Hazardous Waste Section

File Room Document Transmittal Sheet

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Your Name:	Mark Wilkins
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April 28, 2016

Mr. Ken Feely
Regional PCB Coordination/Cleanups
United States Environmental Protection Agency Region 4
Sam Nunn Atlanta Federal Center
61 Forsyth Street, SW
Atlanta, GA 30303-8960

Re: Proposed Verification Sampling and Analysis Plan to Address PCB Soil Sampling Uncertainties
Former DuPont Brevard Facility
Cedar Mountain, North Carolina
NCDEQ RCRA Permit No. NCD 003 152 329

Dear Mr. Feely:

To address uncertainties and concerns communicated by the United States Environmental Protection Agency (EPA) and North Carolina Department of Environmental Quality (NCDEQ) regarding the sampling and analysis of polychlorinated biphenyl (PCB) soil samples at the Former DuPont Brevard Facility (Site), DuPont prepared a proposed PCB Verification Sampling and Analysis Plan (VSAP) which was submitted to you on March 2, 2016. DuPont revised the proposed VSAP based on recent EPA and NCDEQ comments and is submitting the revised PCB VSAP to you for your review (see Attachment 1).

The revised PCB VSAP reflects information communicated by Jan Martin (EPA) on behalf of EPA and NCDEQ in an email dated April 13, 2016 and information communicated during the conference call between EPA, NCDEQ, and DuPont on April 14, 2016. Responses to the comments communicated in the April 14, 2016 conference call are presented in Attachment 2. In addition, the following key agreements were reached during the conference call:

1. A TSCA extraction method should be used for all future PCB analysis.
2. Additional soil sampling will be needed to characterize the area between DU-6 and soil sample SS-5 if PCB concentrations in the southeast corner of DU-6 are elevated.
3. EPA and NCDEQ prefer using detected PCB soil samples to perform a side-by-side extraction method comparison rather than spiking a background sample with a known PCB concentration.
4. EPA and NCDEQ approve of collecting and analyzing PCB soil samples (i.e., conduct

the PCB VSAP) as soon as possible and developing and implementing a plan to collect and analyze sediment and surface water samples in Lake DERA, DERA Creek, and the seep after the RAP is approved.

5. The potential for PCBs to be present in DOWTHERM™ is not of concern based on existing information.
6. The side-by-side extraction method comparison will provide a basis for evaluating previously-collected PCB data that were analyzed using the microwave extraction method.

We are confident that the implementation of the revised PCB VSAP will address EPA and NCDEQ concerns associated with PCBs at the Site. We look forward to receiving your approval of this plan as quickly as practicable, as we are trying to transfer the Brevard property to the State of North Carolina before the end of 2016.

Please do not hesitate to contact me at (704) 362-6626 or jamie.a.vanbuskirk@dupont.com with any questions you may have.

Sincerely,

Jamie VanBuskirk
Project Director
DuPont Corporate Remediation Group

cc: Bill Yarborough, NC Department of Agriculture & Community Services
Tim Fredericks, EPA Region 4
Jan Martin, EPA Region 4
Mark Wilkins, NCDEQ
Tracy Ovbey, Parsons
Brad Grimsted, PIONEER Technologies Corporation

Enclosures:

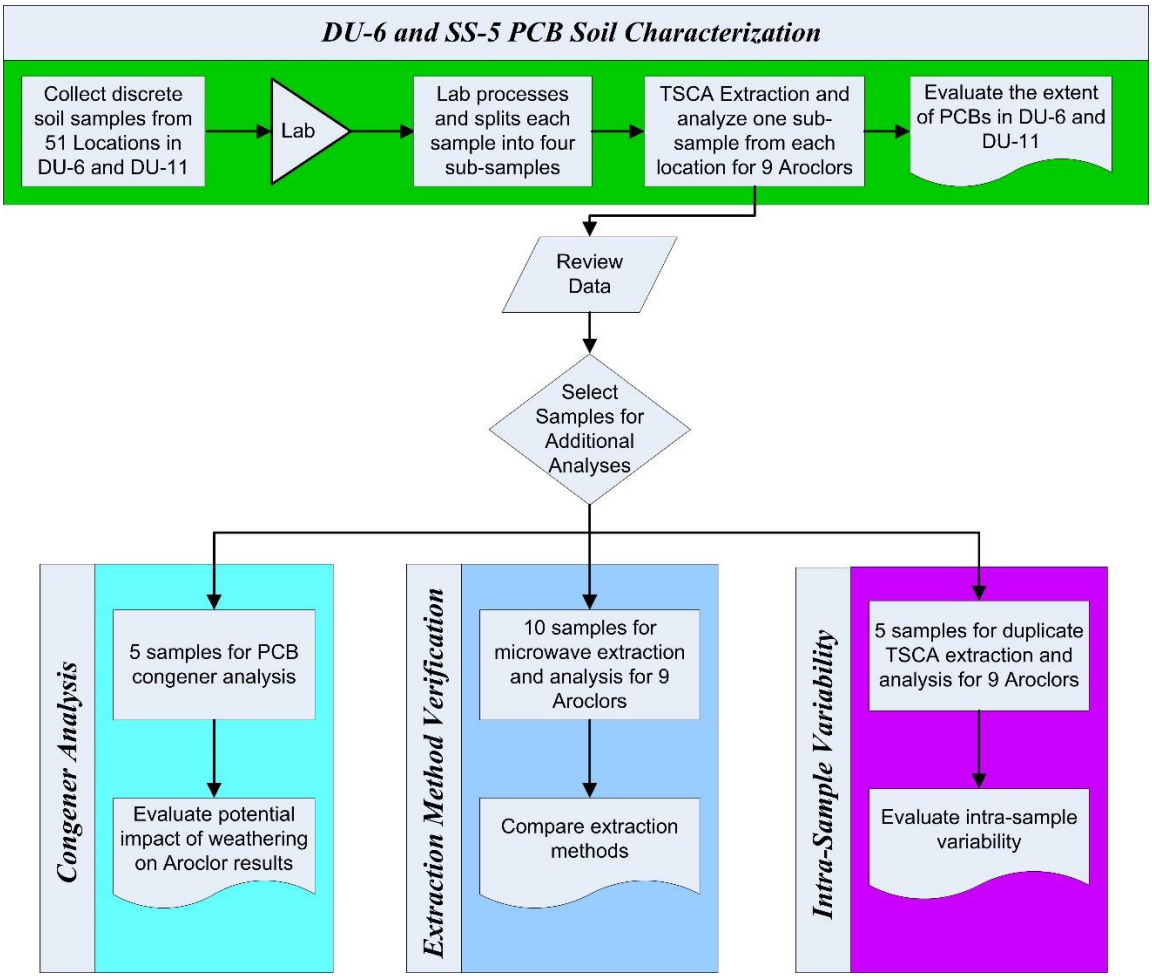
Attachment 1: PCB Verification Sampling and Analysis Plan
Attachment 2: Response to EPA and NCDEQ April 13, 2016 Comments on the PCB VSAP

Attachment 1: PCB Verification Sampling and Analysis Plan

This Polychlorinated biphenyl (PCB) Verification Sampling and Analysis Plan (VSAP) was developed to achieve the following objectives for sampling and analyzing PCBs:

- Further characterize PCB concentrations in soil at DU-6 and the area south of DU-6 (in DU-11) in the vicinity of sample SS-5 to address spatial uncertainty associated with incremental sampling (see Figure 1);
- Characterize uncertainties associated with potential weathering of PCBs;
- Address uncertainties associated with the past use of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)- and Resource Conservation and Recovery Act (RCRA)-approved microwave extraction method (Method 3546) versus the extraction methods identified in the Toxic Substances Control Act (TSCA; e.g., ultrasonic [Method 3550B]); and,
- Characterize the uncertainty associated with potential intra-sample PCB concentration variability due to the heterogeneous nature of constituent concentrations in soil.

This VSAP describes the sample collection, and the proposed approaches, proposed laboratory analyses and data evaluations that will be conducted to fulfill the four objectives. The following flow chart summarizes the program.



Attachment 1: PCB Verification Sampling and Analysis Plan

Sample Collection

Forty-eight discrete samples will be collected at the same locations as the "Node A" incremental samples collected in DU-6 in 2014 during the Remedial Investigation (see Figure 1; Parsons 2015). In addition, three samples will be collected to characterize the area between DU-6 and soil sample SS-5. Soil samples will be collected in accordance with the sampling methodology presented in the Final Remedial Investigation Work Plan at the locations shown in Figure 1 (Parsons 2014). A sufficient volume of soil will be collected from each sample location to allow the laboratory to run four analytical analyses for each sample. Consistent with previous interim sampling methodology (ISM), the laboratory will air dry the sample (if required) and then the sample will be sieved to remove particles greater than 2mm (#10 sieve). If required, the dried soil will be disaggregated by crushing the soil on the sieve with a pestle. The sample will then be dry mixed and split into four sub-samples using a riffle splitter, cone and quartering, or a similar technique (Interstate Technology & Regulatory Council [ITRC] 2012).

DU-6 and SS-5 PCB Soil Characterization

Approach

Discrete soil samples will be collected at 48 locations in DU-6 and at three locations near SS-5 to address spatial uncertainty. The samples will be sent to the laboratory where the samples will be prepared and analyzed for Aroclors using TSCA extraction Method 3550B (ultrasonic) and analytical Method 8082A. The total PCB results will be compared to the TSCA low occupancy criterion of 50 milligrams per kilogram (mg/kg; United States Environmental Protection Agency [EPA] 2005).[1]

Laboratory Analyses

All 51 soil samples will be extracted using TSCA Method 3550B (ultrasonic) and analyzed for Aroclors using Method 8082A. The associated analytical method and reporting limits are presented in Table 1. Analytical data quality will be evaluated using the procedures identified in the Quality Assurance Plan (QAP). A QAP will be submitted for review that includes the TSCA Method 3550B extraction method.

Data Evaluation

The analytical results from the 51 discrete soil samples will be used to evaluate total PCB concentrations in DU-6 and near SS-5. If total PCBs are not detected or are detected at low concentrations (i.e., less than 50 mg/kg), DU-6 and SS-5 will be considered adequately characterized and no additional sampling will be needed.[2] Alternatively, if total PCBs are

[1] The TSCA low occupancy cleanup level if a fence is present is 50 mg/kg (EPA 2005). This cleanup level is well below the site-specific, risk-based remediation level for Aroclor 1242 of 143 mg/kg that was developed in accordance with the North Carolina Risk Bill (N.C.G.S.1 130A-310.65 to 310.77) and is documented in Appendix G of the Remedial Investigation Report (Parsons 2015).

[2] No further action will be needed if all individual sample PCB (total) concentrations in DU-6 are less than 50 mg/kg because a fence restricting access to DU-6 is planned for this area (PIONEER 2016).

detected at concentrations greater than 50 mg/kg at one or more locations, additional sampling or remedial options will be evaluated and proposed.

PCB Weathering Congener Analysis

Approach

Five soil samples (i.e., 10%) collected as part of DU-6 and SS-5 PCB Soil Characterization will undergo PCB congener analysis to address uncertainty associated with the weathering of PCBs. The results of the PCB congener analysis will be used to evaluate the degree to which weathering has affected the typical distribution of congeners in Aroclor mixtures.

Laboratory Analyses

Five soil samples (i.e., 10%) collected as part of DU-6 and SS-5 PCB Soil Characterization will be selected and analyzed for PCB congeners using TSCA extraction Method 3550B (ultrasonic) and analytical method 1668C. The five samples will be selected based on the following:

- If less than five samples have detectable levels of PCBs, then any sample with PCB detections will be included for congener analysis; and samples where PCBs were not detected will be randomly selected to make up the remainder of the five samples for congener analysis.
- If more than five samples have detectable levels of PCBs, then:
    - The three samples with the highest PCB concentrations will be selected.
    - The two samples with most detected individual Aroclors will be selected.

The analytical method, congeners, and reporting limits for PCB congener analysis are presented in Table 1. Analytical data quality will be evaluated using the procedures identified in the QAP. A QAP will be submitted for review that includes the PCB congener analysis.

Data Evaluation

PCB congener analysis will be performed to evaluate the extent to which weathering has affected the typical distribution of congeners in Aroclor mixtures. The total PCB concentration will be determined for each sample by summing the individual congener data. This total PCB concentration based on congener analysis will be compared to the total PCB concentration based on Aroclors using Method 8082A. The comparability of the congener results to the Aroclor results will also provide additional context for samples that were collected during the Final Remedial Investigation and analyzed for Aroclors.

Extraction Method Verification

Approach

Extraction Method Verification (EMV) will be performed to address uncertainty associated with Remedial Investigation PCB results using Method 3546 (microwave extraction). At least 20% of the samples from the DU-6 and SS-5 PCB Soil Characterization program will be selected for Aroclor analysis using Method 3546 (microwave extraction). A side-by-side comparison can

then be done between for each of the samples by comparing the results that were determined using each extraction method.

Laboratory Analyses

The DU-6 and SS-5 PCB Soil Characterization Aroclor data will be reviewed and a subset of the discrete samples will be selected for the side-by-side evaluation. At least 10 soil samples (i.e., 20%) collected as part of DU-6 and SS-5 PCB Soil Characterization will be extracted using Method 3546 (microwave) and analyzed for Aroclors using Method 8082A. The basis for selecting the ten samples is as follows:

- If less than ten samples have detectable levels of PCBs, then any sample with PCB detections will be selected; and samples with PCBs that were not detected will be randomly selected to make up the remainder of the ten samples.
- If more than ten samples have detectable levels of PCBs, then samples that are representative of the PCB concentration data distribution will be selected.

The analytical methods, analytes, and reporting limits for are presented in Table 1. Analytical data quality will be evaluated using the procedures identified in the QAP.

Data Evaluation

The results of the side-by-side EMV analysis will be evaluated to compare the two extraction methods. A component of the evaluation will consist of comparing the total PCB concentration from both methods to the 50 mg/kg TSCA low occupancy cleanup level. This will be done to evaluate the likelihood for false negatives (i.e., making a decision that a sample PCB concentration is less than the cleanup level based on microwave extraction when the TSCA extraction result indicates that it is above the cleanup level).

Intra-Sample Variability

Approach

Any comparison of soil sample results must take into account the heterogeneity of constituent concentrations in soil. In other words, when the EMV results are compared there will be differences in results for each sample that are associated with the soil matrix and have nothing to do with the extraction method or analytical method. In order to estimate intra-sample concentration variability, five samples will be reanalyzed using TSCA Method 3550B (ultrasonic).

Laboratory Analyses

Five of the soil samples used for the EMV will be extracted using TSCA Method 3550B (ultrasonic) and analyzed for Aroclors using Method 8082A. The analytical methods, analytes, and reporting limits for are presented in Table 1. Analytical data quality will be evaluated using the procedures identified in the QAP.

Data Evaluation

The results from the five duplicate samples results will be compared to provide a quantitative estimate of intra-sample variability.

Schedule

Fieldwork will begin no later than 14 days following approval of this VSAP. It is estimated that the laboratory analyses will take approximately 40 days. A report will be submitted to EPA and NCDEQ no later than 20 days after the laboratory analytical data have been evaluated for quality assurance.

Reporting

A report will be prepared that presents VSAP field documentation, laboratory analytical results, data quality assurance findings, the results of the evaluations, and proposed follow-up actions (if needed). This report will be submitted to EPA and NCDEQ.

References

EPA. 2005. Polychlorinated Biphenyl (PCB) Site Revitalization Guidance Under the Toxic Substances Control Act. November.

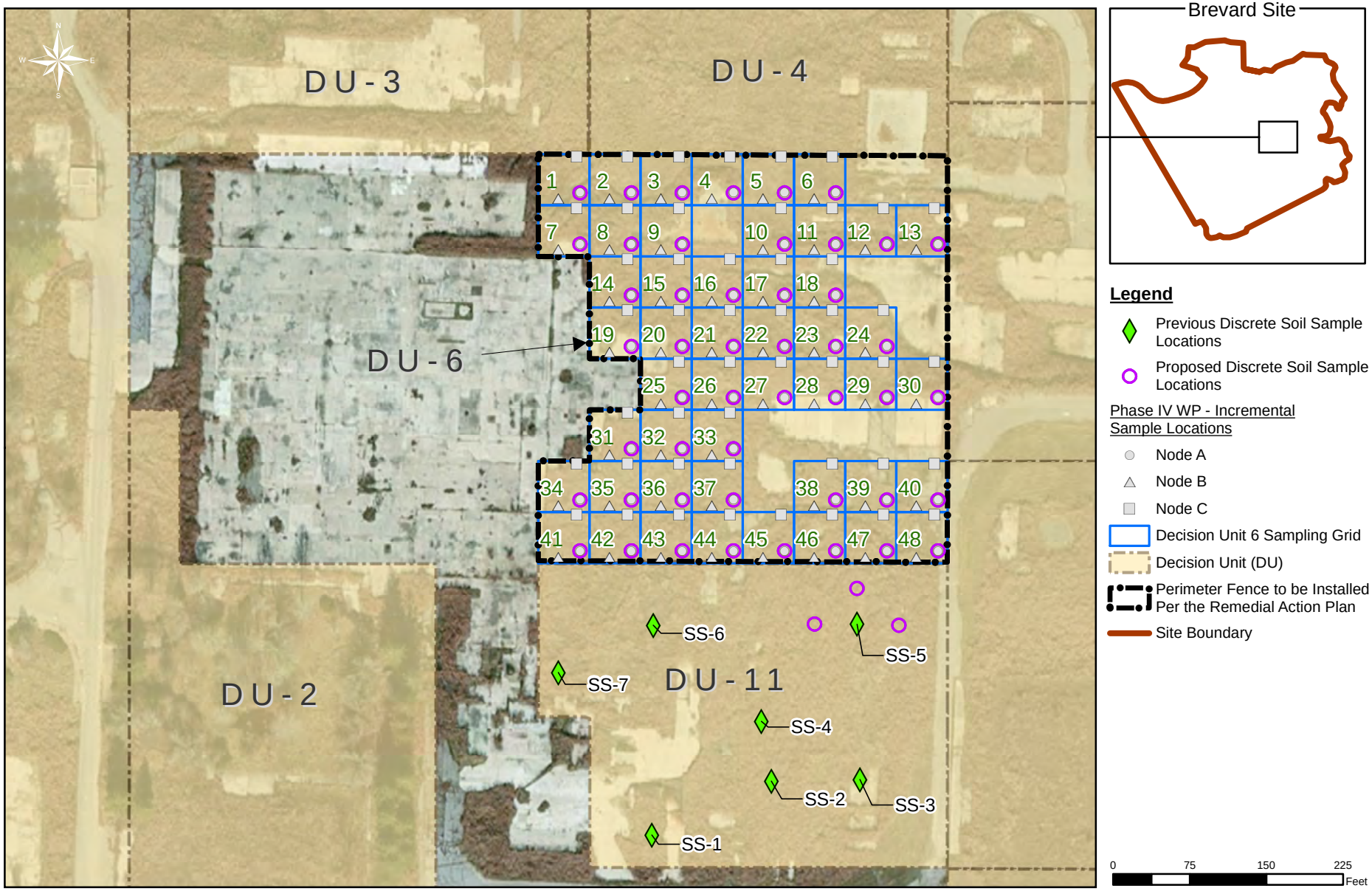
Interstate Technology & Regulatory Council, 2012. Incremental Sampling Methodology.

February.

Parsons 2014. Final Remedial Investigation Work Plan. DuPont Brevard Facility. August 1.

Parsons 2015. Remedial Investigation Report. DuPont Brevard Facility. May 6.

PIONEER. 2016. Conceptual Remedial Action Plan. DuPont Brevard Site. February 5.



PIONEER TECHNOLOGIES CORPORATION

Previous and Proposed Soil PCB Sample Locations
Verification Sampling and Analysis Plan
Brevard Site
Cedar Mountain, North Carolina

Figure 1

Document Path: G:\Projects\Brevard\Maps\2016\February 2016\Figure 1 - Proposed Sample Locations - PCB Verif. SAAP.mxd; Author: VN; Date Saved: 4/20/2016

Table 1: Summary of Proposed Analyses

CAS No.[1]	Analyte	Analysis			
		Analytical Method	MDL	RL	Units
Aroclor					
12674-11-2	Aroclor 1016	8082A	3.3	17	ug/kg
11104-28-2	Aroclor 1221	8082A	5.1	17	ug/kg
11141-16-5	Aroclor 1232	8082A	4.1	17	ug/kg
53469-21-9	Aroclor 1242	8082A	4.1	17	ug/kg
12672-29-6	Aroclor 1248	8082A	3.3	17	ug/kg
11097-69-1	Aroclor 1254	8082A	4.4	17	ug/kg
11096-82-5	Aroclor 1260	8082A	3.9	17	ug/kg
37324-23-5	Aroclor 1262	8082A	3.3	17	ug/kg
11100-14-4	Aroclor 1268	8082A	3.3	17	ug/kg
PCB Congener Analysis[2]					
2051-60-7	PCB1	1668C	1.0	2.0	ng/kg
33146-45-1	PCB10	1668C	1.3	5.0	ng/kg
60145-21-3	PCB103	1668C	1.1	5.0	ng/kg
56558-16-8	PCB104	1668C	1.4	5.0	ng/kg
32598-14-4	PCB105	1668C	1.7	5.0	ng/kg
70424-69-0	PCB106	1668C	1.7	5.0	ng/kg
70424-68-9	PCB107	1668C	1.7	5.0	ng/kg
Multiple	PCB108+124	1668C	2.9	10	ng/kg
2050-67-1	PCB11	1668C	3.4	10	ng/kg
Multiple	PCB110+115	1668C	3.9	10	ng/kg
39635-32-0	PCB111	1668C	1.4	5.0	ng/kg
74472-36-9	PCB112	1668C	1.4	5.0	ng/kg
74472-37-0	PCB114	1668C	1.5	5.0	ng/kg
31508-00-6	PCB118	1668C	3.0	10	ng/kg
Multiple	PCB12+13	1668C	1.9	5.0	ng/kg
68194-12-7	PCB120	1668C	1.3	5.0	ng/kg
56558-18-0	PCB121	1668C	1.2	5.0	ng/kg
76842-07-4	PCB122	1668C	1.2	5.0	ng/kg
65510-44-3	PCB123	1668C	1.7	5.0	ng/kg
57465-28-8	PCB126	1668C	1.6	5.0	ng/kg
39635-33-1	PCB127	1668C	1.4	5.0	ng/kg
Multiple	PCB128+166	1668C	2.9	10	ng/kg
Multiple	PCB129+138+163	1668C	6.3	20	ng/kg
52663-66-8	PCB130	1668C	1.3	5.0	ng/kg
61798-70-7	PCB131	1668C	1.7	5.0	ng/kg
38380-05-1	PCB132	1668C	1.6	5.0	ng/kg
35694-04-3	PCB133	1668C	1.2	5.0	ng/kg
52704-70-8	PCB134	1668C	3.3	10	ng/kg
Multiple	PCB135+151	1668C	4.6	10	ng/kg
38411-22-2	PCB136	1668C	1.6	5.0	ng/kg
35694-06-5	PCB137	1668C	1.5	5.0	ng/kg
Multiple	PCB139+140	1668C	2.9	10	ng/kg
34883-41-5	PCB14	1668C	0.80	2.0	ng/kg
52712-04-6	PCB141	1668C	1.7	5.0	ng/kg
41411-61-4	PCB142	1668C	1.7	5.0	ng/kg
68194-15-0	PCB143	1668C	3.3	10	ng/kg
68194-14-9	PCB144	1668C	1.5	5.0	ng/kg

Table 1: Summary of Proposed Analyses

CAS No.[1]	Analyte	Analysis			
		Analytical Method	MDL	RL	Units
74472-40-5	PCB145	1668C	1.6	5.0	ng/kg
51908-16-8	PCB146	1668C	1.4	5.0	ng/kg
Multiple	PCB147+149	1668C	3.5	10	ng/kg
74472-41-6	PCB148	1668C	1.4	5.0	ng/kg
2050-68-2	PCB15	1668C	1.6	5.0	ng/kg
68194-08-1	PCB150	1668C	1.5	5.0	ng/kg
68194-09-2	PCB152	1668C	1.4	5.0	ng/kg
Multiple	PCB153+168	1668C	3.0	10	ng/kg
60145-22-4	PCB154	1668C	4.6	10	ng/kg
33979-03-2	PCB155	1668C	1.4	5.0	ng/kg
Multiple	PCB156+157	1668C	2.3	10	ng/kg
74472-42-7	PCB158	1668C	1.6	5.0	ng/kg
39635-35-3	PCB159	1668C	1.4	5.0	ng/kg
38444-78-9	PCB16	1668C	0.90	2.0	ng/kg
41411-62-5	PCB160	1668C	6.3	20	ng/kg
74472-43-8	PCB161	1668C	1.3	5.0	ng/kg
39635-34-2	PCB162	1668C	1.3	5.0	ng/kg
74472-45-0	PCB164	1668C	1.5	5.0	ng/kg
74472-46-1	PCB165	1668C	1.3	5.0	ng/kg
52663-72-6	PCB167	1668C	1.3	5.0	ng/kg
32774-16-6	PCB169	1668C	1.5	5.0	ng/kg
37680-66-3	PCB17	1668C	0.90	2.0	ng/kg
35065-30-6	PCB170	1668C	1.2	5.0	ng/kg
Multiple	PCB171+173	1668C	3.0	10	ng/kg
52663-74-8	PCB172	1668C	1.3	5.0	ng/kg
38411-25-5	PCB174	1668C	1.5	5.0	ng/kg
40186-70-7	PCB175	1668C	1.4	5.0	ng/kg
52663-65-7	PCB176	1668C	1.2	5.0	ng/kg
52663-70-4	PCB177	1668C	1.1	5.0	ng/kg
52663-67-9	PCB178	1668C	1.4	5.0	ng/kg
52663-64-6	PCB179	1668C	1.4	5.0	ng/kg
Multiple	PCB18+30	1668C	1.6	5.0	ng/kg
Multiple	PCB180+193	1668C	3.0	10	ng/kg
74472-47-2	PCB181	1668C	1.3	5.0	ng/kg
60145-23-5	PCB182	1668C	1.3	5.0	ng/kg
Multiple	PCB183+185	1668C	2.8	10	ng/kg
74472-48-3	PCB184	1668C	1.4	5.0	ng/kg
74472-49-4	PCB186	1668C	1.5	5.0	ng/kg
52663-68-0	PCB187	1668C	1.7	5.0	ng/kg
74487-85-7	PCB188	1668C	1.5	5.0	ng/kg
39635-31-9	PCB189	1668C	1.3	5.0	ng/kg
38444-73-4	PCB19	1668C	0.80	2.0	ng/kg
41411-64-7	PCB190	1668C	1.4	5.0	ng/kg
74472-50-7	PCB191	1668C	1.3	5.0	ng/kg
74472-51-8	PCB192	1668C	1.3	5.0	ng/kg
35694-08-7	PCB194	1668C	1.8	5.0	ng/kg
52663-78-2	PCB195	1668C	2.2	5.0	ng/kg
42740-50-1	PCB196	1668C	2.0	5.0	ng/kg

Table 1: Summary of Proposed Analyses

CAS No.[1]	Analyte	Analysis			
		Analytical Method	MDL	RL	Units
Multiple	PCB197+200	1668C	4.3	10	ng/kg
Multiple	PCB198+199	1668C	3.7	10	ng/kg
2051-61-8	PCB2	1668C	0.70	2.0	ng/kg
Multiple	PCB20+28	1668C	2.2	5.0	ng/kg
40186-71-8	PCB201	1668C	2.0	5.0	ng/kg
2136-99-4	PCB202	1668C	2.4	10	ng/kg
52663-76-0	PCB203	1668C	1.8	5.0	ng/kg
74472-52-9	PCB204	1668C	2.1	5.0	ng/kg
74472-53-0	PCB205	1668C	1.5	5.0	ng/kg
40186-72-9	PCB206	1668C	1.6	5.0	ng/kg
52663-79-3	PCB207	1668C	1.9	5.0	ng/kg
52663-77-1	PCB208	1668C	1.6	5.0	ng/kg
2051-24-3	PCB209	1668C	1.6	5.0	ng/kg
Multiple	PCB21+33	1668C	2.1	5.0	ng/kg
38444-85-8	PCB22	1668C	0.90	2.0	ng/kg
55720-44-0	PCB23	1668C	0.70	2.0	ng/kg
55702-45-9	PCB24	1668C	1.0	2.0	ng/kg
55712-37-3	PCB25	1668C	0.80	2.0	ng/kg
Multiple	PCB26+29	1668C	1.2	5.0	ng/kg
38444-76-7	PCB27	1668C	0.80	2.0	ng/kg
2051-62-9	PCB3	1668C	1.1	5.0	ng/kg
16606-02-3	PCB31	1668C	1.8	5.0	ng/kg
38444-77-8	PCB32	1668C	0.80	2.0	ng/kg
37680-68-5	PCB34	1668C	0.70	2.0	ng/kg
37680-69-6	PCB35	1668C	0.90	2.0	ng/kg
38444-87-0	PCB36	1668C	0.80	2.0	ng/kg
38444-90-5	PCB37	1668C	1.0	2.0	ng/kg
53555-66-1	PCB38	1668C	0.70	2.0	ng/kg
38444-88-1	PCB39	1668C	0.80	2.0	ng/kg
13029-08-8	PCB4	1668C	1.3	5.0	ng/kg
Multiple	PCB40+71	1668C	4.2	10	ng/kg
52663-59-9	PCB41	1668C	4.2	10	ng/kg
36559-22-5	PCB42	1668C	1.6	5.0	ng/kg
70362-46-8	PCB43	1668C	1.4	5.0	ng/kg
Multiple	PCB44+47+65	1668C	4.0	10	ng/kg
70362-45-7	PCB45	1668C	2.2	5.0	ng/kg
41464-47-5	PCB46	1668C	1.0	2.0	ng/kg
70362-47-9	PCB48	1668C	1.4	5.0	ng/kg
Multiple	PCB49+69	1668C	2.6	10	ng/kg
16605-91-7	PCB5	1668C	0.80	5.0	ng/kg
Multiple	PCB50+53	1668C	2.5	10	ng/kg
68194-04-7	PCB51	1668C	2.2	5.0	ng/kg
35693-99-3	PCB52	1668C	1.5	5.0	ng/kg
15968-05-5	PCB54	1668C	1.4	5.0	ng/kg
74338-24-2	PCB55	1668C	1.2	5.0	ng/kg
41464-43-1	PCB56	1668C	1.5	5.0	ng/kg
70424-67-8	PCB57	1668C	1.1	5.0	ng/kg
41464-49-7	PCB58	1668C	1.4	5.0	ng/kg

Table 1: Summary of Proposed Analyses

CAS No.[1]	Analyte	Analysis			
		Analytical Method	MDL	RL	Units
Multiple	PCB59+62+75	1668C	3.7	10	ng/kg
25569-80-6	PCB6	1668C	0.70	2.0	ng/kg
33025-41-1	PCB60	1668C	1.4	5.0	ng/kg
Multiple	PCB61+70+74+76	1668C	5.9	20	ng/kg
74472-34-7	PCB63	1668C	1.2	5.0	ng/kg
52663-58-8	PCB64	1668C	1.3	5.0	ng/kg
32598-10-0	PCB66	1668C	1.7	5.0	ng/kg
73575-53-8	PCB67	1668C	1.2	5.0	ng/kg
73575-52-7	PCB68	1668C	1.4	5.0	ng/kg
33284-50-3	PCB7	1668C	0.80	2.0	ng/kg
41464-42-0	PCB72	1668C	1.3	5.0	ng/kg
74338-23-1	PCB73	1668C	1.4	5.0	ng/kg
32598-13-3	PCB77	1668C	1.4	5.0	ng/kg
70362-49-1	PCB78	1668C	1.6	5.0	ng/kg
41464-48-6	PCB79	1668C	1.1	5.0	ng/kg
34883-43-7	PCB8	1668C	1.5	5.0	ng/kg
33284-52-5	PCB80	1668C	1.1	5.0	ng/kg
70362-50-4	PCB81	1668C	1.8	5.0	ng/kg
52663-62-4	PCB82	1668C	1.5	5.0	ng/kg
60145-20-2	PCB83	1668C	2.9	10	ng/kg
52663-60-2	PCB84	1668C	1.1	2.0	ng/kg
Multiple	PCB85+116+117	1668C	3.8	10	ng/kg
Multiple	PCB86+87+97+109+119+125	1668C	7.4	20	ng/kg
55215-17-3	PCB88	1668C	2.2	5.0	ng/kg
73575-57-2	PCB89	1668C	1.3	5.0	ng/kg
34883-39-1	PCB9	1668C	0.70	2.0	ng/kg
Multiple	PCB90+101+113	1668C	4.7	20	ng/kg
68194-05-8	PCB91	1668C	2.2	5.0	ng/kg
52663-61-3	PCB92	1668C	1.3	5.0	ng/kg
Multiple	PCB93+100	1668C	7.7	20	ng/kg
73575-55-0	PCB94	1668C	1.3	5.0	ng/kg
38379-99-6	PCB95	1668C	7.7	20	ng/kg
73575-54-9	PCB96	1668C	1.5	5.0	ng/kg
Multiple	PCB98+102	1668C	7.7	20	ng/kg
38380-01-7	PCB99	1668C	2.9	10	ng/kg

Notes:

MDL: Method Detection Limit

RL: Reporting Limit

MDLs and RLs provided as of 2/29/2016. MDLs and RLs are continually updated and are subject to change.

[1] Chemical Abstracts Registry Number

[2] Some of the PCB congeners co-elute (e.g., PCB129+138+163) and will be reported as a summation of the co-eluting compounds.

Attachment 2: Response to EPA and NCDEQ April 13, 2016 Comments on the PCB Verification Sampling and Analysis Plan

	EPA Comments	DuPont Response
General Comments		
1.	Overall, the plan to collect 48 discrete samples for PCB analyses provides a robust data set and provides spatial resolution to determine whether there is a localized "hot spot" of a given radius that may be responsible for the inconsistent ISM results previously reported for DU 6.	Agreed.
2.	Analyzing the five samples (~5%) with the highest total PCB concentration for all PCB congeners is also reasonable.	Agreed. DuPont proposed to analyze 10% in the revised VSAP.
3.	EPA implements federal regulations promulgated under Section 6(e) of TSCA, i.e., Title 40 CFR Part 761 which govern the manufacture, processing, distribution, use, storage, cleanup and disposal of PCBs. Unlike the RCRA program, the PCB program under TSCA has not been delegated to the states.	Agreed.
4.	The PCB data reported in the Remedial Investigation report is not definitive and cannot be used by the EPA to determine the extent of PCB contamination at the DuPont Brevard site. The approach outlined in the Verification Sampling and Analysis Plan (VSAP) proposed by DuPont does not address the uncertainties about PCB data caused by using microwave extraction during the Remedial Investigation.	Whether the Remedial Investigation Report (RIR) PCB data are definitive remains to be established. We acknowledge that the method that was used to extract the RIR PCB samples is not an extraction method identified in the Toxic Substances Control Act (TSCA). However, the method has been validated by EPA and is considered acceptable for making decision at CERCLA and RCRA sites. The VSAP has been revised to address uncertainties associated with PCB data that were analyzed using microwave extraction. The extraction methods will be compared by performing side-by-side extractions and Aroclor analyses for ten discrete soil samples. The results of this comparison will be used to evaluate the equivalency of the extraction methods, and the utility of the PCB data in the RIR for site decision making.

Attachment 2: Response to EPA and NCDEQ April 13, 2016 Comments on the PCB Verification Sampling and Analysis Plan

EPA Comments		DuPont Response
5.	During the February 2, 2016 call with DuPont and NCDEQ, a sampling and analysis approach was discussed which could reduce uncertainties caused by the extraction method used during the Remedial investigation. The approach involved taking co-located samples at discrete sample locations in DU-11 and analyzing them using a regulatory extraction method and microwave extraction. If the results of analysis using the two extraction methods are close, this new data could add a measure of confidence to the PCB data reported in the Remedial Investigation Report. It could provide a benchmark which could be used to asses data already collected.	The VSAP has been revised to use co-located samples at discrete locations for the extraction method verification (EMV). In addition, we agree that the results of this evaluation will be useful for increasing confidence in the RIR data.
6.	DuPont must use one of the regulatory extraction methods listed in 40 CFR 761.358 or validate an alternate method as prescribed in 40 CFR 761 Subpart Q.	Agreed. All future PCB analyses will be performed using a TSCA extraction method.
7.	The VSAP does not include other sampling and analysis discussed during the February 2, 2016 call, including sediment samples from DERA Creek and Lake Dera, sediment samples from the polishing pond seep and sampling for DOWTHERM at SWMU 13.	Sediment sampling in Lake DERA, DERA Creek, and the Polishing Pond seep were identified in the Conceptual Remedial Action Plan (RAP) that was submitted to NCDEQ on 2/5/16. As discussed during the 4/14 call, DuPont will submit a work plan proposing sediment and surface water sampling in Lake DERA, DERA Creek, and the Polishing Pond seep after the RAP is approved. This plan will include sampling for PCBs in Lake DERA, DERA Creek and the seep as requested. As discussed during the 4/14 call, n additional sampling for DOWTHERM in SWMU 13 or elsewhere is necessary.
8.	The VSAP does not address the PCBs detected at the site outside of DU-6. For example, data reported in the Remedial Investigation Report indicates that PCBs were detected at 6 of 7 discrete sampling locations in DU-11. Figure 8 in the Remedial Investigation Report shows the 7 locations in DU-11: MA-SS-1, MA-SS-2, MA-SS-3, MA-SS-4, MA-SS-5, and MA-SS-7 and in the duplicate sample, MA-SS-2 (Dup).	The average PCB (total) concentrations in the six detected discrete samples at DU-11 is 0.26 mg/kg and the maximum detected concentration was 1.3 mg/kg at location SS-5. These results are well below the TSCA low occupancy cleanup level of 50 mg/kg and the site-specific remedial levels. As discussed during the 4/14 call, three additional samples will be collected in the vicinity of SS-5 and the DU-6 boundary to characterize PCB concentrations in soil in that area. The VSAP has been revised accordingly.

Attachment 2: Response to EPA and NCDEQ April 13, 2016 Comments on the PCB Verification Sampling and Analysis Plan

EPA Comments		DuPont Response
9.	PCB analysis should be for Aroclors using an approved extraction method and for the entire suite of 209 PCB congeners using U.S. EPA Method 1668.	All future PCB analyses will use a TSCA extraction method, and Method 1668 will be used as the analytical method on samples selected for congener analysis (see Table 1 of the VSAP).
Extraction Method Verification, Verification Sampling and Analysis Plan Comments		
1.	DuPont will need to provide a copy of the referenced QAP to the EPA.	A QAP will be submitted for your review that includes a TSCA PCB extraction method and PCB congener analysis.
2.	The Extraction Method Verification does not address uncertainties about the PCB concentration of any sample taken during the Remedial Investigation, i.e., none on the reported concentrations are definitive and cannot be used as the basis for a decision by EPA. If DuPont insists on using an extraction method not listed 40 CFR 761.358 it will have to comply with the procedure outlined in 40 CFR 761 Subpart Q.	Whether the existing PCB data are definitive remains to be established. We acknowledge that the method that was used to extract the RIR PCB samples is not an extraction method identified in TSCA. However, the method has been validated by EPA and is considered acceptable for making decision at CERCLA and RCRA sites. The EMV approach has been revised to incorporate the use of co-located samples, as discussed on the 4/14 call. DuPont believes that the revised EMV approach will address the uncertainty associated with using the microwave extraction method, and will determine the utility of the PCB data in the RIR. In addition, all future PCB analyses will use a TSCA extraction method.
3.	All data generated through use of microwave extraction during sample analysis will be non-definitive and not in compliance with federal regulations and cannot be used as the basis for a decision by EPA.	Whether the existing PCB data are definitive remains to be established. We acknowledge that the method that was used to extract the RIR PCB samples is not an extraction method identified in TSCA. However, the method has been validated by EPA and is considered acceptable for making decision at CERCLA and RCRA sites.
DU-6 Soil Characterization Comments		
1.	Sample Collection: What, if any, field or laboratory preparation of samples will be conducted.	Sample preparation will be conducted at the laboratory. The laboratory will air dry the sample (if required) and then the sample will be sieved to remove particles greater than 2mm (#10 sieve). If required, the dried soil will disaggregated by crushing the soil on the sieve with a pestle. The sample will then be dry mixed and split into four sub-samples using a riffle splitter, cone and quartering, or a similar technique. This approach is consistent with previous RI incremental sample methodology and ITRC guidance.

Attachment 2: Response to EPA and NCDEQ April 13, 2016 Comments on the PCB Verification Sampling and Analysis Plan

EPA Comments		DuPont Response
2.	Laboratory Analyses: a. EPA expects the TSCA extraction method to be used for all future sampling analyses. b. What, if any, field or laboratory preparation of samples will be conducted.	All future PCB analyses will use a TSCA extraction method (other than the EMV samples). Sample preparation will be conducted at the laboratory. The laboratory will air dry the sample (if required) and then the sample will be sieved to remove particles greater than 2mm (#10 sieve). If required, the dried soil will disaggregated by crushing the soil on the sieve with a pestle. The sample will then be dry mixed and split into four sub-samples using a riffle splitter, cone and quartering, or a similar technique. This approach is consistent with previous RI incremental sample methodology.

Attachment 2: Response to EPA and NCDEQ April 13, 2016 Comments on the PCB Verification Sampling and Analysis Plan

DEQ Comments		DuPont Response
VSAP		
1.	As previously discussed, DuPont, EPA, and the NC Hazardous Waste Section (HWS) are interested in determining the usability of PCB data previously collected by Incremental Sampling (IS) methods. In addition, as PCBs were detected during the initial phase of the IS work, follow up sampling to more completely define the location and extent of the PCBs would be the next step in the IS process. It was the intent of HWS during previous meetings to provide DuPont with guidance for future sampling activities that could satisfy both issues. Upon collection of proposed soil samples at the DU-6/DU-11 investigation area, side-by-side analysis of samples using ultrasonic/soxhlet extraction and microwave extraction with the subsequent comparison of these results could be used to demonstrate the usability of the IS sample data previously collected. After collecting and analyzing the proposed soil samples, DuPont, EPA, and the HWS will endeavor to reach a mutually agreeable decision about the usability of the previous data. HWS hesitates to provide up front criteria for the usability of the data. What HWS can say is that if results of the ultrasonic/soxhlet extracted samples are routinely 100 times (for example) higher than results from the microwave extraction, the previous data analyzed with microwave extraction is probably suspect. However, if the results using the different extraction methods are similar, the previous PCB analytical data is probably useable. If comparison of the data from ultrasonic/soxhlet extraction with data from microwave extracted samples yields results that lie somewhere between those two endpoints, HWS would be open to discussions as to the usability of the previous IS data.	DuPont appreciates NCDEQ providing guidance on how to judge the results of the EMV evaluation.
2.	DuPont proposes to collect background soil samples, spike them with Aroclor 1242, analyze samples of the spiked soil using microwave extraction, and to perform side-by-side analysis with samples extracted using sonic extraction. This method to verify the usability of previously	The EMV approach has been revised to incorporate the use of co-located samples, as discussed on the 4/14 call. DuPont believes that the revised EMV approach will address the uncertainty

Attachment 2: Response to EPA and NCDEQ April 13, 2016 Comments on the PCB Verification Sampling and Analysis Plan

DEQ Comments		DuPont Response
	collected data and to demonstrate that any future PCB samples can be extracted by microwave is not acceptable. Aroclor 1242 consists of predominantly lower chlorinated PCB congeners. Recovery of Aroclor 1242 from the freshly spiked soil may be biased high relative to the recovery of Aroclor 1242 that would be expected from a highly weathered PCB-contaminated soil at this site. Sole use of Aroclor 1242 does not adequately represent more highly chlorinated (more weathered) congeners that may be present in site soils. Due to the relatively higher recoveries of Aroclor 1242 expected with both microwave and ultrasonic/soxhlet extraction of freshly spiked soil samples, RPD values would not be expected to exceed the 50% threshold. Therefore, the method proposed in the Workplan for verifying previous data from microwave extracted will not be acceptable.	associated with the microwave extraction method that was used in the RI.
3.	Microwave extraction of samples for PCB analysis will not be an acceptable method for any future PCB sampling at the site other than the verification of previous sampling data. DuPont may choose to use microwave extraction for any of their analyses but ultrasonic/soxhlet extraction will be required for acceptable data.	All future PCB analyses will use a TSCA extraction method (other than the EMV samples).
DU-6		
4.	DuPont has proposed collection of forty-eight discrete samples from DU-6. Due to the presence of previously detected Aroclors in a discrete sample collected at SS-5 in DU-11, the proximity of the SS-5 sample in DU-11 to the DU-6 area, and our understanding of the former activities in this general area of the site, DuPont should expand the area of proposed additional sampling to include the northern portion of DU-11. DuPont should add additional discrete sample locations in this area. As an alternative to the proposed forty-eight discrete samples (plus additional samples in DU-11) proposed in the sampling plan, DuPont may choose to divide the DU-6 and DU-11 areas of concern into smaller subunits (for example, eight to ten subunits). DuPont could	Three discrete samples were added in the vicinity of SS-5 in the revised VSAP. DuPont appreciates the alternative of sub-dividing DU-6 and DU-11 but, has chosen to collect discrete samples in DU-6 and DU-11.

Attachment 2: Response to EPA and NCDEQ April 13, 2016 Comments on the PCB Verification Sampling and Analysis Plan

DEQ Comments		DuPont Response
	then collect soil from a minimum of thirty sample locations within each of these smaller subunits, composite the thirty samples into one sample for each subunit, and submit the eight to ten composite samples for analysis. DuPont could then analyze each composite for Aroclors using both sonic/soxhlet and microwave extraction methods to use for verification purposes, and analyze each of the eight to ten composite sample sonic/soxhlet extracts for all 209 congeners using U.S. EPA Method 1668.	
6.	As mentioned in the HWS "Comments on RIR Workplan" since PCBs were detected during soil sampling at the site, sediment samples should be collected from DERA Creek and analyzed for PCBs. Sediment samples are necessary to determine whether PCBs found in surface soil at the site have migrated to surface water. The HWS and DuPont have discussed this issue in a December 2015 meeting and the February 2, 2016 conference call. DuPont should revise the PCB sampling and analysis workplan to include sediment sampling in DERA Creek. Again, DuPont should consider Aroclors analysis using approved extraction methods and analyzing a subset of these samples (based on Aroclor analytical results) for the entire suite of 209 PCB congeners using U.S. EPA Method 1668 when developing the workplan.	Concentrations of PCBs in soil near DERA Creek are slightly above reporting limits. Therefore, it is highly unlikely that there are PCBs in DERA Creek sediment due to runoff. However, sediment sampling in Lake DERA, DERA Creek, and the Polishing Pond seep were identified in the Conceptual RAP that was submitted to NCDEQ on 2/5/16. As discussed during the 4/14 call, DuPont will submit a work plan that includes sediment sampling in Lake DERA, DERA Creek, and the Polishing Pond seep after the RAP is approved which will include PCB analysis.
7.	The HWS has researched potential sources of the PCBs found at the site. Although the materials used in the powerhouse area are a potential source, HWS research indicates that Dowtherm is also a potential source of PCBs found at the site. It is the HWS's understanding that Dowtherm was used throughout much of the life of the manufacturing plant. In addition, Dowtherm constituents have been detected in several SWMUs at the Facility. Some of the highest detections of Dowtherm constituents were in samples collected at SWMU 13. A PCB sampling and analysis workplan should include a plan for sampling waste Dowtherm at SWMU 13. Alternatively, DuPont could choose to sample another location where Dowtherm was previously detected. The waste Dowtherm should be analyzed for Aroclors using the approved extraction method and for 209 congeners using U.S. EPA Method	Dowtherm A was used at the Site and there is no information to indicate that Dowtherm A contained PCBs. In addition, there was no chlorine source in the manufacturing process that could have resulted in the chlorination of biphenyls present in Dowtherm A. As stated on the 4/14 call, we agree that the potential for PCBs in Dowtherm is not an issue at the site and that no additional characterization of PCBs in areas where residual Dowtherm was detected is needed.

Attachment 2: Response to EPA and NCDEQ April 13, 2016 Comments on the PCB Verification Sampling and Analysis Plan

DEQ Comments		DuPont Response
	1668. Below is a link to reference documents indicating Dowtherm as a potential source of PCBs at the Facility. https://books.google.com/books?id=KcJ7UAl49OoC&pg=PA124&dq=dowtherm+PCB&hl=en&sa=X&ved=0ahUKEwiXkcGJ9tHJAhWKQCYKHXr_BEkQ6AEINjAB#v=onepage&q=dowtherm%20PCB&f=false	
8.	As PCBs may be present in Dowtherm and Dowtherm waste has been detected in SWMU 13 adjacent to Lake DERA, DuPont should include sediment sampling in Lake DERA in the PCB sampling and analysis plan. As DuPont is planning to collect sediment samples from Lake DERA for PAH analysis, it might be cost effective to collect and analyze sediment samples for PCBs at the same time. To appropriately characterize the detected contaminants, the PCB analysis should be for Aroclors using an approved extraction method and, based on these results, a subset of these samples for the entire suite of 209 PCB congeners using U.S. EPA Method 1668.	Dowtherm A was used at the Site and there is no information to indicate that Dowtherm A contained PCBs. As stated on the 4/14 call, we agree that the potential for PCBs in Dowtherm is not an issue at the site. DuPont will submit a work plan that includes sediment sampling in Lake DERA, DERA Creek, and the Polishing Pond seep after the RAP is approved. It is anticipated that samples will be analyzed for PCB Aroclors and a subset, i.e., 10% will also be analyzed for PCB congeners.