DEPARTMENT OF THE ARMY
RAVENNA ARMY AMMUNITION PLANT
8451 STATE ROUTE 5
RAVENNA, OHIO 44266-9297

BRIAN

REPLY TO
ATTENTION OF

December 18, 2002

Kendell G. Moore
Environmental Scientist
Environmental Services Division
U.S. EPA
DT-8T
77 West Jackson Blvd.
Chicago, Illinois 60604-3590

Dear Mr. Moore:

As we discussed on December 5, 2002, enclosed is a report on the recently completed PCB sampling event at the Ravenna Army Ammunition Plant.

Based upon our review and analysis of the data generated by the sampling event we do not believe that the applied dry paints in Load Lines #6 & #9 contain regulated quantities of PCBs. The sample results and data review is attached to the report to assist in your evaluation.

We would be happy to answer any questions that you might have. I look forward to your review and comments on the report as well as our conclusions.

Sincerely,

Mark Patterson

Mark Patterson
Environmental Coordinator
Ravenna AAP

Enclosure (1)

cc: Ohio EPA - NEDO
Neal Environmental Services, LLC
MKM Engineers, Inc.
Lynn Malcolm – ARAQMD
Sean Vadas – ARAQMD
DuWayne Porter – PCHD
Steve Uecke - PCHD

REPORT AND DATA ANALYSIS
On
THE RAVENNA ARMY AMMUNITION PLANT

PCB SAMPLING EVENT
For
LOAD LINES # 6 and # 9

On behalf of
MKM Engineers, Inc
Prime Contractor

Prepared by Neal Environmental Services, LLC
December 2002

Report and Data Analysis on the Ravenna Army Ammunition Plant PCB Sampling Event for Load Lines #6 and #9

Background

The Ravenna Army Ammunition Plant (RVAAP) is located in Portage and Trumbull Counties in northeastern Ohio. Since the 1940s, the US Army has used the RVAAP, in part, to produce munitions charged with propellants and explosives. The RVAAP has been declared as excess property by the Department of Defense. Contaminated areas are currently undergoing restoration for future use by the Ohio National Guard. As part of the restoration effort, a number of structures must be investigated, decontaminated and demolished. To properly manage the waste produced by the restoration activities, the RVAAP must accurately characterize the potential waste streams.

In the fall of 2002, the RVAAP began an investigation into the potential that applied dry paints used within Load Lines #6 and #9 would be regulated as Polychlorinated Biphenyl (PCB) Bulk Product Waste at the time the applied paints were designated for disposal. The United States Environmental Protection Agency (USEPA) has adopted regulations governing the manufacturing, processing, distribution and use of PCBs. These regulations are located in 40 CFR Part 761 of the Code of Federal Regulations. The regulations define PCB Bulk Product Waste in part as, "... waste derived from the manufactured products containing PCBs in a non-liquid state at any concentration where the concentration at the time of designation for disposal is $\geq$50 ppm PCBs."

The RVAAP must thermally decontaminate Load Lines #6 and #9 prior to demolition due to the potential presence of unstable explosives and propellants. Thus, it is necessary for the RVAAP to determine the regulatory status of the applied dry paints while the paint remains on the walls and prior to demolition. The regulations contained within 40 CFR 761 do not contain a specified sampling procedure for determining the PCB concentration in applied dry paints prior to demolition. The RVAAP, following consultation with USEPA Region V personnel, developed a sampling plan designed to determine the PCB concentration in the applied dry plants contained within Load Lines #6 and #9.

A copy of the Sampling Plan for Applied Dry Paints at the Ravenna Army Ammunition Plant is attached (Attachment #1). The plan called for the identification of differing paints by use and color, the identification of potential sample sites, the identification of randomly selected sample sites, the collection of paint samples, the compositing of paint samples by color and type, and the analysis of collected samples utilizing Method 8082 as directed by USEPA region V personnel. Prior to sampling, the Ohio Environmental Protection Agency (OEPA) decided to participate in the sampling event and analyze a split of each sample collected.

Sample Results

During the week of October 21 individuals from MKM Engineers, Inc. (MKM) and the OEPA collected samples in accordance with the sampling plan. A total of 10 different waste stream paints were sampled for analysis and classification. Seven of the waste stream paints were sampled in strict adherence to the sampling plan protocol. These samples consisted of differing paints identified by color and use from the Load Line walls and structural steel components. Three discrete non-composite paint samples were collected from Load Line appurtenances such as doors, vents and pipes. These samples were collected as discrete grab samples due to the relatively small square footage of paint these uses represented, overall. Table 1 details the samples collected, the procedure followed to collect the sample and the sample designation.

Table 1

Sample Designation by Use and Color	Sample Collection Procedure
Dark Green Wall Paint (GD-WP)	Composite
Light green Wall Paint (GL-WP)	Composite
Grey Wall Paint (GY-WP)	Composite
White Wall Paint (WT-WP)	Composite
Blue Wall Paint (BL-WP)	Composite
White Structural Steel Paint (WT-SS)	Composite
Silver Structural Steel Paint (SL-SS)	Composite
Yellow Wall Paint (YW-WP)	Grab
Maroon Door Paint (MN-DP)	Grab
Olive Green Door Paint (OG-DP)	Grab

In addition to the above noted samples, measurements/estimates were taken regarding the total area covered by the individual paints and the amount of surface area within these areas that were still covered by the paint. Measured samples were taken of the individual paints and weighed. These results are provided in Attachment #2 OEPA/MKM Data Calculation Sheets. Finally, the 10 samples collected for laboratory analysis were mixed and split with the OEPA.

Analytical Results

Table 2 shows the reported results obtained, via laboratory analysis, for each of the paint types of the MKM and OEPA sample splits. The Analytical Reports from each laboratory are attached and labeled as Attachment #3 MKM Sample Split Severn Trent Laboratories Analytical Report and Attachment #4 OEPA Sample Split Analytical Report for 21023 GPL Laboratories. Both laboratories analyzed the samples utilizing SW-846 Methods (Method 8082 Rev 0) as directed by USEPA Region V personnel.

Table 2

Sample Designation	MKM Result (ppm)	OEPA Result (ppm)
GD-WP	2.2	0.48
GL-WP	39.0	10.3
GY-WP	0.51	0.16
WT-WP	0.26	0.26
BL-WP	75.0	24.3
WT-SS	3.46	2.55
SL-SS	0.38	0.39
YW-WP	2.7	1.03
MN-DP	8.5	4.0
OG-DP	4.5	2.5

Once the data from both laboratories was received it was noted that there were unexpected differences in the data results. It is anticipated that two laboratories analyzing thoroughly homogenized split samples with the same analytical method should report similar results. In fact, the majority of the reported results are similar in regard to the concentration of PCBs present. There are two notable exceptions. The first, MKM reported result for the Blue Wall Paint (BL-WP) was 75.0 ppm, while the OEPA reported result for the Blue Wall Paint (BL-WP) was 24.3 ppm. The second, MKM reported result for the Light Green Wall Paint (GL-WP) was 39.0 ppm while the OEPA reported result for Light Green Wall Paint (GL-WP) was 10.3 ppm. In addition, each laboratory detected different PCB Arochlors. Table 3 displays these differences at the same time showing the general agreement with 8 out of the 10 sample results in regard to concentration.

Table 3

Sample	Difference in Sample Results ppm	MKM Sample Arochlor	MKM Sample Conc. ppm	OEPA Sample Arochlor	OEPA Sample Conc. ppm
GD-WP	1.72	1248	1.10	1016	0.20
		1254	1.10	1260	0.28
GL-WP	28.7	1254	39.0	1016	5.40
				1260	4.90
GY-WP	0.35	1254	0.51	1016	0.086
				1260	0.076
WT-WP	0.0	1254	0.26	1016	0.20
				1260	0.06
BL-WP	50.7	1248	75.0	1016	22.00
				1260	2.30
WT-SS	0.91	1248	2.60	1016	2.20
		1254	0.86	1260	0.35
SL-SS	0.01	1254	0.38	1016	0.21
				1260	0.18
YW-WP	1.67	1248	1.20	1016	0.65
		1254	1.50	1260	0.38
MN-DP	4.50	1254	8.50	1016	1.50
				1260	2.50
OG-DP	2.00	1254	4.50	1016	0.90
				1260	1.60

Following receipt of both sets of data and noting the differences cited, the complete laboratory reports were submitted to Purves Environmental, data validation specialists, for their review of the raw data in an attempt to understand the differences observed in the data. Coincidentally, William Purves who reviewed the laboratory reports is a former paint chemist with Glidden Paints. The Purves Environmental report regarding the data review is attached (Attachment #5).

Purves Environmental provided the following comments of note:

1. "Both laboratories followed protocols as required and no deviation was found."
2. "When comparing the chromatograms of each laboratory sample by sample, there is a difference in peak retention times and intensities that indicate clean up and interferences are at issue here."
3. "The clean up is critical for the removal of potentially interfering peaks. The sulfuric acid clean up does not affect the Arochlor but does affect other compounds that are not as robust. In this case the sample is paint which has a variety of organic matrices that are not like the organic matter found in soil or water. Paint also has organic matter that can be resistant to degradation by sulfuric acid. This may cause difficulties in the cleanup by generating more organic compounds which are sensitive to the ECD detector."
4. "... it is possible to have different reactions to the coatings based upon the clean up step that will affect the outcome of the chromatography."

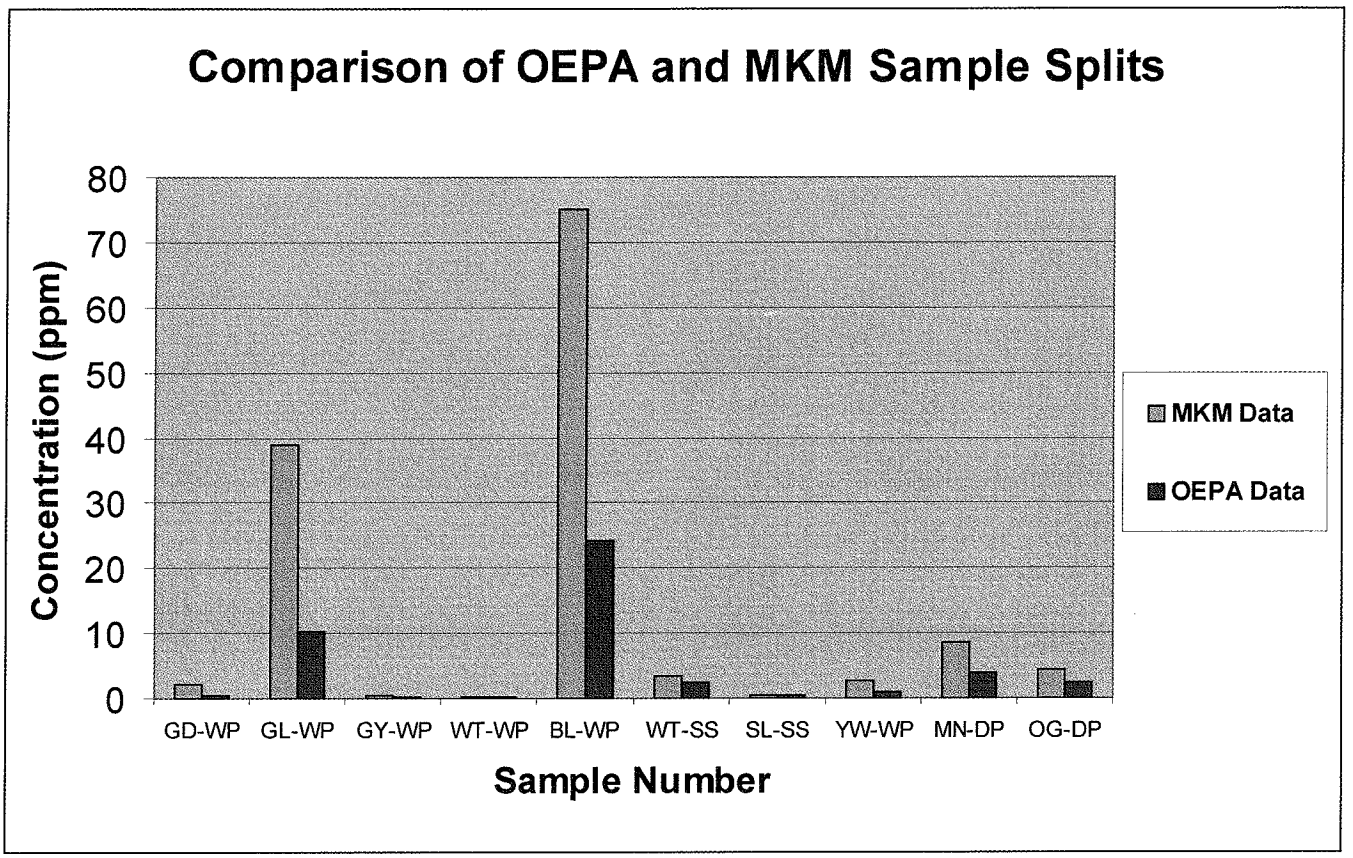
5. "Each laboratory produced chromatography that were similar within their operating system but the data did not match or compare well when examining the same sample split between labs. This indicates that the differences are due to inherent problems with clean up and extraction methods that are not designed for a specific matrix (paint, as in this case), nor well suited to the laboratory procedure."
6. "The ECD detector is not specific to just PCBs. It will detect nitrogen and oxygen containing compounds as well as the Chloride compounds present in PCBs. A coating (paint) will have a variety of compounds that could be detected by the ECD that are not related to PCB Chlorides, such as other halogens as well as nitrogen and oxygen compounds."

In their report Purves Environmental noted that most paint that is specifically blended to contain PCBs typically exhibits concentrations of 10 –15% and offers three reasons why the low levels of PCBs noted are observed.

1. The PCB detected in the coating may occur in one of many layers.
2. The supplier blended PCB paints with other paints to meet supply demand, or the supplier was just trying to get rid of some PCB paints by blending them with other paints.
3. There are no PCBs in the paint at all. The peaks are the result of break down of the paint in the clean up process causing interference and the newly created compounds are ECD sensitive.

Data Analysis

The goal of the RVAAP sampling plan was to determine if the applied dry paints in Load Lines #6 and #9 contain concentrations of PCBs in amounts $\geq$ 50 ppm. The result of the sampling and analysis strongly indicates that the applied dry paints in Load Lines # 6 and # 9 do not contain $\geq$ 50 ppm PCBs. Only one sample result was reported with a value of greater than 50 ppm and this appears to be an outlier. The MKM Blue Wall Paint Sample (BL-WP) was reported with a value of 75.0 ppm. The OEPA Blue Wall Paint Sample was reported with a value of 24.3 ppm. The difference between the two sample results is 50.7 ppm. Excluding, the Light Green Wall Paint Sample (GL-WP), which also appears to be an outlier (with a difference between the two samples of 28.7 ppm), the average difference between the remaining eight samples is 1.40 ppm. The greatest difference between these eight samples is 4.5 ppm. The difference between the MKM Blue Wall Paint Sample result and the OEPA Blue Wall Paint Sample result is 37 times greater than the average difference between these eight samples and over 11 times greater than the largest difference observed between these eight samples. It can be hypothesized that split sample results from laboratories using the same methods should be nearly the same. While eight of the reported results match this hypothesis the MKM sample result for the Blue Wall Paint does not conform to either the hypothesis or the rest of the data. The following chart graphically demonstrates the outlier nature of the MKM Blue Wall Paint Sample.



Numerically there can be little question that the MKM Blue Wall Paint Sample is an outlier. The data review by Purves Environmental provides numerous reasons why this sample is in fact a true outlier. As noted earlier, one of the Purves findings was that, "Both laboratories followed protocols as required and no deviation was found." However, Purves noted two conditions which could lead to a higher than actual reported result. First, Purves noted that sample clean up could be a problem with the paint matrix. As noted by Purves, this problem, "... may cause difficulties in the cleanup by generating more organic compounds, which are sensitive to the ECD detector." Secondly, Purves noted that the ECD detector is not specific to PCBs. Purves went on to note that, "Thus many of the peaks observed may not be Arochlors." Therefore not only was the waste matrix such that cleanup may have generated additional organic compounds these additionally generated compounds may have been read as PCBs when in fact they are not PCBs.

It must also be recognized that while Purves noted several reasons why the reported results could have been higher than the actual PCB concentration he did not note any items either in the protocol, or protocol execution that would have resulted in the reporting of a number that was lower than the actual PCB concentration. Thus, when examining the expected sample result outcome (consistency between split sample results), the actual outcome for all of the samples (consistency between the majority of the sample results), and the potential that cleanup and detector issues could lead to an artificially high result. Further, it is logical to assume that if any PCBs are actually present in the blue wall paint they are present in concentrations in the general

range of the 24.3 ppm reported in the OEPA sample rather than the 75 ppm reported in the MKM sample, due to the pattern of low concentrations exhibited by the remaining samples.

Another item to examine in regard to this issue is the fact that neither laboratory detected the same PCB Arochlors. While this issue is not relative to the ultimate determination as to whether or not the applied dry paints would be PCB Bulk Product Waste it lends credibility to the potential that no PCBs actually are present in the applied dry paints in the Load Lines. Again, different laboratories performing the same tests on a thoroughly homogenized sample should exhibit essentially the same result. This occurred for the majority of the samples from a total concentration perspective. However, each laboratory reported the presence of different PCB Arochlors. This strongly suggests that since both laboratories performed the prescribed analytical method as required, each laboratory experienced the same difficulties. Specifically, during the sample clean-up step, it is likely that each laboratory generated similar amounts of other organic compounds that when read by the ECD detector were noted as different PCB Arochlors when in fact they were not PCB Arochlors at all.

A final observation resulting from the data review involves the exceptionally low concentrations of PCBs detected in all samples. As noted by Purves and as previously noted by a representative of US EPA via telephone, PCB paints, by design, typically contain 10-15% PCBs. As a former paint chemist, Purves suggests three possible reasons why these low concentrations were observed, (see Attachment #5). One potential reason is that there are actually no PCBs present in the samples. The chromatography peaks were the result of ECD sensitive breakdown products. The other two reasons noted are, a supplier blending PCB paints with other paints or that the PCBs detected were in only one of many paint layers. Although these latter two are both logical explanations why one or even a couple of the samples might show a low concentration of PCBs, it is unlikely to assume that these same conditions would have occurred in all ten of the distinctively different paints. It is much more logical, reasonable, and supportable to assume that in fact there are no PCBs present in the applied dry paints and the previously noted laboratory issues resulted in the false positive detection and reporting of PCBs.

Conclusion

The goal of the RVAAP applied dry paint sampling plan was to determine if any of the applied dry paints present in Load Lines #6 and #9 contained PCBs in concentrations $\geq$ 50 ppm. If the applied dry paints did contain concentrations of PCBs $\geq$ 50 ppm they would be subject to regulation as PCB Bulk Product Waste at the time they were designated for disposal. Upon review of the twenty sample results comprised of the OEPA and MKM splits samples, only one sample result was reported with a PCB concentration $\geq$ 50 ppm. The companion split sample result exhibited only one third the concentration. This one sample result is clearly an outlier. Based upon this evaluation, it is likely that the applied dry paints do not contain any PCBs. Therefore, at the time of designation for disposal, the applied dry paints present in the RVAAP Load Lines #6 and #9 should not be managed or regulated as PCB Bulk Product Waste.

ATTACHMENT # 1

PCB SAMPLING PLAN

FOR APPLIED DRY PAINTS
at
THE RAVENNA ARMY AMMUNITION PLANT

PCB SAMPLING PLAN

FOR APPLIED DRIED PAINTS
AT
THE RAVENNA ARMY AMMUNITION PLANT

ON BEHALF OF
MKM ENGINEERS, INC.

COMPLETED BY NEAL ENVIRONMENTAL SERVICES, LLC

OCTOBER 2002

Sampling Plan for Applied Dry Paints at the Ravenna Army Ammunition Plant

1. Site Description.

The Ravenna Army Ammunition Plant (RVAAP) is located on 21,419 acres in Portage and Trumbull Counties in northeastern Ohio. Since the 1940s, the RVAAP has been used by the US Army to produce munitions charged with propellants and explosives. The RVAAP has been declared as excess property by the Department of Defense. Contaminated areas are currently undergoing restoration for future use by the Ohio National Guard. As part of the restoration effort a number of structures must be investigated, decontaminated and demolished. To properly manage the wastes produced by the restoration efforts the RVAAP must accurately characterize the potential waste streams. The waste stream that is the subject of this plan is applied dry paints used in some of the facility structures.

The RVAAP and it facilities were built in 17 months time in the early 1940s. Army ammunition plants were built in accordance with a set of uniform plans. From one plant and one structure to the next the design and materials used to construct the buildings varied little. For example, fuse and booster load lines at the RVAAP, which were used to manufacture munitions, vary little from one fuse and booster load line to the next. Further, the materials used vary little from one fuse and booster load line to the next or from one part of a fuse and booster load line to another part of the same load line. Site facilities consist of individual buildings or groups of buildings or structures. For example a load line consists of a number of similarly constructed attached structures that served as the production line for assembling munitions.

In the construction of the facilities a number of paints were applied. The same paints were applied in and through out each structure or grouping of structures. The type of paint applied was based upon the type, location and function of the structure or item being painted. Thus, the walls and piping in a load line will contain several distinct but uniform types of paints, which can be differentiated by the paint color. Unlike a residential structure it can be said with certainty that when a paint type was selected for use it was used consistently through out the structure or grouping of structures for that particular purpose.

2. Goal.

The goal of this sampling plan is to achieve characterization of dry applied paints used in various structures and groupings of structures at the RVAAP to determine if, as wastes, the applied dry paints are subject to regulation under 40 CFR 761- Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use

Prohibitions. It is suspected that prior to application a number of the paints used at the RVAAP were mixed with various concentrations of PCBs. It should be stressed that any concentration of PCBs present in the RVAAP paints resulted from the mixing of PCBs with the paints prior to their application. It is not known or suspected that any liquid PCBs were spilled or released onto the painted surfaces. Pursuant to 40 CFR 761 the RVAAP will determine the PCB concentration in applied dry paints used on facility structures (walls) and appurtenances (piping). 40 CFR 761.3 defines PCB Bulk Product Waste as waste derived from manufactured products containing PCBs in a non-liquid state, at any concentration where the concentration at the time of designation for disposal was $\geq$ 50 ppm. This definition further specifically lists "applied dry paints" as potential PCB Bulk Product Waste. 40 CFR 761.62 Disposal of PCB Bulk Product Waste states that when it is necessary to analyze wastes to make determinations on the PCB concentration Subpart R of 40 CFR 761 should be utilized. Subpart R envisions that the material be to sampled has been demolished and can be configured in one of several types of piles. However, the US EPA Question and Answer September 2001 Guidance Manual indicates that EPA has not specified a procedure for collecting samples of applied dried paints prior to demolition of the painted surface. Further, this document suggests that the regional US EPA office be contacted for advice on sampling. Thus the goal of this sampling effort will be to identify the various paint types in use at the RVAAP, collect representative samples of each type of paint and determine the PCB concentration in each paint type. Finally, these concentrations will be compared to the PCB Bulk Product Waste concentration characterization limit of $\geq$ 50 ppm and the paints will be characterized for regulation or non-regulation under 40 CFR 761.

3. Condition of Material to be Sampled.

As previously noted contaminated portions of the RVAAP are undergoing restoration for future use by the Ohio National Guard. Many of the existing structures must be investigated, decontaminated and demolished. Thus, the walls and piping can be designated as wastes and characterized for proper disposal. In general, the existing structures are in good condition considering the overall age of the facility and the facility structures. However, the facility structures have not been used or maintained for a number of years. As such, the paint on the walls and piping can be found to be both in good condition, still adhered to the walls or piping, and pealing or flaking from the walls and piping.

4. Waste Classification.

The first step in the waste identification process will be to identify the number and type of different waste streams. This will be accomplished via a visual survey during which a listing will be made of separate paint types by color and use in a structure or grouping of structures. As previously noted, while there are several types of paint in-place in the RVAAP facilities, it is believed that the same few paints were used universally and extensively through out the facility. Thus, a visual survey will be conducted and paint types will be classified via use and color. For example, there may be a waste paint type noted as green in color and primarily used for application on the walls. Each use type

regardless of color will be noted as a separate waste stream. For example, there may be a green paint used on walls and green paint also used on pipes. In this case, two categories would be established; green paint on walls and green paint applied to piping.

Once this initial survey has been completed the various paint colors by use shall be considered to be the list of distinct waste streams for characterization. Following waste stream identification another survey will be conducted to identify the locations of each waste stream in the structure or grouping of structures. As part of this survey, an attempt will be made to identify the relative percentage/amount of each paint waste stream present in a structure or grouping of structures. This will be accomplished via hand measurement or if hand measurement is impractical estimation supported via measurement to the extent practical will be utilized. Where estimation is utilized this shall be noted.

5. Sample Site Selection.

Following identification and location listing of the distinct waste streams, 15 potential sample sites shall be identified for each distinct waste stream. These potential sample sites shall to the extent possible, be evenly distributed through out the structure or grouping of structures being surveyed. Due to the fact that the goal of this sampling effort is to characterize the applied dry paints, the potential sample sites will be identified based upon the presence of paint rather than on a random grid selection process. Potential sample sites shall be at least 1 meter apart unless the amount of painted surface per color and use does not allow such spacing. The potential sampling sites, to the extent possible, will also be evenly distributed through out the structure or grouping of structures being sampled. If the available sample site surface does not allow for the 1-meter spacing, the potential sample sites shall be evenly spaced. Each sample site shall be marked with a number and waste stream designation such as green, wall, #1 and so on beginning at one end of the structure or pipe and continuing down the length of the structure or pipe assigning numbers sequentially. From the 15 potential sample sites, 5 sample sites shall be randomly selected and sampled for each waste stream. The 15 potential sites shall be divided into 3 groups of 5 potential samples sites (1-5), (6-10) and (11-15). One sample site shall be randomly selected from potential sample site group (1-5). Two sample sites shall be randomly selected from potential sample site group (6-10) and 2 sample sites shall be randomly selected from potential site group (11-15).

The following tables/examples illustrate the above described sample site selection process.

1. Visual Survey Fuse and Booster Load Line #6. (May result in identifying the following waste streams.)

Green/Pipe	Green/Wall	Grey/Wall	Red/Pipe	Blue/Wall	Yellow/Pipe

2. Identification of Potential Sample Sites using Green/Pipe as an example. (each waste stream will go through the same process.)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

3. Division of Potential Sample Sites for Green/Pipe into 3 Groups of 5 Each.

1,2,3,4,5	6,7,8,9,10	11,12,13,14,15,

4. Random Selection of Green/Pipe Sample Sites. 1 from Group 1-5, 2 from Group 6-10 and 2 from Group 11-15.

1,2,3,4,5	6,7,8,9,10	11,12,13,14,15

5. Sample Randomly Selected Green/Pipe Sites

2	7	10	11	15

6. Composite Collected Green/Pipe Samples

2,7,10,11,15

7. Thoroughly Mix the Composited Green/Pipe Sample and Remove Sample to be Submitted to Lab

6. Sample Collection.

Following identification of the sample sites, a sample shall be collected from each site and composited with the other samples collected for that distinct waste stream. Each sample shall be collected by manually removing the paint, to the extent practical, down to the bare subsurface. Each sample collected from a sample site shall consist of approximately the same amount of removed applied dry paint. Following collection of all five samples the resulting composite shall be completely and thoroughly mixed. From the resulting composite a sample shall be removed, placed in a sample container approved for shipment of the sample and sent to the laboratory for chemical extraction and analysis of PCB concentration.

Following collection of the composite samples another sample site will be chosen randomly from the remaining sample sites for each waste stream. A sample shall be collected from each of these sites consisting of the applied dry paint, removed to the

extent practical down to the bare subsurface, from an area equivalent to 30 square centimeters. This sample shall be weighed and the result used to calculate the approximate amount/percentage of each waste stream present in the facility being sampled.

7. Laboratory Analysis.

The Laboratory shall use either Method 3500B/3540C or Method 3500B/3550B from EPA's SW-846 Test Methods for Evaluating Solid Waste for chemical extraction of PCBs from the composite samples. Method 8082 from SW-846 shall be used to analyze these extracts for PCBs.

8. Results Reporting.

Each composite sample shall be analyzed for PCB concentration and all sample concentrations shall be reported as ppm by weight on a dry weight basis.

9. Results Analysis.

Any sample concentration of $\geq$ 50 ppm shall result in the corresponding waste stream being designated as PCB Bulk Product Waste and subject regulation under 40 CFR 761.

ATTACHMENT #2

OEPA/MKM

DATA CALCULATION SHEETS

Load Line 6 Paint Evaluation

Building	Sq Footage (Wall)	Sq Footage (Floor)
2F-31	4340	4734
2F-12	2728	864
2F-10	420	108
2F-33	420	108
2F-34	420	108
2F-35	420	108
2F-11	25370	30813
2F-32	11220	11000
2F-7	3460	912
2F-4	4680	4563
2F-9	1584	640
2F-18	420	108
2F-19	420	108
2F-20	420	108
2F-15	420	108
2F-1	1020	220
2F-2	400	99
2F-3	2800	592
6-51	1600	768
2F-36	5260	2581
2F-14	3432	2880
2F-13	6680	3484
2F-8	6732	6811
2F-6	864	164
TOTAL	85530	71989

% Cover	60%	
Residual Coverage	51318	
Structural Steel	22580	white & silver
% Cover	80%	
Residual Coverage	18064	
Doors Vents & Pipes	5837	12 colors
% Cover	70%	
Residual Coverage	4086	

Total Sq Ft Paint **73468**

	Walls		**Total Sq Footage**	**Weight per Sq Ft**
Grey		21%	10777	g
White		60%	30791	g
Lt Green		7%	3592	g
Dk Green		7%	3592	g
Blue		5%	2566	g
	Structural Steel			
White		0.5	9032	g
Silver		0.5	9032	g
	Appurtenances		Pipe, Vents, Doors Windows	
12 Colors		1	4086	g

Total Wall + St Steel Sq Ft	69382	94% % Wall + St Steel
Total Appurt. Sq Ft	4086	6% % Appurt.
	73468	< 0.5% for each remaining color

Load Line 9 Paint Evaluation

Building	Sq Footage (Wall)	Sq Footage (Floor)	
DT-22	16800	8080	
DT-21	16800	8080	
DT-20	16800	8080	
DT-26	528	120	
DT-27	528	120	
DT-33	528	120	
DT-23	528	120	
DT-24	3192	2263	
DT-9	739	237	
DT-8	739	237	
DT-7	648	182	
DT-6	648	182	
DT-10	528	120	
DT-11	528	120	
DT-29	3816	3968	
DT-28	3384	3410	
DT-52	3288	4132	
9-51	1440	884	
DT-13	2760	2316	
DT-12	528	120	
DT-34	432	81	
DT-35	432	81	
DT-18A	2160	2026	
DT-19	528	120	
DT-4	528	120	
DT-5	2832	1209	
DT-2	2832	1209	
DT-3	528	120	
DT-25	528	120	
DT-41	528	120	
DT-17	528	120	
DT-15	528	120	
DT-16	3360	2167	
DT-14	3024	1967	
TOTAL	93518	45199	
% Cover	60%		
Residual Coverage	56111		
Structural Steel	29354	white & silver	
% Cover	80%		
Residual Coverage	23483.2		
Doors Vents & Pipes	8755	12 colors	
% Cover	70%		
Residual Coverage	6129		
Total Sq Ft Paint	**85723**		

	Walls		Total Sq Footage	Weight per Sq Ft	
Grey		21%	11783		g
White		60%	33666		g
Lt Green		7%	3928		g
Dk Green		7%	3928		g
Blue		5%	2806		g
	Structural Steel				
White		0.5	11742		g
Silver		0.5	11742		g
	Appurtenances		Pipe, Vents, Doors Windows		
12 Colors		1	6129		g

Total Wall + St Steel Sq Ft	79594	93%	% Wall + St Steel
Total Appurt. Sq Ft	6129	7%	% Appurt.
	85723	< 0.5%	for each remaining color

LOAD LINE 6
Residual PCBs in Paint Calculations - MKM Primary Samples

Weight of sample 70.4 g — **Concentration of PCBs (ppm)** 2.2 ppm

Dark Green Wall Paint (GD-WP)			Measured		Factor	Factor		Measured		Factor					
Total Painted Wall Surface	Total Percent Coverage Remaining	Square feet of Paint Remaining	Percent of Total for this Paint Color	Square Footage Remaining for This Paint Color	cm / foot	Square cm / Square Foot	Square cm of Paint	Weight of Paint Sample (g/cm^2)	Total grams of Paint	Concentration of PCBs in Paint Sample	Total **Grams** of PCBs in this Paint Color	oz /g	oz of PCBs in Paint	oz / pound	**Pounds of PCBs in the Dark Green Paint**
85530	60%	51318	7%	3592	30.48	929.03	3337319	0.078	261052.49	**0.0000022**	0.574315	0.035	0.020101	16	**0.001256**

Weight of sample 54.8 g — **Concentration of PCBs (ppm)** 39.0 ppm

Light Green Wall Paint (GL-WP)			Measured		Factor	Factor		Measured		Factor					
Total Painted Wall Surface	Total Percent Coverage Remaining	Square feet of Paint Remaining	Percent of Total for this Paint Color	Square Footage Remaining for This Paint Color	cm / foot	Square cm / Square Foot	Square cm of Paint	Weight of Paint Sample (g/cm^2)	Total grams of Paint	Concentration of PCBs in Paint Sample	Total **Grams** of PCBs in this Paint Color	oz /g	oz of PCBs in Paint	oz / pound	**Pounds of PCBs in the Light Green Wall Paint**
85530	60%	51318	7%	3592	30.48	929.03	3337318.74	0.061	203205.63	**0.000039**	7.92502	0.035	0.277376	16	**0.017336**

Weight of sample 88.4 g — **Concentration of PCBs (ppm)** 0.51 ppm

Grey Wall Paint (GY-WP)			Measured		Factor	Factor		Measured		Factor					
Total Painted Wall Surface	Total Percent Coverage Remaining	Square feet of Paint Remaining	Percent of Total for this Paint Color	Square Footage Remaining for This Paint Color	cm / foot	Square cm / Square Foot	Square cm of Paint	Weight of Paint Sample (g/cm^2)	Total grams of Paint	Concentration of PCBs in Paint Sample	Total **Grams** of PCBs in this Paint Color	oz /g	oz of PCBs in Paint	oz / pound	**Pounds of PCBs in the Grey Wall Paint**
85530	60%	51318	21%	10777	30.48	929.03	10011956.2	0.098	983396.59	**0.00000051**	0.501532	0.035	0.017554	16	**0.001097**

Weight of sample 85.6 g — **Concentration of PCBs (ppm)** 0.26 ppm

White Wall Paint (WT-WP)			Measured		Factor	Factor		Measured		Factor					
Total Painted Wall Surface	Total Percent Coverage Remaining	Square feet of Paint Remaining	Percent of Total for this Paint Color	Square Footage Remaining for This Paint Color	cm / foot	Square cm / Square Foot	Square cm of Paint	Weight of Paint Sample (g/cm^2)	Total grams of Paint	Concentration of PCBs in Paint Sample	Total **Grams** of PCBs in this Paint Color	oz /g	oz of PCBs in Paint	oz / pound	**Pounds of PCBs in the White Wall Paint**
85530	60%	51318	60%	30791	30.48	929.03	28605589.2	0.095	2720709.38	**0.00000026**	0.707384	0.035	0.024758	16	**0.001547**

LOAD LINE 6
Residual PCBs in Paint Calculations - MKM Primary Samples

Weight of sample 54 g — **Concentration of PCBs (ppm)** 75.0 ppm

Blue Wall Paint (BL-WP)			Measured		Factor	Factor		Measured		Factor					
Total Painted Wall Surface	Total Percent Coverage Remaining	Square feet of Paint Remaining	Percent of Total for this Paint Color	Square Footage Remaining for This Paint Color	cm / foot	Square cm / Square Foot	Square cm of Paint	Weight of Paint Sample (g/cm^2)	Total grams of Paint	Concentration of PCBs in Paint Sample	Total **Grams** of PCBs in this Paint Color	oz /g	oz of PCBs in Paint	oz / pound	**Pounds of PCBs in the Blue Wall Paint**
85530	60%	51318	**5%**	2566	30.48	929.03	2383799	0.060	143027.95	**0.000075**	10.7271	0.035	0.375448	16	**0.023466**

Weight of sample 60 g — **Concentration of PCBs (ppm)** 3.46 ppm

White Structural Steel Paint (WT-SS)			Measured		Factor	Factor		Measured		Factor					
Total Painted Structural Steel Surface	Total Percent Coverage Remaining	Square feet of Paint Remaining	Percent of Total for this Paint Color	Square Footage Remaining for This Paint Color	cm / foot	Square cm / Square Foot	Square cm of Paint	Weight of Paint Sample (g/cm^2)	Total grams of Paint	Concentration of PCBs in Paint Sample	Total **Grams** of PCBs in this Paint Color	oz /g	oz of PCBs in Paint	oz / pound	**Pounds of PCBs in the White Structural Steel Paint**
22580	80%	18064	**50%**	9032	30.48	929.03	8391002.57	0.067	559400.17	**0.00000346**	1.935525	0.035	0.067743	16	**0.004234**

Weight of sample 25.6 g — **Concentration of PCBs (ppm)** 0.38 ppm

Silver Structural Steel Paint (SL-SS)			Measured		Factor	Factor		Measured		Factor					
Total Painted Structural Steel Surface	Total Percent Coverage Remaining	Square feet of Paint Remaining	Percent of Total for this Paint Color	Square Footage Remaining for This Paint Color	cm / foot	Square cm / Square Foot	Square cm of Paint	Weight of Paint Sample (g/cm^2)	Total grams of Paint	Concentration of PCBs in Paint Sample	Total **Grams** of PCBs in this Paint Color	oz /g	oz of PCBs in Paint	oz / pound	**Pounds of PCBs in the Silver Structural Steel Paint**
22580	80%	18064	**50%**	9032	30.48	929.03	8391002.57	0.028	238677.41	**0.00000038**	0.090697	0.035	0.003174	16	**0.000198**

Appurtenances - Discrete Samples

Weight of sample 24.8 g — **Concentration of PCBs (ppm)** 2.7 ppm

Yellow Wall Paint (YW-WP)			Measured		Factor	Factor		Measured		Factor					
Total Painted Appurtenance Surfaces	Total Percent Coverage Remaining	Square feet of Paint Remaining	Percent of Total for this Paint Color	Square Footage Remaining for This Paint Color	cm / foot	Square cm / Square Foot	Square cm of Paint	Weight of Paint Sample (g/cm^2)	Total grams of Paint	Concentration of PCBs in Paint Sample	Total **Grams** of PCBs in this Paint Color	oz /g	oz of PCBs in Paint	oz / pound	**Pounds of PCBs in the Yellow Wall Paint**
5837	70%	4086	**33%**	1348	30.48	929.03	1252655	0.028	34517.61	**0.0000027**	0.093198	0.035	0.003262	16	**0.000204**

LOAD LINE 6

Residual PCBs in Paint Calculations - MKM Primary Samples

Weight of sample **49.2** g **Concentration of PCBs (ppm)** **8.5** ppm

Maroon Door Paint (MN-DP)			Measured		Factor	Factor		Measured		Factor					
Total Painted Appurtenance Surfaces	Total Percent Coverage Remaining	Square feet of Paint Remaining	Percent of Total for this Paint Color	Square Footage Remaining for This Paint Color	cm / foot	Square cm / Square Foot	Square cm of Paint	Weight of Paint Sample (g/cm^2)	Total grams of Paint	Concentration of PCBs in Paint Sample	Total **Grams** of PCBs in this Paint Color	oz /g	oz of PCBs in Paint	oz / pound	**Pounds of PCBs in the Maroon DoorPaint**
5837	70%	4086	**33%**	1348.347	30.48	929.03	1252655.35	0.055	68478.49	**0.0000085**	0.582067	0.035	0.020372	16	**0.001273**

Weight of sample **45.2** g **Concentration of PCBs (ppm)** **4.5** pm

Olive Green Door Paint (OG-DP)			Measured		Factor	Factor		Measured		Factor					
Total Painted Appurtenance Surfaces	Total Percent Coverage Remaining	Square feet of Paint Remaining	Percent of Total for this Paint Color	Square Footage Remaining for This Paint Color	cm / foot	Square cm / Square Foot	Square cm of Paint	Weight of Paint Sample (g/cm^2)	Total grams of Paint	Concentration of PCBs in Paint Sample	Total **Grams** of PCBs in this Paint Color	oz /g	oz of PCBs in Paint	oz / pound	**Pounds of PCBs in the Olive Green Door Paint**
5837	70%	4086	**33%**	1348.347	30.48	929.03	1252655.35	0.050	62911.14	**0.0000045**	0.2831	0.035	0.009909	16	**0.000619**

Load Line 6 Total PCBs in Paint (lbs.) **0.0512**

LOAD LINE 6
Residual PCBs in Paint Calculations - OEPA Split Samples

Weight of sample **70.4** g — **Concentration of PCBs (ppm)** **0.48** ppm

Dark Green Wall Paint (GD-WP)			Measured		Factor	Factor		Measured		Factor					
Total Painted Wall Surface	Total Percent Coverage Remaining	Square feet of Paint Remaining	Percent of Total for this Paint Color	Square Footage Remaining for This Paint Color	cm / foot	Square cm / Square Foot	Square cm of Paint	Weight of Paint Sample (g/cm^2)	Total grams of Paint	Concentration of PCBs in Paint Sample	Total **Grams** of PCBs in this Paint Color	oz /g	oz of PCBs in Paint	oz / pound	**Pounds of PCBs in the Dark Green Paint**
85530	60%	51318	**7%**	3592	30.48	929.03	3337319	0.078	261052.49	**0.00000048**	0.125305	0.035	0.004386	16	**0.000274**

Weight of sample **54.8** g — **Concentration of PCBs (ppm)** **10.3** ppm

Light Green Wall Paint (GL-WP)			Measured		Factor	Factor		Measured		Factor					
Total Painted Wall Surface	Total Percent Coverage Remaining	Square feet of Paint Remaining	Percent of Total for this Paint Color	Square Footage Remaining for This Paint Color	cm / foot	Square cm / Square Foot	Square cm of Paint	Weight of Paint Sample (g/cm^2)	Total grams of Paint	Concentration of PCBs in Paint Sample	Total **Grams** of PCBs in this Paint Color	oz /g	oz of PCBs in Paint	oz / pound	**Pounds of PCBs in the Light Green Wall Paint**
85530	60%	51318	**7%**	3592	30.48	929.03	3337318.745	0.061	203205.63	**0.0000103**	2.093018	0.035	0.073256	16	**0.004578**

Weight of sample **88.4** g — **Concentration of PCBs (ppm)** **0.162** ppm

Grey Wall Paint (GY-WP)			Measured		Factor	Factor		Measured		Factor					
Total Painted Wall Surface	Total Percent Coverage Remaining	Square feet of Paint Remaining	Percent of Total for this Paint Color	Square Footage Remaining for This Paint Color	cm / foot	Square cm / Square Foot	Square cm of Paint	Weight of Paint Sample (g/cm^2)	Total grams of Paint	Concentration of PCBs in Paint Sample	Total **Grams** of PCBs in this Paint Color	oz /g	oz of PCBs in Paint	oz / pound	**Pounds of PCBs in the Grey Wall Paint**
85530	60%	51318	**21%**	10777	30.48	929.03	10011956.23	0.098	983396.59	**0.000000162**	0.15931	0.035	0.005576	16	**0.000348**

Weight of sample **85.6** g — **Concentration of PCBs (ppm)** **0.26** ppm

White Wall Paint (WT-WP)			Measured		Factor	Factor		Measured		Factor					
Total Painted Wall Surface	Total Percent Coverage Remaining	Square feet of Paint Remaining	Percent of Total for this Paint Color	Square Footage Remaining for This Paint Color	cm / foot	Square cm / Square Foot	Square cm of Paint	Weight of Paint Sample (g/cm^2)	Total grams of Paint	Concentration of PCBs in Paint Sample	Total **Grams** of PCBs in this Paint Color	oz /g	oz of PCBs in Paint	oz / pound	**Pounds of PCBs in the White Wall Paint**
85530	60%	51318	**60%**	30791	30.48	929.03	28605589.24	0.095	#########	**0.00000026**	0.707384	0.035	0.024758	16	**0.001547**

LOAD LINE 6

Residual PCBs in Paint Calculations - OEPA Split Samples

Weight of sample **54** g — **Concentration of PCBs (ppm)** **24.3** ppm

Blue Wall Paint (BL-WP)			Measured		Factor	Factor		Measured		Factor					
Total Painted Wall Surface	Total Percent Coverage Remaining	Square feet of Paint Remaining	Percent of Total for this Paint Color	Square Footage Remaining for This Paint Color	cm / foot	Square cm / Square Foot	Square cm of Paint	Weight of Paint Sample (g/cm^2)	Total grams of Paint	Concentration of PCBs in Paint Sample	Total **Grams** of PCBs in this Paint Color	oz /g	oz of PCBs in Paint	oz / pound	**Pounds of PCBs in the Blue Wall Paint**
85530	60%	51318	**5%**	2566	30.48	929.03	2383799	0.060	143027.95	**0.0000243**	3.475579	0.035	0.121645	16	**0.007603**

Weight of sample **60** g — **Concentration of PCBs (ppm)** **2.55** ppm

White Structural Steel Paint (WT-SS)			Measured		Factor	Factor		Measured		Factor					
Total Painted Structural Steel Surface	Total Percent Coverage Remaining	Square feet of Paint Remaining	Percent of Total for this Paint Color	Square Footage Remaining for This Paint Color	cm / foot	Square cm / Square Foot	Square cm of Paint	Weight of Paint Sample (g/cm^2)	Total grams of Paint	Concentration of PCBs in Paint Sample	Total **Grams** of PCBs in this Paint Color	oz /g	oz of PCBs in Paint	oz / pound	**Pounds of PCBs in the White Structural Steel Paint**
22580	80%	18064	**50%**	9032	30.48	929.03	8391002.573	0.067	559400.17	**0.00000255**	1.42647	0.035	0.049926	16	**0.003120**

Weight of sample **25.6** g — **Concentration of PCBs (ppm)** **0.39** ppm

Silver Structural Steel Paint (SL-SS)			Measured		Factor	Factor		Measured		Factor					
Total Painted Structural Steel Surface	Total Percent Coverage Remaining	Square feet of Paint Remaining	Percent of Total for this Paint Color	Square Footage Remaining for This Paint Color	cm / foot	Square cm / Square Foot	Square cm of Paint	Weight of Paint Sample (g/cm^2)	Total grams of Paint	Concentration of PCBs in Paint Sample	Total **Grams** of PCBs in this Paint Color	oz /g	oz of PCBs in Paint	oz / pound	**Pounds of PCBs in the Silver Structural Steel Paint**
22580	80%	18064	**50%**	9032	30.48	929.03	8391002.573	0.028	238677.41	**0.00000039**	0.093084	0.035	0.003258	16	**0.000204**

Appurtenances - Discrete Samples

Weight of sample **24.8** g — **Concentration of PCBs (ppm)** **1.03** ppm

Yellow Wall Paint (YW-WP)			Measured		Factor	Factor		Measured		Factor					
Total Painted Appurtenance Surfaces	Total Percent Coverage Remaining	Square feet of Paint Remaining	Percent of Total for this Paint Color	Square Footage Remaining for This Paint Color	cm / foot	Square cm / Square Foot	Square cm of Paint	Weight of Paint Sample (g/cm^2)	Total grams of Paint	Concentration of PCBs in Paint Sample	Total **Grams** of PCBs in this Paint Color	oz /g	oz of PCBs in Paint	oz / pound	**Pounds of PCBs in the Yellow Wall Paint**
5837	70%	4086	**33%**	1348	30.48	929.03	1252655	0.028	34517.61	**0.00000103**	0.035553	0.035	0.001244	16	**0.000078**

Weight of sample — **Concentration of PCBs (ppm)**

LOAD LINE 6
Residual PCBs in Paint Calculations - OEPA Split Samples

49.2 g **4.0** ppm

Maroon Door Paint (MN-DP)			Measured		Factor	Factor		Measured		Factor					
Total Painted Appurtenance Surfaces	Total Percent Coverage Remaining	Square feet of Paint Remaining	Percent of Total for this Paint Color	Square Footage Remaining for This Paint Color	cm / foot	Square cm / Square Foot	Square cm of Paint	Weight of Paint Sample (g/cm^2)	Total grams of Paint	Concentration of PCBs in Paint Sample	Total **Grams** of PCBs in this Paint Color	oz /g	oz of PCBs in Paint	oz / pound	**Pounds of PCBs in the Maroon DoorPaint**
5837	70%	4086	**33%**	1348.347	30.48	929.03	1252655.353	0.055	68478.49	**0.000004**	0.273914	0.035	0.009587	16	**0.000599**

Weight of sample **Concentration of PCBs (ppm)**

45.2 g **2.5** pm

Olive Green Door Paint (OG-DP)			Measured		Factor	Factor		Measured		Factor					
Total Painted Appurtenance Surfaces	Total Percent Coverage Remaining	Square feet of Paint Remaining	Percent of Total for this Paint Color	Square Footage Remaining for This Paint Color	cm / foot	Square cm / Square Foot	Square cm of Paint	Weight of Paint Sample (g/cm^2)	Total grams of Paint	Concentration of PCBs in Paint Sample	Total **Grams** of PCBs in this Paint Color	oz /g	oz of PCBs in Paint	oz / pound	**Pounds of PCBs in the Olive Green Door Paint**
5837	70%	4086	**33%**	1348.347	30.48	929.03	1252655.353	0.050	62911.14	**0.0000025**	0.157278	0.035	0.005505	16	**0.000344**

Load Line 6 Total PCBs in Paint (lbs.) **0.0187**

LOAD LINE 9
Residual PCBs in Paint Calculations - MKM Primary Samples

Weight of sample **70.4** g — **Concentration of PCBs (ppm)** **2.2** ppm

Dark Green Wall Paint (GD-WP)			Measured		Factor	Factor		Measured		Factor					
Total Painted Wall Surface	Total Percent Coverage Remaining	Square feet of Paint Remaining	Percent of Total for this Paint Color	Square Footage Remaining for This Paint Color	cm / foot	Square cm / Square Foot	Square cm of Paint	Weight of Paint Sample (g/cm^2)	Total grams of Paint	Concentration of PCBs in Paint Sample	Total **Grams** of PCBs in this Paint Color	oz /g	oz of PCBs in Paint	oz / pound	**Pounds of PCBs in the Dark Green Paint**
93518	60%	56111	7%	3928	30.48	929.03	3649005	0.078	285433	**0.0000022**	0.628	0.035	0.0220	16	**0.001374**

Weight of sample **54.8** g — **Concentration of PCBs (ppm)** **39.0** ppm

Light Green Wall Paint (GL-WP)			Measured		Factor	Factor		Measured		Factor					
Total Painted Wall Surface	Total Percent Coverage Remaining	Square feet of Paint Remaining	Percent of Total for this Paint Color	Square Footage Remaining for This Paint Color	cm / foot	Square cm / Square Foot	Square cm of Paint	Weight of Paint Sample (g/cm^2)	Total grams of Paint	Concentration of PCBs in Paint Sample	Total **Grams** of PCBs in this Paint Color	oz /g	oz of PCBs in Paint	oz / pound	**Pounds of PCBs in the Light Green Wall Paint**
93518	60%	56111	7%	3928	30.48	929.03	3649005	0.061	222184	**0.000039**	8.665	0.035	0.3033	16	**0.018955**

Weight of sample **88.4** g — **Concentration of PCBs (ppm)** **0.51** ppm

Grey Wall Paint (GY-WP)			Measured		Factor	Factor		Measured		Factor					
Total Painted Wall Surface	Total Percent Coverage Remaining	Square feet of Paint Remaining	Percent of Total for this Paint Color	Square Footage Remaining for This Paint Color	cm / foot	Square cm / Square Foot	Square cm of Paint	Weight of Paint Sample (g/cm^2)	Total grams of Paint	Concentration of PCBs in Paint Sample	Total **Grams** of PCBs in this Paint Color	oz /g	oz of PCBs in Paint	oz / pound	**Pounds of PCBs in the Grey Wall Paint**
93518	60%	56111	21%	11783	30.48	929.03	1.1E+07	0.098	1075240	**0.00000051**	0.548	0.035	0.0192	16	**0.001200**

Weight of sample **85.6** g — **Concentration of PCBs (ppm)** **0.26** ppm

White Wall Paint (WT-WP)			Measured		Factor	Factor		Measured		Factor					
Total Painted Wall Surface	Total Percent Coverage Remaining	Square feet of Paint Remaining	Percent of Total for this Paint Color	Square Footage Remaining for This Paint Color	cm / foot	Square cm / Square Foot	Square cm of Paint	Weight of Paint Sample (g/cm^2)	Total grams of Paint	Concentration of PCBs in Paint Sample	Total **Grams** of PCBs in this Paint Color	oz /g	Oz of PCBs in Paint	oz / pound	**Pounds of PCBs in the White Wall Paint**
93518	60%	56111	60%	33666	30.48	929.03	3.1E+07	0.095	2974808	**0.00000026**	0.773	0.035	0.0271	16	**0.001692**

LOAD LINE 9
Residual PCBs in Paint Calculations - MKM Primary Samples

Weight of sample 54 g — **Concentration of PCBs (ppm)** 75.0 ppm

Blue Wall Paint (BL-WP)			Measured		Factor	Factor		Measured		Factor					
Total Painted Wall Surface	Total Percent Coverage Remaining	Square feet of Paint Remaining	Percent of Total for this Paint Color	Square Footage Remaining for This Paint Color	cm / foot	Square cm / Square Foot	Square cm of Paint	Weight of Paint Sample (g/cm^2)	Total grams of Paint	Concentration of PCBs in Paint Sample	Total **Grams** of PCBs in this Paint Color	oz /g	oz of PCBs in Paint	oz / pound	**Pounds of PCBs in the Blue Wall Paint**
93518	60%	56111	**5%**	2806	30.48	929.03	2606432	0.060	156386	**0.000075**	11.729	0.035	0.4105	16	**0.025657**

Weight of sample 60 g — **Concentration of PCBs (ppm)** 3.46 ppm

White Structural Steel Paint (WT-SS)			Measured		Factor	Factor		Measured		Factor					
Total Painted Structural Steel Surfaces	Total Percent Coverage Remaining	Square feet of Paint Remaining	Percent of Total for this Paint Color	Square Footage Remaining for This Paint Color	cm / foot	Square cm / Square Foot	Square cm of Paint	Weight of Paint Sample (g/cm^2)	Total grams of Paint	Concentration of PCBs in Paint Sample	Total **Grams** of PCBs in this Paint Color	oz /g	oz of PCBs in Paint	oz / pound	**Pounds of PCBs in the White Structural Steel Paint**
29354	80%	23483	**50%**	11742	30.48	929.03	1.1E+07	0.067	727220	**0.00000346**	2.516	0.035	0.0881	16	**0.005504**

Weight of sample 25.6 g — **Concentration of PCBs (ppm)** 0.38 ppm

Silver Structural Steel Paint (SL-SS)			Measured		Factor	Factor		Measured		Factor					
Total Painted Structural Steel Surfaces	Total Percent Coverage Remaining	Square feet of Paint Remaining	Percent of Total for this Paint Color	Square Footage Remaining for This Paint Color	cm / foot	Square cm / Square Foot	Square cm of Paint	Weight of Paint Sample (g/cm^2)	Total grams of Paint	Concentration of PCBs in Paint Sample	Total **Grams** of PCBs in this Paint Color	oz /g	oz of PCBs in Paint	oz / pound	**Pounds of PCBs in the Silver Structural Steel Paint**
29354	80%	23483	**50%**	11742	30.48	929.03	1.1E+07	0.028	310281	**0.00000038**	0.118	0.035	0.0041	16	**0.000258**

Appurtenances - Discrete Samples

Weight of sample 49.2 g — **Concentration of PCBs (ppm)** 8.5 ppm

Maroon Door Paint (MN-DP)			Measured		Factor	Factor		Measured		Factor					
Total Painted Appurtenance Surfaces	Total Percent Coverage Remaining	Square feet of Paint Remaining	Percent of Total for this Paint Color	Square Footage Remaining for This Paint Color	cm / foot	Square cm / Square Foot	Square cm of Paint	Weight of Paint Sample (g/cm^2)	Total grams of Paint	Concentration of PCBs in Paint Sample	Total **Grams** of PCBs in this Paint Color	oz /g	oz of PCBs in Paint	oz / pound	**Pounds of PCBs in the Maroon Door Paint**
8755	70%	6129	**50%**	3064	30.48	929.03	2846781	0.055	155624	**0.0000085**	1.323	0.035	0.0463	16	**0.002894**

LOAD LINE 9

Residual PCBs in Paint Calculations - MKM Primary Samples

Weight of sample **45.2** g **Concentration of PCBs (ppm)** **4.5** ppm

Olive Green Door Paint (OG-DP)			Measured		Factor	Factor		Measured		Factor					
Total Painted Appurtenance Surfaces	Total Percent Coverage Remaining	Square feet of Paint Remaining	Percent of Total for this Paint Color	Square Footage Remaining for This Paint Color	cm / foot	Square cm / Square Foot	Square cm of Paint	Weight of Paint Sample (g/cm^2)	Total grams of Paint	Concentration of PCBs in Paint Sample	Total **Grams** of PCBs in this Paint Color	oz /g	oz of PCBs in Paint	oz / pound	**Pounds of PCBs in the Olive Green DoorPaint**
8755	70%	6129	**50%**	3064.25	30.48	929.03	2846781	0.050	142971.69	**0.0000045**	0.643	0.035	0.0225	16	**0.001407**

Load Line 9 Total PCBs in Paint (lbs.) **0.0589**

LOAD LINE 9
Residual PCBs in Paint Calculations - OEPA Split Samples

Weight of sample 70.4 g — **Concentration of PCBs (ppm)** 0.48 ppm

Dark Green Wall Paint (GD-WP)			Measured		Factor	Factor		Measured		Factor					
Total Painted Wall Surface	Total Percent Coverage Remaining	Square feet of Paint Remaining	Percent of Total for this Paint Color	Square Footage Remaining for This Paint Color	cm / foot	Square cm / Square Foot	Square cm of Paint	Weight of Paint Sample (g/cm^2)	Total grams of Paint	Concentration of PCBs in Paint Sample	Total **Grams** of PCBs in this Paint Color	oz /g	oz of PCBs in Paint	oz / pound	**Pounds of PCBs in the Dark Green Paint**
93518	60%	56111	**7%**	3928	30.48	929.03	3649005	0.078	285433	**0.00000048**	0.137	0.035	0.0048	16	**0.000300**

Weight of sample 54.8 g — **Concentration of PCBs (ppm)** 10.3 ppm

Light Green Wall Paint (GL-WP)			Measured		Factor	Factor		Measured		Factor					
Total Painted Wall Surface	Total Percent Coverage Remaining	Square feet of Paint Remaining	Percent of Total for this Paint Color	Square Footage Remaining for This Paint Color	cm / foot	Square cm / Square Foot	Square cm of Paint	Weight of Paint Sample (g/cm^2)	Total grams of Paint	Concentration of PCBs in Paint Sample	Total **Grams** of PCBs in this Paint Color	oz /g	oz of PCBs in Paint	oz / pound	**Pounds of PCBs in the Light Green Wall Paint**
93518	60%	56111	**7%**	3928	30.48	929.03	3649005	0.061	222184	**0.0000103**	2.288	0.035	0.0801	16	**0.005006**

Weight of sample 88.4 g — **Concentration of PCBs (ppm)** 0.162 ppm

Grey Wall Paint (GY-WP)			Measured		Factor	Factor		Measured		Factor					
Total Painted Wall Surface	Total Percent Coverage Remaining	Square feet of Paint Remaining	Percent of Total for this Paint Color	Square Footage Remaining for This Paint Color	cm / foot	Square cm / Square Foot	Square cm of Paint	Weight of Paint Sample (g/cm^2)	Total grams of Paint	Concentration of PCBs in Paint Sample	Total **Grams** of PCBs in this Paint Color	oz /g	oz of PCBs in Paint	oz / pound	**Pounds of PCBs in the Grey Wall Paint**
93518	60%	56111	**21%**	11783	30.48	929.03	1.1E+07	0.098	1075240	**0.000000162**	0.174	0.035	0.0061	16	**0.000381**

Weight of sample 85.6 g — **Concentration of PCBs (ppm)** 0.26 ppm

White Wall Paint (WT-WP)			Measured		Factor	Factor		Measured		Factor					
Total Painted Wall Surface	Total Percent Coverage Remaining	Square feet of Paint Remaining	Percent of Total for this Paint Color	Square Footage Remaining for This Paint Color	cm / foot	Square cm / Square Foot	Square cm of Paint	Weight of Paint Sample (g/cm^2)	Total grams of Paint	Concentration of PCBs in Paint Sample	Total **Grams** of PCBs in this Paint Color	oz /g	Oz of PCBs in Paint	oz / pound	**Pounds of PCBs in the White Wall Paint**
93518	60%	56111	**60%**	33666	30.48	929.03	3.1E+07	0.095	2974808	**0.00000026**	0.773	0.035	0.0271	16	**0.001692**

LOAD LINE 9
Residual PCBs in Paint Calculations - OEPA Split Samples

Weight of sample 54 g — **Concentration of PCBs (ppm)** 24.3 ppm

Blue Wall Paint (BL-WP)			Measured		Factor	Factor		Measured		Factor					
Total Painted Wall Surface	Total Percent Coverage Remaining	Square feet of Paint Remaining	Percent of Total for this Paint Color	Square Footage Remaining for This Paint Color	cm / foot	Square cm / Square Foot	Square cm of Paint	Weight of Paint Sample (g/cm^2)	Total grams of Paint	Concentration of PCBs in Paint Sample	Total **Grams** of PCBs in this Paint Color	oz /g	oz of PCBs in Paint	oz / pound	**Pounds of PCBs in the Blue Wall Paint**
93518	60%	56111	**5%**	2806	2.54	30.48	85513	0.060	5131	**0.0000243**	0.125	0.035	0.0044	16	**0.000273**

Weight of sample 60 g — **Concentration of PCBs (ppm)** 2.55 ppm

White Structural Steel Paint (WT-SS)			Measured		Factor	Factor		Measured		Factor					
Total Painted Structural Steel Surfaces	Total Percent Coverage Remaining	Square feet of Paint Remaining	Percent of Total for this Paint Color	Square Footage Remaining for This Paint Color	cm / foot	Square cm / Square Foot	Square cm of Paint	Weight of Paint Sample (g/cm^2)	Total grams of Paint	Concentration of PCBs in Paint Sample	Total **Grams** of PCBs in this Paint Color	oz /g	oz of PCBs in Paint	oz / pound	**Pounds of PCBs in the White Structural Steel Paint**
29354	80%	23483	**50%**	11742	2.54	30.48	357884	0.067	23859	**0.00000255**	0.061	0.035	0.0021	16	**0.000133**

Weight of sample 25.6 g — **Concentration of PCBs (ppm)** 0.39 ppm

Silver Structural Steel Paint (SL-SS)			Measured		Factor	Factor		Measured		Factor					
Total Painted Structural Steel Surfaces	Total Percent Coverage Remaining	Square feet of Paint Remaining	Percent of Total for this Paint Color	Square Footage Remaining for This Paint Color	cm / foot	Square cm / Square Foot	Square cm of Paint	Weight of Paint Sample (g/cm^2)	Total grams of Paint	Concentration of PCBs in Paint Sample	Total **Grams** of PCBs in this Paint Color	oz /g	oz of PCBs in Paint	oz / pound	**Pounds of PCBs in the Silver Structural Steel Paint**
29354	80%	23483	**50%**	11742	30.48	929.03	1.1E+07	0.028	310281	**0.00000039**	0.121	0.035	0.0042	16	**0.000265**

Appurtenances - Discrete Samples

Weight of sample 49.2 g — **Concentration of PCBs (ppm)** 4.0 ppm

Maroon Door Paint (MN-DP)			Measured		Factor	Factor		Measured		Factor					
Total Painted Appurtenance Surfaces	Total Percent Coverage Remaining	Square feet of Paint Remaining	Percent of Total for this Paint Color	Square Footage Remaining for This Paint Color	cm / foot	Square cm / Square Foot	Square cm of Paint	Weight of Paint Sample (g/cm^2)	Total grams of Paint	Concentration of PCBs in Paint Sample	Total **Grams** of PCBs in this Paint Color	oz /g	oz of PCBs in Paint	oz / pound	**Pounds of PCBs in the Maroon Door Paint**
8755	70%	6129	**50%**	3064	30.48	929.03	2846781	0.055	155624	**0.000004**	0.622	0.035	0.0218	16	**0.001362**

LOAD LINE 9
Residual PCBs in Paint Calculations - OEPA Split Samples

Weight of sample **45.2** g **Concentration of PCBs (ppm)** **2.5** ppm

Olive Green Door Paint (OG-DP)			Measured		Factor	Factor		Measured		Factor					
Total Painted Appurtenance Surfaces	Total Percent Coverage Remaining	Square feet of Paint Remaining	Percent of Total for this Paint Color	Square Footage Remaining for This Paint Color	cm / foot	Square cm / Square Foot	Square cm of Paint	Weight of Paint Sample (g/cm^2)	Total grams of Paint	Concentration of PCBs in Paint Sample	Total **Grams** of PCBs in this Paint Color	oz /g	oz of PCBs in Paint	oz / pound	**Pounds of PCBs in the Olive Green DoorPaint**
8755	70%	6129	**50%**	3064.25	30.48	929.03	2846781	0.050	142971.69	**0.0000025**	0.357	0.035	0.0125	16	**0.000782**

Load Line 9 Total PCBs in Paint (lbs.) **0.0102**

ATTACHMENT #3

MKM SAMPLE SPLIT

SEVERN TRENT LABORATORIES

ANALYTICAL REPORT

SEVERN TRENT LABORATORIES
ANALYTICAL REPORT

JOB NUMBER: 213056

Prepared For:

MKM Engineers, Inc.
Ravenna Army Ammunition Plant
Building 1038
8451 State Route 5
Ravenna, OH 44266
Project: Paint Samples

Attention: Richard Callahan

Date: 11/12/2002

Signature

Name: Eric A. Lang

Title: Project Manager

E-Mail: elang@stl-inc.com

Date

STL Chicago
2417 Bond Street
University Park, IL 60466

PHONE: (708) 534-5200
FAX..: (708) 534-5211

STL Chicago is part of Severn Trent Laboratories, Inc.

SAMPLE INFORMATION
Date: 11/12/2002

Job Number.: 213056
Customer...: MKM Engineers, Inc.
Attn.....: Richard Callahan

Project Number.....: 20002733
Customer Project ID....: PAINT SAMPLES
Project Description....: Paint Samples

Laboratory Sample ID	Customer Sample ID	Sample Matrix	Date Sampled	Time Sampled	Date Received	Time Received
213056-1	LLP-GY-WP-001C	Solid	10/28/2002	09:15	10/29/2002	09:00
213056-2	LLP-WT-WP-001C	Solid	10/28/2002	09:10	10/29/2002	09:00
213056-3	LLP-GD-WP-001C	Solid	10/28/2002	09:35	10/29/2002	09:00
213056-4	LLP-GL-WP-001C	Solid	10/28/2002	09:30	10/29/2002	09:00
213056-5	LLP-SL-SS-001C	Solid	10/28/2002	09:05	10/29/2002	09:00
213056-6	LLP-WT-SS-001C	Solid	10/28/2002	08:58	10/29/2002	09:00
213056-7	LLP-BL-WP-001C	Solid	10/28/2002	09:23	10/29/2002	09:00
213056-8	LLP-OG-DP-001	Solid	10/28/2002	09:55	10/29/2002	09:00
213056-9	LLP-MN-DP-001	Solid	10/28/2002	09:45	10/29/2002	09:00
213056-10	LLP-YW-WP-001	Solid	10/28/2002	09:50	10/29/2002	09:00

STL Chicago is part of Severn Trent Laboratories, Inc.

LABORATORY TEST RESULTS

Job Number: 213056

Date:11/12/2002

CUSTOMER: MKM Engineers, Inc. PROJECT: PAINT SAMPLES ATTN: Richard Callahan

Customer Sample ID: LLP-GY-WP-001C
Date Sampled.....: 10/28/2002
Time Sampled.....: 09:15
Sample Matrix.....: Solid

Laboratory Sample ID: 213056-1
Date Received.....: 10/29/2002
Time Received.....: 09:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8082	PCB Analysis											
	Aroclor 1016, Solid	160	U		1.7	160	1.00000	ug/Kg	68429		11/12/02 0511	mgk
	Aroclor 1221, Solid	160	U		4.5	160	1.00000	ug/Kg	68429		11/12/02 0511	mgk
	Aroclor 1232, Solid	160	U		2.2	160	1.00000	ug/Kg	68429		11/12/02 0511	mgk
	Aroclor 1242, Solid	160	U		1.9	160	1.00000	ug/Kg	68429		11/12/02 0511	mgk
	Aroclor 1248, Solid	160	U		2.1	160	1.00000	ug/Kg	68429		11/12/02 0511	mgk
	Aroclor 1254, Solid	510			1.3	160	1.00000	ug/Kg	68429		11/12/02 0511	mgk
	Aroclor 1260, Solid	160	U		1.5	160	1.00000	ug/Kg	68429		11/12/02 0511	mgk

* In Description = Dry Wgt.

STL Chicago is part of Severn Trent Laboratories, Inc.

LABORATORY TEST RESULTS

Job Number: 213056

Date:11/12/2002

CUSTOMER: MKM Engineers, Inc. PROJECT: PAINT SAMPLES ATTN: Richard Callahan

Customer Sample ID: LLP-WT-WP-001C
Date Sampled.....: 10/28/2002
Time Sampled.....: 09:10
Sample Matrix.....: Solid

Laboratory Sample ID: 213056-2
Date Received.....: 10/29/2002
Time Received.....: 09:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8082	PCB Analysis											
	Aroclor 1016, Solid	160	U		1.7	160	1.00000	ug/Kg	68429		11/12/02 0649	mgk
	Aroclor 1221, Solid	160	U		4.5	160	1.00000	ug/Kg	68429		11/12/02 0649	mgk
	Aroclor 1232, Solid	160	U		2.2	160	1.00000	ug/Kg	68429		11/12/02 0649	mgk
	Aroclor 1242, Solid	160	U		1.9	160	1.00000	ug/Kg	68429		11/12/02 0649	mgk
	Aroclor 1248, Solid	160	U		2.1	160	1.00000	ug/Kg	68429		11/12/02 0649	mgk
	Aroclor 1254, Solid	260			1.3	160	1.00000	ug/Kg	68429		11/12/02 0649	mgk
	Aroclor 1260, Solid	160	U		1.5	160	1.00000	ug/Kg	68429		11/12/02 0649	mgk

* In Description = Dry Wgt.

STL Chicago is part of Severn Trent Laboratories, Inc.

LABORATORY TEST RESULTS

Job Number: 213056 Date:11/12/2002

CUSTOMER: MKM Engineers, Inc. PROJECT: PAINT SAMPLES ATTN: Richard Callahan

Customer Sample ID: LLP-GD-WP-001C
Date Sampled.....: 10/28/2002
Time Sampled.....: 09:35
Sample Matrix.....: Solid

Laboratory Sample ID: 213056-3
Date Received.....: 10/29/2002
Time Received.....: 09:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8082	PCB Analysis											
	Aroclor 1016, Solid	170	U		1.7	170	1.00000	ug/Kg	68429		11/12/02 0721	mgk
	Aroclor 1221, Solid	170	U		4.6	170	1.00000	ug/Kg	68429		11/12/02 0721	mgk
	Aroclor 1232, Solid	170	U		2.2	170	1.00000	ug/Kg	68429		11/12/02 0721	mgk
	Aroclor 1242, Solid	170	U		1.9	170	1.00000	ug/Kg	68429		11/12/02 0721	mgk
	Aroclor 1248, Solid	1100			2.1	170	1.00000	ug/Kg	68429		11/12/02 0721	mgk
	Aroclor 1254, Solid	1100			1.3	170	1.00000	ug/Kg	68429		11/12/02 0721	mgk
	Aroclor 1260, Solid	170	U		1.5	170	1.00000	ug/Kg	68429		11/12/02 0721	mgk

* In Description = Dry Wgt.

STL Chicago is part of Severn Trent Laboratories, Inc.

LABORATORY TEST RESULTS

Job Number: 213056 Date:11/12/2002

CUSTOMER: MKM Engineers, Inc. PROJECT: PAINT SAMPLES ATTN: Richard Callahan

Customer Sample ID: LLP-GL-WP-001C
Date Sampled.....: 10/28/2002
Time Sampled.....: 09:30
Sample Matrix.....: Solid

Laboratory Sample ID: 213056-4
Date Received.....: 10/29/2002
Time Received.....: 09:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8082	PCB Analysis											
	Aroclor 1016, Solid	16000	U		170	16000	100.000	ug/Kg	68429		11/12/02 0829	mgk
	Aroclor 1221, Solid	16000	U		450	16000	100.000	ug/Kg	68429		11/12/02 0829	mgk
	Aroclor 1232, Solid	16000	U		220	16000	100.000	ug/Kg	68429		11/12/02 0829	mgk
	Aroclor 1242, Solid	16000	U		190	16000	100.000	ug/Kg	68429		11/12/02 0829	mgk
	Aroclor 1248, Solid	16000	U		210	16000	100.000	ug/Kg	68429		11/12/02 0829	mgk
	Aroclor 1254, Solid	39000			130	16000	100.000	ug/Kg	68429		11/12/02 0829	mgk
	Aroclor 1260, Solid	16000	U		150	16000	100.000	ug/Kg	68429		11/12/02 0829	mgk

* In Description = Dry Wgt.

STL Chicago is part of Severn Trent Laboratories, Inc.

LABORATORY TEST RESULTS

Job Number: 213056

Date:11/12/2002

CUSTOMER: MKM Engineers, Inc. PROJECT: PAINT SAMPLES ATTN: Richard Callahan

Customer Sample ID: LLP-SL-SS-001C
Date Sampled.....: 10/28/2002
Time Sampled.....: 09:05
Sample Matrix.....: Solid

Laboratory Sample ID: 213056-5
Date Received.....: 10/29/2002
Time Received.....: 09:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DF	DATE/TIME	TECH
8082	PCB Analysis											
	Aroclor 1016, Solid	170	U		1.7	170	1.00000	ug/Kg	68429		11/12/02 0901	mgk
	Aroclor 1221, Solid	170	U		4.6	170	1.00000	ug/Kg	68429		11/12/02 0901	mgk
	Aroclor 1232, Solid	170	U		2.2	170	1.00000	ug/Kg	68429		11/12/02 0901	mgk
	Aroclor 1242, Solid	170	U		1.9	170	1.00000	ug/Kg	68429		11/12/02 0901	mgk
	Aroclor 1248, Solid	170	U		2.1	170	1.00000	ug/Kg	68429		11/12/02 0901	mgk
	Aroclor 1254, Solid	380			1.3	170	1.00000	ug/Kg	68429		11/12/02 0901	mgk
	Aroclor 1260, Solid	170	U		1.5	170	1.00000	ug/Kg	68429		11/12/02 0901	mgk

* In Description = Dry Wgt.

STL Chicago is part of Severn Trent Laboratories, Inc.

LABORATORY TEST RESULTS

Job Number: 213056 Date:11/12/2002

CUSTOMER: MKM Engineers, Inc. PROJECT: PAINT SAMPLES ATTN: Richard Callahan

Customer Sample ID: LLP-WT-SS-001C
Date Sampled.....: 10/28/2002
Time Sampled.....: 08:58
Sample Matrix.....: Solid

Laboratory Sample ID: 213056-6
Date Received.....: 10/29/2002
Time Received.....: 09:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8082	PCB Analysis											
	Aroclor 1016, Solid	330	U		3.3	330	2.00000	ug/Kg	68429		11/12/02 0934	mgk
	Aroclor 1221, Solid	330	U		9.1	330	2.00000	ug/Kg	68429		11/12/02 0934	mgk
	Aroclor 1232, Solid	330	U		4.3	330	2.00000	ug/Kg	68429		11/12/02 0934	mgk
	Aroclor 1242, Solid	330	U		3.7	330	2.00000	ug/Kg	68429		11/12/02 0934	mgk
	Aroclor 1248, Solid	2600			4.1	330	2.00000	ug/Kg	68429		11/12/02 0934	mgk
	Aroclor 1254, Solid	860			2.6	330	2.00000	ug/Kg	68429		11/12/02 0934	mgk
	Aroclor 1260, Solid	330	U		3.0	330	2.00000	ug/Kg	68429		11/12/02 0934	mgk

* In Description = Dry Wgt.

STL Chicago is part of Severn Trent Laboratories, Inc.

LABORATORY TEST RESULTS

Job Number: 213056

Date:11/12/2002

CUSTOMER: MKM Engineers, Inc. PROJECT: PAINT SAMPLES ATTN: Richard Callahan

Customer Sample ID: LLP-BL-WP-001C
Date Sampled.....: 10/28/2002
Time Sampled.....: 09:23
Sample Matrix.....: Solid

Laboratory Sample ID: 213056-7
Date Received.....: 10/29/2002
Time Received.....: 09:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8082	PCB Analysis											
	Aroclor 1016, Solid	16000	U		170	16000	100.000	ug/Kg	68429		11/12/02 1006	mgk
	Aroclor 1221, Solid	16000	U		450	16000	100.000	ug/Kg	68429		11/12/02 1006	mgk
	Aroclor 1232, Solid	16000	U		220	16000	100.000	ug/Kg	68429		11/12/02 1006	mgk
	Aroclor 1242, Solid	16000	U		190	16000	100.000	ug/Kg	68429		11/12/02 1006	mgk
	Aroclor 1248, Solid	75000			210	16000	100.000	ug/Kg	68429		11/12/02 1006	mgk
	Aroclor 1254, Solid	16000	U		130	16000	100.000	ug/Kg	68429		11/12/02 1006	mgk
	Aroclor 1260, Solid	16000	U		150	16000	100.000	ug/Kg	68429		11/12/02 1006	mgk

* In Description = Dry Wgt.

STL Chicago is part of Severn Trent Laboratories, Inc.

LABORATORY TEST RESULTS

Job Number: 213056 Date:11/12/2002

CUSTOMER: MKM Engineers, Inc. PROJECT: PAINT SAMPLES ATTN: Richard Callahan

Customer Sample ID: LLP-OG-DP-001
Date Sampled.....: 10/28/2002
Time Sampled.....: 09:55
Sample Matrix.....: Solid

Laboratory Sample ID: 213056-8
Date Received.....: 10/29/2002
Time Received.....: 09:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8082	PCB Analysis											
	Aroclor 1016, Solid	1700	U		17	1700	10.0000	ug/Kg	68429		11/12/02 1039	mgk
	Aroclor 1221, Solid	1700	U		46	1700	10.0000	ug/Kg	68429		11/12/02 1039	mgk
	Aroclor 1232, Solid	1700	U		22	1700	10.0000	ug/Kg	68429		11/12/02 1039	mgk
	Aroclor 1242, Solid	1700	U		19	1700	10.0000	ug/Kg	68429		11/12/02 1039	mgk
	Aroclor 1248, Solid	1700	U		21	1700	10.0000	ug/Kg	68429		11/12/02 1039	mgk
	Aroclor 1254, Solid	4500			13	1700	10.0000	ug/Kg	68429		11/12/02 1039	mgk
	Aroclor 1260, Solid	1700	U		15	1700	10.0000	ug/Kg	68429		11/12/02 1039	mgk

* In Description = Dry Wgt.

LABORATORY TEST RESULTS

Job Number: 213056

Date:11/12/2002

CUSTOMER: MKM Engineers, Inc. PROJECT: PAINT SAMPLES ATTN: Richard Callahan

Customer Sample ID: LLP-MN-DP-001
Date Sampled.....: 10/28/2002
Time Sampled.....: 09:45
Sample Matrix.....: Solid

Laboratory Sample ID: 213056-9
Date Received.....: 10/29/2002
Time Received.....: 09:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8082	PCB Analysis											
	Aroclor 1016, Solid	1600	U		17	1600	10.0000	ug/Kg	68429		11/12/02 1112	mgk
	Aroclor 1221, Solid	1600	U		45	1600	10.0000	ug/Kg	68429		11/12/02 1112	mgk
	Aroclor 1232, Solid	1600	U		21	1600	10.0000	ug/Kg	68429		11/12/02 1112	mgk
	Aroclor 1242, Solid	1600	U		18	1600	10.0000	ug/Kg	68429		11/12/02 1112	mgk
	Aroclor 1248, Solid	1600	U		20	1600	10.0000	ug/Kg	68429		11/12/02 1112	mgk
	Aroclor 1254, Solid	8500			13	1600	10.0000	ug/Kg	68429		11/12/02 1112	mgk
	Aroclor 1260, Solid	1600	U		15	1600	10.0000	ug/Kg	68429		11/12/02 1112	mgk

* In Description = Dry Wgt.

STL Chicago is part of Severn Trent Laboratories, Inc.

LABORATORY TEST RESULTS

Job Number: 213056

Date:11/12/2002

CUSTOMER: MKM Engineers, Inc. PROJECT: PAINT SAMPLES ATTN: Richard Callahan

Customer Sample ID: LLP-YW-WP-001
Date Sampled.....: 10/28/2002
Time Sampled.....: 09:50
Sample Matrix.....: Solid

Laboratory Sample ID: 213056-10
Date Received.....: 10/29/2002
Time Received.....: 09:00

TEST METHOD	PARAMETER/TEST DESCRIPTION	SAMPLE RESULT	Q	FLAGS	MDL	RL	DILUTION	UNITS	BATCH	DT	DATE/TIME	TECH
8082	PCB Analysis											
	Aroclor 1016, Solid	330	U		3.4	330	2.00000	ug/Kg	68429		11/12/02 1144	mgk
	Aroclor 1221, Solid	330	U		9.1	330	2.00000	ug/Kg	68429		11/12/02 1144	mgk
	Aroclor 1232, Solid	330	U		4.4	330	2.00000	ug/Kg	68429		11/12/02 1144	mgk
	Aroclor 1242, Solid	330	U		3.8	330	2.00000	ug/Kg	68429		11/12/02 1144	mgk
	Aroclor 1248, Solid	1200			4.2	330	2.00000	ug/Kg	68429		11/12/02 1144	mgk
	Aroclor 1254, Solid	1500			2.6	330	2.00000	ug/Kg	68429		11/12/02 1144	mgk
	Aroclor 1260, Solid	330	U		3.0	330	2.00000	ug/Kg	68429		11/12/02 1144	mgk

* In Description = Dry Wgt.

REPORT COMMENTS

1) All pages of this report are integral parts of the analytical data. Therefore, this report should be reproduced only in its entirety.
2) Soil, sediment and sludge sample results are reported on a "dry weight" basis except when analyzed for landfill disposal or incineration parameters. All other solid matrix samples are reported on an "as received" basis unless noted differently.
3) Reporting limits are adjusted for sample size used, dilutions and moisture content if applicable.
4) The test results for the noted analytical method(s) meet the requirements of NELAC. Lab Cert. ID# 100201
5) Arizona Environmental Laboratory License number AZ0603.
6) According to 40CFR Part 136.3, pH, Chlorine Residual and Dissolved Oxygen analyses are to be performed immediately after aqueous sample collection. When these parameters are not indicated as field (e.g. pH Field) they were not analyzed immediately, but as soon as possible on laboratory receipt.

Glossary of flags, qualifiers and abbreviations (any number of which may appear in the report)

Inorganic Qualifiers (Q-Column)

U	Analyte was not detected at or above the stated limit.
<	Not detected at or above the reporting limit.
J	Result is less than the RL, but greater than or equal to the method detection limit.
B	Result is less than the CRDL/RL, but greater than or equal to the IDL/MDL.
S	Result was determined by the Method of Standard Additions.
F	AFCEE: Result is less than the RL, but greater than or equal to the method detection limit.

Inorganic Flags (Flag Column)

^	ICV,CCV,ICB,CCB,ISA,ISB,CRI,CRA,MRL: Instrument related QC exceed the upper or lower control limits.
*	LCS, LCD, MD: Batch QC exceeds the upper or lower control limits.
+	MSA correlation coefficient is less than 0.995.
4	MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.
E	SD: Serial dilution exceeds the control limits.
H	MB, EB1, EB2, EB3: Batch QC is greater than reporting limit or had a negative instrument reading lower than the absolute value of the reporting limit.
N	MS, MSD: Spike recovery exceeds the upper or lower control limits.
W	AS(GFAA) Post-digestion spike was outside 85-115% control limits.

Organic Qualifiers (Q - Column)

U	Analyte was not detected at or above the stated limit.
ND	Compound not detected.
J	Result is an estimated value below the reporting limit or a tentatively identified compound (TIC).
Q	Result was qualitatively confirmed, but not quantified.
C	Pesticide identification was confirmed by GC/MS.
Y	The chromatographic response resembles a typical fuel pattern.
Z	The chromatographic response does not resemble a typical fuel pattern.
E	Result exceeded calibration range, secondary dilution required.
F	AFCEE:Result is an estimated value below the reporting limit or a tentatively identified compound (TIC)

Organic Flags (Flags Column)

B	MB: Batch QC is greater than reporting limit.
*	LCS, LCD, ELC, ELD, CV, MS, MSD, Surrogate: Batch QC exceeds the upper or lower control limits.
^	EB1, EB2, EB3, MLE: Batch QC is greater than reporting Limit
A	Concentration exceeds the instrument calibration range
a	Concentration is below the method Reporting Limit (RL)
B	Compound was found in the blank and sample.
D	Surrogate or matrix spike recoveries were not obtained because the extract was diluted for analysis; also compounds analyzed at a dilution will be flagged with a D.
H	Alternate peak selection upon analytical review
I	Indicates the presence of an interfence, recovery is not calculated.
M	Manually integrated compound.

P The lower of the two values is reported when the % difference between the results of two GC columns is greater than 25%.

Abbreviations

AS	Post Digestion Spike (GFAA Samples - See Note 1 below)
Batch	Designation given to identify a specific extraction, digestion, preparation set, or analysis set
CAP	Capillary Column CCB Continuing Calibration Blank
CCV	Continuing Calibration Verification
CF	Confirmation analysis of original
C1	Confirmation analysis of A1 or D1
C2	Confirmation analysis of A2 or D2
C3	Confirmation analysis of A3 or D3
CRA	Low Level Standard Check - GFAA; Mercury
CRI	Low Level Standard Check - ICP
CV	Calilbration Verification Standard
Dil Fac	Dilution Factor - Secondary dilution analysis
D1	Dilution 1
D2	Dilution 2
D3	Dilution 3
DLFac	Detection Limit Factor
DSH	Distilled Standard - High Level
DSL	Distilled Standard - Low Level
DSM	Distilled Standard - Medium Level
EB1	Extraction Blank 1
EB2	Extraction Blank 2
EB3	DI Blank
ELC	Method Extracted LCS
ELD	Method Extracted LCD
ICAL	Initial calibration
ICB	Initial Calibration Blank
ICV	Initial Calibration Verification
IDL	Instrument Detection Limit
ISA	Interference Check Sample A - ICAP
ISB	Interference Check Sample B - ICAP
Job No.	The first six digits of the sample ID which refers to a specific client, project and sample group Lab ID An 8 number unique laboratory identification
LCD	Laboratory Control Standard Duplicate
LCS	Laboratory Control Standard with reagent grade water or a matrix free from the analyte of interest
MB	Method Blank or (PB) Preparation Blank
MD	Method Duplicate
MDL	Method Detection Limit
MLE	Medium Level Extraction Blank
MRL	Method Reporting Limit Standard
MSA	Method of Standard Additions
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ND	Not Detected
PREPF	Preparation factor used by the Laboratory's Information Management System (LIMS)
PDS	Post Digestion Spike (ICAP)
RA	Re-analysis of original
A1	Re-analysis of D1
A2	Re-analysis of D2
A3	Re-analysis of D3
RD	Re-extraction of dilution
RE	Re-extraction of original
RC	Re-extraction Confirmation
RL	Reporting Limit
RPD	Relative Percent Difference of duplicate (unrounded) analyses
RRF	Relative Response Factor

RT	Retention Time
RTW	Retention Time Window Sample ID A 9 digit number unique for each sample, the first six digits are referred as the job number
SCB	Seeded Control Blank
SD	Serial Dilution (Calculated when sample concentration exceeds 50 times the MDL)
UCB	Unseeded Control Blank
SSV	Second Source Verification Standard
SLCS	Solid Laboratory Control Standard(LCS)
PHC	pH Calibration Check LCSP pH Laboratory Control Sample
LCDP	pH Laboratory Control Sample Duplicate
MDPH	pH Sample Duplicate
MDFP	Flashpoint Sample Duplicate
LCFP	Flashpoint LCS
G1	Gelex Check Standard Range 0-1
G2	Gelex Check Standard Range 1-10
G3	Gelex Check Standard Range 10-100
G4	Gelex Check Standard Range 100-1000

Note 1: The Post Spike Designation on Batch QC for GFAA is designated with an "S" added to the current abbreviation used. EX. LCS S=LCS Post Spike (GFAA); MSS=MS Post Spike (GFAA)

Note 2: The MD calculates an absolute difference (A) when the sample concentration is less than 5 times the reporting limit. The control limit is represented as +/- the RL.

ATTACHMENT #4

OEPA SAMPLE SPLIT

ANALYTICAL REPORT FOR 21023

GPL LABORATORIES

Analytical Report For 210232

for

DLZ Ohio Inc.

Project Manager : Kathy Streng

Project Name : OEPA-NEDO Paint Chip Sampling

November 18, 2002

GPL

Laboratories

GPL Laboratories, LLLP Certifies that the test results meet all requirements of the NELAC Standards unless otherwise noted.

Reviewed by, Project Manager	Approved by, Laboratory Director

202 Perry Parkway Gaithersburg, MD 20877 Phone (301) 926-6802 Fax: (301) 840-1209
www.gplab.com

GPL LABORATORIES, LLLP

Summary of Analytical Results

Client ID: LLP-WT-SS-001C
GPL ID: 210232-001-001-1/1
Matrix: SOIL
Date Collected: 10/28/2002
Date Received: 10/29/2002

Prep Method: SW3550
Prep Date: 10/30/2002
Prep Time: 00:00
Prep Batch: 57550

Analytical Method: SW8082
Date Analyzed: 11/07/2002
Time Analyzed: 13:13
Analysis Batch: 57394

Parameter	Result	Rep Limit	Units	Qualifier	D.F.
PCB-1016	1200	33	ug/kg	EP	1
PCB-1221	BQL	33	ug/kg	U	1
PCB-1232	BQL	33	ug/kg	U	1
PCB-1242	BQL	33	ug/kg	U	1
PCB-1248	BQL	33	ug/kg	U	1
PCB-1254	BQL	33	ug/kg	U	1
PCB-1260	210	33	ug/kg		1

GPL LABORATORIES, LLLP

Summary of Analytical Results

Client ID: LLP-WT-SS-001C
GPL ID: 210232-001-001-1/1
Matrix: SOIL
Date Collected: 10/28/2002
Date Received: 10/29/2002

Prep Method: SW3550
Prep Date: 10/30/2002
Prep Time: 00:00
Prep Batch: 57550

Analytical Method: SW8082
Date Analyzed: 11/06/2002
Time Analyzed: 22:04
Analysis Batch: 57391

Parameter	Result	Rep Limit	Units	Qualifier	D.F.
PCB-1016	2200	330	ug/kg	P	10
PCB-1221	BQL	330	ug/kg	U	10
PCB-1232	BQL	330	ug/kg	U	10
PCB-1242	BQL	330	ug/kg	U	10
PCB-1248	BQL	330	ug/kg	U	10
PCB-1254	BQL	330	ug/kg	U	10
PCB-1260	350	330	ug/kg	P	10

GPL LABORATORIES, LLLP

Summary of Analytical Results

Client ID: LLP-SL-SS-001C
GPL ID: 210232-002-002-1/1
Matrix: SOIL
Date Collected: 10/28/2002
Date Received: 10/29/2002

Prep Method: SW3550
Prep Date: 10/30/2002
Prep Time: 00:00
Prep Batch: 57550

Analytical Method: SW8082
Date Analyzed: 11/07/2002
Time Analyzed: 13:41
Analysis Batch: 57391

Parameter	Result	Rep Limit	Units	Qualifier	D.F.
PCB-1016	210	33	ug/kg	*P	1
PCB-1221	BQL	33	ug/kg	U	1
PCB-1232	BQL	33	ug/kg	U	1
PCB-1242	BQL	33	ug/kg	U	1
PCB-1248	BQL	33	ug/kg	U	1
PCB-1254	BQL	33	ug/kg	U	1
PCB-1260	180	33	ug/kg	P	1

GPL LABORATORIES, LLLP

Summary of Analytical Results

Client ID: LLP-WT-WP-001C
GPL ID: 210232-003-003-1/1
Matrix: SOIL
Date Collected: 10/28/2002
Date Received: 10/29/2002

Prep Method: SW3550
Prep Date: 10/30/2002
Prep Time: 00:00
Prep Batch: 57550

Analytical Method: SW8082
Date Analyzed: 11/07/2002
Time Analyzed: 14:09
Analysis Batch: 57391

Parameter	Result	Rep Limit	Units	Qualifier	D.F.
PCB-1016	200	33	ug/kg		1
PCB-1221	BQL	33	ug/kg	U	1
PCB-1232	BQL	33	ug/kg	U	1
PCB-1242	BQL	33	ug/kg	U	1
PCB-1248	BQL	33	ug/kg	U	1
PCB-1254	BQL	33	ug/kg	U	1
PCB-1260	60	33	ug/kg	P	1

GPL LABORATORIES, LLLP

Summary of Analytical Results

Client ID: LLP-GY-WP-001C
GPL ID: 210232-004-004-1/1
Matrix: SOIL
Date Collected: 10/28/2002
Date Received: 10/29/2002

Prep Method: SW3550
Prep Date: 10/30/2002
Prep Time: 00:00
Prep Batch: 57550

Analytical Method: SW8082
Date Analyzed: 11/07/2002
Time Analyzed: 14:37
Analysis Batch: 57391

Parameter	Result	Rep Limit	Units	Qualifier	D.F.
PCB-1016	86	33	ug/kg	*P	1
PCB-1221	BQL	33	ug/kg	U	1
PCB-1232	BQL	33	ug/kg	U	1
PCB-1242	BQL	33	ug/kg	U	1
PCB-1248	BQL	33	ug/kg	U	1
PCB-1254	BQL	33	ug/kg	U	1
PCB-1260	76	33	ug/kg		1

GPL LABORATORIES, LLLP

Summary of Analytical Results

Client ID: LLP-BL-WP-001C
GPL ID: 210232-005-005-1/1
Matrix: SOIL
Date Collected: 10/28/2002
Date Received: 10/29/2002

Prep Method: SW3550
Prep Date: 10/30/2002
Prep Time: 00:00
Prep Batch: 57550

Analytical Method: SW8082
Date Analyzed: 11/07/2002
Time Analyzed: 15:05
Analysis Batch: 57391

Parameter	Result	Rep Limit	Units	Qualifier	D.F.
PCB-1016	22000	330	ug/kg	EP	10
PCB-1221	BQL	330	ug/kg	U	10
PCB-1232	BQL	330	ug/kg	U	10
PCB-1242	BQL	330	ug/kg	U	10
PCB-1248	BQL	330	ug/kg	U	10
PCB-1254	BQL	330	ug/kg	U	10
PCB-1260	2300	330	ug/kg	P	10

GPL LABORATORIES, LLLP

Summary of Analytical Results

Client ID: LLP-BL-WP-001C
GPL ID: 210232-005-005-1/1
Matrix: SOIL
Date Collected: 10/28/2002
Date Received: 10/29/2002

Prep Method: SW3550
Prep Date: 10/30/2002
Prep Time: 00:00
Prep Batch: 57550

Analytical Method: SW8082
Date Analyzed: 11/07/2002
Time Analyzed: 15:33
Analysis Batch: 57394

Parameter	Result	Rep Limit	Units	Qualifier	D.F.
PCB-1016	18000	3300	ug/kg	*P	100
PCB-1221	BQL	3300	ug/kg	U	100
PCB-1232	BQL	3300	ug/kg	U	100
PCB-1242	BQL	3300	ug/kg	U	100
PCB-1248	BQL	3300	ug/kg	U	100
PCB-1254	BQL	3300	ug/kg	U	100
PCB-1260	BQL	3300	ug/kg	U	100

GPL LABORATORIES, LLLP

Summary of Analytical Results

Client ID: LLP-GL-WP-001C
GPL ID: 210232-006-006-1/1
Matrix: SOIL
Date Collected: 10/28/2002
Date Received: 10/29/2002

Prep Method: SW3550
Prep Date: 10/30/2002
Prep Time: 00:00
Prep Batch: 57550

Analytical Method: SW8082
Date Analyzed: 11/07/2002
Time Analyzed: 16:00
Analysis Batch: 57391

Parameter	Result	Rep Limit	Units	Qualifier	D.F.
PCB-1016	5400	670	ug/kg	*P	20
PCB-1221	BQL	670	ug/kg	U	20
PCB-1232	BQL	670	ug/kg	U	20
PCB-1242	BQL	670	ug/kg	U	20
PCB-1248	BQL	670	ug/kg	U	20
PCB-1254	BQL	670	ug/kg	U	20
PCB-1260	4900	670	ug/kg	P	20

GPL LABORATORIES, LLLP

Summary of Analytical Results

Client ID: LLP-GD-WP-001C
GPL ID: 210232-007-007-1/1
Matrix: SOIL
Date Collected: 10/28/2002
Date Received: 10/29/2002

Prep Method: SW3550
Prep Date: 10/30/2002
Prep Time: 00:00
Prep Batch: 57550

Analytical Method: SW8082
Date Analyzed: 11/07/2002
Time Analyzed: 16:28
Analysis Batch: 57391

Parameter	Result	Rep Limit	Units	Qualifier	D.F.
PCB-1016	200	67	ug/kg	*P	2
PCB-1221	BQL	67	ug/kg	U	2
PCB-1232	BQL	67	ug/kg	U	2
PCB-1242	BQL	67	ug/kg	U	2
PCB-1248	BQL	67	ug/kg	U	2
PCB-1254	BQL	67	ug/kg	U	2
PCB-1260	280	67	ug/kg	P	2

GPL LABORATORIES, LLLP

Summary of Analytical Results

Client ID: LLP-MN-DP-001
GPL ID: 210232-008-008-1/1
Matrix: SOIL
Date Collected: 10/28/2002
Date Received: 10/29/2002

Prep Method: SW3550
Prep Date: 10/30/2002
Prep Time: 00:00
Prep Batch: 57550

Analytical Method: SW8082
Date Analyzed: 11/07/2002
Time Analyzed: 16:56
Analysis Batch: 57391

Parameter	Result	Rep Limit	Units	Qualifier	D.F.
PCB-1016	1500	330	ug/kg	*P	10
PCB-1221	BQL	330	ug/kg	U	10
PCB-1232	BQL	330	ug/kg	U	10
PCB-1242	BQL	330	ug/kg	U	10
PCB-1248	BQL	330	ug/kg	U	10
PCB-1254	BQL	330	ug/kg	U	10
PCB-1260	2500	330	ug/kg		10

GPL LABORATORIES, LLLP

Summary of Analytical Results

Client ID: LLP-YW-WP-001
GPL ID: 210232-009-009-1/1
Matrix: SOIL
Date Collected: 10/28/2002
Date Received: 10/29/2002

Prep Method: SW3550
Prep Date: 10/30/2002
Prep Time: 00:00
Prep Batch: 57550

Analytical Method: SW8082
Date Analyzed: 11/07/2002
Time Analyzed: 18:20
Analysis Batch: 57391

Parameter	Result	Rep Limit	Units	Qualifier	D.F.
PCB-1016	650	170	ug/kg	*P	5
PCB-1221	BQL	170	ug/kg	U	5
PCB-1232	BQL	170	ug/kg	U	5
PCB-1242	BQL	170	ug/kg	U	5
PCB-1248	BQL	170	ug/kg	U	5
PCB-1254	BQL	170	ug/kg	U	5
PCB-1260	380	170	ug/kg		5

GPL LABORATORIES, LLLP

Summary of Analytical Results

Client ID: LLP-OG-DP-001
GPL ID: 210232-010-010-1/1
Matrix: SOIL
Date Collected: 10/28/2002
Date Received: 10/29/2002

Prep Method: SW3550
Prep Date: 10/30/2002
Prep Time: 00:00
Prep Batch: 57550

Analytical Method: SW8082
Date Analyzed: 11/07/2002
Time Analyzed: 18:48
Analysis Batch: 57391

Parameter	Result	Rep Limit	Units	Qualifier	D.F.
PCB-1016	900	170	ug/kg	*	5
PCB-1221	BQL	170	ug/kg	U	5
PCB-1232	BQL	170	ug/kg	U	5
PCB-1242	BQL	170	ug/kg	U	5
PCB-1248	BQL	170	ug/kg	U	5
PCB-1254	BQL	170	ug/kg	U	5
PCB-1260	1600	170	ug/kg		5

GPL LABORATORIES, LLP
ANALYTICAL RESULTS

Project Name : OEPA-NEDO Paint Chip Sampl

Date Printed November 18, 2002

GPL ID	Client ID
210232-005-005-1/1	LLP-BL-WP-001C
210232-007-007-1/1	LLP-GD-WP-001C
210232-006-006-1/1	LLP-GL-WP-001C
210232-004-004-1/1	LLP-GY-WP-001C
210232-008-008-1/1	LLP-MN-DP-001
210232-010-010-1/1	LLP-OG-DP-001
210232-002-002-1/1	LLP-SL-SS-001C
210232-001-001-1/1	LLP-WT-SS-001C
210232-003-003-1/1	LLP-WT-WP-001C
210232-009-009-1/1	LLP-YW-WP-001

ATTACHMENT #5

PURVES ENVIRONMENTAL

DATA REVIEW REPORT

Purves Environmental
Data Validation Specialists

Data Review Report
for

MKM Engineers

Date: December 4, 2002

Location: Ravenna Arsenal, Ravenna, Ohio
Project #: Paint Chips
Laboratory Project #: 210232 GPL , 213056 Severn Trent
Laboratory: GPL & Severn Trent

Data Validator: _____
William W. Purves

7484 Woodspring Ln. Hudson, OH 44236 Phone & Fax: 330-650-2918

Purves Environmental

Data Validation Specialists

Data Validation Report

Project: Ravenna Arsenal, Ravenna Ohio
Project #:
Laboratory Project #: 210232 GPL, 213056 Severn Trent
Laboratory: GPL and Severn Trent
Reviewer: Purves Environmental for MKM Engineers, Inc. (Ravenna, OH)
Analysis: Method: 8082 PCB
Matrix: Paint Chips
Date: December 4, 2002

I Introduction

Paint chips for the analysis of 8082 PCB were sampled, split, and sent to both GPL and Severn Trent Laboratories. The samples were collected and relinquished by MKM field personnel at the Ravenna Arsenal, Ravenna, Ohio. The samples were analyzed utilizing SW-846 Methods as published in the third addition of Test Methods for Evaluating Solid Waste (Method 8082 Rev 0, September 1994). The quality control and flagging convention is consistent with the National Functional Guidelines and QAPP requirements. The packages were reviewed specific to PCB analysis. This is not a data validation report but a review of the raw data provided by both laboratories to understand differences observed in the data.

Review Process
All chromatograms (standards, blanks, and samples) were examined and compared. GPL and Severn Trent have slightly different operating conditions that affect retention times of the Arochlors. However, the patterns for their respective process identify Arochlors. Both laboratories followed protocols as required and no deviation was found.

There are areas in the techniques that can cause differences in chromatography that start at the sample preparation process. The sample preparation process is very technique oriented. The acid cleanup can have an affect on the reduction of interfering analytes. Close examination of the chromatograms proves this issue. When comparing the chromatograms of each laboratory sample by sample, there is a difference in peak retention times and intensities that indicate clean up and interferences are at issue here.

Sample dilution will also have an affect on the ability to recognize patterns, however except for the 100x dilution by Severn Trent on one sample, all dilutions did not adversely affect patterns. The dilution may cause bias in the final result. Data with a high dilution as in sample LLP-BL-WP-001C run by STL may be biased because of the dilution factor of 100.

Issue 1 Clean up
The clean up step is critical for the removal of potentially interfering peaks. The sulfuric acid clean up does not affect the arochlor but does affect other compounds that are not as robust. In this case the sample is paint which has a variety of organic matrices that is not like organic matter found in soil or water. Paint also has organic matter that can be resistant to degradation by sulfuric acid. This may cause difficulties in the cleanup by generating more organic compounds which are sensitive to the ECD detector. Since the method itself is not specifically designed to handle a paint matrix the laboratories can only clean up the sample as well as the method will allow.

Issue 2 Chromatography after Clean up
Based upon Issue 1 (above) it is possible to have different reactions to the coatings based upon the clean up step that will affect the outcome of the chromatography. This is evidenced by the difference in chromatography observed by the data validator. The chromatography was carefully examined taking into account retention times, peak shapes and peak heights. Based upon these criteria, when examining the data between sample splits both laboratories consistently produced different peak patterns.

Each laboratory produced chromatography that were similar within their operating system but the data did not match or compare well when examining the same sample split between labs. This indicates that the differences are due to inherent problems with clean up and extraction methods that are not designed for a specific matrix (paint, as in this case) , nor well suited to the laboratory procedure.

Issue 3 ECD Detector
The ECD detector is not specific to just PCBs. It will detect nitrogen and oxygen containing compounds as well as the Chloride compounds present in PCBs. A coating (paint) will have a variety of compounds that could be detected by the ECD that are not related to PCBs Chlorides, such as other halogens as well as nitrogen and oxygen compounds. Thus many of the peaks observed may not be Arochlors. When chromatograms generate as many peaks as observed in these samples, it is possible that several peaks will fall within the retention time windows characteristic of specific Arochlors. The peak areas also change from the primary column to the secondary column making comparison of calculate quantities a problem. Therefore, an accurate calculation of peak area (or concentration) of an analyte is difficult.

Observations
Both laboratories demonstrated that Arochlor peaks are present based upon the method. However, which laboratory data set is truly more accurate is not clear. The procedures performed by both laboratories was excellent. Yet both laboratories detected completely different Arochlors. The fact that different Arochlors are detected by two different laboratories that have strictly followed the method protocol, strongly indicates a method/matrix incompatibility problem.

As A Paint Chemist
As a former paint chemist from Glidden Paints Research, the data does generate some clear observations. Most paint that contains PCBs is specifically blended to have these components in much higher quantities than are observed here, (often 10-15%). There are three primary reasons why these low levels may be observed.

1. The PCB detected in the coating may occur in one of many layers.
2. The supplier blended PCB paints with other paints to meet supply demand, or the supplier was just trying to get rid of some PCB paints by blending them with other paints.
3. There are no PCBs in the paint at all. The peaks are the result of break down of the paint in the clean up process causing interference and the newly created compounds are ECD sensitive.

Conclusion

The specific types of PCBs contained in the coatings may be difficult to determine with Gas Chromatography. The coatings could be a blend that in fact is causing so many peaks to generate that Arochlor patterns may be observed but not easy to confirm. Though Arochlors were reported by both laboratories it is the professional judgment of the data reviewer that it is not clear which Arochlors are actually detected. The laboratories performed the analysis to the limits of the methodology. It is clear, as a paint chemist, that the majority of the paint base was not intentionally produced as a PCB paint.