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D R A F T WORK PLAN

RCRA FACILITY INVESTIGATION (RFI)
OFF-SITE INVESTIGATION ADDITIONAL WORK
ATTICA, INDIANA
USEPA ID# IND00810754

Prepared for

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August 18, 2011

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C&D Technologies (C&D) has retained URS Corporation (URS) to develop and implement environmental investigative programs for C&D's Attica Indiana Facility located at 200 West Main Street, Attica, Fountain County, Indiana (the Site or Facility). This Supplemental Lead Sampling Plan is being submitted in response to a letter from Bhooma Sundar, Environmental Protection Agency (EPA) Region 5, to Mr. Walter Kozlowski of C&D Technologies dated June 21, 2011. The letter requested additional soil for sampling lead in residential soils adjacent to the C&D Facility.

This work plan describes how additional soil sampling sites will be selected and what sampling procedures will be followed. The June 21, 2011 letter required expanded sampling beyond the previous sample locations and offered recommendations to aid in selecting and performing future sampling events to obtain a more accurate assessment of lead in residential soil. Specifically, the recommendations for analysis were:

- Additional sampling of residential areas that are actually on homeowner property (not in easement or town-owned right of way) to obtain a more accurate lead exposure potential.
- Lead emissions data should be reviewed to account for emission types such as stacks, vents, background, and fugitive emissions that are released from the Facility.
- Sampling locations should be based on the dispersion modeling and/or monitored data. The sampling locations should be conducted in the areas focusing on the susceptible receptors. Applicable areas include residential lots, parks, play areas, and day care centers.
- Use dispersion modeling to aid in determining the spatial extent of the lead emission in the offsite area.
- The use of X-ray fluorescence (XRF) is encouraged for screening purposes during soil sampling.

The recommendations proposed were taken into account when identifying the procedures that will be followed for this work plan.

Section 2 of this work plan describes the air dispersion modeling study used to predict the spatial extent of lead emissions in the offsite area.

Section 3 provides a sampling plan to further evaluate lead in soils in the residential area within the air emissions plume.

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2.1 AIR DISPERSION MODELING STUDY

URS prepared a modeling analysis for lead emissions released from the C&D facility located in Attica, Indiana. The purpose of this section is to present a summary of the modeling procedures that were used to conduct the air quality dispersion modeling analyses. The modeling procedures used to conduct the analysis were based on recommendations given in the United States Environmental Protection Agency (U.S. EPA) Guideline on Air Quality Models.

C&D is a technology company that produces and markets systems for the power conversion and storage of electrical power, including industrial batteries and electronics. The facility is permitted under the Indiana Department of Environmental Management (IDEM), Air Quality Permit No. 045-00008 and operates under the major classification SIC code 3691.

On June 21, 2011, C&D Technologies received a letter from U.S. EPA, Region 5 requesting additional work due to the preliminary results from the RCRA facility investigation that was conducted by C&D. The RCRA investigation included collecting samples from 4 locations in a commercial area north of the property and 16 locations in the rights of way in nearby residential areas. Although the results from the investigation indicated that residential lead levels did not exceed Indiana Department of Environmental Management (IDEM) Residential Soil Direct Closure Levels (URS, 2008, 2009), EPA concluded that there was a potential for lead contamination in the residential area due to its close proximity to the facility. As a result, EPA requested that C&D further assess the migration of lead from battery manufacturing operations in order to add certainty to the RCRA investigation.

2.2 TECHNICAL MODELING APPROACH

2.2.1 Model

The American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) modeling system was employed in the following C&D modeling analysis. AERMOD is a steady-state line Gaussian plume model that considers the effects of nighttime planetary boundary layer effects and daytime convective activities. AERMOD has many features that make it the preferred model of choice for this particular modeling exercise; such features include the capability to model point, area and volume sources; inclusion of building downwash of effluent; and most importantly, AERMOD was recently identified as the "preferred" model in the U.S. EPA Guideline on Air Quality Models.

In this analysis, the following protocol and/or assumptions have been made.

- Simple terrain was assumed.
- Building downwash was used (as applicable).
- Rural model was selected.

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2.2.2 UTM Coordinates

As recommended in the AERMOD Guidelines, all coordinates should be in Universal Transverse Mercator (UTM) coordinate system. Summarized in the Input Parameters table (Appendix A) are the UTM coordinates for each stack and building; note that the datum which the coordinates are based is WGS84.

2.2.3 Meteorological Data

Meteorological data used in AERMOD was obtained through the IDEM Air Dispersion Modeling section, which included both surface and profile data for 2006 – 2010 for Fountain County (1 min ASOS). As specified by EPA's modeling guidance and support document, the use of the pre-processed meteorological data set precludes the need to run AERMET which was used by IDEM when preparing the 2006-2010 data set.

2.2.4 AERMAP Elevations

AERMAP has been revised (beginning with BEEST version 9.84) to support processing of terrain elevations from the National Elevation Dataset (NED) developed by the U.S. Geological Survey (USGS, 2002). An important component of the NED data is that it is being actively supported and checked for quality; therefore, NED represents a more up-to-date and improved resource for terrain elevations for use with AERMAP. In order to accommodate the large area being modeled, the NED data set utilized included the following Indiana towns: Mellott, Stone Bluff, Covington, Attica, Williamsport, West Lebanon, Chatterton, Pine Village and Tab.

2.2.5 Receptor Grid

As recommended in the AERMOD Guidelines, the C&D Air Dispersion model incorporated a 50 meter spacing along the fenceline, and a 100 meter spacing extending 5,000 meters.

2.2.6 Sources

Included in Appendix A is a summary of the modeling input parameters for each pollutant that were utilized in the C&D Air Dispersion Model. In addition, Figure 2-1 provides a detailed site map with the locations of the stacks, building and facility boundary line.

Stack parameters (height, temperature, velocity and diameter) were provided by Mr. James Dobson with C&D Technology. Lead emissions associated with each stack were obtained from the most recent stack test that was conducted for the unit. In cases where the stack did not have any stack test results, the model incorporated the unit's Potential to Emit (PTE) emission factor in order to provide a conservative air dispersion result. For instance, Sources 18, 19 and 20 (Electric Sovema plate curing ovens) are new emission units and have not been tested, therefore the PTE for each source was utilized in the model.

There were no fugitives sources identified at the facility, as the facility does not store lead contaminated product outside which could results in fugitives lead emissions.

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In addition, the facility does not operate 24 hours/day, 7 days/week, 52 weeks/year; therefore, operating restrictions have been incorporated into the C&D Air Dispersion Model. A summary of the hours of operation for each unit can be viewed in Appendix B.

2.2.7 Deposition

Deposition modeling, also referred to as Method 1 in AERMOD, can be used when a significant fraction (greater than about 10 percent) of the total particulate mass has a diameter of 10 µm or larger. Due to the type of collectors utilized (bag house or scrubbers) on most of the larger emitting stacks at this facility, the majority of the emissions are expected to be less than 10 µm and therefore minimizing the applicability of this model. In addition, the particle size distribution must also be known reasonably well in order to use Method 1. Currently, C&D has conducted particle size distribution analysis on only one (1) stack at the facility. Therefore, due to the lack of data currently available, URS was unable to perform a deposition analysis that would be representative of the facility's emissions.

2.3 SUMMARY OF RESULTS

Since the dispersion model AERMOD does not provide the ability to directly compute the 3-month rolling averages, results must go through a post-processing procedure. EPA's "LEADPOST" program is a FORTRAN program that is designed to read monthly concentrations output from AERMOD and calculate the maximum rolling 3-month average concentration for each receptor providing overall maximum concentration levels (across all receptors and source groups).

Below is a summary of the results from the facility-wide modeling study. The modeling indicated the facility, under current operating permit limitations, is in compliance with the NAAQS standard.

NAAQS (Standard No. 2)	Maximum µg/m^3	Background µg/m^3	Total µg/m^3	Standard µg/m^3	Year Max. Observed
Lead (3-Month Rolling Average)	0.080	Not Available	0.080	0.15	2010

The purpose of the air dispersion modeling analysis was to estimate the spatial extent of lead emissions in the offsite area. Unfortunately, there were no other monitoring data to compare the air dispersion modeling results to. URS has prepared a drawing (Figure 2-2) which illustrates the spatial extent of lead emissions in the near offsite area. URS compared the output from all 5 years that were modeled (2006-2010) and delineated four (4) areas; these include:

- Maximum Lead Concentration 0.08 µg/m^3 (based on rolling 3-month average)
- Level 1: Lead concentration approximately 0.04 µg/m^3
- Level 2: Lead concentration approximately 0.03 µg/m^3
- Level 3: Lead concentration approximately 0.02 µg/m^3

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URS utilized this data from the air dispersion modeling results to propose new soil sampling locations for analysis of lead in the offsite area, as further described in section 3.

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Based on the air dispersion analysis modeling, URS proposes to collect up to 28 additional surface soil samples at locations identified in the adjacent residential areas. Access to the proposed sampling locations will be dependent upon landowner approval. Sample locations were selected utilizing air dispersion modeling to define the area of greatest potential for lead impacts. A grid system was placed over the adjacent residential areas with points being roughly one hundred (100) feet apart. These points were then transposed on the map with front and backyards of residences being primary targets. Background lead levels will be evaluated by collecting samples from a recreational area southwest of the Facility. As requested by the June 21, 2011 letter, soil samples will be collected from the 0 to 1 inch depth interval, and field screened using XRF technology.

During previous site investigations, eleven samples were collected in the same residential area we are proposing to sample. These samples were collected in the public right of way (e.g., sidewalk area) between the road and individual properties. The new sampling locations are located on privately owned property and will need landowner permission to enter and sample. The soil samples are to be taken from the residential yards to judge more accurately the hazard for contact of lead with citizens, especially children.

3.1 SOIL SAMPLE COLLECTION

As discussed earlier in this work plan, the purpose of the soil investigation is to identify the lead concentrations in surface soil in the immediate residential area adjacent to the C&D facility. The general approach to sampling has been devised on targeting locations that will most likely meet the goal of this investigation. The sample will be field screened using XRF technology and the sample will be sent to an analytical lab for further analysis of the lead content to promote a greater degree of correlation with the field results.

URS proposes to collect up to 28 surface soil samples from residential property as indicated by the air dispersion modeling analysis (Figure 3-1). Due to the locations being dependent on landowner approval, some locations will potentially not be accessible. A collection of at least 20 samples will provide an accurate analysis of the lead level in the area's surface soil. Soil sample locations will be only accessed after landowner permission has been granted. Background lead levels will be estimated utilizing the same sampling procedures used in the residential areas. Background samples will be collected from a recreational area located southwest of the C&D Facility.

Surface soil samples will be collected from 0 to 1 inch using a stainless steel trowel. To the extent possible, surface vegetation and root matter will be removed prior to the sample collection. The top one inch of soil will be collected and analyzed from each accessible sample location. At each location, the XRF device will be utilized and the sample will be submitted to an analytical laboratory for further analysis. XRF results will be recorded in the project field book.

Soil samples will be collected using a clean trowel at each sample location and latex gloves to prevent potential cross contamination of the sample. New gloves will be used at each sample location. The trowel will be decontaminated between each soil sample location using a mixture of water and soap to scrub off soil and a final rinse of deionized water. Decontamination water will be containerized in a five gallon bucket. It is assumed the decontamination water can be

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disposed to the industrial sewer system at the C&D Facility upon completion of the subsurface soil investigation.

3.2 XRF PROCEDURES

As requested by EPA, soil samples will be field screened for lead using XRF technology. Because the XRF unit is utilized primarily as a field screening tool, each of the soil samples will be sent to a lab for further analysis. This will be done to establish a correlation between XRF readings and actual lab data for lead concentrations. Analytical results will be reviewed and compared to the XRF results to determine the consistency and reliability of the XRF unit for use during future screening events, if needed.

Limitations for the XRF meter involving interference that could potentially affect data quality include sample preparation error, spectral interferences, and chemical matrix interferences. The preparation error will be mitigated with proper sample homogenization and analysis (EPA, 2009). Spectral interference as well as chemical matrix interference cannot be controlled by the operator but will be noted if lab and field results differ greatly.

Another limitation of the XRF meter is the presence of excessive soil moisture. Soil moisture in the range of 15% - 25% are routinely reported to display values that are only 70% - 80% of what an analytical laboratory would find in the same sample (EPA, 2009). Soil moisture will be noted in the field manual when recording the field results to identify possible causes for discrepancies between field screening values and analytical data.

The XRF unit will be calibrated daily according to manufacturer's specifications. Testing a calibration blank sample of known concentration after the proper performance check will help to avoid false positives. A quality check of an existing duplicate sample will also be performed to check for consistency. If ambient air quality changes more than 10 degrees Fahrenheit during use of the meter, a recalibration will take place (EPA, 2009). Daily calibrations will be recorded in the field book.

The XRF meter will be operated via the cup measurement method. The cup measurement method was selected for this sampling event because the soil sample analyzed by the XRF will also be sent to an analytical laboratory. The soil sample will be collected from the ground surface and placed in a new zip-closure bag or a clean glass container and homogenized. The XRF operator will then take an aliquot from the sample container and will place it into a new plastic cup with Mylar covering. The cup containing the soil sample will be placed into a tray for analysis by the XRF meter. The window of the meter will then be opened for approximately 60 seconds to obtain an accurate reading (EPA, 2009). Once the XRF results have been recorded, the operator will then place the sample back into the original glass or zip-closure bag and be shipped to the laboratory for analytical analysis. This will provide a more accurate correlation with field data and laboratory data than using the in-situ method.

Screening support for definitive level site characterization will not be an issue as all of the samples will have duplicates that will be sent to an analytical laboratory for further testing.

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Environmental Protection Agency Region 4. 2009. Field Branches Quality System and Technical Procedures. Section 5: Field X-Ray Fluorescence Measurement (Effective date: November 1, 2007). pgs 1-12. Available on-line at: http://www.epa.gov/region4/sesd/fbqstp/Field-XRF-Measurement.pdf

United States Geological Survey. 2002. "The National Map Seamless Server Viewer." *Seamless Data Warehouse.* Web. 18 Aug. 2011. Available On-Line at: http://seamless.usgs.gov/website/seamless/viewer.htm.

URS Corporation, 2007. RCRA Facility Investigation Work Plan, C&D Technologies, 200 Main Street, Attica, Indiana. September 2007.

URS Corporation, 2008. RCRA Facility Investigation, Part 1 Report, C&D Technologies, Attica, Indiana. October 30, 2008

URS Corporation. 2009. RCRA Facility Investigation, Part 2a Report, C&D Technologies, Attica, Indiana. June 5, 2009

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FIGURES

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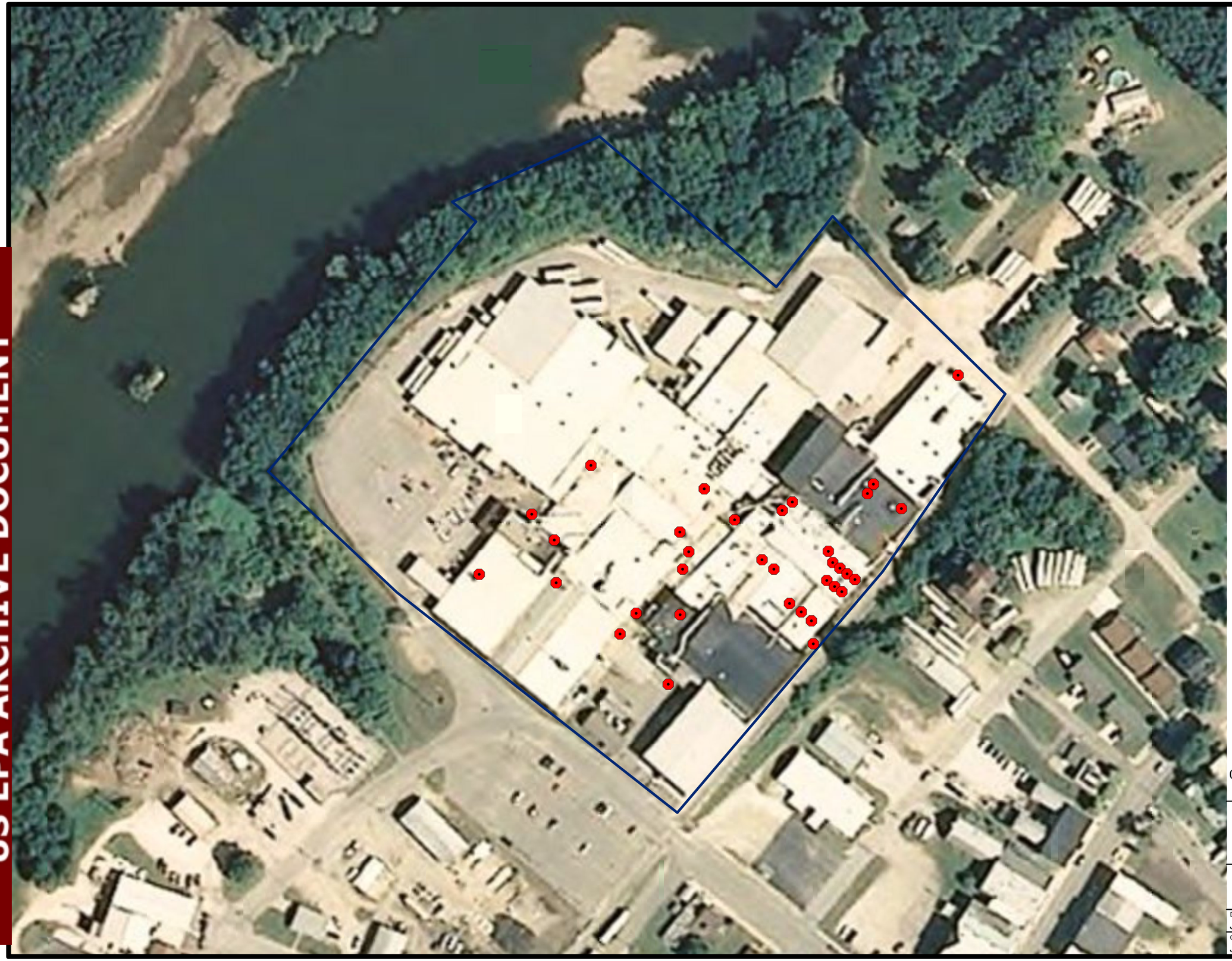


Legend

- Stack Locations
- Property Boundary

N

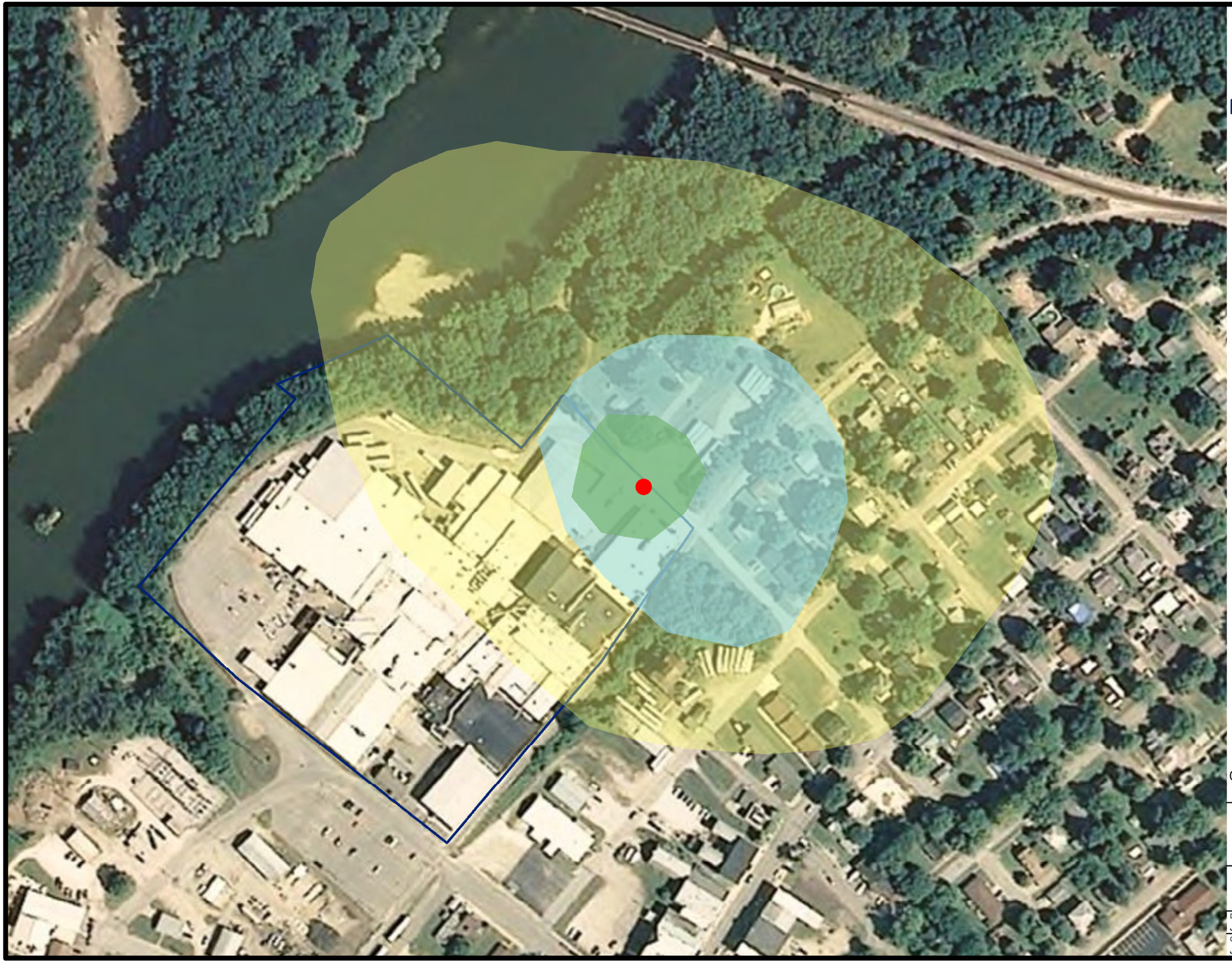
0 12.5 25 50 Meters

URS
Franklin, Tennessee

FIGURE 2-1
STACK LOCATIONS

C & D Technologies, Inc.
200 West Main Street
Attica, Indiana

Drawn By:	Projection:
JB	UTM, Zone 16N, NAD83, Meters
Checked By:	Source(s):
JW	URS Corporation



Legend

- Max. Lead Concentration - 0.08 microgram/m^3
- Level 1 - 0.04 microgram/m^3
- Level 2 - 0.03 microgram/m^3
- Level 3 - 0.02 microgram/m^3
- Property Boundary

N

0 15 30 60 Meters

URS
Franklin, Tennessee

FIGURE 2-2
AIR DISPERSION MODELING
RESULTS

C & D Technologies, Inc.
200 West Main Street
Attica, Indiana

Drawn By:	Projection:
JB	UTM, Zone 16N, NAD83, Meters
Checked By:	Source(s):
JW	URS Corporation

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Legend

- Proposed Sampling Sites
- Level 3 - 0.02 microgram/m^3
- Property Boundary

N

0 12.5 25 50 Meters

URS
Franklin, Tennessee

FIGURE 3-1
PROPOSED SAMPLING SITES

C & D Technologies, Inc.
200 West Main Street
Attica, Indiana

Drawn By:	Projection:
JB	UTM, Zone 16N, NAD83, Meters
Checked By:	Source(s):
JW	URS Corporation

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APPENDIX A
Input Parameters

URS

C&D TECHNOLOGIES, INC. ATTICA, IN
INPUT PARAMETERS

Model ID	EU Description	East UTM m	North UTM m	Elevation m	Stack Height feet	Stack Temp °F	Stack Velocity ft/sec	Stack Diameter feet	STACK TEST Lead Emission Rate lbs/hr	Controls	NOTES
18	Electric Sovema plate curing ovens	478786.06	4460633.90	164	28	140.0	26.00	1.00	0.0000074	None	
19	Electric Sovema plate curing ovens	478783.97	4460635.43	164	28	140.0	26.00	1.00	0.0000074	None	
20	Electric Sovema plate curing ovens	478781.87	4460637.20	164	28	140.0	26.00	1.00	0.0000074	None	
24	Natural gas-fired bone dry oven	478791.57	4460650.43	164	30	146.8	8.00	0.50	0.0000230	None	
25	Natural gas-fired bone dry oven	478794.93	4460647.83	164	30	146.8	8.00	0.50	0.0000230	None	
127	3PO-plate processing and 3PO-MP assembly	478784.31	4460622.64	164	20	83.9	64.00	2.00	0.0008900	Dust coll	
131	Central vacuum	478727.53	4460635.43	164	27	144.8	18.00	0.75	0.0001301	Dust coll	Includes emissions from 113, 124, 129, 130, 224
140	3PO-L plate assembly	478663.65	4460679.46	164	36	83.6	48.00	1.50	0.0066000	Dust coll	
141	3PO-L cell cover insert	478702.06	4460682.49	164	35	77.0	40.00	1.00	0.0002100	Dust coll	
142	3PO-L plate assembly	478728.07	4460664.98	164	36	83.6	48.00	1.50	0.0016000	HEPA	
151	3PO-plate processing	478728.19	4460655.74	164	35	62.6	562.00	2.00	0.0012000	Dust coll	
152	3PO-plate processing	478730.92	4460659.62	164	50	92.5	48.00	2.50	0.0003400	Dust coll	
159	Expander manufacturing	478658.95	4460649.40	164	36	76.8	68.00	1.50	0.0001300	Dust coll	
165	Natural gas-fired bone dry oven	478793.28	4460649.40	164	30	146.8	8.00	0.50	0.0000230	None	
166	3PO-L plate assembly	478680.30	4460664.59	164	30	61.0	33.00	2.00	0.0013000	Dust coll	
178	Formation	478748.34	4460668.93	164	30	61.0	47.00	1.33	0.0000300	None	
179	Natural gas-fired universal curing oven	478770.40	4460655.30	164	45	110.0	9.00	1.10	0.0000390	None	
180	Natural gas-fired universal curing oven	478768.65	4460656.70	164	45	110.0	9.00	1.10	0.0000390	None	
188	3PO-MCT plate assembly	478713.72	4460637.48	164	25	86.9	67.00	2.80	0.0028000	Dust coll	
195	Small parts flaming	478848.00	4460736.11	164	35	102.1	76.00	3.20	0.0006700	Dust coll	
196	Grid casting operation	478806.52	4460696.57	164	30	177.7	48.30	3.40	0.0400000	None	
226	Natural gas-fired grid curing oven	478804.47	4460694.13	164	19	125.0	194.9	0.33	0.0000050	None	
227	Natural gas-fired grid curing oven	478816.70	4460688.25	164	19	125.0	194.9	0.33	0.0001400	None	
228	Natural gas-fired grid curing oven	478793.52	4460658.90	164	19	125.0	194.9	0.33	0.0000400	Scrubber	
230	Grid pasting and pasted plate processing machines	478744.25	4460682.52	164	45	66.0	1,418.2	0.67	0.0026402	Scrubber	Includes emissions from 249 and 250
231	Paste mixing system	478771.90	4460688.41	164	35	85.4	283.6	0.67	0.0007200	Dust coll	
232	Binvent	478766.73	4460684.61	164	25	120.0	64.2	0.42	0.0001490	Dust coll	
233	Binvent	478794.73	4460655.70	164	25	78.0	145	0.42	0.0012000	None	
234	Natural gas-fired OSI universal oven	478796.28	4460654.54	164	20	125.0	194.9	0.33	0.0000788	None	From stack test results for 237
235	Natural gas-fired OSI universal oven	478798.27	4460652.83	164	20	125.0	194.9	0.33	0.0000079	None	
237	Natural gas-fired OSI universal oven	478799.87	4460651.79	164	20	125.0	194.9	0.33	0.0000200	None	
238	Natural gas-fired OSI universal oven	478679.93	4460649.41	164	20	125.0	194.9	0.33	0.0000788	Dust coll	From stack test results for 237
244	LCT 1700 assembly with two jigs	478728.40	4460612.40	164	31	125.0	71.4	2.67	0.0005500	Dust coll	
246	LCT 1700 battery curing ovens	478704.07	4460629.46	164	11	107.0	25.5	1.00	0.0000027	None	
247	3PO-plate processing and 3PO-JC/D assembly	478728.40	4460612.40	164	25	79.5	48.7	4.67	0.0067000	Dust coll	

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APPENDIX B
Hours of Operation

URS

C&D TECHNOLOGIES, INC. ATTICA, IN

OPERATING SCHEDULE

Model ID	EU Description	Elevation m	Stack Height feet	Stack Temp °F	Stack Velocity ft/sec	Stack Diameter feet	STACK TEST Lead Emission Rate lbs/hr	Hours/Year	Hours/day	NOTES
131	Central vacuum	164	27	144.8	18.00	0.75	0.0001301	1,040	4	4 hours 5 times per week
231	Paste mixing system	164	35	85.4	283.6	0.67	0.0007200	1,300	5	5 hours 5 times per week
232	Binvent	164	25	120.0	64.2	0.42	0.0001490	1,300	5	
233	Binvent	164	25	78.0	145	0.42	0.0012000	1,300	5	
127	3PO-plate processing and 3PO-MP assembly	164	20	83.9	64.00	2.00	0.0008900	2,000	8	8 hours 5 times per week
159	Expander manufacturing	164	36	76.8	68.00	1.50	0.0001300	2,000	8	
178	Formation	164	30	61.0	47.00	1.33	0.0000300	2,000	8	
246	LCT 1700 battery curing ovens	164	11	107.0	25.5	1.00	0.0000027	2,080	8	
247	3PO-plate processing and 3PO-JC/D assembly	164	25	79.5	48.7	4.67	0.0067000	2,080	8	
226	Natural gas-fired grid curing oven	164	19	125.0	194.9	0.33	0.0000050	2,600	10	10 hours 5 times per week
227	Natural gas-fired grid curing oven	164	19	125.0	194.9	0.33	0.0001400	2,600	10	
228	Natural gas-fired grid curing oven	164	19	125.0	194.9	0.33	0.0000400	2,600	10	
140	3PO-L plate assembly	164	36	83.6	48.00	1.50	0.0066000	4,160	16	16 hours 5 times per week
141	3PO-L cell cover insert	164	35	77.0	40.00	1.00	0.0002100	4,160	16	
142	3PO-L plate assembly	164	36	83.6	48.00	1.50	0.0016000	4,160	16	
151	3PO-plate processing	164	35	62.6	562.00	2.00	0.0012000	4,160	16	
152	3PO-plate processing	164	50	92.5	48.00	2.50	0.0003400	4,160	16	
188	3PO-MCT plate assembly	164	25	86.9	67.00	2.80	0.0028000	4,160	16	
18	Electric Sovema plate curing ovens	164	28	140.0	26.00	1.00	0.0000074	6,000	23	23 hours 5 times per week
19	Electric Sovema plate curing ovens	164	28	140.0	26.00	1.00	0.0000074	6,000	23	
20	Electric Sovema plate curing ovens	164	28	140.0	26.00	1.00	0.0000074	6,000	23	
24	Natural gas-fired bone dry oven	164	30	146.8	8.00	0.50	0.0000230	6,000	23	
25	Natural gas-fired bone dry oven	164	30	146.8	8.00	0.50	0.0000230	6,000	23	
165	Natural gas-fired bone dry oven	164	30	146.8	8.00	0.50	0.0000230	6,000	23	
234	Natural gas-fired OSI universal oven	164	20	125.0	194.9	0.33	0.0000788	6,000	23	
235	Natural gas-fired OSI universal oven	164	20	125.0	194.9	0.33	0.0000079	6,000	23	
237	Natural gas-fired OSI universal oven	164	20	125.0	194.9	0.33	0.0000200	6,000	23	
238	Natural gas-fired OSI universal oven	164	20	125.0	194.9	0.33	0.0000788	6,000	23	
244	LCT 1700 assembly with two jigs	164	31	125.0	71.4	2.67	0.0005500	6,000	23	
166	3PO-L plate assembly	164	30	61.0	33.00	2.00	0.0013000	6,200	24	24 hours 5 times per week
179	Natural gas-fired universal curing oven	164	45	110.0	9.00	1.10	0.0000390	6,200	24	
180	Natural gas-fired universal curing oven	164	45	110.0	9.00	1.10	0.0000390	6,200	24	
230	Grid pasting and pasted plate processing machines	164	45	66.0	1,418.2	0.67	0.0026402	6,240	24	
196	Grid casting operation	164	30	177.7	48.30	3.40	0.0000027	8,250	23	23 hours 7 times per week
195	Small parts flaming	164	35	102.1	76.00	3.20	0.0067000	8,500	23	23 hours 7 times per week

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