February 9, 2012

Mr. Dennis Aloia
Grand Traverse County
Governmental Center
400 Boardman Avenue
Traverse City, Michigan 49684

Subject: **Hazardous Materials Building Survey**
Sabin Dam Powerhouse
Garfield Township, Grand Traverse County, Michigan
AMEC Project Number: 3310110028

Dear Mr. Aloia:

AMEC Environment & Infrastructure, Inc. (AMEC) was retained by the Boardman River Dams Settlement Agreement Implementation Team (IT) to perform a hazardous materials building survey (building survey) at the Sabin Dam powerhouse located on the Boardman River in Garfield Township, Grand Traverse County, Michigan (Site). The powerhouse is a one-story brick structure formerly used for the generation of hydroelectric power. AMEC understands the powerhouse will be partially razed during the breaching of the dam. Prior to demolition, AMEC performed a limited asbestos survey, a lead-based paint evaluation and a hazardous materials inventory to identify materials that may need to be removed and/or properly managed as part of proposed dam removal activities. The building survey was conducted on October 31, November 1 and November 8, 2011 by Mr. R. Scott Rought, Certified Hazardous Materials Manager (CHMM) and accredited State of Michigan Asbestos Inspector, and Mr. Jeffrey Doerr of AMEC (October 31 and November 1, 2011).

AMEC personnel conducted the building survey in a systematic manner on the interior and exterior of the powerhouse; however, due to safety concerns (close proximity of overhead electric wires and nearby steep dam embankments), an inspection of the structure's roof was not performed. In addition, AMEC personnel did not assess any areas of the dam embankment located in close proximity to the spillway or behind fenced areas and/or railings adjacent to the spillway, including the mechanical equipment currently located in the spillway (e.g., trash racks, etc.) or any areas beneath the powerhouse due to associated safety concerns. Although AMEC personnel made a good faith effort to assess these areas as part of the building survey, these areas may require further inspection once the water level is lowered as part of the proposed dam removal activities. Access to the property was provided by Mr. George Champlin of the Grand Traverse County (County) Department of Public Works.

The following sections provide a summary of the scope of work, field observations and a summary of the analytical laboratory results.

SCOPE OF WORK

AMEC's scope of work consisted of the following:

- Conduct a National Emission Standards for Hazardous Air Pollutants (NESHAPs) pre-demolition asbestos survey of the building with sampling and analysis of suspect asbestos-containing materials (ACM).

Correspondence:
AMEC E&I, Inc. Traverse City
41 Hughes Drive
Traverse City, MI 49696
United States
Tel: (231) 922-9050
Fax: (231) 922-9055

- Conduct a lead-based paint evaluation of the building with sampling and analysis of interior and exterior painted surfaces.
- Conduct a hazardous material inventory for the presence of equipment/building components that may contain polychlorinated biphenyls (PCBs), mercury, chlorofluorocarbons (CFCs), refrigerants and other potentially hazardous materials.
- Prepare a letter report summarizing the field observations, sampling locations and analytical results of the aforementioned work including AMEC's conclusions.

NESHAPS ASBESTOS SURVEY

Observations

AMEC personnel conducted a NESHAPs pre-demolition asbestos survey of the powerhouse structure in general accordance with 40 CFR 61, Subpart M, to identify and sample any suspect ACM. The powerhouse construction consists of a brick exterior and has a main room that is finished with a concrete floor, painted brick interior walls and a concrete ceiling. This area of the powerhouse consists of the main operating room along with a secondary room located on the east end of the powerhouse, over the spillway. The secondary room is finished with plywood flooring, a plywood ceiling and painted brick walls. A mezzanine/storage area is located above the secondary room. Several windows were observed with window panes; window putty/caulk was observed around the perimeter of each pane. Several wall-mounted electric heating units were observed in the main room near ceiling height. The heating units are attached to the wall and AMEC did not observe any associated reflective panels (i.e., transite panels) in association with the heating units or other suspect ACM. AMEC did not observe the presence of any insulation materials. Piping observed within the powerhouse was not insulated. As previously discussed, AMEC personnel did not assess the building's roof. Mr. Champlin reports that the roof is of concrete construction, is not shingled and contains a rubber membrane with a stone surface.

Suspect ACM identified in association with the powerhouse included interior/exterior window putty/caulking material, a white powdery residue on portions of the interior brick wall, and brick mortar ("new" and "old") . A survey of the building's exterior suggests that several windows have been removed from the building and their openings enclosed with brick ("new" mortar). In addition, a powdery residue was identified on several areas of the interior brick walls. The source of the powdery material is not known, but it appeared at some locations to have been sprayed onto the interior walls of the powerhouse. No suspect ACM was identified in association with any other construction materials or equipment (i.e., railings, fencing or operating equipment) located immediately adjacent to the powerhouse. Four bulk samples were collected and identified as sample numbers S-1 through S-4. A description of each sample location is included in Table 1 – Sabin Dam Powerhouse Asbestos Sample Results

Analytical Results

Bulk samples of the aforementioned suspect ACM were collected and submitted to AMEC's in-house asbestos laboratory located in Atlanta, Georgia for asbestos fiber analysis using United States Environmental Protection Agency (EPA) Method 600, Polarized Light Microscopy (PLM). AMEC's laboratory is an accredited laboratory in the National Voluntary Laboratory Accreditation Program (NVLAP). The analytical laboratory results did not detect the presence of asbestos fibers in the samples submitted for laboratory analysis at concentrations greater than 1% (concentration at which EPA regulates the material as asbestos-containing); therefore, all samples submitted for analysis were non-detect for asbestos. Table 1 provides a summary of the materials sampled, their location within the powerhouse and the analytical laboratory result. The analytical laboratory results and chain-of-custody form are provided as Attachment A.

LEAD-BASED PAINT EVALUATION

Observations

A visual survey of the interior and exterior of the powerhouse and apparatus (i.e., safety railings, fencing, etc.) was performed to provide general information regarding the presence of lead-based paint to facilitate contractor compliance with the Occupational Safety and Health Administration (OSHA) Standard 29 CFR Part 1926.62 (Lead in Construction) during the demolition of the powerhouse during dam removal. Observations of the various representative surface coatings were documented and representative paint chip samples were collected. A total of 13 paint chip samples (LS-1 through LS-13) were collected from various interior and exterior locations of the powerhouse. A description of the samples and their representative locations are presented in Table 2 – Sabin Dam Powerhouse Paint Sample Results. The paint chip samples were submitted to EMSL Analytical, Inc. (EMSL) of Indianapolis, Indiana for lead analysis using Atomic Absorption Spectroscopy (AAS) in accordance with EPA Method SW 846, 3050B/7040B. EMSL is accredited through the American Industrial Hygiene Association (AIHA) Environmental Lead Laboratory Approval Program (ELLAP).

As previously discussed, AMEC did not assess the areas beneath the powerhouse or any areas of the dam embankment located in close proximity to the spillway or behind fenced areas and/or railings adjacent to the spillway. Aside from water control equipment, Mr. Champlin indicated that he is not aware of any painted surfaces beneath the water level or powerhouse.

Analytical Results

The analytical results identified an elevated concentration of lead in one (LS-7) of the thirteen samples collected and submitted for laboratory analysis. Lead was identified in sample number LS-7 (Table 2) at a concentration of 0.78% by weight, which is above the lead concentration (0.5 % by weight) that renders a surface coating lead-based paint, as defined under the Department of Housing and Urban Development (HUD) Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing and the EPA's Requirements for Lead-Based Paint Activities in Target and Child-Occupied Facilities (40 CFR Part 745). Based on the analytical results, the dark gray paint on the vertical beams located on the northern and southern walls of the building (total of four stripes per wall) are coated with lead-based paint. None of the remaining surface coatings sampled were identified as containing lead-based paint.

Table 2 provides a summary of the analytical results. The analytical laboratory results and the chain-of-custody form are provided as Attachment B.

HAZARDOUS MATERIALS INVENTORY

Observations

AMEC conducted a visual survey of the interior and exterior areas of the powerhouse to identify potential sources of equipment that may contain PCBs, CFCs and other potential hazardous materials. Table 3 contains a summary of materials observed during the building survey.

One thermostat was identified on the interior north wall of the powerhouse. No ampoules of mercury were observed; however, AMEC did not remove the thermostat from the wall. As such, the thermostat should be considered a source of mercury until proven otherwise. One emergency alarm lamp (located on the east side of the exterior of the powerhouse) and three high intensity lamps (north, south and east sides of powerhouse's exterior) were observed during the building survey. These lamps should be considered mercury-containing until proven otherwise. Additionally, 12 fluorescent lamps (tubes) were identified in association with six fluorescent fixtures (two lamps per fixture) affixed to the ceiling of the powerhouse.

It should be noted that these lamps appeared to be "older" lamps and are not part of EPA's "Green Lights" program which consists of newer tubes that contain less mercury and are identified by green painted metal ends or green writing/etching on each tube. No other mercury-containing sources were identified during the building survey.

Each fluorescent light fixture also contains light ballasts (total of six) which have the potential to contain PCBs. AMEC was unable to access the ceiling-mounted fixtures to inspect them to determine if they were labeled to their PCB-content. However, due to the age of the fluorescent light fixtures, it is assumed that the ballasts contain PCBs. One pad-mounted electrical transformer is located approximately 100 feet west-southwest of the powerhouse. Utility flagging and surface markings were noted between the transformer and a nearby power pole (located approximately 25 feet northwest of the transformer) suggesting that the transformer is associated with the overhead power lines which run east-west over the dam's embankment. Based on this information and the distance of the transformer to the powerhouse, the transformer does not appear to be associated with the former generation of electricity at Sabin Dam.

AMEC collected one sample of caulk from an exterior window pane located on the west side of the powerhouse to determine whether the caulk contains PCBs. The sample collected is representative of the caulk used on the exterior and interior portions of each window and elsewhere in the powerhouse. The sample was submitted to Brighton Analytical, Inc. of Brighton, Michigan for the presence of PCBs using EPA Method 8081. The analytical laboratory results did not identify the presence of PCBs at concentrations above their respective laboratory detection limits. A copy of the analytical laboratory report and chain-of-custody form is provided as Attachment C.

The only materials observed being stored inside the powerhouse was a bag of salt and a bag of quick setting hydraulic cement (water plug).

CONCLUSIONS

AMEC conducted a NESHAP asbestos survey, lead-based paint evaluation and hazardous materials inventory of the Site on October 31, November 1 and November 8, 2011. Laboratory PLM test results did not detect the presence of asbestos fibers in the samples submitted for analysis at a concentration greater than 1%; therefore, all suspect materials sampled are non-detect for asbestos. It is important to note that although no asbestos was identified in the samples collected, a Notification of Intent to Renovate/Demolish form must be submitted to the Michigan Department of Environmental Quality (MDEQ) Air Quality Division and the Michigan Department of Labor and Economic Growth – Asbestos Program at least 10 working days prior to demolition activities.

The lead-based paint evaluation identified the eight interior columnar strips (covered with dark gray paint) located on the north and south walls of the building as being covered with lead-based paint. No other surface coverings containing lead-based paint were identified on the interior or exterior of the powerhouse. Based on the presence of lead-based paint, contractors performing work that could impact (i.e., sand, abrade, chip, etc.) these surface coatings during building demolition activities must take appropriate precautions to comply with the federal lead construction standard (29 CFR 1926.62) which have been adopted by Michigan and referenced as Rule 325.51992 of the Michigan Administrative Code, Part 603 Lead Exposure in Construction Standards (MIOSHA-STD-1403dated August 2005).

The hazardous and non-hazardous materials (i.e., mercury-containing lamps, fluorescent bulbs and thermostat) observed at the Site should be removed, permitted and disposed by a licensed industrial/hazardous waste transporter and/or recycled and/or disposed in accordance with all federal,

state and local regulations. In addition, the fluorescent light ballasts should be visually inspected for labels/markings indicating their PCB-content and disposed accordingly in accordance with all federal, state and local regulations.

CLOSING

The hazardous materials building survey was limited to accessible materials observed during the building survey. If during demolition previously unidentified ACM, lead-based paint or other hazardous and non-hazardous materials are observed, additional investigation (sampling and analysis), notifications and removal may become necessary.

AMEC appreciates the opportunity to provide these environmental services to the IT. If you have any questions, please do not hesitate to contact Sandra Sroonian at (231) 922-9050.

Sincerely,

AMEC Environment & Infrastructure, Inc.

R. Scott Rought, CHMM
Senior Scientist

Sandra Sroonian
Senior Principal Engineer

Attachments:
Table 1 – Sabin Dam Powerhouse Asbestos Sample Results
Table 2 – Sabin Dam Powerhouse Paint Sample Results
Table 3 – Sabin Dam Powerhouse Hazardous and Non-Hazardous Survey Results
Attachment A – Asbestos Analytical Laboratory Report and Chain-of-Custody Form
Attachment B – Lead-Based Paint Analytical Laboratory Report and Chain-of-Custody Form
Attachment C – PCB Analytical Laboratory Report and Chain-of-Custody Form

Table 1
Sabin Dam Asbestos Sample Results
AMEC Project Number: 3310110028

Sample Number	Location/Description	Asbestos Result
S-1	Interior of powerhouse; gray/white caulk on windows; sample collected from windows on north side of building (third set of windows from west end of building, center window on lower set of window panes).	None Detected
S-2	Interior of powerhouse; white powder residue beneath paint; sample collected from north wall above east (secondary) room.	None Detected
S-3	Exterior of powerhouse; brick mortar ("older" in appearance); sample collected from southeast corner of building approximately four feet above ground.	None Detected
S-4	Exterior of powerhouse; brick mortar ("newer" in appearance); sample collected from southwest corner of building approximately four feet above ground.	None Detected

Note: Samples collected on October 31 and November 1, 2011.

Table 2
Sabin Dam Powerhouse Paint Sample Results
AMEC Project Number: 3310110028

Sample Number	Location/Description	Lead Result (% weight)
LS-1	Interior of powerhouse on north wall, sample collected beneath center window/white paint.	0.15
LS-2	Interior of powerhouse on east wall, sample collected near northwest corner of room adjacent to brick wall/white paint.	0.34
LS-3	Interior of powerhouse on south wall, sample collected beneath fourth window from west end of building/white paint.	<0.010
LS-4	Interior of powerhouse on west wall, sample collected south of door (above door)/white paint.	<0.010
LS-5	Interior of powerhouse on floor, sample collected from southeast quadrant of floor/dark gray paint.	<0.010
LS-6	Interior of powerhouse from floor, sample collected from northeast quadrant of floor/light gray paint.	<0.010
LS-7	Interior of powerhouse on south wall (vertical beam embedded in concrete wall)/dark gray paint.	0.78
LS-8	Interior of powerhouse on south wall pipe run, sample collected near center of south wall/white paint.	<0.010
LS-9	Exterior of powerhouse from main door, sample collected from west side of door/multiple layers of paint.	0.4
LS-10	Interior of powerhouse from main door, sample collected from west side of door/multiple layers of paint.	0.050
LS-11	Exterior of powerhouse from west side of building south of door, paint stripe over brick/white paint.	<0.010
LS-12	Exterior of powerhouse, railing near northwest corner of powerhouse overlooking river, sample collected from east end of top rail/gray paint over red paint.	<0.010
LS-13	Interior of powerhouse, railing on east end of powerhouse, sample collected from northeast corner of top rail/gray paint.	<0.010

Notes:
Shading indicates result exceeds the Department of Housing and Urban Development Guidelines for the evaluation and Control of Lead-Based Paint Hazards in Housing and the United States Environmental Protection Act definition of lead-based paint (0.5% by weight).

Samples collected on October 31 and November 1, 2011.

Table 3
Sabin Dam Powerhouse Hazardous and Non-Hazardous Survey Results
AMEC Project Number: 3310110028

Hazard Category	Material	Location/Description	Approximate Quantity
Other Hazardous Materials	Lead-based paint	Powerhouse interior/dark gray paint/painted vertical stripe (beam) on wall.	Unknown quantity
	Water plug	Powerhouse interior/quick setting hydraulic cement.	One, 50-pound bag
	Salt	Powerhouse interior.	One, 20-pound bag (half full)
PCB Sources	Fluorescent light ballasts	Powerhouse interior/ceiling (six light fixtures).	Six ballasts (one ballast per fixture)
Mercury Sources	Fluorescent tubes (lamps)	Powerhouse interior/ceiling (total of six fixtures).	12 lamps (two lamps per fixture)
	Thermostat	Powerhouse interior.	One wall thermostat/rheostat
	Mercury lamps	Powerhouse exterior/north, south and west sides of the building.	Three lamps
	Emergency alarm lamp	Powerhouse exterior/emergency alarm light located on east side of building.	One lamp

Notes:
PCB = polychlorinated biphenyl

Building survey performed on October 31, November 1 and November 8, 2011.

ATTACHMENT A

ASBESTOS ANALYTICAL LABORATORY REPORT AND CHAIN-OF-CUSTODY FORM

PLM REPORT SUMMARY

AMEC E&I, Inc.
396 Plasters Ave. NE
Atlanta, GA 30324 (404) 873-4761

NVLAP Lab Code 101066-0
TDH License No. 30-0306

Client :	Amec - Traverse City, MI	AMEC Job No. :	3310-10-0028.0009
Project :	Sabin Dam	Report Date :	11/8/2011
Client Project No.:	N/A	Sample Date :	10/31/11
Identification :	Asbestos, Bulk Sample Analysis		
Test Method :	Polarized Light Microscopy / Dispersion Staining (PLM/DS) EPA Method 600/R-93/116		

On 11/ 7/2011, four (4) bulk material samples were submitted by Scott Rough for asbestos analysis by PLM/DS.

Lab Sample No.	Sample Description / Location	Asbestos Content
224431	Window Caulk COC# 10256 S-1	None Detected-Caulking
224432	Powder COC# 10256 S-2	None Detected-Powder
224433	Brick Mortar "Old" COC# 10256 S-3	None Detected-Mortar
224434	Brick Mortar "New" COC# 10256 S-4	None Detected-Mortar

These samples were analyzed by layers. The first percentage is the overall asbestos content for the sample. Specific layer or component asbestos content is indicated when relevant. The EPA considers a material to be asbestos containing only if it contains more than one percent asbestos by Calibrated Visual Area Estimation (CVAE). EPA regulations also state that Regulated Asbestos Containing Materials (RACM) -- materials which are friable or may become friable -- be further analyzed by point counting when the results indicate less than ten percent asbestos by CVAE. Our laboratory utilizes CVAE on a routine basis and does not include point counting unless specifically requested.

PLM REPORT SUMMARY

AMEC E&I, Inc.
396 Plasters Ave. NE
Atlanta, GA 30324 (404) 873-4761

NVLAP Lab Code 101066-0
TDH License No. 30-0306

Client :	Amec - Traverse City, MI	AMEC Job No. :	3310-10-0028.0009
Project :	Sabin Dam	Report Date :	11/8/2011
Client Project No.:	N/A	Sample Date :	10/31/11
Identification :	Asbestos, Bulk Sample Analysis		
Test Method :	Polarized Light Microscopy / Dispersion Staining (PLM/DS) EPA Method 600/R-93/116		

STATEMENT OF LABORATORY ACCREDITATION

These samples were analyzed at the Atlanta Branch of AMEC E&I, Inc. in the Asbestos Laboratory at 396 Plasters Ave. NE, Atlanta, GA, 30324. The laboratory holds accreditation from the National Institute of Standards and Technology (formerly National Bureau of Standards) under the National Voluntary Laboratory Accreditation Program (NVLAP). This laboratory also is licensed and authorized to perform as an Asbestos Laboratory in the State of Texas within the purview of Texas Civil Statutes, Article 4477-3a, as amended, so long as this license is not suspended or revoked and is renewed according to the rules adopted by the Texas Board of Health.

The samples were analyzed by polarized light microscopy in general accordance with the procedures described in the Method for the Determination of Asbestos in Bulk Building Materials, EPA/600/R-93/116. The results of each bulk sample analysis relate only to the material tested. This report shall not be used to claim product endorsement by NVLAP or any agency of the U.S. Government.

Specific questions concerning bulk sample results shall be directed to the PLM Laboratory Manager.

Analyst : Chris DuBour

PLM Laboratory Manager : Christopher DuBour

Approved Signatory : Chris DuBour

NVLAP
LAB CODE 101066-0

ZZ4431 – ZZ4434

MACTEC

Mactec Engineering and Consulting, Inc.
41 Hughes Dr.
Traverse City, MI 49686

Chain of Custody

COC #: 10256

PO#: 3316110028-0009

Tracking #:

Relinquished by:	Received by:	Cooler Temp:	Date:	Time:
BS Bought	Chris DuBourn		11/7/11	
Relinquished by:	Received by:	Cooler Temp:	Date:	Time:

Lab: MACTEC ATLANTA

Send Results To: Scott Bought

Fax Results?: Yes (No)

Email Results?: (Yes) No

Email Address: RSBought@MACTEC.com

Project Name: SABIN DAM

Project Number: TRAVERSE CITY, MI

Project Location: 3316110028-0009

Sampler's Signature: BS Bought

Container Size: 1. 40mL 2. 500mL 3. 1L 4. 4 oz 5. Other
Container Type: 1. Plastic 2. Glass 3. VOA 4. Other
Sample Matrix: 1. Water 2. Soil 3. Other
Preservative: 1. None 2. HCl 3. H_2SO_4 4. HNO_3 5. CH_3OH 6. Other

Analysis / Method: PCM – EPA Method 600

Page 1 of 1

Cooler ___ of ___

Sample Identification	Collection Time	Collection Date	Sample Container Size	Type	Number	Sample Matrix	Preservative	Field Filtered?	PCM – EPA Method 600				Comments:
S-1 WINDOW CAULK		10-31-11	ZIPLOC		1	WINDOW CAULK	—	—	X				
S-2 POWDER		10-31-11	ZIPLOC		1	POWDER	—	—	X				POWDER ON WALL UNDER PAINT
S-3 BRICK MORTAR "OLD"		10-31-11	ZIPLOC		1	BRICK MORTAR	—	—	X				
S-4 BRICK MORTAR "NEW"		10-31-11	ZIPLOC		1	BRICK MORTAR	—	—	X				

IF QUESTIONS, PLEASE CALL 231-409-4586 (CELL PHONE)

STANDARD TAT.

THANKS, Scott

F1008-C 1/11 Copies: White - Lab Gold - Lab Pink - Sample Collector

ATTACHMENT B

LEAD-BASED PAINT ANALYTICAL LABORATORY REPORT AND CHAIN-OF-CUSTODY FORM

EMSL Analytical, Inc.
2001 East 52nd St., Indianapolis, IN 46205
Phone: (317) 803-2997 Fax: (317) 803-3047 Email: indianapolislab@emsl.com

Attn: **Scott Rought**
AMEC
41 Hughes Dr
Traverse City, MI 49696

Fax: Phone: (231) 922-9050
Project: **SABYN DAM 3310110028-0009**

Customer ID: LAWE52ZZ
Customer PO: 201113992
Received: 11/11/11 10:00 AM
EMSL Order: 161120691
EMSL Proj:

Test Report: Lead in Paint Chips by Flame AAS (SW 846 3050B*/7000B)

Lab ID:	Analyzed	RDL	Lead Concentration	Notes
0001	11/17/2011	0.010 % wt	0.15 % wt	
Client Sample	LS-1			Collected:
0002	11/17/2011	0.010 % wt	0.34 % wt	
Client Sample	LS-2			Collected:
0003	11/17/2011	0.010 % wt	<0.010 % wt	
Client Sample	LS-3			Collected:
0004	11/17/2011	0.010 % wt	<0.010 % wt	
Client Sample	LS-4			Collected:
0005	11/17/2011	0.010 % wt	<0.010 % wt	
Client Sample	LS-5			Collected:
0006	11/17/2011	0.010 % wt	<0.010 % wt	
Client Sample	LS-6			Collected:
0007	11/17/2011	0.010 % wt	0.78 % wt	
Client Sample	LS-7			Collected:
0008	11/17/2011	0.010 % wt	<0.010 % wt	
Client Sample	LS-8			Collected:
0009	11/17/2011	0.010 % wt	0.40 % wt	
Client Sample	LS-9			Collected:
0010	11/17/2011	0.010 % wt	0.050 % wt	
Client Sample	LS-10			Collected:
0011	11/17/2011	0.010 % wt	<0.010 % wt	
Client Sample	LS-11			Collected:

Initial report from 11/18/2011 07:50:22

Doug Wiegand, Laboratory Manager
or other approved signatory

Reporting limit is 0.01 % wt. The QC data associated with these sample results included in this report meet the method quality control requirements, unless specifically indicated otherwise. Unless noted, results in this report are not blank corrected . This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities.

* slight modifications to methods applied Samples received in good condition unless otherwise noted. Quality Control Data associated with this sample set is within acceptable limits, unless otherwise noted

Samples analyzed by EMSL Analytical, Inc. Indianapolis, IN AIHA-LAP, LLC--ELLAP 157245, OH E10040

EMSL Analytical, Inc.
2001 East 52nd St., Indianapolis, IN 46205
Phone: (317) 803-2997 Fax: (317) 803-3047 Email: indianapolislab@emsl.com

Attn: **Scott Rought**
AMEC
41 Hughes Dr
Traverse City, MI 49696

Fax: Phone: (231) 922-9050
Project: **SABYN DAM 3310110028-0009**

Customer ID: LAWE52ZZ
Customer PO: 201113992
Received: 11/11/11 10:00 AM
EMSL Order: 161120691

EMSL Proj:

Test Report: Lead in Paint Chips by Flame AAS (SW 846 3050B*/7000B)

Lab ID:	*Analyzed*	*RDL*	*Lead Concentration*	*Notes*
0012	11/17/2011	0.010 % wt	<0.010 % wt	
Client Sample LS-12				***Collected:***
0013	11/17/2011	0.010 % wt	<0.010 % wt	
Client Sample LS-13				***Collected:***

Initial report from 11/18/2011 07:50:22

Doug Wiegand, Laboratory Manager
or other approved signatory

Reporting limit is 0.01 % wt. The QC data associated with these sample results included in this report meet the method quality control requirements, unless specifically indicated otherwise. Unless noted, results in this report are not blank corrected . This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities.

* slight modifications to methods applied Samples received in good condition unless otherwise noted. Quality Control Data associated with this sample set is within acceptable limits, unless otherwise noted

Samples analyzed by EMSL Analytical, Inc. Indianapolis, IN AIHA-LAP, LLC--ELLAP 157245, OH E10040

Put 20691 here

Bill to Corporate Office - Acct # 6A.

Chain of Custody

EMSL Order Number (Lab Use Only): 16112069 1

EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

EMSL ANALYTICAL, INC.
200 ROUTE 130 NORTH
CINNAMINSON, NJ 08077
PHONE: (800) 220-3675
FAX: (856) 786-5974

Company: AMEC E&I	**EMSL-Bill to:** ☒ Same ☐ Different If Bill to is Different note instructions in Comments**
Street: 41 Hughes Drive	Third Party Billing requires written authorization from third party
City: Traverse City **State/Province:** MI	**Zip/Postal Code:** 49696 **Country:** USA
Report To (Name): Scott Rought	**Fax #:** 231-922-9055
Telephone #: 231-922-9055	**Email Address:** RSRoughTC MACTEC.com
Project Name/Number: SAGIN DAM - 331611000258-0009	
Please Provide Results: ☐ Fax ☒ Email	**Purchase Order:** **U.S. State Samples Taken:** MI MN

Turnaround Time (TAT) Options* - Please Check

☐ 3 Hour ☐ 6 Hour ☐ 24 Hour ☐ 48 Hour ☐ 72 Hour ☐ 96 Hour ☒ 1 Week ☐ 2 Week

*For RUSH TAT's Please Call Ahead to Confirm Lab Hours and Availability. Not all TAT options are valid for every test. Materials Science and IAQ TATs are in Business Days rather than Hours (i.e. 24 Hour = End of Next Business Day)

Asbestos

PCM - Air
☐ NIOSH 7400
☐ w/ 8hr. TWA

TEM– Air ☐ 4-4.5hr TAT (AHERA ONLY)
☐ AHERA 40 CFR, Part 763
☐ NIOSH 7402
☐ EPA Level II
☐ ISO 10312

TEM - Water
Fibers ≥10µm ☐ Waste ☐ Drinking
All Fiber Sizes ☐ Waste ☐ Drinking

PLM - Bulk
☐ PLM EPA 600/R-93/116
☐ PLM EPA NOB (<1%)
☐ NYS 198.1 (friable-NY)
☐ NYS 198.6 (non-friable-NY)
Point Count ☐ 400 (<0.25%) ☐ 1000 (<0.1%)
Point Count w/ Gravimetric ☐ 400 (<0.25%) ☐ 1000 (<0.1%)

TEM - Dust
☐ Microvac – ASTM D 5755
☐ Wipe-ASTM D6480

TEM - Bulk
☐ TEM EPA NOB
☐ NYS NOB 198.4 (non-friable-NY)
☐ Chatfield SOP

Soil/Rock/Vermiculite
☐ PLM CARB 435 – A (0.25% sensitivity)
☐ PLM CARB 435 – B (0.1% sensitivity)
☐ TEM CARB 435 – B (0.1% sensitivity)
☐ EPA Reg. 1 Screening Protocol (Qualitative)

Other:

Lead (Pb)

Flame Atomic Absorption
☒ Chips SW846-7000B or AOAC 974.02
☐ Soil SW846-7000B/7420
☐ Air NIOSH 7082
☐ Wastewater SM3111B or SW846-7000B/7420
☐ ASTM Wipe SW846-7000B/7420
☐ non ASTM Wipe SW846-7000B/7420
☐ TCLP SW846-1311/7420/SM 3111B

ICP
☐ Air NIOSH 7300 Modified
☐ non ASTM Wipe SW846-6010B or C
☐ ASTM Wipe SW846-6010B or C
☐ Soil SW846-6010 B or C
☐ Waste Water SW846-6010B or C
☐ TCLP SW846-6010B or C

Graphite Furnace Atomic Absorption
☐ Soil SW846-7421 ☐ Wastewater EPA 200.9
☐ Air NIOSH 7105 ☐ Drinking Water EPA 200.9

Other: ☐

Microbiology

Wipe and Bulk Samples
☐ Mold & Fungi – Direct Examination
☐ Mold & Fungi Culture (Genus Only)
☐ Mold & Fungi Culture (Genus & Species)
☐ Bacterial Count & ID (Up to Three Types)
☐ Bacterial Count & ID (Up to Five Types)
☐ MRSA
☐ *Pseudomonas aeruginosa*

Water Samples
☐ Total Coliform & E.coli (P/A)
☐ Fecal Coliform (SM 9222D)
☐ Sewage Screen
☐ Heterotrophic Plate Count (SM 9215)

Air Samples
☐ Mold & Fungi (Spore Trap)
☐ Mold & Fungi Culture (Genus Only)
☐ Mold & Fungi (Genus & Species)
☐ Bacterial Culture & ID (Up to Three Types)
☐ Bacterial Culture & ID (Up to Five Types)
☐ Endotoxin Testing

Real Time Q-PCR (See Analytical Guide for Code)
Code:

Legionella
☐ Level 1 ☐ Level 2 ☐ Level 3 ☐ Level 4

Other: ☐

Materials Science

☐ Common Particle ID (large particles)
☐ Full Particle ID (environmental dust)
☐ Basic Material ID (solids)
☐ Advanced Material ID
☐ Physical Testing (Tensile, Compression)
☐ Combustion-by-products (soot, char, etc.)
☐ X-Ray Fluorescence (elem. analysis)
☐ X-Ray Diffraction (Crystalline Part.)
☐ MMVF's (Fibrous glass, RCF's)
☐ Particle Size (sieve/microscopy/laser)
☐ Combustible Dust
☐ Petrographic Examination
Other: ☐

IAQ

Nuisance Dust NIOSH ☐ 0500 ☐ 0600
Airborne Dust ☐ PM10 ☐ TSP
Silica Analysis: ☐ All Species
Silica Analysis – Single Species
☐ Alpha Quartz ☐ Cristobalite ☐ Tridymite
☐ HVAC Efficiency
☐ Carbon Black
☐ Airborne Oil Mist
Radon Testing: Call for Kit and COC
Other: ☐

****Comments/Special Instructions:** One week TAT, If delivery, please call me at 231-409-4588 (Cell Phone)

Client Sample #'s	LS-1 - LS-13	**Total # of Samples:** 13	
Relinquished (Client):	**Date:** 11-4-11	**Time:** 1200 PM EDT	
Received (Lab):	**Date:** 11/6/11	**Time:** 10 AM DES	

Analysis Completed in Accordance with EMSL's Terms and Conditions located in the Analytical Price Guide

Sagin Dam 331611000258 - 0009 - Lead Sample

EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

Chain of Custody

EMSL Order Number (*Lab Use Only*): 20691

EMSL ANALYTICAL, INC.
200 ROUTE 130 NORTH
CINNAMINSON, NJ 08077
PHONE: (800) 220-3675
FAX: (856) 786-5974

SABRINA MAM - 3314100026-0009 - LEAD SAMPLES

Sample #	Sample Description	Volume/Area (Air) HA # (Bulk)	Date/Time Sampled
LS-1	Interior - North wall Bench Mirror window - White		
LS-2	Interior - East wall NR NW corner - White		
LS-3	Interior - South wall West end - White		
LS-4	Interior - West wall South of door - White		
LS-5	Interior - Floor SE quadrant - Dk. Gray		
LS-6	Interior - Floor NE quadrant - Lt. Gray		
LS-7	Interior - S. wall Dk. Gray Beam		
LS-8	Interior - S. wall Pipe - White		
LS-9	Exterior - West side main door - Multiple colors		
LS-10	Interior - West side main door - Dk. Gray		
LS-11	Exterior - South of door - White Stripe		
LS-12	Exterior - NW corner - Railing - Gray		
LS-13	Interior - East side - Railing - Gray		

*Comments/Special Instructions:
One week TAT. - CAM ME @ 231.409.4588 (cell) IF Questions.

Analysis Completed in Accordance with EMSL's Terms and Conditions located in the Analytical Price Guide

ATTACHMENT C

PCB ANALYTICAL LABORATORY REPORT AND CHAIN-OF-CUSTODY FORM

Brighton Analytical L.L.C.™
2105 Pless Drive · Brighton, Michigan 48114 · Phone (810) 229-7575 · Fax (810) 229-8650 · E-mail bai-brighton@sbcglobal.net

December 09, 2011

AMEC Environment & Infrastructure
41 Hughes Drive
Traverse City, MI 49686

Subject: Sabin Dam
3310110028-009

Dear Mr. Rought :

Thank you for making Brighton Analytical, L.L.C. your laboratory of choice. Enclosed are the results for the samples submitted on 12/08/2011 for the above mentioned project. Duplicate copies can be supplied at your request for a fee of $20.00 per copy.

The invoice for this project will be mailed with copy of report. If you have any questions concerning the invoice or the data, please don't hesitate to contact our office. Please reference Brighton Analytical, L.L.C. project ID 17427 when calling with any questions regarding this project.

Sincerely,
Brighton Analytical, L.L.C.

Brighton Analytical L.L.C.™
Brighton Analytical, L.L.C.
2105 Pless Drive
Brighton, Michigan 48116
Phone: (810) 229-7575 FAX: (810) 229-8650
e-mail: bai-brighton@sbcglobal.net

Sample Date: 12/7/2011
Submit Date: 12/8/2011
Report Date: 12/9/2011

To: AMEC Environment & Infrastructure
41 Hughes Drive
Traverse City, MI 49686

BA Report Number: **17427**
BA Sample ID: **BW01681**

Project Name: **Sabin Dam**
Project Number: **3310110028-009**
Sample ID: **S-1 Caulk**

Parameters	Results	Units	DL	Method Reference	Analyst	Analysis Date
PCB Analysis						
ARO 1016	**Not detected**	ug/Kg	330	SW846 8082	BY	12/8/2011
ARO 1221	**Not detected**	ug/Kg	330	SW846 8082	BY	12/8/2011
ARO 1232	**Not detected**	ug/Kg	330	SW846 8082	BY	12/8/2011
ARO 1242	**Not detected**	ug/Kg	330	SW846 8082	BY	12/8/2011
ARO 1248	**Not detected**	ug/Kg	330	SW846 8082	BY	12/8/2011
ARO 1254	**Not detected**	ug/Kg	330	SW846 8082	BY	12/8/2011
ARO 1260	**Not detected**	ug/Kg	330	SW846 8082	BY	12/8/2011
ARO 1262	**Not detected**	ug/Kg	330	SW846 8082	BY	12/8/2011
ARO 1268	**Not detected**	ug/Kg	330	SW846 8082	BY	12/8/2011
Total PCB	**Not detected**	ug/Kg	330	SW846 8082	BY	12/8/2011
PCB soil extraction	**Extracted**			3510C/3545	MB	12/8/2011
%Solid	**100**	%		ASTM D2216	MB	12/8/2011

All soil results based on dry weight.

DL=Reported detection limit for analytical method requested. Some compounds require special analytical methods to achieve MDNR designated target detection limits (TDL).

Released by: [signature]
Date: 12/9/11

Brighton Analytical L.L.C.

BRIGHTON ANALYTICAL, LLC

QUALITY ASSURANCE/QUALITY CONTROL

REPRESENTATIVE BATCH QUALITY CONTROL

Accuracy & Precision

Analyst: BY **Parameter:** PCB

Analysis Date: 12/8/11 **Method Reference:** EPA 608

Matrix: Soil **Batch:** 12/08/11MB

SPIKE - ACCURACY					
Laboratory ID LCS's	**Spike Conc. (µg/mL)**	**Background (µg/mL)**	**% Recovery**	**Acceptable Range (%)**	**Method Blank Concentration**
DCB (Surrogate)	0.5	ND	83 / 99	60 - 130	76%
Arochlor 1260	1.0	ND	87 / 93	60 - 130	<330 µg/Kg

SPIKE - PRECISION				
Laboratory ID LCS's	**Observed A (µg/mL)**	**Observed B (µg/mL)**	**RPD**	**Acceptable Range**
DCB (Surrogate)	0.42	0.50	17.7	≤ 20%
Arochlor 1260	0.87	0.93	6.2	≤ 20%

MISCELLANEOUS		
	Standard ID #	
DCB (Surrogate)	#1777	
Arochlor 1260	#1633.1	

COMMENTS: LCS's due to sample matrix

17427

MACTEC

Mactec Engineering and Consulting, Inc.
41 Hughes Dr.
Traverse City, MI 49686

Chain of Custody

COC #: 10297

PO#:

VIA FedEx

Tracking #:

Relinquished by:	Received by:	Cooler Temp:	Date:	Time:
[signature]	[signature]	—	12-8-11	11:30 am
Relinquished by:	Received by:	Cooler Temp:	Date:	Time:

Lab: Brighton Analytical

Send Results To: Scott Rought

Fax Results?: Yes (No) — "No" circled

Email Results?: (Yes) No — "Yes" circled

Email Address: RSRought@mactec.com

Project Name: Sabin Dam

Project Number: 3316110028-009

Project Location:

Sampler's Signature: [signature]

Container Size: 1. 40mL 2. 500mL 3. 1L (4. 4 oz) — circled 5. Other

Container Type: 1. Plastic (2. Glass) — circled 3. VOA 4. Other

Sample Matrix: 1. Water 2. Soil (3. Other) — circled: Caulk

Preservative: 1. None 2. HCl 3. H_2SO_4 4. HNO_3 5. CH_3OH 6. Other

Analysis / Method: Polychlorinated biphenyls 8082 (Method); 1680

Page 1 of 1

Cooler — of —

Sample Identification	Collection Time	Collection Date	Sample Container Size	Sample Container Type	Sample Container Number	Sample Matrix	Preservative	Field Filtered?	Polychlorinated biphenyls 8082	1680				Comments:
S-1 CAULK		12-7-11	4 oz	GLASS		CAULK-SOLID	—	—	X					2 DAY TAT
														RUSH
														NO MeOH ...

Ⓐ PO IS IN PROCESS - I WILL CALL W/ PO NUMBER FOR PROPER BILLING.

* EXPEDITED TAT - 2 DAYS

* CALL SCOTT ROUGHT W/ QUESTIONS —
231-922-9050 EXT. 212
231-409-4588- CELL