-238	8.09E+00	1.70E-03	0.00E+00	1.70E-03	1.00E-03	6.30E-02	2.48E-01	5.89E-01	8.38E-01

EPC = Exposure point concentration
SP_r = Soil-to-plant; reproductive
SP_v = Soil-to-plant; vegetative
I_P (kg/kgBW/d) = Plant ingestion rate for red-tailed hawks = 0.00
ADD_P = Average daily dose; plant

I_{P-s} (kg/kgBW/d) = Plant ingestion rate for shrews
AUF = Area use factor (1.0)
BAF_i = Soil-to-animal; invertebrates
ADD_A = Average daily dose; animal
I_{A-s} (kg/kgBW/d) = Animal ingestion rate for shrews
ADD_S = Average daily dose; soil
I_{S-s} (kg/kgBW/d) = Soil ingestion rate for shrews
ADD_{total} = Average daily dose; total

Appendix Table 7A.114. Exposure Unit 2 Surface Soil Radionuclide CPECs for Red-Tailed Hawks at the Luckey Site, Luckey Ohio (continued)

Analytes remaining after the site-wide screens	**Cs** (pCi/g) ADD_{total}/IR_f	**BAF_v**	**ADD_A** (pCi/gBW/d) Cs *x* BAF_v *x* I_A *x* AUF	**ADD_S** (pCi/gBW/d) RME *x* I_S *x* AUF	**ADD_{total}** (pCi/gBW/d) ADD_P + ADD_A + ADD_S	**Internal Dose** (rad/d)	**External Dose** (rad/d)	**Total Dose** (rad/d) Internal + External	**TRV** (rad/d)	**Site EEQ** Total Dose / TRV	**CPEC?**
Radionuclides											
Americium-241	3.47E+00	1.75E-02	6.68E-03	0.00E+00	6.68E-03	6.56E-07	2.03E-08	6.77E-07	1.00E-01	6.77E-06	no
Radium-226	1.12E+00	1.25E-02	1.54E-03	0.00E+00	1.54E-03	9.44E-08	9.39E-08	1.88E-07	1.00E-01	1.88E-06	no
Thorium-230	9.16E+00	3.00E-04	3.02E-04	0.00E+00	3.02E-04	4.34E-10	3.22E-08	3.26E-08	1.00E-01	3.26E-07	no
Thorium-234	9.39E-01	3.00E-04	3.10E-05	0.00E+00	3.10E-05	3.26E-14	6.66E-08	6.66E-08	1.00E-01	6.66E-07	no
Uranium-233/234	1.25E+00	1.00E-02	1.38E-03	0.00E+00	1.38E-03	6.79E-08	3.50E-09	7.14E-08	1.00E-01	7.14E-07	no
Uranium-234	2.11E+00	1.00E-02	2.32E-03	0.00E+00	2.32E-03	1.13E-07	1.75E-09	1.15E-07	1.00E-01	1.15E-06	no
Uranium-238	1.50E+00	1.00E-02	1.65E-03	0.00E+00	1.65E-03	7.06E-08	3.20E-10	7.09E-08	1.00E-01	7.09E-07	no

Cs (pCi/g) = Concentration in the prey
IR_f (kg/kgBW/d)= Ingestion rate of food for shrews = 0.56
BAF_v = Animal-to-mammal
I_A (kg/kgBW/d) = Animal ingestion rate for red-tailed hawks = 0.11
I_S (kg/kgBW/d) = Soil ingestion rate for red-tailed hawks = 0.00
TRV (rad/d) = toxicity reference value
EEQ = Environmental effects quotient
nd= not detected, na= not applicable
CPEC = Constituents of potential ecological concern

Internal Dose (rad/d) = CF x ADD_{total} x $[(20 \times E_\alpha n_\alpha) + (E_\beta n_\beta \times \Phi_\beta) + (E_\gamma n_\gamma \times \Phi_\gamma)]$
External Dose (rad/d) = EPC x F_{above} x F_{ruf} x DCF x CFa x CFd x 2

Appendix Table 7A.115. Exposure Unit 2 Surface Soil Radionuclide CPECs for Red Foxes at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	**EPC** (pCi/g)	**SPr**	**ADD_P** (pCi/gBW/d) RME *x* SP_r *x* I_P *x* AUF	**SP_v**	**Prey ADD_P** (pCi/gBW/d) RME *x* SP_v *x* I_{P-s} *x* AUF-s	**BAF_i**	**Prey ADD_A** (pCi/gBW/d) RME *x* BAF_i *x* I_{A-s} *x* AUF-s	**Prey ADD_S** (pCi/gBW/d) RME *x* I_{S-s} *x* AUF-s	**Prey ADD_{total}** (pCi/gBW/d) ADD_P + ADD_A + ADD_S
Radionuclides									
Americium-241	1.21E+00	5.00E-05	1.92E-07	1.10E-03	9.69E-05	3.15E+00	1.86E+00	8.81E-02	1.94E+00
Radium-226	7.95E+00	3.00E-04	7.57E-06	3.00E-03	1.74E-03	1.25E-02	4.84E-02	5.79E-01	6.29E-01
Thorium-230	7.03E+01	1.70E-05	3.79E-06	1.70E-04	8.70E-04	3.00E-04	1.03E-02	5.12E+00	5.13E+00
Thorium-234	7.21E+00	1.70E-05	3.89E-07	1.70E-04	8.92E-05	3.00E-04	1.05E-03	5.25E-01	5.26E-01
Uranium-233/234	6.76E+00	8.00E-04	1.72E-05	1.70E-03	8.37E-04	6.30E-02	2.07E-01	4.92E-01	7.00E-01
Uranium-234	1.14E+01	8.00E-04	2.89E-05	1.70E-03	1.41E-03	6.30E-02	3.50E-01	8.30E-01	1.18E+00
Uranium-238	8.09E+00	8.00E-04	2.05E-05	1.70E-03	1.00E-03	6.30E-02	2.48E-01	5.89E-01	8.38E-01

EPC = Exposure point concentration
SP_r = Soil-to-plant; reproductive
SP_v = Soil-to-plant; vegetative
I_P (kg/kgBW/d) = Plant ingestion rate for red foxes = 0.00317
ADD_P = Average daily dose; plant
I_{P-s} (kg/kgBW/d) = Plant ingestion rate for shrews = 0.0728
AUF = Area use factor (1.0)
BAF_i = Soil-to-animal; invertebrates
ADD_A = Average daily dose; animal
I_{A-s} (kg/kgBW/d) = Animal ingestion rate for shrews = 0.487
ADD_S = Average daily dose; soil
I_{S-s} (kg/kgBW/d) = Soil ingestion rate for shrews = 0.0728
ADD_{total} = Average daily dose; total

Appendix Table B.115. Exposure Unit 2 Surface Soil Radionuclide CPECs for Red Foxes at the Luckey Site, Luckey Ohio (continued)

Analytes remaining after the site-wide screens	**Cs** (pCi/g) ADD_{total}/IR_f	**BAF_v**	**ADD_A** (pCi/gBW/d) Cs *x* BAF_v *x* I_A *x* AUF	**ADD_S** (pCi/gBW/d) RME *x* I_S *x* AUF	**ADD_{total}** (pCi/gBW/d) $ADD_P + ADD_A + ADD_S$	**Internal Dose** (rad/d)	**External Dose** (rad/d)	**Total Dose** (rad/d) Internal + External	**TRV** (rad/d)	**Site EEQ** Total Dose / TRV	**CPEC?**
Radionuclides											
Americium-241	3.47E+00	1.75E-02	4.00E-03	2.34E-03	6.34E-03	6.22E-07	1.08E-06	1.71E-06	1.00E-01	1.71E-05	no
Radium-226	1.12E+00	1.25E-02	9.24E-04	1.54E-02	1.63E-02	9.96E-07	1.83E-06	2.82E-06	1.00E-01	2.82E-05	no
Thorium-230	9.16E+00	3.00E-04	1.81E-04	1.36E-01	1.36E-01	1.95E-07	1.62E-05	1.64E-05	1.00E-01	1.64E-04	no
Thorium-234	9.39E-01	3.00E-04	1.85E-05	1.39E-02	1.39E-02	1.47E-11	7.13E-06	7.13E-06	1.00E-01	7.13E-05	no
Uranium-233/234	1.25E+00	1.00E-02	8.23E-04	1.31E-02	1.39E-02	6.86E-07	1.38E-06	2.06E-06	1.00E-01	2.06E-05	no
Uranium-234	2.11E+00	1.00E-02	1.39E-03	2.20E-02	2.34E-02	1.14E-06	2.29E-06	3.44E-06	1.00E-01	3.44E-05	no
Uranium-238	1.50E+00	1.00E-02	9.85E-04	1.56E-02	1.66E-02	7.13E-07	1.19E-06	1.91E-06	1.00E-01	1.91E-05	no

Cs (pCi/g) = Concentration in the prey
IR_f = Ingestion rate of food for shrews
BAF_v = Animal-to-mammal
I_A (kg/kgBW/d) = Animal ingestion rate for red foxes = 0.0658
I_S (kg/kgBW/d) = Soil ingestion rate for red foxes = 0.00193
TRV (rad/d) = toxicity reference value
EEQ = Environmental effects quotient
nd= not detected, na= not applicable
CPEC = Constituents of potential ecological concern

Internal Dose (rad/d) = CF x ADD_{total} x $[(20 \times E_\alpha n_\alpha) + (E_\beta n_\beta \times \Phi_\beta) + (E_\gamma n_\gamma \times \Phi_\gamma)]$
External Dose (rad/d) = EPC x $\{F_{above} \times F_{ruf} \times DCF \times CFa \times CFd \times 2 + F_{below} \times 1.05 \times [(E_\beta n_\beta \times \Phi_\beta) + (E_\gamma n_\gamma \times \Phi_\gamma)] \times CF\}$

Appendix Table 7A.116. Surface Soil Exposure Unit 3 Radionuclide CPECs for Plants at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	EPC (pCi/g)	Plants							
		SPr	C (pCi/g) RME *x* SP_r	Internal Dose (rad/d)	External Dose (rad/d)	Total Dose (rad/d) Internal + External	Plant TRV (rad/d)	Plant EEQ Total Dose/TRV	CPEC?
Radionuclides									
Radium-226	3.32E+00	3.00E-04	9.96E-04	4.87E-06	1.89E-06	6.76E-06	1.00E+00	6.76E-06	no
Uranium-233/234	2.61E+00	8.00E-04	2.09E-03	1.03E-05	2.01E-06	1.23E-05	1.00E+00	1.23E-05	no

EPC = Exposure Point Concentration
TRV = toxicity reference value
EEQ = Environmental Effects Quotient
CPEC = Contaminant of Potential Ecological Concern

Internal Dose (rad/d) = CF x ADD_{total} x $[(20 \times E_{\alpha}n_{\alpha}) + (E_{\beta}n_{\beta} \times \Phi_{\beta}) + (E_{\gamma}n_{\gamma} \times \Phi_{\gamma})]$
External Dose (rad/d) = EPC x $\{F_{ruf}$ x DCF x CFa x CFd x 2+ 1.05 x $\{E_{\beta}n_{\beta} \times \Phi_{\beta}) + E_{\gamma}n_{\gamma} \times \Phi_{\gamma})]$ x CF$\}$

Appendix Table 7A.117. Surface Soil Exposure Unit 3 Radionuclide CPECs for Earthworms at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	**EPC** (pCi/g)	**BAF_i**	**C** (pCi/g) RME *x* SP_r	**Internal Dose** (rad/d)	**External Dose** (rad/d)	**Total Dose** (rad/d) Internal + External	**Earthworm TRV** (rad/d)	**Earthworm EEQ** Total Dose/TRV	**CPEC?**
Radionuclides									
Radium-226	3.32E+00	1.25E-02	4.15E-02	2.03E-04	1.50E-06	2.04E-04	1.00E+00	2.04E-04	no
Uranium-233/234	2.61E+00	6.30E-02	3.26E-02	1.61E-04	2.00E-06	1.63E-04	1.00E+00	1.63E-04	no

EPC = Exposure Point Concentration
TRV = toxicity reference value
EEQ = Environmental Effects Quotient
CPEC = Contaminant of Potential Ecological Concern

Internal Dose (rad/d) = CF x ADD_{total} x $[(20 \times E_{\alpha}n_{\alpha}) + (E_{\beta}n_{\beta} \times \Phi_{\beta}) + (E_{\gamma}n_{\gamma} \times \Phi_{\gamma})]$
External Dose (rad/d) = EPC x 1.05 x $[(E_{\beta}n_{\beta} \times \Phi_{\beta}) + (E_{\gamma}n_{\gamma} \times \Phi_{\gamma})]$ x CF

Appendix Table 7A.118. Exposure Unit 3 Surface Soil Radionuclide CPECs for Shrews at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	**EPC** (pCi/g)	**SPv**	**ADD_P** (pCi/gBW/d) RME *x* SP_r *x* I_P *x* AUF	**BAF_i**	**BAF_v**	**ADD_A** (pCi/gBW/d) RME *x* BAF_i *x* I_A *x* AUF	**ADD_S** (pCi/gBW/d) RME *x* I_S *x* AUF	**ADD_{total}** (pCi/gBW/d) ADD_P + ADD_A + ADD_S	**Internal Dose** (rad/d)	**External Dose** (rad/d)	**Total Dose** (rad/d) Internal + External	**TRV** (rad/d)	**Site EEQ** Total Dose / TRV	**CPEC?**
Radionuclides														
Radium-226	3.32E+00	3.00E-03	7.25E-04	1.25E-02	1.25E-02	2.02E-02	2.42E-01	2.63E-01	1.61E-05	7.19E-07	1.68E-05	1.00E-01	1.68E-04	no
Uranium-233/234	2.61E+00	1.70E-03	3.23E-04	6.30E-02	1.00E-02	8.01E-02	1.90E-01	2.70E-01	1.33E-05	5.22E-07	1.39E-05	1.00E-01	1.39E-04	no

EPC = Exposure Point Concentration
SP_v = Soil-to-plant; vegetative
I_P (kg/kgBW/d) = Plant ingestion rate for shrews = 0.0728
ADD_P = Average daily dose; plant
AUF = Area use factor (1.0)
BAF_i = Soil-to-animal; invertebrates
ADD_A = Average daily dose; animal
EEQ = Environmental Effects Quotient

I_A (kg/kgBW/d) = Animal ingestion rate for shrews = 0.487
ADD_S = Average daily dose; soil
I_S (kg/kgBW/d) = Soil ingestion rate for shrews = 0.0728
ADD_{total} = Average daily dose; total
TRV (rad/d) = toxicity reference value
nd= not detected, na= not applicable
CPEC = Constituents of potential ecological concern
Internal Dose (rad/d) = CF x ADD_{total} x $[(20 \times E_\alpha n_\alpha) + (E_\beta n_\beta \times \Phi_\beta) + (E_\gamma n_\gamma \times \Phi_\gamma)]$
External Dose (rad/d) = EPC x $\{F_{above} \times F_{ruf} \times DCF \times CFa \times CFd \times 2 + F_{below} \times 1.05 \times [(E_\beta n_\beta \times \Phi_\beta) + (E_\gamma n_\gamma \times \Phi_\gamma)] \times CF\}$

Appendix Table 7A.119. Exposure Unit 3 Surface Soil Radionuclide CPECs for Robins at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	**EPC** (pCi/g)	**SPr**	**ADD_P** (pCi/gBW/d) RME x SP_r x I_P x AUF	**BAF_i**	**BAF_v**	**ADD_A** (pCi/gBW/d) RME x BAF_i x I_A x AUF	**ADD_S** (pCi/gBW/d) RME x I_S x AUF	**ADD_{total}** (pCi/gBW/d) ADD_P + ADD_A + ADD_S	**Internal Dose** (rad/d)	**External Dose** (rad/d)	**Total Dose** (rad/d) Internal + External	**TRV** (rad/d)	**Site EEQ** Total Dose / TRV	**CPEC?**
Radionuclides														
Radium-226	3.32E+00	3.00E-04	7.57E-04	1.25E-02	1.25E-02	3.15E-02	5.25E-01	5.57E-01	3.40E-05	1.96E-07	3.44E-05	1.00E-01	3.44E-04	no
Uranium-233/234	2.61E+00	8.00E-04	1.59E-03	6.30E-02	1.00E-02	1.25E-01	4.13E-01	5.39E-01	2.66E-05	1.35E-08	2.66E-05	1.00E-01	2.66E-04	no

EPC = Exposure Point Concentration
SP_r = Soil-to-plant; reproductive
I_P (kg/kgBW/d) = Plant ingestion rate for robins = 0.76
ADD_P = Average daily dose; plant
AUF = Area use factor (1.0)
BAF_i = Soil-to-animal; invertebrates
ADD_A = Average daily dose; animal
EEQ = Environmental Effects Quotient

I_A (kg/kgBW/d) = Animal ingestion rate for robins = 0.76
ADD_S = Average daily dose; soil
I_S (kg/kgBW/d) = Soil ingestion rate for robins = 0.158
ADD_{total} = Average daily dose; total
TRV (rad/d) = toxicity reference value
nd= not detected, na= not applicable
CPEC = Constituents of potential ecological concern
Internal Dose (rad/d) = CF x ADD_{total} x $[(20 \times E_\alpha n_\alpha) + (E_\beta n_\beta \times \Phi_\beta) + (E_\gamma n_\gamma \times \Phi_\gamma)]$
External Dose (rad/d) = EPC x F_{above} x F_{ruf} x DCF x CFa x CFd x 2

Appendix Table 7A.120. Exposure Unit 3 Surface Soil Radionuclide CPECs for Cottontail Rabbits at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	**EPC** (pCi/g)	**SPv**	**ADD_P** (pCi/gBW/d) RME *x* SP_r *x* I_P *x* AUF	**BAF_i**	**BAF_v**	**ADD_A** (pCi/gBW/d) RME *x* BAF_i *x* I_A *x* AUF	**ADD_S** (pCi/gBW/d) RME *x* I_S *x* AUF	**ADD_{total}** (pCi/gBW/d) ADD_P + ADD_A + ADD_S	**Internal Dose** (rad/d)	**External Dose** (rad/d)	**Total Dose** (rad/d) Internal + External	**TRV** (rad/d)	**Site EEQ** Total Dose / TRV	**CPEC?**
Radionuclides														
Radium-226	3.32E+00	3.00E-03	2.04E-03	1.25E-02	1.25E-02	0.00E+00	4.29E-02	4.49E-02	2.75E-06	7.63E-07	3.51E-06	1.00E-01	3.51E-05	no
Uranium-233/234	2.61E+00	1.70E-03	9.10E-04	6.30E-02	1.00E-02	0.00E+00	3.37E-02	3.46E-02	1.71E-06	5.32E-07	2.24E-06	1.00E-01	2.24E-05	no

EPC = Exposure Point Concentration
SP_v = Soil-to-plant; vegetative
I_P (kg/kgBW/d) = Plant ingestion rate for cottontail rabbits = 0.205
ADD_P = Average daily dose; plant
AUF = Area use factor (1.0)
BAF_i = Soil-to-animal; invertebrates
ADD_A = Average daily dose; animal
EEQ = Environmental Effects Quotient

I_A (kg/kgBW/d) = Animal ingestion rate for cottontail rabbits = 0.00
ADD_S = Average daily dose; soil
I_S (kg/kgBW/d) = Soil ingestion rate for cottontail rabbits = 0.0129
ADD_{total} = Average daily dose; total
TRV (rad/d) = toxicity reference value
nd= not detected, na= not applicable
CPEC = Constituents of potential ecological concern
Internal Dose (rad/d) = CF x ADD_{total} x $[(20 \times E_\alpha n_\alpha) + (E_\beta n_\beta \times \Phi_\beta) + (E_\gamma n_\gamma \times \Phi_\gamma)]$
External Dose (rad/d) = EPC x $\{F_{above} \times F_{ruf} \times DCF \times CFa \times CFd \times 2 + F_{below} \times 1.05 \times [(E_\beta n_\beta \times \Phi_\beta) + (E_\gamma n_\gamma \times \Phi_\gamma)] \times CF\}$

Appendix Table 7A.121. Exposure Unit 3 Surface Soil Radionuclide CPECs for White-Tailed Deer at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	**EPC** (pCi/g)	**SPv**	**ADD_P** (pCi/gBW/d) RME *x* SP_r *x* I_P *x* AUF	**BAF_i**	**BAF_v**	**ADD_A** (pCi/gBW/d) RME *x* BAF_i *x* I_A *x* AUF	**ADD_S** (pCi/gBW/d) RME *x* I_S *x* AUF	**ADD_{total}** (pCi/gBW/d) ADD_P + ADD_A + ADD_S	**Internal Dose** (rad/d)	**External Dose** (rad/d)	**Total Dose** (rad/d) Internal + External	**TRV** (rad/d)	**Site EEQ** Total Dose / TRV	**CPEC?**
Radionuclides														
Radium-226	3.32E+00	3.00E-03	3.09E-04	1.25E-02	1.25E-02	0.00E+00	2.06E-03	2.37E-03	1.45E-07	1.96E-07	3.41E-07	1.00E-01	3.41E-06	no
Uranium-233/234	2.61E+00	1.70E-03	1.38E-04	6.30E-02	1.00E-02	0.00E+00	1.62E-03	1.76E-03	8.66E-08	6.77E-09	9.34E-08	1.00E-01	9.34E-07	no

EPC = Exposure Point Concentration
SP_v = Soil-to-plant; vegetative
I_P (kg/kgBW/d) = Plant ingestion rate for white-tailed deer = 0.031
ADD_P = Average daily dose; plant
AUF = Area use factor (1.0)
BAF_i = Soil-to-animal; invertebrates
ADD_A = Average daily dose; animal
EEQ = Environmental Effects Quotient

I_A (kg/kgBW/d) = Animal ingestion rate for white-tailed deer = 0.00
ADD_S = Average daily dose; soil
I_S (kg/kgBW/d) = Soil ingestion rate for white-tailed deer = 0.00062
ADD_{total} = Average daily dose; total
TRV (mg/kgBW/d) = toxicity reference value
nd= not detected, na= not applicable
CPEC = Constituents of potential ecological concern
Internal Dose (rad/d) = CF x ADD_{total} x $[(20 \times E_\alpha n_\alpha) + (E_\beta n_\beta \times \Phi_\beta) + (E_\gamma n_\gamma \times \Phi_\gamma)]$
External Dose (rad/d) = EPC x F_{above} x F_{ruf} x DCF x CFa x CFd x 2

Appendix Table 7A.122. Exposure Unit 3 Surface Soil Radionuclide CPECs for Red-Tailed Hawks at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	**EPC** (pCi/g)	**SPr**	**ADD_P** (pCi/gBW/d) RME *x* SP_r *x* I_P *x* AUF	**SP_v**	**Prey ADD_P** (pCi/gBW/d) RME *x* SP_v *x* I_{P-s} *x* AUF-s	**BAF_i**	**Prey ADD_A** (pCi/gBW/d) RME *x* BAF_i *x* I_{A-s} *x* AUF-s	**Prey ADD_S** (pCi/gBW/d) RME *x* I_{S-s} *x* AUF-s	**Prey ADD_{total}** (pCi/gBW/d) ADD_P + ADD_A + ADD_S
Radionuclides									
Radium-226	3.32E+00	3.00E-03	0.00E+00	3.00E-03	7.25E-04	1.25E-02	2.02E-02	2.42E-01	2.63E-01
Uranium-233/234	2.61E+00	1.70E-03	0.00E+00	1.70E-03	3.23E-04	6.30E-02	8.01E-02	1.90E-01	2.70E-01

EPC = Exposure point concentration
SP_r = Soil-to-plant; reproductive
SP_v = Soil-to-plant; vegetative
I_P (kg/kgBW/d) = Plant ingestion rate for red-tailed hawks = 0.00
ADD_P = Average daily dose; plant

I_{P-s} (kg/kgBW/d) = Plant ingestion rate for shrews
AUF = Area use factor (1.0)
BAF_i = Soil-to-animal; invertebrates
ADD_A = Average daily dose; animal
I_{A-s} (kg/kgBW/d) = Animal ingestion rate for shrews
ADD_S = Average daily dose; soil
I_{S-s} (kg/kgBW/d) = Soil ingestion rate for shrews
ADD_{total} = Average daily dose; total

Appendix Table 7A.122. Exposure Unit 3 Surface Soil Radionuclide CPECs for Red-Tailed Hawks at the Luckey Site, Luckey Ohio (continued)

Analytes remaining after the site-wide screens	**Cs** (pCi/g) ADD_{total}/IR_f	**BAF_v**	**ADD_A** (pCi/gBW/d) Cs *x* BAF_v *x* I_A *x* AUF	**ADD_S** (pCi/gBW/d) RME *x* I_S *x* AUF	**ADD_{total}** (pCi/gBW/d) ADD_P + ADD_A + ADD_S	**Internal Dose** (rad/d)	**External Dose** (rad/d)	**Total Dose** (rad/d) Internal + External	**TRV** (rad/d)	**Site EEQ** Total Dose / TRV	**CPEC?**
Radionuclides											
Radium-226	4.69E-01	1.25E-02	6.45E-04	0.00E+00	6.45E-04	3.94E-08	3.92E-08	7.86E-08	1.00E-01	7.86E-07	no
Uranium-233/234	4.83E-01	1.00E-02	5.31E-04	0.00E+00	5.31E-04	2.62E-08	1.35E-09	2.76E-08	1.00E-01	2.76E-07	no

Cs (pCi/g) = Concentration in the prey
IR_f (kg/kgBW/d)= Ingestion rate of food for shrews = 0.56
BAF_v = Animal-to-mammal
I_A (kg/kgBW/d) = Animal ingestion rate for red-tailed hawks = 0.11
I_S (kg/kgBW/d) = Soil ingestion rate for red-tailed hawks = 0.00
TRV (rad/d) = toxicity reference value
EEQ = Environmental effects quotient
nd= not detected, na= not applicable
CPEC = Constituents of potential ecological concern

Internal Dose (rad/d) = CF x ADD_{total} x $[(20 \times E_\alpha n_\alpha) + (E_\beta n_\beta \times \Phi_\beta) + (E_\gamma n_\gamma \times \Phi_\gamma)]$
External Dose (rad/d) = EPC x F_{above} x F_{ruf} x DCF x CFa x CFd x 2

Appendix Table 7A.123. Exposure Unit 3 Surface Soil Radionuclide CPECs for Red Foxes at the Luckey Site, Luckey Ohio

Analytes remaining after the site-wide screens	**EPC** (pCi/g)	**SPr**	**ADD_P** (pCi/gBW/d) RME *x* SP_r *x* I_P *x* AUF	**SP_v**	**Prey ADD_P** (pCi/gBW/d) RME *x* SP_v *x* I_{P-s} *x* AUF-s	**BAF_i**	**Prey ADD_A** (pCi/gBW/d) RME *x* BAF_i *x* I_{A-s} *x* AUF-s	**Prey ADD_S** (pCi/gBW/d) RME *x* I_{S-s} *x* AUF-s	**Prey ADD_{total}** (pCi/gBW/d) ADD_P + ADD_A + ADD_S
Radionuclides									
Radium-226	3.32E+00	3.00E-04	3.16E-06	3.00E-03	7.25E-04	1.25E-02	2.02E-02	2.42E-01	2.63E-01
Uranium-233/234	2.61E+00	8.00E-04	6.63E-06	1.70E-03	3.23E-04	6.30E-02	8.01E-02	1.90E-01	2.70E-01

EPC = Exposure point concentration
SP_r = Soil-to-plant; reproductive
SP_v = Soil-to-plant; vegetative
I_P (kg/kgBW/d) = Plant ingestion rate for red foxes = 0.00317
ADD_P = Average daily dose; plant
I_{P-s} (kg/kgBW/d) = Plant ingestion rate for shrews = 0.0728
AUF = Area use factor (1.0)
BAF_i = Soil-to-animal; invertebrates
ADD_A = Average daily dose; animal
I_{A-s} (kg/kgBW/d) = Animal ingestion rate for shrews = 0.487
ADD_S = Average daily dose; soil
I_{S-s} (kg/kgBW/d) = Soil ingestion rate for shrews = 0.0728
ADD_{total} = Average daily dose; total

Appendix Table 7A.123. Exposure Unit 3 Surface Soil Radionuclide CPECs for Red Foxes at the Luckey Site, Luckey Ohio (continued)

Analytes remaining after the site-wide screens	**Cs** (pCi/g) $ADD_{total}/I R_f$	**BAF_v**	**ADD_A** (pCi/gBW/d) Cs *x* BAF_v *x* I_A *x* AUF	**ADD_S** (pCi/gBW/d) RME *x* I_S *x* AUF	**ADD_{total}** (pCi/gBW/d) $ADD_P + ADD_A + ADD_S$	**Internal Dose** (rad/d)	**External Dose** (rad/d)	**Total Dose** (rad/d) Internal + External	**TRV** (rad/d)	**Site EEQ** Total Dose / TRV	**CPEC?**
Radionuclides											
Radium-226	4.69E-01	1.25E-02	3.86E-04	6.41E-03	6.80E-03	4.16E-07	7.63E-07	1.18E-06	1.00E-01	1.18E-05	no
Uranium-233/234	4.83E-01	1.00E-02	3.18E-04	5.04E-03	5.37E-03	2.65E-07	5.32E-07	7.97E-07	1.00E-01	7.97E-06	no

Cs (pCi/g) = Concentration in the prey
IR_f = Ingestion rate of food for shrews
BAF_v = Animal-to-mammal
I_A (kg/kgBW/d) = Animal ingestion rate for red foxes = 0.0658
I_S (kg/kgBW/d) = Soil ingestion rate for red foxes = 0.00193
TRV (rad/d) = toxicity reference value
EEQ = Environmental effects quotient
nd= not detected, na= not applicable
CPEC = Constituents of potential ecological concern

Internal Dose (rad/d) = CF x ADD_{total} x $[(20 \times E_\alpha n_\alpha) + (E_\beta n_\beta \times \Phi_\beta) + (E_\gamma n_\gamma \times \Phi_\gamma)]$
External Dose (rad/d) = EPC x $\{F_{above} \times F_{ruf} \times DCF \times CFa \times CFd \times 2 + F_{below} \times 1.05 \times [(E_\beta n_\beta \times \Phi_\beta) + (E_\gamma n_\gamma \times \Phi_\gamma)] \times CF\}$

APPENDIX 7B:
Results of Benthic Macroinvertebrate Survey Using Rapid Bio-assessment Protocol

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7B.1 INTRODUCTION

A benthic macroinvertebrate biosurvey was conducted on Toussaint Creek to support the remedial investigation of the Luckey site. Benthic macroinvertebrate biosurvey objectives typically include one or more of the following: (1) to detect impairment of aquatic biota, (2) assess the relative severity of impairment, (3) prioritize sites for more intensive evaluations, and (4) define base line conditions. The purpose of the benthic invertebrate biosurvey at Luckey was to fulfill all of those objectives. This report summaries the methods, results, and conclusions of that benthic macroinvertebrate biosurvey.

7B.2 LUCKEY SITE METHODS

This section describes the field methods (section 2.1) and data analysis methods (section 2.2) that were used for the benthic invertebrate survey at the Luckey Site.

7B.2.1 RBP II Field Methods

The Luckey Site benthic invertebrate biosurvey was performed at five stations on Toussaint Creek, Wood and Ottawah counties, Ohio, on July 13 and 14, 1998 by biologists from Science Applications International Corporation (SAIC). The station IDs were as follows: IA06SW0003, IA06SW0004, IA06SW0006, IA06SW0007, and IA06SW0008. A sixth station, IA06SW0005, was visited but a biosurvey was not performed because in the judgement of the biologists, the extremely poor habitat conditions at the site would yield unproductive biosurvey results. The stations corresponded to surface water sampling locations for the RI. Station IA06SW0003 was upstream of the Luckey site border and was intended to be the reference location because of its location upstream from any potential source inputs from the Luckey site. The size and flows in Toussaint Creek progressively decreased upstream from the Luckey site, which limited the selection of an appropriate site that was similar in size and flow to sites at or downstream of Luckey. Although the site that was selected for the reference was not ideal, it was the best of the available choices and had conditions most similar to those at and downstream of the Luckey site and was the least impacted by adjacent agricultural activities.

The biosurvey generally followed U.S. Environmental Protection Agency (EPA) Rapid Bioassessment Protocol II (RBPII) methods (Plafkin et al.1989). The RBPII utilized standardized sampling techniques from comparable habitat types. The sampling focused on riffle/runs because they are typically the most productive habitat types. In areas without a riffle, submerged fixed structures were sampled (e.g. boulders, logs, etc.). At each location, a total of 100 count organism sample was attempted to be collected. The collected benthic invertebrates were preserved in a 70% v/v isopropanol, sufficient volume to completely cover the organisms.

Prior to collecting the organisms at each station, water quality measurements (temperature, dissolved oxygen, pH, conductivity, and turbidity) were collected using a Horiba Model U-10 instrument.

The Horiba was calibrated daily before taking any field measurements, according to manufacturer=s instructions.

An aquatic habitat assessment was also performed for each sampling station, using standardized data sheets. The habitat assessment consisted of nine parameters dealing with substrate and instream cover, channel morphology, and riparian and bank structure. Each parameter is scored a numerical value corresponding to a ranking of Aexcellent@ to Apoor@. The numerical scores of the individual parameters are totaled to obtain a total score for the location.

7B.2.2 Luckey Site RBPII Data Analysis Methods

The RBPII data analysis scheme integrates several community, population, and functional parameters into a single evaluation of biotic integrity. The RBPII data evaluation entails eight metrics, each of which assesses some aspect of the benthic invertebrate community, population, or functional attributes. The eight metrics, along with a brief description of each one are presented below.

Metric 1 (taxa sickness) is an indicator of the community health through a measurement of the total number of families present. The number of families generally increases as water quality, habitat divesting, and habitat suitability increase.

Metric 2 [modified family biotic index (FBI)] is an indicator of the organisms that are tolerant/intolerant of organic pollutants. Tolerance values range from 0 to 10 for families, and increase as water quality decreases. These higher values indicates a higher proportion of pollution-tolerant families. The FBI is calculated as follows:

$$FBI = \Sigma \frac{x_i t_i}{n}$$

where: x_i = number of individuals within a taxon
t_i = tolerance values of a taxon
n = total number of organisms in the sample

Metric 3 (ratio of scraper and filtering collector functional feeding groups) is an indicator of the riffle/run food base. Shifts in the dominance of a particular feeding type (functional group), compared to the reference site, indicates a community responding to an overabundance of a particular food source. Functional feeding group descriptions are found in Merritt and Cummins (1984). Scrapers increase with increased diatom abundance and decrease as filamentous algae and aquatic mosses increase (usually indicates organic enrichment).

Metric 4 (ratio of EPT and Chironomidae Abundances) is an indicator of community balance in that good biotic condition is reflected in communities with an even distribution of Ephemeroptera (mayflies), Plecoptera (stoneflies), Trichoptera (caddisflies), and Chironomidae (midges). Communities with skewed higher proportions of chironomids might indicate environmental stress, especially from heavy metals.

Metric 5 (percent contribution of dominant family) is another indicator of community balance. A community dominated by a few families indicates environmental stress.

Metric 6 (EPT index) is an indicator of water quality and taxa that are generally considered pollution sensitive. It is the number of distinct taxa within the groups Ephemeroptera, Plecoptera, and Trichoptera. The higher the value, the better quality of water.

Metric 7 (Community Similarity Indices; e.g. community loss index) measures the loss of benthic taxa between a reference station and station of comparison. Values increase as the degree of similarity with reference station increases.

Metric 8 (Ration of shredder functional groups and total number of individuals collected) This metric is applicable to the course particulate organic matter (CPOM) sample. If no CPOM is present, this

metric is not calculated. CPOM was not present at the sampling sites so this metric is not discussed further.

7B.3 RESULTS

This section describes the results of the Luckey site RBPII investigation. Section 3.1 describes the water quality result at the sampling sites, section 3.2 discusses the habitat calculations, and section 3.3 presents the benthic invertebrate RBPII metric data analysis results.

7B.3.1 Water Quality Results

Water quality results are summarized in Table 7B.1. Temperatures were similar among sites, ranging from 21.2°C at station IA06SW0007 to 24°C at IA06SW0004. Dissolved oxygen concentrations varied widely among the RBPII sites ranging from a low of 0.99 mg/L at the upstream site (IA06SW0003) to 9.51 mg/L at IA06SW0007. The generally low values are consistent with the slow flow conditions in the stream. The pH values ranged from 8.74 at IA06SW0003 to 9.79 at IA06SW0007. Conductivity varied widely among sites, ranging from 0.357 mS/cm at IA06SW0003 to 1.35 mS/cm at IA06SW0004. Turbidity was 10 NTUs at all sites.

7B.3.2 Habitat evaluations

Table 7B.2 summarizes physical characterization and qualitative water quality measurements at the sampling sites. The predominant surrounding land use was agricultural at most sites, except for residential at IA06SW0007 and field/pasture at IA06SW0008. Evidence of local watershed erosion was heavy at four of the six sites, and moderate at the two others. Stream widths increased from 6-12 ft at the most upstream site to 20-30 ft at the most downstream site. Flow rates ranged from nearly still to 3cm/sec. All sites were turbid, except IA06SW0007, which was slightly turbid. Three sites had anaerobic odors in the sediment. All sites had much sand and silt deposits. Table 7B.3 summarizes substrate composition at the sites. Only two sites had substrate composition containing fractions larger than gravel (IA06SW0004 and IA06SW0008).

Habitat assessment scores for the Luckey RBPII sites are summarized in Table 7B.4. All sites except the most downstream location (IA06SW0008) were scored as Apoor@. The numerical total score values ranged from 20 to 30 for all the Apoor@ scores, and was 48 (fair) at the most downstream station (IA06SW0008). Embeddedness, as well as bottom scouring and deposition, were scored Apoor@ at all stations . Flow and channel alteration were scored Apoor@ at all stations except the most downstream which was Afair@. Bank stability and bank vegetative stability were generally poor at most stations, except the most upstream, which was scored as Agood@.

7B.3.3 RBPII Metric Data Analysis

Results of the data analysis for metrics 1-6 are presented in Tables 7B.5, and metric 7 results are presented in Table 7B.6. The taxa richness increased from 7 families at the two most upstream sites, to 9 at the next two downstream stations, to a maximum of 10 at the most downstream locations (IA06SW0008). The highest FBI was at the upstream location (7.78), and lowest FBIs were at stations IA06SW0004 (4.05) and IA06SW0008 (4.48). Ratio of scrapers/filterers could only be calculated for two sites (IA06SW0003 and IA06SW0008) because of the absence of any scrapers at the other sites.

The EPT/chironomidae ratio was low at IA06SW0003 (0.67) and IA06SW0006 (0.5), but much higher at IA06SW0008 (13.33). The ratio could not be calculated at Stations IA06SW0004 or IA06SW0007 because of an absence of chrionomids or EPT taxa, respectively. Percent contribution of

dominant family was approximately 89% at the upstream station and IA06SW0004. The percent contribution by dominant family ranged from 29.5% to 50.0% at the remaining stations.

The EPT index was low at all stations, ranging from 0-3.

7B.4 LUCKEY SITE RBPII CONCLUSIONS

- The benthic invertebrate communities in Toussaint Creek, both upstream and downstream from the Luckey Site, show evidence of impact (Objective 1).

- Toussaint Creek is highly impacted from agricultural activities and channelization (heavy local erosion and siltation, along with low stream flow velocities), resulting in poor quality habitat for benthic invertebrates (Objective 2).

- The Luckey Site appears to have little impact to benthic invertebrates in Toussaint Creek, especially compared to the impacts due to from agricultural activities and channelization (Objective 2).

- Additional, more thorough biosurveys in Toussaint Creek do not appear to be warranted because the RBP II survey identified impacts and the likely sources as being mostly attributable to agricultural activities and channelization (Objective 3).

- The improvement in the benthic invertebrate community at the most downstream location in Toussaint Creek (farthest from the Luckey Site) is mostly attributable to better habitat conditions (more suitable substrate and higher stream flows) compared to the other sampling stations (Objectives 2 and 4).

- The RBP II for Toussaint Creek provides a baseline description of the benthic invertebrate community at locations upstream and various distances downstream from the Luckey Site (Objective 4).

7B.5 REFERENCES

Merritt, R.W. and K.W. Cummins, 1984, An Introduction to the Aquatic Insects of North America. Kendall/Hunt Publishing Co. Dubuque, Iowa.

Plafkin, J.L., M.T. Barbour, K.D. Porter, S.K. Gross, and R.M. Hughes. 1989. Rapid Bioassessment Protocols for Use in Streams and Rivers: Benthic Macroinvertebrates and Fish. EPA 144014-891001. Office of Water. US Environmental Protection Agency, Washington, DC.

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Table 7B.1. Summary of Water Quality Measurements in Toussaint Creek for RBP II Sampling in July 1998

Station ID	Temperature (°C)	Dissolved Oxygen (mg/L)	pH (S.U.)	Conductivity (mS/cm)	Turbidity (NTU)
IA06SW0003	21.2	0.99	8.74	0.357	10
IA06SW0004	22.9	5.19	9.42	1.35	10
IA06SW0005	24.2	5.05	9.15	1.06	10
IA06SW0006	21.6	2.14	8.99	0.437	10
IA06SW0007	24.0	9.51	9.79	1.28	10
IA06SW0008	23.4	5.80	9.61	1.29	10

S.U. = standard units
°C = degrees centigrade
mS/cm = millisiemens per centimeter
NTU = nephelometric turbidity units

Table 7B.2. Summary of Physical Characterization and Qualitative Water Quality Field Data Sheets for Sites on Toussaint Creek, Luckey Site RI, July 1998

Station ID	Predominant Land Use	Local Watershed Erosion	Local Watershed NPS Pollution	Estimated Stream Width	Estimated Velocity	Canopy Cover	Sediment Odors	Sediment Oils	Sediment Deposits	Water Odors	Surface Water Oils	Turbidity
IA06SW0003	Agricultural	Moderate	Some potential sources	6-12 ft	Nearly still	Open	Anaerobic	Absent	Sand, silt, relict shells	None	None	Turbid
IA06SW0004	Agricultural	Heavy	Obvious sources	20 ft	1cm/Sec	Partly shaded	Anaerobic	Absent	Sand, silt, relict shells	Normal	Sheen	Turbid
IA06SW0005	Agricultural	Heavy	Obvious sources	12-15 ft	still	Partly open	NR	NR	Sand, silt, tree twigs	Sewage	None	Turbid
IA06SW0006	Agricultural	Heavy	Some potential sources	10-18 ft	2cm/Sec	Partly open	Normal	Absent	Sand, relict shells, silt	Normal	None	Turbid
IA06SW0007	Residential (lawn)	Moderate	Some potential sources	20-25 ft	2cm/Sec	Open	Anaerobic	Absent	Sand, silt relict shells	Normal	None	Slightly turbid
IA06SW0008	Field/ Pasture	Heavy	Some potential sources	20-30 ft	3cm/Sec	Partly shaded	Normal	Absent	Sand, silt, relict shells	Normal	None	Turbid

NR = not recorded
NPS = non point source

Table 7B.3. Summary of Substrate Composition at RBP II Sampling Location in Toussaint Creek, Luckey Site, July 1998

Station ID	Substrate Type					
	Bedrock	**Boulder**	**Cobble**	**Gravel**	**Sand**	**Silt**
IA06SW0003	0	0	0	0	20	80
IA06SW0004	0	< 5	< 10	40	30	15
IA06SW0005	NR	NR	NR	NR	NR	NR
IA06SW0006	0	0	0	0	< 10	90
IA06SW0007	0	0	0	< 1.0	50	50
IA06SW0008	15	0	30	25	20	10

NR = not recorded

Table 7B.4. Summary of Aquatic Habitat Assessment Field Data Sheet Parameters and Scores, Toussaint Creek, for Luckey RI, July 1998

Station ID	Bottom[a] Substrate	Embeddedness[a]	Flow[a]	Channel Attention[b]	Bottom Scouring and Deposition[b]	Run/Bend Ratio[b]	Bank Stability[c]	Bank Vegetative Stability[c]	Streamside Covered[c]	Column Total[d]
IA06SW0003	3 (poor)	2 (poor)	1 (poor)	2 (poor)	1 (poor)	3 (poor)	8 (good)	6 (good)	4 (fair)	30 (poor)
IA06SW0004	6 (fair)	1 (poor)	2 (poor)	2 (poor)	2 (poor)	4 (fair)	1 (poor)	1 (poor)	1 (poor)	20 (poor)
IA06SW0005	6 (fair	2 (poor)	1 (poor)	1 (poor)	1 (poor)	3 (poor)	1 (poor)	1 (poor)	4 (fair)	20 (poor)
IA06SW0006	3 (poor)	1 (poor)	4 (poor)	1 (poor)	1 (poor)	3 (poor)	1 (poor)	3 (fair)	5 (fair)	22 (poor)
IA06SW0007	3 (poor)	1 (poor)	4 (poor)	1 (poor)	1 (poor)	2 (poor)	2 (poor)	2 (poor)	5 (fair)	21 (poor)
IA06SW0008	15 (good)	1 (poor)	7 (fair)	6 (fair)	1 (poor)	9 (good)	1 (poor)	1 (poor)	7 (good)	48 (fair)

a excellent (16-20), good (11-15), fair (6-10), poor (0-5)
b excellent (12-15), good (8-11), fair (4-7), poor (0-3)
c excellent (9-10), good (6-8), fair (3-5), poor (0-2)
d excellent (111-135), good (75-110), fair (31-74), poor (0-30)

Table 7B.5. Summary of RBP II Metrics 1-6 for the Luckey Site RI, Toussaint Creek, July 1998

RBP II Metric number	Metric Description	Sampling Locations					
		IA06SW0003	IA06SW0004	IA06SW0005[a]	IA06SW0006	IA06SW0007	IA06SW0008
total no. collected		96	112		44	56	100
Metric 1	Taxa richness	7	7		9	9	10
Metric 2	FBI	7.78	4.05		6.17	6.57	4.48
Metric 3	Ratio scraper/filterers	no scrapers	0.17		no scrapers	no scrapers	1.00
Metric 4	Ratio EPT/chironomid	0.67	no chironomids		0.50	no ETP taxa	13.33
Metric 5	% contribution dominant fam.	89.58	89.29		29.55	50.00	38.00
Metric 6	EPT index	2	3		2	0	3

[a] benthic invertebrate sampling was not conducted here because of extremely poor habitat

Table 7B.6. Summary of RBP II metric 7 (Community Loss Index) results, Luckey Site RI, Toussaint Creek, July 1998

Station	IA06SW0003	IA06SW0004	IA06SW0006	IA06SW0007	IA06SW0008
IA06SW0003					
IA06SW0004	0.71				
IA06SW0006	0.33	0.44			
IA06SW0007	0.44	0.44	0.56		
IA06SW0008	0.40	0.30	0.60	0.50	

Community Loss Index not calculated in shaded cells because these represent comparison of a site to itself