4.0 NATURE AND EXTENT OF CONTAMINATION

This chapter presents results of the Phase II RI data screening process to identify constituents indicative of impacts from AOC operations. Those constituents that are deemed to be related to AOC operations are classified as SRCs. These SRCs are then evaluated to determine their occurrence and distribution in environmental media at Load Line 2. Section 4.1 of this chapter presents the statistical methods and screening criteria used to reduce and display data and to distinguish naturally occurring constituents from SRCs indicative of impacts from historical site operations. Sections 4.2 through 4.6 present the nature and extent of identified SRCs in each environmental media characterized.

For the purposes of this Phase II RI report, data aggregates were established based on environmental media (surface soil, subsurface soil, sediment, surface water, and groundwater) and site operational history and physical characteristics (spatial aggregates). These data aggregates form the basis for EUs addressed in the human health and ecological risk evaluations (Chapters 6.0 and 7.0, respectively). Section 4.7 addresses analytical results from the sanitary and storm sewer system characterization. Section 4.8 addresses special samples of soil, sediments, sludges, water, and debris materials (floor sweepings) collected beneath and within buildings and structures.

A summary of the results of the OE avoidance activities is presented in Section 4.9. A brief summary of a radiological survey of former radiography building (Building DB-26) by USACE is presented in Section 4.10. Field measurements of metals and explosives are compared with their respective laboratory measurements in Section 4.11. Section 4.12 provides a summary of the results of the contaminant nature and extent evaluation.

4.1 DATA EVALUATION METHODS

The processes used to evaluate Load Line 2 Phase II RI analytical data for each environmental media involve four general steps: (1) defining background concentrations, (2) defining data aggregates, (3) data reduction and screening, and (4) data presentation.

4.1.1 Site Chemical Background

Chemicals occur naturally in soils, sediments, surface water, and groundwater. The natural levels of chemicals—called background levels—must be known in order to determine whether the concentrations measured at Load Line 2 are higher than would be expected if the load line operations had not occurred. Development of facility-wide background values for inorganic constituents in soil, sediment, surface water, and groundwater was conducted as part of a previous Phase II RI at WBG at RVAAP (USACE 2001b). Although some organic compounds also occur under ambient conditions (i.e., some PAHs), the organic compounds of primary concern (e.g., explosives) are man-made; therefore, background for all organic compounds was set to zero, and any detected concentration of these compounds is considered as being above background.

For each environmental medium of interest, a RVAAP facility-wide background level was calculated for each inorganic constituent detected in the background sample population. The background level for a specific constituent is the lower of the maximum detected value in the background dataset (for non-normally distributed data) or the 95% upper tolerance limit of the 95th percentile of the distribution of background concentrations (for normally distributed or log-normally distributed data). For all inorganics detected in the background dataset, the background value selected was the maximum detected

value. If a measured concentration at an AOC is above the background criteria, it is likely that the concentration is elevated due to processes or operations that took place within that AOC.

The background criteria were set to zero for inorganics that were not detected in the background samples. For those metals that were not detected in the background samples, any detected result from Load Line 2 would be considered above background. RVAAP facility-wide background criteria for each medium are listed in Table 4-1.

4.1.2 Definition of Aggregates

The Load Line 2 data were grouped (aggregated) in two ways for evaluation of contaminant nature and extent and the human health and ecological risk evaluations. The initial aggregation of data is by environmental media: soil, sediment, surface water, and groundwater, to facilitate evaluation of contaminant nature and extent and site risks. Data for the soil medium were further aggregated on the basis of depth for consistency with the human health risk assessment and EPA risks assessment guidance. For each media aggregate, an evaluation was conducted to determine if further aggregation was warranted on the basis of site characteristics, historical operations, ecological habitat, and potential future remedial strategy and land use (spatial aggregates).

Soil and Dry Sediment Aggregates

Using the above data aggregation criteria, surface soil and subsurface soil within the geographic area of Load Line 2 are separated into six aggregates (Table 4-2). The first four soil aggregates (Explosives Handling Areas, Preparation and Receiving Areas, Packaging and Shipping Areas, and Changes Houses) represent physically separated groupings of operations facilities with fundamentally different functions (Figure 4-1). These four aggregates contain all known or potential primary contaminant source terms and are expected to exhibit substantially different types and levels of contaminants. Intervening land area between the former operational facilities is relegated to a Perimeter Area Aggregate, which is expected to exhibit low levels or no contamination. A number of predominantly dry drainage ditches was characterized during the RI. These conveyances contain water only during precipitation events or during snow melt, but represent potential accumulation points for contaminants entrained within historical discharges and runoff from source areas. Accordingly, dry sediment samples were assigned to their respective soil source area aggregate, if the conveyance was within the aggregate boundary. Several dry sediment samples were collected from drainage ditches located along the northern boundary of the load line, these were assigned to a separate soil aggregate (North Ditches Aggregate), as they are not associated with a particular source area (Figure 4-1).

Surface Water Streams and Ponds

Data characterizing the surface drainage system at Load Line 2, inclusive of streams and surface impoundments, were aggregated with respect to likelihood of contaminant accumulation and the potential for human use/contact and viability of ecological habitat. Using these criteria, surface water and sediment data from Kelly's Pond and the exit conveyances draining the pond are grouped as a separate aggregate. Characterization data from the North Ponds are grouped as a separate aggregate. A few miscellaneous water samples from ditch lines containing intermittent flow (primarily south of Building DB-802), but not considered as viable ecological habitat, are combined as the Miscellaneous Water Aggregate (Table 4-1).

Table 4-1. RVAPP Facility-Wide Background Criteria

Media Units Analyte	Surface Soil (mg/kg)	Subsurface Soil (mg/kg)	Sediment (mg/kg)	Surface Water (µg/L)	Groundwater Bedrock Zone Filtered (µg/L)	Groundwater Bedrock Zone Unfiltered (µg/L)	Groundwater Unconsolidated Zone Filtered (µg/L)	Groundwater Unconsolidated Zone Unfiltered (µg/L)
Cyanide	0	0	0	0	0	0	0	0
Aluminum	17,700	19,500	13,900	3,370	0	9,410	0	48,000
Antimony	0.96	0.96	0	0	0	0	0	4.3
Arsenic	15.4	19.8	19.5	3.2	0	19.1	11.7	215
Barium	88.4	124	123	47.5	256	241	82.1	327
Beryllium	0.88	0.88	0.38	0	0	0	0	0
Cadmium	0	0	0	0	0	0	0	0
Calcium	15,800	35,500	5,510	41,400	53,100	48,200	115,000	194,000
Chromium	17.4	27.2	18.1	0	0	19.5	7.3	85.2
Cobalt	10.4	23.2	9.1	0	0	0	0	46.3
Copper	17.7	32.3	27.6	7.9	0	17	0	289
Iron	23,100	35,200	28,200	2,560	1,430	21,500	279	195,000
Lead	26.1	19.1	27.4	0	0	23	0	183
Magnesium	3,030	8,790	2,760	10,800	15,000	13,700	43,300	58,400
Manganese	1,450	3,030	1,950	391	1,340	1,260	1,020	2,860
Mercury	0.036	0.044	0.059	0	0	0	0	0.25
Nickel	21.1	60.7	17.7	0	83.4	85.3	0	117
Potassium	927	3,350	1,950	3,170	5,770	6,060	2,890	7,480
Selenium	1.4	1.5	1.7	0	0	0	0	5.7
Silver	0	0	0	0	0	0	0	0
Sodium	123	145	112	21,300	51,400	49,700	45,700	44,700
Thallium	0	0.91	0.89	0	0	0	0	2.4
Vanadium	31.1	37.6	26.1	0	0	15.5	0	98.1
Zinc	61.8	93.3	532	42	52.3	193	60.9	888

RVAAP = Ravenna Army Ammunition Plant.

Table 4-2. Data Aggregates/Exposure Units for the Load Line 2 Phase II RI

Aggregate/Exposure Unit Name	Aggregate/Exposure Unit Basis
Surface and Subsurface Soil	
Explosives Handling Areas	Includes major explosives handling and processing facilities: DB-4/-4A, DB-6/-6A, carrier washout building, and DB-10. Includes dry sediment from station LL2-245 in central drainage ditch to south
Preparation and Receiving Areas	Includes Buildings DB-802, DB-3, powerhouse, ancillary buildings, and dry sediments in ditches southwest and southeast of DB-802
Packaging and Shipping Areas	Includes Buildings DB-13A/-13B/-13C and DB-26, and DB-27A, -27B, and -27C and surrounding areas
Change Houses	Potential future use for clean-hard fill disposal; separated from perimeter areas
Perimeter Area	Intervening land areas between source area aggregates
North Ditches	Dry sediment from several large drainage ditches along the north boundary of the load line. Not related to a specific source area
Sediment and Surface Water	
Kelly's Pond and Exit Drainages Sediment	Viable habitat and primary surface water contaminant accumulation area. Primary exit pathway from Load Line 2
Kelly's Pond and Exit Drainages Surface Water	Viable habitat and primary surface water contaminant accumulation area. Primary exit pathway from Load Line 2
North Ponds Sediment	Viable habitat and contaminant accumulation area
Miscellaneous Surface Water	Water from non-viable habitat areas (intermittent flow drainage ditches, etc.). Associated sediment samples are addressed as soil
Groundwater	
Groundwater Aggregate	All shallow groundwater within AOC
Storm and Sanitary Sewers	
Storm and Sanitary Sewer Sediment	All sediment accumulated within storm and sanitary sewer system
Storm and Sanitary Sewer Water	All water accumulated within storm and sanitary sewer system
Buildings and Structures	
Buildings and Structures Aggregate	Soil beneath floor slabs, sediment/sludge, and water from within sedimentation basins and washout basins
Ballast and Slag	
Ballast and Slag Samples	Separate data aggregate from soil. Nature and extent evaluation only

AOC = Area of Concern.
RI = Remedial Investigation.

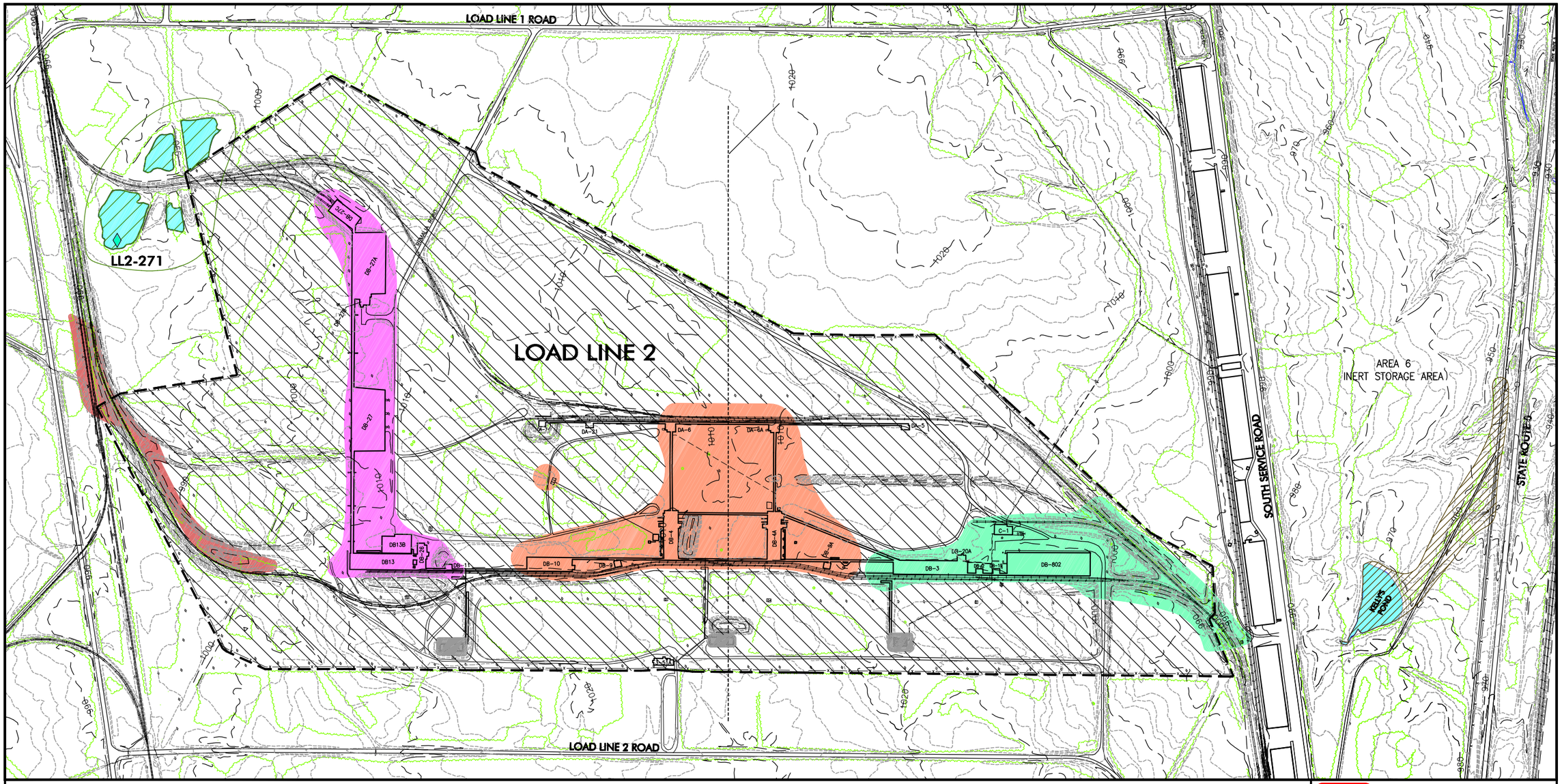


Figure 4-1. Soil, Sediment, and Surface Water Aggregates for Load Line 2

Groundwater

For this Phase II RI, groundwater media were not subdivided into spatial aggregates. All of the monitoring wells installed during the RI monitor the water table interval. Accordingly, no technical basis existed for aggregation at this point in the CERCLA process. Two previously installed wells located south of Load Line 2 (wells LL2mw-059 and -060) were sampled in 2000 and as part of Phase II RI characterization activities at Load Line 1. Both these 2000 data and data collected during the Load Line 2 Phase II RI are included in the aggregate.

Storm and Sanitary Sewers

The storm and sanitary sewer systems sampled during the Phase II RI represent potential accumulation points, as well as potential migration pathways throughout the load line. Additionally, sediments and water within the utility system are not evaluated under the conventional risk exposure scenarios applied to other environmental media within the load line (e.g., soil, surface water, stream sediment, or groundwater). Because of these considerations, the utility systems are evaluated in the nature and extent assessment as a separate aggregate.

Buildings and Structures

Samples of soil beneath building floor slabs, accumulated sediment/sludge and water within sedimentation and washout basins, and accumulated debris on floor surfaces (floor sweep samples) are considered as a separate data aggregate from other environmental media. These samples were collected primarily to support future building demolition activities (e.g., to identify waste management and safety issues). As with storm and sanitary sewer systems, these data are not evaluated under the conventional risk scenarios applied to other environmental media.

Ballast and Slag Samples

Three samples of rail ballast and slag material were collected from along Track DH to characterize whether these materials may be a potential source of inorganic contamination to soil. Samples of soil underlying the ballast material were collected for comparative purposes. The samples of ballast and slag material are not considered part of any soil aggregate because the physical form of the material (e.g., coarse rock) is not consistent with the soil exposure pathway assumptions for human or ecological receptors. Although these types of materials may require consideration as part of any future remedial actions, they are addressed separately consistent with samples collected from buildings and structures.

4.1.3 Data Reduction and Screening

4.1.3.1 Data reduction

More than 363 environmental soil, sediment, surface water, and field QC samples were collected with approximately 24,758 discrete analyses (i.e., analytes) being obtained, reviewed, and integrated into this RI. These totals do not include field measurements and field descriptions. Analytical results were reported by the laboratory in electronic format and loaded into a database. As discussed in Section 3.6, verification of data was performed to ensure all requested data were received and complete. Data use qualifiers were assigned to each result based on the laboratory QA review and verification criteria. Results were qualified as follows:

"U" Not detected.
"UJ" Not detected, detection limit estimated.

"J" Estimated concentration less than method reporting limits.
"R" Rejected result.
"=" Analyte present and concentration accurate.

In addition to assigning qualifiers, the verification process also selected the appropriate result to use when re-analyses or dilutions were performed. Where laboratory surrogate recovery data or laboratory QC samples were outside of analytical method specifications, a determination was made regarding whether laboratory re-analysis should be used in place of an original reported result. If results were reported for both diluted and undiluted samples, results from the diluted sample were used only for those analytes that exceeded the calibration range of the undiluted sample. A complete discussion of the results of the verification process is contained in the data quality summary report (Appendix H). Independent validation of 10% of the Phase II RI data and 100% of the USACE QA laboratory data is performed by a third-party subcontractor to the USACE, Louisville District. Additional qualification of the Phase II RI data may be required based on the results of the validation process.

The data reduction process employed to identify SRCs involved first calculating data summary statistics. Site data were extracted from the database such that QC splits and field duplicates were excluded from the screening datasets. Rejected results were excluded from the screening process. All analytes having at least one detected value were included in the data reduction process. Summary statistics calculated for each data aggregate (Tables 4-3 through 4-10) included the minimum, maximum, and average (mean) detected values and the proportion of detected results to the total number of samples collected. For calculation of mean detected values, nondetected results were addressed by using one-half of the reported detection limit during calculation of the mean result for each compound. Non-detected results with elevated detection limits (more than 5 times the contract-required detection limit) were excluded from the summary statistics in order not to skew the calculation of mean values.

Following data reduction, the data were screened to identify SRCs using the processes outlined in the following sections. Additional screening of identified SRCs was conducted as part of the fate and transport evaluation to identify constituents of potential migration concern (COPMCs) and as part of the risk assessments to identify human health and ecological chemicals of potential concern (COPCs) (see Chapters 6.0 and 7.0).

4.1.3.2 Frequency of detection screen

For sample aggregates containing more than 20 samples, a frequency of detection criterion was applied to identify SRCs. Inorganic constituents, VOCs, SVOCs, pesticides, and PCBs with a frequency of detection greater than or equal to 5% (e.g., 1 in 20 samples) were carried forward to the facility-wide background screening and essential human nutrient screening steps, as applicable. If the frequency of detection for an analyte in one of these classes was less than 5%, a weight of evidence (WOE) approach was used to determine if the chemical was a SRC. The WOE approach involved examining the magnitude and locations of the detected results. If no clustering within a particular area was noted and concentrations were not substantially elevated relative to the detection limits, the detected results were considered spurious, and the compound was eliminated as a SRC. For sample populations comprised of less than 20 samples, all detected constituents were carried forward to the facility-wide background and essential human nutrient screening steps, as applicable.

Table 4-3. Summary Statistics and Determination of SRCs in Load Line 2 Surface Soil

Contaminant	Freq. of Det.	Min. Det.	Max. Det.	Mean Conc.[a]	Dist.[b]	Background Conc.[c]	SRC?	Justification[d]
Change Houses Aggregate								
Metals (concentration units = mg/kg)								
Aluminum	4/ 4	4.1E+03	1.4E+04	7.7E+03	L	1.8E+04	No	Below background
Antimony	3/ 4	5.6E-01	1.2E+00	7.4E-01	X	9.6E-01	Yes	Above background
Arsenic	4/ 4	4.8E+00	1.4E+01	9.0E+00	L	1.5E+01	No	Below background
Barium	4/ 4	3.8E+01	6.9E+01	5.3E+01	X	8.8E+01	No	Below background
Cadmium	3/ 4	5.1E-01	1.5E+00	7.5E-01	L	0	Yes	Above background
Calcium	4/ 4	1.2E+03	1.7E+04	5.7E+03	L	1.6E+04	No	Essential element
Chromium	4/ 4	8.1E+00	2.0E+01	1.5E+01	L	1.7E+01	Yes	Above background
Cobalt	3/ 4	5.0E+00	1.1E+01	7.2E+00	N	1.0E+01	Yes	Above background
Copper	4/ 4	1.7E+01	2.5E+01	2.0E+01	L	1.8E+01	Yes	Above background
Iron	4/ 4	1.4E+04	2.7E+04	1.8E+04	L	2.3E+04	No	Essential element
Lead	4/ 4	1.7E+01	9.5E+01	5.8E+01	N	2.6E+01	Yes	Above background
Magnesium	4/ 4	9.2E+02	7.7E+03	3.0E+03	L	3.0E+03	No	Essential element
Manganese	4/ 4	3.0E+02	5.5E+02	3.9E+02	L	1.5E+03	No	Below background
Nickel	4/ 4	9.0E+00	2.7E+01	1.9E+01	L	2.1E+01	Yes	Above background
Potassium	4/ 4	6.4E+02	3.0E+03	1.5E+03	L	9.3E+02	No	Essential element
Selenium	1/ 4	6.4E-01	6.4E-01	3.9E-01	D	1.4E+00	No	Below background
Vanadium	4/ 4	7.4E+00	2.3E+01	1.4E+01	L	3.1E+01	No	Below background
Zinc	4/ 4	6.8E+01	2.6E+02	1.4E+02	L	6.2E+01	Yes	Above background
Explosives Handling Areas Aggregate								
Metals (concentration units = mg/kg)								
Aluminum	108/ 108	2.5E+03	2.5E+04	8.5E+03	X	1.8E+04	Yes	Above background
Antimony	12/ 78	3.3E-01	1.8E+02	3.2E+00	D	9.6E-01	Yes	Above background
Arsenic	108/ 108	2.1E+00	3.2E+01	1.1E+01	X	1.5E+01	Yes	Above background
Barium	108/ 108	1.5E+01	3.0E+02	7.4E+01	L	8.8E+01	Yes	Above background
Beryllium	56/ 78	2.8E-01	3.1E+00	6.0E-01	X	8.8E-01	Yes	Above background
Cadmium	78/ 108	5.0E-02	2.3E+01	1.2E+00	L	0	Yes	Above background
Calcium	78/ 78	5.6E+02	1.2E+05	1.4E+04	X	1.6E+04	No	Essential element
Chromium	108/ 108	4.4E+00	1.4E+02	1.7E+01	X	1.7E+01	Yes	Above background
Cobalt	78/ 78	1.5E+00	1.9E+01	7.5E+00	L	1.0E+01	Yes	Above background
Copper	78/ 78	4.0E+00	8.2E+01	2.3E+01	L	1.8E+01	Yes	Above background
Cyanide	5/ 18	1.0E-01	5.0E+00	5.5E-01	D	0	Yes	Above background
Iron	78/ 78	7.0E+03	5.6E+04	1.9E+04	X	2.3E+04	No	Essential element

Table 4-3. Summary Statistics and Determination of SRCs in Load Line 2 Surface Soil (continued)

Contaminant	Freq. of Det.	Min. Det.	Max. Det.	Mean Conc.[a]	Dist. [b]	Background Conc.[c]	SRC?	Justification[d]
Lead	108/ 108	4.2E+00	8.8E+02	1.0E+02	X	2.6E+01	Yes	Above background
Magnesium	78/ 78	5.5E+02	1.5E+04	2.9E+03	L	3.0E+03	No	Essential element
Manganese	108/ 108	3.9E+01	5.0E+03	5.5E+02	X	1.5E+03	Yes	Above background
Mercury	68/ 108	9.6E-03	9.9E-01	5.2E-02	X	3.6E-02	Yes	Above background
Nickel	78/ 78	4.6E+00	4.2E+01	1.9E+01	L	2.1E+01	Yes	Above background
Potassium	78/ 78	2.7E+02	2.4E+03	8.9E+02	L	9.3E+02	No	Essential element
Selenium	42/ 108	3.7E-01	3.3E+00	8.0E-01	D	1.4E+00	Yes	Above background
Silver	6/ 108	1.9E-01	1.5E+00	2.4E-01	D	0	Yes	Above background
Sodium	20/ 78	5.5E+01	6.5E+02	2.7E+02	D	1.2E+02	No	Essential element
Thallium	62/ 78	1.5E-01	7.6E+00	6.2E-01	X	0	Yes	Above background
Vanadium	78/ 78	5.2E+00	2.5E+01	1.3E+01	N	3.1E+01	No	Below background
Zinc	108/ 108	1.4E+01	8.9E+02	1.5E+02	X	6.2E+01	Yes	Above background
Organics-Total Organic Carbon (concentration units = mg/kg)								
Total Organic Carbon	1/ 1	9.0E+03	9.0E+03	9.0E+03	X	2.4E+04	No	Below background
Organics-Explosives (concentration units = mg/kg)								
1,3,5-Trinitrobenzene	14/ 72	9.4E-02	1.6E+02	3.4E+00	D	0	Yes	Above background
1,3-Dinitrobenzene	1/ 72	1.3E-01	1.3E-01	2.3E-01	D	0	Yes	Above background
2,4,6-Trinitrotoluene	52/ 72	5.5E-02	1.7E+04	4.5E+02	X	0	Yes	Above background
2,4-Dinitrotoluene	11/ 72	5.4E-02	5.0E+00	3.6E-01	D	0	Yes	Above background
2-Amino-4,6-Dinitrotoluene	16/ 33	1.5E-01	9.8E+00	8.8E+00	D	0	Yes	Above background
4-Amino-2,6-Dinitrotoluene	6/ 33	1.3E-01	1.9E+00	4.3E+01	D	0	Yes	Above background
HMX	7/ 72	6.7E-01	1.5E+03	2.3E+01	D	0	Yes	Above background
Nitrocellulose	5/ 7	2.3E+00	9.4E+01	2.8E+01	L	0	Yes	Above background
RDX	13/ 72	1.8E-01	9.8E+03	1.4E+02	D	0	Yes	Above background
Organics-Pesticide/PCB (concentration units = mg/kg)								
4,4'-DDD	1/ 20	1.2E-02	1.2E-02	5.4E-02	D	0	No	<= 5% detects
4,4'-DDE	9/ 20	3.9E-03	8.1E-02	6.6E-02	D	0	Yes	Above background
4,4'-DDT	6/ 20	6.4E-03	1.7E-01	6.9E-02	D	0	Yes	Above background
Aldrin	2/ 20	2.2E-03	2.4E-02	5.4E-02	D	0	Yes	Above background
Dieldrin	3/ 20	3.1E-03	2.7E-02	5.5E-02	D	0	Yes	Above background
Endrin	1/ 20	5.6E-03	5.6E-03	5.3E-02	D	0	No	<= 5% detects
Endrin Aldehyde	5/ 20	4.6E-03	1.2E-01	6.5E-02	D	0	Yes	Above background

Table 4-3. Summary Statistics and Determination of SRCs in Load Line 2 Surface Soil (continued)

Contaminant	Freq. of Det.	Min. Det.	Max. Det.	Mean Conc.[a]	Dist. [b]	Background Conc.[c]	SRC?	Justification[d]
Heptachlor	1/ 20	3.6E-02	3.6E-02	5.5E-02	D	0	No	<= 5% detects
Heptachlor Epoxide	1/ 20	4.2E-03	4.2E-03	5.3E-02	D	0	No	<= 5% detects
Lindane	1/ 20	4.8E-03	4.8E-03	5.3E-02	D	0	No	<= 5% detects
PCB-1254	40/ 70	3.7E-02	5.2E+00	5.6E-01	X	0	Yes	Above background
PCB-1260	10/ 70	4.2E-02	6.0E+00	2.8E-01	D	0	Yes	Above background
alpha-Chlordane	1/ 20	5.7E-01	5.7E-01	8.1E-02	D	0	No	<= 5% detects
beta-BHC	2/ 20	2.1E-03	4.7E-03	5.3E-02	D	0	Yes	Above background
gamma-Chlordane	4/ 20	2.4E-03	8.8E-02	5.8E-02	D	0	Yes	Above background
Organics-Semivolatile (concentration units = mg/kg)								
2-Methylnaphthalene	3/ 23	6.9E-02	1.7E-01	6.6E-01	D	0	Yes	Above background
4-Methylphenol	1/ 23	5.4E-02	5.4E-02	6.7E-01	D	0	No	<= 5% detects
Acenaphthene	1/ 23	7.4E-01	7.4E-01	6.9E-01	D	0	No	<= 5% detects
Anthracene	3/ 23	7.2E-02	1.9E+00	7.3E-01	D	0	Yes	Above background
Benz(*a*)anthracene	11/ 23	7.0E-02	2.9E+00	7.2E-01	D	0	Yes	Above background
Benzo(*a*)pyrene	10/ 23	6.3E-02	2.3E+00	7.1E-01	D	0	Yes	Above background
Benzo(*b*)fluoranthene	11/ 23	6.8E-02	6.6E-01	6.3E-01	D	0	Yes	Above background
Benzo(*g,h,i*)perylene	8/ 23	3.8E-02	1.1E+00	6.7E-01	D	0	Yes	Above background
Benzo(*k*)fluoranthene	10/ 23	6.1E-02	3.2E+00	7.4E-01	D	0	Yes	Above background
Benzoic Acid	1/ 14	2.4E-01	2.4E-01	4.4E+00	D	0	Yes	Above background
Bis(2-ethylhexyl)phthalate	3/ 23	8.1E-02	1.9E-01	6.6E-01	D	0	Yes	Above background
Butyl benzyl phthalate	3/ 23	8.4E-02	8.1E-01	6.8E-01	D	0	Yes	Above background
Carbazole	1/ 23	1.2E+00	1.2E+00	7.1E-01	D	0	No	<= 5% detects
Chrysene	13/ 23	7.1E-02	2.7E+00	7.2E-01	X	0	Yes	Above background
Di-n-butyl phthalate	3/ 23	6.8E-02	1.1E-01	6.5E-01	D	0	Yes	Above background
Dibenz(*a,h*)anthracene	2/ 23	4.8E-02	7.2E-01	6.8E-01	D	0	Yes	Above background
Dibenzofuran	1/ 23	5.4E-01	5.4E-01	6.8E-01	D	0	No	<= 5% detects
Fluoranthene	13/ 23	1.0E-01	7.7E+00	9.8E-01	X	0	Yes	Above background
Fluorene	1/ 23	9.1E-01	9.1E-01	7.0E-01	D	0	No	<= 5% detects
Indeno(1,2,3-*cd*)pyrene	6/ 23	9.6E-02	1.3E+00	6.9E-01	D	0	Yes	Above background
Naphthalene	3/ 23	6.0E-02	2.7E-01	6.6E-01	D	0	Yes	Above background
Phenanthrene	11/ 23	5.7E-02	6.4E+00	8.9E-01	D	0	Yes	Above background
Pyrene	13/ 23	8.2E-02	5.0E+00	8.6E-01	X	0	Yes	Above background

Table 4-3. Summary Statistics and Determination of SRCs in Load Line 2 Surface Soil (continued)

Contaminant	Freq. of Det.	Min. Det.	Max. Det.	Mean Conc.[a]	Dist.[b]	Background Conc.[c]	SRC?	Justification[d]
Organics-Volatile (concentration units = mg/kg)								
Acetone	1/ 24	6.5E-03	6.5E-03	6.6E-02	D	0	No	<= 5% detects
Chloroform	5/ 24	2.0E-03	3.0E-03	1.7E-02	D	0	Yes	Above background
Toluene	8/ 24	5.6E-03	3.7E+00	1.6E-01	D	0	Yes	Above background
North Ditches Aggregate								
Metals (concentration units = mg/kg)								
Aluminum	4/ 4	7.7E+03	1.0E+04	9.1E+03	N	1.8E+04	No	Below background
Antimony	1/ 3	4.8E+00	4.8E+00	2.1E+00	D	9.6E-01	Yes	Above background
Arsenic	4/ 4	6.4E+00	1.5E+01	1.0E+01	L	1.5E+01	No	Below background
Barium	4/ 4	5.8E+01	6.9E+01	6.5E+01	N	8.8E+01	No	Below background
Beryllium	2/ 3	6.0E-01	6.2E-01	5.0E-01	N	8.8E-01	No	Below background
Cadmium	2/ 4	9.5E-02	4.8E-01	2.4E-01	L	0	Yes	Above background
Calcium	3/ 3	1.0E+03	3.0E+03	1.8E+03	L	1.6E+04	No	Essential element
Chromium	4/ 4	1.1E+01	1.2E+01	1.2E+01	L	1.7E+01	No	Below background
Cobalt	3/ 3	8.6E+00	9.8E+00	9.1E+00	L	1.0E+01	No	Below background
Copper	3/ 3	1.3E+01	1.7E+01	1.4E+01	L	1.8E+01	No	Below background
Iron	3/ 3	1.6E+04	2.3E+04	2.0E+04	X	2.3E+04	No	Essential element
Lead	4/ 4	1.4E+01	2.5E+01	1.7E+01	L	2.6E+01	No	Below background
Magnesium	3/ 3	1.7E+03	2.2E+03	1.9E+03	L	3.0E+03	No	Essential element
Manganese	4/ 4	2.8E+02	8.8E+02	6.2E+02	N	1.5E+03	No	Below background
Mercury	3/ 4	1.6E-02	5.8E-02	3.0E-02	L	3.6E-02	Yes	Above background
Nickel	3/ 3	1.6E+01	2.2E+01	2.0E+01	N	2.1E+01	Yes	Above background
Potassium	3/ 3	6.7E+02	7.7E+02	7.0E+02	X	9.3E+02	No	Essential element
Selenium	2/ 4	3.8E-01	6.1E-01	9.4E-01	L	1.4E+00	No	Below background
Thallium	3/ 3	2.6E-01	3.4E-01	2.9E-01	L	0	Yes	Above background
Vanadium	3/ 3	1.4E+01	1.7E+01	1.6E+01	N	3.1E+01	No	Below background
Zinc	4/ 4	8.1E+01	9.6E+01	8.6E+01	L	6.2E+01	Yes	Above background
Organics-Total Organic Carbon (concentration units = mg/kg)								
Total Organic Carbon	2/ 2	3.4E+03	4.7E+03	4.0E+03	N	2.4E+04	No	Below background
Organics-Explosives (concentration units = mg/kg)								
2,4,6-Trinitrotoluene	1/ 2	5.1E-02	5.1E-02	8.8E-02	N	0	Yes	Above background
Organics-Volatile (concentration units = mg/kg)								
Acetone	2/ 2	3.0E-03	2.0E-02	1.2E-02	N	0	Yes	Above background

Table 4-3. Summary Statistics and Determination of SRCs in Load Line 2 Surface Soil (continued)

Contaminant	Freq. of Det.	Min. Det.	Max. Det.	Mean Conc.[a]	Dist.[b]	Background Conc.[c]	SRC?	Justification[d]
Packaging and Shipping Areas Aggregate								
Metals (concentration units = mg/kg)								
Aluminum	25/ 25	3.3E+03	2.6E+04	1.0E+04	L	1.8E+04	Yes	Above background
Antimony	3/ 22	6.8E-01	6.0E+01	3.3E+00	D	9.6E-01	Yes	Above background
Arsenic	25/ 25	3.1E+00	4.9E+01	1.3E+01	L	1.5E+01	Yes	Above background
Barium	25/ 25	2.9E+01	9.0E+02	1.1E+02	X	8.8E+01	Yes	Above background
Beryllium	20/ 24	3.5E-01	4.2E+00	9.0E-01	L	8.8E-01	Yes	Above background
Cadmium	10/ 25	1.8E-01	1.7E+01	1.2E+00	D	0	Yes	Above background
Calcium	24/ 24	2.3E+02	1.1E+05	1.8E+04	L	1.6E+04	No	Essential element
Chromium	25/ 25	4.7E+00	2.2E+02	2.4E+01	X	1.7E+01	Yes	Above background
Cobalt	24/ 24	2.6E+00	1.5E+01	6.6E+00	L	1.0E+01	Yes	Above background
Copper	24/ 24	7.2E+00	1.4E+02	2.5E+01	X	1.8E+01	Yes	Above background
Iron	24/ 24	8.7E+03	6.0E+04	2.1E+04	L	2.3E+04	No	Essential element
Lead	25/ 25	9.6E+00	1.2E+03	1.1E+02	X	2.6E+01	Yes	Above background
Magnesium	24/ 24	7.6E+02	2.1E+04	3.9E+03	L	3.0E+03	No	Essential element
Manganese	25/ 25	2.5E+02	7.5E+03	1.1E+03	L	1.5E+03	Yes	Above background
Mercury	22/ 25	9.9E-03	1.8E-01	4.6E-02	L	3.6E-02	Yes	Above background
Nickel	24/ 24	6.7E+00	5.2E+01	1.5E+01	X	2.1E+01	Yes	Above background
Potassium	23/ 24	2.9E+02	1.6E+03	7.3E+02	L	9.3E+02	No	Essential element
Selenium	14/ 25	3.7E-01	1.2E+00	1.2E+00	X	1.4E+00	No	Below background
Silver	9/ 25	1.7E-01	1.8E+01	2.3E+00	D	0	Yes	Above background
Sodium	5/ 24	7.8E+01	5.4E+02	2.6E+02	D	1.2E+02	No	Essential element
Thallium	15/ 24	1.7E-01	9.9E-01	4.0E-01	L	0	Yes	Above background
Vanadium	24/ 24	5.1E+00	2.5E+01	1.4E+01	N	3.1E+01	No	Below background
Zinc	25/ 25	2.1E+01	7.0E+02	1.4E+02	X	6.2E+01	Yes	Above background
Organics-Explosives (concentration units = mg/kg)								
2,4,6-Trinitrotoluene	6/ 7	5.3E-02	2.6E+00	5.7E-01	L	0	Yes	Above background
2-Amino-4,6-Dinitrotoluene	2/ 6	1.2E-01	1.6E-01	1.3E-01	D	0	Yes	Above background
4-Amino-2,6-Dinitrotoluene	2/ 6	1.9E-01	2.3E-01	1.5E-01	D	0	Yes	Above background
HMX	1/ 7	6.5E-01	6.5E-01	4.1E-01	D	0	Yes	Above background
RDX	1/ 7	2.8E-01	2.8E-01	2.9E-01	D	0	Yes	Above background
Organics-Pesticide/PCB (concentration units = mg/kg)								
PCB-1254	7/ 23	8.0E-02	9.5E+00	6.3E-01	D	0	Yes	Above background
PCB-1260	3/ 23	5.3E-02	1.3E-01	1.3E-01	D	0	Yes	Above background

Table 4-3. Summary Statistics and Determination of SRCs in Load Line 2 Surface Soil (continued)

Contaminant	Freq. of Det.	Min. Det.	Max. Det.	Mean Conc.[a]	Dist.[b]	Background Conc.[c]	SRC?	Justification[d]
Organics-Semivolatile (concentration units = mg/kg)								
Acenaphthene	1/ 7	1.1E+00	1.1E+00	3.2E-01	D	0	Yes	Above background
Anthracene	2/ 7	7.4E-02	6.9E-01	2.5E-01	D	0	Yes	Above background
Benz(*a*)anthracene	3/ 7	1.1E-01	7.2E-01	2.5E-01	D	0	Yes	Above background
Benzo(*a*)pyrene	3/ 7	1.3E-01	4.1E-01	2.1E-01	D	0	Yes	Above background
Benzo(*b*)fluoranthene	4/ 7	7.8E-02	6.1E-01	2.5E-01	L	0	Yes	Above background
Benzo(*g,h,i*)perylene	3/ 7	9.8E-02	1.7E-01	1.7E-01	D	0	Yes	Above background
Benzo(*k*)fluoranthene	3/ 7	9.8E-02	3.4E-01	1.9E-01	D	0	Yes	Above background
Benzoic Acid	1/ 7	2.4E-01	2.4E-01	8.3E-01	D	0	Yes	Above background
Carbazole	1/ 7	3.7E-01	3.7E-01	2.2E-01	D	0	Yes	Above background
Chrysene	5/ 7	5.6E-02	5.9E-01	2.3E-01	L	0	Yes	Above background
Di-n-butyl phthalate	1/ 7	1.6E-01	1.6E-01	1.9E-01	D	0	Yes	Above background
Dibenz(a,h)anthracene	1/ 7	6.6E-02	6.6E-02	1.7E-01	D	0	Yes	Above background
Dibenzofuran	1/ 7	7.7E-01	7.7E-01	2.7E-01	D	0	Yes	Above background
Fluoranthene	5/ 7	8.6E-02	4.2E+00	7.8E-01	X	0	Yes	Above background
Fluorene	1/ 7	1.4E+00	1.4E+00	3.6E-01	D	0	Yes	Above background
Indeno(1,2,3-*cd*)pyrene	3/ 7	8.7E-02	1.7E-01	1.7E-01	D	0	Yes	Above background
Phenanthrene	3/ 7	1.0E-01	4.6E+00	8.1E-01	D	0	Yes	Above background
Pyrene	5/ 7	7.1E-02	3.3E+00	6.4E-01	X	0	Yes	Above background
Organics-Volatile (concentration units = mg/kg)								
Toluene	2/ 8	1.6E-03	3.7E-03	2.9E-03	D	0	Yes	Above background
Perimeter Area Aggregate								
Metals (concentration units = mg/kg)								
Aluminum	34/ 34	2.8E+03	2.1E+04	1.1E+04	N	1.8E+04	Yes	Above background
Antimony	2/ 27	7.8E-01	8.1E+03	3.0E+02	D	9.6E-01	Yes	Above background
Arsenic	34/ 34	5.5E+00	3.7E+01	1.2E+01	L	1.5E+01	Yes	Above background
Barium	34/ 34	1.5E+01	1.1E+03	1.0E+02	X	8.8E+01	Yes	Above background
Beryllium	23/ 27	3.2E-01	2.9E+00	7.0E-01	L	8.8E-01	Yes	Above background
Cadmium	23/ 33	5.6E-02	4.8E+00	5.0E-01	X	0	Yes	Above background
Calcium	27/ 27	1.5E+02	9.7E+04	5.2E+03	X	1.6E+04	No	Essential element
Chromium	34/ 34	4.0E+00	4.0E+03	1.3E+02	X	1.7E+01	Yes	Above background
Cobalt	27/ 27	3.1E+00	1.2E+02	1.3E+01	X	1.0E+01	Yes	Above background
Copper	27/ 27	4.0E+00	7.2E+02	4.3E+01	X	1.8E+01	Yes	Above background

Table 4-3. Summary Statistics and Determination of SRCs in Load Line 2 Surface Soil (continued)

Contaminant	Freq. of Det.	Min. Det.	Max. Det.	Mean Conc.[a]	Dist.[b]	Background Conc.[c]	SRC?	Justification[d]
Iron	27/ 27	1.0E+04	3.6E+04	2.0E+04	N	2.3E+04	No	Essential element
Lead	34/ 34	8.8E+00	2.5E+04	7.5E+02	X	2.6E+01	Yes	Above background
Magnesium	27/ 27	8.0E+02	1.4E+04	2.6E+03	X	3.0E+03	No	Essential element
Manganese	34/ 34	1.3E+02	2.9E+03	7.3E+02	L	1.5E+03	Yes	Above background
Mercury	27/ 34	1.4E-02	2.8E+00	1.2E-01	X	3.6E-02	Yes	Above background
Nickel	27/ 27	5.7E+00	3.5E+01	1.6E+01	L	2.1E+01	Yes	Above background
Potassium	27/ 27	2.3E+02	2.0E+03	6.9E+02	L	9.3E+02	No	Essential element
Selenium	20/ 34	3.7E-01	4.0E+00	9.7E-01	X	1.4E+00	Yes	Above background
Sodium	2/ 27	1.9E+02	2.1E+02	3.1E+02	D	1.2E+02	No	Essential element
Thallium	15/ 27	3.0E-01	9.3E-01	3.5E-01	L	0	Yes	Above background
Vanadium	27/ 27	5.2E+00	2.9E+01	1.9E+01	N	3.1E+01	No	Below background
Zinc	34/ 34	3.5E+01	9.0E+02	8.6E+01	X	6.2E+01	Yes	Above background
Organics-Total Organic Carbon (concentration units = mg/kg)								
Total Organic Carbon	2/ 2	5.3E+03	8.9E+03	7.1E+03	N	2.4E+04	No	Below background
Organics-Explosives (concentration units = mg/kg)								
2,4,6-Trinitrotoluene	5/ 10	4.7E-02	3.6E+03	3.6E+02	X	0	Yes	Above background
2,4-Dinitrotoluene	2/ 10	5.1E-01	4.0E+00	5.5E-01	D	0	Yes	Above background
2,6-Dinitrotoluene	1/ 10	2.9E-01	2.9E-01	3.9E-01	D	0	Yes	Above background
2-Amino-4,6-Dinitrotoluene	1/ 5	5.8E-01	5.8E-01	1.2E+01	D	0	Yes	Above background
Nitrocellulose	1/ 1	4.2E+03	4.2E+03	4.2E+03	X	0	Yes	Above background
RDX	1/ 10	1.6E+00	1.6E+00	5.1E-01	D	0	Yes	Above background
Organics-Pesticide/PCB (concentration units = mg/kg)								
4,4'-DDE	1/ 2	3.3E-03	3.3E-03	2.1E-03	N	0	Yes	Above background
Dieldrin	1/ 2	3.2E-03	3.2E-03	2.1E-03	N	0	Yes	Above background
PCB-1254	4/ 12	5.1E-02	5.7E+00	6.8E-01	D	0	Yes	Above background
alpha-Chlordane	1/ 2	8.3E-03	8.3E-03	4.6E-03	N	0	Yes	Above background
beta-BHC	2/ 2	2.2E-03	4.0E-03	3.1E-03	N	0	Yes	Above background
Organics-Semivolatile (concentration units = mg/kg)								
Benzoic Acid	1/ 2	1.5E-01	1.5E-01	5.3E-01	N	0	Yes	Above background
Fluoranthene	1/ 2	6.8E-02	6.8E-02	1.3E-01	N	0	Yes	Above background
Preparation and Receiving Areas Aggregate								
Metals (concentration units = mg/kg)								
Aluminum	35/ 35	2.5E+03	2.2E+04	9.1E+03	X	1.8E+04	Yes	Above background

Table 4-3. Summary Statistics and Determination of SRCs in Load Line 2 Surface Soil (continued)

Contaminant	Freq. of Det.	Min. Det.	Max. Det.	Mean Conc.[a]	Dist.[b]	Background Conc.[c]	SRC?	Justification[d]
Antimony	14/ 34	5.5E-01	6.6E+02	2.9E+01	D	9.6E-01	Yes	Above background
Arsenic	35/ 35	3.6E+00	3.9E+01	1.2E+01	L	1.5E+01	Yes	Above background
Barium	35/ 35	1.3E+01	8.1E+02	1.3E+02	X	8.8E+01	Yes	Above background
Beryllium	25/ 31	3.1E-01	2.6E+00	8.3E-01	L	8.8E-01	Yes	Above background
Cadmium	21/ 32	5.9E-02	5.0E+01	4.0E+00	X	0	Yes	Above background
Calcium	34/ 34	3.1E+02	1.5E+05	1.9E+04	L	1.6E+04	No	Essential element
Chromium	35/ 35	4.3E+00	1.9E+03	1.3E+02	X	1.7E+01	Yes	Above background
Chromium, hexavalent	1/ 13	8.2E+01	8.2E+01	7.0E+00	D	0	Yes	Above background
Cobalt	34/ 34	3.0E+00	2.5E+01	1.0E+01	L	1.0E+01	Yes	Above background
Copper	34/ 34	6.6E+00	3.3E+03	2.3E+02	X	1.8E+01	Yes	Above background
Cyanide	3/ 7	1.4E-01	4.0E-01	2.3E-01	D	0	Yes	Above background
Iron	34/ 34	1.1E+04	2.5E+05	3.4E+04	X	2.3E+04	No	Essential element
Lead	35/ 35	7.3E+00	6.9E+03	5.6E+02	X	2.6E+01	Yes	Above background
Magnesium	34/ 34	8.0E+02	2.2E+04	3.7E+03	X	3.0E+03	No	Essential element
Manganese	35/ 35	1.7E+02	2.3E+03	7.1E+02	L	1.5E+03	Yes	Above background
Mercury	30/ 34	1.1E-02	2.4E+00	2.5E-01	X	3.6E-02	Yes	Above background
Nickel	34/ 34	8.4E+00	1.4E+02	3.0E+01	X	2.1E+01	Yes	Above background
Potassium	34/ 34	2.4E+02	1.5E+03	8.2E+02	N	9.3E+02	No	Essential element
Selenium	15/ 35	4.1E-01	5.2E+00	1.4E+00	D	1.4E+00	Yes	Above background
Silver	7/ 35	2.0E-01	3.1E+00	4.3E-01	D	0	Yes	Above background
Sodium	13/ 34	9.8E+01	5.7E+02	2.9E+02	D	1.2E+02	No	Essential element
Thallium	29/ 34	1.5E-01	4.2E+00	7.1E-01	L	0	Yes	Above background
Vanadium	34/ 34	4.7E+00	3.0E+01	1.6E+01	L	3.1E+01	No	Below background
Zinc	35/ 35	3.0E+01	7.3E+03	6.0E+02	X	6.2E+01	Yes	Above background
Organics-Total Organic Carbon (concentration units = mg/kg)								
Total Organic Carbon	5/ 5	3.0E+03	3.9E+04	1.8E+04	N	2.4E+04	Yes	Above background
Organics-Explosives (concentration units = mg/kg)								
1,3-Dinitrobenzene	1/ 21	4.5E-02	4.5E-02	1.2E-01	D	0	Yes	Above background
2,4,6-Trinitrotoluene	6/ 21	1.6E-01	1.2E+00	2.8E-01	D	0	Yes	Above background
2,4-Dinitrotoluene	1/ 21	4.9E-02	4.9E-02	1.2E-01	D	0	Yes	Above background
2-Amino-4,6-Dinitrotoluene	1/ 16	3.4E-01	3.4E-01	1.4E-01	D	0	Yes	Above background
4-Amino-2,6-Dinitrotoluene	2/ 16	2.2E-01	4.8E-01	1.7E-01	D	0	Yes	Above background
Nitrocellulose	2/ 2	6.8E+00	7.2E+00	7.0E+00	N	0	Yes	Above background

Table 4-3. Summary Statistics and Determination of SRCs in Load Line 2 Surface Soil (continued)

Contaminant	Freq. of Det.	Min. Det.	Max. Det.	Mean Conc.[a]	Dist.[b]	Background Conc.[c]	SRC?	Justification[d]
Organics-Pesticide/PCB (concentration units = mg/kg)								
4,4'-DDE	6/ 9	4.0E-03	8.8E-01	1.2E-01	L	0	Yes	Above background
4,4'-DDT	2/ 9	6.2E-03	3.7E-01	4.5E-02	D	0	Yes	Above background
Dieldrin	2/ 9	1.1E-02	2.9E-01	3.7E-02	D	0	Yes	Above background
Endrin Aldehyde	2/ 9	1.4E-02	6.5E-01	7.7E-02	D	0	Yes	Above background
PCB-1254	13/ 32	3.8E-02	5.9E+01	3.9E+00	D	0	Yes	Above background
PCB-1260	3/ 32	7.9E-02	5.2E-01	5.6E-01	D	0	Yes	Above background
beta-BHC	3/ 9	5.3E-03	3.6E-01	4.5E-02	D	0	Yes	Above background
delta-BHC	1/ 9	2.2E-03	2.2E-03	8.6E-03	D	0	Yes	Above background
gamma-Chlordane	2/ 9	7.0E-03	4.6E-01	5.5E-02	D	0	Yes	Above background
Organics-Semivolatile (concentration units = mg/kg)								
2-Methylnaphthalene	6/ 17	1.4E-01	4.5E+00	4.6E-01	D	0	Yes	Above background
Acenaphthene	4/ 17	1.0E-01	1.7E+00	4.7E-01	D	0	Yes	Above background
Acenaphthylene	4/ 17	9.3E-02	1.8E-01	3.7E-01	D	0	Yes	Above background
Anthracene	5/ 17	8.0E-02	5.6E+00	7.4E-01	D	0	Yes	Above background
Benz(*a*)anthracene	10/ 17	5.2E-02	1.0E+01	1.1E+00	X	0	Yes	Above background
Benzo(*a*)pyrene	11/ 17	5.9E-02	9.9E+00	1.1E+00	L	0	Yes	Above background
Benzo(*b*)fluoranthene	12/ 17	4.3E-02	1.1E+01	1.3E+00	L	0	Yes	Above background
Benzo(*g,h,i*)perylene	11/ 17	4.5E-02	4.6E+00	7.6E-01	L	0	Yes	Above background
Benzo(*k*)fluoranthene	9/ 17	5.4E-02	6.7E+00	9.5E-01	X	0	Yes	Above background
Benzoic Acid	3/ 13	3.3E-01	5.0E-01	2.0E+00	D	0	Yes	Above background
Butyl benzyl phthalate	2/ 17	6.5E-02	1.3E-01	3.7E-01	D	0	Yes	Above background
Carbazole	5/ 17	6.2E-02	1.3E+00	4.6E-01	D	0	Yes	Above background
Chrysene	12/ 17	6.0E-02	1.1E+01	1.2E+00	L	0	Yes	Above background
Di-n-butyl phthalate	5/ 17	1.1E-01	2.7E-01	3.9E-01	D	0	Yes	Above background
Dibenz(*a,h*)anthracene	5/ 17	1.1E-01	1.3E+00	4.5E-01	D	0	Yes	Above background
Dibenzofuran	5/ 17	5.8E-02	1.0E+00	4.3E-01	D	0	Yes	Above background
Fluoranthene	14/ 17	3.9E-02	2.4E+01	2.4E+00	L	0	Yes	Above background
Fluorene	4/ 17	2.1E-01	2.2E+00	5.3E-01	D	0	Yes	Above background
Indeno(1,2,3-*cd*)pyrene	9/ 17	4.9E-02	5.1E+00	7.8E-01	L	0	Yes	Above background
Naphthalene	7/ 17	6.5E-02	2.6E+00	3.4E-01	D	0	Yes	Above background
Pentachlorophenol	1/ 17	3.5E-01	3.5E-01	4.5E-01	D	0	Yes	Above background

Table 4-3. Summary Statistics and Determination of SRCs in Load Line 2 Surface Soil (continued)

Contaminant	Freq. of Det.	Min. Det.	Max. Det.	Mean Conc.[a]	Dist. [b]	Background Conc.[c]	SRC?	Justification[d]
Phenanthrene	11/ 17	5.6E-02	1.8E+01	1.9E+00	L	0	Yes	Above background
Pyrene	13/ 17	7.0E-02	2.3E+01	2.5E+00	X	0	Yes	Above background
Organics-Volatile (concentration units = mg/kg)								
2-Butanone	1/ 15	1.2E-02	1.2E-02	9.5E-03	D	0	Yes	Above background
Acetone	1/ 13	3.8E-02	3.8E-02	1.3E-02	D	0	Yes	Above background
Carbon Disulfide	1/ 15	4.7E-03	4.7E-03	3.0E-03	D	0	Yes	Above background
Toluene	6/ 15	7.4E-04	5.6E-02	1.0E-02	D	0	Yes	Above background

[a] One-half of the detection limit was used as a surrogate value for nondetects in the calculation of summary statistics.
[b] Distribution: D = Fewer than 50% detected - distribution not determined; L = Lognormal distribution; N = Normal distribution; X = Neither normal nor lognormal.
[c] Background criteria were set to zero for all organics and inorganics that were not detected in the background dataset.
[d] The essential nutrient screen was not applied for the ecological risk assessment.
BHC = Benzene hexachloride.
DDD = Dichlorodiphenyldichloroethane.
DDE = Dichlorodiphenyldichloroethylene.
DDT = Dichlorodiphenyltrichloroethane.
HMX = Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine.
PCB = Polychlorinated biphenyl.
RDX = Hexahydro-1,3,5-trinitro-1,3,5-triazine.
SRC = Site-related contaminant.

Table 4-4. Summary Statistics and Determination of SRCs in Load Line 2 Subsurface Soil

Contaminant	Freq. of Det.	Min. Det.	Max. Det.	Mean Conc.[a]	Dist. [b]	Background Conc.[c]	SRC?	Justification[d]
Explosives Handling Areas Aggregate								
Metals (concentration units = mg/kg)								
Aluminum	15/ 15	8.3E+03	2.3E+04	1.1E+04	X	2.0E+04	Yes	Above background
Antimony	2/ 15	1.1E+00	2.0E+01	1.9E+00	D	9.6E-01	Yes	Above background
Arsenic	15/ 15	4.1E+00	2.2E+01	1.3E+01	N	2.0E+01	Yes	Above background
Barium	15/ 15	3.4E+01	2.9E+02	8.2E+01	X	1.2E+02	Yes	Above background
Beryllium	12/ 15	4.7E-01	3.1E+00	7.1E-01	X	8.8E-01	Yes	Above background
Cadmium	9/ 15	1.3E-01	3.3E+00	5.0E-01	L	0	Yes	Above background
Calcium	15/ 15	1.2E+03	1.2E+05	1.2E+04	X	3.6E+04	No	Essential element
Chromium	15/ 15	1.1E+01	1.1E+02	2.1E+01	X	2.7E+01	Yes	Above background
Cobalt	15/ 15	2.0E+00	1.7E+01	9.8E+00	N	2.3E+01	No	Below background
Copper	15/ 15	5.7E+00	2.4E+01	1.8E+01	X	3.2E+01	No	Below background
Iron	15/ 15	1.2E+04	3.2E+04	2.4E+04	X	3.5E+04	No	Essential element
Lead	15/ 15	1.2E+01	7.5E+02	7.1E+01	X	1.9E+01	Yes	Above background
Magnesium	15/ 15	1.0E+03	1.4E+04	3.6E+03	L	8.8E+03	No	Essential element
Manganese	15/ 15	7.3E+01	2.8E+03	5.5E+02	L	3.0E+03	No	Below background
Mercury	10/ 13	1.2E-02	7.1E+00	5.7E-01	X	4.4E-02	Yes	Above background
Nickel	15/ 15	6.8E+00	5.6E+01	2.4E+01	L	6.1E+01	No	Below background
Potassium	15/ 15	6.1E+02	1.3E+03	9.1E+02	L	3.4E+03	No	Essential element
Selenium	5/ 15	4.0E-01	1.1E+00	9.3E-01	D	1.5E+00	No	Below background
Sodium	1/ 15	3.1E+02	3.1E+02	3.0E+02	D	1.5E+02	No	Essential element
Thallium	14/ 15	1.9E-01	5.4E-01	3.6E-01	N	9.1E-01	No	Below background
Vanadium	15/ 15	1.1E+01	2.0E+01	1.6E+01	N	3.8E+01	No	Below background
Zinc	15/ 15	3.8E+01	1.6E+02	6.9E+01	L	9.3E+01	Yes	Above background
Organics-Explosives (concentration units = mg/kg)								
1,3,5-Trinitrobenzene	6/ 8	9.3E-02	2.4E+00	5.5E-01	L	0	Yes	Above background
1,3-Dinitrobenzene	1/ 8	5.4E-02	5.4E-02	4.3E-01	D	0	Yes	Above background
2,4,6-Trinitrotoluene	8/ 8	5.8E+00	1.6E+03	2.4E+02	L	0	Yes	Above background
2,4-Dinitrotoluene	4/ 8	5.5E-02	2.1E+00	4.3E-01	L	0	Yes	Above background
2,6-Dinitrotoluene	1/ 8	1.0E-01	1.0E-01	5.3E-01	D	0	Yes	Above background
2-Amino-4,6-Dinitrotoluene	6/ 8	1.4E-01	5.1E+00	2.3E+00	N	0	Yes	Above background
4-Amino-2,6-Dinitrotoluene	1/ 8	4.8E+00	4.8E+00	5.8E+00	D	0	Yes	Above background
RDX	3/ 8	2.4E-01	2.9E-01	8.8E-01	D	0	Yes	Above background

Table 4-4. Summary Statistics and Determination of SRCs in Load Line 2 Subsurface Soil (continued)

Contaminant	Freq. of Det.	Min. Det.	Max. Det.	Mean Conc.[a]	Dist. [b]	Background Conc.[c]	SRC?	Justification[d]
Packaging and Shipping Areas Aggregate								
Metals (concentration units = mg/kg)								
Aluminum	4/ 4	1.2E+04	1.4E+04	1.3E+04	N	2.0E+04	No	Below background
Antimony	1/ 4	2.2E+01	2.2E+01	6.0E+00	D	9.6E-01	Yes	Above background
Arsenic	4/ 4	1.0E+01	2.3E+01	1.5E+01	L	2.0E+01	Yes	Above background
Barium	4/ 4	6.5E+01	2.3E+02	1.1E+02	X	1.2E+02	Yes	Above background
Beryllium	4/ 4	5.2E-01	1.4E+00	8.4E-01	L	8.8E-01	Yes	Above background
Cadmium	2/ 4	2.6E-01	8.5E+00	2.3E+00	X	0	Yes	Above background
Calcium	4/ 4	3.7E+02	3.8E+04	1.0E+04	L	3.6E+04	No	Essential element
Chromium	4/ 4	1.3E+01	1.7E+02	5.4E+01	X	2.7E+01	Yes	Above background
Cobalt	4/ 4	8.6E+00	1.2E+01	9.9E+00	L	2.3E+01	No	Below background
Copper	4/ 4	1.1E+01	1.2E+02	4.5E+01	L	3.2E+01	Yes	Above background
Iron	4/ 4	1.9E+04	5.4E+04	3.2E+04	L	3.5E+04	No	Essential element
Lead	4/ 4	1.5E+01	1.5E+03	3.9E+02	X	1.9E+01	Yes	Above background
Magnesium	4/ 4	1.6E+03	6.0E+03	3.4E+03	L	8.8E+03	No	Essential element
Manganese	4/ 4	2.3E+02	1.5E+03	5.9E+02	L	3.0E+03	No	Below background
Mercury	4/ 4	2.4E-02	7.9E-02	4.4E-02	L	4.4E-02	Yes	Above background
Nickel	4/ 4	1.3E+01	4.8E+01	2.6E+01	L	6.1E+01	No	Below background
Potassium	4/ 4	5.4E+02	1.2E+03	8.8E+02	N	3.4E+03	No	Essential element
Selenium	1/ 4	6.2E-01	6.2E-01	1.1E+00	D	1.5E+00	No	Below background
Silver	1/ 4	1.5E+00	1.5E+00	6.1E-01	D	0	Yes	Above background
Sodium	1/ 4	1.6E+02	1.6E+02	2.7E+02	D	1.5E+02	No	Essential element
Thallium	4/ 4	3.0E-01	5.1E-01	4.1E-01	N	9.1E-01	No	Below background
Vanadium	4/ 4	1.6E+01	2.4E+01	2.1E+01	N	3.8E+01	No	Below background
Zinc	4/ 4	5.1E+01	6.4E+02	2.1E+02	X	9.3E+01	Yes	Above background
Organics-Volatile (concentration units = mg/kg)								
2-Butanone	1/ 1	3.6E-03	3.6E-03	3.6E-03	X	0	Yes	Above background
Acetone	1/ 1	1.7E-02	1.7E-02	1.7E-02	X	0	Yes	Above background
Toluene	1/ 1	1.4E-03	1.4E-03	1.4E-03	X	0	Yes	Above background
Perimeter Area Aggregate								
Metals (concentration units = mg/kg)								
Aluminum	2/ 2	1.1E+04	1.4E+04	1.2E+04	N	2.0E+04	No	Below background
Arsenic	2/ 2	1.1E+01	1.2E+01	1.2E+01	N	2.0E+01	No	Below background

Table 4-4. Summary Statistics and Determination of SRCs in Load Line 2 Subsurface Soil (continued)

Contaminant	Freq. of Det.	Min. Det.	Max. Det.	Mean Conc.[a]	Dist.[b]	Background Conc.[c]	SRC?	Justification[d]
Barium	2/ 2	8.2E+01	8.3E+01	8.3E+01	N	1.2E+02	No	Below background
Beryllium	2/ 2	6.7E-01	6.8E-01	6.8E-01	N	8.8E-01	No	Below background
Cadmium	1/ 2	2.9E-01	2.9E-01	1.8E-01	N	0	Yes	Above background
Calcium	2/ 2	2.2E+02	8.4E+02	5.3E+02	N	3.6E+04	No	Essential element
Chromium	2/ 2	1.4E+01	1.5E+01	1.5E+01	N	2.7E+01	No	Below background
Cobalt	2/ 2	7.0E+00	9.8E+00	8.4E+00	N	2.3E+01	No	Below background
Copper	2/ 2	1.7E+01	1.7E+01	1.7E+01	N	3.2E+01	No	Below background
Iron	2/ 2	2.2E+04	2.3E+04	2.3E+04	N	3.5E+04	No	Essential element
Lead	2/ 2	1.2E+01	2.5E+01	1.8E+01	N	1.9E+01	Yes	Above background
Magnesium	2/ 2	2.0E+03	2.6E+03	2.3E+03	N	8.8E+03	No	Essential element
Manganese	2/ 2	1.4E+02	2.3E+02	1.8E+02	N	3.0E+03	No	Below background
Mercury	1/ 2	3.5E-02	3.5E-02	2.2E-02	N	4.4E-02	No	Below background
Nickel	2/ 2	1.5E+01	2.3E+01	1.9E+01	N	6.1E+01	No	Below background
Potassium	2/ 2	7.3E+02	9.6E+02	8.5E+02	N	3.4E+03	No	Essential element
Selenium	1/ 2	5.2E-01	5.2E-01	8.6E-01	N	1.5E+00	No	Below background
Vanadium	2/ 2	1.5E+01	1.9E+01	1.7E+01	N	3.8E+01	No	Below background
Zinc	2/ 2	6.6E+01	6.6E+01	6.6E+01	X	9.3E+01	No	Below background
Organics-Explosives (concentration units = mg/kg)								
1,3,5-Trinitrobenzene	1/ 1	6.7E+00	6.7E+00	6.7E+00	X	0	Yes	Above background
2,4,6-Trinitrotoluene	1/ 1	4.5E+02	4.5E+02	4.5E+02	X	0	Yes	Above background
2,4-Dinitrotoluene	1/ 1	1.7E+00	1.7E+00	1.7E+00	X	0	Yes	Above background
Organics-Pesticide/PCB (concentration units = mg/kg)								
PCB-1260	1/ 1	6.4E-01	6.4E-01	6.4E-01	X	0	Yes	Above background
Preparation and Receiving Areas Aggregate								
Metals (concentration units = mg/kg)								
Aluminum	4/ 4	1.4E+03	1.3E+04	7.8E+03	N	2.0E+04	No	Below background
Antimony	2/ 4	1.9E+00	2.6E+00	1.4E+00	N	9.6E-01	Yes	Above background
Arsenic	4/ 4	9.5E-01	1.6E+01	7.8E+00	N	2.0E+01	No	Below background
Barium	4/ 4	2.3E+01	7.1E+01	5.1E+01	N	1.2E+02	No	Below background
Beryllium	3/ 4	6.5E-01	8.0E-01	5.6E-01	N	8.8E-01	No	Below background
Cadmium	1/ 4	8.2E-02	8.2E-02	2.4E-01	D	0	Yes	Above background
Calcium	4/ 4	4.3E+02	8.6E+03	3.2E+03	L	3.6E+04	No	Essential element
Chromium	4/ 4	5.8E+00	1.9E+01	1.4E+01	N	2.7E+01	No	Below background
Cobalt	4/ 4	3.1E+00	1.4E+01	9.2E+00	N	2.3E+01	No	Below background

Table 4-4. Summary Statistics and Determination of SRCs in Load Line 2 Subsurface Soil (continued)

Contaminant	Freq. of Det.	Min. Det.	Max. Det.	Mean Conc.[a]	Dist.[b]	Background Conc.[c]	SRC?	Justification[d]
Copper	4/ 4	4.2E+00	4.6E+01	2.2E+01	L	3.2E+01	Yes	Above background
Iron	4/ 4	1.6E+04	2.8E+04	2.1E+04	L	3.5E+04	No	Essential element
Lead	4/ 4	7.4E+00	3.9E+01	1.8E+01	L	1.9E+01	Yes	Above background
Magnesium	4/ 4	3.4E+02	3.2E+03	1.9E+03	N	8.8E+03	No	Essential element
Manganese	4/ 4	2.2E+02	6.1E+02	4.5E+02	N	3.0E+03	No	Below background
Mercury	2/ 4	1.0E-02	3.9E-02	4.0E-02	N	4.4E-02	No	Below background
Nickel	4/ 4	8.9E+00	2.9E+01	2.1E+01	N	6.1E+01	No	Below background
Potassium	4/ 4	2.8E+02	1.1E+03	8.9E+02	X	3.4E+03	No	Essential element
Thallium	4/ 4	2.6E-01	4.0E-01	3.1E-01	L	9.1E-01	No	Below background
Vanadium	4/ 4	4.8E+00	2.1E+01	1.3E+01	N	3.8E+01	No	Below background
Zinc	4/ 4	2.1E+01	9.9E+01	5.3E+01	L	9.3E+01	Yes	Above background
Organics-Semivolatile (concentration units = mg/kg)								
Benzo(*b*)fluoranthene	1/ 1	6.9E-02	6.9E-02	6.9E-02	X	0	Yes	Above background
Chrysene	1/ 1	6.2E-02	6.2E-02	6.2E-02	X	0	Yes	Above background
Fluoranthene	1/ 1	1.1E-01	1.1E-01	1.1E-01	X	0	Yes	Above background
Phenanthrene	1/ 1	7.8E-02	7.8E-02	7.8E-02	X	0	Yes	Above background
Pyrene	1/ 1	8.3E-02	8.3E-02	8.3E-02	X	0	Yes	Above background
Organics-Volatile (concentration units = mg/kg)								
Toluene	1/ 1	1.2E-03	1.2E-03	1.2E-03	X	0	Yes	Above background

[a] One-half of the detection limit was used as a surrogate value for nondetects in the calculation of summary statistics.
[b] Distribution: D = Fewer than 50% detected - distribution not determined; L = Lognormal distribution; N = Normal distribution; X = Neither normal nor lognormal.
[c] Background criteria were set to zero for all organics and inorganics that were not detected in the background dataset.
[d] The essential nutrient screen was not applied for the ecological risk assessment.
PCB = Polychlorinated biphenyl.
RDX = Hexahydro-1,3,5-trinitro-1,3,5-triazine.
SRC = Site-related contaminant.

Table 4-5. Summary Statistics and Determination of SRCs in Load Line 2 Stream and Pond Sediment

Contaminant	Freq. of Det.	Min. Det.	Max. Det.	Mean Conc. [a]	Dist. [b]	Background Conc. [c]	SRC?	Justification [d]
Kelly's Pond and Exit Drainages								
Metals (concentration units = mg/kg)								
Aluminum	6/ 6	5.7E+03	1.2E+04	8.7E+03	L	1.4E+04	No	Below background
Antimony	2/ 5	8.5E-01	1.8E+00	9.0E-01	D	0	Yes	Above background
Arsenic	6/ 6	6.5E+00	1.9E+01	1.3E+01	L	2.0E+01	No	Below background
Barium	6/ 6	3.5E+01	8.3E+01	5.8E+01	N	1.2E+02	No	Below background
Beryllium	5/ 5	5.2E-01	6.4E-01	6.0E-01	N	3.8E-01	Yes	Above background
Cadmium	2/ 6	2.1E-01	2.6E-01	2.9E-01	D	0	Yes	Above background
Calcium	5/ 5	8.3E+02	2.6E+04	7.0E+03	L	5.5E+03	No	Essential element
Chromium	6/ 6	9.4E+00	2.4E+01	1.6E+01	N	1.8E+01	Yes	Above background
Cobalt	5/ 5	8.3E+00	1.1E+01	9.4E+00	L	9.1E+00	Yes	Above background
Copper	5/ 5	1.2E+01	2.9E+01	2.0E+01	N	2.8E+01	Yes	Above background
Iron	5/ 5	2.0E+04	2.7E+04	2.2E+04	L	2.8E+04	No	Essential element
Lead	6/ 6	1.2E+01	4.6E+01	2.7E+01	L	2.7E+01	Yes	Above background
Magnesium	5/ 5	1.3E+03	9.3E+03	3.4E+03	L	2.8E+03	No	Essential element
Manganese	6/ 6	2.4E+02	1.2E+03	5.7E+02	L	2.0E+03	No	Below background
Mercury	3/ 6	1.6E-02	5.1E-02	4.2E-02	N	5.9E-02	No	Below background
Nickel	5/ 5	1.5E+01	2.2E+01	1.8E+01	L	1.8E+01	Yes	Above background
Potassium	5/ 5	4.1E+02	1.1E+03	7.3E+02	N	2.0E+03	No	Essential element
Silver	1/ 6	4.1E+00	4.1E+00	9.1E-01	D	0	Yes	Above background
Thallium	1/ 5	4.3E-01	4.3E-01	2.6E-01	D	8.9E-01	No	Below background
Vanadium	5/ 5	1.3E+01	2.1E+01	1.6E+01	L	2.6E+01	No	Below background
Zinc	6/ 6	5.7E+01	1.4E+02	8.0E+01	L	5.3E+02	No	Below background
Organics-Total Organic Carbon (concentration units = mg/kg)								
Total Organic Carbon	4/ 4	2.9E+03	9.7E+03	6.9E+03	N	0	Yes	Above background
Organics-Explosives (concentration units = mg/kg)								
2,4,6-Trinitrotoluene	1/ 2	2.7E-01	2.7E-01	2.0E-01	N	0	Yes	Above background
2,4-Dinitrotoluene	1/ 2	1.9E-01	1.9E-01	1.6E-01	N	0	Yes	Above background
4-Amino-2,6-Dinitrotoluene	1/ 1	1.3E-01	1.3E-01	1.3E-01	X	0	Yes	Above background
Organics-Pesticide/PCB (concentration units = mg/kg)								
4,4'-DDD	1/ 5	3.8E-03	3.8E-03	1.8E-03	D	0	Yes	Above background
4,4'-DDE	3/ 5	2.6E-03	2.1E-02	6.3E-03	L	0	Yes	Above background
4,4'-DDT	1/ 5	3.7E-03	3.7E-03	1.8E-03	D	0	Yes	Above background

Table 4-5. Summary Statistics and Determination of SRCs in Load Line 2 Stream and Pond Sediment (continued)

Contaminant	Freq. of Det.	Min. Det.	Max. Det.	Mean Conc. [a]	Dist. [b]	Background Conc. [c]	SRC?	Justification[d]
Endrin Ketone	1/ 5	1.0E-02	1.0E-02	3.1E-03	D	0	Yes	Above background
beta-BHC	3/ 5	4.0E-03	7.9E-02	1.9E-02	L	0	Yes	Above background
Organics-Semivolatile (concentration units = mg/kg)								
Anthracene	1/ 5	1.2E-01	1.2E-01	2.0E-01	D	0	Yes	Above background
Benz(*a*)anthracene	2/ 5	1.5E-01	6.0E-01	2.7E-01	D	0	Yes	Above background
Benzo(*a*)pyrene	2/ 5	1.8E-01	5.5E-01	2.7E-01	D	0	Yes	Above background
Benzo(*b*)fluoranthene	3/ 5	7.4E-02	7.1E-01	2.9E-01	L	0	Yes	Above background
Benzo(*g,h,i*)perylene	2/ 5	1.1E-01	2.0E-01	1.9E-01	D	0	Yes	Above background
Benzo(*k*)fluoranthene	2/ 5	1.4E-01	3.6E-01	2.2E-01	D	0	Yes	Above background
Bis(2-ethylhexyl)phthalate	1/ 5	1.2E-01	1.2E-01	2.0E-01	D	0	Yes	Above background
Chrysene	3/ 5	6.1E-02	6.9E-01	2.8E-01	L	0	Yes	Above background
Dibenz(*a,h*)anthracene	1/ 5	8.2E-02	8.2E-02	1.9E-01	D	0	Yes	Above background
Fluoranthene	5/ 5	7.2E-02	9.4E-01	3.2E-01	L	0	Yes	Above background
Indeno(1,2,3-*cd*)pyrene	2/ 5	1.1E-01	2.2E-01	1.9E-01	D	0	Yes	Above background
Phenanthrene	2/ 5	1.8E-01	5.0E-01	2.6E-01	D	0	Yes	Above background
Pyrene	5/ 5	6.0E-02	8.4E-01	2.8E-01	L	0	Yes	Above background
North Ponds								
Metals (concentration units = mg/kg)								
Aluminum	1/ 1	6.4E+03	6.4E+03	6.4E+03	X	1.4E+04	No	Below background
Arsenic	1/ 1	1.9E+01	1.9E+01	1.9E+01	X	2.0E+01	No	Below background
Barium	1/ 1	3.3E+01	3.3E+01	3.3E+01	X	1.2E+02	No	Below background
Beryllium	1/ 1	3.8E-01	3.8E-01	3.8E-01	X	3.8E-01	No	Below background
Cadmium	1/ 1	2.5E-01	2.5E-01	2.5E-01	X	0	Yes	Above background
Calcium	1/ 1	7.1E+02	7.1E+02	7.1E+02	X	5.5E+03	No	Essential element
Chromium	1/ 1	9.5E+00	9.5E+00	9.5E+00	X	1.8E+01	No	Below background
Cobalt	1/ 1	8.5E+00	8.5E+00	8.5E+00	X	9.1E+00	No	Below background
Copper	1/ 1	2.3E+01	2.3E+01	2.3E+01	X	2.8E+01	No	Below background
Iron	1/ 1	2.8E+04	2.8E+04	2.8E+04	X	2.8E+04	No	Essential element
Lead	1/ 1	2.9E+01	2.9E+01	2.9E+01	X	2.7E+01	Yes	Above background
Magnesium	1/ 1	1.9E+03	1.9E+03	1.9E+03	X	2.8E+03	No	Essential element
Manganese	1/ 1	4.4E+02	4.4E+02	4.4E+02	X	2.0E+03	No	Below background
Mercury	1/ 1	1.4E-02	1.4E-02	1.4E-02	X	5.9E-02	No	Below background
Nickel	1/ 1	2.1E+01	2.1E+01	2.1E+01	X	1.8E+01	Yes	Above background

Table 4-5. Summary Statistics and Determination of SRCs in Load Line 2 Stream and Pond Sediment (continued)

Contaminant	Freq. of Det.	Min. Det.	Max. Det.	Mean Conc. [a]	Dist. [b]	Background Conc. [c]	SRC?	Justification [d]
Potassium	1/ 1	7.9E+02	7.9E+02	7.9E+02	X	2.0E+03	No	Essential element
Selenium	1/ 1	5.6E-01	5.6E-01	5.6E-01	X	1.7E+00	No	Below background
Thallium	1/ 1	3.5E-01	3.5E-01	3.5E-01	X	8.9E-01	No	Below background
Vanadium	1/ 1	1.3E+01	1.3E+01	1.3E+01	X	2.6E+01	No	Below background
Zinc	1/ 1	7.0E+01	7.0E+01	7.0E+01	X	5.3E+02	No	Below background
Organics-Explosives (concentration units = mg/kg)								
Nitrocellulose	1/ 1	4.3E-01	4.3E-01	4.3E-01	X	0	Yes	Above background

[a] One-half of the detection limit was used as a surrogate value for nondetects in the calculation of summary statistics.
[b] Distribution: D = Fewer than 50% detected - distribution not determined; L = Lognormal distribution; N = Normal distribution; X = Neither normal nor lognormal.
[c] Background criteria were set to zero for all organics and inorganics that were not detected in the background dataset.
[d] The essential nutrient screen was not applied for the ecological risk assessment.
BHC = Benzene hexachloride.
DDD = Dichlorodiphenyldichloroethane.
DDE = Dichlorodiphenyldichloroethylene.
DDT = Dichlorodiphenyltrichloroethane.
PCB = Polychlorinated biphenyl.
SRC = Site-related contaminant.

Table 4-6. Summary Statistics and Determination of SRCs in Load Line 2 Stream and Pond Surface Water

Contaminant	Freq. of Det.	Min. Det.	Max. Det.	Mean Conc.[a]	Dist.[b]	Background Conc.[c]	SRC?	Justification[d]
Kelly's Pond and Exit Drainages								
Metals (concentration units = mg/L)								
Aluminum	3/ 3	2.7E-01	5.1E-01	4.0E-01	N	3.4E+00	No	Below background
Antimony	2/ 3	1.4E-02	1.5E-02	1.1E-02	N	0	Yes	Above background
Barium	3/ 3	2.9E-02	3.7E-02	3.2E-02	L	4.8E-02	No	Below background
Cadmium	1/ 3	2.8E-04	2.8E-04	1.8E-03	D	0	Yes	Above background
Calcium	3/ 3	3.0E+01	4.4E+01	3.5E+01	L	4.1E+01	No	Essential element
Copper	1/ 3	4.2E-03	4.2E-03	6.4E-03	D	7.9E-03	No	Below background
Iron	3/ 3	2.9E-01	7.0E-01	5.4E-01	N	2.6E+00	No	Essential element
Magnesium	3/ 3	3.5E+00	1.3E+01	6.7E+00	L	1.1E+01	No	Essential element
Manganese	3/ 3	5.5E-02	9.7E-02	7.4E-02	L	3.9E-01	No	Below background
Potassium	3/ 3	2.2E+00	2.6E+00	2.5E+00	X	3.2E+00	No	Essential element
Sodium	3/ 3	1.9E+00	7.4E+00	3.7E+00	X	2.1E+01	No	Essential element
Vanadium	2/ 3	1.7E-03	2.4E-03	2.5E-03	L	0	Yes	Above background
Zinc	1/ 3	1.6E-02	1.6E-02	1.9E-02	D	4.2E-02	No	Below background
Organics-Explosives (concentration units = mg/L)								
2-Amino-4,6-Dinitrotoluene	1/ 3	1.0E-03	1.0E-03	4.0E-04	D	0	Yes	Above background
4-Amino-2,6-Dinitrotoluene	1/ 3	1.3E-03	1.3E-03	5.0E-04	D	0	Yes	Above background
HMX	1/ 3	7.0E-04	7.0E-04	4.0E-04	D	0	Yes	Above background
RDX	1/ 3	2.4E-03	2.4E-03	9.7E-04	D	0	Yes	Above background
Organics-Semivolatile (concentration units = mg/L)								
Bis(2-ethylhexyl)phthalate	1/ 2	2.8E-03	2.8E-03	3.9E-03	N	0	Yes	Above background
Organics-Volatile (concentration units = mg/L)								
Carbon Disulfide	1/ 2	2.3E-03	2.3E-03	1.4E-03	N	0	Yes	Above background

[a] One-half of the detection limit was used as a surrogate value for nondetects in the calculation of summary statistics.
[b] Distribution: D = Fewer than 50% detected - distribution not determined; L = Lognormal distribution; N = Normal distribution; X = Neither normal nor lognormal.
[c] Background criteria were set to zero for all organics and inorganics that were not detected in the background dataset.
[d] The essential nutrient screen was not applied for the ecological risk assessment.
HMX = Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine.
RDX = Hexahydro-1,3,5-trinitro-1,3,5-triazine.
SRC = Site-related contaminant.

Table 4-7. Summary Statistics and Determination of SRCs in Load Line 2 Miscellaneous Water

Contaminant	Freq. of Det.	Min. Det.	Max. Det.	Mean Conc.[a]	Dist.[b]	Background Conc.[c]	SRC?	Justification[d]
Miscellaneous Water Samples Aggregate								
Metals (concentration units = mg/L)								
Aluminum	2/ 2	3.0E-01	2.6E+00	1.5E+00	N	3.4E+00	No	Below background
Arsenic	2/ 2	6.2E-03	9.2E-03	7.7E-03	N	3.2E-03	Yes	Above background
Barium	2/ 2	1.0E-01	2.4E-01	1.7E-01	N	4.8E-02	Yes	Above background
Calcium	2/ 2	4.8E+01	5.5E+01	5.1E+01	N	4.1E+01	No	Essential element
Chromium	1/ 2	2.5E-03	2.5E-03	2.5E-03	X	0	Yes	Above background
Cobalt	1/ 2	2.6E-03	2.6E-03	1.8E-03	N	0	Yes	Above background
Copper	1/ 2	5.4E-03	5.4E-03	6.5E-03	N	7.9E-03	No	Below background
Iron	2/ 2	2.3E+00	6.2E+00	4.3E+00	N	2.6E+00	No	Essential element
Lead	1/ 2	8.6E-03	8.6E-03	6.8E-03	N	0	Yes	Above background
Magnesium	2/ 2	8.2E+00	9.4E+00	8.8E+00	N	1.1E+01	No	Essential element
Manganese	2/ 2	3.0E+00	4.9E+00	4.0E+00	N	3.9E-01	Yes	Above background
Mercury	1/ 2	7.1E-05	7.1E-05	8.6E-05	N	0	Yes	Above background
Nickel	2/ 2	4.1E-03	6.2E-03	5.2E-03	N	0	Yes	Above background
Potassium	2/ 2	5.6E+00	7.9E+00	6.8E+00	N	3.2E+00	No	Essential element
Sodium	2/ 2	4.4E+00	8.5E+00	6.5E+00	N	2.1E+01	No	Essential element
Thallium	1/ 2	4.0E-01	4.0E-01	2.0E-01	N	0	Yes	Above background
Vanadium	1/ 2	4.2E-03	4.2E-03	3.9E-03	N	0	Yes	Above background
Zinc	2/ 2	1.6E-02	6.6E-02	4.1E-02	N	4.2E-02	Yes	Above background

[a] One-half of the detection limit was used as a surrogate value for nondetects in the calculation of summary statistics.
[b] Distribution: D = Fewer than 50% detected - distribution not determined; L = Lognormal distribution; N = Normal distribution; X = Neither normal nor lognormal.
[c] Background criteria were set to zero for all organics and inorganics that were not detected in the background dataset.
[d] The essential nutrient screen was not applied for the ecological risk assessment.
SRC = Site-related contaminant.

Table 4-8. Summary Statistics and Determination of SRCs in Load Line 2 Groundwater

Contaminant	Freq. of Det.	Min. Det.	Max. Det.	Mean Conc.[a]	Dist.[b]	Background Conc.[c]	SRC?	Justification[d]
Metals (concentration units = mg/L)								
Antimony	3/ 12	2.2E-03	8.0E-03	5.0E-03	D	0	Yes	Above background
Arsenic	8/ 12	4.7E-03	1.0E-01	1.9E-02	X	0	Yes	Above background
Barium	12/ 12	5.7E-03	1.1E-01	3.3E-02	L	2.6E-01	No	Below background
Calcium	12/ 12	1.8E+01	6.7E+01	4.8E+01	N	5.3E+01	No	Essential element
Cobalt	4/ 12	9.2E-03	7.3E-02	9.7E-03	D	0	Yes	Above background
Iron	8/ 12	5.3E-01	2.9E+00	9.8E-01	N	1.4E+00	No	Essential element
Magnesium	11/ 12	7.0E+00	2.8E+01	1.9E+01	N	1.5E+01	No	Essential element
Manganese	12/ 12	4.2E-03	1.9E+00	7.2E-01	N	1.3E+00	Yes	Above background
Nickel	10/ 12	3.5E-03	3.0E-01	3.6E-02	X	8.3E-02	Yes	Above background
Potassium	11/ 12	8.7E-01	5.8E+00	1.9E+00	L	5.8E+00	No	Essential element
Sodium	12/ 12	2.7E+00	1.6E+01	8.0E+00	N	5.1E+01	No	Essential element
Organics-Explosives (concentration units = mg/L)								
1,3,5-Trinitrobenzene	1/ 12	4.8E-03	4.8E-03	4.9E-04	D	0	Yes	Above background
2,4-Dinitrotoluene	1/ 12	3.3E-04	3.3E-04	8.7E-05	D	0	Yes	Above background
2-Amino-4,6-Dinitrotoluene	1/ 12	1.1E-03	1.1E-03	1.8E-04	D	0	Yes	Above background
4-Amino-2,6-Dinitrotoluene	1/ 12	8.7E-04	8.7E-04	1.6E-04	D	0	Yes	Above background
HMX	1/ 12	3.3E-04	3.3E-04	2.6E-04	D	0	Yes	Above background
RDX	1/ 12	1.8E-04	1.8E-04	2.4E-04	D	0	Yes	Above background
Organics-Pesticide/PCB (concentration units = mg/L)								
Heptachlor Epoxide	2/ 12	2.2E-04	3.4E-04	6.8E-05	D	0	Yes	Above background
PCB-1242	2/ 12	7.2E-04	8.5E-04	3.4E-04	D	0	Yes	Above background
Organics-Volatile (concentration units = mg/L)								
2-Butanone	1/ 12	1.2E-03	1.2E-03	4.7E-03	D	0	Yes	Above background
Benzene	2/ 12	2.2E-04	4.9E-04	4.8E-04	D	0	Yes	Above background
Carbon Disulfide	2/ 12	2.6E-04	3.1E-04	4.6E-04	D	0	Yes	Above background
Chloromethane	2/ 12	1.6E-04	3.7E-04	4.6E-04	D	0	Yes	Above background

[a] One-half of the detection limit was used as a surrogate value for nondetects in the calculation of summary statistics.
[b] Distribution: D = Fewer than 50% detected - distribution not determined; L = Lognormal distribution; N = Normal distribution; X = Neither normal nor lognormal.
[c] Background criteria were set to zero for all organics and inorganics that were not detected in the background dataset.
[d] The essential nutrient screen was not applied for the ecological risk assessment.
HMX = Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine.
PCB = Polychlorinated biphenyl.
RDX = Hexahydro-1,3,5-trinitro-1,3,5-triazine.
SRC = Site-related contaminant.

Table 4-9. Summary Statistics and Determination of SRCs in Load Line 2 Storm and Sanitary Sewer Sediment

Contaminant	Freq. of Det.	Min. Det.	Max. Det.	Mean Conc.[a]	Dist.[b]	Background Conc.[c]	SRC?	Justification[d]
Storm/Sanitary Sewers Sediment Samples Aggregate								
Metals (concentration units = mg/kg)								
Aluminum	12/ 12	3.5E+03	1.2E+04	6.7E+03	L	1.4E+04	No	Below background
Antimony	8/ 12	1.4E+00	7.2E+03	6.7E+02	X	0	Yes	Above background
Arsenic	12/ 12	5.8E+00	2.9E+01	1.3E+01	L	2.0E+01	Yes	Above background
Barium	12/ 12	3.4E+01	2.0E+03	2.9E+02	L	1.2E+02	Yes	Above background
Beryllium	11/ 12	3.2E-01	1.5E+00	7.3E-01	L	3.8E-01	Yes	Above background
Cadmium	12/ 12	3.3E-01	1.1E+01	3.7E+00	L	0	Yes	Above background
Calcium	12/ 12	1.5E+03	6.5E+04	1.6E+04	L	5.5E+03	No	Essential element
Chromium	12/ 12	7.9E+00	2.4E+03	2.9E+02	L	1.8E+01	Yes	Above background
Chromium, hexavalent	1/ 1	1.4E+00	1.4E+00	1.4E+00	X	0	Yes	Above background
Cobalt	12/ 12	4.1E+00	5.9E+01	1.5E+01	L	9.1E+00	Yes	Above background
Copper	12/ 12	1.7E+01	2.5E+03	3.9E+02	L	2.8E+01	Yes	Above background
Iron	12/ 12	1.5E+04	1.0E+05	4.1E+04	L	2.8E+04	No	Essential element
Lead	12/ 12	2.7E+01	1.5E+04	2.0E+03	L	2.7E+01	Yes	Above background
Magnesium	12/ 12	1.1E+03	1.0E+04	3.4E+03	L	2.8E+03	No	Essential element
Manganese	12/ 12	2.0E+02	5.8E+03	1.3E+03	L	2.0E+03	Yes	Above background
Mercury	11/ 12	1.6E-02	2.3E+00	5.3E-01	L	5.9E-02	Yes	Above background
Nickel	12/ 12	1.2E+01	8.2E+01	3.9E+01	L	1.8E+01	Yes	Above background
Potassium	12/ 12	2.4E+02	1.1E+03	5.2E+02	L	2.0E+03	No	Essential element
Selenium	7/ 12	6.9E-01	3.5E+00	1.5E+00	L	1.7E+00	Yes	Above background
Silver	6/ 12	2.4E-01	3.9E+02	3.3E+01	X	0	Yes	Above background
Sodium	5/ 12	7.6E+01	1.9E+02	3.1E+02	D	1.1E+02	No	Essential element
Thallium	12/ 12	2.1E-01	8.1E-01	4.7E-01	L	8.9E-01	No	Below background
Vanadium	12/ 12	7.7E+00	2.7E+01	1.4E+01	L	2.6E+01	Yes	Above background
Zinc	12/ 12	1.1E+02	1.1E+03	5.1E+02	L	5.3E+02	Yes	Above background
Organics-Explosives (concentration units = mg/kg)								
1,3,5-Trinitrobenzene	1/ 6	3.7E-01	3.7E-01	1.7E-01	D	0	Yes	Above background
2,4,6-Trinitrotoluene	4/ 6	7.4E-01	2.1E+01	5.5E+00	L	0	Yes	Above background
2,4-Dinitrotoluene	2/ 6	1.3E-01	2.7E-01	1.7E-01	D	0	Yes	Above background
2,6-Dinitrotoluene	1/ 6	1.2E-01	1.2E-01	3.1E-01	D	0	Yes	Above background
2-Amino-4,6-Dinitrotoluene	5/ 6	1.0E-01	8.9E+00	2.6E+00	L	0	Yes	Above background
4-Amino-2,6-Dinitrotoluene	5/ 6	1.1E-01	2.2E+01	5.3E+00	L	0	Yes	Above background

Table 4-9. Summary Statistics and Determination of SRCs in Load Line 2 Storm and Sanitary Sewer Sediment (continued)

Contaminant	Freq. of Det.	Min. Det.	Max. Det.	Mean Conc.[a]	Dist.[b]	Background Conc.[c]	SRC?	Justification[d]
HMX	1/ 6	2.5E+01	2.5E+01	4.4E+00	D	0	Yes	Above background
RDX	2/ 6	1.7E-01	1.3E+01	2.4E+00	D	0	Yes	Above background
Organics-Pesticide/PCB (concentration units = mg/kg)								
4,4'-DDE	1/ 1	7.8E-03	7.8E-03	7.8E-03	X	0	Yes	Above background
4,4'-DDT	1/ 1	1.0E-02	1.0E-02	1.0E-02	X	0	Yes	Above background
PCB-1254	10/ 12	1.1E-01	3.1E+01	5.6E+00	L	0	Yes	Above background
PCB-1260	1/ 12	1.6E-01	1.6E-01	3.7E-01	D	0	Yes	Above background
Organics-Semivolatile (concentration units = mg/kg)								
1,2-Dichlorobenzene	1/ 1	7.3E-01	7.3E-01	7.3E-01	X	0	Yes	Above background
Benz(*a*)anthracene	1/ 1	1.9E-01	1.9E-01	1.9E-01	X	0	Yes	Above background
Benzo(*a*)pyrene	1/ 1	2.6E-01	2.6E-01	2.6E-01	X	0	Yes	Above background
Benzo(*b*)fluoranthene	1/ 1	3.4E-01	3.4E-01	3.4E-01	X	0	Yes	Above background
Benzo(*g,h,i*)perylene	1/ 1	1.9E-01	1.9E-01	1.9E-01	X	0	Yes	Above background
Benzo(*k*)fluoranthene	1/ 1	1.6E-01	1.6E-01	1.6E-01	X	0	Yes	Above background
Chrysene	1/ 1	2.6E-01	2.6E-01	2.6E-01	X	0	Yes	Above background
Fluoranthene	1/ 1	2.3E-01	2.3E-01	2.3E-01	X	0	Yes	Above background
Indeno(1,2,3-*cd*)pyrene	1/ 1	1.9E-01	1.9E-01	1.9E-01	X	0	Yes	Above background
Phenanthrene	1/ 1	1.5E-01	1.5E-01	1.5E-01	X	0	Yes	Above background
Pyrene	1/ 1	2.0E-01	2.0E-01	2.0E-01	X	0	Yes	Above background

[a] One-half of the detection limit was used as a surrogate value for nondetects in the calculation of summary statistics.
[b] Distribution: D = Fewer than 50% detected - distribution not determined; L = Lognormal distribution; N = Normal distribution; X = Neither normal nor lognormal.
[c] Background criteria were set to zero for all organics and inorganics that were not detected in the background dataset.
[d] The essential nutrient screen was not applied for the ecological risk assessment.
DDE = Dichlorodiphenyldichloroethane.
DDT = Dichlorodiphenyltrichloroethane.
HMX = Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine.
PCB = Polychlorinated biphenyl.
RDX = Hexahydro-1,3,5-trinitro-1,3,5-triazine.
SRC = Site-related contaminant.

Table 4-10. Summary Statistics and Determination of SRCs in Load Line 2 Storm and Sanitary Sewer Water

Contaminant	Freq. of Det.	Min. Det.	Max. Det.	Mean Conc.[a]	Dist.[b]	Background Conc.[c]	SRC?	Justification[d]
Storm/Sanitary Sewers Water Samples Aggregate								
Metals (concentration units = mg/L)								
Aluminum	4/ 4	1.6E-01	1.5E+00	5.5E-01	L	3.4E+00	No	Below background
Antimony	2/ 4	4.8E-03	5.3E-03	5.0E-03	L	0	Yes	Above background
Barium	4/ 4	1.6E-02	4.2E-02	2.6E-02	L	4.8E-02	No	Below background
Cadmium	1/ 4	2.3E-03	2.3E-03	2.5E-03	D	0	Yes	Above background
Calcium	4/ 4	1.4E+01	4.8E+01	2.9E+01	L	4.1E+01	No	Essential element
Chromium	1/ 4	5.0E-03	5.0E-03	2.7E-03	D	0	Yes	Above background
Copper	2/ 4	4.9E-03	3.9E-02	1.5E-02	L	7.9E-03	Yes	Above background
Iron	4/ 4	1.1E+00	2.4E+00	1.7E+00	L	2.6E+00	No	Essential element
Lead	3/ 4	1.1E-02	1.2E-01	3.7E-02	L	0	Yes	Above background
Magnesium	4/ 4	1.7E+00	9.3E+00	5.6E+00	L	1.1E+01	No	Essential element
Manganese	4/ 4	6.7E-02	2.3E-01	1.4E-01	L	3.9E-01	No	Below background
Nickel	3/ 4	4.6E-03	6.1E-03	7.1E-03	L	0	Yes	Above background
Potassium	4/ 4	1.7E+00	5.0E+00	2.8E+00	L	3.2E+00	No	Essential element
Silver	1/ 4	3.0E-02	3.0E-02	9.4E-03	D	0	Yes	Above background
Sodium	4/ 4	3.3E+00	5.0E+00	4.5E+00	X	2.1E+01	No	Essential element
Vanadium	1/ 4	2.8E-03	2.8E-03	3.3E-03	D	0	Yes	Above background
Zinc	1/ 4	1.3E-01	1.3E-01	4.3E-02	D	4.2E-02	Yes	Above background
Organics-Explosives (concentration units = mg/L)								
1,3,5-Trinitrobenzene	1/ 4	1.2E-03	1.2E-03	6.0E-04	D	0	Yes	Above background
2,4,6-Trinitrotoluene	4/ 4	2.7E-04	3.7E-01	1.3E-01	L	0	Yes	Above background
2-Amino-4,6-Dinitrotoluene	4/ 4	7.4E-04	1.9E-01	6.7E-02	L	0	Yes	Above background
4-Amino-2,6-Dinitrotoluene	4/ 4	6.9E-04	2.6E-01	9.6E-02	L	0	Yes	Above background
HMX	3/ 4	1.4E-03	1.6E-01	5.8E-02	L	0	Yes	Above background
RDX	4/ 4	1.1E-03	6.9E-01	2.6E-01	L	0	Yes	Above background
Organics-Volatile (concentration units = mg/L)								
Trichloroethene	1/ 1	2.1E-03	2.1E-03	2.1E-03	X	0	Yes	Above background

[a] One-half of the detection limit was used as a surrogate value for nondetects in the calculation of summary statistics.
[b] Distribution: D = Fewer than 50% detected - distribution not determined; L = Lognormal distribution; N = Normal distribution; X = Neither normal nor lognormal.
[c] Background criteria were set to zero for all organics and inorganics that were not detected in the background dataset.
[d] The essential nutrient screen was not applied for the ecological risk assessment.
HMX = Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine.
RDX = Hexahydro-1,3,5,-trinitro-1,3,5-triazine.
SRC = Site-related contaminant.

All detected explosives and propellants were considered to be SRCs regardless of the frequency of detection and; thus, were subjected to the risk evaluation (Chapters 6.0 and 7.0). However, the assessment of occurrence and distribution for those explosives and propellants with a frequency of detection was less than 5% includes qualification that they were infrequently detected.

4.1.3.3 Facility-wide background screen

For each inorganic constituent passing the frequency of detection screen, concentrations were compared against facility-wide background values developed as part of the Phase II RI for Load Lines 2, 3, and 4 (USACE 2001b). For inorganic constituents, if the maximum detected concentration (MDC) of an analyte exceeded its exceeded its respective background criterion, it was considered to be an SRC. In the event a constituent was not detected in the background dataset, the background value was set to zero, and any detected result for that constituent was considered above background. This conservative process ensured that detected constituents were not eliminated as SRCs simply because they were not detected in the background dataset. All detected organic compounds were considered to be above background, because these classes of compounds do not occur naturally.

4.1.3.4 Essential nutrients screen

Chemicals that are considered to be essential nutrients (calcium, chloride, iodine, iron, magnesium, potassium, phosphorus, and sodium) are an integral part of the food supply and are often added to foods as supplements. Thus, these constituents are not generally addressed as SRCs in the contaminant nature and extent evaluation and the baseline human health risk assessment (BHHRA) (EPA 1989a and 1996a) unless they are grossly elevated relative to background values. The essential nutrient screen is not applied for the ERA. For the Load Line 2 Phase II RI, analyses were conducted for calcium, iron, magnesium, potassium, and sodium. These five constituents were eliminated as SRCs in all environmental media based on comparison to background values.

4.1.4 Data Presentation

Data summary statistics and screening results for SRCs in each data aggregate are presented in Tables 4-3 through 4-10. In the sections addressing the nature and extent of contamination for each media, analytical results for selected SRCs are presented on maps to depict spatial distribution. Inorganic chemicals depicted on figures were selected based on highest frequency of detection and/or magnitude of concentration above background and process knowledge. The relative concentrations above background were bracketed by non-detects and the MDC, and were arbitrarily subdivided between the highs and lows. Analytical results for classes of SRCs (e.g., explosive compounds, inorganics, or VOCs) are presented in data summary tables for each media and spatial aggregate, whenever a sufficient number of detected values occurred to merit such tables. Where few detected values for a class of SRCs occurred, the values are addressed in the text of the chapter. Complete analytical results including all nondetected results, are contained in Appendix I. Each table in Appendix I presents the results for each sampling station for a specific medium aggregate (e.g., surface soil, subsurface soil, sediment) and class of analytes. Complete results for the samples taken during the Phase I RI are listed in the report addressing that investigation (USACE 1998b). Results for field laboratory analyses of TNT and RDX are contained in Appendix J.

4.1.5 Use of Phase I Remedial Investigation and 1999 Clean-Hard Fill Area Characterization Data

Load Line 2 remained relatively undisturbed between the Phase I and Phase II RIs. Removal of transite siding and roofing material was conducted; however, demolition of structures and extensive disturbance of soil was not done. Accordingly, soil data obtained during the Phase I RI in 1996 were deemed to still represent current conditions at the AOC. Phase I RI soil data are incorporated into the appropriate data aggregates and evaluated in conjunction with Phase II data in the contaminant nature and extent

evaluation. The Phase I soil data are also included in quantitative analyses (e.g., summary statistics and risk evaluations). Soil data obtained in 1999 to evaluate the feasibility of use of the change house areas for disposal of clean inert demolition materials is also included based on the same rationales as for Phase I soil data. Surface soil samples collected during the Phase I RI were collected from the 0- to 0.6-m (0- to 2-ft) bgs interval; these were assigned as surface soil aggregate samples in the evaluation of contaminant nature and extent and risk evaluations.

Sediment data collected from streams and ponds during the Phase I RI represents a transient media. Where a Phase I station was re-sampled during the Phase II RI, the latter data were used as the most representative in assessment of contaminant nature and extent and risk evaluations. In locations where only Phase I RI data existed, they were used by necessity to provide an overall evaluation of contamination and risk. Phase I RI dry sediment samples from ditch lines (nonviable habitat), were addressed as soil, as discussed in Section 4.1.2. Phase I RI data for groundwater (well LL2mw-059 and -060) are evaluated with respect to trends in the nature and extent discussions, but, because of their age, are not incorporated into the risk assessments to represent current conditions. Phase I RI groundwater results from well points (LL2wp-056, LL2wp-057, and LL2wp-058) were not used in the evaluation of contaminant nature and extent and in risk assessments.

Phase I data are appropriately qualified in the nature and extent and risk evaluations with respect to uncertainties resulting from their age, changes in analytical methods and detection limits, and limited TAL metals for many samples. However, for soil, sediment, and groundwater media, the Phase I RI data provide valuable information regarding extent of contamination related to source areas and within exit conveyances from the source areas.

4.2 SURFACE SOILS

4.2.1 Summary of Phase I Remedial Investigation Data

During the Phase I RI, 45 surface soil locations were sampled and analyzed for explosives. Thirty-seven of these samples were also analyzed for 11 process-related inorganic analytes, and 11 samples were analyzed for TAL metals, cyanide, VOCs, SVOCs, and pesticides/PCBs. Explosives were found in soil around the melt-pour buildings, Building BD-10, and Building DA-6A. These areas correspond to the Explosives Handling Areas Soil Aggregate of the current Phase II RI Report. Explosives contamination appeared to be highly localized around vacuum pumps, doorways, or drains, but it did not appear to be present in soil south of Building BD-9A. Site-related metals were found in highest concentrations around the melt-pour buildings and Building BD-10, corresponding to the Explosives Handling Areas Aggregate. Chromium, lead, and manganese were found commonly present above background concentrations. PAHs occurred commonly in surface soil, following the pattern of distribution of explosives around the melt-pour buildings and Building DB-10. PCBs were present in soil east of Building DB-10, south of Building DB-4A (all within the current Explosives Handling Areas Aggregate). PCBs also were found immediately south of Building DB-3, and they appeared to be localized around vacuum pumps and Buildings DB-2 and DB-19 (these buildings are in the current Production and Receiving Areas Soil Aggregate).

In November 1999, surface soil sampling was conducted at two former change houses (DB-8A and DB-22) to evaluate the suitability of these areas for disposal of inert, uncontaminated demolition debris. Analyses for explosives, TAL metals, SVOCs, VOCs, cyanide, and pesticides/PCBs were conducted. Of eight inorganic SRCs, only iron, chromium, and lead exceeded EPA Region 9 residential risk screening criteria (risk = 10^{-7}, HI = 0.1). Acetone and toluene were detected at levels less than risk screening criteria. SVOCs, explosives, propellants, and pesticides/PCBs were not detected.

4.2.2 Geotechnical Results

Twenty disturbed geotechnical samples were collected during the Phase II RI from selected surface soil locations and submitted for moisture content and pH analysis. Additionally, four samples were also submitted for Atterberg limits, USCS classification, specific gravity, and grain size distribution analyses. The data are summarized in Table 4-11.

Sieve analyses and USCS classification identified the samples as ranging from clay (CL) to poorly graded gravel with clay and sand (GP-GC). Moisture content of the 3 samples ranges from 8.4 (LL2-090) to 22.3% (LL2-082). All samples selected for Atterberg limits analyses were identified as having some degree of plasticity. Specific gravity ranged from 2.645 (LL2-141) to 2.745 (LL2-178).

4.2.3 Explosives and Propellants

Explosives Handling Areas Aggregate

Field screening for 2,4,6-TNT and/or RDX was performed at the 66 Phase II surface soil sample locations. There were 20 detections of 2,4,6-TNT and none of RDX.

A total of eight explosive compounds and one propellant were detected in laboratory analyses of surface soils samples from the Explosive Handling Areas Aggregate (Table 4-3). 2,4,6-TNT was the most common explosive, with 52 of 72 surface soil samples showing detected concentrations of this chemical. The maximum concentration of 2,4,6-TNT was 17,000 mg/kg, detected in the sample from station LL2-086. The maximum concentration of 2,4-DNT (5 mg/kg) and the propellant nitrocellulose (93.5 mg/kg) also occurred at this station, which is located adjacent to Building DA-6. Other frequently detected explosive compounds include 1,3,5-trinitrobenzene (TNB) (14 of 72 samples); 2-amino-4,6-DNT (16 of 33 samples); 2,4-DNT (11 of 72 samples); 4-amino-2,6-DNT (6 of 33 samples); and RDX (13 of 72 samples). Less frequently detected explosives include 1,3-dinitrobenzene (DNB) and HMX. The propellant nitrocellulose was detected in five of the seven samples analyzed for this compound. Table 4-12 gives the station and concentration of all explosive and propellant compounds detected in surface soils within this aggregate. Figures 4-2 through 4-4 show the distribution and concentration of explosive and propellant compounds in surface soil at Load Line 2.

Preparation and Receiving Areas

Field screening for 2,4,6-TNT and/or RDX was performed at the 21 Phase II surface soil sample locations. There were six detections of 2,4,6-TNT and none of RDX.

Five explosive compounds and one propellant were detected in laboratory analyses of surface soils in the Preparation and Receiving Areas Aggregate (Table 4-3). 2,4,6-TNT was the most common explosive, with detections in 6 of 21 samples. 4-Amino-2,6-DNT was detected in 2 of 21 samples; the other explosive compounds were detected once each. Nitrocellulose was detected in both of the samples in which it was analyzed. Fourteen of the surface soil samples in the Preparation and Receiving Areas Aggregate had no detections of explosives or propellants. Table 4-13 gives the station and concentration details for all detected explosive and propellant compounds in the Preparation and Receiving Areas Aggregate, and the distribution and concentrations are shown on Figures 4-2 through 4-4.

The maximum concentrations of most of the explosive compounds occurred in samples from stations LL2-165 (2,4-DNT, 0.049 mg/kg); LL2-166 (2,4,6-TNT, 1.2 mg/kg); and LL2-167 (2-amino-4,6-DNT, 0.34 mg/kg, and 4-amino-2,6-DNT, 0.48 mg/kg) (Table 4-13). These stations are all around the footprint of Building DB-3 in the Preparation and Receiving Areas Aggregate (Figures 4-2 through 4-4). Other

Table 4-11. Geotechnical Data for Load Line 2 Surface Soil Samples

Sample ID	Station No.	Depth (ft)	Moist. Cont. (%)	Grain Size Distribution (%)				pH	Attbg. Limits		Hyd. Cond. cm/sec	Specific Gravity	Classification
				Gravel	Sand	Silt	Clay		LL	PI			
LL20732	LL2-082	0 to 1	22.3	-	-	-	-	6.79	-	-	-	-	-
LL20740	LL2-086	0 to 1	15.0	-	-	-	-	7.13	-	-	-	-	-
LL20865	LL2-131	0 to 1	19.6	-	-	-	-	7.42	-	-	-	-	-
LL20726	LL2-080	0 to 1	15.4	3.1	55.6	19.9	21.4	7.19	28	14	-	2.693	Clayey sand, SC
LL20887	LL2-141	0 to 1	15.8	10.3	41.2	29.1	19.4	7.13	35	15	-	2.645	Clayey sand, SC
LL20856	LL2-128	0 to 1	13.3	-	-	-	-	6.38	-	-	-	-	-
LL20980	LL2-176	0 to 1	11.7	45.8	43.2	6.4	4.6	7.50	18	7	-	2.711	Poorly graded gravel w/clay and sand, GP-GC
LL21016	LL2-188	0 to 1	20.5	-	-	-	-	7.15	-	-	-	-	-
LL20746	LL2-088	0 to 1	8.9	-	-	-	-	7.02	-	-	-	-	-
LL20986	LL2-178	0 to 1	22.1	0.8	17.1	38.2	43.9	7.26	33	17	-	2.745	Lean clay with sand, CL
LL20908	LL2-148	0 to 1	10.5	-	-	-	-	7.13	-	-	-	-	-
LL20757	LL2-093	0 to 1	18.9	-	-	-	-	6.14	-	-	-	-	-
LL20752	LL2-090	0 to 1	8.4	-	-	-	-	7.24	-	-	-	-	-
LL20986	LL2-178	0 to 1	30.2	-	-	-	-	7.23	-	-	-	-	-
LL20920	LL2-154	0 to 1	18.0	-	-	-	-	6.45	-	-	-	-	-
LL20832	LL2-118	0 to 1	12.7	-	-	-	-	6.85	-	-	-	-	-
LL20838	LL2-120	0 to 1	13.4	-	-	-	-	6.69	-	-	-	-	-
LL20826	LL2-116	0 to 1	12.1	-	-	-	-	6.97	-	-	-	-	-
LL20926	LL2-156	0 to 1	15.5	-	-	-	-	7.32	-	-	-	-	-
LL20977	LL2-175	0 to 1	23.8	-	-	-	-	6.91	-	-	-	-	-

ID = Identification.
LL = Liquid limit.
PI = Plasticity index.

Table 4-12. Surface Soil Explosives Handling Areas Aggregate – Organic Explosives – Site-Related Contaminants[a]

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2-082**	**LL2-086**	**LL2-086**	**LL2-087**	**LL2-096**
Sample ID		**LL20732**	**LL20740**	**LL21168**	**LL20743**	**LL20766**
Date		**07/25/2001**	**07/26/2001**	**07/26/2001**	**07/26/2001**	**07/26/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Field Duplicate**	**Grab**	**Grab**
Analyte	**Units**					
Explosives						
1,3,5-Trinitrobenzene	mg/kg	1 =	6.1 =	4.9 =	0.8 =	0.25 U
1,3-Dinitrobenzene	mg/kg	0.25 U	0.25 U	0.11 J	0.25 U	0.25 U
2,4,6-Trinitrotoluene	mg/kg	1,100 =	17,000 =	5,900 =	240 =	0.055 J
2,4-Dinitrotoluene	mg/kg	1.1 =	5 =	3.5 =	3.3 =	0.25 U
2-Amino-4,6-dinitrotoluene	mg/kg	5.7 =	500 U	250 U	9.8 J	0.25 U
4-Amino-2,6-dinitrotoluene	mg/kg	50 U	2,700 U	970 U	15 U	0.25 U
HMX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Nitrocellulose	mg/kg	NA	93.5 J	NA	NA	NA
RDX	mg/kg	0.72 U	3.5 U	1.6 U	0.5 U	0.5 U

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2-096**	**LL2-097**	**LL2-098**	**LL2-098**	**LL2-111**
Sample ID		**LL21169**	**LL20769**	**LL20772**	**LL21164**	**LL20811**
Date		**07/26/2001**	**07/26/2001**	**07/26/2001**	**07/26/2001**	**07/28/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Field Duplicate**	**Grab**	**Grab**	**Field Duplicate**	**Grab**
Analyte	**Units**					
Explosives						
1,3,5-Trinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
1,3-Dinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	mg/kg	0.06 J	0.19 J	0.11 J	0.095 J	0.25 U
2,4-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-Amino-4,6-dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
4-Amino-2,6-dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
HMX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Nitrocellulose	mg/kg	NA	NA	2 U	2 U	NA
RDX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U

Table 4-12. Surface Soil Explosives Handling Areas Aggregate – Organic Explosives – Site-Related Contaminants[a] (continued)

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2-115**	**LL2-117**	**LL2-118**	**LL2-120**	**LL2-121**
Sample ID		**LL20823**	**LL20829**	**LL20832**	**LL20838**	**LL20841**
Date		**07/25/2001**	**07/25/2001**	**07/25/2001**	**07/25/2001**	**07/25/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Grab**	**Grab**	**Grab**
Analyte	**Units**					
Explosives						
1,3,5-Trinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
1,3-Dinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	mg/kg	0.12 J	0.25 U	0.43 =	0.27 =	0.25 U
2,4-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-Amino-4,6-dinitrotoluene	mg/kg	0.25 U	0.25 U	0.5 =	0.25 U	0.25 U
4-Amino-2,6-dinitrotoluene	mg/kg	0.25 U	0.25 U	0.53 =	0.25 U	0.25 U
HMX	mg/kg	0.5 U	0.5 U	0.67 =	0.5 U	0.5 U
Nitrocellulose	mg/kg	NA	NA	NA	NA	NA
RDX	mg/kg	0.5 U	0.5 U	0.3 J	0.5 U	0.5 U

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2-122**	**LL2-126**	**LL2-126**	**LL2-128**	**LL2-129**
Sample ID		**LL20844**	**LL20850**	**LL21166**	**LL20856**	**LL20859**
Date		**07/25/2001**	**07/26/2001**	**07/26/2001**	**07/26/2001**	**07/27/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Field Duplicate**	**Grab**	**Grab**
Analyte	**Units**					
Explosives						
1,3,5-Trinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
1,3-Dinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	mg/kg	1.9 =	0.25 U	0.064 J	13 =	0.072 J
2,4-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.1 J	0.25 U
2-Amino-4,6-dinitrotoluene	mg/kg	0.25 =	0.25 U	0.25 U	1.6 =	0.25 U
4-Amino-2,6-dinitrotoluene	mg/kg	0.39 =	0.25 U	0.25 U	1.9 =	0.25 U
HMX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Nitrocellulose	mg/kg	NA	NA	NA	NA	4.8 =
RDX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.18 J

Table 4-12. Surface Soil Explosives Handling Areas Aggregate – Organic Explosives – Site-Related Contaminants[a] (continued)

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2-129**	**LL2-130**	**LL2-131**	**LL2-132**	**LL2-133**
Sample ID		**LL21165**	**LL20862**	**LL20865**	**LL20868**	**LL20871**
Date		**07/27/2001**	**07/27/2001**	**07/26/2001**	**07/26/2001**	**07/28/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Field Duplicate**	**Grab**	**Grab**	**Grab**	**Grab**
Analyte	**Units**					
Explosives						
1,3,5-Trinitrobenzene	mg/kg	0.25 U	0.23 J	0.25 U	0.25 U	0.83 J
1,3-Dinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U	0.13 J
2,4,6-Trinitrotoluene	mg/kg	0.17 J	23 J	4.9 =	270 =	29 J
2,4-Dinitrotoluene	mg/kg	0.25 U	0.13 J	0.054 J	0.2 J	1.4 J
2-Amino-4,6-dinitrotoluene	mg/kg	0.25 U	1.6 =	0.62 =	3.2 =	9.4 J
4-Amino-2,6-dinitrotoluene	mg/kg	0.25 U	4.8 U	1.3 U	12 U	14 U
HMX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Nitrocellulose	mg/kg	4.8 =	NA	NA	66.9 J	NA
RDX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.19 J

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2-134**	**LL2-141**	**LL2-141**	**LL2-144**	**LL2-146**
Sample ID		**LL20874**	**LL20887**	**LL21172**	**LL20896**	**LL20902**
Date		**07/28/2001**	**07/26/2001**	**07/26/2001**	**07/28/2001**	**07/27/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Field Duplicate**	**Grab**	**Grab**
Analyte	**Units**					
Explosives						
1,3,5-Trinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.094 J	0.25 U
1,3-Dinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	mg/kg	7.7 =	0.25 U	0.25 U	4.3 J	1.3 =
2,4-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.086 J	0.25 U
2-Amino-4,6-dinitrotoluene	mg/kg	0.4 =	0.25 U	0.25 U	1.2 J	0.4 =
4-Amino-2,6-dinitrotoluene	mg/kg	1.9 U	0.25 U	0.25 U	2.3 U	0.49 =
HMX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Nitrocellulose	mg/kg	NA	NA	NA	NA	NA
RDX	mg/kg	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U

Table 4-12. Surface Soil Explosives Handling Areas Aggregate – Organic Explosives – Site-Related Contaminants[a] (continued)

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2-149**	**LL2-150**	**LL2-158**	**LL2-162**	**LL2-231**
Sample ID		**LL20911**	**LL20914**	**LL20932**	**LL20944**	**LL21092**
Date		**07/27/2001**	**07/27/2001**	**07/27/2001**	**07/28/2001**	**07/29/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Grab**	**Grab**	**Grab**
Analyte	**Units**					
Explosives						
1,3,5-Trinitrobenzene	mg/kg	0.25 U	0.25 U	2.2 J	0.25 U	0.25 U
1,3-Dinitrobenzene	mg/kg	0.25 U	0.25 U	2.5 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	mg/kg	1.1 J	0.67 J	610 J	9.2 J	0.25 U
2,4-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.48 J	0.25 U	0.25 U
2-Amino-4,6-dinitrotoluene	mg/kg	0.46 =	0.25 U	2.5 U	0.37 J	0.15 J
4-Amino-2,6-dinitrotoluene	mg/kg	0.66 J	0.28 U	2.5 U	1.9 U	0.25 U
HMX	mg/kg	0.5 U	0.5 U	5 U	4.6 J	3.2 =
Nitrocellulose	mg/kg	NA	NA	NA	NA	2.3 J
RDX	mg/kg	0.5 U	0.5 U	5 U	25 J	0.64 =

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2-232**	**LL2-245**	**LL2-272**	**LL2-273**	**LL2-274**
Sample ID		**LL21094**	**LL21113**	**LL20688**	**LL20692**	**LL20686**
Date		**07/29/2001**	**07/30/2001**	**08/25/2001**	**08/26/2001**	**08/25/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Grab**	**Grab**	**Grab**
Analyte	**Units**					
Explosives						
1,3,5-Trinitrobenzene	mg/kg	0.25 U	NA	0.95 =	0.25 U	0.25 U
1,3-Dinitrobenzene	mg/kg	0.25 U	NA	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	mg/kg	0.059 J	NA	27 =	0.25 U	0.079 J
2,4-Dinitrotoluene	mg/kg	0.25 U	NA	0.24 J	0.25 U	0.25 U
2-Amino-4,6-dinitrotoluene	mg/kg	0.25 U	NA	3.1 =	0.25 U	0.25 U
4-Amino-2,6-dinitrotoluene	mg/kg	0.25 U	NA	7.9 U	0.25 U	0.13 J
HMX	mg/kg	0.5 U	NA	0.5 U	0.5 U	0.5 U
Nitrocellulose	mg/kg	26.8 J	4 UJ	NA	NA	NA
RDX	mg/kg	0.5 U	NA	0.5 U	0.5 U	0.5 U

Table 4-12. Surface Soil Explosives Handling Areas Aggregate – Organic Explosives – Site-Related Contaminants[a] (continued)

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2SS-043**	**LL2SS-045**	**LL2sd-030(d)**	**LL2ss-001**	**LL2ss-001**
Sample ID		**LL2SS-043-0137-SO**	**LL2SS-045-0139-SO**	**LL2SD-030(D)-0122-SD**	**LL2SS-001-0087-SO**	**LL2SS-001-0088-FD**
Date		**08/10/1996**	**08/13/1996**	**08/10/1996**	**08/11/1996**	**08/11/1996**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 0**	**0 - 1**	**0 - 1**
Sample Type		**Grab Composite**	**Grab Composite**	**Grab Composite**	**Grab Composite**	**Field Duplicate**
Analyte	**Units**					
Explosives						
1,3,5-Trinitrobenzene	mg/kg	0.25 U	0.48 J	0.25 U	0.59 =	0.89 J
1,3-Dinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	mg/kg	0.25 U	24 J	0.25 U	32 =	36 =
2,4-Dinitrotoluene	mg/kg	0.25 UJ	0.25 UJ	0.25 UJ	0.25 UJ	0.25 UJ
2-Amino-4,6-dinitrotoluene	mg/kg	NA	NA	NA	NA	NA
4-Amino-2,6-dinitrotoluene	mg/kg	NA	NA	NA	NA	NA
HMX	mg/kg	2 U	2 U	2 U	2 U	2 U
Nitrocellulose	mg/kg	NA	NA	NA	NA	NA
RDX	mg/kg	1 U	4.8 J	1 U	1 U	1 U

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2ss-002**	**LL2ss-003**	**LL2ss-004**	**LL2ss-005**	**LL2ss-006**
Sample ID		**LL2SS-002-0089-SO**	**LL2SS-003-0090-SO**	**LL2SS-004-0091-SO**	**LL2SS-005-0092-SO**	**LL2SS-006-0093-SO**
Date		**08/11/1996**	**08/11/1996**	**08/11/1996**	**08/11/1996**	**08/11/1996**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab Composite**	**Grab Composite**	**Grab Composite**	**Grab Composite**	**Grab Composite**
Analyte	**Units**					
Explosives						
1,3,5-Trinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
1,3-Dinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	mg/kg	2.4 =	0.75 J	54 J	12 J	25 J
2,4-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-Amino-4,6-dinitrotoluene	mg/kg	NA	NA	NA	NA	NA
4-Amino-2,6-dinitrotoluene	mg/kg	NA	NA	NA	NA	NA
HMX	mg/kg	2 U	2 U	2 U	2 U	2 U
Nitrocellulose	mg/kg	NA	NA	NA	NA	NA
RDX	mg/kg	1 U	1 U	1 U	1 U	1 U

Table 4-12. Surface Soil Explosives Handling Areas Aggregate – Organic Explosives – Site-Related Contaminants[a] (continued)

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2ss-007**	**LL2ss-008**	**LL2ss-009**	**LL2ss-010**	**LL2ss-011**
Sample ID		**LL2SS-007-0094-SO**	**LL2SS-008-0095-SO**	**LL2SS-009-0096-SO**	**LL2SS-010-0097-SO**	**LL2SS-011-0098-SO**
Date		**08/11/1996**	**08/10/1996**	**08/12/1996**	**08/13/1996**	**08/12/1996**
Depth (ft)		**0 - 2**	**0 - 2**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab Composite**	**Grab Composite**	**Grab Composite**	**Grab Composite**	**Grab Composite**
Analyte	**Units**					
Explosives						
1,3,5-Trinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 UJ	62 =	0.25 UJ
1,3-Dinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	mg/kg	1.9 =	0.25 U	4 =	410 =	3.2 J
2,4-Dinitrotoluene	mg/kg	0.25 U	0.25 UJ	0.25 U	0.25 UJ	0.25 U
2-Amino-4,6-dinitrotoluene	mg/kg	NA	NA	NA	NA	NA
4-Amino-2,6-dinitrotoluene	mg/kg	NA	NA	NA	NA	NA
HMX	mg/kg	2 U	2 U	2 U	9.4 =	2 U
Nitrocellulose	mg/kg	NA	NA	NA	NA	NA
RDX	mg/kg	1 U	1 U	1 U	68 =	1 U

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2ss-012**	**LL2ss-013**	**LL2ss-014**	**LL2ss-015**	**LL2ss-015**
Sample ID		**LL2SS-012-0099-SO**	**LL2SS-013-0100-SO**	**LL2SS-014-0101-SO**	**LL2SS-015-0102-SO**	**LL2SS-015-0103-FD**
Date		**08/13/1996**	**08/12/1996**	**08/12/1996**	**08/13/1996**	**08/13/1996**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab Composite**	**Grab Composite**	**Grab Composite**	**Grab Composite**	**Field Duplicate**
Analyte	**Units**					
Explosives						
1,3,5-Trinitrobenzene	mg/kg	0.25 U	0.25 UJ	0.25 UJ	0.25 U	0.25 U
1,3-Dinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	mg/kg	4.6 =	0.44 =	470 J	1.7 =	27 J
2,4-Dinitrotoluene	mg/kg	0.25 UJ	0.25 U	0.25 U	0.25 UJ	0.25 UJ
2-Amino-4,6-dinitrotoluene	mg/kg	NA	NA	NA	NA	NA
4-Amino-2,6-dinitrotoluene	mg/kg	NA	NA	NA	NA	NA
HMX	mg/kg	2 U	2 U	1,500 J	2 U	2 U
Nitrocellulose	mg/kg	NA	NA	NA	NA	NA
RDX	mg/kg	42 J	1 U	9,800 J	1 U	1 U

Table 4-12. Surface Soil Explosives Handling Areas Aggregate – Organic Explosives – Site-Related Contaminants[a] (continued)

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2ss-016**	**LL2ss-017**	**LL2ss-017**	**LL2ss-018**	**LL2ss-019**
Sample ID		**LL2SS-016-0104-SO**	**LL2SS-017-0105-SO**	**LL2SS-017-0106-FD**	**LL2SS-018-0107-SO**	**LL2SS-019-0108-SO**
Date		**08/13/1996**	**08/10/1996**	**08/10/1996**	**08/10/1996**	**08/10/1996**
Depth (ft)		**0 - 1**	**0 - 2**	**0 - 2**	**0 - 2**	**0 - 2**
Sample Type		**Grab Composite**	**Grab Composite**	**Field Duplicate**	**Grab Composite**	**Grab Composite**
Analyte	**Units**					
Explosives						
1,3,5-Trinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
1,3-Dinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.54 J	0.25 U
2,4-Dinitrotoluene	mg/kg	0.25 UJ	0.25 UJ	0.25 UJ	0.25 UJ	0.25 UJ
2-Amino-4,6-dinitrotoluene	mg/kg	NA	NA	NA	NA	NA
4-Amino-2,6-dinitrotoluene	mg/kg	NA	NA	NA	NA	NA
HMX	mg/kg	2 U	2 U	2 U	2.8 =	2 U
Nitrocellulose	mg/kg	NA	NA	NA	NA	NA
RDX	mg/kg	1 U	1 U	1 U	4.7 =	1 U

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2ss-019**	**LL2ss-020**	**LL2ss-021**	**LL2ss-028**	**LL2ss-028**
Sample ID		**LL2SS-019-0109-FD**	**LL2SS-020-0110-SO**	**LL2SS-021-0111-SO**	**LL2SS-028-0119-SO**	**LL2SS-028-0120-FD**
Date		**08/10/1996**	**08/11/1996**	**08/11/1996**	**08/09/1996**	**08/09/1996**
Depth (ft)		**0 - 2**	**0 - 1**	**0 - 2**	**0 - 2**	**0 - 2**
Sample Type		**Field Duplicate**	**Grab Composite**	**Grab Composite**	**Grab Composite**	**Field Duplicate**
Analyte	**Units**					
Explosives						
1,3,5-Trinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
1,3-Dinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 UJ	0.25 UJ
2,4,6-Trinitrotoluene	mg/kg	0.25 U	1.3 J	0.25 U	0.8 =	0.64 J
2,4-Dinitrotoluene	mg/kg	0.25 UJ	0.25 U	0.25 U	0.25 UJ	0.25 UJ
2-Amino-4,6-dinitrotoluene	mg/kg	NA	NA	NA	NA	NA
4-Amino-2,6-dinitrotoluene	mg/kg	NA	NA	NA	NA	NA
HMX	mg/kg	2 U	2 U	2 U	2 U	2 U
Nitrocellulose	mg/kg	NA	NA	NA	NA	NA
RDX	mg/kg	1 U	1 U	1 U	0.4 J	1 U

Table 4-12. Surface Soil Explosives Handling Areas Aggregate – Organic Explosives – Site-Related Contaminants[a] (continued)

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2ss-029**	**LL2ss-031**	**LL2ss-032**	**LL2ss-033**	**LL2ss-034**
Sample ID		**LL2SS-029-0121-SO**	**LL2SS-031-0123-SO**	**LL2SS-032-0124-SO**	**LL2SS-033-0125-SO**	**LL2SS-034-0126-SO**
Date		**08/09/1996**	**08/09/1996**	**08/09/1996**	**08/09/1996**	**08/09/1996**
Depth (ft)		**0 - 2**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab Composite**	**Grab Composite**	**Grab Composite**	**Grab Composite**	**Grab Composite**
Analyte	**Units**					
Explosives						
1,3,5-Trinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
1,3-Dinitrobenzene	mg/kg	0.25 UJ	0.25 UJ	0.25 UJ	0.25 UJ	0.25 UJ
2,4,6-Trinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.48 J	0.25 U
2,4-Dinitrotoluene	mg/kg	0.25 UJ	0.25 UJ	0.25 UJ	0.25 UJ	0.25 UJ
2-Amino-4,6-dinitrotoluene	mg/kg	NA	NA	NA	NA	NA
4-Amino-2,6-dinitrotoluene	mg/kg	NA	NA	NA	NA	NA
HMX	mg/kg	2 U	2 U	2 U	2 U	2 U
Nitrocellulose	mg/kg	NA	NA	NA	NA	NA
RDX	mg/kg	1 U	1 U	1 U	1 U	1 U

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2ss-034**	**LL2ss-035**	**LL2ss-036**	**LL2ss-037**	**LL2ss-038**
Sample ID		**LL2SS-034-0127-SO**	**LL2SS-035-0128-SO**	**LL2SS-036-0129-SO**	**LL2SS-037-0130-SO**	**LL2SS-038-0131-SO**
Date		**08/09/1996**	**08/09/1996**	**08/09/1996**	**08/09/1996**	**08/10/1996**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Field Duplicate**	**Grab Composite**	**Grab Composite**	**Grab Composite**	**Grab Composite**
Analyte	**Units**					
Explosives						
1,3,5-Trinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
1,3-Dinitrobenzene	mg/kg	0.25 UJ	0.25 UJ	0.25 UJ	0.25 UJ	0.25 U
2,4,6-Trinitrotoluene	mg/kg	0.36 =	0.27 J	0.25 U	0.25 U	0.33 J
2,4-Dinitrotoluene	mg/kg	0.25 UJ	0.25 UJ	0.25 UJ	0.25 UJ	0.25 UJ
2-Amino-4,6-dinitrotoluene	mg/kg	NA	NA	NA	NA	NA
4-Amino-2,6-dinitrotoluene	mg/kg	NA	NA	NA	NA	NA
HMX	mg/kg	2 U	2 U	2 U	2 U	2 U
Nitrocellulose	mg/kg	NA	NA	NA	NA	NA
RDX	mg/kg	1 U	1 U	1 U	1 U	1 U

Table 4-12. Surface Soil Explosives Handling Areas Aggregate – Organic Explosives – Site-Related Contaminants[a] (continued)

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2ss-039**	**LL2ss-044**	**LL2ss-061**	**LL2ss-062**	**LL2ss-063**
Sample ID		**LL2SS-039-0132-SO**	**LL2SS-044-0138-SO**	**LL2SS-061-0675-SO**	**LL2SS-062-0681-SO**	**LL2SS-063-0683-SO**
Date		**08/10/1996**	**08/12/1996**	**08/14/1996**	**08/20/1996**	**08/21/1996**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab Composite**	**Grab Composite**	**Grab Composite**	**Grab Composite**	**Grab Composite**
Analyte	**Units**					
Explosives						
1,3,5-Trinitrobenzene	mg/kg	0.25 U	160 J	0.25 U	0.32 =	0.6 =
1,3-Dinitrobenzene	mg/kg	0.25 U	12.5 U	0.25 U	0.25 UJ	0.25 UJ
2,4,6-Trinitrotoluene	mg/kg	0.3 =	12,000 =	0.24 J	15 J	180 =
2,4-Dinitrotoluene	mg/kg	0.25 UJ	12.5 UJ	0.25 UJ	0.25 UJ	0.25 UJ
2-Amino-4,6-dinitrotoluene	mg/kg	NA	NA	NA	NA	NA
4-Amino-2,6-dinitrotoluene	mg/kg	NA	NA	NA	NA	NA
HMX	mg/kg	21 =	100 U	2 U	2 U	2 U
Nitrocellulose	mg/kg	NA	NA	NA	NA	NA
RDX	mg/kg	140 J	20 J	1 U	1 UJ	1 UJ

[a]Table presents both Phase I (1996) and Phase II (2001) data.
HMX = Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine.
ID = Identification.
NA = Not analyzed.
RDX = Hexahydro-1,3,5-trinitro-1,3,5-triazine.
= - Detected result.
J - Estimated result.
U - Not detected.

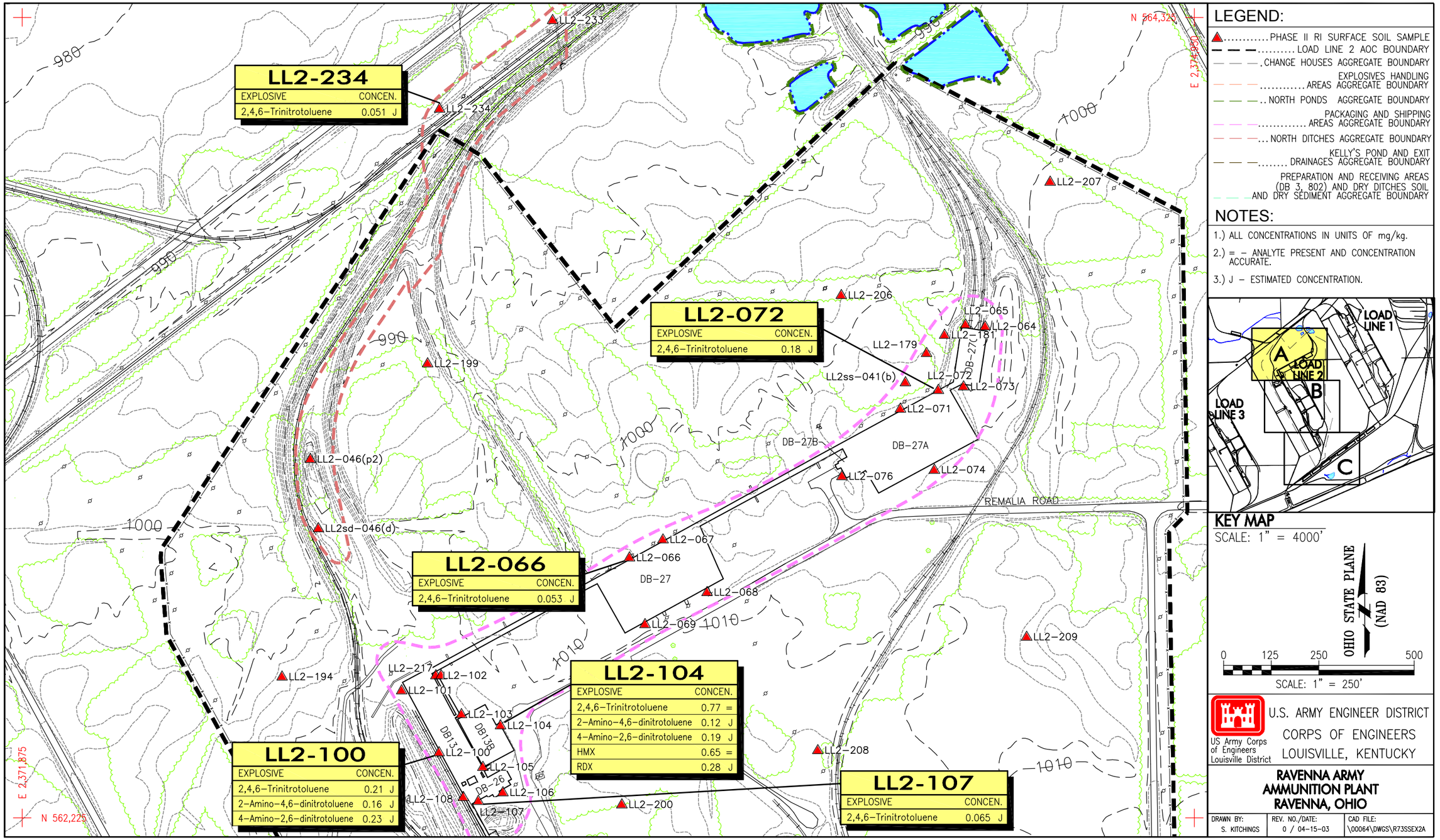


Figure 4-2. Distribution of Explosive and Propellant Compounds in Surface Soil at Load Line 2 - Northern Section

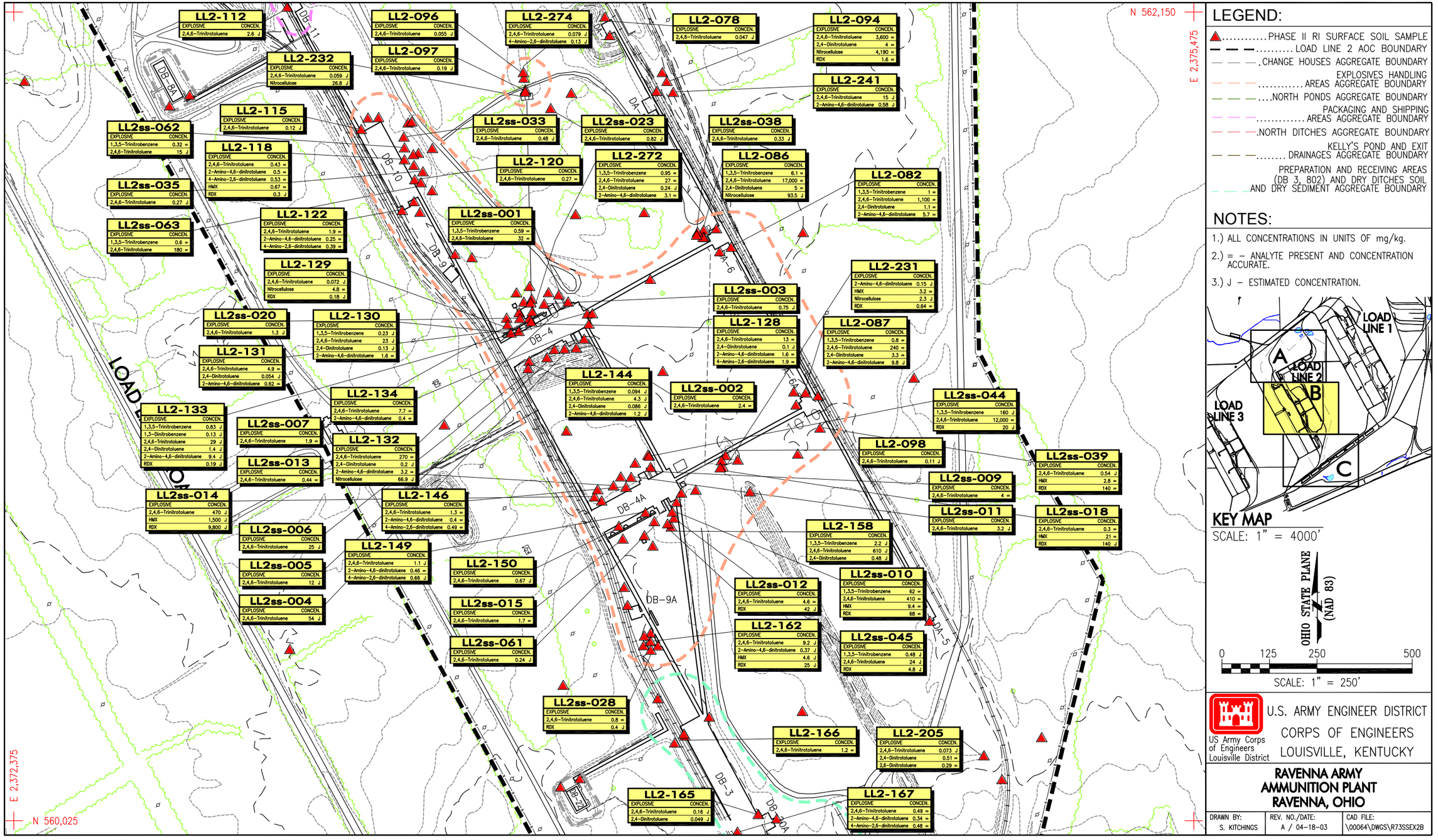


Figure 4-3. Distribution of Explosive and Propellant Compounds in Surface Soil at Load Line 2 - Central Section

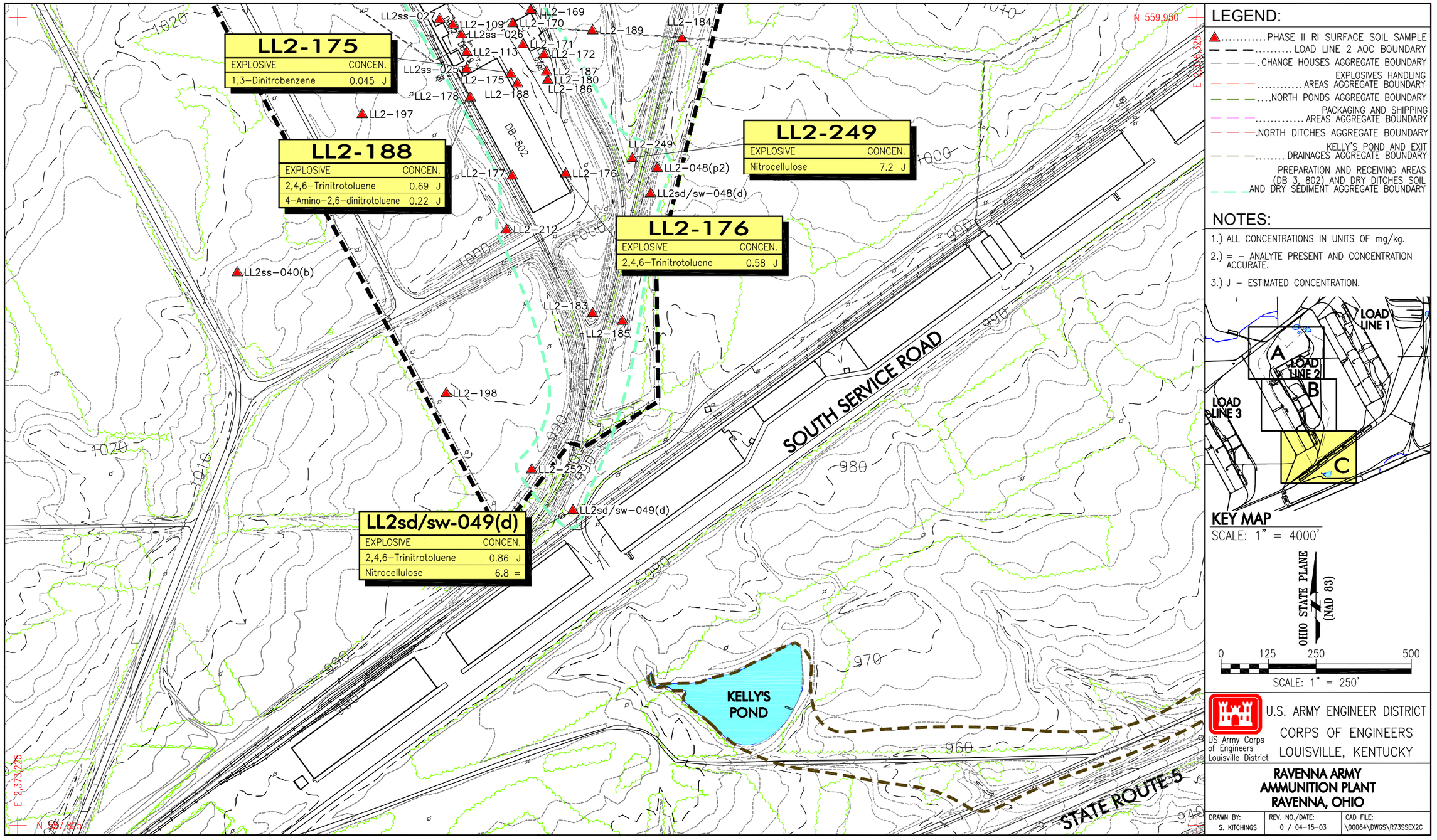


Figure 4-4. Distribution of Explosive and Propellant Compounds in Surface Soil at Load Line 2 - Southern Section

Table 4-13. Load Line 2 Surface Soil Preparation and Receiving Areas Aggregate – Organics Explosives – Site-Related Contaminants[a]

Functional Area		Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate
Station ID		**LL2-164**	**LL2-164**	**LL2-165**	**LL2-166**	**LL2-167**	**LL2-169**
Sample ID		**LL20950**	**LL21167**	**LL20953**	**LL20956**	**LL20959**	**LL20963**
Date		**07/28/2001**	**07/28/2001**	**07/28/2001**	**07/27/2001**	**07/27/2001**	**07/24/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Field Duplicate**	**Grab**	**Grab**	**Grab**	**Grab**
Analyte	**Units**						
Explosives							
1,3-Dinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	mg/kg	0.25 U	0.25 U	0.16 J	1.2 =	0.49 =	0.25 U
2,4-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.049 J	0.25 U	0.25 U	0.25 U
2-Amino-4,6-dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.38 U	0.34 =	0.25 U
4-Amino-2,6-dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.82 U	0.48 =	0.25 U
Nitrocellulose	mg/kg	NA	NA	NA	NA	NA	NA

Functional Area		Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate
Station ID		**LL2-170**	**LL2-175**	**LL2-176**	**LL2-177**	**LL2-178**	**LL2-183**
Sample ID		**LL20966**	**LL20977**	**LL20980**	**LL20983**	**LL20986**	**LL21001**
Date		**07/24/2001**	**07/27/2001**	**07/27/2001**	**07/27/2001**	**07/27/2001**	**07/27/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Grab**	**Grab**	**Grab**	**Grab**
Analyte	**Units**						
Explosives							
1,3-Dinitrobenzene	mg/kg	0.25 U	0.045 J	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	mg/kg	0.25 U	0.28 U	0.58 J	0.25 U	0.25 U	0.25 U
2,4-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-Amino-4,6-dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
4-Amino-2,6-dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Nitrocellulose	mg/kg	NA	NA	NA	NA	NA	NA

Table 4-13. Load Line 2 Surface Soil Preparation and Receiving Areas Aggregate – Organics Explosives – Site-Related Contaminants[a] (continued)

Functional Area		Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate
Station ID		**LL2-183**	**LL2-187**	**LL2-188**	**LL2-243**	**LL2-249**	**LL2-249**
Sample ID		**LL21002**	**LL21013**	**LL21016**	**LL20834**	**LL21118**	**LL21170**
Date		**07/27/2001**	**07/28/2001**	**07/27/2001**	**08/13/2001**	**07/30/2001**	**07/30/2001**
Depth (ft)		**1 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Grab**	**Grab**	**Grab**	**Field Duplicate**
Analyte	**Units**						
Explosives							
1,3-Dinitrobenzene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	mg/kg	0.25 U	0.25 U	0.69 J	0.25 U	0.25 U	0.25 U
2,4-Dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-Amino-4,6-dinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
4-Amino-2,6-dinitrotoluene	mg/kg	0.25 U	0.25 U	0.22 J	0.25 U	0.25 U	0.25 U
Nitrocellulose	mg/kg	NA	NA	NA	NA	7.2 J	NA

Functional Area		Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate
Station ID		**LL2sd/sw-048(d)**	**LL2sd/sw-049(d)**	**LL2sd/sw-049(d)**	**LL2ss-025**	**LL2ss-026**	**LL2ss-027**
Sample ID		**LL2SD-048(D)-0142-SD**	**LL21123**	**LL2SD-049(D)-0144-SD**	**LL2SS-025-0116-SO**	**LL2SS-026-0117-SO**	**LL2SS-027-0118-SO**
Date		**08/20/1996**	**07/27/2001**	**08/20/1996**	**08/08/1996**	**08/08/1996**	**08/08/1996**
Depth (ft)		**0 - 2**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab Composite**	**Grab**	**Grab Composite**	**Grab Composite**	**Grab Composite**	**Grab Composite**
Analyte	**Units**						
Explosives							
1,3-Dinitrobenzene	mg/kg	0.25 U	NA	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	mg/kg	0.25 U	NA	0.86 J	0.25 U	0.25 U	0.25 U
2,4-Dinitrotoluene	mg/kg	0.25 UJ	NA	0.25 UJ	0.25 U	0.25 U	0.25 U
2-Amino-4,6-dinitrotoluene	mg/kg	NA	NA	NA	NA	NA	NA
4-Amino-2,6-dinitrotoluene	mg/kg	NA	NA	NA	NA	NA	NA
Nitrocellulose	mg/kg	NA	6.8 =	NA	NA	NA	NA

[a]Table presents both Phase I (1996) and Phase II (2001) data.
ID = Identification. = - Detected result. J - Estimated result. U - Not detected. NA = Not analyzed.

surface soil stations with maximum concentrations are LL2-175 (1,3-DNB, 0.045 J mg/kg), located adjacent to Building DB-802, and LL2-249 (nitrocellulose, 7.2 mg/kg), located on the eastern side of the aggregate between two sets of railroad tracks.

Packaging and Shipping Areas

Field screening for 2,4,6-TNT and/or RDX was performed at the 24 Phase II surface soil sample locations. There were four detections of 2,4,6-TNT and none of RDX.

Five explosive compounds were detected in laboratory analyses of surface soils from the Packaging and Shipping Areas Aggregate (Table 4-3). Most common was 2,4,6-TNT, with detections in six of seven samples. 2-Amino-4,6-DNT and 4-amino-2,6-DNT were each detected in two samples, and HMX and RDX were detected once each. Propellants were not detected in surface soil samples from this aggregate. Table 4-14 shows the station and concentration details for all explosive compounds detected in surface soils at the Packaging and Shipping Areas Aggregate. The distribution and concentrations of explosives detected in surface soils are shown in Figures 4-2 through 4-4.

The maximum concentrations of detected explosive compounds occurred in stations LL2-100 (2-amino-4,6-DNT, 0.16 J mg/kg and 4-amino-2,6-DNT, 0.23 J mg/kg); LL2-104 (HMX. 0.65 mg/kg and RDX, 0.28 J mg/kg); and LL2-112 (2,4,6-DNT, 2.6 J mg/kg). LL2-100 and LL2-112 are located along the railroad tracks on the western side of the aggregate, LL2-104 is located on the eastern side of Building DB-13B (Table 4-14 and Figures 4-2 through 4-4).

Change Houses Aggregate

Explosives and propellants were not detected in the four surface soil samples from the Change Houses Aggregate.

Perimeter Area Aggregate

Field screening for 2,4,6-TNT and/or RDX was performed at 25 surface soil sample locations. There were two detections of 2,4,6-TNT and none of RDX.

Five explosive compounds and the propellant nitrocellulose were detected in surface soil samples from the Perimeter Area Aggregate sent for laboratory analysis (Table 4-3). 2,4,6-TNT was the most commonly detected explosive, with 5 detections in 10 samples. 2,4-DNT was detected in two samples. The remaining explosives and propellants were detected in one sample each. Table 4-15 presents the station and concentration details for all explosive and propellant compounds detected in surface soils in the Perimeter Area Aggregate. The distribution of explosives and propellants detected in surface soils is presented in Figures 4-2 through 4-4.

The maximum concentrations of detected explosive and propellant compounds occur in three samples, from stations LL2-094 (2,4,6-TNT, 3,600 mg/kg, 2,4-DNT, 4 mg/kg, nitrocellulose, 4,190 mg/kg, and RDX, 1.6 mg/kg); LL2-204 (2,6-DNT, 0.29 mg/kg); and LL2-241 (2-amino-4,6-DNT, 0.59J mg/kg). Stations LL2-094 and LL2-241 are both located between the sets of railroad tracks just north of the Explosives Handling Area Aggregate. LL2-204 is located between the Explosives Handling Area Aggregate and the Preparation and Receiving Areas Aggregate to the south. Low concentrations of 2,4,6-TNT were detected in several other Perimeter Area stations, but the majority of contamination in the Perimeter Area Aggregate seems to be confined to these two areas (Table 4-15 and Figures 4-2 through 4-4).

North Ditches Aggregate

A single detection of 2,4,6-TNT was detected in the surface soil sample LL2-234 from the North Ditches Area Aggregate (Table 4-3 and Table 4-16). This sample showed an estimated concentration of 0.051 J mg/kg. Figures 4-2 through 4-4 show the distribution and concentration of detected explosive compounds in the Load Line 2 aggregates.

Table 4-14. Load Line 2 Surface Soil Packaging and Shipping Areas Aggregate – Organics Explosives – Site-Related Contaminants[a]

Functional Area		Packaging and Shipping Areas Aggregate	Packaging and Shipping Areas Aggregate	Packaging and Shipping Areas Aggregate	Packaging and Shipping Areas Aggregate	Packaging and Shipping Areas Aggregate	Packaging and Shipping Areas Aggregate	Packaging and Shipping Areas Aggregate
Station ID		**LL2-066**	**LL2-072**	**LL2-100**	**LL2-104**	**LL2-107**	**LL2-112**	**LL2ss-041(b)**
Sample ID		**LL20690**	**LL20706**	**LL20778**	**LL20790**	**LL20799**	**LL20814**	**LL2SS-041(B)-0135-SO**
Date		**07/26/2001**	**07/25/2001**	**07/26/2001**	**07/24/2001**	**07/25/2001**	**07/27/2001**	**08/10/1996**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 2**
Sample Type		**Grab**	**Grab**	**Grab**	**Grab**	**Grab**	**Grab**	**Grab Composite**
Analyte	**Units**							
Explosives								
2,4,6-Trinitrotoluene	mg/kg	0.053 J	0.18 J	0.21 J	0.77 =	0.065 J	2.6 J	0.25 U
2-Amino-4,6-dinitrotoluene	mg/kg	0.25 U	0.25 U	0.16 J	0.12 J	0.25 U	0.25 U	NA
4-Amino-2,6-dinitrotoluene	mg/kg	0.25 U	0.25 U	0.23 J	0.19 J	0.25 U	0.25 U	NA
HMX	mg/kg	0.5 U	0.5 U	0.5 U	0.65 =	0.5 U	0.5 U	2 U
RDX	mg/kg	0.5 U	0.5 U	0.5 U	0.28 J	0.5 U	0.5 U	1 U

[a]Table presents both Phase I (1996) and Phase II (2001) data.
HMX = Octahydro-1,3,5,7-tetratrinitro-1,3,5,7-tetrazocine.
ID = Identification.
NA = Not analyzed.
RDX = Hexahydro-1,3,5-trinitro-1,3,5-triozine.
= - Detected result.
J - Estimated result.
U - Not detected.

Table 4-15. Load Line 2 Surface Soil Perimeter Area Aggregate – Organics Explosives – Site-Related Contaminants[a]

Functional Area		Perimeter Area Aggregate	Perimeter Area Aggregate	Perimeter Area Aggregate	Perimeter Area Aggregate	Perimeter Area Aggregate	Perimeter Area Aggregate
Station ID		**LL2-078**	**LL2-078**	**LL2-094**	**LL2-204**	**LL2-205**	**LL2-241**
Sample ID		**LL20720**	**LL21171**	**LL20760**	**LL21044**	**LL21045**	**LL20839**
Date		**07/26/2001**	**07/26/2001**	**07/26/2001**	**07/31/2001**	**07/30/2001**	**08/13/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Field Duplicate**	**Grab**	**Grab**	**Grab**	**Grab**
Analyte	**Units**						
Explosives							
2,4,6-Trinitrotoluene	mg/kg	0.047 J	0.25 U	3,600 =	0.25 U	0.073 J	15 J
2,4-Dinitrotoluene	mg/kg	0.25 U	0.25 U	4 =	0.25 U	0.51 =	0.25 U
2,6-Dinitrotoluene	mg/kg	0.25 U	0.25 U	5.2 U	0.25 U	0.29 =	0.25 U
2-Amino-4,6-dinitrotoluene	mg/kg	0.25 U	0.25 U	120 U	0.25 U	0.25 U	0.58 J
Nitrocellulose	mg/kg	NA	NA	4,190 =	NA	NA	NA
RDX	mg/kg	0.5 U	0.5 U	1.6 =	0.5 U	0.5 U	0.5 U

Functional Area		Perimeter Area Aggregate	Perimeter Area Aggregate	Perimeter Area Aggregate	Perimeter Area Aggregate	Perimeter Area Aggregate
Station ID		**LL2sd-047(d)**	**LL2sd-050(d)**	**LL2ss-022**	**LL2ss-023**	**LL2ss-024**
Sample ID		**LL2SD-047(D)-0141-SD**	**LL2SD-050(D)-0145-SD**	**LL2SS-022-0112-SO**	**LL2SS-023-0113-SO**	**LL2SS-024-0115-SO**
Date		**08/20/1996**	**08/20/1996**	**08/12/1996**	**08/08/1996**	**08/08/1996**
Depth (ft)		**0 - 2**	**0 - 1**	**0 - 2**	**0 - 1**	**0 - 2**
Sample Type		**Grab Composite**	**Grab Composite**	**Grab Composite**	**Grab Composite**	**Grab Composite**
Analyte	**Units**					
Explosives						
2,4,6-Trinitrotoluene	mg/kg	0.25 U	0.25 U	0.25 U	0.82 J	0.25 U
2,4-Dinitrotoluene	mg/kg	0.25 UJ	0.25 UJ	0.25 UJ	0.25 U	0.25 U
2,6-Dinitrotoluene	mg/kg	0.26 U	0.26 U	0.26 U	0.26 U	0.26 U
2-Amino-4,6-dinitrotoluene	mg/kg	NA	NA	NA	NA	NA
Nitrocellulose	mg/kg	NA	NA	NA	NA	NA
RDX	mg/kg	1 U	1 U	1 U	1 U	1 U

[a]Table presents both Phase I (1996) and Phase II (2001) data.
ID = Identification.
NA = Not analyzed.
RDX = Hexahydro-1,3,5-trinitro-1,3,5-triazine.
= - Detected result.
J - Estimated result.
U - Not detected.

Table 4-16. Load Line 2 Surface Soil North Ditches Aggregate – Organics Explosives – Site-Related Contaminants[a]

Functional Area		North Ditches Aggregate	North Ditches Aggregate
Station ID		LL2-234	LL2sd-046(d)
Sample ID		LL21097	LL2SD-046(D)-0140-SD
Date		07/27/2001	08/20/1996
Depth (ft)		0 - 1	0 - 2
Sample Type		Grab	Grab Composite
Analyte	Units		
Explosives			
2,4,6-Trinitrotoluene	mg/kg	0.051 J	0.25 U

[a]Table presents both Phase I (1996) and Phase II (2001) data.
ID = Identification.
= - Detected result.
J - Estimated result.
U - Not detected.

4.2.4 Inorganic Constituents

Explosives Handling Areas Aggregate

A total of 18 inorganic SRCs were identified for surface soil in the Explosives Handling Areas Aggregate (Table 4-3). Aluminum, antimony, arsenic, barium, beryllium, chromium, cobalt, copper, lead, manganese, mercury, nickel, selenium, and zinc each exceeded the respective site-background value in at least one sample. Cyanide, cadmium, silver, and thallium were detected above the background criteria of zero (since they were not detected in the background dataset) and, thus, were considered to be SRCs. Table 4-17 shows the detected analytical concentrations by station for all the SRCs in the Explosives Handling Areas Aggregate.

Metals contamination is wide-spread in surface soil in the Explosives Handling Areas Aggregate. However, of 108 samples, over 70% (77 samples) had detected concentrations of all SRCs of less than 2 times their respective background criteria. And of these, 21 samples had either no SRCs detected or only SRCs without background criteria (usually cadmium and thallium) detected. Inorganic contamination, as was seen for explosives, seems to be isolated into “hot spots” of higher concentrations surrounded by concentrations at or just slightly above the site background criteria.

The most common inorganic SRCs in the Explosives Handling Area Aggregate include aluminum, arsenic, barium, chromium, lead, and zinc, each with 108 detections out of 108 samples, and cobalt, copper, and nickel, with 78 detections out of 78 samples (Table 4-3). Least frequently detected SRCs include silver, with 6 of 108 detections, antimony, with 12 of 78 detections, selenium, with 42 of 108 detections, and cyanide, with 5 of 18 detections. Figures 4-5 to 4-7, 4-8 to 4-10, and 4-11 to 4-13 show the distribution and concentrations of arsenic, lead, and manganese, respectively, as representative of the pattern and intensity of inorganic contamination in surface soils at Load Line 2. These chemicals were selected for the figures based on highest frequency of detection and/or magnitude of concentration above background.

Maximum concentrations of the 18 SRCs for this aggregate occurred in 11 stations. Two or more maximum concentrations were detected at the following stations: LL2-097 had maximum concentrations of antimony (180J mg/kg), chromium (144 mg/kg), and cobalt (18.5 mg/kg). LL2ss-014 had maximum concentrations of cadmium (22.7 mg/kg), lead (881 mg/kg), and zinc (892 mg/kg). LL2-232 had maximum concentrations of manganese (4,990 mg/kg) and selenium (3.3 J mg/kg); LL2ss-031 had maximum concentrations of cyanide (5 mg/kg) and thallium (7.6 mg/kg); and LL2ss-032 had maximum concentrations of aluminum (24,500 mg/kg) and barium (297 mg/kg). LL2-097 and LL2-232 are located in the small portion of the Explosives Handling Area Aggregate just north of the main area. LL2ss-014 is adjacent to Building DB-4A, and LL2ss-031 and LL2ss-032 are located on the east side of Building DB-10.

Table 4-17. Load Line 2 Surface Soil Explosives Handling Areas Aggregate – Inorganics – Site-Related Contaminants[a]

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2-080**	**LL2-080**	**LL2-081**	**LL2-082**	**LL2-083**
Sample ID		**LL20726**	**LL21176**	**LL20729**	**LL20732**	**LL20735**
Date		**07/25/2001**	**07/25/2001**	**07/25/2001**	**07/25/2001**	**07/25/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Field Duplicate**	**Grab**	**Grab**	**Grab**
Analyte	**Units**					
Inorganics						
Cyanide	mg/kg	NA	NA	NA	NA	NA
Aluminum	mg/kg	8,440 =	6,260 =	9,860 =	10,100 =	8,420 =
Antimony	mg/kg	1.1 UJ	1.1 R	1.2 UJ	1.2 UJ	1.1 UJ
Arsenic	mg/kg	9.5 =	6.4 =	5.3 =	8.8 =	3.1 =
Barium	mg/kg	68.8 =	43.6 =	61.3 =	84.4 =	47.6 =
Beryllium	mg/kg	0.47 U	0.36 U	0.41 U	0.53 J	0.28 U
Cadmium	mg/kg	0.64 = *	0.11 J *	0.32 J *	2.1 = *	0.56 U
Chromium	mg/kg	11.5 =	8 =	10.7 =	27.9 = *	7.1 =
Cobalt	mg/kg	6 =	13.4 J *	3.3 =	5.6 =	1.5 =
Copper	mg/kg	25.2 = *	12.2 =	18.5 = *	25.3 = *	4 =
Lead	mg/kg	43.6 = *	19 =	30.5 = *	289 = *	10.4 =
Manganese	mg/kg	320 =	238 J	124 =	240 =	39.2 =
Mercury	mg/kg	0.018 J	0.012 J	0.038 J *	0.029 J	0.013 J
Nickel	mg/kg	16.4 =	12 =	10.1 =	17.9 =	4.6 =
Selenium	mg/kg	0.49 J	2.2 U	0.38 J	0.55 J	0.48 J
Silver	mg/kg	0.56 U	0.55 U	0.58 U	0.58 U	0.56 U
Thallium	mg/kg	0.46 = *	0.66 = *	0.48 = *	0.47 = *	0.35 = *
Zinc	mg/kg	126 = *	60.7 =	53.7 =	243 = *	22.5 =

Table 4-17. Load Line 2 Surface Soil Explosives Handling Areas Aggregate – Inorganics – Site-Related Contaminants[a] (continued)

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2-086**	**LL2-086**	**LL2-087**	**LL2-087**	**LL2-088**
Sample ID		**LL20740**	**LL21168**	**LL20743**	**LL21177**	**LL20746**
Date		**07/26/2001**	**07/26/2001**	**07/26/2001**	**07/26/2001**	**07/26/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Field Duplicate**	**Grab**	**Field Duplicate**	**Grab**
Analyte	**Units**					
Inorganics						
Cyanide	mg/kg	NA	NA	NA	NA	NA
Aluminum	mg/kg	9,270 =	7,900 =	9,560 =	10,500 =	2,850 =
Antimony	mg/kg	1.2 UJ	1.1 UJ	1.2 UJ	1.2 UJ	1.1 UJ
Arsenic	mg/kg	9.1 =	8.4 =	8.6 =	7.1 =	8.1 =
Barium	mg/kg	106 = *	86.2 =	84.2 =	94.4 = *	14.7 =
Beryllium	mg/kg	0.57 J	0.5 U	0.63 =	0.78 =	0.21 U
Cadmium	mg/kg	1.9 = *	1.2 = *	3.3 = *	3.4 = *	0.072 J *
Chromium	mg/kg	15.9 =	11.6 =	12.9 =	13.9 =	4.4 =
Cobalt	mg/kg	5.7 =	5.2 =	6.3 J	4.4 J	3.2 =
Copper	mg/kg	17.9 = *	16.6 =	16.1 =	13.7 =	12.2 =
Lead	mg/kg	210 = *	85.3 = *	52.4 = *	47.1 = *	13.6 =
Manganese	mg/kg	386 J	434 J	334 J	376 J	193 J
Mercury	mg/kg	0.035 J	0.014 J	0.08 J *	0.056 J *	0.11 U
Nickel	mg/kg	14.1 =	13.6 =	12.4 =	11.9 =	7.7 =
Selenium	mg/kg	0.78 J	0.69 J	0.58 J	2.4 U	2.2 U
Silver	mg/kg	0.58 U	0.56 U	0.62 U	0.61 U	0.54 U
Thallium	mg/kg	0.61 = *	0.7 = *	0.47 = *	0.43 = *	0.5 = *
Zinc	mg/kg	192 = *	130 = *	100 = *	92.9 = *	54.4 =

Table 4-17. Load Line 2 Surface Soil Explosives Handling Areas Aggregate – Inorganics – Site-Related Contaminants[a] (continued)

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2-089**	**LL2-090**	**LL2-093**	**LL2-096**	**LL2-096**
Sample ID		**LL20749**	**LL20752**	**LL20757**	**LL20766**	**LL21169**
Date		**07/26/2001**	**07/26/2001**	**07/26/2001**	**07/26/2001**	**07/26/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Grab**	**Grab**	**Field Duplicate**
Analyte	**Units**					
Inorganics						
Cyanide	mg/kg	NA	NA	NA	NA	NA
Aluminum	mg/kg	9,950 =	5,200 =	9,820 =	9,180 =	8,120 =
Antimony	mg/kg	1.2 UJ	1.1 UJ	1.1 UJ	1.2 UJ	1.2 UJ
Arsenic	mg/kg	12.4 =	9.8 =	9.3 =	4.2 =	3.8 =
Barium	mg/kg	64.7 =	43.1 =	58.1 =	61.3 =	56.5 =
Beryllium	mg/kg	0.55 J	0.59 =	0.45 U	0.76 =	0.86 =
Cadmium	mg/kg	0.59 U	0.21 U	0.57 U	0.076 U	0.6 U
Chromium	mg/kg	12.4 =	9.2 =	11.5 =	16.6 =	17.6 = *
Cobalt	mg/kg	8.2 =	3 J	4.4 =	11.6 = *	14.6 = *
Copper	mg/kg	14.1 =	9.4 =	10.5 =	19.4 = *	18.9 = *
Lead	mg/kg	19.2 =	30.4 = *	15.6 =	11.6 =	11.7 =
Manganese	mg/kg	320 J	272 J	179 J	338 =	392 =
Mercury	mg/kg	0.021 J	0.025 J	0.025 J	0.014 J	0.02 J
Nickel	mg/kg	15.4 =	9.5 =	10.9 =	26.6 = *	28.3 = *
Selenium	mg/kg	0.78 J	0.46 J	2.3 U	0.43 J	0.48 J
Silver	mg/kg	0.59 U	0.55 U	0.57 U	0.62 U	0.6 U
Thallium	mg/kg	0.42 = *	0.38 = *	0.75 = *	0.47 U	0.5 = *
Zinc	mg/kg	57.9 =	63.4 = *	49.3 =	68.8 = *	61.7 =

Table 4-17. Load Line 2 Surface Soil Explosives Handling Areas Aggregate – Inorganics – Site-Related Contaminants[a] (continued)

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2-097**	**LL2-098**	**LL2-098**	**LL2-099**	**LL2-110**
Sample ID		**LL20769**	**LL20772**	**LL21164**	**LL20775**	**LL20808**
Date		**07/26/2001**	**07/26/2001**	**07/26/2001**	**07/26/2001**	**07/28/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Field Duplicate**	**Grab**	**Grab**
Analyte	**Units**					
Inorganics						
Cyanide	mg/kg	NA	0.59 U	0.82 = *	NA	NA
Aluminum	mg/kg	7,620 =	9,500 =	9,440 =	10,200 =	4,760 =
Antimony	mg/kg	180 J *	1.2 UJ	1.2 UJ	1.1 UJ	5 J *
Arsenic	mg/kg	7.1 =	10.6 =	11 =	11.2 =	6.4 =
Barium	mg/kg	80 =	69 =	67 =	67.1 =	34.1 =
Beryllium	mg/kg	0.71 =	0.73 J	0.79 J	0.54 J	0.26 U
Cadmium	mg/kg	0.26 J *	0.06 U	0.053 U	0.56 U	1.7 = *
Chromium	mg/kg	144 = *	14.2 =	14.1 =	12.2 =	8.6 =
Cobalt	mg/kg	18.5 = *	8.7 =	8.9 =	10.4 =	4.4 =
Copper	mg/kg	36.7 = *	17.9 = *	18 = *	14.5 =	47.2 = *
Lead	mg/kg	815 = *	19.2 J	18.4 J	20.9 =	82.3 = *
Manganese	mg/kg	752 =	486 =	472 =	501 =	205 =
Mercury	mg/kg	0.033 J	0.02 J	0.015 J	0.025 J	0.026 J
Nickel	mg/kg	20.9 =	22.1 = *	22 = *	19.6 =	11.1 =
Selenium	mg/kg	0.51 U	2.4 U	2.3 U	0.43 J	2.2 U
Silver	mg/kg	0.62 U	0.59 U	0.58 U	0.56 U	0.54 U
Thallium	mg/kg	0.25 U	0.48 = *	0.5 = *	0.48 = *	0.15 J *
Zinc	mg/kg	92.9 = *	53.2 =	56.1 =	56.7 =	91.5 = *

Table 4-17. Load Line 2 Surface Soil Explosives Handling Areas Aggregate – Inorganics – Site-Related Contaminants[a] (continued)

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2-111**	**LL2-115**	**LL2-116**	**LL2-117**	**LL2-118**
Sample ID		**LL20811**	**LL20823**	**LL20826**	**LL20829**	**LL20832**
Date		**07/28/2001**	**07/25/2001**	**07/25/2001**	**07/25/2001**	**07/25/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Grab**	**Grab**	**Grab**
Analyte	**Units**					
Inorganics						
Cyanide	mg/kg	NA	0.54 U	NA	NA	NA
Aluminum	mg/kg	5,710 =	3,260 =	10,600 =	22,500 = *	5,380 =
Antimony	mg/kg	0.57 UJ	0.98 J *	0.82 J	1.1 UJ	1.1 UJ
Arsenic	mg/kg	10.5 J	4.9 =	11.1 =	5.5 =	11.3 =
Barium	mg/kg	72.7 J	53.9 =	77.1 =	190 = *	43.8 =
Beryllium	mg/kg	0.37 U	0.33 U	0.95 = *	3.1 = *	0.39 J
Cadmium	mg/kg	1.4 J *	2 = *	0.17 U	0.18 U	0.51 J *
Chromium	mg/kg	41.8 J *	16 =	11.7 =	9.2 =	9.9 =
Cobalt	mg/kg	6.8 J	4.5 J	5.9 J	3.2 J	4.2 J
Copper	mg/kg	34 J *	28.4 = *	26.2 = *	9.2 =	44.6 = *
Lead	mg/kg	398 J *	141 = *	33.2 = *	15.9 =	53.4 = *
Manganese	mg/kg	398 J	375 J	675 J	1,770 J *	301 J
Mercury	mg/kg	0.021 J	0.031 J	0.023 J	0.025 J	0.021 J
Nickel	mg/kg	25.3 J *	15.1 =	16.8 =	7.5 =	11 =
Selenium	mg/kg	2.2 U	0.5 J	0.45 J	1.2 J	0.47 J
Silver	mg/kg	0.55 U	0.54 U	0.53 U	0.53 U	0.38 J *
Thallium	mg/kg	0.34 = *	0.42 = *	0.43 = *	0.29 J *	0.36 = *
Zinc	mg/kg	192 = *	177 = *	73.7 = *	35.9 =	124 = *

Table 4-17. Load Line 2 Surface Soil Explosives Handling Areas Aggregate – Inorganics – Site-Related Contaminants[a] (continued)

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2-119**	**LL2-120**	**LL2-121**	**LL2-122**	**LL2-126**
Sample ID		**LL20835**	**LL20838**	**LL20841**	**LL20844**	**LL20850**
Date		**07/25/2001**	**07/25/2001**	**07/25/2001**	**07/25/2001**	**07/26/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Grab**	**Grab**	**Grab**
Analyte	**Units**					
Inorganics						
Cyanide	mg/kg	NA	NA	NA	NA	0.59 U
Aluminum	mg/kg	3,160 =	4,020 =	2,680 =	4,010 =	13,900 =
Antimony	mg/kg	1 UJ	1.8 J *	1 UJ	17.3 J *	1.2 UJ
Arsenic	mg/kg	4.2 =	11.5 =	2.6 =	11 =	13.5 =
Barium	mg/kg	36.9 =	26 =	18 =	44.5 =	58.1 =
Beryllium	mg/kg	0.21 U	0.26 U	0.18 U	0.47 J	0.55 U
Cadmium	mg/kg	0.27 U	0.24 U	0.17 U	0.75 = *	0.59 U
Chromium	mg/kg	7.7 =	6 =	8.1 J	17.6 = *	15.8 =
Cobalt	mg/kg	3.2 J	4.1 J	3.2 J	5.3 J	7.4 =
Copper	mg/kg	9.9 =	16.8 =	6.5 =	33.1 = *	15.6 =
Lead	mg/kg	32.5 = *	820 = *	29.1 = *	145 = *	17.8 =
Manganese	mg/kg	216 J	331 J	223 =	396 J	315 =
Mercury	mg/kg	0.018 J	0.014 J	0.014 J	0.025 J	0.016 J
Nickel	mg/kg	9 =	9.7 =	8.8 =	17.6 =	14.9 =
Selenium	mg/kg	0.58 J	2.1 U	0.44 J	0.6 J	2.4 U
Silver	mg/kg	0.52 U	0.52 U	0.52 U	0.19 J *	0.59 U
Thallium	mg/kg	0.38 = *	0.38 = *	0.33 U	0.37 = *	0.24 U
Zinc	mg/kg	73.9 = *	95.8 = *	33 =	89.6 = *	55.4 =

Table 4-17. Load Line 2 Surface Soil Explosives Handling Areas Aggregate – Inorganics – Site-Related Contaminants[a] (continued)

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2-126**	**LL2-127**	**LL2-128**	**LL2-129**	**LL2-129**
Sample ID		**LL21166**	**LL20853**	**LL20856**	**LL20859**	**LL21165**
Date		**07/26/2001**	**07/26/2001**	**07/26/2001**	**07/27/2001**	**07/27/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Field Duplicate**	**Grab**	**Grab**	**Grab**	**Field Duplicate**
Analyte	**Units**					
Inorganics						
Cyanide	mg/kg	0.58 U	NA	NA	0.59 U	0.59 U
Aluminum	mg/kg	14,200 =	7,250 =	7,100 =	10,700 =	10,900 =
Antimony	mg/kg	1.2 UJ	1.2 UJ	1.1 UJ	1.2 UJ	1.2 UJ
Arsenic	mg/kg	12.6 =	22.7 = *	10.5 =	18 = *	15.2 =
Barium	mg/kg	58.5 =	46.8 =	44.5 =	76.4 =	69.9 =
Beryllium	mg/kg	0.53 J	0.75 =	0.44 U	0.67 =	0.66 J
Cadmium	mg/kg	0.58 U	0.18 J *	0.56 U	0.097 J *	0.59 U
Chromium	mg/kg	16 =	15.1 =	10.9 =	13.9 =	15.9 =
Cobalt	mg/kg	6.9 =	12.6 = *	6.7 =	10.5 = *	9.7 =
Copper	mg/kg	14.8 =	18.7 = *	20 = *	26.1 = *	31.1 = *
Lead	mg/kg	17 =	30.8 = *	23.5 =	24.6 =	23.6 =
Manganese	mg/kg	281 =	556 =	434 =	571 =	521 J
Mercury	mg/kg	0.023 J	0.12 U	0.013 J	0.012 J	0.12 U
Nickel	mg/kg	14.8 =	30.9 = *	15.2 =	19.8 =	20.1 =
Selenium	mg/kg	2.3 U	0.39 U	2.2 U	2.3 U	2.3 U
Silver	mg/kg	0.58 U	0.58 U	0.56 U	0.59 U	0.59 U
Thallium	mg/kg	0.5 = *	0.78 J *	0.45 = *	0.23 U	0.99 = *
Zinc	mg/kg	54.8 =	83.6 = *	57.4 =	65.4 = *	65.7 = *

Table 4-17. Load Line 2 Surface Soil Explosives Handling Areas Aggregate – Inorganics – Site-Related Contaminants[a] (continued)

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2-130**	**LL2-131**	**LL2-132**	**LL2-133**	**LL2-134**
Sample ID		**LL20862**	**LL20865**	**LL20868**	**LL20871**	**LL20874**
Date		**07/27/2001**	**07/26/2001**	**07/26/2001**	**07/28/2001**	**07/28/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Grab**	**Grab**	**Grab**
Analyte	**Units**					
Inorganics						
Cyanide	mg/kg	NA	NA	NA	NA	NA
Aluminum	mg/kg	13,900 =	9,750 =	4,950 =	9,180 =	9,660 =
Antimony	mg/kg	1.1 UJ	1.1 UJ	1.2 UJ	1.2 UJ	1.2 UJ
Arsenic	mg/kg	6.8 =	9.9 =	9.3 =	15.5 J *	15.1 J
Barium	mg/kg	194 = *	166 = *	122 = *	77 J	82.1 J
Beryllium	mg/kg	1.5 = *	0.68 =	0.44 U	0.69 =	0.72 =
Cadmium	mg/kg	1.8 = *	1.8 = *	6.6 = *	1.2 J *	2.6 J *
Chromium	mg/kg	45.4 = *	16.2 =	27.7 = *	19.5 J *	19.9 J *
Cobalt	mg/kg	3.9 =	7.1 =	5.6 J	9.5 J	9.9 J
Copper	mg/kg	20.3 = *	28.8 = *	42 = *	31.4 J *	28.9 J *
Lead	mg/kg	339 = *	151 = *	229 = *	64.7 J *	184 J *
Manganese	mg/kg	1,640 = *	741 =	604 J	449 J	485 J
Mercury	mg/kg	0.99 = *	0.051 J *	0.045 J *	0.053 J *	0.052 J *
Nickel	mg/kg	12.1 =	15.4 =	23.7 = *	30.4 J *	27.3 J *
Selenium	mg/kg	0.87 U	2.3 U	2.4 U	2.3 U	2.4 U
Silver	mg/kg	0.56 U	0.57 U	0.21 J *	0.58 U	0.59 U
Thallium	mg/kg	0.22 UJ	0.67 J *	0.36 = *	0.37 = *	0.4 = *
Zinc	mg/kg	159 = *	193 = *	331 = *	243 = *	273 = *

Table 4-17. Load Line 2 Surface Soil Explosives Handling Areas Aggregate – Inorganics – Site-Related Contaminants[a] (continued)

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2-139**	**LL2-140**	**LL2-141**	**LL2-141**	**LL2-142**
Sample ID		**LL20881**	**LL20884**	**LL20887**	**LL21172**	**LL20890**
Date		**07/26/2001**	**07/26/2001**	**07/26/2001**	**07/26/2001**	**07/28/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Grab**	**Field Duplicate**	**Grab**
Analyte	**Units**					
Inorganics						
Cyanide	mg/kg	NA	NA	NA	NA	NA
Aluminum	mg/kg	5,310 =	15,600 =	9,430 =	9,020 =	8,740 =
Antimony	mg/kg	1.1 UJ	1.1 UJ	1.2 UJ	1.2 UJ	1.1 UJ
Arsenic	mg/kg	10 =	6.3 =	12.6 =	12.9 =	8.6 J
Barium	mg/kg	35 =	159 = *	65 =	67.7 =	71.5 J
Beryllium	mg/kg	0.37 U	1.9 = *	0.7 =	0.7 =	0.59 =
Cadmium	mg/kg	0.094 J *	0.21 J *	0.14 U	0.19 J *	0.57 U
Chromium	mg/kg	10.1 =	9.5 =	13.2 =	12.5 =	17.8 J *
Cobalt	mg/kg	5.4 =	3.1 J	7.5 J	7.8 J	10.4 J
Copper	mg/kg	15.3 =	10.7 =	21.5 = *	21.8 = *	15.1 J
Lead	mg/kg	15.5 =	17.4 =	29.4 = *	30.1 = *	18.1 J
Manganese	mg/kg	316 =	1,370 J	475 J	587 J	339 J
Mercury	mg/kg	0.026 J	0.018 J	0.025 J	0.031 J	0.0096 J
Nickel	mg/kg	13.1 =	7.7 =	19.2 =	20.9 =	25.6 J *
Selenium	mg/kg	2.2 U	0.94 J	0.42 J	0.6 J	2.3 U
Silver	mg/kg	0.56 U	0.56 U	0.25 J *	0.22 J *	0.57 U
Thallium	mg/kg	0.4 U	0.31 = *	0.43 = *	0.48 = *	0.38 = *
Zinc	mg/kg	58.2 =	37.5 =	94 = *	103 = *	51.7 =

Table 4-17. Load Line 2 Surface Soil Explosives Handling Areas Aggregate – Inorganics – Site-Related Contaminants[a] (continued)

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2-143**	**LL2-144**	**LL2-144**	**LL2-145**	**LL2-146**
Sample ID		**LL20893**	**LL20896**	**LL21178**	**LL20899**	**LL20902**
Date		**07/28/2001**	**07/28/2001**	**07/28/2001**	**07/27/2001**	**07/27/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Field Duplicate**	**Grab**	**Grab**
Analyte	**Units**					
Inorganics						
Cyanide	mg/kg	NA	NA	NA	0.57 U	NA
Aluminum	mg/kg	10,400 =	8,810 =	9,510 =	7,550 =	8,060 =
Antimony	mg/kg	1.2 UJ	1.2 UJ	1.2 UJ	1.1 UJ	1.1 UJ
Arsenic	mg/kg	9.6 J	9.1 =	8.9 J	9 =	8.5 =
Barium	mg/kg	89.7 J *	67 =	71 J	129 = *	160 = *
Beryllium	mg/kg	0.69 =	0.57 J	0.63 =	0.72 J	0.84 J
Cadmium	mg/kg	0.056 J *	0.23 J *	0.18 J *	2.2 = *	3.8 = *
Chromium	mg/kg	15.2 J	16.3 =	18.1 J *	23.9 = *	15.4 =
Cobalt	mg/kg	13.2 J *	9.9 =	10.8 J *	6.2 =	5.7 =
Copper	mg/kg	14.6 J	15.6 =	17.1 J	35.5 = *	30.9 = *
Lead	mg/kg	16.1 J	33.4 = *	31.9 J *	342 J *	218 J *
Manganese	mg/kg	1,440 J	314 =	392 J	775 =	998 =
Mercury	mg/kg	0.026 J	0.12 U	0.018 J	0.18 = *	0.045 J *
Nickel	mg/kg	24.6 J *	23.7 = *	26.8 J *	25.8 = *	18.9 =
Selenium	mg/kg	2.3 U	2.4 U	2.4 U	2.3 U	2.1 U
Silver	mg/kg	0.58 U	0.59 U	0.59 U	0.57 U	0.54 U
Thallium	mg/kg	0.36 = *	0.32 = *	0.35 = *	0.39 U	0.33 UJ
Zinc	mg/kg	53.8 =	74.2 = *	79.8 = *	401 = *	507 = *

Table 4-17. Load Line 2 Surface Soil Explosives Handling Areas Aggregate – Inorganics – Site-Related Contaminants[a] (continued)

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2-147**	**LL2-147**	**LL2-148**	**LL2-149**	**LL2-150**
Sample ID		**LL20905**	**LL21179**	**LL20908**	**LL20911**	**LL20914**
Date		**07/27/2001**	**07/27/2001**	**07/27/2001**	**07/27/2001**	**07/27/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Field Duplicate**	**Grab**	**Grab**	**Grab**
Analyte	**Units**					
Inorganics						
Cyanide	mg/kg	NA	NA	NA	0.55 U	NA
Aluminum	mg/kg	9,710 =	9,250 =	3,740 =	6,940 =	5,190 =
Antimony	mg/kg	1.2 UJ	1.2 UJ	1.1 UJ	1.9 J *	1.1 UJ
Arsenic	mg/kg	17.8 = *	15.9 = *	10.7 =	11 =	10.5 =
Barium	mg/kg	57.2 =	46.3 =	31.1 =	36.9 =	63 =
Beryllium	mg/kg	0.52 J	0.52 J	0.27 U	0.45 U	0.49 U
Cadmium	mg/kg	0.2 J *	0.08 U	1.3 = *	0.12 J *	1.3 = *
Chromium	mg/kg	16.6 =	12.7 =	7.9 =	9.9 =	9.8 =
Cobalt	mg/kg	10.5 = *	9.9 =	4.2 =	6.7 =	5.1 =
Copper	mg/kg	23.6 = *	22.4 = *	81.5 = *	17.5 =	27.3 = *
Lead	mg/kg	89.6 J *	25.3 J	57.1 = *	70.4 = *	363 = *
Manganese	mg/kg	356 =	313 =	302 =	353 =	456 =
Mercury	mg/kg	0.011 J	0.01 J	0.042 J *	0.11 = *	0.032 J
Nickel	mg/kg	26.6 = *	24.5 = *	12.2 =	18.9 =	14.4 =
Selenium	mg/kg	2.4 U	2.3 U	0.65 U	2.2 U	2.2 U
Silver	mg/kg	0.59 U	0.59 U	0.53 U	0.55 U	0.54 U
Thallium	mg/kg	0.42 = *	0.39 U	0.66 J *	0.68 J *	0.68 J *
Zinc	mg/kg	112 = *	73.3 = *	192 = *	65.4 = *	195 = *

Table 4-17. Load Line 2 Surface Soil Explosives Handling Areas Aggregate – Inorganics – Site-Related Contaminants[a] (continued)

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2-154**	**LL2-155**	**LL2-156**	**LL2-157**	**LL2-158**
Sample ID		**LL20920**	**LL20923**	**LL20926**	**LL20929**	**LL20932**
Date		**07/27/2001**	**07/27/2001**	**07/27/2001**	**07/27/2001**	**07/27/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Grab**	**Grab**	**Grab**
Analyte	**Units**					
Inorganics						
Cyanide	mg/kg	NA	NA	NA	NA	NA
Aluminum	mg/kg	12,400 =	7,080 =	8,820 =	12,800 =	10,200 =
Antimony	mg/kg	1.2 UJ	1.1 UJ	1.1 UJ	1.2 UJ	1.1 UJ
Arsenic	mg/kg	15 =	10.6 =	12.1 =	13.1 =	13.9 =
Barium	mg/kg	72.2 =	36.3 =	50.6 =	104 = *	55.4 =
Beryllium	mg/kg	0.67 J	0.35 U	0.43 J	1.1 J *	0.54 J
Cadmium	mg/kg	0.58 U	0.55 U	0.087 U	0.58 U	2.4 = *
Chromium	mg/kg	16.6 =	9.3 =	10.9 =	17.2 =	14.3 =
Cobalt	mg/kg	10.9 = *	6.4 =	7.4 =	13.7 = *	9.9 =
Copper	mg/kg	21.4 = *	17 =	18.5 = *	20.6 = *	20.7 = *
Lead	mg/kg	14.6 J	13.1 J	16.7 J	16.9 J	17.7 =
Manganese	mg/kg	355 =	304 =	306 =	365 =	359 =
Mercury	mg/kg	0.12 U	0.012 J	0.017 J	0.02 J	0.11 U
Nickel	mg/kg	30.8 = *	15.5 =	19.1 =	33.6 = *	23.9 = *
Selenium	mg/kg	2.3 U	2.2 U	2.2 U	2.3 U	2.3 U
Silver	mg/kg	0.58 U	0.55 U	0.55 U	0.58 U	0.56 U
Thallium	mg/kg	0.46 = *	0.39 U	0.43 U	0.48 = *	0.47 = *
Zinc	mg/kg	64.5 = *	55.4 =	65.6 = *	68.9 = *	67.7 = *

Table 4-17. Load Line 2 Surface Soil Explosives Handling Areas Aggregate – Inorganics – Site-Related Contaminants[a] (continued)

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2-158**	**LL2-159**	**LL2-160**	**LL2-160**	**LL2-161**
Sample ID		**LL21180**	**LL20935**	**LL20938**	**LL21184**	**LL20941**
Date		**07/27/2001**	**07/27/2001**	**07/28/2001**	**07/28/2001**	**07/27/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Field Duplicate**	**Grab**	**Grab**	**Field Duplicate**	**Grab**
Analyte	**Units**					
Inorganics						
Cyanide	mg/kg	NA	NA	0.57 U	NA	NA
Aluminum	mg/kg	10,100 =	12,600 =	10,400 =	4,840 =	9,300 =
Antimony	mg/kg	1.1 UJ	1.1 UJ	1.1 UJ	5.3 J *	1.1 UJ
Arsenic	mg/kg	15.2 =	15.5 = *	14.6 =	7.4 =	13 =
Barium	mg/kg	54.7 =	60.4 =	84.5 =	36.2 =	44.5 =
Beryllium	mg/kg	0.57 =	0.66 =	0.58 =	0.27 U	0.54 J
Cadmium	mg/kg	2.2 = *	1.1 = *	0.19 J *	1.8 = *	0.56 U
Chromium	mg/kg	14.2 =	18.5 = *	16.7 =	9.1 =	12.6 =
Cobalt	mg/kg	15.6 = *	10.7 = *	11.2 = *	5.1 =	10.1 =
Copper	mg/kg	20.8 = *	27.2 = *	22.9 = *	50.3 = *	18.3 = *
Lead	mg/kg	23.4 =	49 = *	46 = *	88.8 = *	15.7 =
Manganese	mg/kg	408 =	309 =	403 =	226 =	385 =
Mercury	mg/kg	0.018 J	0.11 U	0.026 J	0.03 J	0.015 J
Nickel	mg/kg	24.1 = *	26.8 = *	29.8 = *	12.4 =	25.5 = *
Selenium	mg/kg	2.2 U	2.3 U	2.3 U	2.2 U	2.3 U
Silver	mg/kg	0.56 U	0.57 U	0.57 U	0.54 U	0.56 U
Thallium	mg/kg	0.83 J *	0.85 J *	0.28 = *	0.27 = *	0.44 UJ
Zinc	mg/kg	70.3 = *	158 = *	78.2 = *	107 = *	59.1 =

Table 4-17. Load Line 2 Surface Soil Explosives Handling Areas Aggregate – Inorganics – Site-Related Contaminants[a] (continued)

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2-162**	**LL2-163**	**LL2-202**	**LL2-203**	**LL2-214**
Sample ID		**LL20944**	**LL20947**	**LL21042**	**LL21043**	**LL21054**
Date		**07/28/2001**	**07/28/2001**	**07/31/2001**	**07/31/2001**	**07/27/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Grab**	**Grab**	**Grab**
Analyte	**Units**					
Inorganics						
Cyanide	mg/kg	NA	NA	NA	NA	NA
Aluminum	mg/kg	7,940 =	7,320 =	10,700 =	11,200 =	11,600 =
Antimony	mg/kg	0.6 J	1.1 UJ	1.1 UJ	1.1 UJ	1.1 UJ
Arsenic	mg/kg	12.4 =	12 J	14.5 =	14 =	20.7 = *
Barium	mg/kg	61.8 =	43 J	58.1 =	68.9 =	76.5 =
Beryllium	mg/kg	0.41 =	0.42 U	0.64 =	0.67 =	0.8 J
Cadmium	mg/kg	0.2 J *	0.56 U	0.19 J *	0.57 U	0.57 U
Chromium	mg/kg	14.2 =	10.7 J	15.9 =	15.5 =	16.9 =
Cobalt	mg/kg	7.9 =	8.4 J	13 = *	8.8 =	10.6 = *
Copper	mg/kg	22.1 = *	18.7 J *	19.9 = *	14.9 =	19 = *
Lead	mg/kg	40 = *	14.6 J	17.9 J	18 J	14.7 J
Manganese	mg/kg	374 =	357 J	339 J	383 J	581 =
Mercury	mg/kg	0.047 J *	0.01 J	0.028 J	0.027 J	0.11 U
Nickel	mg/kg	20.2 =	20.2 J	24.6 = *	19.6 =	26.4 = *
Selenium	mg/kg	2.2 U	2.2 U	0.43 J	2.3 U	2.3 U
Silver	mg/kg	0.55 U	0.56 U	0.56 U	0.57 U	0.57 U
Thallium	mg/kg	0.22 = *	0.34 = *	0.45 = *	0.48 = *	0.42 = *
Zinc	mg/kg	79.6 = *	67.3 = *	66.5 J *	57.8 J	57.3 =

Table 4-17. Load Line 2 Surface Soil Explosives Handling Areas Aggregate – Inorganics – Site-Related Contaminants[a] (continued)

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2-214**	**LL2-215**	**LL2-216**	**LL2-231**	**LL2-232**
Sample ID		**LL21183**	**LL21055**	**LL21056**	**LL21092**	**LL21094**
Date		**07/27/2001**	**07/27/2001**	**07/27/2001**	**07/29/2001**	**07/29/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Field Duplicate**	**Grab**	**Grab**	**Grab**	**Grab**
Analyte	**Units**					
Inorganics						
Cyanide	mg/kg	NA	NA	NA	0.56 U	1.3 = *
Aluminum	mg/kg	10,000 =	5,270 =	2,510 =	10,200 =	10,800 =
Antimony	mg/kg	1.1 UJ	1.1 J	1.1 UJ	0.79 UJ	3.1 U
Arsenic	mg/kg	20.5 = *	5.1 =	2.1 =	31.5 = *	9.2 =
Barium	mg/kg	56.7 =	39.7 =	17.8 =	55.8 =	254 = *
Beryllium	mg/kg	0.62 J	0.32 U	0.2 U	0.58 =	1.2 = *
Cadmium	mg/kg	0.57 U	0.56 U	0.54 =	0.56 U	4.9 = *
Chromium	mg/kg	14 =	7.7 =	5.6 =	14.9 =	32 J *
Cobalt	mg/kg	9.8 =	4.8 =	3.1 =	12.3 = *	9.7 =
Copper	mg/kg	18.8 = *	8.6 =	5.1 =	21.7 = *	48.2 J *
Lead	mg/kg	13.2 J	8.6 =	4.2 J	20.6 J	431 J *
Manganese	mg/kg	387 =	264 =	313 =	308 J	4,990 = *
Mercury	mg/kg	0.11 U	0.11 U	0.11 U	0.11 U	0.24 J *
Nickel	mg/kg	26.5 = *	12 =	7.6 =	28.6 J *	33.4 = *
Selenium	mg/kg	2.3 U	2.2 U	2.2 U	2.3 U	3.3 J *
Silver	mg/kg	0.57 U	0.56 U	0.54 U	0.56 U	1.6 U
Thallium	mg/kg	0.47 = *	0.19 J *	0.27 U	0.34 = *	1.3 = *
Zinc	mg/kg	56.8 =	30.2 =	13.5 =	65.8 J *	495 J *

Table 4-17. Load Line 2 Surface Soil Explosives Handling Areas Aggregate – Inorganics – Site-Related Contaminants[a] (continued)

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2-245**	**LL2-255**	**LL2-257**	**LL2-258**	**LL2-272**
Sample ID		**LL21113**	**LL20843**	**LL20846**	**LL20864**	**LL20688**
Date		**07/30/2001**	**08/13/2001**	**08/14/2001**	**08/14/2001**	**08/25/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Grab**	**Grab**	**Grab**
Analyte	**Units**					
Inorganics						
Cyanide	mg/kg	NA	NA	NA	NA	NA
Aluminum	mg/kg	4,420 =	8,880 =	9,200 =	8,400 =	9,030 =
Antimony	mg/kg	1.3 UJ	1.1 UJ	1.1 UJ	0.66 J	1.2 UJ
Arsenic	mg/kg	6.9 =	7.3 =	7.6 =	10.4 =	14.2 =
Barium	mg/kg	36.5 =	57.9 =	65.5 =	60.9 =	111 = *
Beryllium	mg/kg	0.43 J	0.57 J	0.53 J	0.55 J	0.99 = *
Cadmium	mg/kg	0.79 = *	0.27 J *	0.32 J *	0.3 J *	0.54 J *
Chromium	mg/kg	8.5 =	12.7 =	11.5 =	12.3 =	12.7 =
Cobalt	mg/kg	8 =	7 =	5.5 =	7.4 =	8.2 =
Copper	mg/kg	16.7 =	12.3 =	11.8 =	12.8 =	23.1 = *
Lead	mg/kg	31.5 = *	30.9 = *	23.8 =	20 =	30.2 = *
Manganese	mg/kg	211 J	331 =	256 =	499 =	937 =
Mercury	mg/kg	0.012 J	0.019 J	0.031 J	0.036 J	0.041 U
Nickel	mg/kg	14.6 =	14.3 =	12.8 =	17.2 =	21 =
Selenium	mg/kg	1 U	2.3 U	2.3 U	2.3 U	0.98 J
Silver	mg/kg	0.65 U	0.57 U	0.57 U	0.57 U	0.58 U
Thallium	mg/kg	0.3 = *	0.52 = *	0.54 = *	0.55 = *	0.38 U
Zinc	mg/kg	130 = *	45.3 =	50.7 =	55.3 =	79.4 = *

Table 4-17. Load Line 2 Surface Soil Explosives Handling Areas Aggregate – Inorganics – Site-Related Contaminants[a] (continued)

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2-273**	**LL2-274**	**LL2SS-043**	**LL2SS-045**	**LL2sd-030(d)**
Sample ID		**LL20692**	**LL20686**	**LL2SS-043-0137-SO**	**LL2SS-045-0139-SO**	**LL2SD-030(D)-0122-SD**
Date		**08/26/2001**	**08/25/2001**	**08/10/1996**	**08/13/1996**	**08/10/1996**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 0**
Sample Type		**Grab**	**Grab**	**Grab Composite**	**Grab Composite**	**Grab Composite**
Analyte	**Units**					
Inorganics						
Cyanide	mg/kg	NA	NA	0.1 U	NA	0.1 U
Aluminum	mg/kg	10,400 =	10,500 =	3,990 =	4,960 =	4,390 =
Antimony	mg/kg	1.1 UJ	1.1 UJ	0.3 U	NA	0.31 U
Arsenic	mg/kg	12.8 =	4.4 =	8.9 =	10.9 J	10.8 =
Barium	mg/kg	56.2 =	69.4 =	24.4 =	38.7 =	53.3 =
Beryllium	mg/kg	0.56 J	0.95 = *	0.28 =	NA	0.32 =
Cadmium	mg/kg	0.18 J *	0.41 J *	0.52 = *	1.6 = *	0.99 = *
Chromium	mg/kg	14.7 =	20.9 = *	5.7 =	12.3 =	13.5 =
Cobalt	mg/kg	7.8 =	10.7 = *	4.3 =	NA	3.7 =
Copper	mg/kg	13.8 =	30.1 = *	18.2 = *	NA	25.5 = *
Lead	mg/kg	20.2 =	13.3 =	21.6 =	210 J *	27.8 = *
Manganese	mg/kg	344 =	215 =	214 =	265 J	270 =
Mercury	mg/kg	0.024 U	0.019 U	0.03 U	0.04 U	0.03 U
Nickel	mg/kg	17.8 =	29.6 = *	9.1 =	NA	12.1 =
Selenium	mg/kg	0.53 J	0.43 J	0.3 U	0.36 U	0.56 =
Silver	mg/kg	0.57 U	0.57 U	0.19 U	0.23 U	0.2 U
Thallium	mg/kg	0.23 U	0.29 U	0.81 = *	NA	1 = *
Zinc	mg/kg	58.9 =	72.2 = *	71.1 = *	501 = *	99 = *

Table 4-17. Load Line 2 Surface Soil Explosives Handling Areas Aggregate – Inorganics – Site-Related Contaminants[a] (continued)

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2ss-001**	**LL2ss-001**	**LL2ss-002**	**LL2ss-003**	**LL2ss-004**
Sample ID		**LL2SS-001-0087-SO**	**LL2SS-001-0088-FD**	**LL2SS-002-0089-SO**	**LL2SS-003-0090-SO**	**LL2SS-004-0091-SO**
Date		**08/11/1996**	**08/11/1996**	**08/11/1996**	**08/11/1996**	**08/11/1996**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab Composite**	**Field Duplicate**	**Grab Composite**	**Grab Composite**	**Grab Composite**
Analyte	**Units**					
Inorganics						
Cyanide	mg/kg	NA	NA	NA	NA	NA
Aluminum	mg/kg	5,220 =	12,900 =	9,500 =	9,330 =	3,790 =
Antimony	mg/kg	NA	NA	NA	NA	NA
Arsenic	mg/kg	8.1 =	8.3 =	13.9 =	8.4 =	6.1 =
Barium	mg/kg	67.7 =	160 = *	108 = *	35.4 =	249 = *
Beryllium	mg/kg	NA	NA	NA	NA	NA
Cadmium	mg/kg	3.3 = *	4.2 = *	2.9 = *	0.08 J *	2.9 = *
Chromium	mg/kg	35.2 = *	14.7 =	20.2 = *	9.1 =	12.6 =
Cobalt	mg/kg	NA	NA	NA	NA	NA
Copper	mg/kg	NA	NA	NA	NA	NA
Lead	mg/kg	310 = *	191 = *	183 = *	18.1 =	112 = *
Manganese	mg/kg	426 =	1,240 =	451 =	146 =	859 =
Mercury	mg/kg	0.04 U	0.11 = *	0.06 = *	0.05 = *	0.07 = *
Nickel	mg/kg	NA	NA	NA	NA	NA
Selenium	mg/kg	0.39 J	0.34 U	1.4 =	0.58 =	0.43 J
Silver	mg/kg	0.22 U	0.22 U	0.22 U	0.22 U	0.21 U
Thallium	mg/kg	NA	NA	NA	NA	NA
Zinc	mg/kg	536 = *	359 = *	662 = *	55.8 =	228 = *

Table 4-17. Load Line 2 Surface Soil Explosives Handling Areas Aggregate – Inorganics – Site-Related Contaminants[a] (continued)

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2ss-005**	**LL2ss-006**	**LL2ss-007**	**LL2ss-008**	**LL2ss-009**
Sample ID		**LL2SS-005-0092-SO**	**LL2SS-006-0093-SO**	**LL2SS-007-0094-SO**	**LL2SS-008-0095-SO**	**LL2SS-009-0096-SO**
Date		**08/11/1996**	**08/11/1996**	**08/11/1996**	**08/10/1996**	**08/12/1996**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 2**	**0 - 2**	**0 - 1**
Sample Type		**Grab Composite**	**Grab Composite**	**Grab Composite**	**Grab Composite**	**Grab Composite**
Analyte	**Units**					
Inorganics						
Cyanide	mg/kg	NA	NA	NA	0.1 J *	NA
Aluminum	mg/kg	8,950 =	5,030 =	14,100 =	10,200 =	3,530 =
Antimony	mg/kg	NA	NA	NA	0.31 U	NA
Arsenic	mg/kg	6.7 =	7.3 =	16.2 = *	13 =	7.2 =
Barium	mg/kg	78.5 =	129 = *	80 =	60.5 =	19.4 =
Beryllium	mg/kg	NA	NA	NA	0.5 =	NA
Cadmium	mg/kg	0.82 = *	3.6 = *	0.05 U	0.38 J *	0.43 J *
Chromium	mg/kg	21.4 = *	35.3 = *	16.9 =	12.4 =	5.7 =
Cobalt	mg/kg	NA	NA	NA	6.5 =	NA
Copper	mg/kg	NA	NA	NA	11.7 =	NA
Lead	mg/kg	55.6 = *	265 = *	24.7 =	16.9 =	19.5 =
Manganese	mg/kg	439 =	959 =	417 =	319 =	218 =
Mercury	mg/kg	0.04 = *	0.94 = *	0.04 U	0.03 U	0.04 U
Nickel	mg/kg	NA	NA	NA	12.7 =	NA
Selenium	mg/kg	0.94 =	1.2 =	0.34 U	1.4 =	0.33 U
Silver	mg/kg	0.22 U	1.5 = *	0.22 U	0.2 U	0.21 U
Thallium	mg/kg	NA	NA	NA	2.4 = *	NA
Zinc	mg/kg	120 = *	339 = *	80.2 = *	63.4 = *	82 = *

Table 4-17. Load Line 2 Surface Soil Explosives Handling Areas Aggregate – Inorganics – Site-Related Contaminants[a] (continued)

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2ss-010**	**LL2ss-011**	**LL2ss-012**	**LL2ss-013**	**LL2ss-014**
Sample ID		**LL2SS-010-0097-SO**	**LL2SS-011-0098-SO**	**LL2SS-012-0099-SO**	**LL2SS-013-0100-SO**	**LL2SS-014-0101-SO**
Date		**08/13/1996**	**08/12/1996**	**08/13/1996**	**08/12/1996**	**08/12/1996**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab Composite**	**Grab Composite**	**Grab Composite**	**Grab Composite**	**Grab Composite**
Analyte	**Units**					
Inorganics						
Cyanide	mg/kg	NA	NA	NA	0.44 J *	NA
Aluminum	mg/kg	10,200 =	8,600 =	6,600 =	9,680 =	6,890 =
Antimony	mg/kg	NA	NA	NA	0.33 U	NA
Arsenic	mg/kg	18.4 = *	15.6 = *	18.8 = *	12.3 J	8.7 =
Barium	mg/kg	71 =	50 =	48.6 =	110 = *	123 = *
Beryllium	mg/kg	NA	NA	NA	0.77 =	NA
Cadmium	mg/kg	0.85 = *	0.74 = *	0.67 = *	6 = *	22.7 = *
Chromium	mg/kg	15.5 =	14.3 =	20.3 = *	22.1 = *	116 = *
Cobalt	mg/kg	NA	NA	NA	8.8 =	NA
Copper	mg/kg	NA	NA	NA	53.4 = *	NA
Lead	mg/kg	20.4 =	20.7 =	113 = *	370 = *	881 = *
Manganese	mg/kg	481 =	422 =	501 =	654 =	754 =
Mercury	mg/kg	0.05 = *	0.04 U	0.04 U	0.08 J *	0.06 = *
Nickel	mg/kg	NA	NA	NA	28.8 = *	NA
Selenium	mg/kg	0.35 U	0.36 U	0.34 U	0.85 =	0.66 =
Silver	mg/kg	0.22 U	0.23 U	0.21 U	0.21 U	0.47 J *
Thallium	mg/kg	NA	NA	NA	2.4 = *	NA
Zinc	mg/kg	72.7 = *	66.1 = *	152 = *	888 = *	892 = *

Table 4-17. Load Line 2 Surface Soil Explosives Handling Areas Aggregate – Inorganics – Site-Related Contaminants[a] (continued)

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2ss-015**	**LL2ss-015**	**LL2ss-016**	**LL2ss-017**	**LL2ss-017**
Sample ID		**LL2SS-015-0102-SO**	**LL2SS-015-0103-FD**	**LL2SS-016-0104-SO**	**LL2SS-017-0105-SO**	**LL2SS-017-0106-FD**
Date		**08/13/1996**	**08/13/1996**	**08/13/1996**	**08/10/1996**	**08/10/1996**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 2**	**0 - 2**
Sample Type		**Grab Composite**	**Field Duplicate**	**Grab Composite**	**Grab Composite**	**Field Duplicate**
Analyte	**Units**					
Inorganics						
Cyanide	mg/kg	NA	NA	NA	NA	NA
Aluminum	mg/kg	5,970 =	6,510 =	9,890 =	12,500 =	11,800 =
Antimony	mg/kg	NA	NA	NA	NA	NA
Arsenic	mg/kg	13.7 =	13.4 =	17.8 J *	15.5 J *	13.5 J
Barium	mg/kg	53.9 =	49.1 =	50.5 =	87.1 =	81.8 =
Beryllium	mg/kg	NA	NA	NA	NA	NA
Cadmium	mg/kg	1.7 = *	0.99 = *	0.77 = *	0.42 J *	0.28 J *
Chromium	mg/kg	13.3 =	12.4 =	15.6 =	19 = *	18.5 = *
Cobalt	mg/kg	NA	NA	NA	NA	NA
Copper	mg/kg	NA	NA	NA	NA	NA
Lead	mg/kg	134 = *	73.1 = *	38.5 J *	48 = *	17.1 =
Manganese	mg/kg	336 =	355 =	325 J	591 J	356 J
Mercury	mg/kg	0.05 = *	0.04 = *	0.04 U	0.04 U	0.04 U
Nickel	mg/kg	NA	NA	NA	NA	NA
Selenium	mg/kg	0.35 U	0.35 U	0.34 U	1.4 J	1.1 J
Silver	mg/kg	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U
Thallium	mg/kg	NA	NA	NA	NA	NA
Zinc	mg/kg	235 = *	143 = *	264 = *	65.4 = *	55.9 =

Table 4-17. Load Line 2 Surface Soil Explosives Handling Areas Aggregate – Inorganics – Site-Related Contaminants[a] (continued)

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2ss-018**	**LL2ss-019**	**LL2ss-019**	**LL2ss-020**	**LL2ss-021**
Sample ID		**LL2SS-018-0107-SO**	**LL2SS-019-0108-SO**	**LL2SS-019-0109-FD**	**LL2SS-020-0110-SO**	**LL2SS-021-0111-SO**
Date		**08/10/1996**	**08/10/1996**	**08/10/1996**	**08/11/1996**	**08/11/1996**
Depth (ft)		**0 - 2**	**0 - 2**	**0 - 2**	**0 - 1**	**0 - 2**
Sample Type		**Grab Composite**	**Grab Composite**	**Field Duplicate**	**Grab Composite**	**Grab Composite**
Analyte	**Units**					
Inorganics						
Cyanide	mg/kg	NA	0.1 U	0.38 J *	NA	NA
Aluminum	mg/kg	13,000 =	7,230 =	8,920 =	10,100 =	11,400 =
Antimony	mg/kg	NA	0.31 U	0.31 U	NA	NA
Arsenic	mg/kg	24.3 J *	9.4 =	6.9 =	16.2 = *	9.8 =
Barium	mg/kg	62.5 =	72.8 =	85.3 =	143 = *	58.6 =
Beryllium	mg/kg	NA	0.96 = *	1.1 = *	NA	NA
Cadmium	mg/kg	0.47 J *	0.22 J *	0.4 J *	1.8 = *	0.05 U
Chromium	mg/kg	17.9 = *	18 = *	11.3 =	15.6 =	11.9 =
Cobalt	mg/kg	NA	12.3 = *	7.2 =	NA	NA
Copper	mg/kg	NA	30.7 = *	14.8 =	NA	NA
Lead	mg/kg	13.6 =	7 =	15.9 =	67.7 = *	11.8 =
Manganese	mg/kg	299 J	465 =	545 =	594 =	328 =
Mercury	mg/kg	0.04 U	0.03 U	0.03 U	0.04 U	0.05 = *
Nickel	mg/kg	NA	32.6 = *	16 =	NA	NA
Selenium	mg/kg	1.5 J *	0.98 =	0.44 J	0.38 J	0.37 U
Silver	mg/kg	0.22 U	0.2 U	0.19 U	0.22 U	0.23 U
Thallium	mg/kg	NA	2.3 = *	1.7 = *	NA	NA
Zinc	mg/kg	68.3 = *	29.8 =	45.9 =	612 = *	34.6 =

Table 4-17. Load Line 2 Surface Soil Explosives Handling Areas Aggregate – Inorganics – Site-Related Contaminants[a] (continued)

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2ss-028**	**LL2ss-028**	**LL2ss-029**	**LL2ss-031**	**LL2ss-032**
Sample ID		**LL2SS-028-0119-SO**	**LL2SS-028-0120-FD**	**LL2SS-029-0121-SO**	**LL2SS-031-0123-SO**	**LL2SS-032-0124-SO**
Date		**08/09/1996**	**08/09/1996**	**08/09/1996**	**08/09/1996**	**08/09/1996**
Depth (ft)		**0 - 2**	**0 - 2**	**0 - 2**	**0 - 1**	**0 - 1**
Sample Type		**Grab Composite**	**Field Duplicate**	**Grab Composite**	**Grab Composite**	**Grab Composite**
Analyte	**Units**					
Inorganics						
Cyanide	mg/kg	NA	NA	NA	5 = *	NA
Aluminum	mg/kg	4,210 =	3,550 =	9,360 =	18,100 = *	24,500 = *
Antimony	mg/kg	NA	NA	NA	0.33 J	NA
Arsenic	mg/kg	11.8 =	11.6 =	14.2 =	4.4 =	6.2 =
Barium	mg/kg	20.8 =	18.1 =	42.3 =	191 = *	297 = *
Beryllium	mg/kg	NA	NA	NA	2.9 = *	NA
Cadmium	mg/kg	0.05 J *	0.08 J *	0.12 J *	0.47 J *	1.1 = *
Chromium	mg/kg	5.5 =	4.7 =	13.3 =	8.7 =	12.8 =
Cobalt	mg/kg	NA	NA	NA	3.3 =	NA
Copper	mg/kg	NA	NA	NA	12.4 =	NA
Lead	mg/kg	9.6 =	9.9 =	10.2 =	81 = *	46.1 = *
Manganese	mg/kg	284 =	300 =	290 =	3,310 = *	4,240 = *
Mercury	mg/kg	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Nickel	mg/kg	NA	NA	NA	7 =	NA
Selenium	mg/kg	0.35 U	0.35 U	0.34 U	2.2 J *	3.1 = *
Silver	mg/kg	0.22 U	0.22 U	0.21 U	0.2 U	0.2 U
Thallium	mg/kg	NA	NA	NA	7.6 = *	NA
Zinc	mg/kg	52.4 =	54.3 =	51.6 =	89.2 = *	90 = *

Table 4-17. Load Line 2 Surface Soil Explosives Handling Areas Aggregate – Inorganics – Site-Related Contaminants[a] (continued)

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2ss-033**	**LL2ss-034**	**LL2ss-034**	**LL2ss-035**	**LL2ss-036**
Sample ID		**LL2SS-033-0125-SO**	**LL2SS-034-0126-SO**	**LL2SS-034-0127-SO**	**LL2SS-035-0128-SO**	**LL2SS-036-0129-SO**
Date		**08/09/1996**	**08/09/1996**	**08/09/1996**	**08/09/1996**	**08/09/1996**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab Composite**	**Grab Composite**	**Field Duplicate**	**Grab Composite**	**Grab Composite**
Analyte	**Units**					
Inorganics						
Cyanide	mg/kg	NA	NA	NA	NA	NA
Aluminum	mg/kg	3,370 =	4,380 =	4,980 =	4,940 =	3,840 =
Antimony	mg/kg	NA	NA	NA	NA	NA
Arsenic	mg/kg	5.5 =	7.2 =	7.8 =	10.9 =	5.5 =
Barium	mg/kg	35.1 =	32.9 =	35.3 =	29.1 =	28 =
Beryllium	mg/kg	NA	NA	NA	NA	NA
Cadmium	mg/kg	0.21 J *	0.07 J *	0.07 J *	0.04 U	0.19 J *
Chromium	mg/kg	6.9 =	8.7 =	9 =	6.8 =	5.7 =
Cobalt	mg/kg	NA	NA	NA	NA	NA
Copper	mg/kg	NA	NA	NA	NA	NA
Lead	mg/kg	39.4 = *	17.6 =	16.5 =	11.7 =	13.7 =
Manganese	mg/kg	371 =	294 =	421 =	278 =	301 =
Mercury	mg/kg	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Nickel	mg/kg	NA	NA	NA	NA	NA
Selenium	mg/kg	0.34 U	0.34 U	0.34 U	0.34 U	0.34 U
Silver	mg/kg	0.22 U	0.21 U	0.21 U	0.21 U	0.21 U
Thallium	mg/kg	NA	NA	NA	NA	NA
Zinc	mg/kg	63.1 = *	51.5 =	54 =	52.4 =	33.3 =

Table 4-17. Load Line 2 Surface Soil Explosives Handling Areas Aggregate – Inorganics – Site-Related Contaminants[a] (continued)

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2ss-037**	**LL2ss-038**	**LL2ss-039**	**LL2ss-044**	**LL2ss-061**
Sample ID		**LL2SS-037-0130-SO**	**LL2SS-038-0131-SO**	**LL2SS-039-0132-SO**	**LL2SS-044-0138-SO**	**LL2SS-061-0675-SO**
Date		**08/09/1996**	**08/10/1996**	**08/10/1996**	**08/12/1996**	**08/14/1996**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab Composite**	**Grab Composite**	**Grab Composite**	**Grab Composite**	**Grab Composite**
Analyte	**Units**					
Inorganics						
Cyanide	mg/kg	NA	NA	NA	NA	0.31 J *
Aluminum	mg/kg	3,100 =	6,740 =	4,660 =	9,480 =	14,400 =
Antimony	mg/kg	NA	NA	NA	NA	0.41 U
Arsenic	mg/kg	5 =	14.1 =	11.1 =	14.8 =	28.4 = *
Barium	mg/kg	24 =	57.2 =	38.1 =	58.9 =	204 = *
Beryllium	mg/kg	NA	NA	NA	NA	0.87 =
Cadmium	mg/kg	0.32 J *	0.39 J *	1 = *	4.3 = *	4 = *
Chromium	mg/kg	8.6 =	8.7 =	13.2 =	13.4 =	36.1 = *
Cobalt	mg/kg	NA	NA	NA	NA	17 = *
Copper	mg/kg	NA	NA	NA	NA	46.6 = *
Lead	mg/kg	45.5 = *	22.4 =	121 = *	31 = *	388 = *
Manganese	mg/kg	433 =	418 =	320 =	329 =	536 =
Mercury	mg/kg	0.04 U	0.04 U	0.04 U	0.13 = *	0.05 U
Nickel	mg/kg	NA	NA	NA	NA	41.9 = *
Selenium	mg/kg	0.34 U	0.43 J	0.37 J	0.35 U	0.41 U
Silver	mg/kg	0.21 U	0.23 U	0.21 U	0.22 U	0.26 U
Thallium	mg/kg	NA	NA	NA	NA	1.7 = *
Zinc	mg/kg	52.3 =	76.6 = *	409 = *	115 = *	737 = *

Table 4-17. Load Line 2 Surface Soil Explosives Handling Areas Aggregate – Inorganics – Site-Related Contaminants[a] (continued)

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2ss-062**	**LL2ss-063**
Sample ID		**LL2SS-062-0681-SO**	**LL2SS-063-0683-SO**
Date		**08/20/1996**	**08/21/1996**
Depth (ft)		**0 - 1**	**0 - 1**
Sample Type		**Grab Composite**	**Grab Composite**
Analyte	**Units**		
Inorganics			
Cyanide	mg/kg	0.4 U	0.3 U
Aluminum	mg/kg	8,510 =	4,580 =
Antimony	mg/kg	1 = *	1.2 = *
Arsenic	mg/kg	14.5 =	11.7 =
Barium	mg/kg	58.8 =	40.9 =
Beryllium	mg/kg	0.64 =	0.36 =
Cadmium	mg/kg	1.5 = *	0.9 = *
Chromium	mg/kg	13.4 =	10.9 =
Cobalt	mg/kg	6.7 =	4.6 =
Copper	mg/kg	37.8 = *	29.3 = *
Lead	mg/kg	68 = *	263 = *
Manganese	mg/kg	383 =	316 =
Mercury	mg/kg	0.05 = *	0.04 U
Nickel	mg/kg	17.8 =	13.1 =
Selenium	mg/kg	0.35 U	0.36 U
Silver	mg/kg	0.22 U	0.23 U
Thallium	mg/kg	1.8 = *	1.4 = *
Zinc	mg/kg	147 = *	375 = *

[a]Table presents both Phase I (1996) and Phase II (2001) data.
* - Exceeds Ravenna Army Ammunition Plant background criteria.
ID = Identification.
NA = Not analyzed.
= - Detected result.
J - Estimated result.
U - Not detected.

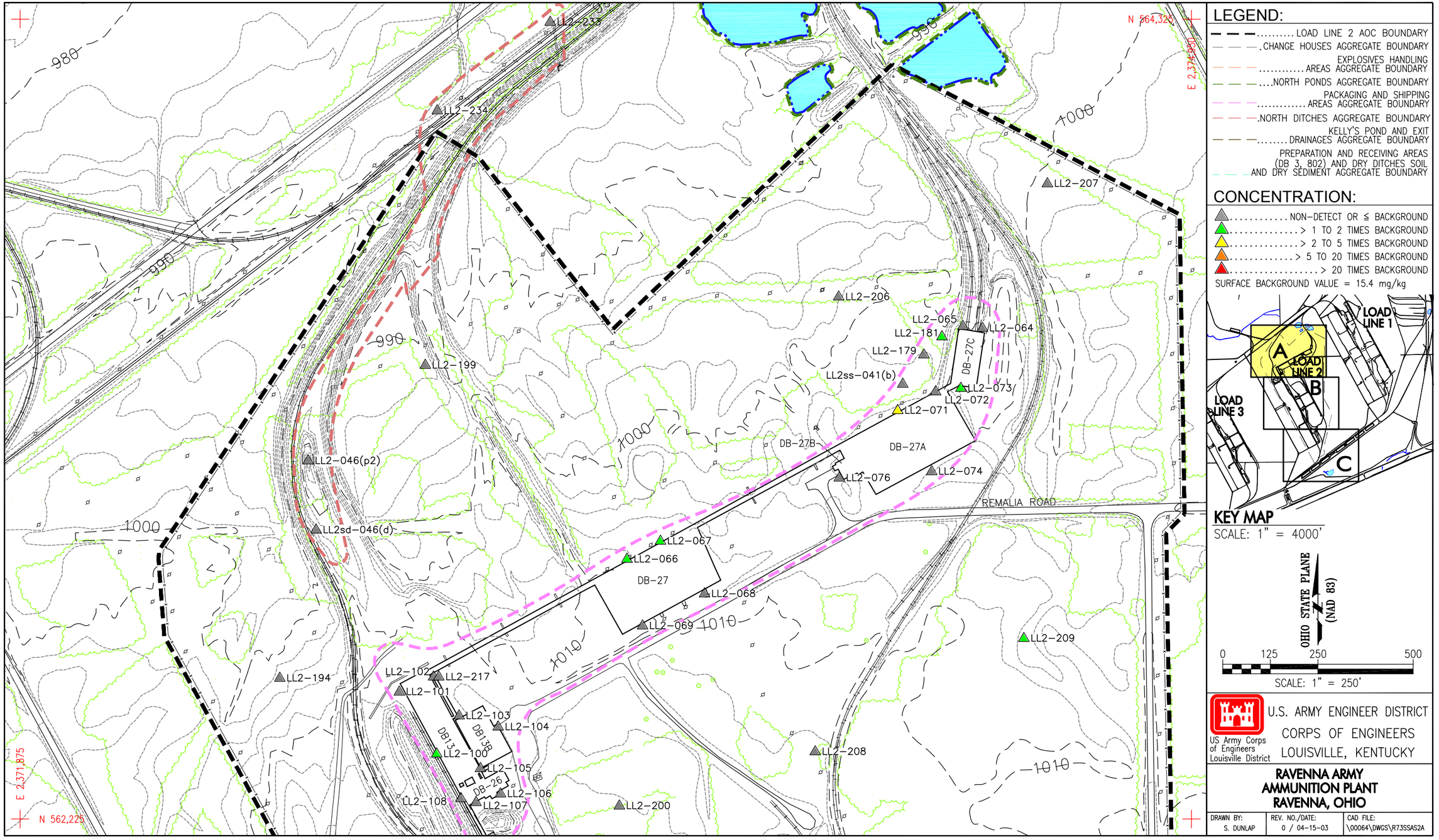


Figure 4-5. Distribution and Relative Concentration of Arsenic in Surface Soil at Load Line 2 - Northern Section

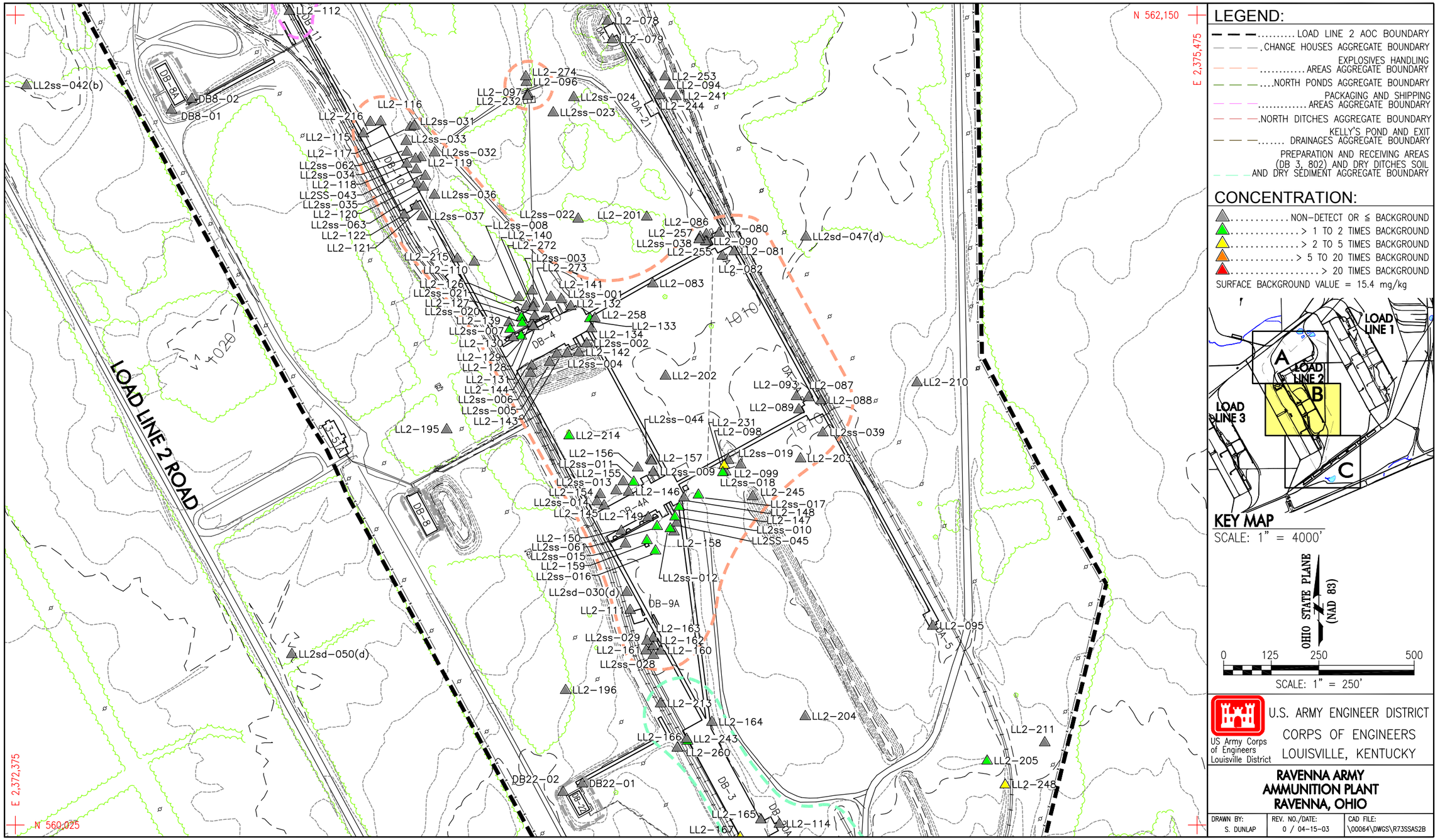
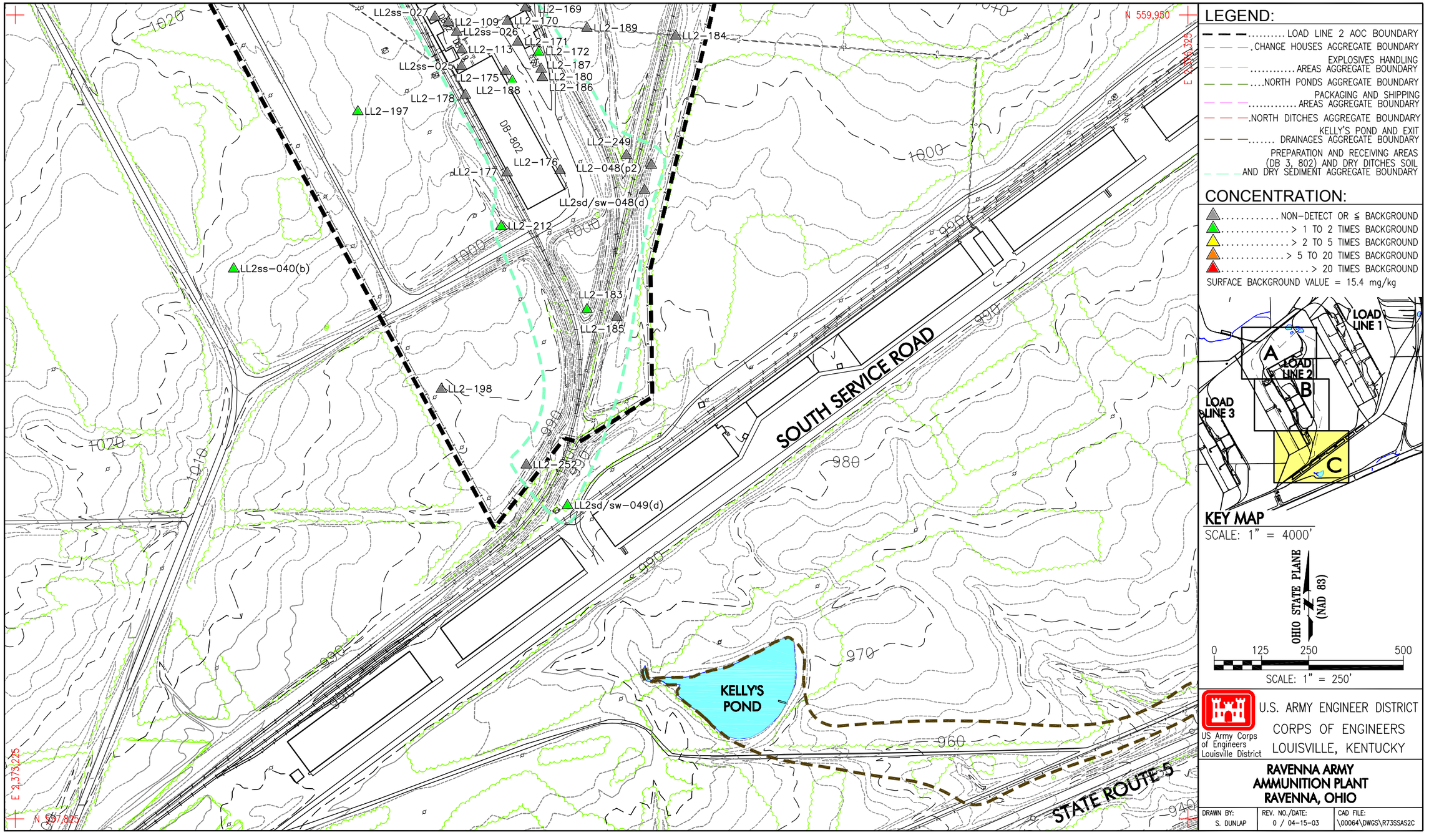


Figure 4-6. Distribution and Relative Concentration of Arsenic in Surface Soil at Load Line 2 - Central Section



LEGEND:

- LOAD LINE 2 AOC BOUNDARY
- CHANGE HOUSES AGGREGATE BOUNDARY
- EXPLOSIVES HANDLING AREAS AGGREGATE BOUNDARY
- NORTH PONDS AGGREGATE BOUNDARY
- PACKAGING AND SHIPPING AREAS AGGREGATE BOUNDARY
- NORTH DITCHES AGGREGATE BOUNDARY
- KELLY'S POND AND EXIT DRAINAGES AGGREGATE BOUNDARY
- PREPARATION AND RECEIVING AREAS (DB 3, 802) AND DRY DITCHES SOIL AND DRY SEDIMENT AGGREGATE BOUNDARY

CONCENTRATION:

- NON-DETECT OR ≤ BACKGROUND
- > 1 TO 2 TIMES BACKGROUND
- > 2 TO 5 TIMES BACKGROUND
- > 5 TO 20 TIMES BACKGROUND
- > 20 TIMES BACKGROUND

SURFACE BACKGROUND VALUE = 15.4 mg/kg

KEY MAP

SCALE: 1" = 4000'

OHIO STATE PLANE (NAD 83)

0 125 250 500

SCALE: 1" = 250'

US Army Corps of Engineers Louisville District

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
LOUISVILLE, KENTUCKY

RAVENNA ARMY AMMUNITION PLANT
RAVENNA, OHIO

DRAWN BY:	REV. NO./DATE:	CAD FILE:
S. DUNLAP	0 / 04-15-03	\00064\DWGS\R73SSAS2C

Figure 4-7. Distribution and Relative Concentration of Arsenic in Surface Soil at Load Line 2 - Southern Section

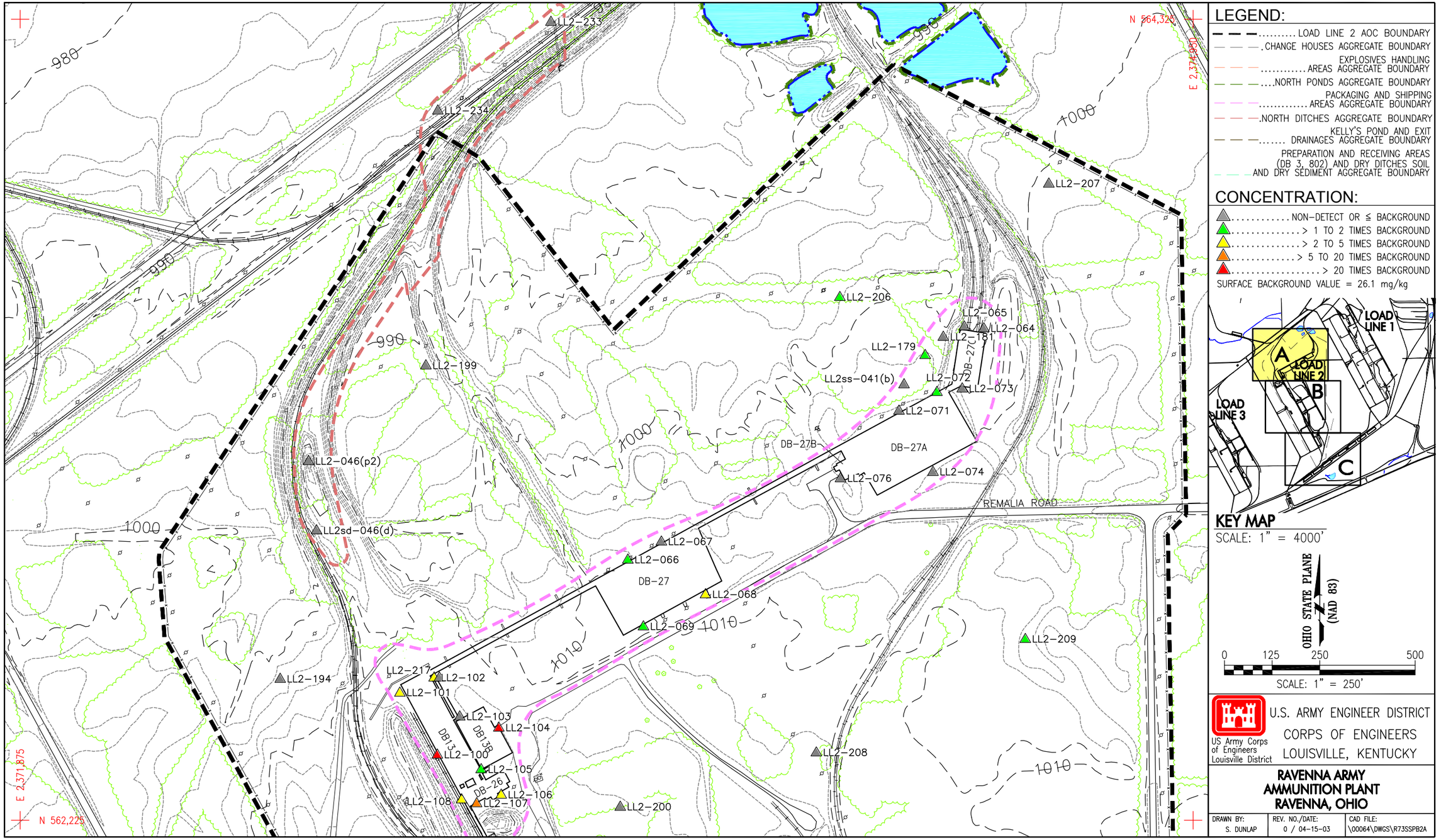


Figure 4-8. Distribution and Relative Concentration of Lead in Surface Soil at Load Line 2 - Northern Section