



REPORT

J.H. Campbell Generating Facility

Pond A - Construction Documentation Report

Submitted to:

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Executive Summary

J.H. Campbell Generating Facility (JH Campbell) Pond A is a coal combustion residual (CCR) surface impoundment which is owned and operated by Consumers Energy Company (CEC). Pond A is located at the J.H. Campbell Generating Facility in Port Sheldon Township, Ottawa County, Michigan (Site). This Construction Documentation Report (Report) serves as certification that the Pond A final cover was constructed in general accordance with 40 CFR 257.102(d); the Pond A Construction Quality Assurance (CQA) Plan dated March 22, 2019; the Part 115 Administrative Rules; and the approved Pond A Closure Plan submitted to Michigan Department of Environmental, Great Lakes, and Energy (EGLE) on March 8, 2019, revised March 25, 2019, and approved by EGLE Office of Waste Management and Radiological Protection on March 27, 2019. CEC retained Golder Associates Inc. (Golder) to provide CQA services and testing during construction.

Pond A is located toward the southeast side of the Site. The total plan area of the geosynthetic cover being certified by this Report is approximately 451,000 square feet (10.4 acres), as shown on Sheet 3 presented with the Record Drawings in Appendix A.

The Pond A final cover system includes the following components: CCR backfill to maintain positive drainage, a 40-mil high density polyethylene (HDPE) geomembrane, a 10 ounce per square yard (oz/sy) nonwoven geotextile, six-inch diameter perforated drainage piping, a 24-inch-thick protective cover (sand) layer, and a six-inch-thick topsoil layer. Pond A closure began on June 20, 2018 with dewatering of the pond and installation of erosion control measures. The stockpiling, placement, and grading of backfill material at Pond A occurred from June 25, 2018 to April 12, 2019. Geosynthetics installation commenced on April 10, 2019 and was completed on June 5, 2019. Placement of the protective cover and topsoil layers commenced on May 13, 2019 and was substantially completed on July 26, 2019. The topsoil survey was completed on July 29, 2019. Seeding and mulching were performed on August 1, 2019 and August 2, 2019.

There was one clarification to the Pond A CQA Plan required during the construction that was communicated to EGLE. The clarification was specific to geomembrane field seams and stated prohibition/minimization of horizontal seams as described in Section 6.3 of the Pond A CQA Plan is intended for slopes greater than 10 percent. The clarification is included in Appendix B.3.

Request for Information (RFI)-007 - Pond A Manhole Liner Boot Clarification was issued to the geosynthetic installer, however the clarification did not affect the permitted design. The clarification is included in Appendix B.3.

The data for soils laboratory testing, geosynthetics inventory logs, and geosynthetics manufacturer's certificates are included in the Appendices for the information gathered in 2018 and 2019 for Pond A.

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1.0 INTRODUCTION

J.H. Campbell Generating Facility (JH Campbell) Pond A is a coal combustion residual (CCR) surface impoundment owned and operated by Consumers Energy Company (CEC). Pond A is located at the J.H. Campbell Generating Facility in Port Sheldon Township, Ottawa County, Michigan (Site). This Construction Documentation Report (Report) serves as certification that the Pond A final cover was constructed in accordance with 40 CFR 257.102(d); the Pond A Construction Quality Assurance (CQA) Plan dated March 22, 2019; the Part 115 Administrative Rules; and the Pond A Closure Plan submitted to Michigan Department of Environmental, Great Lakes, and Energy (EGLE) on March 8, 2019, revised March 25, 2019, and approved by EGLE Office of Waste Management and Radiological Protection on March 27, 2019. CEC retained Golder Associates Inc. (Golder) to provide CQA services and testing during construction.

Pond A is located toward the southeast area of the Site. The total plan area of the geosynthetic cover being certified by this Report is approximately 451,000 square feet (10.4 acres), as shown on Sheet 3 presented with the Record Drawings in Appendix A. Figure 1 depicts the typical cover system for Pond A.

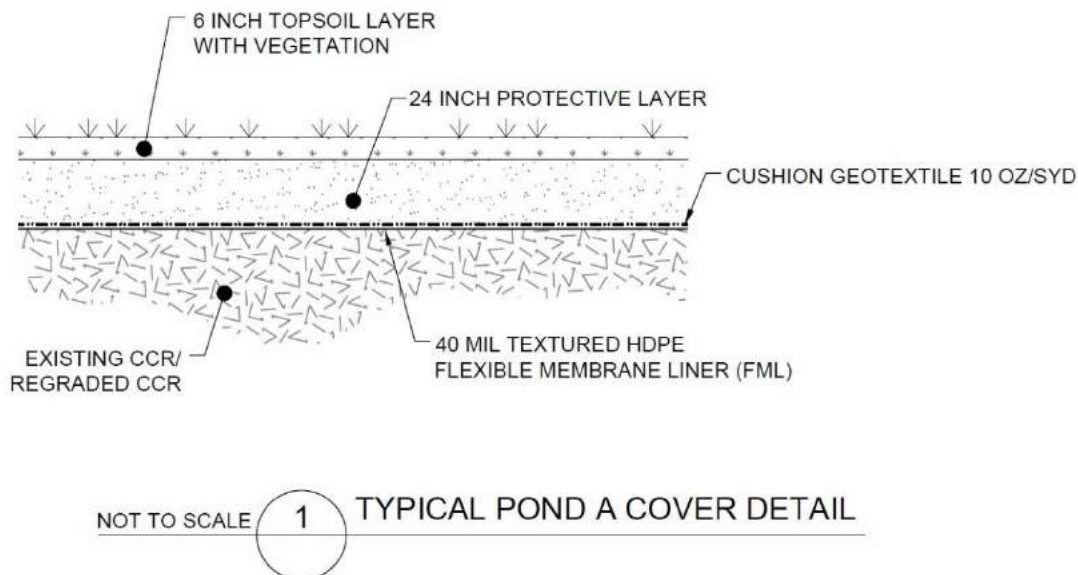


Figure 1: Typical Pond A Cover Detail

It should be noted that quality assurance and quality control are often denoted by the acronyms “QA” and “QC,” respectively and “CQA/CQC,” collectively. In addition, “geosynthetic” is an industry term which collectively refers to geomembrane, geotextile, geosynthetic clay liners (GCL), and geocomposite materials. These terms, as well as the individual component terms, are used throughout the remainder of this Report.

2.0 SCOPE OF SERVICES

This Report presents a description of the CQA monitoring and testing services provided by Golder throughout the construction process in 2018 and 2019. Sections 3.0 through 8.0 of this Report include descriptions of the construction documents and parties, liner configuration, backfill material placement, 40-mil textured high density polyethylene (HDPE) geomembrane flexible membrane liner (FML), 10 oz/sy nonwoven geotextile, and protective soil cover and stormwater system, respectively. A project summary is presented in Section 9.0.

This Report complies with Michigan Administrative Rules promulgated under Part 115 of Public Act 451 of 1994, as amended, specifically Rule 921 – Construction Certification. A signature page and a statement by Golder indicating that this Report is true and accurate and contains all information required is included in Section 10.0 at the end of this Report text.

3.0 CONSTRUCTION DOCUMENTS AND PARTIES

The CQA Plan, construction plans, and regulatory documents for the construction of Pond A are listed in Section 3.1. Note that the abbreviated title of each document, as referenced hereinafter, appears within parentheses immediately following the full name.

3.1 Reference Documents

The following reference documents were utilized during closure construction of Pond A:

- Pond A Closure Plan – J.H. Campbell Generating Facility. West Olive, Michigan (Closure Plan). Submitted to EGLE on March 8, 2019, revised March 25, 2019, and approved by EGLE March 27, 2019.
- Approved for Construction Drawings Titled “Consumers Energy Company, J.H. Campbell Generating Facility, Ash Pond and Chemical Treatment Pond Closure Project” (Construction Drawings), originally dated March 7, 2018, prepared by Golder (last revision dated March 19, 2019).
- Construction Quality Assurance Plan - J.H. Campbell Generating Facility (CQA Plan), revised March 22, 2019, approved by EGLE March 27, 2019, prepared by Golder.
- Solid Waste Management Act Administrative Rules promulgated pursuant to Part 115 of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.

3.2 Design Clarifications

There was one clarification to the CQA Plan required during the construction of Pond A that was communicated to EGLE. The clarification was specific to geomembrane field seams and stated prohibition/minimization of horizontal seams as described in Section 6.3 of the Pond A CQA Plan is intended for slopes greater than 10 percent. The email between CEC and EGLE documenting the clarification is included in Appendix B.3.

RFI-007 - Pond A Manhole Liner Boot Clarification was issued to the geosynthetic installer; however, the clarification did not affect the permitted design. The RFI providing clarification on the method for booting around the Pond A manholes is included in Appendix B.3.

3.3 Parties

The following parties were involved in the closure construction of Pond A at JH Campbell:

- Consumers Energy Company (CEC) – (Owner)
 - Aaron Davis, P.E. (2018) / Thomas Shields (2019) – Project Manager
 - Andrew Baird, P.E. – Project Engineer
 - Adam Saur – Construction Manager
 - Brad Runkel, P.E. – Landfill Operations Compliance

- Michigan Department of Environmental, Great Lakes, and Energy, Office of Waste Management and Radiological Protection (EGLE) – Regulator
 - Timothy Unsel – Grand Rapids District Solid Waste Engineer
- Golder Associates Inc. (Golder) – Design Engineer and CQA Consultant
 - David M. List, P.E. – Project Director
 - Jeff Piaskowski, P.E. – Project Manager and Certifying Engineer
 - Aaron Bickel – Lead Site Engineer (2019)
 - Amy Mandrell – Site Engineer
 - David Hutchinson – Lead CQA Technician (2018)
 - Don Winey – CQA Technician
- Ryan Central Incorporated (Ryan) – Earthworks Contractor
 - John Lafferty – Project Manager
 - John Burt – Project Engineer
 - Rob Koski – Project Superintendent
- Nederveld, Inc. (Nederveld) – Professional Certification Surveyor
 - Matthew Nederveld – Professional Surveyor, Michigan
- Chesapeake Containment Systems Inc. (CCS) - Geosynthetics Installer
 - Jennifer Battle – Project Manager
 - Moises Tello - Superintendent
 - Barbarito Flores – Project Superintendent
- Agru America (Agru) – Geomembrane Supplier
- SKAPS Industries – Geotextile Supplier
- Brewers Dock – Protective Cover Layer
- ADS, Inc. – Drainage Tile Supplier
- Bush Concrete, Inc. – Manhole Supplier
- Core & Main – RCP Supplier
- Northern Concrete Pipe, Inc. – RCP Manufacturer
- EJ Co. – Manhole Cover Supplier
- Verplank Trucking Co. – Topsoil and Riprap

- Geotech Services Inc. – Fabriform Supplier
- Golder – Soils/Geosynthetic Laboratory
 - David Alexander – Geosynthetic Laboratory Manager, Atlanta, Georgia
 - Tim Sanders – Soil Laboratory Manager, Lansing, Michigan

A list of the specific Golder and CCS field personnel involved in the Pond A project is included in Appendix B.1 and B.2, respectively.

4.0 LINER CONFIGURATION

Pond A is a trapezoidal shaped area with an approximate lined two-dimensional plan area of 451,000 square feet (10.4 acres).

The components of the constructed Pond A cover system bottom to top are:

- CCR backfill placed to grade
- 40-mil thick textured HDPE FML
- 10 oz/sy geotextile
- Six-inch diameter drain tiles with screens on ends
- 24-inch-thick layer of protective cover material (sand)
- Six-inch-thick layer of topsoil for vegetation establishment

Additional components include the following:

- Precast concrete catch basins and manholes
- Precast concrete piping
- Riprap
- Fabriform drainage downchutes

Throughout this Report, all references to the dimensions used are the nominal value unless otherwise indicated. Project Daily Reports with photographs are included in Appendix C.

The quantities of materials that were used in the closure construction of Pond A are presented in Table 1, Pond A Quantities.

Table 1: Pond A Quantities

Soil Layer	Description	Approx. Quantity ¹	Units ²	Number of Grain Size Distribution Tests	Number of Organic Content and pH Tests	Meets Laboratory Testing Specs (See Notes)?
Backfill	Pond A fill	317,000	CYD	n/a	n/a	n/a
Protective Cover Soil	24-inch-thick protective cover	34,700	CYD	9	n/a	Yes
Topsoil	6-inch-thick layer	52,368	SYD	3	3	Yes
Riprap	Erosion protection at manholes	117	SYD	n/a	n/a	Yes
Geomembrane	40-mil textured HDPE FML	450,987	SF	n/a	n/a	Yes
Geotextile	10 oz/sy nonwoven geotextile	450,987	SF	n/a	n/a	Yes
Drain Tiles	6-inch diameter ADS single wall heavy duty polyethylene pipe	6,360	LF	n/a	n/a	Yes
RCP	30-inch diameter	339	LF	n/a	n/a	Yes
Manhole and Cover	5-foot or 8-foot diameter manhole with beehive casting	3	EACH	n/a	n/a	Yes
Seed, Fertilizer, Mulch	Per MDOT ³ standards and project specifications	52,368	SYD	n/a	n/a	Yes

Notes: ¹Approx. Quantity: Quantities were calculated from AutoCAD using Nederveld survey information collected throughout the project.

²Units: CYD = cubic yards, SYD = square yards, LF = linear feet, SF = square feet

³Michigan Department of Transportation

5.0 BACKFILL MATERIAL

Pond A required dewatering and placement of backfill to achieve design subgrade elevations. The backfill was comprised of CCR material excavated from JH Campbell Ponds 1-2 North and South (N/S) and Pond 3 N/S. The top one foot of backfill placed across Pond A was considered the “subgrade” layer. Details regarding subgrade acceptance are provided in Section 5.2.

5.1 Backfill Placement

Placement of CCR from Ponds 1-2 N/S and Pond 3 N/S was performed by Ryan using excavators, dozers, and articulated off-road haul trucks. Ryan placed CCR in approximate 14-inch- to 16-inch-thick lifts and compacted each lift with a John Deere tractor with a towed roller. Golder observed compaction of each lift and documented a successful proof roll with the John Deere tractor before subsequent lifts were placed. If rutting or pumping was observed in excess of one inch during the proof roll, additional compaction effort was applied to the lift until the proof roll passed.

5.2 Subgrade Acceptance

Once design elevations were generally met, the area was fine-graded using global positioning system (GPS) controlled equipment, smooth drum rolled, and inspected for rocks larger than 0.75 inches in diameter. Rocks in excess of 0.75 inches were removed, and final elevations were recorded by Nederveld to verify that elevations were within the grade tolerance. The prepared subgrade was then reviewed by CEC, CCS, Ryan, and Golder. If the area was acceptable to the parties, a certification of acceptance was signed, and the area was relinquished to CCS for deployment of geosynthetic materials. Subgrade Acceptance Certificates are provided in Appendix G.1, and Record Drawings of the subgrade prepared with Nederveld’s survey are presented in Appendix A.

6.0 40-MIL TEXTURED HDPE GEOMEMBRANE FML

The Pond A final cover geomembrane is a 40-mil textured HDPE FML manufactured by Agru and installed by CCS. The geomembrane was placed directly over the subgrade. Details of the installation are described in the following subsections.

6.1 Geomembrane Inventory and Manufacturer’s Certifications

Rolls of geomembrane were visually inspected for quality during unloading and storage. Roll numbers received were checked against shipping documents and manufacturer’s material certifications. 40-mil textured HDPE FML geomembrane was used exclusively to cap Pond A.

Agru provided certification reports for the 40-mil textured HDPE FML geomembrane rolls supplied for this project. The rolls were tested for thickness, tensile properties, tear resistance, puncture strength, elongation, carbon black content, carbon black dispersion, melt flow index, dimensional stability, geomembrane resin density, and asperity height. The resin supplier performed quality control testing on the HDPE resin for density and melt flow index. Resins were supplied by Chevron Phillips Chemical Company, LLP. The reported values of each roll tested met or exceeded the requirements of the CQA Plan and the manufacturer’s stated minimum values. The manufacturer’s quality control testing results were checked for completeness and conformance to the project specifications. In accordance with the CQA Plan, no additional conformance testing was required. Inventory and manufacturer’s certifications for the textured HDPE geomembrane are included as Appendix E.2.

6.2 Geomembrane Installation and Seaming

Resumes of CCS installation personnel for Pond A closure construction are included in Appendix B.2.

Geosynthetics were deployed using either a CAT TL1055D telehandler or a CAT 289D Skid Steer with a spreader bar attachment from an access road running along the perimeter of Pond A. Generally, the deployment was from south to north at Pond A. Panels were pulled by hand, and no equipment was allowed on previously deployed geomembrane.

Geomembrane panels were overlapped a minimum of four inches and shingled in the direction of flow. Unbound edges of the geomembrane panels were temporarily loaded with sandbags prior to seaming. Cross seams were minimized, and no cross seam occurred on slopes steeper than 10 percent or within five feet of the anchor trench or toe or crest of slopes.

As each panel was deployed, it was assigned a unique field identification number by Golder. Geomembrane panel placement information is located in Appendix G.2. Panels were observed by Golder for damage and manufacturing imperfections. Observed defects were marked by Golder and repaired by CCS. The panel layout diagram for the liner includes the geomembrane panel orientation, destructive sample locations, and repairs. The panel layout plan for Pond A is included in the construction Record Drawings as Sheet 4 and Sheet 5 in Appendix A.

There were 31 rolls of Agru 40-mil textured HDPE geomembrane used for the closure construction of Pond A. Thirty rolls were deployed over Pond A resulting in 122 panels; one roll (#70017) was used to make repairs.

Prior to seaming, trial weld samples were prepared and tested in the field using a field tensiometer to qualify welders for seaming activities. Trial weld samples were made from excess liner and prepared using the same procedures and under the conditions anticipated during field welding. Three one-inch-wide coupons were removed from the trial weld sample and tested for peel adhesion, and three coupons were tested for shear strength.

Trial welds were performed at the beginning of each seaming period, and no seaming equipment was in use for longer than a five-hour interval. In addition, two specimens were obtained from the end of the last production seam performed by each welding machine each day. Each specimen was tested by hand for peel adhesion only. Golder personnel observed the trial weld preparation and testing performed on the trial weld and end of day samples.

Peel and shear test criteria were based on the requirements of the CQA Plan. The minimum strength criteria required for peel testing of the textured 40-mil HDPE geomembrane was 60 pounds per inch (ppi) for fusion welds and 52 ppi for extrusion welds. For shear testing, the minimum strength criterion was 80 ppi for both fusion and extrusion welds. No (zero percent) weld separation was allowed on any specimen during trial weld testing. This process was performed at the start of the day, every five hours, and after equipment shutdowns. Results of the trial weld testing are presented in Appendix H, Liner Trial Seam Logs.

Production seaming was performed using a dual hot wedge fusion welder. This device creates two fused seams separated by an air channel. The air channel can be pressurized to non-destructively test the completed seam. Repairs and patching were performed with an extrusion welder.

The procedures associated with both fusion and extrusion seaming operations were observed by Golder. These observations included seam preparation, weather conditions, general seaming procedures, overlap of geomembrane panels, and temporary bonding procedures. Seams were visually inspected throughout their length for quality and seam completion. Visually detected imperfections were marked by Golder and subsequently repaired by CCS. Geomembrane panel seaming records are presented in Appendix I, Fusion Seaming Logs.

6.3 Defects and Repairs

The geomembrane deployment and seaming were monitored for defects. Each defect was documented and recorded by Golder, given a unique identifier, and repaired by CCS. Repairs were generally made by extrusion welding patches and cap strips over defects. Where minor defects were observed, grind and weld practices were implemented to make the repair.

Golder defines patches as pieces of liner cut to extend beyond the defect a minimum of six inches, which are then extrusion welded over the defect. Golder defines cap strips as long patches used to repair failed lengths of seam. Grind and welds are considered minor repairs for defects that do not extend the full depth of the liner. Patches and cap strips were cut to fit the defect or failed seam then tacked to the geomembrane liner with a hot air Leister gun. The edges were beveled with a sandpaper disc and then extrusion welded. Defects were non-destructively tested with vacuum testing. Documentation of geomembrane repairs is included in Appendices J.1 and J.2, Defect Logs and Repair Logs, respectively.

6.4 Geomembrane Seam Non-Destructive Testing

Non-destructive testing of geomembrane seams consisted of air channel pressure testing or vacuum box testing. Seams and repairs failing non-destructive testing were repaired and retested until passing results were obtained.

Air channel testing consisted of pressurizing the channels between the dual wedge seams with air to a pressure of at least 30 pounds per square inch (psi). The channels were kept pressurized for a minimum of five minutes, after which the technician released the pressure from the seam end opposite the pressure gauge to ensure continuity. Passing tests for 40-mil geomembrane were those with no more than a drop of four psi over the five minute period. If a dual wedge seam did not meet the passing requirements, the seam was tested in shorter segments to isolate the portion which could not be pressure tested. There were seven failing air tests for Pond A fusion welded seams. All failing sections of the seams were repaired with fusion welded cap strips, and those seams were successfully air tested.

Vacuum testing utilizes a vacuum box consisting of a clear acrylic window with a thick neoprene gasket around the bottom edge. The box is connected to a vacuum source that reduces the air pressure in the box. A soapy water solution is applied to the weld to be tested, the box is manually pressed against the seam, and a vacuum of at least five psi is applied inside the box for a minimum of 10 seconds. If no air bubbles were observed coming from the seam/weld, the test was considered to be passing. Bubbles being drawn through the seam and viewed through the window on the box were evidence of a leak in the extrusion weld. There were two failing vacuum box tests for the extrusion welded seams or repairs. Each failed vacuum box test was ground, re-welded with an extrusion gun, and retested with the vacuum box until results were acceptable.

Documentation of geomembrane non-destructive testing is included in Appendices J.3 and J.4, Non-Destructive Air Testing Logs and Vacuum Testing Logs, respectively.

6.5 Geomembrane Seam Destructive Testing

In general, destructive test samples were taken at a frequency of at least one test per 500 linear feet of production fusion seam with a minimum of one test per day per seaming crew member. Extrusion welding destructs were sampled at a frequency of one test per 500 linear feet of production welding. It should be noted that only defect repairs that have a diagonal dimension in excess of eight feet were recorded as extrusion production welding. Destructive sample locations were marked by Golder personnel based on required frequencies or if a portion of seam was considered suspect.

A total of 54 fusion welded destructive samples were collected from 21,817 linear feet of fusion welding on Pond A; this results in one destructive sample taken every 405 feet on average. No extrusion panel seaming was performed, but it should be noted that patches and caps larger than eight feet diagonally were recorded as production extrusion welding and subject to destructive testing at a rate of one test per 500 feet.

Destructive seam samples were obtained at the locations shown on the Record Drawings provided in Appendix A. The destructive samples were approximately 36 inches long. The samples were generally cut into three pieces with 12 inches of the sample tested in the field (five peel and five shear), 12 inches of the sample submitted to Golder's Atlanta lab for additional testing (if the field section passed), and the remaining 12 inches of the sample retained by CEC as an archive. The extrusion welded destructive test samples were taken from repair welds that were of sufficient size or length to warrant inclusion in the destructive sample summary or from a trial weld that was welded after the production seam was completed.

The pass/fail criteria for the 40-mil textured geomembrane seams were based on the requirements of the CQA Plan as follows:

Table 2: Field and Laboratory Destructive Seam Strength Requirements

Property	Test Method	40 mil Textured HDPE
Shear Strength – Fusion Weld (Hot Wedge) – pounds per inch (ppi)	ASTM D 6392 – GRI-GM19a	80
Peel Strength – Fusion Weld (Hot Wedge) - ppi	ASTM D 6392 – GRI-GM19a	60
Shear Strength – Extrusion Weld - ppi	ASTM D 6392 – GRI-GM19a	80
Peel Strength – Extrusion Weld - ppi	ASTM D 6392 – GRI-GM19a	52

There were 12 failing fusion and one failing extrusion destructive tests recorded on the Pond A final cover. Failed destruct locations were capped and retested until the Pond A final cover geomembrane documentation was complete.

The Pond A destructive fusion and extrusion weld test results indicated that the welds meet the requirements presented in the CQA Plan. Results of laboratory testing of destructive seam samples are included in Appendix K, Seam Destructive Test Results.

6.6 Additional Destructive Testing Conversations

Golder observed an unusually high number of failed destructive fusion tests during the Pond A final cover installation. CCS stopped production welding on May 3, 2019 and May 4, 2019 to perform an internal investigation to determine a cause for the unusually high number of recorded failures so procedures could be revised to limit the amount of failures going forward. The investigation documented that the failures generally aligned with periods of high wind in excess of 15 miles per hour (mph) on April 13, 2019. Panels were oriented north-south and sequentially deployed from east to west. The wind direction on April 13, 2019 ranged from south-southwest (SSW) to west-southwest (WSW) and sustained speeds from 15 mph to 25 mph with gusts up to 32 mph recorded in the morning. The wind speeds reduced to 10 mph by 14:00 and as little as 5 mph by 16:00. The winds in the morning and deployment direction allowed dust from the subgrade to be driven into the leading edge of the panel where seaming was required and resulted in the unusually high number of failed destructive fusion tests.

CCS capped suspect seams and all seams bound by passing destructs. Additionally, Golder proposed five destructs on uncapped seam segments for further assurance of quality seams. The five additional destructive samples (DS-50, DS-51, DS-52, DS-53, and DS-54) provided acceptable test results, giving assurance that the remaining uncapped seams fusion welded on April 13, 2019 are of good quality.

Table 3: Additional Destructive Samples from April 13, 2019

Fusion Destruct No.	Seam	Technician	Machine	Time of Seaming	Wind Speed During Seaming
DF-50	P8/P9	UM	85	10:43	17 mph
DF-51	P6/P8	VG	20	09:57	20 mph
DF-52	P13/P15	VG	20	15:04	7 mph
DF-53	P15/P17	HM	81	16:03	5 mph
DF-54	P12/P13	UM	85	14:18	10 mph

During a telephone conference on May 15, 2019, Mr. Timothy J. Unseld (Solid Waste Engineer at EGLE Grand Rapids Office) requested that Golder provide discussion in this Report that would provide confidence that the seam bounded between DF8N5 and DF10P2 is of good quality. As a result, Golder is providing the following items to document that the seam bound between DF8N5 and DF10P2 is of good quality:

- It has an additional passing destructive sample (DF-52)
- The panels were deployed after 14:00 when wind speeds were reportedly less than 10 mph
- It was welded when wind speeds were reportedly less than 10 mph
- Welding panels that were deployed after 14:00 generally resulted in more favorable destruct results

7.0 GEOTEXTILE

A 10 oz/sy nonwoven SKAPS GE110 geotextile manufactured by SKAPS Industries (SKAPS) was installed over the geomembrane.

7.1 Inventory and Material Testing

The rolls of geotextile were visually inspected during unloading and storage to ensure good quality. Roll identification numbers received were checked against and complied with both the shipping documents and manufacturer's material certifications.

SKAPS provided a material testing and certification report for rolls of geotextile supplied for this project. Geotextile certifications were checked for completeness and conformance to the project specifications. Geotextile inventory logs and geotextile quality control certificates are included as Appendices F.1 and F.2, Geotextile Inventory Log and Geotextile Quality Control Certificates, respectively.

7.2 Installation

Golder, CCS, and Ryan discussed and accepted the lined surfaces before placement of geotextile, as noted in the Project Daily Reports for May 8, 2019; May 13, 2019; and May 16, 2019 (Appendix C).

The nonwoven geotextile panels were deployed from rolls with a CAT TL1055D telehandler and spreader bar that was stationed on the Pond A perimeter access road. The nonwoven geotextile was placed longitudinally on the slopes in a manner that minimized seams.

Geotextile panels were overlapped at minimum three inches and were continuously sewn using a butterfly seam configuration and double looped stitch.

The installation of geotextile was monitored continuously by Golder. Any areas found to need repair smaller than six square feet were covered with a piece of geotextile extending two feet in all directions from the defective area and secured into place by thermally bonding the patch to the underlying geotextile.

8.0 STORMWATER SYSTEM AND PROTECTIVE COVER

The following sections describe the materials, installation, and testing of the Pond A stormwater system and protective soil cover in more detail.

8.1 Stormwater System

The drain tiles are perforated six-inch diameter advanced drainage system (ADS) single wall heavy duty polyethylene pipes. The tiles were wrapped with ADS SOCK synthetic wrap. The manholes connecting into the drain tiles are five-foot diameter precast concrete manholes (flat top) with six-inch-thick walls, eight-inch thick bases, and EJIW 1020 O2 six-inch beehive casting. One-half-inch diameter weep holes with one-foot off-sets are located on the manholes at the same invert as the drain tiles. An eight-foot diameter junction manhole was also used near the southwest corner of Pond A with an eight-inch-thick base and 36-inch eccentric cone catch basin with EJIW 1020 O2 six-inch beehive casting.

The six-inch diameter ADS single wall heavy duty perforated polyethylene drain tiles and ADS SOCK synthetic wrap specifications were supplied by ADS. The manhole specifications and cover details were provided by Bush Concrete Products, Inc. and EJ Co. Material testing and specifications for the Fabriform Articulated Square Block (ASB) were provided by Geotech Services, Inc. The specifications for the Class IV precast reinforced concrete

pipe (RCP) culverts were supplied by Northern Concrete Pipe, Inc. (precast manufacturer) and Core & Main (supplier). Golder project engineers reviewed the provided specifications and approved them for project use. The details of the stormwater system are provided in Appendix L, Stormwater System Information.

The installation of drain tiles, culverts, manholes, and Fabriform were monitored continuously by Golder. The stormwater system components were installed in accordance with the Closure Plan and manufacturer recommendations. The drain tiles were set by Ryan and junctions were field verified using a GPS unit in accordance with the CQAP. Golder CQA staff photographed and visually verified the placement of the drain tiles and culverts in general accordance with the construction drawings.

The 30-inch diameter RCP culverts in the southwest corner and southeast corner of Pond A were surveyed, and their invert elevations are provided in the Record Drawings (Appendix A).

8.2 Protective Cover Layer

The 24-inch-thick protective cover layer placed above the geotextile was classified by the Unified Soil Classification System (USCS) as poorly graded sand (SP) with no stones larger than 0.75 inches. The protective cover soils were imported from Brewers Dock located in Holland, Michigan.

8.2.1 Protective Layer Material Testing

Samples of the protective cover material were obtained for every 5,000 cubic yards (CYD) of material placed, tested, and classified by Golder as it was received onsite. Based on an estimated quantity of approximately 34,700 CYD of protective material, a total of nine classifications were performed. All nine samples were classified as SP.

Results of the laboratory testing performed on the protective cover material met the requirements of the CQA Plan and are presented in Appendix D.1, Protective Cover Material.

8.2.2 Protective Material Installation

The protective cover was placed as one continuous lift. Sand was hauled to the site and stockpiled outside the southwestern end of the pond. Haul trucks were only allowed to travel on areas covered with material thicknesses exceeding three feet. In addition, the trucks dumped only on areas where material was already spread. Dumping of material directly on the geotextile was prohibited. Sand was spread by low ground pressure dozers (less than five psi) in a manner that minimized wrinkle propagation. Thickness control was maintained by a GPS controlled dozer and by probe measurements. Placement of protective cover material was continuously observed by Golder and Ryan to ensure that the geosynthetics were free from damage, excessive wrinkles, and folds.

On May 30, 2019, a dozer's blade came into contact with the geotextile and geomembrane on the northeastern corner on Panel 11. This accident was the result of operator error while using a non-GPS guided dozer to grade cover material. May 30, 2019 was the first and last day that the non-GPS dozer was used to perform grading on the Pond A final cover. The area surrounding the damage was exposed to assess its condition. The damaged geotextile and geomembrane were repaired by CCS on June 5, 2019 (repair 24A). Non-destructive testing was completed on repair 24A and documented in accordance with the CQA Plan.

Once the protective cover materials were installed to a 24-inch-thick design thickness, a survey check was completed at the certification points. Areas that did not meet Closure Plan protective cover requirements were regraded, as necessary, to meet the requirements in the Closure Plan and CQA Plan.

8.3 Topsoil, Seed, Fertilizer, and Mulch

Topsoil used onsite was hauled in by Verplank Trucking Co. (Verplank). Before topsoil was brought onsite, Verplank provided a letter dated August 9, 2018 stating that project topsoil would come from a virgin source. Additionally, one sample was collected for each five acres of topsoil placement and tested to confirm the topsoil met the CQA Plan requirements. Topsoil was tested for grain size distribution, organic matter (minimum of 2.5 percent), and pH (6.4 to 7.5) in accordance with the CQA Plan and is summarized in Appendix D.2, Topsoil.

Topsoil was placed and graded in a minimum six-inch-thick layer by Ryan. After installation of topsoil, Nederveld surveyed top of topsoil points at the same subgrade certification points to document 30 inches of protective cover and topsoil (combined). Natural Environmental Reclamation Concepts, Inc. performed seeding and mulching on August 1 and 2, 2019. Rhino Seed and Turf Supply was used to develop the Michigan Department of Transportation (MDOT) seed mix consisting of Creeping Red Fescue, Perennial Ryegrass, Sword Hard Fescue, and Kentucky Bluegrass. The Andersons, Inc. supplied the 19-19-19 fertilizer, and loose mulch was installed over the seeded and fertilized topsoil. The seed, fertilizer, and mulch met the project requirements and MDOT standards and are summarized in Appendix M, Seed, Fertilizer, and Mulch Information.

9.0 SUMMARY

Golder was retained by CEC to provide CQA services during the closure construction of Pond A at the J.H. Campbell Generating Facility located in Port Sheldon Township, Ottawa County, Michigan. The services provided included CQA associated with CCR backfill, subgrade, 40-mil textured HDPE geomembrane FML, geotextile, stormwater system, protective cover, and vegetative erosion layer (six-inch-thick topsoil and seed). Continuous observation was provided by Golder for closure construction of the Pond A final cover system.

A summary of construction activities was documented by Golder personnel on Project Daily Reports included as Appendix C. Selected construction photographs are also presented in Appendix C. Record drawings are provided in Appendix A.

Golder implemented the CQA Plan which included testing of protective cover soil, topsoil, and geosynthetic materials; observation and documentation of the geomembrane liner deployment, seaming, non-destructive testing, and destructive seam strength testing; and observation and documentation of the placement of the cover materials and stormwater system.

The observations made by Golder during the closure construction of Pond A indicate that the construction was in compliance with the reference documents listed in Section 3.1, except as noted otherwise in this document.

10.0 CERTIFICATION

The observations and tests performed by Golder personnel as described in this Report during the final cover construction of Pond A (10.4 acres) indicate that the materials tested conform to the requirements and construction was performed in compliance with the Part 115 Administrative Rules, approved Pond A Closure Plan, CQA Plan, and reference documents listed in Section 3.1.

I certify that this document and attachments were prepared under my direction or supervision in conformance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiries of the persons who were directly responsible for gathering the information, the information submitted is, to the best of my knowledge, true, accurate, and complete.

Golder Associates Inc.



David M. List, P.E.
Principal



Jeff Piaskowski, P.E.
Certifying Engineer
Michigan Professional Engineer
P.E. Number 6201061033

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APPENDIX A

Record Drawings

CONSUMERS ENERGY COMPANY
J.H. CAMPBELL GENERATING FACILITY
POND A RECORD DRAWINGS

PREPARED FOR:



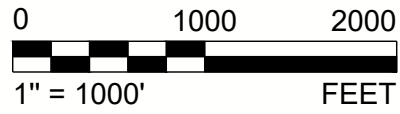
CONSUMERS ENERGY COMPANY
J.H. CAMPBELL GENERATING PLANT
17000 CROSWELL STREET
WEST OLIVE, MI 49460

PREPARED BY:



GOLDER
GOLDER ASSOCIATES INC.
15851 SOUTH US 27
SUITE 50
LANSING, MI 48906

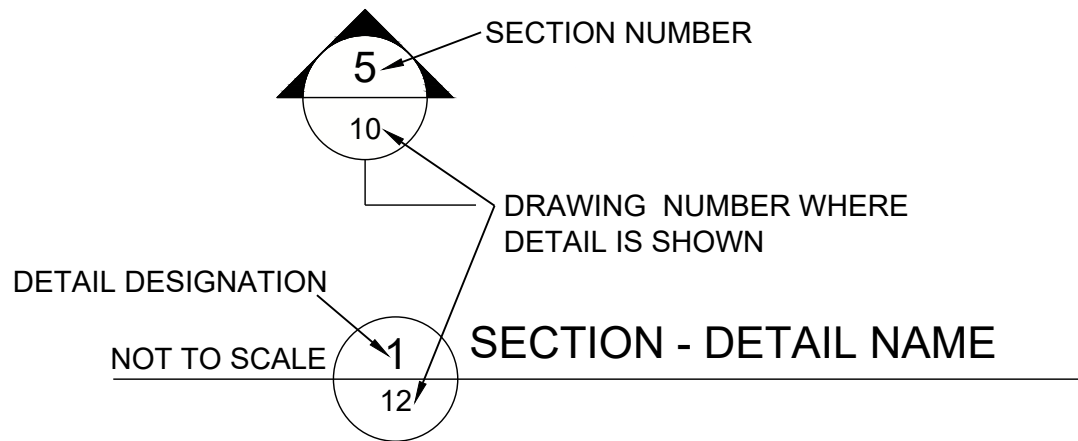
DRAWING LIST		
SHEET NUMBER	DRAWING TITLE	DRAWING REV.
1	COVER SHEET	A
2	DEMOLITION PLAN	A
3	TOP OF SUBGRADE RECORD DRAWING	A
4	GEOMEMBRANE PANEL LAYOUT - WEST	A
5	GEOMEMBRANE PANEL LAYOUT - EAST	A
6	TOP OF COVER RECORD DRAWING	A
7	CONTROL POINTS	A
8	DETAILS	A
9	DETAILS	A



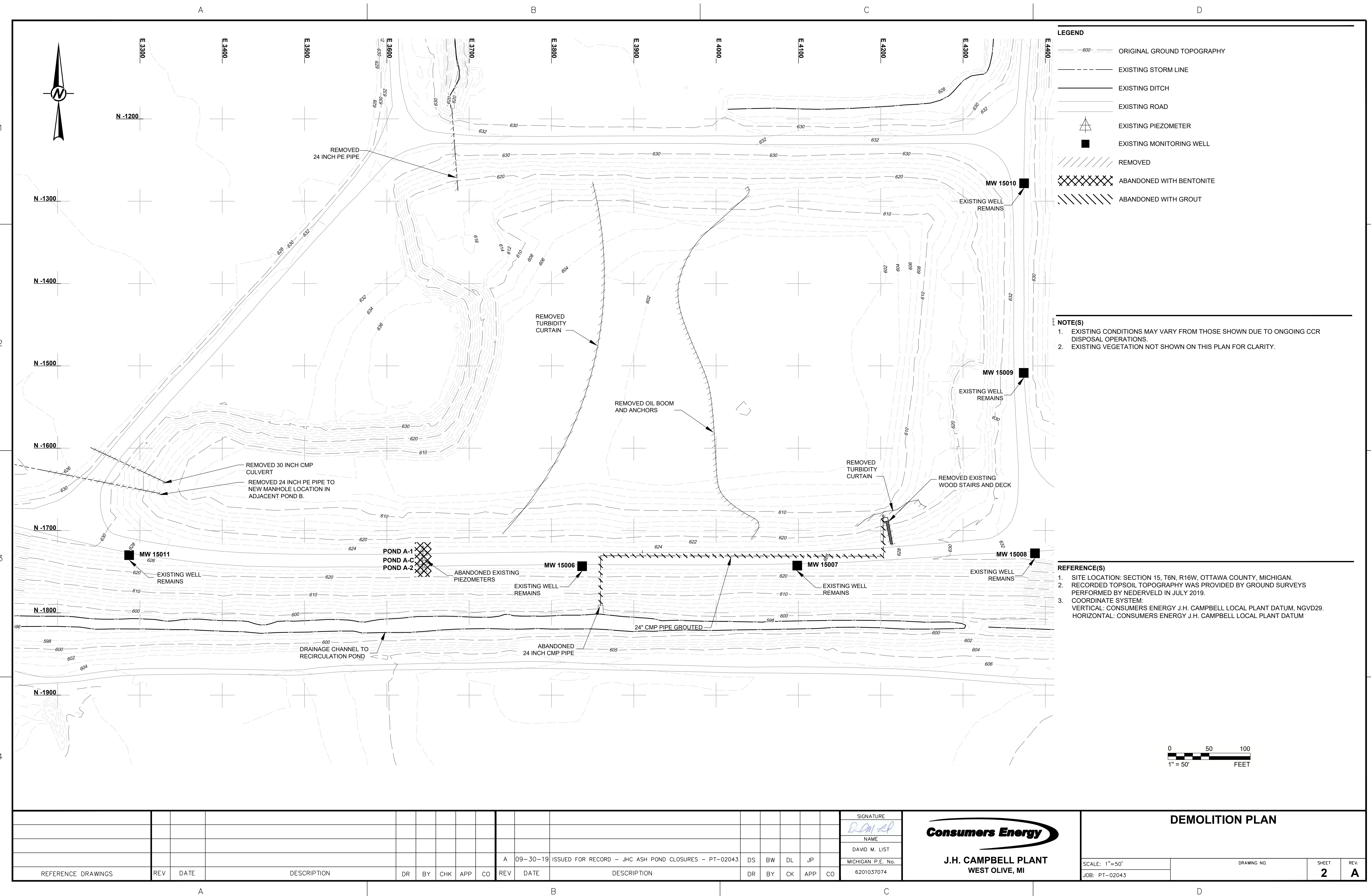
REFERENCE(S)

1. AERIAL PHOTO WAS PROVIDED BY AN AERIAL SURVEY PERFORMED BY ROWE PROFESSIONAL SERVICES IN OCTOBER 2012.

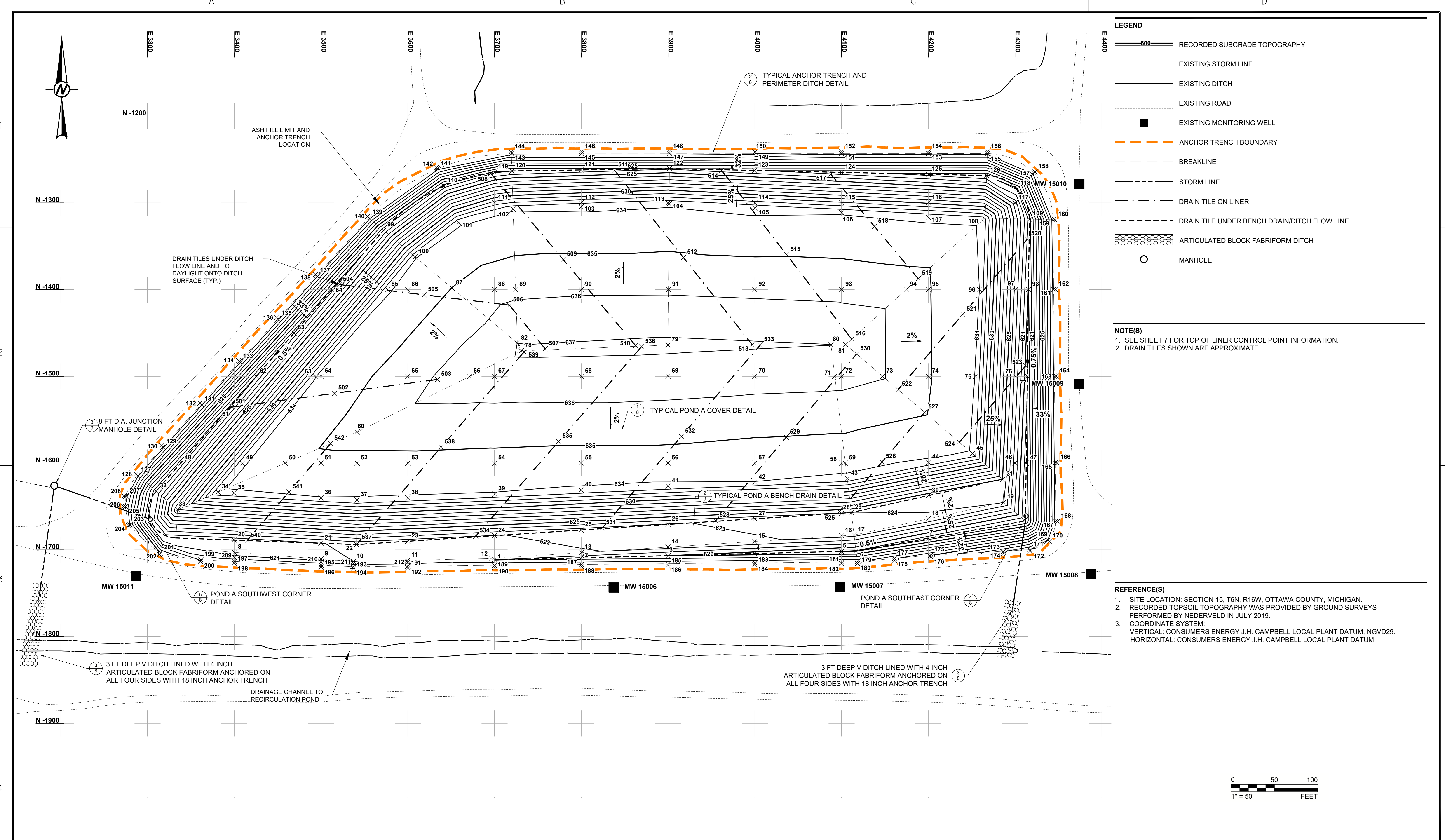
SECTION, DETAIL, AND VIEW C



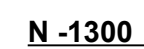
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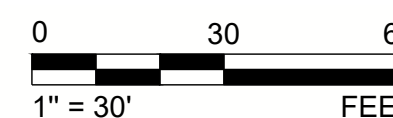










N -1400

N -1500

N -1600

N -1700



LEGEND	
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	FUSION WELD
	LINER PANEL LABEL
	REPAIR LOCATION
	BOOT LOCATION
	DESTRUCTIVE SAMPLE - FUSION
	DESTRUCTIVE SAMPLE - EXTRUSION
	CAP

NOTE(S)

1. REPAIR, DESTRUCT, PANEL, PIPE BOOT, AND ANCHOR TRENCH LOCATIONS BASED UPON SURVEYS PERFORMED BY NEDERVELD DURING THE LINER INSTALLATION.
2. REPAIR 24A WAS NOT SURVEYED AND ITS LOCATION IS APPROXIMATE ONLY.
3. TOTAL POND A LINER AREA AS SHOWN ON SHEETS #245 & #246 = 450,987 SFT.

REFERENCE(S)

1. SITE LOCATION: SECTION 15, T6N, R16W, OTTAWA COUNTY, MICHIGAN.
2. RECORDED PANEL INFORMATION WAS PROVIDED BY GROUND SURVEYS PERFORMED BY NEDERVELD IN APRIL AND MAY 2019.
3. COORDINATE SYSTEM:
VERTICAL: CONSUMERS ENERGY J.H. CAMPBELL LOCAL PLANT DATUM, NGVD29.
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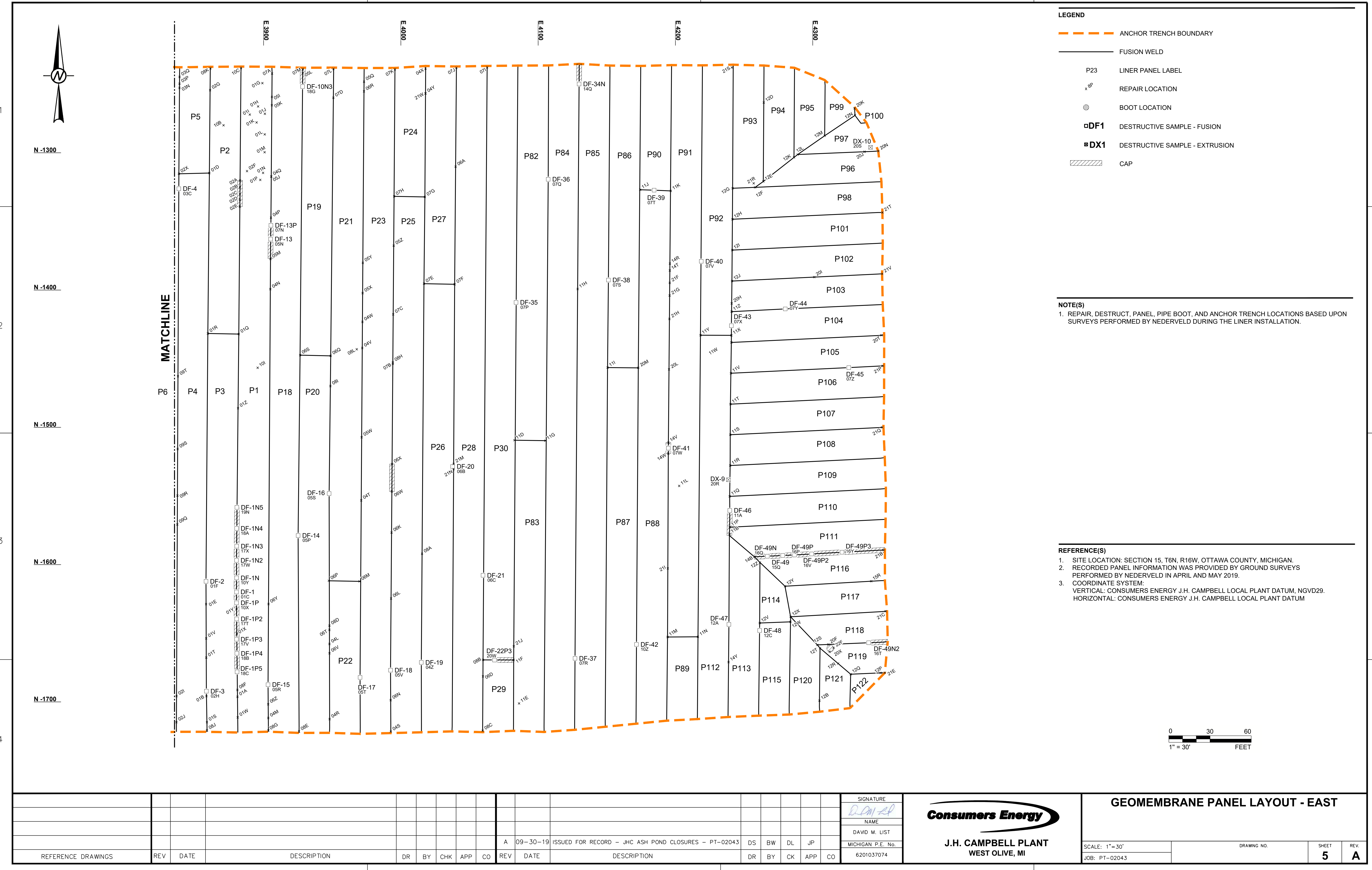
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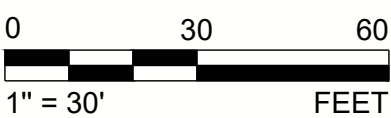
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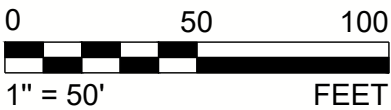
- REPAIR, DESTRUCT, PANEL, PIPE BOOT, AND ANCHOR TRENCH LOCATIONS BASED UPON SURVEYS PERFORMED BY NEDERVELD DURING THE LINER INSTALLATION.

REFERENCE(S)

- SITE LOCATION: SECTION 15, T6N, R16W, OTTAWA COUNTY, MICHIGAN.
- RECORDED PANEL INFORMATION WAS PROVIDED BY GROUND SURVEYS PERFORMED BY NEDERVELD IN APRIL AND MAY 2019.
- COORDINATE SYSTEM:
VERTICAL: CONSUMERS ENERGY J.H. CAMPBELL LOCAL PLANT DATUM, NGVD29.
HORIZONTAL: CONSUMERS ENERGY J.H. CAMPBELL LOCAL PLANT DATUM



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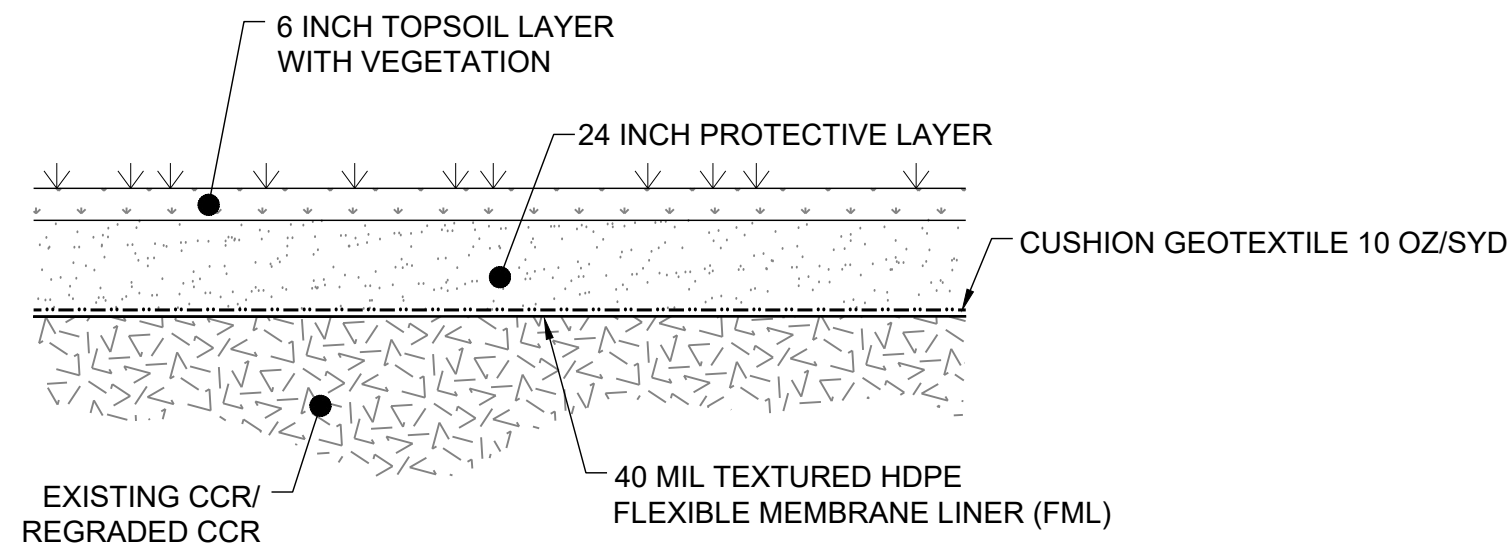
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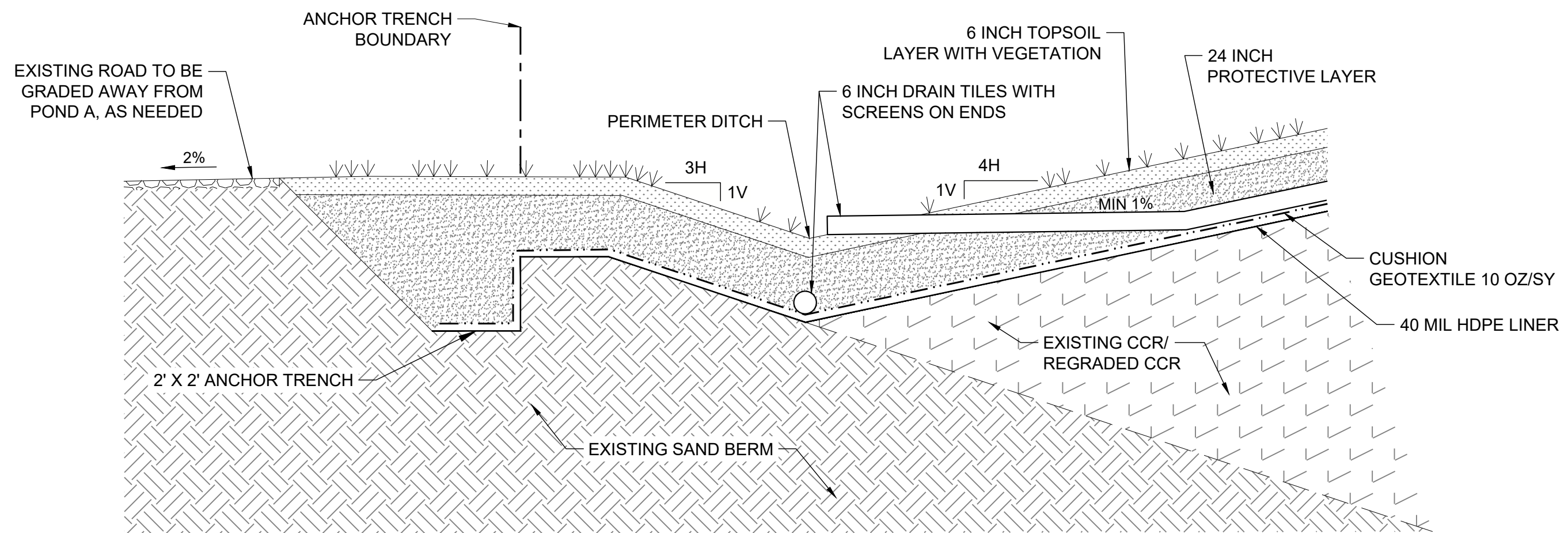
Table 1 - J.H. CAMPBELL - POND A CONSTRUCTION CONTROL POINTS									
DESIGN NORTHING	DESIGN EASTING	SUBGRADE CONTROL POINT NUMBER	SUBGRADE		Date Surveyed by Nederveld	Difference	Drawing Reference	Notes	
			SUBGRADE DESIGN ELEVATION	SUBGRADE RECORD ELEVATION from Nederveld					
-1711.65	3700.00	1	621.04	620.87	4/19/2019	-0.07	3	LINER-S DCH	
-1709.18	3800.00	2	620.58	620.47	4/19/2019	-0.11	3	LINER-S DCH	
-1706.71	3900.00	3	620.08	619.99	4/19/2019	-0.09	3	LINER-S DCH	
-1704.24	4000.00	4	619.59	619.56	4/19/2019	-0.03	3	LINER-S DCH	
-1701.77	4100.00	5	619.08	618.98	4/19/2019	-0.11	3	LINER-S DCH	
-1701.35	4117.12	6	618.00	616.88	4/19/2019	-0.12	3	LINER-S DCH	
-1696.60	4200.00	7	618.58	616.46	4/19/2019	-0.10	3	LINER-S DCH	
-1702.81	3400.00	8	620.48	620.37	4/19/2019	-0.11	3	LINER-BENCH	
-1710.56	3500.00	9	620.70	620.64	4/19/2019	-0.06	3	LINER-BENCH	
-1713.45	3537.19	10	621.00	621.00	4/19/2019	0.00	3	LINER-BENCH	
-1712.08	3600.00	11	621.07	621.02	4/19/2019	-0.05	3	LINER-BENCH	
-1710.00	3695.55	12	621.47	621.31	4/19/2019	-0.16	3	LINER-BENCH	
-1703.26	3800.00	13	622.00	621.87	4/19/2019	-0.12	3	LINER-BENCH	
-1696.78	3900.00	14	622.52	622.41	4/19/2019	-0.11	3	LINER-BENCH	
-1690.30	4000.00	15	623.00	622.93	4/19/2019	-0.07	3	LINER-BENCH	
-1684.15	4100.00	16	623.54	623.39	4/19/2019	-0.15	3	LINER-BENCH	
-1682.87	4114.79	17	623.57	623.37	4/19/2019	-0.19	3	LINER-BENCH	
-1664.19	4200.00	18	624.01	623.84	4/19/2019	-0.16	3	LINER-BENCH	
-1645.14	4288.88	19	624.07	624.01	4/19/2019	-0.06	3	LINER-BENCH	
-1688.72	3400.00	20	620.50	620.42	4/19/2019	-0.08	3	LINER-BENCH	
-1692.39	3500.00	21	621.01	620.97	4/19/2019	-0.04	3	LINER-BENCH	
-1693.89	3540.91	22	621.22	621.23	4/19/2019	0.01	3	LINER-BENCH	
-1690.06	3600.00	23	621.52	621.47	4/19/2019	-0.05	3	LINER-BENCH	
-1683.59	3700.00	24	622.03	621.93	4/19/2019	-0.10	3	LINER-BENCH	
-1677.11	3800.00	25	622.54	622.53	4/19/2019	-0.01	3	LINER-BENCH	
-1670.63	3900.00	26	623.05	622.96	4/19/2019	-0.09	3	LINER-BENCH	
-1664.15	4000.00	27	623.56	623.39	4/19/2019	-0.16	3	LINER-BENCH	
-1657.69	4100.00	28	624.07	623.87	4/19/2019	-0.10	3	LINER-BENCH	
-1656.96	4111.13	29	624.12	624.01	4/19/2019	-0.11	3	LINER-BENCH	
-1637.48	4200.00	30	624.59	624.40	4/19/2019	-0.19	3	LINER-BENCH	
-1618.72	4285.79	31	625.00	624.97	4/19/2019	-0.03	3	LINER-BENCH	
-1632.45	3309.94	32	620.21	620.09	4/19/2019	-0.12	3	LINER-W DCH	
-1653.73	3334.63	33	628.07	627.92	4/19/2019	-0.16	3	LINER-W DCH	
-1633.48	3381.40	34	634.00	633.91	4/19/2019	-0.09	3	LINER-BKLN	
-1634.54	3400.00	35	634.00	633.88	4/19/2019	-0.14	3	LINER-BKLN	
-1640.25	3500.00	36	634.00	633.98	4/19/2019	-0.02	3	LINER-BKLN	
-1642.61	3541.29	37	634.00	633.93	4/19/2019	-0.07	3	LINER-BKLN	
-1640.01	3600.00	38	634.00	633.93	4/19/2019	-0.07	3	LINER-BKLN	
-1635.17	3700.00	39	634.00	633.86	4/19/2019	-0.04	3	LINER-BKLN	
-1631.14	3800.00	40	634.00	633.89	4/19/2019	-0.11	3	LINER-BKLN	
-1626.70	3900.00	41	634.00	633.97	4/19/2019	-0.03	3	LINER-BKLN	
-1622.27	4000.00	42	634.00	633.98	4/19/2019	-0.02	3	LINER-BKLN	
-1617.52	4105.48	43	634.00	633.84	4/19/2019	-0.16	3	LINER-BKLN	
-1599.01	4200.00	44	634.00	633.81	4/19/2019	-0.19	3	LINER-BKLN	
-1588.90	4257.04	45	634.00	633.92	4/19/2019	-0.08	3	LINER-BKLN	
-1600.00	4300.00	46	632.85	632.58	4/19/2019	-0.07	3	LINER-25%	
-1600.00	4312.84	47	618.50	618.60	4/19/2019	0.00	3	LINER-E DCH	
-1600.00	3338.24	48	620.42	620.32	4/19/2019	-0.10	3	LINER-W DCH	
-1600.00	3429.42	49	634.00	633.91	4/19/2019	-0.09	3	LINER-BKLN	
-1600.00	3454.35	50	634.00	633.86	4/19/2019	-0.10	3	LINER-BKLN	
-1600.00	3500.00	51	634.80	634.74	4/19/2019	-0.07	3	LINER-2%	
-1600.00	3541.57	52	634.85	634.74	4/19/2019	-0.11	3	LINER-BKLN	
-1600.00	3600.00	53	634.80	634.74	4/19/2019	-0.06	3	LINER-2%	
-1600.00	3700.00	54	634.71	634.67	4/19/2019	-0.04	3	LINER-2%	
-1600.00	3800.00	55	634.82	634.59	4/19/2019	-0.03	3	LINER-2%	
-1600.00	3900.00	56	634.53	634.59	4/19/2019	0.06	3	LINER-2%	
-1600.00	4000.00	57	634.44	634.41	4/19/2019	-0.03	3	LINER-2%	
-1600.00	4100.00	58	634.36	634.30	4/19/2019	-0.06	3	LINER-2%	
-1600.00	4104.36	59	634.35	634.32	4/19/2019	-0.03	3	LINER-BKLN	
-1600.00	3541.80	60	635.52	635.39	4/19/2019	-0.13	3	LINER-BKLN	
-1550.00	3381.75	61	620.75	620.67	4/19/2019	-0.08	3	LINER-W DCH	
-1500.16	3425.25	62	621.98	620.54	4/19/2019	-0.15	3	LINER-W DCH	
-1500.00	3433.13	63	634.00	633.96	4/19/2019	-0.04	3	LINER-BKLN	
-1500.00	3500.00	64	634.11	634.15	4/19/2019	0.04	3	LINER-2%	
-1500.00	3600.00	65	635.64	635.60	4/19/2019	-0.04	3	LINER-2%	
-1500.00	3671.41	66	636.73	636.58	4/19/2019	-0.15	3	LINER-BKLN	
-1500.00	3700.00	67	636.71	636.59	4/19/2019	-0.12	3	LINER-2%	
-1500.00	3800.00	68	636.62	636.62	4/19/2019	0.00	3	LINER-2%	
-1500.00	3900.00	69	636.53	636.53	4/19/2019	0.00	3	LINER-2%	
-1500.00	4000.00	70	636.44	636.41	4/19/2019	-0.03	3	LINER-2%	
-1500.00	4092.20	71	636.35	636.34	4/19/2019	-0.02	3	LINER-BKLN	
-1500.00	4100.00	72	636.33	636.33	4/19/2019	0.00	3	LINER-BKLN	
-1500.00	4147.44	73	636.15	636.07	4/19/2019	-0.08	3	LINER-BKLN	
-1500.00	4200.00	74	635.10	635.08	4/19/2019	-0.01	3	LINER-2%	
-1500.00	4254.87	75	634.00	633.97	4/19/2019	-0.03	3	LINER-BKLN	
-1500.00	4300.00	76	622.73	622.69	4/19/2019	-0.04	3	LINER-2%	
-1500.00	4314.15	77	619.25	619.22	4/19/2019	-0.03	3	LINER-E DCH	
-1470.61	3730.87	78	637.25	637.13	4/19/2019	-0.12	3	LINER-BKLN	
-1463.89	3899.96	79	637.25	637.18	4/19/2019	-0.07	3	LINER-BKLN	
-1463.64	4087.78	80	637.05	637.01	4/19/2019	-0.05	3	LINER-BKLN	
-1463.36	4104.74	81	637.03	636.90	4/19/2019	-0.13	3	LINER-BKLN	
-1461.75	3726.32	82	637.08	637.00	4/19/2019	-0.08	3	LINER-BKLN	
-1450.00	3466.62	83	621.42	621.34	4/19/2019	-0.08	3	LINER-W DCH	
-1400.00	3512.57	84	621.76	621.66	4/19/2019	-0.10	3	LINER-W DCH	
-1400.00	3576.84	85	634.00	633.91	4/19/2019	-0.09	3	LINER-BKLN	
-1400.00	3600.00	86	634.36	634.28	4/19/2019	-0.08	3	LINER-2%	
-1398.32	3651.22	87	635.12	635.02	4/19/2019	-0.10	3	LINER-BKLN	
-1400.00	3700.00	88	635.74	635.62	4/19/2019	-0.12	3	LINER-2%	
-1400.00	3724.35	89	635.85	635.77	4/19/2019	-0.09	3	LINER-BKLN	
-1400.00	3800.00	90	635.91	635.87	4/19/2019	-0.04	3	LINER-2%	
-1400.00	3900.49	91	635.98	635.87	4/19/2019	-0.11	3	LINER-BKLN	
-1400.00	4000.00	92	635.87	635.79	4/19/2019	-0.09	3	LINER-2%	
-1400.00	4100.00	93	635.77	635.71	4/19/2019	-0.07	3	LINER-2%	
-1400.00	4174.43	94	635.99	635.62	4/19/2019	-0.17	3	LINER-BKLN	
-1400.00	4200.00	95	635.18	635.06	4/19/2019	-0.12	3	LINER-BKLN	
-1400.00	4259.18	96	634.00	633.99	4/19/2019	-0.01	3	LINER-BKLN	
-1400.00	4300.00	97	623.80	623.76	4/19/2019	-0.05	3	LINER-25%	
-1400.00	4315.45	98	620.00	619.94	4/19/2019	-0.07	3	LINER-E DCH	
-1331.59	3572.21	99	622.20	622.21	4/19/2019	0.01	3	LINER-W DCH	
-1362.26	3608.52	100	634.00	633.97	4/19/2019	-0.03	3	LINER-BKLN	
-1323.00	3658.70	101	634.00	633.82	4/19/2019	-0.08	3	LINER-BKLN	
-1307.40	3721.40	102	634.00	633.96	4/19/2019	-0.04	3	LINER-BKLN	
-1304.61	3800.00	103	634.00	633.88	4/19/2019	-0.12	3	LINER-BKLN	
-1301.03	3901.30	104	634.00	633.92	4/19/2019	-0.08	3	LINER-BKLN	
-1306.15	4000.00	105	634.00	633.82	4/19/2019	-0.18	3	LINER-BKLN	
-1311.35	4100.00	106	634.00	633.95	4/19/2019	-0.05	3	LINER-BKLN	

Table 1 - J.H. CAMPBELL - POND A CONSTRUCTION CONTROL POINTS									
DESIGN NORTHING	DESIGN EASTING	SUBGRADE CONTROL POINT NUMBER	SUBGRADE			Date Surveyed by Nederveld	Difference	Drawing Reference	Notes
			SUBGRADE DESIGN ELEVATION	SUBGRADE RECORD ELEVATION from Nederveld					
-1316.54	4200.00	107	634.00	633.87	4/19/2019	-0.13	3	LINER-BKLN	
-1319.78	4262.46	108	634.00	633.87	4/19/2019	-0.13	3	LINER-BKLN	
-1318.78	4316.51	109	620.61	620.61	4/19/2019	0.00	3	LINER-E DCH	
-1280.40	3641.78	110	622.63	622.52	4/19/2019	-0.11	3	LINER-NW DCH	
-1300.00	3700.00	111	631.51	631.46	4/19/2019	-0.05	3	LINER-25%	
-1300.00	3800.00	112	632.85	632.84	4/19/2019	-0.01	3	LINER-25%	
-1300.00	3900.00	113	633.73	633.71	4/19/2019	-0.02	3	LINER-25%	
-1300.00	4000.00	114	632.46	632.44	4/19/2019	-0.02	3	LINER-25%	
-1300.00	4100.00	115	631.17	631.17	4/19/2019	0.00	3	LINER-25%	
-1300.00	4200.00	116	629.87	629.87	4/19/2019	0.00	3	LINER-25%	
-1300.00	4300.00	117	623.49	623.46	4/19/2019	-0.01	3	LINER-25%	
-1383.50	3700.00	118	620.50	620.44	4/19/2019	-0.06	3	LINER-DCH	
-1264.58	3700.00	119	622.94	622.80	4/19/2019	-0.14	3	LINER-NW DCH	
-1263.31	3719.99	120	623.04	623.02	4/19/2019	-0.03	3	LINER-NW DCH	
-1262.07	3800.00	121	623.44	623.39	4/19/2019	-0.05	3	LINER-NW DCH	
-1260.51	3901.59	122	623.95	623.82	4/19/2019	-0.13	3	LINER-NW DCH	
-1262.66	4000.00	123	623.20	623.13	4/19/2019	-0.07	3	LINER-NE DCH	
-1264.85	4100.00	124	622.45	622.40	4/19/2019	-0.05	3	LINER-NE DCH	
-1267.05	4200.00	125	621.70	621.65	4/19/2019	-0.04	3	LINER-NE DCH	
-1268.52	4267.23	126	621.20	621.08	4/19/2019	-0.12	3	LINER-NE DCH	
-1813.94	3288.46	127	629.50	629.37	4/19/2019	-0.13	3	LINER-BKLN	
-1812.71	3287.03	128	629.50	629.40	4/19/2019	-0.06	3	ANCHOR TRENCH	
-1581.48	3151.13	129	629.50	629.44	4/19/2019	-0.06	3	LINER-25%	
-1590.14	3216.13	130	629.50	629.37	4/19/2019	-0.13	3	ANCHOR TRENCH	
-1532.22	3381.88	131	629.50	629.36	4/19/2019	-0.12	3	LINER-BKLN	
-1530.85	3360.39	132	629.50	629.43	4/19/2019	-0.07	3	ANCHOR TRENCH	
-1482.96	3406.14	133	629.50	629.40	4/19/2019	-0.10	3	LINER-BKLN	
-1481.62	3404.65	134	629.50	629.47	4/19/2019	-0.03	3	ANCHOR TRENCH	
-1433.55	3404.53	135	629.50	629.45	4/19/2019	-0.05	3	LINER-BKLN	
-1432.21	3449.04	136	629.50	629.50	4/19/2019	0.00	3	ANCHOR TRENCH	
-1384.14	3494.92	137	629.50	629.35	4/19/2019	-0.15	3	LINER-BKLN	
-1382.80	3493.43	138	629.50	629.37	4/19/2019	-0.13	3	ANCHOR TRENCH	
-1317.11	3555.14	139	629.50	629.49	4/19/2019	-0.01	3	LINER-BKLN	
-1315.86	3553.58	140	629.50	629.44	4/19/2019	-0.06	3	ANCHOR TRENCH	
-1260.84	3634.01	141	629.50	629.38	4/19/2019	-0.12	3	LINER-BKLN	
-1258.98	3633.27	142	629.50	629.50	4/19/2019	0.00	3	ANCHOR TRENCH	
-1243.45	3719.35	143	629.50	629.38	4/19/2019	-0.12	3	LINER-BKLN	
-1241.45	3719.29	144	629.50	629.51	4/19/2019	0.01	3	ANCHOR TRENCH	
-1243.41	3799.59	145	629.50	629.51	4/19/2019	0.00	3	LINER-BKLN	
-1241.41	3799.59	146	629.50	629.50	4/19/2019	0.00	3	ANCHOR TRENCH	
-1243.36	3901.58	147	629.50	629.47	4/19/2019	-0.03	3	LINER-BKLN	
-1241.36	3901.58	148	629.50	629.49	4/19/2019	-0.01	3	ANCHOR TRENCH	
-1243.30	3999.99	149	629.50	629.45	4/19/2019	-0.05	3	LINER-BKLN	
-1241.30	3999.99	150	629.50	629.57	4/19/2019	0.07	3	ANCHOR TRENCH	
-1243.25	4034.33	151	629.50	629.42	4/19/2019	-0.08	3	LINER-BKLN	
-1241.25	4099.99	152	629.50	629.43	4/19/2019	-0.07	3	ANCHOR TRENCH	
-1243.20	4199.99	153	629.50	629.39	4/19/2019	-0.12	3	LINER-BKLN	
-1241.20	4199.99	154	629.50	629.43	4/19/2019	-0.07	3	ANCHOR TRENCH	
-1243.16	4288.12	155	629.50	629.41	4/19/2019	-0.09	3	LINER-BKLN	
-1241.16	4288.14	156	629.50	629.47	4/19/2019	-0.03	3	ANCHOR TRENCH	
-1265.75	4321.54	157	629.50	629.40	4/19/2019	-0.10	3	LINER-BKLN	
-1264.40	4323.02	158	629.50	629.50	4/19/2019	0.00	3	ANCHOR TRENCH	
-1319.43	4343.64	159	629.50	629.44	4/19/2019	-0.07	3	LINER-BKLN	
-1319.48	4345.72	160	629.50	629.50	4/19/2019	0.00	3	ANCHOR TRENCH	
-1399.73	4344.39	161	629.50	629.32	4/19/2019	-0.18	3	LINER-BKLN	
-1396.71	4346.39	162	629.50	629.44	4/19/2019	-0.06	3	ANCHOR TRENCH	
-1498.71	4345.33	163	629.50	629.35	4/19/2019	-0.15	3	LINER-BKLN	
-1498.69	4347.33	164	629.50	629.45	4/19/2019	-0.05	3	ANCHOR TRENCH	
-1599.61	4346.27	165	629.50	629.36	4/19/2019	-0.14	3	LINER-BKLN	
-1599.58	4348.27	166	629.50	629.49	4/19/2019	-0.01	3	ANCHOR TRENCH	
-1667.08	4346.51	167	629.50	629.36	4/19/2019	-0.14	3	LINER-BKLN	
-1667.08	4348.91	168	629.50	629.50	4/19/2019	0.00	3	ANCHOR TRENCH	
-1688.91	4337.96	169	629.25	629.09	4/19/2019	-0.16	3	LINER-BKLN	
-1690.26	4339.43	170	629.25	629.21	4/19/2019	-0.04	3	ANCHOR TRENCH	
-1699.74	4317.00	171	629.00	628.97	4/19/2019	-0.03	3	LINER-BKLN	
-1701.73	4317.25	172	629.00	628.86	4/19/2019	-0.11	3	ANCHOR TRENCH	
-1701.61	4346.00	173	628.00	627.88	4/19/2019	-0.14	3	LINER-BKLN	
-1703.61	4286.92	174	628.00	627.98	4/19/2019	-0.04	3	ANCHOR TRENCH	
-1706.15	4202.76	175	625.00	624.86	4/19/2019	-0.14	3	LINER-BKLN	
-1708.15	4202.87	176	625.00	624.86	4/19/2019	-0.14	3	ANCHOR TRENCH	
-1709.93	4160.80	177	624.00	623.88	4/19/2019	-0.12	3	LINER-BKLN	
-1711.93	4160.98	178	624.00	623.89	4/19/2019	-0.11	3	ANCHOR TRENCH	
-1713.82	4118.19	179	623.00	622.86	4/19/2019	-0.14	3	LINER-BKLN	
-1715.82	4118.25	180	623.00	622.93	4/19/2019	-0.07	3	ANCHOR TRENCH	
-1714.00	4100.00	181	623.00	622.94	4/19/2019	-0.06	3	LINER-BKLN	
-1716.00	4100.00	182	623.00	622.95	4/19/2019	-0.05	3	ANCHOR TRENCH	
-1714.96	4000.00	183	623.00	622.87	4/19/2019	-0.13	3	LINER-BKLN	
-1716.96	4000.00	184	623.00	622.83	4/19/2019	-0.07	3	ANCHOR TRENCH	
-1715.93	3900.00	185	623.00	622.83	4/19/2019	-0.17	3	LINER-BKLN	
-1717.93	3900.00	186	623.00	622.93	4/19/2019	-0.07	3	ANCHOR TRENCH	
-1716.90	3800.00	187	623.00	622.90	4/19/2019	-0.10	3	LINER-BKLN	
-1718.90	3800.00	188	623.00	622.97	4/19/2019	-0.03	3	ANCHOR TRENCH	
-1717.87	3700.00	189	623.00	622.88	4/19/2019	-0.12	3	LINER-BKLN	
-1719.87	3700.00	190	623.00	622.90	4/19/2019	-0.10	3	ANCHOR TRENCH	
-1718.84	3600.00	191	623.00	622.82	4/19/2019	-0.18	3	LINER-BKLN	
-1720.86	3600.00	192	623.00	622.88	4/19/2019	-0.12	3	ANCHOR TRENCH	
-1719.45	3537.09	193	623.00	622.88	4/19/2019	-0.12	3	LINER-BKLN	
-1721.45	3537.07	194	623.00	623.00	4/19/2019	0.00	3	ANCHOR TRENCH	
-1717.78	3560.00	195	623.00	622.92	4/19/2019	-0.08	3	ANCHOR TRENCH	
-1715.78	3500.00	196	623.00	622.87	4/19/2019	-0.03	3	LINER-BKLN	
-1717.31	3400.00	197	623.00	622.89	4/19/2019	-0.11	3	LINER-BKLN	
-1715.31	3400.00	198	623.00	622.88	4/19/2019	-0.02	3	ANCHOR TRENCH	
-1711.59	3361.54	199	623.00	622.85	4/19/2019	-0.15	3	LINER-BKLN	
-1713.58	3361.36	200	623.00	622.91	4/19/2019	-0.09	3	ANCHOR TRENCH	
-1703.61	3314.72	201	625.00	624.87	4/19/2019	-0.13	3	LINER-BKLN	
-1705.51	3313.86	202	625.00	624.84	4/19/2019	-0.16	3	ANCHOR TRENCH	
-1671.23	3278.85	203	625.00	623.88	4/19/2019	-0.12	3	LINER-BKLN	
-1672.24	3278.08	204	628.00	627.92	4/19/2019	-0.09	3	ANCHOR TRENCH	
-1850.01	3274.43	205	629.00	628.99	4/19/2019	-0.11	3	LINER-BKLN	
-1650.12	3272.42	206	629.00	629.00	4/19/2019	0.00	3	ANCHOR TRENCH	
-1638.18	3275.88	207	629.50	629.41	4/19/2019	-0.09	3	LINER-BKLN	
-1637.86	3273.02	208	629.50	629.45	4/19/2019	-0.05	3	ANCHOR TRENCH	
-1708.75	3400.00	209	622.50	621.40	4/19/2019	-0.10	3	LINER-S DCH	
-1713.79	3500.00	210	621.67	621.53	4/19/2019	-0.14	3	LINER-S DCH	
-1715.66	3537.47	211	621.74	621.64	4/19/2019	-0.10	3	LINER-S DCH	
-1714.12	3600.00	212	621.43	621.35	4/19/2019	-0.08	3	LINER-S DCH	

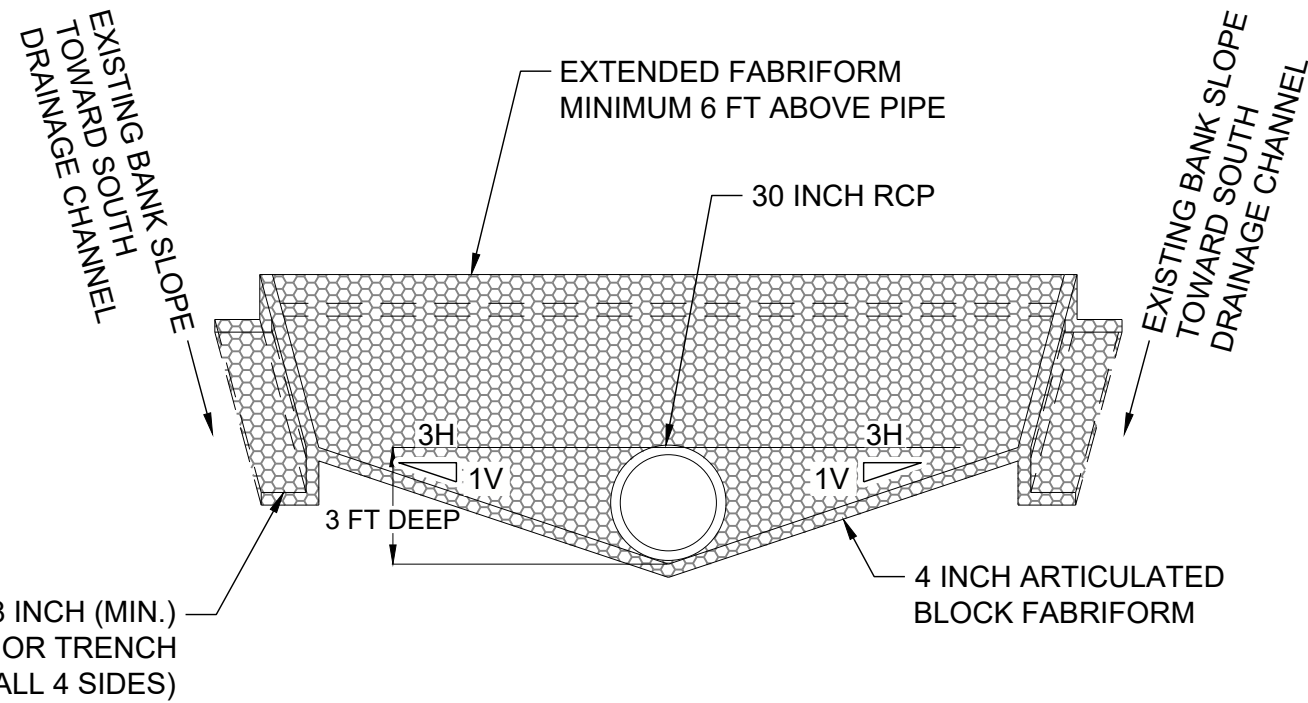
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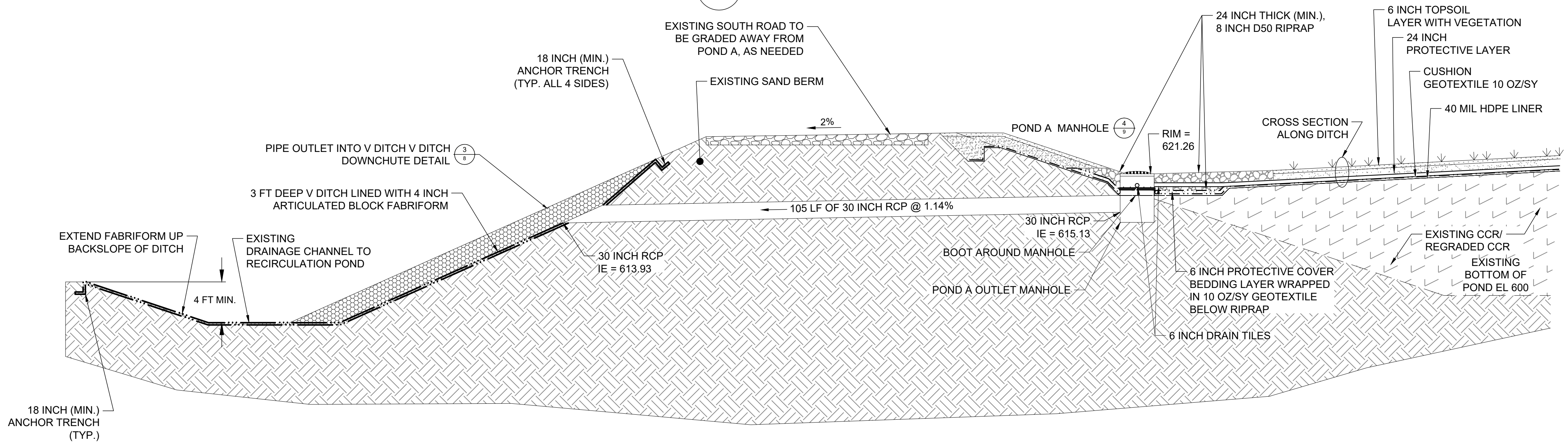
NOT TO SCALE 1 8 TYPICAL POND A COVER DETAIL



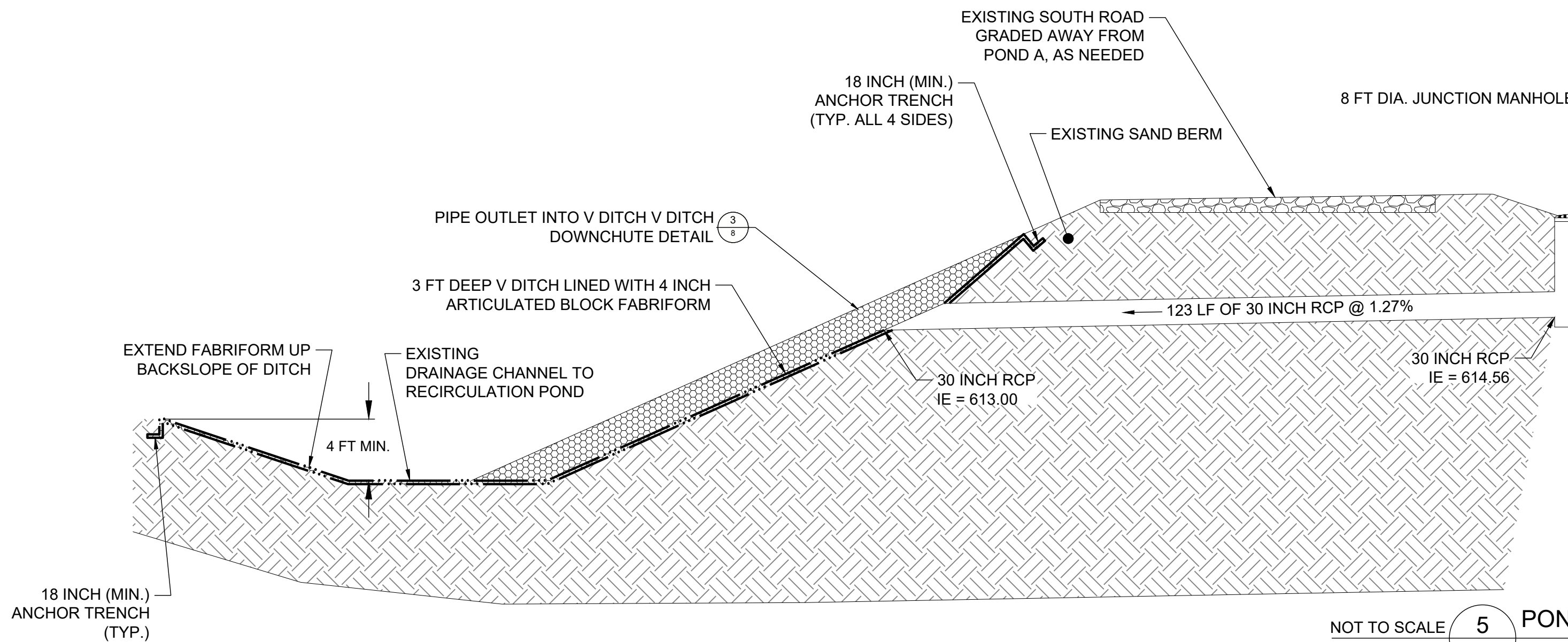
NOT TO SCALE 2 8 TYPICAL ANCHOR TRENCH AND PERIMETER DITCH DETAIL



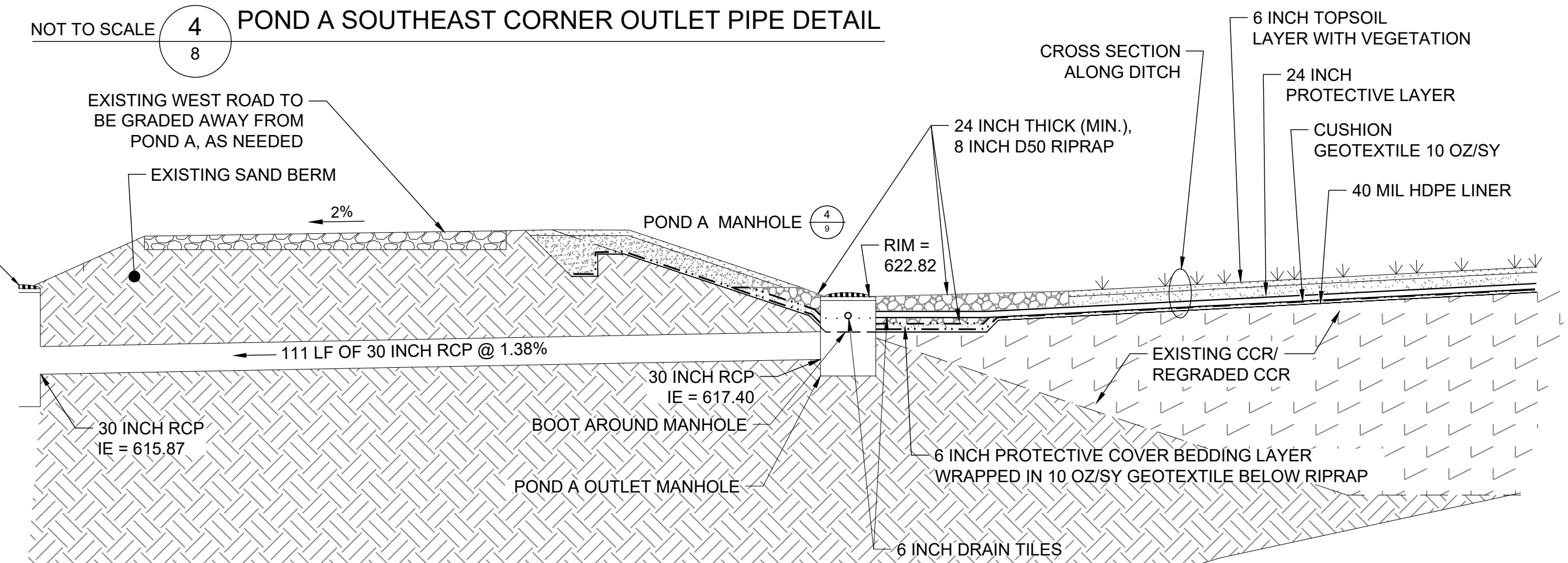
NOT TO SCALE 3 8 TYPICAL PIPE OUTLET INTO V DITCH DOWNCHUTE DETAIL



NOT TO SCALE 4 8 POND A SOUTHEAST CORNER OUTLET PIPE DETAIL

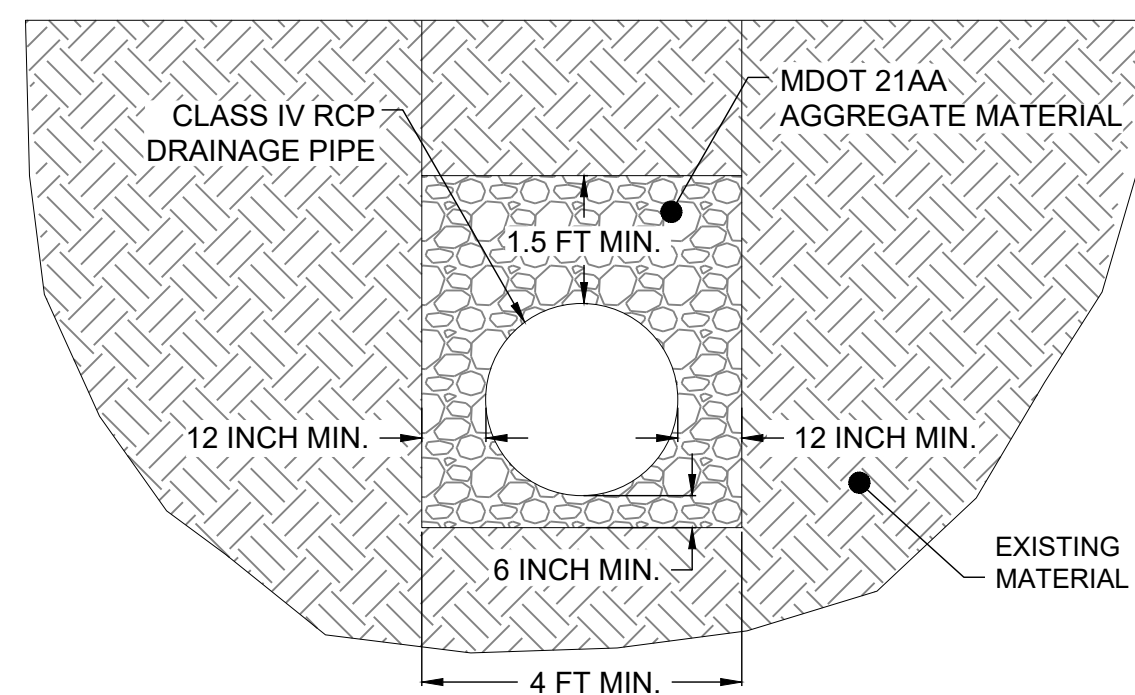


NOT TO SCALE 5 8 POND A SOUTHWEST CORNER OUTLET PIPE DETAIL

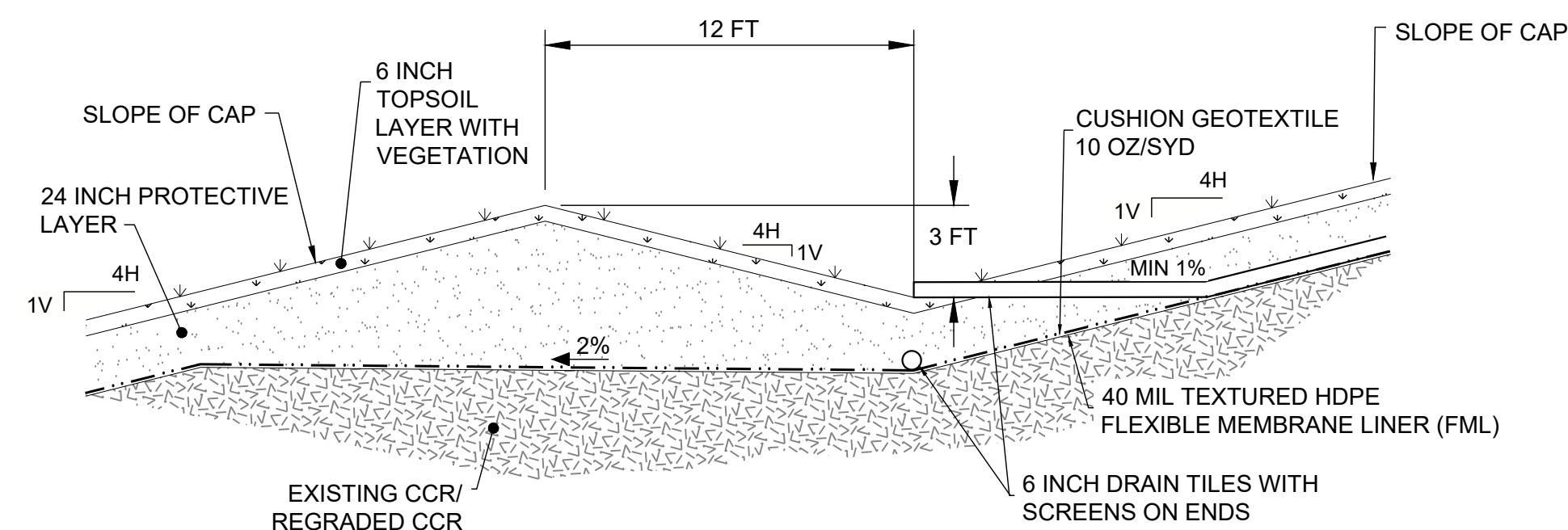


NOTE(S)
1. ALL DIMENSIONS SHOWN ARE NOMINAL OR APPROXIMATE UNLESS SPECIFIED OTHERWISE.

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NOT TO SCALE 1 TYPICAL DRAINAGE PIPE BACKFILL DETAIL



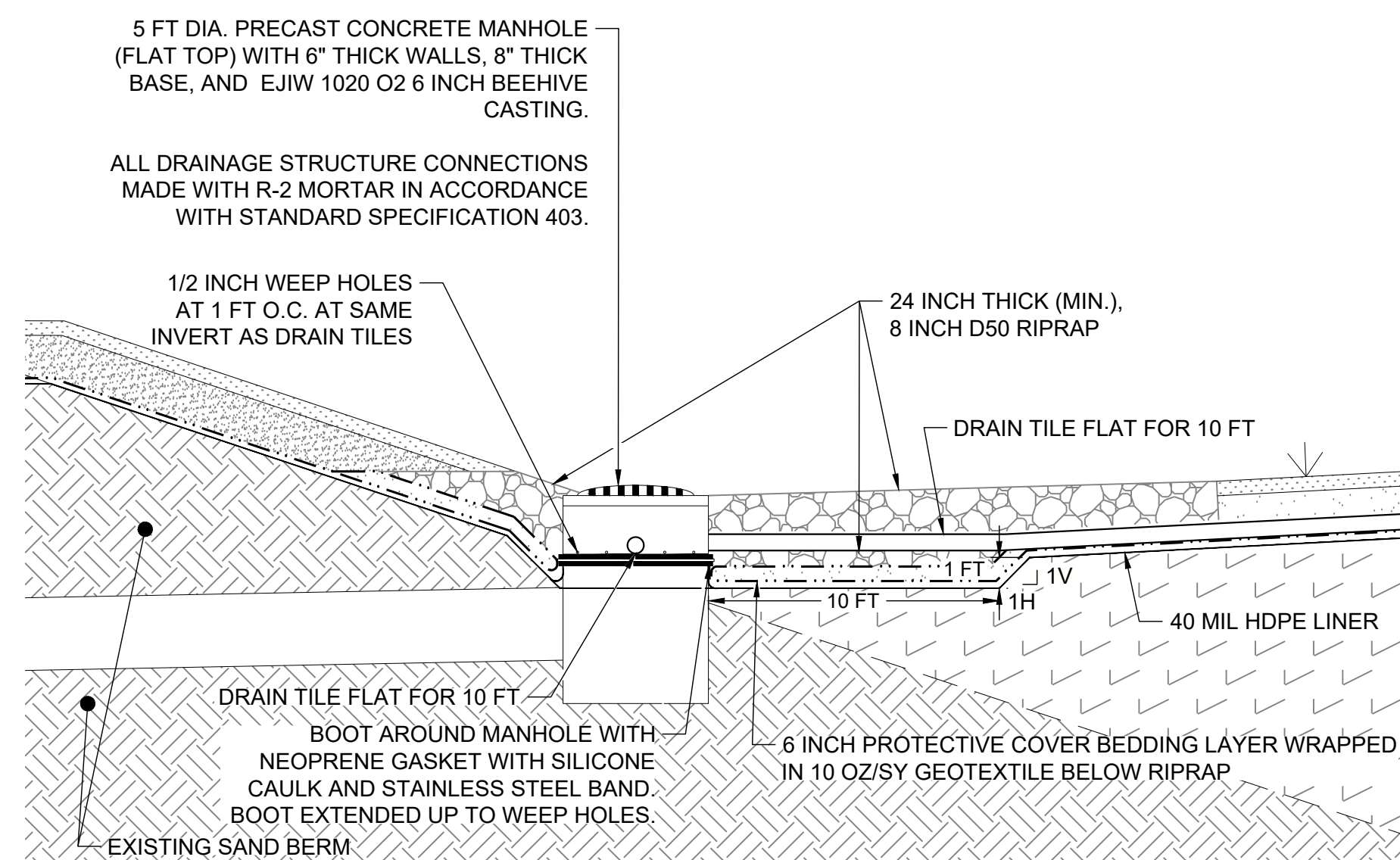
NOT TO SCALE 2 TYPICAL POND A BENCH DRAIN DETAIL

Table 1: Pond A Quantities

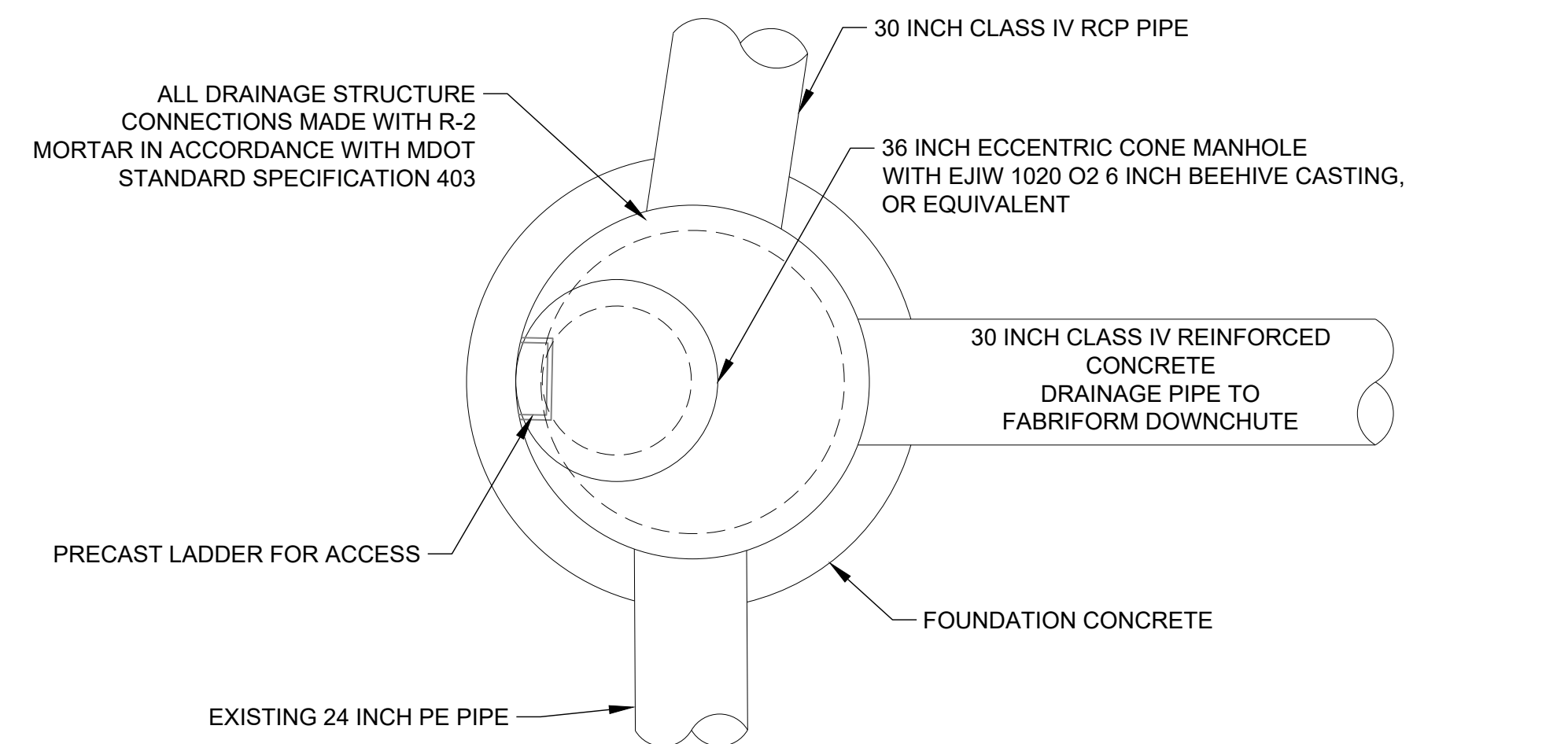
Soil Layer	Description	Approx. Quantity ¹	Units ²
Backfill	Pond A fill	317,000	cys
Protective Cover Soil	24-inch protective cover	34,700	cys
Topsoil	6-inch-thick layer	52,368	syd
Riprap	Erosion protection at manholes	117	syd
Geomembrane	40-mil textured HDPE FML	450,987	sf
Geotextile	10 oz/sy nonwoven geotextile	450,987	sf
Drain Tiles	6-inch diameter ADS single wall heavy duty polyethylene pipe	6,360	lf
RCP	30-inch diameter	339	lf
Manhole and Cover	Five-foot or eight-foot diameter manhole with beehive casting	3	each
Seed, Fertilizer, Mulch	Per MDOT standards and project specifications	52,368	syd

Notes: ¹Approx. Quantity: Quantities were calculated from AutoCAD using Nederveld survey information collected throughout the project.

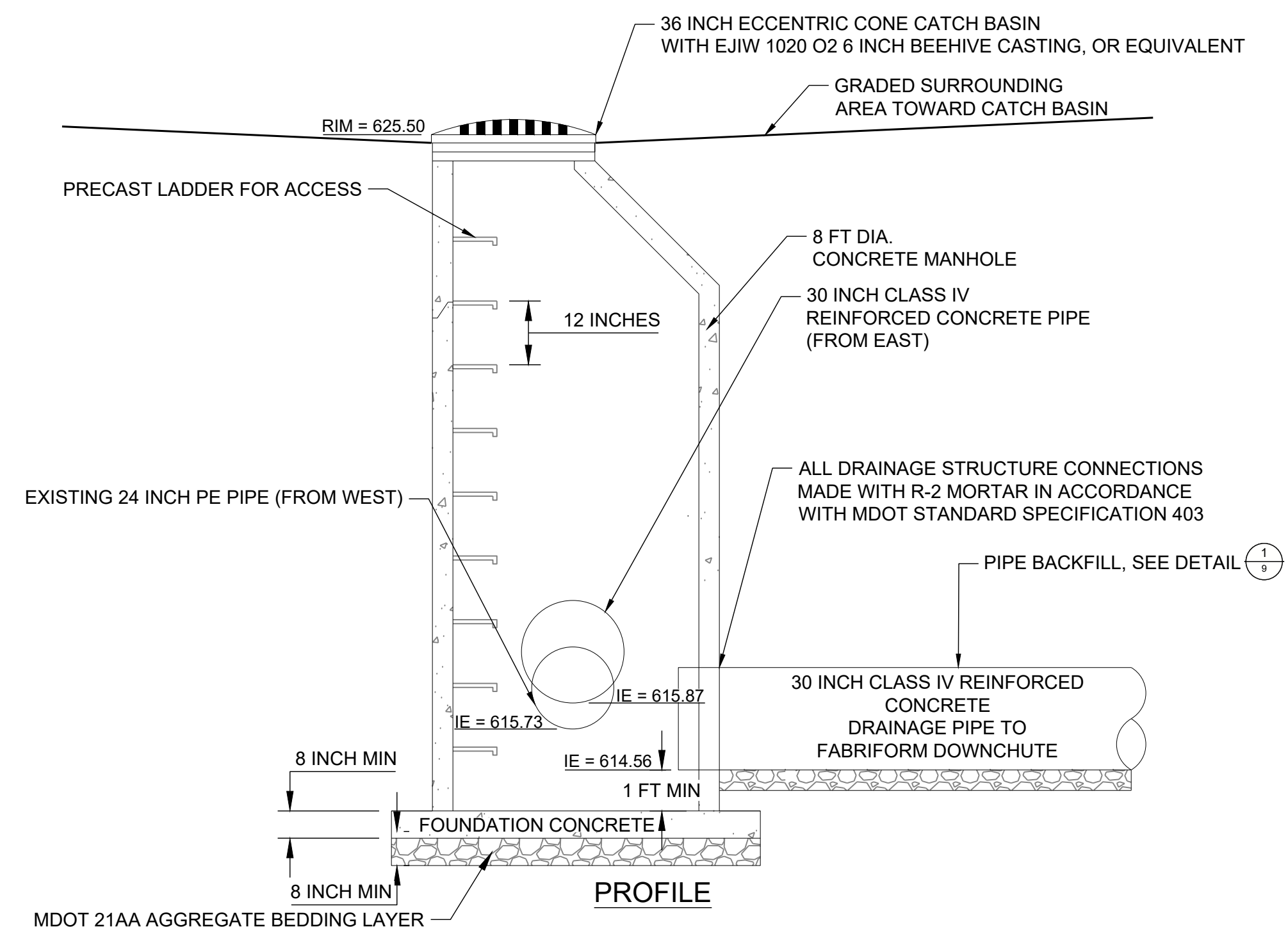
²Units: cys = cubic yards, syd = square yards, lf = linear feet



NOT TO SCALE **4** TYPICAL POND A MANHOLE DETAIL




PLAN



NOT TO SCALE 3 8 FT DIA. JUNCTION MANHOLE DETAIL

NOTE(S)

1. ALL DIMENSIONS SHOWN ARE NOMINAL OR APPROXIMATE UNLESS SPECIFIED OTHERWISE.

																		<div><div></div><div>Consumers Energy</div></div> <div>J.H. CAMPBELL PLANT WEST OLIVE, MI</div>				DETAILS						
																		SIGNATURE		SCALE: NONE		DRAWING NO.		SHEET		REV.		
																				JOB: PT-02043		9		A				
																		NAME										
																		DAVID M. LIST										
																		MICHIGAN P.E. No.										
																		6201037074										
REFERENCE DRAWINGS	REV	DATE	DESCRIPTION	DR	BY	CHK	APP	CO	REV	DATE	DESCRIPTION	DR	BY	CK	APP	CO												
									A	09-30-19	ISSUED FOR RECORD - JHC ASH POND CLOSURES - PT-02043	DS	BW	DL	JP													

APPENDIX B

Project Information

APPENDIX B.1

Golder Personnel

Table B.1: J.H. Campbell Pond A CQA - Golder Personnel

Golder CQA Team Member	Role	Initials
David List, P.E.	Project Director	DML
Jeff Piaskowski, P.E.	Certifying Engineer	JP
Aaron Bickel	Lead Site Engineer	AB
Amy Mandrell	Site Engineer	AM
David Hutchinson	Lead CQA Technician	DH
Donald Winey	CQA Technician	DW
David Alexander	Geosynthetic Lab Manager	DA
Tim Sanders	Soils Lab Manager	TDS

Notes:

CQA = construction quality assurance

APPENDIX B.2

Chesapeake Containment Systems Personnel

Table B.2: J.H. Campbell Pond A CQA - Chesapeake Containment Systems (CCS) Personnel

Golder CQA Team Member	Role	Initials
First Crew		
Moises Tello	Superintendent and QC	MT
Jose Vargas	QC	JV
Ernesto Conde	Master Seamer	EC
Ignacio Gonzalez	Technician	IG
Victor Guterrez	Master Seamer	VG
Heriberto A. Martinez	Master Seamer	HM
Jorge Martinez	Master Seamer	JM
Uriel Muniz	Master Seamer	UM
Gerardo Parada	Technician in Training	GP
Fausto Saenz	Technician in Training	FS
Celestino Tello	Master Seamer	CT
Efrain Tello	Master Seamer	ET
Natolio Tello	Master Seamer	NT
Second Crew		
Barbarito Flores	Superintendent and QC	BF
Luis Moran	QC	LM
Edgar Ceron	Master Seamer	EC
Marcelino Ceron	Master Seamer	MC
Miguel Chavero	Master Seamer	MC
Carmelo Ferretiz	Master Seamer	CF
Orlando Narvaez	Master Seamer	ON
Garcia B Omar	Technician in Training	GO
Cristian Paz	Master Seamer	CP
Marcial Ramos	Master Seamer	MR
Diego Rivas	Master Seamer	DR
Jose Yanez	Master Seamer	JY

Notes:

CQA = construction quality assurance

QC = installer's quality control

INSTALLATION CREW RESUMES

JH Campbell
Ash Pond Closure
April 2019

SUPERINTENDENT **Moises Tello**

Tello, Jose Moises

Material	Quantity	Project	Location	Completion Date	
10-oz Geotextile	1,075,500 SF	Duke Mayo Water Redirect	Roxboro	NC	2 /3 /2019
GCL	684,000 SF	Duke Mayo Water Redirect	Roxboro	NC	2 /3 /2019
16-oz Geotextile	571,500 SF	Duke Mayo Water Redirect	Roxboro	NC	2 /3 /2019
60-mil HDPE Textured	927,234 SF	Duke Mayo Water Redirect	Roxboro	NC	2 /3 /2019
16-oz Geotextile	808,000 SF	Duke Roxboro Water Redirect	Semora	NC	12/15/2018
10-oz Geotextile	118,000 SF	Duke Roxboro Water Redirect	Semora	NC	12/15/2018
GCL	808,000 SF	Duke Roxboro Water Redirect	Semora	NC	12/15/2018
60-mil HDPE	808,000 SF	Duke Roxboro Water Redirect	Semora	NC	12/15/2018
16-oz Geotextile	455,000 SF	Duke Cliffside - Water Direct	Mooresboro	NC	11/29/2018
GCL	300,000 SF	Duke Cliffside - Water Direct	Mooresboro	NC	11/29/2018
60-mil HDPE Textured	300,000 SF	Duke Cliffside - Water Direct	Mooresboro	NC	11/29/2018
30-mil PVC	30,500 SF	Duke Cliffside - Water Direct	Mooresboro	NC	11/29/2018
Geocomposite	1,374,382 SF	Winyah LF Area 1	Georgetown	SC	9 /6 /2018
GCL	1,374,382 SF	Winyah LF Area 1	Georgetown	SC	9 /6 /2018
60-mil HDPE	1,394,382 SF	Winyah LF Area 1	Georgetown	SC	9 /6 /2018
40-mil LLDPE Textured	1,415,700 SF	TVA Kingston Stilling Pond Closure Harriman		TN	6 /26/2018
Geocomposite	1,415,700 SF	TVA Kingston Stilling Pond Closure Harriman		TN	6 /26/2018
12-oz Geotextile	1,415,700 SF	TVA Kingston Stilling Pond Closure Harriman		TN	6 /26/2018
60-mil HDPE Textured	350,000 SF	WestRock Covington Cell	Covington	VA	6 /21/2018
Geocomposite	350,000 SF	WestRock Covington Cell	Covington	VA	6 /21/2018
Rain Cover	350,000 SF	WestRock Covington Cell	Covington	VA	6 /21/2018
40-mil HDPE	300,000 SF	WestRock Covington Cell	Covington	VA	6 /21/2018
12-oz Geotextile	300,000 SF	WestRock Covington Cell	Covington	VA	6 /21/2018
GCL	350,000 SF	WestRock Covington Cell	Covington	VA	6 /21/2018

Geocomposite	465,000 SF	King George Cell 16B	King George	VA	5 /23/2018
60-mil HDPE	930,000 SF	King George Cell 16B	King George	VA	5 /23/2018
GCL	930,000 SF	King George Cell 16B	King George	VA	5 /23/2018
Geotextile	465,000 SF	King George Cell 16B	King George	VA	5 /23/2018
40-mil HDPE	465,000 SF	King George Cell 16B	King George	VA	5 /23/2018
Geocomposite	1,045,440 SF	WM Atlantic LF Cell 11A, 11B and 11C Cells	Waverly	VA	4 /27/2018
GCL	1,045,440 SF	WM Atlantic LF Cell 11A, 11B and 11C Cells	Waverly	VA	4 /27/2018
60-mil HDPE Textured	1,045,440 SF	WM Atlantic LF Cell 11A, 11B and 11C Cells	Waverly	VA	4 /27/2018
40-mil HDPE Textured	1,045,440 SF	WM Atlantic LF Cell 11A, 11B and 11C Cells	Waverly	VA	4 /27/2018
Rain Cover	1,045,440 SF	WM Atlantic LF Cell 11A, 11B and 11C Cells	Waverly	VA	4 /27/2018
60-mil HDPE Smooth	70,875 SF	Bay Valley Foods Pond #3	Faison	NC	4 /13/2018
60-mil HDPE	1,000,000 SF	Plant Hammond Ash Pond 3 Closure	Rome	GA	1 /25/2018
Geocomposite	1,000,000 SF	Plant Hammond Ash Pond 3 Closure	Rome	GA	1 /25/2018
60-mil HDPE Textured	301,371 SF	Volunteer Landfill	Oneida	TN	12/3 /2017
40-mil HDPE Textured	1,100 LF	Volunteer Landfill	Oneida	TN	12/3 /2017
Geocomposite	301,371 SF	Volunteer Landfill	Oneida	TN	12/3 /2017
40-mil LLDPE Textured	2,326,755 SF	TVA Colbert Ash Pond 4 Closure	Tuscumbia	AL	11/18/2017
Geotextile	2,326,755 SF	TVA Colbert Ash Pond 4 Closure	Tuscumbia	AL	11/18/2017
Geocomposite	2,326,755 SF	TVA Colbert Ash Pond 4 Closure	Tuscumbia	AL	11/18/2017
GCL	189,615 SF	Rhea County Landfill	Dayton	TN	11/6 /2017
16-oz Geotextile	189,615 SF	Rhea County Landfill	Dayton	TN	11/6 /2017
60-mil HDPE Textured	189,615 SF	Rhea County Landfill	Dayton	TN	11/6 /2017
60-mil HDPE Textured	113,940 SF	Bradley Co LF - Module 5	McDonald	TN	10/27/2017

8-mil Dura Skrim	440,000 SF	Bradley Co LF - Module 5	McDonald	TN	10/27/2017
8-oz Geotextile	113,940 SF	Bradley Co LF - Module 5	McDonald	TN	10/27/2017
GCL	113,940 SF	Bradley Co LF - Module 5	McDonald	TN	10/27/2017
Geocomposite	410,000 SF	HRRC Landfill - Cell 5	Virginia Beach	VA	10/20/2017
60-mil HDPE	631,000 SF	HRRC Landfill - Cell 5	Virginia Beach	VA	10/20/2017
Geocomposite (2)	222,000 SF	HRRC Landfill - Cell 5	Virginia Beach	VA	10/20/2017
Geocomposite	663,414 SF	TVA Bull Run Sluice Channel	Clinton	TN	8 /4 /2017
12-oz Geotextile.	124,690 SF	TVA Bull Run Sluice Channel	Clinton	TN	8 /4 /2017
40-mil LLDPE Textured (2)	663,414 SF	TVA Bull Run Sluice Channel	Clinton	TN	8 /4 /2017
12-oz Geotextile	663,414 SF	TVA Bull Run Sluice Channel	Clinton	TN	8 /4 /2017
40-mil LLDPE Textured	124,690 SF	TVA Bull Run Sluice Channel	Clinton	TN	8 /4 /2017
60-mil LLDPE Textured	11,000 SF	TVA Bull Run Sluice Channel	Clinton	TN	8 /4 /2017
Geocomposite	203,000 SF	Procter and Gamble Site - Ash Pond Closure	Cincinnati	OH	8 /2 /2017
40-mil LLDPE	203,000 SF	Procter and Gamble Site - Ash Pond Closure	Cincinnati	OH	8 /2 /2017
GCL	18,000 SF	Georgia Power - Plant Yates Temporary Water Treatment Pads	Newnan	GA	7 /28/2017
60-mil HDPE	18,000 SF	Georgia Power - Plant Yates Temporary Water Treatment Pads	Newnan	GA	7 /28/2017
60-mil HDPE Textured	73,000 SF	AEP John Amos	Winfield	WV	7 /17/2017
10-oz Geotextile	146,000 SF	AEP John Amos	Winfield	WV	7 /17/2017
40-mil LLDPE	550,000 SF	NIPSCO	Wheatfield	IN	7 /7 /2017
Geocomposite	47,000 SF	NIPSCO	Wheatfield	IN	7 /7 /2017
Geocomposite	1,200,000 SF	Atlantic Cell 7A-7C Addendum	Waverly	VA	
GCL	1,200,000 SF	Atlantic Cell 7A-7C Addendum	Waverly	VA	
60-mil HDPE	1,200,000 SF	Atlantic Cell 7A-7C Addendum	Waverly	VA	
40-mil HDPE	1,200,000 SF	Atlantic Cell 7A-7C Addendum	Waverly	VA	

60-mil HDPE Textured	90,090 SF	Dominion Power Clover Ponds	Clover	VA
60-mil HDPE Textured (2)	78,840 SF	Dominion Power Clover Ponds	Clover	VA
32-oz Geotextile	90,090 SF	Dominion Power Clover Ponds	Clover	VA
32-oz Geotextile (2)	78,840 SF	Dominion Power Clover Ponds	Clover	VA
Rain Cover (2)	285,777 SF	Dominon Brema Power Station - EAP Excavation & NAP Fill	Brema Bluff	VA
Rain Cover	3,286,386 SF	Dominon Brema Power Station - EAP Excavation & NAP Fill	Brema Bluff	VA
Wind Defender	3,286,386 SF	Dominon Brema Power Station - EAP Excavation & NAP Fill	Brema Bluff	VA
16-oz Geotextile	18,358 SF	Duke Allen WTS Pad	Belmont	NC
60-mil HDPE	18,358 SF	Duke Allen WTS Pad	Belmont	NC
Rain Cover	230,000 SF	Duke Mayo Monofill LF Emergency Cover	Roxboro	NC
Geotextile	40,400 SF	Duke Mayo Stormwater Redirect	Roxboro	NC
30-mil HDPE	40,400 SF	Duke Mayo Stormwater Redirect	Roxboro	NC
GCL	51,700 SF	Duke Mayo Stormwater Redirect	Roxboro	NC
60-mil HDPE	51,700 SF	Duke Mayo Stormwater Redirect	Roxboro	NC
16-oz Geotextile	7,404 SF	Duke Mayo Water Treatment System Pad	Roxboro	NC
40-mil LLDPE	45,448 SF	Duke Mayo Water Treatment System Pad	Roxboro	NC
8-oz Geotextile	38,044 SF	Duke Mayo Water Treatment System Pad	Roxboro	NC
40-mil LLDPE Textured	197,500 SF	Duke Roxboro - Area A Closure	Semora	NC
Geocomposite	197,500 SF	Duke Roxboro - Area A Closure	Semora	NC
40-mil HDPE Textured	62,700 SF	LCT Laurel Plant Sediment Ponds	Central City	PA
Geocomposite	300,000 SF	Raven Power Lot 15	Baltimore	MD
8-oz Geotextile	300,000 SF	Raven Power Lot 15	Baltimore	MD
Rain Cover	150,000 SF	Raven Power Lot 15	Baltimore	MD

60-mil HDPE	360,000 SF	Raven Power Lot 15	Baltimore	MD
Geotextile	415,000 SF	Santee Cooper - Winyah Ponds	Georgetown	SC
GCL	445,000 SF	Santee Cooper - Winyah Ponds	Georgetown	SC
Geocomposite	163,000 SF	Santee Cooper - Winyah Ponds	Georgetown	SC
60-mil HDPE	415,000 SF	Santee Cooper - Winyah Ponds	Georgetown	SC
60-mil LLDPE	427,000 SF	Trimble Co CCR Ponds	Bedford	KY
GCL	414,000 SF	Trimble Co CCR Ponds	Bedford	KY
Geotextile	414,000 SF	Trimble Co CCR Ponds	Bedford	KY
60-mil HDPE Textured	691,375 SF	WM Maplewood Phase 23/26 Cells Jetersville		VA
60-mil HDPE Textured (2)	691,375 SF	WM Maplewood Phase 23/26 Cells Jetersville		VA
Geonet	691,375 SF	WM Maplewood Phase 23/26 Cells Jetersville		VA
GCL	691,375 SF	WM Maplewood Phase 23/26 Cells Jetersville		VA

QAQC
Jose Vargas

Vargas, Jose

Material	Quantity	Project	Location	Completion Date	
60-mil HDPE	808,000 SF	Duke Roxboro Water Redirect	Semora	NC	12/15/2018
GCL	808,000 SF	Duke Roxboro Water Redirect	Semora	NC	12/15/2018
16-oz Geotextile	808,000 SF	Duke Roxboro Water Redirect	Semora	NC	12/15/2018
10-oz Geotextile	118,000 SF	Duke Roxboro Water Redirect	Semora	NC	12/15/2018
10-oz Geotextile	204,732 SF	Republic Honeygo Ph 3 Cap Install Only	Perry Hall	MD	12/14/2018
Geocomposite	400,752 SF	Republic Honeygo Ph 3 Cap Install Only	Perry Hall	MD	12/14/2018
40-mil LLDPE Textured	204,732 SF	Republic Honeygo Ph 3 Cap Install Only	Perry Hall	MD	12/14/2018
30-mil PVC	30,500 SF	Duke Cliffside - Water Direct	Mooresboro	NC	11/29/2018
GCL	300,000 SF	Duke Cliffside - Water Direct	Mooresboro	NC	11/29/2018
60-mil HDPE Textured	300,000 SF	Duke Cliffside - Water Direct	Mooresboro	NC	11/29/2018
16-oz Geotextile	455,000 SF	Duke Cliffside - Water Direct	Mooresboro	NC	11/29/2018
RPP	90,000 SF	ICS - Peterson Farms	Shelby	MI	11/5 /2018
GCL	90,000 SF	ICS - Peterson Farms	Shelby	MI	11/5 /2018
GCL	52,300 SF	Stone's Throw LF Cell 6A	Tallassee	AL	9 /9 /2018
Geocomposite	52,300 SF	Stone's Throw LF Cell 6A	Tallassee	AL	9 /9 /2018
60-mil HDPE	52,300 SF	Stone's Throw LF Cell 6A	Tallassee	AL	9 /9 /2018
60-mil HDPE	1,394,382 SF	Winyah LF Area 1	Georgetown	SC	9 /6 /2018
Geocomposite	1,374,382 SF	Winyah LF Area 1	Georgetown	SC	9 /6 /2018
GCL	1,374,382 SF	Winyah LF Area 1	Georgetown	SC	9 /6 /2018
60-mil HDPE Smooth	5,500 SF	Marmaduke Frac Tank	Marmaduke	AR	8 /25/2018
60-mil HDPE	360,300 SF	Mountain View Reclamation Cell 21B2	Greencastle	PA	8 /6 /2018
16-oz Geotextile	179,300 SF	Mountain View Reclamation Cell 21B2	Greencastle	PA	8 /6 /2018

60-mil HDPE	28,750 SF	Pine Ridge LF Stormwater Diversion Berm	Griffin	GA	7 /23/2018
4-oz Geotextile	27,990 SF	Plant Gaston Wastewater Pond	Wilsonville	AL	3 /27/2018
Gundseal	149,709 SF	Plant Gaston Wastewater Pond	Wilsonville	AL	3 /27/2018
50-mil HDPE Textured	66,704 SF	Plant Gaston Wastewater Pond	Wilsonville	AL	3 /27/2018
60-mil HDPE Textured	43,560 SF	Mount Storm Pyrite Pond	Mt Storm	WV	12/16/2017
32-oz Geotextile	43,560 SF	Mount Storm Pyrite Pond	Mt Storm	WV	12/16/2017
GCL	43,560 SF	Mount Storm Pyrite Pond	Mt Storm	WV	12/16/2017
60-mil HDPE	1,200,000 SF	Atlantic Cell 7A-7C Addendum	Waverly	VA	
Geocomposite	1,200,000 SF	Atlantic Cell 7A-7C Addendum	Waverly	VA	
GCL	1,200,000 SF	Atlantic Cell 7A-7C Addendum	Waverly	VA	
40-mil HDPE	1,200,000 SF	Atlantic Cell 7A-7C Addendum	Waverly	VA	
Wind Defender	3,898,620 SF	Dominion Chesterfield Lower Ash Pond	Chester	VA	
8-oz Geotextile	457,380 SF	Dominion Chesterfield Lower Ash Pond	Chester	VA	
40-mil HDPE Textured	4,356,000 SF	Dominion Chesterfield Lower Ash Pond	Chester	VA	
60-mil HDPE Textured (2)	78,840 SF	Dominion Power Clover Ponds	Clover	VA	
60-mil HDPE Textured	90,090 SF	Dominion Power Clover Ponds	Clover	VA	
32-oz Geotextile (2)	78,840 SF	Dominion Power Clover Ponds	Clover	VA	
32-oz Geotextile	90,090 SF	Dominion Power Clover Ponds	Clover	VA	
GCL	135,000 SF	Duke Belews Creek - North Coal Runoff Basin	Belews Creek	NC	
60-mil HDPE	135,000 SF	Duke Belews Creek - North Coal Runoff Basin	Belews Creek	NC	
16-oz Geotextile	270,000 SF	Duke Belews Creek - North Coal Runoff Basin	Belews Creek	NC	
Rain Cover	230,000 SF	Duke Mayo Monofill LF Emergency Cover	Roxboro	NC	

40-mil LLDPE (2)	229,649 SF	Halls Mill Creek Lift Station Basin	Mobile	AL
40-mil LLDPE	654 LF	Halls Mill Creek Lift Station Basin	Mobile	AL
Geotextile	392,931 SF	Kapstone Phase 3 LF Cell	Roanoke Rapids	NC
GCL	392,931 SF	Kapstone Phase 3 LF Cell	Roanoke Rapids	NC
60-mil HDPE	392,931 SF	Kapstone Phase 3 LF Cell	Roanoke Rapids	NC
Rain Cover	124,000 SF	LCS North Mountain Raincover Repair	Hedgesville	WV
Rain Cover	150,000 SF	Raven Power Lot 15	Baltimore	MD
60-mil HDPE	360,000 SF	Raven Power Lot 15	Baltimore	MD
Geocomposite	300,000 SF	Raven Power Lot 15	Baltimore	MD
8-oz Geotextile	300,000 SF	Raven Power Lot 15	Baltimore	MD

FIELD TEAM

Ernesto Conde*
Ignacio Gonzalez
Victor Guiterrez
Heriberto A. Martinez
Jorge Martinez
Uriel Muniz
Gerardo Parada*
Fausto Saenz
Celestino Tello
Efrain Tello
Natolio Tello

*Denotes 2019 new hire

Gonzalez Velazquez, Ignac

Material	Quantity	Project	Location	Completion Date
GCL	1,200,000 SF	Atlantic Cell 7A-7C Addendum	Waverly	VA
60-mil HDPE	1,200,000 SF	Atlantic Cell 7A-7C Addendum	Waverly	VA
40-mil HDPE	1,200,000 SF	Atlantic Cell 7A-7C Addendum	Waverly	VA
Geocomposite	1,200,000 SF	Atlantic Cell 7A-7C Addendum	Waverly	VA
32-oz Geotextile (2)	78,840 SF	Dominion Power Clover Ponds	Clover	VA
60-mil HDPE Textured	90,090 SF	Dominion Power Clover Ponds	Clover	VA
60-mil HDPE Textured (2)	78,840 SF	Dominion Power Clover Ponds	Clover	VA
32-oz Geotextile	90,090 SF	Dominion Power Clover Ponds	Clover	VA
60-mil HDPE Textured (2)	691,375 SF	WM Maplewood Phase 23/26 Cells Jetersville		VA
Geonet	691,375 SF	WM Maplewood Phase 23/26 Cells Jetersville		VA
GCL	691,375 SF	WM Maplewood Phase 23/26 Cells Jetersville		VA
60-mil HDPE Textured	691,375 SF	WM Maplewood Phase 23/26 Cells Jetersville		VA

Gutierrez, Victor

Material	Quantity	Project	Location	Completion Date	
16-oz Geotextile	571,500 SF	Duke Mayo Water Redirect	Roxboro	NC	2 /3 /2019
60-mil HDPE Textured	927,234 SF	Duke Mayo Water Redirect	Roxboro	NC	2 /3 /2019
10-oz Geotextile	1,075,500 SF	Duke Mayo Water Redirect	Roxboro	NC	2 /3 /2019
GCL	684,000 SF	Duke Mayo Water Redirect	Roxboro	NC	2 /3 /2019
60-mil HDPE	808,000 SF	Duke Roxboro Water Redirect	Semora	NC	12/15/2018
GCL	808,000 SF	Duke Roxboro Water Redirect	Semora	NC	12/15/2018
16-oz Geotextile	808,000 SF	Duke Roxboro Water Redirect	Semora	NC	12/15/2018
10-oz Geotextile	118,000 SF	Duke Roxboro Water Redirect	Semora	NC	12/15/2018
40-mil LLDPE Textured	1,415,700 SF	TVA Kingston Stilling Pond Closure	Harriman	TN	6 /26/2018
12-oz Geotextile	1,415,700 SF	TVA Kingston Stilling Pond Closure	Harriman	TN	6 /26/2018
Geocomposite	1,415,700 SF	TVA Kingston Stilling Pond Closure	Harriman	TN	6 /26/2018
GCL	350,000 SF	WestRock Covington Cell	Covington	VA	6 /21/2018
Geocomposite	350,000 SF	WestRock Covington Cell	Covington	VA	6 /21/2018
Rain Cover	350,000 SF	WestRock Covington Cell	Covington	VA	6 /21/2018
12-oz Geotextile	300,000 SF	WestRock Covington Cell	Covington	VA	6 /21/2018
60-mil HDPE Textured	350,000 SF	WestRock Covington Cell	Covington	VA	6 /21/2018
40-mil HDPE	300,000 SF	WestRock Covington Cell	Covington	VA	6 /21/2018
60-mil HDPE	1,000,000 SF	Plant Hammond Ash Pond 3 Closure	Rome	GA	1 /25/2018
Geocomposite	1,000,000 SF	Plant Hammond Ash Pond 3 Closure	Rome	GA	1 /25/2018
Geocomposite	30,487 SF	Northern LF Cells 1 & 2 Closure and Leachate Ponds	Westminster	MD	12/15/2017
60 mil Textured HDPE Secondary	30,487 SF	Northern LF Cells 1 & 2 Closure and Leachate Ponds	Westminster	MD	12/15/2017
60-mil HDPE Textured	30,487 SF	Northern LF Cells 1 & 2 Closure and Leachate Ponds	Westminster	MD	12/15/2017

GCL	30,487 SF	Northern LF Cells 1 & 2 Closure and Leachate Ponds	Westminster	MD	12/15/2017
8-oz Geotextile	840,000 SF	Northern LF Cells 1 & 2 Closure and Leachate Ponds	Westminster	MD	12/15/2017
50-mil HDPE (Super Gripnet)	875,000 SF	Northern LF Cells 1 & 2 Closure and Leachate Ponds	Westminster	MD	12/15/2017
Geocomposite	301,371 SF	Volunteer Landfill	Oneida	TN	12/3 /2017
60-mil HDPE Textured	301,371 SF	Volunteer Landfill	Oneida	TN	12/3 /2017
40-mil HDPE Textured	1,100 LF	Volunteer Landfill	Oneida	TN	12/3 /2017
Geocomposite	2,326,755 SF	TVA Colbert Ash Pond 4 Closure	Tuscumbia	AL	11/18/2017
Geotextile	2,326,755 SF	TVA Colbert Ash Pond 4 Closure	Tuscumbia	AL	11/18/2017
40-mil LLDPE Textured	2,326,755 SF	TVA Colbert Ash Pond 4 Closure	Tuscumbia	AL	11/18/2017
60-mil HDPE Textured	189,615 SF	Rhea County Landfill	Dayton	TN	11/6 /2017
16-oz Geotextile	189,615 SF	Rhea County Landfill	Dayton	TN	11/6 /2017
GCL	189,615 SF	Rhea County Landfill	Dayton	TN	11/6 /2017
Geocomposite	410,000 SF	HRRC Landfill - Cell 5	Virginia Beach	VA	10/20/2017
60-mil HDPE	631,000 SF	HRRC Landfill - Cell 5	Virginia Beach	VA	10/20/2017
Geocomposite (2)	222,000 SF	HRRC Landfill - Cell 5	Virginia Beach	VA	10/20/2017
12-oz Geotextile.	124,690 SF	TVA Bull Run Sluice Channel	Clinton	TN	8 /4 /2017
12-oz Geotextile	663,414 SF	TVA Bull Run Sluice Channel	Clinton	TN	8 /4 /2017
40-mil LLDPE Textured	124,690 SF	TVA Bull Run Sluice Channel	Clinton	TN	8 /4 /2017
60-mil LLDPE Textured	11,000 SF	TVA Bull Run Sluice Channel	Clinton	TN	8 /4 /2017
40-mil LLDPE Textured (2)	663,414 SF	TVA Bull Run Sluice Channel	Clinton	TN	8 /4 /2017
Geocomposite	663,414 SF	TVA Bull Run Sluice Channel	Clinton	TN	8 /4 /2017
Geocomposite	203,000 SF	Procter and Gamble Site - Ash Pond Closure	Cincinnati	OH	8 /2 /2017
40-mil LLDPE	203,000 SF	Procter and Gamble Site - Ash Pond Closure	Cincinnati	OH	8 /2 /2017
Rain Cover (2)	435,600 SF	2017 Fairless Raincover	Morrisville	PA	8 /1 /2017

Rain Cover	400,752 SF	2017 Fairless Raincover	Morrisville	PA	8 /1 /2017
60-mil HDPE	18,000 SF	Georgia Power - Plant Yates Temporary Water Treatment Pads	Newnan	GA	7 /28/2017
GCL	18,000 SF	Georgia Power - Plant Yates Temporary Water Treatment Pads	Newnan	GA	7 /28/2017
60-mil HDPE	1,853,408 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
36-mil RPE Floating Cover	777,917 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
80-mil HDPE Floating Cover	186,375 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
GCL	1,639,049 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
60-mil LLDPE Floating Cover	209,982 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
60-mil HDPE Textured	73,000 SF	AEP John Amos	Winfield	WV	7 /17/2017
10-oz Geotextile	146,000 SF	AEP John Amos	Winfield	WV	7 /17/2017
40-mil LLDPE	550,000 SF	NIPSCO	Wheatfield	IN	7 /7 /2017
Geocomposite	47,000 SF	NIPSCO	Wheatfield	IN	7 /7 /2017
10-oz Geotextile	115,995 SF	Rumpke Pendleton Co Cell 4A	Butler	KY	7 /4 /2017
60-mil HDPE Textured	302,981 SF	Rumpke Pendleton Co Cell 4A	Butler	KY	7 /4 /2017
Geocomposite	185,884 SF	Rumpke Pendleton Co Cell 4A	Butler	KY	7 /4 /2017
60-mil HDPE	85,500 SF	WM Atlantic Waste WWTP Ponds	Waverly	VA	12/23/2016
80-mil LLDPE	164,329 SF	WM Atlantic LF Floating Covers	Waverly	VA	12/2 /2016
60-mil LLDPE	187,070 SF	WM Atlantic LF Floating Covers	Waverly	VA	12/2 /2016
Geocomposite	30,000 SF	Midshore LF Exposed Cap	Easton	MD	11/1 /2016
60-mil HDPE	3,000,000 SF	Midshore LF Exposed Cap	Easton	MD	11/1 /2016
60-mil HDPE Textured	1,463,000 SF	WM Atlantic Waste Temp Cap Phase 1	Waverly	VA	8 /22/2016
Wind Defender	315,396 SF	WM Atlantic Waste Western Slope Cap	Waverly	VA	8 /7 /2016

60-mil HDPE	315,396 SF	WM Atlantic Waste Western Slope Cap	Waverly	VA	8 /7 /2016
80-mil HDPE Embedment Liner	37,700 SF	Patapsco WWTP 845R	Baltimore	MD	7 /14/2016
40-mil LLDPE Textured	900,000 SF	Spencer's East Site Rubble Landfill Closure	Abingdon	MD	5 /21/2016
Geocomposite	900,000 SF	Spencer's East Site Rubble Landfill Closure	Abingdon	MD	5 /21/2016
30-mil PVC	6,980 SF	Randall Recreation Center Ponds	Washington	DC	12/11/2015
16-oz Geotextile	513,000 SF	Harford County	Street	MD	12/4 /2015
8-oz Geotextile	513,000 SF	Harford County	Street	MD	12/4 /2015
60-mil HDPE	513,000 SF	Harford County	Street	MD	12/4 /2015
Rain Cover	1,393,920 SF	WM Atlantic LF Cell 12A, 12b and 12c Rain Cover	Waverly	VA	11/14/2015
Geocomposite	2,354,425 SF	Westland Ash Closure	Dickerson	MD	8 /30/2015
GCL	52,318 SF	Westland Ash Closure	Dickerson	MD	8 /30/2015
16-oz Geotextile	52,318 SF	Westland Ash Closure	Dickerson	MD	8 /30/2015
8-oz Geotextile	1,039,339 SF	Westland Ash Closure	Dickerson	MD	8 /30/2015
50-mil HDPE	389,986 SF	Westland Ash Closure	Dickerson	MD	8 /30/2015
40-mil HDPE	2,053,381 SF	Westland Ash Closure	Dickerson	MD	8 /30/2015
60-mil HDPE	52,318 SF	Westland Ash Closure	Dickerson	MD	8 /30/2015
Geocomposite (2)	414,000 SF	AEP Mitchell Landfill	Proctor	WV	7 /28/2015
GCL	584,000 SF	AEP Mitchell Landfill	Proctor	WV	7 /28/2015
30-mil PVC	512,000 SF	AEP Mitchell Landfill	Proctor	WV	7 /28/2015
45-mil RPP	72,000 SF	AEP Mitchell Landfill	Proctor	WV	7 /28/2015
Geocomposite	512,000 SF	AEP Mitchell Landfill	Proctor	WV	7 /28/2015
Rain Cover	216,000 SF	Days Cove LF Cells I F & G	White Marsh	MD	7 /19/2015
Geocomposite	88,000 SF	Days Cove LF Cells I F & G	White Marsh	MD	7 /19/2015
60-mil HDPE Textured	200,000 SF	Days Cove LF Cells I F & G	White Marsh	MD	7 /19/2015

GCL	288,000 SF	Days Cove LF Cells I F & G	White Marsh	MD	7 /19/2015
60-mil HDPE Textured (2)	88,000 SF	Days Cove LF Cells I F & G	White Marsh	MD	7 /19/2015
Geocomposite	420,000 SF	Ottumwa Landfill	Ottumwa	IA	4 /17/2015
GCL	2,500 SF	Ottumwa Landfill	Ottumwa	IA	4 /17/2015
Geotextile	500,000 SF	Ottumwa Landfill	Ottumwa	IA	4 /17/2015
60-mil HDPE Textured	500,000 SF	Ottumwa Landfill	Ottumwa	IA	4 /17/2015
Rain Cover	522,000 SF	WM King George LF 24 mil Raincover	King George	VA	2 /27/2015
40-mil HDPE	44,000 SF	Walmart 6264 Winston-Salem	Winston-Salem	NC	12/4 /2014
24-oz Geotextile	84,000 SF	Walmart 6264 Winston-Salem	Winston-Salem	NC	12/4 /2014
30-mil PVC	51,000 SF	NMS Healthcare Addition	Hagerstown	MD	10/31/2014
8-oz Geotextile	51,000 SF	NMS Healthcare Addition	Hagerstown	MD	10/31/2014
45-mil RPP	62,000 SF	NALF Fentress Lagoon Liner Replacement	Chesapeake	VA	10/9 /2014
40-mil HDPE	65,000 SF	Honeygo Sed Trap 5	Perry Hall	MD	9 /13/2014
60-mil HDPE Textured	454,021 SF	Dunn Landfill	Rensselaer	NY	9 /9 /2014
20-mil Dura Skrim	480,000 SF	Grows/Tullytown Valley Cap 20 mil	Morrisville	PA	9 /4 /2014
20-mil White/White Woven Coated	462,663 SF	Frederick County Landfill Lagoon & Rain Cover	Winchester	VA	9 /3 /2014
80-mil HDPE Textured	25,783 SF	Frederick County Landfill Lagoon & Rain Cover	Winchester	VA	9 /3 /2014
45-mil RPP	40,000 SF	White Marsh Run Mitigation	White Marsh	MD	8 /20/2014
8-oz Geotextile	389,000 SF	Noble Road Landfill	Shiloh	OH	8 /14/2014
8-oz Geotextile (2)	389,000 SF	Noble Road Landfill	Shiloh	OH	8 /14/2014
60-mil HDPE	389,000 SF	Noble Road Landfill	Shiloh	OH	8 /14/2014
60-mil HDPE	663,000 SF	Hampton Road Recovery Center	Virginia Beach	VA	8 /6 /2014
Geocomposite (2)	423,000 SF	Hampton Road Recovery Center	Virginia Beach	VA	8 /6 /2014
Geocomposite	240,000 SF	Hampton Road Recovery Center	Virginia Beach	VA	8 /6 /2014

60-mil HDPE	5,200 SF	Calverton School	Huntingtown	MD	8 /5 /2014
8-mil Dura Skrim	540,000 SF	2014 Grows Cell 4A-B Raincover	Morrisville	PA	7 /15/2014
45-mil Reinforced Polypropylene	164,700 SF	Meadow Brook Substation	Stevens City	VA	6 /13/2014
10-oz Geotextile	164,700 SF	Meadow Brook Substation	Stevens City	VA	6 /13/2014
Rain Cover	646,200 SF	Eastern Sanitary Landfill Phase X	White Marsh	MD	12/1 /2013
Geocomposite (2)	1,212,500 SF	Eastern Sanitary Landfill Phase X	White Marsh	MD	12/1 /2013
Geocomposite	1,212,500 SF	Eastern Sanitary Landfill Phase X	White Marsh	MD	12/1 /2013
50-mil PVC	657,000 SF	Eastern Sanitary Landfill Phase X	White Marsh	MD	12/1 /2013
Geocomposite	300,000 SF	Montebello Plant 2 Finished Reservoir Cover	Baltimore	MD	10/1 /2013
80-mil HDPE	300,000 SF	Montebello Plant 2 Finished Reservoir Cover	Baltimore	MD	10/1 /2013
Geotextile	40,400 SF	Duke Mayo Stormwater Redirect	Roxboro	NC	
60-mil HDPE	51,700 SF	Duke Mayo Stormwater Redirect	Roxboro	NC	
GCL	51,700 SF	Duke Mayo Stormwater Redirect	Roxboro	NC	
30-mil HDPE	40,400 SF	Duke Mayo Stormwater Redirect	Roxboro	NC	
60-mil HDPE	128,000 SF	Duke Mayo Water Redirect - Holding Basin	Roxboro	NC	
16-oz Geotextile	37,000 SF	Duke Mayo Water Redirect - Holding Basin	Roxboro	NC	
10-oz Geotextile	445,000 SF	Duke Mayo Water Redirect - Holding Basin	Roxboro	NC	
GCL	128,000 SF	Duke Mayo Water Redirect - Holding Basin	Roxboro	NC	
Geocomposite	197,500 SF	Duke Roxboro - Area A Closure	Semora	NC	
40-mil LLDPE Textured	197,500 SF	Duke Roxboro - Area A Closure	Semora	NC	
40-mil HDPE Textured	62,700 SF	LCT Laurel Plant Sediment Ponds	Central City	PA	
60-mil HDPE Textured	691,375 SF	WM Maplewood Phase 23/26 Cells	Jetersville	VA	
GCL	691,375 SF	WM Maplewood Phase 23/26 Cells	Jetersville	VA	

Geonet	691,375 SF	WM Maplewood Phase 23/26 Cells Jetersville	VA
60-mil HDPE Textured (2)	691,375 SF	WM Maplewood Phase 23/26 Cells Jetersville	VA

Martinez, Heriberto A

Material	Quantity	Project	Location	Completion Date	
16-oz Geotextile	571,500 SF	Duke Mayo Water Redirect	Roxboro	NC	2 /3 /2019
GCL	684,000 SF	Duke Mayo Water Redirect	Roxboro	NC	2 /3 /2019
60-mil HDPE Textured	927,234 SF	Duke Mayo Water Redirect	Roxboro	NC	2 /3 /2019
10-oz Geotextile	1,075,500 SF	Duke Mayo Water Redirect	Roxboro	NC	2 /3 /2019
60-mil HDPE Textured	395,290 SF	Republic Walnut Creek LF	Frankfort	IN	12/7 /2018
40-mil LLDPE Textured	279,089 SF	Republic Clinton Co Cap	Frankfort	IN	11/3 /2018
Geocomposite	291,249 SF	Republic Clinton Co Cap	Frankfort	IN	11/3 /2018
12-oz Geotextile	80,000 SF	JH Campbell.	West Olive	MI	9 /9 /2018
60-mil HDPE	30,000 SF	JH Campbell.	West Olive	MI	9 /9 /2018
60-mil LLDPE	80,000 SF	JH Campbell.	West Olive	MI	9 /9 /2018
40-mil HDPE	450,000 SF	JH Campbell.	West Olive	MI	9 /9 /2018
10-oz Geotextile	450,000 SF	JH Campbell.	West Olive	MI	9 /9 /2018
GCL	30,000 SF	JH Campbell.	West Olive	MI	9 /9 /2018
Geocomposite	1,374,382 SF	Winyah LF Area 1	Georgetown	SC	9 /6 /2018
GCL	1,374,382 SF	Winyah LF Area 1	Georgetown	SC	9 /6 /2018
60-mil HDPE	1,394,382 SF	Winyah LF Area 1	Georgetown	SC	9 /6 /2018
Geocomposite	67,000 SF	Montgomery Co LF Cell 4	Jeffersonville	KY	8 /10/2018
6-oz Geotextile	147,000 SF	Montgomery Co LF Cell 4	Jeffersonville	KY	8 /10/2018
60-mil HDPE Textured	212,000 SF	Montgomery Co LF Cell 4	Jeffersonville	KY	8 /10/2018
GCL	212,000 SF	Montgomery Co LF Cell 4	Jeffersonville	KY	8 /10/2018
Geocomposite	329,000 SF	South Kent Co LF	Byron Center	MI	7 /23/2018
GCL	472,000 SF	South Kent Co LF	Byron Center	MI	7 /23/2018
60-mil HDPE	472,000 SF	South Kent Co LF	Byron Center	MI	7 /23/2018
Geocomposite	164,000 SF	Santee Cooper - Cross Phase II and II Drainage	Pineville	SC	6 /2 /2018

60-mil HDPE	34,000 SF	Santee Cooper - Cross Phase II and II Drainage	Pineville	SC	6 /2 /2018
GCL	1,200,000 SF	Atlantic Cell 7A-7C Addendum	Waverly	VA	
40-mil HDPE	1,200,000 SF	Atlantic Cell 7A-7C Addendum	Waverly	VA	
60-mil HDPE	1,200,000 SF	Atlantic Cell 7A-7C Addendum	Waverly	VA	
Geocomposite	1,200,000 SF	Atlantic Cell 7A-7C Addendum	Waverly	VA	
60-mil HDPE Textured	233,000 SF	Crawford County LF Phase 5B	Bucyrus	OH	
8-oz Geotextile	233,000 SF	Crawford County LF Phase 5B	Bucyrus	OH	
8-oz Geotextile	457,380 SF	Dominion Chesterfield Lower Ash Pond	Chester	VA	
40-mil HDPE Textured	4,356,000 SF	Dominion Chesterfield Lower Ash Pond	Chester	VA	
Wind Defender	3,898,620 SF	Dominion Chesterfield Lower Ash Pond	Chester	VA	
Wind Defender	3,286,386 SF	Dominon Bremono Power Station - EAP Excavation & NAP Fill	Bremo Bluff	VA	
Rain Cover (2)	285,777 SF	Dominon Bremono Power Station - EAP Excavation & NAP Fill	Bremo Bluff	VA	
Rain Cover	3,286,386 SF	Dominon Bremono Power Station - EAP Excavation & NAP Fill	Bremo Bluff	VA	
60-mil HDPE Textured	43,600 SF	Duke Mayo Additional Pond	Roxboro	NC	
Geotextile	43,600 SF	Duke Mayo Additional Pond	Roxboro	NC	
10-oz Geotextile	445,000 SF	Duke Mayo Water Redirect - Holding Basin	Roxboro	NC	
GCL	128,000 SF	Duke Mayo Water Redirect - Holding Basin	Roxboro	NC	
60-mil HDPE	128,000 SF	Duke Mayo Water Redirect - Holding Basin	Roxboro	NC	
16-oz Geotextile	37,000 SF	Duke Mayo Water Redirect - Holding Basin	Roxboro	NC	
Wind Defender	439,000 SF	Hoover Mason Raincover & Wind Defender	Mt Pleasant	TN	

12-mil Raincover	439,000 SF	Hoover Mason Raincover & Wind Defender	Mt Pleasant	TN
Rain Cover	150,000 SF	Raven Power Lot 15	Baltimore	MD
60-mil HDPE	360,000 SF	Raven Power Lot 15	Baltimore	MD
8-oz Geotextile	300,000 SF	Raven Power Lot 15	Baltimore	MD
Geocomposite	300,000 SF	Raven Power Lot 15	Baltimore	MD
60-mil HDPE	415,000 SF	Santee Cooper - Winyah Ponds	Georgetown	SC
Geocomposite	163,000 SF	Santee Cooper - Winyah Ponds	Georgetown	SC
GCL	445,000 SF	Santee Cooper - Winyah Ponds	Georgetown	SC
Geotextile	415,000 SF	Santee Cooper - Winyah Ponds	Georgetown	SC
Rain Cover	330,000 SF	SWACO Hydroturf Downchutes	Grove City	OH
GCL	85,900 SF	SWACO Hydroturf Downchutes	Grove City	OH
60-mil HDPE	85,900 SF	SWACO Hydroturf Downchutes	Grove City	OH
40-mil LLDPE Textured	27,800 SF	SWACO Hydroturf Downchutes	Grove City	OH
60-mil HDPE Textured	413,000 SF	Tunnel Hill Phase 7	New Lexington	OH
6-oz Geotextile	658,000 SF	Tunnel Hill Phase 7	New Lexington	OH
Rain Cover	269,000 SF	Tunnel Hill Phase 7	New Lexington	OH

Martinez, Jorge

Material	Quantity	Project	Location		Completion Date
60-mil HDPE Textured	395,290 SF	Republic Walnut Creek LF	Frankfort	IN	12/7 /2018
Geocomposite	291,249 SF	Republic Clinton Co Cap	Frankfort	IN	11/3 /2018
40-mil LLDPE Textured	279,089 SF	Republic Clinton Co Cap	Frankfort	IN	11/3 /2018
12-oz Geotextile	1,415,700 SF	TVA Kingston Stilling Pond Closure	Harriman	TN	6 /26/2018
Geocomposite	1,415,700 SF	TVA Kingston Stilling Pond Closure	Harriman	TN	6 /26/2018
40-mil LLDPE Textured	1,415,700 SF	TVA Kingston Stilling Pond Closure	Harriman	TN	6 /26/2018
60-mil HDPE Textured	350,000 SF	WestRock Covington Cell	Covington	VA	6 /21/2018
GCL	350,000 SF	WestRock Covington Cell	Covington	VA	6 /21/2018
12-oz Geotextile	300,000 SF	WestRock Covington Cell	Covington	VA	6 /21/2018
Rain Cover	350,000 SF	WestRock Covington Cell	Covington	VA	6 /21/2018
40-mil HDPE	300,000 SF	WestRock Covington Cell	Covington	VA	6 /21/2018
Geocomposite	350,000 SF	WestRock Covington Cell	Covington	VA	6 /21/2018
Geocomposite	1,000,000 SF	Plant Hammond Ash Pond 3 Closure	Rome	GA	1 /25/2018
60-mil HDPE	1,000,000 SF	Plant Hammond Ash Pond 3 Closure	Rome	GA	1 /25/2018
Geocomposite (3)	660,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
60-mil HDPE Textured (3)	660,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
Geocomposite (4)	660,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
GCL (2)	330,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
GCL	405,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
60-mil HDPE Textured (2)	810,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017

60-mil HDPE Textured	810,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
Geocomposite	810,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
Geocomposite (2)	810,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
60-mil HDPE Textured (4)	660,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
40-mil HDPE Textured	1,100 LF	Volunteer Landfill	Oneida	TN	12/3 /2017
60-mil HDPE Textured	301,371 SF	Volunteer Landfill	Oneida	TN	12/3 /2017
Geocomposite	301,371 SF	Volunteer Landfill	Oneida	TN	12/3 /2017
Geotextile	2,326,755 SF	TVA Colbert Ash Pond 4 Closure	Tuscumbia	AL	11/18/2017
Geocomposite	2,326,755 SF	TVA Colbert Ash Pond 4 Closure	Tuscumbia	AL	11/18/2017
40-mil LLDPE Textured	2,326,755 SF	TVA Colbert Ash Pond 4 Closure	Tuscumbia	AL	11/18/2017
GCL	189,615 SF	Rhea County Landfill	Dayton	TN	11/6 /2017
60-mil HDPE Textured	189,615 SF	Rhea County Landfill	Dayton	TN	11/6 /2017
16-oz Geotextile	189,615 SF	Rhea County Landfill	Dayton	TN	11/6 /2017
Geocomposite	410,000 SF	HRRC Landfill - Cell 5	Virginia Beach	VA	10/20/2017
Geocomposite (2)	222,000 SF	HRRC Landfill - Cell 5	Virginia Beach	VA	10/20/2017
60-mil HDPE	631,000 SF	HRRC Landfill - Cell 5	Virginia Beach	VA	10/20/2017
60-mil HDPE	875,000 SF	Duke Sutton Landfill	Wilmington	NC	8 /19/2017
Geocomposite	875,000 SF	Duke Sutton Landfill	Wilmington	NC	8 /19/2017
GCL	875,000 SF	Duke Sutton Landfill	Wilmington	NC	8 /19/2017
60-mil HDPE (3)	875,000 SF	Duke Sutton Landfill	Wilmington	NC	8 /19/2017
60-mil HDPE (2)	875,000 SF	Duke Sutton Landfill	Wilmington	NC	8 /19/2017
36-mil RPE Floating Cover	777,917 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
GCL	1,639,049 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017

80-mil HDPE Floating Cover	186,375 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
60-mil HDPE	1,853,408 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
60-mil LLDPE Floating Cover	209,982 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
60-mil HDPE	450,000 SF	Onslow County Landfill	Jacksonville	NC	6 /8 /2017
GCL	450,000 SF	Onslow County Landfill	Jacksonville	NC	6 /8 /2017
Rain Cover	200,000 SF	Onslow County Landfill	Jacksonville	NC	6 /8 /2017
Geocomposite	450,000 SF	Onslow County Landfill	Jacksonville	NC	6 /8 /2017
GCL	128,202 SF	Hodges LF Slope Repair	Eldersburg	MD	6 /5 /2017
40-mil LLDPE	128,202 SF	Hodges LF Slope Repair	Eldersburg	MD	6 /5 /2017
Rain Cover	435,600 SF	WM Grand Central LF- Temp Cap Nov.	Pen Argyl	PA	1 /21/2017
GCL	23,925 SF	Plant McIntosh GCL Repairs	Rincon	GA	11/21/2016
GCL	72,000 SF	Maiden Creek Residual Waste Landfill - Sludge Basin #5	Fleetwood	PA	11/4 /2016
10-oz Geotextile	16,800 SF	Brownsville Community Pond	Rohrersville	MD	11/1 /2016
Embedment	40 LF	Brownsville Community Pond	Rohrersville	MD	11/1 /2016
40-mil LLDPE	16,800 SF	Brownsville Community Pond	Rohrersville	MD	11/1 /2016
Geocomposite	950,000 SF	Kanawha Fly Ash	Hansford	WV	10/31/2016
40-mil LLDPE Smooth	950,000 SF	Kanawha Fly Ash	Hansford	WV	10/31/2016
8-oz Geotextile	218,825 SF	Bradley Co. LF	McDonald	TN	10/8 /2016
40-mil HDPE	1,225 LF	Bradley Co. LF	McDonald	TN	10/8 /2016
60-mil HDPE Textured	218,825 SF	Bradley Co. LF	McDonald	TN	10/8 /2016
GCL	218,825 SF	Bradley Co. LF	McDonald	TN	10/8 /2016
GCL	429,000 SF	Asheville Phase 3	Arden	NC	10/3 /2016
Geocomposite	384,000 SF	Asheville Phase 3	Arden	NC	10/3 /2016
60-mil HDPE Textured	429,000 SF	Asheville Phase 3	Arden	NC	10/3 /2016

40-mil LLDPE	342,229 SF	WM Model City RMU Phase IX Final Cover	Model City	NY	9 /21/2016
GCL	342,229 SF	WM Model City RMU Phase IX Final Cover	Model City	NY	9 /21/2016
Geocomposite	342,229 SF	WM Model City RMU Phase IX Final Cover	Model City	NY	9 /21/2016
6-oz Geotextile	135,100 SF	Matlock Bend LF	Loudon	TN	9 /14/2016
60-mil HDPE	135,100 SF	Matlock Bend LF	Loudon	TN	9 /14/2016
60-mil HDPE Textured	1,463,000 SF	WM Atlantic Waste Temp Cap Phase 1	Waverly	VA	8 /22/2016
Geotextile	2,800,000 SF	TVA Colbert Closure	Tuscumbia	AL	8 /17/2016
Geocomposite	2,800,000 SF	TVA Colbert Closure	Tuscumbia	AL	8 /17/2016
40-mil LLDPE Textured	2,800,000 SF	TVA Colbert Closure	Tuscumbia	AL	8 /17/2016
10-oz Geotextile	10,000 SF	BGE Lipins Corner Transformer Pit	Glen Burnie	MD	8 /14/2016
60-mil HDPE Textured	8,500 SF	BGE Lipins Corner Transformer Pit	Glen Burnie	MD	8 /14/2016
80-mil HDPE Embedment Liner	37,700 SF	Patapsco WWTP 845R	Baltimore	MD	7 /14/2016
Rain Cover	801,124 SF	WM Grand Central LF- Temp Cap	Pen Argyl	PA	3 /31/2016
8-oz Geotextile	5,000 SF	Duke Belews Creek Gypsum	Belews Creek	NC	3 /29/2016
60-mil HDPE	5,000 SF	Duke Belews Creek Gypsum	Belews Creek	NC	3 /29/2016
Rain Cover	261,360 SF	Duke Roxboro Gypsum	Semora	NC	2 /26/2016
Wind Defender	500,000 SF	Hoover Mason Recycling	Mt Pleasant	TN	1 /19/2016
12-mil Dura Skrim	500,000 SF	Hoover Mason Recycling	Mt Pleasant	TN	1 /19/2016
60-mil LLDPE Textured	2,465,496 SF	Ghent PH1B	Ghent	KY	12/12/2015
Geotextile	2,465,496 SF	Ghent PH1B	Ghent	KY	12/12/2015
Geocomposite	104,000 SF	Rumpke-Montgomery Co LF Unit 3 Cell 3	Jeffersonville	KY	12/5 /2015
Geotextile	210,000 SF	Rumpke-Montgomery Co LF Unit 3 Cell 3	Jeffersonville	KY	12/5 /2015

60-mil HDPE Textured	328,000 SF	Rumpke-Montgomery Co LF Unit 3 Cell 3	Jeffersonville	KY	12/5 /2015
GCL	254,000 SF	Rumpke-Montgomery Co LF Unit 3 Cell 3	Jeffersonville	KY	12/5 /2015
GCL	4,000 SF	I-43 Ash Landfill	Sheboygan	WI	11/29/2015
Geotextile	73,275 SF	I-43 Ash Landfill	Sheboygan	WI	11/29/2015
60-mil HDPE	539,000 SF	I-43 Ash Landfill	Sheboygan	WI	11/29/2015
40-mil LLDPE	150,000 SF	I-43 Ash Landfill	Sheboygan	WI	11/29/2015
Rain Cover	104,000 SF	Ghent Slope Raincover	Ghent	KY	11/14/2015
Rain Cover	1,393,920 SF	WM Atlantic LF Cell 12A, 12b and 12c Rain Cover	Waverly	VA	11/14/2015
80-mil HDPE	6,000 SF	Rumpke Tank Relining	Cincinnati	OH	10/28/2015
60-mil HDPE	6,000 SF	Rumpke Tank Relining	Cincinnati	OH	10/28/2015
16-oz Geotextile	6,000 SF	Rumpke Tank Relining	Cincinnati	OH	10/28/2015
60-mil HDPE Smooth	86,800 SF	Lindauer & Sons Pond	Ferdinand	IN	10/16/2015
60-mil HDPE	5,400 SF	Vincent Georges & Sons Pond	Fort Branch	IN	10/15/2015
12-oz Geotextile	3,000 SF	Vincent Georges & Sons Pond	Fort Branch	IN	10/15/2015
Geocomposite	39,000 SF	Duke Weatherspoon Secondary Containment	Lumberton	NC	9 /30/2015
60-mil HDPE	39,000 SF	Duke Weatherspoon Secondary Containment	Lumberton	NC	9 /30/2015
GCL	584,000 SF	AEP Mitchell Landfill	Proctor	WV	7 /28/2015
Geocomposite (2)	414,000 SF	AEP Mitchell Landfill	Proctor	WV	7 /28/2015
30-mil PVC	512,000 SF	AEP Mitchell Landfill	Proctor	WV	7 /28/2015
Geocomposite	512,000 SF	AEP Mitchell Landfill	Proctor	WV	7 /28/2015
45-mil RPP	72,000 SF	AEP Mitchell Landfill	Proctor	WV	7 /28/2015
30-mil PVC	357,192 SF	Schrock Run Refuse Base Liner Expansion	Berlin	PA	12/13/2014
10-oz Geotextile	8,100 SF	Schrock Run Refuse Base Liner Expansion	Berlin	PA	12/13/2014

10-oz Geotextile (2)	714,384 SF	Schrock Run Refuse Base Liner Expansion	Berlin	PA	12/13/2014
Geocomposite	65,000 SF	Refined Metals Corporation	Beech Grove	IN	12/12/2014
60-mil HDPE	65,000 SF	Refined Metals Corporation	Beech Grove	IN	12/12/2014
Geotextile	65,000 SF	Refined Metals Corporation	Beech Grove	IN	12/12/2014
8-oz Geotextile	51,000 SF	NMS Healthcare Addition	Hagerstown	MD	10/31/2014
30-mil PVC	51,000 SF	NMS Healthcare Addition	Hagerstown	MD	10/31/2014
40-mil Textured HDPE	234,000 SF	Trinity South	Hempfield Township	PA	10/23/2014
Geocomposite	234,000 SF	Trinity South	Hempfield Township	PA	10/23/2014
16-oz Geotextile	234,000 SF	Trinity South	Hempfield Township	PA	10/23/2014
6-oz Geotextile	250,000 SF	Thoroughbred Disposal	Lexington	KY	9 /12/2014
60-mil HDPE Textured	454,021 SF	Dunn Landfill	Rensselaer	NY	9 /9 /2014
20-mil Dura Skrim	480,000 SF	Grows/Tullytown Valley Cap 20 mil	Morrisville	PA	9 /4 /2014
80-mil HDPE Textured	25,783 SF	Frederick County Landfill Lagoon & Rain Cover	Winchester	VA	9 /3 /2014
20-mil White/White Woven Coated	462,663 SF	Frederick County Landfill Lagoon & Rain Cover	Winchester	VA	9 /3 /2014
45-mil RPP	40,000 SF	White Marsh Run Mitigation	White Marsh	MD	8 /20/2014
8-mil Dura Skrim	540,000 SF	2014 Grows Cell 4A-B Raincover	Morrisville	PA	7 /15/2014
Geocomposite	15,000 SF	Glatfelter Zone 5 Lime Handling	Spring Grove	PA	7 /2 /2014
12-oz Geotextile	6,300 SF	Glatfelter Zone 5 Lime Handling	Spring Grove	PA	7 /2 /2014
80-mil HDPE	19,000 SF	Glatfelter Zone 5 Lime Handling	Spring Grove	PA	7 /2 /2014
30-mil PVC	7,500 SF	Frederick WAWA	Frederick	MD	6 /18/2014
8-oz Geotextile	7,500 SF	Frederick WAWA	Frederick	MD	6 /18/2014
45-mil Reinforced Polypropylene	164,700 SF	Meadow Brook Substation	Stevens City	VA	6 /13/2014
10-oz Geotextile	164,700 SF	Meadow Brook Substation	Stevens City	VA	6 /13/2014

8-oz Geotextile	84,000 SF	Walmart #4148-00	Charlotte	NC	5 /29/2014
30-mil LLDPE	42,000 SF	Walmart #4148-00	Charlotte	NC	5 /29/2014
Geocomposite	83,200 SF	Swope Supefund Site	Pennsauken	NJ	5 /15/2014
60-mil HDPE Smooth	83,200 SF	Swope Supefund Site	Pennsauken	NJ	5 /15/2014
Geocomposite (2)	158,000 SF	Bayer Woodbine Cropscience Landfill Closure	Woodbine	GA	12/1 /2013
GCL	158,000 SF	Bayer Woodbine Cropscience Landfill Closure	Woodbine	GA	12/1 /2013
Geocomposite	158,000 SF	Bayer Woodbine Cropscience Landfill Closure	Woodbine	GA	12/1 /2013
60-mil HDPE	178,000 SF	Bayer Woodbine Cropscience Landfill Closure	Woodbine	GA	12/1 /2013
Rain Cover	646,200 SF	Eastern Sanitary Landfill Phase X	White Marsh	MD	12/1 /2013
Geocomposite (2)	1,212,500 SF	Eastern Sanitary Landfill Phase X	White Marsh	MD	12/1 /2013
Geocomposite	1,212,500 SF	Eastern Sanitary Landfill Phase X	White Marsh	MD	12/1 /2013
50-mil PVC	657,000 SF	Eastern Sanitary Landfill Phase X	White Marsh	MD	12/1 /2013
12-oz Geotextile	68,900 SF	Cooper Power Plant Lagoon	Somerset	KY	11/1 /2012
60-mil LLDPE Textured	537,200 SF	Cooper Power Plant Lagoon	Somerset	KY	11/1 /2012
80-mil HDPE Textured	61,200 SF	Cooper Power Plant Lagoon	Somerset	KY	11/1 /2012
10-oz Geotextile	680,900 SF	Cooper Power Plant Lagoon	Somerset	KY	11/1 /2012
GCL	237,000 SF	Crystal Rivers North Slope Closure	Crystal Rivers	FL	10/1 /2012
10-oz Geotextile	2,516,000 SF	Ghent Landfill	Ghent	KY	10/1 /2012
60-mil LLDPE Textured	2,516,000 SF	Ghent Landfill	Ghent	KY	10/1 /2012
40-mil LLDPE	1,200,000 SF	Haleys Pike Install	Lexington	KY	8 /1 /2012
Geocomposite	2,400,000 SF	Haleys Pike Install	Lexington	KY	8 /1 /2012
40-mil HDPE Textured	847,000 SF	Zion Landfill Cap	Zion	IL	7 /1 /2012
8-oz Geotextile	19,200 SF	Zion Landfill Cap	Zion	IL	7 /1 /2012
Geocomposite	847,500 SF	Zion Landfill Cap	Zion	IL	7 /1 /2012

Geotextile	260,000 SF	Delaware County LF Cap	Boyertown	PA	6 /1 /2012
30-mil PVC	260,000 SF	Delaware County LF Cap	Boyertown	PA	6 /1 /2012
Geocomposite	260,000 SF	Delaware County LF Cap	Boyertown	PA	6 /1 /2012
Geocomposite	86,000 SF	Medora LF Cell 1 & 2	Medora	IN	6 /1 /2012
40-mil LLDPE Textured	860,000 SF	Medora LF Cell 1 & 2	Medora	IN	6 /1 /2012
40-mil LLDPE Textured	1,829,500 SF	Oak Ridge Landfill Cap	Ballwin	MO	6 /1 /2012
Geocomposite	1,829,500 SF	Oak Ridge Landfill Cap	Ballwin	MO	6 /1 /2012
40-mil HDPE Textured	1,005,000 SF	Hutsonville Ash Pond	Crawford County	IL	5 /1 /2012
Geocomposite	892,000 SF	Holmes County Final Cap	Millersburg	OH	4 /1 /2012
40-mil LLDPE Textured	892,000 SF	Holmes County Final Cap	Millersburg	OH	4 /1 /2012
60-mil HDPE Textured	604,000 SF	HR Recovery Cell 4	Virginia Beach	VA	3 /1 /2012
Geocomposite	604,000 SF	HR Recovery Cell 4	Virginia Beach	VA	3 /1 /2012
GCL	5,300 SF	NIPSCO Phase VII	Wheatfield	IN	
Geocomposite	600,000 SF	NIPSCO Phase VII	Wheatfield	IN	
60-mil HDPE Textured	1,320,000 SF	NIPSCO Phase VII	Wheatfield	IN	
8-oz Geotextile	720,000 SF	NIPSCO Phase VII	Wheatfield	IN	
40-mil LLDPE	978,200 SF	Sunny Farms Cell 8 Cap	Fostoria	OH	
Geocomposite	978,200 SF	Sunny Farms Cell 8 Cap	Fostoria	OH	

Muniz, Uriel

Material	Quantity	Project	Location	Completion Date	
60-mil HDPE Textured	927,234 SF	Duke Mayo Water Redirect	Roxboro	NC	2 /3 /2019
10-oz Geotextile	1,075,500 SF	Duke Mayo Water Redirect	Roxboro	NC	2 /3 /2019
GCL	684,000 SF	Duke Mayo Water Redirect	Roxboro	NC	2 /3 /2019
16-oz Geotextile	571,500 SF	Duke Mayo Water Redirect	Roxboro	NC	2 /3 /2019
60-mil HDPE	808,000 SF	Duke Roxboro Water Redirect	Semora	NC	12/15/2018
16-oz Geotextile	808,000 SF	Duke Roxboro Water Redirect	Semora	NC	12/15/2018
10-oz Geotextile	118,000 SF	Duke Roxboro Water Redirect	Semora	NC	12/15/2018
GCL	808,000 SF	Duke Roxboro Water Redirect	Semora	NC	12/15/2018
Rain Cover	1,045,440 SF	WM Atlantic LF Cell 11A, 11B and 11C Cells	Waverly	VA	4 /27/2018
40-mil HDPE Textured	1,045,440 SF	WM Atlantic LF Cell 11A, 11B and 11C Cells	Waverly	VA	4 /27/2018
60-mil HDPE Textured	1,045,440 SF	WM Atlantic LF Cell 11A, 11B and 11C Cells	Waverly	VA	4 /27/2018
GCL	1,045,440 SF	WM Atlantic LF Cell 11A, 11B and 11C Cells	Waverly	VA	4 /27/2018
Geocomposite	1,045,440 SF	WM Atlantic LF Cell 11A, 11B and 11C Cells	Waverly	VA	4 /27/2018
60-mil HDPE Textured	1,674,330 SF	WM Atlantic LF Temp Cap Phase 3	Waverly	VA	10/3 /2017
Geocomposite	82,500 SF	WM Atlantic LF Temp Cap Phase 3	Waverly	VA	10/3 /2017
8-oz Geotextile	100,941 SF	WM Atlantic LF Temp Cap Phase 3	Waverly	VA	10/3 /2017
60-mil LLDPE Floating Cover	209,982 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
GCL	1,639,049 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
60-mil HDPE	1,853,408 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
80-mil HDPE Floating Cover	186,375 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017

36-mil RPE Floating Cover	777,917 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
Rain Cover	291,500 SF	WM Middle Peninsula Raincover	Saluda	VA	7 /11/2017
32-oz Geotextile (2)	78,840 SF	Dominion Power Clover Ponds	Clover	VA	
32-oz Geotextile	90,090 SF	Dominion Power Clover Ponds	Clover	VA	
60-mil HDPE Textured	90,090 SF	Dominion Power Clover Ponds	Clover	VA	
60-mil HDPE Textured (2)	78,840 SF	Dominion Power Clover Ponds	Clover	VA	
Geotextile	40,400 SF	Duke Mayo Stormwater Redirect	Roxboro	NC	
30-mil HDPE	40,400 SF	Duke Mayo Stormwater Redirect	Roxboro	NC	
60-mil HDPE	51,700 SF	Duke Mayo Stormwater Redirect	Roxboro	NC	
GCL	51,700 SF	Duke Mayo Stormwater Redirect	Roxboro	NC	
60-mil HDPE	128,000 SF	Duke Mayo Water Redirect - Holding Basin	Roxboro	NC	
16-oz Geotextile	37,000 SF	Duke Mayo Water Redirect - Holding Basin	Roxboro	NC	
10-oz Geotextile	445,000 SF	Duke Mayo Water Redirect - Holding Basin	Roxboro	NC	
GCL	128,000 SF	Duke Mayo Water Redirect - Holding Basin	Roxboro	NC	
40-mil LLDPE Textured	197,500 SF	Duke Roxboro - Area A Closure	Semora	NC	
Geocomposite	197,500 SF	Duke Roxboro - Area A Closure	Semora	NC	
40-mil HDPE Textured	62,700 SF	LCT Laurel Plant Sediment Ponds	Central City	PA	
60-mil HDPE Textured	691,375 SF	WM Maplewood Phase 23/26 Cells Jetersville		VA	
GCL	691,375 SF	WM Maplewood Phase 23/26 Cells Jetersville		VA	
Geonet	691,375 SF	WM Maplewood Phase 23/26 Cells Jetersville		VA	
60-mil HDPE Textured (2)	691,375 SF	WM Maplewood Phase 23/26 Cells Jetersville		VA	

Saenz, Fausto

Material	Quantity	Project	Location	Completion Date	
60-mil HDPE	87,120 SF	Winchester VA Leachate Lagoon	Winchester	VA	12/15/2018
GCL	87,120 SF	Winchester VA Leachate Lagoon	Winchester	VA	12/15/2018
40-mil LLDPE	87,120 SF	Winchester VA Leachate Lagoon	Winchester	VA	12/15/2018
Rain Cover	124,000 SF	LCS North Mountain Raincover Repair	Hedgesville	WV	
50-mil HDPE	657,100 SF	Mountain View Reclamation Eastern Tract 2 Cap	Greencastle	PA	
6-oz Geotextile	657,100 SF	Mountain View Reclamation Eastern Tract 2 Cap	Greencastle	PA	

Tello, Celestino

Material	Quantity	Project	Location		Completion Date
Geocomposite	254,000 SF	Pendleton Co Cell 4B & Slide Remediation	Butler	KY	12/15/2018
10-oz Geotextile	33,000 SF	Pendleton Co Cell 4B & Slide Remediation	Butler	KY	12/15/2018
60-mil HDPE Textured	255,000 SF	Pendleton Co Cell 4B & Slide Remediation	Butler	KY	12/15/2018
GCL	178,026 SF	Central KY Landfill	Georgetown	KY	12/9 /2018
Geocomposite	178,026 SF	Central KY Landfill	Georgetown	KY	12/9 /2018
60-mil HDPE Textured	178,026 SF	Central KY Landfill	Georgetown	KY	12/9 /2018
GCL	60,000 SF	Whitewater Coal Settling Pond	Richmond	IN	11/15/2018
16-oz Geotextile	30,000 SF	Whitewater Coal Settling Pond	Richmond	IN	11/15/2018
60-mil HDPE Textured	60,000 SF	Whitewater Coal Settling Pond	Richmond	IN	11/15/2018
60-mil HDPE Textured	1,045,440 SF	WM Atlantic LF Cell 11A, 11B and 11C Cells	Waverly	VA	4 /27/2018
Geocomposite	1,045,440 SF	WM Atlantic LF Cell 11A, 11B and 11C Cells	Waverly	VA	4 /27/2018
Rain Cover	1,045,440 SF	WM Atlantic LF Cell 11A, 11B and 11C Cells	Waverly	VA	4 /27/2018
GCL	1,045,440 SF	WM Atlantic LF Cell 11A, 11B and 11C Cells	Waverly	VA	4 /27/2018
40-mil HDPE Textured	1,045,440 SF	WM Atlantic LF Cell 11A, 11B and 11C Cells	Waverly	VA	4 /27/2018
60-mil HDPE Textured	810,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
60-mil HDPE Textured (4)	660,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
Geocomposite	810,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
GCL (2)	330,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017

60-mil HDPE Textured (3)	660,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
Geocomposite (3)	660,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
GCL	405,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
60-mil HDPE Textured (2)	810,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
Geocomposite (4)	660,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
Geocomposite (2)	810,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
Geocomposite	1,000,000 SF	Clinch River	Cleveland	VA	12/18/2017
40-mil LLDPE	270,000 SF	Clinch River	Cleveland	VA	12/18/2017
6-oz Geotextile	70,000 SF	Clinch River	Cleveland	VA	12/18/2017
30-mil PVC	1,000,000 SF	Clinch River	Cleveland	VA	12/18/2017
Rain Cover	432,720 SF	WM LCS North Mountain LF Raincover	Hedgesville	WV	11/11/2017
40-mil HDPE Liner	10,890 SF	Havelock Drying Beds	Havelock	NC	10/17/2017
8-oz Geotextile	100,941 SF	WM Atlantic LF Temp Cap Phase 3	Waverly	VA	10/3 /2017
60-mil HDPE Textured	1,674,330 SF	WM Atlantic LF Temp Cap Phase 3	Waverly	VA	10/3 /2017
Geocomposite	82,500 SF	WM Atlantic LF Temp Cap Phase 3	Waverly	VA	10/3 /2017
30-mil PVC	16,000 SF	Camp Lejeune Drying Beds Liner Install	Jacksonville	NC	9 /14/2017
Geotextile	1,200 SF	Duke Energy - Dan River Wall Liner	Eden	NC	9 /7 /2017
45-mil RPP	1,200 SF	Duke Energy - Dan River Wall Liner	Eden	NC	9 /7 /2017
60-mil HDPE (2)	875,000 SF	Duke Sutton Landfill	Wilmington	NC	8 /19/2017
GCL	875,000 SF	Duke Sutton Landfill	Wilmington	NC	8 /19/2017
60-mil HDPE (3)	875,000 SF	Duke Sutton Landfill	Wilmington	NC	8 /19/2017
60-mil HDPE	875,000 SF	Duke Sutton Landfill	Wilmington	NC	8 /19/2017

Geocomposite	875,000 SF	Duke Sutton Landfill	Wilmington	NC	8 /19/2017
Geocomposite	60,000 SF	Green Recycling - Cell 2	Maysville	NC	7 /22/2017
60-mil HDPE	60,000 SF	Green Recycling - Cell 2	Maysville	NC	7 /22/2017
80-mil HDPE Floating Cover	186,375 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
60-mil HDPE	1,853,408 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
60-mil LLDPE Floating Cover	209,982 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
36-mil RPE Floating Cover	777,917 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
GCL	1,639,049 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
Rain Cover	291,500 SF	WM Middle Peninsula Raincover	Saluda	VA	7 /11/2017
60-mil HDPE Textured	1,654,241 SF	WM Atlantic LF Temp Cap Phase 4A/B/C	Waverly	VA	6 /4 /2017
Wind Defender	382,963 SF	WM Atlantic LF Temp Cap Phase 4A/B/C	Waverly	VA	6 /4 /2017
60-mil HDPE	85,900 SF	SWACO Hydroturf Downchutes	Grove City	OH	
40-mil LLDPE Textured	27,800 SF	SWACO Hydroturf Downchutes	Grove City	OH	
GCL	85,900 SF	SWACO Hydroturf Downchutes	Grove City	OH	
Rain Cover	330,000 SF	SWACO Hydroturf Downchutes	Grove City	OH	
Geotextile	414,000 SF	Trimble Co CCR Ponds	Bedford	KY	
60-mil LLDPE	427,000 SF	Trimble Co CCR Ponds	Bedford	KY	
GCL	414,000 SF	Trimble Co CCR Ponds	Bedford	KY	

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Material	Quantity	Project	Location		Completion Date
60-mil HDPE Textured	30,000 SF	Glenwood Place Apts Wet Pond	Raleigh	NC	11/24/2018
GCL	90,000 SF	ICS - Peterson Farms	Shelby	MI	11/5 /2018
RPP	90,000 SF	ICS - Peterson Farms	Shelby	MI	11/5 /2018
12-oz Geotextile	1,415,700 SF	TVA Kingston Stilling Pond Closure	Harriman	TN	6 /26/2018
40-mil LLDPE Textured	1,415,700 SF	TVA Kingston Stilling Pond Closure	Harriman	TN	6 /26/2018
Geocomposite	1,415,700 SF	TVA Kingston Stilling Pond Closure	Harriman	TN	6 /26/2018
12-oz Geotextile	300,000 SF	WestRock Covington Cell	Covington	VA	6 /21/2018
Rain Cover	350,000 SF	WestRock Covington Cell	Covington	VA	6 /21/2018
60-mil HDPE Textured	350,000 SF	WestRock Covington Cell	Covington	VA	6 /21/2018
GCL	350,000 SF	WestRock Covington Cell	Covington	VA	6 /21/2018
40-mil HDPE	300,000 SF	WestRock Covington Cell	Covington	VA	6 /21/2018
Geocomposite	350,000 SF	WestRock Covington Cell	Covington	VA	6 /21/2018
60-mil HDPE	1,000,000 SF	Plant Hammond Ash Pond 3 Closure	Rome	GA	1 /25/2018
Geocomposite	1,000,000 SF	Plant Hammond Ash Pond 3 Closure	Rome	GA	1 /25/2018
GCL	43,560 SF	Mount Storm Pyrite Pond	Mt Storm	WV	12/16/2017
60-mil HDPE Textured	43,560 SF	Mount Storm Pyrite Pond	Mt Storm	WV	12/16/2017
32-oz Geotextile	43,560 SF	Mount Storm Pyrite Pond	Mt Storm	WV	12/16/2017
50-mil HDPE (Super Gripnet)	875,000 SF	Northern LF Cells 1 & 2 Closure and Leachate Ponds	Westminster	MD	12/15/2017
8-oz Geotextile	840,000 SF	Northern LF Cells 1 & 2 Closure and Leachate Ponds	Westminster	MD	12/15/2017
60 mil Textured HDPE Secondary	30,487 SF	Northern LF Cells 1 & 2 Closure and Leachate Ponds	Westminster	MD	12/15/2017
GCL	30,487 SF	Northern LF Cells 1 & 2 Closure and Leachate Ponds	Westminster	MD	12/15/2017

60-mil HDPE Textured	30,487 SF	Northern LF Cells 1 & 2 Closure and Leachate Ponds	Westminster	MD	12/15/2017
Geocomposite	30,487 SF	Northern LF Cells 1 & 2 Closure and Leachate Ponds	Westminster	MD	12/15/2017
Geocomposite	301,371 SF	Volunteer Landfill	Oneida	TN	12/3 /2017
60-mil HDPE Textured	301,371 SF	Volunteer Landfill	Oneida	TN	12/3 /2017
40-mil HDPE Textured	1,100 LF	Volunteer Landfill	Oneida	TN	12/3 /2017
Geotextile	2,326,755 SF	TVA Colbert Ash Pond 4 Closure	Tuscumbia	AL	11/18/2017
40-mil LLDPE Textured	2,326,755 SF	TVA Colbert Ash Pond 4 Closure	Tuscumbia	AL	11/18/2017
Geocomposite	2,326,755 SF	TVA Colbert Ash Pond 4 Closure	Tuscumbia	AL	11/18/2017
16-oz Geotextile	189,615 SF	Rhea County Landfill	Dayton	TN	11/6 /2017
60-mil HDPE Textured	189,615 SF	Rhea County Landfill	Dayton	TN	11/6 /2017
GCL	189,615 SF	Rhea County Landfill	Dayton	TN	11/6 /2017
60-mil HDPE Textured	113,940 SF	Bradley Co LF - Module 5	McDonald	TN	10/27/2017
8-mil Dura Skrim	440,000 SF	Bradley Co LF - Module 5	McDonald	TN	10/27/2017
8-oz Geotextile	113,940 SF	Bradley Co LF - Module 5	McDonald	TN	10/27/2017
GCL	113,940 SF	Bradley Co LF - Module 5	McDonald	TN	10/27/2017
Geocomposite	410,000 SF	HRRC Landfill - Cell 5	Virginia Beach	VA	10/20/2017
Geocomposite (2)	222,000 SF	HRRC Landfill - Cell 5	Virginia Beach	VA	10/20/2017
60-mil HDPE	631,000 SF	HRRC Landfill - Cell 5	Virginia Beach	VA	10/20/2017
40-mil LLDPE Textured	124,690 SF	TVA Bull Run Sluice Channel	Clinton	TN	8 /4 /2017
12-oz Geotextile	663,414 SF	TVA Bull Run Sluice Channel	Clinton	TN	8 /4 /2017
12-oz Geotextile.	124,690 SF	TVA Bull Run Sluice Channel	Clinton	TN	8 /4 /2017
40-mil LLDPE Textured (2)	663,414 SF	TVA Bull Run Sluice Channel	Clinton	TN	8 /4 /2017
Geocomposite	663,414 SF	TVA Bull Run Sluice Channel	Clinton	TN	8 /4 /2017
60-mil LLDPE Textured	11,000 SF	TVA Bull Run Sluice Channel	Clinton	TN	8 /4 /2017
Geocomposite	203,000 SF	Procter and Gamble Site - Ash Pond Closure	Cincinnati	OH	8 /2 /2017

40-mil LLDPE	203,000 SF	Procter and Gamble Site - Ash Pond Closure	Cincinnati	OH	8 /2 /2017
Rain Cover (2)	435,600 SF	2017 Fairless Raincover	Morrisville	PA	8 /1 /2017
Rain Cover	400,752 SF	2017 Fairless Raincover	Morrisville	PA	8 /1 /2017
GCL	18,000 SF	Georgia Power - Plant Yates Temporary Water Treatment Pads	Newnan	GA	7 /28/2017
60-mil HDPE	18,000 SF	Georgia Power - Plant Yates Temporary Water Treatment Pads	Newnan	GA	7 /28/2017
GCL	1,639,049 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
60-mil LLDPE Floating Cover	209,982 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
36-mil RPE Floating Cover	777,917 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
80-mil HDPE Floating Cover	186,375 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
60-mil HDPE	1,853,408 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
10-oz Geotextile	146,000 SF	AEP John Amos	Winfield	WV	7 /17/2017
60-mil HDPE Textured	73,000 SF	AEP John Amos	Winfield	WV	7 /17/2017
14-oz Geotextile	501,812 SF	Taylor LF, Cells Q & P	Chesterfield	VA	7 /16/2017
40-mil HDPE Textured	50,400 SF	Taylor LF, Cells Q & P	Chesterfield	VA	7 /16/2017
60-mil HDPE Textured	556,127 SF	Taylor LF, Cells Q & P	Chesterfield	VA	7 /16/2017
Geocomposite	47,000 SF	NIPSCO	Wheatfield	IN	7 /7 /2017
40-mil LLDPE	550,000 SF	NIPSCO	Wheatfield	IN	7 /7 /2017
10-oz Geotextile	115,995 SF	Rumpke Pendleton Co Cell 4A	Butler	KY	7 /4 /2017
60-mil HDPE Textured	302,981 SF	Rumpke Pendleton Co Cell 4A	Butler	KY	7 /4 /2017
Geocomposite	185,884 SF	Rumpke Pendleton Co Cell 4A	Butler	KY	7 /4 /2017
60-mil HDPE	85,500 SF	WM Atlantic Waste WWTP Ponds	Waverly	VA	12/23/2016
60-mil LLDPE	187,070 SF	WM Atlantic LF Floating Covers	Waverly	VA	12/2 /2016

80-mil LLDPE	164,329 SF	WM Atlantic LF Floating Covers	Waverly	VA	12/2 /2016
60-mil HDPE Textured (2)	125,714 SF	Days Cove LF Cell F & G Phase 2	White Marsh	MD	10/18/2016
Rain Cover	121,263 SF	Days Cove LF Cell F & G Phase 2	White Marsh	MD	10/18/2016
GCL	154,487 SF	Days Cove LF Cell F & G Phase 2	White Marsh	MD	10/18/2016
60-mil HDPE Textured	28,774 SF	Days Cove LF Cell F & G Phase 2	White Marsh	MD	10/18/2016
30-mil PVC	2,000,000 SF	Rockport	Rockport	IN	9 /28/2016
10-oz Geotextile	2,000,000 SF	Rockport	Rockport	IN	9 /28/2016
60-mil HDPE Textured	1,463,000 SF	WM Atlantic Waste Temp Cap Phase 1	Waverly	VA	8 /22/2016
Wind Defender	315,396 SF	WM Atlantic Waste Western Slope Cap	Waverly	VA	8 /7 /2016
60-mil HDPE	315,396 SF	WM Atlantic Waste Western Slope Cap	Waverly	VA	8 /7 /2016
Geotextile	280,000 SF	Millennium Landfill	Ashtabula	OH	7 /24/2016
Geocomposite	155,000 SF	Millennium Landfill	Ashtabula	OH	7 /24/2016
40-mil LLDPE	80,000 SF	Millennium Landfill	Ashtabula	OH	7 /24/2016
60-mil HDPE	350,000 SF	Millennium Landfill	Ashtabula	OH	7 /24/2016
16-oz Geotextile	345,649 SF	Bethlehem LF Temp Cap	Bethlehem	PA	4 /23/2016
Wind Defender	282,799 SF	Bethlehem LF Temp Cap	Bethlehem	PA	4 /23/2016
24-mil Dura Skrim	125,597 SF	Bethlehem LF Temp Cap	Bethlehem	PA	4 /23/2016
40-mil Geomembrane	345,649 SF	Bethlehem LF Temp Cap	Bethlehem	PA	4 /23/2016
Geocomposite	82,800 SF	Bethlehem LF Temp Cap	Bethlehem	PA	4 /23/2016
8-oz Geocomposite	9,000 SF	AKZO Spill Pond	High Point	NC	4 /22/2016
40-mil Smooth	9,000 SF	AKZO Spill Pond	High Point	NC	4 /22/2016
100-mil Floating Cover	30,756 SF	Griffin Industries-Bastrop Facility	Bastrop	TX	12/19/2015
GCL	2,014,000 SF	EW Brown Phase 1 Cell	Harrodsburg	KY	12/12/2015
16-oz Geotextile	239,600 SF	EW Brown Phase 1 Cell	Harrodsburg	KY	12/12/2015
Geocomposite	1,854,000 SF	EW Brown Phase 1 Cell	Harrodsburg	KY	12/12/2015

60-mil HDPE Textured	328,000 SF	Rumpke-Montgomery Co LF Unit 3 Cell 3	Jeffersonville	KY	12/5 /2015
Geocomposite	104,000 SF	Rumpke-Montgomery Co LF Unit 3 Cell 3	Jeffersonville	KY	12/5 /2015
Geotextile	210,000 SF	Rumpke-Montgomery Co LF Unit 3 Cell 3	Jeffersonville	KY	12/5 /2015
GCL	254,000 SF	Rumpke-Montgomery Co LF Unit 3 Cell 3	Jeffersonville	KY	12/5 /2015
30-mil PVC (2)	454,500 SF	Gallagher Station Cell 2 Construction & Cell 1 Closure	New Albany	IN	12/4 /2015
PVC	1,280 LF	Gallagher Station Cell 2 Construction & Cell 1 Closure	New Albany	IN	12/4 /2015
16-oz Geotextile	454,500 SF	Gallagher Station Cell 2 Construction & Cell 1 Closure	New Albany	IN	12/4 /2015
30-mil PVC	405,900 SF	Gallagher Station Cell 2 Construction & Cell 1 Closure	New Albany	IN	12/4 /2015
Geocomposite	440,550 SF	Gallagher Station Cell 2 Construction & Cell 1 Closure	New Albany	IN	12/4 /2015
Rain Cover	1,393,920 SF	WM Atlantic LF Cell 12A, 12b and 12c Rain Cover	Waverly	VA	11/14/2015
Wind Defender	45,000 SF	Phoenix Landfill Rain Cover	Wellsboro	PA	10/31/2015
60-mil HDPE	420 LF	Phoenix Landfill Rain Cover	Wellsboro	PA	10/31/2015
6-oz Geotextile	145,000 SF	Phoenix Landfill Rain Cover	Wellsboro	PA	10/31/2015
Rain Cover	155,000 SF	Phoenix Landfill Rain Cover	Wellsboro	PA	10/31/2015
60-mil HDPE	100,000 SF	Duke Mayo Gypsum	Roxboro	NC	10/1 /2015
Geotextile	100,000 SF	Duke Mayo Gypsum	Roxboro	NC	10/1 /2015
60-mil HDPE	96,000 SF	Lehigh New Windsor Quarry Expansion	New Windsor	MD	9 /20/2015
30-mil HDPE	88,000 SF	Lehigh New Windsor Quarry Expansion	New Windsor	MD	9 /20/2015
60-mil HDPE	1,200,000 SF	Atlantic Cell 7A-7C Addendum	Waverly	VA	
Geocomposite	1,200,000 SF	Atlantic Cell 7A-7C Addendum	Waverly	VA	

GCL	1,200,000 SF	Atlantic Cell 7A-7C Addendum	Waverly	VA
40-mil HDPE	1,200,000 SF	Atlantic Cell 7A-7C Addendum	Waverly	VA
40-mil HDPE Textured	4,356,000 SF	Dominion Chesterfield Lower Ash Pond	Chester	VA
Wind Defender	3,898,620 SF	Dominion Chesterfield Lower Ash Pond	Chester	VA
8-oz Geotextile	457,380 SF	Dominion Chesterfield Lower Ash Pond	Chester	VA
60-mil HDPE Textured	90,090 SF	Dominion Power Clover Ponds	Clover	VA
32-oz Geotextile (2)	78,840 SF	Dominion Power Clover Ponds	Clover	VA
32-oz Geotextile	90,090 SF	Dominion Power Clover Ponds	Clover	VA
60-mil HDPE Textured (2)	78,840 SF	Dominion Power Clover Ponds	Clover	VA
GCL	392,931 SF	Kapstone Phase 3 LF Cell	Roanoke Rapids	NC
Geotextile	392,931 SF	Kapstone Phase 3 LF Cell	Roanoke Rapids	NC
60-mil HDPE	392,931 SF	Kapstone Phase 3 LF Cell	Roanoke Rapids	NC

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Material	Quantity	Project	Location		Completion Date
Geotextile	100,000 SF	Keystone Landfill T&M	Dunmore	PA	1 /12/2019
40-mil LLDPE	87,120 SF	Winchester VA Leachate Lagoon	Winchester	VA	12/15/2018
GCL	87,120 SF	Winchester VA Leachate Lagoon	Winchester	VA	12/15/2018
60-mil HDPE	87,120 SF	Winchester VA Leachate Lagoon	Winchester	VA	12/15/2018
8-oz Geotextile	26,000 SF	Virginia Tech Bioretention Ponds	Blacksburg	VA	8 /28/2018
30-mil PVC	13,000 SF	Virginia Tech Bioretention Ponds	Blacksburg	VA	8 /28/2018
16-oz Geotextile	179,300 SF	Mountain View Reclamation Cell 21B2	Greencastle	PA	8 /6 /2018
60-mil HDPE	360,300 SF	Mountain View Reclamation Cell 21B2	Greencastle	PA	8 /6 /2018
Geocomposite	1,415,700 SF	TVA Kingston Stilling Pond Closure	Harriman	TN	6 /26/2018
40-mil LLDPE Textured	1,415,700 SF	TVA Kingston Stilling Pond Closure	Harriman	TN	6 /26/2018
12-oz Geotextile	1,415,700 SF	TVA Kingston Stilling Pond Closure	Harriman	TN	6 /26/2018
GCL	350,000 SF	WestRock Covington Cell	Covington	VA	6 /21/2018
12-oz Geotextile	300,000 SF	WestRock Covington Cell	Covington	VA	6 /21/2018
40-mil HDPE	300,000 SF	WestRock Covington Cell	Covington	VA	6 /21/2018
60-mil HDPE Textured	350,000 SF	WestRock Covington Cell	Covington	VA	6 /21/2018
Rain Cover	350,000 SF	WestRock Covington Cell	Covington	VA	6 /21/2018
Geocomposite	350,000 SF	WestRock Covington Cell	Covington	VA	6 /21/2018
60-mil HDPE	1,000,000 SF	Plant Hammond Ash Pond 3 Closure	Rome	GA	1 /25/2018
Geocomposite	1,000,000 SF	Plant Hammond Ash Pond 3 Closure	Rome	GA	1 /25/2018
32-oz Geotextile	43,560 SF	Mount Storm Pyrite Pond	Mt Storm	WV	12/16/2017
60-mil HDPE Textured	43,560 SF	Mount Storm Pyrite Pond	Mt Storm	WV	12/16/2017
GCL	43,560 SF	Mount Storm Pyrite Pond	Mt Storm	WV	12/16/2017

8-oz Geotextile	840,000 SF	Northern LF Cells 1 & 2 Closure and Leachate Ponds	Westminster	MD	12/15/2017
60 mil Textured HDPE Secondary	30,487 SF	Northern LF Cells 1 & 2 Closure and Leachate Ponds	Westminster	MD	12/15/2017
GCL	30,487 SF	Northern LF Cells 1 & 2 Closure and Leachate Ponds	Westminster	MD	12/15/2017
50-mil HDPE (Super Gripnet)	875,000 SF	Northern LF Cells 1 & 2 Closure and Leachate Ponds	Westminster	MD	12/15/2017
60-mil HDPE Textured	30,487 SF	Northern LF Cells 1 & 2 Closure and Leachate Ponds	Westminster	MD	12/15/2017
Geocomposite	30,487 SF	Northern LF Cells 1 & 2 Closure and Leachate Ponds	Westminster	MD	12/15/2017
60-mil HDPE Textured	301,371 SF	Volunteer Landfill	Oneida	TN	12/3 /2017
Geocomposite	301,371 SF	Volunteer Landfill	Oneida	TN	12/3 /2017
40-mil HDPE Textured	1,100 LF	Volunteer Landfill	Oneida	TN	12/3 /2017
40-mil LLDPE Textured	2,326,755 SF	TVA Colbert Ash Pond 4 Closure	Tuscumbia	AL	11/18/2017
Geotextile	2,326,755 SF	TVA Colbert Ash Pond 4 Closure	Tuscumbia	AL	11/18/2017
Geocomposite	2,326,755 SF	TVA Colbert Ash Pond 4 Closure	Tuscumbia	AL	11/18/2017
GCL	189,615 SF	Rhea County Landfill	Dayton	TN	11/6 /2017
16-oz Geotextile	189,615 SF	Rhea County Landfill	Dayton	TN	11/6 /2017
60-mil HDPE Textured	189,615 SF	Rhea County Landfill	Dayton	TN	11/6 /2017
GCL	113,940 SF	Bradley Co LF - Module 5	McDonald	TN	10/27/2017
60-mil HDPE Textured	113,940 SF	Bradley Co LF - Module 5	McDonald	TN	10/27/2017
8-mil Dura Skrim	440,000 SF	Bradley Co LF - Module 5	McDonald	TN	10/27/2017
8-oz Geotextile	113,940 SF	Bradley Co LF - Module 5	McDonald	TN	10/27/2017
Geocomposite (2)	222,000 SF	HRRC Landfill - Cell 5	Virginia Beach	VA	10/20/2017
Geocomposite	410,000 SF	HRRC Landfill - Cell 5	Virginia Beach	VA	10/20/2017
60-mil HDPE	631,000 SF	HRRC Landfill - Cell 5	Virginia Beach	VA	10/20/2017
40-mil LLDPE Textured	124,690 SF	TVA Bull Run Sluice Channel	Clinton	TN	8 /4 /2017

40-mil LLDPE Textured (2)	663,414 SF	TVA Bull Run Sluice Channel	Clinton	TN	8 /4 /2017
12-oz Geotextile	663,414 SF	TVA Bull Run Sluice Channel	Clinton	TN	8 /4 /2017
Geocomposite	663,414 SF	TVA Bull Run Sluice Channel	Clinton	TN	8 /4 /2017
60-mil LLDPE Textured	11,000 SF	TVA Bull Run Sluice Channel	Clinton	TN	8 /4 /2017
12-oz Geotextile.	124,690 SF	TVA Bull Run Sluice Channel	Clinton	TN	8 /4 /2017
40-mil LLDPE	203,000 SF	Procter and Gamble Site - Ash Pond Closure	Cincinnati	OH	8 /2 /2017
Geocomposite	203,000 SF	Procter and Gamble Site - Ash Pond Closure	Cincinnati	OH	8 /2 /2017
Rain Cover (2)	435,600 SF	2017 Fairless Raincover	Morrisville	PA	8 /1 /2017
Rain Cover	400,752 SF	2017 Fairless Raincover	Morrisville	PA	8 /1 /2017
GCL	18,000 SF	Georgia Power - Plant Yates Temporary Water Treatment Pads	Newnan	GA	7 /28/2017
60-mil HDPE	18,000 SF	Georgia Power - Plant Yates Temporary Water Treatment Pads	Newnan	GA	7 /28/2017
GCL	1,639,049 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
60-mil LLDPE Floating Cover	209,982 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
60-mil HDPE	1,853,408 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
80-mil HDPE Floating Cover	186,375 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
36-mil RPE Floating Cover	777,917 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
60-mil HDPE Textured	73,000 SF	AEP John Amos	Winfield	WV	7 /17/2017
10-oz Geotextile	146,000 SF	AEP John Amos	Winfield	WV	7 /17/2017
Geocomposite	185,884 SF	Rumpke Pendleton Co Cell 4A	Butler	KY	7 /4 /2017
60-mil HDPE Textured	302,981 SF	Rumpke Pendleton Co Cell 4A	Butler	KY	7 /4 /2017
10-oz Geotextile	115,995 SF	Rumpke Pendleton Co Cell 4A	Butler	KY	7 /4 /2017
Geocomposite	450,000 SF	Onslow County Landfill	Jacksonville	NC	6 /8 /2017

60-mil HDPE	450,000 SF	Onslow County Landfill	Jacksonville	NC	6 /8 /2017
GCL	450,000 SF	Onslow County Landfill	Jacksonville	NC	6 /8 /2017
Rain Cover	200,000 SF	Onslow County Landfill	Jacksonville	NC	6 /8 /2017
GCL	85,000 SF	Laurel Ridge LF	Lily	KY	5 /7 /2017
Geocomposite	85,000 SF	Laurel Ridge LF	Lily	KY	5 /7 /2017
60-mil HDPE Textured	85,000 SF	Laurel Ridge LF	Lily	KY	5 /7 /2017
16-oz Geotextile	2,000 LF	EKPC Spurlock Area C Phase 3 LF Expansion	Maysville	KY	4 /26/2017
60-mil HDPE (2)	500,000 SF	EKPC Spurlock Area C Phase 3 LF Expansion	Maysville	KY	4 /26/2017
60-mil HDPE	2,000 LF	EKPC Spurlock Area C Phase 3 LF Expansion	Maysville	KY	4 /26/2017
Geocomposite	500,000 SF	EKPC Spurlock Area C Phase 3 LF Expansion	Maysville	KY	4 /26/2017
Wind Defender	335,000 SF	Macon County MSW Phase 3 Cell	Franklin	NC	12/28/2016
Rain Cover	335,000 SF	Macon County MSW Phase 3 Cell	Franklin	NC	12/28/2016
60-mil HDPE	335,000 SF	Macon County MSW Phase 3 Cell	Franklin	NC	12/28/2016
16-oz Geotextile	335,000 SF	Macon County MSW Phase 3 Cell	Franklin	NC	12/28/2016
GCL	335,000 SF	Macon County MSW Phase 3 Cell	Franklin	NC	12/28/2016
60-mil LLDPE	187,070 SF	WM Atlantic LF Floating Covers	Waverly	VA	12/2 /2016
80-mil LLDPE	164,329 SF	WM Atlantic LF Floating Covers	Waverly	VA	12/2 /2016
60-mil HDPE	815,000 SF	Riverview LF	Riverview	MI	11/30/2016
GCL	815,000 SF	Riverview LF	Riverview	MI	11/30/2016
Geocomposite	815,000 SF	Riverview LF	Riverview	MI	11/30/2016
GCL	210,420 SF	Hood Container Phase 7 LF	Waverly	TN	11/16/2016
Tie In Weld	796 LF	Hood Container Phase 7 LF	Waverly	TN	11/16/2016
60-mil HDPE Textured	210,420 SF	Hood Container Phase 7 LF	Waverly	TN	11/16/2016
16-oz Geotextile	210,420 SF	Hood Container Phase 7 LF	Waverly	TN	11/16/2016

60-mil HDPE Smooth	322,306 SF	LaFarge LF 2016 Construction	Alpena	MI	11/5 /2016
60-mil HDPE Textured	104,019 SF	LaFarge LF 2016 Construction	Alpena	MI	11/5 /2016
40-mil LLDPE	178,349 SF	LaFarge LF 2016 Construction	Alpena	MI	11/5 /2016
40-mil LLDPE Smooth	893,111 SF	LaFarge LF 2016 Construction	Alpena	MI	11/5 /2016
Geocomposite	384,000 SF	Asheville Phase 3	Arden	NC	10/3 /2016
60-mil HDPE Textured	429,000 SF	Asheville Phase 3	Arden	NC	10/3 /2016
GCL	429,000 SF	Asheville Phase 3	Arden	NC	10/3 /2016
16-oz Geotextile	835,000 SF	Rumpke RSL Phase 10	Cincinnati	OH	9 /30/2016
60-mil HDPE Textured	835,000 SF	Rumpke RSL Phase 10	Cincinnati	OH	9 /30/2016
30-mil PVC	2,000,000 SF	Rockport	Rockport	IN	9 /28/2016
10-oz Geotextile	2,000,000 SF	Rockport	Rockport	IN	9 /28/2016
GCL	960,740 SF	Blackfoot Bridge Mine	Soda Springs	ID	9 /21/2016
Geocomposite	960,740 SF	Blackfoot Bridge Mine	Soda Springs	ID	9 /21/2016
60-mil HDPE Textured	1,463,000 SF	WM Atlantic Waste Temp Cap Phase 1	Waverly	VA	8 /22/2016
Wind Defender	315,396 SF	WM Atlantic Waste Western Slope Cap	Waverly	VA	8 /7 /2016
60-mil HDPE	315,396 SF	WM Atlantic Waste Western Slope Cap	Waverly	VA	8 /7 /2016
40-mil LLDPE	80,000 SF	Millennium Landfill	Ashtabula	OH	7 /24/2016
60-mil HDPE	350,000 SF	Millennium Landfill	Ashtabula	OH	7 /24/2016
Geotextile	280,000 SF	Millennium Landfill	Ashtabula	OH	7 /24/2016
Geocomposite	155,000 SF	Millennium Landfill	Ashtabula	OH	7 /24/2016
80-mil HDPE Embedment Liner	37,700 SF	Patapsco WWTP 845R	Baltimore	MD	7 /14/2016
24-mil Dura Skrim	125,597 SF	Bethlehem LF Temp Cap	Bethlehem	PA	4 /23/2016
16-oz Geotextile	345,649 SF	Bethlehem LF Temp Cap	Bethlehem	PA	4 /23/2016
Wind Defender	282,799 SF	Bethlehem LF Temp Cap	Bethlehem	PA	4 /23/2016

Geocomposite	82,800 SF	Bethlehem LF Temp Cap	Bethlehem	PA	4 /23/2016
40-mil Geomembrane	345,649 SF	Bethlehem LF Temp Cap	Bethlehem	PA	4 /23/2016
40-mil Smooth	9,000 SF	AKZO Spill Pond	High Point	NC	4 /22/2016
8-oz Geocomposite	9,000 SF	AKZO Spill Pond	High Point	NC	4 /22/2016
100-mil Floating Cover	30,756 SF	Griffin Industries-Bastrop Facility	Bastrop	TX	12/19/2015
GCL	2,014,000 SF	EW Brown Phase 1 Cell	Harrodsburg	KY	12/12/2015
16-oz Geotextile	239,600 SF	EW Brown Phase 1 Cell	Harrodsburg	KY	12/12/2015
Geocomposite	1,854,000 SF	EW Brown Phase 1 Cell	Harrodsburg	KY	12/12/2015
Geocomposite	104,000 SF	Rumpke-Montgomery Co LF Unit 3 Cell 3	Jeffersonville	KY	12/5 /2015
GCL	254,000 SF	Rumpke-Montgomery Co LF Unit 3 Cell 3	Jeffersonville	KY	12/5 /2015
60-mil HDPE Textured	328,000 SF	Rumpke-Montgomery Co LF Unit 3 Cell 3	Jeffersonville	KY	12/5 /2015
Geotextile	210,000 SF	Rumpke-Montgomery Co LF Unit 3 Cell 3	Jeffersonville	KY	12/5 /2015
16-oz Geotextile	454,500 SF	Gallagher Station Cell 2 Construction & Cell 1 Closure	New Albany	IN	12/4 /2015
30-mil PVC	405,900 SF	Gallagher Station Cell 2 Construction & Cell 1 Closure	New Albany	IN	12/4 /2015
PVC	1,280 LF	Gallagher Station Cell 2 Construction & Cell 1 Closure	New Albany	IN	12/4 /2015
30-mil PVC (2)	454,500 SF	Gallagher Station Cell 2 Construction & Cell 1 Closure	New Albany	IN	12/4 /2015
Geocomposite	440,550 SF	Gallagher Station Cell 2 Construction & Cell 1 Closure	New Albany	IN	12/4 /2015
16-oz Geotextile	513,000 SF	Harford County	Street	MD	12/4 /2015
8-oz Geotextile	513,000 SF	Harford County	Street	MD	12/4 /2015
60-mil HDPE	513,000 SF	Harford County	Street	MD	12/4 /2015
Wind Defender	45,000 SF	Phoenix Landfill Rain Cover	Wellsboro	PA	10/31/2015
60-mil HDPE	420 LF	Phoenix Landfill Rain Cover	Wellsboro	PA	10/31/2015

6-oz Geotextile	145,000 SF	Phoenix Landfill Rain Cover	Wellsboro	PA	10/31/2015
Rain Cover	155,000 SF	Phoenix Landfill Rain Cover	Wellsboro	PA	10/31/2015
Geotextile	100,000 SF	Duke Mayo Gypsum	Roxboro	NC	10/1 /2015
60-mil HDPE	100,000 SF	Duke Mayo Gypsum	Roxboro	NC	10/1 /2015
30-mil HDPE	88,000 SF	Lehigh New Windsor Quarry Expansion	New Windsor	MD	9 /20/2015
60-mil HDPE	96,000 SF	Lehigh New Windsor Quarry Expansion	New Windsor	MD	9 /20/2015
GCL	584,000 SF	AEP Mitchell Landfill	Proctor	WV	7 /28/2015
30-mil PVC	512,000 SF	AEP Mitchell Landfill	Proctor	WV	7 /28/2015
Geocomposite (2)	414,000 SF	AEP Mitchell Landfill	Proctor	WV	7 /28/2015
45-mil RPP	72,000 SF	AEP Mitchell Landfill	Proctor	WV	7 /28/2015
Geocomposite	512,000 SF	AEP Mitchell Landfill	Proctor	WV	7 /28/2015
20-mil Dura Skrim	309,120 SF	Grows and Tullytown December 2014 Temp Cap	Morrisville	PA	12/23/2014
45-mil RPP	30,000 SF	Cozart Landfill Pond	Coolville	OH	11/19/2014
Geotextile	19,000 SF	Cozart Landfill Pond	Coolville	OH	11/19/2014
60-mil HDPE	19,000 SF	Cozart Landfill Pond	Coolville	OH	11/19/2014
60-mil HDPE Textured	71,999 SF	US Nitrogen Pond	Midway	TN	11/11/2014
16-oz Geotextile	71,999 SF	US Nitrogen Pond	Midway	TN	11/11/2014
30-mil LLDPE	41,978 SF	Wal-Mart 6263	Winston Salem	NC	11/6 /2014
8-oz Geotextile	83,956 SF	Wal-Mart 6263	Winston Salem	NC	11/6 /2014
60-mil HDPE Smooth	492,300 SF	NIPSCO Phase 6 Cell	Wheatfield	IN	10/8 /2014
Geotextile	54,000 SF	NIPSCO Phase 6 Cell	Wheatfield	IN	10/8 /2014
60-mil HDPE Textured	86,400 SF	NIPSCO Phase 6 Cell	Wheatfield	IN	10/8 /2014
24-mil Dura Skrim	176,761 SF	WM Chaffee Landfill	Chaffee	NY	10/6 /2014
30-mil HDPE	84,093 SF	WM Chaffee Landfill	Chaffee	NY	10/6 /2014
60-mil HDPE	1,009,600 SF	Santee Cooper Cross Station	Pineville	SC	9 /19/2014

60-mil HDPE Textured	185,900 SF	Santee Cooper Cross Station	Pineville	SC	9 /19/2014
GCL	146,000 SF	Santee Cooper Cross Station	Pineville	SC	9 /19/2014
GCL (2)	1,007,600 SF	Santee Cooper Cross Station	Pineville	SC	9 /19/2014
Geocomposite	199,100 SF	Santee Cooper Cross Station	Pineville	SC	9 /19/2014
40-mil HDPE Smooth	775,170 SF	Plant Gorgas Temporary Cover	Parrish	AL	9 /9 /2014
60-mil HDPE	43,560 SF	Iris Glen Cell 6B Repairs	Johnson City	TN	9 /4 /2014
60-mil HDPE	389,000 SF	Noble Road Landfill	Shiloh	OH	8 /14/2014
8-oz Geotextile	389,000 SF	Noble Road Landfill	Shiloh	OH	8 /14/2014
8-oz Geotextile (2)	389,000 SF	Noble Road Landfill	Shiloh	OH	8 /14/2014
Geocomposite	31,224 SF	Modifications to Asheville Cap & Cell for Runway at Asheville Airport	Fletcher	NC	7 /20/2014
GCL	31,224 SF	Modifications to Asheville Cap & Cell for Runway at Asheville Airport	Fletcher	NC	7 /20/2014
40-mil HDPE	43,885 SF	Modifications to Asheville Cap & Cell for Runway at Asheville Airport	Fletcher	NC	7 /20/2014
60-mil HDPE	31,224 SF	Modifications to Asheville Cap & Cell for Runway at Asheville Airport	Fletcher	NC	7 /20/2014
60-mil HDPE	146,500 SF	Wilmington Vertical Expansion	Wilmington	OH	6 /29/2014
8-oz Geotextile	140,000 SF	Wilmington Vertical Expansion	Wilmington	OH	6 /29/2014
Geocomposite	1,212,500 SF	Eastern Sanitary Landfill Phase X	White Marsh	MD	12/1 /2013
50-mil PVC	657,000 SF	Eastern Sanitary Landfill Phase X	White Marsh	MD	12/1 /2013
Geocomposite (2)	1,212,500 SF	Eastern Sanitary Landfill Phase X	White Marsh	MD	12/1 /2013
Rain Cover	646,200 SF	Eastern Sanitary Landfill Phase X	White Marsh	MD	12/1 /2013
Geocomposite	1,976,900 SF	Plant Gorgas Cell 1 & 2	Parrish	AL	12/1 /2013
60-mil HDPE	2,031,500 SF	Plant Gorgas Cell 1 & 2	Parrish	AL	12/1 /2013
GCL	1,705,400 SF	Plant Gorgas Cell 1 & 2	Parrish	AL	12/1 /2013

32-oz Geotextile (2)	78,840 SF	Dominion Power Clover Ponds	Clover	VA
60-mil HDPE Textured	90,090 SF	Dominion Power Clover Ponds	Clover	VA
60-mil HDPE Textured (2)	78,840 SF	Dominion Power Clover Ponds	Clover	VA
32-oz Geotextile	90,090 SF	Dominion Power Clover Ponds	Clover	VA
Rain Cover	230,000 SF	Duke Mayo Monofill LF Emergency Cover	Roxboro	NC
12-mil Raincover	439,000 SF	Hoover Mason Raincover & Wind Defender	Mt Pleasant	TN
Wind Defender	439,000 SF	Hoover Mason Raincover & Wind Defender	Mt Pleasant	TN
6-oz Geotextile	657,100 SF	Mountain View Reclamation Eastern Tract 2 Cap	Greencastle	PA
50-mil HDPE	657,100 SF	Mountain View Reclamation Eastern Tract 2 Cap	Greencastle	PA
8-oz Geotextile	300,000 SF	Raven Power Lot 15	Baltimore	MD
Rain Cover	150,000 SF	Raven Power Lot 15	Baltimore	MD
Geocomposite	300,000 SF	Raven Power Lot 15	Baltimore	MD
60-mil HDPE	360,000 SF	Raven Power Lot 15	Baltimore	MD
40-mil LLDPE	978,200 SF	Sunny Farms Cell 8 Cap	Fostoria	OH
Geocomposite	978,200 SF	Sunny Farms Cell 8 Cap	Fostoria	OH



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SUPERINTENDENT **Barbarito Flores**

Flores, Barbarito

Material	Quantity	Project	Location	Completion Date	
60-mil HDPE Textured	927,234 SF	Duke Mayo Water Redirect	Roxboro	NC	2 /3 /2019
10-oz Geotextile	1,075,500 SF	Duke Mayo Water Redirect	Roxboro	NC	2 /3 /2019
GCL	684,000 SF	Duke Mayo Water Redirect	Roxboro	NC	2 /3 /2019
16-oz Geotextile	571,500 SF	Duke Mayo Water Redirect	Roxboro	NC	2 /3 /2019
60-mil HDPE Textured	395,290 SF	Republic Walnut Creek LF	Frankfort	IN	12/7 /2018
Geocomposite	291,249 SF	Republic Clinton Co Cap	Frankfort	IN	11/3 /2018
40-mil LLDPE Textured	279,089 SF	Republic Clinton Co Cap	Frankfort	IN	11/3 /2018
12-oz Geotextile	80,000 SF	JH Campbell.	West Olive	MI	9 /9 /2018
40-mil HDPE	450,000 SF	JH Campbell.	West Olive	MI	9 /9 /2018
10-oz Geotextile	450,000 SF	JH Campbell.	West Olive	MI	9 /9 /2018
60-mil LLDPE	80,000 SF	JH Campbell.	West Olive	MI	9 /9 /2018
GCL	30,000 SF	JH Campbell.	West Olive	MI	9 /9 /2018
60-mil HDPE	30,000 SF	JH Campbell.	West Olive	MI	9 /9 /2018
Geocomposite	1,374,382 SF	Winyah LF Area 1	Georgetown	SC	9 /6 /2018
GCL	1,374,382 SF	Winyah LF Area 1	Georgetown	SC	9 /6 /2018
60-mil HDPE	1,394,382 SF	Winyah LF Area 1	Georgetown	SC	9 /6 /2018
Geocomposite	67,000 SF	Montgomery Co LF Cell 4	Jeffersonville	KY	8 /10/2018
6-oz Geotextile	147,000 SF	Montgomery Co LF Cell 4	Jeffersonville	KY	8 /10/2018
GCL	212,000 SF	Montgomery Co LF Cell 4	Jeffersonville	KY	8 /10/2018
60-mil HDPE Textured	212,000 SF	Montgomery Co LF Cell 4	Jeffersonville	KY	8 /10/2018
60-mil HDPE	472,000 SF	South Kent Co LF	Byron Center	MI	7 /23/2018
GCL	472,000 SF	South Kent Co LF	Byron Center	MI	7 /23/2018
Geocomposite	329,000 SF	South Kent Co LF	Byron Center	MI	7 /23/2018
60-mil HDPE	34,000 SF	Santee Cooper - Cross Phase II and II Drainage	Pineville	SC	6 /2 /2018

Geocomposite	164,000 SF	Santee Cooper - Cross Phase II and II Drainage	Pineville	SC	6 /2 /2018
60-mil HDPE Textured (4)	660,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
Geocomposite (4)	660,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
60-mil HDPE Textured (2)	810,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
Geocomposite (2)	810,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
60-mil HDPE Textured	810,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
GCL	405,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
Geocomposite (3)	660,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
60-mil HDPE Textured (3)	660,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
GCL (2)	330,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
Geocomposite	810,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
60-mil HDPE Textured	272,960 SF	Rumpke Beech Hollow Landfill	Wellston	OH	10/19/2017
8 oz Geotextile	272,960 SF	Rumpke Beech Hollow Landfill	Wellston	OH	10/19/2017
60-mil HDPE	100,000 SF	Ottawa Farms Landfill	Coopersville	MI	10/12/2017
GCL	100,000 SF	Ottawa Farms Landfill	Coopersville	MI	10/12/2017
8-oz Geotextile	1,200,000 SF	Sunny Farms	Fostoria	OH	8 /29/2017
60-mil HDPE	1,200,000 SF	Sunny Farms	Fostoria	OH	8 /29/2017
Tie-In	2,100 LF	Sunny Farms	Fostoria	OH	8 /29/2017
12-oz Geotextile	122,095 SF	Decatur Co Landfill	Bath Springs	TN	8 /21/2017
Rain Cover	418,531 SF	Decatur Co Landfill	Bath Springs	TN	8 /21/2017
60-mil HDPE Textured	155,621 SF	Decatur Co Landfill	Bath Springs	TN	8 /21/2017

Geocomposite	59,415 SF	Decatur Co Landfill	Bath Springs	TN	8 /21/2017
20-mil Dura Skrim	1,700,000 SF	Duke Gibson Cell 2 Raincover	Owensville	IN	8 /17/2017
12-oz Geotextile.	124,690 SF	TVA Bull Run Sluice Channel	Clinton	TN	8 /4 /2017
Geocomposite	663,414 SF	TVA Bull Run Sluice Channel	Clinton	TN	8 /4 /2017
12-oz Geotextile	663,414 SF	TVA Bull Run Sluice Channel	Clinton	TN	8 /4 /2017
40-mil LLDPE Textured	124,690 SF	TVA Bull Run Sluice Channel	Clinton	TN	8 /4 /2017
40-mil LLDPE Textured (2)	663,414 SF	TVA Bull Run Sluice Channel	Clinton	TN	8 /4 /2017
60-mil LLDPE Textured	11,000 SF	TVA Bull Run Sluice Channel	Clinton	TN	8 /4 /2017
36-mil RPE Floating Cover	777,917 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
GCL	1,639,049 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
60-mil LLDPE Floating Cover	209,982 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
60-mil HDPE	1,853,408 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
80-mil HDPE Floating Cover	186,375 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
20-mil Dura Skrim	1,700,000 SF	Duke Gibson Cell 3 Raincover	Owensville	IN	7 /10/2017
40-mil LLDPE	550,000 SF	NIPSCO	Wheatfield	IN	7 /7 /2017
Geocomposite	47,000 SF	NIPSCO	Wheatfield	IN	7 /7 /2017
60-mil HDPE	47,000 SF	Raleigh Town Center - Pond Lining	Raleigh	NC	5 /21/2017
12-oz Geotextile	47,000 SF	Raleigh Town Center - Pond Lining	Raleigh	NC	5 /21/2017
12-mil Dura Skrim	918,000 SF	Red Rock Disposal- Phase I Temporary Cover	Holly Springs	NC	5 /8 /2017
Wind Defender	918,000 SF	Red Rock Disposal- Phase I Temporary Cover	Holly Springs	NC	5 /8 /2017
20-mil Dura Skrim	435,000 SF	WM King George LF Temp Cap 2016 Phase 2	King George	VA	4 /1 /2017
Wind Defender	435,000 SF	WM King George LF Temp Cap 2016 Phase 2	King George	VA	4 /1 /2017

60-mil HDPE	55,000 SF	Bay Valley Foods Lagoon	Faison	NC	3 /21/2017
Rain Cover	435,600 SF	WM Grand Central LF- Temp Cap Nov.	Pen Argyl	PA	1 /21/2017
40-mil LLDPE	340,000 SF	Duke Catawba Nuclear Station LF Closure	York	SC	12/12/2016
16-oz Geotextile	36,000 SF	Duke Catawba Nuclear Station LF Closure	York	SC	12/12/2016
6-oz Geotextile	245,000 SF	Duke Catawba Nuclear Station LF Closure	York	SC	12/12/2016
Geocomposite	320,000 SF	Duke Catawba Nuclear Station LF Closure	York	SC	12/12/2016
80-mil LLDPE	164,329 SF	WM Atlantic LF Floating Covers	Waverly	VA	12/2 /2016
60-mil LLDPE	187,070 SF	WM Atlantic LF Floating Covers	Waverly	VA	12/2 /2016
40-mil LLDPE	26,000 SF	Duke Pine Hall Road Diversion	Walnut Cove	NC	11/23/2016
Geocomposite	26,000 SF	Duke Pine Hall Road Diversion	Walnut Cove	NC	11/23/2016
60-mil HDPE	125,000 SF	Carolina Beach WWTP	Carolina Beach	NC	10/15/2016
60-mil HDPE	110,000 SF	Duke Cliffside Basement Liner	Mooresboro	NC	10/10/2016
12-oz Geotextile	110,000 SF	Duke Cliffside Basement Liner	Mooresboro	NC	10/10/2016
Wind Defender	95,832 SF	WM King George LF Temp Cap 2016	King George	VA	10/5 /2016
40-mil HDPE	95,832 SF	WM King George LF Temp Cap 2016	King George	VA	10/5 /2016
60-mil HDPE Textured	429,000 SF	Asheville Phase 3	Arden	NC	10/3 /2016
GCL	429,000 SF	Asheville Phase 3	Arden	NC	10/3 /2016
Geocomposite	384,000 SF	Asheville Phase 3	Arden	NC	10/3 /2016
60-mil HDPE Textured	1,463,000 SF	WM Atlantic Waste Temp Cap Phase 1	Waverly	VA	8 /22/2016
60-mil HDPE	26,750 SF	AEP Darby Plant Tank Farm	Mt Sterling	OH	8 /20/2016
Geonet	55,058 SF	Plant McIntosh	Rincon	GA	7 /16/2016
Geocomposite	420,542 SF	Plant McIntosh	Rincon	GA	7 /16/2016

60-mil HDPE Textured	110,153 SF	Plant McIntosh	Rincon	GA	7 /16/2016
4-oz Protection Strip	47,460 SF	Plant McIntosh	Rincon	GA	7 /16/2016
Rain Cover	395,730 SF	Plant McIntosh	Rincon	GA	7 /16/2016
16-oz Geotextile	62,296 SF	Plant McIntosh	Rincon	GA	7 /16/2016
60-mil HDPE Textured (3)	461,437 SF	Plant McIntosh	Rincon	GA	7 /16/2016
60-mil HDPE Textured (2)	110,153 SF	Plant McIntosh	Rincon	GA	7 /16/2016
80-mil HDPE Embedment Liner	37,700 SF	Patapsco WWTP 845R	Baltimore	MD	7 /14/2016
Geocomposite (2)	379,557 SF	HRRC Cell 6	Virginia Beach	VA	5 /8 /2016
60-mil HDPE	575,216 SF	HRRC Cell 6	Virginia Beach	VA	5 /8 /2016
Geocomposite	195,659 SF	HRRC Cell 6	Virginia Beach	VA	5 /8 /2016
30-mil PVC	138,549 SF	Costco	Monrovia	MD	5 /1 /2016
8-oz Geotextile	95,118 SF	Costco	Monrovia	MD	5 /1 /2016
40-mil HDPE	400 SF	Harnett Co WTP	Lillington	NC	4 /10/2016
Rain Cover	801,124 SF	WM Grand Central LF- Temp Cap	Pen Argyl	PA	3 /31/2016
8-oz Geotextile	5,000 SF	Duke Belews Creek Gypsum	Belews Creek	NC	3 /29/2016
60-mil HDPE	5,000 SF	Duke Belews Creek Gypsum	Belews Creek	NC	3 /29/2016
Rain Cover	261,360 SF	Duke Roxboro Gypsum	Semora	NC	2 /26/2016
Geocomposite	1,283,229 SF	Huffaker Rd	Rome	GA	12/13/2015
8-oz Geotextile	53,304 SF	Huffaker Rd	Rome	GA	12/13/2015
30 mil Rain Cap	1,227,466 SF	Huffaker Rd	Rome	GA	12/13/2015
60-mil HDPE Textured	1,313,361 SF	Huffaker Rd	Rome	GA	12/13/2015
60-mil HDPE Textured (2)	38,982 SF	Huffaker Rd	Rome	GA	12/13/2015
60-mil HDPE Textured (3)	38,982 SF	Huffaker Rd	Rome	GA	12/13/2015
16-oz Geotextile	53,304 SF	Huffaker Rd	Rome	GA	12/13/2015
60-mil HDPE	513,000 SF	Harford County	Street	MD	12/4 /2015
16-oz Geotextile	513,000 SF	Harford County	Street	MD	12/4 /2015

8-oz Geotextile	513,000 SF	Harford County	Street	MD	12/4 /2015
30-mil HDPE Textured	163,350 SF	WM Cedar Ridge Temp Cover	Lewisburg	TN	11/26/2015
30-mil Geomembrane	68,718 SF	Duke Cliffside Ash LF	Mooresboro	NC	11/24/2015
GCL	677,825 SF	Duke Cliffside Ash LF	Mooresboro	NC	11/24/2015
Rain Cover	24,740 SF	Duke Cliffside Ash LF	Mooresboro	NC	11/24/2015
60-mil HDPE	677,825 SF	Duke Cliffside Ash LF	Mooresboro	NC	11/24/2015
Geocomposite	677,825 SF	Duke Cliffside Ash LF	Mooresboro	NC	11/24/2015
30-mil Textured	557,755 SF	WM West Camden Temp Cover	Camden	TN	11/21/2015
Rain Cover	322,080 SF	WM King George LF Rain Cover 2015	King George	VA	11/3 /2015
60-mil HDPE Smooth	1,172,622 SF	Santee Cooper Cell and Pond	Pineville	SC	10/27/2015
Geocomposite	983,547 SF	Santee Cooper Cell and Pond	Pineville	SC	10/27/2015
GCL	1,272,446 SF	Santee Cooper Cell and Pond	Pineville	SC	10/27/2015
12-oz Geotextile	380,979 SF	Santee Cooper Cell and Pond	Pineville	SC	10/27/2015
60-mil HDPE Textured	99,824 SF	Santee Cooper Cell and Pond	Pineville	SC	10/27/2015
Geotextile	100,000 SF	Duke Mayo Gypsum	Roxboro	NC	10/1 /2015
60-mil HDPE	100,000 SF	Duke Mayo Gypsum	Roxboro	NC	10/1 /2015
8-oz Geotextile	1,039,339 SF	Westland Ash Closure	Dickerson	MD	8 /30/2015
60-mil HDPE	52,318 SF	Westland Ash Closure	Dickerson	MD	8 /30/2015
16-oz Geotextile	52,318 SF	Westland Ash Closure	Dickerson	MD	8 /30/2015
50-mil HDPE	389,986 SF	Westland Ash Closure	Dickerson	MD	8 /30/2015
40-mil HDPE	2,053,381 SF	Westland Ash Closure	Dickerson	MD	8 /30/2015
GCL	52,318 SF	Westland Ash Closure	Dickerson	MD	8 /30/2015
Geocomposite	2,354,425 SF	Westland Ash Closure	Dickerson	MD	8 /30/2015
40-mil HDPE	6,500 SF	Anderson Regional Landfill Overlay 2B Area	Belton	SC	8 /16/2015
60-mil HDPE Textured	99,631 SF	Anderson Regional Landfill Overlay 2B Area	Belton	SC	8 /16/2015

Geocomposite	10,359 SF	Anderson Regional Landfill Overlay 2B Area	Belton	SC	8 /16/2015
40-mil HDPE (2)	15,000 SF	Anderson Regional Landfill Overlay 2B Area	Belton	SC	8 /16/2015
GCL	584,000 SF	AEP Mitchell Landfill	Proctor	WV	7 /28/2015
Geocomposite (2)	414,000 SF	AEP Mitchell Landfill	Proctor	WV	7 /28/2015
Geocomposite	512,000 SF	AEP Mitchell Landfill	Proctor	WV	7 /28/2015
30-mil PVC	512,000 SF	AEP Mitchell Landfill	Proctor	WV	7 /28/2015
45-mil RPP	72,000 SF	AEP Mitchell Landfill	Proctor	WV	7 /28/2015
GCL	288,000 SF	Days Cove LF Cells I F & G	White Marsh	MD	7 /19/2015
Rain Cover	216,000 SF	Days Cove LF Cells I F & G	White Marsh	MD	7 /19/2015
Geocomposite	88,000 SF	Days Cove LF Cells I F & G	White Marsh	MD	7 /19/2015
60-mil HDPE Textured (2)	88,000 SF	Days Cove LF Cells I F & G	White Marsh	MD	7 /19/2015
60-mil HDPE Textured	200,000 SF	Days Cove LF Cells I F & G	White Marsh	MD	7 /19/2015
Geotextile	11,000 SF	SR 33 & Chrin Interchange Liner	Palmer	PA	5 /28/2015
60-mil LLDPE	5,500 SF	SR 33 & Chrin Interchange Liner	Palmer	PA	5 /28/2015
Rain Cover	620,000 SF	Mid Shore Cell 2 Rain Cover	Ridgely	MD	3 /31/2015
40-mil HDPE	44,000 SF	Walmart 6264 Winston-Salem	Winston-Salem	NC	12/4 /2014
24-oz Geotextile	84,000 SF	Walmart 6264 Winston-Salem	Winston-Salem	NC	12/4 /2014
60-mil HDPE Textured	785,000 SF	East Kentucky Power Spurlock	Maysville	KY	11/26/2014
60-mil HDPE	1,009,600 SF	Santee Cooper Cross Station	Pineville	SC	9 /19/2014
60-mil HDPE Textured	185,900 SF	Santee Cooper Cross Station	Pineville	SC	9 /19/2014
GCL	146,000 SF	Santee Cooper Cross Station	Pineville	SC	9 /19/2014
Geocomposite	199,100 SF	Santee Cooper Cross Station	Pineville	SC	9 /19/2014
GCL (2)	1,007,600 SF	Santee Cooper Cross Station	Pineville	SC	9 /19/2014
20-mil Dura Skrim	480,000 SF	Grows/Tullytown Valley Cap 20 mil	Morrisville	PA	9 /4 /2014
60-mil HDPE	43,560 SF	Iris Glen Cell 6B Repairs	Johnson City	TN	9 /4 /2014

GCL	830,000 SF	South Gypsum	Apollo Beach	FL	7 /7 /2014
80-mil HDPE	830,000 SF	South Gypsum	Apollo Beach	FL	7 /7 /2014
30-mil LLDPE	42,000 SF	Walmart #4148-00	Charlotte	NC	5 /29/2014
8-oz Geotextile	84,000 SF	Walmart #4148-00	Charlotte	NC	5 /29/2014
Wind Defender	40,000 SF	Waste Management LCS Landfill	Hedgesville	WV	4 /18/2014
Rain Cover	40,000 SF	Waste Management LCS Landfill	Hedgesville	WV	4 /18/2014
GCL	619,000 SF	Cooper Power Plant 2013 Expansion	Somerset	KY	12/1 /2013
60-mil HDPE Textured	159,100 SF	Cooper Power Plant 2013 Expansion	Somerset	KY	12/1 /2013
10-oz Geotextile	100,000 SF	Cooper Power Plant 2013 Expansion	Somerset	KY	12/1 /2013
60-mil Textured	850,500 SF	Cooper Power Plant 2013 Expansion	Somerset	KY	12/1 /2013
Geocomposite	369,000 SF	Cooper Power Plant 2013 Expansion	Somerset	KY	12/1 /2013
Geocomposite	1,212,500 SF	Eastern Sanitary Landfill Phase X	White Marsh	MD	12/1 /2013
Geocomposite (2)	1,212,500 SF	Eastern Sanitary Landfill Phase X	White Marsh	MD	12/1 /2013
50-mil PVC	657,000 SF	Eastern Sanitary Landfill Phase X	White Marsh	MD	12/1 /2013
Rain Cover	646,200 SF	Eastern Sanitary Landfill Phase X	White Marsh	MD	12/1 /2013
Geocomposite	200,000 SF	Pendleton	Butler	KY	12/1 /2013
10-oz Geotextile	200,000 SF	Pendleton	Butler	KY	12/1 /2013
60-mil HDPE	400,000 SF	Pendleton	Butler	KY	12/1 /2013
Geocomposite	642,600 SF	New Georgia Landfill	Birmingham	AL	10/1 /2013
GCL	642,600 SF	New Georgia Landfill	Birmingham	AL	10/1 /2013
10-oz Geotextile	642,600 SF	New Georgia Landfill	Birmingham	AL	10/1 /2013
60-mil HDPE	642,600 SF	New Georgia Landfill	Birmingham	AL	10/1 /2013
8-oz Geotextile	528,000 SF	Beech Hollow	Wellston	OH	8 /1 /2013
60-mil HDPE	528,000 SF	Beech Hollow	Wellston	OH	8 /1 /2013

40-mil HDPE Textured	293,900 SF	Ashville Pond & Rim Ditch	Arden	NC	4 /1 /2013
Geocomposite	15,000 SF	Davidson County MSWLF Phase 2 Area 2	Thomasville	NC	3 /14/2013
60-mil HDPE	285,600 SF	Davidson County MSWLF Phase 2 Area 2	Thomasville	NC	3 /14/2013
GCL	277,500 SF	Davidson County MSWLF Phase 2 Area 2	Thomasville	NC	3 /14/2013
Geotextile	420,000 SF	Davidson County MSWLF Phase 2 Area 2	Thomasville	NC	3 /14/2013
60-mil HDPE	617,000 SF	Plum Point Cell & Leachate Systems	Osceola	AR	3 /1 /2013
Geocomposite	518,000 SF	Plum Point Cell & Leachate Systems	Osceola	AR	3 /1 /2013
20-mil Geomembrane	135,700 SF	I-95 LF Phase 3B	Lorton	VA	2 /28/2013
60-mil LLDPE Textured	537,200 SF	Cooper Power Plant Lagoon	Somerset	KY	11/1 /2012
10-oz Geotextile	680,900 SF	Cooper Power Plant Lagoon	Somerset	KY	11/1 /2012
12-oz Geotextile	68,900 SF	Cooper Power Plant Lagoon	Somerset	KY	11/1 /2012
80-mil HDPE Textured	61,200 SF	Cooper Power Plant Lagoon	Somerset	KY	11/1 /2012
GCL	237,000 SF	Crystal Rivers North Slope Closure	Crystal Rivers	FL	10/1 /2012
60-mil LLDPE Textured	2,516,000 SF	Ghent Landfill	Ghent	KY	10/1 /2012
10-oz Geotextile	2,516,000 SF	Ghent Landfill	Ghent	KY	10/1 /2012
60-mil HDPE	875,000 SF	Hickory Meadows LF	Hilbert	WI	10/1 /2012
Rain Cover	330,000 SF	Hickory Meadows LF	Hilbert	WI	10/1 /2012
12-oz Geotextile	875,000 SF	Hickory Meadows LF	Hilbert	WI	10/1 /2012
40-mil LLDPE	1,200,000 SF	Haleys Pike Install	Lexington	KY	8 /1 /2012
Geocomposite	2,400,000 SF	Haleys Pike Install	Lexington	KY	8 /1 /2012
Geocomposite	847,500 SF	Zion Landfill Cap	Zion	IL	7 /1 /2012
8-oz Geotextile	19,200 SF	Zion Landfill Cap	Zion	IL	7 /1 /2012
40-mil HDPE Textured	847,000 SF	Zion Landfill Cap	Zion	IL	7 /1 /2012

30-mil PVC	260,000 SF	Delaware County LF Cap	Boyertown	PA	6 /1 /2012
Geotextile	260,000 SF	Delaware County LF Cap	Boyertown	PA	6 /1 /2012
Geocomposite	260,000 SF	Delaware County LF Cap	Boyertown	PA	6 /1 /2012
40-mil LLDPE Textured	860,000 SF	Medora LF Cell 1 & 2	Medora	IN	6 /1 /2012
Geocomposite	86,000 SF	Medora LF Cell 1 & 2	Medora	IN	6 /1 /2012
Geocomposite	1,829,500 SF	Oak Ridge Landfill Cap	Ballwin	MO	6 /1 /2012
40-mil LLDPE Textured	1,829,500 SF	Oak Ridge Landfill Cap	Ballwin	MO	6 /1 /2012
40-mil HDPE Textured	1,005,000 SF	Hutsonville Ash Pond	Crawford County	IL	5 /1 /2012
Geocomposite	980,000 SF	Belews Creek Structural Fill Cap	Belews Creek	NC	4 /1 /2012
40-mil LLDPE Textured	980,000 SF	Belews Creek Structural Fill Cap	Belews Creek	NC	4 /1 /2012
6-oz Geotextile	262,800 SF	First Piedmont	Ringgold	VA	4 /1 /2012
60-mil HDPE Textured	425,100 SF	First Piedmont	Ringgold	VA	4 /1 /2012
Geocomposite	186,400 SF	First Piedmont	Ringgold	VA	4 /1 /2012
12-oz Geotextile	247,100 SF	First Piedmont	Ringgold	VA	4 /1 /2012
Geocomposite	892,000 SF	Holmes County Final Cap	Millersburg	OH	4 /1 /2012
40-mil LLDPE Textured	892,000 SF	Holmes County Final Cap	Millersburg	OH	4 /1 /2012
60-mil HDPE	139,400 SF	Rumpke OCB 2011 Phase 2	Cincinnati	OH	3 /21/2012
60-mil HDPE Textured	604,000 SF	HR Recovery Cell 4	Virginia Beach	VA	3 /1 /2012
Geocomposite	604,000 SF	HR Recovery Cell 4	Virginia Beach	VA	3 /1 /2012
Geocomposite	2,017,000 SF	Plant Hammond	Rome	GA	2 /1 /2012
GCL	2,017,000 SF	Plant Hammond	Rome	GA	2 /1 /2012
60-mil HDPE Textured	206,000 SF	International Paper	Pine Hill	AL	10/1 /2011
Geocomposite	206,000 SF	International Paper	Pine Hill	AL	10/1 /2011
60-mil HDPE Textured	321,000 SF	Apex LF Phase 5	Amsterdam	OH	9 /1 /2011
GCL	321,000 SF	Apex LF Phase 5	Amsterdam	OH	9 /1 /2011
12-oz Geotextile	321,000 SF	Apex LF Phase 5	Amsterdam	OH	9 /1 /2011
16-oz Geotextile	238,000 SF	Norfolk Southern- Lucknow Yard	Harrisburg	PA	9 /1 /2011

10-oz Geotextile	238,000 SF	Norfolk Southern- Lucknow Yard	Harrisburg	PA	9 /1 /2011
GCL	238,000 SF	Norfolk Southern- Lucknow Yard	Harrisburg	PA	9 /1 /2011
10-oz Geotextile	264,000 SF	Ew Brown Ash Pond	Harrodsburg	KY	8 /1 /2011
60-mil LLDPE Textured	264,000 SF	Ew Brown Ash Pond	Harrodsburg	KY	8 /1 /2011
60-mil HDPE Textured	10,000 SF	Lorton LF Cell 3	Lorton	VA	8 /1 /2011
60-mil HDPE Textured	232,000 SF	Millenium Ash Baltimore	Baltimore	MD	8 /1 /2011
8-oz Geotextile	125,000 SF	Millenium Ash Baltimore	Baltimore	MD	8 /1 /2011
6-oz Geotextile	2,132,000 SF	Clover Power Station	Clover	VA	6 /1 /2011
60-mil HDPE Textured	1,066,000 SF	Clover Power Station	Clover	VA	6 /1 /2011
40-mil LLDPE Textured	1,094,000 SF	Pecan Row	Valdosta	GA	6 /1 /2011
Geocomposite	1,094,000 SF	Pecan Row	Valdosta	GA	6 /1 /2011
Geocomposite	1,363,000 SF	Perry County Cap	Uniontown	AL	6 /1 /2011
40-mil LLDPE	1,386,300 SF	Perry County Cap	Uniontown	AL	6 /1 /2011
30-mil HDPE Textured	217,800 SF	Asheville Airport Phase 2	Arden	NC	3 /1 /2011
40-mil LLDPE Textured	802,000 SF	Hobbs	Denton	MD	12/1 /2010
Geocomposite	802,000 SF	Hobbs	Denton	MD	12/1 /2010
32-oz Geotextile	40,000 SF	Domtar	Plymouth	NC	11/1 /2010
Geocomposite	550,000 SF	Domtar	Plymouth	NC	11/1 /2010
40-mil LLDPE Textured	590,000 SF	Domtar	Plymouth	NC	11/1 /2010
GCL	590,000 SF	Domtar	Plymouth	NC	11/1 /2010
GCL	256,000 SF	Mirant Westland Ash B1-A	Dickerson	MD	11/1 /2010
60-mil HDPE Textured	256,000 SF	Mirant Westland Ash B1-A	Dickerson	MD	11/1 /2010
16-oz Geotextile	256,000 SF	Mirant Westland Ash B1-A	Dickerson	MD	11/1 /2010
16-oz Geotextile	256,000 SF	Mirant Westland Ash B1-B	Dickerson	MD	11/1 /2010
GCL	256,000 SF	Mirant Westland Ash B1-B	Dickerson	MD	11/1 /2010
60-mil HDPE Textured	256,000 SF	Mirant Westland Ash B1-B	Dickerson	MD	11/1 /2010
40-mil LLDPE Textured	494,000 SF	Roxboro Phase 5	Semora	NC	11/1 /2010

GCL	755,000 SF	Asheville Airport Phase 1	Arden	NC	9 /1 /2010
60-mil HDPE Textured	755,000 SF	Asheville Airport Phase 1	Arden	NC	9 /1 /2010
Geocomposite	755,000 SF	Asheville Airport Phase 1	Arden	NC	9 /1 /2010
8-oz Geotextile	654,000 SF	RSL Phase IX	Cincinnati	OH	9 /1 /2010
60-mil HDPE Textured	654,000 SF	RSL Phase IX	Cincinnati	OH	9 /1 /2010
40-mil LLDPE	569,000 SF	Progress Energy	Semora	NC	7 /1 /2010
60-mil HDPE	550,000 SF	Robeson Co. MSW LF Phase 4 Exp	St. Pauls	NC	6 /1 /2010
GCL	550,000 SF	Robeson Co. MSW LF Phase 4 Exp	St. Pauls	NC	6 /1 /2010
Geocomposite	550,000 SF	Robeson Co. MSW LF Phase 4 Exp	St. Pauls	NC	6 /1 /2010
GCL	1,200,000 SF	Atlantic Cell 7A-7C Addendum	Waverly	VA	
60-mil HDPE	1,200,000 SF	Atlantic Cell 7A-7C Addendum	Waverly	VA	
40-mil HDPE	1,200,000 SF	Atlantic Cell 7A-7C Addendum	Waverly	VA	
Geocomposite	1,200,000 SF	Atlantic Cell 7A-7C Addendum	Waverly	VA	
60-mil HDPE Textured	233,000 SF	Crawford County LF Phase 5B	Bucyrus	OH	
8-oz Geotextile	233,000 SF	Crawford County LF Phase 5B	Bucyrus	OH	
8-oz Geotextile	457,380 SF	Dominion Chesterfield Lower Ash Pond	Chester	VA	
Wind Defender	3,898,620 SF	Dominion Chesterfield Lower Ash Pond	Chester	VA	
40-mil HDPE Textured	4,356,000 SF	Dominion Chesterfield Lower Ash Pond	Chester	VA	
Wind Defender	3,286,386 SF	Dominion Bremon Power Station - EAP Excavation & NAP Fill	Bremo Bluff	VA	
Rain Cover	3,286,386 SF	Dominion Bremon Power Station - EAP Excavation & NAP Fill	Bremo Bluff	VA	
Rain Cover (2)	285,777 SF	Dominion Bremon Power Station - EAP Excavation & NAP Fill	Bremo Bluff	VA	
60-mil HDPE Textured	43,600 SF	Duke Mayo Additional Pond	Roxboro	NC	
Geotextile	43,600 SF	Duke Mayo Additional Pond	Roxboro	NC	

60-mil HDPE	128,000 SF	Duke Mayo Water Redirect - Holding Basin	Roxboro	NC
16-oz Geotextile	37,000 SF	Duke Mayo Water Redirect - Holding Basin	Roxboro	NC
10-oz Geotextile	445,000 SF	Duke Mayo Water Redirect - Holding Basin	Roxboro	NC
GCL	128,000 SF	Duke Mayo Water Redirect - Holding Basin	Roxboro	NC
60-mil HDPE	415,000 SF	Santee Cooper - Winyah Ponds	Georgetown	SC
Geocomposite	163,000 SF	Santee Cooper - Winyah Ponds	Georgetown	SC
Geotextile	415,000 SF	Santee Cooper - Winyah Ponds	Georgetown	SC
GCL	445,000 SF	Santee Cooper - Winyah Ponds	Georgetown	SC
Geocomposite	978,200 SF	Sunny Farms Cell 8 Cap	Fostoria	OH
40-mil LLDPE	978,200 SF	Sunny Farms Cell 8 Cap	Fostoria	OH
GCL	85,900 SF	SWACO Hydroturf Downchutes	Grove City	OH
Rain Cover	330,000 SF	SWACO Hydroturf Downchutes	Grove City	OH
60-mil HDPE	85,900 SF	SWACO Hydroturf Downchutes	Grove City	OH
40-mil LLDPE Textured	27,800 SF	SWACO Hydroturf Downchutes	Grove City	OH
GCL	414,000 SF	Trimble Co CCR Ponds	Bedford	KY
60-mil LLDPE	427,000 SF	Trimble Co CCR Ponds	Bedford	KY
Geotextile	414,000 SF	Trimble Co CCR Ponds	Bedford	KY
60-mil HDPE Textured	413,000 SF	Tunnel Hill Phase 7	New Lexington	OH
6-oz Geotextile	658,000 SF	Tunnel Hill Phase 7	New Lexington	OH
Rain Cover	269,000 SF	Tunnel Hill Phase 7	New Lexington	OH

QAQC
Luis Moran

Moran, Luis

Material	Quantity	Project	Location	Completion Date	
16-oz Geotextile	571,500 SF	Duke Mayo Water Redirect	Roxboro	NC	2 /3 /2019
60-mil HDPE Textured	927,234 SF	Duke Mayo Water Redirect	Roxboro	NC	2 /3 /2019
GCL	684,000 SF	Duke Mayo Water Redirect	Roxboro	NC	2 /3 /2019
10-oz Geotextile	1,075,500 SF	Duke Mayo Water Redirect	Roxboro	NC	2 /3 /2019
16-oz Geotextile	808,000 SF	Duke Roxboro Water Redirect	Semora	NC	12/15/2018
GCL	808,000 SF	Duke Roxboro Water Redirect	Semora	NC	12/15/2018
60-mil HDPE	808,000 SF	Duke Roxboro Water Redirect	Semora	NC	12/15/2018
10-oz Geotextile	118,000 SF	Duke Roxboro Water Redirect	Semora	NC	12/15/2018
60-mil HDPE Textured	395,290 SF	Republic Walnut Creek LF	Frankfort	IN	12/7 /2018
60-mil HDPE Textured	300,000 SF	Duke Cliffside - Water Direct	Mooresboro	NC	11/29/2018
16-oz Geotextile	455,000 SF	Duke Cliffside - Water Direct	Mooresboro	NC	11/29/2018
30-mil PVC	30,500 SF	Duke Cliffside - Water Direct	Mooresboro	NC	11/29/2018
GCL	300,000 SF	Duke Cliffside - Water Direct	Mooresboro	NC	11/29/2018
Geocomposite	291,249 SF	Republic Clinton Co Cap	Frankfort	IN	11/3 /2018
40-mil LLDPE Textured	279,089 SF	Republic Clinton Co Cap	Frankfort	IN	11/3 /2018
40-mil HDPE	450,000 SF	JH Campbell.	West Olive	MI	9 /9 /2018
12-oz Geotextile	80,000 SF	JH Campbell.	West Olive	MI	9 /9 /2018
10-oz Geotextile	450,000 SF	JH Campbell.	West Olive	MI	9 /9 /2018
60-mil LLDPE	80,000 SF	JH Campbell.	West Olive	MI	9 /9 /2018
GCL	30,000 SF	JH Campbell.	West Olive	MI	9 /9 /2018
60-mil HDPE	30,000 SF	JH Campbell.	West Olive	MI	9 /9 /2018
80-mil HDPE Smooth	31,000 SF	AZR Effluent Pond Lining	Mooresboro	NC	5 /1 /2018
100-mil HDPE	43,514 SF	AZR Effluent Pond Lining	Mooresboro	NC	5 /1 /2018
Geocomposite	1,045,440 SF	WM Atlantic LF Cell 11A, 11B and 11C Cells	Waverly	VA	4 /27/2018

Rain Cover	1,045,440 SF	WM Atlantic LF Cell 11A, 11B and 11C Cells	Waverly	VA	4 /27/2018
GCL	1,045,440 SF	WM Atlantic LF Cell 11A, 11B and 11C Cells	Waverly	VA	4 /27/2018
60-mil HDPE Textured	1,045,440 SF	WM Atlantic LF Cell 11A, 11B and 11C Cells	Waverly	VA	4 /27/2018
40-mil HDPE Textured	1,045,440 SF	WM Atlantic LF Cell 11A, 11B and 11C Cells	Waverly	VA	4 /27/2018
60-mil HDPE Smooth	70,875 SF	Bay Valley Foods Pond #3	Faison	NC	4 /13/2018
4-oz Geotextile	27,990 SF	Plant Gaston Wastewater Pond	Wilsonville	AL	3 /27/2018
50-mil HDPE Textured	66,704 SF	Plant Gaston Wastewater Pond	Wilsonville	AL	3 /27/2018
Gundseal	149,709 SF	Plant Gaston Wastewater Pond	Wilsonville	AL	3 /27/2018
60-mil HDPE	66,080 SF	WM Charles City LF Phase V Cell 2	Charles City	VA	2 /4 /2018
Rain Cover	336,450 SF	WM Charles City LF Phase V Cell 2	Charles City	VA	2 /4 /2018
Geonet	336,097 SF	WM Charles City LF Phase V Cell 2	Charles City	VA	2 /4 /2018
60-mil HDPE Textured	720,100 SF	WM Charles City LF Phase V Cell 2	Charles City	VA	2 /4 /2018
Geocomposite	23,954 SF	WM Charles City LF Phase V Cell 2	Charles City	VA	2 /4 /2018
GCL	360,050 SF	WM Charles City LF Phase V Cell 2	Charles City	VA	2 /4 /2018
16-oz Geotextile	12,000 SF	AEP Flint Creek - Leachate Pond Repairs	Gentry	AR	12/28/2017
60-mil HDPE Textured	1,000 SF	AEP Flint Creek - Leachate Pond Repairs	Gentry	AR	12/28/2017
80-mil HDPE Smooth (Floating Cover)	30,000 SF	WM Lake Charles Floating Cover	Sulphur	LA	12/18/2017
Geocomposite	30,487 SF	Northern LF Cells 1 & 2 Closure and Leachate Ponds	Westminster	MD	12/15/2017
50-mil HDPE (Super Gripnet)	875,000 SF	Northern LF Cells 1 & 2 Closure and Leachate Ponds	Westminster	MD	12/15/2017
60 mil Textured HDPE Secondary	30,487 SF	Northern LF Cells 1 & 2 Closure and Leachate Ponds	Westminster	MD	12/15/2017
8-oz Geotextile	840,000 SF	Northern LF Cells 1 & 2 Closure and Leachate Ponds	Westminster	MD	12/15/2017

GCL	30,487 SF	Northern LF Cells 1 & 2 Closure and Leachate Ponds	Westminster	MD	12/15/2017
60-mil HDPE Textured	30,487 SF	Northern LF Cells 1 & 2 Closure and Leachate Ponds	Westminster	MD	12/15/2017
60-mil HDPE	631,000 SF	HRRC Landfill - Cell 5	Virginia Beach	VA	10/20/2017
Geocomposite	410,000 SF	HRRC Landfill - Cell 5	Virginia Beach	VA	10/20/2017
Geocomposite (2)	222,000 SF	HRRC Landfill - Cell 5	Virginia Beach	VA	10/20/2017
Geocomposite	82,500 SF	WM Atlantic LF Temp Cap Phase 3	Waverly	VA	10/3 /2017
8-oz Geotextile	100,941 SF	WM Atlantic LF Temp Cap Phase 3	Waverly	VA	10/3 /2017
60-mil HDPE Textured	1,674,330 SF	WM Atlantic LF Temp Cap Phase 3	Waverly	VA	10/3 /2017
60-mil HDPE	1,853,408 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
60-mil LLDPE Floating Cover	209,982 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
GCL	1,639,049 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
36-mil RPE Floating Cover	777,917 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
80-mil HDPE Floating Cover	186,375 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
Rain Cover	291,500 SF	WM Middle Peninsula Raincover	Saluda	VA	7 /11/2017
20-mil Dura Skrim	5,000 SF	Dominion Chesapeake Temp Cap Repair	Chesapeake	VA	6 /6 /2017
Wind Defender	5,000 SF	Dominion Chesapeake Temp Cap Repair	Chesapeake	VA	6 /6 /2017
Wind Defender	382,963 SF	WM Atlantic LF Temp Cap Phase 4A/B/C	Waverly	VA	6 /4 /2017
60-mil HDPE Textured	1,654,241 SF	WM Atlantic LF Temp Cap Phase 4A/B/C	Waverly	VA	6 /4 /2017
60-mil HDPE Textured	85,000 SF	Laurel Ridge LF	Lily	KY	5 /7 /2017
Geocomposite	85,000 SF	Laurel Ridge LF	Lily	KY	5 /7 /2017
GCL	85,000 SF	Laurel Ridge LF	Lily	KY	5 /7 /2017

Wind Defender	335,000 SF	Macon County MSW Phase 3 Cell	Franklin	NC	12/28/2016
GCL	335,000 SF	Macon County MSW Phase 3 Cell	Franklin	NC	12/28/2016
16-oz Geotextile	335,000 SF	Macon County MSW Phase 3 Cell	Franklin	NC	12/28/2016
60-mil HDPE	335,000 SF	Macon County MSW Phase 3 Cell	Franklin	NC	12/28/2016
Rain Cover	335,000 SF	Macon County MSW Phase 3 Cell	Franklin	NC	12/28/2016
60-mil HDPE	85,500 SF	WM Atlantic Waste WWTP Ponds	Waverly	VA	12/23/2016
80-mil LLDPE	164,329 SF	WM Atlantic LF Floating Covers	Waverly	VA	12/2 /2016
60-mil LLDPE	187,070 SF	WM Atlantic LF Floating Covers	Waverly	VA	12/2 /2016
60-mil HDPE	3,000,000 SF	Midshore LF Exposed Cap	Easton	MD	11/1 /2016
Geocomposite	30,000 SF	Midshore LF Exposed Cap	Easton	MD	11/1 /2016
60-mil HDPE Textured	28,774 SF	Days Cove LF Cell F & G Phase 2	White Marsh	MD	10/18/2016
Rain Cover	121,263 SF	Days Cove LF Cell F & G Phase 2	White Marsh	MD	10/18/2016
60-mil HDPE Textured (2)	125,714 SF	Days Cove LF Cell F & G Phase 2	White Marsh	MD	10/18/2016
GCL	154,487 SF	Days Cove LF Cell F & G Phase 2	White Marsh	MD	10/18/2016
60-mil HDPE Textured	1,463,000 SF	WM Atlantic Waste Temp Cap Phase 1	Waverly	VA	8 /22/2016
Wind Defender	315,396 SF	WM Atlantic Waste Western Slope Cap	Waverly	VA	8 /7 /2016
60-mil HDPE	315,396 SF	WM Atlantic Waste Western Slope Cap	Waverly	VA	8 /7 /2016
40-mil LLDPE Textured	900,000 SF	Spencer's East Site Rubble Landfill Closure	Abingdon	MD	5 /21/2016
Geocomposite	900,000 SF	Spencer's East Site Rubble Landfill Closure	Abingdon	MD	5 /21/2016
Geocomposite	82,800 SF	Bethlehem LF Temp Cap	Bethlehem	PA	4 /23/2016
40-mil Geomembrane	345,649 SF	Bethlehem LF Temp Cap	Bethlehem	PA	4 /23/2016
Wind Defender	282,799 SF	Bethlehem LF Temp Cap	Bethlehem	PA	4 /23/2016
16-oz Geotextile	345,649 SF	Bethlehem LF Temp Cap	Bethlehem	PA	4 /23/2016
24-mil Dura Skrim	125,597 SF	Bethlehem LF Temp Cap	Bethlehem	PA	4 /23/2016

40-mil LLDPE	361,255 SF	WM Mid Penn Interim LF Cap	Saluda	VA	4 /1 /2016
Rain Cover	1,393,920 SF	WM Atlantic LF Cell 12A, 12b and 12c Rain Cover	Waverly	VA	11/14/2015
40-mil HDPE	1,200,000 SF	Atlantic Cell 7A-7C Addendum	Waverly	VA	
GCL	1,200,000 SF	Atlantic Cell 7A-7C Addendum	Waverly	VA	
Geocomposite	1,200,000 SF	Atlantic Cell 7A-7C Addendum	Waverly	VA	
60-mil HDPE	1,200,000 SF	Atlantic Cell 7A-7C Addendum	Waverly	VA	
8-oz Geotextile	457,380 SF	Dominion Chesterfield Lower Ash Pond	Chester	VA	
Wind Defender	3,898,620 SF	Dominion Chesterfield Lower Ash Pond	Chester	VA	
40-mil HDPE Textured	4,356,000 SF	Dominion Chesterfield Lower Ash Pond	Chester	VA	
60-mil HDPE Textured	90,090 SF	Dominion Power Clover Ponds	Clover	VA	
60-mil HDPE Textured (2)	78,840 SF	Dominion Power Clover Ponds	Clover	VA	
32-oz Geotextile (2)	78,840 SF	Dominion Power Clover Ponds	Clover	VA	
32-oz Geotextile	90,090 SF	Dominion Power Clover Ponds	Clover	VA	
Rain Cover (2)	285,777 SF	Dominon Bremo Power Station - EAP Excavation & NAP Fill	Bremo Bluff	VA	
Rain Cover	3,286,386 SF	Dominon Bremo Power Station - EAP Excavation & NAP Fill	Bremo Bluff	VA	
Wind Defender	3,286,386 SF	Dominon Bremo Power Station - EAP Excavation & NAP Fill	Bremo Bluff	VA	
Geotextile	43,600 SF	Duke Mayo Additional Pond	Roxboro	NC	
60-mil HDPE Textured	43,600 SF	Duke Mayo Additional Pond	Roxboro	NC	
10-oz Geotextile	445,000 SF	Duke Mayo Water Redirect - Holding Basin	Roxboro	NC	
GCL	128,000 SF	Duke Mayo Water Redirect - Holding Basin	Roxboro	NC	
16-oz Geotextile	37,000 SF	Duke Mayo Water Redirect - Holding Basin	Roxboro	NC	

60-mil HDPE	128,000 SF	Duke Mayo Water Redirect - Holding Basin	Roxboro	NC
60-mil HDPE	85,900 SF	SWACO Hydroturf Downchutes	Grove City	OH
40-mil LLDPE Textured	27,800 SF	SWACO Hydroturf Downchutes	Grove City	OH
Rain Cover	330,000 SF	SWACO Hydroturf Downchutes	Grove City	OH
GCL	85,900 SF	SWACO Hydroturf Downchutes	Grove City	OH
60-mil HDPE Textured	413,000 SF	Tunnel Hill Phase 7	New Lexington	OH
Rain Cover	269,000 SF	Tunnel Hill Phase 7	New Lexington	OH
6-oz Geotextile	658,000 SF	Tunnel Hill Phase 7	New Lexington	OH

FIELD TEAM

Edgar Ceron

Marcelino Ceron

Miguel Chavero

Carmelo Ferretiz

Orlando Narvaez

Garcia B Omar*

Cristian Paz

Marcial Ramos

Diego Rivas

Jose Yanez

*Designates 2019 New Hire

Ceron, Edgar

Material	Quantity	Project	Location		Completion Date
10-oz Geotextile	33,000 SF	Pendleton Co Cell 4B & Slide Remediation	Butler	KY	12/15/2018
60-mil HDPE Textured	255,000 SF	Pendleton Co Cell 4B & Slide Remediation	Butler	KY	12/15/2018
Geocomposite	254,000 SF	Pendleton Co Cell 4B & Slide Remediation	Butler	KY	12/15/2018
Geocomposite	178,026 SF	Central KY Landfill	Georgetown	KY	12/9 /2018
GCL	178,026 SF	Central KY Landfill	Georgetown	KY	12/9 /2018
60-mil HDPE Textured	178,026 SF	Central KY Landfill	Georgetown	KY	12/9 /2018
16-oz Geotextile	30,000 SF	Whitewater Coal Settling Pond	Richmond	IN	11/15/2018
60-mil HDPE Textured	60,000 SF	Whitewater Coal Settling Pond	Richmond	IN	11/15/2018
GCL	60,000 SF	Whitewater Coal Settling Pond	Richmond	IN	11/15/2018
GCL	1,045,440 SF	WM Atlantic LF Cell 11A, 11B and 11C Cells	Waverly	VA	4 /27/2018
40-mil HDPE Textured	1,045,440 SF	WM Atlantic LF Cell 11A, 11B and 11C Cells	Waverly	VA	4 /27/2018
Rain Cover	1,045,440 SF	WM Atlantic LF Cell 11A, 11B and 11C Cells	Waverly	VA	4 /27/2018
60-mil HDPE Textured	1,045,440 SF	WM Atlantic LF Cell 11A, 11B and 11C Cells	Waverly	VA	4 /27/2018
Geocomposite	1,045,440 SF	WM Atlantic LF Cell 11A, 11B and 11C Cells	Waverly	VA	4 /27/2018
GCL	43,560 SF	Mount Storm Pyrite Pond	Mt Storm	WV	12/16/2017
60-mil HDPE Textured	43,560 SF	Mount Storm Pyrite Pond	Mt Storm	WV	12/16/2017
32-oz Geotextile	43,560 SF	Mount Storm Pyrite Pond	Mt Storm	WV	12/16/2017
60-mil HDPE Textured	1,674,330 SF	WM Atlantic LF Temp Cap Phase 3	Waverly	VA	10/3 /2017
8-oz Geotextile	100,941 SF	WM Atlantic LF Temp Cap Phase 3	Waverly	VA	10/3 /2017
Geocomposite	82,500 SF	WM Atlantic LF Temp Cap Phase 3	Waverly	VA	10/3 /2017

36-mil RPE Floating Cover	777,917 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
60-mil LLDPE Floating Cover	209,982 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
GCL	1,639,049 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
80-mil HDPE Floating Cover	186,375 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
60-mil HDPE	1,853,408 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
Rain Cover	291,500 SF	WM Middle Peninsula Raincover	Saluda	VA	7 /11/2017
Rain Cover	330,000 SF	SWACO Hydroturf Downchutes	Grove City	OH	
60-mil HDPE	85,900 SF	SWACO Hydroturf Downchutes	Grove City	OH	
GCL	85,900 SF	SWACO Hydroturf Downchutes	Grove City	OH	
40-mil LLDPE Textured	27,800 SF	SWACO Hydroturf Downchutes	Grove City	OH	
60-mil LLDPE	427,000 SF	Trimble Co CCR Ponds	Bedford	KY	
GCL	414,000 SF	Trimble Co CCR Ponds	Bedford	KY	
Geotextile	414,000 SF	Trimble Co CCR Ponds	Bedford	KY	

Ceron, Marcelino

Material	Quantity	Project	Location	Completion Date	
Geotextile	100,000 SF	Keystone Landfill T&M	Dunmore	PA	1 /12/2019
Geocomposite	400,752 SF	Republic Honeygo Ph 3 Cap Install Only	Perry Hall	MD	12/14/2018
40-mil LLDPE Textured	204,732 SF	Republic Honeygo Ph 3 Cap Install Only	Perry Hall	MD	12/14/2018
10-oz Geotextile	204,732 SF	Republic Honeygo Ph 3 Cap Install Only	Perry Hall	MD	12/14/2018
30-mil PVC	13,000 SF	Virginia Tech Bioretention Ponds	Blacksburg	VA	8 /28/2018
8-oz Geotextile	26,000 SF	Virginia Tech Bioretention Ponds	Blacksburg	VA	8 /28/2018
60-mil HDPE	360,300 SF	Mountain View Reclamation Cell 21B2	Greencastle	PA	8 /6 /2018
16-oz Geotextile	179,300 SF	Mountain View Reclamation Cell 21B2	Greencastle	PA	8 /6 /2018
GCL	350,000 SF	WestRock Covington Cell	Covington	VA	6 /21/2018
60-mil HDPE Textured	350,000 SF	WestRock Covington Cell	Covington	VA	6 /21/2018
40-mil HDPE	300,000 SF	WestRock Covington Cell	Covington	VA	6 /21/2018
Rain Cover	350,000 SF	WestRock Covington Cell	Covington	VA	6 /21/2018
Geocomposite	350,000 SF	WestRock Covington Cell	Covington	VA	6 /21/2018
12-oz Geotextile	300,000 SF	WestRock Covington Cell	Covington	VA	6 /21/2018
40-mil HDPE Textured	1,045,440 SF	WM Atlantic LF Cell 11A, 11B and 11C Cells	Waverly	VA	4 /27/2018
60-mil HDPE Textured	1,045,440 SF	WM Atlantic LF Cell 11A, 11B and 11C Cells	Waverly	VA	4 /27/2018
Rain Cover	1,045,440 SF	WM Atlantic LF Cell 11A, 11B and 11C Cells	Waverly	VA	4 /27/2018
GCL	1,045,440 SF	WM Atlantic LF Cell 11A, 11B and 11C Cells	Waverly	VA	4 /27/2018
Geocomposite	1,045,440 SF	WM Atlantic LF Cell 11A, 11B and 11C Cells	Waverly	VA	4 /27/2018

Rain Cover	336,450 SF	WM Charles City LF Phase V Cell 2	Charles City	VA	2 /4 /2018
Geocomposite	23,954 SF	WM Charles City LF Phase V Cell 2	Charles City	VA	2 /4 /2018
Geonet	336,097 SF	WM Charles City LF Phase V Cell 2	Charles City	VA	2 /4 /2018
60-mil HDPE Textured	720,100 SF	WM Charles City LF Phase V Cell 2	Charles City	VA	2 /4 /2018
60-mil HDPE	66,080 SF	WM Charles City LF Phase V Cell 2	Charles City	VA	2 /4 /2018
GCL	360,050 SF	WM Charles City LF Phase V Cell 2	Charles City	VA	2 /4 /2018
Geocomposite	1,000,000 SF	Clinch River	Cleveland	VA	12/18/2017
6-oz Geotextile	70,000 SF	Clinch River	Cleveland	VA	12/18/2017
40-mil LLDPE	270,000 SF	Clinch River	Cleveland	VA	12/18/2017
30-mil PVC	1,000,000 SF	Clinch River	Cleveland	VA	12/18/2017
GCL	43,560 SF	Mount Storm Pyrite Pond	Mt Storm	WV	12/16/2017
60-mil HDPE Textured	43,560 SF	Mount Storm Pyrite Pond	Mt Storm	WV	12/16/2017
32-oz Geotextile	43,560 SF	Mount Storm Pyrite Pond	Mt Storm	WV	12/16/2017
50-mil HDPE (Super Gripnet)	875,000 SF	Northern LF Cells 1 & 2 Closure and Leachate Ponds	Westminster	MD	12/15/2017
GCL	30,487 SF	Northern LF Cells 1 & 2 Closure and Leachate Ponds	Westminster	MD	12/15/2017
8-oz Geotextile	840,000 SF	Northern LF Cells 1 & 2 Closure and Leachate Ponds	Westminster	MD	12/15/2017
Geocomposite	30,487 SF	Northern LF Cells 1 & 2 Closure and Leachate Ponds	Westminster	MD	12/15/2017
60-mil HDPE Textured	30,487 SF	Northern LF Cells 1 & 2 Closure and Leachate Ponds	Westminster	MD	12/15/2017
60 mil Textured HDPE Secondary	30,487 SF	Northern LF Cells 1 & 2 Closure and Leachate Ponds	Westminster	MD	12/15/2017
Rain Cover	205,676 SF	Mountain View LF - Cell 21-B Raincover	Greencastle	PA	10/23/2017
Geocomposite	82,500 SF	WM Atlantic LF Temp Cap Phase 3	Waverly	VA	10/3 /2017
8-oz Geotextile	100,941 SF	WM Atlantic LF Temp Cap Phase 3	Waverly	VA	10/3 /2017
60-mil HDPE Textured	1,674,330 SF	WM Atlantic LF Temp Cap Phase 3	Waverly	VA	10/3 /2017

36-mil RPE Floating Cover	777,917 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
GCL	1,639,049 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
60-mil LLDPE Floating Cover	209,982 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
80-mil HDPE Floating Cover	186,375 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
60-mil HDPE	1,853,408 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
40-mil HDPE Textured	50,400 SF	Taylor LF, Cells Q & P	Chesterfield	VA	7 /16/2017
14-oz Geotextile	501,812 SF	Taylor LF, Cells Q & P	Chesterfield	VA	7 /16/2017
60-mil HDPE Textured	556,127 SF	Taylor LF, Cells Q & P	Chesterfield	VA	7 /16/2017
Rain Cover	291,500 SF	WM Middle Peninsula Raincover	Saluda	VA	7 /11/2017
60-mil HDPE Textured	1,654,241 SF	WM Atlantic LF Temp Cap Phase 4A/B/C	Waverly	VA	6 /4 /2017
Wind Defender	382,963 SF	WM Atlantic LF Temp Cap Phase 4A/B/C	Waverly	VA	6 /4 /2017
30-mil HDPE Smooth	79,860 SF	WM Chaffee LF Temp Cover Rainflap	Chaffee	NY	1 /13/2017
Geocomposite	26,000 SF	Duke Pine Hall Road Diversion	Walnut Cove	NC	11/23/2016
40-mil LLDPE	26,000 SF	Duke Pine Hall Road Diversion	Walnut Cove	NC	11/23/2016
Geocomposite	30,000 SF	Midshore LF Exposed Cap	Easton	MD	11/1 /2016
60-mil HDPE	3,000,000 SF	Midshore LF Exposed Cap	Easton	MD	11/1 /2016
Geocomposite	100,000 SF	Plum Point Leachate Storage Pond	Osceola	AR	10/29/2016
60-mil HDPE	100,000 SF	Plum Point Leachate Storage Pond	Osceola	AR	10/29/2016
60-mil HDPE Textured	42,500 SF	Carter Hollow Landfill	Manchester	OH	10/26/2016
10-oz Geotextile	671,000 SF	Carter Hollow Landfill	Manchester	OH	10/26/2016
30-mil PVC	38,293 SF	Clarksburg Outlets Biofilters	Clarksburg	MD	10/23/2016
GCL	65,000 SF	Waterloo	Waterloo	NY	10/16/2016

Geocomposite	50,000 SF	Waterloo	Waterloo	NY	10/16/2016
60-mil LLDPE Textured	98,678 SF	American LF Temp Cover	Waynesburg	OH	10/10/2016
60-mil HDPE Textured	684 LF	American LF Temp Cover	Waynesburg	OH	10/10/2016
GCL	27,600 SF	American LF Temp Cover	Waynesburg	OH	10/10/2016
Geocomposite	90,955 SF	American LF Temp Cover	Waynesburg	OH	10/10/2016
40-mil HDPE	1,225 LF	Bradley Co. LF	McDonald	TN	10/8 /2016
8-oz Geotextile	218,825 SF	Bradley Co. LF	McDonald	TN	10/8 /2016
GCL	218,825 SF	Bradley Co. LF	McDonald	TN	10/8 /2016
60-mil HDPE Textured	218,825 SF	Bradley Co. LF	McDonald	TN	10/8 /2016
16-oz Geotextile	835,000 SF	Rumpke RSL Phase 10	Cincinnati	OH	9 /30/2016
60-mil HDPE Textured	835,000 SF	Rumpke RSL Phase 10	Cincinnati	OH	9 /30/2016
GCL	20,000 SF	Winnebago LF Cell W3	Rockford	IL	9 /17/2016
60-mil HDPE Textured	112,000 SF	Winnebago LF Cell W3	Rockford	IL	9 /17/2016
60-mil HDPE Smooth	432,000 SF	Winnebago LF Cell W3	Rockford	IL	9 /17/2016
4-oz Geotextile	526,500 SF	Winnebago LF Cell W3	Rockford	IL	9 /17/2016
8-oz Geotextile	537,000 SF	Winnebago LF Cell W3	Rockford	IL	9 /17/2016
16-oz Geotextile	162,000 SF	EKPC Coal Pile Runoff Pond	Maysville	KY	8 /28/2016
GCL	87,000 SF	EKPC Coal Pile Runoff Pond	Maysville	KY	8 /28/2016
60-mil HDPE Textured	925 LF	Rochelle Landfill	Rochelle	IL	8 /9 /2016
8-oz Geotextile	294,445 SF	Rochelle Landfill	Rochelle	IL	8 /9 /2016
60 mil HD Textured	53,998 SF	Rochelle Landfill	Rochelle	IL	8 /9 /2016
60-mil HDPE Smooth	243,051 SF	Rochelle Landfill	Rochelle	IL	8 /9 /2016
4-oz Geotextile	283,661 LF	Rochelle Landfill	Rochelle	IL	8 /9 /2016
Geotextile	280,000 SF	Millennium Landfill	Ashtabula	OH	7 /24/2016
Geocomposite	155,000 SF	Millennium Landfill	Ashtabula	OH	7 /24/2016
40-mil LLDPE	80,000 SF	Millennium Landfill	Ashtabula	OH	7 /24/2016
60-mil HDPE	350,000 SF	Millennium Landfill	Ashtabula	OH	7 /24/2016

30-mil PVC	36,487 SF	Manors at Ballenger Creek	Frederick	MD	7 /16/2016
80-mil HDPE Embedment Liner	37,700 SF	Patapsco WWTP 845R	Baltimore	MD	7 /14/2016
Wind Defender	100,000 SF	Loudoun County Wind Defender	Leesburg	VA	7 /1 /2016
10-oz Geotextile	13,000 SF	BGE Monument St Transformer Pits	Baltimore	MD	6 /30/2016
60-mil HDPE Textured	13,000 SF	BGE Monument St Transformer Pits	Baltimore	MD	6 /30/2016
12-oz Geotextile	25,000 SF	Ghent Pond	Ghent	KY	5 /26/2016
60-mil HDPE Smooth	25,000 SF	Ghent Pond	Ghent	KY	5 /26/2016
40-mil LLDPE Textured	900,000 SF	Spencer's East Site Rubble Landfill Closure	Abingdon	MD	5 /21/2016
Geocomposite	900,000 SF	Spencer's East Site Rubble Landfill Closure	Abingdon	MD	5 /21/2016
Geocomposite (2)	379,557 SF	HRRC Cell 6	Virginia Beach	VA	5 /8 /2016
60-mil HDPE	575,216 SF	HRRC Cell 6	Virginia Beach	VA	5 /8 /2016
Geocomposite	195,659 SF	HRRC Cell 6	Virginia Beach	VA	5 /8 /2016
30-mil PVC	138,549 SF	Costco	Monrovia	MD	5 /1 /2016
8-oz Geotextile	95,118 SF	Costco	Monrovia	MD	5 /1 /2016
Rain Cover	261,360 SF	Duke Roxboro Gypsum	Semora	NC	2 /26/2016
30-mil PVC	6,980 SF	Randall Recreation Center Ponds	Washington	DC	12/11/2015
60-mil HDPE	513,000 SF	Harford County	Street	MD	12/4 /2015
16-oz Geotextile	513,000 SF	Harford County	Street	MD	12/4 /2015
8-oz Geotextile	513,000 SF	Harford County	Street	MD	12/4 /2015
Rain Cover	1,393,920 SF	WM Atlantic LF Cell 12A, 12b and 12c Rain Cover	Waverly	VA	11/14/2015
60-mil HDPE Smooth	1,172,622 SF	Santee Cooper Cell and Pond	Pineville	SC	10/27/2015
GCL	1,272,446 SF	Santee Cooper Cell and Pond	Pineville	SC	10/27/2015
12-oz Geotextile	380,979 SF	Santee Cooper Cell and Pond	Pineville	SC	10/27/2015

Geocomposite	983,547 SF	Santee Cooper Cell and Pond	Pineville	SC	10/27/2015
60-mil HDPE Textured	99,824 SF	Santee Cooper Cell and Pond	Pineville	SC	10/27/2015
60-mil HDPE Smooth	5,881 SF	Backwash WW Equalization Lagoon Liner Replacement	Natrona Heights	PA	9 /23/2015
20-oz Geotextile	5,881 SF	Backwash WW Equalization Lagoon Liner Replacement	Natrona Heights	PA	9 /23/2015
Geocomposite	2,354,425 SF	Westland Ash Closure	Dickerson	MD	8 /30/2015
GCL	52,318 SF	Westland Ash Closure	Dickerson	MD	8 /30/2015
40-mil HDPE	2,053,381 SF	Westland Ash Closure	Dickerson	MD	8 /30/2015
8-oz Geotextile	1,039,339 SF	Westland Ash Closure	Dickerson	MD	8 /30/2015
50-mil HDPE	389,986 SF	Westland Ash Closure	Dickerson	MD	8 /30/2015
60-mil HDPE	52,318 SF	Westland Ash Closure	Dickerson	MD	8 /30/2015
16-oz Geotextile	52,318 SF	Westland Ash Closure	Dickerson	MD	8 /30/2015
Geocomposite (2)	414,000 SF	AEP Mitchell Landfill	Proctor	WV	7 /28/2015
GCL	584,000 SF	AEP Mitchell Landfill	Proctor	WV	7 /28/2015
Geocomposite	512,000 SF	AEP Mitchell Landfill	Proctor	WV	7 /28/2015
45-mil RPP	72,000 SF	AEP Mitchell Landfill	Proctor	WV	7 /28/2015
30-mil PVC	512,000 SF	AEP Mitchell Landfill	Proctor	WV	7 /28/2015
60-mil HDPE Textured (2)	88,000 SF	Days Cove LF Cells I F & G	White Marsh	MD	7 /19/2015
GCL	288,000 SF	Days Cove LF Cells I F & G	White Marsh	MD	7 /19/2015
Rain Cover	216,000 SF	Days Cove LF Cells I F & G	White Marsh	MD	7 /19/2015
60-mil HDPE Textured	200,000 SF	Days Cove LF Cells I F & G	White Marsh	MD	7 /19/2015
Geocomposite	88,000 SF	Days Cove LF Cells I F & G	White Marsh	MD	7 /19/2015
Rain Cover	522,000 SF	WM King George LF 24 mil Raincover	King George	VA	2 /27/2015
40-mil HDPE	44,000 SF	Walmart 6264 Winston-Salem	Winston-Salem	NC	12/4 /2014
24-oz Geotextile	84,000 SF	Walmart 6264 Winston-Salem	Winston-Salem	NC	12/4 /2014
8-oz Geotextile	51,000 SF	NMS Healthcare Addition	Hagerstown	MD	10/31/2014

30-mil PVC	51,000 SF	NMS Healthcare Addition	Hagerstown	MD	10/31/2014
45-mil RPP	62,000 SF	NALF Fentress Lagoon Liner Replacement	Chesapeake	VA	10/9 /2014
40-mil HDPE	65,000 SF	Honeygo Sed Trap 5	Perry Hall	MD	9 /13/2014
60-mil HDPE Textured	454,021 SF	Dunn Landfill	Rensselaer	NY	9 /9 /2014
20-mil Dura Skrim	480,000 SF	Grows/Tullytown Valley Cap 20 mil	Morrisville	PA	9 /4 /2014
80-mil HDPE Textured	25,783 SF	Frederick County Landfill Lagoon & Rain Cover	Winchester	VA	9 /3 /2014
20-mil White/White Woven Coated	462,663 SF	Frederick County Landfill Lagoon & Rain Cover	Winchester	VA	9 /3 /2014
45-mil RPP	40,000 SF	White Marsh Run Mitigation	White Marsh	MD	8 /20/2014
8-oz Geotextile	389,000 SF	Noble Road Landfill	Shiloh	OH	8 /14/2014
8-oz Geotextile (2)	389,000 SF	Noble Road Landfill	Shiloh	OH	8 /14/2014
60-mil HDPE	389,000 SF	Noble Road Landfill	Shiloh	OH	8 /14/2014
Geocomposite	240,000 SF	Hampton Road Recovery Center	Virginia Beach	VA	8 /6 /2014
60-mil HDPE	663,000 SF	Hampton Road Recovery Center	Virginia Beach	VA	8 /6 /2014
Geocomposite (2)	423,000 SF	Hampton Road Recovery Center	Virginia Beach	VA	8 /6 /2014
60-mil HDPE	5,200 SF	Calverton School	Huntingtown	MD	8 /5 /2014
8-mil Dura Skrim	540,000 SF	2014 Grows Cell 4A-B Raincover	Morrisville	PA	7 /15/2014
45-mil Reinforced Polypropylene	164,700 SF	Meadow Brook Substation	Stevens City	VA	6 /13/2014
10-oz Geotextile	164,700 SF	Meadow Brook Substation	Stevens City	VA	6 /13/2014
50-mil PVC	657,000 SF	Eastern Sanitary Landfill Phase X	White Marsh	MD	12/1 /2013
Rain Cover	646,200 SF	Eastern Sanitary Landfill Phase X	White Marsh	MD	12/1 /2013
Geocomposite	1,212,500 SF	Eastern Sanitary Landfill Phase X	White Marsh	MD	12/1 /2013
Geocomposite (2)	1,212,500 SF	Eastern Sanitary Landfill Phase X	White Marsh	MD	12/1 /2013
GCL	1,200,000 SF	Atlantic Cell 7A-7C Addendum	Waverly	VA	
Geocomposite	1,200,000 SF	Atlantic Cell 7A-7C Addendum	Waverly	VA	

40-mil HDPE	1,200,000 SF	Atlantic Cell 7A-7C Addendum	Waverly	VA
60-mil HDPE	1,200,000 SF	Atlantic Cell 7A-7C Addendum	Waverly	VA
40-mil HDPE Textured	4,356,000 SF	Dominion Chesterfield Lower Ash Pond	Chester	VA
8-oz Geotextile	457,380 SF	Dominion Chesterfield Lower Ash Pond	Chester	VA
Wind Defender	3,898,620 SF	Dominion Chesterfield Lower Ash Pond	Chester	VA
60-mil HDPE Textured (2)	78,840 SF	Dominion Power Clover Ponds	Clover	VA
60-mil HDPE Textured	90,090 SF	Dominion Power Clover Ponds	Clover	VA
32-oz Geotextile (2)	78,840 SF	Dominion Power Clover Ponds	Clover	VA
32-oz Geotextile	90,090 SF	Dominion Power Clover Ponds	Clover	VA
Rain Cover	230,000 SF	Duke Mayo Monofill LF Emergency Cover	Roxboro	NC
6-oz Geotextile	657,100 SF	Mountain View Reclamation Eastern Tract 2 Cap	Greencastle	PA
50-mil HDPE	657,100 SF	Mountain View Reclamation Eastern Tract 2 Cap	Greencastle	PA
80-mil Geomembrane	19,500 SF	Pike County Landfill	Pikeville	KY
10-oz Geotextile	19,500 SF	Pike County Landfill	Pikeville	KY
GCL	19,500 SF	Pike County Landfill	Pikeville	KY
60-mil HDPE Textured	691,375 SF	WM Maplewood Phase 23/26 Cells Jetersville		VA
Geonet	691,375 SF	WM Maplewood Phase 23/26 Cells Jetersville		VA
GCL	691,375 SF	WM Maplewood Phase 23/26 Cells Jetersville		VA
60-mil HDPE Textured (2)	691,375 SF	WM Maplewood Phase 23/26 Cells Jetersville		VA

Chavero, Miguel

Material	Quantity	Project	Location	Completion Date	
Geocomposite	455,130 SF	Republic Middle Point LF	Murfreesboro	TN	12/16/2018
60-mil HDPE Textured	455,130 SF	Republic Middle Point LF	Murfreesboro	TN	12/16/2018
60-mil HDPE Textured	255,000 SF	Pendleton Co Cell 4B & Slide Remediation	Butler	KY	12/15/2018
10-oz Geotextile	33,000 SF	Pendleton Co Cell 4B & Slide Remediation	Butler	KY	12/15/2018
Geocomposite	254,000 SF	Pendleton Co Cell 4B & Slide Remediation	Butler	KY	12/15/2018
60-mil HDPE	472,000 SF	South Kent Co LF	Byron Center	MI	7 /23/2018
GCL	472,000 SF	South Kent Co LF	Byron Center	MI	7 /23/2018
Geocomposite	329,000 SF	South Kent Co LF	Byron Center	MI	7 /23/2018
12-oz Geotextile	1,415,700 SF	TVA Kingston Stilling Pond Closure Harriman		TN	6 /26/2018
40-mil LLDPE Textured	1,415,700 SF	TVA Kingston Stilling Pond Closure Harriman		TN	6 /26/2018
Geocomposite	1,415,700 SF	TVA Kingston Stilling Pond Closure Harriman		TN	6 /26/2018
4-oz Geotextile	27,990 SF	Plant Gaston Wastewater Pond	Wilsonville	AL	3 /27/2018
50-mil HDPE Textured	66,704 SF	Plant Gaston Wastewater Pond	Wilsonville	AL	3 /27/2018
Gundseal	149,709 SF	Plant Gaston Wastewater Pond	Wilsonville	AL	3 /27/2018
32-oz Geotextile	43,560 SF	Mount Storm Pyrite Pond	Mt Storm	WV	12/16/2017
60-mil HDPE Textured	43,560 SF	Mount Storm Pyrite Pond	Mt Storm	WV	12/16/2017
GCL	43,560 SF	Mount Storm Pyrite Pond	Mt Storm	WV	12/16/2017
60-mil HDPE Textured	724,750 SF	Rumpke Noble Road Landfill	Shiloh	OH	12/6 /2017
8-oz Geotextile	724,750 SF	Rumpke Noble Road Landfill	Shiloh	OH	12/6 /2017
8-oz Geotextile (2)	724,750 SF	Rumpke Noble Road Landfill	Shiloh	OH	12/6 /2017
60-mil HDPE Textured	301,371 SF	Volunteer Landfill	Oneida	TN	12/3 /2017
40-mil HDPE Textured	1,100 LF	Volunteer Landfill	Oneida	TN	12/3 /2017
Geocomposite	301,371 SF	Volunteer Landfill	Oneida	TN	12/3 /2017

40-mil LLDPE Textured	2,326,755 SF	TVA Colbert Ash Pond 4 Closure	Tuscumbia	AL	11/18/2017
Geocomposite	2,326,755 SF	TVA Colbert Ash Pond 4 Closure	Tuscumbia	AL	11/18/2017
Geotextile	2,326,755 SF	TVA Colbert Ash Pond 4 Closure	Tuscumbia	AL	11/18/2017
8-mil Dura Skrim	440,000 SF	Bradley Co LF - Module 5	McDonald	TN	10/27/2017
60-mil HDPE Textured	113,940 SF	Bradley Co LF - Module 5	McDonald	TN	10/27/2017
GCL	113,940 SF	Bradley Co LF - Module 5	McDonald	TN	10/27/2017
8-oz Geotextile	113,940 SF	Bradley Co LF - Module 5	McDonald	TN	10/27/2017
12-oz Geotextile.	124,690 SF	TVA Bull Run Sluice Channel	Clinton	TN	8 /4 /2017
12-oz Geotextile	663,414 SF	TVA Bull Run Sluice Channel	Clinton	TN	8 /4 /2017
40-mil LLDPE Textured	124,690 SF	TVA Bull Run Sluice Channel	Clinton	TN	8 /4 /2017
Geocomposite	663,414 SF	TVA Bull Run Sluice Channel	Clinton	TN	8 /4 /2017
60-mil LLDPE Textured	11,000 SF	TVA Bull Run Sluice Channel	Clinton	TN	8 /4 /2017
40-mil LLDPE Textured (2)	663,414 SF	TVA Bull Run Sluice Channel	Clinton	TN	8 /4 /2017
80-mil HDPE Floating Cover	186,375 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
60-mil HDPE	1,853,408 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
60-mil LLDPE Floating Cover	209,982 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
GCL	1,639,049 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
36-mil RPE Floating Cover	777,917 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
60-mil HDPE Textured	73,000 SF	AEP John Amos	Winfield	WV	7 /17/2017
10-oz Geotextile	146,000 SF	AEP John Amos	Winfield	WV	7 /17/2017
Wind Defender	33,000 SF	Phoenix Landfill Raincover	Wellsboro	PA	5 /16/2017
60-mil HDPE	450 LF	Phoenix Landfill Raincover	Wellsboro	PA	5 /16/2017
12-mil Dura Skrim	120,000 SF	Phoenix Landfill Raincover	Wellsboro	PA	5 /16/2017
6-oz Geotextile	150,000 SF	Phoenix Landfill Raincover	Wellsboro	PA	5 /16/2017

GCL	85,000 SF	Laurel Ridge LF	Lily	KY	5 /7 /2017
60-mil HDPE Textured	85,000 SF	Laurel Ridge LF	Lily	KY	5 /7 /2017
Geocomposite	85,000 SF	Laurel Ridge LF	Lily	KY	5 /7 /2017
40-mil HDPE	187,770 SF	Duke Energy Riverbend Pond Lining	Mount Holly	NC	4 /22/2017
60-mil HDPE	30,800 SF	Duke Energy Riverbend Pond Lining	Mount Holly	NC	4 /22/2017
20-mil Dura Skrim	435,000 SF	WM King George LF Temp Cap 2016 Phase 2	King George	VA	4 /1 /2017
Wind Defender	435,000 SF	WM King George LF Temp Cap 2016 Phase 2	King George	VA	4 /1 /2017
60-mil HDPE	85,500 SF	WM Atlantic Waste WWTP Ponds	Waverly	VA	12/23/2016
60-mil LLDPE	187,070 SF	WM Atlantic LF Floating Covers	Waverly	VA	12/2 /2016
80-mil LLDPE	164,329 SF	WM Atlantic LF Floating Covers	Waverly	VA	12/2 /2016
60-mil HDPE Textured (2)	125,714 SF	Days Cove LF Cell F & G Phase 2	White Marsh	MD	10/18/2016
GCL	154,487 SF	Days Cove LF Cell F & G Phase 2	White Marsh	MD	10/18/2016
Rain Cover	121,263 SF	Days Cove LF Cell F & G Phase 2	White Marsh	MD	10/18/2016
60-mil HDPE Textured	28,774 SF	Days Cove LF Cell F & G Phase 2	White Marsh	MD	10/18/2016
60-mil HDPE Textured	1,463,000 SF	WM Atlantic Waste Temp Cap Phase 1	Waverly	VA	8 /22/2016
80-mil HDPE Embedment Liner	37,700 SF	Patapsco WWTP 845R	Baltimore	MD	7 /14/2016
60-mil HDPE	5,000 SF	Duke Belews Creek Gypsum	Belews Creek	NC	3 /29/2016
8-oz Geotextile	5,000 SF	Duke Belews Creek Gypsum	Belews Creek	NC	3 /29/2016
Rain Cover	261,360 SF	Duke Roxboro Gypsum	Semora	NC	2 /26/2016
GCL	2,014,000 SF	EW Brown Phase 1 Cell	Harrodsburg	KY	12/12/2015
Geocomposite	1,854,000 SF	EW Brown Phase 1 Cell	Harrodsburg	KY	12/12/2015
16-oz Geotextile	239,600 SF	EW Brown Phase 1 Cell	Harrodsburg	KY	12/12/2015
8-oz Geotextile	513,000 SF	Harford County	Street	MD	12/4 /2015

60-mil HDPE	513,000 SF	Harford County	Street	MD	12/4 /2015
16-oz Geotextile	513,000 SF	Harford County	Street	MD	12/4 /2015
Geotextile	100,000 SF	Duke Mayo Gypsum	Roxboro	NC	10/1 /2015
60-mil HDPE	100,000 SF	Duke Mayo Gypsum	Roxboro	NC	10/1 /2015
40-mil HDPE	44,000 SF	Walmart 6264 Winston-Salem	Winston-Salem	NC	12/4 /2014
24-oz Geotextile	84,000 SF	Walmart 6264 Winston-Salem	Winston-Salem	NC	12/4 /2014
60-mil HDPE Textured	785,000 SF	East Kentucky Power Spurlock	Maysville	KY	11/26/2014
Geocomposite	199,100 SF	Santee Cooper Cross Station	Pineville	SC	9 /19/2014
GCL (2)	1,007,600 SF	Santee Cooper Cross Station	Pineville	SC	9 /19/2014
GCL	146,000 SF	Santee Cooper Cross Station	Pineville	SC	9 /19/2014
60-mil HDPE Textured	185,900 SF	Santee Cooper Cross Station	Pineville	SC	9 /19/2014
60-mil HDPE	1,009,600 SF	Santee Cooper Cross Station	Pineville	SC	9 /19/2014
60-mil HDPE	43,560 SF	Iris Glen Cell 6B Repairs	Johnson City	TN	9 /4 /2014
80-mil HDPE	19,000 SF	Glatfelter Zone 5 Lime Handling	Spring Grove	PA	7 /2 /2014
12-oz Geotextile	6,300 SF	Glatfelter Zone 5 Lime Handling	Spring Grove	PA	7 /2 /2014
Geocomposite	15,000 SF	Glatfelter Zone 5 Lime Handling	Spring Grove	PA	7 /2 /2014
50-mil PVC	657,000 SF	Eastern Sanitary Landfill Phase X	White Marsh	MD	12/1 /2013
Geocomposite	1,212,500 SF	Eastern Sanitary Landfill Phase X	White Marsh	MD	12/1 /2013
Rain Cover	646,200 SF	Eastern Sanitary Landfill Phase X	White Marsh	MD	12/1 /2013
Geocomposite (2)	1,212,500 SF	Eastern Sanitary Landfill Phase X	White Marsh	MD	12/1 /2013
8-oz Geotextile	528,000 SF	RSL 10A	Cincinnati	OH	10/1 /2013
60-mil HDPE	528,000 SF	RSL 10A	Cincinnati	OH	10/1 /2013

Ferretiz, Carmelo

Material	Quantity	Project	Location	Completion Date	
10-oz Geotextile	1,075,500 SF	Duke Mayo Water Redirect	Roxboro	NC	2 /3 /2019
GCL	684,000 SF	Duke Mayo Water Redirect	Roxboro	NC	2 /3 /2019
16-oz Geotextile	571,500 SF	Duke Mayo Water Redirect	Roxboro	NC	2 /3 /2019
60-mil HDPE Textured	927,234 SF	Duke Mayo Water Redirect	Roxboro	NC	2 /3 /2019
60-mil HDPE Textured	395,290 SF	Republic Walnut Creek LF	Frankfort	IN	12/7 /2018
Geocomposite	291,249 SF	Republic Clinton Co Cap	Frankfort	IN	11/3 /2018
40-mil LLDPE Textured	279,089 SF	Republic Clinton Co Cap	Frankfort	IN	11/3 /2018
60-mil HDPE	30,000 SF	JH Campbell.	West Olive	MI	9 /9 /2018
40-mil HDPE	450,000 SF	JH Campbell.	West Olive	MI	9 /9 /2018
10-oz Geotextile	450,000 SF	JH Campbell.	West Olive	MI	9 /9 /2018
12-oz Geotextile	80,000 SF	JH Campbell.	West Olive	MI	9 /9 /2018
60-mil LLDPE	80,000 SF	JH Campbell.	West Olive	MI	9 /9 /2018
GCL	30,000 SF	JH Campbell.	West Olive	MI	9 /9 /2018
60-mil HDPE	1,394,382 SF	Winyah LF Area 1	Georgetown	SC	9 /6 /2018
Geocomposite	1,374,382 SF	Winyah LF Area 1	Georgetown	SC	9 /6 /2018
GCL	1,374,382 SF	Winyah LF Area 1	Georgetown	SC	9 /6 /2018
60-mil HDPE Textured	212,000 SF	Montgomery Co LF Cell 4	Jeffersonville	KY	8 /10/2018
GCL	212,000 SF	Montgomery Co LF Cell 4	Jeffersonville	KY	8 /10/2018
6-oz Geotextile	147,000 SF	Montgomery Co LF Cell 4	Jeffersonville	KY	8 /10/2018
Geocomposite	67,000 SF	Montgomery Co LF Cell 4	Jeffersonville	KY	8 /10/2018
GCL	472,000 SF	South Kent Co LF	Byron Center	MI	7 /23/2018
60-mil HDPE	472,000 SF	South Kent Co LF	Byron Center	MI	7 /23/2018
Geocomposite	329,000 SF	South Kent Co LF	Byron Center	MI	7 /23/2018
Geocomposite	1,415,700 SF	TVA Kingston Stilling Pond Closure Harriman		TN	6 /26/2018

40-mil LLDPE Textured	1,415,700 SF	TVA Kingston Stilling Pond Closure Harriman		TN	6 /26/2018
12-oz Geotextile	1,415,700 SF	TVA Kingston Stilling Pond Closure Harriman		TN	6 /26/2018
16-oz Geotextile	65,125 SF	WM Grand Central Basin Liner	Pen Argyl	PA	6 /9 /2018
40-mil LLDPE	65,125 SF	WM Grand Central Basin Liner	Pen Argyl	PA	6 /9 /2018
12-oz Geotextile	65,125 SF	WM Grand Central Basin Liner	Pen Argyl	PA	6 /9 /2018
Geocomposite	164,000 SF	Santee Cooper - Cross Phase II and II Drainage	Pineville	SC	6 /2 /2018
60-mil HDPE	34,000 SF	Santee Cooper - Cross Phase II and II Drainage	Pineville	SC	6 /2 /2018
60-mil HDPE Textured	43,560 SF	Mount Storm Pyrite Pond	Mt Storm	WV	12/16/2017
32-oz Geotextile	43,560 SF	Mount Storm Pyrite Pond	Mt Storm	WV	12/16/2017
GCL	43,560 SF	Mount Storm Pyrite Pond	Mt Storm	WV	12/16/2017
8-oz Geotextile (2)	724,750 SF	Rumpke Noble Road Landfill	Shiloh	OH	12/6 /2017
8-oz Geotextile	724,750 SF	Rumpke Noble Road Landfill	Shiloh	OH	12/6 /2017
60-mil HDPE Textured	724,750 SF	Rumpke Noble Road Landfill	Shiloh	OH	12/6 /2017
40-mil LLDPE Textured	2,326,755 SF	TVA Colbert Ash Pond 4 Closure	Tuscumbia	AL	11/18/2017
Geocomposite	2,326,755 SF	TVA Colbert Ash Pond 4 Closure	Tuscumbia	AL	11/18/2017
Geotextile	2,326,755 SF	TVA Colbert Ash Pond 4 Closure	Tuscumbia	AL	11/18/2017
60-mil LLDPE Textured	11,000 SF	TVA Bull Run Sluice Channel	Clinton	TN	8 /4 /2017
Geocomposite	663,414 SF	TVA Bull Run Sluice Channel	Clinton	TN	8 /4 /2017
40-mil LLDPE Textured (2)	663,414 SF	TVA Bull Run Sluice Channel	Clinton	TN	8 /4 /2017
40-mil LLDPE Textured	124,690 SF	TVA Bull Run Sluice Channel	Clinton	TN	8 /4 /2017
12-oz Geotextile.	124,690 SF	TVA Bull Run Sluice Channel	Clinton	TN	8 /4 /2017
12-oz Geotextile	663,414 SF	TVA Bull Run Sluice Channel	Clinton	TN	8 /4 /2017
36-mil RPE Floating Cover	777,917 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
GCL	1,639,049 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017

60-mil LLDPE Floating Cover	209,982 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
60-mil HDPE	1,853,408 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
80-mil HDPE Floating Cover	186,375 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
80-mil HDPE Floating Cover	186,375 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
36-mil RPE Floating Cover	777,917 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
60-mil HDPE	1,853,408 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
60-mil LLDPE Floating Cover	209,982 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
GCL	1,639,049 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
60-mil HDPE Textured	73,000 SF	AEP John Amos	Winfield	WV	7 /17/2017
10-oz Geotextile	146,000 SF	AEP John Amos	Winfield	WV	7 /17/2017
Geocomposite	450,000 SF	Onslow County Landfill	Jacksonville	NC	6 /8 /2017
Rain Cover	200,000 SF	Onslow County Landfill	Jacksonville	NC	6 /8 /2017
60-mil HDPE	450,000 SF	Onslow County Landfill	Jacksonville	NC	6 /8 /2017
GCL	450,000 SF	Onslow County Landfill	Jacksonville	NC	6 /8 /2017
Wind Defender	33,000 SF	Phoenix Landfill Raincover	Wellsboro	PA	5 /16/2017
12-mil Dura Skrim	120,000 SF	Phoenix Landfill Raincover	Wellsboro	PA	5 /16/2017
6-oz Geotextile	150,000 SF	Phoenix Landfill Raincover	Wellsboro	PA	5 /16/2017
60-mil HDPE	450 LF	Phoenix Landfill Raincover	Wellsboro	PA	5 /16/2017
60-mil HDPE Textured	85,000 SF	Laurel Ridge LF	Lily	KY	5 /7 /2017
Geocomposite	85,000 SF	Laurel Ridge LF	Lily	KY	5 /7 /2017
GCL	85,000 SF	Laurel Ridge LF	Lily	KY	5 /7 /2017
60-mil HDPE	30,800 SF	Duke Energy Riverbend Pond Lining	Mount Holly	NC	4 /22/2017

40-mil HDPE	187,770 SF	Duke Energy Riverbend Pond Lining	Mount Holly	NC	4 /22/2017
Wind Defender	435,000 SF	WM King George LF Temp Cap 2016 Phase 2	King George	VA	4 /1 /2017
20-mil Dura Skrim	435,000 SF	WM King George LF Temp Cap 2016 Phase 2	King George	VA	4 /1 /2017
GCL	335,000 SF	Macon County MSW Phase 3 Cell	Franklin	NC	12/28/2016
Rain Cover	335,000 SF	Macon County MSW Phase 3 Cell	Franklin	NC	12/28/2016
60-mil HDPE	335,000 SF	Macon County MSW Phase 3 Cell	Franklin	NC	12/28/2016
Wind Defender	335,000 SF	Macon County MSW Phase 3 Cell	Franklin	NC	12/28/2016
16-oz Geotextile	335,000 SF	Macon County MSW Phase 3 Cell	Franklin	NC	12/28/2016
60-mil HDPE	85,500 SF	WM Atlantic Waste WWTP Ponds	Waverly	VA	12/23/2016
60-mil HDPE	85,500 SF	WM Atlantic Waste WWTP Ponds	Waverly	VA	12/23/2016
80-mil LLDPE	164,329 SF	WM Atlantic LF Floating Covers	Waverly	VA	12/2 /2016
60-mil LLDPE	187,070 SF	WM Atlantic LF Floating Covers	Waverly	VA	12/2 /2016
60-mil LLDPE	187,070 SF	WM Atlantic LF Floating Covers	Waverly	VA	12/2 /2016
80-mil LLDPE	164,329 SF	WM Atlantic LF Floating Covers	Waverly	VA	12/2 /2016
60-mil HDPE	125,000 SF	Carolina Beach WWTP	Carolina Beach	NC	10/15/2016
40-mil HDPE	95,832 SF	WM King George LF Temp Cap 2016	King George	VA	10/5 /2016
Wind Defender	95,832 SF	WM King George LF Temp Cap 2016	King George	VA	10/5 /2016
Geocomposite	384,000 SF	Asheville Phase 3	Arden	NC	10/3 /2016
60-mil HDPE Textured	429,000 SF	Asheville Phase 3	Arden	NC	10/3 /2016
GCL	429,000 SF	Asheville Phase 3	Arden	NC	10/3 /2016
60-mil HDPE	350,000 SF	Millennium Landfill	Ashtabula	OH	7 /24/2016
Geotextile	280,000 SF	Millennium Landfill	Ashtabula	OH	7 /24/2016
40-mil LLDPE	80,000 SF	Millennium Landfill	Ashtabula	OH	7 /24/2016
Geotextile	280,000 SF	Millennium Landfill	Ashtabula	OH	7 /24/2016

Geocomposite	155,000 SF	Millennium Landfill	Ashtabula	OH	7 /24/2016
40-mil LLDPE	80,000 SF	Millennium Landfill	Ashtabula	OH	7 /24/2016
60-mil HDPE	350,000 SF	Millennium Landfill	Ashtabula	OH	7 /24/2016
Geocomposite	155,000 SF	Millennium Landfill	Ashtabula	OH	7 /24/2016
80-mil HDPE Embedment Liner	37,700 SF	Patapsco WWTP 845R	Baltimore	MD	7 /14/2016
40-mil LLDPE Textured	900,000 SF	Spencer's East Site Rubble Landfill Closure	Abingdon	MD	5 /21/2016
Geocomposite	900,000 SF	Spencer's East Site Rubble Landfill Closure	Abingdon	MD	5 /21/2016
40-mil LLDPE Textured	900,000 SF	Spencer's East Site Rubble Landfill Closure	Abingdon	MD	5 /21/2016
Geocomposite	900,000 SF	Spencer's East Site Rubble Landfill Closure	Abingdon	MD	5 /21/2016
8-oz Geotextile	95,118 SF	Costco	Monrovia	MD	5 /1 /2016
30-mil PVC	138,549 SF	Costco	Monrovia	MD	5 /1 /2016
40-mil LLDPE	361,255 SF	WM Mid Penn Interim LF Cap	Saluda	VA	4 /1 /2016
8-oz Geotextile	50,000 SF	Dominion Power Yorktown Plant Ponds 1 & 2	Yorktown	VA	12/19/2015
XR-5	50,000 SF	Dominion Power Yorktown Plant Ponds 1 & 2	Yorktown	VA	12/19/2015
8-oz Geotextile	50,000 SF	Dominion Power Yorktown Plant Ponds 1 & 2	Yorktown	VA	12/19/2015
XR-5	50,000 SF	Dominion Power Yorktown Plant Ponds 1 & 2	Yorktown	VA	12/19/2015
30-mil PVC	4,304 SF	Somerford Place	Hagerstown	MD	12/18/2015
30-mil PVC	4,304 SF	Somerford Place	Hagerstown	MD	12/18/2015
8-oz Geotextile	4,304 SF	Somerford Place	Hagerstown	MD	12/18/2015
8-oz Geotextile	4,304 SF	Somerford Place	Hagerstown	MD	12/18/2015
16-oz Geotextile	513,000 SF	Harford County	Street	MD	12/4 /2015
60-mil HDPE	513,000 SF	Harford County	Street	MD	12/4 /2015

8-oz Geotextile	513,000 SF	Harford County	Street	MD	12/4 /2015
16-oz Geotextile	513,000 SF	Harford County	Street	MD	12/4 /2015
60-mil HDPE	513,000 SF	Harford County	Street	MD	12/4 /2015
8-oz Geotextile	513,000 SF	Harford County	Street	MD	12/4 /2015
Rain Cover	1,393,920 SF	WM Atlantic LF Cell 12A, 12b and 12c Rain Cover	Waverly	VA	11/14/2015
Rain Cover	1,393,920 SF	WM Atlantic LF Cell 12A, 12b and 12c Rain Cover	Waverly	VA	11/14/2015
60-mil HDPE	420 LF	Phoenix Landfill Rain Cover	Wellsboro	PA	10/31/2015
Rain Cover	155,000 SF	Phoenix Landfill Rain Cover	Wellsboro	PA	10/31/2015
Wind Defender	45,000 SF	Phoenix Landfill Rain Cover	Wellsboro	PA	10/31/2015
Rain Cover	155,000 SF	Phoenix Landfill Rain Cover	Wellsboro	PA	10/31/2015
6-oz Geotextile	145,000 SF	Phoenix Landfill Rain Cover	Wellsboro	PA	10/31/2015
60-mil HDPE	420 LF	Phoenix Landfill Rain Cover	Wellsboro	PA	10/31/2015
Wind Defender	45,000 SF	Phoenix Landfill Rain Cover	Wellsboro	PA	10/31/2015
6-oz Geotextile	145,000 SF	Phoenix Landfill Rain Cover	Wellsboro	PA	10/31/2015
Rain Cover	374,616 SF	WM DRPI LF Cell 1-3 Overlay Rain Cover	New Castle	DE	10/13/2015
Rain Cover	374,616 SF	WM DRPI LF Cell 1-3 Overlay Rain Cover	New Castle	DE	10/13/2015
10-oz Geotextile	100,000 SF	Cooper Power Plant 2013 Expansion	Somerset	KY	12/1 /2013
60-mil Textured	850,500 SF	Cooper Power Plant 2013 Expansion	Somerset	KY	12/1 /2013
60-mil HDPE Textured	159,100 SF	Cooper Power Plant 2013 Expansion	Somerset	KY	12/1 /2013
GCL	619,000 SF	Cooper Power Plant 2013 Expansion	Somerset	KY	12/1 /2013
Geocomposite	369,000 SF	Cooper Power Plant 2013 Expansion	Somerset	KY	12/1 /2013
10-oz Geotextile	200,000 SF	Pendleton	Butler	KY	12/1 /2013

60-mil HDPE	400,000 SF	Pendleton	Butler	KY	12/1 /2013
Geocomposite	200,000 SF	Pendleton	Butler	KY	12/1 /2013
GCL	642,600 SF	New Georgia Landfill	Birmingham	AL	10/1 /2013
60-mil HDPE	642,600 SF	New Georgia Landfill	Birmingham	AL	10/1 /2013
Geocomposite	642,600 SF	New Georgia Landfill	Birmingham	AL	10/1 /2013
10-oz Geotextile	642,600 SF	New Georgia Landfill	Birmingham	AL	10/1 /2013
8-oz Geotextile	528,000 SF	Beech Hollow	Wellston	OH	8 /1 /2013
60-mil HDPE	528,000 SF	Beech Hollow	Wellston	OH	8 /1 /2013
Geocomposite	518,000 SF	Plum Point Cell & Leachate Systems	Osceola	AR	3 /1 /2013
60-mil HDPE	617,000 SF	Plum Point Cell & Leachate Systems	Osceola	AR	3 /1 /2013
20-mil Geomembrane	135,700 SF	I-95 LF Phase 3B	Lorton	VA	2 /28/2013
80-mil HDPE Textured	61,200 SF	Cooper Power Plant Lagoon	Somerset	KY	11/1 /2012
12-oz Geotextile	68,900 SF	Cooper Power Plant Lagoon	Somerset	KY	11/1 /2012
10-oz Geotextile	680,900 SF	Cooper Power Plant Lagoon	Somerset	KY	11/1 /2012
60-mil LLDPE Textured	537,200 SF	Cooper Power Plant Lagoon	Somerset	KY	11/1 /2012
GCL	237,000 SF	Crystal Rivers North Slope Closure	Crystal Rivers	FL	10/1 /2012
60-mil LLDPE Textured	2,516,000 SF	Ghent Landfill	Ghent	KY	10/1 /2012
10-oz Geotextile	2,516,000 SF	Ghent Landfill	Ghent	KY	10/1 /2012
Rain Cover	330,000 SF	Hickory Meadows LF	Hilbert	WI	10/1 /2012
60-mil HDPE	875,000 SF	Hickory Meadows LF	Hilbert	WI	10/1 /2012
12-oz Geotextile	875,000 SF	Hickory Meadows LF	Hilbert	WI	10/1 /2012
40-mil LLDPE	1,200,000 SF	Haleys Pike Install	Lexington	KY	8 /1 /2012
Geocomposite	2,400,000 SF	Haleys Pike Install	Lexington	KY	8 /1 /2012
Geocomposite	847,500 SF	Zion Landfill Cap	Zion	IL	7 /1 /2012
40-mil HDPE Textured	847,000 SF	Zion Landfill Cap	Zion	IL	7 /1 /2012

8-oz Geotextile	19,200 SF	Zion Landfill Cap	Zion	IL	7 /1 /2012
Geocomposite	260,000 SF	Delaware County LF Cap	Boyertown	PA	6 /1 /2012
Geotextile	260,000 SF	Delaware County LF Cap	Boyertown	PA	6 /1 /2012
30-mil PVC	260,000 SF	Delaware County LF Cap	Boyertown	PA	6 /1 /2012
40-mil LLDPE Textured	860,000 SF	Medora LF Cell 1 & 2	Medora	IN	6 /1 /2012
Geocomposite	86,000 SF	Medora LF Cell 1 & 2	Medora	IN	6 /1 /2012
Geocomposite	1,829,500 SF	Oak Ridge Landfill Cap	Ballwin	MO	6 /1 /2012
40-mil LLDPE Textured	1,829,500 SF	Oak Ridge Landfill Cap	Ballwin	MO	6 /1 /2012
40-mil HDPE Textured	1,005,000 SF	Hutsonville Ash Pond	Crawford County	IL	5 /1 /2012
Geocomposite	980,000 SF	Belews Creek Structural Fill Cap	Belews Creek	NC	4 /1 /2012
40-mil LLDPE Textured	980,000 SF	Belews Creek Structural Fill Cap	Belews Creek	NC	4 /1 /2012
6-oz Geotextile	262,800 SF	First Piedmont	Ringgold	VA	4 /1 /2012
60-mil HDPE Textured	425,100 SF	First Piedmont	Ringgold	VA	4 /1 /2012
12-oz Geotextile	247,100 SF	First Piedmont	Ringgold	VA	4 /1 /2012
Geocomposite	186,400 SF	First Piedmont	Ringgold	VA	4 /1 /2012
40-mil LLDPE Textured	892,000 SF	Holmes County Final Cap	Millersburg	OH	4 /1 /2012
Geocomposite	892,000 SF	Holmes County Final Cap	Millersburg	OH	4 /1 /2012
60-mil HDPE	139,400 SF	Rumpke OCB 2011 Phase 2	Cincinnati	OH	3 /21/2012
Geocomposite	604,000 SF	HR Recovery Cell 4	Virginia Beach	VA	3 /1 /2012
60-mil HDPE Textured	604,000 SF	HR Recovery Cell 4	Virginia Beach	VA	3 /1 /2012
Geocomposite	2,017,000 SF	Plant Hammond	Rome	GA	2 /1 /2012
GCL	2,017,000 SF	Plant Hammond	Rome	GA	2 /1 /2012
60-mil HDPE Textured	206,000 SF	International Paper	Pine Hill	AL	10/1 /2011
Geocomposite	206,000 SF	International Paper	Pine Hill	AL	10/1 /2011
60-mil HDPE Textured	321,000 SF	Apex LF Phase 5	Amsterdam	OH	9 /1 /2011
GCL	321,000 SF	Apex LF Phase 5	Amsterdam	OH	9 /1 /2011
12-oz Geotextile	321,000 SF	Apex LF Phase 5	Amsterdam	OH	9 /1 /2011

16-oz Geotextile	238,000 SF	Norfolk Southern- Lucknow Yard	Harrisburg	PA	9 /1 /2011
GCL	238,000 SF	Norfolk Southern- Lucknow Yard	Harrisburg	PA	9 /1 /2011
10-oz Geotextile	238,000 SF	Norfolk Southern- Lucknow Yard	Harrisburg	PA	9 /1 /2011
10-oz Geotextile	264,000 SF	Ew Brown Ash Pond	Harrodsburg	KY	8 /1 /2011
60-mil LLDPE Textured	264,000 SF	Ew Brown Ash Pond	Harrodsburg	KY	8 /1 /2011
60-mil HDPE Textured	10,000 SF	Lorton LF Cell 3	Lorton	VA	8 /1 /2011
60-mil HDPE Textured	232,000 SF	Millenium Ash Baltimore	Baltimore	MD	8 /1 /2011
8-oz Geotextile	125,000 SF	Millenium Ash Baltimore	Baltimore	MD	8 /1 /2011
6-oz Geotextile	2,132,000 SF	Clover Power Station	Clover	VA	6 /1 /2011
60-mil HDPE Textured	1,066,000 SF	Clover Power Station	Clover	VA	6 /1 /2011
Geocomposite	1,094,000 SF	Pecan Row	Valdosta	GA	6 /1 /2011
40-mil LLDPE Textured	1,094,000 SF	Pecan Row	Valdosta	GA	6 /1 /2011
40-mil LLDPE	1,386,300 SF	Perry County Cap	Uniontown	AL	6 /1 /2011
Geocomposite	1,363,000 SF	Perry County Cap	Uniontown	AL	6 /1 /2011
30-mil HDPE Textured	217,800 SF	Asheville Airport Phase 2	Arden	NC	3 /1 /2011
Geocomposite	802,000 SF	Hobbs	Denton	MD	12/1 /2010
40-mil LLDPE Textured	802,000 SF	Hobbs	Denton	MD	12/1 /2010
GCL	590,000 SF	Domtar	Plymouth	NC	11/1 /2010
40-mil LLDPE Textured	590,000 SF	Domtar	Plymouth	NC	11/1 /2010
32-oz Geotextile	40,000 SF	Domtar	Plymouth	NC	11/1 /2010
Geocomposite	550,000 SF	Domtar	Plymouth	NC	11/1 /2010
16-oz Geotextile	256,000 SF	Mirant Westland Ash B1-A	Dickerson	MD	11/1 /2010
60-mil HDPE Textured	256,000 SF	Mirant Westland Ash B1-A	Dickerson	MD	11/1 /2010
GCL	256,000 SF	Mirant Westland Ash B1-A	Dickerson	MD	11/1 /2010
60-mil HDPE Textured	256,000 SF	Mirant Westland Ash B1-B	Dickerson	MD	11/1 /2010
16-oz Geotextile	256,000 SF	Mirant Westland Ash B1-B	Dickerson	MD	11/1 /2010
GCL	256,000 SF	Mirant Westland Ash B1-B	Dickerson	MD	11/1 /2010

40-mil LLDPE Textured	494,000 SF	Roxboro Phase 5	Semora	NC	11/1 /2010
Geocomposite	755,000 SF	Asheville Airport Phase 1	Arden	NC	9 /1 /2010
60-mil HDPE Textured	755,000 SF	Asheville Airport Phase 1	Arden	NC	9 /1 /2010
GCL	755,000 SF	Asheville Airport Phase 1	Arden	NC	9 /1 /2010
8-oz Geotextile	654,000 SF	RSL Phase IX	Cincinnati	OH	9 /1 /2010
60-mil HDPE Textured	654,000 SF	RSL Phase IX	Cincinnati	OH	9 /1 /2010
40-mil LLDPE	569,000 SF	Progress Energy	Semora	NC	7 /1 /2010
GCL	550,000 SF	Robeson Co. MSW LF Phase 4 Exp	St. Pauls	NC	6 /1 /2010
60-mil HDPE	550,000 SF	Robeson Co. MSW LF Phase 4 Exp	St. Pauls	NC	6 /1 /2010
Geocomposite	550,000 SF	Robeson Co. MSW LF Phase 4 Exp	St. Pauls	NC	6 /1 /2010
Geocomposite	1,200,000 SF	Atlantic Cell 7A-7C Addendum	Waverly	VA	
GCL	1,200,000 SF	Atlantic Cell 7A-7C Addendum	Waverly	VA	
40-mil HDPE	1,200,000 SF	Atlantic Cell 7A-7C Addendum	Waverly	VA	
60-mil HDPE	1,200,000 SF	Atlantic Cell 7A-7C Addendum	Waverly	VA	
60-mil HDPE Textured	233,000 SF	Crawford County LF Phase 5B	Bucyrus	OH	
8-oz Geotextile	233,000 SF	Crawford County LF Phase 5B	Bucyrus	OH	
40-mil HDPE Textured	4,356,000 SF	Dominion Chesterfield Lower Ash Pond	Chester	VA	
8-oz Geotextile	457,380 SF	Dominion Chesterfield Lower Ash Pond	Chester	VA	
Wind Defender	3,898,620 SF	Dominion Chesterfield Lower Ash Pond	Chester	VA	
Wind Defender	3,286,386 SF	Dominion Bremon Power Station - EAP Excavation & NAP Fill	Bremo Bluff	VA	
Rain Cover (2)	285,777 SF	Dominion Bremon Power Station - EAP Excavation & NAP Fill	Bremo Bluff	VA	
Rain Cover	3,286,386 SF	Dominion Bremon Power Station - EAP Excavation & NAP Fill	Bremo Bluff	VA	
Geotextile	43,600 SF	Duke Mayo Additional Pond	Roxboro	NC	

60-mil HDPE Textured	43,600 SF	Duke Mayo Additional Pond	Roxboro	NC
16-oz Geotextile	37,000 SF	Duke Mayo Water Redirect - Holding Basin	Roxboro	NC
10-oz Geotextile	445,000 SF	Duke Mayo Water Redirect - Holding Basin	Roxboro	NC
GCL	128,000 SF	Duke Mayo Water Redirect - Holding Basin	Roxboro	NC
60-mil HDPE	128,000 SF	Duke Mayo Water Redirect - Holding Basin	Roxboro	NC
60-mil HDPE	415,000 SF	Santee Cooper - Winyah Ponds	Georgetown	SC
GCL	445,000 SF	Santee Cooper - Winyah Ponds	Georgetown	SC
Geocomposite	163,000 SF	Santee Cooper - Winyah Ponds	Georgetown	SC
Geotextile	415,000 SF	Santee Cooper - Winyah Ponds	Georgetown	SC
Rain Cover	330,000 SF	SWACO Hydroturf Downchutes	Grove City	OH
40-mil LLDPE Textured	27,800 SF	SWACO Hydroturf Downchutes	Grove City	OH
GCL	85,900 SF	SWACO Hydroturf Downchutes	Grove City	OH
60-mil HDPE	85,900 SF	SWACO Hydroturf Downchutes	Grove City	OH
60-mil HDPE Textured	413,000 SF	Tunnel Hill Phase 7	New Lexington	OH
6-oz Geotextile	658,000 SF	Tunnel Hill Phase 7	New Lexington	OH
Rain Cover	269,000 SF	Tunnel Hill Phase 7	New Lexington	OH

Narvaez, Orlando

Material	Quantity	Project	Location	Completion Date	
60-mil HDPE Textured	395,290 SF	Republic Walnut Creek LF	Frankfort	IN	12/7 /2018
Geocomposite	291,249 SF	Republic Clinton Co Cap	Frankfort	IN	11/3 /2018
40-mil LLDPE Textured	279,089 SF	Republic Clinton Co Cap	Frankfort	IN	11/3 /2018
60-mil HDPE Textured (4)	660,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
60-mil HDPE Textured	810,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
Geocomposite	810,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
60-mil HDPE Textured (3)	660,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
Geocomposite (4)	660,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
60-mil HDPE Textured (2)	810,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
GCL	405,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
GCL (2)	330,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
Geocomposite (3)	660,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
Geocomposite (2)	810,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
Geocomposite (CoalTex)	100,000 SF	EKPC Spurlock Phase 2	Maysville	KY	11/12/2017
Geocomposite	250,000 SF	EKPC Spurlock Phase 2	Maysville	KY	11/12/2017
8 oz Geotextile	272,960 SF	Rumpke Beech Hollow Landfill	Wellston	OH	10/19/2017
60-mil HDPE Textured	272,960 SF	Rumpke Beech Hollow Landfill	Wellston	OH	10/19/2017
60-mil HDPE	100,000 SF	Ottawa Farms Landfill	Coopersville	MI	10/12/2017
GCL	100,000 SF	Ottawa Farms Landfill	Coopersville	MI	10/12/2017

8-oz Geotextile	1,200,000 SF	Sunny Farms	Fostoria	OH	8 /29/2017
Tie-In	2,100 LF	Sunny Farms	Fostoria	OH	8 /29/2017
60-mil HDPE	1,200,000 SF	Sunny Farms	Fostoria	OH	8 /29/2017
20-mil Dura Skrim	1,700,000 SF	Duke Gibson Cell 2 Raincover	Owensville	IN	8 /17/2017
36-mil RPE Floating Cover	777,917 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
80-mil HDPE Floating Cover	186,375 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
60-mil HDPE	1,853,408 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
GCL	1,639,049 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
60-mil LLDPE Floating Cover	209,982 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
20-mil Dura Skrim	1,700,000 SF	Duke Gibson Cell 3 Raincover	Owensville	IN	7 /10/2017
Geocomposite	47,000 SF	NIPSCO	Wheatfield	IN	7 /7 /2017
40-mil LLDPE	550,000 SF	NIPSCO	Wheatfield	IN	7 /7 /2017
Rain Cover	110,024 SF	Hoover Mason Raincover	Mt Pleasant	TN	5 /25/2017
60-mil HDPE	47,000 SF	Raleigh Town Center - Pond Lining	Raleigh	NC	5 /21/2017
12-oz Geotextile	47,000 SF	Raleigh Town Center - Pond Lining	Raleigh	NC	5 /21/2017
20-mil Dura Skrim	435,000 SF	WM King George LF Temp Cap 2016 Phase 2	King George	VA	4 /1 /2017
Wind Defender	435,000 SF	WM King George LF Temp Cap 2016 Phase 2	King George	VA	4 /1 /2017
Geocomposite	320,000 SF	Duke Catawba Nuclear Station LF Closure	York	SC	12/12/2016
6-oz Geotextile	245,000 SF	Duke Catawba Nuclear Station LF Closure	York	SC	12/12/2016
16-oz Geotextile	36,000 SF	Duke Catawba Nuclear Station LF Closure	York	SC	12/12/2016
40-mil LLDPE	340,000 SF	Duke Catawba Nuclear Station LF Closure	York	SC	12/12/2016

80-mil LLDPE	164,329 SF	WM Atlantic LF Floating Covers	Waverly	VA	12/2 /2016
60-mil LLDPE	187,070 SF	WM Atlantic LF Floating Covers	Waverly	VA	12/2 /2016
Geocomposite	26,000 SF	Duke Pine Hall Road Diversion	Walnut Cove	NC	11/23/2016
40-mil LLDPE	26,000 SF	Duke Pine Hall Road Diversion	Walnut Cove	NC	11/23/2016
60-mil HDPE	125,000 SF	Carolina Beach WWTP	Carolina Beach	NC	10/15/2016
60-mil HDPE	110,000 SF	Duke Cliffside Basement Liner	Mooresboro	NC	10/10/2016
12-oz Geotextile	110,000 SF	Duke Cliffside Basement Liner	Mooresboro	NC	10/10/2016
40-mil HDPE	95,832 SF	WM King George LF Temp Cap 2016	King George	VA	10/5 /2016
Wind Defender	95,832 SF	WM King George LF Temp Cap 2016	King George	VA	10/5 /2016
60-mil HDPE Textured	1,463,000 SF	WM Atlantic Waste Temp Cap Phase 1	Waverly	VA	8 /22/2016
60-mil HDPE	26,750 SF	AEP Darby Plant Tank Farm	Mt Sterling	OH	8 /20/2016
16-oz Geotextile	62,296 SF	Plant McIntosh	Rincon	GA	7 /16/2016
Geonet	55,058 SF	Plant McIntosh	Rincon	GA	7 /16/2016
60-mil HDPE Textured (3)	461,437 SF	Plant McIntosh	Rincon	GA	7 /16/2016
Rain Cover	395,730 SF	Plant McIntosh	Rincon	GA	7 /16/2016
4-oz Protection Strip	47,460 SF	Plant McIntosh	Rincon	GA	7 /16/2016
60-mil HDPE Textured (2)	110,153 SF	Plant McIntosh	Rincon	GA	7 /16/2016
60-mil HDPE Textured	110,153 SF	Plant McIntosh	Rincon	GA	7 /16/2016
Geocomposite	420,542 SF	Plant McIntosh	Rincon	GA	7 /16/2016
80-mil HDPE Embedment Liner	37,700 SF	Patapsco WWTP 845R	Baltimore	MD	7 /14/2016
60-mil HDPE	575,216 SF	HRRC Cell 6	Virginia Beach	VA	5 /8 /2016
Geocomposite (2)	379,557 SF	HRRC Cell 6	Virginia Beach	VA	5 /8 /2016
Geocomposite	195,659 SF	HRRC Cell 6	Virginia Beach	VA	5 /8 /2016
30-mil PVC	138,549 SF	Costco	Monrovia	MD	5 /1 /2016

8-oz Geotextile	95,118 SF	Costco	Monrovia	MD	5 /1 /2016
40-mil HDPE	400 SF	Harnett Co WTP	Lillington	NC	4 /10/2016
60-mil HDPE	5,000 SF	Duke Belews Creek Gypsum	Belews Creek	NC	3 /29/2016
8-oz Geotextile	5,000 SF	Duke Belews Creek Gypsum	Belews Creek	NC	3 /29/2016
Rain Cover	261,360 SF	Duke Roxboro Gypsum	Semora	NC	2 /26/2016
8-oz Geotextile	513,000 SF	Harford County	Street	MD	12/4 /2015
60-mil HDPE	513,000 SF	Harford County	Street	MD	12/4 /2015
16-oz Geotextile	513,000 SF	Harford County	Street	MD	12/4 /2015
30-mil HDPE Textured	163,350 SF	WM Cedar Ridge Temp Cover	Lewisburg	TN	11/26/2015
30-mil Textured	557,755 SF	WM West Camden Temp Cover	Camden	TN	11/21/2015
Rain Cover	322,080 SF	WM King George LF Rain Cover 2015	King George	VA	11/3 /2015
Geotextile	100,000 SF	Duke Mayo Gypsum	Roxboro	NC	10/1 /2015
60-mil HDPE	100,000 SF	Duke Mayo Gypsum	Roxboro	NC	10/1 /2015
24-oz Geotextile	84,000 SF	Walmart 6264 Winston-Salem	Winston-Salem	NC	12/4 /2014
40-mil HDPE	44,000 SF	Walmart 6264 Winston-Salem	Winston-Salem	NC	12/4 /2014
60-mil HDPE Textured	785,000 SF	East Kentucky Power Spurlock	Maysville	KY	11/26/2014
GCL	146,000 SF	Santee Cooper Cross Station	Pineville	SC	9 /19/2014
60-mil HDPE Textured	185,900 SF	Santee Cooper Cross Station	Pineville	SC	9 /19/2014
60-mil HDPE	1,009,600 SF	Santee Cooper Cross Station	Pineville	SC	9 /19/2014
Geocomposite	199,100 SF	Santee Cooper Cross Station	Pineville	SC	9 /19/2014
GCL (2)	1,007,600 SF	Santee Cooper Cross Station	Pineville	SC	9 /19/2014
60-mil HDPE	43,560 SF	Iris Glen Cell 6B Repairs	Johnson City	TN	9 /4 /2014
12-oz Geotextile	6,300 SF	Glatfelter Zone 5 Lime Handling	Spring Grove	PA	7 /2 /2014
Geocomposite	15,000 SF	Glatfelter Zone 5 Lime Handling	Spring Grove	PA	7 /2 /2014
80-mil HDPE	19,000 SF	Glatfelter Zone 5 Lime Handling	Spring Grove	PA	7 /2 /2014
Geocomposite	1,212,500 SF	Eastern Sanitary Landfill Phase X	White Marsh	MD	12/1 /2013

50-mil PVC	657,000 SF	Eastern Sanitary Landfill Phase X	White Marsh	MD	12/1 /2013
Geocomposite (2)	1,212,500 SF	Eastern Sanitary Landfill Phase X	White Marsh	MD	12/1 /2013
Rain Cover	646,200 SF	Eastern Sanitary Landfill Phase X	White Marsh	MD	12/1 /2013
Geocomposite	300,000 SF	Montebello Plant 2 Finished Reservoir Cover	Baltimore	MD	10/1 /2013
80-mil HDPE	300,000 SF	Montebello Plant 2 Finished Reservoir Cover	Baltimore	MD	10/1 /2013
Geocomposite	468,200 SF	South Carolina International Paper	Eastover	SC	10/1 /2013
60-mil HDPE Textured	468,200 SF	South Carolina International Paper	Eastover	SC	10/1 /2013
Rain Cover	212,400 SF	South Carolina International Paper	Eastover	SC	10/1 /2013
60-mil HDPE Textured	197,300 SF	Apex LF Modified 6A 2013	Amsterdam	OH	8 /1 /2013
Geocomposite	197,300 SF	Apex LF Modified 6A 2013	Amsterdam	OH	8 /1 /2013
GCL	197,300 SF	Apex LF Modified 6A 2013	Amsterdam	OH	8 /1 /2013
80-mil HDPE Textured	61,200 SF	Cooper Power Plant Lagoon	Somerset	KY	11/1 /2012
12-oz Geotextile	68,900 SF	Cooper Power Plant Lagoon	Somerset	KY	11/1 /2012
10-oz Geotextile	680,900 SF	Cooper Power Plant Lagoon	Somerset	KY	11/1 /2012
60-mil LLDPE Textured	537,200 SF	Cooper Power Plant Lagoon	Somerset	KY	11/1 /2012
GCL	237,000 SF	Crystal Rivers North Slope Closure	Crystal Rivers	FL	10/1 /2012
10-oz Geotextile	2,516,000 SF	Ghent Landfill	Ghent	KY	10/1 /2012
60-mil LLDPE Textured	2,516,000 SF	Ghent Landfill	Ghent	KY	10/1 /2012
Geocomposite	2,400,000 SF	Haleys Pike Install	Lexington	KY	8 /1 /2012
40-mil LLDPE	1,200,000 SF	Haleys Pike Install	Lexington	KY	8 /1 /2012
40-mil HDPE Textured	847,000 SF	Zion Landfill Cap	Zion	IL	7 /1 /2012
Geocomposite	847,500 SF	Zion Landfill Cap	Zion	IL	7 /1 /2012
8-oz Geotextile	19,200 SF	Zion Landfill Cap	Zion	IL	7 /1 /2012
30-mil PVC	260,000 SF	Delaware County LF Cap	Boyertown	PA	6 /1 /2012
Geocomposite	260,000 SF	Delaware County LF Cap	Boyertown	PA	6 /1 /2012

Geotextile	260,000 SF	Delaware County LF Cap	Boyertown	PA	6 /1 /2012
Geocomposite	86,000 SF	Medora LF Cell 1 & 2	Medora	IN	6 /1 /2012
40-mil LLDPE Textured	860,000 SF	Medora LF Cell 1 & 2	Medora	IN	6 /1 /2012
40-mil LLDPE Textured	1,829,500 SF	Oak Ridge Landfill Cap	Ballwin	MO	6 /1 /2012
Geocomposite	1,829,500 SF	Oak Ridge Landfill Cap	Ballwin	MO	6 /1 /2012
40-mil HDPE Textured	1,005,000 SF	Hutsonville Ash Pond	Crawford County	IL	5 /1 /2012
40-mil LLDPE Textured	892,000 SF	Holmes County Final Cap	Millersburg	OH	4 /1 /2012
Geocomposite	892,000 SF	Holmes County Final Cap	Millersburg	OH	4 /1 /2012
Geocomposite	604,000 SF	HR Recovery Cell 4	Virginia Beach	VA	3 /1 /2012
60-mil HDPE Textured	604,000 SF	HR Recovery Cell 4	Virginia Beach	VA	3 /1 /2012
40-mil HDPE Textured	4,356,000 SF	Dominion Chesterfield Lower Ash Pond	Chester	VA	
Wind Defender	3,898,620 SF	Dominion Chesterfield Lower Ash Pond	Chester	VA	
8-oz Geotextile	457,380 SF	Dominion Chesterfield Lower Ash Pond	Chester	VA	
60-mil HDPE	128,000 SF	Duke Mayo Water Redirect - Holding Basin	Roxboro	NC	
16-oz Geotextile	37,000 SF	Duke Mayo Water Redirect - Holding Basin	Roxboro	NC	
GCL	128,000 SF	Duke Mayo Water Redirect - Holding Basin	Roxboro	NC	
10-oz Geotextile	445,000 SF	Duke Mayo Water Redirect - Holding Basin	Roxboro	NC	

Paz, Cristian

Material	Quantity	Project	Location	Completion Date	
10-oz Geotextile	1,075,500 SF	Duke Mayo Water Redirect	Roxboro	NC	2 /3 /2019
GCL	684,000 SF	Duke Mayo Water Redirect	Roxboro	NC	2 /3 /2019
16-oz Geotextile	571,500 SF	Duke Mayo Water Redirect	Roxboro	NC	2 /3 /2019
60-mil HDPE Textured	927,234 SF	Duke Mayo Water Redirect	Roxboro	NC	2 /3 /2019
60-mil HDPE Textured	395,290 SF	Republic Walnut Creek LF	Frankfort	IN	12/7 /2018
Geocomposite	291,249 SF	Republic Clinton Co Cap	Frankfort	IN	11/3 /2018
40-mil LLDPE Textured	279,089 SF	Republic Clinton Co Cap	Frankfort	IN	11/3 /2018
60-mil HDPE	30,000 SF	JH Campbell.	West Olive	MI	9 /9 /2018
GCL	30,000 SF	JH Campbell.	West Olive	MI	9 /9 /2018
60-mil LLDPE	80,000 SF	JH Campbell.	West Olive	MI	9 /9 /2018
40-mil HDPE	450,000 SF	JH Campbell.	West Olive	MI	9 /9 /2018
10-oz Geotextile	450,000 SF	JH Campbell.	West Olive	MI	9 /9 /2018
12-oz Geotextile	80,000 SF	JH Campbell.	West Olive	MI	9 /9 /2018
GCL	1,374,382 SF	Winyah LF Area 1	Georgetown	SC	9 /6 /2018
60-mil HDPE	1,394,382 SF	Winyah LF Area 1	Georgetown	SC	9 /6 /2018
Geocomposite	1,374,382 SF	Winyah LF Area 1	Georgetown	SC	9 /6 /2018
GCL	212,000 SF	Montgomery Co LF Cell 4	Jeffersonville	KY	8 /10/2018
60-mil HDPE Textured	212,000 SF	Montgomery Co LF Cell 4	Jeffersonville	KY	8 /10/2018
6-oz Geotextile	147,000 SF	Montgomery Co LF Cell 4	Jeffersonville	KY	8 /10/2018
Geocomposite	67,000 SF	Montgomery Co LF Cell 4	Jeffersonville	KY	8 /10/2018
Geocomposite	329,000 SF	South Kent Co LF	Byron Center	MI	7 /23/2018
GCL	472,000 SF	South Kent Co LF	Byron Center	MI	7 /23/2018
60-mil HDPE	472,000 SF	South Kent Co LF	Byron Center	MI	7 /23/2018
60-mil HDPE	34,000 SF	Santee Cooper - Cross Phase II and II Drainage	Pineville	SC	6 /2 /2018

Geocomposite	164,000 SF	Santee Cooper - Cross Phase II and II Drainage	Pineville	SC	6 /2 /2018
60-mil HDPE Textured (3)	660,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
60-mil HDPE Textured	810,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
Geocomposite (2)	810,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
60-mil HDPE Textured (4)	660,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
Geocomposite (4)	660,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
GCL (2)	330,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
GCL	405,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
Geocomposite (3)	660,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
60-mil HDPE Textured (2)	810,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
Geocomposite	810,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
8 oz Geotextile	272,960 SF	Rumpke Beech Hollow Landfill	Wellston	OH	10/19/2017
60-mil HDPE Textured	272,960 SF	Rumpke Beech Hollow Landfill	Wellston	OH	10/19/2017
GCL	100,000 SF	Ottawa Farms Landfill	Coopersville	MI	10/12/2017
60-mil HDPE	100,000 SF	Ottawa Farms Landfill	Coopersville	MI	10/12/2017
60-mil HDPE	1,200,000 SF	Sunny Farms	Fostoria	OH	8 /29/2017
Tie-In	2,100 LF	Sunny Farms	Fostoria	OH	8 /29/2017
8-oz Geotextile	1,200,000 SF	Sunny Farms	Fostoria	OH	8 /29/2017
Geocomposite	59,415 SF	Decatur Co Landfill	Bath Springs	TN	8 /21/2017
Rain Cover	418,531 SF	Decatur Co Landfill	Bath Springs	TN	8 /21/2017
60-mil HDPE Textured	155,621 SF	Decatur Co Landfill	Bath Springs	TN	8 /21/2017

12-oz Geotextile	122,095 SF	Decatur Co Landfill	Bath Springs	TN	8 /21/2017
20-mil Dura Skrim	1,700,000 SF	Duke Gibson Cell 2 Raincover	Owensville	IN	8 /17/2017
40-mil LLDPE Textured (2)	663,414 SF	TVA Bull Run Sluice Channel	Clinton	TN	8 /4 /2017
Geocomposite	663,414 SF	TVA Bull Run Sluice Channel	Clinton	TN	8 /4 /2017
40-mil LLDPE Textured	124,690 SF	TVA Bull Run Sluice Channel	Clinton	TN	8 /4 /2017
12-oz Geotextile	663,414 SF	TVA Bull Run Sluice Channel	Clinton	TN	8 /4 /2017
12-oz Geotextile.	124,690 SF	TVA Bull Run Sluice Channel	Clinton	TN	8 /4 /2017
60-mil LLDPE Textured	11,000 SF	TVA Bull Run Sluice Channel	Clinton	TN	8 /4 /2017
80-mil HDPE Floating Cover	186,375 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
60-mil HDPE	1,853,408 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
60-mil LLDPE Floating Cover	209,982 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
36-mil RPE Floating Cover	777,917 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
GCL	1,639,049 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
20-mil Dura Skrim	1,700,000 SF	Duke Gibson Cell 3 Raincover	Owensville	IN	7 /10/2017
60-mil HDPE	47,000 SF	Raleigh Town Center - Pond Lining	Raleigh	NC	5 /21/2017
12-oz Geotextile	47,000 SF	Raleigh Town Center - Pond Lining	Raleigh	NC	5 /21/2017
12-mil Dura Skrim	918,000 SF	Red Rock Disposal- Phase I Temporary Cover	Holly Springs	NC	5 /8 /2017
Wind Defender	918,000 SF	Red Rock Disposal- Phase I Temporary Cover	Holly Springs	NC	5 /8 /2017
60-mil HDPE	55,000 SF	Bay Valley Foods Lagoon	Faison	NC	3 /21/2017
Geocomposite	30,000 SF	Midshore LF Exposed Cap	Easton	MD	11/1 /2016
60-mil HDPE	3,000,000 SF	Midshore LF Exposed Cap	Easton	MD	11/1 /2016
GCL	429,000 SF	Asheville Phase 3	Arden	NC	10/3 /2016
Geocomposite	384,000 SF	Asheville Phase 3	Arden	NC	10/3 /2016

60-mil HDPE Textured	429,000 SF	Asheville Phase 3	Arden	NC	10/3 /2016
40-mil HDPE	400 SF	Harnett Co WTP	Lillington	NC	4 /10/2016
8-oz Geotextile	513,000 SF	Harford County	Street	MD	12/4 /2015
60-mil HDPE	513,000 SF	Harford County	Street	MD	12/4 /2015
16-oz Geotextile	513,000 SF	Harford County	Street	MD	12/4 /2015
Geocomposite	677,825 SF	Duke Cliffside Ash LF	Mooresboro	NC	11/24/2015
60-mil HDPE	677,825 SF	Duke Cliffside Ash LF	Mooresboro	NC	11/24/2015
30-mil Geomembrane	68,718 SF	Duke Cliffside Ash LF	Mooresboro	NC	11/24/2015
GCL	677,825 SF	Duke Cliffside Ash LF	Mooresboro	NC	11/24/2015
Rain Cover	24,740 SF	Duke Cliffside Ash LF	Mooresboro	NC	11/24/2015
60-mil HDPE	6,000 SF	Rumpke Tank Relining	Cincinnati	OH	10/28/2015
16-oz Geotextile	6,000 SF	Rumpke Tank Relining	Cincinnati	OH	10/28/2015
80-mil HDPE	6,000 SF	Rumpke Tank Relining	Cincinnati	OH	10/28/2015
60-mil HDPE Smooth	1,172,622 SF	Santee Cooper Cell and Pond	Pineville	SC	10/27/2015
60-mil HDPE Textured	99,824 SF	Santee Cooper Cell and Pond	Pineville	SC	10/27/2015
Geocomposite	983,547 SF	Santee Cooper Cell and Pond	Pineville	SC	10/27/2015
12-oz Geotextile	380,979 SF	Santee Cooper Cell and Pond	Pineville	SC	10/27/2015
GCL	1,272,446 SF	Santee Cooper Cell and Pond	Pineville	SC	10/27/2015
60-mil HDPE Textured	342,000 SF	Rumpke-Noble Road LF Cell 8A	Shiloh	OH	9 /14/2015
Geotextile	684,000 SF	Rumpke-Noble Road LF Cell 8A	Shiloh	OH	9 /14/2015
60-mil HDPE Textured	26,329 SF	Wexford Co Leachate Lagoon & Spray Curtain	Manton	MI	8 /28/2015
Geocomposite	26,329 SF	Wexford Co Leachate Lagoon & Spray Curtain	Manton	MI	8 /28/2015
GCL (2)	26,329 SF	Wexford Co Leachate Lagoon & Spray Curtain	Manton	MI	8 /28/2015
Wind Defender	230,000 SF	Wexford Co Leachate Lagoon & Spray Curtain	Manton	MI	8 /28/2015

30-mil LLDPE Textured	256,329 SF	Wexford Co Leachate Lagoon & Spray Curtain	Manton	MI	8 /28/2015
GCL	22,000 SF	Wexford Co Leachate Lagoon & Spray Curtain	Manton	MI	8 /28/2015
60-mil HDPE Textured	99,631 SF	Anderson Regional Landfill Overlay 2B Area	Belton	SC	8 /16/2015
40-mil HDPE	6,500 SF	Anderson Regional Landfill Overlay 2B Area	Belton	SC	8 /16/2015
Geocomposite	10,359 SF	Anderson Regional Landfill Overlay 2B Area	Belton	SC	8 /16/2015
40-mil HDPE (2)	15,000 SF	Anderson Regional Landfill Overlay 2B Area	Belton	SC	8 /16/2015
60-mil HDPE Textured (2)	88,000 SF	Days Cove LF Cells I F & G	White Marsh	MD	7 /19/2015
Rain Cover	216,000 SF	Days Cove LF Cells I F & G	White Marsh	MD	7 /19/2015
60-mil HDPE Textured	200,000 SF	Days Cove LF Cells I F & G	White Marsh	MD	7 /19/2015
Geocomposite	88,000 SF	Days Cove LF Cells I F & G	White Marsh	MD	7 /19/2015
GCL	288,000 SF	Days Cove LF Cells I F & G	White Marsh	MD	7 /19/2015
60-mil HDPE Smooth	645,870 SF	Rowan County LF	Woodleaf	NC	6 /5 /2015
12-oz Geotextile	195,710 SF	Rowan County LF	Woodleaf	NC	6 /5 /2015
Rain Cover	891,920 SF	Rowan County LF	Woodleaf	NC	6 /5 /2015
GCL	878,920 SF	Rowan County LF	Woodleaf	NC	6 /5 /2015
Geocomposite	693,573 SF	Rowan County LF	Woodleaf	NC	6 /5 /2015
60-mil HDPE Textured	233,020 SF	Rowan County LF	Woodleaf	NC	6 /5 /2015
60-mil LLDPE	5,500 SF	SR 33 & Chrin Interchange Liner	Palmer	PA	5 /28/2015
Geotextile	11,000 SF	SR 33 & Chrin Interchange Liner	Palmer	PA	5 /28/2015
Rain Cover	620,000 SF	Mid Shore Cell 2 Rain Cover	Ridgely	MD	3 /31/2015
60-mil HDPE	331,000 SF	Medora Landfill Cell 8 & 9 East & CAMU Piggyback	Medora	IN	9 /14/2014
Geotextile	372,000 SF	Medora Landfill Cell 8 & 9 East & CAMU Piggyback	Medora	IN	9 /14/2014

20-mil Dura Skrim	480,000 SF	Grows/Tullytown Valley Cap 20 mil	Morrisville	PA	9 /4 /2014
80-mil HDPE Textured	25,783 SF	Frederick County Landfill Lagoon & Rain Cover	Winchester	VA	9 /3 /2014
20-mil White/White Woven Coated	462,663 SF	Frederick County Landfill Lagoon & Rain Cover	Winchester	VA	9 /3 /2014
8-oz Geotextile	389,000 SF	Noble Road Landfill	Shiloh	OH	8 /14/2014
8-oz Geotextile (2)	389,000 SF	Noble Road Landfill	Shiloh	OH	8 /14/2014
60-mil HDPE	389,000 SF	Noble Road Landfill	Shiloh	OH	8 /14/2014
60-mil HDPE	663,000 SF	Hampton Road Recovery Center	Virginia Beach	VA	8 /6 /2014
Geocomposite	240,000 SF	Hampton Road Recovery Center	Virginia Beach	VA	8 /6 /2014
Geocomposite (2)	423,000 SF	Hampton Road Recovery Center	Virginia Beach	VA	8 /6 /2014
Rain Cover	3,600 SF	Loudoun County Landfill Raincover Repair	Leesburg	VA	8 /5 /2014
8-oz Geotextile	140,000 SF	Wilmington Vertical Expansion	Wilmington	OH	6 /29/2014
60-mil HDPE	146,500 SF	Wilmington Vertical Expansion	Wilmington	OH	6 /29/2014
Rain Cover	40,000 SF	Waste Management LCS Landfill	Hedgesville	WV	4 /18/2014
Wind Defender	40,000 SF	Waste Management LCS Landfill	Hedgesville	WV	4 /18/2014
GCL	277,500 SF	Davidson County MSWLF Phase 2 Area 2	Thomasville	NC	3 /14/2013
60-mil HDPE	285,600 SF	Davidson County MSWLF Phase 2 Area 2	Thomasville	NC	3 /14/2013
Geocomposite	15,000 SF	Davidson County MSWLF Phase 2 Area 2	Thomasville	NC	3 /14/2013
Geotextile	420,000 SF	Davidson County MSWLF Phase 2 Area 2	Thomasville	NC	3 /14/2013
GCL	1,200,000 SF	Atlantic Cell 7A-7C Addendum	Waverly	VA	
60-mil HDPE	1,200,000 SF	Atlantic Cell 7A-7C Addendum	Waverly	VA	
Geocomposite	1,200,000 SF	Atlantic Cell 7A-7C Addendum	Waverly	VA	
40-mil HDPE	1,200,000 SF	Atlantic Cell 7A-7C Addendum	Waverly	VA	
60-mil HDPE Textured	233,000 SF	Crawford County LF Phase 5B	Bucyrus	OH	

8-oz Geotextile	233,000 SF	Crawford County LF Phase 5B	Bucyrus	OH
Wind Defender	3,898,620 SF	Dominion Chesterfield Lower Ash Pond	Chester	VA
40-mil HDPE Textured	4,356,000 SF	Dominion Chesterfield Lower Ash Pond	Chester	VA
8-oz Geotextile	457,380 SF	Dominion Chesterfield Lower Ash Pond	Chester	VA
Rain Cover (2)	285,777 SF	Dominon Brema Power Station - EAP Excavation & NAP Fill	Brema Bluff	VA
Wind Defender	3,286,386 SF	Dominon Brema Power Station - EAP Excavation & NAP Fill	Brema Bluff	VA
Rain Cover	3,286,386 SF	Dominon Brema Power Station - EAP Excavation & NAP Fill	Brema Bluff	VA
60-mil HDPE Textured	43,600 SF	Duke Mayo Additional Pond	Roxboro	NC
Geotextile	43,600 SF	Duke Mayo Additional Pond	Roxboro	NC
GCL	128,000 SF	Duke Mayo Water Redirect - Holding Basin	Roxboro	NC
10-oz Geotextile	445,000 SF	Duke Mayo Water Redirect - Holding Basin	Roxboro	NC
16-oz Geotextile	37,000 SF	Duke Mayo Water Redirect - Holding Basin	Roxboro	NC
60-mil HDPE	128,000 SF	Duke Mayo Water Redirect - Holding Basin	Roxboro	NC
Geotextile	415,000 SF	Santee Cooper - Winyah Ponds	Georgetown	SC
GCL	445,000 SF	Santee Cooper - Winyah Ponds	Georgetown	SC
Geocomposite	163,000 SF	Santee Cooper - Winyah Ponds	Georgetown	SC
60-mil HDPE	415,000 SF	Santee Cooper - Winyah Ponds	Georgetown	SC
40-mil LLDPE Textured	27,800 SF	SWACO Hydroturf Downchutes	Grove City	OH
60-mil HDPE	85,900 SF	SWACO Hydroturf Downchutes	Grove City	OH
Rain Cover	330,000 SF	SWACO Hydroturf Downchutes	Grove City	OH
GCL	85,900 SF	SWACO Hydroturf Downchutes	Grove City	OH

6-oz Geotextile	658,000 SF	Tunnel Hill Phase 7	New Lexington	OH
Rain Cover	269,000 SF	Tunnel Hill Phase 7	New Lexington	OH
60-mil HDPE Textured	413,000 SF	Tunnel Hill Phase 7	New Lexington	OH

Ramos, Marcial

Material	Quantity	Project	Location	Completion Date	
60-mil HDPE Textured	395,290 SF	Republic Walnut Creek LF	Frankfort	IN	12/7 /2018
40-mil LLDPE Textured	279,089 SF	Republic Clinton Co Cap	Frankfort	IN	11/3 /2018
Geocomposite	291,249 SF	Republic Clinton Co Cap	Frankfort	IN	11/3 /2018
Geocomposite	810,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
Geocomposite (4)	660,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
60-mil HDPE Textured (2)	810,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
Geocomposite (2)	810,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
60-mil HDPE Textured (4)	660,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
GCL (2)	330,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
60-mil HDPE Textured	810,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
60-mil HDPE Textured (3)	660,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
GCL	405,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
Geocomposite (3)	660,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
60-mil HDPE	100,000 SF	Ottawa Farms Landfill	Coopersville	MI	10/12/2017
GCL	100,000 SF	Ottawa Farms Landfill	Coopersville	MI	10/12/2017
8-oz Geotextile	1,200,000 SF	Sunny Farms	Fostoria	OH	8 /29/2017
60-mil HDPE	1,200,000 SF	Sunny Farms	Fostoria	OH	8 /29/2017
Tie-In	2,100 LF	Sunny Farms	Fostoria	OH	8 /29/2017
20-mil Dura Skrim	1,700,000 SF	Duke Gibson Cell 2 Raincover	Owensville	IN	8 /17/2017

20-mil Dura Skrim	1,700,000 SF	Duke Gibson Cell 3 Raincover	Owensville	IN	7 /10/2017
Geocomposite	1,200,000 SF	Atlantic Cell 7A-7C Addendum	Waverly	VA	
40-mil HDPE	1,200,000 SF	Atlantic Cell 7A-7C Addendum	Waverly	VA	
60-mil HDPE	1,200,000 SF	Atlantic Cell 7A-7C Addendum	Waverly	VA	
GCL	1,200,000 SF	Atlantic Cell 7A-7C Addendum	Waverly	VA	
8-oz Geotextile	457,380 SF	Dominion Chesterfield Lower Ash Pond	Chester	VA	
Wind Defender	3,898,620 SF	Dominion Chesterfield Lower Ash Pond	Chester	VA	
40-mil HDPE Textured	4,356,000 SF	Dominion Chesterfield Lower Ash Pond	Chester	VA	
10-oz Geotextile	445,000 SF	Duke Mayo Water Redirect - Holding Basin	Roxboro	NC	
GCL	128,000 SF	Duke Mayo Water Redirect - Holding Basin	Roxboro	NC	
16-oz Geotextile	37,000 SF	Duke Mayo Water Redirect - Holding Basin	Roxboro	NC	
60-mil HDPE	128,000 SF	Duke Mayo Water Redirect - Holding Basin	Roxboro	NC	
Wind Defender	314,700 SF	WM Bethel LF Interim Cap Install Only	Hampton	VA	
40-mil HDPE	314,700 SF	WM Bethel LF Interim Cap Install Only	Hampton	VA	

Rivas, Diego

Material	Quantity	Project	Location	Completion Date	
60-mil HDPE Textured	255,000 SF	Pendleton Co Cell 4B & Slide Remediation	Butler	KY	12/15/2018
Geocomposite	254,000 SF	Pendleton Co Cell 4B & Slide Remediation	Butler	KY	12/15/2018
10-oz Geotextile	33,000 SF	Pendleton Co Cell 4B & Slide Remediation	Butler	KY	12/15/2018
Rain Cover	300,000 SF	Metro Park East Landfill	Mitchellville	IA	12/6 /2018
60-mil HDPE	450,000 SF	Metro Park East Landfill	Mitchellville	IA	12/6 /2018
12-oz Geotextile	450,000 SF	Metro Park East Landfill	Mitchellville	IA	12/6 /2018
40-mil LLDPE	400,000 SF	Metro Park East Landfill	Mitchellville	IA	12/6 /2018
Geocomposite	400,000 SF	Metro Park East Landfill	Mitchellville	IA	12/6 /2018
8-oz Geotextile	709,888 SF	WM Charles City Cap	Charles City	VA	1 /13/2018
50-mil HDPE	709,888 SF	WM Charles City Cap	Charles City	VA	1 /13/2018
GCL	297,925 SF	WM Charles City Cap	Charles City	VA	1 /13/2018
GCL	43,560 SF	Mount Storm Pyrite Pond	Mt Storm	WV	12/16/2017
32-oz Geotextile	43,560 SF	Mount Storm Pyrite Pond	Mt Storm	WV	12/16/2017
60-mil HDPE Textured	43,560 SF	Mount Storm Pyrite Pond	Mt Storm	WV	12/16/2017
50-mil HDPE (Super Gripnet)	875,000 SF	Northern LF Cells 1 & 2 Closure and Leachate Ponds	Westminster	MD	12/15/2017
Geocomposite	30,487 SF	Northern LF Cells 1 & 2 Closure and Leachate Ponds	Westminster	MD	12/15/2017
60-mil HDPE Textured	30,487 SF	Northern LF Cells 1 & 2 Closure and Leachate Ponds	Westminster	MD	12/15/2017
GCL	30,487 SF	Northern LF Cells 1 & 2 Closure and Leachate Ponds	Westminster	MD	12/15/2017
8-oz Geotextile	840,000 SF	Northern LF Cells 1 & 2 Closure and Leachate Ponds	Westminster	MD	12/15/2017
60 mil Textured HDPE Secondary	30,487 SF	Northern LF Cells 1 & 2 Closure and Leachate Ponds	Westminster	MD	12/15/2017

60-mil HDPE Textured	724,750 SF	Rumpke Noble Road Landfill	Shiloh	OH	12/6 /2017
8-oz Geotextile (2)	724,750 SF	Rumpke Noble Road Landfill	Shiloh	OH	12/6 /2017
8-oz Geotextile	724,750 SF	Rumpke Noble Road Landfill	Shiloh	OH	12/6 /2017
10-oz Geotextile	87,120 SF	Duke Roxboro Gypsum Pad	Semora	NC	11/26/2017
Rain Cover	136,800 SF	Rumpke Pendleton Co Temp Cover	Butler	KY	11/22/2017
40-mil PVC	30,000 SF	Seymour Road LF	Montrose	MI	11/14/2017
Geogrid	30,000 SF	Seymour Road LF	Montrose	MI	11/14/2017
Geocomposite	30,000 SF	Seymour Road LF	Montrose	MI	11/14/2017
GCL	56,800 SF	TtECI -NASB LF Cap Expansion	Brunswick	ME	11/11/2017
40-mil LLDPE Textured	56,800 SF	TtECI -NASB LF Cap Expansion	Brunswick	ME	11/11/2017
Rain Cover	248,500 SF	King George Cell 16A Raincover	King George	VA	10/28/2017
60-mil HDPE Textured	1,674,330 SF	WM Atlantic LF Temp Cap Phase 3	Waverly	VA	10/3 /2017
8-oz Geotextile	100,941 SF	WM Atlantic LF Temp Cap Phase 3	Waverly	VA	10/3 /2017
Geocomposite	82,500 SF	WM Atlantic LF Temp Cap Phase 3	Waverly	VA	10/3 /2017
Rain Cover	418,531 SF	Decatur Co Landfill	Bath Springs	TN	8 /21/2017
Geocomposite	59,415 SF	Decatur Co Landfill	Bath Springs	TN	8 /21/2017
60-mil HDPE Textured	155,621 SF	Decatur Co Landfill	Bath Springs	TN	8 /21/2017
12-oz Geotextile	122,095 SF	Decatur Co Landfill	Bath Springs	TN	8 /21/2017
6-oz Geotextile	226,474 SF	Bulger Impoundment Phase 5	Bulger	PA	8 /13/2017
6-oz Geocomposite	226,474 SF	Bulger Impoundment Phase 5	Bulger	PA	8 /13/2017
40-mil HDPE Smooth	226,474 SF	Bulger Impoundment Phase 5	Bulger	PA	8 /13/2017
8-mil Dura Skrim	440,000 SF	DRPI Landfill Raincover	New Castle	DE	8 /1 /2017
40-mil HDPE	1,400,000 SF	JR Whiting	Erie	MI	7 /25/2017
10-oz Geotextile	1,400,000 SF	JR Whiting	Erie	MI	7 /25/2017
Rain Cover	291,500 SF	WM Middle Peninsula Raincover	Saluda	VA	7 /11/2017
10-oz Geotextile	115,995 SF	Rumpke Pendleton Co Cell 4A	Butler	KY	7 /4 /2017

60-mil HDPE Textured	302,981 SF	Rumpke Pendleton Co Cell 4A	Butler	KY	7 /4 /2017
Geocomposite	185,884 SF	Rumpke Pendleton Co Cell 4A	Butler	KY	7 /4 /2017
80-mil HDPE Smooth	40,000 SF	AZR Pond Lining	Mooresboro	NC	6 /23/2017
60-mil HDPE Textured	1,654,241 SF	WM Atlantic LF Temp Cap Phase 4A/B/C	Waverly	VA	6 /4 /2017
Wind Defender	382,963 SF	WM Atlantic LF Temp Cap Phase 4A/B/C	Waverly	VA	6 /4 /2017
Wind Defender	435,000 SF	WM King George LF Temp Cap 2016 Phase 2	King George	VA	4 /1 /2017
20-mil Dura Skrim	435,000 SF	WM King George LF Temp Cap 2016 Phase 2	King George	VA	4 /1 /2017
40-mil LLDPE	340,000 SF	Duke Catawba Nuclear Station LF Closure	York	SC	12/12/2016
Geocomposite	320,000 SF	Duke Catawba Nuclear Station LF Closure	York	SC	12/12/2016
6-oz Geotextile	245,000 SF	Duke Catawba Nuclear Station LF Closure	York	SC	12/12/2016
16-oz Geotextile	36,000 SF	Duke Catawba Nuclear Station LF Closure	York	SC	12/12/2016
80-mil LLDPE	164,329 SF	WM Atlantic LF Floating Covers	Waverly	VA	12/2 /2016
60-mil LLDPE	187,070 SF	WM Atlantic LF Floating Covers	Waverly	VA	12/2 /2016
40-mil LLDPE	26,000 SF	Duke Pine Hall Road Diversion	Walnut Cove	NC	11/23/2016
Geocomposite	26,000 SF	Duke Pine Hall Road Diversion	Walnut Cove	NC	11/23/2016
60-mil HDPE	125,000 SF	Carolina Beach WWTP	Carolina Beach	NC	10/15/2016
12-oz Geotextile	110,000 SF	Duke Cliffside Basement Liner	Mooresboro	NC	10/10/2016
60-mil HDPE	110,000 SF	Duke Cliffside Basement Liner	Mooresboro	NC	10/10/2016
40-mil HDPE	95,832 SF	WM King George LF Temp Cap 2016	King George	VA	10/5 /2016
Wind Defender	95,832 SF	WM King George LF Temp Cap 2016	King George	VA	10/5 /2016
GCL	429,000 SF	Asheville Phase 3	Arden	NC	10/3 /2016

Geocomposite	384,000 SF	Asheville Phase 3	Arden	NC	10/3 /2016
60-mil HDPE Textured	429,000 SF	Asheville Phase 3	Arden	NC	10/3 /2016
60-mil HDPE Textured	1,463,000 SF	WM Atlantic Waste Temp Cap Phase 1	Waverly	VA	8 /22/2016
60-mil HDPE	26,750 SF	AEP Darby Plant Tank Farm	Mt Sterling	OH	8 /20/2016
60-mil HDPE Textured	110,153 SF	Plant McIntosh	Rincon	GA	7 /16/2016
Geonet	55,058 SF	Plant McIntosh	Rincon	GA	7 /16/2016
60-mil HDPE Textured (2)	110,153 SF	Plant McIntosh	Rincon	GA	7 /16/2016
60-mil HDPE Textured (3)	461,437 SF	Plant McIntosh	Rincon	GA	7 /16/2016
16-oz Geotextile	62,296 SF	Plant McIntosh	Rincon	GA	7 /16/2016
4-oz Protection Strip	47,460 SF	Plant McIntosh	Rincon	GA	7 /16/2016
Geocomposite	420,542 SF	Plant McIntosh	Rincon	GA	7 /16/2016
Rain Cover	395,730 SF	Plant McIntosh	Rincon	GA	7 /16/2016
80-mil HDPE Embedment Liner	37,700 SF	Patapsco WWTP 845R	Baltimore	MD	7 /14/2016
Geocomposite (2)	379,557 SF	HRRC Cell 6	Virginia Beach	VA	5 /8 /2016
60-mil HDPE	575,216 SF	HRRC Cell 6	Virginia Beach	VA	5 /8 /2016
Geocomposite	195,659 SF	HRRC Cell 6	Virginia Beach	VA	5 /8 /2016
30-mil PVC	138,549 SF	Costco	Monrovia	MD	5 /1 /2016
8-oz Geotextile	95,118 SF	Costco	Monrovia	MD	5 /1 /2016
40-mil HDPE	400 SF	Harnett Co WTP	Lillington	NC	4 /10/2016
60-mil HDPE	5,000 SF	Duke Belews Creek Gypsum	Belews Creek	NC	3 /29/2016
8-oz Geotextile	5,000 SF	Duke Belews Creek Gypsum	Belews Creek	NC	3 /29/2016
Rain Cover	261,360 SF	Duke Roxboro Gypsum	Semora	NC	2 /26/2016
30-mil HDPE Textured	163,350 SF	WM Cedar Ridge Temp Cover	Lewisburg	TN	11/26/2015
30-mil Textured	557,755 SF	WM West Camden Temp Cover	Camden	TN	11/21/2015
Rain Cover	322,080 SF	WM King George LF Rain Cover 2015	King George	VA	11/3 /2015

12-oz Geotextile	380,979 SF	Santee Cooper Cell and Pond	Pineville	SC	10/27/2015
GCL	1,272,446 SF	Santee Cooper Cell and Pond	Pineville	SC	10/27/2015
Geocomposite	983,547 SF	Santee Cooper Cell and Pond	Pineville	SC	10/27/2015
60-mil HDPE Smooth	1,172,622 SF	Santee Cooper Cell and Pond	Pineville	SC	10/27/2015
60-mil HDPE Textured	99,824 SF	Santee Cooper Cell and Pond	Pineville	SC	10/27/2015
40-mil LLDPE	1,327,700 SF	John Sevier	Rogersville	TN	10/26/2015
Geocomposite	1,327,700 SF	John Sevier	Rogersville	TN	10/26/2015
Geotextile	100,000 SF	Duke Mayo Gypsum	Roxboro	NC	10/1 /2015
60-mil HDPE	100,000 SF	Duke Mayo Gypsum	Roxboro	NC	10/1 /2015
30-mil PVC	512,000 SF	AEP Mitchell Landfill	Proctor	WV	7 /28/2015
Geocomposite (2)	414,000 SF	AEP Mitchell Landfill	Proctor	WV	7 /28/2015
Geocomposite	512,000 SF	AEP Mitchell Landfill	Proctor	WV	7 /28/2015
GCL	584,000 SF	AEP Mitchell Landfill	Proctor	WV	7 /28/2015
45-mil RPP	72,000 SF	AEP Mitchell Landfill	Proctor	WV	7 /28/2015
Geocomposite	420,000 SF	Ottumwa Landfill	Ottumwa	IA	4 /17/2015
60-mil HDPE Textured	500,000 SF	Ottumwa Landfill	Ottumwa	IA	4 /17/2015
GCL	2,500 SF	Ottumwa Landfill	Ottumwa	IA	4 /17/2015
Geotextile	500,000 SF	Ottumwa Landfill	Ottumwa	IA	4 /17/2015
20-mil Dura Skrim	309,120 SF	Grows and Tullytown December 2014 Temp Cap	Morrisville	PA	12/23/2014
30-mil PVC	357,192 SF	Schrock Run Refuse Base Liner Expansion	Berlin	PA	12/13/2014
10-oz Geotextile	8,100 SF	Schrock Run Refuse Base Liner Expansion	Berlin	PA	12/13/2014
10-oz Geotextile (2)	714,384 SF	Schrock Run Refuse Base Liner Expansion	Berlin	PA	12/13/2014
60-mil HDPE Textured	56,800 SF	Green Recycling C & D Landfill	Maysville	NC	12/2 /2014
60-mil HDPE Textured (2)	56,800 SF	Green Recycling C & D Landfill	Maysville	NC	12/2 /2014

Geotextile	990,000 SF	Santee Cooper Geotextile	Pineville	SC	11/29/2014
40-mil HDPE	32,335 SF	CF Industries Basin Relining	Cofield	NC	11/16/2014
Geocomposite	32,335 SF	CF Industries Basin Relining	Cofield	NC	11/16/2014
60-mil HDPE	44,100 SF	CF Industries Basin Relining	Cofield	NC	11/16/2014
30-mil LLDPE	41,978 SF	Wal-Mart 6263	Winston Salem	NC	11/6 /2014
8-oz Geotextile	83,956 SF	Wal-Mart 6263	Winston Salem	NC	11/6 /2014
16-oz Geotextile	234,000 SF	Trinity South	Hempfield Township	PA	10/23/2014
Geocomposite	234,000 SF	Trinity South	Hempfield Township	PA	10/23/2014
40-mil Textured HDPE	234,000 SF	Trinity South	Hempfield Township	PA	10/23/2014
Geocomposite	136,100 SF	Pendelton County Landfill	Butler	KY	9 /13/2014
10-oz Geotextile	225,300 SF	Pendelton County Landfill	Butler	KY	9 /13/2014
60-mil HDPE	361,300 SF	Pendelton County Landfill	Butler	KY	9 /13/2014
40-mil LLDPE	307,350 SF	JH Campbell 2014 Closure	West Olive	MI	7 /13/2014
8-oz Geotextile	84,000 SF	Walmart #4148-00	Charlotte	NC	5 /29/2014
30-mil LLDPE	42,000 SF	Walmart #4148-00	Charlotte	NC	5 /29/2014
Rain Cover	646,200 SF	Eastern Sanitary Landfill Phase X	White Marsh	MD	12/1 /2013
Geocomposite (2)	1,212,500 SF	Eastern Sanitary Landfill Phase X	White Marsh	MD	12/1 /2013
Geocomposite	1,212,500 SF	Eastern Sanitary Landfill Phase X	White Marsh	MD	12/1 /2013
50-mil PVC	657,000 SF	Eastern Sanitary Landfill Phase X	White Marsh	MD	12/1 /2013
60-mil HDPE Textured	468,200 SF	South Carolina International Paper	Eastover	SC	10/1 /2013
Rain Cover	212,400 SF	South Carolina International Paper	Eastover	SC	10/1 /2013
Geocomposite	468,200 SF	South Carolina International Paper	Eastover	SC	10/1 /2013
30-mil HDPE Textured	217,800 SF	Asheville Airport Phase 2	Arden	NC	3 /1 /2011
60-mil HDPE	769,973 SF	Duke Allen Steam Station - Water Direct	Belmont	NC	

GCL	769,973 SF	Duke Allen Steam Station - Water Direct	Belmont	NC
30-mil PVC	43,000 SF	Duke Allen Steam Station - Water Direct	Belmont	NC
10-oz Geotextile	769,973 SF	Duke Allen Steam Station - Water Direct	Belmont	NC
Geocomposite	300,000 SF	Raven Power Lot 15	Baltimore	MD
60-mil HDPE	360,000 SF	Raven Power Lot 15	Baltimore	MD
8-oz Geotextile	300,000 SF	Raven Power Lot 15	Baltimore	MD
Rain Cover	150,000 SF	Raven Power Lot 15	Baltimore	MD

Yanez, Jose

Material	Quantity	Project	Location	Completion Date	
60-mil HDPE Textured	395,290 SF	Republic Walnut Creek LF	Frankfort	IN	12/7 /2018
40-mil LLDPE Textured	279,089 SF	Republic Clinton Co Cap	Frankfort	IN	11/3 /2018
Geocomposite	291,249 SF	Republic Clinton Co Cap	Frankfort	IN	11/3 /2018
60-mil HDPE Textured (4)	660,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
Geocomposite (3)	660,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
60-mil HDPE Textured	810,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
60-mil HDPE Textured (3)	660,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
GCL	405,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
60-mil HDPE Textured (2)	810,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
Geocomposite (4)	660,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
Geocomposite (2)	810,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
GCL (2)	330,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
Geocomposite	810,000 SF	Duke Energy - Marshall Steam Station, Cells 3 & 4	Sherrills Ford	NC	12/20/2017
8 oz Geotextile	272,960 SF	Rumpke Beech Hollow Landfill	Wellston	OH	10/19/2017
60-mil HDPE Textured	272,960 SF	Rumpke Beech Hollow Landfill	Wellston	OH	10/19/2017
GCL	100,000 SF	Ottawa Farms Landfill	Coopersville	MI	10/12/2017
60-mil HDPE	100,000 SF	Ottawa Farms Landfill	Coopersville	MI	10/12/2017
8-oz Geotextile	1,200,000 SF	Sunny Farms	Fostoria	OH	8 /29/2017
60-mil HDPE	1,200,000 SF	Sunny Farms	Fostoria	OH	8 /29/2017

Tie-In	2,100 LF	Sunny Farms	Fostoria	OH	8 /29/2017
Geocomposite	59,415 SF	Decatur Co Landfill	Bath Springs	TN	8 /21/2017
12-oz Geotextile	122,095 SF	Decatur Co Landfill	Bath Springs	TN	8 /21/2017
60-mil HDPE Textured	155,621 SF	Decatur Co Landfill	Bath Springs	TN	8 /21/2017
Rain Cover	418,531 SF	Decatur Co Landfill	Bath Springs	TN	8 /21/2017
20-mil Dura Skrim	1,700,000 SF	Duke Gibson Cell 2 Raincover	Owensville	IN	8 /17/2017
80-mil HDPE Floating Cover	186,375 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
36-mil RPE Floating Cover	777,917 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
GCL	1,639,049 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
60-mil LLDPE Floating Cover	209,982 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
60-mil HDPE	1,853,408 SF	WM Atlantic LF Miscellaneous Work	Waverly	VA	7 /18/2017
20-mil Dura Skrim	1,700,000 SF	Duke Gibson Cell 3 Raincover	Owensville	IN	7 /10/2017
40-mil LLDPE	550,000 SF	NIPSCO	Wheatfield	IN	7 /7 /2017
Geocomposite	47,000 SF	NIPSCO	Wheatfield	IN	7 /7 /2017
Geocomposite	185,884 SF	Rumpke Pendleton Co Cell 4A	Butler	KY	7 /4 /2017
60-mil HDPE Textured	302,981 SF	Rumpke Pendleton Co Cell 4A	Butler	KY	7 /4 /2017
10-oz Geotextile	115,995 SF	Rumpke Pendleton Co Cell 4A	Butler	KY	7 /4 /2017
12-oz Geotextile	47,000 SF	Raleigh Town Center - Pond Lining	Raleigh	NC	5 /21/2017
60-mil HDPE	47,000 SF	Raleigh Town Center - Pond Lining	Raleigh	NC	5 /21/2017
GCL	85,000 SF	Laurel Ridge LF	Lily	KY	5 /7 /2017
60-mil HDPE Textured	85,000 SF	Laurel Ridge LF	Lily	KY	5 /7 /2017
Geocomposite	85,000 SF	Laurel Ridge LF	Lily	KY	5 /7 /2017
60-mil HDPE	2,000 LF	EKPC Spurlock Area C Phase 3 LF Expansion	Maysville	KY	4 /26/2017

60-mil HDPE (2)	500,000 SF	EKPC Spurlock Area C Phase 3 LF Expansion	Maysville	KY	4 /26/2017
16-oz Geotextile	2,000 LF	EKPC Spurlock Area C Phase 3 LF Expansion	Maysville	KY	4 /26/2017
Geocomposite	500,000 SF	EKPC Spurlock Area C Phase 3 LF Expansion	Maysville	KY	4 /26/2017
16-oz Geotextile	335,000 SF	Macon County MSW Phase 3 Cell	Franklin	NC	12/28/2016
Rain Cover	335,000 SF	Macon County MSW Phase 3 Cell	Franklin	NC	12/28/2016
GCL	335,000 SF	Macon County MSW Phase 3 Cell	Franklin	NC	12/28/2016
60-mil HDPE	335,000 SF	Macon County MSW Phase 3 Cell	Franklin	NC	12/28/2016
Wind Defender	335,000 SF	Macon County MSW Phase 3 Cell	Franklin	NC	12/28/2016
80-mil LLDPE	164,329 SF	WM Atlantic LF Floating Covers	Waverly	VA	12/2 /2016
60-mil LLDPE	187,070 SF	WM Atlantic LF Floating Covers	Waverly	VA	12/2 /2016
60-mil HDPE Textured	210,420 SF	Hood Container Phase 7 LF	Waverly	TN	11/16/2016
Tie In Weld	796 LF	Hood Container Phase 7 LF	Waverly	TN	11/16/2016
16-oz Geotextile	210,420 SF	Hood Container Phase 7 LF	Waverly	TN	11/16/2016
GCL	210,420 SF	Hood Container Phase 7 LF	Waverly	TN	11/16/2016
40-mil LLDPE	178,349 SF	LaFarge LF 2016 Construction	Alpena	MI	11/5 /2016
60-mil HDPE Textured	104,019 SF	LaFarge LF 2016 Construction	Alpena	MI	11/5 /2016
60-mil HDPE Smooth	322,306 SF	LaFarge LF 2016 Construction	Alpena	MI	11/5 /2016
40-mil LLDPE Smooth	893,111 SF	LaFarge LF 2016 Construction	Alpena	MI	11/5 /2016
60-mil HDPE Textured	835,000 SF	Rumpke RSL Phase 10	Cincinnati	OH	9 /30/2016
16-oz Geotextile	835,000 SF	Rumpke RSL Phase 10	Cincinnati	OH	9 /30/2016
10-oz Geotextile	2,000,000 SF	Rockport	Rockport	IN	9 /28/2016
30-mil PVC	2,000,000 SF	Rockport	Rockport	IN	9 /28/2016
GCL	960,740 SF	Blackfoot Bridge Mine	Soda Springs	ID	9 /21/2016
Geocomposite	960,740 SF	Blackfoot Bridge Mine	Soda Springs	ID	9 /21/2016

60-mil HDPE Textured	1,463,000 SF	WM Atlantic Waste Temp Cap Phase 1	Waverly	VA	8 /22/2016
Wind Defender	315,396 SF	WM Atlantic Waste Western Slope Cap	Waverly	VA	8 /7 /2016
60-mil HDPE	315,396 SF	WM Atlantic Waste Western Slope Cap	Waverly	VA	8 /7 /2016
80-mil HDPE Embedment Liner	37,700 SF	Patapsco WWTP 845R	Baltimore	MD	7 /14/2016
24-mil Dura Skrim	125,597 SF	Bethlehem LF Temp Cap	Bethlehem	PA	4 /23/2016
16-oz Geotextile	345,649 SF	Bethlehem LF Temp Cap	Bethlehem	PA	4 /23/2016
40-mil Geomembrane	345,649 SF	Bethlehem LF Temp Cap	Bethlehem	PA	4 /23/2016
Geocomposite	82,800 SF	Bethlehem LF Temp Cap	Bethlehem	PA	4 /23/2016
Wind Defender	282,799 SF	Bethlehem LF Temp Cap	Bethlehem	PA	4 /23/2016
40-mil Smooth	9,000 SF	AKZO Spill Pond	High Point	NC	4 /22/2016
8-oz Geocomposite	9,000 SF	AKZO Spill Pond	High Point	NC	4 /22/2016
40-mil HDPE	400 SF	Harnett Co WTP	Lillington	NC	4 /10/2016
8-oz Geotextile	5,000 SF	Duke Belews Creek Gypsum	Belews Creek	NC	3 /29/2016
60-mil HDPE	5,000 SF	Duke Belews Creek Gypsum	Belews Creek	NC	3 /29/2016
Rain Cover	261,360 SF	Duke Roxboro Gypsum	Semora	NC	2 /26/2016
100-mil Floating Cover	30,756 SF	Griffin Industries-Bastrop Facility	Bastrop	TX	12/19/2015
Geocomposite	1,854,000 SF	EW Brown Phase 1 Cell	Harrodsburg	KY	12/12/2015
GCL	2,014,000 SF	EW Brown Phase 1 Cell	Harrodsburg	KY	12/12/2015
16-oz Geotextile	239,600 SF	EW Brown Phase 1 Cell	Harrodsburg	KY	12/12/2015
16-oz Geotextile	513,000 SF	Harford County	Street	MD	12/4 /2015
60-mil HDPE	513,000 SF	Harford County	Street	MD	12/4 /2015
8-oz Geotextile	513,000 SF	Harford County	Street	MD	12/4 /2015
Geotextile	100,000 SF	Duke Mayo Gypsum	Roxboro	NC	10/1 /2015
60-mil HDPE	100,000 SF	Duke Mayo Gypsum	Roxboro	NC	10/1 /2015

24-oz Geotextile	84,000 SF	Walmart 6264 Winston-Salem	Winston-Salem	NC	12/4 /2014
40-mil HDPE	44,000 SF	Walmart 6264 Winston-Salem	Winston-Salem	NC	12/4 /2014
60-mil HDPE Textured	785,000 SF	East Kentucky Power Spurlock	Maysville	KY	11/26/2014
60-mil HDPE	1,009,600 SF	Santee Cooper Cross Station	Pineville	SC	9 /19/2014
GCL	146,000 SF	Santee Cooper Cross Station	Pineville	SC	9 /19/2014
GCL (2)	1,007,600 SF	Santee Cooper Cross Station	Pineville	SC	9 /19/2014
Geocomposite	199,100 SF	Santee Cooper Cross Station	Pineville	SC	9 /19/2014
60-mil HDPE Textured	185,900 SF	Santee Cooper Cross Station	Pineville	SC	9 /19/2014
60-mil HDPE	43,560 SF	Iris Glen Cell 6B Repairs	Johnson City	TN	9 /4 /2014
30-mil LLDPE	42,000 SF	Walmart #4148-00	Charlotte	NC	5 /29/2014
8-oz Geotextile	84,000 SF	Walmart #4148-00	Charlotte	NC	5 /29/2014
GCL	158,000 SF	Bayer Woodbine Cropscience Landfill Closure	Woodbine	GA	12/1 /2013
Geocomposite	158,000 SF	Bayer Woodbine Cropscience Landfill Closure	Woodbine	GA	12/1 /2013
60-mil HDPE	178,000 SF	Bayer Woodbine Cropscience Landfill Closure	Woodbine	GA	12/1 /2013
Geocomposite (2)	158,000 SF	Bayer Woodbine Cropscience Landfill Closure	Woodbine	GA	12/1 /2013
60-mil HDPE Textured	159,100 SF	Cooper Power Plant 2013 Expansion	Somerset	KY	12/1 /2013
10-oz Geotextile	100,000 SF	Cooper Power Plant 2013 Expansion	Somerset	KY	12/1 /2013
60-mil Textured	850,500 SF	Cooper Power Plant 2013 Expansion	Somerset	KY	12/1 /2013
Geocomposite	369,000 SF	Cooper Power Plant 2013 Expansion	Somerset	KY	12/1 /2013
GCL	619,000 SF	Cooper Power Plant 2013 Expansion	Somerset	KY	12/1 /2013
GCL	194,500 SF	Crystal River 2013 Closure	Crystal Rivers	FL	12/1 /2013
Geocomposite (2)	1,212,500 SF	Eastern Sanitary Landfill Phase X	White Marsh	MD	12/1 /2013

Geocomposite	1,212,500 SF	Eastern Sanitary Landfill Phase X	White Marsh	MD	12/1 /2013
Rain Cover	646,200 SF	Eastern Sanitary Landfill Phase X	White Marsh	MD	12/1 /2013
50-mil PVC	657,000 SF	Eastern Sanitary Landfill Phase X	White Marsh	MD	12/1 /2013
10-oz Geotextile	680,900 SF	Cooper Power Plant Lagoon	Somerset	KY	11/1 /2012
60-mil LLDPE Textured	537,200 SF	Cooper Power Plant Lagoon	Somerset	KY	11/1 /2012
80-mil HDPE Textured	61,200 SF	Cooper Power Plant Lagoon	Somerset	KY	11/1 /2012
12-oz Geotextile	68,900 SF	Cooper Power Plant Lagoon	Somerset	KY	11/1 /2012
GCL	237,000 SF	Crystal Rivers North Slope Closure	Crystal Rivers	FL	10/1 /2012
10-oz Geotextile	2,516,000 SF	Ghent Landfill	Ghent	KY	10/1 /2012
60-mil LLDPE Textured	2,516,000 SF	Ghent Landfill	Ghent	KY	10/1 /2012
40-mil LLDPE	1,200,000 SF	Haleys Pike Install	Lexington	KY	8 /1 /2012
Geocomposite	2,400,000 SF	Haleys Pike Install	Lexington	KY	8 /1 /2012
8-oz Geotextile	19,200 SF	Zion Landfill Cap	Zion	IL	7 /1 /2012
40-mil HDPE Textured	847,000 SF	Zion Landfill Cap	Zion	IL	7 /1 /2012
Geocomposite	847,500 SF	Zion Landfill Cap	Zion	IL	7 /1 /2012
Geocomposite	260,000 SF	Delaware County LF Cap	Boyertown	PA	6 /1 /2012
Geotextile	260,000 SF	Delaware County LF Cap	Boyertown	PA	6 /1 /2012
30-mil PVC	260,000 SF	Delaware County LF Cap	Boyertown	PA	6 /1 /2012
Geocomposite	86,000 SF	Medora LF Cell 1 & 2	Medora	IN	6 /1 /2012
40-mil LLDPE Textured	860,000 SF	Medora LF Cell 1 & 2	Medora	IN	6 /1 /2012
40-mil LLDPE Textured	1,829,500 SF	Oak Ridge Landfill Cap	Ballwin	MO	6 /1 /2012
Geocomposite	1,829,500 SF	Oak Ridge Landfill Cap	Ballwin	MO	6 /1 /2012
40-mil HDPE Textured	1,005,000 SF	Hutsonville Ash Pond	Crawford County	IL	5 /1 /2012
Geocomposite	892,000 SF	Holmes County Final Cap	Millersburg	OH	4 /1 /2012
40-mil LLDPE Textured	892,000 SF	Holmes County Final Cap	Millersburg	OH	4 /1 /2012
60-mil HDPE Textured	604,000 SF	HR Recovery Cell 4	Virginia Beach	VA	3 /1 /2012
Geocomposite	604,000 SF	HR Recovery Cell 4	Virginia Beach	VA	3 /1 /2012

30-mil HDPE Textured	217,800 SF	Asheville Airport Phase 2	Arden	NC	3 /1 /2011
Wind Defender	3,898,620 SF	Dominion Chesterfield Lower Ash Pond	Chester	VA	
8-oz Geotextile	457,380 SF	Dominion Chesterfield Lower Ash Pond	Chester	VA	
40-mil HDPE Textured	4,356,000 SF	Dominion Chesterfield Lower Ash Pond	Chester	VA	
60-mil HDPE	128,000 SF	Duke Mayo Water Redirect - Holding Basin	Roxboro	NC	
10-oz Geotextile	445,000 SF	Duke Mayo Water Redirect - Holding Basin	Roxboro	NC	
GCL	128,000 SF	Duke Mayo Water Redirect - Holding Basin	Roxboro	NC	
16-oz Geotextile	37,000 SF	Duke Mayo Water Redirect - Holding Basin	Roxboro	NC	

APPENDIX B.3

Specifications/Clarifications

Piaskowski, Jeff

From: Unseld, Timothy (EGLE) <UNSELDT@michigan.gov>
Sent: Thursday, April 25, 2019 9:58 AM
To: Brad Runkel
Cc: Bethany L. Swanberg; Piaskowski, Jeff; Sellers, Fred (EGLE); Walters, Kent (EGLE)
Subject: RE: Pond A CQA Clarification

EXTERNAL EMAIL

Brad,

As you stated, the prohibition/minimization of horizontal seams on slopes is intended for slopes greater than 10%. The changes that you proposed are approved. You can include this email as documentation in the certification report as approval of a deviation from previously approved plans..

From: BRADLEY T. RUNKEL <BRADLEY.RUNKEL@cmsenergy.com>
Sent: Thursday, April 25, 2019 10:32 AM
To: Unseld, Timothy (EGLE) <UNSELDT@michigan.gov>
Cc: Bethany L. Swanberg <Bethany.Swanberg@cmsenergy.com>; Piaskowski, Jeff <Jeff_Piaskowski@golder.com>
Subject: Pond A CQA Clarification

Good morning Tim,

This email has been prepared to provide EGLE with clarification of one item in the Pond A CQA Plan. Section 6.3-Geomembrane Field Seams lists the three following items related to geomembrane cross seams:

- Horizontal seams on slopes shall be reasonably minimized with no horizontal seams within five feet of an anchor trench or the toe of a slope.
- No horizontal seams shall be within five feet of the crest of the subgrade.
- Horizontal seams shall be diagonal and staggered.

Specifically, this clarification is in regard to the intent on the last two bullets that state "No horizontal seams shall be within five feet of the crest of the subgrade" and "Horizontal seams shall be diagonal and staggered." These bullets are meant to be applied to the 4H:1V slopes or, in general, those slopes 10 percent or greater. The bullets were not intended to be applied to what is referred to as the "top deck" which is designed at a two percent grade. Horizontal seams within the top deck have been and will continue to be staggered.

Please advise if additional clarification is required.

Thanks,

Brad Runkel, P.E.

Supervisor | Landfill Operations Compliance

Senior Engineer Lead | Consumers Energy | Environmental Services

P: 517-788-2980 | C: 517-745-0983 | F: 517-788-1064

E: bradley.runkel@cmsenergy.com | W: www.consumersenergy.com



Request For Information

Project: Ash Pond Closure (Pond A)

Consumers Energy RFI-007

Project File Index No(s):

☐ Technical RFI

Contractor: RYAN INC

☐ Commercial RFI

Contract Title: SUPT

Contract Number: ??

Contractor RFI Number (if applicable): 07

Subject: Pond A Manhole Liner Boot Clarification

To: ANDREW BAIRD

Date Created: 09/26/2018

Originator: ROB KOSKI - RYAN INC

Respond By Date: 09/26/2018

Drawing Reference(s) 690-3930-268 Sheet 27 Rev D (09/07/2018) det.6

Date Closed: 09/26/2018

Contract Reference(s):

Originator Description: (Provide attachments as required)

Contractor requests clarification/additional detail on how to boot around the Pond A Manholes/ Drainage Structures (Detail 6 on Sheet 27) 690-3930-268

Originator Recommendation:

N/A

Yes No

Cost Impact ☐ ☒ \$ _____

Schedule Impact ☐ ☒ _____

Scope Impact ☐ ☒ _____

Yes No

(PCN) Project Change Notice Required ☐ ☒

PCN Number: _____

(ECN) Engineering Change Notice Required ☐ ☒

ECN Number: _____

Response:

See attached detail with clarification & additional details

Respondent Name (Print) & Signature:

Andrew Baird

Date:

9/26/2018

CC: (List as Required)

JOHN BURT - Ryan Inc

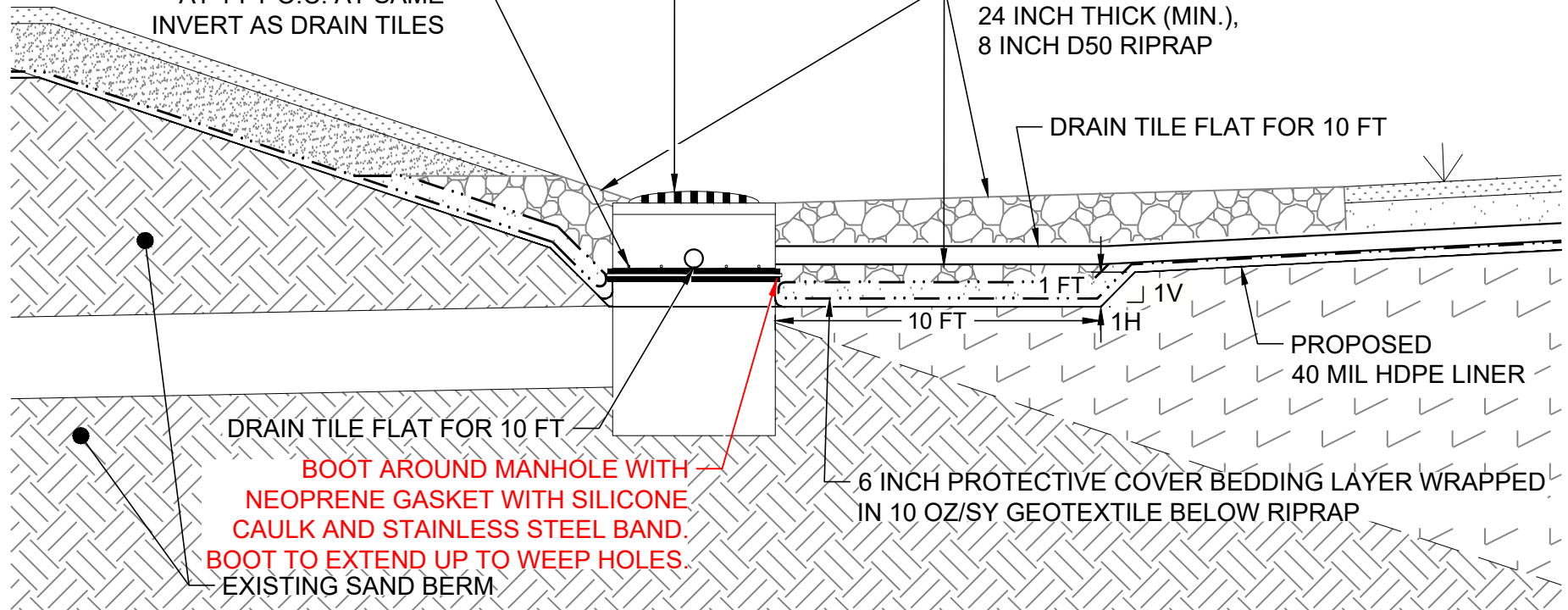
PROPOSED 5 FT DIA. PRECAST
CONCRETE MANHOLE (FLAT TOP) WITH
6" THICK WALLS, 8" THICK BASE, AND
EJIW 1020 O2 6 INCH BEEHIVE CASTING.

ALL DRAINAGE STRUCTURE
CONNECTIONS SHALL BE MADE WITH
R-2 MORTAR IN ACCORDANCE WITH
STANDARD SPECIFICATION 403.

1/2 INCH WEEP HOLES
AT 1 FT O.C. AT SAME
INVERT AS DRAIN TILES

PROPOSED
24 INCH THICK (MIN.),
8 INCH D50 RIPRAP

DRAIN TILE FLAT FOR 10 FT



DRAIN TILE FLAT FOR 10 FT

BOOT AROUND MANHOLE WITH
NEOPRENE GASKET WITH SILICONE
CAULK AND STAINLESS STEEL BAND.
BOOT TO EXTEND UP TO WEEP HOLES.
EXISTING SAND BERM

6 INCH PROTECTIVE COVER BEDDING LAYER WRAPPED
IN 10 OZ/SY GEOTEXTILE BELOW RIPRAP

NOT TO SCALE

6

27

TYPICAL POND A OUTLET MANHOLE DETAIL

APPENDIX C

Project Daily Reports with Photographic Overview

Pond A - 2018 & 2019 Construction Summary

DATE	DAY OF WEEK	FIELD CQA TECHNICIAN	Daily Activity
6/20/2018	Wednesday	David Hutchinson	Install of erosion control for dewatering
6/21/2018	Thursday	David Hutchinson	Dewatering
6/22/2018	Friday	n/a	No activity at Pond A due to Pond 1-2 construction
6/23/2018	Saturday	n/a	No activity - weekend day
6/24/2018	Sunday	n/a	No activity - weekend day
6/25/2018	Monday	n/a	No activity at Pond A due to Pond 1-2 construction
6/25/2018	Monday	David Hutchinson	Stockpiling sand/bottom ash for backfill
6/26/2018	Tuesday	David Hutchinson	Stockpiling sand/bottom ash for backfill
6/27/2018	Wednesday	n/a	No activity at Pond A due to Pond 1-2 construction
6/28/2018	Thursday	David Hutchinson	Stockpiling sand/bottom ash for backfill
6/29/2018	Friday	David Hutchinson	Stockpiling sand/bottom ash for backfill
6/30/2018	Saturday	n/a	No activity - weekend day
7/1/2018	Sunday	n/a	No activity - weekend day
7/2/2018	Monday	David Hutchinson	Dewatering
7/3/2018	Tuesday	David Hutchinson	Dewatering
7/4/2018	Wednesday	n/a	No activity - holiday
7/5/2018	Thursday	David Hutchinson	Dewatering
7/6/2018	Friday	David Hutchinson	Dewatering, abandoned pipe in NW corner
7/7/2018	Saturday	David Hutchinson	Dewatering, abandoned 3 southern piezometers
7/8/2018	Sunday	n/a	No activity - weekend day
7/9/2018	Monday	David Hutchinson	Dewatering, stockpiling, liner delivered
7/10/2018	Tuesday	David Hutchinson	Sealed Pond A outflow pipe
7/11/2018	Wednesday	David Hutchinson	Dewatering and stockpiling
7/12/2018	Thursday	David Hutchinson	Dewatering
7/13/2018	Friday	David Hutchinson	Dewatering and backfilled overflow pipe
7/14/2018	Saturday	David Hutchinson	Dewatering and removed remaining overflow pipe not backfilled
7/15/2018	Sunday	n/a	No activity - weekend day
7/16/2018	Monday	David Hutchinson	Dewatering and completed backfill of overflow pipe
7/17/2018	Tuesday	n/a	No activity at Pond A due to Pond 3S construction
7/18/2018	Wednesday	n/a	No activity at Pond A due to Pond 3S construction
7/19/2018	Thursday	David Hutchinson	Backfilling
7/20/2018	Friday	David Hutchinson	Backfilling
7/21/2018	Saturday	n/a	No activity - weekend day
7/22/2018	Sunday	n/a	No activity - weekend day
7/23/2018	Monday	David Hutchinson	Stockpiling and backfilling
7/24/2018	Tuesday	n/a	No activity at Pond A due to Pond 1-2 construction
7/25/2018	Wednesday	n/a	No activity at Pond A due to Pond 1-2 & 3S construction
7/26/2018	Thursday	n/a	No activity at Pond A due to Pond 1-2 construction
7/27/2018	Friday	n/a	No activity at Pond A due to Pond 1-2 construction
7/28/2018	Saturday	n/a	No activity - weekend day
7/29/2018	Sunday	n/a	No activity - weekend day
7/30/2018	Monday	n/a	No activity at Pond A due to Pond 1-2 construction
7/31/2018	Tuesday	David Hutchinson	Stockpiling and backfilling
8/1/2018	Wednesday	n/a	No activity at Pond A due to Pond 1-2 construction
8/2/2018	Thursday	David Hutchinson	Stockpiling and backfilling
8/3/2018	Friday	David Hutchinson	Stockpiling and backfilling
8/4/2018	Saturday	David Hutchinson	Stockpiling and backfilling
8/5/2018	Sunday	n/a	No activity - weekend day

Pond A - 2018 & 2019 Construction Summary

DATE	DAY OF WEEK	FIELD CQA TECHNICIAN	Daily Activity
8/6/2018	Monday	n/a	No activity at Pond A due to Pond 1-2 construction
8/7/2018	Tuesday	n/a	No activity at Pond A due to Pond 1-2 construction
8/8/2018	Wednesday	David Hutchinson	Backfilling
8/9/2018	Thursday	n/a	No activity at Pond A due to Pond 1-2 construction
8/10/2018	Friday	David Hutchinson	Backfilling
8/11/2018	Saturday	n/a	No activity - weekend day
8/12/2018	Sunday	n/a	No activity - weekend day
8/13/2018	Monday	David Hutchinson	Backfilling
8/14/2018	Tuesday	David Hutchinson	Backfilling
8/15/2018	Wednesday	David Hutchinson	Backfilling
8/16/2018	Thursday	David Hutchinson	Backfilling
8/17/2018	Friday	David Hutchinson	Backfilling
8/18/2018	Saturday	n/a	No activity - weekend day
8/19/2018	Sunday	n/a	No activity - weekend day
8/20/2018	Monday	David Hutchinson	Backfilling
8/21/2018	Tuesday	n/a	No activity at Pond A due to Pond 1-2 construction
8/22/2018	Wednesday	David Hutchinson	Backfilling
8/23/2018	Thursday	David Hutchinson	Backfilling
8/24/2018	Friday	David Hutchinson	Backfilling
8/25/2018	Saturday	David Hutchinson	No activity - weekend day
8/26/2018	Sunday	David Hutchinson	No activity - weekend day
8/27/2018	Monday	David Hutchinson	Backfilling
8/28/2018	Tuesday	n/a	No activity at Pond A due to Pond 1-2 construction
8/29/2018	Wednesday	n/a	No activity at Pond A due to Pond 1-2 construction
8/30/2018	Thursday	n/a	No activity at Pond A due to Pond 1-2 construction
8/31/2018	Friday	n/a	No activity at Pond A due to Pond 1-2 construction
9/1/2018	Saturday	n/a	No activity - weekend day
9/2/2018	Sunday	n/a	No activity - weekend day
9/3/2018	Monday	n/a	No activity - holiday
9/4/2018	Tuesday	n/a	No activity at Pond A due to Pond 1-2 & 3S construction
9/5/2018	Wednesday	n/a	No activity at Pond A due to Pond 1-2 & 3S construction
9/6/2018	Thursday	n/a	No activity at Pond A due to Pond 1-2 & 3S construction
9/7/2018	Friday	n/a	No activity at Pond A due to Pond 1-2 construction
9/8/2018	Saturday	n/a	No activity - weekend day
9/9/2018	Sunday	n/a	No activity - weekend day
9/10/2018	Monday	n/a	No activity at Pond A due to Pond 1-2 construction
9/11/2018	Tuesday	n/a	No activity at Pond A due to Pond 1-2 construction
9/12/2018	Wednesday	n/a	No activity at Pond A due to Pond 1-2 & 3S construction
9/13/2018	Thursday	n/a	No activity at Pond A due to Pond 1-2 & 3S construction
9/14/2018	Friday	n/a	No activity at Pond A due to Pond 1-2 & 3S construction
9/15/2018	Saturday	David Hutchinson	Grading perimeter ditches
9/16/2018	Sunday	David Hutchinson	No activity - weekend day
9/17/2018	Monday	David Hutchinson	Stockpiling and grading ditches
9/18/2018	Tuesday	David Hutchinson	Stockpiling and grading ditches

Pond A - 2018 & 2019 Construction Summary			
DATE	DAY OF WEEK	FIELD CQA TECHNICIAN	Daily Activity
9/19/2018	Wednesday	n/a	No activity at Pond A due to Pond 1-2 & 3S construction
9/20/2018	Thursday	n/a	No activity at Pond A due to Pond 1-2 construction
9/21/2018	Friday	n/a	No activity at Pond A due to Pond 1-2 & 3S construction
9/22/2018	Saturday	n/a	No activity - weekend day
9/23/2018	Sunday	n/a	No activity - weekend day
9/24/2018	Monday	n/a	No activity at Pond A due to Pond 1-2 construction
9/25/2018	Tuesday	n/a	No activity at Pond A due to Pond 1-2 & 3S construction
9/26/2018	Wednesday	n/a	No activity at Pond A due to Pond 1-2 & 3S construction
9/27/2018	Thursday	n/a	No activity at Pond A due to Pond 1-2 & 3S construction
9/28/2018	Friday	n/a	No activity at Pond A due to Pond 1-2 & 3S construction
9/29/2018	Saturday	n/a	No activity - weekend day
9/30/2018	Sunday	n/a	No activity - weekend day
10/1/2018	Monday	David Hutchinson	Liner delivery
10/2/2018	Tuesday	David Hutchinson, Halle Doering	Stockpiling and grading ditches
10/3/2018	Wednesday	David Hutchinson, Halle Doering	Stockpiling and grading ditches
10/4/2018	Thursday	n/a	No activity at Pond A due to Pond 1-2 & 3S construction
10/5/2018	Friday	n/a	No activity at Pond A due to Pond 1-2 construction
10/6/2018	Saturday	n/a	No activity - weekend day
10/7/2018	Sunday	n/a	No activity - weekend day
10/8/2018	Monday	David Hutchinson, Halle Doering	Stockpiling and grading ditches
10/9/2018	Tuesday	n/a	No activity at Pond A due to Pond 1-2 & 3S construction
10/10/2018	Wednesday	n/a	No activity at Pond A due to Pond 1-2 & 3S construction
10/11/2018	Thursday	David Hutchinson, Halle Doering	Backfilling and grading ditches
10/12/2018	Friday	n/a	No activity at Pond A due to Pond 1-2 & 3S construction
10/13/2018	Saturday	n/a	No activity - weekend day
10/14/2018	Sunday	n/a	No activity - weekend day
10/15/2018	Monday	David Hutchinson, Halle Doering	Backfilling and grading ditches
10/16/2018	Tuesday	David Hutchinson, Halle Doering	Backfilling
10/17/2018	Wednesday	David Hutchinson, Halle Doering	Backfilling and grading ditches
10/18/2018	Thursday	David Hutchinson	Installation of SW manhole
10/19/2018	Friday	n/a	No activity at Pond A due to Pond 3S construction
10/20/2018	Saturday	n/a	No activity - weekend day
10/21/2018	Sunday	n/a	No activity - weekend day

Pond A - 2018 & 2019 Construction Summary

DATE	DAY OF WEEK	FIELD CQA TECHNICIAN	Daily Activity
10/22/2018	Monday	David Hutchinson	Pipe installation
10/23/2018	Tuesday	David Hutchinson	Pipe backfill and installation of SW manhole
10/24/2018	Wednesday	David Hutchinson	Pipe installation and backfill, excavation for fabriform
10/25/2018	Thursday	David Hutchinson	Pipe installation and backfill
10/26/2018	Friday	David Hutchinson	Pipe installation and backfill, last day of Golder CQA on site in 2018
10/27/2018 -3/31/2019	n/a	n/a	No activity at Pond A due to cold weather conditions
4/1/2019	Monday	Aaron Bickel	Inspected geosynthetics delivered in 2018
4/2/2019	Tuesday	Aaron Bickel	Checked 2018 inventory logs
4/3/2019	Wednesday	Aaron Bickel	Graded subgrade
4/4/2019	Thursday	Aaron Bickel	Graded and compacted subgrade
4/5/2019	Friday	Aaron Bickel	Graded and compacted subgrade
4/6/2019	Saturday	n/a	No activity - weekend day
4/7/2019	Sunday	n/a	No activity - weekend day
4/8/2019	Monday	Aaron Bickel	Graded and compacted subgrade
4/9/2019	Tuesday	Aaron Bickel	Graded and compacted subgrade
4/10/2019	Wednesday	Aaron Bickel	Graded and compacted subgrade, liner deployment
4/11/2019	Thursday	Aaron Bickel	Graded and compacted subgrade
4/12/2019	Friday	Aaron Bickel	Graded and compacted subgrade
4/13/2019	Saturday	Aaron Bickel, Amy Mandrell	Subgrade preparation, liner deployment
4/14/2019	Sunday	n/a	No activity - weekend day
4/15/2019	Monday	Aaron Bickel, David List	No work due to snow
4/16/2019	Tuesday	Aaron Bickel	Subgrade preparation, liner deployment
4/17/2019	Wednesday	Aaron Bickel	Subgrade preparation, liner deployment
4/18/2019	Thursday	Aaron Bickel	No work due to rain
4/19/2019	Friday	Aaron Bickel	Subgrade preparation, liner testing, liner repairs
4/20/2019	Saturday	n/a	No activity - weekend day
4/21/2019	Sunday	n/a	No activity - weekend day
4/22/2019	Monday	Aaron Bickel, Amy Mandrell	Liner deployment
4/23/2019	Tuesday	Aaron Bickel, Amy Mandrell	Liner testing and repairs
4/24/2019	Wednesday	Aaron Bickel, Amy Mandrell	Liner deployment
4/25/2019	Thursday	Aaron Bickel, Amy Mandrell	Liner deployment
4/26/2019	Friday	Aaron Bickel, Amy Mandrell	Liner testing and repairs
4/27/2019	Saturday	Aaron Bickel	Liner testing
4/28/2019	Sunday	n/a	No activity - weekend day
4/29/2019	Monday	Aaron Bickel	No work due to rain
4/30/2019	Tuesday	Aaron Bickel	Liner testing
5/1/2019	Wednesday	Aaron Bickel	Liner testing
5/2/2019	Thursday	Aaron Bickel	Liner testing
5/3/2019	Friday	Aaron Bickel	Liner testing
5/4/2019	Saturday	Aaron Bickel	Liner testing
5/5/2019	Sunday	n/a	No activity - weekend day
5/6/2019	Monday	Aaron Bickel	Liner testing

Pond A - 2018 & 2019 Construction Summary			
DATE	DAY OF WEEK	FIELD CQA TECHNICIAN	Daily Activity
5/7/2019	Tuesday	Aaron Bickel, Don Winey	Liner testing
5/8/2019	Wednesday	Aaron Bickel, Don Winey	Geotextile deployment and liner testing
5/9/2019	Thursday	Aaron Bickel, Don Winey	Geotextile deployment and sowing
5/10/2019	Friday	Aaron Bickel, Don Winey	Geotextile deployment and sowing, liner testing, tile installation
5/11/2019	Saturday	Aaron Bickel	Geotextile deployment and sowing, liner testing, tile installation
5/12/2019	Sunday	n/a	No activity - weekend day
5/13/2019	Monday	Aaron Bickel	Geotextile deployment and sowing, liner testing, tile installation, and cover placement
5/14/2019	Tuesday	Aaron Bickel	Cover placement and tile installation
5/15/2019	Wednesday	Aaron Bickel	Cover placement, tile installation, and geotextile deployment and sowing
5/16/2019	Thursday	Aaron Bickel	Cover placement, tile installation, and geotextile deployment and sowing
5/17/2019	Friday	Aaron Bickel	Cover placement and tile installation
5/18/2019	Saturday	n/a	No activity - weekend day
5/19/2019	Sunday	n/a	No activity - weekend day
5/20/2019	Monday	Aaron Bickel	Cover placement and tile installation
5/21/2019	Tuesday	Aaron Bickel	Cover placement and tile installation
5/22/2019	Wednesday	Aaron Bickel	Cover placement and tile installation
5/23/2019	Thursday	Aaron Bickel	Cover placement and tile installation
5/24/2019	Friday	n/a	No activity at Pond A due to holiday
5/25/2019	Saturday	n/a	No activity - weekend day
5/26/2019	Sunday	n/a	No activity - weekend day
5/27/2019	Monday	n/a	No activity at Pond A due to holiday
5/28/2019	Tuesday	Aaron Bickel	Cover placement
5/29/2019	Wednesday	Aaron Bickel	Cover placement
5/30/2019	Thursday	Aaron Bickel	Cover placement, dozer damaged liner
5/31/2019	Friday	Aaron Bickel	Cover placement
6/1/2019	Saturday	Don Winey	Cover placement
6/2/2019	Sunday	n/a	No activity - weekend day
6/3/2019	Monday	n/a	No activity at Pond A due to Phase 6 construction
6/4/2019	Tuesday	Aaron Bickel	Cover placement
6/5/2019	Wednesday	Aaron Bickel, Don Winey	Cover placement, dozer damage repaired
6/6/2019	Thursday	n/a	No activity at Pond A due to Phase 6 construction
6/7/2019	Friday	Aaron Bickel, Don Winey	Cover placement, dozer damage repaired
6/8/2019	Saturday	n/a	No activity - weekend day
6/9/2019	Sunday	n/a	No activity - weekend day
6/10/2019	Monday	Aaron Bickel	Grading cover material
6/11/2019	Tuesday	Aaron Bickel	Grading cover material and placing topsoil
6/12/2019	Wednesday	Aaron Bickel	Grading cover material and placing topsoil
6/13/2019	Thursday	Aaron Bickel	Grading cover material and placing topsoil
6/14/2019	Friday	Aaron Bickel	Grading cover material and placing topsoil
6/15/2019	Saturday	n/a	No activity - weekend day

Pond A - 2018 & 2019 Construction Summary

DATE	DAY OF WEEK	FIELD CQA TECHNICIAN	Daily Activity
6/16/2019	Sunday	n/a	No activity - weekend day
6/17/2019	Monday	Aaron Bickel	Grading cover material and placing topsoil
6/18/2019	Tuesday	Aaron Bickel	Grading cover material and placing topsoil
6/19/2019	Wednesday	Aaron Bickel	Grading cover material and placing topsoil
6/20/2019	Thursday	n/a	No activity at Pond A due to Phase 6 construction
6/21/2019	Friday	Aaron Bickel	Grading cover material and placing topsoil
6/22/2019	Saturday	n/a	No activity - weekend day
6/23/2019	Sunday	n/a	No activity - weekend day
6/24/2019	Monday	Aaron Bickel	Placed and graded topsoil
6/25/2019	Tuesday	Aaron Bickel	Placed and graded topsoil
6/26/2019	Wednesday	Aaron Bickel	Placed and graded topsoil
6/27/2019	Thursday	Aaron Bickel	Placed and graded topsoil
6/28/2019	Friday	Aaron Bickel	Placed and graded topsoil
6/29/2019	Saturday	n/a	No activity - weekend day
6/30/2019	Sunday	n/a	No activity - weekend day
7/1/2019	Monday	Aaron Bickel	Placed and graded topsoil
7/2/2019	Tuesday	Aaron Bickel	Placed and graded cover material
7/3/2019	Wednesday	Aaron Bickel	Placed and graded cover material
7/4/2019	Thursday	n/a	No activity at Pond A due to holiday
7/5/2019	Friday	n/a	No activity at Pond A due to holiday
7/6/2019	Saturday	n/a	No activity - weekend day
7/7/2019	Sunday	n/a	No activity - weekend day
7/8/2019	Monday	Aaron Bickel	Placed and graded cover material
7/9/2019	Tuesday	Aaron Bickel	Placed and graded cover material
7/10/2019	Wednesday	Aaron Bickel	Placed and graded cover material
7/11/2019	Thursday	Aaron Bickel	Placed and graded cover material
7/12/2019	Friday	Aaron Bickel	Placed and graded cover material
7/13/2019	Saturday	Aaron Bickel	Graded cover material and topsoil
7/14/2019	Sunday	n/a	No activity - weekend day
7/15/2019	Monday	Aaron Bickel	Graded cover material and topsoil
7/16/2019	Tuesday	Aaron Bickel	Graded cover material and topsoil
7/17/2019	Wednesday	Aaron Bickel	Placed and graded topsoil
7/18/2019	Thursday	Aaron Bickel	Received topsoil
7/19/2019	Friday	Aaron Bickel	Placed and graded topsoil
7/20/2019	Saturday	n/a	No activity - weekend day
7/21/2019	Sunday	n/a	No activity - weekend day
7/22/2019	Monday	Aaron Bickel	Placed and graded topsoil
7/23/2019	Tuesday	Aaron Bickel	Placed and graded topsoil
7/24/2019	Wednesday	Aaron Bickel	Placed and graded topsoil
7/25/2019	Thursday	Aaron Bickel	Placed and graded topsoil
7/26/2019	Friday	Aaron Bickel	Placed and graded topsoil
7/27/2019	Saturday	Aaron Bickel	Installed screens on daylighted tiles
7/28/2019	Sunday	n/a	No activity - weekend day
7/29/2019	Monday	Aaron Bickel	Surveyed topsoil grades
7/30/2019	Tuesday	n/a	No activity at Pond A due to Phase 6 construction
7/31/2019	Wednesday	n/a	No activity at Pond A due to Phase 6 construction
8/1/2019	Thursday	Aaron Bickel	Seeding and mulching
8/2/2019	Friday	Aaron Bickel	Seeding and mulching, installed jersey barriers at corners and rip-rap at manholes
POND A CONSTRUCTION SUBSTANTIALLY COMPLETED			



GOLDER ASSOCIATES, INC.
Daily Summary Report
Date: 6.20.2018

SURFACE IMPOUNDMENT: POND A

PROJECT NUMBER: 1896102	PROJECT TITLE: CEC JHC Pond Closures
SITE: CEC JHC	CONTRACTOR: Ryan Central
LOCATION: West Olive, MI	CONTRACTOR REP: Rob Koski

WEATHER:	Temperature: Low: 64 High: 73	Approx. Precipitation: none
	Cloud Cover: cloudy, 6-12 mph	

GAI PERSONNEL ON SITE: David Hutchinson

GAI Arrival/Departure: 0630/1830

ADDITIONAL PERSONNEL ON SITE: Ryan crew; 1 superintendent, 5-operator/labor

Arrival/Departure: Ryan 0630/1800

HEALTH AND SAFETY ITEMS / ISSUES

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

Three Volvo A40G haul trucks, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, one Cat D4K dozer w/GPS, one Cat D6T dozer, one Cat 289D skid steer, one Cat 312C excavator, one Cat 326F excavator, one Cat 330B excavator with shear, one Cat 980M loader and one Cat CS563C smooth drum roller.

SUMMARY OF DEWATERING AND TREATMENT

NA

SUMMARY OF CONSTRUCTION ACTIVITY

Ryan installed a 12-inch hdpe pipe to be used for dewatering from the top southeast corner of pond A, under the haul road, down the slope, and ending in the south perimeter ditch. Ryan installed five concrete blocks in the ditch at the outfall of the hdpe pipe for erosion control.

SUMMARY OF CCR FILL AND GRADING

NA

SUMMARY OF FINAL COVER SYSTEM

NA

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Ryan said they would begin dewatering pond A.

Submitted by: David Hutchinson

Reviewed by: Mark Bergeon

Daily Photographic Overview

Description

Photo

Photo 1:

Direction: E

Location: Installing 12-inch pipe through road from pond A to the south perimeter ditch.



Photo 2:

Direction: S

Location: Installing concrete blocks for erosion control at outfall of 12-inch pipe in south perimeter ditch.



SUBMITTED BY GAI



GOLDER ASSOCIATES, INC.
Daily Summary Report
Date: 6.21.2018

SURFACE IMPOUNDMENT: POND A

PROJECT NUMBER:	1896102	PROJECT TITLE:	CEC JHC Pond Closures
SITE:	CEC JHC	CONTRACTOR:	Ryan Central
LOCATION:	West Olive, MI	CONTRACTOR REF	Rob Koski

WEATHER:	Temperature: Low: 59 High: 72	Approx. Precipitation: none
	Cloud Cover: cloudy, 4-8 mph winds	

GAI PERSONNEL ON SITE:	David Hutchinson
GAI Arrival/Departure:	0630/1830
ADDITIONAL PERSONNEL ON SITE:	Ryan crew; 1 superintendent, 5-operator/labor
Arrival/Departure:	Ryan 0630/1800

HEALTH AND SAFETY ITEMS / ISSUES

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

Three Volvo A40G haul trucks, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, one Cat D4K dozer w/GPS, one Cat D6T dozer, one Cat 289D skid steer, one Cat 312C excavator, one Cat 326F excavator, one Cat 330B excavator with shear, one Cat 980M loader and one Cat CS563C smooth drum roller.

SUMMARY OF DEWATERING AND TREATMENT

NA

SUMMARY OF CONSTRUCTION ACTIVITY

Ryan set-up a 6-inch pump for dewatering in the southeast corner of pond A. Ryan placed a 6-inch HDPE pipe from the pump into the pond ending about 100 feet from the bank. The pump was connected to the 6-inch HDPE pipe using 6-inch flex pipe. A second section of flex pipe was connected to the pump discharge and ran into a 12-inch HDPE pipe that was run under the road and into the south perimeter ditch.

SUMMARY OF CCR FILL AND GRADING

NA

SUMMARY OF FINAL COVER SYSTEM

NA

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Ryan said they would begin dewatering pond A.

Submitted by: David Hutchinson
Reviewed by: Mark Bergeon

Daily Photographic Overview

Description	Photo
Photo 1:	
Direction: NW	
Location: 6-inch pump used for dewatering pond A.	
Photo 2:	
Direction: NW	
Location: Suction pipe in pond A.	

SUBMITTED BY GAI

**GOLDER**

GOLDER ASSOCIATES, INC.
Daily Summary Report
Date: 6.22.2018

SURFACE IMPOUNDMENT: POND A

PROJECT NUMBER: 1896102	PROJECT TITLE: CEC JHC Pond Closures
SITE: CEC JHC	CONTRACTOR: Ryan Central
LOCATION: West Olive, MI	CONTRACTOR REP Rob Koski

WEATHER:	Temperature: Low: 61 High: 72	Approx. Precipitation: rain, 0.1 inches
	Cloud Cover: overcast, 2-12 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson**GAI Arrival/Departure:** 0630/1830**ADDITIONAL PERSONNEL ON SITE:** Ryan crew; 1 superintendent, 5-operator/labor**Arrival/Departure:** Ryan 0630/1800**HEALTH AND SAFETY ITEMS / ISSUES**

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

Three Volvo A40G haul trucks, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, one Cat D4K dozer w/GPS, one Cat D6T dozer, one Cat 289D skid steer, one Cat 312C excavator, one Cat 326F excavator, one Cat 330B excavator with shear, one Cat 980M loader and one Cat CS563C smooth drum roller.

SUMMARY OF DEWATERING AND TREATMENT

Ryan began dewatering pond A using a 6-inch pump.

SUMMARY OF CONSTRUCTION ACTIVITY

None

SUMMARY OF CCR FILL AND GRADING

NA

SUMMARY OF FINAL COVER SYSTEM

NA

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Ryan said they would begin dewatering pond A.

Submitted by: David Hutchinson**Reviewed by:** Mark Bergeon

Daily Photographic Overview

Description	Photo
<p>Photo 1:</p>	
<p>Direction: NW</p>	
<p>Location: 6-inch pump being used to dewater pond A.</p>	
<p>Photo 2:</p>	
<p>Direction: S</p>	
<p>Location: Pond A dewatering outfall in the south perimeter ditch.</p>	

SUBMITTED BY GAI



GOLDER ASSOCIATES, INC.
Daily Summary Report
Date: 6.25.2018

SURFACE IMPOUNDMENT: POND A

PROJECT NUMBER: 1896102	PROJECT TITLE: CEC JHC Pond Closures
SITE: CEC JHC	CONTRACTOR: Ryan Central
LOCATION: West Olive, MI	CONTRACTOR REP: Rob Koski

WEATHER:	Temperature: Low: 60 High: 78	Approx. Precipitation: none
	Cloud Cover: partly sunny, 6-20 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson

GAI Arrival/Departure: 0630/1830

ADDITIONAL PERSONNEL ON SITE: Ryan; 1 superintendent, 6-operators

Arrival/Departure: Ryan 0630/1800

HEALTH AND SAFETY ITEMS / ISSUES

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

Three Volvo A40G haul trucks, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, one Cat D4K dozer w/GPS, one Cat D6T dozer w/GPS, one Cat 289D skid steer, one Cat 312C excavator, one Cat 326F excavator, one Cat 330B excavator with shear, one Cat 980M loader and one Cat CS563C smooth drum roller.

SUMMARY OF DEWATERING AND TREATMENT

NA

SUMMARY OF CONSTRUCTION ACTIVITY

Ryan continued to haul bottom ash from Ponds 1-2. A Cat 352F was used to load three Volvo A40G haul trucks with bottom ash excavated from the west and north slopes of Pond 1-2N. The excavated material was hauled to Pond A and stockpiled for later use in backfilling the pond.

SUMMARY OF VISUALLY ACCEPTED AREAS AND PHOTOGRAPHIC DOCUMENTATION CAPTURED

NA

SUMMARY OF COLORIMETRIC CONFIRMATION SAMPLES AND TESTING PERFORMED

NA

SUMMARY OF CCR REMOVAL BELOW BASELINE EXCAVATION LIMITS

NA

SUMMARY OF DITCH GRADING AND REDIRECTED FLOWS

None

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Talked to Ryan superintendent about the day's planned work. He said they would continue to haul bottom ash from Ponds 1-2.

Submitted by: David Hutchinson

Reviewed by: Mark Bergeon

Daily Photographic Overview

Description

Photo

Photo 1:

Direction: W

Location: Loading bottom ash from west slope of Pond 1-2N.




Photo 2:

Direction: NW

Location: Pond 1-2N



Daily Photographic Overview	
Description	Photo
Photo 3:	
Direction: W	
Location: North slope of Pond 1-2N after day's excavation of bottom ash from the slope.	

SUBMITTED BY GAI



GOLDER ASSOCIATES, INC.
Daily Summary Report
Date: 6.26.2018

SURFACE IMPOUNDMENT: POND A

PROJECT NUMBER: 1896102	PROJECT TITLE: CEC JHC Pond Closures
SITE: CEC JHC	CONTRACTOR: Ryan Central
LOCATION: West Olive, MI	CONTRACTOR REP: Rob Koski

WEATHER:	Temperature: Low: 60 High: 73	Approx. Precipitation: none
	Cloud Cover: mostly cloudy, 5-10 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson

GAI Arrival/Departure: 0630/1830

ADDITIONAL PERSONNEL ON SITE: Ryan; 1 superintendent, 6-operators, EES; 1-surveyor

Arrival/Departure: Ryan 0630/1800, EES 0700/1230

HEALTH AND SAFETY ITEMS / ISSUES

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

Three Volvo A40G haul trucks, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, one Cat D4K dozer w/GPS, one Cat D6T dozer w/GPS, one Cat 289D skid steer, one Cat 312C excavator, one Cat 326F excavator, one Cat 330B excavator with shear, one Cat 980M loader and one Cat CS563C smooth drum roller.

SUMMARY OF DEWATERING AND TREATMENT

NA

SUMMARY OF CONSTRUCTION ACTIVITY

Ryan continued to haul bottom ash from Ponds 1-2N and 1-2S slopes. A Cat 352F excavator was used to load three Volvo A40G haul trucks with bottom ash excavated from the south slope of Pond 1-2S and the berm separating Ponds 1-2S from 1-2N. Bottom ash was hauled either to Pond A and stockpiled for later use as backfill or to Ditch #2 for use in regrading of the ditch. A D6T dozer continued with regrading of Ditch #2 to reverse flow from Pond A.

SUMMARY OF VISUALLY ACCEPTED AREAS AND PHOTOGRAPHIC DOCUMENTATION CAPTURED

NA

SUMMARY OF COLORIMETRIC CONFIRMATION SAMPLES AND TESTING PERFORMED

NA

SUMMARY OF CCR REMOVAL BELOW BASELINE EXCAVATION LIMITS

NA

SUMMARY OF DITCH GRADING AND REDIRECTED FLOWS

None

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Talked to Ryan superintendent about the day's planned work. He said they would continue to haul bottom ash from Ponds 1-2.

Submitted by: David Hutchinson

Reviewed by: Mark Bergeon

Daily Photographic Overview

Description

Photo

Photo 1:

Direction: W

Location: Excavation of berm
between Pond 1-2S and 1-2N.



Photo 2:

Direction: S

Location: Excavation of southern
slope of Pond 1-2S.



Daily Photographic Overview

Description	Photo
Photo 3:	
Direction: N	
Location: Excavating south slope of pond 1-2S.	
Photo 4:	
Direction: S	
Location: Regrading of ditch #2.	

SUBMITTED BY GAI

**GOLDER**

GOLDER ASSOCIATES, INC.
Daily Summary Report
Date: 6.28.2018

SURFACE IMPOUNDMENT: POND A

PROJECT NUMBER: 1896102	PROJECT TITLE: CEC JHC Pond Closures
SITE: CEC JHC	CONTRACTOR: Ryan Central
LOCATION: West Olive, MI	CONTRACTOR REP: Rob Koski

WEATHER:	Temperature: Low: 61 High: 80	Approx. Precipitation: none
	Cloud Cover: sunny, 0-6 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson**GAI Arrival/Departure:** 0630/1830**ADDITIONAL PERSONNEL ON SITE:** Ryan; 1 superintendent, 6-operators**Arrival/Departure:** Ryan 0630/1800**HEALTH AND SAFETY ITEMS / ISSUES**

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

Three Volvo A40G haul trucks, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, one Cat D4K dozer w/GPS, one Cat D6T dozer w/GPS, one Cat 289D skid steer, one Cat 312C excavator, one Cat 326F excavator, one Cat 330B excavator with shear, one Cat 980M loader and one Cat CS563C smooth drum roller.

SUMMARY OF DEWATERING AND TREATMENT

NA

SUMMARY OF CONSTRUCTION ACTIVITY

Ryan hauled bottom ash from the stockpile southeast of the ash tanks to Pond A using a Cat 352F excavator to load three Volvo A40G haul trucks. Ryan continued to haul bottom ash from Ponds 1-2 and stockpile at Pond A. A Cat 352F excavator loaded four Volvo A40G haul trucks with material excavated from the west side of Ponds 1-2 to bring slope down to grades called for in specifications. Excavated material was stockpiled at Pond A for use as backfill.

SUMMARY OF VISUALLY ACCEPTED AREAS AND PHOTOGRAPHIC DOCUMENTATION CAPTURED

NA

SUMMARY OF COLORIMETRIC CONFIRMATION SAMPLES AND TESTING PERFORMED

NA

SUMMARY OF CCR REMOVAL BELOW BASELINE EXCAVATION LIMITS

NA

SUMMARY OF DITCH GRADING AND REDIRECTED FLOWS

none

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Talked to Ryan superintendent about the day's planned work. He said they would continue hauling bottom ash from Ponds 1-2 and install a 42-inch culvert between Ditch #1 and Ditch #2.

Submitted by: David Hutchinson**Reviewed by:** Mark Bergeon

Daily Photographic Overview

Description	Photo
Photo 1:	
Direction: W	
Location: Pond 1-2N	
Photo 2:	
Direction: W	
Location: Pond 1-2N	

SUBMITTED BY GAI



GOLDER ASSOCIATES, INC.
Daily Summary Report
Date: 6.29.2018

SURFACE IMPOUNDMENT: POND 1-2

PROJECT NUMBER: 1896102	PROJECT TITLE: CEC JHC Pond Closures
SITE: CEC JHC	CONTRACTOR: Ryan Central
LOCATION: West Olive, MI	CONTRACTOR REP: Rob Koski

WEATHER:	Temperature: Low: 66 High: 91	Approx. Precipitation: none
	Cloud Cover: sunny, 3-13 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson

GAI Arrival/Departure: 0630/1830

ADDITIONAL PERSONNEL ON SITE: Ryan; 1 superintendent, 6-operators, MDR; 4-labor

Arrival/Departure: Ryan 0630/1800, MDR 0700/1800

HEALTH AND SAFETY ITEMS / ISSUES

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

Three Volvo A40G haul trucks, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, one Cat D4K dozer w/GPS, one Cat D6T dozer w/GPS, one Cat 289D skid steer, one Cat 312C excavator, one Cat 326F excavator, one Cat 330B excavator with shear, one Cat 980M loader and one Cat CS563C smooth drum roller.

SUMMARY OF DEWATERING AND TREATMENT

NA

SUMMARY OF CONSTRUCTION ACTIVITY

Ryan continued to haul bottom ash from the west and north slopes of Pond 1-2N. A Cat 352F excavator loaded excavated material into three Volvo A40G haul trucks for stockpiling at Pond A for use as backfill. MDR seeded both slopes of Ditch #1 and installed 8-foot wide rolls of straw mat along the toe of both the south and north slopes from the east end of Ditch #1 to the culvert at the west end.

SUMMARY OF VISUALLY ACCEPTED AREAS AND PHOTOGRAPHIC DOCUMENTATION CAPTURED

NA

SUMMARY OF COLORIMETRIC CONFIRMATION SAMPLES AND TESTING PERFORMED

NA

SUMMARY OF CCR REMOVAL BELOW BASELINE EXCAVATION LIMITS

NA

SUMMARY OF DITCH GRADING AND REDIRECTED FLOWS

none

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Talked to Ryan superintendent about the day's planned work. He said they would continue hauling bottom ash from Ponds 1-2 and MDR would begin to seed and mulch Ditch #1.

Submitted by: David Hutchinson

Reviewed by: Mark Bergeon

Daily Photographic Overview

Description

Photo

Photo 1:

Direction: S

Location: Pond 1-2N



Photo 2:

Direction: NW

Location: Pond 1-2N



Daily Photographic Overview

Description

Photo

Photo 3:

Direction: E

Location: Ditch #1



Photo 4:

Direction: W

Location: Ditch #1



SUBMITTED BY GAI

**GOLDER**

GOLDER ASSOCIATES, INC.
Daily Summary Report
Date: 7.2.2018

SURFACE IMPOUNDMENT: POND A

PROJECT NUMBER: 1896102	PROJECT TITLE: CEC JHC Pond Closures
SITE: CEC JHC	CONTRACTOR: Ryan Central
LOCATION: West Olive, MI	CONTRACTOR REP: Rob Koski

WEATHER:	Temperature: Low: 71 High: 81	Approx. Precipitation: none
	Cloud Cover: sunny, 2-8 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson**GAI Arrival/Departure:** 0630/1900**ADDITIONAL PERSONNEL ON SITE:** Ryan crew; 1 superintendent, 6-operator/labor**Arrival/Departure:** Ryan 0630/1830**HEALTH AND SAFETY ITEMS / ISSUES**

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

Three Volvo A40G haul trucks, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, one Cat D4K dozer w/GPS, one Cat D6T dozer, one Cat 289D skid steer, one Cat 312C excavator, one Cat 326F excavator, one Cat 330B excavator with shear, one Cat 980M loader and one Cat CS563C smooth drum roller.

SUMMARY OF DEWATERING AND TREATMENT

Ryan continued dewatering Pond A using two 6-inch pumps with the water being discharged into the south perimeter ditch.

SUMMARY OF CONSTRUCTION ACTIVITY

None

SUMMARY OF CCR FILL AND GRADING

NA

SUMMARY OF FINAL COVER SYSTEM

NA

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Ryan said they would continue dewatering Pond A.

Submitted by: David Hutchinson**Reviewed by:** Mark Bergeon

Daily Photographic Overview

Description	Photo
Photo 1:	
Direction: N	
Location: Water level in Pond A and pumps used for dewatering.	
Photo 2:	
Direction: S	
Location: Water from Pond A discharging into the south perimeter ditch.	

SUBMITTED BY GAI



GOLDER ASSOCIATES, INC.
Daily Summary Report
Date: 7.3.2018

SURFACE IMPOUNDMENT: POND A

PROJECT NUMBER: 1896102	PROJECT TITLE: CEC JHC Pond Closures
SITE: CEC JHC	CONTRACTOR: Ryan Central
LOCATION: West Olive, MI	CONTRACTOR REP Rob Koski

WEATHER:	Temperature: Low: 66 High: 91	Approx. Precipitation: none
	Cloud Cover: sunny, 3-9 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson

GAI Arrival/Departure: 0630/1830

ADDITIONAL PERSONNEL ON SITE: Ryan crew; 1 superintendent, 6-operator/labor

Arrival/Departure: Ryan 0630/1800

HEALTH AND SAFETY ITEMS / ISSUES

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

Three Volvo A40G haul trucks, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, one Cat D4K dozer w/GPS, one Cat D6T dozer, one Cat 289D skid steer, one Cat 312C excavator, one Cat 326F excavator, one Cat 330B excavator with shear, one Cat 980M loader and one Cat CS563C smooth drum roller.

SUMMARY OF DEWATERING AND TREATMENT

Ryan continued dewatering Pond A using two 6-inch pumps with the water being discharged into the south perimeter ditch.

SUMMARY OF CONSTRUCTION ACTIVITY

Ryan installed a water level indicator Pond A adjacent to the 6-inch pumps' suction pipes for daily water depth verification.

SUMMARY OF CCR FILL AND GRADING

NA

SUMMARY OF FINAL COVER SYSTEM

NA

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Ryan said they would continue dewatering Pond A and install a water depth indicator.

Submitted by: David Hutchinson

Reviewed by: Mark Bergeon

Daily Photographic Overview

Description

Photo

Photo 1:

Direction: N

Location: Pond A





Photo 2:

Direction: N

Location: Existing overflow pipe in pond A



Daily Photographic Overview

Description	Photo
Photo 3:	
Direction: N	
Location: Installing a water level indicator in Pond A.	
Photo 4:	
Direction: N	
Location: Water level indicator in Pond A.	

SUBMITTED BY GAI

**GOLDER**

GOLDER ASSOCIATES, INC.
Daily Summary Report
Date: 7.5.2018

SURFACE IMPOUNDMENT: POND A

PROJECT NUMBER: 1896102	PROJECT TITLE: CEC JHC Pond Closures
SITE: CEC JHC	CONTRACTOR: Ryan Central
LOCATION: West Olive, MI	CONTRACTOR REP: Rob Koski

WEATHER:	Temperature: Low: 72 High: 86	Approx. Precipitation: none
	Cloud Cover: partly cloudy, 2-10 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson**GAI Arrival/Departure:** 0630/1830**ADDITIONAL PERSONNEL ON SITE:** Ryan crew; 1 superintendent, 6-operator/labor**Arrival/Departure:** Ryan 0630/1800**HEALTH AND SAFETY ITEMS / ISSUES**

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

Three Volvo A40G haul trucks, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, one Cat D4K dozer w/GPS, one Cat D6T dozer, one Cat 289D skid steer, one Cat 312C excavator, one Cat 326F excavator, one Cat 330B excavator with shear, one Cat 980M loader and one Cat CS563C smooth drum roller.

SUMMARY OF DEWATERING AND TREATMENT

Ryan continued dewatering Pond A using two 6-inch pumps with the water being discharged into the south perimeter ditch.

SUMMARY OF CONSTRUCTION ACTIVITY

Using a Cat 352F excavator, Ryan removed the turbidity curtain from Pond A. The excavator was also used to remove the 24-inch PE pipe and the 30-inch CMP culvert from the southwest corner of Pond A per drawings.

SUMMARY OF CCR FILL AND GRADING

NA

SUMMARY OF FINAL COVER SYSTEM

NA

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Ryan said they would continue dewatering Pond A.

Submitted by: David Hutchinson**Reviewed by:** Mark Bergeon

Daily Photographic Overview

Description

Photo

Photo 1:

Direction: W

Location: Removal of the turbidity curtain from Pond A.



Photo 2:

Direction: NE

Location: Pond A



Daily Photographic Overview	
Description	Photo
Photo 3:	
Direction: S	
Location: Removing the 30-inch CMP culvert from Pond A.	

SUBMITTED BY GAI

**GOLDER**

GOLDER ASSOCIATES, INC.
Daily Summary Report
Date: 7.6.2018

SURFACE IMPOUNDMENT: POND A

PROJECT NUMBER: 1896102	PROJECT TITLE: CEC JHC Pond Closures
SITE: CEC JHC	CONTRACTOR: Ryan Central
LOCATION: West Olive, MI	CONTRACTOR REP: Rob Koski

WEATHER:	Temperature: Low: 66 High: 82	Approx. Precipitation: none
	Cloud Cover: sunny, 0-12 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson**GAI Arrival/Departure:** 0630/1830**ADDITIONAL PERSONNEL ON SITE:** Ryan crew; 1 superintendent, 6-operator/labor**Arrival/Departure:** Ryan 0630/1800**HEALTH AND SAFETY ITEMS / ISSUES**

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

Three Volvo A40G haul trucks, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, one Cat D4K dozer w/GPS, one Cat D6T dozer, one Cat 289D skid steer, one Cat 326F excavator, one Cat 330B excavator with shear, one Cat 980M loader and one Cat CS563C smooth drum roller.

SUMMARY OF DEWATERING AND TREATMENT

Ryan continued dewatering Pond A using two 6-inch pumps with the water being discharged into the south perimeter ditch.

SUMMARY OF CONSTRUCTION ACTIVITY

Ryan abandoned the 24-inch PE pipe in the northwest corner of Pond A using flowable fill. Fill was placed into the pipe by two concrete trucks. A D4K dozer was used to maintain the stockpiles at Pond A.

SUMMARY OF CCR FILL AND GRADING

NA

SUMMARY OF FINAL COVER SYSTEM

NA

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Ryan said they would continue dewatering Pond A and abandon a 24-inch PE pipe.

Submitted by: David Hutchinson**Reviewed by:** Mark Bergeon

Daily Photographic Overview

Description

Photo

Photo 1:

Direction: SE

Location: Backfilling of the 24-inch PE pipe with flowable fill.





Photo 2:

Direction: NE

Location: Pond A



Daily Photographic Overview	
Description	Photo
Photo 3:	
Direction: S	
Location: Pond A	
Photo 4:	
Direction: N	
Location: Water level indicator in Pond A.	

SUBMITTED BY GAI

**GOLDER**

GOLDER ASSOCIATES, INC.
Daily Summary Report
Date: 7.7.2018

SURFACE IMPOUNDMENT: POND A

PROJECT NUMBER: 1896102	PROJECT TITLE: CEC JHC Pond Closures
SITE: CEC JHC	CONTRACTOR: Ryan Central
LOCATION: West Olive, MI	CONTRACTOR REP Rob Koski

WEATHER:	Temperature: Low: 61 High: 89	Approx. Precipitation: none
	Cloud Cover: sunny, 4-8 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson**GAI Arrival/Departure:** 0630/1500**ADDITIONAL PERSONNEL ON SITE:** Ryan crew; 1 superintendent, 2-operator/labor**Arrival/Departure:** Ryan 0630/1430**HEALTH AND SAFETY ITEMS / ISSUES**

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

Three Volvo A40G haul trucks, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, one Cat D4K dozer w/GPS, one Cat D6T dozer, one Cat 289D skid steer, one Cat 326F excavator, one Cat 980M loader and one Cat CS563C smooth drum roller.

SUMMARY OF DEWATERING AND TREATMENT

Ryan continued dewatering of Pond A using one 6-inch pump with the water being discharged into the South Perimeter Ditch.

SUMMARY OF CONSTRUCTION ACTIVITY

Ryan abandoned the three piezometers south of Pond A using 3/8-inch bentonite pellets to backfill the two-inch PVC pipes. Ryan then excavated around each pipe by hand to a minimum of two feet, removed casings, and cutoff pipe two feet below grade. Ryan made repairs to the haul roads using a Cat D6T dozer and water truck.

SUMMARY OF CCR FILL AND GRADING

NA

SUMMARY OF FINAL COVER SYSTEM

NA

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Ryan said they would continue dewatering pond 'A' and abandon 3 piezometers at pond A.

Submitted by: David Hutchinson**Reviewed by:** Mark Bergeon

Daily Photographic Overview

Description

Photo

Photo 1:

Direction: SW

Location: Pond A - Piezometer A-2




Photo 2:

Direction: NW

Location: Pond A - Piezometer A-1



Daily Photographic Overview	
Description	Photo
Photo 3:	
Direction: NA	
Location: Pond A - Piezometer A-C	

SUBMITTTED BY GAI

**GOLDER**

GOLDER ASSOCIATES, INC.
Daily Summary Report
Date: 7.9.2018

SURFACE IMPOUNDMENT: POND A

PROJECT NUMBER: 1896102	PROJECT TITLE: CEC JHC Pond Closures
SITE: CEC JHC	CONTRACTOR: Ryan Central
LOCATION: West Olive, MI	CONTRACTOR REP Rob Koski

WEATHER:	Temperature: Low: 63 High: 91	Approx. Precipitation: none
	Cloud Cover: sunny, 4-10 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson**GAI Arrival/Departure:** 0630/1830**ADDITIONAL PERSONNEL ON SITE:** Ryan crew; 1 superintendent, 8-operator**Arrival/Departure:** Ryan 0630/1800**HEALTH AND SAFETY ITEMS / ISSUES**

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

Three Volvo A40G haul trucks, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, one Cat D4K dozer w/GPS, one Cat D6T dozer, one Cat 289D skid steer, one Cat 326F excavator, one Cat 980M loader and one Cat CS563C smooth drum roller.

SUMMARY OF DEWATERING AND TREATMENT

Ryan continued dewatering Pond A using one 6-inch pump with the water being discharged into the south perimeter ditch.

SUMMARY OF CONSTRUCTION ACTIVITY

Ryan used a D6T dozer to maintain stockpiles and haul roads while hauling from Ponds 1-2. Ryan received 46 rolls of 10 oz. geotextile for Pond A. Rolls were delivered by semi-truck with flatbed and offloaded using a Cat 289D skid steer. Rolls were placed in staging area east of Pond A. Golder completed inventory of rolls during offloading operations.

SUMMARY OF CCR FILL AND GRADING

NA

SUMMARY OF FINAL COVER SYSTEM



NA

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Ryan said they would continue dewatering Pond A.

Submitted by: David Hutchinson**Reviewed by:** Mark Bergeon

Daily Photographic Overview

Description	Photo
Photo 1:	
Direction:	
Location: Pond A	
Photo 2:	
Direction:	
Location: Pond A	

SUBMITTED BY GAI

**GOLDER**

GOLDER ASSOCIATES, INC.
Daily Summary Report
Date: 7.10.2018

SURFACE IMPOUNDMENT: POND A

PROJECT NUMBER: 1896102	PROJECT TITLE: CEC JHC Pond Closures
SITE: CEC JHC	CONTRACTOR: Ryan Central
LOCATION: West Olive, MI	CONTRACTOR REP Rob Koski

WEATHER:	Temperature: Low: 73 High: 85	Approx. Precipitation: none
	Cloud Cover: sunny, 2-9 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson**GAI Arrival/Departure:** 0630/1830**ADDITIONAL PERSONNEL ON SITE:** Ryan crew; 1 superintendent, 8-operator**Arrival/Departure:** Ryan 0630/1800**HEALTH AND SAFETY ITEMS / ISSUES**

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

Three Volvo A40G haul trucks, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, one Cat D4K dozer w/GPS, one Cat D6T dozer, one Cat 289D skid steer, one Cat 326F excavator, one Cat 980M loader and one Cat CS563C smooth drum roller.

SUMMARY OF DEWATERING AND TREATMENT

NA

SUMMARY OF CONSTRUCTION ACTIVITY

Ryan sealed the overflow pipe from Pond A to the South Perimeter Ditch at the outfall using brick and concrete. Brick was placed two feet deep with concrete inside the overflow pipe at the outfall to seal for backfilling of the pipe with grout/flowable fill. Ryan used a D6T dozer to maintain stockpiles and haul roads while hauling from Ponds 1-2.

SUMMARY OF CCR FILL AND GRADING

NA

SUMMARY OF FINAL COVER SYSTEM

NA

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Ryan said they would brick the overflow pipe from Pond A at the outfall today and would resume dewatering of pond tomorrow. Attended weekly progress meeting with C.E.C., Ryan and Golder representatives.

Submitted by: David Hutchinson**Reviewed by:** Mark Bergeon

Daily Photographic Overview

Description

Photo

Photo 1:

Direction: E

Location: Pond A - Overflow pipe
outfall in South Perimeter Ditch



Photo 2:

Direction: NA

Location: Pond A - Outfall from
Pond A overflow pipe.



Daily Photographic Overview	
Description	Photo
Photo 3:	
Direction: NW	
Location: Pond A	

SUBMITTED BY GAI



GOLDER ASSOCIATES, INC.
Daily Summary Report
Date: 7.11.2018

SURFACE IMPOUNDMENT: POND A

PROJECT NUMBER: 1896102	PROJECT TITLE: CEC JHC Pond Closures
SITE: CEC JHC	CONTRACTOR: Ryan Central
LOCATION: West Olive, MI	CONTRACTOR REF Rob Koski

WEATHER:	Temperature: Low: 64 High: 82	Approx. Precipitation: none
	Cloud Cover: sunny, 0-5 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson

GAI Arrival/Departure: 0630/1830

ADDITIONAL PERSONNEL ON SITE: Ryan crew; 1 superintendent, 8-operator

Arrival/Departure: Ryan 0630/1800

HEALTH AND SAFETY ITEMS / ISSUES

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

Three Volvo A40G haul trucks, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, one Cat D4K dozer w/GPS, one Cat D6T dozer, one Cat 289D skid steer, one Cat 326F excavator, one Cat 980M loader and one Cat CS563C smooth drum roller.

SUMMARY OF DEWATERING AND TREATMENT

Ryan continued dewatering Pond A with a six-inch pump with the water being discharged into the South Perimeter Ditch.

SUMMARY OF CONSTRUCTION ACTIVITY

Ryan used one Cat D6T dozer to maintain stockpile and haul roads around Pond A. A Cat water truck was used for dust control on haul roads and stockpiles during operations.

SUMMARY OF CCR FILL AND GRADING

NA

SUMMARY OF FINAL COVER SYSTEM

NA



SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Ryan said they would continue dewatering Pond A.

Submitted by: David Hutchinson

Reviewed by: Mark Bergeon

Daily Photographic Overview

Description	Photo
Photo 1:	
Direction: N	
Location: Pond A	
Photo 2:	
Direction: W	
Location: Pond A	

SUBMITTED BY GAI

**GOLDER**

GOLDER ASSOCIATES, INC.
Daily Summary Report
Date: 7.12.2018

SURFACE IMPOUNDMENT: POND A

PROJECT NUMBER: 1896102	PROJECT TITLE: CEC JHC Pond Closures
SITE: CEC JHC	CONTRACTOR: Ryan Central
LOCATION: West Olive, MI	CONTRACTOR REP Rob Koski

WEATHER:	Temperature: Low: 64 High: 85	Approx. Precipitation: none
	Cloud Cover: mostly sunny, 3-9 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson**GAI Arrival/Departure:** 0630/1830**ADDITIONAL PERSONNEL ON SITE:** Ryan crew; 1 superintendent, 8-operator**Arrival/Departure:** Ryan 0630/1800**HEALTH AND SAFETY ITEMS / ISSUES**

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

Three Volvo A40G haul trucks, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, one Cat D4K dozer w/GPS, one Cat D6T dozer, one Cat 289D skid steer, one Cat 326F excavator, one Cat 980M loader and one Cat CS563C smooth drum roller.

SUMMARY OF DEWATERING AND TREATMENT

Ryan continued dewatering Pond A with a six-inch pump with the water being discharged into the South Perimeter Ditch.

SUMMARY OF CONSTRUCTION ACTIVITY

Ryan used one Cat D6T dozer to maintain stockpile and haul roads around Pond A. Cat water truck was used for dust control on haul roads and stockpile during operations. Ryan installed an additional check dam in the South Perimeter Ditch downstream from the discharge of the pipe being used to dewater Pond A; check dam was constructed using straw bales.

SUMMARY OF CCR FILL AND GRADING

NA

SUMMARY OF FINAL COVER SYSTEM

NA

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Ryan said they would continue dewatering of Pond A.

Submitted by: David Hutchinson**Reviewed by:** Mark Bergeon

Daily Photographic Overview

Description

Photo

Photo 1:

Direction: N

Location: Pond A



Photo 2:

Direction: W

Location: Pond A



SUBMITTED BY GAI

**GOLDER**

GOLDER ASSOCIATES, INC.
Daily Summary Report
Date: 7.13.2018

SURFACE IMPOUNDMENT: POND A

PROJECT NUMBER: 1896102	PROJECT TITLE: CEC JHC Pond Closures
SITE: CEC JHC	CONTRACTOR: Ryan Central
LOCATION: West Olive, MI	CONTRACTOR REP Rob Koski

WEATHER:	Temperature: Low: 73 High: 85	Approx. Precipitation: none
	Cloud Cover: sunny, 0-5 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson**GAI Arrival/Departure:** 0630/1830**ADDITIONAL PERSONNEL ON SITE:** Ryan crew; 1 superintendent, 7-operator**Arrival/Departure:** Ryan 0630/1800**HEALTH AND SAFETY ITEMS / ISSUES**

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

Three Volvo A40G haul trucks, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, one Cat D4K dozer w/GPS, one Cat D6T dozer, one Cat 289D skid steer, one Cat 326F excavator, one Cat 980M loader and one Cat CS563C smooth drum roller.

SUMMARY OF DEWATERING AND TREATMENT

Ryan continued dewatering Pond A with a six-inch pump with the water being discharged into the south perimeter ditch.

SUMMARY OF CONSTRUCTION ACTIVITY

Ryan used one Cat D6T dozer to maintain stockpile and haul roads around Pond A. A Cat water truck was used for dust control on haul roads and stockpile during operations. Ryan backfilled the 24-inch overflow pipe from the north side of the perimeter haul road to the bricked outfall above the South Perimeter Ditch. Concrete flowable fill was used to backfill pipe by pouring into the north end of the pipe.

SUMMARY OF CCR FILL AND GRADING

NA

SUMMARY OF FINAL COVER SYSTEM

NA

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Ryan said they would continue dewatering Pond A and prepare the 24-inch overflow pipe for backfill with grout.

Submitted by: David Hutchinson**Reviewed by:** Mark Bergeon

**GOLDER**

GOLDER ASSOCIATES, INC.
Daily Summary Report
Date: 7.14.2018

SURFACE IMPOUNDMENT: POND A

PROJECT NUMBER: 1896102	PROJECT TITLE: CEC JHC Pond Closures
SITE: CEC JHC	CONTRACTOR: Ryan Central
LOCATION: West Olive, MI	CONTRACTOR REP Rob Koski

WEATHER:	Temperature: Low: 70 High: 86	Approx. Precipitation: none
	Cloud Cover: sunny, 0-6 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson**GAI Arrival/Departure:** 0630/1500**ADDITIONAL PERSONNEL ON SITE:** Ryan crew; 1 superintendent, 3-operator**Arrival/Departure:** Ryan 0630/1430**HEALTH AND SAFETY ITEMS / ISSUES**

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

Three Volvo A40G haul trucks, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, one Cat D4K dozer w/GPS, one Cat D6T dozer, one Cat 289D skid steer, one Cat 326F excavator, one Cat 980M loader and one Cat CS563C smooth drum roller.

SUMMARY OF DEWATERING AND TREATMENT

Ryan continued dewatering of Pond A with a three-inch pump, water from the pond was discharged into the South Perimeter Ditch. Ryan excavated a sump down to clean sand in the southeast corner of Pond A using a Cat 326F excavator to allow remaining water to drain.

SUMMARY OF CONSTRUCTION ACTIVITY

Ryan removed the six-inch pump from the southeast corner of the pond and installed a three inch pump for dewatering. Ryan removed the 24-inch overflow intake and remaining pipe not backfilled with flow fill using a Cat 326F excavator.

SUMMARY OF CCR FILL AND GRADING

NA

SUMMARY OF FINAL COVER SYSTEM

NA

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Ryan said they would continue dewatering of Pond A, remove the 24-inch intake along with stairs and platforms. No photos for today's activities, memory card went bad and could not download from card.

Submitted by: David Hutchinson**Reviewed by:** Mark Bergeon

**GOLDER**

GOLDER ASSOCIATES, INC.
Daily Summary Report
Date: 7.16.2018

SURFACE IMPOUNDMENT: POND A

PROJECT NUMBER: 1896102	PROJECT TITLE: CEC JHC Pond Closures
SITE: CEC JHC	CONTRACTOR: Ryan Central
LOCATION: West Olive, MI	CONTRACTOR REF Rob Koski

WEATHER:	Temperature: Low: 71 High: 87	Approx. Precipitation: none
	Cloud Cover: partly sunny, 1-9 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson**GAI Arrival/Departure:** 0630/1500**ADDITIONAL PERSONNEL ON SITE:** Ryan crew; 1 superintendent, 8-operator**Arrival/Departure:** Ryan 0630/1430**HEALTH AND SAFETY ITEMS / ISSUES**

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

Three Volvo A40G haul trucks, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, one Cat D4K dozer w/GPS, one Cat D6T dozer, one Cat 289D skid steer, one Cat 326F excavator, one Cat 980M loader and one Cat CS563C smooth drum roller.

SUMMARY OF DEWATERING AND TREATMENT

Ryan continued dewatering of Pond A with a three-inch pump for about three hours then removed pump from the pond, water from pond was discharged into the South Perimeter Ditch. Ryan cleaned out the sump excavated on Saturday, 7.14.18, down to clean sand using a Cat 326F excavator to allow remaining water to drain.

SUMMARY OF CONSTRUCTION ACTIVITY

Ryan completed backfill of the 24-inch overflow pipe from the north side of the South Perimeter Haul Road to the bricked end of the outfall above the South Perimeter Ditch using flow fill poured directly from concrete truck into the overflow pipe. Cat D6T dozer maintained the stockpiles and haul roads around the pond.

SUMMARY OF CCR FILL AND GRADING

NA

SUMMARY OF FINAL COVER SYSTEM

NA

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Ryan said they would continue dewatering of Pond A and backfill of 24-inch overflow pipe.

Submitted by: David Hutchinson
Reviewed by: Mark Bergeon

Daily Photographic Overview

Description	Photo
Photo 1:	 <p>This aerial photograph shows a large, shallow pond or excavation site. A worker in a white hard hat and orange safety vest is visible near the center of the site. A blue hose or pipe runs across the ground. The date stamp '2018/07/16' is visible in the bottom right corner.</p>
Direction: N	
Location: Pond A - dewatering with 3-inch pump	
Photo 2:	 <p>This close-up photograph shows a red pipe being backfilled with sand. A worker in a white hard hat and orange safety vest is standing next to the pipe, which is partially buried in the sand. The date stamp '2018/07/16' is visible in the bottom right corner.</p>
Direction: N	
Location: Pond A - backfill of overflow pipe	

Daily Photographic Overview	
Description	Photo
Photo 3:	
Direction: NW	
Location: Pond A	

SUBMITTED BY GAI

**GOLDER**

GOLDER ASSOCIATES, INC.
Daily Summary Report
Date: 7.19.2018

SURFACE IMPOUNDMENT: POND A

PROJECT NUMBER: 1896102	PROJECT TITLE: CEC JHC Pond Closures
SITE: CEC JHC	CONTRACTOR: Ryan Central
LOCATION: West Olive, MI	CONTRACTOR REF: Rob Koski

WEATHER:	Temperature: Low: 65 High: 86	Approx. Precipitation: none
	Cloud Cover: partly cloudy, 2-5 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson**GAI Arrival/Departure:** 0630/1500**ADDITIONAL PERSONNEL ON SITE:** Ryan crew; 1 superintendent, 8-operator**Arrival/Departure:** Ryan 0630/1430**HEALTH AND SAFETY ITEMS / ISSUES**

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

Three Volvo A40G haul trucks, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, one Cat D4K dozer w/GPS, one Cat D6T dozer, one Cat 289D skid steer, one Cat 326F excavator, one Cat 980M loader, one Cat CS563C smooth drum roller and one Cat TL1255D forklift.

SUMMARY OF DEWATERING AND TREATMENT

NA

SUMMARY OF CONSTRUCTION ACTIVITY

Ryan placed bottom ash into Pond A from stockpiles along the top of slopes using a Cat D6T dozer. D6T began building an access ramp to the pond floor in the southeast corner of Pond A. Cat water truck used for dust control on haul roads and stockpiles.

SUMMARY OF CCR FILL AND GRADING

NA

SUMMARY OF FINAL COVER SYSTEM

NA

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Ryan said they would continue placing bottom ash from stockpiles in Pond A.

Submitted by: David Hutchinson**Reviewed by:** Mark Bergeon

Daily Photographic Overview

Description

Photo

Photo 1:

Direction: NW

Location: Pond A




Photo 2:

Direction: NW

Location: Pond A



Daily Photographic Overview	
Description	Photo
Photo 3:	
Direction: NW	
Location: Pond A	

SUBMITTED BY GAI



GOLDER ASSOCIATES, INC.
Daily Summary Report
Date: 7.20.2018

SURFACE IMPOUNDMENT: POND A

PROJECT NUMBER: 1896102	PROJECT TITLE: CEC JHC Pond Closures
SITE: CEC JHC	CONTRACTOR: Ryan Central
LOCATION: West Olive, MI	CONTRACTOR REF Rob Koski

WEATHER:	Temperature: Low: 64 High: 81	Approx. Precipitation: none
	Cloud Cover: mostly cloudy, 4-15 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson

GAI Arrival/Departure: 0630/1830

ADDITIONAL PERSONNEL ON SITE: Ryan crew; 1 superintendent, 9-operator

Arrival/Departure: Ryan 0630/1800

HEALTH AND SAFETY ITEMS / ISSUES

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

Three Volvo A40G haul trucks, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, one Cat D4K dozer w/GPS, one Cat D6T dozer, one Cat 289D skid steer, one Cat 326F excavator, one Cat 980M loader, one Cat CS563C smooth drum roller and one Cat TL1255D forklift.

SUMMARY OF DEWATERING AND TREATMENT

NA

SUMMARY OF CONSTRUCTION ACTIVITY

Ryan placed bottom ash into Pond A from the stockpiles located atop of the slopes using two Cat D6T dozers. The two D6T dozers began building access ramps down to the pond floor in the southeast and northwest corners of Pond A. The two D6T dozers began construction of a haul road across the floor of the pond connecting the two access ramps. A John Deere tractor with box blade was used to maintain haul roads and a Cat water truck was used for dust control on haul roads and stockpiles.

SUMMARY OF CCR FILL AND GRADING

NA

SUMMARY OF FINAL COVER SYSTEM

NA

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Ryan said they would construct access ramps into Pond A using bottom ash from stockpiles around the pond.

Submitted by: David Hutchinson

Reviewed by: Mark Bergeon

Daily Photographic Overview

Description

Photo

Photo 1:

Direction: NW

Location: Pond A




Photo 2:

Direction: NW

Location: Pond A



Daily Photographic Overview	
Description	Photo
Photo 3:	
Direction: NE	
Location: Pond A	

SUBMITTTED BY GAI

**GOLDER**

GOLDER ASSOCIATES, INC.
Daily Summary Report
Date: 7.23.2018

SURFACE IMPOUNDMENT: POND A

PROJECT NUMBER: 1896102	PROJECT TITLE: CEC JHC Pond Closures
SITE: CEC JHC	CONTRACTOR: Ryan Central
LOCATION: West Olive, MI	CONTRACTOR REP Rob Koski

WEATHER:	Temperature: Low: 66 High: 70	Approx. Precipitation: none
	Cloud Cover: mostly cloudy, 0-6 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson**GAI Arrival/Departure:** 0630/1830**ADDITIONAL PERSONNEL ON SITE:** Ryan crew; 1 superintendent, 10-operator**Arrival/Departure:** Ryan 0630/1800**HEALTH AND SAFETY ITEMS / ISSUES**

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

Three Volvo A40G haul trucks, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, one Cat D4K dozer w/GPS, one Cat D6T dozer, one Cat 289D skid steer, one Cat 326F excavator, one Cat 980M loader, one Cat CS563C smooth drum roller and one Cat TL1255D forklift.

SUMMARY OF DEWATERING AND TREATMENT

NA

SUMMARY OF CONSTRUCTION ACTIVITY

Ryan used a Cat 988M front loader to load bottom ash from the stockpile south of the BA Storage Pad into four Volvo haul trucks for stockpiling at Pond A. Ryan pushed the stockpiled material into Pond A using a Cat D6T dozer.

SUMMARY OF CCR FILL AND GRADING

NA

SUMMARY OF FINAL COVER SYSTEM

NA

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Ryan said they would continue placing material from the Pond 3S Stockpile into Pond A.

Submitted by: David Hutchinson**Reviewed by:** Mark Bergeon

Daily Photographic Overview

Description	Photo
Photo 1:	
Direction: N	
Location: Pond A	
Photo 2:	
Direction: N	
Location: Pond A	

SUBMITTED BY GAI

**GOLDER**

GOLDER ASSOCIATES, INC.
Daily Summary Report
Date: 7.31.2018

SURFACE IMPOUNDMENT: POND A

PROJECT NUMBER: 1896102	PROJECT TITLE: CEC JHC Pond Closures
SITE: CEC JHC	CONTRACTOR: Ryan Central
LOCATION: West Olive, MI	CONTRACTOR REF Rob Koski

WEATHER:	Temperature: Low: 59 High: 81	Approx. Precipitation: none
	Cloud Cover: mostly sunny, 1-9 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson**GAI Arrival/Departure:** 0630/1900**ADDITIONAL PERSONNEL ON SITE:** Ryan crew; 2 superintendent, 8 operator**Arrival/Departure:** Ryan 0630/1830**HEALTH AND SAFETY ITEMS / ISSUES**

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

Three Volvo A40G haul trucks, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, one Cat D4K dozer w/GPS, one Cat D6T dozer, one Cat 289D skid steer, one Cat 326F excavator, one Cat 980M loader, one Cat CS563C smooth drum roller and one Cat TL1255D forklift.

SUMMARY OF DEWATERING AND TREATMENT

NA

SUMMARY OF CONSTRUCTION ACTIVITY

Ryan used a Cat D6T to push material hauled from the excavation of Ponds 1-2 and stockpiled around the top edges of Pond A into Pond A. A Cat water truck was used for dust control and a John Deere tractor with towed box blade was used to maintain haul roads between Ponds 1-2 and Pond A.

SUMMARY OF CCR FILL AND GRADING

NA

SUMMARY OF FINAL COVER SYSTEM

NA

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Ryan said they would continue placing material from Pond 1-2 stockpiles into Pond A.

Submitted by: David Hutchinson**Reviewed by:** Mark Bergeon

Daily Photographic Overview

Description

Photo

Photo 1:

Direction: W

Location: Pond A



Photo 2:

Direction: W

Location: Pond A



SUBMITTED BY GAI

**GOLDER**

GOLDER ASSOCIATES, INC.
Daily Summary Report
Date: 8.2.2018

SURFACE IMPOUNDMENT: POND A

PROJECT NUMBER: 1896102	PROJECT TITLE: CEC JHC Pond Closures
SITE: CEC JHC	CONTRACTOR: Ryan Central
LOCATION: West Olive, MI	CONTRACTOR REF Rob Koski

WEATHER:	Temperature: Low: 70 High: 81	Approx. Precipitation: none
	Cloud Cover: partly sunny, 2-13 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson**GAI Arrival/Departure:** 0630/1900**ADDITIONAL PERSONNEL ON SITE:** Ryan crew; 2 superintendent, 8 operator**Arrival/Departure:** Ryan 0630/1830**HEALTH AND SAFETY ITEMS / ISSUES**

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

Three Volvo A40G haul trucks, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, one Cat D4K dozer w/GPS, one Cat D6T dozer, one Cat D8 dozer, one Cat 289D skid steer, one Cat 326F excavator, one Cat 980M loader, one Cat CS563C smooth drum roller and one Cat TL1255D forklift.

SUMMARY OF DEWATERING AND TREATMENT

NA

SUMMARY OF CONSTRUCTION ACTIVITY

Ryan used a Cat D6T to push material hauled from the excavation of Ponds 1-2 and stockpiled around the top edges of Pond A into Pond A. A Cat D6T dozer was used to place a 2-foot to 3-foot thick bridging lift across floor of the pond. A Cat water truck was used for dust control and a John Deere tractor with towed box blade was used to maintain haul roads between Ponds 1-2 and Pond A. Ryan mobilized one Cat D8 dozer to site.

SUMMARY OF CCR FILL AND GRADING

NA

SUMMARY OF FINAL COVER SYSTEM

NA

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Ryan said they would continue placing material from Ponds 1-2 into Pond A.

Submitted by: David Hutchinson**Reviewed by:** Mark Bergeon

Daily Photographic Overview

Description

Photo

Photo 1:

Direction: W

Location: Pond A




Photo 2:

Direction: N

Location: Pond A



Daily Photographic Overview	
Description	Photo
Photo 3:	
Direction: W	
Location: Pond A	

SUBMITTED BY GAI

**GOLDER**

GOLDER ASSOCIATES, INC.
Daily Summary Report
Date: 8.3.2018

SURFACE IMPOUNDMENT: POND A

PROJECT NUMBER: 1896102	PROJECT TITLE: CEC JHC Pond Closures
SITE: CEC JHC	CONTRACTOR: Ryan Central
LOCATION: West Olive, MI	CONTRACTOR REF Rob Koski

WEATHER:	Temperature: Low: 62 High: 80	Approx. Precipitation: none
	Cloud Cover: mostly sunny, 2-03 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson**GAI Arrival/Departure:** 0630/1900**ADDITIONAL PERSONNEL ON SITE:** Ryan crew; 2 superintendent, 7 operator**Arrival/Departure:** Ryan 0630/1830**HEALTH AND SAFETY ITEMS / ISSUES**

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

Three Volvo A40G haul trucks, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, one Cat D4K dozer w/GPS, one Cat D6T dozer, one Cat D8 dozer, one Cat 289D skid steer, one Cat 326F excavator, one Cat 980M loader, one Cat CS563C smooth drum roller and one Cat TL1255D forklift.

SUMMARY OF DEWATERING AND TREATMENT

NA

SUMMARY OF CONSTRUCTION ACTIVITY

Ryan used a Cat D6T to push material hauled from the excavation of Ponds 1-2 and stockpiled around the top edges of Pond A into Pond A. A Cat D6T dozer continued placing a 2-foot to 3-foot thick bridging lift across floor of the pond. A Cat water truck was used for dust control and a John Deere tractor with towed box blade was used to maintain haul roads between Ponds 1-2 and Pond A.

SUMMARY OF CCR FILL AND GRADING

NA

SUMMARY OF FINAL COVER SYSTEM

NA

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Ryan said they would continue placing material from Ponds 1-2 into Pond A.

Submitted by: David Hutchinson**Reviewed by:** Mark Bergeon

Daily Photographic Overview

Description

Photo

Photo 1:

Direction: NW

Location: Pond A




Photo 2:

Direction: N

Location: Pond A



Daily Photographic Overview	
Description	Photo
Photo 3:	
Direction: N	
Location: Pond A	

SUBMITTED BY GAI



GOLDER ASSOCIATES, INC.
Daily Summary Report
Date: 8.4.2018

SURFACE IMPOUNDMENT: POND A

PROJECT NUMBER: 1896102	PROJECT TITLE: CEC JHC Pond Closures
SITE: CEC JHC	CONTRACTOR: Ryan Central
LOCATION: West Olive, MI	CONTRACTOR REP Rob Koski

WEATHER:	Temperature: Low: 71 High: 91	Approx. Precipitation: none
	Cloud Cover: sunny, 1-5 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson

GAI Arrival/Departure: 0630/1900

ADDITIONAL PERSONNEL ON SITE: Ryan crew; 2 superintendent, 3 operator

Arrival/Departure: Ryan 0630/1830

HEALTH AND SAFETY ITEMS / ISSUES

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

Three Volvo A40G haul trucks, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, one Cat D4K dozer w/GPS, one Cat D6T dozer, one Cat D8 dozer, one Cat 289D skid steer, one Cat 326F excavator, one Cat 980M loader, one Cat CS563C smooth drum roller and one Cat TL1255D forklift.

SUMMARY OF DEWATERING AND TREATMENT

NA

SUMMARY OF CONSTRUCTION ACTIVITY

Ryan used a Cat D8 dozer to push material into Pond A hauled from the excavation of Ponds 1-2 and stockpiled around the top edges of Pond A. A Cat D6T dozer completed placement of a 2-foot to 3-foot thick bridging layer across the floor of the pond. Ryan used a Cat D8 and a D6T to begin placing 14-inch to 18-inch lifts over the bridging layer. A John Deere tractor with towed roller was used to compact each lift. Golder visually verified compaction of each lift by proof roll with the John Deere tractor looking for excessive rutting or pumping prior to next lift being placed. Cat water truck was used for dust control.

SUMMARY OF CCR FILL AND GRADING

NA

SUMMARY OF FINAL COVER SYSTEM

NA

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Ryan said they would continue backfilling Pond A using material from Ponds 1-2 stockpile.

Submitted by: David Hutchinson

Reviewed by: Mark Bergeon

Daily Photographic Overview

Description

Photo

Photo 1:

Direction: NW

Location: Pond A



Photo 2:

Direction: NW

Location: Pond A



SUBMITTTED BY GAI

**GOLDER**

GOLDER ASSOCIATES, INC.
Daily Summary Report
Date: 8.8.2018

SURFACE IMPOUNDMENT: POND A

PROJECT NUMBER: 1896102	PROJECT TITLE: CEC JHC Pond Closures
SITE: CEC JHC	CONTRACTOR: Ryan Central
LOCATION: West Olive, MI	CONTRACTOR REF: Rob Koski

WEATHER:	Temperature: Low: 69 High: 82	Approx. Precipitation: none
	Cloud Cover: mostly sunny, 2-8 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson**GAI Arrival/Departure:** 0630/1900**ADDITIONAL PERSONNEL ON SITE:** Ryan crew; 2 superintendent, 6 operator**Arrival/Departure:** Ryan 0630/1830**HEALTH AND SAFETY ITEMS / ISSUES**

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

Three Volvo A40G haul trucks, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, one Cat D4K dozer w/GPS, one Cat D6T dozer, one Cat D8 dozer, one Cat 289D skid steer, one Cat 326F excavator, one Cat 980M loader, one Cat CS563C smooth drum roller and one Cat TL1255D forklift.

SUMMARY OF DEWATERING AND TREATMENT

NA

SUMMARY OF CONSTRUCTION ACTIVITY

Ryan used a Cat D8 dozer to place 14-inch to 16-inch lifts across the floor of Pond A using material hauled from the excavation of Ponds 1-2. A John Deere tractor with towed roller was used to compact each lift prior to placement of additional lifts. Golder visually verified compaction of each lift by proof rolling with the John Deere tractor looking for excessive rutting or pumping prior to next lift being placed. A Cat water truck was used for dust control.

SUMMARY OF CCR FILL AND GRADING

NA

SUMMARY OF FINAL COVER SYSTEM

NA

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Ryan said they would continue backfilling Pond A using material from Ponds 1-2 stockpile.

Submitted by: David Hutchinson**Reviewed by:** Mark Bergeon

Daily Photographic Overview

Description	Photo
Photo 1:	
Direction: N	
Location: Pond A	
Photo 2:	
Direction: NW	
Location: Pond A	

SUBMITTTED BY GAI

**GOLDER**

GOLDER ASSOCIATES, INC.
Daily Summary Report
Date: 8.9.2018

SURFACE IMPOUNDMENT: POND A

PROJECT NUMBER: 1896102	PROJECT TITLE: CEC JHC Pond Closures
SITE: CEC JHC	CONTRACTOR: Ryan Central
LOCATION: West Olive, MI	CONTRACTOR REF Rob Koski

WEATHER:	Temperature: Low: 70 High: 80	Approx. Precipitation: none
	Cloud Cover: mostly cloudy, 1-10 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson**GAI Arrival/Departure:** 0630/1900**ADDITIONAL PERSONNEL ON SITE:** Ryan crew; 2 superintendent, 8 operator**Arrival/Departure:** Ryan 0630/1830**HEALTH AND SAFETY ITEMS / ISSUES**

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

Three Volvo A40G haul trucks, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, one Cat D4K dozer w/GPS, one Cat D6T dozer, one Cat D8 dozer, one Cat 824C wheeled dozer, one Cat 289D skid steer, one Cat 326F excavator, one Cat 980M loader, one Cat CS563C smooth drum roller and one Cat TL1255D forklift.

SUMMARY OF DEWATERING AND TREATMENT

NA

SUMMARY OF CONSTRUCTION ACTIVITY

Ryan used a Cat D8 dozer and 824C wheeled dozer to place 14-inch to 16-inch lifts across the floor of Pond A using material hauled from the excavation of Ponds 1-2. A John Deere tractor with towed roller was used to compact each lift prior to placement of additional lifts. Golder visually verified compaction of each lift by proof rolling with the John Deere tractor looking for excessive rutting or pumping prior to next lift being placed. A Cat water truck was used for dust control. Ryan mobilized one Cat 824C wheeled dozer to site.

SUMMARY OF CCR FILL AND GRADING

NA

SUMMARY OF FINAL COVER SYSTEM**SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS**

Ryan said they would continue backfilling Pond A using material from Ponds 1-2 stockpile.

Submitted by: David Hutchinson**Reviewed by:** Mark Bergeon

Daily Photographic Overview

Description

Photo

Photo 1:

Direction: N

Location: Pond A



Photo 2:

Direction: N

Location: Pond A



Daily Photographic Overview

Description

Photo

Photo 3:

Direction: NW

Location: Pond A



Photo 4:

Direction: W

Location: Pond A



SUBMITTED BY GAI



GOLDER ASSOCIATES, INC.
Daily Summary Report
Date: 8.10.2018

SURFACE IMPOUNDMENT: POND A

PROJECT NUMBER: 1896102	PROJECT TITLE: CEC JHC Pond Closures
SITE: CEC JHC	CONTRACTOR: Ryan Central
LOCATION: West Olive, MI	CONTRACTOR REP Rob Koski

WEATHER:	Temperature: Low: 64 High: 80	Approx. Precipitation: none
	Cloud Cover: sunny, 2-11 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson

GAI Arrival/Departure: 0630/1900

ADDITIONAL PERSONNEL ON SITE: Ryan crew; 1 superintendent, 8 operator

Arrival/Departure: Ryan 0630/1830

HEALTH AND SAFETY ITEMS / ISSUES

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

Three Volvo A40G haul trucks, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, one Cat D4K dozer w/GPS, one Cat D6T dozer, one Cat D8 dozer, one Cat 824C wheeled dozer, one Cat 289D skid steer, one Cat 326F excavator, one Cat 980M loader, one Cat CS563C smooth drum roller and one Cat TL1255D forklift.

SUMMARY OF DEWATERING AND TREATMENT

NA

SUMMARY OF CONSTRUCTION ACTIVITY

Ryan used a Cat D8 dozer and 824C wheeled dozer to place 14 -16 inch lifts across floor of Pond A using material hauled from the excavation of Ponds 1-2. A John Deere tractor with towed roller was used to compact each lift prior to placement of additional lifts. Golder visually verified compaction of each lift by proof rolling with the John Deere tractor looking for excessive rutting or pumping prior to next lift being placed. Cat water truck was used for dust control.

SUMMARY OF CCR FILL AND GRADING

NA

SUMMARY OF FINAL COVER SYSTEM

NA

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Ryan said they would continue backfilling Pond A using material from Ponds 1-2 stockpile.

Submitted by: David Hutchinson

Reviewed by: Mark Bergeon

Daily Photographic Overview

Description

Photo

Photo 1:

Direction: NW

Location: Pond A



Photo 2:

Direction: W

Location: Pond A



Daily Photographic Overview

Description	Photo
Photo 3:	
Direction: W	
Location: Pond A	
Photo 4:	
Direction: W	
Location: Pond A	

SUBMITTED BY GAI

**GOLDER**

GOLDER ASSOCIATES, INC.
Daily Summary Report
Date: 8.13.2018

SURFACE IMPOUNDMENT: POND A

PROJECT NUMBER: 1896102	PROJECT TITLE: CEC JHC Pond Closures
SITE: CEC JHC	CONTRACTOR: Ryan Central
LOCATION: West Olive, MI	CONTRACTOR REF Rob Koski

WEATHER:	Temperature: Low: 62 High: 85	Approx. Precipitation: none
	Cloud Cover: sunny, 1-4 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson**GAI Arrival/Departure:** 0630/1900**ADDITIONAL PERSONNEL ON SITE:** Ryan crew; 1 superintendent, 8 operator**Arrival/Departure:** Ryan 0630/1830**HEALTH AND SAFETY ITEMS / ISSUES**

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

Three Volvo A40G haul trucks, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, one Cat D4K dozer w/GPS, one Cat D6T dozer, one Cat D8 dozer, one Cat 824C wheeled dozer, one Cat 289D skid steer, one Cat 326F excavator, one Cat 980M loader, one Cat CS563C smooth drum roller and one Cat TL1255D forklift.

SUMMARY OF DEWATERING AND TREATMENT

NA

SUMMARY OF CONSTRUCTION ACTIVITY

Ryan used a Cat D8 dozer and 824C wheeled dozer to place 14-inch to 16-inch lifts across the floor of Pond A using material hauled from the excavation of Ponds 1-2. A John Deere tractor with towed roller was used to compact each lift. Each lift was proof rolled with a John Deere tractor prior to the next lift being placed. Golder visually verified compaction of each lift by looking for excessive rutting or pumping during proof rolling. A Cat water truck was used for dust control.

SUMMARY OF CCR FILL AND GRADING

NA

SUMMARY OF FINAL COVER SYSTEM

NA

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Ryan said they would continue backfilling Pond A using stockpiled material from Ponds 1-2.

Submitted by: David Hutchinson**Reviewed by:** Mark Bergeon

Daily Photographic Overview

Description

Photo

Photo 1:

Direction: W

Location: Pond A



Photo 2:

Direction: NW

Location: Pond A



Daily Photographic Overview

Description	Photo
Photo 3:	
Direction: W	
Location: Pond A	
Photo 4:	
Direction: N	
Location: Pond A	

SUBMITTED BY GAI



GOLDER ASSOCIATES, INC.
Daily Summary Report
Date: 8.14.2018

SURFACE IMPOUNDMENT: POND A

PROJECT NUMBER: 1896102	PROJECT TITLE: CEC JHC Pond Closures
SITE: CEC JHC	CONTRACTOR: Ryan Central
LOCATION: West Olive, MI	CONTRACTOR REF: Rob Koski

WEATHER:	Temperature: Low: 65 High: 83	Approx. Precipitation: none
	Cloud Cover: sunny, 1-4 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson

GAI Arrival/Departure: 0630/1900

ADDITIONAL PERSONNEL ON SITE: Ryan crew; 2 superintendent, 8 operator

Arrival/Departure: Ryan 0630/1830

HEALTH AND SAFETY ITEMS / ISSUES

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

Four Volvo A40G haul trucks, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, one Cat D4K dozer w/GPS, two Cat D6T dozers w/GPS, one Cat D8 dozer, one Cat 824C wheeled dozer, one Cat 289D skid steer, one Cat 326F excavator, one Cat 980M loader, one Cat CS563C smooth drum roller and one Cat TL1255D forklift.

SUMMARY OF DEWATERING AND TREATMENT

NA

SUMMARY OF CONSTRUCTION ACTIVITY

Ryan used a Cat D8 dozer and 824C wheeled dozer to place 14-inch to 16-inch lifts across the floor of Pond A using material hauled from the excavation of Ponds 1-2. A John Deere tractor with towed roller was used to compact each lift. Each lift was proof rolled with a John Deere tractor prior to the next lift being placed. Golder visually verified compaction of each lift by looking for excessive rutting or pumping during proof rolling. A Cat water truck was used for dust control.

SUMMARY OF CCR FILL AND GRADING

NA

SUMMARY OF FINAL COVER SYSTEM

NA

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Ryan said they would continue backfilling Pond A using material hauled from Ponds 1-2. Weekly construction meeting with CEC, Ryan and Golder.

Submitted by: David Hutchinson

Reviewed by: Mark Bergeon

Daily Photographic Overview

Description

Photo

Photo 1:

Direction: NW

Location: Pond A




Photo 2:

Direction: N

Location: Pond A



Daily Photographic Overview	
Description	Photo
Photo 3:	
Direction: W	
Location: Pond A	

SUBMITTED BY GAI

**GOLDER**

GOLDER ASSOCIATES, INC.
Daily Summary Report
Date: 8.15.2018

SURFACE IMPOUNDMENT: POND A

PROJECT NUMBER: 1896102	PROJECT TITLE: CEC JHC Pond Closures
SITE: CEC JHC	CONTRACTOR: Ryan Central
LOCATION: West Olive, MI	CONTRACTOR REF Rob Koski

WEATHER:	Temperature: Low: 68 High: 92	Approx. Precipitation: none
	Cloud Cover: mostly cloudy, 0-3 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson**GAI Arrival/Departure:** 0630/1900**ADDITIONAL PERSONNEL ON SITE:** Ryan crew; 2 superintendent, 9 operator**Arrival/Departure:** Ryan 0630/1830**HEALTH AND SAFETY ITEMS / ISSUES**

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

Four Volvo A40G haul trucks, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, one Cat D4K dozer w/GPS, two Cat D6T dozers w/GPS, one Cat D8 dozer, one Cat 824C wheeled dozer, one Cat 289D skid steer, one Cat 326F excavator, one Cat 980M loader, one Cat CS563C smooth drum roller and one Cat TL1255D forklift.

SUMMARY OF DEWATERING AND TREATMENT

NA

SUMMARY OF CONSTRUCTION ACTIVITY

Ryan used a Cat D8 dozer and 824C wheeled dozer to place 14-inch to 16-inch lifts across the floor of Pond A using material hauled from the excavation of Ponds 1-2. A John Deere tractor with towed roller was used to compact each lift. Each lift was proof rolled with a John Deere tractor prior to the next lift being placed. Golder visually verified compaction of each lift by looking for excessive rutting or pumping during proof rolling. A Cat water truck was used for dust control.

SUMMARY OF CCR FILL AND GRADING

NA

SUMMARY OF FINAL COVER SYSTEM

NA

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Ryan said they would continue backfilling Pond A using material hauled from Ponds 1-2.

Submitted by: David Hutchinson**Reviewed by:** Mark Bergeon

Daily Photographic Overview

Description

Photo

Photo 1:

Direction: SW

Location: Pond A




Photo 2:

Direction: N

Location: Pond A



Daily Photographic Overview	
Description	Photo
Photo 3:	
Direction: W	
Location: Pond A	

SUBMITTTED BY GAI



GOLDER ASSOCIATES, INC.
Daily Summary Report
Date: 8.16.2018

SURFACE IMPOUNDMENT: POND A

PROJECT NUMBER: 1896102	PROJECT TITLE: CEC JHC Pond Closures
SITE: CEC JHC	CONTRACTOR: Ryan Central
LOCATION: West Olive, MI	CONTRACTOR REF: Rob Koski

WEATHER:	Temperature: Low: 69 High: 84	Approx. Precipitation: none
	Cloud Cover: sunny, 0-4 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson

GAI Arrival/Departure: 0630/1900

ADDITIONAL PERSONNEL ON SITE: Ryan crew; 2 superintendent, 9 operator

Arrival/Departure: Ryan 0630/1830

HEALTH AND SAFETY ITEMS / ISSUES

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

Four Volvo A40G haul trucks, one Volvo A56G haul truck, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, one Cat D4K dozer w/GPS, two Cat D6T dozers w/GPS, one Cat D8 dozer, one Cat 824C wheeled dozer, one Cat 289D skid steer, one Cat 326F excavator, one Cat 980M loader, one Cat CS563C smooth drum roller and one Cat TL1255D forklift.

SUMMARY OF DEWATERING AND TREATMENT

NA

SUMMARY OF CONSTRUCTION ACTIVITY

Ryan used a Cat D8 dozer and 824C wheeled dozer to place 14-inch to 16-inch lifts across the floor of Pond A using material hauled from the excavation of Ponds 1-2. A John Deere tractor with towed roller was used to compact each lift. Each lift was proof rolled with a John Deere tractor prior to the next lift being placed. Golder visually verified compaction of each lift by looking for excessive rutting or pumping during proof rolling. A Cat water truck was used for dust control.

SUMMARY OF CCR FILL AND GRADING

NA

SUMMARY OF FINAL COVER SYSTEM

NA

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Ryan said they would continue backfilling Pond A using material hauled from Ponds 1-2.

Submitted by: David Hutchinson

Reviewed by: Mark Bergeon

Daily Photographic Overview

Description

Photo

Photo 1:

Direction: W

Location: Pond A




Photo 2:

Direction: W

Location: Pond A



Daily Photographic Overview	
Description	Photo
Photo 3:	
Direction: W	
Location: Pond A	

SUBMITTED BY GAI

**GOLDER**

GOLDER ASSOCIATES, INC.
Daily Summary Report
Date: 8.17.2018

SURFACE IMPOUNDMENT: POND A

PROJECT NUMBER: 1896102	PROJECT TITLE: CEC JHC Pond Closures
SITE: CEC JHC	CONTRACTOR: Ryan Central
LOCATION: West Olive, MI	CONTRACTOR REF Rob Koski

WEATHER:	Temperature: Low: 70 High: 79	Approx. Precipitation: scattered showers
	Cloud Cover: overcast, 2-10 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson**GAI Arrival/Departure:** 0630/1900**ADDITIONAL PERSONNEL ON SITE:** Ryan crew; 2 superintendent, 9 operator**Arrival/Departure:** Ryan 0630/1830**HEALTH AND SAFETY ITEMS / ISSUES**

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

Four Volvo A40G haul trucks, one Volvo A56G haul truck, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, one Cat D4K dozer w/GPS, two Cat D6T dozers w/GPS, one Cat D8 dozer, one Cat 824C wheeled dozer, one Cat 289D skid steer, one Cat 326F excavator, one Cat 980M loader, one Cat CS563C smooth drum roller and one Cat TL1255D forklift.

SUMMARY OF DEWATERING AND TREATMENT

NA

SUMMARY OF CONSTRUCTION ACTIVITY

Ryan used a Cat D8 dozer and 824C wheeled dozer to place 14-inch to 16-inch lifts across the floor of Pond A using material hauled from the excavation of Ponds 1-2. A John Deere tractor with towed roller was used to compact each lift. Each lift was proof rolled with a John Deere tractor prior to the next lift being placed. Golder visually verified compaction of each lift by looking for excessive rutting or pumping during proof rolling. A Cat water truck was used for dust control.

SUMMARY OF CCR FILL AND GRADING

NA

SUMMARY OF FINAL COVER SYSTEM

NA

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Ryan said they would continue backfilling Pond A using material hauled from Ponds 1-2.

Submitted by: David Hutchinson
Reviewed by: Mark Bergeon

Daily Photographic Overview

Description

Photo

Photo 1:

Direction: W

Location: Pond A




Photo 2:

Direction: W

Location: Pond A



Daily Photographic Overview	
Description	Photo
Photo 3:	
Direction: W	
Location: Pond A	

SUBMITTTED BY GAI

**GOLDER**

GOLDER ASSOCIATES, INC.
Daily Summary Report
Date: 8.20.2018

SURFACE IMPOUNDMENT: POND A

PROJECT NUMBER: 1896102	PROJECT TITLE: CEC JHC Pond Closures
SITE: CEC JHC	CONTRACTOR: Ryan Central
LOCATION: West Olive, MI	CONTRACTOR REP Rob Koski

WEATHER:	Temperature: Low: 68 High: 74	Approx. Precipitation: none
	Cloud Cover: overcast, 3-12 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson**GAI Arrival/Departure:** 0700/1900**ADDITIONAL PERSONNEL ON SITE:** Ryan crew; 2 superintendent, 8 operator**Arrival/Departure:** Ryan 0630/1830**HEALTH AND SAFETY ITEMS / ISSUES**

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

Four Volvo A40G haul trucks, one Volvo A56G haul truck, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, one Cat D4K dozer w/GPS, two Cat D6T dozers w/GPS, one Cat D8 dozer, one Cat 824C wheeled dozer, one Cat 289D skid steer, one Cat 326F excavator, one Cat 980M loader, one Cat CS563C smooth drum roller and one Cat TL1255D forklift.

SUMMARY OF DEWATERING AND TREATMENT

NA

SUMMARY OF CONSTRUCTION ACTIVITY

Ryan used a Cat D8 dozer to place 14 -16 inch lifts across floor of Pond A using material hauled from the excavation of Ponds 1-2. A John Deere tractor with towed roller was used to compact each lift prior to placement of additional lifts. Golder visually verified compaction of each lift by proof roll with the John Deere tractor looking for excessive rutting or pumping prior to next lift being placed. Cat water truck was used for dust control.

SUMMARY OF CCR FILL AND GRADING

NA

SUMMARY OF FINAL COVER SYSTEM

NA

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Ryan said they would continue backfilling Pond A using material hauled from Ponds 1-2.

Submitted by: David Hutchinson**Reviewed by:** Mark Bergeon

Daily Photographic Overview

Description

Photo

Photo 1:

Direction: NW

Location: Pond A




Photo 2:

Direction: W

Location: Pond A



Daily Photographic Overview	
Description	Photo
Photo 3:	
Direction: W	
Location: Pond A	

SUBMITTTED BY GAI

**GOLDER**

GOLDER ASSOCIATES, INC.
Daily Summary Report
Date: 8.22.2018

SURFACE IMPOUNDMENT: POND A

PROJECT NUMBER: 1896102	PROJECT TITLE: CEC JHC Pond Closures
SITE: CEC JHC	CONTRACTOR: Ryan Central
LOCATION: West Olive, MI	CONTRACTOR REP Rob Koski

WEATHER:	Temperature: Low: 59 High: 75	Approx. Precipitation: none
	Cloud Cover: sunny, 3-12 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson, Dave Regalbuto**GAI Arrival/Departure:** 0700/1930, 1330/1500**ADDITIONAL PERSONNEL ON SITE:** Ryan crew; 2 superintendent, 10 operator**Arrival/Departure:** Ryan 0630/1900**HEALTH AND SAFETY ITEMS / ISSUES**

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

Four Volvo A40G haul trucks, one Volvo A56G haul truck, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, one Cat D4K dozer w/GPS, two Cat D6T dozers w/GPS, one Cat 824C wheeled dozer, one Cat 289D skid steer, one Cat 326F excavator, one Cat 980M loader, one Cat CS563C smooth drum roller and one Cat TL1255D forklift.

SUMMARY OF DEWATERING AND TREATMENT

NA

SUMMARY OF CONSTRUCTION ACTIVITY

Ryan used a Cat D6T dozer to place 14 -16 inch lifts across floor of Pond A using material hauled from the excavation of Ponds 1-2. A John Deere tractor with towed roller was used to compact each lift prior to placement of additional lifts. Golder visually verified compaction of each lift by proof roll with the John Deere tractor looking for excessive rutting or pumping prior to next lift being placed. Cat water truck was used for dust control.

SUMMARY OF CCR FILL AND GRADING

NA

SUMMARY OF FINAL COVER SYSTEM

NA

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Ryan said they would continue backfilling Pond A using material hauled from Ponds 1-2. Dave Regalbuto from Golder onsite today conducting a Safety Audit.

Submitted by: David Hutchinson**Reviewed by:** Mark Bergeon

Daily Photographic Overview

Description

Photo

Photo 1:

Direction: SW

Location: Pond A




Photo 2:

Direction: SW

Location: Pond A



Daily Photographic Overview	
Description	Photo
Photo 3:	
Direction: SW	
Location: Pond A	

SUBMITTTED BY GAI

**GOLDER**

GOLDER ASSOCIATES, INC.
Daily Summary Report
Date: 8.23.2018

SURFACE IMPOUNDMENT: POND A

PROJECT NUMBER: 1896102	PROJECT TITLE: CEC JHC Pond Closures
SITE: CEC JHC	CONTRACTOR: Ryan Central
LOCATION: West Olive, MI	CONTRACTOR REP Rob Koski

WEATHER:	Temperature: Low: 60 High: 75	Approx. Precipitation: none
	Cloud Cover: sunny, 1-10 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson**GAI Arrival/Departure:** 0700/1900**ADDITIONAL PERSONNEL ON SITE:** Ryan crew; 2 superintendent, 9 operator, EES; 1 Surveyor**Arrival/Departure:** Ryan 0630/1830, 0800/1600**HEALTH AND SAFETY ITEMS / ISSUES**

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

Four Volvo A40G haul trucks, one Volvo A56G haul truck, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, one Cat D4K dozer w/GPS, two Cat D6T dozers w/GPS, one Cat 824C wheeled dozer, one Cat 289D skid steer, one Cat 326F excavator, one Cat 980M loader, one Cat CS563C smooth drum roller and one Cat TL1255D forklift.

SUMMARY OF DEWATERING AND TREATMENT

NA

SUMMARY OF CONSTRUCTION ACTIVITY

Ryan used a Cat D6T dozer to place 14 -16 inch lifts across floor of Pond A using material hauled from the excavation of Ponds 1-2. A John Deere tractor with towed roller was used to compact each lift prior to placement of additional lifts. Golder visually verified compaction of each lift by proof roll with the John Deere tractor looking for excessive rutting or pumping prior to next lift being placed. Cat water truck was used for dust control.

SUMMARY OF CCR FILL AND GRADING

NA

SUMMARY OF FINAL COVER SYSTEM

NA

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Ryan said they would continue backfilling Pond A using material hauled from Ponds 1-2. EES surveyor onsite to shoot Pond A, survey completed.

Submitted by: David Hutchinson**Reviewed by:** Mark Bergeon

Daily Photographic Overview

Description

Photo

Photo 1:

Direction: W

Location: Pond A



Photo 2:

Direction: W

Location: Pond A



Daily Photographic Overview

Description

Photo

Photo 3:

Direction: W

Location: Pond A



SUBMITTED BY GAI

**GOLDER**

GOLDER ASSOCIATES, INC.
Daily Summary Report
Date: 8.24.2018

SURFACE IMPOUNDMENT: POND A

PROJECT NUMBER: 1896102	PROJECT TITLE: CEC JHC Pond Closures
SITE: CEC JHC	CONTRACTOR: Ryan Central
LOCATION: West Olive, MI	CONTRACTOR REP Rob Koski

WEATHER:	Temperature: Low: 59 High: 80	Approx. Precipitation: none
	Cloud Cover: overcast, 3-9 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson**GAI Arrival/Departure:** 0700/1900**ADDITIONAL PERSONNEL ON SITE:** Ryan crew; 2 superintendent, 9 operator**Arrival/Departure:** Ryan 0630/1830**HEALTH AND SAFETY ITEMS / ISSUES**

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

Four Volvo A40G haul trucks, one Volvo A56G haul truck, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, one Cat D4K dozer w/GPS, two Cat D6T dozers w/GPS, one Cat 824C wheeled dozer, one Cat 289D skid steer, one Cat 326F excavator, one Cat 980M loader, one Cat CS563C smooth drum roller and one Cat TL1255D forklift.

SUMMARY OF DEWATERING AND TREATMENT

NA

SUMMARY OF CONSTRUCTION ACTIVITY

Ryan used a Cat D6T dozer to place 14 -16 inch lifts across floor of Pond A using material hauled from the excavation of Ponds 1-2. A John Deere tractor with towed roller was used to compact each lift prior to placement of additional lifts. Golder visually verified compaction of each lift by proof roll with the John Deere tractor looking for excessive rutting or pumping prior to next lift being placed. Cat water truck was used for dust control.

SUMMARY OF CCR FILL AND GRADING

NA

SUMMARY OF FINAL COVER SYSTEM

NA

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Ryan said they would continue backfilling Pond A using material hauled from Ponds 1-2.

Submitted by: David Hutchinson**Reviewed by:** Mark Bergeon

Daily Photographic Overview

Description

Photo

Photo 1:

Direction: SW

Location: Pond A




Photo 2:

Direction: S

Location: Pond A



Daily Photographic Overview	
Description	Photo
Photo 3:	
Direction: SW	
Location: Pond A	

SUBMITTED BY GAI

**GOLDER****GOLDER ASSOCIATES, INC.****Daily Summary Report****Date: 8.27.2018****SURFACE IMPOUNDMENT: POND A**

PROJECT NUMBER: 1896102	PROJECT TITLE: CEC JHC Pond Closures
SITE: CEC JHC	CONTRACTOR: Ryan Central
LOCATION: West Olive, MI	CONTRACTOR REP Rob Koski

WEATHER:	Temperature: Low: 70 High: 87	Approx. Precipitation: none
	Cloud Cover: mostly cloudy, 4-20 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson**GAI Arrival/Departure:** 0700/1900**ADDITIONAL PERSONNEL ON SITE:** Ryan crew; 2 superintendent, 9 operator**Arrival/Departure:** Ryan 0630/1830**HEALTH AND SAFETY ITEMS / ISSUES**

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

Four Volvo A40G haul trucks, one Volvo A56G haul truck, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, one Cat D4K dozer w/GPS, two Cat D6T dozers w/GPS, one Cat 824C wheeled dozer, one Cat 289D skid steer, one Cat 326F excavator, one Cat 980M loader, one Cat CS563C smooth drum roller and one Cat TL1255D forklift.

SUMMARY OF DEWATERING AND TREATMENT

NA

SUMMARY OF CONSTRUCTION ACTIVITY

Ryan used a Cat D6T dozer to place 14 -16 inch lifts across floor of Pond A using material hauled from the excavation of Ponds 1-2. A John Deere tractor with towed roller was used to compact each lift prior to placement of additional lifts. Golder visually verified compaction of each lift by proof roll with the John Deere tractor looking for excessive rutting or pumping prior to next lift being placed.

SUMMARY OF CCR FILL AND GRADING

NA

SUMMARY OF FINAL COVER SYSTEM

NA

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Ryan said they would continue backfilling Pond A using material hauled from Ponds 1-2.

Submitted by: David Hutchinson**Reviewed by:** Mark Bergeon

Daily Photographic Overview

Description

Photo

Photo 1:

Direction: W

Location: Pond A




Photo 2:

Direction: W

Location: Pond A



Daily Photographic Overview	
Description	Photo
Photo 3:	
Direction: S	
Location: Pond A	

SUBMITTTED BY GAI

**GOLDER**

GOLDER ASSOCIATES, INC.
Daily Summary Report
Date: 9.15.2018

SURFACE IMPOUNDMENT: POND A

PROJECT NUMBER: 1896102	PROJECT TITLE: CEC JHC Pond Closures
SITE: CEC JHC	CONTRACTOR: Ryan Central
LOCATION: West Olive, MI	CONTRACTOR REP Rob Koski

WEATHER:	Temperature: Low: 66 High: 87	Approx. Precipitation: none
	Cloud Cover: sunny, 0-3 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson**GAI Arrival/Departure:** 0700/1900**ADDITIONAL PERSONNEL ON SITE:** Ryan crew; 1 superintendent, 2 operator**Arrival/Departure:** Ryan 0700/1830**HEALTH AND SAFETY ITEMS / ISSUES**

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

Four Volvo A40G haul trucks, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, two Cat D6T dozers w/GPS, one Cat D8 dozer, one Cat 824C wheeled dozer, one Cat 289D skid steer, one Cat 326F excavator, one Cat 980M loader and one Cat CS563C smooth drum roller.

SUMMARY OF DEWATERING AND TREATMENT

NA

SUMMARY OF CONSTRUCTION ACTIVITY

Ryan used one Cat D8 and one D6T dozer to begin rough cutting of the east and north perimeter ditches at Pond A. Material removed was stockpiled for use in backfilling of Pond A.

SUMMARY OF CCR FILL AND GRADING

NA


SUMMARY OF FINAL COVER SYSTEM

NA

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Ryan said they would begin cutting the perimeter ditches at Pond A.

Submitted by: David Hutchinson**Reviewed by:** Mark Bergeon

Daily Photographic Overview	
Description	Photo
Photo 1:	
Direction: E	
Location: Pond A	

SUBMITTTED BY GAI

**GOLDER**

GOLDER ASSOCIATES, INC.
Daily Summary Report
Date: 9.17.2018

SURFACE IMPOUNDMENT: POND A

PROJECT NUMBER: 1896102	PROJECT TITLE: CEC JHC Pond Closures
SITE: CEC JHC	CONTRACTOR: Ryan Central
LOCATION: West Olive, MI	CONTRACTOR REP Rob Koski

WEATHER:	Temperature: Low: 67 High: 84	Approx. Precipitation: none
	Cloud Cover: sunny, 0-7 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson**GAI Arrival/Departure:** 0700/1900**ADDITIONAL PERSONNEL ON SITE:** Ryan crew; 1 superintendent, 7 operator, EES; 1 surveyor**Arrival/Departure:** Ryan 0700/1830, 0930/1500**HEALTH AND SAFETY ITEMS / ISSUES**

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

Four Volvo A40G haul trucks, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, two Cat D6T dozers w/GPS, one Cat D8 dozer, one Cat 824C wheeled dozer, one Cat 289D skid steer, one Cat 326F excavator, one Cat 980M loader and one Cat CS563C smooth drum roller.

SUMMARY OF DEWATERING AND TREATMENT

NA

SUMMARY OF CONSTRUCTION ACTIVITY

Ryan continued excavation of the east and north perimeter ditches using a Cat D8 dozer to rough cut the ditches. Material removed was stockpiled within the footprint of Pond A for backfilling of pond. EES surveyed Pond A by drone today.

SUMMARY OF CCR FILL AND GRADING

NA

SUMMARY OF FINAL COVER SYSTEM

NA

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Ryan said they would continue excavation of Pond A perimeter ditches.

Submitted by: David Hutchinson**Reviewed by:** Mark Bergeon

Daily Photographic Overview

Description	Photo
Photo 1:	
Direction: W	
Location: Pond A	
Photo 2:	
Direction: N	
Location: Pond A	

SUBMITTTED BY GAI

**GOLDER**

GOLDER ASSOCIATES, INC.
Daily Summary Report
Date: 9.18.2018

SURFACE IMPOUNDMENT: POND A

PROJECT NUMBER:	1896102	PROJECT TITLE:	CEC JHC Pond Closures
SITE:	CEC JHC	CONTRACTOR:	Ryan Central
LOCATION:	West Olive, MI	CONTRACTOR REP	Rob Koski

WEATHER:	Temperature: Low: 66 High: 78	Approx. Precipitation: none
	Cloud Cover: mostly cloudy, 0-5 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson**GAI Arrival/Departure:** 0700/1900**ADDITIONAL PERSONNEL ON SITE:** Ryan crew; 1 superintendent, 7 operator**Arrival/Departure:** Ryan 0700/1830**HEALTH AND SAFETY ITEMS / ISSUES**

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

Four Volvo A40G haul trucks, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, two Cat D6T dozers w/GPS, one Cat D8 dozer, one Cat 824C wheeled dozer, one Cat 289D skid steer, one Cat 326F excavator, one Cat 980M loader and one Cat CS563C smooth drum roller.

SUMMARY OF DEWATERING AND TREATMENT

NA

SUMMARY OF CONSTRUCTION ACTIVITY

Ryan continued excavation of the north perimeter ditch using a Cat D8 dozer to rough cut the ditches. Material removed was stockpiled within the footprint of Pond A for backfilling of pond.

SUMMARY OF CCR FILL AND GRADING

NA

SUMMARY OF FINAL COVER SYSTEM

NA

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Ryan said they would continue excavation of Pond A perimeter ditches.

Submitted by: David Hutchinson**Reviewed by:** Mark Bergeon

Daily Photographic Overview

Description

Photo

Photo 1:

Direction: W

Location: Pond A



Photo 2:

Direction: W

Location: Pond A



SUBMITTED BY GAI

**GOLDER****GOLDER ASSOCIATES, INC.****Daily Summary Report****Date:** 10.1.2018**SURFACE IMPOUNDMENT: POND A**

PROJECT NUMBER:	1896102	PROJECT TITLE:	CEC JHC Pond Closures
SITE:	CEC JHC	CONTRACTOR:	Ryan Central
LOCATION:	West Olive, MI	CONTRACTOR REP	Rob Koski

WEATHER:	Temperature: Low: 43 High: 55	Approx. Precipitation: rain
	Cloud Cover: overcast, 5-12 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson**GAI Arrival/Departure:** 0700/1700**ADDITIONAL PERSONNEL ON SITE:** Ryan crew; 1 superintendent, 1 operator**Arrival/Departure:** Ryan 0700/1700**HEALTH AND SAFETY ITEMS / ISSUES**

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

Three Volvo A40G haul trucks, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, two Cat D6T dozers w/GPS, one Cat D8 dozer, one Cat 289D skid steer, one Cat 326F excavator and one Cat CS563C smooth drum roller.

SUMMARY OF DEWATERING AND TREATMENT

NA

SUMMARY OF CONSTRUCTION ACTIVITY

Ryan offloaded two flatbed trucks with a total of 18 rolls of 40mil HDPE Micro-Spike Geomembrane using a Cat 352F excavator. Material was stockpiled to the east of pond with other geosynthetics for capping of pond.

SUMMARY OF CCR FILL AND GRADING

NA

SUMMARY OF FINAL COVER SYSTEM

NA

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Ryan said they would be receiving delivery of 40mil geomembrane for Pond A today.

Submitted by: David Hutchinson**Reviewed by:** Mark Bergeon

**GOLDER**

GOLDER ASSOCIATES, INC.
Daily Summary Report
Date: 10.2.2018

SURFACE IMPOUNDMENT: POND A

PROJECT NUMBER: 1896102	PROJECT TITLE: CEC JHC Pond Closures
SITE: CEC JHC	CONTRACTOR: Ryan Central
LOCATION: West Olive, MI	CONTRACTOR REF Rob Koski

WEATHER:	Temperature: Low: 58 High: 70	Approx. Precipitation: none
	Cloud Cover: overcast, 5-15 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson**GAI Arrival/Departure:** 0700/1900**ADDITIONAL PERSONNEL ON SITE:** Ryan crew; 1 superintendent, 8 operator**Arrival/Departure:** Ryan 0700/1830**HEALTH AND SAFETY ITEMS / ISSUES**

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

Three Volvo A40G haul trucks, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, two Cat D6T dozers w/GPS, one Cat D8 dozer, one Cat 289D skid steer, one Cat 326F excavator and one Cat CS563C smooth drum roller.

SUMMARY OF DEWATERING AND TREATMENT

NA

SUMMARY OF CONSTRUCTION ACTIVITY

Ryan used a Cat 352F excavator to begin excavation of the west perimeter ditch. Excavated material was loaded into two Volvo A40G haul trucks for transport and stockpiling within the footprint of Pond A. Two Cat D6T dozers and one Cat D8 dozer continued cutting the north and east perimeter ditches.

SUMMARY OF CCR FILL AND GRADING

NA

SUMMARY OF FINAL COVER SYSTEM

NA

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Ryan said they would continue work on perimeter ditches at Pond A. Attended weekly progress meeting with CEC, Ryan and Golder.

Submitted by: David Hutchinson**Reviewed by:** Mark Bergeon

Daily Photographic Overview

Description

Photo

Photo 1:

Direction: W

Location: Pond A



Photo 2:

Direction: S

Location: Pond A



Daily Photographic Overview	
Description	Photo
Photo 3:	
Direction: S	
Location: Pond A	
Photo 4:	
Direction: S	
Location: Pond A	

SUBMITTTED BY GAI

**GOLDER****GOLDER ASSOCIATES, INC.****Daily Summary Report****Date:** 10.3.2018**SURFACE IMPOUNDMENT: POND A**

PROJECT NUMBER: 1896102	PROJECT TITLE: CEC JHC Pond Closures
SITE: CEC JHC	CONTRACTOR: Ryan Central
LOCATION: West Olive, MI	CONTRACTOR REF Rob Koski

WEATHER:	Temperature: Low: 57 High: 80	Approx. Precipitation: none
	Cloud Cover: mostly cloudy, 4-9 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson**GAI Arrival/Departure:** 0700/1930**ADDITIONAL PERSONNEL ON SITE:** Ryan crew; 1 superintendent, 8 operator, CTL; 1 Technician**Arrival/Departure:** Ryan 0700/1900, 1200/1700**HEALTH AND SAFETY ITEMS / ISSUES**

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

Three Volvo A40G haul trucks, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, two Cat D6T dozers w/GPS, one Cat D8 dozer, one Cat 289D skid steer, one Cat 326F excavator and one Cat CS563C smooth drum roller.

SUMMARY OF DEWATERING AND TREATMENT

NA

SUMMARY OF CONSTRUCTION ACTIVITY

Ryan used a Cat 352F excavator to begin excavation of the west perimeter ditch. Excavated material was loaded into two Volvo A40G haul trucks for transport and stockpiling within the footprint of Pond A. A Cat D8 dozer continued the cutting of the east perimeter ditch.

SUMMARY OF CCR FILL AND GRADING

NA

SUMMARY OF FINAL COVER SYSTEM**SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS**

Ryan said they would continue work on perimeter ditches at Pond A.

Submitted by: David Hutchinson**Reviewed by:** Mark Bergeon

Daily Photographic Overview

Description

Photo

Photo 1:

Direction: SW

Location: Pond A



Photo 2:

Direction: S

Location: Pond A



Daily Photographic Overview	
Description	Photo
Photo 3:	
Direction: S	
Location: Pond A	
Photo 4:	
Direction: W	
Location: Pond A	

SUBMITTTED BY GAI

**GOLDER****GOLDER ASSOCIATES, INC.****Daily Summary Report****Date:** 10.8.2018**SURFACE IMPOUNDMENT: POND A**

PROJECT NUMBER: 1896102	PROJECT TITLE: CEC JHC Pond Closures
SITE: CEC JHC	CONTRACTOR: Ryan Central
LOCATION: West Olive, MI	CONTRACTOR REF Rob Koski

WEATHER	Temperature: Low: 56 High: 80	Approx. Precipitation: none
	Cloud Cover: sunny, 0-6 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson**GAI Arrival/Departure:** 0700/1930**ADDITIONAL PERSONNEL ON SITE:** Ryan crew; 1 superintendent, 8 operator, MDR; 1 superintendent, 2 operators**Arrival/Departure:** Ryan 0700/1900, 1200/1600**HEALTH AND SAFETY ITEMS / ISSUES**

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

Three Volvo A40G haul trucks, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, two Cat D6T dozers w/GPS, one Cat D8 dozer, one Cat 289D skid steer, one Cat 326F excavator and one Cat CS563C smooth drum roller.

SUMMARY OF DEWATERING AND TREATMENT

NA

SUMMARY OF CONSTRUCTION ACTIVITY

Ryan used a Cat 352F excavator to begin excavation of the west perimeter ditch. Excavated material was loaded into two Volvo A40G haul trucks for transport and stockpiling within the footprint of Pond A. A Cat D8 dozer continued rough cutting of the east perimeter ditch. Two Cat D6T dozers worked on finish grading the north and west perimeter ditches.

SUMMARY OF CCR FILL AND GRADING

NA

SUMMARY OF FINAL COVER SYSTEM

NA

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Ryan said they would continue work on perimeter ditches at Pond A.

Submitted by: David Hutchinson**Reviewed by:** Mark Bergeon

Daily Photographic Overview

Description

Photo

Photo 1:

Direction: NW

Location: Pond A



Photo 2:

Direction: S

Location: Pond A



Daily Photographic Overview	
Description	Photo
Photo 3:	
Direction: S	
Location: Pond A	
Photo 4:	
Direction: W	
Location: Pond A	

SUBMITTED BY GAI

**GOLDER**

GOLDER ASSOCIATES, INC.
Daily Summary Report
Date: 10.11.2018

SURFACE IMPOUNDMENT: POND A

PROJECT NUMBER: 1896102	PROJECT TITLE: CEC JHC Pond Closures
SITE: CEC JHC	CONTRACTOR: Ryan Central
LOCATION: West Olive, MI	CONTRACTOR REF Rob Koski

WEATHER	Temperature: Low: 48 High: 52	Approx. Precipitation: none
	Cloud Cover: cloudy, 13-20 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson**GAI Arrival/Departure:** 0700/1930**ADDITIONAL PERSONNEL ON SITE:** Ryan crew; 1 superintendent, 8 operator, MDR; 1 superintendent, 2 operators**Arrival/Departure:** Ryan 0700/1900, 1200/1600**HEALTH AND SAFETY ITEMS / ISSUES**

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

Three Volvo A40G haul trucks, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, two Cat D6T dozers w/GPS, one Cat D8 dozer, one Cat 289D skid steer, one Cat 326F excavator and one Cat CS563C smooth drum roller.

SUMMARY OF DEWATERING AND TREATMENT

NA

SUMMARY OF CONSTRUCTION ACTIVITY

A Cat D8 dozer continued rough cutting of the south perimeter ditch. A Cat D8 dozer continued placing 12-inch loose lifts of material excavated from Pond 1-2 and 3S. A Cat CS563C smooth drum roller and John Deere tractor with towed roller were used to compact each lift prior to placement of additional lifts. Golder visually verified compaction of each lift by proof roll with loaded A40G haul trucks looking for excessive rutting or pumping prior to next lift being placed.

SUMMARY OF CCR FILL AND GRADING

NA

SUMMARY OF FINAL COVER SYSTEM

NA

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Ryan said they would continue work on perimeter ditches and placement of lifts in Pond A.

Submitted by: David Hutchinson**Reviewed by:** Mark Bergeon

Daily Photographic Overview

Description

Photo

Photo 1:

Direction: W

Location: Pond A




Photo 2:

Direction: W

Location: Pond A



Daily Photographic Overview	
Description	Photo
Photo 3:	
Direction: W	
Location: Pond A	

SUBMITTTED BY GAI

**GOLDER****GOLDER ASSOCIATES, INC.****Daily Summary Report****Date:** 10.15.2018**SURFACE IMPOUNDMENT: POND A**

PROJECT NUMBER:	1896102	PROJECT TITLE:	CEC JHC Pond Closures
SITE:	CEC JHC	CONTRACTOR:	Ryan Central
LOCATION:	West Olive, MI	CONTRACTOR REP	Rob Koski

WEATHER:	Temperature: Low: 43 High: 48	Approx. Precipitation: rain
	Cloud Cover: mostly cloudy, 8-15 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson**GAI Arrival/Departure:** 0700/1930**ADDITIONAL PERSONNEL ON SITE:** Ryan crew; 1 superintendent, 5 operator**Arrival/Departure:** Ryan 0700/1900**HEALTH AND SAFETY ITEMS / ISSUES**

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

Three Volvo A40G haul trucks, one Volvo A45G haul truck, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, two Cat D6T dozers w/GPS, one Cat D8 dozer, one Cat 289D skid steer, one Cat 326F excavator and one Cat CS563C smooth drum roller.

SUMMARY OF DEWATERING AND TREATMENT

NA

SUMMARY OF CONSTRUCTION ACTIVITY

Three Volvo A40G haul trucks, one Volvo A45G haul truck, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, two Cat D6T dozers w/GPS, one Cat D8 dozer, one Cat 289D skid steer, one Cat 326F excavator and one Cat CS563C smooth drum roller.

SUMMARY OF CCR FILL AND GRADING

NA

SUMMARY OF FINAL COVER SYSTEM

NA

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Ryan said they would continue work on perimeter ditches and placement of lifts in Pond A.

Submitted by: David Hutchinson**Reviewed by:** Mark Bergeon

Daily Photographic Overview

Description

Photo

Photo 1:

Direction: NW

Location: Pond A



Photo 2:

Direction: W

Location: Pond A



SUBMITTED BY GAI



GOLDER ASSOCIATES, INC.
Daily Summary Report
Date: 10.16.2018

SURFACE IMPOUNDMENT: POND A

PROJECT NUMBER: 1896102	PROJECT TITLE: CEC JHC Pond Closures
SITE: CEC JHC	CONTRACTOR: Ryan Central
LOCATION: West Olive, MI	CONTRACTOR REP Rob Koski

WEATHER:	Temperature: Low: 46 High: 54	Approx. Precipitation: none
	Cloud Cover: mostly sunny, 8-25 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson

GAI Arrival/Departure: 0700/1930

ADDITIONAL PERSONNEL ON SITE: Ryan crew; 1 superintendent, 6 operator

Arrival/Departure: Ryan 0700/1900

HEALTH AND SAFETY ITEMS / ISSUES

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

Three Volvo A40G haul trucks, one Volvo A45G haul truck, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, two Cat D6T dozers w/GPS, one Cat D8 dozer, one Cat 289D skid steer, one Cat 326F excavator and one Cat CS563C smooth drum roller.

SUMMARY OF DEWATERING AND TREATMENT

NA

SUMMARY OF CONSTRUCTION ACTIVITY

Cat D8 and D6T dozers continued placing 12-inch lifts of material excavated from Ponds 1-2 and 3S. A Cat CS563C smooth drum roller and a John Deere tractor with towed roller were used to compact each lift prior to placement of additional lifts. Golder visually verified compaction of each lift by proof roll with a loaded A40G haul trucks looking for excessive rutting or pumping prior to placement of the next lift.

SUMMARY OF CCR FILL AND GRADING

NA

SUMMARY OF FINAL COVER SYSTEM

NA

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Ryan said they would continue backfilling Pond A and would install the southeast manhole.

Submitted by: David Hutchinson

Reviewed by: Mark Bergeon

Daily Photographic Overview

Description

Photo

Photo 1:

Direction: W

Location: Pond A



Photo 2:

Direction: W

Location: Pond A



SUBMITTED BY GAI

**GOLDER****GOLDER ASSOCIATES, INC.****Daily Summary Report****Date: 10.17.2018****SURFACE IMPOUNDMENT: POND A**

PROJECT NUMBER: 1896102	PROJECT TITLE: CEC JHC Pond Closures
SITE: CEC JHC	CONTRACTOR: Ryan Central
LOCATION: West Olive, MI	CONTRACTOR REP Rob Koski

WEATHER:	Temperature: Low: 46 High: 48	Approx. Precipitation: none
	Cloud Cover: cloudy, 10-19 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson**GAI Arrival/Departure:** 0700/1930**ADDITIONAL PERSONNEL ON SITE:** Ryan crew; 1 superintendent, 6 operator**Arrival/Departure:** Ryan 0700/1900**HEALTH AND SAFETY ITEMS / ISSUES**

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

Three Volvo A40G haul trucks, one Volvo A45G haul truck, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, two Cat D6T dozers w/GPS, one Cat D8 dozer, one Cat 289D skid steer, one Cat 326F excavator and one Cat CS563C smooth drum roller.

SUMMARY OF DEWATERING AND TREATMENT

NA

SUMMARY OF CONSTRUCTION ACTIVITY

A Cat D6T and two D8 dozers continued grading the south perimeter ditch. The Cat D8 and D6T dozers continued placing 12-inch lifts of material excavated from Ponds 1-2 and 3S in Pond A. A Cat CS563C smooth drum roller and a John Deere tractor with towed roller were used to compact each lift prior to placement of additional lifts. Golder visually verified compaction of each lift by proof rolling with loaded A40G haul trucks looking for excessive rutting or pumping prior to placement of the next lift.

SUMMARY OF CCR FILL AND GRADING

NA

SUMMARY OF FINAL COVER SYSTEM

NA

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Ryan said they would continue backfilling Pond A and grading the perimeter ditches.

Submitted by: David Hutchinson**Reviewed by:** Mark Bergeon

Daily Photographic Overview

Description

Photo

Photo 1:

Direction: NW

Location: Pond A



Photo 2:

Direction: W

Location: Pond A



SUBMITTED BY GAI

**GOLDER****GOLDER ASSOCIATES, INC.****Daily Summary Report****Date:** 10.18.2018**SURFACE IMPOUNDMENT: POND A**

PROJECT NUMBER:	1896102	PROJECT TITLE:	CEC JHC Pond Closures
SITE:	CEC JHC	CONTRACTOR:	Ryan Central
LOCATION:	West Olive, MI	CONTRACTOR REP	Rob Koski

WEATHER:	Temperature: Low: 29 High: 50	Approx. Precipitation: none
	Cloud Cover: sunny, 2-5 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson**GAI Arrival/Departure:** 0700/1930**ADDITIONAL PERSONNEL ON SITE:** Ryan crew; 1 superintendent, 5 operator**Arrival/Departure:** Ryan 0700/1900**HEALTH AND SAFETY ITEMS / ISSUES**

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

Three Volvo A40G haul trucks, one Volvo A45G haul truck, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, two Cat D6T dozers w/GPS, one Cat D8 dozer, one Cat 289D skid steer, one Cat 326F excavator and one Cat CS563C smooth drum roller.

SUMMARY OF DEWATERING AND TREATMENT

NA

SUMMARY OF CONSTRUCTION ACTIVITY

A Cat 352F excavated a hole for the installation of an 8-foot diameter manhole to be installed west of the pond's southwest corner. A Cat 352F placed 6 inches of 21AA stone for the manhole footing. Once placed, the stone was tamped using the 352F's bucket. Ryan received delivery of a 30-inch diameter concrete drain pipe. The pipe was staged for installation in the southeast and southwest corners of the pond.

SUMMARY OF CCR FILL AND GRADING

NA

SUMMARY OF FINAL COVER SYSTEM

NA

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Ryan said they would continue excavating for installation of the 8-foot diameter manhole at Pond A.

Submitted by: David Hutchinson**Reviewed by:** Mark Bergeon

Daily Photographic Overview

Description

Photo

Photo 1:

Direction: W

Location: Pond A



Photo 2:

Direction: W

Location: Pond A



Daily Photographic Overview

Description	Photo
Photo 3:	
Direction: S	
Location: Pond A	
Photo 4:	
Direction: NW	
Location: Pond A	

SUBMITTED BY GAI



GOLDER ASSOCIATES, INC.
Daily Summary Report
Date: 10.22.2018

SURFACE IMPOUNDMENT: POND A

PROJECT NUMBER: 1896102	PROJECT TITLE: CEC JHC Pond Closures
SITE: CEC JHC	CONTRACTOR: Ryan Central
LOCATION: West Olive, MI	CONTRACTOR REP Rob Koski

WEATHER:	Temperature: Low: 37 High: 55	Approx. Precipitation: none
	Cloud Cover: mostly sunny, 2-8 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson

GAI Arrival/Departure: 0700/1930

ADDITIONAL PERSONNEL ON SITE: Ryan crew; 1 superintendent, 6 operator

Arrival/Departure: Ryan 0700/1900

HEALTH AND SAFETY ITEMS / ISSUES

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

One Volvo A40G haul trucks, one Volvo A45G haul truck, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, two Cat D6T dozers w/GPS, one Cat D8 dozer, one Cat 289D skid steer, one Cat 326F excavator and one Cat CS563C smooth drum roller.

SUMMARY OF DEWATERING AND TREATMENT

NA

SUMMARY OF CONSTRUCTION ACTIVITY

A Cat 352F excavated a trench for a 30-inch diameter concrete drain pipe. The trench began at the 5-foot diameter manhole and extended to the south perimeter road. Ryan installed the 30-inch diameter concrete drain pipe using a Cat 352F to set the pipe in place. Ryan installed a rubber gasket on each section of the pipe prior to connecting each section. Ryan installed the 5-foot diameter manhole at the north end of the installed pipe.

SUMMARY OF CCR FILL AND GRADING

NA

SUMMARY OF FINAL COVER SYSTEM

NA

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Ryan said they would install the 5-foot diameter manhole, located in the southeast corner of Pond A, and the 30-inch diameter pipe from the manhole to the south drainage ditch.

Submitted by: David Hutchinson
Reviewed by: Mark Bergeon

Daily Photographic Overview

Description	Photo
Photo 1:	
Direction: N	
Location: Pond A	
Photo 2:	
Direction: W	
Location: Pond A	

Daily Photographic Overview

Description	Photo
Photo 3:	
Direction: NW	
Location: Pond A	
Photo 4:	
Direction: S	
Location: Pond A	

SUBMITTTED BY GAI



GOLDER ASSOCIATES, INC.
Daily Summary Report
Date: 10.23.2018

SURFACE IMPOUNDMENT: POND A

PROJECT NUMBER: 1896102	PROJECT TITLE: CEC JHC Pond Closures
SITE: CEC JHC	CONTRACTOR: Ryan Central
LOCATION: West Olive, MI	CONTRACTOR REP Rob Koski

WEATHER:	Temperature: Low: 46 High: 48	Approx. Precipitation: none
	Cloud Cover: mostly cloudy, 2-8 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson

GAI Arrival/Departure: 0700/1930

ADDITIONAL PERSONNEL ON SITE: Ryan crew; 1 superintendent, 6 operator, Norther A-1; 1 superintendent, 3 operators

Arrival/Departure: Ryan 0700/1900, 1200/1700

HEALTH AND SAFETY ITEMS / ISSUES

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

One Volvo A40G haul trucks, one Volvo A45G haul truck, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, two Cat D6T dozers w/GPS, one Cat D8 dozer, one Cat 289D skid steer, one Cat 326F excavator and one Cat CS563C smooth drum roller.

SUMMARY OF DEWATERING AND TREATMENT

NA

SUMMARY OF CONSTRUCTION ACTIVITY

The Cat 352F excavator began backfilling the 30-inch diameter concrete drain pipe trench between the manhole in southeast corner of pond and the south perimeter ditch using sand removed during excavation of the pipe trench. A Cat CS563C smooth drum roller was used to compact pipe backfill, placed in 12-inch loose lifts, Golder observed proof rolls of each lift using a loaded A40G haul truck to verify compaction. The Cat 326F began excavating a ditch for the fabriform down chute from the southeast corner of Pond A into the south perimeter ditch. A Cat 352F excavated for and set an 8-foot diameter manhole to the west of Pond A's southwest corner.

SUMMARY OF CCR FILL AND GRADING

NA

SUMMARY OF FINAL COVER SYSTEM

NA

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Ryan said they would backfill the trench associated with the 30-inch pipe installed the previous day, begin excavating a trench for the fabriform installation, and set-up for installing the 8-foot diameter manhole in the southwest corner of the pond. Attended the weekly progress meeting with CEC, Ryan and Golder.

Submitted by: David Hutchinson

Reviewed by: Mark Bergeon

Daily Photographic Overview

Description

Photo

Photo 1:

Direction: SW

Location: Pond A



Photo 2:

Direction: W

Location: Pond A



Daily Photographic Overview

Description	Photo
Photo 3:	
Direction: W	
Location: Pond A	
Photo 4:	
Direction: W	
Location: Pond A	

SUBMITTTED BY GAI



GOLDER ASSOCIATES, INC.
Daily Summary Report
Date: 10.24.2018

SURFACE IMPOUNDMENT: POND A

PROJECT NUMBER: 1896102	PROJECT TITLE: CEC JHC Pond Closures
SITE: CEC JHC	CONTRACTOR: Ryan Central
LOCATION: West Olive, MI	CONTRACTOR REP Rob Koski

WEATHER:	Temperature: Low: 27 High: 51	Approx. Precipitation: none
	Cloud Cover: mostly cloudy, 2-8 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson

GAI Arrival/Departure: 0700/1930

ADDITIONAL PERSONNEL ON SITE: Ryan crew; 1 superintendent, 6 operator

Arrival/Departure: Ryan 0700/1900

HEALTH AND SAFETY ITEMS / ISSUES

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

One Volvo A40G haul trucks, one Volvo A45G haul truck, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, two Cat D6T dozers w/GPS, one Cat D8 dozer, one Cat 289D skid steer, one Cat 326F excavator and one Cat CS563C smooth drum roller.

SUMMARY OF DEWATERING AND TREATMENT

NA

SUMMARY OF CONSTRUCTION ACTIVITY

A Cat D6T completed backfilling the 30-inch pipe trench in the southeast corner of the pond and completed final grading of the perimeter road. A Cat CS563C smooth drum roller was used to compact the area after final grading was completed. A Cat 326F completed the excavation of a ditch and anchor trench for the fabriform down chute south of Pond A's southeast corner. The material removed was loaded into a Volvo A40G haul truck and transported to Pond A. A Cat 352F excavator was used to excavate a pipe trench from the 8-foot manhole to the south perimeter ditch for a 30-inch diameter concrete drain pipe. A Cat 352F was used to place the 30 inch diameter concrete pipe from south perimeter ditch to the 8 foot manhole

SUMMARY OF CCR FILL AND GRADING

NA

SUMMARY OF FINAL COVER SYSTEM

NA

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Ryan said they would complete backfilling the southeast manhole and excavation of the trench for fabriform installation. Ryan also said there would excavate for the installation of an 8-foot diameter manhole, 30-inch diameter pipe, and the fabriform trench.

Submitted by: David Hutchinson

Reviewed by: Mark Bergeon

Daily Photographic Overview

Description

Photo

Photo 1:

Direction: SW

Location: Pond A



Photo 2:

Direction: SW

Location: Pond A



Daily Photographic Overview

Description

Photo

Photo 3:

Direction: SW

Location: Pond A



Photo 4:

Direction: N

Location: Pond A



SUBMITTED BY GAI

**GOLDER****GOLDER ASSOCIATES, INC.****Daily Summary Report****Date:** 10.25.2018**SURFACE IMPOUNDMENT: POND A**

PROJECT NUMBER: 1896102	PROJECT TITLE: CEC JHC Pond Closures
SITE: CEC JHC	CONTRACTOR: Ryan Central
LOCATION: West Olive, MI	CONTRACTOR REP Rob Koski

WEATHER:	Temperature: Low: 30 High: 51	Approx. Precipitation: none
	Cloud Cover: cloudy, 0-6 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson**GAI Arrival/Departure:** 0700/1930**ADDITIONAL PERSONNEL ON SITE:** Ryan crew; 1 superintendent, 6 operator**Arrival/Departure:** Ryan 0700/1900**HEALTH AND SAFETY ITEMS / ISSUES**

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

One Volvo A40G haul trucks, one Volvo A45G haul truck, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, two Cat D6T dozers w/GPS, one Cat D8 dozer, one Cat 289D skid steer, one Cat 326F excavator and one Cat CS563C smooth drum roller.

SUMMARY OF DEWATERING AND TREATMENT

NA

SUMMARY OF CONSTRUCTION ACTIVITY

Ryan completed the installation of the 30-inch diameter concrete pipe from the south perimeter ditch to the 8-foot diameter manhole. Ryan began the installation of the 30-inch diameter concrete pipe from the 8-foot diameter manhole to the 5-foot diameter manhole in the southwest corner of Pond A using a Cat 352F to place the pipe. A rubber gasket was placed on each pipe section prior to connecting each section. A Cat 326F began backfilling the trench associated with the 30-inch pipe installed the previous day using sand removed during the excavation of pipe trench.

SUMMARY OF CCR FILL AND GRADING

NA

SUMMARY OF FINAL COVER SYSTEM

NA

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS



Ryan said they would continue installing the 30-inch diameter pipe from the 8-foot diameter manhole to the south perimeter ditch and excavate the anchor trench for the fabriform.

Submitted by: David Hutchinson**Reviewed by:** Mark Bergeon

Daily Photographic Overview

Description	Photo
Photo 1:	
Direction: SW	
Location: Pond A	
Photo 2:	
Direction: W	
Location: Pond A	

Daily Photographic Overview

Description	Photo
Photo 3:	
Direction: E	
Location: Pond A	
Photo 4:	
Direction: E	
Location: Pond A	

SUBMITTED BY GAI



GOLDER ASSOCIATES, INC.
Daily Summary Report
Date: 10.26.2018

SURFACE IMPOUNDMENT: POND A

PROJECT NUMBER: 1896102	PROJECT TITLE: CEC JHC Pond Closures
SITE: CEC JHC	CONTRACTOR: Ryan Central
LOCATION: West Olive, MI	CONTRACTOR REP: Rob Koski

WEATHER:	Temperature: Low: 38 High: 52	Approx. Precipitation: none
	Cloud Cover: cloudy, 2-6 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson

GAI Arrival/Departure: 0700/1930

ADDITIONAL PERSONNEL ON SITE: Ryan crew; 1 superintendent, 6 operator

Arrival/Departure: Ryan 0700/1900

HEALTH AND SAFETY ITEMS / ISSUES

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

One Volvo A40G haul trucks, one Volvo A45G haul truck, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, two Cat D6T dozers w/GPS, one Cat D8 dozer, one Cat 289D skid steer, one Cat 326F excavator and one Cat CS563C smooth drum roller.

SUMMARY OF DEWATERING AND TREATMENT

NA

SUMMARY OF CONSTRUCTION ACTIVITY

Ryan completed installation of the 30-inch diameter concrete pipe from the 8-foot diameter manhole to the 5-foot diameter manhole in the southwest corner of Pond A using a Cat 352F to place the pipe. A rubber gasket was installed on each pipe section prior to connecting each section. A Cat 326F continued backfilling the trench associated with the 30-inch diameter pipe installed the previous day using sand removed during excavation of the pipe trench. A Cat CS563C was used to compact the pipe backfill. Ryan bricked around pipe penetrations on both the 5-foot diameter and 8-foot diameter manholes.

SUMMARY OF CCR FILL AND GRADING

NA

SUMMARY OF FINAL COVER SYSTEM



NA

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Ryan said they would finish installing the 30-inch diameter pipe to the 5-foot diameter manhole in southwest corner of the pond.

Submitted by: David Hutchinson
Reviewed by: Mark Bergeon

Daily Photographic Overview

Description	Photo
Photo 1:	
Direction: SE	
Location: Pond A	
Photo 2:	
Direction: SE	
Location: Pond A	

Daily Photographic Overview

Description	Photo
Photo 3:	
Direction: S	
Location: Pond A	
Photo 4:	
Direction: SE	
Location: Pond A	

SUBMITTED BY GAI

**GOLDER****GOLDER ASSOCIATES, INC.****Daily Summary Report****Date:** 10.27.2018**SURFACE IMPOUNDMENT: POND A**

PROJECT NUMBER:	1896102	PROJECT TITLE:	CEC JHC Pond Closures
SITE:	CEC JHC	CONTRACTOR:	Ryan Central
LOCATION:	West Olive, MI	CONTRACTOR REP	Rob Koski

WEATHER:	Temperature:	Low: 38	High: 50	Approx. Precipitation: none
	Cloud Cover:	cloudy, 4-9 mph winds		

GAI PERSONNEL ON SITE: David Hutchinson**GAI Arrival/Departure:** 0700/1530**ADDITIONAL PERSONNEL ON SITE:** Ryan crew; 1 superintendent, 2 operator**Arrival/Departure:** Ryan 0700/1500**HEALTH AND SAFETY ITEMS / ISSUES**

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

One Volvo A40G haul trucks, one Volvo A45G haul truck, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, two Cat D6T dozers w/GPS, one Cat D8 dozer, one Cat 289D skid steer, one Cat 326F excavator and one Cat CS563C smooth drum roller.

SUMMARY OF DEWATERING AND TREATMENT

NA

SUMMARY OF CONSTRUCTION ACTIVITY

Ryan began leveling the placed material in the pond to topsoil grade using remaining CCR from Pond 3S stockpiles. The material was placed by a Cat D6T and D8 dozers in a single lift from 3 to 14 inches. A Cat CS563C was used to compact lifts and a loaded Volvo A40G haul truck was used to proof roll for verification of compaction by Golder.

SUMMARY OF CCR FILL AND GRADING

NA

SUMMARY OF FINAL COVER SYSTEM

NA

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Ryan said they would begin leveling Pond A to grade for topsoil.

Submitted by: David Hutchinson**Reviewed by:** Mark Bergeon

Daily Photographic Overview

Description

Photo

Photo 1:

Direction: W

Location: Pond A



Photo 2:

Direction: W

Location: Pond A



SUBMITTED BY GAI

**GOLDER****GOLDER ASSOCIATES, INC.****Daily Summary Report****Date: 10.29.2018****SURFACE IMPOUNDMENT: POND A**

PROJECT NUMBER:	1896102	PROJECT TITLE:	CEC JHC Pond Closures
SITE:	CEC JHC	CONTRACTOR:	Ryan Central
LOCATION:	West Olive, MI	CONTRACTOR REP	Rob Koski

WEATHER:	Temperature:	Low: 46	High: 52	Approx. Precipitation: none
	Cloud Cover:	cloudy, 3-7 mph winds		

GAI PERSONNEL ON SITE: David Hutchinson**GAI Arrival/Departure:** 0700/1930**ADDITIONAL PERSONNEL ON SITE:** Ryan crew; 1 superintendent, 5 operator, Geotech; 1 superintendent, 3 labor**Arrival/Departure:** Ryan 0700/1900, 0730/1430**HEALTH AND SAFETY ITEMS / ISSUES**

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

One Volvo A40G haul trucks, one Volvo A45G haul truck, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, two Cat D6T dozers w/GPS, one Cat D8 dozer, one Cat 289D skid steer, one Cat 326F excavator and one Cat CS563C smooth drum roller.

SUMMARY OF DEWATERING AND TREATMENT

NA

SUMMARY OF CONSTRUCTION ACTIVITY

Ryan continued finish grading the CCR placed in pond using a Cat D6T and D8 dozer. A Cat 326F excavator finished the excavation for the west Fabriform down chute. Geotech installed the Fabriform panels for both the east and west down chutes in preparation for the following day's pour.

SUMMARY OF CCR FILL AND GRADING

NA

SUMMARY OF FINAL COVER SYSTEM

NA

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Ryan said they would complete excavation for the west Fabriform installation and continue finish grading of CCR in the pond. Geotech said they would install the Fabriform panels in preparation for the pour.

Submitted by: David Hutchinson**Reviewed by:** Mark Bergeon

Daily Photographic Overview

Description

Photo

Photo 1:

Direction: S

Location: Pond A



Photo 2:

Direction: W

Location: Pond A



Daily Photographic Overview

Description

Photo

Photo 3:

Direction: S

Location: Pond A



Photo 4:

Direction: SW

Location: Pond A



SUBMITTED BY GAI

**GOLDER****GOLDER ASSOCIATES, INC.****Daily Summary Report****Date: 10.30.2018****SURFACE IMPOUNDMENT: POND A**

PROJECT NUMBER:	1896102	PROJECT TITLE:	CEC JHC Pond Closures
SITE:	CEC JHC	CONTRACTOR:	Ryan Central
LOCATION:	West Olive, MI	CONTRACTOR REP:	Rob Koski

WEATHER:	Temperature: Low: 41 High: 52	Approx. Precipitation: none
	Cloud Cover: cloudy, 4-10 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson**GAI Arrival/Departure:** 0700/1930**ADDITIONAL PERSONNEL ON SITE:** Ryan crew; 1 superintendent, 4 operator, Geotech; 1 superintendent, 3 labor**Arrival/Departure:** Ryan 0700/1900, 0730/1600**HEALTH AND SAFETY ITEMS / ISSUES**

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

One Volvo A40G haul trucks, one Volvo A45G haul truck, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, two Cat D6T dozers w/GPS, one Cat D8 dozer, one Cat 289D skid steer, one Cat 326F excavator and one Cat CS563C smooth drum roller.

SUMMARY OF DEWATERING AND TREATMENT

NA

SUMMARY OF CONSTRUCTION ACTIVITY

Ryan completed finish grading of the perimeter ditches around the pond with the exception of the access ramp in the northwest corner. Geotech began pouring grout into panels of the west Fabriform down chute. Approximately 3/4 of the pour was completed today on the west down chute.

SUMMARY OF CCR FILL AND GRADING

NA

SUMMARY OF FINAL COVER SYSTEM

NA

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Ryan said they would complete finish grading of the perimeter ditches around the pond and Geotech would pour the west Fabriform down chute.

Submitted by: David Hutchinson**Reviewed by:** Mark Bergeon

Daily Photographic Overview

Description

Photo

Photo 1:

Direction: W

Location: Pond A



Photo 2:

Direction: W

Location: Pond A



Daily Photographic Overview

Description

Photo

Photo 3:

Direction: S

Location: Pond A



Photo 4:

Direction: S

Location: Pond A



SUBMITTED BY GAI

**GOLDER****GOLDER ASSOCIATES, INC.****Daily Summary Report****Date: 10.31.2018****SURFACE IMPOUNDMENT: POND A**

PROJECT NUMBER:	1896102	PROJECT TITLE:	CEC JHC Pond Closures
SITE:	CEC JHC	CONTRACTOR:	Ryan Central
LOCATION:	West Olive, MI	CONTRACTOR REP	Rob Koski

WEATHER:	Temperature: Low: 48 High: 53	Approx. Precipitation: none
	Cloud Cover: mostly cloudy, 3-8 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson**GAI Arrival/Departure:** 0700/1930**ADDITIONAL PERSONNEL ON SITE:** Ryan crew; 1 superintendent, 4 operators, Geotech; 1 superintendent, 3 labors**Arrival/Departure:** Ryan 0700/1900, 0730/1600**HEALTH AND SAFETY ITEMS / ISSUES**

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

One Volvo A40G haul trucks, one Volvo A45G haul truck, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, two Cat D6T dozers w/GPS, one Cat D8 dozer, one Cat 289D skid steer, one Cat 326F excavator and one Cat CS563C smooth drum roller.

SUMMARY OF DEWATERING AND TREATMENT

NA

SUMMARY OF CONSTRUCTION ACTIVITY

Geotech completed both pours for the west and east Fabriform down chute's using grout pumped into panels.

SUMMARY OF CCR FILL AND GRADING

NA

SUMMARY OF FINAL COVER SYSTEM

NA

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Ryan said that Geotech would complete the grout pours for the west and east Fabriform down chutes.

Submitted by: David Hutchinson**Reviewed by:** Mark Bergeon

Daily Photographic Overview

Description

Photo

Photo 1:

Direction: W

Location: Pond A



Photo 2:

Direction: SW

Location: Pond A



Daily Photographic Overview

Description

Photo

Photo 3:

Direction: S

Location: Pond A



Photo 4:

Direction: S

Location: Pond A



SUBMITTED BY GAI

**GOLDER****GOLDER ASSOCIATES, INC.****Daily Summary Report****Date: 11.1.2018****SURFACE IMPOUNDMENT: POND A**

PROJECT NUMBER:	1896102	PROJECT TITLE:	CEC JHC Pond Closures
SITE:	CEC JHC	CONTRACTOR:	Ryan Central
LOCATION:	West Olive, MI	CONTRACTOR REP	Rob Koski

WEATHER:	Temperature: Low: 44 High: 48	Approx. Precipitation: none
	Cloud Cover: cloudy, 2-7 mph winds	

GAI PERSONNEL ON SITE: David Hutchinson**GAI Arrival/Departure:** 0700/1900**ADDITIONAL PERSONNEL ON SITE:** Ryan crew; 1 superintendent, 5 operators**Arrival/Departure:** Ryan 0700/1830**HEALTH AND SAFETY ITEMS / ISSUES**

No incidents, accidents or health and safety issues occurred on site.

EQUIPMENT ON SITE

One Volvo A40G haul trucks, one Volvo A45G haul truck, one John Deere 9520 tractor, one Cat 352F excavator, one Cat water truck, two Cat D6T dozers w/GPS, one Cat D8 dozer, one Cat 289D skid steer, one Cat 326F excavator and one Cat CS563C smooth drum roller.

SUMMARY OF DEWATERING AND TREATMENT

NA

SUMMARY OF CONSTRUCTION ACTIVITY

A Cat 326F excavator backfilled the anchor trenches for the west and east Fabriform down chutes using material removed during the excavation of the anchor trenches. Material was placed in two lifts and compacted by tamping with bucket of excavator. Ryan placed four concrete blocks along the south edge of the west Fabriform down chute as erosion protection for the existing drainage ditches on the slope.

SUMMARY OF CCR FILL AND GRADING

NA

SUMMARY OF FINAL COVER SYSTEM

NA

SUMMARY OF MEETINGS/ DISCUSSIONS HELD AND/OR PROBLEMS AND RESOLUTIONS

Ryan said they would backfill both the west and east Fabriform down chute anchor trenches and install concrete blocks along the south end of the west down chutes.

Submitted by: David Hutchinson**Reviewed by:** Mark Bergeon

Daily Photographic Overview

Description

Photo

Photo 1:

Direction: S

Location: Pond A



Photo 2:

Direction: S

Location: Pond A



Daily Photographic Overview

Description

Photo

Photo 3:

Direction: S

Location: Pond A



Photo 4:

Direction: S

Location: Pond A



SUBMITTED BY GAI

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 4/1/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	1400-1700	
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski	

SITE CONDITIONS

Weather (AM): Clear	Temperature: 42° F
Weather (PM): Clear	Temperature: 46° F
Precipitation: 0.00 inches	Wind: 5-8 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer

SUMMARY OF CONSTRUCTION

Construction:
Ryan Central
1 Laborer.

Pond A Construction:

- None.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction:

- Inspected Pond A Geosynthetic Material delivered in 2018.

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

- Undertook Site Specific Safety Orientation with Casey Malotke.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES

None.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PHOTOGRAPHS



Stockpiled Geosynthetic Material for Pond A.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

Handwritten signature of Aaron Bickel.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW					
Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date:	4/2/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan		
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1700		
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski		

SITE CONDITIONS	
Weather (AM): Clear	Temperature: 38° F
Weather (PM): Clear	Temperature: 45° F
Precipitation: 0.00 inches	Wind: 4-8 mph

EQUIPMENT ON SITE
Ryan Central: CAT Skid Steer

SUMMARY OF CONSTRUCTION
Construction: Ryan Central 1 Laborer.
Pond A Construction: <ul style="list-style-type: none">None.

GAI CQA ACTIVITIES AND TEST RESULTS
Construction: <ul style="list-style-type: none">Confirmed 2018 Inventory Logs of 40-mil HDPE and 10oz Geotextile correctly reflect actual stockpiled materials onsite.

SUMMARY OF SURVEYOR'S ACTIVITIES
<ul style="list-style-type: none">Ryan performed an aerial drone survey of Pond A.

SUMMARY OF PROBLEMS AND RESOLUTIONS
None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
None.

PHOTOGRAPHS



Stockpiled Geosynthetic Material for Pond A.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

Handwritten signature of Aaron Bickel.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date:	4/3/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan		
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0800-1700		
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski		

SITE CONDITIONS

Weather (AM): Clear	Temperature: 38° F
Weather (PM): Clear	Temperature: 45° F
Precipitation: 0.00 inches	Wind: 4-8 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer
--

SUMMARY OF CONSTRUCTION

Construction: Ryan Central 1 Laborer.
Pond A Construction: <ul style="list-style-type: none">Removed erosion control hay bales from Pond A ditches.Dozed subgrade to meet grade tolerances.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction: <ul style="list-style-type: none">Observed dozing of subgrade.

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

<ul style="list-style-type: none">Discussed the current plan for this week and next w/ Rob:<ul style="list-style-type: none">Finish preparing subgrade by MondayHave Nederveld survey subgrade on MondayLiner crew arrive on Sunday and fill sand bags on MondayBegin placing liner on Wednesday/Thursday
--

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
--

None.

PHOTOGRAPHS



Hay bales removed from Pond A ditches.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA



Dozing subgrade to meet grade tolerance.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

Handwritten signature of Aaron Bickel.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 4/4/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0800-1700	
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski	

SITE CONDITIONS

Weather (AM): Overcast	Temperature: 38° F
Weather (PM): Overcast	Temperature: 42° F
Precipitation: 0.00 inches	Wind: 10-12mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller.

SUMMARY OF CONSTRUCTION

Construction: Ryan Central 2 Operators.
Pond A Construction: <ul style="list-style-type: none">Dozed and rolled subgrade to meet grade tolerances.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction: <ul style="list-style-type: none">Observed dozing and rolling of subgrade.

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES

None.

PHOTOGRAPHS



Dozer and drum roller repairing subgrade.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA



Dozer and Tractor w/ rollerblade preparing subgrade.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 4/5/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0800-1700	
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski	

SITE CONDITIONS

Weather (AM): Overcast	Temperature: 38° F
Weather (PM): Overcast	Temperature: 42° F
Precipitation: 0.00 inches	Wind: 10-12mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller.

SUMMARY OF CONSTRUCTION

Construction: Ryan Central 2 Operators.
Pond A Construction: <ul style="list-style-type: none">Dozed and rolled subgrade to meet grade tolerances.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction: <ul style="list-style-type: none">Observed dozing and rolling of subgrade.

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES

None.

PHOTOGRAPHS



Dozer repairing subgrade.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA



Dozer preparing subgrade.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date:	4/8/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan		
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0800-1700		
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski		
	Chesapeake Containment Systems		J. Moises Tello		

SITE CONDITIONS

Weather (AM): Clear	Temperature: 48° F
Weather (PM): Clear	Temperature: 54° F
Precipitation: 0.00 inches	Wind: 7-10 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler.

SUMMARY OF CONSTRUCTION

Construction:
Ryan Central
1 Foreman, 4 Operators.

Chesapeake Containment Systems:
1 Foreman, 12 Laborers

Pond A Construction:

- Ryan dozed and rolled subgrade to meet grade tolerances.
- CCS took site specific safety training.
- CCS filled sand bags.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction:

- Observed dozing and rolling of subgrade.

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

None.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
--

None.

PHOTOGRAPHS



Dozer and drum roller preparing subgrade.



Dozer preparing subgrade.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA



CCS laborers filling sand bags



Dozing subgrade to meet tolerance.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:



DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date:	4/9/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan		
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0800-1700		
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski		
	Chesapeake Containment Systems		J. Moises Tello		

SITE CONDITIONS

Weather (AM): Clear	Temperature: 43° F
Weather (PM): Clear	Temperature: 54° F
Precipitation: 0.00 inches	Wind: 9-10 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.

SUMMARY OF CONSTRUCTION

Construction: Ryan Central 1 Foreman, 2 Operators, 2 Laborers.
Chesapeake Containment Systems: 1 Foreman, 12 Laborers
Pond A Construction: <ul style="list-style-type: none">• Ryan continued dozing and rolling subgrade to meet grade tolerances.• Ryan laborers rock picked subgrade to remove rocks/debris larger than 0.75-inches in diameter.• CCS continued filling sand bags.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction: <ul style="list-style-type: none">• Observed dozing and rolling of subgrade.

SUMMARY OF SURVEYOR'S ACTIVITIES

Nederveld Inc. 2 Surveyors – Matt & John
<ul style="list-style-type: none">• On Site 0820-1510• Established control points for Pond A Top of Liner Grade survey• Began surveying top of liner grading certification points for Pond A<ul style="list-style-type: none">○ Ryan said the subgrade would be ready but during the survey ~1/4 of certification points meet tolerance.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

SUMMARY OF PROBLEMS AND RESOLUTIONS
--

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
--

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
--

None.

PHOTOGRAPHS



Ryan laborers rock-picking Pond A subgrade



Dozer preparing subgrade.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA



CCS laborers filling sand bags

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 4/10/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0800-1800	
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski	
	Chesapeake Containment Systems		J. Moises Tello	

SITE CONDITIONS

Weather (AM): Overcast	Temperature: 42° F
Weather (PM): Overcast	Temperature: 45° F
Precipitation: 0.00 inches	Wind: 10-12 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.

SUMMARY OF CONSTRUCTION

Construction:

Ryan Central

1 Foreman, 2 Operators, 2 Laborers, 1 Surveyor.

Chesapeake Containment Systems:

1 Foreman, 12 Laborers

Pond A Construction:

- Ryan continued dozing and rolling subgrade to meet grade tolerances.
- Ryan excavated anchor trench.

Geosynthetic Work:

- CCS placed and fusion seamed ~33,150 square feet of 40-mil HDPE.
- Liner was deployed using CAT Telehandler with bullets and pulled out by hand.
- Panels 1-5 were placed.
- 3 fusion wedges performed fusion seaming.
- Placed sand bags along edges of panels and in flow lines in expectation of high winds the following day.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction:

- Observed dozing and rolling of subgrade.
- Observed excavation of anchor trenches.
- Observed deployment of liner.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

- Observed trial-welds of all three wedges, all passing.
- Observed fusion seaming.
- Marked out destructs DF-1, DF-2, DF-3.
- Marked and recorded location of repairs.

SUMMARY OF SURVEYOR'S ACTIVITIES

Nederveld Inc.

2 Surveyors – Matt & John

- On Site 0830-1300
- John continued surveying top of liner grading certification points for Pond A
 - Surveyed certification points on and around the sections of anchor trench dug on the north and south sides of Pond A.

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES

None.

PHOTOGRAPHS



Ryan excavating anchor trench on the north side of Pond A.



Fusion seaming along the north slope of Pond A.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA



Anchor trench along the north side of Pond A.



Deploying Panel 1.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:



DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 4/11/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0800-1700	
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski	
	Chesapeake Containment Systems		J. Moises Tello	

SITE CONDITIONS

Weather (AM): Overcast, Sleet/Snow	Temperature: 36° F
Weather (PM): Overcast	Temperature: 45° F
Precipitation: 0.20 inches	Wind: 22-28 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.

SUMMARY OF CONSTRUCTION

Construction:

Ryan Central

1 Foreman, 2 Operators, 2 Laborers, 1 Surveyor.

Chesapeake Containment Systems:

1 Foreman, 12 Laborers

Pond A Construction:

- Ryan continuing excavation of anchor trench along north and south sides of Pond A.
- Ryan continued dozing subgrade to meet tolerance.

Geosynthetic Work:

- No work due to cold temperatures, high winds, and snow from the previous night.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction:

- Observed excavation of anchor trenches.
- Observed dozing of subgrade to meet tolerance.

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
--

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
--

None.

PHOTOGRAPHS



Ryan excavating the anchor trench on the south side of Pond A.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA



Southern slope of Pond A shot from the southwest corner.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 4/12/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0700-1700	
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski	
	Chesapeake Containment Systems		J. Moises Tello	

SITE CONDITIONS

Weather (AM): Overcast	Temperature: 48° F
Weather (PM): Overcast	Temperature: 45° F
Precipitation: 0.20 inches	Wind: 10-28 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.

SUMMARY OF CONSTRUCTION

Construction:

Ryan Central

1 Foreman, 2 Operators, 2 Laborers, 1 Surveyor.

Chesapeake Containment Systems:

1 Foreman, 12 Laborers

Pond A Construction:

- Ryan continuing excavation of anchor trench along north, south, and east sides of Pond A.
- Ryan continued dozing subgrade to meet tolerance.

Geosynthetic Work:

- No liner deployed due to high winds and rain from the previous night and this morning.
- CCS filled sand bags
- CCS repaired fusion wedges.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction:

- Observed excavation of anchor trenches.
- Observed dozing of subgrade to meet tolerance.

SUMMARY OF SURVEYOR'S ACTIVITIES

- Nederveld – 2 Surveyors
- On Site – 0900-1100
- Surveyed certification points along the north and south sides of Pond A.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

- Surveyed liner that was deployed on 4-10-19.

SUMMARY OF PROBLEMS AND RESOLUTIONS

- To prevent the frequency of burn outs, encountered when fusion seaming on 4/10/19, new parts for the fusion wedges were acquired and used to repair fusion wedges.
- The repaired fusion wedges were prepared for the following day's work.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES

None.

PHOTOGRAPHS



Ryan excavating the anchor trench on the east side of Pond A.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA



Ryan preparing subgrade along the eastern slope of Pond A.



Ryan laborer rock-picking subgrade.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA



CCS filling sand bags.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

Handwritten signature of Aaron Bickel.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 4/13/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0700-1900	
	Amy Mandrell		0700-1800	
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski	
	Chesapeake Containment Systems		J. Moises Tello	

SITE CONDITIONS

Weather (AM): Clear	Temperature: 40° F
Weather (PM): Clear	Temperature: 45° F
Precipitation: 0.00 inches	Wind: 12-22 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.
--

SUMMARY OF CONSTRUCTION

Construction:

Ryan Central

1 Foreman, 2 Operators, 2 Laborers.

Chesapeake Containment Systems:

1 Foreman, 12 Laborers

Pond A Construction:

- Ryan continuing excavation of anchor trench along east and west sides of Pond A.
- Ryan raked subgrade prior to lining.
- Ryan performed rock-picking of subgrade to remove rocks/debris larger than 0.75-inches.

Geosynthetic Work:

- Deployed and seamed ~88,500 sq. ft. of 40-mil HDPE.
- Deployed liner using CAT skid-steer with bullet attachments to hold liner.
- Fusion welded seams with three wedges.
- Placed sand bags along panel edges, anchor trenches, and flow lines.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction:

- Observed excavation of anchor trenches.
- Observed preparation of subgrade prior to liner deployment.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

- Observed and documented testing of fusion trial seams, all passing.
- Observed and documented fusion seaming.
- Observed and documented deployment of geomembrane.
- Marked out fusion destructs DF-4 to DF-12.

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES

None.

PHOTOGRAPHS



Testing fusion trial seams.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA



Deploying liner.



CAT Skid-steer about to deploy liner and Ryan laborer raking subgrade prior to deployment.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA



CCS fusion welding seams.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:



CQA Field Engineer: Amy Mandrell

Signature:



DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 4/15/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Aaron Bickel David List	Arrival/Departure Time:	0700-1900 1000-1300	
Contractor(s):	Ryan Central Inc. Chesapeake Containment Systems	Contractor(s) Rep:	Rob Koski J. Moises Tello	

SITE CONDITIONS

Weather (AM): Clear	Temperature: 35° F
Weather (PM): Clear	Temperature: 40° F
Precipitation: 5.00 inches, snow	Wind: 8-10 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.

SUMMARY OF CONSTRUCTION

Construction: Ryan Central 1 Foreman, 2 Operators, 2 Laborers.
Chesapeake Containment Systems: 1 Foreman, 12 Laborers
Pond A Construction: <ul style="list-style-type: none">No work due to snow from the morning and previous day.
Geosynthetic Work: <ul style="list-style-type: none">No work due to snow from the morning and previous day.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction: <ul style="list-style-type: none">Checked liner paperworkGave Dave List a site tour

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

- Dave List directed future liner work to stop performing “change of overlap” on the south side of Pond A.
- Dave List noted the CQA plan calls for cross seams to be cut at a 45-degree angle. However, this method is used for cross seams located on steep slopes but all cross seams for Pond A will be located on the shallow slopes on the top of Pond A so a straight cross seam is suitable.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES

None.

PHOTOGRAPHS



Pond A as seen from the north east corner.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 4/16/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0700-1700	
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski	
	Chesapeake Containment Systems		J. Moises Tello	

SITE CONDITIONS

Weather (AM): Overcast	Temperature: 42° F
Weather (PM): Clear	Temperature: 59° F
Precipitation: 0.00 inches	Wind: 8-12 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.
--

SUMMARY OF CONSTRUCTION

Construction: Ryan Central 1 Foreman, 2 Operators, 2 Laborers.
Chesapeake Containment Systems: 1 Foreman, 12 Laborers
Pond A Construction: <ul style="list-style-type: none">• Ryan continuing excavation of anchor trench along west side of Pond A.• Ryan raked subgrade prior to lining.
Geosynthetic Work: <ul style="list-style-type: none">• Deployed and seamed ~66,682 sq. ft. of 40-mil HDPE.• Deployed liner using CAT skid-steer with bullet attachments to hold liner.• Fusion welded seams with four wedges.• Placed sand bags along panel edges, anchor trenches, and flow lines.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction: <ul style="list-style-type: none">• Observed excavation of anchor trenches.• Observed preparation of subgrade prior to liner deployment.• Observed and documented testing of fusion trial seams, all passing.• Observed and documented fusion seaming.
--

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

- Observed and documented deployment of geomembrane.
- Marked out fusion destructs DF-13 to DF-19.

SUMMARY OF SURVEYOR'S ACTIVITIES

- Nederveld
 - 0800-1000 Collected certification points and surveyed deployed geomembrane.
 - 1200-1300 Collected drone photos/videos of Pond A.

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES

None.

PHOTOGRAPHS



Deploying geomembrane.



Fusion seaming.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA



Cat skid-steer deploying geomembrane.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

Handwritten signature of Aaron Bickel in black ink.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date:	4/17/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan		
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0700-1900		
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski		
	Chesapeake Containment Systems		J. Moises Tello		

SITE CONDITIONS

Weather (AM): Overcast	Temperature: 42° F
Weather (PM): P. Cloudy	Temperature: 45° F
Precipitation: 0.00 inches	Wind: 12-17 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.
--

SUMMARY OF CONSTRUCTION

Construction: Ryan Central 1 Foreman, 2 Operators, 2 Laborers.
Chesapeake Containment Systems: 1 Foreman, 12 Laborers
Pond A Construction: <ul style="list-style-type: none">• Ryan continuing excavation of anchor trench along west side of Pond A.• Ryan raked subgrade prior to lining.
Geosynthetic Work: <ul style="list-style-type: none">• Deployed and seamed ~55,770 sq. ft. of 40-mil HDPE.<ul style="list-style-type: none">○ ~54% of Pond A is covered in geomembrane.• Deployed liner using CAT skid-steer with bullet attachments to hold liner.• Fusion welded seams with three wedges.<ul style="list-style-type: none">○ Fusion wedge #85 was sent away for repairs.• Placed sand bags along panel edges, anchor trenches, and flow lines.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction: <ul style="list-style-type: none">• Observed excavation of anchor trenches.• Observed preparation of subgrade prior to liner deployment.
--

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

- Observed and documented testing of fusion trial seams, all passing.
- Observed and documented fusion seaming.
- Observed and documented deployment of geomembrane.
- Marked and documented defects.
- Marked out fusion destructs DF-20 to DF-24.

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES

None.

PHOTOGRAPHS



CAT Skid-steer deploying geomembrane.



Fusion seam and deploying geomembrane.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA



Fusion Seaming of cross seam.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

A handwritten signature in black ink, appearing to read "Aaron Bickel".

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date:	4/18/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan		
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0700-1900		
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski		
	Chesapeake Containment Systems		J. Moises Tello		

SITE CONDITIONS

Weather (AM): Overcast, Rain	Temperature: 40° F
Weather (PM): P. Cloudy	Temperature: 47° F
Precipitation: 0.20 inches	Wind: 12-15 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.
--

SUMMARY OF CONSTRUCTION

Construction: Ryan Central 1 Foreman, 2 Operators, 2 Laborers.
Chesapeake Containment Systems: 1 Foreman, 12 Laborers
Pond A Construction: <ul style="list-style-type: none">No construction work performed.
Geosynthetic Work: <ul style="list-style-type: none">No geosynthetic work performed due to due showers throughout the day.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction: <ul style="list-style-type: none">Checked liner paperwork
--

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

None.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
--

None.

PHOTOGRAPHS



Pond A as seen from the northeast corner.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:



DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 4/22/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0700-1800	
	Amy Mandrell	Time:	0700-1800	
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski	
	Chesapeake Containment Systems		J. Moises Tello	

SITE CONDITIONS

Weather (AM): Clear	Temperature: 45° F
Weather (PM): Clear	Temperature: 75° F
Precipitation: 0.00 inches	Wind: 15-20 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.
--

SUMMARY OF CONSTRUCTION

Construction: Ryan Central 1 Foreman, 2 Operators, 2 Laborers.
Chesapeake Containment Systems: 1 Foreman, 12 Laborers
Pond A Construction: <ul style="list-style-type: none">Ryan repaired the eastern stormwater drain.
Geosynthetic Work: <ul style="list-style-type: none">Deployed and seamed ~96,000 square feet of 40-mil HDPEPerformed fusion welding of geomembrane.<ul style="list-style-type: none">Three wedges were used.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction: <ul style="list-style-type: none">Observed and documented deployment of geomembrane.Observed and documented fusion seaming.Observed and documented testing of fusion trial seams, all passing.Marked out fusion destructs DF-25 to DF-33.Marked and documented defects.
--

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

SUMMARY OF PROBLEMS AND RESOLUTIONS
--

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
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- | |
|---|
| <ul style="list-style-type: none">• Tim Unseld on site 0930-1000<ul style="list-style-type: none">○ Accompanied by Kevin Starken○ Discussed:<ul style="list-style-type: none">▪ Fusion seaming<ul style="list-style-type: none">• Mentioned the laboratory results of the first destructs have not been received yet.▪ Fusion trial welds<ul style="list-style-type: none">• All trail welds had passed up to this point. |
|---|

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
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None.

PHOTOGRAPHS



Deploying geomembrane.



Ryan repairing eastern most stormwater drain.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA



Deploying geomembrane.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

CQA Field Engineer: Amy Mandrell

Signature:

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date:	4/23/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan		
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0700-1800		
	Amy Mandrell	Time:	0700-1800		
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski		
	Chesapeake Containment Systems		J. Moises Tello		

SITE CONDITIONS

Weather (AM): Overcast	Temperature: 42° F
Weather (PM): P. Cloudy	Temperature: 45° F
Precipitation: 0.00 inches	Wind: 18-22 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.
--

SUMMARY OF CONSTRUCTION

Construction: Ryan Central 1 Foreman, 2 Operators, 2 Laborers.
Chesapeake Containment Systems: 1 Foreman, 12 Laborers
Pond A Construction: <ul style="list-style-type: none">Ryan excavated last portion of anchor trench in the southwest corner of Pond A
Geosynthetic Work: <ul style="list-style-type: none">Performed pressure testing of fusion welded seams.Performed repairs of defects.<ul style="list-style-type: none">Two extrusion guns were used.Pulled fusion destructs.Performed field testing of fusion destructs, all passing except for DF-6, DF-8, DF-10.Received extrusion destruct lab results:<ul style="list-style-type: none">DX-1, DX-2, DX-3.All passing.Received fusion destruct lab results:<ul style="list-style-type: none">DF-1, DF-13P, DF-15, DF-16, DF-17, DF-18, DF-19, DF-20, DF-21.All passed except DF-1, which failed shear requirements.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

GAI CQA ACTIVITIES AND TEST RESULTS

Construction:

- Observed and documented pressure testing.
- Observed and documented extrusion welding of repairs.
- Observed and documented testing of extrusion trial seams, all passing.
- Observed and documented field testing of destructs.
- Marked and documented defects.

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES

None.

PHOTOGRAPHS



Extrusion welding repairs along the north side of Pond A.



Pressure testing seams.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA



Extrusion welding repairs along south side of Pond A.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

CQA Field Engineer: Amy Mandrell

Signature:

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 4/24/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0700-1800	
	Amy Mandrell	Time:	0700-1800	
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski	
	Chesapeake Containment Systems		J. Moises Tello	

SITE CONDITIONS

Weather (AM): P. Cloudy	Temperature: 42° F
Weather (PM): P. Cloudy	Temperature: 64° F
Precipitation: 0.00 inches	Wind: 8-12 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.
--

SUMMARY OF CONSTRUCTION

Construction: Ryan Central 1 Foreman, 2 Operators, 2 Laborers.
Chesapeake Containment Systems: 1 Foreman, 12 Laborers
Pond A Construction: <ul style="list-style-type: none">• None.
Geosynthetic Work: <ul style="list-style-type: none">• Deployed and seamed ~119,000 square feet of 40-mil HDPE.• Deployed geosynthetics using CAT Skid-steer with bullet attachment.• Performed fusion welding using three wedges.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction: <ul style="list-style-type: none">• Observed and documented testing of fusion trial seams, all passing.• Observed and documented deployment of geosynthetics.• Observed and documented all fusion seaming.• Marked and documented destructs.<ul style="list-style-type: none">◦ DF-35 to DF-46.• Marked and documented defects.
--

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

- | |
|---|
| <ul style="list-style-type: none">• Marked and documented location of “previous” and “next” destructs for all failing destructs from the previous day, 4-23-19.<ul style="list-style-type: none">◦ DF-1, DF-6, DF-8, DF-10.• Accompanied surveyor while on-site. |
|---|

SUMMARY OF SURVEYOR'S ACTIVITIES

- | |
|---|
| <ul style="list-style-type: none">• Nederveld surveyor on site 1530-1700.• Surveyed geosynthetics deployed since last survey.• Attempted to survey the last Top of Liner Grading certification point, which was out of tolerance, and Ryan was unable to fix before the surveyor left site. |
|---|

SUMMARY OF PROBLEMS AND RESOLUTIONS
--

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
--

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
--

None.

PHOTOGRAPHS



Deploying geosynthetics along the northeast corner of Pond A.



Fusion welding and deploying geosynthetics along the south side of Pond A.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA



Fusion welding geosynthetics in the northeast corner of Pond A.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

CQA Field Engineer: Amy Mandrell

Signature:

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 4/25/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0700-1800	
	Amy Mandrell		0700-1800	
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski	
	Chesapeake Containment Systems		J. Moises Tello	

SITE CONDITIONS

Weather (AM): P. Cloudy	Temperature: 42° F
Weather (PM): Clear	Temperature: 68° F
Precipitation: 0.00 inches	Wind: 8-12 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.
--

SUMMARY OF CONSTRUCTION

Construction: Ryan Central 1 Foreman, 2 Operators, 2 Laborers.
Chesapeake Containment Systems: 1 Foreman, 12 Laborers
Pond A Construction: <ul style="list-style-type: none">• None.
Geosynthetic Work: <ul style="list-style-type: none">• Deployed and seamed the last ~16,000 square feet of 40-mil HDPE.• Deployed geosynthetics using CAT Skid-steer with bullet attachment.• Performed fusion welding using three wedges.• Performed extrusion welding using two guns.• Performed pressure testing of fusion welded seams.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction: <ul style="list-style-type: none">• Observed and documented testing of fusion trial seams, all passing.• Observed and documented deployment of geosynthetics.• Observed and documented all fusion seaming.• Marked and documented destructs.
--

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

- DF-47 to DF-49.
- Marked and documented defects.
- Observed field testing of destructs.
 - DF-6P, DF-6N, DF-10P2, DF-10N2, DF-23, DF-24 Passed
 - DF-1P, DF-1N, DF-10N, DF-10P Failed
- Received lab destruct results.
 - DF-2, DF-3, DF-4, DF-9, & DF-11 Passed.
 - DF-5, DF-7, & DF-12 Failed.
- Shipped DF-6P, DF-6N, DF-23, & DF-24 to lab for testing.

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

SUMMARY OF PROBLEMS AND RESOLUTIONS
--

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
--

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
--

None.

PHOTOGRAPHS

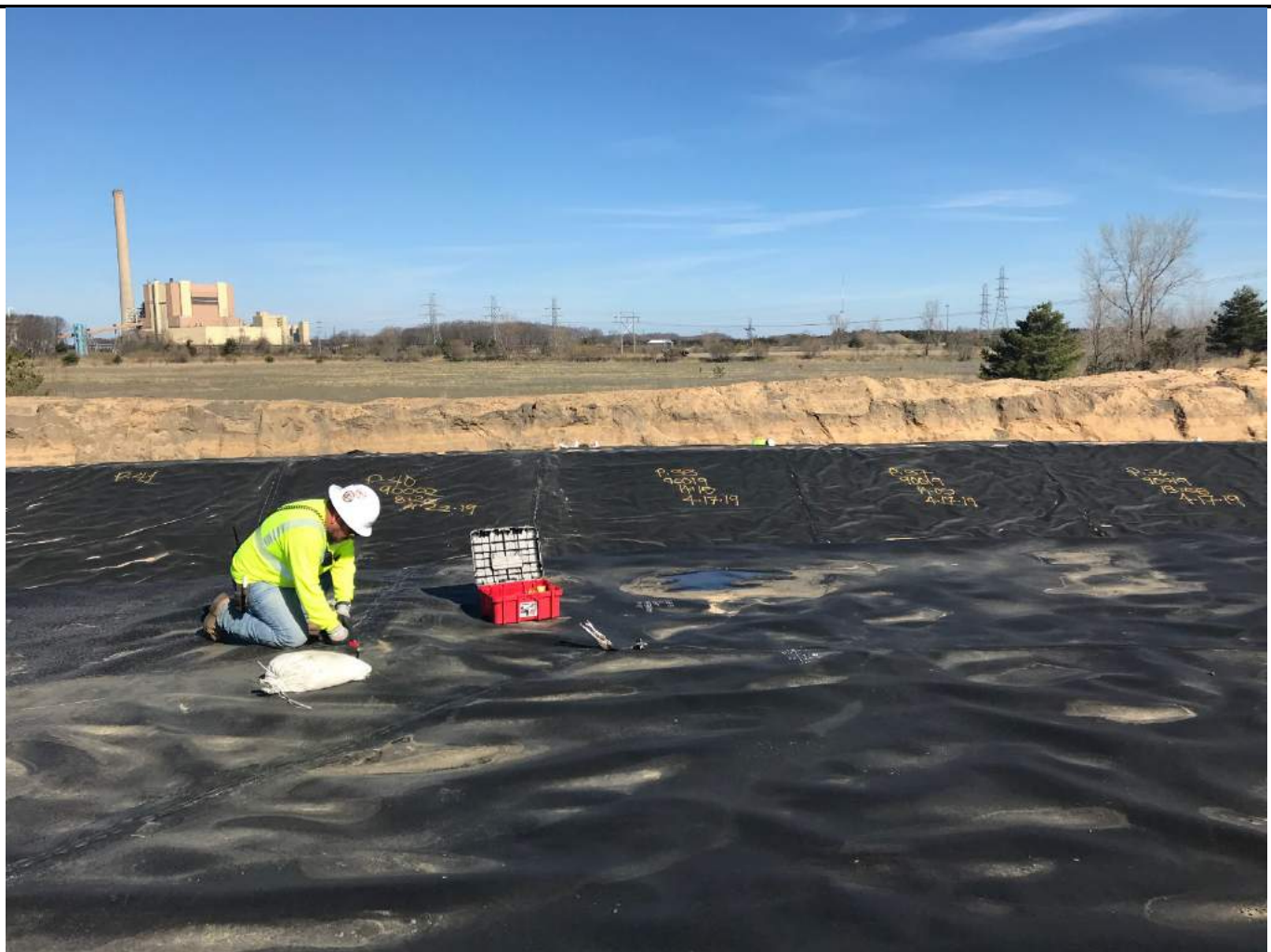


Fusion seaming the last of the geomembrane for Pond A.



Extrusion welding repairs.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA



Pressure testing fusion welded seams.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

CQA Field Engineer: Amy Mandrell

Signature:

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 4/26/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0700-1800	
	Amy Mandrell		0730-1630	
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski	
	Chesapeake Containment Systems		J. Moises Tello	

SITE CONDITIONS

Weather (AM): P. Cloudy	Temperature: 42° F
Weather (PM): Clear	Temperature: 68° F
Precipitation: 0.00 inches	Wind: 20-25 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.
--

SUMMARY OF CONSTRUCTION

Construction: Ryan Central 1 Foreman, 2 Operators, 2 Laborers.
Chesapeake Containment Systems: 1 Foreman, 12 Laborers, 1 Operations Manger
Pond A Construction: <ul style="list-style-type: none">• None.
Geosynthetic Work: <ul style="list-style-type: none">• Winds too high to deploy geomembrane.• Performed extrusion welding using two guns.• Performed pressure testing of fusion welded seams.• Pulled and field tested fusion destructs, all passing except for:<ul style="list-style-type: none">○ DF-34

GAI CQA ACTIVITIES AND TEST RESULTS

Construction: <ul style="list-style-type: none">• Observed and documented testing of extrusion trial seams, all passing.• Observed and documented extrusion welding of repairs.• Observed and documented pressure testing seams.• Marked out fusion destructs:
--

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

- | |
|---|
| <ul style="list-style-type: none">○ DF-34P & DF-34N○ DF-6P2, DF-6P3○ DF-5N4• Marked and documented defects.• Observed field testing of destructs.• Received lab destruct results.<ul style="list-style-type: none">○ DF-6N, DF-23, & DF-24 Passed.○ DF-6P Failed. |
|---|

SUMMARY OF SURVEYOR'S ACTIVITIES

- | |
|--|
| <ul style="list-style-type: none">• Nederveld surveyor on-site 0900-1000<ul style="list-style-type: none">○ Surveyed last subgrade certification point○ Flew drone and collected photos/video of Pond A |
|--|

SUMMARY OF PROBLEMS AND RESOLUTIONS
--

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
--

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
--

None.

PHOTOGRAPHS



Extrusion welding of repairs.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA



Nederveld fly drone over Pond A.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

CQA Field Engineer: Amy Mandrell

Signature:

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 4/27/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1530	
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski J. Moises Tello	
	Chesapeake Containment Systems			

SITE CONDITIONS

Weather (AM): Overcast	Temperature: 38° F
Weather (PM): Overcast	Temperature: 41° F
Precipitation: 0.00 inches	Wind: 10-12 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.
--

SUMMARY OF CONSTRUCTION

Construction: Ryan Central None
Chesapeake Containment Systems: 1 Foreman, 12 Laborers, 1 Operations Manger
Pond A Construction: <ul style="list-style-type: none">• None.
Geosynthetic Work: <ul style="list-style-type: none">• Temperature too cold to extrusion weld geomembrane.• Performed pressure testing of seams.• Performed field testing of fusion destructs.• Pulled all destructs marked out up to this day.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction: <ul style="list-style-type: none">• Observed and documented pressure testing• Observed field testing of destructs• Shipped 37 destructs to laboratory for testing.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

SUMMARY OF PROBLEMS AND RESOLUTIONS
--

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
--

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
--

None.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PHOTOGRAPHS



Pressure testing seams.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

Handwritten signature of Aaron Bickel.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 4/29/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1630	
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski	
	Chesapeake Containment Systems		J. Moises Tello	

SITE CONDITIONS

Weather (AM): Overcast, Rain	Temperature: 40° F
Weather (PM): Overcast, Rain	Temperature: 45° F
Precipitation: 0.30 inches	Wind: 10-12 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.

SUMMARY OF CONSTRUCTION

Construction:
Ryan Central
None

Chesapeake Containment Systems:
1 Foreman, 12 Laborers, 1 Operations Manger

Pond A Construction:

- None.

Geosynthetic Work:

- No work due to rain.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction:

- Checked liner paperwork.

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

None.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
--

None.

PHOTOGRAPHS



Pond A as seen from the south east corner.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:



DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 4/30/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1630	
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski J. Moises Tello	
	Chesapeake Containment Systems			

SITE CONDITIONS

Weather (AM): Overcast	Temperature: 42° F
Weather (PM): Overcast, Rain	Temperature: 47° F
Precipitation: 0.20 inches	Wind: 10-15 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.
--

SUMMARY OF CONSTRUCTION

Construction: Ryan Central None
Chesapeake Containment Systems: 1 Foreman, 12 Laborers, 1 Operations Manger
Pond A Construction: <ul style="list-style-type: none">• None.
Geosynthetic Work: <ul style="list-style-type: none">• Onsite 0730-1430, stopped work at 1430 due to rain.• Used sump pump at the western end of Pond A to remove standing water from the previous day of rain.• Performed pressure testing of seams.• Performed extrusion welding of repairs using two guns.• Performed field testing of destructs.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction: <ul style="list-style-type: none">• Observed and documented pressure testing.• Observed and documented extrusion welding.• Observed field testing of destructs.
--

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

- Marked out destructs and defects.
- Accompanied surveyor while onsite.
- Received destruct results from laboratory.
 - Failed: DF-5P4, DF-5N4, DF-10N2, DF-22, DF-7P
 - Passed: DX-4, DF-6P3, DF-7N, DF-12P, DF-12N, DF-25, DF-26, DF-27, DF-28, DF-29, DF-30
- Shipped DX-5, DF-14, DF-1N4, DF-1P5, DF-8N3, DF-8P2 to laboratory for testing.

SUMMARY OF SURVEYOR'S ACTIVITIES

- | |
|--|
| <ul style="list-style-type: none">• Nederveld onsite 0830-1030• Surveyed all remaining liner and destructs. |
|--|

SUMMARY OF PROBLEMS AND RESOLUTIONS
--

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
--

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
--

None.

PHOTOGRAPHS



Welding repair around western stormwater drain.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA



Extrusion welding repairs.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 5/1/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	1230-1930	
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski	
	Chesapeake Containment Systems		J. Moises Tello	

SITE CONDITIONS

Weather (AM): Overcast	Temperature: 42° F
Weather (PM): Overcast	Temperature: 57° F
Precipitation: 0.15 inches	Wind: 5-7 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.

SUMMARY OF CONSTRUCTION

Construction: Ryan Central None
Chesapeake Containment Systems: 1 Foreman, 12 Laborers, 1 Operations Manger
Pond A Construction: <ul style="list-style-type: none">• None.
Geosynthetic Work: <ul style="list-style-type: none">• Onsite 1330-1930, began work at 1330 due to rain in the morning.• Used sump pump at the western end of Pond A to remove standing water from the previous day of rain.• Performed pressure testing of seams.• Performed extrusion welding of repairs using two guns.• Performed field testing of destructs, all passing except DF-22P.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction: <ul style="list-style-type: none">• Observed and documented vacuum testing.• Observed and documented extrusion welding.• Observed field testing of destructs.
--

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

- Marked out destructs and defects.
- Received destruct results from laboratory.
 - Failed: DF-1N4, DF-8P2
 - Passed: DX-5, DF-1P5, DF-8N3, DF-14
- Shipped DF-33P, DF-33N, DF-22N to laboratory for testing.

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES

None.

PHOTOGRAPHS



Welding repair around western stormwater drain.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA



Extrusion welding repairs.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA



Sump-pump dewatering western end of Pond A

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

Handwritten signature of Aaron Bickel.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date:	5/2/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan		
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1930		
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski		
	Chesapeake Containment Systems		J. Moises Tello		

SITE CONDITIONS

Weather (AM): Overcast	Temperature: 50° F
Weather (PM): Overcast	Temperature: 57° F
Precipitation: 0.00 inches	Wind: 5-7 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.
--

SUMMARY OF CONSTRUCTION

Construction: Ryan Central None
Chesapeake Containment Systems: 1 Foreman, 12 Laborers, 1 Operations Manger
Pond A Construction: <ul style="list-style-type: none">• None.
Geosynthetic Work: <ul style="list-style-type: none">• Performed vacuum testing of repairs.• Performed extrusion welding of repairs using two guns.• Performed field testing of destructs.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction: <ul style="list-style-type: none">• Observed and documented vacuum testing.• Observed and documented extrusion welding.• Observed field testing of destructs.• Marked out destructs and defects.• Received destruct results from laboratory.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

- Failed: DF-33P, DF-33N, DF-22N
- Passed: None
- Shipped DF-1N5, DF-5N6, DF-5P5, DF-7P2, DF-8P3, DF-10N3, DF-22P2, DX-6, DX-7, DX-8.

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

- Pond A Update Meeting:
 - Attended by Chuck Mervart, Adam Saur, Rob Koski, Thomas Shields, Andrew Baird, Jeff Piaskowski, John Lafferty, Aaron Bickel
 - Discussed:
 - Current status of Pond A cap
 - Possible reasons for the failing destructs
 - Future Pond A work

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES

None.

PHOTOGRAPHS



Vacuum testing repairs.



Extrusion welding repairs.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA



Extrusion welding repairs

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 5/3/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1930	
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski J. Moises Tello	
	Chesapeake Containment Systems			

SITE CONDITIONS

Weather (AM): Overcast	Temperature: 50° F
Weather (PM): Overcast	Temperature: 57° F
Precipitation: 0.00 inches	Wind: 5-7 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.

SUMMARY OF CONSTRUCTION

Construction:

Ryan Central

None

Chesapeake Containment Systems:

1 Foreman, 12 Laborers, 1 Operations Manger

Pond A Construction:

- None.

Geosynthetic Work:

- Performed vacuum testing of repairs.
- Performed pressure testing of seams.
- Performed extrusion welding of repairs using two guns.
- Performed field testing of destructs.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction:

- Observed and documented vacuum testing.
- Observed and documented pressure testing of seams.
- Observed and documented extrusion welding.
- Observed field testing of destructs.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

- Marked out destructs and defects.
- Received destruct results from laboratory.
 - Failed: DF-5N6, DF-7P2, DF-8P3, DF-22P2, DX-6
 - Passed: DF-1N5, DF-5P5, DF-10N3, DX-7, DX-8
- Shipped DF-33P2, DF-33N2, DF-8N5

SUMMARY OF SURVEYOR'S ACTIVITIES

- Nederveld onsite 0830-0930 to shoot missing cross seams and destructs created since last survey

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

- Informed by Chesapeake that the current crew will be replaced and no extrusion welding will occur until the new crew arrives.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES

None.

PHOTOGRAPHS



Extrusion welding repairs.



Pressure testing seams.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA



Vacuum testing repairs

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

A handwritten signature in black ink, appearing to read 'Aaron Bickel'.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 5/4/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Aaron Bickel Amy Mandrell	Arrival/Departure Time:	0730-1330 0730-1330	
Contractor(s):	Ryan Central Inc. Chesapeake Containment Systems	Contractor(s) Rep:	Rob Koski J. Moises Tello	

SITE CONDITIONS

Weather (AM): Clear	Temperature: 52° F
Weather (PM): Clear	Temperature: 65° F
Precipitation: 0.00 inches	Wind: 5-7 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.

SUMMARY OF CONSTRUCTION

Construction:

Ryan Central
None

Chesapeake Containment Systems:

1 Foreman, 12 Laborers, 1 Operations Manger

Pond A Construction:

- None.

Geosynthetic Work:

- Performed vacuum testing of repairs.
- Moises's crew packed up all their equipment.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction:

- Observed and documented vacuum testing.
- Marked out destructs and defects.
- Received destruct results from laboratory.
 - Failed: None
 - Passed: DF-33P2, DF-33N2, DF-8N5

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

SUMMARY OF PROBLEMS AND RESOLUTIONS
--

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
--

None

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
--

None.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PHOTOGRAPHS



Vacuum testing repairs.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date:	5/6/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan		
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1730		
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski Barbarito Flores		
	Chesapeake Containment Systems				

SITE CONDITIONS

Weather (AM): Overcast, Rain	Temperature: 48° F
Weather (PM): P. Cloudy	Temperature: 57° F
Precipitation: 0.17 inches	Wind: 5-7 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.

SUMMARY OF CONSTRUCTION

Construction:
Ryan Central
None

Chesapeake Containment Systems:
1 Foreman, 12 Laborers, 1 Operations Manger

Pond A Construction:

- None.

Geosynthetic Work:

- Barbarito's new crew took their site-specific safety training
- Pulled and field tested destructs
- No extrusion welding of repairs was performed due to rain from 1230-1530

GAI CQA ACTIVITIES AND TEST RESULTS

Construction:

- Marked out destructs and defects.
- Observed field testing of destructs.
- Shipped destructs DF-22N3, DF-22P3, DX-6N, DX-6P, DX-9, DX-10.

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

<i>SUMMARY OF PROBLEMS AND RESOLUTIONS</i>

None.

<i>SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)</i>

None

<i>SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES</i>

None.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PHOTOGRAPHS



Pulling extrusion destruct DX-6P

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 5/7/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Aaron Bickel Don Winey	Arrival/Departure Time:	0730-1830 0930-1630	
Contractor(s):	Ryan Central Inc. Chesapeake Containment Systems	Contractor(s) Rep:	Rob Koski Barbarito Flores	

SITE CONDITIONS

Weather (AM): P. Cloudy	Temperature: 47° F
Weather (PM): P. Cloudy	Temperature: 57° F
Precipitation: 0.00 inches	Wind: 7-10 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.

SUMMARY OF CONSTRUCTION

Construction:

Ryan Central

None

Chesapeake Containment Systems:

1 Foreman, 12 Laborers, 1 Operations Manger

Pond A Construction:

- None.

Geosynthetic Work:

- Performed vacuum testing of repairs.
- Pulled and field-tested extrusion destructs.
- Performed extrusion welding of defects, using two guns.
- Began welding boot for the eastern stormwater manhole.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction:

- Marked out destructs on extrusion trial welds for both guns.
- Observed field testing of destructs.
- Shipped destructs DX-11 & DX-12, destructs from trial welds of each gun.
- Received destructs results from laboratory:

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

- Passing: DF-22N5, DF-22P3, DX-6N, DX-6P, DX-9, DX-10.
- Failing: None

SUMMARY OF SURVEYOR'S ACTIVITIES

- Nederveld on-site from 0930-1000. Surveyed all destructs marked since last survey.

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

- Pond A Meeting @ 1300
- Attended by: Adam Saur, Aaron Bickel, Tiffany Johnson, Jeff Piaskowski, John Burt
- Discussed the draft report submitted by Chesapeake addressing the failing destructs.
- The report proposed capping the failing seams or cutting failing seams and re-welding them.
- Golder recommended to Consumers to cap the seams as opposed to cut them out and re-weld them.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES

None.

PHOTOGRAPHS



Performing extrusion welding of repairs.



Extrusion welding repairs.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA



Began welding boot for eastern stormwater manhole

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

CQA Technician: Donald Winey

Signature:

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 5/8/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Aaron Bickel Don Winey	Arrival/Departure Time:	0730-1830 0930-1630	
Contractor(s):	Ryan Central Inc. Chesapeake Containment Systems	Contractor(s) Rep:	Rob Koski Barbarito Flores	

SITE CONDITIONS

Weather (AM): P. Cloudy	Temperature: 45° F
Weather (PM): P. Cloudy	Temperature: 58° F
Precipitation: 0.00 inches	Wind: 10-25 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.

SUMMARY OF CONSTRUCTION

Construction:

Ryan Central

1 Operator, 1 Foreman

Chesapeake Containment Systems:

1 Foreman, 12 Laborers, 1 Operations Manger

Pond A Construction:

- Operated CAT Excavator to help deploy geotextile

Geosynthetic Work:

- Performed vacuum testing of repairs.
- Pulled and field-tested fusion destructs from welding performed on 4/13/2019.
- Performed extrusion welding of defects, using two guns.
- Deployed 8 rolls of geotextile along the eastern end of Pond A.
- Sowed seams of geotextile.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction:

- Observed field testing of destructs.
- Shipped destructs DF-50 to DF-54, destructs from fusion welding on 4/13/2019.
- Received destructs results from laboratory:

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

- | |
|--|
| <ul style="list-style-type: none">○ Passing: DX-11 & DX-12○ Failing: None |
|--|

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

SUMMARY OF PROBLEMS AND RESOLUTIONS
--

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
--

Pond A Meeting @ 1100:

- | |
|--|
| <ul style="list-style-type: none">• Attended by: Adam Saur, Aaron Bickel, Tiffany Johnson, Jeff Piaskowski, Rob Koski, Andrew Baird, Chuck Mervart• Discussed the draft report submitted by Chesapeake addressing the failing destructs.• Golder recommended to Consumers to cap the seams as opposed to cut them out and re-weld them.• Consumers requested further destructs to test the quality of seams welded on 4/13/2019 that are currently not scheduled to be capped and did not have any destructive tests. |
|--|

Pond A Meeting Prior to Geotextile Deployment:
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- | |
|--|
| <ul style="list-style-type: none">• Attended by: Rob Koski (Ryan), Barbarito Flores (CCS) , Aaron Bickel (Golder)• Discussed lined areas of Pond A, bounded by passing destructs and with all other necessary repairs/testing having been performed, ready to receive geotextile. |
|--|

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
--

None.

PHOTOGRAPHS



Performing extrusion welding of repairs.



Vacuum testing of repairs.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA



Began deploying and sowing geotextile along the eastern portion of Pond A.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

Handwritten signature of Aaron Bickel.

CQA Technician: Donald Winey

Signature:

Handwritten signature of Donald Winey.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date:	5/9/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan		
GAI Personnel:	Aaron Bickel Don Winey	Arrival/Departure Time:	0730-1830 0930-1630		
Contractor(s):	Ryan Central Inc. Chesapeake Containment Systems	Contractor(s) Rep:	Rob Koski Barbarito Flores		

SITE CONDITIONS

Weather (AM): P. Cloudy	Temperature: 45° F
Weather (PM): P. Cloudy	Temperature: 58° F
Precipitation: 0.00 inches	Wind: 10-25 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.

SUMMARY OF CONSTRUCTION

Construction:
Ryan Central
1 Operator, 1 Foreman

Chesapeake Containment Systems:
1 Foreman, 12 Laborers, 1 Operations Manger

Pond A Construction:

- Operated CAT Excavator to help deploy geotextile

Geosynthetic Work:

- Deployed 18 rolls of geotextile along the eastern and western end of Pond A.
- Sowed seams of geotextile.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction:

- Received destructs results from laboratory:
 - Passing: DF-50 to DF-54.
 - Failing: None

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

SUMMARY OF PROBLEMS AND RESOLUTIONS
--

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
--

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
--

None.

PHOTOGRAPHS



Deploying and sowing geotextile.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA



Deploying and sowing geotextile.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:



CQA Technician: Donald Winey

Signature:



DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 5/10/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Aaron Bickel Don Winey	Arrival/Departure Time:	0730-1830 0800-1630	
Contractor(s):	Ryan Central Inc. Chesapeake Containment Systems	Contractor(s) Rep:	Rob Koski Barbarito Flores	

SITE CONDITIONS

Weather (AM): Clear	Temperature: 40° F
Weather (PM): Clear	Temperature: 45° F
Precipitation: 0.00 inches	Wind: 5-12 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.
--

SUMMARY OF CONSTRUCTION

Construction: Ryan Central 2 Operator, 1 Foreman
Chesapeake Containment Systems: 1 Foreman, 12 Laborers, 1 Operations Manger
Pond A Construction: <ul style="list-style-type: none">• Cut sand bags in anchor trench and emptied contents into the anchor trench.• Filled in anchor trench along the eastern end of Pond A.• Placed 6-inch drainage tiles.
Geosynthetic Work: <ul style="list-style-type: none">• Finished eastern stormwater manhole.• Performed vacuum testing of repairs.• Perform field testing of extrusion trial welds, all passing.• Performed extrusion welding of caps, using two guns.• Deployed 7 rolls of geotextile along the western end of Pond A.• Sowed seams of geotextile.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction:

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

- Observed field testing of trial welds.
- Observed and documented extrusion welding of caps.
- Observed work on eastern stormwater manhole.
- Observed placement and sowing of geotextile.
- Observed installation of drainage tile.
- Observed and documented vacuum testing.

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

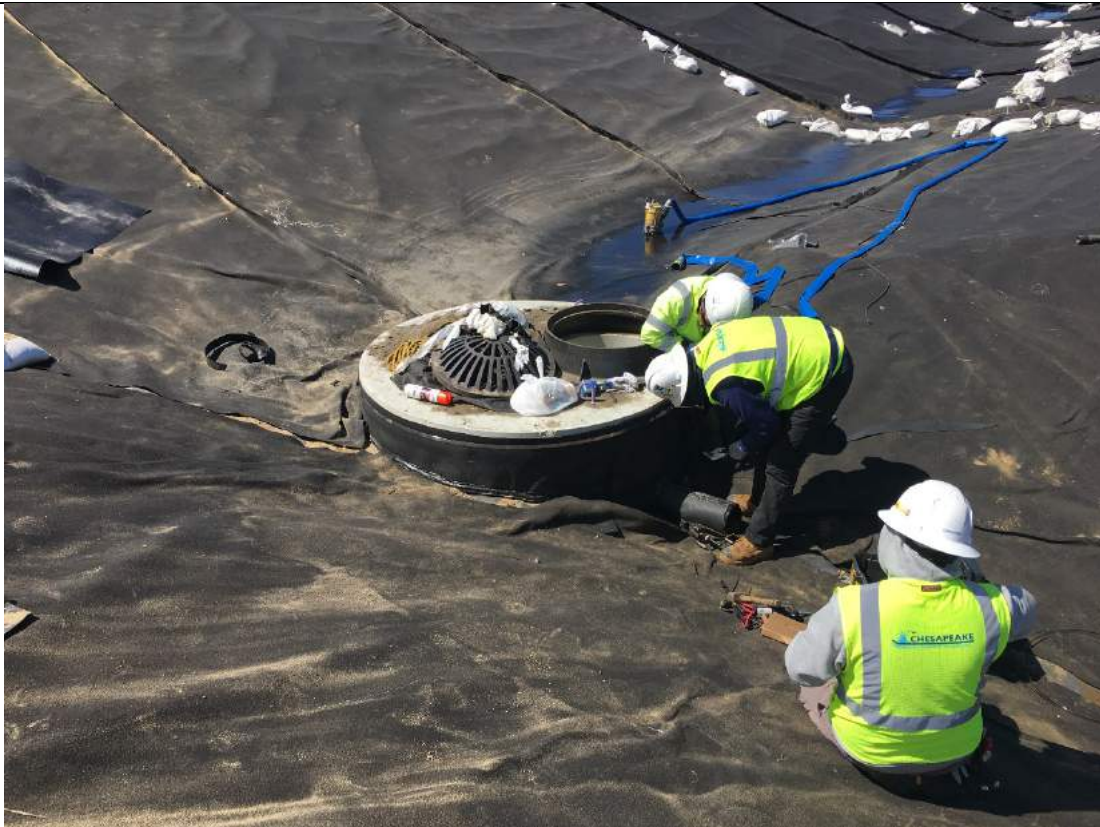
SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES

None.

PHOTOGRAPHS



Eastern stormwater manhole.



Backfilled anchor trench along the eastern edge of Pond A.



Installed 6-inch drainage tile.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA



Extrusion welding caps.



Extrusion welding caps.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

A handwritten signature in black ink, appearing to read "Aaron Bickel".

CQA Technician: Donald Winey

Signature:

A handwritten signature in black ink, appearing to read "Donald Winey".

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 5/11/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1630	
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski Barbarito Flores	
	Chesapeake Containment Systems			

SITE CONDITIONS

Weather (AM): Clear	Temperature: 43° F
Weather (PM): Clear	Temperature: 53° F
Precipitation: 0.00 inches	Wind: 7-12 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.
--

SUMMARY OF CONSTRUCTION

Construction: Ryan Central 2 Operators, 1 Foreman
Chesapeake Containment Systems: 1 Foreman, 12 Laborers
Pond A Construction: <ul style="list-style-type: none">• Cut sand bags in anchor trench and emptied contents into the anchor trench.• Continued filling in anchor trench along the north and south side of Pond A.• Continued placing 6-inch drainage tiles.• Connected drainage tiles to eastern stormwater manhole.
Geosynthetic Work: <ul style="list-style-type: none">• Performed vacuum testing of repairs.• Perform field testing of extrusion trial welds, all passing.• Performed field testing of extrusion destructs, all passing.• Performed extrusion welding of repairs.• Performed extrusion welding of caps, using two guns.• Deployed 7 rolls of geotextile along the western end of Pond A.• Sowed seams of geotextile.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

GAI CQA ACTIVITIES AND TEST RESULTS

Construction:

- Observed field testing of trial welds, all passing.
- Observed and documented field testing of extrusion destructs, all passing.
- Observed and documented extrusion welding of caps.
- Observed work on eastern stormwater manhole.
- Observed placement and sowing of geotextile.
- Observed installation of drainage tile.
- Observed and documented vacuum testing.
- Shipped extrusion destructs DX-13, DX-14, DX-15 to laboratory for testing.

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES

None.

PHOTOGRAPHS



Placing and sowing seams of textile on the west end of Pond A.



Placing and sowing seams of textile on west end of Pond A.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA



Installed 6-inch drainage tile.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

A handwritten signature in black ink, appearing to read "Aaron Bickel".

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date:	5/13/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan		
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1830		
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski Barbarito Flores		
	Chesapeake Containment Systems				

SITE CONDITIONS

Weather (AM): Clear	Temperature: 45° F
Weather (PM): Clear	Temperature: 54° F
Precipitation: 0.00 inches	Wind: 7-10 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.
--

SUMMARY OF CONSTRUCTION

Construction: Ryan Central 2 Operators, 1 Foreman
Chesapeake Containment Systems: 1 Foreman, 12 Laborers
Pond A Construction: <ul style="list-style-type: none">Received and placed 2,277 cubic yards of cover material.Began building bridge of cover material into Pond A in the southeast corner of Pond A.Continued filling in anchor trench along the west side of Pond A.
Geosynthetic Work: <ul style="list-style-type: none">Performed vacuum testing of repairs.Perform field testing of extrusion trial welds, all passing.Performed field testing of extrusion destructs, all passing.Performed extrusion welding of repairs.Performed extrusion welding of caps, using two guns.Deployed 5 rolls of geotextile along the western end of Pond A.Sowed seams of geotextile.

GAI CQA ACTIVITIES AND TEST RESULTS

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

Construction:

- Observed placement of cover materials in Pond A.
- Observed field testing of trial welds, all passing.
- Observed and documented field testing of extrusion destructs, all passing.
- Observed and documented extrusion welding of caps.
- Observed work on eastern stormwater manhole.
- Observed placement and sowing of geotextile.
- Observed installation of drainage tile.
- Observed and documented vacuum testing.
- Shipped extrusion destructs DX-16, DX-17, DX-18 to laboratory for testing.

SUMMARY OF SURVEYOR'S ACTIVITIES

- Onsite 1400-1530, surveyed destruct locations created since last survey.

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

- Tim Unseld, EGLE, onsite 1425-1500.
- Discussed caps of 4-13-2019 welding.
 - Discussed destructs DF-50 to DF-54 ensuring quality of uncapped 4-13-19 welded seams.
 - Discussed tracking of failing destructs throughout the project.
- Pond A Meeting Prior to Geotextile Deployment:
- Attended by: Rob Koski (Ryan), Barbarito Flores (CCS) , Aaron Bickel (Golder)
 - Discussed lined areas of Pond A, bounded by passing destructs and with all other necessary repairs/testing having been performed, ready to receive geotextile.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES

None.

PHOTOGRAPHS



Eastern stormwater manhole without 6-inch drainage tile connected.



Cover material being delivered to the southeast corner of Pond A.



Placing and sewing seams of geotextile in the southwest corner of Pond A.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA



Extrusion welding cap on top of Pond A.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

A handwritten signature in black ink, appearing to read 'Aaron Bickel'.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 5/14/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1730	
Contractor(s):	Ryan Central Inc. Chesapeake Containment Systems	Contractor(s) Rep:	Rob Koski Barbarito Flores	

SITE CONDITIONS

Weather (AM): Clear	Temperature: 50° F
Weather (PM): Clear	Temperature: 70° F
Precipitation: 0.00 inches	Wind: 5-7 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.
--

SUMMARY OF CONSTRUCTION

Construction: Ryan Central 2 Operators, 1 Foreman
Chesapeake Containment Systems: None
Pond A Construction: <ul style="list-style-type: none">Received and placed 2,691 cubic yards of cover material.Continued building bridge of cover material into Pond A in the southeast and northeast corner of Pond A.Continued placing 6-inch drainage tile.
Geosynthetic Work: <ul style="list-style-type: none">None. Waiting on the last extrusion destructs before covering with geotextile.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction: <ul style="list-style-type: none">Observed placement of cover materials in Pond A.Received extrusion destruct results from lab. DX-13 to DX-18 all passed.Collected cover materials sample, SS-1, for grain size analysis.

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

SUMMARY OF PROBLEMS AND RESOLUTIONS
--

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
--

None

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
--

None.

PHOTOGRAPHS



Cover material being placed in the southeast corner.



DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA



Cover material and 6-inch drain tile.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

A handwritten signature in black ink, appearing to read "Aaron Bickel".

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 5/15/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1730	
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski Barbarito Flores	
	Chesapeake Containment Systems			

SITE CONDITIONS

Weather (AM): Clear	Temperature: 50° F
Weather (PM): Clear	Temperature: 70° F
Precipitation: 0.00 inches	Wind: 5-7 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.
--

SUMMARY OF CONSTRUCTION

Construction: Ryan Central 2 Operators, 1 Foreman
Chesapeake Containment Systems: 1 Foreman, 13 Technicians
Pond A Construction: <ul style="list-style-type: none">Received and placed 3,657 cubic yards of cover material.Continued building bridge of cover material into Pond A in the southeast and northeast corner of Pond A.Continued placing 6-inch drainage tile.
Geosynthetic Work: <ul style="list-style-type: none">Onsite 1400-1800Began placing geotextile over 4/13/19 welded seams.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction: <ul style="list-style-type: none">Observed placement of cover materials in Pond A.Observed deployment and sowing of geotextile material over Pond A.
--

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

SUMMARY OF PROBLEMS AND RESOLUTIONS
--

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
--

- | |
|---|
| <ul style="list-style-type: none">• Informed at 1200 by Jeff Piaskowski that the last of the geotextile had been released for placement over 4/13 welded seams. |
|---|

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
--

None.

PHOTOGRAPHS



Cover material being placed in the southeast corner.



Cover material being placed in the northeast corner.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA



Geotextile being placed over 4/13 welded seams.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 5/16/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1730	
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski Barbarito Flores	
	Chesapeake Containment Systems			

SITE CONDITIONS

Weather (AM): Overcast	Temperature: 5° F
Weather (PM): Overcast	Temperature: 64° F
Precipitation: 0.00 inches	Wind: 5-7 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.
--

SUMMARY OF CONSTRUCTION

Construction:

Ryan Central

2 Operators, 1 Foreman

Chesapeake Containment Systems:

1 Foreman, 13 Technicians

Pond A Construction:

- Received and placed 3588 cubic yards of cover material.
- Placed cover material over the eastern end of Pond A.
- Continued placing 6-inch drainage tile.
- Connected drainage tile to the western stormwater manhole.

Geosynthetic Work:

- Onsite 0730-1100
- Finished placing and sowing geotextile
- Leistered geotextile around the boot of the western stormwater manhole.
- Removed sandbags from anchor trench and emptied their content.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

GAI CQA ACTIVITIES AND TEST RESULTS

Construction:

- Observed placement of cover materials in Pond A.
- Observed deployment and sowing of geotextile material over Pond A.
- Collected sample of cover material, SS-2, for grain size analysis.

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

Pond A Meeting Prior to Geotextile Deployment:

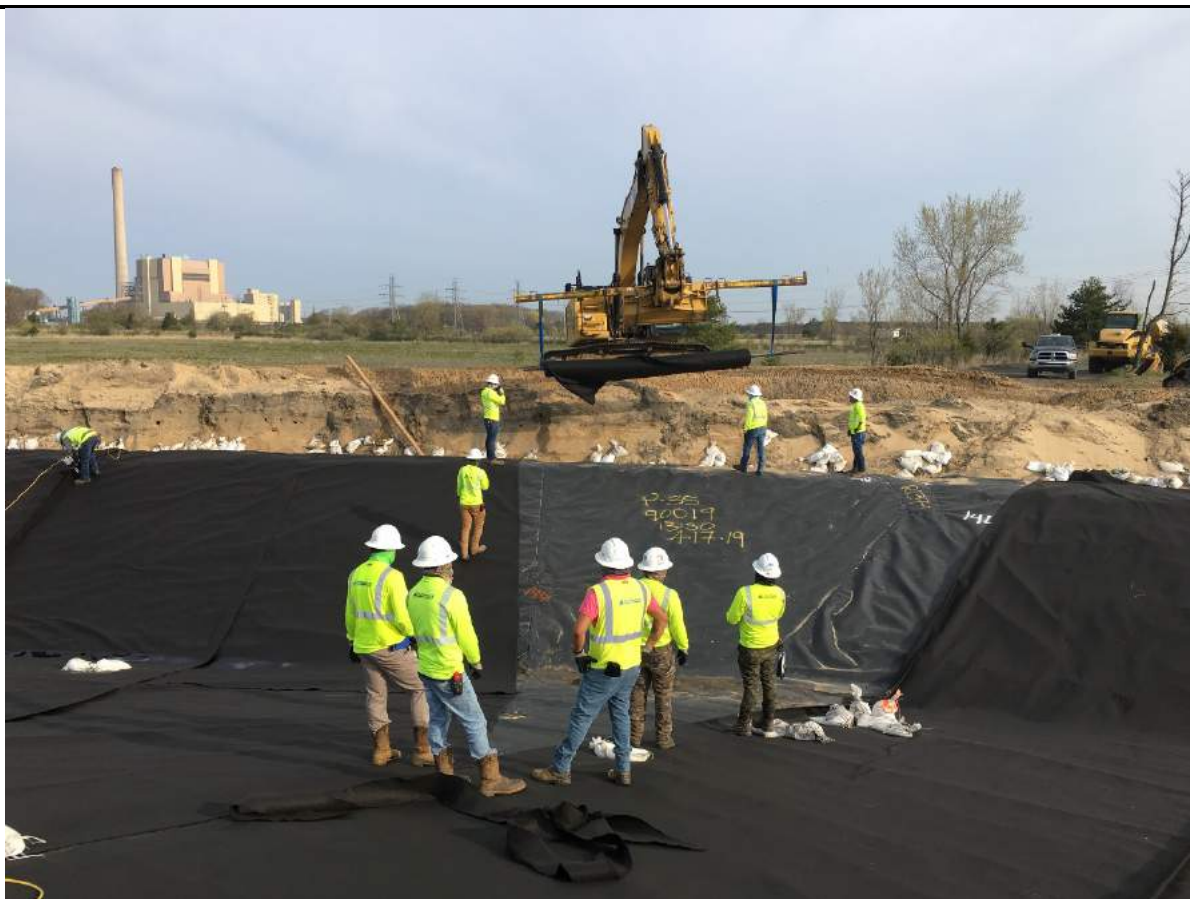
- Attended by: Rob Koski (Ryan), Barbarito Flores (CCS), Aaron Bickel (Golder)
- Discussed the last lined area of Pond A, bounded by passing destructs and with all other necessary repairs/testing having been performed, ready to receive geotextile.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES

None.

PHOTOGRAPHS

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA



Last of the geotextile being placed over Pond A.



Cover material being placed in the northeast corner.



Sandbags removed from the anchor trench.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA



Wrapping western stormwater manhole in geotextile.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

A handwritten signature in black ink, appearing to read "Aaron Bickel".

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 5/17/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1730	
Contractor(s):	Ryan Central Inc. Chesapeake Containment Systems	Contractor(s) Rep:	Rob Koski Barbarito Flores	

SITE CONDITIONS

Weather (AM): Overcast	Temperature: 55° F
Weather (PM): Overcast	Temperature: 64° F
Precipitation: 0.00 inches	Wind: 5-7 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.
--

SUMMARY OF CONSTRUCTION

Construction: Ryan Central 2 Operators, 1 Foreman
Chesapeake Containment Systems: 1 Foreman, 13 Technicians
Pond A Construction: <ul style="list-style-type: none">Received and placed 3,036 cubic yards of cover material.Continued placing cover material over the eastern end of Pond A.Continued placing 6-inch drainage tile.
Geosynthetic Work: <ul style="list-style-type: none">Packed up equipment and left site

GAI CQA ACTIVITIES AND TEST RESULTS

Construction: <ul style="list-style-type: none">Observed placement of cover materials in Pond A.Collected sample of cover material, SS-3, for grain size analysis.
--

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

SUMMARY OF PROBLEMS AND RESOLUTIONS

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES

None.

PHOTOGRAPHS



East end of Pond A.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA



West end of Pond A.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date:	5/20/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan		
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1730		
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski		

SITE CONDITIONS

Weather (AM): Overcast	Temperature: 55° F
Weather (PM): Overcast	Temperature: 64° F
Precipitation: 0.00 inches	Wind: 5-7 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.
--

SUMMARY OF CONSTRUCTION

Construction: Ryan Central 2 Laborers, 2 Operators, 1 Foreman
Pond A Construction: <ul style="list-style-type: none">Received and placed 3,105 cubic yards of cover material.Began building bridge of cover materials in the northwestern corner of Pond A.Took down and pushed out cover material of the bridge in the southeastern corner and northeastern corner of Pond A.Continued placing 6-inch drainage tile.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction: <ul style="list-style-type: none">Observed placement of cover materials in Pond A.Observed installation of drainage tile.

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
--

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
--

None.

PHOTOGRAPHS



Pushing out cover material in the southeastern corner of Pond A.



Placing cover material on top of Pond A.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA



Building bridge of cover materials in the northwest corner of Pond A.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

Handwritten signature of Aaron Bickel.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 5/21/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1730	
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski	

SITE CONDITIONS

Weather (AM): Clear	Temperature: 55° F
Weather (PM): Clear	Temperature: 64° F
Precipitation: 0.00 inches	Wind: 5-7 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.
--

SUMMARY OF CONSTRUCTION

Construction: Ryan Central 2 Laborers, 2 Operators, 1 Foreman
Pond A Construction: <ul style="list-style-type: none">Received and placed 3,266 cubic yards of cover material.Continued placing cover material in the western half of Pond A.Continued grading cover material in the eastern half of Pond A.Continued placing 6-inch drainage tile.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction: <ul style="list-style-type: none">Observed placement of cover materials in Pond A.Collected cover material sample, SS-4, for laboratory analysis.Observed installation of drainage tile.

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
--

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
--

None.

PHOTOGRAPHS



Receiving cover material in the northwest corner of Pond A.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA



Dozer grading cover material on top of Pond A.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 5/22/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1730	
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski	

SITE CONDITIONS

Weather (AM): Clear	Temperature: 55° F
Weather (PM): Clear	Temperature: 64° F
Precipitation: 0.00 inches	Wind: 5-7 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.

SUMMARY OF CONSTRUCTION

Construction:
Ryan Central
2 Laborers, 2 Operators, 1 Foreman

Pond A Construction:

- Received and placed 3,427 cubic yards of cover material.
- Continued placing cover material in the western half of Pond A.
- Continued grading cover material in the eastern half of Pond A.
- Continued placing 6-inch drainage tile.

GAI CQA ACTIVITIES AND TEST RESULTS

- Construction:**
- Observed placement of cover materials in Pond A.
 - Collected cover material sample, SS-5, for laboratory analysis.
 - Observed installation of drainage tile.

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
--

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
--

None.

PHOTOGRAPHS



Grading cover material in the northwest corner of Pond A.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA



Placing 6-inch drainage tile.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 5/23/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1730	
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski	

SITE CONDITIONS

Weather (AM): Clear	Temperature: 55° F
Weather (PM): Clear	Temperature: 64° F
Precipitation: 0.00 inches	Wind: 5-7 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.
--

SUMMARY OF CONSTRUCTION

Construction: Ryan Central 2 Laborers, 2 Operators, 1 Foreman
Pond A Construction: <ul style="list-style-type: none">Received and placed 3,450 cubic yards of cover material.Continued placing cover material in the western half of Pond A.Continued grading cover material in the eastern half of Pond A.Continued placing 6-inch drainage tile.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction: <ul style="list-style-type: none">Observed placement of cover materials in Pond A.Collected cover material sample, SS-6, for laboratory analysis.Observed installation of drainage tile.

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
--

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
--

None.

PHOTOGRAPHS



Grading and placing cover material in the northwest corner of Pond A.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA



Placing and receiving cover materials in the northwest corner of Pond A.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:



DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 5/28/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1730	
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski	

SITE CONDITIONS

Weather (AM): Clear	Temperature: 55° F
Weather (PM): Clear	Temperature: 65° F
Precipitation: 0.00 inches	Wind: 5-7 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.
--

SUMMARY OF CONSTRUCTION

Construction: Ryan Central 2 Laborers, 2 Operators, 1 Foreman
Pond A Construction: <ul style="list-style-type: none">Received and placed 3,128 cubic yards of cover material.Continued placing cover material in the western half of Pond A.Continued grading cover material in the eastern half of Pond A.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction: <ul style="list-style-type: none">Observed placement of cover materials in Pond A.

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

None.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES

None.

PHOTOGRAPHS



Excavator placing cover material over drainage tile and the dozer grading cover material.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:



DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 5/29/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1730	
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski	

SITE CONDITIONS

Weather (AM): Overcast, Foggy	Temperature: 50° F
Weather (PM): Clear	Temperature: 55° F
Precipitation: 0.00 inches	Wind: 5-7 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.
--

SUMMARY OF CONSTRUCTION

Construction: Ryan Central 3 Operators, 1 Foreman
Pond A Construction: <ul style="list-style-type: none">Received and placed 2,898 cubic yards of cover material.Continued placing cover material in the western half of Pond A.Continued grading cover material in the eastern half of Pond A.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction: <ul style="list-style-type: none">Observed placement of cover materials in Pond A.

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

None.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
--

None.

PHOTOGRAPHS



Placing and grading cover material.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 5/30/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1730	
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski	

SITE CONDITIONS

Weather (AM): Overcast, Light Rain	Temperature: 51° F
Weather (PM): Clear	Temperature: 63° F
Precipitation: 0.19 inches	Wind: 5-7 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.
--

SUMMARY OF CONSTRUCTION

Construction: Ryan Central 3 Operators, 1 Foreman
Pond A Construction: <ul style="list-style-type: none">• Received and placed 2,806 cubic yards of cover material.• Continued placing cover material in the western half of Pond A.• Continued grading cover material in the eastern half of Pond A.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction: <ul style="list-style-type: none">• Observed placement of cover materials in Pond A.• Inspected puncture of geotextile and geomembrane by dozer.
--

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

SUMMARY OF PROBLEMS AND RESOLUTIONS

<ul style="list-style-type: none">• While grading sand along the northern edge of Pond A the dozer's blade came into contact with the geotextile and geomembrane. This resulted in a 5'x5' area of damage leaving the subgrade exposed.• This accident was the result of operator error while using a non-gps guided dozer.• The surrounding area will be exposed to verify its condition.• The geomembrane and geotextile will be repaired once Chesapeake returns to site for Phase 6.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
--

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
--

None.

PHOTOGRAPHS



West end of Pond A.



The west end of Pond A.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA



The shovel is laid over the damaged area of liner. The piece of liner the dozer blade cut is sitting on the right.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

Handwritten signature of Aaron Bickel.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 5/31/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1730	
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski	

SITE CONDITIONS

Weather (AM): Clear	Temperature: 51° F
Weather (PM): Clear	Temperature: 63° F
Precipitation: 0.00 inches	Wind: 5-7 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.

SUMMARY OF CONSTRUCTION

Construction:
Ryan Central
3 Operators, 1 Foreman

Pond A Construction:

- Received and placed 2,944 cubic yards of cover material.
- Continued placing cover material in the western half of Pond A.
- Continued grading cover material in the eastern half of Pond A.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction:

- Observed placement of cover materials in Pond A.
- Collected sample of Cover Material, SS-8, for laboratory testing.
- Inspected puncture of geotextile and geomembrane by dozer w/ Adam Saur, CEC.

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
--

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
--

None.

PHOTOGRAPHS



West end of Pond A.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA



Receiving Cover Material.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 6/1/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Don Winey	Arrival/Departure Time:	0730-1730	
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski	

SITE CONDITIONS

Weather (AM): Overcast, Rain	Temperature: 50° F
Weather (PM): Clear	Temperature: 65° F
Precipitation: 0.35 inches	Wind: 5-7 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.

SUMMARY OF CONSTRUCTION**Construction:****Ryan Central**

3 Operators, 1 Foreman

Pond A Construction:

- No delivery of cover material to site.
- Two dozers continued grading cover material.

GAI CQA ACTIVITIES AND TEST RESULTS**Construction:**

- Observed grading of cover materials in Pond A.

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES

None.

PHOTOGRAPHS



Pond A.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA



Grading cover material in Pond A.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

A handwritten signature in blue ink, appearing to read "Donald R. Bickel".

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 6/4/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1730	
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski	

SITE CONDITIONS

Weather (AM): Clear	Temperature: 52° F
Weather (PM): Clear	Temperature: 65° F
Precipitation: 0.00 inches	Wind: 5-7 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.

SUMMARY OF CONSTRUCTION

Construction:

Ryan Central

1 Operators, 1 Foreman

Pond A Construction:

- No delivery of cover material to site.
- One dozer continued grading cover material.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction:

- Observed grading of cover materials in Pond A.

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES

None.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PHOTOGRAPHS



Pond A.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 6/5/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Aaron Bickel Don Winey	Arrival/Departure Time:	0730-1730 0900-1730	
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski	

SITE CONDITIONS

Weather (AM): Clear	Temperature: 52° F
Weather (PM): Clear	Temperature: 65° F
Precipitation: 0.05 inches	Wind: 5-7 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.

SUMMARY OF CONSTRUCTION

Construction:

Ryan Central

1 Operators, 1 Foreman

Chesapeake Containment Systems:

1 Superintendent, 2 Technicians

Pond A Construction:

- No delivery of cover material to site.
- One dozer continued grading cover material.
- Dozer placed cover material over the repaired area of liner.

Geosynthetics:

- Repaired damage to liner, which occurred on 5-30-19.
- Extrusion welded patch over damage, with one gun.
- Performed trial weld prior to welding.
- Vacuum tested repair.
- Replaced damage geotextile above repair.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction:

- Observed grading of cover materials in Pond A.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

- Accompanied surveyor while onsite.
- Observed testing of extrusion trial weld, passing.
- Observed extrusion welding of repair.
- Observed vacuum testing of repair.
- Observed sowing of geotextile over repaired area.

SUMMARY OF SURVEYOR'S ACTIVITIES

- Nederveld onsite 1030-1230.
- Attempted to survey Top of Cover Material certification points.
- Was told by Ryan Central that the certification points were ready but found the vast majority of points to be outside of tolerance.
- Nederveld compared their survey equipment readings to the GPS readings of Ryan Central's dozer blade.
 - Both readings were identical.

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES

None.

PHOTOGRAPHS



Dozer grading cover material of Pond A.



Chesapeake preparing area for repair.



Chesapeake extrusion welding patch over repair.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA



Dozer placing cover material over repaired area.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

CQA Technician: Donald Winey

Signature:

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date:	6/7/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan		
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1730		
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski		

SITE CONDITIONS

Weather (AM): Clear	Temperature: 60° F
Weather (PM): Clear	Temperature: 90° F
Precipitation: 0.00 inches	Wind: 3-7 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.

SUMMARY OF CONSTRUCTION

Construction:
Ryan Central
1 Operators, 1 Foreman

Chesapeake Containment Systems:
None.

Pond A Construction:

- No delivery of cover material to site.
- One dozer continued grading cover material.

Geosynthetics:

- None.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction:

- Observed grading of cover materials in Pond A.
- Accompanied surveyor while onsite.
- Assured probing of cover material was done in a manor to avoid damage to underlying geomembrane.

SUMMARY OF SURVEYOR'S ACTIVITIES

- Nederveld onsite 1230-1430.
- Attempted to survey all Top of Cover Material certification points.
- Surveyed $\frac{3}{4}$ all Top of Cover Material certification points on the Top portion of Pond A.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

- | |
|---|
| <ul style="list-style-type: none">• For certification points shown to be slightly out of tolerance by Nederveld's survey equipment a direct depth of cover material was measured with a probe.<ul style="list-style-type: none">○ These probed points were found to be within tolerance, 0.0' to +0.2'.○ Nederveld recorded the depth of Cover Material at these certification points which were probed. |
|---|

SUMMARY OF PROBLEMS AND RESOLUTIONS
--

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
--

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
--

None.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PHOTOGRAPHS



Dozer grading cover material of Pond A.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 6/10/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1730	
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski	

SITE CONDITIONS

Weather (AM): Clear	Temperature: 60° F
Weather (PM): Clear	Temperature: 75° F
Precipitation: 0.00 inches	Wind: 3-7 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.
--

SUMMARY OF CONSTRUCTION

Construction: Ryan Central 1 Operator, 1 Foreman
Chesapeake Containment Systems: None.
Pond A Construction: <ul style="list-style-type: none">One dozer continued grading cover material.No delivery of cover material or topsoil to site.
Geosynthetics: <ul style="list-style-type: none">None.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction: <ul style="list-style-type: none">Observed grading of cover materials in Pond A.

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES

None.

PHOTOGRAPHS



Dozer grading cover material of Pond A.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:



DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 6/11/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1730	
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski	

SITE CONDITIONS

Weather (AM): Clear	Temperature: 60° F
Weather (PM): Clear	Temperature: 75° F
Precipitation: 0.00 inches	Wind: 3-7 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.

SUMMARY OF CONSTRUCTION

Construction:

Ryan Central

1 Operator, 1 Foreman

Chesapeake Containment Systems:

None.

Pond A Construction:

- One dozer continued grading cover material.
- One front end loader began placing topsoil.
- 1,344.18 tons of Topsoil was delivered to site.

Geosynthetics:

- None.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction:

- Observed grading of cover materials in Pond A.
- Observed delivery of topsoil.

SUMMARY OF SURVEYOR'S ACTIVITIES

- Nederveld onsite 1030-1200.
 - Collected remainder of top of sand cert points east of the sand haul road.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

- Jeff Piaskowski onsite 1100-1200.
 - Inspected western and eastern manholes.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES

None.

PHOTOGRAPHS



Dozer grading cover material of Pond A.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:



DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 6/12/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1730	
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski	

SITE CONDITIONS

Weather (AM): Clear	Temperature: 60° F
Weather (PM): Clear	Temperature: 75° F
Precipitation: 0.00 inches	Wind: 3-7 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.
--

SUMMARY OF CONSTRUCTION

Construction: Ryan Central 1 Operator, 1 Foreman
Chesapeake Containment Systems: None.
Pond A Construction: <ul style="list-style-type: none">One dozer continued grading cover material.One front end loader began placing topsoil.1,356.67 tons of Topsoil was delivered to site.
Geosynthetics: <ul style="list-style-type: none">None.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction: <ul style="list-style-type: none">Observed grading of cover materials in Pond A.Observed delivery of topsoil.

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES

None.

PHOTOGRAPHS



Placing and grading topsoil.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 6/13/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1730	
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski	

SITE CONDITIONS

Weather (AM): Clear	Temperature: 60° F
Weather (PM): Clear	Temperature: 75° F
Precipitation: 0.00 inches	Wind: 3-7 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.
--

SUMMARY OF CONSTRUCTION

Construction: Ryan Central 1 Operator, 1 Foreman
Chesapeake Containment Systems: None.
Pond A Construction: <ul style="list-style-type: none">• One dozer continued grading cover material.• One front end loader began placing topsoil.• No topsoil or cover material delivered to site.
Geosynthetics: <ul style="list-style-type: none">• None.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction: <ul style="list-style-type: none">• Observed grading of cover materials in Pond A.• Observed delivery of topsoil.

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

SUMMARY OF PROBLEMS AND RESOLUTIONS
--

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
--

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
--

None.

PHOTOGRAPHS



Placing and grading topsoil.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:



DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 6/14/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1730	
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski	

SITE CONDITIONS

Weather (AM): Clear	Temperature: 60° F
Weather (PM): Clear	Temperature: 75° F
Precipitation: 0.00 inches	Wind: 3-7 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.
--

SUMMARY OF CONSTRUCTION

Construction: Ryan Central 1 Operator, 1 Foreman
Chesapeake Containment Systems: None.
Pond A Construction: <ul style="list-style-type: none">• One dozer continued grading cover material.• One front end loader placing topsoil.• Received 801.26 tons of topsoil.
Geosynthetics: <ul style="list-style-type: none">• None.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction: <ul style="list-style-type: none">• Observed grading of cover materials in Pond A.• Observed delivery of topsoil.

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

SUMMARY OF PROBLEMS AND RESOLUTIONS
--

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
--

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
--

None.

PHOTOGRAPHS



Placing and grading topsoil.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:



DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 6/17/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1730	
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski	

SITE CONDITIONS

Weather (AM): Clear	Temperature: 60° F
Weather (PM): Clear	Temperature: 75° F
Precipitation: 0.00 inches	Wind: 3-7 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.
--

SUMMARY OF CONSTRUCTION

Construction: Ryan Central 1 Operator, 1 Foreman
Chesapeake Containment Systems: None.
Pond A Construction: <ul style="list-style-type: none">• One dozer continued grading cover material.• One front end loader placing topsoil.• Received 1,082.02 tons of topsoil.
Geosynthetics: <ul style="list-style-type: none">• None.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction: <ul style="list-style-type: none">• Observed grading of cover materials in Pond A.• Observed delivery of topsoil.

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES

None.

PHOTOGRAPHS



Grading topsoil.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

A handwritten signature in black ink, appearing to read "Aaron Bickel".

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 6/18/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1730	
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski	

SITE CONDITIONS

Weather (AM): Clear	Temperature: 60° F
Weather (PM): Clear	Temperature: 75° F
Precipitation: 0.00 inches	Wind: 3-7 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.
--

SUMMARY OF CONSTRUCTION

Construction: Ryan Central 1 Operator, 1 Foreman
Chesapeake Containment Systems: None.
Pond A Construction: <ul style="list-style-type: none">• One dozer continued grading cover material.• One front end loader placing topsoil.• Received 1,314.94 tons of topsoil.
Geosynthetics: <ul style="list-style-type: none">• None.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction: <ul style="list-style-type: none">• Observed grading of cover materials in Pond A.• Observed delivery of topsoil.

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES

None.

PHOTOGRAPHS



Grading topsoil.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

A handwritten signature in black ink, appearing to read "Aaron Bickel".

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 6/19/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1730	
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski	

SITE CONDITIONS

Weather (AM): Clear	Temperature: 60° F
Weather (PM): Clear	Temperature: 75° F
Precipitation: 0.00 inches	Wind: 3-7 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.
--

SUMMARY OF CONSTRUCTION

Construction: Ryan Central 1 Operator, 1 Foreman
Chesapeake Containment Systems: None.
Pond A Construction: <ul style="list-style-type: none">• One dozer continued grading cover material.• One front end loader placing topsoil.• Received 1,242.82 tons of topsoil.
Geosynthetics: <ul style="list-style-type: none">• None.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction: <ul style="list-style-type: none">• Observed grading of cover materials in Pond A.• Observed delivery of topsoil.

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES

None.

PHOTOGRAPHS



Grading topsoil.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

A handwritten signature in black ink, appearing to read "Aaron Bickel".

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 6/20/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1730	
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski	

SITE CONDITIONS

Weather (AM): Clear	Temperature: 60° F
Weather (PM): Clear	Temperature: 75° F
Precipitation: 0.00 inches	Wind: 3-7 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.
--

SUMMARY OF CONSTRUCTION

Construction: Ryan Central None.
Chesapeake Containment Systems: None.
Pond A Construction: <ul style="list-style-type: none">• No work performed at Pond A.• No topsoil received.
Geosynthetics: <ul style="list-style-type: none">• None.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction:

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
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None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
--

None.

PHOTOGRAPHS

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:



DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 6/21/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1730	
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski	

SITE CONDITIONS

Weather (AM): Clear	Temperature: 60° F
Weather (PM): Clear	Temperature: 75° F
Precipitation: 0.00 inches	Wind: 3-7 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.
--

SUMMARY OF CONSTRUCTION

Construction: Ryan Central 1 Operator, 1 Foreman
Chesapeake Containment Systems: None.
Pond A Construction: <ul style="list-style-type: none">• One dozer graded topsoil.• One front end loader placed topsoil.• Received 599.53 tons of topsoil.
Geosynthetics: <ul style="list-style-type: none">• None.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction: <ul style="list-style-type: none">• Observed delivery and grading of topsoil.
--

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES

None.

PHOTOGRAPHS



Delivery and grading of topsoil.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 6/24/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1730	
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski	

SITE CONDITIONS

Weather (AM): Clear	Temperature: 60° F
Weather (PM): Clear	Temperature: 75° F
Precipitation: 0.00 inches	Wind: 3-7 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.
--

SUMMARY OF CONSTRUCTION

Construction: Ryan Central 1 Operator, 1 Foreman
Chesapeake Containment Systems: None.
Pond A Construction: <ul style="list-style-type: none">• One dozer graded topsoil.• Received no topsoil.
Geosynthetics: <ul style="list-style-type: none">• None.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction: <ul style="list-style-type: none">• Observed delivery and grading of topsoil.
--

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
--

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
--

None.

PHOTOGRAPHS



Delivery and grading of topsoil.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

A handwritten signature in black ink, appearing to read "Aaron Bickel".

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 6/25/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1730	
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski	

SITE CONDITIONS

Weather (AM): Clear	Temperature: 60° F
Weather (PM): Clear	Temperature: 75° F
Precipitation: 0.00 inches	Wind: 3-7 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.
--

SUMMARY OF CONSTRUCTION

Construction: Ryan Central 1 Operator, 1 Foreman
Chesapeake Containment Systems: None.
Pond A Construction: <ul style="list-style-type: none">• One dozer graded topsoil.• One front end loader placed topsoil.• Received 1,081.54 tons of topsoil.
Geosynthetics: <ul style="list-style-type: none">• None.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction: <ul style="list-style-type: none">• Observed delivery and grading of topsoil.
--

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
--

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
--

None.

PHOTOGRAPHS



Delivery and grading of topsoil.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 6/26/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1730	
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski	

SITE CONDITIONS

Weather (AM): Clear	Temperature: 60° F
Weather (PM): Clear	Temperature: 75° F
Precipitation: 0.00 inches	Wind: 3-7 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.
--

SUMMARY OF CONSTRUCTION

Construction: Ryan Central 1 Operator, 1 Foreman
Chesapeake Containment Systems: None.
Pond A Construction: <ul style="list-style-type: none">• One dozer graded topsoil.• One front end loader placed topsoil.• Received 902.74 tons of topsoil.
Geosynthetics: <ul style="list-style-type: none">• None.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction: <ul style="list-style-type: none">• Observed delivery and grading of topsoil.
--

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
--

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
--

None.

PHOTOGRAPHS



Delivery and grading of topsoil.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:



DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 6/27/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1730	
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski	

SITE CONDITIONS

Weather (AM): Clear	Temperature: 60° F
Weather (PM): Clear	Temperature: 75° F
Precipitation: 0.00 inches	Wind: 3-7 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.

SUMMARY OF CONSTRUCTION

Construction:

Ryan Central

1 Operator, 1 Foreman

Chesapeake Containment Systems:

None.

Pond A Construction:

- One dozer graded topsoil.
- Received no topsoil.

Geosynthetics:

- None.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction:

- Observed delivery and grading of topsoil.

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
--

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
--

None.

PHOTOGRAPHS



Delivery and grading of topsoil.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 6/28/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1730	
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski	

SITE CONDITIONS

Weather (AM): Clear	Temperature: 60° F
Weather (PM): Clear	Temperature: 75° F
Precipitation: 0.00 inches	Wind: 3-7 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.
--

SUMMARY OF CONSTRUCTION

Construction: Ryan Central 1 Operator, 1 Foreman
Chesapeake Containment Systems: None.
Pond A Construction: <ul style="list-style-type: none">Received topsoil.One dozer graded topsoil.
Geosynthetics: <ul style="list-style-type: none">None.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction: <ul style="list-style-type: none">Observed delivery and grading of topsoil.
--

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
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None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
--

None.

PHOTOGRAPHS



Grading of topsoil.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:



DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date:	7/1/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan		
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1730		
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski		

SITE CONDITIONS

Weather (AM): Clear	Temperature: 60° F
Weather (PM): Clear	Temperature: 75° F
Precipitation: 0.00 inches	Wind: 3-7 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.

SUMMARY OF CONSTRUCTION

Construction:
Ryan Central
1 Operator, 1 Foreman

Chesapeake Containment Systems:
None.

Pond A Construction:

- One dozer graded topsoil.
- Removed the sand road running north-south across Pond A and placed the material at the western end of Pond A.
- Received no topsoil.

Geosynthetics:

- None.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction:

- Observed grading of topsoil.

SUMMARY OF SURVEYOR'S ACTIVITIES

- Nederveld onsite 0830-1230
- Surveyed Top of Topsoil for the ~2/3 of the east side of Pond A.

SUMMARY OF PROBLEMS AND RESOLUTIONS

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES

None.

PHOTOGRAPHS



Topsoil at the east end of Pond A.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 7/2/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1730	
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski	

SITE CONDITIONS

Weather (AM): Clear	Temperature: 60° F
Weather (PM): Clear	Temperature: 75° F
Precipitation: 0.00 inches	Wind: 3-7 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.

SUMMARY OF CONSTRUCTION

Construction:

Ryan Central

2 Operators, 1 Foreman

Chesapeake Containment Systems:

None.

Pond A Construction:

- One dozer graded sand.
- One front end loader placed sand.
- Received no topsoil.

Geosynthetics:

- None.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction:

- Observed reception and grading of cover material.

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

SUMMARY OF PROBLEMS AND RESOLUTIONS
--

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
--

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
--

None.

PHOTOGRAPHS



Placing cover material at the west end of Pond A.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:



DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 7/3/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1530	
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski	

SITE CONDITIONS

Weather (AM): Overcast	Temperature: 60° F
Weather (PM): Overcast	Temperature: 75° F
Precipitation: 0.00 inches	Wind: 3-7 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.
--

SUMMARY OF CONSTRUCTION

Construction: Ryan Central 2 Operators, 1 Foreman
Chesapeake Containment Systems: None.
Pond A Construction: <ul style="list-style-type: none">Received and placed 1748 cubic yards of cover material.One dozer graded sand.One front end loader placed sand.Received no topsoil.
Geosynthetics: <ul style="list-style-type: none">None.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction: <ul style="list-style-type: none">Observed reception and grading of cover material.
--

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

SUMMARY OF PROBLEMS AND RESOLUTIONS
--

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
--

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
--

None.

PHOTOGRAPHS



Delivery and grading of topsoil.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:



DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date:	7/9/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan		
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1730		
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski		

SITE CONDITIONS

Weather (AM): Clear	Temperature: 69° F
Weather (PM): Clear	Temperature: 81° F
Precipitation: 0.00 inches	Wind: 3-7 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.

SUMMARY OF CONSTRUCTION

Construction:
Ryan Central
2 Laborers, 2 Operators, 1 Foreman

Chesapeake Containment Systems:
None.

Pond A Construction:

- Received and placed 1,082 cubic yards of cover material.
- One dozer graded sand.
- One front end loader placed sand.
- Received no topsoil.
- Laborers began daylighting drain tiles along slopes.

Geosynthetics:

- None.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction:

- Observed reception and grading of cover material.
- Observed daylighting of drain tiles.

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

SUMMARY OF PROBLEMS AND RESOLUTIONS
--

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
--

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
--

None.

PHOTOGRAPHS



DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

Exposed drain tile.



Grading cover material along the west end of Pond A.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

Handwritten signature of Aaron Bickel in black ink.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 7/10/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1730	
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski	

SITE CONDITIONS

Weather (AM): Clear	Temperature: 69° F
Weather (PM): Clear	Temperature: 81° F
Precipitation: 0.00 inches	Wind: 3-7 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.

SUMMARY OF CONSTRUCTION

Construction:

Ryan Central

2 Laborers, 2 Operators, 1 Foreman

Chesapeake Containment Systems:

None.

Pond A Construction:

- Received 161 cubic yards of cover material, the last of the cover material to be delivered.
- Received no topsoil.
- One dozer graded sand.
- Laborers continued daylighting drain tiles along slopes.

Geosynthetics:

- None.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction:

- Observed grading of cover material.
- Observed daylighting of drain tiles.
- Accompanied surveyor while onsite.
- Collected cover material sample, SS-09, for laboratory testing.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

SUMMARY OF SURVEYOR'S ACTIVITIES

- Nederveld onsite 0830-1030.
- Attempted to survey remaining top of cover material certification points at the west end of Pond A.
- Certification points at the toe of the slope in the trench line were consistently 0.5' high.
- Certification points in the western corner along the crest of the slope were outside of tolerance.

SUMMARY OF PROBLEMS AND RESOLUTIONS

- Mechanical issues with the Dozer were repaired in the morning.
- Mechanical issues with the Cat Skid-steer were repaired in the morning.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES

None.

PHOTOGRAPHS



Cover material along the northwest corner of Pond A.



Cover material along the southwest corner of Pond A.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA



Cover material along the western edge of Pond A.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:



DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 7/11/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1730	
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski	

SITE CONDITIONS

Weather (AM): Clear	Temperature: 69° F
Weather (PM): Clear	Temperature: 81° F
Precipitation: 0.00 inches	Wind: 3-7 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.

SUMMARY OF CONSTRUCTION

Construction:
Ryan Central
2 Laborers, 2 Operators, 1 Foreman

Chesapeake Containment Systems:
None.

Pond A Construction:

- Received no cover material or topsoil.
- One dozer graded sand.
- One skid-steer graded sand along the toe of slope in the ditch lines.
- Laborers continued daylighting drain tiles along slopes.

Geosynthetics:

- None.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction:

- Observed grading of cover material.
- Observed daylighting of drain tiles.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

SUMMARY OF PROBLEMS AND RESOLUTIONS
--

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
--

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
--

None.

PHOTOGRAPHS



Exposed drain tile.



Grading cover material along the west end of Pond A.



Skid-steer preparing subgrade

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA



Dozer preparing subgrade at the west end of Pond A.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

A handwritten signature in black ink, appearing to read "Aaron Bickel".

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date:	7/12/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan		
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1730		
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski		

SITE CONDITIONS

Weather (AM): Clear	Temperature: 69° F
Weather (PM): Clear	Temperature: 81° F
Precipitation: 0.00 inches	Wind: 3-7 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.
--

SUMMARY OF CONSTRUCTION

Construction: Ryan Central 2 Laborers, 2 Operators, 1 Foreman
Chesapeake Containment Systems: None.
Pond A Construction: <ul style="list-style-type: none">• Received no cover material or topsoil.• One dozer graded sand.• One skid-steer graded sand and topsoil along the toe of slope in the ditch lines.• Laborers continued daylighting drain tiles along slopes.
Geosynthetics: <ul style="list-style-type: none">• None.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction: <ul style="list-style-type: none">• Observed grading of cover material.• Observed daylighting of drain tiles.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

SUMMARY OF PROBLEMS AND RESOLUTIONS
--

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
--

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
--

None.

PHOTOGRAPHS



Grading cover material.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:



DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date:	7/13/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan		
GAI Personnel:	Don Winey	Arrival/Departure Time:	0730-1730		
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski		

SITE CONDITIONS

Weather (AM): Clear	Temperature: 69° F
Weather (PM): Clear	Temperature: 81° F
Precipitation: 0.00 inches	Wind: 3-7 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.
--

SUMMARY OF CONSTRUCTION

Construction: Ryan Central 2 Operators, 1 Foreman
Chesapeake Containment Systems: None.
Pond A Construction: <ul style="list-style-type: none">Received no cover material or topsoil.Preparing certifications for Top of Topsoil and Top of Cover Material.One skid-steer helped prepare certification points.
Geosynthetics: <ul style="list-style-type: none">None.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction: <ul style="list-style-type: none">Observed grading of cover material and topsoil.
--

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
--

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
--

None.

PHOTOGRAPHS



Skid-steer preparing cert points.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA



Cert points along the toe of slope.

SUBMITTED BY GOLDER:

CQA Technician: Donald Winey

Signature:

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date:	7/16/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan		
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1730		
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski		

SITE CONDITIONS

Weather (AM): Clear	Temperature: 69° F
Weather (PM): Clear	Temperature: 81° F
Precipitation: 0.00 inches	Wind: 3-7 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.
--

SUMMARY OF CONSTRUCTION

Construction: Ryan Central 2 Operators, 1 Foreman
Chesapeake Containment Systems: None.
Pond A Construction: <ul style="list-style-type: none">Received no cover material or topsoil.One skid-steer and one dozer graded cover material and topsoil to fix certification points.
Geosynthetics: <ul style="list-style-type: none">None.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction: <ul style="list-style-type: none">Observed grading of cover material.Observed grading of topsoil.

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
--

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
--

None.

PHOTOGRAPHS



Dozer preparing top of topsoil on the northern side of Pond A.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:



DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date:	7/17/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan		
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1730		
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski		

SITE CONDITIONS

Weather (AM): Clear	Temperature: 69° F
Weather (PM): Clear	Temperature: 81° F
Precipitation: 0.00 inches	Wind: 3-7 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.

SUMMARY OF CONSTRUCTION

Construction:
Ryan Central
2 Operators, 1 Foreman

Chesapeake Containment Systems:
None.

Pond A Construction:

- Received no topsoil.
- Dozer graded topsoil at the west end of Pond A.

Geosynthetics:

- None.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction:

- Observed grading and reception of topsoil.

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES

None.

PHOTOGRAPHS



Dozer preparing top of topsoil on the west end of Pond A.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:



DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date:	7/18/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan		
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1730		
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski		

SITE CONDITIONS

Weather (AM): Overcast	Temperature: 69° F
Weather (PM): Clear	Temperature: 78° F
Precipitation: 0.35 inches	Wind: 10-15 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.
--

SUMMARY OF CONSTRUCTION

Construction: Ryan Central 2 Operators, 1 Foreman
Chesapeake Containment Systems: None.
Pond A Construction: <ul style="list-style-type: none">Received 605.27 tons of topsoil.
Geosynthetics: <ul style="list-style-type: none">None.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction: <ul style="list-style-type: none">Observed reception of topsoil.

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

None.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
--

None.

PHOTOGRAPHS



Receiving topsoil at the west end of Pond A.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:



DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date:	7/19/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan		
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1730		
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski		

SITE CONDITIONS

Weather (AM): Clear	Temperature: 72° F
Weather (PM): Clear	Temperature: 82° F
Precipitation: 0.00 inches	Wind: 10-15 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.

SUMMARY OF CONSTRUCTION

Construction:

Ryan Central

2 Operators, 1 Foreman

Chesapeake Containment Systems:

None.

Pond A Construction:

- Received 760.55 tons of topsoil.
- Graded topsoil at the west end of Pond A.

Geosynthetics:

- None.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction:

- Observed reception of topsoil.
- Accompanied surveyor while onsite.

SUMMARY OF SURVEYOR'S ACTIVITIES

- Nederveld onsite 0800-1030.
- Collected remaining top of cover material certification points at Pond A.
- Collected topsoil certification point that were within tolerance.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES

None.

PHOTOGRAPHS



Received topsoil at the west end of Pond A.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

Handwritten signature of Aaron Bickel.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date:	7/22/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan		
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1730		
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski		

SITE CONDITIONS

Weather (AM): Clear	Temperature: 72° F
Weather (PM): Clear	Temperature: 82° F
Precipitation: 0.00 inches	Wind: 10-15 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.

SUMMARY OF CONSTRUCTION

Construction:
Ryan Central
1 Operator, 1 Foreman

Chesapeake Containment Systems:
None.

Pond A Construction:

- Graded topsoil at the west end of Pond A.

Geosynthetics:

- None.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction:

- Observed grading of topsoil.

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

None.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES

None.

PHOTOGRAPHS



Grading topsoil at the west end of Pond A.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:



DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date:	7/23/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan		
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1730		
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski		

SITE CONDITIONS

Weather (AM): Clear	Temperature: 72° F
Weather (PM): Clear	Temperature: 82° F
Precipitation: 0.00 inches	Wind: 10-15 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.
--

SUMMARY OF CONSTRUCTION

Construction: Ryan Central 2 Operators, 1 Foreman
Chesapeake Containment Systems: None.
Pond A Construction: <ul style="list-style-type: none">• Front end loader placed topsoil.• Dozer graded topsoil at the west end of Pond A.
Geosynthetics: <ul style="list-style-type: none">• None.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction: <ul style="list-style-type: none">• Observed grading and placement of topsoil.

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES

None.

PHOTOGRAPHS



Placing and grading topsoil at the west end of Pond A.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:



DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date:	7/23/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan		
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1730		
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski		

SITE CONDITIONS

Weather (AM): Clear	Temperature: 72° F
Weather (PM): Clear	Temperature: 82° F
Precipitation: 0.00 inches	Wind: 10-15 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.
--

SUMMARY OF CONSTRUCTION

Construction: Ryan Central 2 Operators, 1 Foreman
Chesapeake Containment Systems: None.
Pond A Construction: <ul style="list-style-type: none">• Front end loader placed topsoil.• Dozer graded topsoil at the west end of Pond A.
Geosynthetics: <ul style="list-style-type: none">• None.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction: <ul style="list-style-type: none">• Observed grading and placement of topsoil.

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES

None.

PHOTOGRAPHS



Grading of topsoil at the west end of Pond A.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date:	7/25/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan		
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1730		
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski		

SITE CONDITIONS

Weather (AM): Clear	Temperature: 72° F
Weather (PM): Clear	Temperature: 82° F
Precipitation: 0.00 inches	Wind: 10-15 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.
--

SUMMARY OF CONSTRUCTION

Construction: Ryan Central 2 Operators, 1 Foreman
Chesapeake Containment Systems: None.
Pond A Construction: <ul style="list-style-type: none">• Front end loader placed topsoil.• Dozer graded topsoil at the west end of Pond A.
Geosynthetics: <ul style="list-style-type: none">• None.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction: <ul style="list-style-type: none">• Observed grading and placement of topsoil.

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES

None.

PHOTOGRAPHS



Grading of topsoil at the west end of Pond A.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:



DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date:	7/26/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan		
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1730		
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski		

SITE CONDITIONS

Weather (AM): Clear	Temperature: 72° F
Weather (PM): Clear	Temperature: 82° F
Precipitation: 0.00 inches	Wind: 10-15 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.

SUMMARY OF CONSTRUCTION

Construction:
Ryan Central
2 Operators, 1 Foreman

Chesapeake Containment Systems:
None.

Pond A Construction:

- Dozer finished grading topsoil at the west end of Pond A.

Geosynthetics:

- None.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction:

- Observed grading and placement of topsoil.

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

None.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
--

None.

PHOTOGRAPHS



Graded of topsoil at the west end of Pond A.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA



Graded topsoil on the south side of Pond A.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date:	7/27/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan		
GAI Personnel:	Don Winey	Arrival/Departure Time:	0730-1730		
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski		

SITE CONDITIONS

Weather (AM): Clear	Temperature: 72° F
Weather (PM): Clear	Temperature: 82° F
Precipitation: 0.00 inches	Wind: 10-15 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.
--

SUMMARY OF CONSTRUCTION

Construction: Ryan Central 2 Operators, 1 Foreman
Chesapeake Containment Systems: None.
Pond A Construction: <ul style="list-style-type: none">Installed screens on daylighted drain tiles.
Geosynthetics: <ul style="list-style-type: none">None.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction: <ul style="list-style-type: none">Observed installation of screens.
--

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

None.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES

None.

PHOTOGRAPHS



Installed screens on the drain tile.

SUBMITTED BY GOLDER:

CQA Technician: Donald Winey

Signature:

Handwritten signature of Donald Winey.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date:	7/29/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan		
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1730		
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski		

SITE CONDITIONS

Weather (AM): Clear	Temperature: 72° F
Weather (PM): Clear	Temperature: 82° F
Precipitation: 0.00 inches	Wind: 10-15 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.

SUMMARY OF CONSTRUCTION

Construction:
Ryan Central
2 Operators, 1 Foreman

Chesapeake Containment Systems:
None.

Pond A Construction:

- None

Geosynthetics:

- None.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction:

- Accompanied surveyor while onsite.

SUMMARY OF SURVEYOR'S ACTIVITIES

- Nederveld onsite 0800-1030.
- Collected the last of the Top of Topsoil certification points at Pond A.

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

None.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
--

None.

PHOTOGRAPHS



Graded topsoil on the south side of Pond A.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:



DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date:	8/1/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan		
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1730		
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski		

SITE CONDITIONS

Weather (AM): Clear	Temperature: 72° F
Weather (PM): Clear	Temperature: 82° F
Precipitation: 0.00 inches	Wind: 10-15 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.

SUMMARY OF CONSTRUCTION

Construction:

Ryan Central

2 Operators, 1 Foreman

Chesapeake Containment Systems:

None.

Pond A Construction:

- Natural Environmental Reclamation Concepts, Inc. onsite to perform seeding and mulching.

Geosynthetics:

- None.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction:

- Observed seeding and mulching of Pond A.

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

SUMMARY OF PROBLEMS AND RESOLUTIONS

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

None.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
--

None.

PHOTOGRAPHS



Seeding and mulching of Pond A.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

PROJECT OVERVIEW

Project Title:	J.H. Campbell Landfill Pond A	Project Number:	1896102	Date: 8/2/19
Client:	Consumers Energy	Site/Location:	West Olive, Michigan	
GAI Personnel:	Aaron Bickel	Arrival/Departure Time:	0730-1730	
Contractor(s):	Ryan Central Inc.	Contractor(s) Rep:	Rob Koski	

SITE CONDITIONS

Weather (AM): Clear	Temperature: 72° F
Weather (PM): Clear	Temperature: 82° F
Precipitation: 0.00 inches	Wind: 10-15 mph

EQUIPMENT ON SITE

Ryan Central: CAT Skid Steer, CAT D6T Dozer, John Deere Tractor w/ Rollerblade, CAT Drum roller, CAT TL1055D Telehandler, CAT 326F Excavator.

SUMMARY OF CONSTRUCTION

Construction:

Ryan Central

2 Operators, 1 Foreman

Chesapeake Containment Systems:

None.

Pond A Construction:

- Natural Environmental Reclamation Concepts, Inc. onsite to perform seeding and mulching.
- Ryan Central installed 12 jersey barriers. 3 at each corner.
- Installed textile and overlying rip-wrap at the west and east manhole.

Geosynthetics:

- None.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction:

- Observed seeding and mulching of Pond A.
- Observed installation of rip-wrap and jersey barriers.

SUMMARY OF SURVEYOR'S ACTIVITIES

None.

SUMMARY OF PROBLEMS AND RESOLUTIONS

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA

None.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

None.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES

None.

PHOTOGRAPHS



Placing straw over seeded topsoil at Pond A.



Western manhole with rip-wrap.



Eastern manhole with rip-wrap.

DAILY FIELD FORM – J.H. CAMPBELL – POND A CQA



South west corner of Pond A with jersey barriers.

SUBMITTED BY GOLDER:

CQA Field Manager: Aaron Bickel

Signature:

APPENDIX D

Soil Laboratory Testing

APPENDIX D.1

Protective Cover Material

Sample Identification	Sample Type	Sample Depth (ft)	Soil Classification	In-situ Moisture %	Atterberg Limits				Grain Size Distribution			STANDARD Proctor		Organic Content %	pH	Hydraulic Conductivity (cm/sec)	Additional Tests Conducted (See Notes)
					LL	PL	PI	LI	% Finer 0.75" sieve	% Finer #4 sieve	% Finer #200 sieve	Maximum Dry Density (pcf)	Optimum Moisture %				
SS-01	Bag	-	SP	5.1	-	-	-	-	100.0	99.0	0.5	-	-	-	-	-	
SS-02	Bag	-	SP	4.6	-	-	-	-	100.0	99.8	0.7	-	-	-	-	-	
SS-03	Bag	-	SP	5.1	-	-	-	-	100.0	99.7	0.7	-	-	-	-	-	
SS-04	Bag	-	SP	4.4	-	-	-	-	100.0	99.6	1.1	-	-	-	-	-	
SS-05	Bag	-	SP	4.3	-	-	-	-	100.0	99.3	2.0	-	-	-	-	-	
SS-06	Bag	-	SP	4.5	-	-	-	-	100.0	99.6	0.8	-	-	-	-	-	
SS-07	Bag	-	SP	3.9	-	-	-	-	100.0	98.1	0.8	-	-	-	-	-	
SS-08	Bag	-	SP	4.0	-	-	-	-	100.0	96.5	0.9	-	-	-	-	-	
SS-09	Bag	-	SP	3.3	-	-	-	-	100.0	97.6	0.5	-	-	-	-	-	

ABBREVIATIONS: LIQUID LIMIT (LL)
PLASTIC LIMIT (PL)
PLASTICITY INDEX (PI)
LIQUIDITY INDEX (LI)
SPECIFIC GRAVITY (Gs)
MOISTURE (Mc)

NOTES: T = TRIAXIAL TEST
U = UNCONFINED COMPRESSION TEST
C = CONSOLIDATION TEST
DS = DIRECT SHEAR TEST
O = ORGANIC CONTENT
P = pH
NP = NON-PLASTIC
*Classified Visually

ASTM GRAIN SIZE ANALYSIS
ASTM D 421, D 2217, D 1140, C 117, D 422, C 136, C 142

PROJECT TITLE	CEC JHC Pond A	SAMPLE ID	SS-01
PROJECT NO.	1896102	SAMPLE TYPE	Bag
REMARKS		SAMPLE DEPTH (ft)	-

WATER CONTENT (Delivered Moisture)		Hygroscopic Moisture For Sieve Sample	
Wt Wet Soil & Tare (gm)	(w1) 1000.12	Wet Soil & Tare (gm)	1.00
Wt Dry Soil & Tare (gm)	(w2) 969.64	Dry Soil & Tare (gm)	1.00
Weight of Tare (gm)	(w3) 372.89	Tare Weight (gm)	0.00
Weight of Water (gm)	(w4=w1-w2) 30.48	Moisture Content (%)	0.00%
Weight of Dry Soil (gm)	(w5=w2-w3) 596.75	Total Weight Of Sample Used For Sieve Corrected For Hygroscopic Moisture	
Moisture Content (%)	(w4/w5)*100 5.11	Weight Of Sample (gm)	969.64
		Tare Weight (gm)	372.89
		(W6) Total Dry Weight (gm)	596.75

SIEVE ANALYSIS	Tare Weight	Wt Ret	Cum. Ret.	Cumulative	% PASS	SIEVE
	372.89	+Tare	(Wt-Tare) (dry)	(%Retained) ((w1 ret/w6)*100)	(100-%ret)	
3.0"	372.89	0.00	0.00	100.00	3.0"	coarse gravel
2.5"	372.89	0.00	0.00	100.00	2.5"	coarse gravel
2.0"	372.89	0.00	0.00	100.00	2.0"	coarse gravel
1.5"	372.89	0.00	0.00	100.00	1.5"	coarse gravel
1.0"	372.89	0.00	0.00	100.00	1.0"	coarse gravel
0.75"	372.89	0.00	0.00	100.00	0.75"	fine gravel
0.50"	372.89	0.00	0.00	100.00	0.50"	fine gravel
0.375"	376.42	3.53	0.59	99.41	0.375"	fine gravel
#4	379.01	6.12	1.03	98.97	#4	coarse sand
#10	386.93	14.04	2.35	97.65	#10	medium sand
#20	403.70	30.81	5.16	94.84	#20	medium sand
#40	518.43	145.54	24.39	75.61	#40	fine sand
#60	824.07	451.18	75.61	24.39	#60	fine sand
#100	945.04	572.15	95.88	4.12	#100	fine sand
#200	966.59	593.70	99.49	0.51	#200	finer

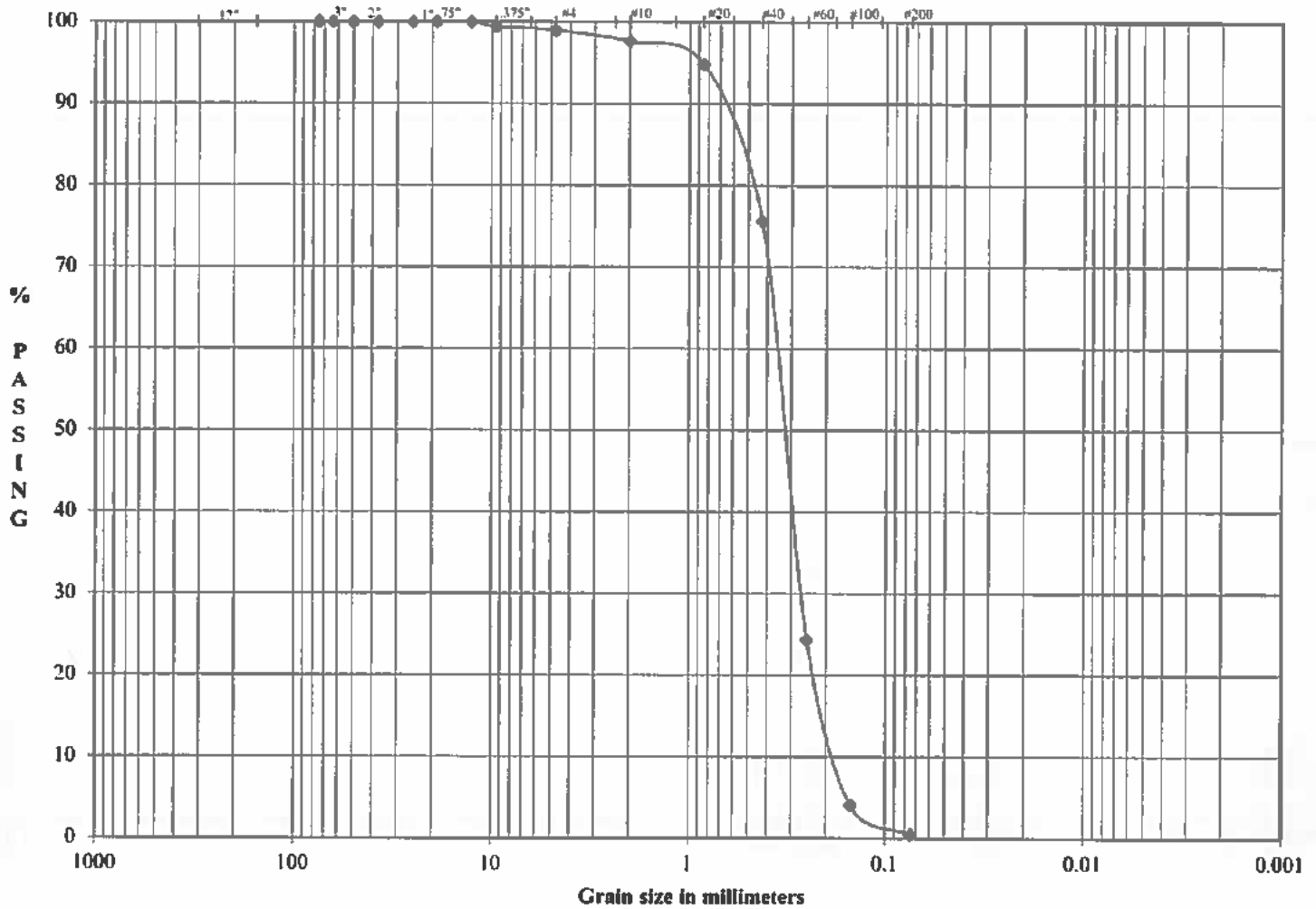
% C GRAVEL	0.00	Descriptive Terms	> 10% mostly coarse (c)	LL	-
% F GRAVEL	1.03	trace 0 to 5%	> 10% mostly medium (m)	PL	-
% C SAND	1.33	little 5 to 12%	< 10% fine (c-m)	PI	-
% M SAND	22.04	some 12 to 30%	< 10% coarse (m-f)	Gs	-
% F SAND	75.10	and 30 to 50%	< 10% coarse and fine (m)		
% FINES	0.51		< 10% coarse and medium (f)		
% TOTAL	100.00		> 10% equal amounts each (c-f)		

DESCRIPTION	Brown, POORLY GRADED SAND, trace gravel, trace fines
USCS	SP

TECH	NM
DATE	5/21/2019
CHECK	PS
REVIEW	AK

* material finer than #4 sieve corrected for hygroscopic moisture.

**PARTICLE SIZE DISTRIBUTION ASTM D 421 AND D 422
US STANDARD SIEVE OPENING SIZES**



Boulders	Cobbles	Coarse	Fine	Cor	Med	Fine	SILT OR CLAY
		GRAVEL		SAND			FINES
	0.00	0.00	1.03	1.33	22.04	75.10	0.51
		1.03		98.46			

SAMPLE ID: SS-01
SAMPLE TYPE: Bag
SAMPLE DEPTH (ft): -

LL: -
PL: -
PI: -

DESCRIPTION: Brown, POORLY GRADED SAND, trace gravel, trace fines

USCS: SP

TECH	NM
DATE	5/21/2019
CHECK	BS
REVIEW	AK

ASTM GRAIN SIZE ANALYSIS
ASTM D 421, D 2217, D 1140, C 117, D 422, C 136, C 142

PROJECT TITLE	CEC JHC Pond A	SAMPLE ID	SS-02
PROJECT NO.	1896102	SAMPLE TYPE	Bag
REMARKS		SAMPLE DEPTH (ft)	-

WATER CONTENT (Delivered Moisture)		Hygroscopic Moisture For Sieve Sample	
Wt Wet Soil & Tare (gm)	(w1) 1000.08	Wet Soil & Tare (gm)	1.00
Wt Dry Soil & Tare (gm)	(w2) 972.26	Dry Soil & Tare (gm)	1.00
Weight of Tare (gm)	(w3) 363.96	Tare Weight (gm)	0.00
Weight of Water (gm)	(w4=w1-w2) 27.82	Moisture Content (%)	0.00%
Weight of Dry Soil (gm)	(w5=w2-w3) 608.30	Total Weight Of Sample Used For Sieve Corrected For Hygroscopic Moisture	
Moisture Content (%)	(w4/w5)*100 4.57	Weight Of Sample (gm)	972.26
		Tare Weight (gm)	363.96
		(W6) Total Dry Weight (gm)	608.30

SIEVE ANALYSIS		Cum. Ret.	Cumulative	% PASS	SIEVE
Tare Weight	Wt Ret	(Wt-Tare)	(%Retained)	(100-%ret)	
363.96	+Tare	(dry)	[(w1 ret/w6)*100]		
3.0"	363.96	0.00	0.00	100.00	3.0" coarse gravel
2.5"	363.96	0.00	0.00	100.00	2.5" coarse gravel
2.0"	363.96	0.00	0.00	100.00	2.0" coarse gravel
1.5"	363.96	0.00	0.00	100.00	1.5" coarse gravel
1.0"	363.96	0.00	0.00	100.00	1.0" coarse gravel
0.75"	363.96	0.00	0.00	100.00	0.75" fine gravel
0.50"	363.96	0.00	0.00	100.00	0.50" fine gravel
0.375"	363.96	0.00	0.00	100.00	0.375" fine gravel
#4	365.20	1.24	0.20	99.80	#4 coarse sand
#10	368.13	4.17	0.69	99.31	#10 medium sand
#20	378.55	14.59	2.40	97.60	#20 medium sand
#40	495.68	131.72	21.65	78.35	#40 fine sand
#60	819.92	455.96	74.96	25.04	#60 fine sand
#100	943.26	579.30	95.23	4.77	#100 fine sand
#200	968.17	604.21	99.33	0.67	#200 fines

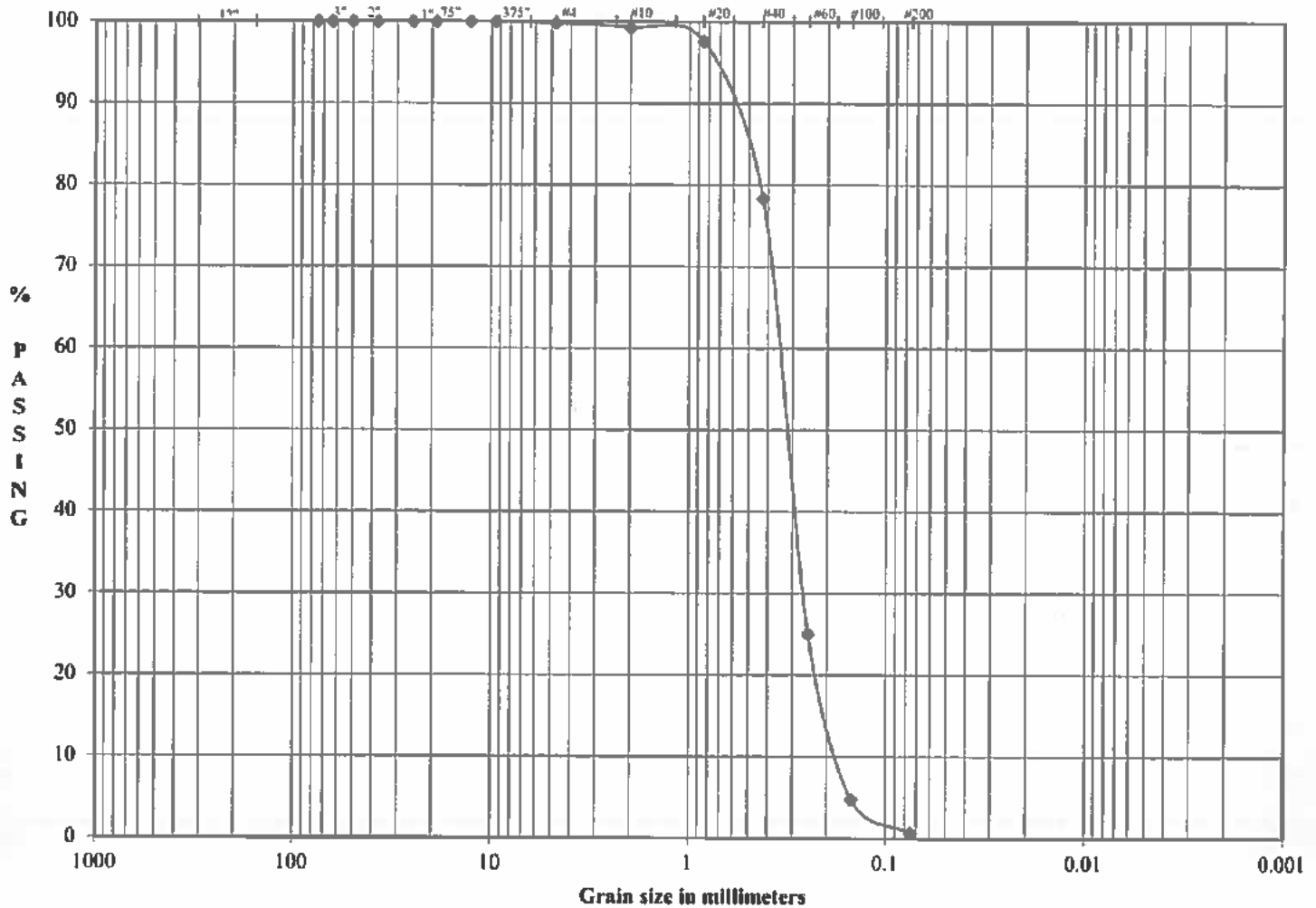
% C GRAVEL	0.00	Descriptive Terms	> 10% mostly coarse (c)	LL	-
% F GRAVEL	0.20		> 10% mostly medium (m)		-
% C SAND	0.48	trace	0 to 5%	PL	-
% M SAND	20.97	little	5 to 12%	PI	-
% F SAND	77.67	some	12 to 30%	Gs	-
% FINES	0.67	and	30 to 50%		
% TOTAL	100.00		< 10% fine (c-m)		
			< 10% coarse (m-f)		
			< 10% coarse and fine (m)		
			< 10% coarse and medium (f)		
			> 10% equal amounts each (c-f)		

DESCRIPTION	Brown, POORLY GRADED SAND, trace gravel, trace fines
USCS	SP

TECH	NM
DATE	5/21/2019
CHECK	BS
REVIEW	AK

* material finer than #4 sieve corrected for hygroscopic moisture.

**PARTICLE SIZE DISTRIBUTION ASTM D 421 AND D 422
US STANDARD SIEVE OPENING SIZES**



Boulders	Cobbles	Coarse	Fine	Cor	Med	Fine	SILT OR CLAY
		GRAVEL		SAND			FINES
	0.00	0.00	0.20	0.48	20.97	77.67	0.67
		0.20		99.12			

SAMPLE ID: SS-02
SAMPLE TYPE: Bag
SAMPLE DEPTH (ft): -

LL: -
PL: -
PI: -

DESCRIPTION: Brown, POORLY GRADED SAND, trace gravel, trace fines

USCS: SP

TECH: NM
DATE: 5/21/2019
CHECK: BS
REVIEW: AK

ASTM GRAIN SIZE ANALYSIS
ASTM D 421, D 2217, D 1140, C 117, D 422, C 136, C 142

PROJECT TITLE	CEC JHC Pond A	SAMPLE ID	SS-03
PROJECT NO.	1896102	SAMPLE TYPE	Bag
REMARKS		SAMPLE DEPTH (ft)	-

WATER CONTENT (Delivered Moisture)		Hygroscopic Moisture For Sieve Sample	
Wt Wet Soil & Tare (gm)	(w1) 1000.12	Wet Soil & Tare (gm)	1.00
Wt Dry Soil & Tare (gm)	(w2) 965.72	Dry Soil & Tare (gm)	1.00
Weight of Tare (gm)	(w3) 297.10	Tare Weight (gm)	0.00
Weight of Water (gm)	(w4=w1-w2) 34.40	Moisture Content (%)	0.00%
Weight of Dry Soil (gm)	(w5=w2-w3) 668.62	Total Weight Of Sample Used For Sieve Corrected For Hygroscopic Moisture	
Moisture Content (%)	(w4/w5)*100 5.14	Weight Of Sample (gm)	965.72
		Tare Weight (gm)	297.10
		(W6) Total Dry Weight (gm)	668.62

SIEVE ANALYSIS		Cum. Ret.	Cumulative			
Tare Weight	Wt Ret	(Wt-Tare)	(%Retained)	% PASS	SIEVE	
297.10	+Tare	(dry)	((wt ret/w6)*100)	(100-%ret)		
3.0"	297.10	0.00	0.00	100.00	3.0"	coarse gravel
2.5"	297.10	0.00	0.00	100.00	2.5"	coarse gravel
2.0"	297.10	0.00	0.00	100.00	2.0"	coarse gravel
1.5"	297.10	0.00	0.00	100.00	1.5"	coarse gravel
1.0"	297.10	0.00	0.00	100.00	1.0"	coarse gravel
0.75"	297.10	0.00	0.00	100.00	0.75"	fine gravel
0.50"	297.10	0.00	0.00	100.00	0.50"	fine gravel
0.375"	297.10	0.00	0.00	100.00	0.375"	fine gravel
#4	298.89	1.79	0.27	99.73	#4	coarse sand
#10	302.55	5.45	0.82	99.18	#10	medium sand
#20	314.31	17.21	2.57	97.43	#20	medium sand
#40	445.68	148.58	22.22	77.78	#40	fine sand
#60	803.17	506.07	75.69	24.31	#60	fine sand
#100	934.19	637.09	95.28	4.72	#100	fine sand
#200	961.25	664.15	99.33	0.67	#200	finer

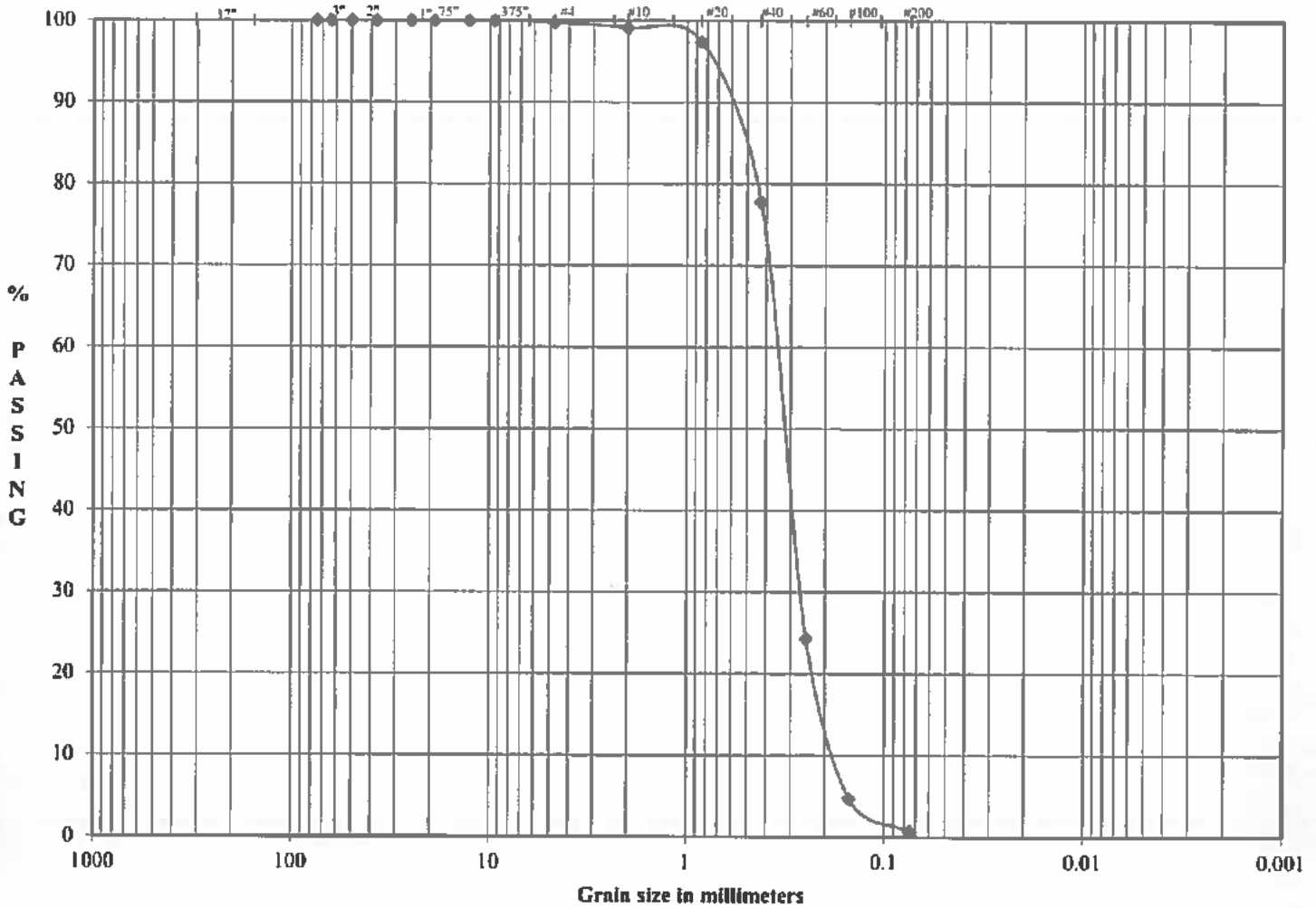
% C GRAVEL	0.00	Descriptive Terms	> 10% mostly coarse (c)	LL	-
% F GRAVEL	0.27	trace	0 to 5%	PL	-
% C SAND	0.55	little	5 to 12%	PI	-
% M SAND	21.41	some	12 to 30%	Gs	-
% F SAND	77.11	and	30 to 50%		
% FINES	0.67		< 10% fine (c-m)		
% TOTAL	100.00		< 10% coarse (m-f)		
			< 10% coarse and fine (m)		
			< 10% coarse and medium (f)		
			> 10% equal amounts each (c-f)		

DESCRIPTION	Brown, POORLY GRADED SAND, trace gravel, trace fines
USCS	SP

TECH	NM
DATE	5/21/2019
CHECK	PS
REVIEW	AK

* material finer than #4 sieve corrected for hygroscopic moisture.

**PARTICLE SIZE DISTRIBUTION ASTM D 421 AND D 422
US STANDARD SIEVE OPENING SIZES**



Boulders	Cobbles	Coarse	Fine	Cor	Med	Fine	SILT OR CLAY
		GRAVEL		SAND			FINES
	0.00	0.00	0.27	0.55	21.41	77.11	0.67
		0.27		99.06			

SAMPLE ID: SS-03
SAMPLE TYPE: Bag
SAMPLE DEPTH (ft): -

LL: -
PL: -
PI: -

DESCRIPTION: Brown, POORLY GRADED SAND, trace gravel, trace fines

USCS: SP

TECH	NM
DATE	5/21/2019
CHECK	PS
REVIEW	AK

ASTM GRAIN SIZE ANALYSIS
ASTM D 421, D 2217, D 1140, C 117, D 422, C 136, C 142

PROJECT TITLE	CEC JHC Pond A	SAMPLE ID	SS-04
PROJECT NO.	1896102	SAMPLE TYPE	Bag
REMARKS		SAMPLE DEPTH (ft)	-

WATER CONTENT (Delivered Moisture)		Hygroscopic Moisture For Sieve Sample	
Wt Wet Soil & Tare (gm)	(w1) 1101.75	Wet Soil & Tare (gm)	1.00
Wt Dry Soil & Tare (gm)	(w2) 1068.81	Dry Soil & Tare (gm)	1.00
Weight of Tare (gm)	(w3) 315.83	Tare Weight (gm)	0.00
Weight of Water (gm)	(w4=w1-w2) 32.94	Moisture Content (%)	0.00%
Weight of Dry Soil (gm)	(w5=w2-w3) 752.98	Total Weight Of Sample Used For Sieve Corrected For Hygroscopic Moisture	
Moisture Content (%)	(w4/w5)*100 4.37	Weight Of Sample (gm)	1068.81
		Tare Weight (gm)	315.83
		(W6) Total Dry Weight (gm)	752.98

SIEVE ANALYSIS	Tare Weight	Wt Ret	Cum. Ret	Cumulative	% PASS	SIEVE
	315.83	+Tare	(Wt-Tare) (dry)	(%Retained) [(wt ret/w6)*100]	(100-%ret)	
3.0"	315.83	0.00	0.00	100.00	3.0"	coarse gravel
2.5"	315.83	0.00	0.00	100.00	2.5"	coarse gravel
2.0"	315.83	0.00	0.00	100.00	2.0"	coarse gravel
1.5"	315.83	0.00	0.00	100.00	1.5"	coarse gravel
1.0"	315.83	0.00	0.00	100.00	1.0"	coarse gravel
0.75"	315.83	0.00	0.00	100.00	0.75"	fine gravel
0.50"	315.83	0.00	0.00	100.00	0.50"	fine gravel
0.375"	315.83	0.00	0.00	100.00	0.375"	fine gravel
#4	318.99	3.16	0.42	99.58	#4	coarse sand
#10	324.16	8.33	1.11	98.89	#10	medium sand
#20	339.95	24.12	3.20	96.80	#20	medium sand
#40	490.69	174.86	23.22	76.78	#40	fine sand
#60	865.95	550.12	73.06	26.94	#60	fine sand
#100	1017.33	701.50	93.16	6.84	#100	fine sand
#200	1060.36	744.53	98.88	1.12	#200	fines

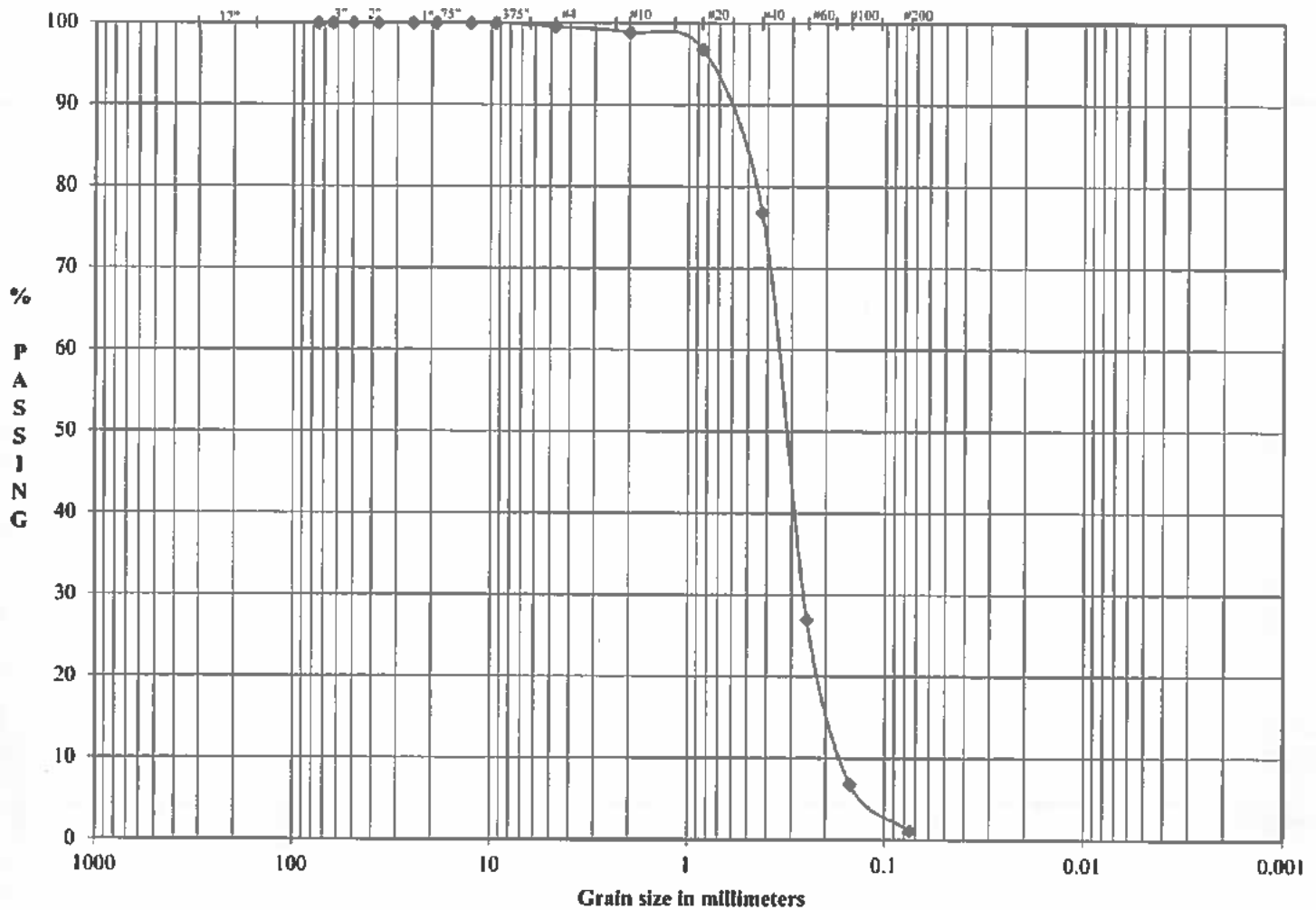
% C GRAVEL	0.00	Descriptive Terms	> 10% mostly coarse (c)	LL	-
% F GRAVEL	0.42	trace	0 to 5%	PL	-
% C SAND	0.69	little	5 to 12%	PI	-
% M SAND	22.12	some	12 to 30%	Gs	-
% F SAND	75.66	and	30 to 50%		
% FINES	1.12		< 10% coarse (c-m)		
% TOTAL	100.00		< 10% coarse (m-f)		
			< 10% coarse and fine (m)		
			< 10% coarse and medium (f)		
			> 10% equal amounts each (c-f)		

DESCRIPTION	Brown, POORLY GRADED SAND, trace gravel, trace fines
USCS	SP

TECH	BB
DATE	5/28/2019
CHECK	PS
REVIEW	AK

* material finer than #4 sieve corrected for hygroscopic moisture.

**PARTICLE SIZE DISTRIBUTION ASTM D 421 AND D 422
US STANDARD SIEVE OPENING SIZES**



Boulders	Cobbles	Coarse	Fine	Cor	Med	Fine	SILT OR CLAY
		GRAVEL		SAND			FINES
	0.00	0.00	0.42	0.69	22.12	75.66	1.12
		0.42		98.46			

SAMPLE ID: SS-04
SAMPLE TYPE: Bag
SAMPLE DEPTH (ft): -

LL: -
PL: -
PI: -

DESCRIPTION: Brown, POORLY GRADED SAND, trace gravel, trace fines
USCS: SP

TECH: BB
DATE: 5/28/2019
CHECK: [Signature]
REVIEW: [Signature]

ASTM GRAIN SIZE ANALYSIS
ASTM D 421, D 2217, D 1140, C 117, D 422, C 136, C 142

PROJECT TITLE	CEC JHC Pond A	SAMPLE ID	SS-05
PROJECT NO.	1896102	SAMPLE TYPE	Bag
REMARKS		SAMPLE DEPTH (ft)	-

WATER CONTENT (Delivered Moisture)			Hygroscopic Moisture For Sieve Sample		
			Wet Soil & Tare (gm)		1.00
			Dry Soil & Tare (gm)		1.00
			Tare Weight (gm)		0.00
			Moisture Content (%)		0.00%
Wt Wet Soil & Tare (gm)	(w1)	945.35	Total Weight Of Sample Used For Sieve Corrected For Hygroscopic Moisture		
Wt Dry Soil & Tare (gm)	(w2)	918.73			
Weight of Tare (gm)	(w3)	298.92			
Weight of Water (gm)	(w4=w1-w2)	26.62			
Weight of Dry Soil (gm)	(w5=w2-w3)	619.81			
Moisture Content (%)	(w4/w5)*100	4.29	Weight Of Sample (gm)		918.73
			Tare Weight (gm)		298.92
			(W6) Total Dry Weight (gm)		619.81

SIEVE ANALYSIS	Tare Weight	Wt Ret	Cum. Ret.	Cumulative	% PASS	SIEVE
	298.92	+Tare	(Wt-Tare) (dry)	(%Retained) (wt ret/w6)*100	(100-%ret)	
3.0"	298.92	0.00	0.00	100.00	3.0"	coarse gravel
2.5"	298.92	0.00	0.00	100.00	2.5"	coarse gravel
2.0"	298.92	0.00	0.00	100.00	2.0"	coarse gravel
1.5"	298.92	0.00	0.00	100.00	1.5"	coarse gravel
1.0"	298.92	0.00	0.00	100.00	1.0"	coarse gravel
0.75"	298.92	0.00	0.00	100.00	0.75"	fine gravel
0.50"	298.92	0.00	0.00	100.00	0.50"	fine gravel
0.375"	300.32	1.40	0.23	99.77	0.375"	fine gravel
#4	303.23	4.31	0.70	99.30	#4	coarse sand
#10	313.28	14.36	2.32	97.68	#10	medium sand
#20	336.65	37.73	6.09	93.91	#20	medium sand
#40	493.48	194.56	31.39	68.61	#40	fine sand
#60	780.31	481.39	77.67	22.33	#60	fine sand
#100	881.23	582.31	93.95	6.05	#100	fine sand
#200	906.07	607.15	97.96	2.04	#200	finer

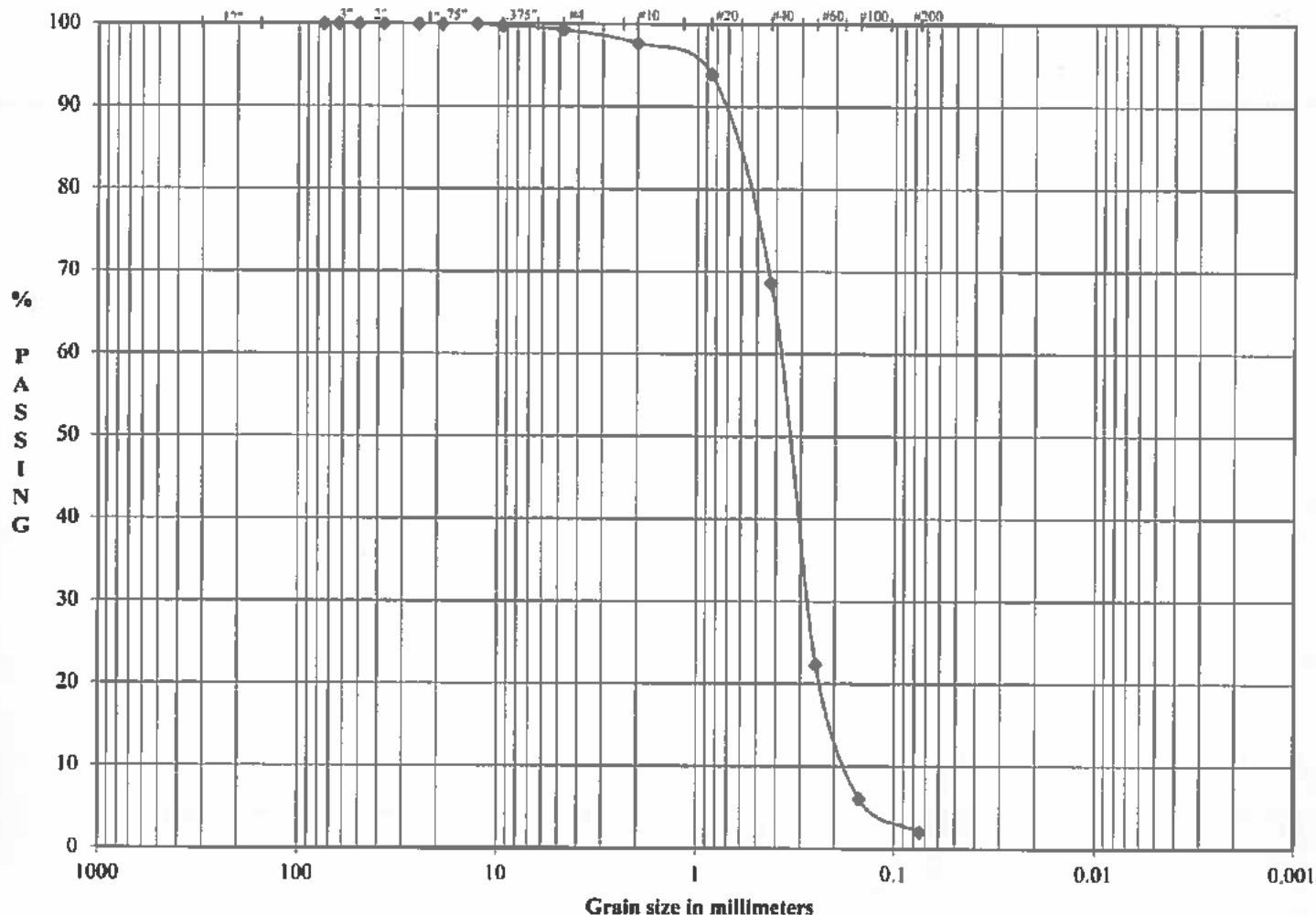
% C GRAVEL	0.00	Descriptive Terms		> 10% mostly coarse (c)	LL - PL - PI - Gs -
% F GRAVEL	0.70	trace	0 to 5%	> 10% mostly medium (m)	
% C SAND	1.62	little	5 to 12%	< 10% fine (c-m)	
% M SAND	29.07	some	12 to 30%	< 10% coarse (m-f)	
% F SAND	66.57	and	30 to 50%	< 10% coarse and fine (m)	
% FINES	2.04			< 10% coarse and medium (f)	
% TOTAL	100.00			> 10% equal amounts each (c-f)	

DESCRIPTION	Brown, POORLY GRADED SAND, trace gravel, trace fines
USCS	SP

TECH	BB
DATE	5/28/2019
CHECK	PS
REVIEW	AK

* material finer than #4 sieve corrected for hygroscopic moisture.

**PARTICLE SIZE DISTRIBUTION ASTM D 421 AND D 422
US STANDARD SIEVE OPENING SIZES**



Boulders	Cobbles	Coarse	Fine	Cor	Med	Fine	SILT OR CLAY
		GRAVEL		SAND			FINES
	0.00	0.00	0.70	1.62	29.07	66.57	2.04
		0.70		97.26			

SAMPLE ID: SS-05
SAMPLE TYPE: Bag
SAMPLE DEPTH (ft): -

LL: -
PL: -
PI: -

DESCRIPTION: Brown, POORLY GRADED SAND, trace gravel, trace fines

USCS: SP

TECH: BB
DATE: 5/28/2019
CHECK: *PS*
REVIEW: *AK*

ASTM GRAIN SIZE ANALYSIS
ASTM D 421, D 2217, D 1140, C 117, D 422, C 136, C 142

PROJECT TITLE	CEC JHC Pond A	SAMPLE ID	SS-06
PROJECT NO.	1896102	SAMPLE TYPE	Bag
REMARKS		SAMPLE DEPTH (ft)	-

WATER CONTENT (Delivered Moisture)			Hygroscopic Moisture For Sieve Sample		
Wt Wet Soil & Tare (gm)	(w1)	1005.86	Wet Soil & Tare (gm)		1.00
Wt Dry Soil & Tare (gm)	(w2)	975.66	Dry Soil & Tare (gm)		1.00
Weight of Tare (gm)	(w3)	297.45	Tare Weight (gm)		0.00
Weight of Water (gm)	(w4=w1-w2)	30.20	Moisture Content (%)		0.00%
Weight of Dry Soil (gm)	(w5=w2-w3)	678.21	Total Weight Of Sample Used For Sieve Corrected For Hygroscopic Moisture		
Moisture Content (%)	(w4/w5)*100	4.45	Weight Of Sample (gm)		975.66
			Tare Weight (gm)		297.45
			(W6) Total Dry Weight (gm)		678.21

SIEVE ANALYSIS		Cum. Ret.	Cumulative			
Tare Weight	Wt Ret	(Wt-Tare)	(%Retained)	% PASS	SIEVE	
297.45	+Tare	(dry)	((wt ret/w6)*100)	(100-%ret)		
3.0"	297.45	0.00	0.00	100.00	3.0"	coarse gravel
2.5"	297.45	0.00	0.00	100.00	2.5"	coarse gravel
2.0"	297.45	0.00	0.00	100.00	2.0"	coarse gravel
1.5"	297.45	0.00	0.00	100.00	1.5"	coarse gravel
1.0"	297.45	0.00	0.00	100.00	1.0"	coarse gravel
0.75"	297.45	0.00	0.00	100.00	0.75"	fine gravel
0.50"	297.45	0.00	0.00	100.00	0.50"	fine gravel
0.375"	297.45	0.00	0.00	100.00	0.375"	fine gravel
#4	300.40	2.95	0.43	99.57	#4	coarse sand
#10	307.67	10.22	1.51	98.49	#10	medium sand
#20	326.45	29.00	4.28	95.72	#20	medium sand
#40	490.29	192.84	28.43	71.57	#40	fine sand
#60	825.78	528.33	77.90	22.10	#60	fine sand
#100	944.09	646.64	95.35	4.65	#100	fine sand
#200	970.17	672.72	99.19	0.81	#200	finer

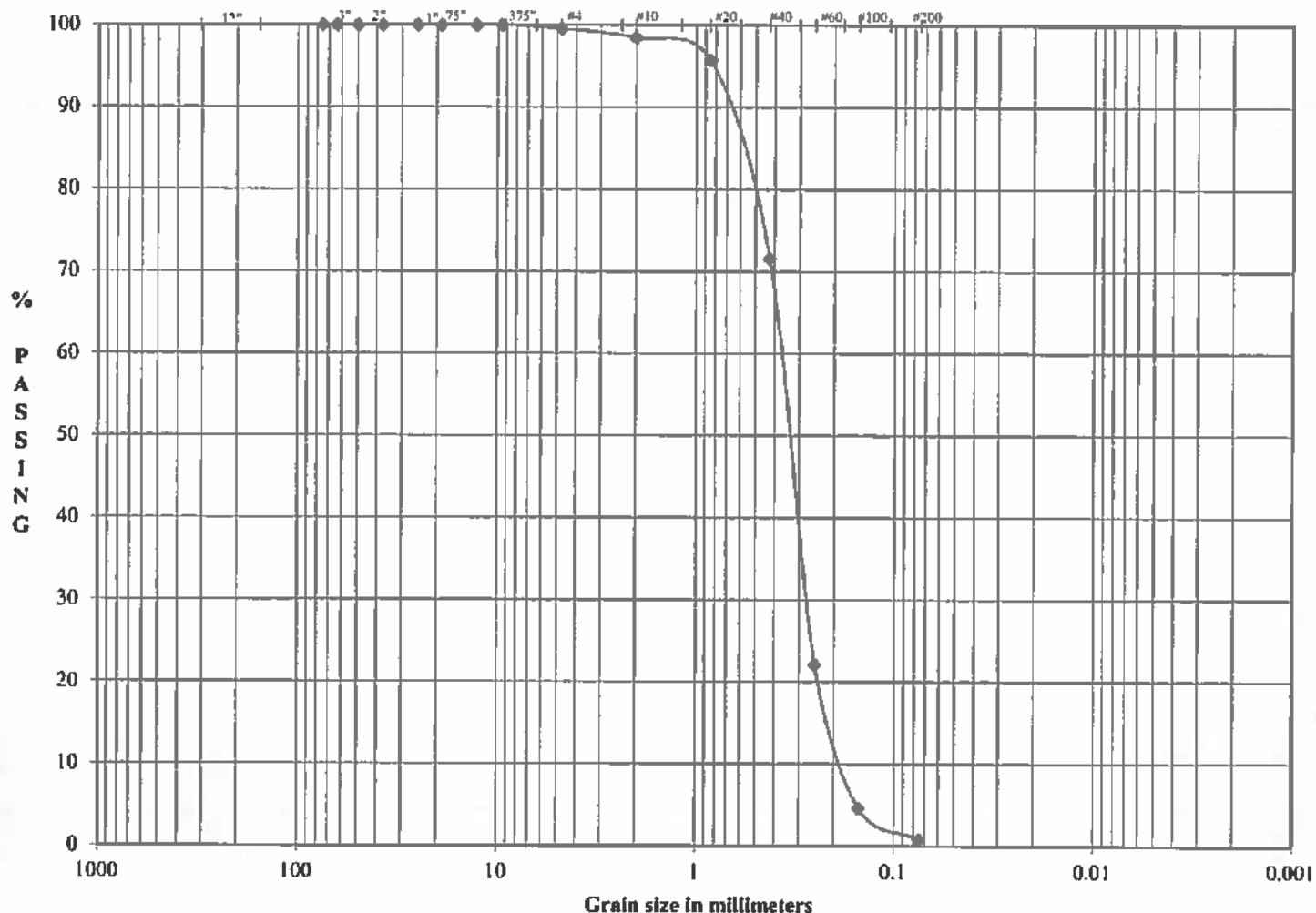
% C GRAVEL	0.00	Descriptive Terms	> 10% mostly coarse (c)	LL	-
% F GRAVEL	0.43	trace	> 10% mostly medium (m)	PL	-
% C SAND	1.07	little	< 10% fine (c-m)	PI	-
% M SAND	26.93	some	< 10% coarse (m-f)	Gs	-
% F SAND	70.76	and	< 10% coarse and fine (m)		
% FINES	0.81		< 10% coarse and medium (f)		
% TOTAL	100.00		> 10% equal amounts each (c-f)		

DESCRIPTION	Brown, POORLY GRADED SAND, trace gravel, trace fines
USCS	SP

TECH	BB
DATE	5/28/2019
CHECK	FS
REVIEW	AK

* material finer than #4 sieve corrected for hygroscopic moisture.

**PARTICLE SIZE DISTRIBUTION ASTM D 421 AND D 422
US STANDARD SIEVE OPENING SIZES**



Boulders	Cobbles	Coarse	Fine	Cor	Med	Fine	SILT OR CLAY
		GRAVEL		SAND			FINES
	0.00	0.00	0.43	1.07	26.93	70.76	0.81
		0.43		98.76			

SAMPLE ID	SS-06
SAMPLE TYPE	Bag
SAMPLE DEPTH (ft)	-

LL	-
PL	-
PI	-

DESCRIPTION	Brown, POORLY GRADED SAND, trace gravel, trace fines
USCS	SP

TECH	BB
DATE	5/28/2019
CHECK	<i>[Signature]</i>
REVIEW	AK

ASTM GRAIN SIZE ANALYSIS
ASTM D 421, D 2217, D 1140, C 117, D 422, C 136, C 142

PROJECT TITLE	CEC JHC Pond A	SAMPLE ID	SS-07
PROJECT NO.	1896102	SAMPLE TYPE	Bag
REMARKS		SAMPLE DEPTH (ft)	

WATER CONTENT (Delivered Moisture)			Hygroscopic Moisture For Sieve Sample		
Wt Wet Soil & Tare (gm)	(w1)	997.04	Wet Soil & Tare (gm)		1.00
Wt Dry Soil & Tare (gm)	(w2)	970.88	Dry Soil & Tare (gm)		1.00
Weight of Tare (gm)	(w3)	298.71	Tare Weight (gm)		0.00
Weight of Water (gm)	(w4=w1-w2)	26.16	Moisture Content (%)		0.00%
Weight of Dry Soil (gm)	(w5=w2-w3)	672.17	Total Weight Of Sample Used For Sieve Corrected For Hygroscopic Moisture		
Moisture Content (%)	(w4/w5)*100	3.89	Weight Of Sample (gm)		970.88
			Tare Weight (gm)		298.71
			(W6) Total Dry Weight (gm)		672.17

SIEVE ANALYSIS	Tare Weight	Wt Ret	Cum. Ret.	Cumulative	% PASS	SIEVE
	298.71	+Tare	(Wt-Tare) (dry)	(%Retained) (wt ret/w6)*100	(100-%ret)	
3.0"	298.71	0.00	0.00	100.00	3.0"	coarse gravel
2.5"	298.71	0.00	0.00	100.00	2.5"	coarse gravel
2.0"	298.71	0.00	0.00	100.00	2.0"	coarse gravel
1.5"	298.71	0.00	0.00	100.00	1.5"	coarse gravel
1.0"	298.71	0.00	0.00	100.00	1.0"	coarse gravel
0.75"	298.71	0.00	0.00	100.00	0.75"	fine gravel
0.50"	298.71	0.00	0.00	100.00	0.50"	fine gravel
0.375"	302.25	3.54	0.53	99.47	0.375"	fine gravel
#4	311.37	12.66	1.88	98.12	#4	coarse sand
#10	331.28	32.57	4.85	95.15	#10	medium sand
#20	357.15	58.44	8.69	91.31	#20	medium sand
#40	517.36	218.65	32.53	67.47	#40	fine sand
#60	839.56	540.85	80.46	19.54	#60	fine sand
#100	946.23	647.52	96.33	3.67	#100	fine sand
#200	965.36	666.65	99.18	0.82	#200	fines

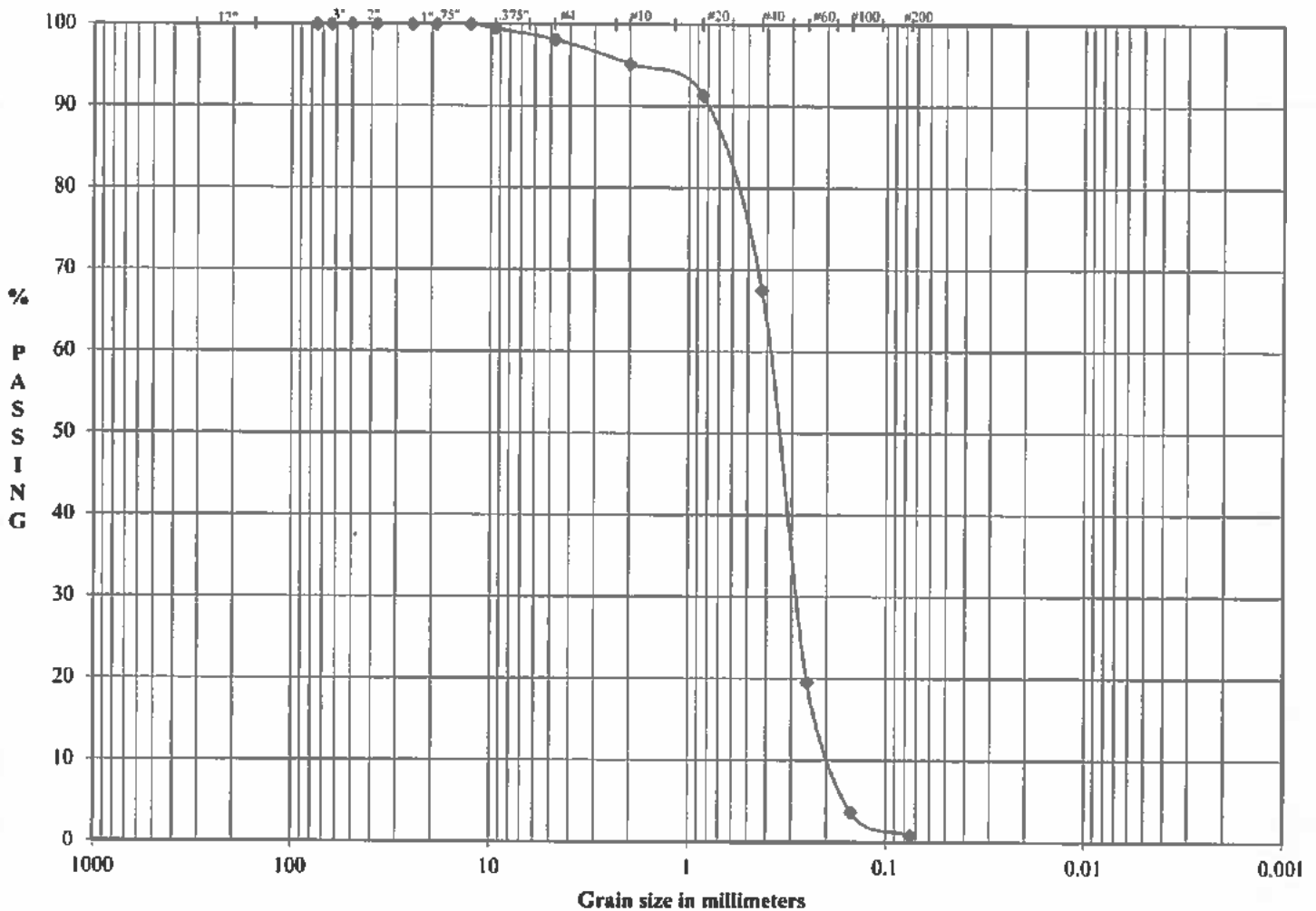
% C GRAVEL	0.00	Descriptive Terms		> 10% mostly coarse (c)	<div>LL</div> <div>PL</div> <div>PI</div> <div>Gs</div>
% F GRAVEL	1.88	trace	0 to 5%	> 10% mostly medium (m)	
% C SAND	2.96	little	5 to 12%	< 10% fine (c-m)	
% M SAND	27.68	some	12 to 30%	< 10% coarse (m-f)	
% F SAND	66.65	and	30 to 50%	< 10% coarse and fine (m)	
% FINES	0.82			< 10% coarse and medium (f)	
% TOTAL	100.00			> 10% equal amounts each (c-f)	

DESCRIPTION	Brown, POORLY GRADED SAND, trace gravel, trace fines
USCS	SP

TECH	BB
DATE	6/3/2019
CHECK	PK
REVIEW	AK

* material finer than #4 sieve corrected for hygroscopic moisture.

PARTICLE SIZE DISTRIBUTION ASTM D 421 AND D 422 US STANDARD SIEVE OPENING SIZES



Boulders	Cobbles	Coarse	Fine	SILT OR CLAY		
		GRAVEL		FINES		
	0.00	0.00	1.88	2.96	27.68	66.65
		1.88		97.30		

SAMPLE ID: SS-07
SAMPLE TYPE: Bag
SAMPLE DEPTH (ft): -

LL: -
PL: -
PI: -

DESCRIPTION: Brown, POORLY GRADED SAND, trace gravel, trace fines

USCS: SP

TECH: BB
DATE: 6/3/2019
CHECK: PS
REVIEW: AK

ASTM GRAIN SIZE ANALYSIS
ASTM D 421, D 2217, D 1140, C 117, D 422, C 136, C 142

PROJECT TITLE	CEC JHC Pond A	SAMPLE ID	SS-08
PROJECT NO.	1896102	SAMPLE TYPE	Bag
REMARKS		SAMPLE DEPTH (ft)	-

WATER CONTENT (Delivered Moisture)

Wt Wet Soil & Tare (gm)	(w1)	1019.81
Wt Dry Soil & Tare (gm)	(w2)	992.26
Weight of Tare (gm)	(w3)	296.57
Weight of Water (gm)	(w4=w1-w2)	27.55
Weight of Dry Soil (gm)	(w5=w2-w3)	695.69
Moisture Content (%)	(w4/w5)*100	3.96

Hygroscopic Moisture For Sieve Sample

Wet Soil & Tare (gm)	1.00
Dry Soil & Tare (gm)	1.00
Tare Weight (gm)	0.00
Moisture Content (%)	0.00%

Total Weight Of Sample Used For Sieve Corrected For Hygroscopic Moisture

Weight Of Sample (gm)	992.26
Tare Weight (gm)	296.57
(W6) Total Dry Weight (gm)	695.69

SIEVE ANALYSIS

Tare Weight	Wt Ret	Cum. Ret.	Cumulative	% PASS	SIEVE
296.57	+Tare	(Wt-Tare)	(%Retained)	(100-%ret)	
		(dry)	((wt ret/w6)*100)		
3.0"	296.57	0.00	0.00	100.00	3.0" coarse gravel
2.5"	296.57	0.00	0.00	100.00	2.5" coarse gravel
2.0"	296.57	0.00	0.00	100.00	2.0" coarse gravel
1.5"	296.57	0.00	0.00	100.00	1.5" coarse gravel
1.0"	296.57	0.00	0.00	100.00	1.0" coarse gravel
0.75"	296.57	0.00	0.00	100.00	0.75" fine gravel
0.50"	296.57	0.00	0.00	100.00	0.50" fine gravel
0.375"	298.44	1.87	0.27	99.73	0.375" fine gravel
#4	321.12	24.55	3.53	96.47	#4 coarse sand
#10	350.21	53.64	7.71	92.29	#10 medium sand
#20	384.74	88.17	12.67	87.33	#20 medium sand
#40	538.62	242.05	34.79	65.21	#40 fine sand
#60	836.11	539.54	77.55	22.45	#60 fine sand
#100	958.34	661.77	95.12	4.88	#100 fine sand
#200	986.31	689.74	99.14	0.86	#200 fines

% C GRAVEL
 % F GRAVEL
 % C SAND
 % M SAND
 % F SAND
 % FINES
 % TOTAL

0.00
3.53
4.18
27.08
64.35
0.86
100.00

Descriptive Terms
 trace 0 to 5%
 little 5 to 12%
 some 12 to 30%
 and 30 to 50%

> 10% mostly coarse (c)
 > 10% mostly medium (m)
 < 10% fine (c-m)
 < 10% coarse (m-f)
 < 10% coarse and fine (m)
 < 10% coarse and medium (f)
 > 10% equal amounts each (c-f)

LL	-
PL	-
PI	-
Gs	-

DESCRIPTION

Brown, POORLY GRADED SAND, trace gravel, trace fines

USCS

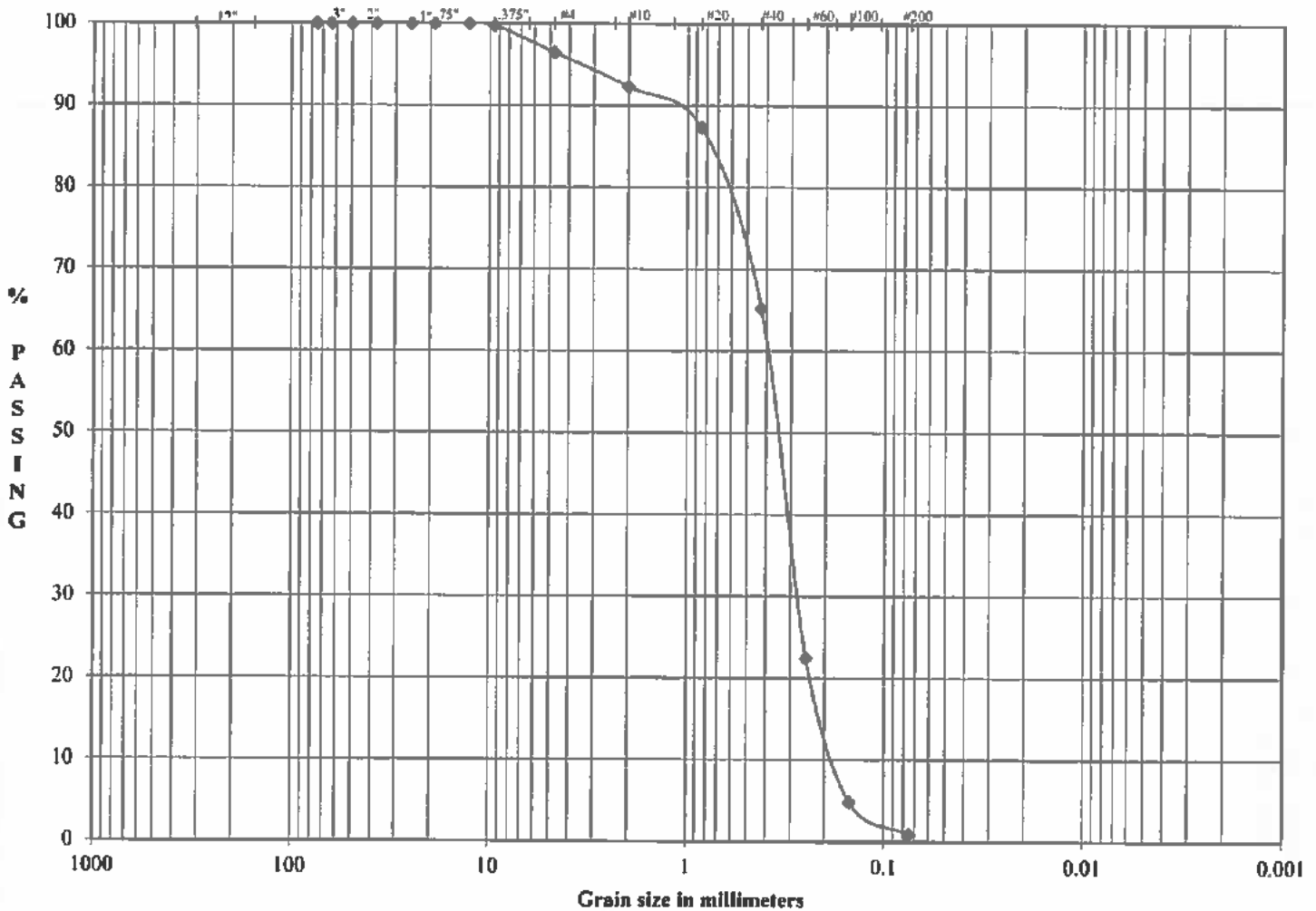
SP

TECH
DATE
CHECK
REVIEW

BB
 6/3/2019
 BS
 AK

* material finer than #4 sieve corrected for hygroscopic moisture.

**PARTICLE SIZE DISTRIBUTION ASTM D 421 AND D 422
US STANDARD SIEVE OPENING SIZES**



ASTM GRAIN SIZE ANALYSIS
ASTM D 421, D 2217, D 1140, C 117, D 422, C 136, C 142

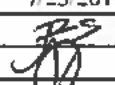
PROJECT TITLE	CEC JHC Pond A	SAMPLE ID	SS-09
PROJECT NO.	1896102	SAMPLE TYPE	Bag
REMARKS		SAMPLE DEPTH (ft)	-

WATER CONTENT (Delivered Moisture)		Hygroscopic Moisture For Sieve Sample	
Wt Wet Soil & Tare (gm)	(w1)	Wet Soil & Tare (gm)	1.00
Wt Dry Soil & Tare (gm)	(w2)	Dry Soil & Tare (gm)	1.00
Weight of Tare (gm)	(w3)	Tare Weight (gm)	0.00
Weight of Water (gm)	(w4=w1-w2)	Moisture Content (%)	0.00%
Weight of Dry Soil (gm)	(w5=w2-w3)	Total Weight Of Sample Used For Sieve Corrected For Hygroscopic Moisture	
Moisture Content (%)	(w4/w5)*100	Weight Of Sample (gm)	1005.64
		Tare Weight (gm)	316.35
		(W6) Total Dry Weight (gm)	689.29

SIEVE ANALYSIS		Cum. Ret.	Cumulative	% PASS	SIEVE	
Tare Weight	Wt Ret	(Wt-Tare)	(%Retained)	(100-%ret)		
316.35	+Tare	(dry)	((wt ret/w6)*100)			
3.0"	316.35	0.00	0.00	100.00	3.0"	coarse gravel
2.5"	316.35	0.00	0.00	100.00	2.5"	coarse gravel
2.0"	316.35	0.00	0.00	100.00	2.0"	coarse gravel
1.5"	316.35	0.00	0.00	100.00	1.5"	coarse gravel
1.0"	316.35	0.00	0.00	100.00	1.0"	coarse gravel
0.75"	316.35	0.00	0.00	100.00	0.75"	fine gravel
0.50"	320.13	3.78	0.55	99.45	0.50"	fine gravel
0.375"	324.08	7.73	1.12	98.88	0.375"	fine gravel
#4	332.68	16.33	2.37	97.63	#4	coarse sand
#10	348.89	32.54	4.72	95.28	#10	medium sand
#20	379.66	63.31	9.18	90.82	#20	medium sand
#40	527.35	211.00	30.61	69.39	#40	fine sand
#60	862.71	546.36	79.26	20.74	#60	fine sand
#100	986.14	669.79	97.17	2.83	#100	fine sand
#200	1002.32	685.97	99.52	0.48	#200	fines

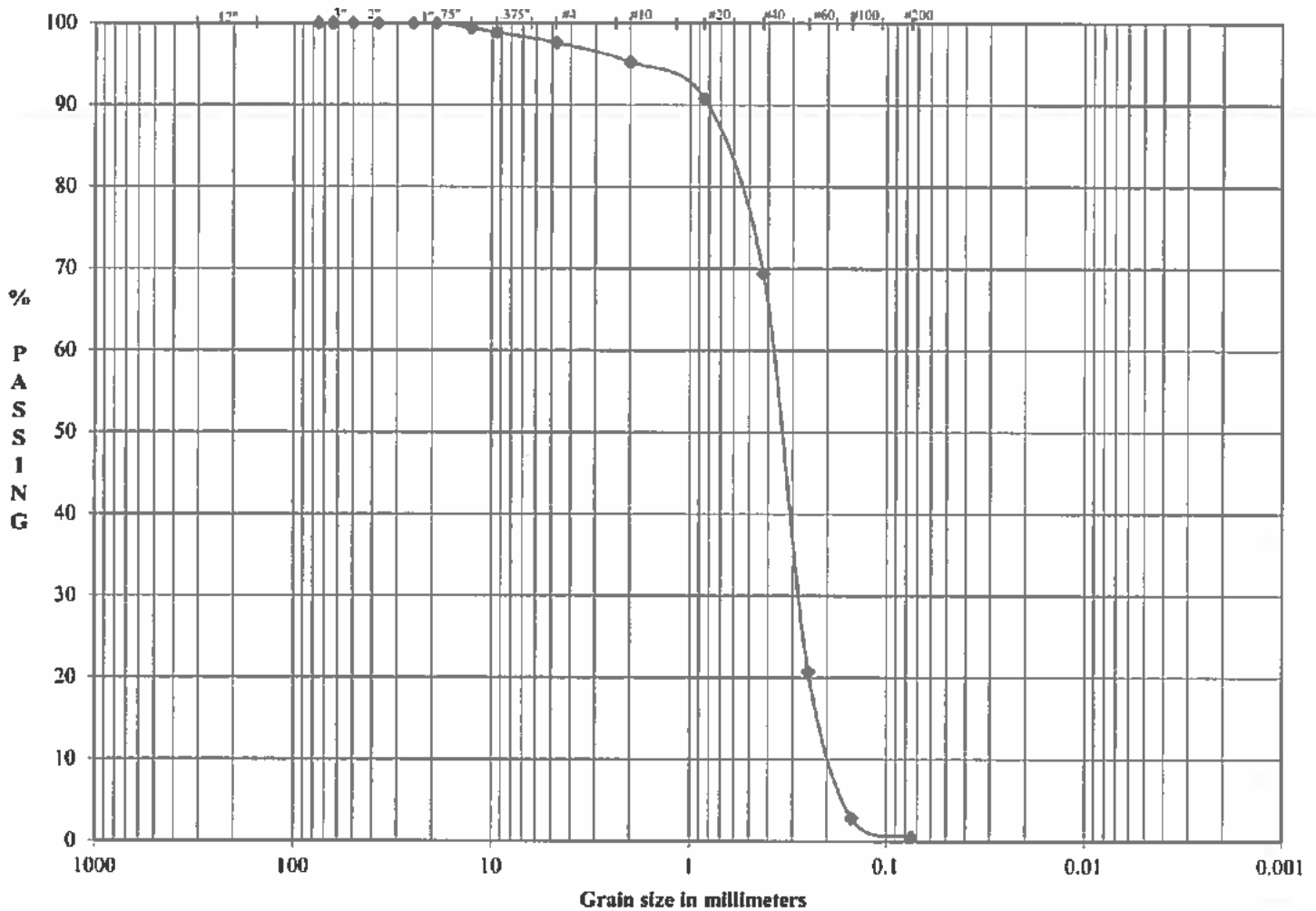
% C GRAVEL	0.00	Descriptive Terms		> 10% mostly coarse (c)	<div>LL</div> <div>PL</div> <div>PI</div> <div>Gs</div>
% F GRAVEL	2.37	trace	0 to 5%	> 10% mostly medium (m)	
% C SAND	2.35	little	5 to 12%	< 10% fine (c-m)	
% M SAND	25.89	some	12 to 30%	< 10% coarse (m-f)	
% F SAND	68.91	and	30 to 50%	< 10% coarse and fine (m)	
% FINES	0.48			< 10% coarse and medium (f)	
% TOTAL	100.00			> 10% equal amounts each (c-f)	

DESCRIPTION	Brown, POORLY GRADED SAND, trace gravel, trace fines
USCS	SP

TECH	BB
DATE	7/23/2019
CHECK	
REVIEW	

* material finer than #4 sieve corrected for hygroscopic moisture.

**PARTICLE SIZE DISTRIBUTION ASTM D 421 AND D 422
US STANDARD SIEVE OPENING SIZES**



Boulders	Cobbles	Coarse	Fine	Cor	Med	Fine	SILT OR CLAY
		GRAVEL		SAND			FINES
	0.00	0.00	2.37	2.35	25.89	68.91	0.48
		2.37		97.15			

SAMPLE ID: SS-09
SAMPLE TYPE: Bag
SAMPLE DEPTH (ft): -

LL: -
PL: -
PI: -

DESCRIPTION: Brown, POORLY GRADED SAND, trace gravel, trace fines

USCS: SP

TECH: BB
DATE: 7/23/2019
CHECK: [Signature]
REVIEW: [Signature]

Brewer's CITY DOCK, INC.

24 Pine Avenue, Holland, Michigan 49423
Dispatch Phone (616) 772-9275
Office Phone (616) 396-6563
Fax (616) 396-9464

8/9/19

Rob,

All of the Class II Sand material that was provided to Ryan Central for the Consumers Energy protective cover project was from the Croswell Sand Pit in West Olive. All of this material was mined from the ground and would be virgin soil.

If you need any further information please feel free to let me know.

Thanks
Phil Brewer

APPENDIX D.2

Topsoil

Golder Associates

ASTM GRAIN SIZE ANALYSIS
ASTM D 421, D 2217, D 1140, C 117, D 422, C 136, C 142

PROJECT TITLE	CEC JHC Pond A	SAMPLE ID	TS-01
PROJECT NO.	1896102	SAMPLE TYPE	Bag
REMARKS		SAMPLE DEPTH (ft)	-

WATER CONTENT (Delivered Moisture)				Hygroscopic Moisture For Sieve Sample			
Wt Wet Soil & Tare (gm)	(w1)	984.05		Wet Soil & Tare (gm)		1.00	
Wt Dry Soil & Tare (gm)	(w2)	796.82		Dry Soil & Tare (gm)		1.00	
Weight of Tare (gm)	(w3)	316.03		Tare Weight (gm)		0.00	
Weight of Water (gm)	(w4=w1-w2)	187.23		Moisture Content (%)		0.00%	
Weight of Dry Soil (gm)	(w5=w2-w3)	480.79		Total Weight Of Sample Used For Sieve Corrected For Hygroscopic Moisture			
Moisture Content (%)	(w4/w5)*100	38.94		Weight Of Sample (gm)		796.82	
				Tare Weight (gm)		316.03	
				(W6) Total Dry Weight (gm)		480.79	

SIEVE ANALYSIS		Cum. Ret.	Cumulative			
Tare Weight	Wt Ret	(Wt-Tare)	(%Retained)	% PASS	SIEVE	
316.03	+Tare	(dry)	((wt ret-w6)*100)	(100-%ret)		
3.0"	316.03	0.00	0.00	100.00	3.0"	coarse gravel
2.5"	316.03	0.00	0.00	100.00	2.5"	coarse gravel
2.0"	316.03	0.00	0.00	100.00	2.0"	coarse gravel
1.5"	316.03	0.00	0.00	100.00	1.5"	coarse gravel
1.0"	316.03	0.00	0.00	100.00	1.0"	coarse gravel
0.75"	316.03	0.00	0.00	100.00	0.75"	fine gravel
0.50"	316.03	0.00	0.00	100.00	0.50"	fine gravel
0.375"	317.10	1.07	0.22	99.78	0.375"	fine gravel
#4	336.15	20.12	4.18	95.82	#4	coarse sand
#10	394.19	78.16	16.26	83.74	#10	medium sand
#20	460.27	144.24	30.00	70.00	#20	medium sand
#40	525.21	209.18	43.51	56.49	#40	fine sand
#60	660.03	344.00	71.55	28.45	#60	fine sand
#100	746.06	430.03	89.44	10.56	#100	fine sand
#200	776.53	460.50	95.78	4.22	#200	finer

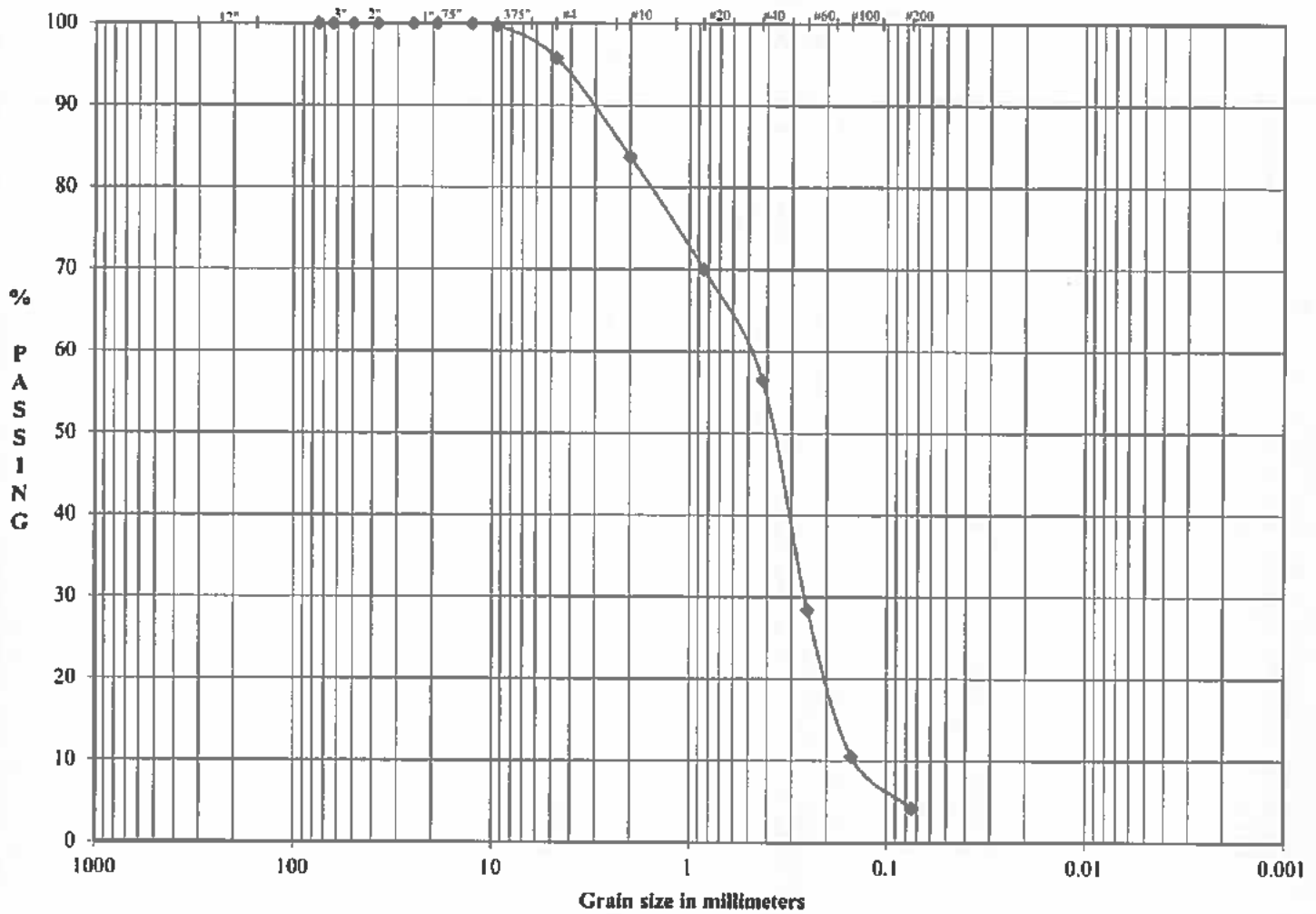
% C GRAVEL	0.00	Descriptive Terms		> 10% mostly coarse (c)	LL	-
% F GRAVEL	4.18	trace	0 to 5%	> 10% mostly medium (m)	PL	-
% C SAND	12.07	little	5 to 12%	< 10% fine (c-m)	PI	-
% M SAND	27.25	some	12 to 30%	< 10% coarse (m-f)	Gs	-
% F SAND	52.27	and	30 to 50%	< 10% coarse and fine (m)		
% FINES	4.22			< 10% coarse and medium (f)		
% TOTAL	100.00			> 10% equal amounts each (c-f)		

DESCRIPTION	Black, POORLY GRADED SAND, trace gravel, trace fines
USCS	SP

TECH	BB
DATE	6/24/2019
CHECK	<i>JS</i>
REVIEW	<i>AK</i>

* material finer than #4 sieve corrected for hygroscopic moisture.

**PARTICLE SIZE DISTRIBUTION ASTM D 421 AND D 422
US STANDARD SIEVE OPENING SIZES**



ASTM GRAIN SIZE ANALYSIS
ASTM D 421, D 2217, D 1140, C 117, D 422, C 136, C 142

PROJECT TITLE	CEC JHC Pond A	SAMPLE ID	TS-02
PROJECT NO.	1896102	SAMPLE TYPE	Bag
REMARKS		SAMPLE DEPTH (ft)	-

WATER CONTENT (Delivered Moisture)

Wt Wet Soil & Tare (gm)	(w1)	1043.12
Wt Dry Soil & Tare (gm)	(w2)	843.81
Weight of Tare (gm)	(w3)	365.01
Weight of Water (gm)	(w4=w1-w2)	199.31
Weight of Dry Soil (gm)	(w5=w2-w3)	478.80
Moisture Content (%)	(w4/w5)*100	41.63

Hygroscopic Moisture For Sieve Sample

Wet Soil & Tare (gm)	1.00
Dry Soil & Tare (gm)	1.00
Tare Weight (gm)	0.00
Moisture Content (%)	0.00%

Total Weight Of Sample Used For Sieve Corrected For Hygroscopic Moisture

Weight Of Sample (gm)	843.81
Tare Weight (gm)	365.01
(W6) Total Dry Weight (gm)	478.80

SIEVE ANALYSIS

Tare Weight	Wt Ret	Cum. Ret.	Cumulative	% PASS	SIEVE
365.01	+Tare	(Wt-Tare)	(%Retained)	(100-%ret)	
		(dry)	((wt ret/w6)*100)		
3.0"	365.01	0.00	0.00	100.00	3.0" coarse gravel
2.5"	365.01	0.00	0.00	100.00	2.5" coarse gravel
2.0"	365.01	0.00	0.00	100.00	2.0" coarse gravel
1.5"	365.01	0.00	0.00	100.00	1.5" coarse gravel
1.0"	365.01	0.00	0.00	100.00	1.0" coarse gravel
0.75"	365.01	0.00	0.00	100.00	0.75" fine gravel
0.50"	370.74	5.73	1.20	98.80	0.50" fine gravel
0.375"	374.72	9.71	2.03	97.97	0.375" fine gravel
#4	397.58	32.57	6.80	93.20	#4 coarse sand
#10	476.33	111.32	23.25	76.75	#10 medium sand
#20	533.16	168.15	35.12	64.88	#20 medium sand
#40	585.06	220.05	45.96	54.04	#40 fine sand
#60	696.51	331.50	69.24	30.76	#60 fine sand
#100	779.30	414.29	86.53	13.47	#100 fine sand
#200	814.06	449.05	93.79	6.21	#200 fines

% C GRAVEL	0.00	Descriptive Terms	> 10% mostly coarse (c)
% F GRAVEL	6.80	trace	0 to 5%
% C SAND	16.45	little	5 to 12%
% M SAND	22.71	some	12 to 30%
% F SAND	47.83	and	30 to 50%
% FINES	6.21		< 10% coarse and fine (m)
% TOTAL	100.00		< 10% coarse and medium (f)
			> 10% equal amounts each (c-f)

LL	-
PL	-
PI	-
Gs	-

VISUAL DESCRIPTION

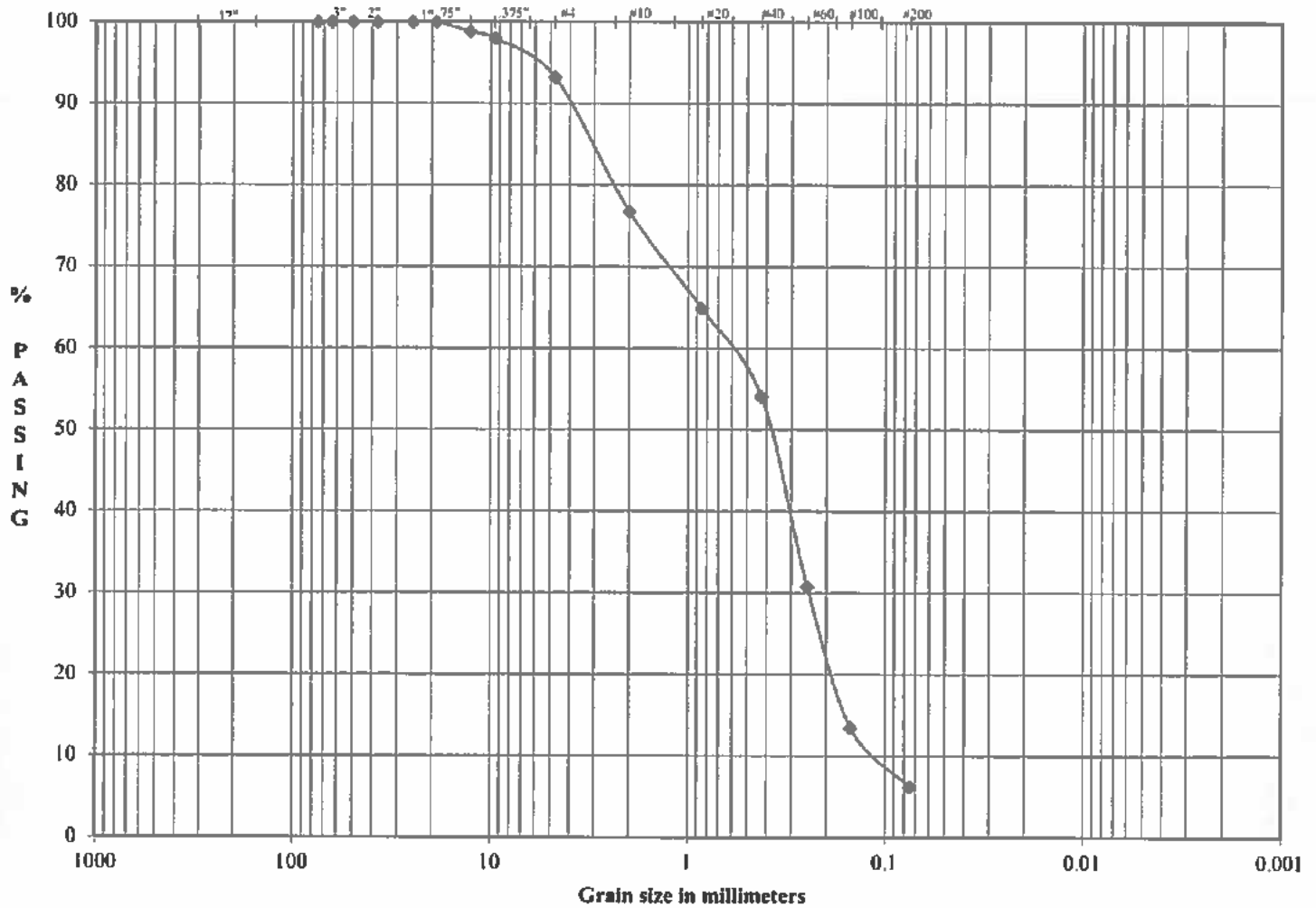
Black, POORLY GRADED SAND WITH SILT, little gravel

USCS SP-SM

TECH	BB
DATE	6/24/2019
CHECK	BS
REVIEW	AK

* material finer than #4 sieve corrected for hygroscopic moisture.

**PARTICLE SIZE DISTRIBUTION ASTM D 421 AND D 422
US STANDARD SIEVE OPENING SIZES**



Boulders	Cobbles	Coarse	Fine	Cor	Med	Fine	SILT OR CLAY
		GRAVEL		SAND			FINES
	0.00	0.00	6.80	16.45	22.71	47.83	6.21
		6.80		86.98			

SAMPLE ID: TS-02
 SAMPLE TYPE: Bag
 SAMPLE DEPTH (ft): -

LL: -
 PL: -
 PI: -

VISUAL DESCRIPTION: Black, POORLY GRADED SAND WITH SILT, little gravel

USCS: SP-SM

TECH: BB
 DATE: 6/24/2019
 CHECK: *BR*
 REVIEW: *AK*

ASTM GRAIN SIZE ANALYSIS
ASTM D 421, D 2217, D 1140, C 117, D 422, C 136, C 142

PROJECT TITLE	CEC JHC Pond A	SAMPLE ID	TS-03
PROJECT NO.	1896102	SAMPLE TYPE	Bag
REMARKS		SAMPLE DEPTH (ft)	

WATER CONTENT (Delivered Moisture)

Wt Wet Soil & Tare (gm)	(w1)	957.19
Wt Dry Soil & Tare (gm)	(w2)	813.47
Weight of Tare (gm)	(w3)	372.77
Weight of Water (gm)	(w4=w1-w2)	143.72
Weight of Dry Soil (gm)	(w5=w2-w3)	440.70
Moisture Content (%)	(w4/w5)*100	32.61

Hygroscopic Moisture For Sieve Sample

Wet Soil & Tare (gm)	1.00
Dry Soil & Tare (gm)	1.00
Tare Weight (gm)	0.00
Moisture Content (%)	0.00%

Total Weight Of Sample Used For Sieve Corrected For Hygroscopic Moisture

Weight Of Sample (gm)	813.47
Tare Weight (gm)	372.77
(W6) Total Dry Weight (gm)	440.70

SIEVE ANALYSIS

Tare Weight	Wt Ret	Cum. Ret.	Cumulative	% PASS	SIEVE
372.77	+Tare	(Wt-Tare)	(%Retained)	(100-%ret)	
		(dry)	((wt ret/w6)*100)		
3.0"	372.77	0.00	0.00	100.00	3.0" coarse gravel
2.5"	372.77	0.00	0.00	100.00	2.5" coarse gravel
2.0"	372.77	0.00	0.00	100.00	2.0" coarse gravel
1.5"	372.77	0.00	0.00	100.00	1.5" coarse gravel
1.0"	372.77	0.00	0.00	100.00	1.0" coarse gravel
0.75"	372.77	0.00	0.00	100.00	0.75" fine gravel
0.50"	387.16	14.39	3.27	96.73	0.50" fine gravel
0.375"	395.12	22.35	5.07	94.93	0.375" fine gravel
#4	407.29	34.52	7.83	92.17	#4 coarse sand
#10	456.87	84.10	19.08	80.92	#10 medium sand
#20	513.59	140.82	31.95	68.05	#20 medium sand
#40	570.76	197.99	44.93	55.07	#40 fine sand
#60	691.56	318.79	72.34	27.66	#60 fine sand
#100	767.06	394.29	89.47	10.53	#100 fine sand
#200	794.08	421.31	95.60	4.40	#200 fines

% C GRAVEL	0.00	Descriptive Terms	> 10% mostly coarse (c)
% F GRAVEL	7.83	trace 0 to 5%	> 10% mostly medium (m)
% C SAND	11.25	little 5 to 12%	< 10% fine (c-m)
% M SAND	25.84	some 12 to 30%	< 10% coarse (m-f)
% F SAND	50.67	and 30 to 50%	< 10% coarse and fine (m)
% FINES	4.40		< 10% coarse and medium (f)
% TOTAL	100.00		> 10% equal amounts each (c-f)

LL	-
PL	-
PI	-
Gs	-

DESCRIPTION Black, POORLY GRADED SAND, little gravel, trace fines

USCS SP

TECH	BB
DATE	6/24/2019
CHECK	<i>PS</i>
REVIEW	<i>AK</i>

* material finer than #4 sieve corrected for hygroscopic moisture.

The graph illustrates the grain size distribution of a sample. The x-axis represents grain size in millimeters on a logarithmic scale, with major grid lines at 1000, 100, 10, 1, 0.1, 0.01, and 0.001. The y-axis represents the percentage of material passing through a given sieve size, ranging from 0 to 100. The curve starts at 100% passing for sieve sizes larger than 75 microns (0.075 mm) and drops sharply between 1 mm and 0.075 mm, reaching approximately 5% passing at 0.075 mm.

Sieve Size (mm)	% Passing
75 (No. 200)	100
60 (No. 250)	100
45 (No. 325)	100
30 (No. 600)	100
25 (No. 600)	100
20 (No. 750)	100
15 (No. 1000)	100
12.5 (No. 1200)	100
10 (No. 1500)	95
7.5 (No. 2000)	92
6 (No. 2500)	81
4.75 (No. 3000)	68
3.75 (No. 4000)	55
3.0 (No. 5000)	28
2.5 (No. 6000)	10
2.0 (No. 7500)	5

		Coarse	Fine	Cor	Med	Fine	SILT OR CLAY
Boulders	Cobbles	GRAVEL		SAND			FINES
	0.00	0.00	7.83	11.25	25.84	50.67	4.40
		7.83		87.77			

SAMPLE ID	TS-03
SAMPLE TYPE	Bag
SAMPLE DEPTH (ft)	-

LL	-
PL	-
PI	-

DESCRIPTION	Black, POORLY GRADED SAND, little gravel, trace fines
--------------------	---

USCS	SP
------	----

TECH	BB
DATE	6/24/2019
CHECK	<i>[Signature]</i>
REVIEW	AK

ORGANIC CONTENT

ASTM D2974, METHOD C

JOB NAME: CEC JHC Pond A

DATE: 06/24/19

JOB NUMBER: 1896102

TECH: BB

REVIEW: AK

MOISTURE CONTENT DETERMINATION

sample #	TS-01	TS-02	TS-03			
depth (ft)	-	-	-			
tare #	1	2	3			
wt wet soil & tare (g)	336.88	323.84	298.28			
wt dry soil & tare (g)	278.46	264.93	258.00			
wt tare (g)	129.57	125.13	120.02			
wt lost (g)	58.42	58.91	40.28			
wt soil, dry (g)	148.89	139.80	137.98			
% moisture	39.2%	42.1%	29.2%			

ASH & ORGANIC CONTENT DETERMINATION

wt soil & tare, dry (g)	278.46	264.93	258.00			
wt soil & tare, burnt (g)	265.02	252.92	246.63			
wt tare (g)	129.57	125.13	120.02			
wt lost (g)	13.44	12.01	11.37			
wt soil, dry (g)	148.89	139.80	137.98			
% ash	91.0%	91.4%	91.8%			
% Volatile organics	9.0%	8.6%	8.2%			

Note: Gravel removed from test specimen prior to moisture content determination

Furnace temperature for ash content determination was approximately 460° C

GOLDER ASSOCIATES
LANSING, MI

pH of Soils

ASTM D4972, METHOD A

JOB NAME: CEC JHC Pond A

DATE: 06/25/19

JOB NUMBER: 1896102

TECH: BB/NM

REVIEW: AK

pH DETERMINATION in Water

sample #	TS-01	TS-02	TS-03			
depth	-	-	-			
tare #	G	F	7			
wt of soil (g)	40.04	40.00	40.02			
temp (c°)	20.5	20.3	20.5			
pH of Soil	7.1	7.1	7.2			

pH DETERMINATION in Calcium Chloride Solution

sample #	TS-01	TS-02	TS-03			
depth	-	-	-			
tare #	CE	CF	8.00			
wt of soil (g)	40.01	40.05	40.03			
temp (c°)	20.4	20.3	20.5			
pH of Soil	7.1	7.1	7.1			

**GOLDER ASSOCIATES
LANSING, MI**

APPENDIX E

Material Testing for 40-mil Textured HDPE FML

APPENDIX E.1

Geomembrane Inventory Log

POND A

GEOSYNTHETIC INVENTORY CONTROL LOG

PROJECT NUMBER: 1896102 PROJECT TITLE: JHC Ash and Chemical Pond Closure
 OWNER: Consumers Energy CONTRACTOR: RYAN
 LOCATION: J.H. Campbell West Olive, MI

MATERIAL TYPE: GEOMEMBRANE GEONET GEOTEXTILE OTHER

DATE OF ARRIVAL: 9.27.18

MATERIAL MANUFACTURER: AGRU

PRODUCT IDENTIFICATION: 40 MIL HDPE MICRO-SPIKE

TRUCK TYPE: FLATBED

DATE OF INVENTORY: 9.27.18

INVENTORY MONITOR: DH

CONDITION IN TRUCK: GOOD

UNLOADING METHOD: EXCAVATOR

	ROLL NUMBER	BATCH OR LOT NO.	MATERIAL DIMENSIONS			QC CERT Y/N	CONF. SAMP. Y/N	OTHER	REMARKS
			LENGTH	WIDTH	THICKNESS OR WEIGHT				
1	1469-0029 ✓		74'	23'	40 MIL	Y			TRUCK #1
2	0027 ✓								
3	0016 ✓								
4	0021 ✓								
5	0030 ✓								
6	0015 ✓								
7	0010 ✓								
8	0023 ✓								
9	0006 ✓								
10	0007 ✓								
11	0032 ✓								
12	0019 ✓		74'	23'	40 MIL	Y			
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									

Golder Form: G2

(July 2000)

REVIEWED BY: PS

DATE: 9/30/15

GOLDER ASSOCIATES INC.

POND A

GEOSYNTHETIC INVENTORY CONTROL LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: J.H. Campbell West Olive, MI

PROJECT TITLE: JHC Ash and Chemical Pond Closure
 CONTRACTOR: RYAN

MATERIAL TYPE: GEOMEMBRANE GEONET GEOTEXTILE OTHER

DATE OF ARRIVAL: 10.1.18

MATERIAL MANUFACTURER: AGRU

PRODUCT IDENTIFICATION: 40 MIL HDPE MICRO-SPIKE

TRUCK TYPE: Semi w/FLATBED

DATE OF INVENTORY: 10.2.18

INVENTORY MONITOR: DH

CONDITION IN TRUCK: GOOD

UNLOADING METHOD: EXCAVATOR

	ROLL NUMBER	BATCH OR LOT NO.	MATERIAL DIMENSIONS			QC CERT Y/N	CONF. SAMP. Y/N	OTHER	REMARKS
			LENGTH	WIDTH	THICKNESS OR WEIGHT				
1	1469-ΦΦ14 ✓		74'	23'	40 mil	Y			
2	ΦΦ28 ✓								
3	ΦΦ11 ✓								
4	ΦΦ9 ✓								
5	ΦΦ5 ✓								
6	ΦΦ31 ✓								
7	ΦΦ20 ✓								
8	ΦΦ26 ✓								
9	ΦΦ8 ✓								
10	ΦΦ18 ✓								
11	ΦΦ25 ✓								
12	ΦΦ24 ✓								
13	ΦΦ1 ✓								
14	ΦΦ12 ✓								
15	ΦΦ22 ✓								
16	ΦΦ22 ✓								
17	ΦΦ17 ✓								
18	ΦΦ13 ✓		74'	23'	40 mil	Y			
19									
20									
21									
22									
23	* 15 SPOOLS		HDPE	WELDING	ROD	Y			
24									
25									

Golder Form: G2
 (July 2000)

REVIEWED BY: TDS


DATE: 9/30/18

GOLDER ASSOCIATES INC.

STRAIGHT BILL OF LADING - SHORT FORM - ORIGINAL - NOT NEGOTIABLE


NAME OF CARRIER MERTRA	CARRIER'S TRUCK NO. 17028	FREIGHT QTE NO.	DATE 9/28/2018	B/L NO. 1851
SALES ORDER SO00000777	PURCHASE ORDER 18072	C.O.D. FEE Prepaid __ Collect \$ __	Freight charges are PREPAID unless marked collect	

RECEIVED, subject to the classifications and lawfully filed tariffs in effect on the date of this Bill of Lading, the property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated below which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any said property, that every service to be performed hereunder, shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classifications in effect on the date hereof, if this is a rail or a rail-water shipment, or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment. Shipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, set forth in the classification or tariff which governs the transportation of this shipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

FROM:	TO:	JAMES H. CAMPBELL - ASH POND CLOSURE
SHIPPER	CONSIGNEE	17000 CROSSWELL STREET WEST OLIVE, MI 49460 US
	Georgetown Agu Georgetown 500 Garrison Rd Georgetown, SC 29440 United States 843-546-0600	Contact: ROB KOSKI 847-417-9298

SPECIAL INSTRUCTIONS			CONTAINER NO.	SEAL NO.	
NO. PCS	ITEM	LOT NUMBER	QUANTITY	WEIGHT	CLASS OR RATE
1	FG-HDMSDS040BBBEA	GTC0014690001	17020 SF	3,600 LB	
1	FG-HDMSDS040BBBEA	GTC0014690002	17020 SF	3,763 LB	
1	FG-HDMSDS040BBBEA	GTC0014690005	17020 SF	3,595 LB	
1	FG-HDMSDS040BBBEA	GTC0014690009	17020 SF	3,600 LB	
1	FG-HDMSDS040BBBEA	GTC0014690011	17020 SF	3,600 LB	
1	FG-HDMSDS040BBBEA	GTC0014690013	17020 SF	3,592 LB	
1	FG-HDMSDS040BBBEA	GTC0014690014	17020 SF	3,592 LB	
1	FG-HDMSDS040BBBEA	GTC0014690017	17020 SF	3,596 LB	
1	FG-HDMSDS040BBBEA	GTC0014690020	17020 SF	3,598 LB	
1	FG-HDMSDS040BBBEA	GTC0014690022	17020 SF	3,598 LB	
1	FG-HDMSDS040BBBEA	GTC0014690028	17020 SF	3,596 LB	
1	FG-HDMSDS040BBBEA	GTC0014690031	17020 SF	3,579 LB	
15	FW-WR-HDPE-BK-5MM	GTWR10020610001	15 SP	330 LB	
27				43,639 LB	

10/01/18
VCR11

REMIT C.O.D. TO:  Agro America, Inc. 500 Garrison Road Georgetown, SC 29440 US 843-546-0600	C.O.D. AMT \$	Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement: The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges. _____ Signature of Consignor
If the shipment moves between two ports by a carrier by water, the law requires that the bill of lading shall state whether it's a "carrier's or shipper's weight." Shipper's Imprint in lieu of stamp; not a part of bill of lading approved by the Interstate Commerce Commission.	Note: Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property. The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding \$ _____ per _____	

"This is to certify that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation."

Shipper, Per 

Carrier, Per  17028

Permanent post office address of shipper

MARK WITH "X" TO DESIGNATE HAZARDOUS MATERIAL AS DEFINED IN TITLE 49 OF FEDERAL REGULATIONS

When transporting hazardous materials, include the technical or chemical name for n.o.s. (not otherwise specified) or generic description of material with appropriate UN or NA numbers as defined in US DOT Emergency Response Communication Standard (HM-126C). Provide emergency response phone number in case of incident or accident.

STRAIGHT BILL OF LADING - SHORT FORM - ORIGINAL - NOT NEGOTIABLE

NAME OF CARRIER MERTRA	CARRIER'S TRUCK NO. 18242	FREIGHT QTE NO.	DATE 9/25/2018	B/L NO. 1850
SALIS ORDER SO00000777	PURCHASE ORDER 18072	C.O.D. FEE Prepaid ___ Collect \$ ___	Freight charges are PREPAID unless marked collect	


RECEIVED, subject to the classifications and lawfully filed tariffs in effect on the date of this Bill of Lading, the property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated below which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any said property, that every service to be performed hereunder, shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classifications in effect on the date hereof, if this is a rail or a rail-water shipment, or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment. Shipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, set forth in the classification or tariff which governs the transportation of this shipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

FROM:		TO:	
SHIPPER	Georgetown Agru Georgetown 500 Garrison Rd Georgetown, SC 29440 United States 843-546-0600	CONSIGNEE	JAMES H. CAMPBELL - ASH POND CLOSURE 17000 CROSSWELL STREET WEST OLIVE, MI 49460 US Contact: ROB KOSKI 847-417-9298

SPECIAL INSTRUCTIONS	CONTAINER NO.	SEAL NO.
----------------------	---------------	----------

NO. PCS	ITEM	LOT NUMBER	QUANTITY	WEIGHT	CLASS OR RATE
1	FG-HDMSDS040BBBEA	GTC0014690006 ✓	17020 SF	3,581 LB	
1	FG-HDMSDS040BBBEA	GTC0014690007 ✓	17020 SF	3,588 LB	
1	FG-HDMSDS040BBBEA	GTC0014690010 ✓	17020 SF	3,592 LB	
1	FG-HDMSDS040BBBEA	GTC0014690015 ✓	17020 SF	3,588 LB	
1	FG-HDMSDS040BBBEA	GTC0014690016 ✓	17020 SF	3,594 LB	
1	FG-HDMSDS040BBBEA	GTC0014690019 ✓	17020 SF	3,590 LB	
1	FG-HDMSDS040BBBEA	GTC0014690021 ✓	17020 SF	3,590 LB	
1	FG-HDMSDS040BBBEA	GTC0014690023 ✓	17020 SF	3,600 LB	
1	FG-HDMSDS040BBBEA	GTC0014690027 ✓	17020 SF	3,610 LB	
1	FG-HDMSDS040BBBEA	GTC0014690029 ✓	17020 SF	3,615 LB	
1	FG-HDMSDS040BBBEA	GTC0014690030 ✓	17020 SF	3,585 LB	
1	FG-HDMSDS040BBBEA	GTC0014690032 ✓	17020 SF	3,579 LB	
12			204240 SF	43,112 LB	

Rob Koski
09/27/18

REMIT C.O.D. TO:  Agu America, Inc. 500 Garrison Road Georgetown, SC 29440 US 843-546-0600	C.O.D. AMT \$	Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement: The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges. _____ Signature of Consignor
If the shipment moves between two ports by a carrier by water, the law requires that the bill of lading shall state whether it's a "carrier's or shipper's weight." Shipper's imprint in lieu of stamp; not a part of bill of lading approved by the Interstate Commerce Commission.	Note: Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property. The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding \$ _____ per _____	

"This is to certify that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation."

Shipper, Per 

Carrier, Per 

Permanent post office address of shipper

MARK WITH "X" TO DESIGNATE HAZARDOUS MATERIAL AS DEFINED IN TITLE 49 OF FEDERAL REGULATIONS

When transporting hazardous materials, include the technical or chemical name for n.o.s. (not otherwise specified) or generic description of material with appropriate UN or NA numbers as defined in US DOT Emergency Response Communication Standard (HM-126C). Provide emergency response phone number in case of incident or accident.

GEOSYNTHETIC INVENTORY CONTROL LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

MATERIAL TYPE: GEOMEMBRANE GEONET GEOTEXTILE GCL OTHER

DATE OF ARRIVAL: 5-10-19

DATE OF INVENTORY: 5-10-19

MATERIAL MANUFACTURER: ARGU

INVENTORY MONITOR: P.D.W

PRODUCT IDENTIFICATION: MICRO SPIKE

CONDITION IN TRUCK: OK

TRUCK TYPE: PICKUP W TOW TRAILER


UNLOADING METHOD: ROLLED OFF END

	ROLL NUMBER	BATCH OR LOT NO.	MATERIAL DIMENSIONS			QC CERT Y/N	CONF. SAMP. Y/N	OTHER	REMARKS
			LENGTH	WIDTH	THICKNESS OR WEIGHT				
1	GTB0030870017	—	750'	23'	40ML	Y			
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									


STRAIGHT BILL OF LADING - SHORT FORM - ORIGINAL - NOT NEGOTIABLE

NAME OF CARRIER CPU-COLLECT	CARRIER'S TRUCK NO. 01	FREIGHT QTE NO.	DATE 5/8/2019	B/L NO. 8376
SALES ORDER SO00003750	PURCHASE ORDER 19109	C.O.D. FEE Prepaid ___ Collect \$ ___	Freight charges are PREPAID unless marked collect	

RECEIVED, subject to the classifications and lawfully filed tariffs in effect on the date of this Bill of Lading, the property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated below which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any said property, that every service to be performed hereunder, shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classifications in effect on the date hereof, if this is a rail or a rail-water shipment, or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment. Shipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, set forth in the classification or tariff which governs the transportation of this shipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

FROM:	TO:
SHIPPER	CONSIGNEE
 Georgetown Agru America, Inc 500 Garrison Rd Georgetown, SC 29440 United States 843-546-0600	James H Campbell Plant - PH6 2019 Closure 170000 Crosswell Street West Olive, MI 49460 US

SPECIAL INSTRUCTIONS		CONTAINER NO.	SEAL NO.
NO. PCS	ITEM	LOT NUMBER	QUANTITY
1	FG-HDMSDS040BBBEG	GTB0030870017	17250 SF
20	FW-WR-HDPE-BK-5MM	GTWR20028840001	20 SP
21			4,241 LB

REMIT C.O.D. TO:	C.O.D. AMT \$	Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement: The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.
 Agru America, Inc. 500 Garrison Road Georgetown, SC 29440 US 843-546-0600		_____ Signature of Consignor

If the shipment moves between two ports by a carrier by water, the law requires that the bill of lading shall state whether it's a "carrier's or shipper's weight." Shipper's imprint in lieu of stamp; not a part of bill of lading approved by the Interstate Commerce Commission.	Note: Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property. The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding \$ _____ per
---	--

"This is to certify that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation."

Shipper, Per

Carrier, Per

Permanent post office address of shipper

MARK WITH "X" TO DESIGNATE HAZARDOUS MATERIAL AS DEFINED IN TITLE 49 OF FEDERAL REGULATIONS

When transporting hazardous materials, include the technical or chemical name for n.o.a. (not otherwise specified) or generic description of material with appropriate UN or NA numbers as defined in US DOT Emergency Response Communication Standard (HM-126C). Provide emergency response phone number in case of incident or accident.

APPENDIX E.2

Geomembrane Quality Control Certificates



2690-D Salisbury Hwy
Statesville, NC 28677
P: 704.208.3440
www.ccsliners.com

SUBMITTAL COVER SHEET

DATE: 8/24/2018

SUBMITTAL NUMBER: 05 - Geomembrane MQC Certs

PROJECT NUMBER:	18-029
PROJECT NAME:	J.H. Campbell Generating Facility Ash Pond Closure
ATTENTION TO:	John Burt

OWNER: J.H. Campbell Generating Plant 17000 Croswell Street West Olive, MI 49460	CONTRACTOR: Ryan Central 2700 E Racine Street Janesville, WI 53545
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MANUFACTURER: Agru America 40 mil HDPE Microspike

SPEC. SECTION	SUBMITTAL ITEM DESCRIPTION
313800	Polyethylene Geomembrane Manufacturer Submittals
1.04 A-2	Copies of dated quality control certificates issued by resin supplier.
1.04 A-3	Results of tests conducted by geomembrane manufacturer to verify that resin used to manufacture geomembrane meets Specifications.
1.04 A-8	Quality control certificates, signed by geomembrane manufacturer. Each quality control certificate shall include applicable roll identification numbers, testing procedures, and results of quality control tests

SUBCONTRACTOR REVIEW: <i>These are submitted as checked below:</i> For Approval: <u> X </u> For Your Use: <u> </u> As Requested: <u> </u> Signature of CCS Reviewer: <u> Jennifer Battle </u>	ENGINEER APPROVAL:
--	--------------------



Geomembrane Certification Package for
J.H. Campbell - Ash Pond Closure

West Olive, MI



MATERIAL CERTIFICATIONS IN THIS PACKAGE:

- 40 MIL HDPE MICROSPIKE



23 August 2018

Jennifer Battle
Chesapeake Containment Systems, Inc.
2690D Salisbury Hwy
Statesville, NC 28677

RE: AGRU OA #41406 JH Campbell Ash Pond Closure – Weld Rod Compatibility

Dear Ms. Battle,

Please see below the requested certifications for the above referenced Project:

- All weld rod produced and supplied for this Project is fully compatible with all geomembrane produced and supplied for this Project.

Sincerely,

A handwritten signature in black ink, appearing to read "Anthony Johnson", with a long horizontal flourish extending to the right.

Anthony Johnson
Technical Review Specialist
AGRU America



SECTION 1

List of Materials



Cust: Chesapeake Containment Systems
 PO#: 18072 James H. Campbell-Ash Pond Closure
 Dest: West Olive, MI

Doc#: 41406

FG-HDMSDS040BBBEA 30 rolls 40HD micro (740) 510,600 ft²

roll #	English			check weld rod qty (if ordered)	wgt	resin lot #
	width	length	area			
	ft.	ft.	ft².		lbs.	
no third party testing						
GTC0014690001	23	740	17,020	FG-HDMSDS040BBBEA 30tot 1	3600	HJF810600
GTC0014690002	23	740	17,020	FG-HDMSDS040BBBEA 30tot 2	3763	HJF810600
GTC0014690005	23	740	17,020	FG-HDMSDS040BBBEA 30tot 3	3595	HJF810600
GTC0014690006	23	740	17,020	FG-HDMSDS040BBBEA 30tot 4	3581	HJF810600
GTC0014690007	23	740	17,020	FG-HDMSDS040BBBEA 30tot 5	3588	HJF810600
GTC0014690008	23	740	17,020	FG-HDMSDS040BBBEA 30tot 6	3586	HJF810600
GTC0014690009	23	740	17,020	FG-HDMSDS040BBBEA 30tot 7	3600	HJF810600
GTC0014690010	23	740	17,020	FG-HDMSDS040BBBEA 30tot 8	3592	HJF810600
GTC0014690011	23	740	17,020	FG-HDMSDS040BBBEA 30tot 9	3600	HJF810600
GTC0014690012	23	740	17,020	FG-HDMSDS040BBBEA 30tot 10	3596	HJF810600
GTC0014690013	23	740	17,020	FG-HDMSDS040BBBEA 30tot 11	3592	HJF810600
GTC0014690014	23	740	17,020	FG-HDMSDS040BBBEA 30tot 12	3592	HJF810600
GTC0014690015	23	740	17,020	FG-HDMSDS040BBBEA 30tot 13	3588	HJF810600
GTC0014690016	23	740	17,020	FG-HDMSDS040BBBEA 30tot 14	3594	HJF810600
GTC0014690017	23	740	17,020	FG-HDMSDS040BBBEA 30tot 15	3596	HJF810600
GTC0014690018	23	740	17,020	FG-HDMSDS040BBBEA 30tot 16	3594	HJF810600
GTC0014690019	23	740	17,020	FG-HDMSDS040BBBEA 30tot 17	3590	HJF810600
GTC0014690020	23	740	17,020	FG-HDMSDS040BBBEA 30tot 18	3598	HJF810600
GTC0014690021	23	740	17,020	FG-HDMSDS040BBBEA 30tot 19	3590	HJF810600
GTC0014690022	23	740	17,020	FG-HDMSDS040BBBEA 30tot 20	3598	HJF810600
GTC0014690023	23	740	17,020	FG-HDMSDS040BBBEA 30tot 21	3600	HJG810930
GTC0014690024	23	740	17,020	FG-HDMSDS040BBBEA 30tot 22	3600	HJG810930
GTC0014690025	23	740	17,020	FG-HDMSDS040BBBEA 30tot 23	3610	HJG810930
GTC0014690026	23	740	17,020	FG-HDMSDS040BBBEA 30tot 24	3605	HJG810930
GTC0014690027	23	740	17,020	FG-HDMSDS040BBBEA 30tot 25	3610	HJG810930
GTC0014690028	23	740	17,020	FG-HDMSDS040BBBEA 30tot 26	3596	HJG810930
GTC0014690029	23	740	17,020	FG-HDMSDS040BBBEA 30tot 27	3615	HJG810930
GTC0014690030	23	740	17,020	FG-HDMSDS040BBBEA 30tot 28	3585	HJG810930
GTC0014690031	23	740	17,020	FG-HDMSDS040BBBEA 30tot 29	3579	HJG810930
GTC0014690032	23	740	17,020	FG-HDMSDS040BBBEA 30tot 30	3579	HJG810930

510,600
 total for order



SECTION 2

Geomembrane Quality Control Certifications



quality certificate

ROLL #: **GTC0014690001** LOT #: **HJF810600** LINER TYPE: **40 HD MICROSPIKE**

	METRIC	ENGLISH		METRIC	ENGLISH
Thickness	MIN: .9 mm	36 mil	Thickness:	1.02 mm	40 mil
Measurement			Length:	225.555 m	740 feet
ASTM D5994	MAX: 1.1 mm	44 mil	Width:	7.01 m	23 feet
(Modified)	AVE: 1.0 mm	40 mil			
OIT(Standard) ASTM D 3895					186 minutes
Asperity	Average	Top		.66 mm	26 mil
ASTM D7466		Bottom		.64 mm	25 mil
Specific Gravity	Average Density				.942 g/cc
ASTM D792					
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min				.34
Grade: K307					
Carbon Black Content ASTM D4218	Range				2.5 %
Carbon Black Dispersion ASTM D5596	Category				10 in Category 1
Tensile Strength ASTM D6693 (2 inches / minute)	Average Strength @ Yield	MD	19 N/mm	107 ppi	2803 psi
		TD	20 N/mm	115 ppi	3011 psi
	Average Strength @ Break	MD	23 N/mm	134 ppi	3499 psi
		TD	23 N/mm	131 ppi	3438 psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	MD			19 %
		TD			15 %
	Average Elongation @Break	MD			432 %
		TD			543 %
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	MD	209.1 N		47 lbs.
		TD	209.1 N		47 lbs.
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load		489.3 N		110 lbs.
Notched Constant Tensile Load ASTM D5397	Pass/Fail @ 30%		500 Hrs.		ONGOING

Customer: Chesapeake Containment Systems
PO: 18072 James H. Campbell-Ash Pond Closure
Destination: West Olive, MI

Production Date: **8/16/2018** OA#: **41406**

Signature: _____

Maria Coffey

Quality Control Department



quality certificate

ROLL #: **GTC0014690002** LOT #: **HJF810600** LINER TYPE: **40 HD MICROSPIKE**

	METRIC	ENGLISH		METRIC	ENGLISH
Thickness	MIN: 1.0 mm	38 mil	Thickness:	1.02 mm	40 mil
Measurement			Length:	225.555 m	740 feet
ASTM D5994	MAX: 1.1 mm	42 mil	Width:	7.01 m	23 feet
(Modified)	AVE: 1.0 mm	40 mil			
OIT(Standard) ASTM D 3895					186 minutes
Asperity	Average	Top		.61 mm	24 mil
ASTM D7466		Bottom		.51 mm	20 mil
Specific Gravity	Average Density				.942 g/cc
ASTM D792					
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min				.34
Grade: K307					
Carbon Black Content ASTM D4218	Range				2.5 %
Carbon Black Dispersion ASTM D5596	Category				10 in Category 1
Tensile Strength ASTM D6693 (2 inches / minute)	Average Strength @ Yield	MD	19 N/mm	107 ppi	2803 psi
		TD	20 N/mm	115 ppi	3011 psi
	Average Strength @ Break	MD	23 N/mm	134 ppi	3499 psi
		TD	23 N/mm	131 ppi	3438 psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	MD			19 %
		TD			15 %
	Average Elongation @Break	MD			432 %
		TD			543 %
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	MD		209.1 N	47 lbs.
		TD		209.1 N	47 lbs.
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load			489.3 N	110 lbs.
Notched Constant Tensile Load ASTM D5397	Pass/Fail @ 30%			500 Hrs.	ONGOING

Customer: **Chesapeake Containment Systems**
PO: **18072 James H. Campbell-Ash Pond Closure**
Destination: **West Olive, MI**

Production Date: **8/16/2018** OA#: **41406**

Signature: _____

Maria Coffey

Quality Control Department



quality certificate

ROLL #: **GTC0014690005** LOT #: **HJF810600** LINER TYPE: **40 HD MICROSPIKE**

	METRIC	ENGLISH		METRIC	ENGLISH
Thickness	MIN: .9 mm	36 mil	Thickness:	1.02 mm	40 mil
Measurement			Length:	225.555 m	740 feet
ASTM D5994	MAX: 1.1 mm	42 mil	Width:	7.01 m	23 feet
(Modified)	AVE: 1.0 mm	40 mil			
OIT(Standard) ASTM D 3895					183 minutes
Asperity	Average	Top		.69 mm	27 mil
ASTM D7466		Bottom		.61 mm	24 mil
Specific Gravity	Average Density				.943 g/cc
ASTM D792					
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min				.24
Grade: K307					
Carbon Black Content ASTM D4218	Range				2.6 %
Carbon Black Dispersion ASTM D5596	Category				10 in Category 1
Tensile Strength	Average Strength @ Yield	MD	19 N/mm	107 ppi	2803 psi
ASTM D6693		TD	20 N/mm	115 ppi	3011 psi
(2 inches / minute)	Average Strength @ Break	MD	23 N/mm	134 ppi	3499 psi
		TD	23 N/mm	131 ppi	3438 psi
Tensile Elongation	Average Elongation @ Yield	MD			19 %
ASTM D6693		TD			15 %
(2 inches / minute)	Average Elongation @Break	MD			432 %
Lo = 1.3" Yield		TD			543 %
Lo = 2.0" Break					
Tear Resistance	Average Tear Resistance	MD	209.1 N		47 lbs.
ASTM D1004 (Modified)		TD	209.1 N		47 lbs.
Puncture Resistance	Average Peak Load		489.3 N		110 lbs.
ASTM D4833 (Modified)					
Notched Constant Tensile Load	Pass/Fail @ 30%		500 Hrs.		ONGOING
ASTM D5397					

Customer: **Chesapeake Containment Systems**
PO: **18072 James H. Campbell-Ash Pond Closure**
Destination: **West Olive, MI**

Production Date: **8/16/2018** OA#: **41406**

Signature: _____

Maria Coffey

Quality Control Department



quality certificate

ROLL #: **GTC0014690006** LOT #: **HJF810600** LINER TYPE: **40 HD MICROSPIKE**

	METRIC	ENGLISH		METRIC	ENGLISH
Thickness	MIN: .9 mm	36 mil	Thickness:	1.02 mm	40 mil
Measurement			Length:	225.555 m	740 feet
ASTM D5994	MAX: 1.1 mm	44 mil	Width:	7.01 m	23 feet
(Modified)	AVE: 1.0 mm	40 mil			
OIT(Standard) ASTM D 3895					183 minutes
Asperity	Average	Top		.69 mm	27 mil
ASTM D7466		Bottom		.69 mm	27 mil
Specific Gravity	Average Density				.943 g/cc
ASTM D792					
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min				.24
Grade: K307					
Carbon Black Content ASTM D4218	Range				2.6 %
Carbon Black Dispersion ASTM D5596	Category				10 in Category 1
Tensile Strength ASTM D6693 (2 inches / minute)	Average Strength @ Yield	MD	18 N/mm	103 ppi	2669 psi
		TD	19 N/mm	110 ppi	2853 psi
	Average Strength @ Break	MD	23 N/mm	134 ppi	3494 psi
		TD	22 N/mm	128 ppi	3291 psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	MD			23 %
		TD			14 %
	Average Elongation @Break	MD			400 %
		TD			558 %
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	MD		209.1 N	47 lbs.
		TD		209.1 N	47 lbs.
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load			489.3 N	110 lbs.
Notched Constant Tensile Load ASTM D5397	Pass/Fail @ 30%			500 Hrs.	ONGOING

Customer: **Chesapeake Containment Systems**
PO: **18072 James H. Campbell-Ash Pond Closure**
Destination: **West Olive, MI**

Production Date: **8/16/2018** OA#: **41406**

Signature: _____

Maria Coffey

Quality Control Department



quality certificate

ROLL #: **GTC0014690007** LOT #: **HJF810600** LINER TYPE: **40 HD MICROSPIKE**

	METRIC	ENGLISH		METRIC	ENGLISH
Thickness	MIN: 1.0 mm	40 mil	Thickness:	1.02 mm	40 mil
Measurement			Length:	225.555 m	740 feet
ASTM D5994	MAX: 1.1 mm	45 mil	Width:	7.01 m	23 feet
(Modified)	AVE: 1.1 mm	42 mil			
OIT(Standard) ASTM D 3895					183 minutes
Asperity	Average	Top		.81 mm	32 mil
ASTM D7466		Bottom		.84 mm	33 mil
Specific Gravity	Average Density				.943 g/cc
ASTM D792					
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min				.24
Grade: K307					
Carbon Black Content ASTM D4218	Range				2.6 %
Carbon Black Dispersion ASTM D5596	Category				10 in Category 1
Tensile Strength ASTM D6693 (2 inches / minute)	Average Strength @ Yield	MD	18 N/mm	103 ppi	2669 psi
		TD	19 N/mm	110 ppi	2853 psi
	Average Strength @ Break	MD	23 N/mm	134 ppi	3494 psi
		TD	22 N/mm	128 ppi	3291 psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	MD			23 %
		TD			14 %
	Average Elongation @Break	MD			400 %
		TD			558 %
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	MD		209.1 N	47 lbs.
		TD		209.1 N	47 lbs.
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load			489.3 N	110 lbs.
Notched Constant Tensile Load ASTM D5397	Pass/Fail @ 30%			500 Hrs.	ONGOING

Customer: **Chesapeake Containment Systems**
PO: **18072 James H. Campbell-Ash Pond Closure**
Destination: **West Olive, MI**

Production Date: **8/16/2018** OA#: **41406**

Signature: _____

Maria Coffey

Quality Control Department



quality certificate

ROLL #: **GTC0014690008** LOT #: **HJF810600** LINER TYPE: **40 HD MICROSPIKE**

	METRIC	ENGLISH		METRIC	ENGLISH
Thickness	MIN: 1.0 mm	40 mil	Thickness:	1.02 mm	40 mil
Measurement			Length:	225.555 m	740 feet
ASTM D5994	MAX: 1.1 mm	44 mil	Width:	7.01 m	23 feet
(Modified)	AVE: 1.1 mm	42 mil			
OIT(Standard) ASTM D 3895					183 minutes
Asperity	Average	Top		.81 mm	32 mil
ASTM D7466		Bottom		.86 mm	34 mil
Specific Gravity	Average Density				.943 g/cc
ASTM D792					
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min				.24
Grade: K307					
Carbon Black Content ASTM D4218	Range				2.6 %
Carbon Black Dispersion ASTM D5596	Category				10 in Category 1
Tensile Strength	Average Strength @ Yield	MD 18 N/mm 103 ppi 2669 psi			
ASTM D6693		TD 19 N/mm 110 ppi 2853 psi			
(2 inches / minute)	Average Strength @ Break	MD 23 N/mm 134 ppi 3494 psi			
		TD 22 N/mm 128 ppi 3291 psi			
Tensile Elongation	Average Elongation @ Yield	MD 23 %			
ASTM D6693		TD 14 %			
(2 inches / minute)	Average Elongation @Break	MD 400 %			
Lo = 1.3" Yield		TD 558 %			
Lo = 2.0" Break					
Tear Resistance	Average Tear Resistance	MD 209.1 N 47 lbs.			
ASTM D1004 (Modified)		TD 209.1 N 47 lbs.			
Puncture Resistance	Average Peak Load	489.3 N 110 lbs.			
ASTM D4833 (Modified)					
Notched Constant Tensile Load	Pass/Fail @ 30%	500 Hrs.			ONGOING
ASTM D5397					

Customer: **Chesapeake Containment Systems**
PO: **18072 James H. Campbell-Ash Pond Closure**
Destination: **West Olive, MI**

Production Date: **8/16/2018** OA#: **41406**

Signature: _____

Maria Coffey

Quality Control Department



quality certificate

ROLL #: **GTC0014690009** LOT #: **HJF810600** LINER TYPE: **40 HD MICROSPIKE**

	METRIC	ENGLISH		METRIC	ENGLISH
Thickness	MIN: 1.0 mm	40 mil	Thickness:	1.02 mm	40 mil
Measurement			Length:	225.555 m	740 feet
ASTM D5994	MAX: 1.1 mm	44 mil	Width:	7.01 m	23 feet
(Modified)	AVE: 1.1 mm	42 mil			
OIT(Standard) ASTM D 3895					183 minutes
Asperity	Average	Top		.81 mm	32 mil
ASTM D7466		Bottom		.81 mm	32 mil
Specific Gravity	Average Density				.943 g/cc
ASTM D792					
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min				.24
Grade: K307					
Carbon Black Content ASTM D4218	Range				2.6 %
Carbon Black Dispersion ASTM D5596	Category				10 in Category 1
Tensile Strength ASTM D6693 (2 inches / minute)	Average Strength @ Yield	MD	18 N/mm	103 ppi	2669 psi
		TD	19 N/mm	110 ppi	2853 psi
	Average Strength @ Break	MD	23 N/mm	134 ppi	3494 psi
		TD	22 N/mm	128 ppi	3291 psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	MD			23 %
		TD			14 %
	Average Elongation @Break	MD			400 %
		TD			558 %
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	MD		209.1 N	47 lbs.
		TD		209.1 N	47 lbs.
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load			489.3 N	110 lbs.
Notched Constant Tensile Load ASTM D5397	Pass/Fail @ 30%			500 Hrs.	ONGOING

Customer: **Chesapeake Containment Systems**
PO: **18072 James H. Campbell-Ash Pond Closure**
Destination: **West Olive, MI**

Production Date: **8/16/2018** OA#: **41406**

Signature: _____

Maria Coffey

Quality Control Department



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ROLL #: **GTC0014690010** LOT #: **HJF810600** LINER TYPE: **40 HD MICROSPIKE**

	METRIC	ENGLISH		METRIC	ENGLISH
Thickness	MIN: 1.0 mm	40 mil	Thickness:	1.02 mm	40 mil
Measurement			Length:	225.555 m	740 feet
ASTM D5994	MAX: 1.2 mm	46 mil	Width:	7.01 m	23 feet
(Modified)	AVE: 1.1 mm	42 mil			
OIT(Standard) ASTM D 3895					183 minutes
Asperity	Average	Top		.79 mm	31 mil
ASTM D7466		Bottom		.81 mm	32 mil
Specific Gravity	Average Density				.943 g/cc
ASTM D792					
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min				.24
Grade: K307					
Carbon Black Content ASTM D4218	Range				2.6 %
Carbon Black Dispersion ASTM D5596	Category				10 in Category 1
Tensile Strength ASTM D6693 (2 inches / minute)	Average Strength @ Yield	MD	18 N/mm	103 ppi	2669 psi
		TD	19 N/mm	110 ppi	2853 psi
	Average Strength @ Break	MD	23 N/mm	134 ppi	3494 psi
		TD	22 N/mm	128 ppi	3291 psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	MD			23 %
		TD			14 %
	Average Elongation @Break	MD			400 %
		TD			558 %
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	MD		209.1 N	47 lbs.
		TD		209.1 N	47 lbs.
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load			489.3 N	110 lbs.
Notched Constant Tensile Load ASTM D5397	Pass/Fail @ 30%			500 Hrs.	ONGOING

Customer: **Chesapeake Containment Systems**
PO: **18072 James H. Campbell-Ash Pond Closure**
Destination: **West Olive, MI**

Production Date: **8/16/2018** OA#: **41406**

Signature: _____

Maria Coffey

Quality Control Department



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ROLL #: **GTC0014690011** LOT #: **HJF810600** LINER TYPE: **40 HD MICROSPIKE**

	METRIC	ENGLISH		METRIC	ENGLISH
Thickness	MIN: 1.0 mm	40 mil	Thickness:	1.02 mm	40 mil
Measurement			Length:	225.555 m	740 feet
ASTM D5994	MAX: 1.1 mm	44 mil	Width:	7.01 m	23 feet
(Modified)	AVE: 1.1 mm	42 mil			
OIT(Standard) ASTM D 3895					183 minutes
Asperity	Average	Top		.86 mm	34 mil
ASTM D7466		Bottom		.84 mm	33 mil
Specific Gravity	Average Density				.943 g/cc
ASTM D792					
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min				.24
Grade: K307					
Carbon Black Content ASTM D4218	Range				2.5 %
Carbon Black Dispersion ASTM D5596	Category				10 in Category 1
Tensile Strength	Average Strength @ Yield	MD 18 N/mm 103 ppi 2460 psi			
ASTM D6693		TD 21 N/mm 118 ppi 2812 psi			
(2 inches / minute)	Average Strength @ Break	MD 25 N/mm 144 ppi 3451 psi			
		TD 22 N/mm 128 ppi 3064 psi			
Tensile Elongation	Average Elongation @ Yield	MD 21 %			
ASTM D6693		TD 14 %			
(2 inches / minute)	Average Elongation @Break	MD 452 %			
Lo = 1.3" Yield		TD 551 %			
Lo = 2.0" Break					
Tear Resistance	Average Tear Resistance	MD 182.4 N 41 lbs.			
ASTM D1004 (Modified)		TD 191.3 N 43 lbs.			
Puncture Resistance	Average Peak Load	480.4 N 108 lbs.			
ASTM D4833 (Modified)					
Notched Constant Tensile Load	Pass/Fail @ 30%	500 Hrs.			ONGOING
ASTM D5397					

Customer: **Chesapeake Containment Systems**
PO: **18072 James H. Campbell-Ash Pond Closure**
Destination: **West Olive, MI**

Production Date: **8/16/2018** OA#: **41406**

Signature: _____

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ROLL #: **GTC0014690012** LOT #: **HJF810600** LINER TYPE: **40 HD MICROSPIKE**

	METRIC	ENGLISH		METRIC	ENGLISH
Thickness	MIN: 1.0 mm	40 mil	Thickness:	1.02 mm	40 mil
Measurement			Length:	225.555 m	740 feet
ASTM D5994	MAX: 1.1 mm	44 mil	Width:	7.01 m	23 feet
(Modified)	AVE: 1.1 mm	42 mil			
OIT(Standard) ASTM D 3895					183 minutes
Asperity	Average	Top		.81 mm	32 mil
ASTM D7466		Bottom		.79 mm	31 mil
Specific Gravity	Average Density				.943 g/cc
ASTM D792					
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min				.24
Grade: K307					
Carbon Black Content ASTM D4218	Range				2.5 %
Carbon Black Dispersion ASTM D5596	Category				10 in Category 1
Tensile Strength	Average Strength @ Yield	MD 18 N/mm	103 ppi	2460 psi	
ASTM D6693		TD 21 N/mm	118 ppi	2812 psi	
(2 inches / minute)	Average Strength @ Break	MD 25 N/mm	144 ppi	3451 psi	
		TD 22 N/mm	128 ppi	3064 psi	
Tensile Elongation	Average Elongation @ Yield	MD		21 %	
ASTM D6693		TD		14 %	
(2 inches / minute)	Average Elongation @Break	MD		452 %	
Lo = 1.3" Yield		TD		551 %	
Lo = 2.0" Break					
Tear Resistance	Average Tear Resistance	MD	182.4 N	41 lbs.	
ASTM D1004 (Modified)		TD	191.3 N	43 lbs.	
Puncture Resistance	Average Peak Load		480.4 N	108 lbs.	
ASTM D4833 (Modified)					
Notched Constant Tensile Load	Pass/Fail @ 30%		500 Hrs.	ONGOING	
ASTM D5397					

Customer: **Chesapeake Containment Systems**
PO: **18072 James H. Campbell-Ash Pond Closure**
Destination: **West Olive, MI**

Production Date: **8/16/2018** OA#: **41406**

Signature: _____

Maria Coffey

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ROLL #: **GTC0014690013** LOT #: **HJF810600** LINER TYPE: **40 HD MICROSPIKE**

	METRIC	ENGLISH		METRIC	ENGLISH
Thickness	MIN: 1.0 mm	40 mil	Thickness:	1.02 mm	40 mil
Measurement			Length:	225.555 m	740 feet
ASTM D5994	MAX: 1.1 mm	44 mil	Width:	7.01 m	23 feet
(Modified)	AVE: 1.1 mm	42 mil			
OIT(Standard) ASTM D 3895					183 minutes
Asperity	Average	Top		.81 mm	32 mil
ASTM D7466		Bottom		.84 mm	33 mil
Specific Gravity	Average Density				.943 g/cc
ASTM D792					
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min				.24
Grade: K307					
Carbon Black Content ASTM D4218	Range				2.6 %
Carbon Black Dispersion ASTM D5596	Category				10 in Category 1
Tensile Strength ASTM D6693 (2 inches / minute)	Average Strength @ Yield	MD	18 N/mm	103 ppi	2460 psi
		TD	21 N/mm	118 ppi	2812 psi
	Average Strength @ Break	MD	25 N/mm	144 ppi	3451 psi
		TD	22 N/mm	128 ppi	3064 psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	MD			21 %
		TD			14 %
	Average Elongation @Break	MD			452 %
		TD			551 %
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	MD		182.4 N	41 lbs.
		TD		191.3 N	43 lbs.
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load			480.4 N	108 lbs.
Notched Constant Tensile Load ASTM D5397	Pass/Fail @ 30%			500 Hrs.	ONGOING

Customer: **Chesapeake Containment Systems**
PO: **18072 James H. Campbell-Ash Pond Closure**
Destination: **West Olive, MI**

Production Date: **8/17/2018** OA#: **41406**

Signature: _____

Maria Coffey

Quality Control Department



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ROLL #: **GTC0014690014** LOT #: **HJF810600** LINER TYPE: **40 HD MICROSPIKE**

	METRIC	ENGLISH		METRIC	ENGLISH
Thickness	MIN: .9 mm	37 mil	Thickness:	1.02 mm	40 mil
Measurement			Length:	225.555 m	740 feet
ASTM D5994	MAX: 1.1 mm	45 mil	Width:	7.01 m	23 feet
(Modified)	AVE: 1.0 mm	41 mil			
OIT(Standard) ASTM D 3895					183 minutes
Asperity	Average	Top		.74 mm	29 mil
ASTM D7466		Bottom		.74 mm	29 mil
Specific Gravity	Average Density				.943 g/cc
ASTM D792					
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min				.24
Grade: K307					
Carbon Black Content ASTM D4218	Range				2.6 %
Carbon Black Dispersion ASTM D5596	Category				10 in Category 1
Tensile Strength ASTM D6693 (2 inches / minute)	Average Strength @ Yield	MD	18 N/mm	103 ppi	2460 psi
		TD	21 N/mm	118 ppi	2812 psi
	Average Strength @ Break	MD	25 N/mm	144 ppi	3451 psi
		TD	22 N/mm	128 ppi	3064 psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	MD			21 %
		TD			14 %
	Average Elongation @Break	MD			452 %
		TD			551 %
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	MD		182.4 N	41 lbs.
		TD		191.3 N	43 lbs.
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load			480.4 N	108 lbs.
Notched Constant Tensile Load ASTM D5397	Pass/Fail @ 30%			500 Hrs.	ONGOING

Customer: **Chesapeake Containment Systems**
PO: **18072 James H. Campbell-Ash Pond Closure**
Destination: **West Olive, MI**

Production Date: **8/17/2018** OA#: **41406**

Signature: _____

Maria Coffey

Quality Control Department



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ROLL #: **GTC0014690015** LOT #: **HJF810600** LINER TYPE: **40 HD MICROSPIKE**

	METRIC	ENGLISH		METRIC	ENGLISH
Thickness	MIN: .9 mm	36 mil	Thickness:	1.02 mm	40 mil
Measurement			Length:	225.555 m	740 feet
ASTM D5994	MAX: 1.2 mm	47 mil	Width:	7.01 m	23 feet
(Modified)	AVE: 1.0 mm	41 mil			
OIT(Standard) ASTM D 3895					183 minutes
Asperity	Average	Top		.74 mm	29 mil
ASTM D7466		Bottom		.66 mm	26 mil
Specific Gravity	Average Density				.943 g/cc
ASTM D792					
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min				.24
Grade: K307					
Carbon Black Content ASTM D4218	Range				2.6 %
Carbon Black Dispersion ASTM D5596	Category				10 in Category 1
Tensile Strength ASTM D6693 (2 inches / minute)	Average Strength @ Yield	MD	18 N/mm	103 ppi	2460 psi
		TD	21 N/mm	118 ppi	2812 psi
	Average Strength @ Break	MD	25 N/mm	144 ppi	3451 psi
		TD	22 N/mm	128 ppi	3064 psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	MD			21 %
		TD			14 %
	Average Elongation @Break	MD			452 %
		TD			551 %
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	MD		182.4 N	41 lbs.
		TD		191.3 N	43 lbs.
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load			480.4 N	108 lbs.
Notched Constant Tensile Load ASTM D5397	Pass/Fail @ 30%			500 Hrs.	ONGOING

Customer: **Chesapeake Containment Systems**
PO: **18072 James H. Campbell-Ash Pond Closure**
Destination: **West Olive, MI**

Production Date: **8/17/2018** OA#: **41406**

Signature: _____

Maria Coffey

Quality Control Department



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ROLL #: **GTC0014690016** LOT #: **HJF810600** LINER TYPE: **40 HD MICROSPIKE**

	METRIC	ENGLISH		METRIC	ENGLISH
Thickness	MIN: .9 mm	36 mil	Thickness:	1.02 mm	40 mil
Measurement			Length:	225.555 m	740 feet
ASTM D5994	MAX: 1.1 mm	45 mil	Width:	7.01 m	23 feet
(Modified)	AVE: 1.0 mm	40 mil			
OIT(Standard) ASTM D 3895					183 minutes
Asperity	Average	Top		.64 mm	25 mil
ASTM D7466		Bottom		.69 mm	27 mil
Specific Gravity	Average Density				.943 g/cc
ASTM D792					
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min				.24
Grade: K307					
Carbon Black Content ASTM D4218	Range				2.6 %
Carbon Black Dispersion ASTM D5596	Category				10 in Category 1
Tensile Strength	Average Strength @ Yield	MD	17 N/mm	98 ppi	2496 psi
ASTM D6693		TD	19 N/mm	111 ppi	2821 psi
(2 inches / minute)	Average Strength @ Break	MD	24 N/mm	137 ppi	3503 psi
		TD	22 N/mm	127 ppi	3213 psi
Tensile Elongation	Average Elongation @ Yield	MD			22 %
ASTM D6693		TD			14 %
(2 inches / minute)	Average Elongation @Break	MD			452 %
Lo = 1.3" Yield		TD			552 %
Lo = 2.0" Break					
Tear Resistance	Average Tear Resistance	MD	182.4 N		41 lbs.
ASTM D1004 (Modified)		TD	191.3 N		43 lbs.
Puncture Resistance	Average Peak Load		480.4 N		108 lbs.
ASTM D4833 (Modified)					
Notched Constant Tensile Load	Pass/Fail @ 30%		500 Hrs.		ONGOING
ASTM D5397					

Customer: **Chesapeake Containment Systems**
PO: **18072 James H. Campbell-Ash Pond Closure**
Destination: **West Olive, MI**

Production Date: **8/17/2018** OA#: **41406**

Signature: _____

Maria Coffey

Quality Control Department



quality certificate

ROLL #: **GTC0014690017** LOT #: **HJF810600** LINER TYPE: **40 HD MICROSPIKE**

	METRIC	ENGLISH		METRIC	ENGLISH
Thickness	MIN: .9 mm	36 mil	Thickness:	1.02 mm	40 mil
Measurement			Length:	225.555 m	740 feet
ASTM D5994	MAX: 1.1 mm	44 mil	Width:	7.01 m	23 feet
(Modified)	AVE: 1.0 mm	40 mil			
OIT(Standard) ASTM D 3895					183 minutes
Asperity	Average	Top		.71 mm	28 mil
ASTM D7466		Bottom		.71 mm	28 mil
Specific Gravity	Average Density				.943 g/cc
ASTM D792					
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min				.24
Grade: K307					
Carbon Black Content ASTM D4218	Range				2.5 %
Carbon Black Dispersion ASTM D5596	Category				10 in Category 1
Tensile Strength ASTM D6693 (2 inches / minute)	Average Strength @ Yield	MD	17 N/mm	98 ppi	2496 psi
		TD	19 N/mm	111 ppi	2821 psi
	Average Strength @ Break	MD	24 N/mm	137 ppi	3503 psi
		TD	22 N/mm	127 ppi	3213 psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	MD			22 %
		TD			14 %
	Average Elongation @Break	MD			452 %
		TD			552 %
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	MD		182.4 N	41 lbs.
		TD		191.3 N	43 lbs.
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load			480.4 N	108 lbs.
Notched Constant Tensile Load ASTM D5397	Pass/Fail @ 30%			500 Hrs.	ONGOING

Customer: **Chesapeake Containment Systems**
PO: **18072 James H. Campbell-Ash Pond Closure**
Destination: **West Olive, MI**

Production Date: **8/17/2018** OA#: **41406**

Signature: _____

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Quality Control Department



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ROLL #: **GTC0014690018** LOT #: **HJF810600** LINER TYPE: **40 HD MICROSPIKE**

	METRIC	ENGLISH		METRIC	ENGLISH
Thickness	MIN: .9 mm	36 mil	Thickness:	1.02 mm	40 mil
Measurement			Length:	225.555 m	740 feet
ASTM D5994	MAX: 1.1 mm	44 mil	Width:	7.01 m	23 feet
(Modified)	AVE: 1.0 mm	40 mil			
OIT(Standard) ASTM D 3895					183 minutes
Asperity	Average	Top		.71 mm	28 mil
ASTM D7466		Bottom		.74 mm	29 mil
Specific Gravity	Average Density				.943 g/cc
ASTM D792					
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min				.24
Grade: K307					
Carbon Black Content ASTM D4218	Range				2.5 %
Carbon Black Dispersion ASTM D5596	Category				10 in Category 1
Tensile Strength	Average Strength @ Yield	MD	17 N/mm	98 ppi	2496 psi
ASTM D6693		TD	19 N/mm	111 ppi	2821 psi
(2 inches / minute)	Average Strength @ Break	MD	24 N/mm	137 ppi	3503 psi
		TD	22 N/mm	127 ppi	3213 psi
Tensile Elongation	Average Elongation @ Yield	MD			22 %
ASTM D6693		TD			14 %
(2 inches / minute)	Average Elongation @Break	MD			452 %
Lo = 1.3" Yield		TD			552 %
Lo = 2.0" Break					
Tear Resistance	Average Tear Resistance	MD	182.4 N		41 lbs.
ASTM D1004 (Modified)		TD	191.3 N		43 lbs.
Puncture Resistance	Average Peak Load		480.4 N		108 lbs.
ASTM D4833 (Modified)					
Notched Constant Tensile Load	Pass/Fail @ 30%		500 Hrs.		ONGOING
ASTM D5397					

Customer: **Chesapeake Containment Systems**
PO: **18072 James H. Campbell-Ash Pond Closure**
Destination: **West Olive, MI**

Production Date: **8/17/2018** OA#: **41406**

Signature: _____

Maria Coffey

Quality Control Department



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ROLL #: **GTC0014690019** LOT #: **HJF810600** LINER TYPE: **40 HD MICROSPIKE**

	METRIC	ENGLISH		METRIC	ENGLISH
Thickness	MIN: .9 mm	36 mil	Thickness:	1.02 mm	40 mil
Measurement			Length:	225.555 m	740 feet
ASTM D5994	MAX: 1.1 mm	44 mil	Width:	7.01 m	23 feet
(Modified)	AVE: 1.0 mm	40 mil			
OIT(Standard) ASTM D 3895					183 minutes
Asperity	Average	Top		.71 mm	28 mil
ASTM D7466		Bottom		.71 mm	28 mil
Specific Gravity	Average Density				.943 g/cc
ASTM D792					
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min				.24
Grade: K307					
Carbon Black Content ASTM D4218	Range				2.4 %
Carbon Black Dispersion ASTM D5596	Category				10 in Category 1
Tensile Strength ASTM D6693 (2 inches / minute)	Average Strength @ Yield	MD	17 N/mm	98 ppi	2496 psi
		TD	19 N/mm	111 ppi	2821 psi
	Average Strength @ Break	MD	24 N/mm	137 ppi	3503 psi
		TD	22 N/mm	127 ppi	3213 psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	MD			22 %
		TD			14 %
	Average Elongation @Break	MD			452 %
		TD			552 %
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	MD	182.4 N		41 lbs.
		TD	191.3 N		43 lbs.
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load		480.4 N		108 lbs.
Notched Constant Tensile Load ASTM D5397	Pass/Fail @ 30%		500 Hrs.		ONGOING

Customer: **Chesapeake Containment Systems**
PO: **18072 James H. Campbell-Ash Pond Closure**
Destination: **West Olive, MI**

Production Date: **8/17/2018** OA#: **41406**

Signature: _____

Maria Coffey

Quality Control Department



quality certificate

ROLL #: **GTC0014690020** LOT #: **HJF810600** LINER TYPE: **40 HD MICROSPIKE**

	METRIC	ENGLISH		METRIC	ENGLISH
Thickness	MIN: .9 mm	36 mil	Thickness:	1.02 mm	40 mil
Measurement			Length:	225.555 m	740 feet
ASTM D5994	MAX: 1.1 mm	45 mil	Width:	7.01 m	23 feet
(Modified)	AVE: 1.0 mm	41 mil			
OIT(Standard) ASTM D 3895					183 minutes
Asperity	Average	Top		.71 mm	28 mil
ASTM D7466		Bottom		.69 mm	27 mil
Specific Gravity	Average Density				.943 g/cc
ASTM D792					
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min				.24
Grade: K307					
Carbon Black Content ASTM D4218	Range				2.4 %
Carbon Black Dispersion ASTM D5596	Category				10 in Category 1
Tensile Strength ASTM D6693 (2 inches / minute)	Average Strength @ Yield	MD	17 N/mm	98 ppi	2496 psi
		TD	19 N/mm	111 ppi	2821 psi
	Average Strength @ Break	MD	24 N/mm	137 ppi	3503 psi
		TD	22 N/mm	127 ppi	3213 psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	MD			22 %
		TD			14 %
	Average Elongation @Break	MD			452 %
		TD			552 %
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	MD		182.4 N	41 lbs.
		TD		191.3 N	43 lbs.
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load			480.4 N	108 lbs.
Notched Constant Tensile Load ASTM D5397	Pass/Fail @ 30%			500 Hrs.	ONGOING

Customer: **Chesapeake Containment Systems**
PO: **18072 James H. Campbell-Ash Pond Closure**
Destination: **West Olive, MI**

Production Date: **8/17/2018** OA#: **41406**

Signature: _____

Maria Coffey

Quality Control Department



quality certificate

ROLL #: **GTC0014690021** LOT #: **HJF810600** LINER TYPE: **40 HD MICROSPIKE**

	METRIC	ENGLISH		METRIC	ENGLISH
Thickness	MIN: .9 mm	36 mil	Thickness:	1.02 mm	40 mil
Measurement			Length:	225.555 m	740 feet
ASTM D5994	MAX: 1.2 mm	46 mil	Width:	7.01 m	23 feet
(Modified)	AVE: 1.0 mm	40 mil			
OIT(Standard) ASTM D 3895					183 minutes
Asperity	Average	Top		.71 mm	28 mil
ASTM D7466		Bottom		.71 mm	28 mil
Specific Gravity	Average Density				.943 g/cc
ASTM D792					
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min				.24
Grade: K307					
Carbon Black Content ASTM D4218	Range				2.6 %
Carbon Black Dispersion ASTM D5596	Category				10 in Category 1
Tensile Strength ASTM D6693 (2 inches / minute)	Average Strength @ Yield	MD	19 N/mm	107 ppi	2515 psi
		TD	20 N/mm	116 ppi	2670 psi
	Average Strength @ Break	MD	26 N/mm	146 ppi	3435 psi
		TD	23 N/mm	131 ppi	3012 psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	MD			20 %
		TD			14 %
	Average Elongation @Break	MD			454 %
		TD			554 %
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	MD		195.7 N	44 lbs.
		TD		173.5 N	39 lbs.
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load			458.1 N	103 lbs.
Notched Constant Tensile Load ASTM D5397	Pass/Fail @ 30%			500 Hrs.	ONGOING

Customer: **Chesapeake Containment Systems**
PO: **18072 James H. Campbell-Ash Pond Closure**
Destination: **West Olive, MI**

Production Date: **8/17/2018** OA#: **41406**

Signature: _____

Maria Coffey

Quality Control Department



quality certificate

ROLL #: **GTC0014690022** LOT #: **HJF810600** LINER TYPE: **40 HD MICROSPIKE**

	METRIC	ENGLISH		METRIC	ENGLISH
Thickness	MIN: 1.0 mm	40 mil	Thickness:	1.02 mm	40 mil
Measurement			Length:	225.555 m	740 feet
ASTM D5994	MAX: 1.1 mm	44 mil	Width:	7.01 m	23 feet
(Modified)	AVE: 1.0 mm	41 mil			
OIT(Standard) ASTM D 3895					183 minutes
Asperity	Average	Top		.84 mm	33 mil
ASTM D7466		Bottom		.81 mm	32 mil
Specific Gravity	Average Density				.943 g/cc
ASTM D792					
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min				.24
Grade: K307					
Carbon Black Content ASTM D4218	Range				2.6 %
Carbon Black Dispersion ASTM D5596	Category				10 in Category 1
Tensile Strength ASTM D6693 (2 inches / minute)	Average Strength @ Yield	MD	19 N/mm	107 ppi	2515 psi
		TD	20 N/mm	116 ppi	2670 psi
	Average Strength @ Break	MD	26 N/mm	146 ppi	3435 psi
		TD	23 N/mm	131 ppi	3012 psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	MD			20 %
		TD			14 %
	Average Elongation @Break	MD			454 %
		TD			554 %
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	MD		195.7 N	44 lbs.
		TD		173.5 N	39 lbs.
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load			458.1 N	103 lbs.
Notched Constant Tensile Load ASTM D5397	Pass/Fail @ 30%			500 Hrs.	ONGOING

Customer: **Chesapeake Containment Systems**
PO: **18072 James H. Campbell-Ash Pond Closure**
Destination: **West Olive, MI**

Production Date: **8/17/2018** OA#: **41406**

Signature: _____

Maria Coffey

Quality Control Department



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ROLL #: **GTC0014690023** LOT #: **HJG810930** LINER TYPE: **40 HD MICROSPIKE**

	METRIC	ENGLISH		METRIC	ENGLISH
Thickness	MIN: 1.0 mm	40 mil	Thickness:	1.02 mm	40 mil
Measurement					
ASTM D5994	MAX: 1.2 mm	47 mil	Length:	225.555 m	740 feet
(Modified)	AVE: 1.1 mm	43 mil	Width:	7.01 m	23 feet
OIT(Standard) ASTM D 3895					187 minutes
Asperity	Average	Top		.84 mm	33 mil
ASTM D7466		Bottom		.86 mm	34 mil
Specific Gravity	Average Density				.943 g/cc
ASTM D792					
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min				.26
Grade: K307					
Carbon Black Content ASTM D4218	Range				2.5 %
Carbon Black Dispersion ASTM D5596	Category				10 in Category 1
Tensile Strength ASTM D6693 (2 inches / minute)	Average Strength @ Yield	MD	19 N/mm	107 ppi	2515 psi
		TD	20 N/mm	116 ppi	2670 psi
	Average Strength @ Break	MD	26 N/mm	146 ppi	3435 psi
		TD	23 N/mm	131 ppi	3012 psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	MD			20 %
		TD			14 %
	Average Elongation @Break	MD			454 %
		TD			554 %
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	MD		195.7 N	44 lbs.
		TD		173.5 N	39 lbs.
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load			458.1 N	103 lbs.
Notched Constant Tensile Load ASTM D5397	Pass/Fail @ 30%			500 Hrs.	ONGOING

Customer: **Chesapeake Containment Systems**
PO: **18072 James H. Campbell-Ash Pond Closure**
Destination: **West Olive, MI**

Production Date: **8/17/2018** OA#: **41406**

Signature: _____

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ROLL #: **GTC0014690024** LOT #: **HJG810930** LINER TYPE: **40 HD MICROSPIKE**

	METRIC	ENGLISH		METRIC	ENGLISH
Thickness	MIN: 1.0 mm	40 mil	Thickness:	1.02 mm	40 mil
Measurement			Length:	225.555 m	740 feet
ASTM D5994	MAX: 1.1 mm	44 mil	Width:	7.01 m	23 feet
(Modified)	AVE: 1.1 mm	42 mil			
OIT(Standard) ASTM D 3895					187 minutes
Asperity	Average	Top		.79 mm	31 mil
ASTM D7466		Bottom		.79 mm	31 mil
Specific Gravity	Average Density				.943 g/cc
ASTM D792					
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min				.26
Grade: K307					
Carbon Black Content ASTM D4218	Range				2.5 %
Carbon Black Dispersion ASTM D5596	Category				10 in Category 1
Tensile Strength ASTM D6693 (2 inches / minute)	Average Strength @ Yield	MD	19 N/mm	107 ppi	2515 psi
		TD	20 N/mm	116 ppi	2670 psi
	Average Strength @ Break	MD	26 N/mm	146 ppi	3435 psi
		TD	23 N/mm	131 ppi	3012 psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	MD			20 %
		TD			14 %
	Average Elongation @Break	MD			454 %
		TD			554 %
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	MD		195.7 N	44 lbs.
		TD		173.5 N	39 lbs.
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load			458.1 N	103 lbs.
Notched Constant Tensile Load ASTM D5397	Pass/Fail @ 30%			500 Hrs.	ONGOING

Customer: **Chesapeake Containment Systems**
PO: **18072 James H. Campbell-Ash Pond Closure**
Destination: **West Olive, MI**

Production Date: **8/17/2018** OA#: **41406**

Signature: _____

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ROLL #: **GTC0014690025** LOT #: **HJG810930** LINER TYPE: **40 HD MICROSPIKE**

	METRIC	ENGLISH		METRIC	ENGLISH
Thickness	MIN: 1.0 mm	40 mil	Thickness:	1.02 mm	40 mil
Measurement			Length:	225.555 m	740 feet
ASTM D5994	MAX: 1.1 mm	43 mil	Width:	7.01 m	23 feet
(Modified)	AVE: 1.0 mm	41 mil			
OIT(Standard) ASTM D 3895					187 minutes
Asperity	Average	Top		.79 mm	31 mil
ASTM D7466		Bottom		.81 mm	32 mil
Specific Gravity	Average Density				.943 g/cc
ASTM D792					
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min				.26
Grade: K307					
Carbon Black Content ASTM D4218	Range				2.5 %
Carbon Black Dispersion ASTM D5596	Category				10 in Category 1
Tensile Strength ASTM D6693 (2 inches / minute)	Average Strength @ Yield	MD	19 N/mm	107 ppi	2515 psi
		TD	20 N/mm	116 ppi	2670 psi
	Average Strength @ Break	MD	26 N/mm	146 ppi	3435 psi
		TD	23 N/mm	131 ppi	3012 psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	MD			20 %
		TD			14 %
	Average Elongation @Break	MD			454 %
		TD			554 %
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	MD		195.7 N	44 lbs.
		TD		173.5 N	39 lbs.
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load			458.1 N	103 lbs.
Notched Constant Tensile Load ASTM D5397	Pass/Fail @ 30%			500 Hrs.	ONGOING

Customer: **Chesapeake Containment Systems**
PO: **18072 James H. Campbell-Ash Pond Closure**
Destination: **West Olive, MI**

Production Date: **8/18/2018** OA#: **41406**

Signature: _____

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ROLL #: **GTC0014690026** LOT #: **HJG810930** LINER TYPE: **40 HD MICROSPIKE**

	METRIC	ENGLISH		METRIC	ENGLISH
Thickness	MIN: 1.0 mm	41 mil	Thickness:	1.02 mm	40 mil
Measurement			Length:	225.555 m	740 feet
ASTM D5994	MAX: 1.1 mm	45 mil	Width:	7.01 m	23 feet
(Modified)	AVE: 1.1 mm	43 mil			
OIT(Standard) ASTM D 3895					187 minutes
Asperity	Average	Top		.79 mm	31 mil
ASTM D7466		Bottom		.76 mm	30 mil
Specific Gravity	Average Density				.943 g/cc
ASTM D792					
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min				.26
Grade: K307					
Carbon Black Content ASTM D4218	Range				2.5 %
Carbon Black Dispersion ASTM D5596	Category				10 in Category 1
Tensile Strength ASTM D6693 (2 inches / minute)	Average Strength @ Yield	MD	18 N/mm	104 ppi	2475 psi
		TD	20 N/mm	117 ppi	2760 psi
	Average Strength @ Break	MD	24 N/mm	136 ppi	3254 psi
		TD	23 N/mm	134 ppi	3158 psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	MD			20 %
		TD			14 %
	Average Elongation @Break	MD			431 %
		TD			575 %
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	MD		195.7 N	44 lbs.
		TD		173.5 N	39 lbs.
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load			458.1 N	103 lbs.
Notched Constant Tensile Load ASTM D5397	Pass/Fail @ 30%			500 Hrs.	ONGOING

Customer: **Chesapeake Containment Systems**
PO: **18072 James H. Campbell-Ash Pond Closure**
Destination: **West Olive, MI**

Production Date: **8/18/2018** OA#: **41406**

Signature: _____

Maria Coffey

Quality Control Department



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ROLL #: **GTC0014690027** LOT #: **HJG810930** LINER TYPE: **40 HD MICROSPIKE**

	METRIC	ENGLISH		METRIC	ENGLISH
Thickness	MIN: 1.0 mm	40 mil	Thickness:	1.02 mm	40 mil
Measurement			Length:	225.555 m	740 feet
ASTM D5994	MAX: 1.2 mm	46 mil	Width:	7.01 m	23 feet
(Modified)	AVE: 1.1 mm	43 mil			
OIT(Standard) ASTM D 3895					187 minutes
Asperity	Average	Top		.79 mm	31 mil
ASTM D7466		Bottom		.81 mm	32 mil
Specific Gravity	Average Density				.943 g/cc
ASTM D792					
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min				.26
Grade: K307					
Carbon Black Content ASTM D4218	Range				2.5 %
Carbon Black Dispersion ASTM D5596	Category				10 in Category 1
Tensile Strength ASTM D6693 (2 inches / minute)	Average Strength @ Yield	MD	18 N/mm	104 ppi	2475 psi
		TD	20 N/mm	117 ppi	2760 psi
	Average Strength @ Break	MD	24 N/mm	136 ppi	3254 psi
		TD	23 N/mm	134 ppi	3158 psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	MD			20 %
		TD			14 %
	Average Elongation @Break	MD			431 %
		TD			575 %
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	MD		195.7 N	44 lbs.
		TD		173.5 N	39 lbs.
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load			458.1 N	103 lbs.
Notched Constant Tensile Load ASTM D5397	Pass/Fail @ 30%			500 Hrs.	ONGOING

Customer: **Chesapeake Containment Systems**
PO: **18072 James H. Campbell-Ash Pond Closure**
Destination: **West Olive, MI**

Production Date: **8/18/2018** OA#: **41406**

Signature: _____

Maria Coffey

Quality Control Department



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ROLL #: **GTC0014690028** LOT #: **HJG810930** LINER TYPE: **40 HD MICROSPIKE**

	METRIC	ENGLISH		METRIC	ENGLISH
Thickness	MIN: 1.0 mm	40 mil	Thickness:	1.02 mm	40 mil
Measurement			Length:	225.555 m	740 feet
ASTM D5994	MAX: 1.1 mm	45 mil	Width:	7.01 m	23 feet
(Modified)	AVE: 1.1 mm	42 mil			
OIT(Standard) ASTM D 3895					187 minutes
Asperity	Average	Top		.76 mm	30 mil
ASTM D7466		Bottom		.71 mm	28 mil
Specific Gravity	Average Density				.943 g/cc
ASTM D792					
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min				.26
Grade: K307					
Carbon Black Content ASTM D4218	Range				2.5 %
Carbon Black Dispersion ASTM D5596	Category				10 in Category 1
Tensile Strength	Average Strength @ Yield	MD 18 N/mm 104 ppi 2475 psi			
ASTM D6693		TD 20 N/mm 117 ppi 2760 psi			
(2 inches / minute)	Average Strength @ Break	MD 24 N/mm 136 ppi 3254 psi			
		TD 23 N/mm 134 ppi 3158 psi			
Tensile Elongation	Average Elongation @ Yield	MD 20 %			
ASTM D6693		TD 14 %			
(2 inches / minute)	Average Elongation @Break	MD 431 %			
Lo = 1.3" Yield		TD 575 %			
Lo = 2.0" Break					
Tear Resistance	Average Tear Resistance	MD 195.7 N 44 lbs.			
ASTM D1004 (Modified)		TD 173.5 N 39 lbs.			
Puncture Resistance	Average Peak Load			458.1 N	103 lbs.
ASTM D4833 (Modified)					
Notched Constant Tensile Load	Pass/Fail @ 30%			500 Hrs.	ONGOING
ASTM D5397					

Customer: **Chesapeake Containment Systems**
PO: **18072 James H. Campbell-Ash Pond Closure**
Destination: **West Olive, MI**

Production Date: **8/18/2018** OA#: **41406**

Signature: _____

Maria Coffey

Quality Control Department



quality certificate

ROLL #: **GTC0014690029** LOT #: **HJG810930** LINER TYPE: **40 HD MICROSPIKE**

	METRIC	ENGLISH		METRIC	ENGLISH
Thickness	MIN: 1.0 mm	40 mil	Thickness:	1.02 mm	40 mil
Measurement			Length:	225.555 m	740 feet
ASTM D5994	MAX: 1.1 mm	45 mil	Width:	7.01 m	23 feet
(Modified)	AVE: 1.1 mm	42 mil			
OIT(Standard) ASTM D 3895					187 minutes
Asperity	Average	Top		.76 mm	30 mil
ASTM D7466		Bottom		.74 mm	29 mil
Specific Gravity	Average Density				.943 g/cc
ASTM D792					
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min				.26
Grade: K307					
Carbon Black Content ASTM D4218	Range				2.6 %
Carbon Black Dispersion ASTM D5596	Category				10 in Category 1
Tensile Strength ASTM D6693 (2 inches / minute)	Average Strength @ Yield	MD	18 N/mm	104 ppi	2475 psi
		TD	20 N/mm	117 ppi	2760 psi
	Average Strength @ Break	MD	24 N/mm	136 ppi	3254 psi
		TD	23 N/mm	134 ppi	3158 psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	MD			20 %
		TD			14 %
	Average Elongation @Break	MD			431 %
		TD			575 %
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	MD		195.7 N	44 lbs.
		TD		173.5 N	39 lbs.
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load			458.1 N	103 lbs.
Notched Constant Tensile Load ASTM D5397	Pass/Fail @ 30%			500 Hrs.	ONGOING

Customer: **Chesapeake Containment Systems**
PO: **18072 James H. Campbell-Ash Pond Closure**
Destination: **West Olive, MI**

Production Date: **8/18/2018** OA#: **41406**

Signature: _____

Maria Coffey

Quality Control Department



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ROLL #: **GTC0014690030** LOT #: **HJG810930** LINER TYPE: **40 HD MICROSPIKE**

	METRIC	ENGLISH		METRIC	ENGLISH
Thickness	MIN: .9 mm	36 mil	Thickness:	1.02 mm	40 mil
Measurement			Length:	225.555 m	740 feet
ASTM D5994	MAX: 1.1 mm	44 mil	Width:	7.01 m	23 feet
(Modified)	AVE: 1.0 mm	40 mil			
OIT(Standard) ASTM D 3895					187 minutes
Asperity	Average	Top		.84 mm	33 mil
ASTM D7466		Bottom		.81 mm	32 mil
Specific Gravity	Average Density				.943 g/cc
ASTM D792					
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min				.26
Grade: K307					
Carbon Black Content ASTM D4218	Range				2.6 %
Carbon Black Dispersion ASTM D5596	Category				10 in Category 1
Tensile Strength ASTM D6693 (2 inches / minute)	Average Strength @ Yield	MD	17 N/mm	95 ppi	2527 psi
		TD	19 N/mm	109 ppi	2840 psi
	Average Strength @ Break	MD	27 N/mm	155 ppi	4101 psi
		TD	23 N/mm	130 ppi	3400 psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	MD			17 %
		TD			14 %
	Average Elongation @Break	MD			441 %
		TD			593 %
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	MD		191.3 N	43 lbs.
		TD		195.7 N	44 lbs.
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load			444.8 N	100 lbs.
Notched Constant Tensile Load ASTM D5397	Pass/Fail @ 30%			500 Hrs.	ONGOING

Customer: **Chesapeake Containment Systems**
PO: **18072 James H. Campbell-Ash Pond Closure**
Destination: **West Olive, MI**

Production Date: **8/18/2018** OA#: **41406**

Signature: _____

Maria Coffey

Quality Control Department



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ROLL #: **GTC0014690031** LOT #: **HJG810930** LINER TYPE: **40 HD MICROSPIKE**

	METRIC	ENGLISH		METRIC	ENGLISH
Thickness	MIN: 1.0 mm	38 mil	Thickness:	1.02 mm	40 mil
Measurement	MAX: 1.1 mm	42 mil	Length:	225.555 m	740 feet
ASTM D5994	AVE: 1.0 mm	40 mil	Width:	7.01 m	23 feet
(Modified)					
OIT(Standard) ASTM D 3895					187 minutes
Asperity	Average	Top		.79 mm	31 mil
ASTM D7466		Bottom		.71 mm	28 mil
Specific Gravity	Average Density				.943 g/cc
ASTM D792					
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min				.26
Grade: K307					
Carbon Black Content ASTM D4218	Range				2.6 %
Carbon Black Dispersion ASTM D5596	Category				10 in Category 1
Tensile Strength	Average Strength @ Yield	MD 18 N/mm 104 ppi 2364 psi			
ASTM D6693		TD 20 N/mm 117 ppi 2676 psi			
(2 inches / minute)	Average Strength @ Break	MD 26 N/mm 147 ppi 3328 psi			
		TD 24 N/mm 135 ppi 3081 psi			
Tensile Elongation	Average Elongation @ Yield	MD 17 %			
ASTM D6693		TD 14 %			
(2 inches / minute)	Average Elongation @Break	MD 428 %			
Lo = 1.3" Yield		TD 559 %			
Lo = 2.0" Break					
Tear Resistance	Average Tear Resistance	MD 191.3 N 43 lbs.			
ASTM D1004 (Modified)		TD 186.8 N 42 lbs.			
Puncture Resistance	Average Peak Load	480.4 N 108 lbs.			
ASTM D4833 (Modified)					
Notched Constant Tensile Load	Pass/Fail @ 30%	500 Hrs.			ONGOING
ASTM D5397					

Customer: **Chesapeake Containment Systems**
PO: **18072 James H. Campbell-Ash Pond Closure**
Destination: **West Olive, MI**

Production Date: **8/18/2018** OA#: **41406**

Signature: _____

Maria Coffey

Quality Control Department



quality certificate

ROLL #: **GTC0014690032** LOT #: **HJG810930** LINER TYPE: **40 HD MICROSPIKE**

	METRIC	ENGLISH		METRIC	ENGLISH
Thickness	MIN: .9 mm	37 mil	Thickness:	1.02 mm	40 mil
Measurement			Length:	225.555 m	740 feet
ASTM D5994	MAX: 1.1 mm	42 mil	Width:	7.01 m	23 feet
(Modified)	AVE: 1.0 mm	40 mil			
OIT(Standard) ASTM D 3895					187 minutes
Asperity	Average	Top		.79 mm	31 mil
ASTM D7466		Bottom		.81 mm	32 mil
Specific Gravity	Average Density				.943 g/cc
ASTM D792					
MFI ASTM D1238 COND. E	Melt Flow Index 190C/2160 g - g/10 min				.26
Grade: K307					
Carbon Black Content ASTM D4218	Range				2.5 %
Carbon Black Dispersion ASTM D5596	Category				10 in Category 1
Tensile Strength ASTM D6693 (2 inches / minute)	Average Strength @ Yield	MD	18 N/mm	104 ppi	2364 psi
		TD	20 N/mm	117 ppi	2676 psi
	Average Strength @ Break	MD	26 N/mm	147 ppi	3328 psi
		TD	24 N/mm	135 ppi	3081 psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	MD			17 %
		TD			14 %
	Average Elongation @Break	MD			428 %
		TD			559 %
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	MD		191.3 N	43 lbs.
		TD		186.8 N	42 lbs.
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load			480.4 N	108 lbs.
Notched Constant Tensile Load ASTM D5397	Pass/Fail @ 30%			500 Hrs.	ONGOING

Customer: **Chesapeake Containment Systems**
PO: **18072 James H. Campbell-Ash Pond Closure**
Destination: **West Olive, MI**

Production Date: **8/18/2018** OA#: **41406**

Signature: _____

Maria Coffey

Quality Control Department

Certificate of Analysis

Shipped To: AGRU AMERICA INC:GEORGETOWN
500 GARRISON RD
GEORGETOWN SC 29440
USA

Recipient: PALMER
Fax:

Delivery #: 89705686
PO #: 013146
Weight: 189000.000 LB
Ship Date: 07/16/2018
Package: BULK
Mode: Hopper Car
Car #: SHPX463968
Seal No: 125497

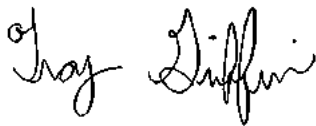
Product:
MARLEX K307 POLYETHYLENE in Bulk

Lot Number: HJF810600

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.24	g/10min
HLMI Flow Rate	ASTM D1238	20	g/10min
Density	D1505 or D4883	0.938	g/cm3
Pellet Count	P02.08.03	37	pelet/gram
Production Date		06/24/2018	

PELLET WAIVED BY E. CORNEJO

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP (CPChem).
However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.



Troy Griffin
Quality Systems Coordinator



Certificate of Analysis

Shipped To: AGRU AMERICA INC:GEORGETOWN
500 GARRISON RD
GEORGETOWN SC 29440
USA

Recipient: PALMER
Fax:

Delivery #: 89710272
PO #: 013146
Weight: 165500.000 LB
Ship Date: 07/23/2018
Package: BULK
Mode: Hopper Car
Car #: CHVX890068
Seal No: 136383

Product:
MARLEX K307 POLYETHYLENE in Bulk

Lot Number: HJG810930

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.26	g/10min
HLMI Flow Rate	ASTM D1238	21	g/10min
Density	D1505 or D4883	0.936	g/cm3
Pellet Count	P02.08.03	29	pelet/gram
Production Date		07/17/2018	

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP (CPChem).
However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.

Troy Griffin
Quality Systems Coordinator



Vergil H. Rhodes, PE, CPlasT - Tech Svc & App Dev Engineer, Geomembranes
Highways 60 & 123, Bartlesville Research and Technology Center, Room 103 PTC
Bartlesville, OK 74003
■ 918-977-4229 ■ rhodevh@cpchem.com ■ Fax: 918-977-7599 ■ www.cpchem.com

October 31, 2017

Filename: Agru Oven and QUV Exposure Testing_103117.pdf

Nathan Ivy - Corporate Quality Control/Technical Manager
Agru America, Inc.
800 Rockmead #122
Kingwood, TX 77339
281-358-4741

Dear Mr. Ivy:

Please recall your request for testing of oven-exposed and UV-exposed geomembrane samples produced primarily from Marlex® 7104 LLDPE and Marlex® K307 HDPE. Agru blended other components with each of these polyethylenes to produce the geomembrane samples for testing. Smooth geomembrane samples have been received from Agru and test results are reported below. The samples were tested for HP-OIT in their as-received condition, and were also tested after oven and UV exposures of 90 days and 1600 hours of irradiance, respectively, in accordance with GRI-GM13 and GRI-GM17.

The following geomembrane sheet samples were received from Agru in mid-June 2017 and were reported to be primarily composed of each of the Chevron Phillips Chemical Company grades in the description below:

- K307 Lot #HHB620720, Agru Roll #G17D000534, black sheet, smooth, nominal 0.040" thick.
- 7104 Lot #CFJ810540, Agru Roll #G15B434055, black sheet, smooth, nominal 0.040" thick.

Exposure and testing conditions, along with the test results are tabulated on the next page. GM-13 and GM-17 require minimum % HP-OIT retention after a 90-day oven exposure and after a 1600 hour UV irradiance exposure. These test results indicate these GM-13 and GM-17 minimum % HP-OIT retentions were exceeded by these Agru-supplied K307 and 7104 sheet samples, respectively.

If you have any questions, please feel free to contact me (contact information given above).

Sincerely,

Vergil Rhodes
Polyethylene Technical Service and Applications Development, Geomembrane

NOTICES

Technical Information - By using any Technical Information contained herein, Recipient agrees that said Technical Information is given by CPChem for convenience only, without any warranty or guarantee of any kind, and is accepted and used at your sole risk. Recipients are encouraged to verify independently any such information to their reasonable satisfaction. As used in this paragraph, "Technical Information" includes any technical advice, recommendations, testing, or analysis, including, without limitation, information as it may relate to the selection of a product for a specific use and application.

The following oven aging and UV exposure test methods were conducted in accordance with the GRI-GM13 (HDPE) and GRI-GM17 (LLDPE) requirements:

Test Name	Exposure Conditions	Test Method
Oven Aging	90 days in an oven at 85 °C	ASTM D5721
UV Exposure	1600 UV irradiance hours. Cycle: 20 hours UVA-340 at 75 °C followed by 4 hours dark with condensation at 60 °C. Irradiance was 0.78 W/m ² at wavelength 340 nm. Note: This implies a total UV chamber residence time of 1920 hours, e.g., 1600 hours of irradiance and 320 hours of dark/condensation.	ASTM D7238
HP-OIT	150 °C in an oxygen atmosphere at 500 psi	ASTM D5885

Oven Aging Results:

Sample	Initial HP-OIT (min)	HP-OIT after 90 days of oven aging. (min)	% HP-OIT Retained after 90 days of oven aging.	GRI-GM13 and GRI-GM17 minimum % HP-OIT retained after 90 days of oven aging.
K307 Lot #HHB620720, Agru Roll #G17D000534, black sheet, smooth, nominal 0.040" thick	1264	1123	89	GRI-GM13: 80 minimum
7104 Lot #CFJ810540, Agru Roll #G15B434055, black sheet, smooth, nominal 0.040" thick	550	508	92	GRI-GM17: 60 minimum

UV Aging Results:

Sample	Initial HP-OIT (min)	HP-OIT after 1600 hrs of UV exposure. (min)	% HP-OIT Retained after 1600 hrs of UV exposure.	GRI-GM13 and GRI-GM17 minimum % HP-OIT retained after 1600 hrs of UV exposure.
K307 Lot #HHB620720, Agru Roll #G17D000534, black sheet, smooth, nominal 0.040" thick	1264	1024	81	GRI-GM13: 50 minimum
7104 Lot #CFJ810540, Agru Roll #G15B434055, black sheet, smooth, nominal 0.040" thick	550	470	85	GRI-GM17: 35 minimum

Note: 1600 hours of UV exposure in accordance with ASTM D7238 implies a total UV chamber residence time of 1920 hours, e.g., 1600 hours of irradiance and 320 hours of darkness with condensation.


NOTICES

Technical Information - By using any Technical Information contained herein, Recipient agrees that said Technical Information is given by CPChem for convenience only, without any warranty or guarantee of any kind, and is accepted and used at your sole risk. Recipients are encouraged to verify independently any such information to their reasonable satisfaction. As used in this paragraph, "Technical Information" includes any technical advice, recommendations, testing, or analysis, including, without limitation, information as it may relate to the selection of a product for a specific use and application.



Liner Type: **40HD micro**
 Item: **FG-HDMSDS040BBBEG**
 Current # of Rolls: **1**
 Roll Count: **1-1 (all)**

ENGLISH Measurements

				ASTM D5994 (Modified)			ASTM D7466														ASTM D3895	ASTM D792	ASTM D1238	ASTM D4218	ASTM D5596	ASTM D6693	ASTM D6693	ASTM D6693	ASTM D6693	ASTM D6693	ASTM D6693	ASTM D6693	ASTM D6693	ASTM D1004	ASTM D4833	ASTM D5397	
Count	Roll #	(English)			Thickness (English)			Asperity (Top)	Asperity (Bottom)	Weight	Lot #	OIT (Standard)	Specific Gravity	Melt Flow Index	Carbon Black Content	Carbon Black Disp.	Tensile Str. @Yield (MD)	Tensile Str. @Yield (TD)	Tensile Str. @Break (MD)	Tensile Str. @Break (TD)	Elong. @Yield (MD)	Elong. @Yield (TD)	Elong. @Break (MD)	Elong. @Break (TD)	Tear Resistance (MD)	Tear Resistance (TD)	Puncture Resistance	NCTL (500hrs.)	Production Date								
		Width	Length	Area	Min.	Max.	Ave.																														
		ft.	ft.	ft².	mils	mils	mils																							mils	mils	lbs.					
Minimum Results (ea. Col.) 					38	48	42	28	31	3801		192	0.943	0.20	2.4	10	103	113	176	131	17	14	453	544	38	33	104										
1	GTB0030870017	23	750	17,250	38	48	42	28	31	3801	19A1107	192	0.943	0.20	2.4	10	103	113	176	131	17	14	453	544	38	33	104	PASS	3/22/2019								



FORMOSA PLASTICS CORPORATION, TEXAS

201 FORMOSA DRIVE
PO BOX 700
POINT COMFORT

TX 77978

PHONE: (888) FPCUSA3

Certificate of Analysis
(CONFIDENTIAL)

CUSTOMER: AGRU/AMERICA, INC.
500 GARRISON ROAD

GEORGETOWN

SC 29440

PRODUCT : HL3721

RAILCAR

FPAX201504

CLEANING/INSPECTION NO: 201504011019

S/O NO : EU2A832

CUSTOMER PO : PO 15673

DATE SHIPPED: 2/28/19

LOT NO : 19A1107

WEIGHT (LB) : 198,400.00

CUSTID: FT03888 SPIDM1

DATE OF PROD: 1/11/19

Test	Method	Spec Min	Spec Max	Actual
Melt Index, g/10min	ASTM D1238	.14	.245	.20
HLMI, g/10 min.	ASTM D1238	18	24	21.6
Density, g/cm3	ASTM D1505	.935	.939	.9367

Linda Kao

QC SUPERVISOR



GEOMEMBRANE TEST RESULTS

TRI Client: Agru America
Project: Geomembrane Testing

Material: Agru 60 mil Smooth HDPE Geomembrane
Sample Identification: Formosa - HDPE, Resin DF3721A
TRI Log #: E2339-36-07 April 19, 2010

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.
	1	2	3	4	5	6	7	8	9	10			
UV Resistance (GRI GM 13)													
The resistance to degradation due to exposure to ultraviolet light and moisture was determined in accordance with GRI-GM11, Accelerated Weathering of Geomembranes Using a Fluorescent UVA Device. This standard covers the basic principles for using the QUV apparatus to accelerate the weathering of geomembranes using UVA bulbs and condensation. To comply with Specification GRI GM13, the sample was exposed to 1600 hours of UV exposure composed of 80 cycles of UA at 75 C for 20 hours followed by condensation at 60 C for 4 hours. The High Pressure Oxidative Induction Time (HPOIT) was evaluated before and after the exposure and results were as follows.													
HPOIT (minutes) - Baseline	1201										1201		PERCENT RETAINED
HPOIT (minutes) - After QUV Aging	1010										1010	84	
Note: No surface cracking was observed.													
Oven Aging (ASTM D 5721)													
The geomembrane was exposed to 90 days of elevated temperature exposure in an air oven maintained at 85°C ± 0.5°C in accordance with ASTM D 5721-95, Standard Practice for Air-Oven Aging of Polyolefin Geomembranes. Oxidative Induction Time (OIT) was tested for after exposure and compared to values generated for unexposed material. The results are provided below.													
HPOIT (minutes) - Baseline	1201										1201		PERCENT
HPOIT (minutes) - After QUV Aging	1114										1114	93	
Note: No surface cracking was observed.													
MD Machine Direction TD Transverse Direction NA Not Available													

The testing is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.



Formosa Plastics®

Formosa Plastics Corporation, U.S.A.
9 Peach Tree Hill Road
Livingston, NJ 07039
Telephone: (973)-992-2090
Fax: (973)-992-9627

February 1, 2018

Grant Palmer
Materials Manager
AGRU America, Inc.
500 Garrison Road
Georgetown, South Carolina 29440 USA

Dear Mr. Palmer,

Formosa Plastics Corporation U.S.A. (Formosa) is a leading producer of Polyethylene in North America. Formolene® HL3721 is a geomembrane medium density polyethylene resin that is produced on our HDPE II Plant in Point Comfort, Texas. Formolene® HL3721 prior to January of 2018 was sold as Formolene® DF3721A. The two resins are one in the same and are equivalent.

If you have any questions, please do not hesitate to contact your salesperson or myself. Thank you.

Sincerely,

Yonas Kebede
Global Marketing Coordinator

APPENDIX F

Material Testing Geotextile

APPENDIX F.1

Geotextile Inventory Log

POND A

truck #1

GEOSYNTHETIC INVENTORY CONTROL LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: J.H. Campbell West Olive, MI

PROJECT TITLE: JHC Ash and Chemical Pond Closure
 CONTRACTOR: RYAN CENTRAL

MATERIAL TYPE: GEOMEMBRANE GEONET GEOTEXTILE OTHER

DATE OF ARRIVAL: 7.9.18

DATE OF INVENTORY: 7.9.18

MATERIAL MANUFACTURER: SKAPS

INVENTORY MONITOR: DH

PRODUCT IDENTIFICATION: 10 02

CONDITION IN TRUCK: GOOD

TRUCK TYPE: SEMI w/FLATBED

UNLOADING METHOD: SKID STEER

	ROLL NUMBER	BATCH OR LOT NO.	MATERIAL DIMENSIONS			QC CERT Y/N	CONF. SAMP. Y/N	OTHER	REMARKS
			LENGTH	WIDTH	THICKNESS OR WEIGHT				
✓1	52492.19		57φ'	15'	10 02	Y			
✓2	.13								
✓3	.16								
✓4	.20								
✓5	.17								
✓6	.28								
✓7	.18								
✓8	.29								
✓9	.26								
✓10	.27								
✓11	.22								
✓12	.14								
✓13	.35								
✓14	.34								
✓15	.33								
✓16	.15								
✓17	.24								
✓18	.23								
✓19	.25								
✓20	.30								
✓21	.21								
✓22	.31								
✓23	52492.32		57φ'	15'	10 02	Y			
24									
25									

Golder Form: G2
 (July 2000)

REVIEWED BY: PS

DATE: 9/5/19

GOLDER ASSOCIATES INC.

POND A

TRUCK #2

GEOSYNTHETIC INVENTORY CONTROL LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: J.H. Campbell West Olive, MI

PROJECT TITLE: JHC Ash and Chemical Pond Closure
 CONTRACTOR:

MATERIAL TYPE: GEOMEMBRANE GEONET GEOTEXTILE OTHER

DATE OF ARRIVAL: 7.9.18

DATE OF INVENTORY: 7.9.18

MATERIAL MANUFACTURER: SKAPS

INVENTORY MONITOR: DH

PRODUCT IDENTIFICATION: 10 02

CONDITION IN TRUCK: GOOD

TRUCK TYPE: SEMI w/ FLATBED

UNLOADING METHOD: SKID STEER

ROLL NUMBER	BATCH OR LOT NO.	MATERIAL DIMENSIONS			QC CERT Y/N	CONF. SAMP. Y/N	OTHER	REMARKS
		LENGTH	WIDTH	THICKNESS OR WEIGHT				
✓1	52492.40 ✓	57'0"	15'	10 02	✓			
✓2	↑ .89 ✓							
✓3	.43 ✓							
✓4	.41 ✓							
✓5	.38 ✓							
✓6	.44 ✓							
✓7	.49 ✓							
✓8	.48 ✓							
✓9	.46 ✓							
	.47 ✓							
✓11	.37 ✓							
✓12	.58 ✓							
✓13	.51 ✓							
✓14	.42 ✓							
✓15	.57 ✓							
✓16	.50 ✓							
✓17	.36 ✓							
✓18	.53 ✓							
✓19	.56 ✓							
✓20	.52 ✓							
✓21	.55 ✓							
✓22	.45 ✓							
✓23	52492.05 ✓	57'0"	15'	10 02	✓			
24								
25								

Golder Form: G2
 (July 2000)

REVIEWED BY: PS

DATE: 9/5/19

GOLDER ASSOCIATES INC.

GEOSYNTHETIC INVENTORY CONTROL LOG

PROJECT NUMBER: 1896102
OWNER: Consumers Energy
LOCATION: J.H. Campbell West Olive, MI

PROJECT TITLE: JHC Ash and Chemical Pond Closure
CONTRACTOR: RYAN CENTRAL INC.

MATERIAL TYPE: GEOMEMBRANE GEONET GEOTEXTILE OTHER

DATE OF ARRIVAL: 7.2.18

DATE OF INVENTORY: 7.3.18

MATERIAL MANUFACTURER: SKAPS

INVENTORY MONITOR: DH

PRODUCT IDENTIFICATION: 10 02

CONDITION IN TRUCK: Good

TRUCK TYPE: SEMI W/FLATBED TRAILER

UNLOADING METHOD: SKIP STEER

	ROLL NUMBER	BATCH OR LOT NO.	MATERIAL DIMENSIONS			QC CERT Y/N	CONF. SAMP. Y/N	OTHER	REMARKS
			LENGTH	WIDTH	THICKNESS OR WEIGHT				
+ 1	52492.11 ✓		57φ'	15'	1002	Y			
+ 2	.12 ✓								
+ 3	.2 ✓								
+ 4	.8 ✓								
+ 5	.1 ✓								
+ 6	.3 ✓								
+ 7	.10 ✓								
+ 8	.9 ✓								
+ 9	.5 ✓								
+ 10	.6 ✓								
+ 11	.4 ✓								
+ 12	52492.7 ✓		57φ"	15'	1002	Y			
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24	5151.4		48φ'						
25									

Golden Form: G2REVIEWED BY: RS

DATE: 9/5/19

(July 2000)

GOLDER ASSOCIATES INC.

APPENDIX F.2

Geotextile Quality Control Certificates



2690-D Salisbury Hwy
Statesville, NC 28677
P: 704.208.3440
www.ccsliners.com

SUBMITTAL COVER SHEET

DATE: 5/24/2018

SUBMITTAL NUMBER: 06 Rev A - Geotextile MQC Certifications

PROJECT NUMBER:	18-029
PROJECT NAME:	J.H. Campbell Generating Facility Ash Pond Closure
ATTENTION TO:	John Burt

OWNER:	J.H. Campbell Generating Plant 17000 Croswell Street West Olive, MI 49460	CONTRACTOR:	Ryan Central 2700 E Racine Street Janesville, WI 53545
--------	---	-------------	--

MANUFACTURER: Skaps GE110 - Revised per Golder Submittal Response dated 5/18/18

SPEC. SECTION	SUBMITTAL ITEM DESCRIPTION
313400	Geotextile Manufacturer Submittals
1.04 A-4	Quality control certificates, signed by geotextile manufacturer. Each quality control certificate shall include roll identification numbers, testing procedures, and results of quality control tests (supplied by Manufacturer) - Revised to include UV resistance information

SUBCONTRACTOR REVIEW: <i>These are submitted as checked below:</i> For Approval: <u> X </u> For Your Use: <u> </u> As Requested: <u> </u> Signature of CCS Reviewer: <u> Jennifer Battle </u>	ENGINEER APPROVAL:
--	--------------------



SKAPS Industries (Nonwoven Division)

335 Athena Drive
Athens, GA 30601 (U.S.A.)
Phone (706) 354-3700 Fax (706) 354-3737
E-mail: info @skaps.com

Sales Office:
Engineered Synthetics Products Inc.
Phone: (770) 564-1857
Fax: (770) 564-1818

Date: March 21st, 2018

SUBJECT: Annual UV Resistance Testing for SKAPS Industries GE and GT Style Products

To whom it may concern,

This letter is to inform **you** that SKAPS Industries certifies UV Resistance based on annual third-party testing results. SKAPS Industries certifies its GE and/or GT style products to retain at least 70% of its strength after being exposed to direct UV for five-hundred (500) hours (ASTM D 4355). SKAPS Industries nonwoven geotextiles are composed of one-hundred percent virgin raw polypropylene material. Therefore, all GT and GE products are composed of identical raw polypropylene fibers.

Attached to this document is the third party annual testing result for UV Resistance performed in 2018 for SKAPS Industries' GT131. SKAPS Industries' GE and/or GT style geotextile fabrics supplied are heavier and thicker, therefore, they will retain a greater amount of strength after exposed in the UV Resistance chamber in comparison to SKAPS lightest weight product, GT131. SKAPS Industries certifies that the geotextiles rolls supplied to this project will meet or exceed the requirements of UV Resistance.

Please feel free to contact SKAPS Industries if you have any questions.

Regards,

Kourosh Sabzevari

Quality Control Manager

February 6, 2018

Mall To:

Kourosh Sabzevari
SKAPS Industries
335 Athens Drive
Athens, GA 30601

email: kourosh@skaps.com
cc email: anurag@skaps.com

Bill To:

<= Same

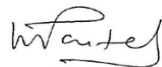
Dear Mr. Sabzevari:

Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs.
TRI is pleased to submit this final report of the laboratory testing for the sample(s) listed below.

Project:	UV Testing
TRI Job Reference Number:	34822
Material(s) Tested:	One, Skaps GT131 Nonwoven Geotextile(s)
Test(s) Requested:	UV Resistance (ASTM D 4355)

If you have any questions or require any additional information, please call us at 1-800-880-8378

Sincerely,



Mansukh Patel
Laboratory Manager
Geosynthetic Services Division
www.GeosyntheticTesting.com

*Signature is on file

GEOTEXTILE TEST RESULTS
TRI Client: SKAPS Industries
Project: UV Testing

Material: Skaps GT131 Nonwoven Geotextile
Sample Identification: GT131
TRI Log #: 34822

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.
	1	2	3	4	5	6	7	8	9	10			
UV Resistance (ASTM D 4355)													
Strength Retained measured via strip tensile (ASTM D 5035)												PERCENT RETAINED	
MD - Tensile Strength (lbs) - B	70.3	99.4	76.7	92.7	106						89.0	15.1	
MD - Tensile Strength (ppi) - B	35.1	49.7	38.3	46.4	53.0						44.5	7.6	
MD - Tensile Strength (N) - B	313	442	341	413	472						396	67	
MD - Tensile Strength (kN/m) - B	6.15	8.71	6.72	8.12	9.29						7.80	1.33	
MD - Tensile Strength (lbs) - E	92.2	88.4	70.8	88.3	110						90.0	14.0	
MD - Tensile Strength (ppi) - E	46.1	44.2	35.4	44.2	55.1						45.0	7.0	
MD - Tensile Strength (N) - E	410	393	315	393	490						400	62	
MD - Tensile Strength (kN/m) - E	8.07	7.74	6.20	7.74	9.65						7.88	1.23	101
TD - Tensile Strength (lbs) - B	68.6	66.8	71.1	61.3	48.6						63.3	9.0	
TD - Tensile Strength (ppi) - B	34.3	33.4	35.6	30.7	24.3						31.6	4.5	
TD - Tensile Strength (N) - B	305	297	316	273	216						282	40	
TD - Tensile Strength (kN/m) - B	6.01	5.85	6.23	5.37	4.25						5.54	0.79	
TD - Tensile Strength (lbs) - E	36.2	44.7	66.2	36.7	46.9						46.2	12.2	
TD - Tensile Strength (ppi) - E	18.1	22.3	33.1	18.4	23.5						23.1	6.1	
TD - Tensile Strength (N) - E	161	199	295	163	209						205	54	
TD - Tensile Strength (kN/m) - E	3.17	3.91	5.80	3.22	4.11						4.04	1.07	73
MD - Elong. @ Max. Load (%) - B	44.0	42.0	46.7	46.7	44.0						44.7	2.0	
MD - Elong. @ Max. Load (%) - E	38.7	34.7	29.3	39.3	35.3						35.5	4.0	79
TD - Elong. @ Max. Load (%) - B	79.3	88.0	81.3	80.0	82.0						82.1	3.4	
TD - Elong. @ Max. Load (%) - E	58.7	68.7	52.0	58.7	58.0						59.2	6.0	72
B - Baseline Unexposed E - Exposed for 500 hours of ASTM D 4355 Cycle													
MD Machine Direction TD Transverse Direction													



SKAPS Industries (Nonwoven Division)
335, Athena Drive
Athens, GA 30601 (U.S.A.)
Phone (706) 354-3700 Fax (706) 354-3737
E-mail: contact@skaps.com

Sales Office:
Engineered Synthetic Product Inc.
Phone: (770)564-1857
Fax: (770)564-1818

May 11, 2018
Chesapeake Containment Systems, Inc.
2690 D Salisbury Highway
Statesville, NC 28677
PO : 18073

Dear Sir/Madam:

This is to certify that SKAPS GE110 is a high quality needle-punched nonwoven geotextile made of 100% polypropylene staple fibers, randomly networked to form a high strength dimensionally stable fabric. SKAPS GE110 resists ultraviolet deterioration, rotting, biological degradation. The fabric is inert to commonly encountered soil chemicals. Polypropylene is stable within a pH range of 2 to 13. SKAPS GE110 conforms to the property values listed below:

PROPERTY	TEST METHOD	UNIT S	M.A.R.V. Minimum Average Roll Value
Weight	ASTM D 5261	oz/sy (g/m ²)	10.00 (339)
Grab Tensile	ASTM D 4632	lbs (kN)	260 (1.16)
Grab Elongation	ASTM D 4632	%	50
Trapezoidal Tear	ASTM D 4533	lbs (kN)	100 (0.44)
CBR Puncture	ASTM D 6241	lbs (kN)	725 (3.22)
UV Resistance	ASTM D 4355	%/hrs	70/500

Notes:

* At the time of manufacturing. Handling may change these properties.

KOUROSH SABZEVARI
QUALITY CONTROL MANAGER

www.skaps.com

www.espgeosynthetics.com

Product : GE110-180

ROLL # ASTM METHOD UNITS TARGET	WEIGHT D5261 oz/sq yd 10.00	MD TENSILE D4632 lbs. 260	MD ELONG D4632 % 50	XMD TENSILE D4632 lbs 260	XMD ELONG D4632 % 50	MD TRAP D4533 lbs. 100	XMD TRAP D4533 lbs 100	CBR PUNCTURE D6241 lbs. 725
52492.1	10.57	279	76	287	88	106	129	816
52492.2	10.57	279	76	287	88	106	129	816
52492.3	10.57	279	76	287	88	106	129	816
52492.4	10.57	279	76	287	88	106	129	816
52492.5	10.34	275	71	284	84	106	129	816
52492.6	10.34	275	71	284	84	106	129	816
52492.7	10.34	275	71	284	84	106	129	816
52492.8	10.34	275	71	284	84	106	129	816
52492.9	10.34	275	71	284	84	106	129	816
52492.10	10.70	281	79	283	90	110	124	757
52492.11	10.70	281	79	283	90	110	124	757
52492.12	10.70	281	79	283	90	110	124	757
52492.13	10.70	281	79	283	90	110	124	757
52492.14	10.70	281	79	283	90	110	124	757
52492.15	10.48	285	75	289	80	110	124	757
52492.16	10.48	285	75	289	80	110	124	757
52492.17	10.48	285	75	289	80	110	124	757
52492.18	10.48	285	75	289	80	110	124	757
52492.19	10.48	285	75	289	80	110	124	757
52492.20	10.65	278	77	280	85	108	132	846
52492.21	10.65	278	77	280	85	108	132	846
52492.22	10.65	278	77	280	85	108	132	846
52492.23	10.65	278	77	280	85	108	132	846
52492.24	10.65	278	77	280	85	108	132	846
52492.25	10.10	283	72	287	83	108	132	846
52492.26	10.10	283	72	287	83	108	132	846
52492.27	10.10	283	72	287	83	108	132	846
52492.28	10.10	283	72	287	83	108	132	846
52492.29	10.10	283	72	287	83	108	132	846
52492.30	10.52	280	80	284	89	105	126	800
52492.31	10.52	280	80	284	89	105	126	800
52492.32	10.52	280	80	284	89	105	126	800
52492.33	10.52	280	80	284	89	105	126	800
52492.34	10.52	280	80	284	89	105	126	800
52492.35	10.37	285	70	292	81	105	126	800
52492.36	10.37	285	70	292	81	105	126	800
52492.37	10.37	285	70	292	81	105	126	800
52492.38	10.37	285	70	292	81	105	126	800
52492.39	10.37	285	70	292	81	105	126	800

*All values are MARV.

Product : GE110-180

ROLL # ASTM METHOD UNITS TARGET	WEIGHT D5261 oz/sq yd 10.00	MD TENSILE D4632 lbs. 260	MD ELONG D4632 % 50	XMD TENSILE D4632 lbs 260	XMD ELONG D4632 % 50	MD TRAP D4533 lbs. 100	XMD TRAP D4533 lbs 100	CBR PUNCTURE D6241 lbs. 725
52492.40	10.60	276	75	280	87	113	128	805
52492.41	10.60	276	75	280	87	113	128	805
52492.42	10.60	276	75	280	87	113	128	805
52492.43	10.60	276	75	280	87	113	128	805
52492.44	10.60	276	75	280	87	113	128	805
52492.45	10.43	283	73	286	85	113	128	805
52492.46	10.43	283	73	286	85	113	128	805
52492.47	10.43	283	73	286	85	113	128	805
52492.48	10.43	283	73	286	85	113	128	805
52492.49	10.43	283	73	286	85	113	128	805
52492.50	10.19	280	77	285	86	107	121	791
52492.51	10.19	280	77	285	86	107	121	791
52492.52	10.19	280	77	285	86	107	121	791
52492.53	10.19	280	77	285	86	107	121	791
52492.54	10.19	280	77	285	86	107	121	791
52492.55	10.70	285	74	291	82	107	121	791
52492.56	10.70	285	74	291	82	107	121	791
52492.57	10.70	285	74	291	82	107	121	791
52492.58	10.70	285	74	291	82	107	121	791

*All values are MARV.

APPENDIX G

HDPE Liner Deployment

APPENDIX G.1

Subgrade Acceptance Certificates

CERTIFICATE OF ACCEPTANCE OF SOIL SURFACE

GEOSYNTHETIC INSTALLER

COMPANY Chesapeake Containment Systems, Inc.

LOCATION _____

PROJECT

West Olive, Michigan

ADDRESS _____

PROJECT
OWNER

JH Campbell Ash Pond A Closure
Consumers Energy

I, the Undersigned, the duly authorized representative of

Chesapeake Containment Systems, Inc.

do hereby accept the area of soil surface bounded by

P1-P5

and shall be responsible for maintaining its integrity and suitability in accordance with the project specifications from this date to the completion of the installation.

Jim Moises Tello Jim Moises Tello Superintendent 4-10-19
NAME SIGNATURE TITLE DATE

CERTIFICATE OF ACCEPTANCE RECEIVED BY QA/QC MANAGER

Aaron Bickel [Signature] CQA Field Lead 4-10-19
NAME SIGNATURE TITLE DATE

CERTIFICATE OF ACCEPTANCE RECEIVED BY OWNER

Adam Sauer [Signature] CM 4-10-19
NAME SIGNATURE TITLE DATE

CERTIFICATE OF ACCEPTANCE OF SOIL SURFACE

GEOSYNTHETIC INSTALLER

COMPANY Chesapeake Containment Systems, Inc.

LOCATION

PROJECT
West Olive, Michigan

ADDRESS

PROJECT
OWNER

JH Campbell Ash Pond A Closure
Consumers Energy

I, the Undersigned, the duly authorized representative of

Chesapeake Containment Systems, Inc.

do hereby accept the area of soil surface bounded by

P6-P17

and shall be responsible for maintaining its integrity and suitability in accordance with the project specifications from this date to the completion of the installation.

Moses Tello Moses Tello Superintendent 4-13-19
NAME SIGNATURE TITLE DATE

CERTIFICATE OF ACCEPTANCE RECEIVED BY QA/QC MANAGER

Aaron Bickel [Signature] CQA Manager 4-13-19
NAME SIGNATURE TITLE DATE

CERTIFICATE OF ACCEPTANCE RECEIVED BY OWNER

AMMSA [Signature] CM/CEC 4-13-19
NAME SIGNATURE TITLE DATE

CERTIFICATE OF ACCEPTANCE OF SOIL SURFACE

GEOSYNTHETIC INSTALLER

COMPANY Chesapeake Containment Systems, Inc.

LOCATION

PROJECT

West Olive, Michigan

ADDRESS

PROJECT
OWNER

JH Campbell Ash Pond A Closure

Consumers Energy

I, the Undersigned, the duly authorized representative of

Chesapeake Containment Systems, Inc.

do hereby accept the area of soil surface bounded by

P18 - P40

and shall be responsible for maintaining its integrity and suitability in accordance with the project specifications from this date to the completion of the installation.

NAME

SIGNATURE

TITLE

DATE

CERTIFICATE OF ACCEPTANCE RECEIVED BY QA/QC MANAGER

NAME

SIGNATURE

TITLE

DATE

CERTIFICATE OF ACCEPTANCE RECEIVED BY OWNER

NAME

SIGNATURE

TITLE

DATE

GOLDER FORM: G4-0699

(January 2005)

GOLDER ASSOCIATES INC.

CERTIFICATE OF ACCEPTANCE OF SOIL SURFACE

GEOSYNTHETIC INSTALLER

COMPANY Chesapeake Containment Systems, Inc.

LOCATION _____

PROJECT
West Olive, Michigan

ADDRESS _____

PROJECT
OWNER

JH Campbell Ash Pond A Closure
Consumers Energy

I, the Undersigned, the duly authorized representative of

Chesapeake Containment Systems, Inc.

do hereby accept the area of soil surface bounded by

PHO-P122

and shall be responsible for maintaining its integrity and suitability in accordance with the project specifications from this date to the completion of the installation.

Moises Telto Superintendent 4-22-19
NAME SIGNATURE TITLE DATE

CERTIFICATE OF ACCEPTANCE RECEIVED BY QA/QC MANAGER

Aaron Bickel [Signature] CQA 4-22-19
NAME SIGNATURE TITLE DATE

CERTIFICATE OF ACCEPTANCE RECEIVED BY OWNER

Adam Saul [Signature] CEL CM 4-22-19
NAME SIGNATURE TITLE DATE

APPENDIX G.2

Panel Placement Summary

GEOSYNTHETIC PANEL DEPLOYMENT LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

GEOMEMBRANE: Secondary Primary Closure Other:
 SUBGRADE CONDITION: (Surface Compaction Protrusions Dessiccation Excessive Moisture)
 REMARKS:

TRANSPORT EQUIPMENT:

PANEL #	ROLL NUMBER	DEPLY'D LENGTH	AMBIENT AIR TEMP	OBS'D OVERLAP	MONITOR	THICKNESS MEASUREMENTS		REMARKS
						LEAD	SIDE	
P1	690011	505	45°F	Y	AB	39.14/40.14/40.14	41.11/41.11	4-10-19
P2	690011	200	45°F	Y	AM	1111	1111	
P3	90028	300	43°	Y	AM	40.14/40.14/40.14	42.11/42.11	
P4	90028	420	43°	Y	AM	1111	1111	↓
P5	90014	82	43°	Y	AM	40.14/40.14/40.14	42.11/42.11	4-10-19
P6	90014	505	43°	Y	AM	1111	1111	4-13-19
P7	90014	130	43°	Y	AM	1111	1111	
P8	90031	376	43°	Y	AM	40.14/40.14/40.14	42.11/42.11	
P9	90031	350	43°	Y	AM	1111	1111	
P10	90025	185	43°	Y	AM	1111	1111	
P11	90005	506	43°	Y	AM	1111	1111	
P12	90009	510	43°	Y	AM	41.11/41.11/41.11	43.11/43.11	
P13	90009	225	43°	Y	AM	1111	1111	
P14	90013	280	43°	Y	AM	39.14/40.14/40.14	41.11/41.11/41.11	
P15	90013	415	43°	Y	AM	39.14/40.14/40.14	41.11/41.11/41.11	
P16	90020	97	43°	Y	AM	39.14/40.14/40.14	41.11/41.11/41.11	↓
P17	90020	500	44°	Y	AB	1111	1111	4-13-19
P18	90017	505	55°	Y	AB	1111	1111	4-16-19
P19	90017	220	55°	Y	AB	1111	1111	
P20	90001	282	55°	Y	AB	1111	1111	
P21	90001	390	55°	Y	AB	1111	1111	
P22	90022	118	55°	Y	AB	1111	1111	
P23	90022	506	55°	Y	AB	1111	1111	
P24	90022	105	57°	Y	AB	1111	1111	
P25	90007	400	57°	Y	AB	1111	1111	
P26	90007	335	57°	Y	AB	1111	1111	↓
P27	90015	170	57°	Y	AB	1111	1111	4-16-19

Golder Form: G2-TSS
 (January 2005)

REVIEWED BY: PS DATE: 9/5/19

GOLDER ASSOCIATES INC.

GEOSYNTHETIC PANEL DEPLOYMENT LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

GEOMEMBRANE: Secondary Primary Closure Other:
 SUBGRADE CONDITION: (Surface Compaction Protrusions Dessiccation Excessive Moisture)
 REMARKS:

TRANSPORT EQUIPMENT:

PANEL #	ROLL NUMBER	DEPLY'D LENGTH	AMBIENT AIR TEMP	OBS'D OVERLAP	MONITOR	THICKNESS MEASUREMENTS		REMARKS
						LEAD	SIDE	
P28	90015	505	43°	Y	AB	1111	1111	4.17.19
P29	90015	60	43°	Y	AB	1111	1111	
P30	90025	445	43°	Y	AB	1111	1111	
P31	90020	145	43°	Y	AB	1111	1111	
P32	90032	360	44°	Y	AB	1111	1111	
P33	90032	364	44°	Y	AB	1111	1111	
P34	90019	353	45°	Y	AB	1111	1111	
P35	90019	32	45°	Y	AB	1111	1111	
P36	90019	66	45°	Y	AB	1111	1111	
P37	90019	98	45°	Y	AB	1111	1111	
P38	90019	98	45°	Y	AB	1111	1111	
P39	90019	9	45°	Y	AB	1111	1111	4.17.19
P40	90002	98	56°	Y	AM	1111	1111	4.22.19
P41	90002	100	56°	Y	AM	1111	1111	
P42	90002	101	58°	Y	AM	1111	1111	
P43	90002	102	58°	Y	AM	1111	1111	
P44	90002	105	60°	Y	AM	1111	1111	
P45	90002	103	60°	Y	AM	1111	1111	
P46	90002	105	64°	Y	AM	1111	1111	
P47	90006	103	64°	Y	AM	1111	1111	
P48	90006	103	64°	Y	AM	1111	1111	
P49	90006	104	64°	Y	AM	1111	1111	
P50	90006	107	64°	Y	AM	1111	1111	
P51	90006	104	64°	Y	AM	1111	1111	
P52	90006	108	64°	Y	AM	1111	1111	
P53	90006	109	64°	Y	AB	1111	1111	
P54	90029	325	65°	Y	AB	1111	1111	4.22.19

Golder Form: G2-TSS
 (January 2005)

REVIEWED BY: PS DATE: 9/5/19

GOLDER ASSOCIATES INC.

GEOSYNTHETIC PANEL DEPLOYMENT LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

GEOMEMBRANE: Secondary Primary Closure Other:
 SUBGRADE CONDITION: (Surface Compaction Protrusions Dessiccation Excessive Moisture)
 REMARKS:

TRANSPORT EQUIPMENT:

PANEL #	ROLL NUMBER	DEPLY'D LENGTH	AMBIENT AIR TEMP	OBS'D OVERLAP	MONITOR	THICKNESS MEASUREMENTS		REMARKS
						LEAD	SIDE	
P55	90029	272	67°	Y	AB	1111	1111	4.22.19
P56	90029	35	67°	Y	AB	1111	1111	
P57	90029	77	75°	Y	AB	1111	1111	
P58	90029	45	75°	Y	AB	1111	1111	
P59	90010	196	75°	Y	AM	1111	1111	
P60	90010	206	75°	Y	AM	1111	1111	
P61	90010	228	75°	Y	AM	1111	1111	
P62	90010	40	75°	Y	AM	1111	1111	
P63	90010	65	75°	Y	AM	1111	1111	
P64	90036	95	73°	Y	AM	1111	1111	
P65	90030	167	73°	Y	AM	1111	1111	
P66	90030	110	70°	Y	AM	1111	1111	
P67	90030	166	70°	Y	AM	1111	1111	
P68	90030	96	70°	Y	AM	1111	1111	
P69	90030	90	70°	Y	AM	1111	1111	
P70	90018	82	70°	Y	AM	1111	1111	
P71	90030	26	70°	Y	AM	1111	1111	
P72	90018	50	70°	Y	AM	1111	1111	
P73	90018	92	70°	Y	AM	1111	1111	
P74	90018	82	70°	Y	AM	1111	1111	
P75	90018	68	70°	Y	AM	1111	1111	
P76	90018	50	70°	Y	AM	1111	1111	
P77	90018	60	70°	Y	AM	1111	1111	
P78	90030	30	70°	Y	AM	1111	1111	
P79	90018	110	70°	Y	AM	1111	1111	
P80	90018	115	70°	Y	AM	1111	1111	
P81	90013	21	70°	Y	AM	1111	1111	4.22.19

Golder Form: G2-TSS
 (January 2005)

REVIEWED BY: PS DATE: 9/5/19

GOLDER ASSOCIATES INC.

GEOSYNTHETIC PANEL DEPLOYMENT LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

GEOMEMBRANE: Secondary Primary Closure Other:
 SUBGRADE CONDITION: (Surface Compaction Protrusions Dessiccation Excessive Moisture)
 REMARKS:

TRANSPORT EQUIPMENT:

PANEL #	ROLL NUMBER	DEPLY'D LENGTH	AMBIENT AIR TEMP	OBS'D OVERLAP	MONITOR	THICKNESS MEASUREMENTS		REMARKS
						LEAD	SIDE	
P82	90025	287	45°	y	Am	1111	1111	4-24-19
P83	90008	223	45°	y	Am	1111	1111	
P84	90008	510	47°	y	Am	1111	1111	
P85	90026	512	47°	y	Am	1111	1111	
P86	90026	232	47°	y	Am	1111	1111	
P87	90027	274	47°	y	Am	1111	1111	
P88	90027	418	47°	y	Am	1111	1111	
P89	90027	60	50°	y	Am	1111	1111	
P90	90024	95	54°	y	Am	1111	1111	
P91	90024	438	54°	y	Am	1111	1111	
P92	90024	215	60	y	Am	1111	1111	
P93	90012	100	60	y	Am	1111	1111	
P94	90012	89	60	y	Am	1111	1111	
P95	90012	63	64	y	Am	1111	1111	
P96	90012	79	64	y	Am	1111	1111	
P97	90012	52	64	y	Am	1111	1111	
P98	90012	118	63	y	Am	1111	1111	
P99	90018	27	63	y	Am	1111	1111	
P100	90018	15	60	y	Am	1111	1111	
P101	90012	119	60	y	Am	1111	1111	
P102	90012	121	60	y	Am	1111	1111	
P103	90023	120	60	y	Am	1111	1111	
P104	90023	119	60	y	Am	1111	1111	
P105	90023	123	54	y	Am	1111	1111	
P106	90023	123	54	y	Am	1111	1111	
P107	90023	119	52	y	Am	1111	1111	
P108	90023	118	52	y	Am	1111	1111	

Golder Form: G2-TSS
 (January 2005)

REVIEWED BY: PS DATE: 7/5/19

GOLDER ASSOCIATES INC.

GEOSYNTHETIC PANEL DEPLOYMENT LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

GEOMEMBRANE: Secondary Primary Closure Other:
 SUBGRADE CONDITION: (Surface Compaction Protrusions Dessiccation Excessive Moisture)
 REMARKS:

TRANSPORT EQUIPMENT:

PANEL #	ROLL NUMBER	DEPLY'D LENGTH	AMBIENT AIR TEMP	OBS'D OVERLAP	MONITOR	THICKNESS MEASUREMENTS		REMARKS
						LEAD	SIDE	
P109	90016	126	64	Y	AB	11111	11111	
P110	90016	120	64	Y	AB	11111	11111	
P111	90016	120	64	Y	AB	11111	11111	
P112	90016	290	64	Y	AB	11111	11111	4-24-19
P113	90021	135	48	Y	AM	11111	11111	4-25-19
P114	90021	50	48	Y	AM	11111	11111	
P115	90021	80	50	Y	AM	11111	11111	
P116	90021	111	50	Y	AM	11111	11111	
P117	90021	83	54	Y	AM	11111	11111	
P118	90021	60	54	Y	AM	11111	11111	
P119	90021	57	54	Y	AM	11111	11111	
P120	90021	70	54	Y	AM	11111	11111	
P121	90021	52	54	Y	AM	11111	11111	
P122	90021	30	54	Y	AM	11111	11111	4-25-19
						11111	11111	
						11111	11111	
						11111	11111	
						11111	11111	
						11111	11111	
						11111	11111	
						11111	11111	
						11111	11111	
						11111	11111	
						11111	11111	
						11111	11111	
						11111	11111	
						11111	11111	
						11111	11111	
						11111	11111	

APPENDIX H

Liner Trial Seam Logs

APPENDIX H.1

Fusion Trial Seam Logs

GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER: 1896102
OWNER: Consumers Energy
LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
CONTRACTOR: Chesapeake Containment Systems, Inc.

TF - # = FUSION

DATE 4-10-19

TX - # = EXTRUSION

SHEET NUMBER 1 of 1

[illegible]

NOTE: ADHESION FAILURE OF TRIAL SEAM SAMPLES SHALL BE NOTED IN THE REMARKS COLUMN

GOLDER FORM: G12-TSS
(January 2005)

REVIEWED BY: PS DATE: 9/5/19

GOLDER ASSOCIATES INC.

GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER: 1896102
OWNER: Consumers Energy
LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
CONTRACTOR: Chesapeake Containment Systems, Inc.

TF - # = FUSION

DATE 4-13-19

TX - # = EXTRUSION

SHEET NUMBER 107

[illegible]

NOTE: ADHESION FAILURE OF TRIAL SEAM SAMPLES SHALL BE NOTED IN THE REMARKS COLUMN

GOLDER FORM: G12-TSS
(January 2005)

REVIEWED BY: *PS* DATE: *11/5/17*

GOLDER ASSOCIATES INC.

GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER: 1896102
OWNER: Consumers Energy
LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
CONTRACTOR: Chesapeake Containment Systems, Inc.

DATE 4-16-19

SHEET NUMBER 162

[illegible]

NOTE: ADHESION FAILURE OF TRIAL SEAM SAMPLES SHALL BE NOTED IN THE REMARKS COLUMN

GOLDER FORM: G12-TSS
(January 2005)

REVIEWED BY: BS DATE: 9/5/19

GOLDER ASSOCIATES INC.

GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER: 1896102 PROJECT TITLE: JH Campbell Ash Pond A Closure
 OWNER: Consumers Energy CONTRACTOR: Chesapeake Containment Systems, Inc.
 LOCATION: West Olive, Michigan

60/80

TF - # = FUSION

DATE 4-17-19

TX - # = EXTRUSION

SHEET NUMBER 1 of 1

SAMPLE NUMBER	APPROX. TIME	WELDING MACHINE NUMBER	WELD TECH.	TEMPERATURES				TEST RESULTS			PASS OR FAIL	MON.	REMARKS **
				AMBIENT AIR TEMP.	PREHEAT OR MACHINE SPEED	EXTRUDER	NOZZLE OR WEDGE	INSIDE PEEL STRENGTH	OUTSIDE PEEL STRENGTH	SHEAR STRENGTH			
TF-1	8:06	20	VG	43°	700		810	91188166	84190182	1221119	P	AB	S/S
TF-2	8:07	20	VG	43°	600		810	961109195	10811141103	1241120	P	AB	T/T
TF-3	8:28	81	HM	43°	500		800	9111041106	86199190	1201117	P	AB	S/S
TF-4	8:33	81	HM	43°	450		800	100185176	83194192	1241119	P	AB	T/T
TF-5	9:45	1807	UM	44°	500		800	88176175	68172180	1151115	P	AB	S/S
TF-6	1008	1807	UM	44°	450		800	11511071118	10711071119	1141120	P	AB	T/T
TF-7	1330	81	HM	45°	450		800	90179190	76184180	1171118	P	AB	S/T
TF-8	1339	20	VG	45°	700		810	87189182	74169163	1061104	P	AB	S/S
TF-9	1346	81	HM	45°	500		800	91191190	90180189	1021104	P	AB	S/S
TF-10	1340	81	HM	45°	450		800	10211071107	971101197	1191116	P	AB	T/T
TF-11	1333	20	VG	45°	630		810	83188192	94174175	1091110	P	AB	S/T
TF-12	1346	20	VG	45°	600		810	86178170	97191189	1121106	P	AB	T/T
								11	11	11			
								11	11	11			
								11	11	11			
								11	11	11			
								11	11	11			
								11	11	11			
								11	11	11			
								11	11	11			
								11	11	11			

NOTE: ADHESION FAILURE OF TRIAL SEAM SAMPLES SHALL BE NOTED IN THE REMARKS COLUMN

GOLDER FORM: G12-TSS
 (January 2005)

REVIEWED BY: PS DATE: 9/5/19

GOLDER ASSOCIATES INC.

GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

60/80

TF - # = FUSION

TX - # = EXTRUSION

DATE 4.22.19
 SHEET NUMBER 10th

SAMPLE NUMBER	APPROX. TIME	WELDING MACHINE NUMBER	WELD TECH.	TEMPERATURES				TEST RESULTS			PASS OR FAIL	MON.	REMARKS **
				AMBIENT AIR TEMP.	PREHEAT OR MACHINE SPEED	EXTRUDER	NOZZLE OR WEDGE	INSIDE PEEL STRENGTH	OUTSIDE PEEL STRENGTH	SHEAR STRENGTH			
TF-1	8:10	1807	UM	56°	500		800	82/74/68	87/78/83	100/95	P	AB	S/S
TF-2	8:33	1807	UM	56°	450		800	83/82/87	94/84/92	98/100	P	AB	T/T
TF-3	8:33	81	HM	56°	600		750	87/80/89	80/87/70	99/90	P	AB	S/S
TF-4	8:37	81	HM	56°	500		750	101/77/91	101/93/92	96/102	P	AB	T/T
TF-5	8:40	81	HM	56°	550		750	94/76/84	72/77/78	100/101	P	AB	S/T
TF-6	8:45	20	VG	56°	650		730	89/79/77	75/82/79	96/95	P	AB	S/S
TF-7	9:16	20	VG	56°	570		730	93/77/97	95/79/102	93/91	P	AB	T/T
TF-8	13:23	81	HM	78°	600		700	76/73/73	71/73/68	87/82	P	AB	S/S
TF-9	13:29	81	HM	78°	500		750	74/75/85	70/71/73	89/83	P	AB	T/T
TF-10	13:27	1807	UM	78°	550		800	75/61/63	64/71/72	83/81	P	AB	S/S
TF-11	13:36	20	VG	78°	650		730	85/83/90	83/65/85	95/96	P	AB	S/S
TF-12	13:30	20	VG	78°	570		730	98/101/86	100/97/80	92/90	P	AB	T/T
TF-13	13:30	1807	UM	78°	500		800	78/83/81	83/75/76	84/87	P	AB	T/T
TF-14	13:32	20	VG	78°	570		730	81/86/78	84/82/77	93/91	P	AB	S/T
TF-15	14:24	1807	UM	78°	500		800	82/79/81	78/79/76	87/87	P	AB	T/T
TF-16	18:26	1807	UM	78°	550		800	67/69/75	69/78/64	92/90	P	AB	S/S
								1/1	1/1	1			
								1/1	1/1	1			
								1/1	1/1	1			
								1/1	1/1	1			
								1/1	1/1	1			

NOTE: ADHESION FAILURE OF TRIAL SEAM SAMPLES SHALL BE NOTED IN THE REMARKS COLUMN

E-12

GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

60/80

TF - # = FUSION

DATE 4-24-19

TX - # = EXTRUSION

SHEET NUMBER 104

SAMPLE NUMBER	APPROX. TIME	WELDING MACHINE NUMBER	WELD TECH.	TEMPERATURES				TEST RESULTS			PASS OR FAIL	MON.	REMARKS **
				AMBIENT AIR TEMP.	PREHEAT OR MACHINE SPEED	EXTRUDER	NOZZLE OR WEDGE	INSIDE PEEL STRENGTH	OUTSIDE PEEL STRENGTH	SHEAR STRENGTH			
TF -1	851	81	HM	44°	600		750	94182180	85178181	1151113	P	AB	S/S
TF -2	854	81	HM	44°	500		750	93169177	94185177	1261127	P	AB	T/T
TF -3	903	1807	UM	44°	500		800	88177188	89188188	1161101	P	AB	T/T
TF -4	843	1807	UM	44°	550		800	77174177	72181175	1141106	P	AB	S/S
TF -5	909	20	VG	44°	680		730	101178179	86182192	1121112	P	AB	S/S
TF -6	915	20	VG	44°	600		730	93188110	93178194	1171115	P	AB	T/T
TF -7	1330	81	HM	55°	600		700	81168175	63183172	1031103	P	AB	S/S
TF -8	1327	20	VG	55°	680		730	79167172	84170183	99190	P	AB	S/S
TF -9	1332	81	HM	55°	500		700	91186187	75182185	1041101	P	AB	T/T
TF -10	1332	20	VG	55°	600		730	66172179	78179165	98193	P	AB	T/T
TF -11	1328	81	HM	55°	550		700	89185176	85181177	98199	P	AB	S/T
TF -12	1328	20	VG	55°	620		730	69177176	70176172	97194	P	AB	S/T
TF -13	1359	1807	UM	55°	600		800	69177167	86185182	107199	P	AB	S/S
TF -14	1403	1807	UM	55°	550		800	80187183	81169173	1061107	P	AB	S/T
								11	11	11			
								11	11	11			
								11	11	11			
								11	11	11			
								11	11	11			
								11	11	11			
								11	11	11			
								11	11	11			

NOTE: ADHESION FAILURE OF TRIAL SEAM SAMPLES SHALL BE NOTED IN THE REMARKS COLUMN

GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER: 1896102 PROJECT TITLE: JH Campbell Ash Pond A Closure
 OWNER: Consumers Energy CONTRACTOR: Chesapeake Containment Systems, Inc.
 LOCATION: West Olive, Michigan

66/80
~~52/80~~

TF - # = FUSION

DATE 4-25-19

TX - # = EXTRUSION

SHEET NUMBER 1 of 1

SAMPLE NUMBER	APPROX. TIME	WELDING MACHINE NUMBER	WELD TECH.	TEMPERATURES				TEST RESULTS			PASS OR FAIL	MON.	REMARKS **
				AMBIENT AIR TEMP.	PREHEAT OR MACHINE SPEED	EXTRUDER	NOZZLE OR WEDGE	INSIDE PEEL STRENGTH	OUTSIDE PEEL STRENGTH	SHEAR STRENGTH			
TF-1	741	1807	UM	45°	600		800	99198193	81168183	1191118	P	AB	S/S
TF-2	744	1807	UM		550		800	97187179	94194187	1301125	P	AB	T/T
TF-3	741	81	HM		600		750	85179168	89175175	1121102	P	AB	S/S
TF-4	818	81	HM		500		750	88187177	78174174	1141114	P	AB	S/T
TF-5	758	20	VG		680		730	85172187	100191167	1181117	P	AB	S/S
TF-6	739	20	VG	45°	600		730	87177189	84185184	1281125	P	AB	T/T
TX-1	1050	52	ET	60°	480	500		981961102	11111	101199	P	AB	AK
TX-2	1045	46	CT		420	480		110195199	1111	1101101	P	AB	AK
TX-3	1600	52	ET		480	550		90188199	1111	95191	P	AB	AK
TX-4	1530	46	CT	60°	420	480		87185193	1111	95188	P	AB	AK
								1111	1111	1111			
								1111	1111	1111			
								1111	1111	1111			
								1111	1111	1111			
								1111	1111	1111			
								1111	1111	1111			
								1111	1111	1111			
								1111	1111	1111			
								1111	1111	1111			
								1111	1111	1111			
								1111	1111	1111			
								1111	1111	1111			

NOTE: ADHESION FAILURE OF TRIAL SEAM SAMPLES SHALL BE NOTED IN THE REMARKS COLUMN

APPENDIX H.2

Extrusion Trial Seam Logs

GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER: 1896102
OWNER: Consumers Energy
LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
CONTRACTOR: Chesapeake Containment Systems, Inc.

DATE 4-19-19

SHEET NUMBER 10

[illegible]

NOTE: ADHESION FAILURE OF TRIAL SEAM SAMPLES SHALL BE NOTED IN THE REMARKS COLUMN

REVIEWED BY: *PS* DATE: *9/5/9*

GOLDER ASSOCIATES INC.

GEOMEMBRANE TRIAL SEAM LOG

1896102

Consumers Energy

West Olive, Michigan

JH Campbell Ash Pond A Closure

Chesapeake Containment Systems, Inc.

DATE _____

DATE 4-23-19

SHEET NUMBER

SHEET NUMBER 1071

[illegible]

NOTE: ADHESION FAILURE OF TRIAL SEAM SAMPLES SHALL BE NOTED IN THE REMARKS COLUMN

REVIEWED BY:

DATE:

9/5/19

GOLDER ASSOCIATES INC.

GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER: 1896102 PROJECT TITLE: JH Campbell Ash Pond A Closure
 OWNER: Consumers Energy CONTRACTOR: Chesapeake Containment Systems, Inc.
 LOCATION: West Olive, Michigan

66/80 TF - # = FUSION
52/80 TX - # = EXTRUSION

DATE 4-25-19
 SHEET NUMBER 1 of 1

SAMPLE NUMBER	APPROX. TIME	WELDING MACHINE NUMBER	WELD TECH.	TEMPERATURES				TEST RESULTS			PASS OR FAIL	MON.	REMARKS **
				AMBIENT AIR TEMP.	PREHEAT OR MACHINE SPEED	EXTRUDER	NOZZLE OR WEDGE	INSIDE PEEL STRENGTH	OUTSIDE PEEL STRENGTH	SHEAR STRENGTH			
TF-1	741	1807	UM	45°	600		800	99198193	81168183	1191118	P	AB	S/S
TF-2	744	1807	UM		550		800	97187179	94194187	1301125	P	AB	T/T
TF-3	744	81	HM		600		750	85179168	89175175	1121102	P	AB	S/S
TF-4	818	81	HM		500		750	88187177	78174174	1141114	P	AB	S/T
TF-5	758	20	VG		600		730	85172187	100191167	1181117	P	AB	S/S
TF-6	739	20	VG	45°	600		730	87177189	84185184	1281125	P	AB	T/T
TX-1	1050	52	ET	60°	480	500		981961102	1 1	101199	P	AB	
TX-2	1045	46	CT		420	480		110195199	1 1	1101101	P	AB	
TX-3	1600	52	ET		480	550		90188199	1 1	95191	P	AB	
TX-4	1530	46	CT	60°	420	480		87185193	1 1	95188	P	AB	
								1 1	1 1	1			
								1 1	1 1	1			
								1 1	1 1	1			
								1 1	1 1	1			
								1 1	1 1	1			
								1 1	1 1	1			
								1 1	1 1	1			
								1 1	1 1	1			
								1 1	1 1	1			
								1 1	1 1	1			
								1 1	1 1	1			
								1 1	1 1	1			
								1 1	1 1	1			
								1 1	1 1	1			

NOTE: ADHESION FAILURE OF TRIAL SEAM SAMPLES SHALL BE NOTED IN THE REMARKS COLUMN

GOLDER FORM: G12-TSS (January 2005) REVIEWED BY: PS DATE: 9/5/19

GOLDER ASSOCIATES INC.

GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER: 1896102
OWNER: Consumers Energy
LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
CONTRACTOR: Chesapeake Containment Systems, Inc.

DATE 4-26-19

SHEET NUMBER 107

[illegible]

NOTE: ADHESION FAILURE OF TRIAL SEAM SAMPLES SHALL BE NOTED IN THE REMARKS COLUMN

REVIEWED BY: PS DATE: 9/5/13

GOLDER ASSOCIATES INC.

GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER: 1896102
OWNER: Consumers Energy
LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
CONTRACTOR: Chesapeake Containment Systems, Inc.

TF - # = FUSION

DATE 4-30-19

52180 TX-# = EXTRUSION

SHEET NUMBER

[illegible]

NOTE: ADHESION FAILURE OF TRIAL SEAM SAMPLES SHALL BE NOTED IN THE REMARKS COLUMN

GOLDER FORM: G12-TSS
(January 2005)

REVIEWED BY: PS DATE: 9/5/19

GOLDER ASSOCIATES INC.

GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER: 1896102
OWNER: Consumers Energy
LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
CONTRACTOR: Chesapeake Containment Systems, Inc.

DATE 5-1-19

	TF - # = FUSION
52/80	TX - # = EXTRUSION

SHEET NUMBER 1 of 1

[illegible]

NOTE: ADHESION FAILURE OF TRIAL SEAM SAMPLES SHALL BE NOTED IN THE REMARKS COLUMN

GOLDER FORM: G12-TSS
(January 2005)

REVIEWED BY: PS DATE: 9/5/19

GOLDER ASSOCIATES INC.

GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER: 1896102

OWNER: Consumers Energy

LOCATION: West Olive, Michigan

PROJECT TITLE:

JH Campbell Ash Pond A Closure

CONTRACTOR:

Chesapeake Containment Systems, Inc.

TF - # = FUSION

DATE 5-2-19

52/30

TX - # = EXTRUSION

SHEET NUMBER 1

[illegible]

NOTE: ADHESION FAILURE OF TRIAL SEAM SAMPLES SHALL BE NOTED IN THE REMARKS COLUMN

GOLDER FORM: G12-TSS

REVIEWED BY:

DATE:

(January 2005)

GOLDER ASSOCIATES INC.

GEOMEMBRANE TRIAL SEAM LOG

1896102

Consumers Energy

West Olive, Michigan

JH Campbell Ash Pond A Closure

Chesapeake Containment Systems, Inc.

DATE _____

DATE 5-3-19

SHEET NUMBER

SHEET NUMBER 2

[illegible]

NOTE: ADHESION FAILURE OF TRIAL SEAM SAMPLES SHALL BE NOTED IN THE REMARKS COLUMN

REVIEWED BY:

DATE:

DATE: 9/5/19

GOLDER ASSOCIATES INC.

GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER: 1896102
OWNER: Consumers Energy
LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
CONTRACTOR: Chesapeake Containment Systems, Inc.

TF - # = FUSION

DATE 5-7-19

52/80 TX - # = EXTRUSION

SHEET NUMBER)

[illegible]

NOTE: ADHESION FAILURE OF TRIAL SEAM SAMPLES SHALL BE NOTED IN THE REMARKS COLUMN

GOLDER FORM: G12-TSS
(January 2005)

REVIEWED BY: PS DATE: 9/5/19

GOLDER ASSOCIATES INC.

GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER: 1896102
OWNER: Consumers Energy
LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
CONTRACTOR: Chesapeake Containment Systems, Inc.

TF - # = FUSION

DATE 5-8-19

52/30

TX-# = EXTRUSION

SHEET NUMBER)

[illegible]

NOTE: ADHESION FAILURE OF TRIAL SEAM SAMPLES SHALL BE NOTED IN THE REMARKS COLUMN

GOLDER FORM: G12-TSS
(January 2005)

REVIEWED BY: PS DATE: 9/5/19

GOLDER ASSOCIATES INC.

GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER:

OWNER:

LOCATION:

PROJECT TITLE:

CONTRACTOR:

50/60

TF - # = FUSION

DATE _____

5-10-19

44/60

TX - # = EXTRUSION

SHEET NUMBER

1 of 7

[illegible]

NOTE: ADHESION FAILURE OF TRIAL SEAM SAMPLES SHALL BE NOTED IN THE REMARKS COLUMN

GOLDER FORM: G12-TSS

(January 2005)

REVIEWED BY:

DATE: _____

9/5/9

GOLDER ASSOCIATES INC.

GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER:	1896102
OWNER:	Consumers Energy
LOCATION:	West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
CONTRACTOR: Chesapeake Containment Systems, Inc.

DATE 5-11-19

SHEET NUMBER (07)

[illegible]

NOTE: ADHESION FAILURE OF TRIAL SEAM SAMPLES SHALL BE NOTED IN THE REMARKS COLUMN

GOLDER FORM: G12-TSS
(January 2005)

REVIEWED BY: PS DATE: 9/5/15

GOLDER ASSOCIATES INC.

GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER: 1896102
OWNER: Consumers Energy
LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
CONTRACTOR: Chesapeake Containment Systems, Inc.

TF - # = FUSION

DATE 5-13-19

52/80 TX-# = EXTRUSION

SHEET NUMBER 1 of 1

[illegible]

NOTE: ADHESION FAILURE OF TRIAL SEAM SAMPLES SHALL BE NOTED IN THE REMARKS COLUMN

GOLDER FORM: G12-TSS
(January 2005)

REVIEWED BY: PD DATE: 9/5/19

GOLDER ASSOCIATES INC.

GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER:	1896102	PROJECT TITLE:	JH Campbell Ash Pond A Closure
OWNER:	Consumers Energy	CONTRACTOR:	Chesapeake Containment Systems, Inc.
LOCATION:	West Olive, Michigan		Basin Damage Repair

TF - # = FUSION

DATE 6-5-19

TX - # = EXTRUSION

SHEET NUMBER 1 of 1

[illegible]

NOTE: ADHESION FAILURE OF TRIAL SEAM SAMPLES SHALL BE NOTED IN THE REMARKS COLUMN

GOLDER FORM: G12-TSS
(January 2005)

REVIEWED BY: PS DATE: 9/5/15

GOLDER ASSOCIATES INC.

APPENDIX H.3

Tensiometer Certifications

TENSIOMETER CERTIFICATIONS

T2



CALIBRATION CERTIFICATE

Tensiometer Model: Pro-Tester [T-0100/A or T-0100SE/A]
 Device Calibrated: S-Type load cell
 Range: 0 - 750 lbs. Tension
 Model No: M2405-750#
 Serial No: 9973
 Calibration Apparatus: Pro-Cal unit, model TC-0100/A

A/D Module Model No: T-029
 A/D Module Serial No: 1415029973
 Channel No: N/A

Dead Weight: Reference Cell:
 W1 2 R1 2
 W2 152 R2 152
 W3 302 R3 302

Indicator reading with no load: 0

Offset: -4.582875

Scale: 3.329140

Applied Force lbs.
2
52
102
152
202
252
302

Cell Response:
2
52
102
152
202
252
302

Deviation Error:
0.00
0.00
0.00
0.00
0.00
0.00
0.00

Total Deviation Error (%): 0.00%

Temperature at time of calibration: 73 degrees F

Excitation Voltage: 5 V DC

This calibration conforms to the standards set by ASTM E4 and is traceable to NIST standards

Note: A/D Module and load cell above have been systems calibrated and are considered a matched pair. In general, calibrated A/D Modules and load cells are not interchangeable.

Calibration Technician: Ryan Beck
 Signature:

Date: 04/23/19

T2



CALIBRATION CERTIFICATE

Tensiometer Model: Pro-Tester [T-0100/A or T-0100SE/A]
 Device Calibrated: S-Type load cell
 Range: 0 - 750 lbs. Tension
 Model No: M2405-750#
 Serial No: 9221
 Calibration Apparatus: Pro-Cal unit, model TC-0100/A

A/D Module Model No: T-029
 A/D Module Serial No: 5114009221
 Channel No: N/A

Dead Weight: Reference Cell:
 W1 2 R1 2
 W2 152 R2 152
 W3 302 R3 302

Indicator reading with no load: 0

Offset: -2.596186

Scale: 3.326096

Applied Force lbs.
2
52
102
152
202
252
302

Cell Response:
2
52
102
152
202
252
302

Deviation Error:
0.00
0.00
0.00
0.00
0.00
0.00
0.00

Total Deviation Error (%): 0.00%

Temperature at time of calibration: 73 degrees F

Excitation Voltage: 5 V DC

This calibration conforms to the standards set by ASTM E4 and is traceable to NIST standards

Note: A/D Module and load cell above have been systems calibrated and are considered a matched pair. In general, calibrated A/D Modules and load cells are not interchangeable.

Calibration Technician:

Ryan Beck

Date: 04/23/19

Signature:

T1806

Demtech Services, Inc.
Placerville, California, USA

CALIBRATION CERTIFICATE

Tensiometer Model:

Pro-Tester T-0100

Device Calibrated:

S-Type load cell
0 - 750 lbs. Tension

Calibration Apparatus:

Range:

Model No:

M2405-750#

Pro-Cal unit, model TC-0100/A

Serial No:

29917

A/D Module Model No:

T-029

A/D Module Serial No:

1415029917

Channel No:

N/A

Dead Weight:

W1

2

W2

152

W3

302

Reference Cell:

R1

2

R2

152

R3

302

Indicator reading with no load:

0

Offset:

-5.549562

Scale:

3.326038

Applied Force lbs.

Cell Response:

Deviation Error:

2
52
102
152
202
252
302

2
52
102
152
202
252
302

0.00
0.00
0.00
0.00
0.00
0.00
0.00

Total Deviation Error (%): 0.00%

Temperature at time of calibration:

73 degrees F

Excitation Voltage:

5

V DC

This calibration conforms to the standards set by ASTM E4 and is traceable to NIST standards

Note: A/D Module and load cell above have been systems calibrated and are considered a matched pair. In general, calibrated A/D Modules and load cells are not interchangeable.

Technician:

Ryan Beck

Date:

10/16/18

T1806

Demtech Services, Inc.
Placerville, California, USA

CALIBRATION CERTIFICATE

Tensiometer Model:

Pro-Tester T-0100

Device Calibrated:

S-Type load cell
0 - 750 lbs. Tension

Calibration Apparatus:

Range:

Model No:

M2405-750#

Pro-Cal unit, model TC-0100/A

Serial No:

75686

A/D Module Model No:

T-029

A/D Module Serial No:

3614075686

Channel No:

N/A

Dead Weight:

W1	2
W2	152
W3	302

Reference Cell:

R1	2
R2	152
R3	302

Indicator reading with no load:

0

Offset:

-3.366746

Scale:

3.317335

Applied Force lbs.

Cell Response:

Deviation Error:

2
52
102
152
202
252
302

2
52
102
152
202
252
302

0.00
0.00
0.00
0.00
0.00
0.00
0.00

Total Deviation Error (%):

0.00%

Temperature at time of calibration:

73 degrees F

Excitation Voltage:

5

V DC

This calibration conforms to the standards set by ASTM E4 and is traceable to NIST standards

Note: A/D Module and load cell above have been systems calibrated and are considered a matched pair. In general, calibrated A/D Modules and load cells are not interchangeable.

Ryan Beck

Date:

10/16/18

TENSIOMETER CERTIFICATIONS

T11

Demtech Services, Inc.
Placerville, California, USA

CALIBRATION CERTIFICATE

Tensiometer Model:

Pro-Tester T-0100

Device Calibrated:

S-Type load cell
0 - 750 lbs. Tension

Calibration Apparatus:

Range:

M2405-750#

Model No:

Pro-Cal unit, model TC-0100/A

Serial No:

51823

A/D Module Model No:

T-029

Dead Weight:

W1 2

Reference Cell:

R1 2

A/D Module Serial No:

4518051823

W2 152

R2 152

Channel No:

N/A

W3 302

R3 302

Indicator reading with no load:

0

Offset: 5.669116

Scale: 3.328865

Applied Force lbs.

Cell Response:

Deviation Error:

2
52
102
152
202
252
302

2
52
102
152
202
252
302

0.00
0.00
0.00
0.00
0.00
0.00
0.00

Total Deviation Error (%) 0.00%

Temperature at time of calibration: 73 degrees F

Excitation Voltage: 5. V DC

This calibration conforms to the standards set by ASTM E4 and is traceable to NIST standards

Note: A/D Module and load cell above have been systems calibrated and are considered a matched pair. In general, calibrated A/D Modules and load cells are not interchangeable.

MH

Date: 12/17/18

Matt Harrison

T11

Demtech Services, Inc.
Placerville, California, USA

CALIBRATION CERTIFICATE

Tensiometer Model: Pro-Tester T-0100

Device Calibrated: S-Type load cell
Range: 0 - 750 lbs. Tension

Calibration Apparatus:

Model No: M2405-750#

Pro-Cal unit, model TC-0100/A

Serial No: 51779

A/D Module Model No: T-029

Dead Weight:

Reference Cell:

A/D Module Serial No: 4518051779

W1	2
W2	152
W3	302

R1	2
R2	152
R3	302

Channel No: N/A

Indicator reading with no load: 0

Offset: 4.257595

Scale: 3:328143

Applied Force lbs.

Cell Response:

Deviation Error:

2
52
102
152
202
252
302

2
52
102
152
202
252
302

0.00
0.00
0.00
0.00
0.00
0.00
0.00

Total Deviation Error (%): 0.00%

Temperature at time of calibration: 73 degrees F

Excitation Voltage: 5 V DC

This calibration conforms to the standards set by ASTM E4 and is traceable to NIST standards

Note: A/D Module and load cell above have been systems calibrated and are considered a matched pair. In general, calibrated A/D Modules and load cells are not interchangeable.

MH

Date: 12/17/18

Matt Harrison

APPENDIX I

Fusion Seaming Logs

GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

☒ FUSION
☐ EXTRUSION

MACHINE # 1807

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF-2	1442	VG
TF-3	1504	VG

T/T
S/S

DESTRUCTIVE LENGTH CARRY-OVER FROM PREVIOUS LOG 0

DATE 4-10-19

SHEET NUMBER 1 of 1

	SEAM NUMBER	SEAM SECTION*		APPROX. START TIME	AMB. AIR TEMP.	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON-DESTRUCTIVE	
		START POINT	FINISH POINT					DIGITAL SET	INDICATOR						TEST DATE	MON.
								WEDGE OR BARREL NOZZLE	WEDGE OR BARREL NOZZLE							
1	P1 / P3	1A	Seals	1518	45°F	VG	600	860 -	860 -	26	26		AB		4-19	AB
2	P1 / P3	1A	NPS	1529	45°	VG	600	860 -	860 -	265	100/191	DF-1	AB		4-19	AB
3	P1 / P2	Seals	NPS	1603	45°	VG	600	860 -	860 -	196	387		AB		4-19	AB
4	/	-						-	-							
5	/	-						-	-							
6	/	-						-	-							
7	/	-						-	-							
8	/	-						-	-							
9	/	-						-	-							
10	/	-						-	-							
11	/	-						-	-							
12	/	-						-	-							
13	/	-						-	-							
14	/	-						-	-							
15	/	-						-	-							
16	/	-						-	-							
17	/	-						-	-							
18	/	-						-	-							
19	/	-						-	-							
20	/	-						-	-							

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS),
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM.

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY-OVER

** COLUMNS TO BE USED
 BY THE DATA REVIEWER ONLY

GOLDER FORM: G13-0699
 (January 2005)

REVIEWED BY: PS DATE: 9/5/19

GOLDER ASSOCIATES INC.

GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

☒ FUSION ☐ EXTRUSION

MACHINE # 85

PASSING TRIAL SEAMS		
NO.	TIME	TECH ID
TF-1	1410	UM
TF-4	1511	UM

T/T S/S

DESTRUCTIVE LENGTH CARRY-OVER FROM PREVIOUS LOG 0

DATE 4-10-19

SHEET NUMBER 101

	SEAM NUMBER	SEAM SECTION*		APPROX. START TIME	AMB. AIR TEMP.	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON-DESTRUCTIVE	
		START POINT	FINISH POINT					DIGITAL SET	INDICATOR						TEST DATE	MON.
								WEDGE OR BARREL NOZZLE	WEDGE OR BARREL NOZZLE							
1	P3 / P4	1B	-S	1530	45	UM	550	850-	850-	26	26		AB		4-19	AB
2	P3 / P4	1B	-IE	1544	45	UM	550	850-	850-	67	49/44	DF-3	AB		4-19	AB
3	/	-	-					-	-							
4	/	-	-					-	-							
5	/	-	-					-	-							
6	/	-	-					-	-							
7	/	-	-					-	-							
8	/	-	-					-	-							
9	/	-	-					-	-							
10	/	-	-					-	-							
11	/	-	-					-	-							
12	/	-	-					-	-							
13	/	-	-					-	-							
14	/	-	-					-	-							
15	/	-	-					-	-							
16	/	-	-					-	-							
17	/	-	-					-	-							
18	/	-	-					-	-							
19	/	-	-					-	-							
20	/	-	-					-	-							

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS),
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM.

** COLUMNS TO BE USED
 BY THE DATA REVIEWER ONLY

GOLDER FORM: G13-0699
 (January 2005)

REVIEWED BY: PS DATE: 9/5/19

GOLDER ASSOCIATES INC.

GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

☒ FUSION
☐ EXTRUSION

MACHINE # 81

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF-5	1508	H/M
TF-6	1513	H/M

S/S
T/T

DESTRUCTIVE LENGTH CARRY-OVER
 FROM PREVIOUS LOG 0

DATE 4-10-19

SHEET NUMBER 1 of 1

SEAM NUMBER	SEAM SECTION*		APPROX. START TIME	AMB. AIR TEMP.	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON-DESTRUCTIVE	
	START POINT	FINISH POINT					DIGITAL SET	INDICATOR						TEST DATE	MON.
							WEDGE OR BARREL NOZZLE	WEDGE OR BARREL NOZZLE							
1	P4	P5	Weld - EOS	1544	45	H/M	500	860 -	960 -	22	22	AB		4-19	AB
2	P2	P3	Weld - EOS	1552	45	H/M	500	860 -	960 -	22	44	AB		4-19	AB
3	P3	P4	IE - Need	1604	45	H/M	550	800 -	860 -	200	64/180	DF-2	AB	4-19	AB
4	P2	P4	Seal - Need	1628	45	H/M	550	860 -	860 -	120	300	AB		4-19	AB
5	P2	P5	Seal - Need	1643	45	H/M	550	860 -	860 -	76	376	AB		4-19	AB
6	/	-						-	-						
7	/	-						-	-						
8	/	-						-	-						
9	/	-						-	-						
10	/	-						-	-						
11	/	-						-	-						
12	/	-						-	-						
13	/	-						-	-						
14	/	-						-	-						
15	/	-						-	-						
16	/	-						-	-						
17	/	-						-	-						
18	/	-						-	-						
19	/	-						-	-						
20	/	-						-	-						

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS),
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM.

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY-OVER

440
 376

** COLUMNS TO BE USED
 BY THE DATA REVIEWER ONLY

REVIEWED BY: PS DATE: 9/5/19

GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

☒ FUSION
☐ EXTRUSION
 MACHINE # 85

PASSING TRIAL SEAMS		
NO.	TIME	TECH ID
TF-1	0853	UM
TF-2	0907	UM
TF-8	1325	UM
TF-9	1334	UM

S/S
T/T

DESTRUCTIVE LENGTH CARRY-OVER
 FROM PREVIOUS LOG 44

DATE 4-13-19

SHEET NUMBER 101

	SEAM NUMBER	SEAM SECTION*		APPROX. START TIME	AMB. AIR TEMP.	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	NON-DESTRUCTIVE	
		START POINT	FINISH POINT					DIGITAL SET	INDICATOR						TEST DATE	MON.
								WEDGE OR BARREL NOZZLE	WEDGE OR BARREL NOZZLE							
1	P4 1 PG	2I - Seos	0922	43°F	UM	550	850 -	850 -	26	70		AB		4-23	AB	
2	P4 1 PG	2I - Neos	0928		UM	550	-	-	390	452/8	DF-4	AB		4-23	AB	
3	P5 1 PG	Seos - Neos	1020		UM	550	-	-	79	87		AB		4-23	AB	
4	P8 1 PG	3D - Seos	1043		UM	550	-	-	26	113		AB		4-23	AB	
5	P8 1 PG	3D - Neos	1048		UM	550	-	-	321	434		AB		4-23	AB	
6	P8 1 P10	Seos - Neos	1130	V	UM	550	-	-	30	464		AB		4-23	AB	
7	P7 1 P10	Seos - Neos	1134	43	UM	550	V -	V -	118	475/107	DF-6	AB		4-23	AB	
8	P12 1 P13	EA - Seos	1418	44	UM	550	850 -	850 -	17	124		AB		4-23	AB	
9	P12 1 P13	EA - Neos	1427	V	UM	550	850 -	850 -	219	343		AB		4-23	AB	
10	P12 P14	Seos - Neos	1455	44	UM	550	850 -	850 -	272	470/145	DF-9	AB		4-23	AB	
11	/	-					-	-								
12	/	-					-	-								
13	/	-					-	-								
14	/	-					-	-								
15	/	-					-	-								
16	/	-					-	-								
17	/	-					-	-								
18	/	-					-	-								
19	/	-					-	-								
20	/	-					-	-								

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS),
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM.

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY-OVER

1498

145

** COLUMNS TO BE USED
 BY THE DATA REVIEWER ONLY

GOLDER FORM: G13-0699
 (January 2005)

REVIEWED BY: PS

DATE: 9/5/19

GOLDER ASSOCIATES INC.

GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

☒ FUSION
☐ EXTRUSION
 MACHINE # 81

PASSING TRIAL SEAMS		
NO.	TIME	TECH ID
TF-5	0958	HM
TF-10	1337	HM
TF-11	1333	HM

DESTRUCTIVE LENGTH CARRY-OVER
 FROM PREVIOUS LOG 376

DATE 4-13-19

SHEET NUMBER 1 of 1

SEAM NUMBER	SEAM SECTION* START POINT FINISH POINT		APPROX. START TIME	AMB. AIR TEMP.	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON-DESTRUCTIVE	
							DIGITAL SET	INDICATOR						TEST DATE	MON.
							WEDGE OR BARREL NOZZLE	WEDGE OR BARREL NOZZLE							
1	P7	P8	WPOS - EOS	1014	43	HM	450	860-	860-	22	398	AB		4.23	AB
2	P9	P10	WPOS - EOS	1051	43	HM	450	860-	860-	22	420	HM		4.23	AB
3	P13	P14	WPOS - WPOS	1443	43	HM	500	800-	860-	22	442	HM		4.23	AB
4	P15	P16	WPOS - PPOS	1527	43	HM	500	860-	860-	22	453/11	DF-11	HM	4.23	AB
5	P15	P17	4F - SEOS	1603	43	HM	550	860-	860-	17	28	HM		4.23	AB
6	P15	P17	4F - NEOS	1610	43	HM	550	860-	860-	38.5	405/8	DF-12	HM	4.23	AB
7	P16	P17	SEOS - NEOS	1625	43	HM	550	860-	860-	87	95	HM		4.23	AB
8	/	-						-	-						
9	/	-						-	-						
10	/	-						-	-						
11	/	-						-	-						
12	/	-						-	-						
13	/	-						-	-						
14	/	-						-	-						
15	/	-						-	-						
16	/	-						-	-						
17	/	-						-	-						
18	/	-						-	-						
19	/	-						-	-						
20	/	-						-	-						

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS),
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM.

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY-OVER

577
 95

** COLUMNS TO BE USED
 BY THE DATA REVIEWER ONLY

GOLDER FORM: G13-0699
 (January 2005)

REVIEWED BY: PS DATE: 9/5/19

GOLDER ASSOCIATES INC.

GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

☒ FUSION
☐ EXTRUSION
 MACHINE # 20

NO.	TIME	TECH ID
TF-3	0933	VG
TF-4	0951	VG
TF-6	1336	VG
TF-7	1326	VG

T/T
S/S

DESTRUCTIVE LENGTH CARRY-OVER
 FROM PREVIOUS LOG 0

DATE 4.13.19

SHEET NUMBER 101

SEAM NUMBER	SEAM SECTION*		APPROX. START TIME	AMB. AIR TEMP.	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON-DESTRUCTIVE	
	START POINT	FINISH POINT					DIGITAL SET	INDICATOR						TEST DATE	MON.
							WEDGE OR BARREL NOZZLE	WEDGE OR BARREL NOZZLE							
1	PG 1 P8	3A - Seos	0957	43	VG	590	810 -	810 -	26	26		AB		4.23	AB
2	PG 1 P8	3A - Neos	1002		VG		-	-	350	376		AB		4.23	AB
3	PG 1 P7	Seos - Neos	1040		VG		-	-	117	421/72	DF-5	AB		4.23	AB
4	PG 1 P11	3A - Seos	1117		VG		-	-	26	98		AB		4.23	AB
5	PG 1 P11	3A - Neos	1122		VG		-	-	302	420		AB		4.23	AB
6	P10 1 P11	Seos - Neos	1158	43	VG	590	810 -	810 -	147	470/97	DF-7	AB		4.23	AB
7	P11 1 P12	3Y - Seos	1346	44	VG	650	810 -	810 -	20	117		AB		4.23	AB
8	P11 1 P12	3Y - Neos	1351		VG		-	-	470	473/114	DF-8	AB		4.23	AB
9	P13 1 P15	Seos - Neos	1504		VG		-	-	220	334		AB		4.23	AB
10	P14 1 P15	Seos - Neos	1525		VG		-	-	185	470/49	DF-10	AB		4.23	AB
11	P14 1 P16	Seos - Neos	1546	44	VG	650	810 -	810 -	87	136		AB		4.23	AB
12	/	-					-	-							
13	/	-					-	-							
14	/	-					-	-							
15	/	-					-	-							
16	/	-					-	-							
17	/	-					-	-							
18	/	-					-	-							
19	/	-					-	-							
20	/	-					-	-							

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS),
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM.

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY-OVER

1970

136

** COLUMNS TO BE USED
 BY THE DATA REVIEWER ONLY

GOLDER FORM: G13-0699
 (January 2005)

REVIEWED BY: PS

DATE: 9/5/19

GOLDER ASSOCIATES INC.

GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

☒ FUSION ☐ EXTRUSION
 MACHINE # 1807
 PASSING TRIAL SEAMS
 NO. TIME TECH ID
 TF-7 1552 UM
 TF-8 1536 UM
 * Note M1807 was used on 4-10-19 by VG
 DATE 4-16-19
 DESTRUCTIVE LENGTH CARRY-OVER FROM PREVIOUS LOG 0
 SHEET NUMBER 1 of 1

SEAM NUMBER	SEAM SECTION*		APPROX. START TIME	AMB. AIR TEMP.	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON-DESTRUCTIVE	
	START POINT	FINISH POINT					DIGITAL SET	INDICATOR						TEST DATE	MON.
							WEDGE OR BARREL NOZZLE	WEDGE OR BARREL NOZZLE							
1	P24	P25	Weld - EOS	1607	570	UM	550	800 -	800 -	22	22	AB		4-19	AB
2	P23	P24	New Seam	1624	570	UM	600	850 -	850 -	95	117	AB		4-19	AB
3	P23	P25	New Seam	1635	570	UM	600	850 -	860 -	390	470/37	DF.18 AB		4-19	AB
4	P26	P27	New - EOS	1733	570	UM	550	800 -	800 -	22	59	AB		4-19	AB
5	/	-						-	-						
6	/	-						-	-						
7	/	-						-	-						
8	/	-						-	-						
9	/	-						-	-						
10	/	-						-	-						
11	/	-						-	-						
12	/	-						-	-						
13	/	-						-	-						
14	/	-						-	-						
15	/	-						-	-						
16	/	-						-	-						
17	/	-						-	-						
18	/	-						-	-						
19	/	-						-	-						
20	/	-						-	-						

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS),
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM.

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY-OVER

529
 59

** COLUMNS TO BE USED
 BY THE DATA REVIEWER ONLY

GOLDER FORM: G13-0699
 (January 2005)

353

REVIEWED BY: PS DATE: 9/5/19

GOLDER ASSOCIATES INC.

GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

☒ FUSION
☐ EXTRUSION

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF-2	1242	UM
TF-4	1250	UM

MACHINE # 85

DESTRUCTIVE LENGTH CARRY-OVER
 FROM PREVIOUS LOG 145

DATE 4-16-19

SHEET NUMBER 1 of 1

	SEAM NUMBER	SEAM SECTION*		APPROX. START TIME	AMB. AIR TEMP.	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON-DESTRUCTIVE	
		START POINT	FINISH POINT					DIGITAL SET	INDICATOR						TEST DATE	MON.
								WEDGE OR BARREL NOZZLE	WEDGE OR BARREL NOZZLE							
1	P1 / P18	Negs	-5M	1341	55	UM	500	230 -	230 -	140	270/15	DFB	AB		4-19	AB
2	/	-						-	-							
3	/	-						-	-							
4	/	-						-	-							
5	/	-						-	-							
6	/	-						-	-							
7	/	-						-	-							
8	/	-						-	-							
9	/	-						-	-							
10	/	-						-	-							
11	/	-						-	-							
12	/	-						-	-							
13	/	-						-	-							
14	/	-						-	-							
15	/	-						-	-							
16	/	-						-	-							
17	/	-						-	-							
18	/	-						-	-							
19	/	-						-	-							
20	/	-						-	-							

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS),
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM.

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY-OVER

140
 15

** COLUMNS TO BE USED
 BY THE DATA REVIEWER ONLY

GOLDER FORM: G13-0699
 (January 2005)

REVIEWED BY: PS DATE: 9/5/19

GOLDER ASSOCIATES INC.

GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

☒ FUSION
☐ EXTRUSION

MACHINE # 81

PASSING TRIAL SEAMS		
NO.	TIME	TECH ID
TF-3	1311	HM
TF-5	1315	HM

DESTRUCTIVE LENGTH CARRY-OVER FROM PREVIOUS LOG 95

DATE 4-16-19

SHEET NUMBER 1 of 1

SEAM NUMBER	SEAM SECTION*		APPROX. START TIME	AMB. AIR TEMP.	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON-DESTRUCTIVE	
	START POINT	FINISH POINT					DIGITAL SET	INDICATOR						TEST DATE	MON.
							WEDGE OR BARREL NOZZLE	WEDGE OR BARREL NOZZLE							
1	P19 / P20	Eos - N/A	1414	55°	HM	500	860 -	860 -	22	117		AB		4-19	AB
2	P1 / P18	SM - S03	1433	55°	HM	550	860 -	860 -	355	440/32	DF-15	AB		4-19	AB
3	P21 / P23	Noss - S03	1530	55°	HM	550	860 -	860 -	380	412		AB		4-19	AB
4	P22 / P23	Noss - S03	1600	55°	HM	550	860 -	860 -	108	480/40	DF-17	AB		4-19	AB
5	P24 / P27	Noss - S03	1730	57°	HM	550	860 -	860 -	95	135		AB		4-19	AB
6	P25 / P27	Noss - S03	1738	57°	HM	550	860 -	860 -	65	200		AB		4-19	AB
7	P25 / P26	Noss - S03	1744	57°	HM	550	860 -	860 -	328	480/48	DF-19	AB		4-19	AB
8	/	-					-	-							
9	/	-					-	-							
10	/	-					-	-							
11	/	-					-	-							
12	/	-					-	-							
13	/	-					-	-							
14	/	-					-	-							
15	/	-					-	-							
16	/	-					-	-							
17	/	-					-	-							
18	/	-					-	-							
19	/	-					-	-							
20	/	-					-	-							

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS),
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM.

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY-OVER

1353
 48

** COLUMNS TO BE USED
 BY THE DATA REVIEWER ONLY

GOLDER FORM: G13-0699
 (January 2005)

495 - 140 = 355

68

REVIEWED BY: PS

DATE: 9/5/19

GOLDER ASSOCIATES INC.

GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

PASSING TRIAL SEAMS

☒ FUSION
☐ EXTRUSION

NO.	TIME	TECH ID
TF-1	1258	VG
TF-6	1241	VG

MACHINE # 20

DESTRUCTIVE LENGTH CARRY-OVER FROM PREVIOUS LOG 136

DATE 4-16-19

SHEET NUMBER 1 of 1

SEAM NUMBER	SEAM SECTION* START POINT FINISH POINT		APPROX. START TIME	AMB. AIR TEMP.	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON-DESTRUCTIVE	
							DIGITAL SET	INDICATOR						TEST DATE	MON.
							WEDGE OR BARREL NOZZLE	WEDGE OR BARREL NOZZLE							
1	P18 / P19	Neos - Seos	1407	55°	VG	700	810 -	810 -	210	346		AB		4-19	AB
2	P18 / P20	Neos - Seos	1431	55°	VG	700	810 -	810 -	272	470/148	DF-14	AB		4-19	AB
3	P21 / P22	Neos - Eos	1505	55°	VG	600	810 -	810 -	22	170		AB		4-19	AB
4	P19 / P21	Neos - Seos	1517	55°	VG	700	810 -	810 -	210	380		AB		4-19	AB
5	P21 / P20	Neos - Seos	1540	55°	VG	700	810 -	810 -	165	480/165	DF-16	AB		4-19	AB
6	P20 / P22	Neos - Seos	1558	55°	VG	700	810 -	810 -	107	172		AB		4-19	AB
7	/	-					-	-							
8	/	-					-	-							
9	/	-					-	-							
10	/	-					-	-							
11	/	-					-	-							
12	/	-					-	-							
13	/	-					-	-							
14	/	-					-	-							
15	/	-					-	-							
16	/	-					-	-							
17	/	-					-	-							
18	/	-					-	-							
19	/	-					-	-							
20	/	-					-	-							

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS),
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM.

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY-OVER

986
 172

** COLUMNS TO BE USED
 BY THE DATA REVIEWER ONLY

GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

☒ FUSION
☐ EXTRUSION
 MACHINE # 1807

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF-5	9:45	UM
TF-6	10:08	UM

DESTRUCTIVE LENGTH CARRY-OVER
 FROM PREVIOUS LOG 59

DATE 4-17-19

SHEET NUMBER 1 of 1

SEAM NUMBER	SEAM SECTION*		APPROX. START TIME	AMB. AIR TEMP.	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON-DESTRUCTIVE	
	START POINT	FINISH POINT					DIGITAL SET	INDICATOR						TEST DATE	MON.
							WEDGE OR BARREL NOZZLE	WEDGE OR BARREL NOZZLE							
1	P33 / P34	Seam - New	11:17	45°	UM	500	800 -	800 -	343	377/25	DF-24	AB		4-25	AB
2	/	-					-	-							
3	/	-					-	-							
4	/	-					-	-							
5	/	-					-	-							
6	/	-					-	-							
7	/	-					-	-							
8	/	-					-	-							
9	/	-					-	-							
10	/	-					-	-							
11	/	-					-	-							
12	/	-					-	-							
13	/	-					-	-							
14	/	-					-	-							
15	/	-					-	-							
16	/	-					-	-							
17	/	-					-	-							
18	/	-					-	-							
19	/	-					-	-							
20	/	-					-	-							

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS),
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM.

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY-OVER

343
 25

** COLUMNS TO BE USED
 BY THE DATA REVIEWER ONLY

REVIEWED BY: TDS
 DATE: 9/5/19

GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

PASSING TRIAL SEAMS

☒ FUSION
☐ EXTRUSION
 MACHINE # 81

NO.	TIME	TECH ID
TF-3	8:28	HM
TF-4	8:33	HM
TF-7	1:30	HM
TF-9	1:46	HM

TF-10 1340 HM
 DESTRUCTIVE LENGTH CARRY-OVER FROM PREVIOUS LOG 48
 DATE 4-17-19
 SHEET NUMBER 1 of 1

SEAM NUMBER	SEAM SECTION* START POINT FINISH POINT		APPROX. START TIME	AMB. AIR TEMP.	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON-DESTRUCTIVE	
							DIGITAL SET	INDICATOR						TEST DATE	MON.
							WEDGE OR BARREL NOZZLE	WEDGE OR BARREL NOZZLE							
1	P28 / P30	Neos - Seos	0850	43°	HM	500	800 -	800 -	435	420/63	DF-21	AB		4-19	AB
2	P28 / P29	Neos - Seos	0945	43°	HM	500	800 -	800 -	50	113		AB		4-19	AB
3	P31 / P32	Neos - Eeos	1029	43°	HM	450	800 -	800 -	22	135		AB		4-23	AB
4	P32 / P33	Seos - Neos	1045	44°	HM	500	800 -	800 -	341	476		AB		4-23	AB
5	P31 / P33	Seos - Neos	1128	45°	HM	500	800 -	800 -	24	484/16	DF-23	AB		4-25	AB
6	P37 / P38	Seos - Neos	1430	45°	HM	500	800 -	800 -	90	106		AB		4-25	AB
7	P31 / P37	Seos - Neos	1450	45°	HM	500	800 -	800 -	25	131		AB		4-25	AB
8	P31 / P36	Seos - Neos	1454	45°	HM	500	800 -	800 -	37	168		AB		4-25	AB
9	P31 / P35	Seos - Neos	1459	45°	HM	500	800 -	800 -	37	205		AB		4-25	AB
10	P31 / P39	Seos - Neos	1503	45	HM	500	800 -	800 -	6	211		AB		4-25	AB
11	/	-					-	-							
12	/	-					-	-							
13	/	-					-	-							
14	/	-					-	-							
15	/	-					-	-							
16	/	-					-	-							
17	/	-					-	-							
18	/	-					-	-							
19	/	-					-	-							
20	/	-					-	-							

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS),
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM.

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY-OVER

1067
 211

** COLUMNS TO BE USED
 BY THE DATA REVIEWER ONLY

REVIEWED BY: POS

DATE: 9/5/19

GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

☒ FUSION ☐ EXTRUSION
 MACHINE # 20

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF-1	806	VG
TF-2	800	VG
TF-8	1339	VG
TF-11	1333	VG

No. TF-12 Time 1346 Tech ID VG

DESTRUCTIVE LENGTH CARRY-OVER FROM PREVIOUS LOG 172

DATE 4-17-19 SHEET NUMBER 101

	SEAM NUMBER	SEAM SECTION*		APPROX. START TIME	AMB. AIR TEMP.	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON-DESTRUCTIVE	
		START POINT	FINISH POINT					DIGITAL SET	INDICATOR						TEST DATE	MON.
								WEDGE OR BARREL NOZZLE	WEDGE OR BARREL NOZZLE							
1	P27 / P28	Nees	-Sees	0824	43°	VG		-	-	160	332		AB		4-19	AB
2	P26 / P28	Nees	-Sees	0842	43°	VG	670	810	-	325	470/187	DF-20	AB		4-23	AB
3	P29 / P30	Eees	-Wees	0920	43°	VG	600	810	-	22	209		AB		4-19	AB
4	P17 / P31	Sees	-Nees	1001	43°	VG		-	-	135	344		AB		4-23	AB
5	P17 / P32	Sees	-Nees	1032	44°	VG	700	810	-	341	470/215	DF-22	AB		4-23	AB
6	P36 / P37	Sees	-Nees	1420	45°	VG	700	810	-	72	287		AB		4-25	AB
7	P35 / P36	Sees	-Nees	1436	45°	VG	700	810	-	41	328		AB		4-25	AB
8	P35 / P39	Sees	-Nees	1444	45°	VG	700	810	-	7	335		AB		4-25	AB
9	P34 / P38	Wees	-Eees	1453	45°	VG	600	810	-	4	339		AB	CAPON	4-26	AB
10	P33 / P38	Wees	-Eees	1454	45°	VG	600	810	-	19	358		AB		4-25	AB
11	P33 / P37	Wees	-Eees	1456	45	VG	600	810	-	6	364		AB		4-25	AB
12	/	-	-					-	-							
13	/	-	-					-	-							
14	/	-	-					-	-							
15	/	-	-					-	-							
16	/	-	-					-	-							
17	/	-	-					-	-							
18	/	-	-					-	-							
19	/	-	-					-	-							
20	/	-	-					-	-							

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS),
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM.

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY-OVER

1132
 364

** COLUMNS TO BE USED
 BY THE DATA REVIEWER ONLY

GOLDER FORM: G13-0699
 (January 2005)

REVIEWED BY: PS DATE: 9/5/19

GOLDER ASSOCIATES INC.

GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

☒ FUSION ☐ EXTRUSION

MACHINE # 1807 S/S T/T

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF-1	8:10	UM
TF-2	8:33	UM
TF-10	1:32	UM
TF-13	1:30	UM

S/S T/T TF-15 1824 UM T/T TF-16 1826 UM S/S

DESTRUCTIVE LENGTH CARRY-OVER FROM PREVIOUS LOG 25

DATE 4-22-19

SHEET NUMBER 1 of 3

SEAM NUMBER	SEAM SECTION* START POINT	FINISH POINT	APPROX. START TIME	AMB. AIR TEMP.	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON-DESTRUCTIVE	
							DIGITAL SET	INDICATOR						TEST DATE	MON.
							WEDGE OR BARREL NOZZLE	WEDGE OR BARREL NOZZLE							
1	P38/P40	SEOS - NEWS	8:55	60°	VM	500	800 -	800 -	90	115		AM	CAP ON	4-26	AB
2	P42/P43	SEOS - NEWS	9:20	64°	VM	500	800 -	800 -	90	205		AM		4-25	AB
3	P47/P48	SEOS - NEWS	9:52	64°	VM	300	800 -	800 -	90	295		AM		4-26	AB
4	P48/P49	SEOS - NEWS	10:24	64°	VM	500	800 -	800 -	90	385		AB		4-26	AB
5	P49/P50	SEOS - NEWS	10:58	65°	VM	500	800 -	800 -	90	390/85	DF 27	AB		4-27	AB
6	P55/P56	NEWS - EOS	11:26	67°	VM	450	800 -	800 -	22	107		AB		4-25	AB
7	P44/P56	NEWS - EOS	11:50	67°	VM	450	800 -	800 -	22	129		AB		4-25	AB
8	P43/P56	NEWS - EOS	11:56	67°	VM	450	800 -	800 -	12	141		AB		4-25	AB
9	P43/P54	NEWS - EOS	11:58	67°	VM	450	800 -	800 -	16	151		AB		4-25	AB
10	P42/P54	NEWS - EOS	12:00	67°	VM	450	800 -	800 -	22	173		AB		4-25	AB
11	P41/P54	NEWS - EOS	12:02	67°	VM	450	800 -	800 -	2	175		AB	CAP ON	4-26	AB
12	P41/P34	NEWS - EOS	12:08	67°	VM	450	800 -	800 -	22	197		AB		4-25	AB
13	P40/P34	NEWS - EOS	12:05	67°	VM	450	800 -	800 -	16	213		AB		4-25	AB
14	P55/P59	SEOS - NEWS	14:03	75	VM	550	800 -	800 -	187	400		AM		4-26	AB
15	P55/P57	SEOS - NEWS	14:27	75	VM	550	800 -	800 -	76	470/6	DF 30	AM		4-25	AB
16	P56/P57	SEOS - NEWS	14:37	75	VM	550	800 -	800 -	92	15		AM		4-25	AB
17	P62/P63	NEWS - EOS	14:47	73	VM	500	800 -	800 -	22	37		AM		5-1	AB
18	P63/P64	NEWS - EOS	14:58	73	VM	500	800 -	800 -	22	59		AM		5-1	AB
19	P60/P64	SEOS - NEWS	15:10	73	VM	550	800 -	800 -	90	149		AM		5-1	AB
20	P60/P63	SEOS - NEWS	15:22	70	VM	550	800 -	800 -	64	213		AM		5-1	AB
* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM.									DAILY TOTAL 1048				** COLUMNS TO BE USED BY THE DATA REVIEWER ONLY		
DESTRUCTIVE LENGTH CARRY-OVER											213				

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS),
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM.

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY-OVER

** COLUMNS TO BE USED
 BY THE DATA REVIEWER ONLY

GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

☒ FUSION ☐ EXTRUSION
 MACHINE # 1807

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF-1	8:10	UM
TF-2	8:33	UM
TF-10	13:27	UM
TF-13	13:30	UM

TF-15 1824 UM
 TF-16 1826 UM

DESTRUCTIVE LENGTH CARRY-OVER FROM PREVIOUS LOG 213

DATE 4.22.19

SHEET NUMBER 2 of 3

SEAM NUMBER	SEAM SECTION*		APPROX. START TIME	AMB. AIR TEMP.	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON-DESTRUCTIVE	
	START POINT	FINISH POINT					DIGITAL SET	INDICATOR						TEST DATE	MON.
							WEDGE OR BARREL NOZZLE	WEDGE OR BARREL NOZZLE							
1	P61 / P62	SEOS - NEOS	1528	70	UM	550	800 -	800 -	39	252		AM		4.30	AB
2	P51 / P62	WEOS - FEOS	1605	70	UM	500	800 -	800 -	4	256		AM	CAPON	4.30	AB
3	P50 / P62	-	1605	70	UM	500	800 -	800 -	22	278		AM		4.30	AB
4	P49 / P62	-	1610	70	UM	500	800 -	800 -	8	286		AM		4.30	AB
5	P49 / P61	-	1611	70	UM	500	800 -	800 -	14	300		AM		4.26	AB
6	P48 / P61	-	1612	70	UM	500	800 -	800 -	29	320		AM		4.26	AB
7	P48 / P58	-	1614	70	UM	500	800 -	800 -	30	322		AM	CAPON	4.26	AB
8	P47 / P58	-	1616	70	UM	500	800 -	800 -	22	344		AM		4.26	AB
9	P46 / P58	-	1618	70	UM	500	800 -	800 -	11	355		AM		4.26	AB
10	P46 / P57	-	1620	70	UM	500	800 -	800 -	11	366		AM		4.26	AB
11	P45 / P57	WEOS - FEOS	1621	70	UM	500	800 -	800 -	22	388		AM		4.25	AB
12	P74 / P75	SEOS - NEOS	1739	70	UM	550	800 -	800 -	15	470/33	DF-33	AM		4.30	AB
13	P79 / P80	SEOS - NEOS	1805	70	UM	550	800 -	800 -	105	138		AM		5-1	AB
14	P78 / P80	SEOS - NEOS	1818	70	UM	550	800 -	800 -	14	152		AM		4.30	AB
15	P67 / P80	WEOS - FEOS	1832	70	UM	500	800 -	800 -	15	167		AM		4.30	AB
16	P66 / P80	WEOS - FEOS	1834	70	UM	500	800 -	800 -	17	184		AM		4.30	AB
17	P66 / P78	WEOS - FEOS	1837	70	UM	500	800 -	800 -	6	190		AM	CAPON	4.30	AB
18	P53 / P78	WEOS - FEOS	1837	70	UM	500	800 -	800 -	22	212		AM		4.30	AB
19	P52 / P78	WEOS - FEOS	1840	70	UM	500	800 -	800 -	6	218		AM		4.30	AB
20	P52 / P65	WEOS - FEOS	1841	70	UM	500	800 -	800 -	16	234		AM		4.30	AB

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS),
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM.

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY-OVER

** COLUMNS TO BE USED
 BY THE DATA REVIEWER ONLY

GOLDER FORM: G13-0699
 (January 2005)

REVIEWED BY: PS DATE: 9/5/19

GOLDER ASSOCIATES INC.

GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

☒ FUSION ☐ EXTRUSION
 MACHINE # 1807

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF-1	810	UM
TF-2	833	UM
TF-10	1327	UM
TF-13	1330	UM

TF-15 1824 UM
 TF-16 1826 UM

DESTRUCTIVE LENGTH CARRY-OVER FROM PREVIOUS LOG 234

DATE 4.22.19
 SHEET NUMBER 30AS

	SEAM NUMBER	SEAM SECTION*		APPROX. START TIME	AMB. AIR TEMP.	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON-DESTRUCTIVE		
		START POINT	FINISH POINT					DIGITAL SET	INDICATOR						TEST DATE	MON.	
1	P51 / P65	Wes - Ecos	1843	78	UM	500	800	-	800	-	20	254	AB		4.36	AB	
2	P67 / P73	Ecos - Wes	1906	78	UM			-		-	8	262	AB		4.30	AB	
3	P68 / P73	Ecos - Wes	1907	78	UM			-		-	18	280	AB		4.30	AB	
4	P68 / P74	Ecos - Wes	1909	78	UM			-		-	7	287	AB		4.30	AB	
5	P69 / P74	Ecos - Wes	1910	78	UM			-		-	19	306	AB		4.30	AB	
6	P75 / P69	Ecos - Wes	1911	78	UM			-		-	8	314	AB		4.30	AB	
7	P70 / P75	Ecos - Wes	1914	78	UM			-		-	18	332	AB		4.30	AB	
8	P70 / P77	Ecos - Wes	1916	78	UM			-		-	14	346	AB		4.30	AB	
9	P72 / P77	Ecos - Wes	1918	78	UM		500	800	-	800	-	40	386	AB		4.30	AB
10	/	-						-		-							
11	/	-						-		-							
12	/	-						-		-							
13	/	-						-		-							
14	/	-						-		-							
15	/	-						-		-							
16	/	-						-		-							
17	/	-						-		-							
18	/	-						-		-							
19	/	-						-		-							
20	/	-						-		-							

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS),
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM.

DAILY TOTAL 1691
 DESTRUCTIVE LENGTH CARRY-OVER 386

** COLUMNS TO BE USED
 BY THE DATA REVIEWER ONLY

GOLDER FORM: G13-0699
 (January 2005)

REVIEWED BY: PS DATE: 9/5/19

GOLDER ASSOCIATES INC.

GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

☒ FUSION
☐ EXTRUSION
 MACHINE # 81

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF-3	833	H/M
TF-4	837	H/M
TF-5	840	H/M
TF-8	1323	H/M

TF-9 1329 H/M

DESTRUCTIVE LENGTH CARRY-OVER
 FROM PREVIOUS LOG 211

DATE 4-22-19

SHEET NUMBER 121

	SEAM NUMBER	SEAM SECTION*		APPROX. START TIME	AMB. AIR TEMP.	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON-DESTRUCTIVE	
		START POINT	FINISH POINT					DIGITAL SET	INDICATOR						TEST DATE	MON.
								WEDGE OR BARREL NOZZLE	WEDGE OR BARREL NOZZLE							
1	P40 / P41	Seas	- Nees	918	570	H/M	550	750 -	750 -	90	301		AB	SIT	4-25	AB
2	P41 / P42	Seas	- Nees	936	570	H/M	600	750 -	750 -	90	391		AB	SIS	4-25	AB
3	P43 / P44	Seas	- Nees	1002	580	H/M	600	750 -	750 -	90	481		AB		4-25	AB
4	P50 / P51	Seas	- Nees	1030	640	H/M	600	750 -	750 -	90	491/80	DF-26	AB		4-27	AB
5	P51 / P52	Seas	- Nees	1050	640	H/M	600	750 -	750 -	90	170		AB		4-30	AB
6	P54 / P55	Seas	- Nees	1125	650	H/M	600	750 -	750 -	266	436		AB		4-25	AB
7	P54 / P56	Seas	- Nees	1153	670	H/M	600	750 -	750 -	33	469		AB		4-25	AB
8	P57 / P59	Nees	- Fees	1414	750	H/M	500	750 -	750 -	22	480/11	DF-29	AB		4-26	AB
9	P58 / P60	Nees	- Fees	1430	750	H/M	500	750 -	750 -	22	33		AB		4-26	AB
10	P60 / P61	Seas	- Nees	1448	750	H/M	600	700 -	700 -	200	233		AB		4-26	AB
11	P58 / P61	Seas	- Nees	1507	750	H/M	600	700 -	700 -	25	258		AB		4-26	AB
12	P53 / P66	Seas	- Nees	1547	750	H/M	600	700 -	700 -	96	354		AB		4-30	AB
13	P67 / P68	Seas	- Nees	1607	750	H/M	600	700 -	700 -	94	448		AB		4-30	AB
14	P69 / P70	Seas	- Nees	1632	750	H/M	600	700 -	700 -	73	470/51	DF-32	AB		4-30	AB
15	P78 / P79	Nees	- Fees	1756	78	H/M	500	750 -	750 -	22	73		AB		5-1	AB
16	P65 / P79	QN	- Nees	1805	78	H/M	600	700 -	700 -	74	147		AB		5-1	AB
17	P65 / P78	Seas	- Nees	1813	78	H/M	600	700 -	700 -	39	186		AB		4-30	AB
18	P73 / P80	Seas	- Nees	1822	78	H/M	600	700 -	700 -	83	269		AB		4-30	AB
19	/	-	-					-	-							
20	/	-	-					-	-							

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS),
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM.

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY-OVER

1499
 269

** COLUMNS TO BE USED
 BY THE DATA REVIEWER ONLY

REVIEWED BY: PS

DATE: 9/5/19

GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

PASSING TRIAL SEAMS

☒ FUSION
☐ EXTRUSION
 MACHINE # 20

NO.	TIME	TECH ID
TF-6	845	VG
TF-7	916	VG
TF-11	1336	VG
TF-12	1330	VG

DATE 4-22-19
 DESTRUCTIVE LENGTH CARRY-OVER FROM PREVIOUS LOG 364
 SHEET NUMBER 102

	SEAM NUMBER	SEAM SECTION*		APPROX. START TIME	AMB. AIR TEMP.	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	**	
		START POINT	FINISH POINT					DIGITAL SET	INDICATOR						NON-DESTRUCTIVE	
															WEDGE OR BARREL NOZZLE	WEDGE OR BARREL NOZZLE
1	P44 / P45	SEAS - NEAS		925	57	VG	650	730 -	730 -	90	454		AB		4.25	AB
2	P45 / P46	SEAS - NEAS		945	57	VG	650	730 -	730 -	90	459/85	DF-25	AB		4.25	AB
3	P46 / P47	SEAS - NEAS		1004	59	VG	650	730 -	730 -	90	175		AB		4.26	AB
4	P52 / P53	SEAS - NEAS		1029	63°	VG	650	730 -	730 -	90	265		AB		4.30	AB
5	P34 / P54	SEAS - NEAS		1121	65°	VG	650	730 -	730 -	313	470/108	DF-28	AB		4.25	AB
6	P59 / P60	SEAS - NEAS		1436	75°	VG	650	730 -	730 -	188	296		AB		4.26	AB
7	P57 / P60	SEAS - NEAS		1459	75°	VG	650	730 -	730 -	12	308		AB		4.26	AB
8	P57 / P58	SEAS - NEAS		1500	75°	VG	650	730 -	730 -	48	356		AB		4.26	AB
9	P64 / P65	SEAS - NEAS		1515	78°	VG	650	730 -	730 -	93	449		AB		5.1	AB
10	P63 / P65	SEAS - NEAS		1530	78°	VG	650	730 -	730 -	58	470/37	DF-31	AB		4.26	AB
11	P62 / P65	SEAS - NEAS		1537	78°	VG	650	730 -	730 -	14	51		AB		4.30	AB
12	P66 / P67	SEAS - NEAS		1550	78	VG	650	730 -	730 -	96	147		AB		4.30	AB
13	P68 / P69	SEAS - NEAS		1607	78	VG	650	730 -	730 -	87	234		AB		4.30	AB
14	P71 / P72	SEAS - NEAS		1637	78	VG	650	730 -	730 -	20	254		AB		4.30	AB
15	P70 / P72	SEAS - NEAS		1655	78	VG	570	730 -	730 -	32	286		AB		4.30	AB
16	P70 / P71	SEAS - NEAS		1700	78	VG	650	730 -	730 -	18	304		AB		4.30	AB
17	P73 / P74	SEAS - NEAS		1727	78	VG	650	730 -	730 -	76	380		AB		4.30	AB
18	P76 / P77	SEAS - NEAS		1748	78	VG	570	730 -	730 -	22	402		AB		4.26	AB
19	P75 / P76	SEAS - NEAS		1811	78	VG	570	730 -	730 -	32	434		AB		4.30	AB
20	P75 / P77	SEAS - NEAS		1818	78	VG	570	730 -	730 -	22	456		AB		4.30	AB

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS),
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM.

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY-OVER

** COLUMNS TO BE USED
 BY THE DATA REVIEWER ONLY

GOLDER FORM: G13-0699
 (January 2005)

REVIEWED BY: PDS

DATE: 9/5/19

GOLDER ASSOCIATES INC.

GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

☒ FUSION
☐ EXTRUSION
 MACHINE # 20

PASSING TRIAL SEAMS		
NO.	TIME	TECH ID
TF-6	845	VG
TF-7	916	VG
TF-11	1336	VG
TF-12	1330	VG

TF-14 1332 VG
 DESTRUCTIVE LENGTH CARRY-OVER
 FROM PREVIOUS LOG 456

DATE 4-22-19

SHEET NUMBER 20A2

SEAM NUMBER	SEAM SECTION* START POINT FINISH POINT		APPROX. START TIME	AMB. AIR TEMP.	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON-DESTRUCTIVE	
							DIGITAL SET	INDICATOR						TEST DATE	MON.
							WEDGE OR BARREL NOZZLE	WEDGE OR BARREL NOZZLE							
1	P 76	P 81	Near - Seed	1828	78	VG	570	730 -	730 -	20	476			4-26	AB
2	P 77	P 81	Eos - Near	1830	78	VG	570	730 -	730 -	15	483/8	DF-34		4-26	AB
3	/	-						-	-						
4	/	-						-	-						
5	/	-						-	-						
6	/	-						-	-						
7	/	-						-	-						
8	/	-						-	-						
9	/	-						-	-						
10	/	-						-	-						
11	/	-						-	-						
12	/	-						-	-						
13	/	-						-	-						
14	/	-						-	-						
15	/	-						-	-						
16	/	-						-	-						
17	/	-						-	-						
18	/	-						-	-						
19	/	-						-	-						
20	/	-						-	-						

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS),
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM.

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY-OVER

1526
 8

** COLUMNS TO BE USED
 BY THE DATA REVIEWER ONLY

GOLDER FORM: G13-0699
 (January 2005)

REVIEWED BY: PS DATE: 9/5/19

GOLDER ASSOCIATES INC.

GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

☒ FUSION
☐ EXTRUSION
 MACHINE # 1807

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF-3	903	UM
TF-4	843	UM
TF-13	1359	UM
TF-14	1403	UM

DESTRUCTIVE LENGTH CARRY-OVER
 FROM PREVIOUS LOG 386

DATE 4-24-19

SHEET NUMBER 1 of 1

SEAM NUMBER	SEAM SECTION* START FINISH POINT POINT	APPROX. START TIME	AMB. AIR TEMP.	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON-DESTRUCTIVE	
						DIGITAL SET	INDICATOR						TEST DATE	MON.
						WEDGE OR BARREL NOZZLE	WEDGE OR BARREL NOZZLE							
1	P821/P84	NEOS - SEOS	944	47	UM	550	800 -	800 -	277	470.193	DF-36	AM	4.27	AB
2	P84/P84	NEOS - SEOS	1018	47	UM	550	800 -	800 -	213	400		AM	5.3	AB
3	P861/P87	NEOS - EEOS	1058	54	UM	500	800 -	800 -	22	428		AM	5.3	AB
4	P881/P90	NEOS - EEOS	1123	54	UM	500	800 -	800 -	22	439.11	DF-39	AM	4.27	AB
5	P88/P90	NEOS - SEOS	1131	54	UM	550	800 -	800 -	90	101		AM	5.3	AB
6	P90/P91	NEOS - SEOS	1154	57	UM	550	800 -	800 -	90	191		AM	5.3	AB
7	P881/P91	NEOS - SEOS	1205	57	UM	550	800 -	800 -	406	470.07	DF-41	AM	5.3	AB
8	P881/P89	NEOS - SEOS	1242	60	UM	550	800 -	800 -	54	181		AM	5.3	AB
9	P90/P98	EEOS - NEOS	1457	64	UM	600	800 -	800 -	110	291		AM	5.3	AB
10	P101/P102	EEOS - NEOS	1525	60	UM	600	800 -	800 -	110	401		AM	5.3	AB
11	P103/P104	EPDS - NEOS	1552	54	UM	600	800 -	800 -	109	470.40	DF-44	AM	4.27	AB
12	P104/P105	EEOS - NEOS	1620	52	UM	600	800 -	800 -	110	150		AM	5.3	AB
13	P107/P108	EEOS - NEOS	1658	52	UM	600	800 -	800 -	110	260		AB	5.3	AB
14	P109/P110	EEOS - NEOS	1723	52	UM	600	800 -	800 -	110	370		AB	5.3	AB
15	/	-					-	-						
16	/	-					-	-						
17	/	-					-	-						
18	/	-					-	-						
19	/	-					-	-						
20	/	-					-	-						

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS),
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM.

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY-OVER

1833
 370

** COLUMNS TO BE USED
 BY THE DATA REVIEWER ONLY

REVIEWED BY: TDS DATE: 9/5/19

GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

☒ FUSION
☐ EXTRUSION
 MACHINE # 81

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF-1	851	HM
TF-2	854	HM
TF-3	1330	HM
TF-4	1332	HM

DATE 4-24-19

DESTRUCTIVE LENGTH CARRY-OVER FROM PREVIOUS LOG 269

SHEET NUMBER 1022

	SEAM NUMBER	SEAM SECTION*		APPROX. START TIME	AMB. AIR TEMP.	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON-DESTRUCTIVE	
		START POINT	FINISH POINT					DIGITAL SET	INDICATOR						TEST DATE	MON.
								WEDGE OR BARREL NOZZLE	WEDGE OR BARREL NOZZLE							
1	P82 / P83	Eos - Wos	922	47	+M	600	750 -	750 -	22	291		AM		5-3	AB	
2	P30 / P82	Nos - Sps	936		+M		-	-	277	470/98	DF-35			4-27		
3	P30 / P83	Nos - Sps	1004		+M		-	-	44	142				5-3		
4	P29 / P83	Nos - Sps	1024	47	+M		-	-	171	313				5-3		
5	P85 / P86	Nos - Sps	1051	54	+M		-	-	220	470/63	DF-38			4-27		
6	P85 / P87	Nos - Sps	1114	54	+M		-	-	262	325				5-3		
7	P91 / P92	Nos - Sps	1153	57	+M		-	-	210	470/65	DF-40			4-27		
8	P92 / P93	Nos - Sps	1354	60	+M		-	-	96	161				5-3		
9	P94 / P95	Nos - Sps	1427	63	+M		-	-	56	217				5-3		
10	P95 / P99	Sps - Nos	1453	64	+M	600	750 -	750 -	40	257				5-3		
11	P99 / P100	Nos - Sps	1505	64	+M	550	700 -	700 -	10	267				5-3		
12	P97 / P100	Wos - Eos	1514	64	+M	500	700 -	700 -	5	272				5-3		
13	P97 / P99	Wos - Eos	1515	64	+M		-	-	27	299				5-3		
14	P95 / P97	Wos - Eos	1518	64	+M		-	-	24	323				5-3		
15	P96 / P95	Wos - Eos	1523	60	+M		-	-	3	326			CAP ON	5-3		
16	P94 / P96	Wos - Eos	1524	60	+M		-	-	31	357				5-3		
17	P93 / P96	Wos - Eos	1527	60	+M	500	700 -	700 -	7	364				5-3		
18	P93 / P98	Wos - Eos	1530	64	+M	550	700 -	700 -	14	378				5-3		
19	P92 / P98	Nos - Sps	1600	64	+M	550	700 -	700 -	21	399				5-3		
20	P92 / P101	Nos - Sps	1603	64	+M	550	700 -	700 -	22	421		AM		5-3	AB	

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM.

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY-OVER

** COLUMNS TO BE USED
 BY THE DATA REVIEWER ONLY

GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.



FUSION



EXTRUSION

MACHINE # 81

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF-1	851	HM
TF-2	854	HM
TF-7	1330	HM
TF-9	1332	HM

TF-11 1328 HM

DESTRUCTIVE LENGTH CARRY-OVER
 FROM PREVIOUS LOG 421

DATE 4-24-19

SHEET NUMBER 2012

	SEAM NUMBER	SEAM SECTION*		APPROX. START TIME	AMB. AIR TEMP.	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON-DESTRUCTIVE	
		START POINT	FINISH POINT					DIGITAL SET	INDICATOR						TEST DATE	MON.
								WEDGE OR BARREL NOZZLE	WEDGE OR BARREL NOZZLE							
1	P92 / P102	N102	-S202	1606	64	HM	550	700 -	700 -	22	443		AM		5.3	AB
2	P92 / P103	N103	-S203	1609	64	HM	550	700 -	700 -	22	465		AM		5.3	AB
3	P92 / P104	N104	-S204	1611	64	HM	550	700 -	700 -	18	475/8	DF-43	AM		5.3	
4	P106 / P107	E206	-W207	1630	64	HM	600	700 -	700 -	110	118		AB		5.3	
5	P108 / P109	E208	-W209	1702	64	HM	600	700 -	700 -	110	228		AB		5.3	
6	P110 / P111	E210	-W211	1730	64	HM	600	700 -	700 -	110	338		AB		5.3	
7	P104 / P112	N104	-S212	1755	64	HM	550	700 -	700 -	4	342		AB		5.3	
8	P105 / P112	N105	-S212	1756		HM		-	-	22	364		AB		5.3	
9	P106 / P112	N106	-S212	1758		HM		-	-	22	386		AB		5.3	
10	P107 / P112	N107	-S212	1801		HM		-	-	22	408		AB		5.3	
11	P108 / P112	N108	-S212	1804		HM		-	-	22	430		AB		5.3	
12	P109 / P112	N109	-S212	1807		HM		-	-	22	452		AB		5.3	
13	P110 / P112	N110	-S212	1809		HM		-	-	22	465/11	DF-46	AB		4.27	
14	P111 / P112	N111	-S212	1812	64	HM	550	700 -	700 -	5	16		AB	CAPON	5.3	AB
15	/	-	-					-	-							
16	/	-	-					-	-							
17	/	-	-					-	-							
18	/	-	-					-	-							
19	/	-	-					-	-							
20	/	-	-					-	-							

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS),
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM.

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY-OVER

2095
 16

** COLUMNS TO BE USED
 BY THE DATA REVIEWER ONLY

GOLDER FORM: G13-0699
 (January 2005)

REVIEWED BY: PS

DATE: 9/5/19

GOLDER ASSOCIATES INC.

GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

☒ FUSION
☐ EXTRUSION
 MACHINE # 20

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF-5	909	VG
TF-6	915	VG
TF-8	1327	VG
TF-10	1332	

TF-12 1328 VG

DESTRUCTIVE LENGTH CARRY-OVER
 FROM PREVIOUS LOG 8

DATE 4-24-19

SHEET NUMBER 1 of 1

	SEAM NUMBER	SEAM SECTION*		APPROX. START TIME	AMB. AIR TEMP.	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON-DESTRUCTIVE	
		START POINT	FINISH POINT					DIGITAL SET	INDICATOR						TEST DATE	MON.
								WEDGE OR BARREL NOZZLE	WEDGE OR BARREL NOZZLE							
1	P84/P85	NEOS - SEOS		1000	54°	VG	680	730 -	730 -	490	448/50	DF-37	AB		4-26	AB
2	P86/P88	NEOS - SEOS		1103	54°	VG	680	730 -	730 -	132	182		AB		5-3	AB
3	P87/P88	NEOS - SEOS		1120	54°	VG	680	730 -	730 -	261	388/55	DF-42	AB		4-26	AB
4	P89/P91	FEOS - WEOS		1158	57°	VG	600	730 -	730 -	22	77		AB		5-3	AB
5	P93/P94	NEOS - SEOS		1353	63°	VG	680	730 -	730 -	85	162		AB		5-3	AB
6	P96/P97	FEOS - WEOS		1437	64°	VG	680	730 -	730 -	61	223		AB		5-3	AB
7	P98/P101	FEOS - WEOS		1514	66°	VG	680	730 -	730 -	110	333		AB		5-3	AB
8	P102/P103	FEOS - WEOS		1549	67°	VG	650	730 -	730 -	110	443		AB		5-3	AB
9	P105/P106	FEOS - WEOS		1628	64°	VG	680	730 -	730 -	110	470/83	DF-45	AB		4-26	AB
10	P92/P112	FEOS - WEOS		1713	64	VG	680	730 -	730 -	22	1051		AB		5-3	AB
11	P91/P112	NEOS - SEOS		1718	64	VG	680	730 -	730 -	223	328		AB		5-3	AB
12	P89/P112	NEOS - SEOS		1743	64	VG	680	730 -	730 -	56	384		AB		5-3	AB
13	/	-						-	-							
14	/	-						-	-							
15	/	-						-	-							
16	/	-						-	-							
17	/	-						-	-							
18	/	-						-	-							
19	/	-						-	-							
20	/	-						-	-							

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS),
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM.

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY-OVER

1682
 384

** COLUMNS TO BE USED
 BY THE DATA REVIEWER ONLY

GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

☒ FUSION
☐ EXTRUSION

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF-1	741	UM
TF-2	744	UM

5/S
 S/T
 DESTRUCTIVE LENGTH CARRY-OVER
 FROM PREVIOUS LOG 370

DATE 4-25-19
 SHEET NUMBER 1 of 1

MACHINE # 1807

SEAM NUMBER	SEAM SECTION* START POINT FINISH POINT		APPROX. START TIME	AMB. AIR TEMP.	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON-DESTRUCTIVE	
							DIGITAL SET	INDICATOR						TEST DATE	MON.
							WEDGE OR BARREL NOZZLE	WEDGE OR BARREL NOZZLE							
1	P112	P113	NEOS - SEOS	813	45	UM	600	800 -	800 -	128	438/60	DF-47	AM	4.27	AB
2	P114	P115	EOS - WEOS	840	45	UM	550	800 -	800 -	22	82		AM	5.3	
3	P116	P117	ISR - WEOS	854	50	UM	600	800 -	800 -	88	170		AM	5.3	
4	P117	P118	EOS - WEOS	910	54	UM	1000	800 -	800 -	65	235		AM	5.3	
5	P114	P116	EOS - WEOS	931	58	UM	550	800 -	800 -	23	258		AM	5.3	
6	P113	P116	EOS - WEOS	930	58	UM	550	800 -	800 -	6	264		AM	5.3	
7	P111	P113	EOS - WEOS	937	58	UM	550	800 -	800 -	22	286		AM	5.3	
8	P114	P117	NEOS - SEOS	946	58	UM	550	800 -	800 -	22	308		AM	5.3	
9	P118	P120	WEOS - EOS	957	58	UM	550	800 -	800 -	27	335		AM	5.3	
10	P119	P120	WEOS - EOS	1006	58	UM	550	800 -	800 -	4	339		AM	5.3	
11	P119	P121	WEOS - EOS	1006	58	UM	550	800 -	800 -	27	366		AM	5.3	
12	P119	P122	WEOS - EOS	1006	58	UM	550	800 -	800 -	20	386		AM	5.3	AB
13	/	-						-	-						
14	/	-						-	-						
15	/	-						-	-						
16	/	-						-	-						
17	/	-						-	-						
18	/	-						-	-						
19	/	-						-	-						
20	/	-						-	-						

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS),
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM.

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY-OVER

454
 386

** COLUMNS TO BE USED
 BY THE DATA REVIEWER ONLY

REVIEWED BY: PS
 DATE: 9/5/19

GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

☒ FUSION
☐ EXTRUSION
 MACHINE # 81

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF-3	747	H/M
TF-4	818	H/M

5/5
5/1

DESTRUCTIVE LENGTH CARRY-OVER
 FROM PREVIOUS LOG 16

DATE 4.25.19

SHEET NUMBER 1 of 1

	SEAM NUMBER	SEAM SECTION*		APPROX. START TIME	AMB. AIR TEMP.	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON-DESTRUCTIVE	
		START POINT	FINISH POINT					DIGITAL SET	INDICATOR						TEST DATE	MON.
								WEDGE OR BARREL NOZZLE	WEDGE OR BARREL NOZZLE							
1	P111 / P116	Ecos	- W25	925	54	HM	600	750 -	750 -	110	106 / 20	DF-49	AM		4.27	AB
2	P118 / P119	Ecos	- W25	942	54	HM	600	750 -	750 -	65	85		AM		5.3	AB
3	/	-						-	-							
4	/	-						-	-							
5	/	-						-	-							
6	/	-						-	-							
7	/	-						-	-							
8	/	-						-	-							
9	/	-						-	-							
10	/	-						-	-							
11	/	-						-	-							
12	/	-						-	-							
13	/	-						-	-							
14	/	-						-	-							
15	/	-						-	-							
16	/	-						-	-							
17	/	-						-	-							
18	/	-						-	-							
19	/	-						-	-							
20	/	-						-	-							

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS),
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM.

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY-OVER

175
 85

** COLUMNS TO BE USED
 BY THE DATA REVIEWER ONLY

REVIEWED BY: PS

DATE: 9/5/19

GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

☒ FUSION ☐ EXTRUSION

MACHINE # 20

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF-5	758	VG
TF-6	739	VG

DATE 4-25-19

DESTRUCTIVE LENGTH CARRY-OVER FROM PREVIOUS LOG 384

SHEET NUMBER 121

SEAM NUMBER	SEAM SECTION* START POINT FINISH POINT		APPROX. START TIME	AMB. AIR TEMP.	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON-DESTRUCTIVE	
							DIGITAL SET	INDICATOR						TEST DATE	MON.
							WEDGE OR BARREL NOZZLE	WEDGE OR BARREL NOZZLE							
1	P113/P114	N/S - Seos	826	45	VG	680	730 -	730 -	46	430		AM		5.3	AB
2	P113/P115	N/S - Seos	845	45	VG	680	730 -	730 -	69	440.59	DE-48	AM		4.26	AB
3	P114/P120	N/S - Seos	859	50	VG	680	730 -	730 -	4	63		AM	CAPON	5.3	AB
4	P115/P120	N/S - Seos	859	54	VG	680	730 -	730 -	85	128		AM		5.3	AB
5	P120/P121	N/S - Seos	905	54	VG	680	730 -	730 -	45	173		AM		5.3	AB
6	P121/P122	Seos - N/S	925	54	VG	680	730 -	730 -	18	191		AM		5.3	AB
7	/	-					-	-							
8	/	-					-	-							
9	/	-					-	-							
10	/	-					-	-							
11	/	-					-	-							
12	/	-					-	-							
13	/	-					-	-							
14	/	-					-	-							
15	/	-					-	-							
16	/	-					-	-							
17	/	-					-	-							
18	/	-					-	-							
19	/	-					-	-							
20	/	-					-	-							

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM.

DAILY TOTAL 247

DESTRUCTIVE LENGTH CARRY-OVER 191

** COLUMNS TO BE USED BY THE DATA REVIEWER ONLY

REVIEWED BY: PS DATE: 9/5/19

APPENDIX J

Liner Repair Summary

APPENDIX J.1

Defect Logs

GEOMEMBRANE DEFECT LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

SHEET NUMBER 1 of 1

DEFECT CODE	DEFECT LOCATION		DEFECT TYPE	LOG DATE	MON.	REMARKS	** REPAIR DATE	** TEST DATE
	SEAM, PANEL OR REPAIR NO.	DEFECT LOCATION DESCRIPTION						
A	P1-P3	26' N Seams	CO	4.10	AB		4-19	5.8
B	P3-P4	26' N Seams	CO	4.10	AB		4-19	5.8
C	P1-P3	93' W Seams	DF-1	4.10	AB		4-19	5.8
D	P2.4.5	INT	T	4.10	AB		4-19	5.8
E	P3-P4	67' N RIB	BO	4.10	AB		4-19	5.8
F	P3-P4	87' N RIB	DF-2	4.10	AB		4-19	5.8
G	P1	12.5' Nside 7' Wside	D	4.10	AB		4.23	5.8
H	P1	29.5' Nside 10' Wside	D	4.10	AB		4.23	5.8
I	P1	34.5' Nside 11' Wside	D	4.10	AB		4.23	5.8
J	P1	34.5' Nside 5' Wside	D	4.10	AB		4.23	5.8
K	P1	40.5' Nside 11' Wside	D	4.10	AB		4.23	5.8
L	P1	49.5' Nside 5' E Wside	D	4.10	AB		4.23	5.8
M	P1	62.5' Nside 5' Wside	D	4.10	AB		4.23	5.8
N	P1	77.5' Nside 6' Wside	D	4.10	AB		4.23	5.8
P	P1	82.5' Nside 8' Wside	D	4.10	AB		4.23	5.8
Q	P1.2.3	INT	T	4.10	AB		4-19	5.8
R	P2.3.4	INT	T	4.10	AB		4-19	5.8
S	P3-P4	7' N Seams	BO	4.10	AB		4-19	5.8
T	P3-P4	54' N Seams	BO	4.10	AB		4-19	5.8
V	P3-P4	68' N Seams	BO	4.10	AB		4-19	5.8
W	P1-P3	11' N Seams	BO	4.10	AB		4-19	5.8
X	P1-P3	72' N Seams	BO	4.10	AB		4-19	5.8
Y	P1-P3	40' N Seams	BO	4.10	AB		4-19	5.8
Z	P1-P3	54' S Neams	BO	4.10	AB		4-19	5.8

B - UNDISPERSED RESIN BEAD
 BO - FUSION WELDER BURN
 BS - BOOT/SKIRT FOR FML PENETRATION
 CO - CHANGE OF OVERLAP
 CR - CREASE
 D - INSTALLATION DAMAGE
 DS# - DESTRUCTIVE TEST NUMBER

EXT - EXTENSION
 FM - FISHMOUTH
 FS - FAILED SEAM LENGTH
 FTS - FIELD TEST STRIP
 HT - HEAT TACK BURN
 IO - INSUFFICIENT OVERLAY (UNDER SPEC.)
 MD - MANUFACTURER/DELIVERY DAMAGE

SI - SOIL SURFACE IRREGULARITY
 SL - SLAG ON TEXTURED SHEET
 T - THREE PANEL INTERSECTION
 VL - VACUUM TEST LEAK
 WR - WRINKLE
 WS - WELDER RESTART
 OTHER _____

REVIEWED BY: PS

DATE: 9/6/19

** COLUMNS TO BE USED BY THE DATA REVIEWER ONLY.

GOLDER FORM: G18-0629

January 2005

GOLDER ASSOCIATES INC.

GEOMEMBRANE DEFECT LOG

PROJECT NUMBER:

1896102

PROJECT TITLE:

JH Campbell Ash Pond A Closure

OWNER:

Consumers Energy

CONTRACTOR:

Chesapeake Containment Systems, Inc.

LOCATION:

West Olive, Michigan

SHEET NUMBER

2 of 1

DEFECT CODE	DEFECT LOCATION		DEFECT TYPE	LOG DATE	MON.	REMARKS	** REPAIR DATE	** TEST DATE
	SEAM, PANEL OR REPAIR NO.	DEFECT LOCATION DESCRIPTION						
A	P1-P2	83' S NOD	FD	4.10	AB		4-19	5.8
B	P1-P2	88' S NOD	FD	4.10	AB		4-19	5.8
C	P1-P2	93' S NOD	FD	4.10	AB		4-19	5.8
D	P1-P2	97' S NOD	FD	4.10	AB		4-19	5.8
E	P1-P2	102' S NOD	FD	4.10	AB		4-19	5.8
F	P1	76' S N side 5' E W side	D	4.10	AB		4-23	5.8
G	P2-P5	17' S NOD	FD	4.10	AB		4-19	5.8
H	P3-P4	49' N Seos	DF-3	4.13	AB		4-19	5.8
I	P4-P6	26' N Seos	CO	4.13	AB		4-23	5.8
J	P4-P6	7' N Seos	BS	4.13	AB		4-23	5.8
K	P8	1' N Seos. 9' W Ecos	D	4.13	AM		4-23	5.8
L	P8	9' N Seos. 9' W Ecos	D	4.13	AM		4-23	5.8
M	P8	17' N Seos. 9' W Ecos	D	4.13	AM		4-23	5.8
N	P8	25' N Seos. 9' W Ecos	D	4.13	AM		4-23	5.8
P	P8	33' N Seos. 9' W Ecos	D	4.13	AM		4-23	5.8
Q	P8	41' N Seos. 9' W Ecos	D	4.13	AM		4-23	5.8
R	P8	49' N Seos. 9' W Ecos	D	4.13	AM		4-23	5.8
S	P8	57' N Seos. 9' W Ecos	D	4.13	AM		4-23	5.8
T	P8	65' N Seos. 9' W Ecos	D	4.13	AM		4-23	5.8
V	P8	73' N Seos. 9' W Ecos	D	4.13	AM		4-23	5.8
W	P8	81' N Seos. 9' W Ecos	D	4.13	AM		4-23	5.8
X	P4-P5-P6	INT	T	4.13	AM		4.23	5.8
Y	P6-P7-P8	INT	T	4.13	AM		4.23	5.8
Z	P7-P8-P9	INT	T	4.13	AM		4.23	5.8

B - UNDISPERSED RESIN BEAD

BO - FUSION WELDER BURN

BS - BOOT/SKIRT FOR FML PENETRATION

CO - CHANGE OF OVERLAP

CR - CREASE

D - INSTALLATION DAMAGE

DS# - DESTRUCTIVE TEST NUMBER

EXT - EXTENSION

FM - FISHMOUTH

FS - FAILED SEAM LENGTH

FIS - FIELD TEST STRIP

HT - HEAT TACK BURN

IO - INSUFFICIENT OVERLAY (UNDER SPEC.)

MD - MANUFACTURER/DELIVERY DAMAGE

SI - SOIL SURFACE IRREGULARITY

SL - SLAG ON TEXTURED SHEET

T - THREE PANEL INTERSECTION

VL - VACUUM TEST LEAK

WR - WRINKLE

WS - WELDER RESTART

OTHER _____

REVIEWED BY:

PS

DATE:

9/6/19

** COLUMNS TO BE USED BY THE DATA REVIEWER ONLY.

GOLDER FORM: G18-0629

January 2005)

GOLDER ASSOCIATES INC.

GEOMEMBRANE DEFECT LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

SHEET NUMBER

3

DEFECT CODE	DEFECT LOCATION		DEFECT TYPE	LOG DATE	MON.	REMARKS	REPAIR DATE	TEST DATE
	SEAM, PANEL OR REPAIR NO.	DEFECT LOCATION DESCRIPTION						
A	P6-P8	26' N Seams	CO	4.13.19	AB		4-23	5-8
B	P6-P8	1' N Seams	BO	4.13.19	AB		4-23	5-8
C	P4-P6	8'S Neos	DF-4	4.13.19	AB		4-23	5-8
D	P8-P9	26' N Seams	CO	4.13.19	AB		4-23	5-8
E	P8-P9	1' N Seams	BO	4.13.19	AB		4-23	5-8
F	P8-P9-P10	INT	T	4.13.19	AM		4-23	5-8
G	P6-P7	45' N Seams	DF-5	4.13.19	AB		4-23	5-8
H	P9-P11	26' N Seams	CO	4.13.19	AB		4-23	5-8
I	P9-P11	1' N Seams	BO	4.13.19	AB		4-23	5-8
J	P7-P10	11' N Seams	DF-6	4.13.19	AB		4-23	5-8
K	P6-P7	18'S Neos	BO	4.13.19	AB		4-23	5-8
L	P10-P11	50' N Seams	DF-7	4.13.19	AB		4-23	5-8
M	P9-P10-P11	INT	T	4.13.19	AM		4-23	5-8
N	P5-P6	15'S Neos	BO	4.13.19	AM		4-23	5-8
P	P5-P6	12'S Neos	D	4.13.19	AM		4-23	5-8
Q	P5-P6	7'S Neos	D	4.13.19	AM		4-23	5-8
R	P6-P7	12'S Neos	BO	4.13.19	AM		4-23	5-8
S	P7-P10	11'S Neos	BO	4.13.19	AM		4-23	5-8
T	P11-P12	109' N Seams	BO	4.13.19	AM		4-23	5-8
V	P11-P12	95' N Seams	BO	4.13.19	AM		4-23	5-8
W	P11-P12	91' N Seams	BO	4.13.19	AM		4-23	5-8
X	P11-P12	83' N Seams	BO	4.13.19	AM		4-23	5-8
Y	P11-P12	20' N Seams	CO	4.13.19	AM		4-23	5-8
Z	P11-P12	1' N Seams	BO	4.13.19	AM		4-23	5-8

B - UNDISPERSED RESIN BEAD
 BO - FUSION WELDER BURN
 BS - BOOT/SKIRT FOR FML PENETRATION
 CO - CHANGE OF OVERLAP
 CR - CREASE
 D - INSTALLATION DAMAGE
 DS - DESTRUCTIVE TEST NUMBER

EXT - EXTENSION
 FM - FISHMOUTH
 FS - FAILED SEAM LENGTH
 FTS - FIELD TEST STRIP
 HT - HEAT TACK BURN
 IO - INSUFFICIENT OVERLAY (UNDER SPEC.)
 MD - MANUFACTURER/DELIVERY DAMAGE

SI - SOIL SURFACE IRREGULARITY
 SL - SLAG ON TEXTURED SHEET
 T - THREE PANEL INTERSECTION
 VL - VACUUM TEST LEAK
 WR - WRINKLE
 WS - WELDER RESTART
 OTHER _____

REVIEWED BY: PS DATE: 7/6/19

** COLUMNS TO BE USED BY THE DATA REVIEWER ONLY.

GOLDER FORM: G18-0699

January 2005)

GOLDER ASSOCIATES INC.

GEOMEMBRANE DEFECT LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

SHEET NUMBER 4 of 4

DEFECT CODE	DEFECT LOCATION		DEFECT TYPE	LOG DATE	MON.	REMARKS	** REPAIR DATE	** TEST DATE
	SEAM, PANEL OR REPAIR NO.	DEFECT LOCATION DESCRIPTION						
A	P12-P13-P14	FNT	T	4.13.19	AM		4.23	5.8
B	P11-P12	146'S NEOS	BO	4.13.19	AM		4.25	5.8
C	P15	105'S NEOS - 6'W EOB	D	4.13.19	AM	→	4.26	5.8
D	P13-P15	156'N Seos	BO	4.13.19	AM		4.25	5.8
E	P13-P14-P15	FNT	T	4.13.19	AM		4.23	5.8
F	P15-P17	1'N Seos	BO	4.13.19	AM		4.25	5.8
G	P13-P15	83'N Seos	BO	4.13.19	AM		4.25	5.8
H	P13-P15	70'N Seos	BO	4.13.19	AM		4.25	5.8
I	P15-P17	17'N Seos	CO	4.13.19	AM		4.25	5.8
J	P14-P15	23'N Seos	BO	4.13.19	AM		4.23	5.8
K	P15-P17	8'S NEOS	DF-12	4.13.19	AM		4-23	5.8
L	P20-P22	46'S NEOS	BO	4.16.19	AB		4-19	5.3
M	P1-P18	10'N Seos	BO	4.16.19	AB		4-19	5.3
N	P1-P18	162'S NEOS	BO	4.16.19	AB		4-19	5.3
P	P1-P18	110'S NEOS	BO	4.16.19	AB		4-19	5.3
Q	-	-	-	-	-		-	-
R	P20-P22	10'N Seos	BO	4.16.19	AB		4-19	5.3
S	P23-P25	1'N Seos	BO	4.16.19	AB		4-19	5.8
T	P21-P23	59'N Seos	BO	4.16.19	AB		4-19	5.3
V	P21-P23	176'N Seos	BO	4.16.19	AB		4-19	5.3
W	P21-P23	189'N Seos	BO	4.16.19	AB		4-19	5.3
X	P24-P27	2'S NEOS	BO	4.16.19	AB		4-19	5.3
Y	P24-P27	20'S NEOS	BO	4.16.19	AB		4-19	5.8
Z	P25-P26	48'N Seos	DF-19	4.16.19	AB		4-19	5.8

B - UNDISPERSED RESIN BEAD
 BO - FUSION WELDER BURN
 BS - BOOTSKIRT FOR FML PENETRATION
 CO - CHANGE OF OVERLAP
 CR - CREASE
 D - INSTALLATION DAMAGE
 DS - DESTRUCTIVE TEST NUMBER

EXT - EXTENSION
 FM - FISHMOUTH
 FS - FAILED SEAM LENGTH
 FTS - FIELD TEST STRIP
 HT - HEAT TACK BURN
 IO - INSUFFICIENT OVERLAY (UNDER SPEC.)
 MD - MANUFACTURER/DELIVERY DAMAGE

SI - SOIL SURFACE IRREGULARITY
 SL - SLAG ON TEXTURED SHEET
 T - THREE PANEL INTERSECTION
 VL - VACUUM TEST LEAK
 WR - WRINKLE
 WS - WELDER RESTART
 OTHER _____

REVIEWED BY: PS DATE: 9/6/19

** COLUMNS TO BE USED BY THE DATA REVIEWER ONLY.

GEOMEMBRANE DEFECT LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

SHEET NUMBER 504

DEFECT CODE	DEFECT LOCATION		DEFECT TYPE	LOG DATE	MON.	REMARKS	** REPAIR DATE	** TEST DATE
	SEAM, PANEL OR REPAIR NO.	DEFECT LOCATION DESCRIPTION						
A	P12-P13	17' N Seams	CO	4.13.19	AB		4.25	5.8
B	P11-P12	114' S Nees	DF-8	4.13.19	AB		4.23	5.8
C	P12-P14	145' S Nees	DF-9	4.13.19	AB		4.23	5.8
D	P14-P15	49' S Nees	DF-10	4.13.19	AB		4.23	5.8
E	P15-P16	11' W Ees	DF-11	4.13.19	AB		4.23	5.8
F	P13-P15	107' N Sees	BO	4.13.19	AB		4.25	5.8
G	P16-P17	31' N Sees	BO	4.13.19	AB		4.25	5.8
H	P16-P17	41' N Sees	IO	4.13.19	AB		4.25	5.8
I	P1-P18	22' S Nees	FM	4.16.19	AB		4-19	5.3
J	P1-P18	80' S Nees	D	4.16.19	AB		4-19	5.2
K	P1-P18	28' S Nees	BO	4.16.19	AB		4-19	5.3
L	P18-P19	4' S Nees	BO	4.16.19	AB		4-19	5.3
M	P1-P18	140' S Nees	BO	4.16.19	AB		4-19	5.3
N	P1-P18	125' S Nees	DF-13	4.16.19	AB		4-19	5.3
P	P18-P20	124' S Nees	DF-14	4.16.19	AB		4-19	5.3
Q	P21-P23	10' S Nees	D	4.16.19	AB		4-19	5.3
R	P1-P18	32' N Sees	DF-15	4.16.19	AB		4-19	5.3
S	P20-P21	100' S Nees	DF-16	4.16.19	AB		4-19	5.3
T	P22-P23	40' N Sees	DF-17	4.16.19	AB		4-19	5.3
V	P23-P25	353' S Nees	DF-18	4.16.19	AB		4-19	5.8
W	P21-P23	105' N Sees	BO	4.16.19	AB		4-19	5.3
X	P21-P23	210' N Sees	BO	4.16.19	AB		4-19	5.3
Y	P21-P23	232' N Sees	BO	4.16.19	AB		4-19	5.3
Z	P23-P25	36' S Nees	IO	4.16.19	AB		4-19	5.7

B - UNDISPERSED RESIN BEAD
 BO - FUSION WELDER BURN
 BS - BOOT/SKIRT FOR FML PENETRATION
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 D - INSTALLATION DAMAGE
 DS# - DESTRUCTIVE TEST NUMBER

EXT - EXTENSION
 FM - FISHMOUTH
 FS - FAILED SEAM LENGTH
 FTS - FIELD TEST STRIP
 HT - HEAT TACK BURN
 IO - INSUFFICIENT OVERLAY (UNDER SPEC.)
 MD - MANUFACTURER/DELIVERY DAMAGE

SI - SOIL SURFACE IRREGULARITY
 SL - SLAG ON TEXTURED SHEET
 T - THREE PANEL INTERSECTION
 VL - VACUUM TEST LEAK
 WR - WRINKLE
 WS - WELDER RESTART
 OTHER _____

REVIEWED BY: PS DATE: 9/6/19

** COLUMNS TO BE USED BY THE DATA REVIEWER ONLY.

GOLDER FORM: G18-0699

January 2005)

GOLDER ASSOCIATES INC.

GEOMEMBRANE DEFECT LOG

PROJECT NUMBER: 1896102
OWNER: Consumers Energy
LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
CONTRACTOR: Chesapeake Containment Systems, Inc.

SHEET NUMBER

62

DEFECT CODE	DEFECT LOCATION		DEFECT TYPE	LOG DATE	MON.	REMARKS	** REPAIR DATE	** TEST DATE
	SEAM, PANEL OR REPAIR NO.	DEFECT LOCATION DESCRIPTION						
A	P27-P28	73' S Neos	D	4.17.19	AB		4-19	5.7
B	P26-P28	187' N Seos	DF-20	4.17.19	AB		4-19	5.7
C	P28-P30	63' N Seos	DF-21	4.17.19	AB		4-19	5.8
D	P28-P29	12' S Neos	BO	4.17.19	AB		4-19	5.7
E	P17-P32	1' N Seos	BO	4.17.19	AB		4.25	5.8
F	P32-P33	111' N Seos	BO	4.17.19	AB		4.25	5.8
G	P17-P32	156' N Seos	BO	4.17.19	AB		4.23	5.8
H	P17-P32	126' N Seos	DF-22	4.17.19	AB		4.25	5.8
I	P31-P33	8' N Seos	DF-23	4.17.19	AB		4.25	5.2
J	P33-P34	25' S Neos	DF-24	4.17.19	AB		4.25	5.3
K	P23-P25	146' N Seos	BO	4.19.19	AM		4-19	5.7
L	P23-P25	98' N Seos	BO	4.19.19	AM		4-19	5.8
M	P21-P21-P23	INT	T	4.19.19	AM		4-19	5.3
N	P23-P25	24' N Seos	D	4.19.19	AM	✓	4-19	5.8
P	P20-P21-P22	INT	T	4.19.19	AM		4-19	5.3
Q	P19-P20-P21	INT	T	4.19.19	AM		4-19	5.3
R	P21-P23	17' S Neos	D	4.19.19	AM	✓	4-19	5.3
S	P18-P19-P20	INT	T	4.19.19	AM		4-19	5.3
T	P20-P22	75' N Seos	VD	4.19.19	AM	✓	4-19	5.3
V	P20-P22	58' N Seos	VD	4.19.19	AM	✓	4-19	5.3
W	P23-P25	176' N Seos	VD	4.19.19	AM	✓	4-19	5.7
X	P23-P25	196' N Seos	VD	4.19.19	AM	✓	4-19	5.7
Y	P1-P18	93' N Seos	D	4.19.19	AM	✓	4-19	5.3
Z	P1-P18	20' N Seos	VD	4.19.19	AM	✓	4-19	5.3

B - UNDISPERSED RESIN BEAD
BO - FUSION WELDER BURN
BS - BOOT/SKIRT FOR FML PENETRATION
CO - CHANGE OF OVERLAP
CR - CREASE
D - INSTALLATION DAMAGE
DS# - DESTRUCTIVE TEST NUMBER

EXT - EXTENSION
FM - FISHMOUTH
FS - FAILED SEAM LENGTH
FTS - FIELD TEST STRIP
HT - HEAT TACK BURN
IO - INSUFFICIENT OVERLAY (UNDER SPEC.)
MD - MANUFACTURER/DELIVERY DAMAGE

SI - SOIL SURFACE IRREGULARITY
SL - SLAG ON TEXTURED SHEET
T - THREE PANEL INTERSECTION
VL - VACUUM TEST LEAK
WR - WRINKLE
WS - WELDER RESTART
OTHER _____

REVIEWED BY: PS

DATE: 9/6/19

** COLUMNS TO BE USED BY THE DATA REVIEWER ONLY.

GOLDER FORM: G18-0699

January 2005

GOLDER ASSOCIATES INC.

GEOMEMBRANE DEFECT LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

SHEET NUMBER 7 of 7

DEFECT CODE	DEFECT LOCATION		DEFECT TYPE	LOG DATE	MON.	REMARKS	REPAIR DATE	TEST DATE
	SEAM, PANEL OR REPAIR NO.	DEFECT LOCATION DESCRIPTION						
A	P1-P18	5'S Neos	D	4.19.19	AB		4-19	5.3
B	P23-P25	122'S Neos	D	4.19.19	AB		4-19	5.7
C	P23-P25	86'S Neos	D	4.19.19	AB		4-19	5.7
D	P19-P21	22'S Neos	D	4.19.19	AB		4-19	5.3
E	P25-P27	INT	T	4.19.19	AB		4-19	5.7
F	P26-P27	INT	T	4.19.19	AB		4-19	5.7
G	P24-P25	INT	T	4.19.19	AB		4-19	5.7
H	P23-P24	INT	T	4.19.19	AB		4-19	5.7
I	P28-P30	1'S Neos	D	4.19.19	AB		4-19	5.7
J	P27-P28	1'S Neos	D	4.19.19	AB		4-19	5.7
K	P23-P24	1'S Neos	D	4.19.19	AB		4-19	5.3
L	P19-P21	1'S Neos	D	4.19.19	AB		4-19	5.3
M	P18-P19	1'S Neos	D	4.19.19	AB		4-19	5.3
N	P1-P18	115'S Neos	DF-13P	4.19.19	AB		4-19	5.3
P	P30-P82	98'S Neos	DF-35	4.24.19	AM		5.7	5.7
Q	P82-P84	193'S Neos	DF-36	4.24.19	AM		5.7	5.7
R	P84-P85	50'S Neos	DF-37	4.24.19	AM		5.7	5.7
S	P85-P86	63'S Neos	DF-38	4.24.19	AM		5.7	5.7
T	P88-P90	11'E Neos	DF-39	4.24.19	AM		4.26	5.7
V	P91-P92	145'S Neos	DF-40	4.24.19	AM		5.3	5.4
W	P88-P91	279'S Neos	DF-41	4.24.19	AM		5.3	5.7
X	P92-P104	8'S Neos	DF-43	4.24.19	AM		5.3	5.4
Y	P103-P104	40'E Neos	DF-44	4.24.19	AM		5.3	5.4
Z	P105-P106	85'E Neos	DF-45	4.24.19	AB		5.3	5.4

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EXT - EXTENSION
 FM - FISHMOUTH
 FS - FAILED SEAM LENGTH
 FTS - FIELD TEST STRIP
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SI - SOIL SURFACE IRREGULARITY
 SL - SLAG ON TEXTURED SHEET
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 WS - WELDER RESTART
 OTHER _____

REVIEWED BY: PS DATE: 9/6/19

** COLUMNS TO BE USED BY THE DATA REVIEWER ONLY.

GEOMEMBRANE DEFECT LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

SHEET NUMBER 8 of 10

DEFECT CODE	DEFECT LOCATION		DEFECT TYPE	LOG DATE	MON.	REMARKS	** REPAIR DATE	** TEST DATE
	SEAM, PANEL OR REPAIR NO.	DEFECT LOCATION DESCRIPTION						
A	P25-P26	130' N Seos	BO	4.19.19	AM		4.19.19	5.7
B	P28-P29-P30	ENT	T	4.19.19	AM		4.19.19	5.8
C	P28-P29	1' N Seos	BO	4.19.19	AM		4.19.19	5.8
D	P20-P22	78' N Seos	D	4.19.19	AM		4.19.19	5.3
E	P18-P20	1' N Seos	D	4.19.19	AM		4.19.19	5.3
F	P1-P3	3' N Seos	D	4.19.19	AM		4.19.19	5.8
G	P1-P18	1' N Seos	BO	4.19.19	AM		4.19.19	5.3
H	P23-P25	120' S Neos	D	4.19.19	AM		4.19.19	5.7
I	P20-P21	22' S Neos	D	4.19.19	AB		4-19	5.3
J	P3-P4	1' N Seos	D	4.19.19	AB		4-19	5.8
K	P2-P5	1' S Neos	D	4.19.19	AB		4-19	5.8
L	P21	169' N from S side W from E side	D	4.19.19	AB		4-23	5.3
M	P41-P42	15' S Neos	D	4.22.19	AB		4.26	5.2
N	P45-P46	5' N Seos	DF-25	4.22.19	AB		4.26	5.2
P	P43-P44	29' S Neos	D	4.22.19	AB		4.30	5.2
Q	P50-P51	10' N Seos	DF-26	4.22.19	AB		4.30	5.1
R	P50-P51	30' S Neos	PO	4.22.19	AB		4.30	5.1
S	P49-P50	5' N Seos	DF-27	4.22.19	AB		4.30	5.7
T	P49-P50	49' N Seos	BO	4.22.19	AB		4.30	5.1
V	P48-P49	49' N Seos	BO	4.22.19	AB		4.30	5.1
W	P34-P54	108' S Neos	DF-28	4.22.19	AB		4.26	5.3
X	P57-P59	11' E Neos	DF-29	4.22.19	AB		4.26	5.2
Y	P63-P65	37' S Neos	DF-31	4.22.19	AB		4.26	5.2
Z	P69-P70	22' N Seos	DF-32	4.22.19	AB		4.30	5.1

B - UNDISPERSED RESIN BEAD
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REVIEWED BY: PS DATE: 9/6/19

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GOLDER FORM: G18-0699

January 2005

GOLDER ASSOCIATES INC.

GEOMEMBRANE DEFECT LOG

PROJECT NUMBER: 1896102
OWNER: Consumers Energy
LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
CONTRACTOR: Chesapeake Containment Systems, Inc.

SHEET NUMBER 9 of 9

DEFECT CODE	DEFECT LOCATION		DEFECT TYPE	LOG DATE	MON.	REMARKS	** REPAIR DATE	** TEST DATE
	SEAM, PANEL OR REPAIR NO.	DEFECT LOCATION DESCRIPTION						
A	P55-P57	34'S NEOS	BO	4.22.19	AM		4.26	5.3
B	P55-P59	68'S NEOS	BO	4.22.19	AM		5-1	5.2
C	P35-P39	entire seam length	FS	4.22.19	AM		4.26	5.2
D	P55-P57	6'S NEOS	DS-30	4.22.19	AM	DF-30	4.26	5.1
E	P47-P58	6' E WEOS	IO	4.22.19	AM		4.26	5.1
F	P70	1'S NEOS 7'W WEOS	D	4.22.19	AM		4.30	5.1
G	P70	7'S NEOS 7'W WEOS	D	4.22.19	AM		4.30	5.1
H	P70	16'S NEOS 7'W WEOS	D	4.22.19	AM		4.30	5.1
I	P70	25'S NEOS 7'W WEOS	D	4.22.19	AM		4.30	5.1
J	P70	33'S NEOS 7'W WEOS	D	4.22.19	AM		4.30	5.1
K	P70	41'S NEOS 7'W WEOS	D	4.22.19	AM		4.30	5.1
L	P74-P75	33'S NEOS	DS-33	4.22.19	AM	LF-33	5.1	5.1
M	P74-P75	33'S NEOS	DS-33	4.22.19	AM			
N	P65-P79	25'N SEOS	D	4.22.19	AM		5.1	5.2
P	P77-P81	8'E WEOS	DS-34	4.22.19	AM	DF-34	4.30	5.1
Q	P4-P6	15'N SEOS	BO	4.22.19	AB		4-23	5.1
R	P4-P6	172'N SEOS	BO	4.22.19	AB		4-23	5.1
S	P4-P6	206'N SEOS	D	4.23.19	AB		4-23	5.1
T	P4-P6	259'N SEOS	BO	4.23.19	AB		4-23	5.1
V	P8-P9	43'S NEOS	D	4.23.19	AB		4-23	5.1
W	P12-P13	44'N SEOS	FM	4.23.19	AB		4-25	5.8
X	P12-P14	40'S NEOS	D	4.23.19	AB		4-25	5.2
Y	P12-P14	20'S NEOS	D	4.23.19	AB		4-25	5.2
Z	P14	5'S N SIDE POI E W SIDE	D	4.23.19	AB		4-25	5.2

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REVIEWED BY: PS

DATE: 9/6/19

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GOLDER FORM: G18-0699

January 2005

GOLDER ASSOCIATES INC.

GEOMEMBRANE DEFECT LOG

PROJECT NUMBER: 1896102
OWNER: Consumers Energy
LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
CONTRACTOR: Chesapeake Containment Systems, Inc.

SHEET NUMBER

10

DEFECT CODE	DEFECT LOCATION		DEFECT TYPE	LOG DATE	MON.	REMARKS	** REPAIR DATE	** TEST DATE
	SEAM, PANEL OR REPAIR NO.	DEFECT LOCATION DESCRIPTION						
A	P6-P8	100' N Seos	D	4.23.19	Am		4.23	5.8
B	D2	42' S Neos	D	4.23.19	Am		4.23	5.8
C	p1-p2	1' S Neos	D	4.23.19	Am		4.23	5.8
D	P8	1' N Seos-8' E Neos	D	4.23.19	Am		4-23	5.8
E	P6-P8	1' S Neos	D	4.23.19	Am		4-23	5.8
F	p7-p10	27' S Neos	D	4.23.19	Am		4.23	5.8
G	p12-p14	20' N Seos	FD	4.23.19	Am	✓	4.23	5.8
H	p12-p14	188' S Neos	FD	4.23.19	Am	✓	4-19	5.8
I	p1	219' S Neos-1/4' E Neos	D	4.23.19	Am		4-19	5.8
J	p17	230' N Neos 10' E Neos	D	4.23.19	Am		4.23	5.8
K	p12-p13	1' N Seos	D	4.23.19	Am		4.25	5.8
L	p13-p15	1' N Seos	D	4.23.19	Am		4.25	5.8
M	p14-p15-p16	INT	T	4.23.19	Am		4.23	5.8
N	p15-p16-p17	INT	T	4.23.19	Am		4.23	5.8
P	p11-p15	10' S Neos	D	4.23.19	Am		4.23	5.8
Q	P8-P10	4' S Neos	DF-6P	4.24.19	AB		4.25	5.8
R	P7-P10	21' N Seos	DF-6N	4.24.19	AB		4.25	5.8
S	P11-P12	124' S Neos	DF-8P	4.24.19	AB		4.25	5.8
T	P11-P12	104' S Neos	DF-8N	4.24.19	AB		4.25	5.8
V	P14-P15	59' S Neos	DF-10P	4.24.19	AB		4.25	5.8
W	P14-P15	39' S Neos	DF-10N	4.24.19	AB		4.25	5.8
X	P1-P3	83' N Seos	DF-1P	4.24.19	AB		4.25	5.8
Y	P1-P3	103' N Seos	DF-1N	4.24.19	AB		4.25	5.8
Z	P88-P87	55' N Seos	DF-42	4.24.19	AB		5.7	5.7

B - UNDISPERSED RESIN BEAD
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VL - VACUUM TEST LEAK
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WS - WELDER RESTART
OTHER _____

REVIEWED BY: RS DATE: 9/6/19

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GOLDER FORM: G18-0599

January 2005)

GOLDER ASSOCIATES INC.

10

GEOMEMBRANE DEFECT LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

SHEET NUMBER

11 of 12

DEFECT CODE	DEFECT LOCATION		DEFECT TYPE	LOG DATE	MON.	REMARKS	** REPAIR DATE	** TEST DATE
	SEAM, PANEL OR REPAIR NO.	DEFECT LOCATION DESCRIPTION						
A	P110-P112	11'S NEOS	DF-46	4.24.19	AB		5.3	5.4
B	P111-P112	5'S NEOS	TD	4.24.19	AB		5.3	5.4
C								
D	p30-82.83	INT	T	4.25.19	Am		5.7	5.7
E	p83	20'S NEOS 4'E WEOS	D	4.25.19	Am		5.7	5.7
F	p29.30.83	INT	T	4.25.19	Am		5.7	5.8
G	p82.83.84	INT	T	4.25.19	Am		5.7	5.7
H	p84-p85	161'S NEOS	BO	4.25.19	Am		5.7	5.7
I	p85.86.87	INT	T	4.25.19	Am		5.3	5.7
J	p80.88.90	INT	T	4.25.19	Am		5.3	5.7
K	p88.90.91	INT	T	4.25.19	Am		5.3	5.7
L	p91	110'S SEOS 8'E WEOS	D	4.25.19	Am		5.7	5.7
M	p88.89.91	INT	T	4.25.19	Am		5.7	5.7
N	p89.91.112	INT	T	4.25.19	Am		5.7	5.7
P	P110.111.112	INT	T	4.25.19	Am		5.3	5.4
Q	P109.110.112	INT	T	4.25.19	Am		5.3	5.4
R	P108.109.112	INT	T	4.25.19	Am		5.3	5.4
S	P107.108.112	INT	T	4.25.19	Am		5.3	5.4
T	P106.107.112	INT	T	4.25.19	Am		5.3	5.4
V	P105.106.112	INT	T	4.25.19	Am		5.3	5.4
W	P104.105.112	INT	T	4.25.19	Am		5.3	5.4
X	P92.104.112	INT	T	4.25.19	Am		5.3	5.4
Y	P91.99.112	INT	T	4.25.19	Am		5.3	5.4
Z	P92.103.104	INT	T	4.25.19	Am		5.3	5.4

B - UNDISPERSED RESIN BEAD
 BO - FUSION WELDER BURN
 BS - BOOT/SKIRT FOR FML PENETRATION
 CO - CHANGE OF OVERLAP
 CR - CREASE
 D - INSTALLATION DAMAGE
 DS# - DESTRUCTIVE TEST NUMBER

EXT - EXTENSION
 FM - FISHMOUTH
 FS - FAILED SEAM LENGTH
 FTS - FIELD TEST STRIP
 HT - HEAT TACK BURN
 IO - INSUFFICIENT OVERLAY (UNDER SPEC.)
 MD - MANUFACTURER/DELIVERY DAMAGE

SI - SOIL SURFACE IRREGULARITY
 SL - SLAG ON TEXTURED SHEET
 T - THREE PANEL INTERSECTION
 VL - VACUUM TEST LEAK
 WR - WRINKLE
 WS - WELDER RESTART
 OTHER _____

REVIEWED BY: PS

DATE: 9/6/19

** COLUMNS TO BE USED BY THE DATA REVIEWER ONLY.

GOLDER FORM: G14-0699

January 2005

GOLDER ASSOCIATES INC.

GEOMEMBRANE DEFECT LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

SHEET NUMBER

12

DEFECT CODE	DEFECT LOCATION		DEFECT TYPE	LOG DATE	MON.	REMARKS	** REPAIR DATE	** TEST DATE
	SEAM, PANEL OR REPAIR NO.	DEFECT LOCATION DESCRIPTION						
A	P112, P113	60' N SEOS	DF-47	4.25.19	AB		5.3	5.4
B	P120, P121	8' N SEOS	D	4.25.19	Am		5.3	5.4
C	P113, P115	10' S NEOS	DF-48	4.25.19	Am		5.3	5.4
D	P93, P94	27' S NEOS	D	4.25.19	Am		5.3	5.4
E	P93, P94, P96	INT	T	4.25.19	Am		5.3	5.4
F	P93, P96, P96	INT	T	4.25.19	Am		5.3	5.4
G	P92, P93, P98	INT	T	4.25.19	Am		5.3	5.4
H	P92, P98, P101	INT	T	4.25.19	Am		5.3	5.4
I	P92, P101, P102	INT	T	4.25.19	Am		5.3	5.4
J	P92, P102, P103	INT	T	4.25.19	Am		5.3	5.4
K	P94, P95, P96	INT	T	4.25.19	Am		5.3	5.4
L	P95, P96, P97	INT	T	4.25.19	Am		5.3	5.4
M	P95, P97, P97	INT	T	4.25.19	Am		5.3	5.4
N	P97, P99, P100	INT	T	4.25.19	Am		5.3	5.4
P	P119, P122	3' W SEOS	D	4.25.19	Am		5.3	5.4
Q	P119, P121, P122	INT	T	4.25.19	Am		5.3	5.4
R	P119, P121	12' W SEOS	FM	4.25.19	Am		5.7	5.10
S	P118, P120, P119	INT	T	4.25.19	Am		5.3	5.4
T	P119, P120, P121	INT	T	4.25.19	Am		5.3	5.4
V	P113, P114, P115	INT	T	4.25.19	Am		5.3	5.4
W	P114, P115, P120	INT	T	4.25.19	Am		5.3	5.4
X	P114, P117, P118, P120	INT	4T	4.25.19	Am		5.3	5.4
Y	P114, P116, P117	INT	T	4.25.19	Am		5.3	5.4
Z	P113, P114, P116	INT	T	4.25.19	Am		5.3	5.4

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January 2005

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 CONTRACTOR: Chesapeake Containment Systems, Inc.

SHEET NUMBER 13

DEFECT CODE	DEFECT LOCATION		DEFECT TYPE	LOG DATE	MON.	REMARKS	** REPAIR DATE	** TEST DATE
	SEAM, PANEL OR REPAIR NO.	DEFECT LOCATION DESCRIPTION						
A	P32-P33	12'S NWS	D	4.25.19	AB		4.25	5.2
B	P38-P40	25'S NWS	D	4.25.19	AB		4.26	5.2
C	P33-37-38	INT	T	4.25	AB		4.25	5.2
D	P31-33-37	INT	T	4.25	AB		4.25	5.2
E	P33-34-38	INT	T	4.25	AB		4.25	5.3
F	P34-38-40	INT	T	4.25	AB		4.26	5.3
G	P34-40-41	INT	T	4.25	AB		4.25	5.3
H	P34-41-42-54	4 INT	T	4.25	AB		4.26	5.1
I	P42-43-54	INT	T	4.25	AB		4.26	5.1
J	P43-54-56	INT	T	4.25	AB		4.26	5.1
K	P43-44-56	INT	T	4.25	AB		4.26	5.1
L	P44-45-56-57	4 INT	T	4.25	AB		4.26	5.1
M	P55-56-57	INT	T	4.25	AB		4.26	5.1
N	P55-56	INT	T	4.25	AB		-	-
P	P45-46-57	INT	T	4.25	AB		4.26	5.1
Q	P46-57-58	INT	T	4.25	AB		4.26	5.1
R	P46-47-58	INT	T	4.25	AB		4.26	5.1
S	P47-48-58-61	4 INT	T	4.25	AB		4.26	5.1
T	P48-49-61	INT	T	4.25	AB		4.26	5.1
V	P49-61-62	INT	T	4.25	AB		4.30	5.1
W	P49-50-62	INT	T	4.25	AB		4.30	5.1
X	P62-50-51	INT	T	4.25	AB		4.30	5.1
Y	P62-65-51	INT	T	4.25	AB		4.30	5.1
Z	P62-63-65	INT	T	4.25	AB		5.1	5.2

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REVIEWED BY: PS DATE: 9/6/19

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GOLDER FORM: G18-0699

January 2005

GOLDER ASSOCIATES INC.

GEOMEMBRANE DEFECT LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

SHEET NUMBER 14

DEFECT CODE	DEFECT LOCATION		DEFECT TYPE	LOG DATE	MON.	REMARKS	** REPAIR DATE	** TEST DATE
	SEAM, PANEL OR REPAIR NO.	DEFECT LOCATION DESCRIPTION						
A	P17-31-32	INT	T	4.25	AB		4.25	5.8
B	P11-113-116	INT	T	4.25	AM		5.3	5.4
C	P15-17	48'S Neos	D	4.25	Am		4.25	5.8
D	P16-17	10'N Seos	D	4.25	Am		4.25	5.8
E	P32-33	1'N Seos	D	4.25	Am		4.25	5.8
F	P32-33	12'N Seos	D	4.25	Am		4.25	5.8
G	P7-P10	4'N Seos	D	4.25	AM		4.25	5.8
H	P31-36-37	INT	T	4.25	Am		4.25	5.8
I	P12-P14	52'S Neos	D	4.25	AM		4.25	5.8
J	P16-17	15'S Neos	D	4.25	Am		4.26	5.8
K	P16-17	19'S Neos	D	4.25	Am		4.26	5.8
L	P31-35-39	INT	T	4.25	AM		4.26	5.2
M	P31-32-33	INT	T	4.25	Am		4.25	5.2
N	P17	N end P17	EXT	4.25	Am	22x4	4.26	5.8
P	P76-P81	10'S Neos	DF-34P	4.26	AB		4.30	5.1
Q	P84-P85	12'S Neos	DF-34N	4.26	AB		5.7	5.7
R	P88-P91	53'S Neos	D	4.26	AB		5.3	5.7
S	P59-P60	10'N Seos	D	4.26	AB		5.2	5.2
T	P88-P91	58'S Neos	D	4.26	AB		5.3	5.7
V	P88-P91	275'S Neos	D	4.26	AB		5.3	5.7
W	P88-P91	283'S Neos	D	4.26	AB		5.3	5.7
X	P8-P9	10'S Neos	DF-60P3	4.26	AB		5.2	5.8
Y	P112-P113	40'N Seos	D	4.26	AB		5.7	5.7
Z	P11-P11	30'N Seos	DF-5N4	4.27	AB		5.2	5.8

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GOLDER FORM: G18-0699

January 2005

GOLDER ASSOCIATES INC.

GEOMEMBRANE DEFECT LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

SHEET NUMBER 15

DEFECT CODE	DEFECT LOCATION		DEFECT TYPE	LOG DATE	MON.	REMARKS	** REPAIR DATE	** TEST DATE
	SEAM, PANEL OR REPAIR NO.	DEFECT LOCATION DESCRIPTION						
A	P33-P34	270'S Neos	D	4.25	AB		4.25	5.8
B	P33-P34	190'S Neos	D	4.25	AB		4.25	5.8
C	P33-P34	178'S Neos	D	4.25	AB		4.25	5.8
D	P33-P34	78'S Neos	D	4.25	AB		4.25	5.8
E	P14-P15	69'S Neos	DF-10P2	4.25	AB		4.25	5.8
F	P14-P15	29'S Neos	DF-10N2	4.25	AB		4.25	5.8
G	P37-P38	49'N Seos	D	4.25	AB		4.26	5.2
H	P37-P38	59'N Seos	D	4.25	AB		4.26	5.2
I	P37-P38	69'N Seos	D	4.25	AB		4.26	5.2
J	P37-P38	10'S Neos	D	4.25	AB		4.26	5.2
K	P6-P7	35'N Seos	DF-5P	4.25	AB		5.1	5.8
L	P6-P7	55'N Seos	DF-5N	4.25	AB		5.1	5.8
M	P10-P11	40'N Seos	DF-7P	4.25	AB		4.26	5.8
N	P10-P11	60'N Seos	DF-7N	4.25	AB		4.26	5.8
P	P15-P17	18'S Neos	DF-12P	4.25	AB		4.26	5.8
Q	P111-P116	20'E Weos	DF-49	4.25	AB		5.3	5.4
R	P116-P117	10'W Eeos	D	4.25	AB		5.3	5.4
S	P42-P43	38'S Neos	D	4.25	AB		4.26	5.1
T	P42-P43	50'S Neos	D	4.25	AB		4.26	5.1
V	P42-P43	75'S Neos	D	4.25	AB		4.26	5.1
W	P42-P43	80'S Neos	D	4.25	AB		4.26	5.1
X	P11-P12	1'S Neos	D	4.26	Am		4.23	5.1
Y	P31-P3536	± NY	T	4.26	Am		4.26	5.2
Z	P15-P17	12'S Neos	TD	4.26	Am		4.25	5.8

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GOLDER FORM: G18-0699

January 2005

GOLDER ASSOCIATES INC.

GEOMEMBRANE DEFECT LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

SHEET NUMBER

16

DEFECT CODE	DEFECT LOCATION		DEFECT TYPE	LOG DATE	MON.	REMARKS	REPAIR DATE	TEST DATE
	SEAM, PANEL OR REPAIR NO.	DEFECT LOCATION DESCRIPTION						
A	P55-P57	12' N Seam	D	4.26.01	AB		4.26	5.2
B	P8-P10	22' S Seam	DF-6P2	4.26	AB		4.26	5.2
C	P16-P17	18' N Seam	DF-12N	4.26	AB		4.26	5.8
D	P56	5' S N side	B	4.26	AB		4.26	5.1
E	P7-R-10R	5' S Nees	DX-4	4.26	AB		4.26	5.8
F	P55-P57	52' S Nees	D	4.26	AB		4.26	5.3
G	P55-57-58	INT	T	4.26	AB		4.26	5.2
H	P57-59-60	INT	T	4.26	AB		4.26	5.2
I	P58-60-61	INT	T	4.26	AB		4.26	5.2
J	P55-P59	30' S Nees	D	4.26	AB		4.26	5.2
K	P55-P59	43' S Nees	D	4.26	AB		4.26	5.2
L	P47-P48	62' N Seam	D	4.26	AB		4.30	5.2
M	P60-P61	116' S Nees	D	4.26	AB		4.26	5.2
N	P9-P11	24' S Nees	D	4.26	AB		4.26	5.8
P	P11-P16	30' E Nees	DF-49P	4.27	AB		5.3	5.4
Q	P11-P16	10' E Nees	DF-49N	4.27	AB		5.3	5.4
R	P6-P7	65' N Seam	DF-5N2	4.27	AB		5.1	5.4
S	P6-P7	25' N Seam	DF-5P2	4.27	AB		5.1	5.8
T	P118-P119	15' W Seam	DF-49N2	4.27	AB		5.3	5.4
V	P11-P16	40' E Nees	DF-49P2	4.27	AB		5.3	5.4
W	P6-P7	75' N Seam	DF-5N3	4.27	AB		5.1	5.8
X	P6-P7	2' N Seam	DF-5P3	4.27	AB		5.1	5.8
Y	P11-P16	35' W Seam	DF-49P3	4.27	AB		5.3	5.4
Z	P6-P8	10' S Nees	DF-5P4	4.27	AB		5.1	5.8

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January 2005

GOLDER ASSOCIATES INC.

GEOMEMBRANE DEFECT LOG

PROJECT NUMBER: 1896102
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SHEET NUMBER

17

DEFECT CODE	DEFECT LOCATION		DEFECT TYPE	LOG DATE	MON.	REMARKS	** REPAIR DATE	** TEST DATE
	SEAM, PANEL OR REPAIR NO.	DEFECT LOCATION DESCRIPTION						
A	P15-P17	1'S NEOS	D	4.26.19	Am	✓	4-26	5.8
B	P16-P17	1'N Seos	D	4.26.19	Am	✓	4-26	5.8
C	P31.37	6'N Seos	D	4.26.19	Am		4-26	5.2
D	P34.38	entire seam	IS	4.26.19	Am		4-26	5.3
E	P38.40	1'S NEOS	FS	4.26	Am		4-26	5.2
F	P42.43	4'S NEOS	D	4.26	Am		4-26	5.1
G	P54.55.56	INT	T	4.26	Am		4-26	5.1
H	P54.56	10'N Seos	D	4.26	Am		4-26	5.1
I	PS6	8'N Seos, 1'W Seos	D	4.26	Am		4-26	5.1
J	P57.58.60	INT	T	4.26	Am		4-26	5.2
K	P61.63.64	INT	T	4.26	Am		5.1	5.2
L	P63.64.65	INT	T	4.26	Am		5.1	5.2
M	P65.78.79	INT	T	4-26	AB		5.1	5.2
N	P78.79.80	INT	T	4-26	AB		5.1	5.2
P	P66.78.80	INT	T	4-26	AB		4.30	5.1
Q	P53.66.78	INT	T	4-26	AB		4.30	5.1
R	P11-P12	134'S NEOS	DF-8P2	4.30	AB		5.2	5.3
S	P11-P12	94'S NEOS	DF-8N2	4.30	AB		5.2	5.3
T	P1-P3	73' N Seos	DF-1P2	4.30	AB		5.8	5.8
V	P1-P3	61' N Seos	DF-1P3	4.30	AB		5.8	5.8
W	P1-P3	113' N Seos	DF-1N2	4.30	AB		5.8	5.8
X	P1-P3	123' N Seos	DF-1N3	4.30	AB		5.8	5.8
Y	P40-R13B	44' N Seos	DX-S	4.30	AB		5.2	5.3
Z	P11-P12	84'S NEOS	DF-8N3	4.30	AB		5.2	5.3

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(January 2005)

GOLDER ASSOCIATES INC.

17

GEOMEMBRANE DEFECT LOG

PROJECT NUMBER: 1896102
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PROJECT TITLE: JH Campbell Ash Pond A Closure
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SHEET NUMBER

18

DEFECT CODE	DEFECT LOCATION		DEFECT TYPE	LOG DATE	MON.	REMARKS	** REPAIR DATE	** TEST DATE
	SEAM, PANEL OR REPAIR NO.	DEFECT LOCATION DESCRIPTION						
A	P1-P3	133' N Seals	DF-1N4	4.30	AB		5.8	5.8
B	P1-P3	51' N Seals	DF-1P4	4.30	AB		5.8	5.8
C	P1-P3	41' N Seals	DF-1P5	4.30	AB		5.8	5.8
D	P70-P72	10' E Walls	D	4.30	AB		4.30	5.1
E	P69-P74-75	INT	T	4.30	AB		4.30	5.1
F	P69-P70-75	INT	T	4.30	AB		4.30	5.1
G	P18-P19	12'S N Seals	DF-10N3	5.1	AB		5.7	5.8
H	P17-P32	145' N Seals	DF-22N	5.1	AB		5.1	5.8
I	P17-P32	100' N Seals	DF-22P	5.1	AB		5.2	5.8
J	P74-P75	10' N Seals	DF-33P	5.1	AB		5.1	5.8
K	P79-P80	10' N Seals	DF-33N	5.1	AB		5.1	5.2
L	P43-P44	1'S N Seals	D	5.1	AB		4.30	5.2
M	P47-P48	1'S N Seals	D	5.1	AB		4.30	5.2
N	P49-P50	10'S N Seals	D	5.1	AB		4.30	5.2
P	P70-75-77	INT	T	5.1	AB		4.30	5.1
Q	P68-69-74	INT	T	5.1	AB		4.30	5.1
R	P68-73-74	INT	T	5.1	AB		4.30	5.1
S	P67-68-73	INT	T	5.1	AB		4.30	5.1
T	P67-73-80	INT	T	5.1	AB		4.30	5.1
V	P66-67-80	INT	T	5.1	AB		4.30	5.1
W	P52-53-78	INT	T	5.1	AB		4.30	5.1
X	P52-65-78	INT	T	5.1	AB		4.30	5.1
Y	P51-52-65	INT	T	5.1	AB		4.30	5.1
Z	P48-P49	10' N Seals	D	5.1	AB		4.30	5.2

B - UNDISPERSED RESIN BEAD
 BO - FUSION WELDER BURN
 BS - BOOTS/SKIRT FOR FML PENETRATION
 CO - CHANGE OF OVERLAY
 CR - CREASE
 D - INSTALLATION DAMAGE
 DS# - DESTRUCTIVE TEST NUMBER

EXT - EXTENSION
 FM - FISHMOUTH
 FS - FAILED SEAM LENGTH
 FTS - FIELD TEST STRIP
 HT - HEAT TACK BURN
 IO - INSUFFICIENT OVERLAY (UNDER SPEC.)
 MD - MANUFACTURER/DELIVERY DAMAGE

SI - SOIL SURFACE IRREGULARITY
 SL - SLAG ON TEXTURED SHEET
 T - THREE PANEL INTERSECTION
 VL - VACUUM TEST LEAK
 WR - WRINKLE
 WS - WELDER RESTART
 OTHER _____

REVIEWED BY: PS DATE: 9/6/19

** COLUMNS TO BE USED BY THE DATA REVIEWER ONLY.

GOLDER FORM: G18-0699

January 2005

GOLDER ASSOCIATES INC.

GEOMEMBRANE DEFECT LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

SHEET NUMBER 19

DEFECT CODE	DEFECT LOCATION		DEFECT TYPE	LOG DATE	MON.	REMARKS	REPAIR DATE	TEST DATE
	SEAM, PANEL OR REPAIR NO.	DEFECT LOCATION DESCRIPTION						
A	P61-P62-P63	INT	T	5.1	AB		5.1	5.2
B	P74-P75	33'S NEOS	D	5.1	AB		5.2	5.2
C	P74-P75	13'N Seos	D	5.1	AB		5.1	5.2
D	P73-P74	2'N Seos	D	5.1	AB		5.1	5.2
E	P73-P80	2'N Seos	D	5.1	AB		5.1	5.2
F	P79-P65	2'N Seos	D	5.1	AB		5.1	5.2
G	P75-P67	INT	T	4.30	AB		4.30	5.2
H	P74	10'N Seos 2' E Weos	D	4.30	AB		4.30	5.2
I	P17-P32	78'N Seos	DF-22PA	5.2	AB		5.2	5.8
J	P6-P8	190'S NEOS	DF-5P5	5.2	AB		5.2	5.8
K	P9-P11	55'N Seos	DF-5N5	5.2	AB		5.2	5.8
L	P10-P11	22'N Seos	DF-7P2	5.2	AB		5.2	5.2
M	P11-P12	144'S NEOS	DF-8P3	5.2	AB		5.2	5.2
N	P1-P3	143'N Seos	DF-11N5	5.2	AB		5.8	5.8
P	P6-P8	120'S NEOS	D	5.1	AB		5.1	5.8
Q	P9-P11	80' N. Seos	DF-5N6	5.2	AB		5.2	5.8
R	P55-P59	83' N Seos	D	5.1	AB		5.1	5.2
S	P77	West SW drain	BS	4.30	AB		4.30	5.2
T	P6-R19T	10'N Seos	DX-8	5.2	AB		5.2	5.8
V	P74-R19B	5'N Seos	DX-7	5.2	AB		5.2	5.2
W	P47-R16L	5'S NEOS	DX-6	5.2	AB		5.2	5.2
X	R-16A	R-16A	VL	5.2	AB		5.2	5.2
Y	P1-P3	143'N Seos	DF-11N5	5.2	AB		5.8	5.8
Z	P45-P57	5'W Eos	DF-33P2	5.3	AB		5.3	5.4

B - UNDISPERSED RESIN BEAD
 BO - FUSION WELDER BURN
 BS - BOOT/SKIRT FOR FML PENETRATION
 CO - CHANGE OF OVERLAP
 CR - CREASE
 D - INSTALLATION DAMAGE
 DS# - DESTRUCTIVE TEST NUMBER

EXT - EXTENSION
 FM - FISHMOUTH
 FS - FAILED SEAM LENGTH
 FTS - FIELD TEST STRIP
 HT - HEAT TACK BURN
 IO - INSUFFICIENT OVERLAY (UNDER SPEC.)
 MD - MANUFACTURER/DELIVERY DAMAGE

SI - SOIL SURFACE IRREGULARITY
 SL - SLAG ON TEXTURED SHEET
 T - THREE PANEL INTERSECTION
 VL - VACUUM TEST LEAK
 WR - WRINKLE
 WS - WELDER RESTART
 OTHER

REVIEWED BY: PS DATE: 9/6/19

** COLUMNS TO BE USED BY THE DATA REVIEWER ONLY.

GOLDER FORM: G18-0699

January 2005)

GOLDER ASSOCIATES INC.

GEOMEMBRANE DEFECT LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, MI

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

SHEET NUMBER 20

DEFECT CODE	DEFECT LOCATION		DEFECT TYPE	LOG DATE	MON.	REMARKS	**	**
	SEAM, PANEL OR REPAIR NO.	DEFECT LOCATION DESCRIPTION					REPAIR DATE	TEST DATE
A	P79-P80	40' N Seos	DF-33N2	5.3	AB		5.3	5.3
B	P17-P32	178' N Sees	DF-22N2	5.3	AB		5.3	5.8
C	P11-P12	55' S Nees	DF-8N4	5.2	AB		5.2	5.8
D	P17-P32	188' N Sees	DF-22N3	5.3	AB		5.3	5.8
E	P13-P15	18' N Sees	DF-8N5	5.3	AB		5.3	5.8
F	P118-P119	8' E Nees	D	5.3	AB		5.7	5.8
G	P17-P32	205' N Sees	DF-22N4	5.3	AB		5.3	5.8
H	P92-P103	6' N Sees	D	5.3	AB		5.3	5.8
I	P102-P103	60' E Nees	D	5.3	AB		5.7	5.7
J	P96-P97	10' W Nees	D	5.3	AB		5.3	5.4
K	P99-P100	1' S Nees	D	5.3	AB		5.3	5.4
L	P88-P91	130' S Nees	D	5.3	AB		5.3	5.7
M	P86-87-88	INT	T	5.3	AB		5.3	6.7
N	P96-P97	Ecos	EXT	5.3	AB	over anchor trench	5.3	5.7
P	P49-R85	1' S Nees	DX-6N	5.3	AB		5.7	5.7
Q	P7-R-16E	2' S Nees	DX-6P	5.3	AB		5.7	5.7
R	P112-R11R	4' N Sees	DX-9	5.4	AB	MX 46	5.7	5.7
S	P97-R20N	2' N Sees	DX-10	5.4	AB	MX 52	5.7	5.7
T	P104-P105	2' W Nees	D	5.4	AB		5.7	5.7
V	P36-P37	10' N Sees	DF-22N5	5.6	AB		5.7	5.7
W	P29-P30	11' E Nees	DF-22P3	5.6	AB		5.7	5.8
X	P118-119-120	Eastern Manhole	BS	5.7	AB		5.7	5.8
Y								
Z								

B - UNDISPERSED RESIN BEAD
 BO - FUSION WELDER BURN
 BS - BOOTSKIRT FOR FML PENETRATION
 CO - CHANGE OF OVERLAP
 CR - CREASE
 D - INSTALLATION DAMAGE
 DS-N - DESTRUCTIVE TEST NUMBER

EXT - EXTENSION
 FM - FISHMOUTH
 FS - FAILED SEAM LENGTH
 FTS - FIELD TEST STRIP
 HT - HEAT TACK BURN
 IO - INSUFFICIENT OVERLAY (UNDER SPEC.)
 MD - MANUFACTURER/DELIVERY DAMAGE

SI - SOIL SURFACE IRREGULARITY
 SL - SLAC ON TEXTURED SHEET
 T - THREE PANEL INTERSECTION
 VL - VACUUM TEST LEAK
 WR - WRINKLE
 WS - WELDER RESTART
 OTHER _____

REVIEWED BY: PS DATE: 9/6/19

** COLUMNS TO BE USED BY THE DATA REVIEWER ONLY.

GOLDER FORM: G18-4699

January 2005)

GOLDER ASSOCIATES INC.

GEOMEMBRANE DEFECT LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, MI

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

SHEET NUMBER 21

DEFECT CODE	DEFECT LOCATION		DEFECT TYPE	LOG DATE	MON.	REMARKS	** REPAIR DATE	** TEST DATE
	SEAM, PANEL OR REPAIR NO.	DEFECT LOCATION DESCRIPTION						
A	P17-23	146' N Seos	D	5-3	Am		5-3	5-8
B	P111-116	1' W Feos	D	5-3	Am		5-3	5-4
C	P117-118	1' W Neos	D	5-3	Am		5-3	5-4
D	P9-11	2' N Seos	D	5-3	Am		5-3	5-8
E	P119-122	Feos	EXT	5-3	Am	over anchor tendon	5-3	5-4
F	P88-P91	67'S Neos	D	5-3	AB		5-3	5-4
G	P88-P91	76'S Neos	D	5-3	AB		5-3	5-7
H	P88-P91	93'S Neos	D	5-3	AB		5-3	5-7
I	P88-P91	50' N Seos	D	5-3	AB		5-7	5-7
J	P30-P83	10' N Seos	D	5-3	AB		5-7	5-8
K	P48-P49	R-18E	C	5-7	AB	CAPS R-18E	5-7	5-7
L	P47-P48	R-19W	C	5-7	AB	CAPS R-19W (TX-6)	5-7	5-7
M	P26-P28	Neo R-6B	D	5-7	AB		5-7	5-7
N	P26-P28	Seo R-6B	D	5-7	AB		5-7	5-7
P	P105-P106	1' W Feos	D	5-7	AB		5-7	5-7
Q	P107-P108	1' W Feos	D	5-7	AB		5-7	5-7
R	P93	3' N Seos 7' W	D	5-7	DL		5-7	5-7
S	P92	1' W Feos 2' S Neos	D	5-7	DL		5-7	5-7
T	P98-P101	E Feos	D	5-7	DL		5-7	5-7
V	P102-P103	E Feos	D	5-7	DL		5-7	5-7
W	P24-P27	R-4Y	VL	5-8	AB		5-8	5-8
X	P8-P9	175' N Seos	DF-S1	5-8	AB		5-8	5-8
Y	P6-P8	67' N Seos	DF-S1	5-8	AB		5-8	5-8
Z	P13-P15	178' N Seos	DF-S2	5-8	AB		5-8	5-8

B - UNDISPERSED RESIN BEAD
 BO - FUSION WELDER BURN
 BS - BOOT/SKIRT FOR FML PENETRATION
 CO - CHANGE OF OVERLAP
 CR - CREASE
 D - INSTALLATION DAMAGE
 DS-# - DESTRUCTIVE TEST NUMBER

EXT - EXTENSION
 FM - FISHMOUTH
 FS - FAILED SEAM LENGTH
 FTS - FIELD TEST STRIP
 HT - HEAT TACK BURN
 IO - INSUFFICIENT OVERLAY (UNDER SPEC.)
 MD - MANUFACTURER/DELIVERY DAMAGE

SI - SOIL SURFACE IRREGULARITY
 SL - SLAG ON TEXTURED SHEET
 T - THREE PANEL INTERSECTION
 VL - VACUUM TEST LEAK
 WR - WRINKLE
 WS - WELDER RESTART
 OTHER _____

REVIEWED BY: PS DATE: 9/6/19

** COLUMNS TO BE USED BY THE DATA REVIEWER ONLY.

GOLDER FORM: G18-0699

May 2005

GOLDER ASSOCIATES INC.

GEOMEMBRANE DEFECT LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, MI

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

SHEET NUMBER

22

DEFECT CODE	DEFECT LOCATION		DEFECT TYPE	LOG DATE	MON.	REMARKS	** REPAIR DATE	** TEST DATE
	SEAM, PANEL OR REPAIR NO.	DEFECT LOCATION DESCRIPTION						
A	P15-P17	210' N/S	DF-53	5-8	AB		5-8	5-8
B	P12-P13	75' S Neos	DF-54	5-8	AB		5-8	5-8
C	P76-P81	2' N Sees	D	5-7	AB		5-7	5-7
D	P54	5' E W side 75' N S side	D	5-9	AB		5-11	5-13
E	P70-P71-P72	INT	T	4-30	AB		4-30	5-1
F	P118-BS	6' S Neos	WR	5-10	AB	R-22F	5-10	5-10
G	P11-P10	75N - Neos	FS	5-10	DW	CAP 81' JY-13	5-10	5-10
H	P9-P11	22L - 22I	FS	5-10	DW	115' CAP CF-33	5-10	5-10
I	P9-P11	16N - 22H	FS	5-10	DW	70' CAP	5-10	5-10
J	P10-P11	19L - 3m	FS	5-10	DW	16' CAP JY-13	5-10	5-10
K	P9-P11	Neos - 16N	FS	5-10	DW	20' CAP JY-13	5-10	5-10
L	P9-P11	22H - 19Q	FS	5-10	DW	50' CAP CF-33	5-10	5-10
M	P9-R22H	62' N Sees	DX-13	5-11	AB	MX33	5-11	5-11
N	P11-R22J	8' S Neos	DX-14	5-11	AB	AX13	5-11	5-11
P	P11-P12	3V-3T	FS	5-10	AB	11' CAP CF-33	5-10	5-10
Q	P11-P12	3X-3Y	FS	5-10	AB	58' CAP CF-33	5-10	5-10
R	P11-P12	3Y-3Z	FS	5-10	AB	10' CAP CF-33	5-10	5-10
S	P11-P12	3Z-Sees	FS	5-10	AB	7' CAP CF-33	5-10	5-10
T	P70-P72	15' E Neos	TD	5-11	AB	CF-33	5-11	5-11
V	P60	19' N S side	D	5-11	AB	CF-33	5-11	5-13
W	P11-P12	17Z-20C	FS	5-11	AB	22' CAP JY-13	5-11	5-11
X	P11-P12	3T-19M	FS	5-11	AB	216' CAP CF-33	5-11	5-11
Y	P11-R22X	12' S Neos	DX-15	5-11	AB		5-11	5-11
Z	P11-P12	20C-Neos	FS	5-11	AB	50' CAP	5-11	5-11

B - UNDISPERSED RESIN BEAD
 BO - FUSION WELDER BURN
 BS - BOOTS/KIRT FOR FML PENETRATION
 CO - CHANGE OF OVERLAP
 CR - CREASE
 D - INSTALLATION DAMAGE
 DS-# - DESTRUCTIVE TEST NUMBER

EXT - EXTENSION
 FM - FISHMOUTH
 FS - FAILED SEAM LENGTH
 FTS - FIELD TEST STRIP
 HT - HEAT TACK BURN
 IO - INSUFFICIENT OVERLAY (UNDER SPEC.)
 MD - MANUFACTURER/DELIVERY DAMAGE

SI - SOIL SURFACE IRREGULARITY
 SL - SLAC ON TEXTURED SHEET
 T - THREE PANEL INTERSECTION
 VL - VACUUM TEST LEAK
 WR - WRINKLE
 WS - WELDER RESTART
 OTHER _____

REVIEWED BY: PS

DATE: 9/6/19

** COLUMNS TO BE USED BY THE DATA REVIEWER ONLY.

GOLDER FORM: G18-0699

May 2005

GOLDER ASSOCIATES INC.

GEOMEMBRANE DEFECT LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, MI

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

SHEET NUMBER 23

DEFECT CODE	DEFECT LOCATION		DEFECT TYPE	LOG DATE	MON.	REMARKS	** REPAIR DATE	** TEST DATE
	SEAM, PANEL OR REPAIR NO.	DEFECT LOCATION DESCRIPTION						
A	P14-P15	15F - Neos	FS	5-11	AB	13' cap 13-JY	5-11	5-13
B	P14-P16	Seam - Neos	FS	5-11	AB	86' cap 13-JY	5-11	5-13
C	P17-P32	Seam - 19I	FS	5-11	AB	66' cap 33-IF	5-11	5-13
D	P14-R23B	33' N Sees	DX-16	5-11	AB		5-13	5-13
E	P17-P31	Seam - Neos	FS	5-13	AB	136' cap 13-JY	5-13	5-13
F	P17-R22E	35' N Sees	DX-17	5-13	AB		5-13	5-13
G	P17-P32	20G - Neos	FS	5-13	AB	125' cap 33-IF	5-13	5-13
H	P32-R22G	55' N Sees	DX-18	5-13	AB		5-13	5-13
I								
J								
K								
L								
M								
N								
P								
Q								
R								
S								
T								
V								
W								
X								
Y								
Z								

B - UNDISPERSED RESIN BEAD
 BO - FUSION WELDER BURN
 BS - BOOT/SKIRT FOR FML PENETRATION
 CO - CHANGE OF OVERLAP
 CR - CREASE
 D - INSTALLATION DAMAGE
 DS-# - DESTRUCTIVE TEST NUMBER

EXT - EXTENSION
 FM - FISHMOUTH
 FS - FAILED SEAM LENGTH
 FTS - FIELD TEST STRIP
 HT - HEAT TACK BURN
 IO - INSUFFICIENT OVERLAY (UNDER SPEC)
 MD - MANUFACTURER/DELIVERY DAMAGE

SI - SOIL SURFACE IRREGULARITY
 SL - SLAG ON TEXTURED SHEET
 T - THREE PANEL INTERSECTION
 VL - VACUUM TEST LEAK
 WR - WRINKLE
 WS - WELDER RESTART
 OTHER _____

REVIEWED BY: PD DATE: 9/6/19

** COLUMNS TO BE USED BY THE DATA REVIEWER ONLY.

GOLDER FORM: G18-0699

January 2005

GOLDER ASSOCIATES INC.

GEOMEMBRANE DEFECT LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

Dozer Damage Repair
 SHEET NUMBER 24

DEFECT CODE	DEFECT LOCATION		DEFECT TYPE	LOG DATE	MON.	REMARKS	** REPAIR DATE	** TEST DATE
	SEAM, PANEL OR REPAIR NO.	DEFECT LOCATION DESCRIPTION						
A	Pond A	North Side	D	6-5	DW		6-5	6-5
B								
C								
D								
E								
F								
G								
H								
I								
J								
K								
L								
M								
N								
P								
Q								
R								
S								
T								
V								
W								
X								
Y								
Z								

R - UNDISPERSED RESIN BEAD
 BO - FUSION WELDER BURN
 BS - BOOT/SKIRT FOR FML PENETRATION
 CO - CHANGE OF OVERLAP
 CR - CREASE
 D - INSTALLATION DAMAGE
 DS# - DESTRUCTIVE TEST NUMBER

EXT - EXTENSION
 FM - FISHMOUTH
 FS - FAILED SEAM LENGTH
 FTS - FIELD TEST STRIP
 HT - HEAT TACK BURN
 IO - INSUFFICIENT OVERLAY (UNDER SPEC.)
 MD - MANUFACTURER/DELIVERY DAMAGE

SI - SOIL SURFACE IRREGULARITY
 SL - SLAG ON TEXTURED SHEET
 T - THREE PANEL INTERSECTION
 VL - VACUUM TEST LEAK
 WR - WRINKLE
 WS - WELDER RESTART
 OTHER _____

REVIEWED BY: PS DATE: 9/6/19

** COLUMNS TO BE USED BY THE DATA REVIEWER ONLY.

APPENDIX J.2

Repair Logs

GEOMEMBRANE REPAIR LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

PASSING TRIAL SEAMS

NO.	TIME	TECH	NO.	TIME	TECH
TX-4	1336	JM			

MACHINE NUMBER: MX3
 DATE: 4-19-19
 SHEET NO: 1 of 1

DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM.	WELD TECH.	MON.	REMARKS
1 SS	4.19	1355	P	2x6	JM	AM	
2 SP	4.19	1405	P	2x6	JM	AM	
3 6W-6X	4.19	1427	C	2x19	JM	AM	PS
4 6M	4.19	1432	P	2x3	JM	AM	
5 6P	4.19	1437	P	2x2	JM	AB	
6 6S	4.19	1452	P	2x2	JM	AB	
7 6Q	4.19	1456	P	2x2	JM	AB	
8 6K	4.19	1443	P	2x3	JM	AM	
9 4V	4.19	1505	P	2x4	JM	AM	
10 8W	4.19	1509	P	2x3	JM	AM	
11 SW	4.19	1518	P	2x3	JM	AM	
12 8H	4.19	1525	P	2x3	JM	AM	
13 7B	4.19	1530	P	2x2	JM	AM	
14 8I	4.19	1536	P	5x2	JM	AB	
15 7C	4.19	1554	P	2x2	JM	AM	
16 5Z	4.19	1555	P	2x3	JM	AM	
17 1Q	4.19	1630	P	2x2	JM	AB	
18 4N	4.19	1635	P	2x3	JM	AB	
19 1R	4.19	1640	P	2x2	JM	AB	
20 1F	4.19	1704	P	5x2	JM	AB	DF-2
21 1B-2H	4.19	1722	C	10x2	JM	AB	DF-3 PS
22 7H	4.19	1606	P	2xC	JM	AB	
23			P				
24							
25							
26							
27							
28							
29							
30							

DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM.	WELD TECH.	MON.	REMARKS
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							
41							
42							
43							
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REPAIR TYPE: P - PATCH, C - CAP, RS - RECONSTRUCTED SEAM, G&W - GRIND WELD

REVIEWED BY: PS DATE 9/6/19

GOLDER FORM: G19-4ss

(January 2005)

GOLDER ASSOCIATES INC.

Note: Item 21 Caps 1B
 Line 3: Repair caps seam between 6W & 6X along
 with defects 6W & 6X.

GEOMEMBRANE REPAIR LOG

PROJECT NUMBER 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

PASSING TRIAL SEAMS

NO.	TIME	TECH	NO.	TIME	TECH
TX-2	836	CT			
TX-5	1324	CT			

MACHINE NUMBER: 46
 DATE: 4-19-19
 SHEET NO: 104

DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM.	WELD TECH.	MON.	REMARKS
1 7F	4.19	9:11	P	2x2	CT	AB	
2 7E	4.19	9:21	P	2x2	CT	AB	
3 7G	4.19	9:36	P	2x2	CT	AB	
4 7I	4.19	11:01	P	5x2	CT	AB	
5 7J	4.19	10:38	P	5x2	CT	AB	
6 4X	4.19	10:23	P	2x2	CT	AB	
7 7K	4.19	11:28	P	5x2	CT	AB	
8 5Q	4.19	11:53	C	2x12	CT	AB	PS
9 7L	4.19	13:54	P	6x2	CT	AB	
10 5L	4.19	14:06	P	2x2	CT	AB	
11 6A	4.19	9:50	P	2x2	CT	AB	
12 7M	4.19	14:26	P	4x2	CT	AB	
13 6R	4.19	12:03	P	2x2	CT	AB	
14 5N	4.19	16:21	C	29x2	CT	AB	Note 1 PS
15 4W	4.19	15:49	P	3x2	CT	AB	
16 5K	4.19	14:58	P	2x2	CT	AB	
17 5I	4.19	14:48	P	4x2	CT	AB	
18 7A	4.19	15:21	P	5x2	CT	AB	
19 2A	4.19	16:41	P	23x2	CT	AB	Note 2 PS
20 1D	4.19	16:55	P	2x2	CT	AB	
21 2G	4.19	17:05	P	6x2	CT	AB	
22 8K	4.19	17:46	P	6x2	CT	AB	
23 6J	4.19	14:48	P	2x2	CT	AB	
24 7R	4.19	12:00	P	2x2	CT	AB	
25 7D	4.19	15:53	P	2x2	CT	AB	
26							
27							
28							
29							
30							

DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM.	WELD TECH.	MON.	REMARKS
31							
32							
33							
34							
35							
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37							
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REPAIR TYPE: P - PATCH, C - CAP, RS - RECONSTRUCTED SEAM, G&W - GRIND WELD

REVIEWED BY: PS DATE 9/6/19

GOLDER FORM: G19-tss

(January 2005)

GOLDER ASSOCIATES INC.

Note: Line 14 covers:
 5M, 5N (DF-13), 7N (DF-13P), 4P
 CAPS seams between defects 5M + 4P

Note 2: Cap covers
 2A, 2B, 2C, 2D, 2E

GEOMEMBRANE REPAIR LOG

PROJECT NUMBER 1896102
OWNER: Consumers Energy
LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
CONTRACTOR: Chesapeake Containment Systems, Inc.

PASSING TRIAL SEAMS

NO.	TIME	TECH	NO.	TIME	TECH
TX-1	8:35	ET			
TX-3	13:10	ET			

MACHINE NUMBER: Mx52
DATE: 4-19-19
SHEET NO: 1 of 1

DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM.	WELD TECH.	MON.	REMARKS
1 GB	4/19	8:40	P	2x7	ET	AM	
2 8A	4/19	8:47	P	2x5	ET	AM	
3 6C	4/19	8:53	P	2x6	ET	AM	
4 8B	4-19	9:00	P	2x2	ET	AM	
5 6D	4-19	9:07	P	2x3	ET	AM	
6 8C	4-19	9:11	P	2x2	ET	AM	
7 4Z	4-19	9:17	P	2x6	ET	AM	
8 5V	4-19	9:30	P	2x4	ET	AM	
9 6N	4-19	9:43	C	2x14	ET	AM	PS
10 4S	4-19	10:00	P	2x6	ET	AM	
11 5T	4-19	10:10	P	2x6	ET	AM	
12 6L	4-19	10:18	P	2x4	ET	AM	
13 6T, 4L	4-19	10:40	C	2x14	ET	AM	PS
14 8D	4-19	13:20	P	2x3	ET	AM	
15 4R	4-19	13:24	P	2x2	ET	AM	
16 6V	4-19	13:26	P	2x2	ET	AM	
17 8E	4-19	13:44	C	2x11	ET	AM	PS
18 5R	4-19	13:50	P	2x6	ET	AM	
19 6Z	4-19	13:56	P	2x2	ET	AM	
20 4M	4-19	14:05	P	2x6	ET	AM	
21 1A	4-19	14:10	P	1x1	ET	AM	
22 8F	4-19	14:15	P	2x2	ET	AM	
23 1W	4-19	14:23	P	2x6	ET	AM	
24 8G	4-19	14:29	P	2x4	ET	AM	
25 6Y	4-19	15:00	P	2x7	ET	AM	
26 8E	4-19	13:44	P	2x11	ET	AM	Repeat
27 1C	4-19	15:35	P	2x5	ET	AM	
28 1Y	4-19	15:40	P	2x2	ET	AM	
29 1X	4-19	15:45	P	2x2	ET	AM	
30 1E	4-19	17:07	P	4x2	ET	AB	

DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM.	WELD TECH.	MON.	REMARKS
31 1V	4-19	17:14	P	4x3	ET	AB	
32 1T	4-19	17:18	P	2x2	ET	AB	
33 1S	4-19	17:30	P	5x2	ET	AB	
34 8J	4-19	17:35	P	5x2	ET	AB	
35 5X	4-19	16:10	C	2x8	ET	AB	PS
36 5Y	4-19	16:16	C	2x8	ET	AB	PS
37 1Z	4-19	16:23	P	2x4	ET	AB	
38 10I	4-19	16:28	P	2x2	ET	AB	
39 4T	4-19	16:05	P	2x2	ET	AB	
40 4Y	4-19	16:16	P	2x2	ET	AB	
41							
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REPAIR TYPE: P - PATCH, C - CAP, RS - RECONSTRUCTED SEAM, G&W - GRIND WELD

REVIEWED BY: PS DATE 9/6/19

GOLDER FORM: G19-tss

(January 2005)

GOLDER ASSOCIATES INC.

GEOMEMBRANE REPAIR LOG

PROJECT NUMBER 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

PASSING TRIAL SEAMS

NO.	TIME	TECH	NO.	TIME	TECH
TX-2	1025	CT			
TX-4	1323	CT			

MACHINE NUMBER: MX 46
 DATE: 4-23-19
 SHEET NO: 1 of 1

DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM.	WELD TECH.	MON.	REMARKS
1 3C	4.23	1109	P	2x6	CT	AM	
2 1P	4.23	1047	P	2x4	CT	AM	
3 1N	4.23	1051	P	2x3	CT	AM	
4 2F	4.23	1053	P	2x2	CT	AM	
5 1M	4.23	1100	P	2x3	CT	AM	
6 3G	4.23	1117	P	2x5	CT	AM	
7 8L	4.23	1124	P	2x2	CT	AM	
8 1L	4.23	1130	P	2x2	CT	AM	
9 1K	4.23	1135	P	2x3	CT	AM	
10 1I	4.23	1140	P	2x2	CT	AM	
11 1J	4.23	1145	P	2x2	CT	AM	
12 1H	4.23	1148	P	2x2	CT	AM	
13 1G	4.23	1153	P	2x3	CT	AM	
14 10C	4.23	1200	P	2x3	CT	AM	
15 10B	4.23	1350	P	2x2	CT	AM	
16 3K	4.23	1356	P	2x2	CT	AM	
17 3P	4.23	1400	P	2x2	CT	AM	
18 3Q	4.23	1417	P	2x8	CT	AM	PS
19 3M	4.23	1428	P	2x7	CT	AM	
20 3N	4.23	1428	P	2x4	CT	AM	
21 10E	4.23	1457	P	2x3	CT	AM	
22 10F	4.23	1503	P	2x3	CT	AM	
23 3S	4.23	1513	P	2x3	CT	AM	
24 2X	4.23	1540	P	2x3	CT	AM	
25 2Z	4.23	1548	P	2x4	CT	AM	
26 3T	4.23	1557	P	2x6	CT	AM	
27 2Y	4.23	1607	P	2x2	CT	AM	
28 3F	4.23	1612	P	2x2	CT	AM	
29 3M	4.23	1625	P	2x2	CT	AM	
30 9V	4.23	1631	P	2x2	CT	AM	

DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM.	WELD TECH.	MON.	REMARKS
31 3L	4.23	1638	P	2x6	CT	AM	
32 5B	4.23	1646	P	2x7	CT	AM	
33 5C	4.23	1655	P	2x6	CT	AM	
34 5D	4.23	1704	P	2x6	CT	AM	
35 10M	4.23	1711	P	2x3	CT	AM	
36 5E	4.23	1721	P	2x5	CT	AM	
37 10N	4.23	1728	P	3x3	CT	AM	
38 4K	4.23	1735	P	2x6	CT	AM	
39 10P	4.23	1739	P	2x3	CT	AM	
40 15X	4.23	1532	P	2x5	CT	AM	
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REPAIR TYPE: P - PATCH, C - CAP, RS - RECONSTRUCTED SEAM, G&W - GRIND WELD

REVIEWED BY: RS DATE 9/6/19

GOLDER FORM: G19-tss
 (January 2005)

GOLDER ASSOCIATES INC.

GEOMEMBRANE REPAIR LOG

PROJECT NUMBER 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

PASSING TRIAL SEAMS

NO.	TIME	TECH	NO.	TIME	TECH
TX-1	958	ET			
TX-3	1330	ET			

MACHINE NUMBER: MX 52
 DATE: 4-23-19
 SHEET NO: 1 of 1

DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM.	WELD TECH.	MON.	REMARKS
1 2W	4.23	1021	P	2x2	ET	Am	
2 2V	4.23	1025	P	2x2	ET	Am	
3 2T	4.23	1030	P	2x2	ET	Am	
4 2S	4.23	1034	P	2x2	ET	Am	
5 2R	4.23	1038	P	2x2	ET	Am	
6 2Q	4.23	1040	P	2x2	ET	Am	
7 2P	4.23	1045	P	2x2	ET	Am	
8 2N	4.23	1046	P	2x2	ET	Am	
9 2M	4.23	1050	P	2x2	ET	Am	
10 2L	4.23	1053	P	2x2	ET	Am	
11 2K	4.23	1057	P	2x5	ET	Am	
12 9Q	4.23	1110	P	2x2	ET	Am	
13 9R	4.23	1115	P	2x5	ET	Am	
14 9S	4.23	1120	P	2x2	ET	Am	
15 9T	4.23	1128	P	2x4	ET	Am	
16 25.2	4.23	1200	C	2x22	ET	Am	PS
17 3B	4.23	1357	P	2x6	ET	Am	
18 3A	4.23	1403	P	2x5	ET	Am	
19 3D	4.23	1410	P	2x4	ET	Am	
20 10D	4.23	1345	P	2x4	ET	Am	
21 3E	4.23	1426	P	2x5	ET	Am	
22 3H	4.23	1415	P	2x4	ET	Am	
23 3I	4.23	1430	P	2x4	ET	Am	
24 3Z	4.23	1437	P	2x3	ET	Am	
25 10G	4.23	1405	C	2x14	ET	Am	Repeat
26 3Y	4.23	1453	P	2x4	ET	Am	
27 3X	4.23	1527	C	2x16	ET	Am	Note 1 PS
28 3T	4.23	1533	P	2x3	ET	Am	
29 4A	4.23	1550	P	3x5	ET	Am	
30 10G 10H	4.23	1705	C	2x66	ET	Am	Note 2 PS

DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM.	WELD TECH.	MON.	REMARKS
31 4E	4.23	1710	P	3x5	ET	Am	
32 4J	4.23	1715	P	3x3	ET	Am	
33 10J	4.23	1720	P	2x2	ET	Am	
34 6G	4.23	1727	P	2x2	ET	Am	
35 10A	4.23	1544	P	2x2	ET	Am	
36					ET	Am	
37					ET		
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REPAIR TYPE: P - PATCH, C - CAP, RS - RECONSTRUCTED SEAM, G&W - GRIND WELD

REVIEWED BY: PS DATE 9/6/19

GOLDER FORM: G19-iss
 (January 2005)

3x cap covers : GOLDR ASSOCIATES INC.
 repairs 3V and 3W

Note 2

10G cap includes 10H

GEOMEMBRANE REPAIR LOG

PROJECT NUMBER 1896102
OWNER: Consumers Energy
LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
CONTRACTOR: Chesapeake Containment Systems, Inc.

PASSING TRIAL SEAMS

NO.	TIME	TECH	NO.	TIME	TECH
TX-1	1050	ET			
TX-3	1600	ET			

MACHINE NUMBER: MX52
DATE: 4-25-19
SHEET NO: 1 of

DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM.	WELD TECH.	MON.	REMARKS
1	4D	4.25	1110	P	2x5	ET	AM
2	5F	4.25	1115	P	2x2	ET	AM
3	4G	4.25	1120	P	2x2	ET	AM
4	4H	4.25	1125	P	2x2	ET	AM
5	9W	4.25	1130	P	2x4	ET	AM
6	5A	4.25	1135	P	2x3	ET	AM
7	10K	4.25	1140	P	2x6	ET	AM
8	10L	4.25	1145	P	2x4	ET	AM
9	4F	4.25	1150	P	2x3	ET	AM
10	4E	4.25	1155	P	2x3	ET	AM
11	6E	4.25	1311	P	2x6	ET	AM
12	14E	4.25	1316	P	2x4	ET	AM
13	15A	4.25	1325	P	2x2	ET	AM
14	6F	4.25	1330	P	2x5	ET	AM
15	6H	4.25	1335	P	2x6	ET	AM
16	15B	4.25	1350	P	2x2	ET	AM
17	15C	4.25	1355	P	2x2	ET	AM
18	14F	4.25	1400	P	2x2	ET	AM
19	10X	4.25	1425	C	2x9	ET	AM PS
20	10Y	4.25	1435	C	2x12	ET	AM PS
21	6J	4.25	1410	P	2x6	ET	AM
22	15D	4.25	1405	P	2x2	ET	AM
23	13E	4.25	1511	C	2x11	ET	AM PS
24	4H	4.25	1521	P	2x2	ET	AM
25	13G	4.25	1517	P	2x2	ET	AM
26	13C	4.25	1523	P	2x7	ET	AB
27							
28							
29							
30							

DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM.	WELD TECH.	MON.	REMARKS
31							
32							
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REPAIR TYPE: P - PATCH, C - CAP, RS - RECONSTRUCTED SEAM, G&W - GRIND WELD

REVIEWED BY: PS DATE 9/6/19

GOLDER FORM: G19-tss

(January 2005)

Line 26: 13C caps entire P33/P37 seam. GOLDER ASSOCIATES INC.

GEOMEMBRANE REPAIR LOG

PROJECT NUMBER 1896102
OWNER: Consumers Energy
LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
CONTRACTOR: Chesapeake Containment Systems, Inc.

PASSING TRIAL SEAMS

NO.	TIME	TECH	NO.	TIME	TECH
TX-2	1045	CT			
TX-4	1530	CT			

MACHINE NUMBER: MX-46
DATE: 4-25-19
SHEET NO: 1 of

DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM.	WELD TECH.	MON.	REMARKS
1 4A	4.25	1116	P	3x6	CT	Am	
2 6F	4.25	1417	C	2x36	CT	Am	Note 2
3 14C	4.25	1156	P	2x4	CT	Am	
4 10V	4.25	1314	C	2x10	CT	Am	
5 10W	4.25	1320	C	2x10	CT	Am	
6 10T	4.25	1339	C	2x10	CT	Am	Note 5
7 10S	4.25	1350	C	2x10	CT	Am	Note 4
8 4B	4.25	1359	P	2x3	CT	Am	
9 10R	4.25	1412	C	2x20	CT	Am	Note 7
10 14G	4.25	1420	P	2x10	CT	Am	Note 2
11 15E	4.25	1454	C	2x12	CT	Am	Note 6
12 15F	4.25	1515	C	2x18	CT	Am	
13 15Z	4.25	1415	P	2x7	CT	Am	Repeat
14 14I	4.25	1532	P	2x2	CT	Am	
15 14D	4.25	1538	P	2x3	CT	Am	
16 15G	4.25	1547	P	2x2	CT	Am	
17 9X	4.25	1558	P	2x3	CT	Am	
18 9V	4.25	1631	C	2x20	CT	Am	Repeat
19 5H	4.25	1047	P	2x2	CT	Am	
20 97	4.25	1654	C	2x32	CT	Am	
21 96	4.25	1705	P	2x2	CT	Am	
22 15E	4.25	1415	C	2x10	CT	Am	Note 3
23							
24							
25							
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28							
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DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM.	WELD TECH.	MON.	REMARKS
31							
32							
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REPAIR TYPE: P - PATCH, C - CAP, RS - RECONSTRUCTED SEAM, G&W - GRIND WELD

REVIEWED BY: PS DATE 9/6/19

GOLDER FORM: G19-4ss
(January 2005)

Notes

GOLDER ASSOCIATES INC.

(see notes on back)

- cap covers 6I, 13A, 13D, 14M and entire p31-p33 seam length.
- Repair 14G caps P8/P10 from 10A to Neos. Also, caps P7/P10 from Seos to, and including, defect 14G.
- covers P15/P17 seam between 4K (DF-12) and 15R (DF-12P).
- covers P11/P12 seam from 10S to 5B.

5- 10T covers P11/P12 seam from 5B to 10T

6- 15E caps P14/P15 seam from 15E to 10V

7- Repair 10R caps P7/P10 seam from 14G to 10R.
caps defects 3 J + 10R.

GEOMEMBRANE REPAIR LOG

PROJECT NUMBER 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

PASSING TRIAL SEAMS

NO.	TIME	TECH	NO.	TIME	TECH
2	800	CT			
4	1306	CT			

MACHINE NUMBER: 46
 DATE: 4-26-19
 SHEET NO: 1

DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM.	WELD TECH.	MON.	REMARKS
1	14N	4.26	1035	P	22x4	CT	AB PS
2	5H	4.26	1047	P	2x2	CT	AB
3	15H	4.26	1122	P	2x2	CT	AB
4	15G	4.26	1126	P	2x2	CT	AB
5	15M	4.26	1446	C	2x18	CT	AM Note 1 PS
6	15N	4.26	1432	C	2x18	CT	AM Note 2 PS
7	14J	4.26	1013	P	2x2	CT	AM
8	14K	4.26	1008	P	2x3	CT	AM
9	9C	4.26	1104	C	2x12	CT	AM Note 3 PS
10	15Y	4.26	1115	P	2x2	CT	AM
11	16C	4.26	1513	C	2x15	CT	AM Note 5 PS
12	16B	4.26	1403	C	2x28	CT	AM Note 4 PS
13	4C	4.26	1520	P	2x7	CT	AM
14	15P	4.26	1446	P	2x7	CT	AM
15	17B	4.26	1504	P	2x7	CT	AM Note 5 PS
16	17A	4.26	1457	P	2x6	CT	AM Note 6 PS
17	17C	4.26	1540	P	2x2	CT	AM
18	17D	4.26	1155	P	3x3	CT	AM
19							
20	13H	4.26	1314	P	2x6	CT	AM
21	13I	4.26	1326	C	2x12	CT	AM Note 8 PS
22	8W	4.26	1339	P	2x6	CT	AM
23	16N	4.26	1619	P	2x7	CT	AM
24	16E	4.26	1626	P	2x6	CT	AM Dx4
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DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM.	WELD TECH.	MON.	REMARKS
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REPAIR TYPE: P - PATCH, C - CAP, RS - RECONSTRUCTED SEAM, G&W - GRIND WELD

GOLDER FORM: G19-tss
 (January 2005)

REVIEWED BY: PS DATE 9/6/19

GOLDER ASSOCIATES INC.

- 4) cap covers p10, p11 seam between 15M and 3L
 2) cap covers p10, p11 seam between 15N and 3L

- 3) cap covers 14L int. and entire p39-P35 seam length
 4) cap covers p8, p10 seam from Seos to 10Q and caps defects 10Q and 10B.
 5) cap covers p16, p17 seam between 14D & Seos

Notes

(notes cont)

Notes cont

6) 17A covers P15, P17 seam between 10N and (DF12)^{4K}

~~7) Cap includes 17E, 13B, 13F and covers entire P38-P40
seam length meas to seos~~

8) Cap covers 13I, 15W, and P42/P43 seam length
between 13I/15W

9) Line 20. 13H caps entire P41/P54 seam.

10) Line 18. 17D caps entire P34/P38 seam.

11) Line 11. 16C caps P16/P17 seam from 14D to DE12N

GEOMEMBRANE REPAIR LOG

PROJECT NUMBER 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

PASSING TRIAL SEAMS

NO.	TIME	TECH	NO.	TIME	TECH
1	1000	ET			
3	1315	ET			

MACHINE NUMBER: 52
 DATE: 4.26.19
 SHEET NO: 1

DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM.	WELD TECH.	MON.	REMARKS
1 15I	4.26	1043	C	10x2	ET	AB	PS
2 17E	4.26	1036	C	92x2	ET	AB	PS Note 1
3 15J	4.26	1047	C	8x2	ET	AB	PS
4 8M	4.26	1055	P	2x2	ET	Am	
5 17F	4.26	1128	P	2x6	ET	Am	
6 15S	4.26	1135	P	2x2	ET	Am	
7 15V	4.26	1155	C	2x20	ET	Am	PS-note 2
8 13J	4.26	1325	P	2x3	ET	Am	
9 16D	4.26	1410	P	3x3	ET	Am	
10 13K	4.26	1330	P	1x2	ET	Am	
11 17G	4.26	1425	P	2x2	ET	Am	
12 17H	4.26	1425	P	2x2	ET	Am	
13 17I	4.26	1420	P	2x2	ET	Am	
14 16K	4.26	1515	P	3x9	ET	Am	
15 16J	4.26	1510	P	2x4	ET	Am	
16 16G	4.26	1450	P	2x4	ET	Am	
17 8X	4.26	1455	P	2x1	ET	Am	
18 16H	4.26	1500	P	2x2	ET	Am	
19 17J	4.26	1505	P	2x2	ET	Am	
20 16A	4.26	1445	P	2x3	ET	Am	
21 16F	4.26	1440	P	2x7	ET	Am	
22 9A	4.26	1435	P	2x1	ET	Am	
23 9D	4.26	1345	P	2x7	ET	Am	
24 13M	4.26	1340	P	2x3	ET	Am	
25 13L	4.26	1338	P	2x3	ET	Am	
26 13P	4.26	1400	P	2x7	ET	Am	
27 13Q	4.26	1405	P	2x3	ET	Am	
28 13R	4.26	1640	P	2x2	ET	Am	
29 9E	4.26	1635	P	2x2	ET	Am	
30 13S	4.26	1630	P	2x5	ET	Am	

DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM.	WELD TECH.	MON.	REMARKS
31 16I	4.26	1621	P	2x2	ET	Am	PS
32 13T	4.26	1647	C	2x12	ET	Am	PS
33 16M	4.26	1610	P	2x2	ET	Am	
34 8V	4.26	1605	C	2x15	ET	Am	PS
35 7T	4.26	1655	P	7x2	ET	AB	DS-39
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REPAIR TYPE: P - PATCH, C - CAP, RS - RECONSTRUCTED SEAM, G&W - GRIND WELD

REVIEWED BY: PS DATE 9/6/19

GOLDER FORM: G19-tss

(January 2005)

GOLDER ASSOCIATES INC.

Note 1: Repair line 2 caps entire P38/P40 seam, 17F, 13B, 13F (DX-5) taken
 2: CAP COVERS 15V to 15T (P42/43 seam)
 Line 30: 13S caps entire P48/P58 seam.

GEOMEMBRANE REPAIR LOG

PROJECT NUMBER 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

PASSING TRIAL SEAMS

NO.	TIME	TECH	NO.	TIME	TECH
3	843	JM			

MACHINE NUMBER: MX 3
 DATE: 4.30.19
 SHEET NO: 1

DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM.	WELD TECH.	MON.	REMARKS
1	9P	4:30	950	C	22.2	JM	AB DF-34
2	14P	4:30	945	C	11.2	JM	AB DF-34P
3	19S	4:30	1300	BS	12.12	JM	AB
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DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM.	WELD TECH.	MON.	REMARKS
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REPAIR TYPE: P - PATCH, C - CAP, RS - RECONSTRUCTED SEAM, G&W - GRIND WELD

REVIEWED BY: PS DATE 9/6/19

GOLDER FORM: G19-iss

(January 2005)

GOLDER ASSOCIATES INC.

Line 1: Caps seam P77/P81 Eess Wees, including DF-34.
 Line 2: Caps seam P76/P81 Nees - 14P, 14P = U DF-34P.

GEOMEMBRANE REPAIR LOG

PROJECT NUMBER 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

PASSING TRIAL SEAMS

NO.	TIME	TECH	NO.	TIME	TECH
2	8:22	CT			

MACHINE NUMBER: 46
 DATE: 4-30-19
 SHEET NO: 1 of 1

	DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM.	WELD TECH.	MON.	REMARKS
1	16L	4:30	845	C	2.13	CT	AB	DX-6
2	18Z		856	P	2.2	CT	AB	
3	85		905	C	7.2	CT	AB	DF-27
4	8Q		919	C	7.2	CT	AB	DF-26
5	9K		941	P	2.2	CT	AB	
6	8Z		946	C	7.2	CT	AB	DF-32
7	18P		1004	P	2.2	CT	AB	
8	9I		1010	P	2.2	CT	AB	
9	9J		1015	P	2.2	CT	AB	
10	9H		1019	P	2.2	CT	AB	
11	9G		1026	P	2.2	CT	AB	
12	9F		1027	P	2.2	CT	AB	
13	18F		1115	P	2.2	CT	AB	
14	18E		1120	P	2.2	CT	AB	
15	18Q		1134	P	2.2	CT	AB	
16	19G		1125	P	2.2	CT	AB	
17	19H		1128	P	2.2	CT	AB	
18	18R		1138	P	2.2	CT	AB	
19	18S	✓	1143	P	2.2	CT	AB	
20	18T	4:30	1150	P	4.2	CT	AB	
21	22E	4:30	1037	P	2.2	CT	AB	
22	18D	4:30	1031	P	2.2	CT	AB	
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DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM.	WELD TECH.	MON.	REMARKS
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REPAIR TYPE: P - PATCH, C - CAP, RS - RECONSTRUCTED SEAM, G&W - GRIND WELD

REVIEWED BY: PS DATE 9/6/19

GOLDER FORM: G19-tss
 (January 2005)

GOLDER ASSOCIATES INC.

GEOMEMBRANE REPAIR LOG

PROJECT NUMBER 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

PASSING TRIAL SEAMS

NO.	TIME	TECH	NO.	TIME	TECH
1	8:28	ET			

MACHINE NUMBER: 52
 DATE: 4-30-19
 SHEET NO: 1

DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM.	WELD TECH.	MON.	REMARKS
1 18L	4-30	9:13	P	4x2	ET	AB	
2 18M	4-30	10:00	P	2x2	ET	AB	
3 18N	4-30	10:50	P	2x2	ET	AB	
4 8T	4-30	10:41	P	3x2	ET	AB	
5 8R	4-30	11:03	P	5x2	ET	AB	
6 18V	4-30	11:50	P	2x2	ET	AB	
7 17P-17B	4-30	11:44	C	8x2	ET	AB	PS
8 18W	4-30	11:37	P	2x2	ET	AB	
9 18X	4-30	11:33	P	2x2	ET	AB	
10 18Y	4-30	11:27	P	2x2	ET	AB	
11 13X-13Y	4-30	11:22	C	8x2	ET	AB	13X-13Y PS
12 13W	4-30	11:15	P	2x2	ET	AB	
13 13V	4-30	11:10	P	2x2	ET	AB	
14 8P	4-30	9:16	P	2x3	ET	AB	
15 8V	4-30	10:22	C	2x10	ET	AB	PS
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DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM.	WELD TECH.	MON.	REMARKS
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REPAIR TYPE: P - PATCH, C - CAP, RS - RECONSTRUCTED SEAM, G&W - GRIND WELD

REVIEWED BY: PS DATE 9/6/19

GOLDER FORM: G19-tss

(January 2005)

GOLDER ASSOCIATES INC.

Line 7: Caps P66/P78 seam
 Line 11: Caps P51/P62 seam

GEOMEMBRANE REPAIR LOG

PROJECT NUMBER 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

PASSING TRIAL SEAMS

NO.	TIME	TECH	NO.	TIME	TECH
2	1507	CT			

MACHINE NUMBER: 2246
 DATE: 5-1-19
 SHEET NO: 1

DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM.	WELD TECH.	MON.	REMARKS
1	16Z	5.1	1547	C	120.2	CT	AB
2	16X	5.1	1610	C	13.2	CT	AB
3	16S	5.1	1616	P	8.2	CT	AB DF-5P2
4	15K	5.1	1630	C	14.2	CT	AB DF-5P
5	15L	5.1	1715	C	73.2	CT	AB
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DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM.	WELD TECH.	MON.	REMARKS
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REPAIR TYPE: P - PATCH, C - CAP, RS - RECONSTRUCTED SEAM, G&W - GRIND WELD

REVIEWED BY: PS DATE 9/6/19

GOLDER FORM: G19-tss
 (January 2005)

GOLDER ASSOCIATES INC.

Line 1: Caps P6/P8 seam from Neos to 19P. Including 16Z (DP-5P4).
 Line 2: Caps P6/P7 seam from Sees to 16S (DF-5P2).
 Line 4: Caps P6/P7 seam from 16S (DF-5P2) to 3G (DF-5).
 Line 5: Caps P6/P7 seam from 3G (DF-5) to Neos. Including 16R, 16W, 3R, 3K.

GEOMEMBRANE REPAIR LOG

PROJECT NUMBER 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

PASSING TRIAL SEAMS

NO.	TIME	TECH	NO.	TIME	TECH
1	1503	ET			

MACHINE NUMBER: 52
 DATE: 5.1.19
 SHEET NO: 1

DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM	WELD TECH.	MON.	REMARKS
1	17L	5.1	1748	P	2x2	ET	AB
2	17K	5.1	1755	P	2x2	ET	AB
3	19A	5.1	1800	P	2x2	ET	AB
4	13Z	5.1	1805	P	2x2	ET	AB
5	17N	5.1	1745	P	2x2	ET	AB
6	17M	5.1	1740	P	6x2	ET	AB
7	9L	5.1	1604	C	33x2	ET	AB DF-33
8	18J	5.1	1635	C	15.2	ET	AB DF-33P
9	19D	5.1	1700	C	8.2	ET	AB FS
10	19E	5.1	1710	C	8.2	ET	AB
11	18K	5.1	1715	P	7.2	ET	AB DF-33N
12	19F	5.1	1730	C	25.2	ET	AB BS
13	18H	5.1	1920	C	20.2	ET	AB DF-22N
14	19R	5.1	1810	P	2.2	ET	AB
15	9B	5.1	1815	P	4.2	ET	AB
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DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM	WELD TECH.	MON.	REMARKS
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REPAIR TYPE: P - PATCH, C - CAP, RS - RECONSTRUCTED SEAM, G&W - GRIND WELD

REVIEWED BY: PS DATE 9/6/19

GOLDER FORM: G19-tss

(January 2005)

GOLDER ASSOCIATES INC.

Line 7: Caps P74/P75 seam from Neos to 19B. Including DF-33(9L)
 Line 8: Caps P74/P75 seam from Seos to 19C. Including DF-33P.
 Line 12: Caps P65/P79 seam from 9N to Seos. Including 19F.
 Line 13: Caps P17/P32 seam from 18H(DF-22N) to 6H(DF-22).

GEOMEMBRANE REPAIR LOG

PROJECT NUMBER 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

PASSING TRIAL SEAMS

NO.	TIME	TECH	NO.	TIME	TECH
2	815	JM			

MACHINE NUMBER: 46

DATE: 5.2.19

SHEET NO: 1

DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM.	WELD TECH.	MON.	REMARKS
1	19J	5.2	906	C	75.2	JM	AB DX-8
2	19W	5.2	1122	P	7.2	JM	AB DX-8
3	17S	5.2	1005	C	8.2	JM	AB
4	17Z	5.2	950	C	11.2	JM	AB
5	20C	5.2	1145	P	7.2	JM	AB
6	19L	5.2	1107	C	18.2	JM	AB
7	14X	5.2	918	C	11.2	JM	AB
8	19T	5.2	1154	P	7.2	JM	AB TX-3
9	17Y	5.2	941	P	7.2	JM	AB DX-5
10	19M	5.2	1047	C	15.2	CT	AB
11	17R	5.2	1029	C	15.2	CT	AB
12	19X	5.2	1200	P	1.1	CT	AB VL-164
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DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM.	WELD TECH.	MON.	REMARKS
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REPAIR TYPE: P - PATCH, C - CAP, RS - RECONSTRUCTED SEAM, G&W - GRIND WELD

REVIEWED BY: PS DATE 9/6/19

GOLDER FORM: G19-tss

(January 2005)

GOLDER ASSOCIATES INC.

Line 1: Caps P6/P8 seam from 19P to 19J (DF-5P5)
 Line 3: Caps P11/P12 seam from 10T (DF-8N1) to 17S (DF-8N2)
 Line 4: Caps P11/P12 seam from 17Z (DF-8N3) to 17S (DF-8N2)
 Line 6: Caps P10/P11 seam from 15M (DF-7P) to 19I (DF-7D)

(see notes on back)

Line 7: Caps P 8/P9 seam from Nees to 14X (DF. 6P3)

○ Line 10: caps P11/P12 scan from 4B to 19M (DF 8P3)

Line 11: Caps P11/P12 seam from 4B to 10S,
including 17R (DF-8P2).

GEOMEMBRANE REPAIR LOG

PROJECT NUMBER 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

PASSING TRIAL SEAMS

NO.	TIME	TECH	NO.	TIME	TECH
1	800	ET			

MACHINE NUMBER: 52
 DATE: 5.2.19
 SHEET NO: 1

DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM.	WELD TECH.	MON.	REMARKS
1	18I	5.2	930	C	40.2	ET	AB
2	19B	5.2	830	C	20.2	ET	AB DX-7
3	19V	5.2	1133	P	7.2	ET	AB DX-7
4	145	5.2	1200	P	2.2	ET	AB
5	14Z	5.2	1037	C	2.36	ET	AB
6	19Q	5.2	1119	C	2.24	ET	AB
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DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM.	WELD TECH.	MON.	REMARKS
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REPAIR TYPE: P - PATCH, C - CAP, RS - RECONSTRUCTED SEAM, G&W - GRIND WELD

REVIEWED BY: PS DATE 9/6/19

GOLDER FORM: G19-tss
 (January 2005)

GOLDER ASSOCIATES INC.

Line 1: Caps P17/P32 seam from 19I (DF-22P2) to 6H (DF-22) including 18I (DF-22P).

Line 2: Caps P74/P75 seam from 19B to 19C

Line 5: Caps P9/P11 seam from 3H to 19K, including 14Z

Line 6: caps P9/P11 seam from 19K to 19Q

GEOMEMBRANE REPAIR LOG

PROJECT NUMBER 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

PASSING TRIAL SEAMS

NO.	TIME	TECH	NO.	TIME	TECH
2	1305				
3	817				

MACHINE NUMBER: mx46
 DATE: 5-3-19
 SHEET NO: 2 of 1

DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM.	WELD TECH.	MON.	REMARKS
1 14B	5.3	1400	P	2x6	JM	Am	Note 1
2 149	5.3	900	C	2x8	JM	Am	
3 16P	5.3	915	C	2x9	JM	Am	
4 16V	5.3	923	C	2x14	JM	Am	
5 16V2/B	5.3	1000	C	2x34	JM	Am	Note 2
6 15R	5.3	1030	P	2x7	JM	Am	
7 21C	5.3	1048	P	2x6	JM	Am	
8 16T	5.3	1122	C	2x12	JM	Am	Note 2
9 21E	5.3	1130	P	8x8	JM	Am	
10 12Q	5.3	1143	P	2x2	JM	Am	
11 12B	5.3	1150	P	2x4	JM	Am	
12 12S/12T	5.3	1200	P	2x5	JM	Am	
13 12X/12W	5.3	1320	P	2x6	JM	Am	
14 12Y	5.3	1334	P	2x2	JM	Am	
15 12Z	5.3	1338	P	2x2	JM	Am	
16 12C	5.3	1350	P	2x6	JM	Am	
17 12V	5.3	1325	P	2x5	JM	Am	
18 12A	5.3	1354	P	2x7	JM	Am	
19 11A	5.3	1417	C	24.2	JM	AB	PS
20 11Q	5.3	1422	P	2.2	JM	AB	
21 11R	5.3	1436	C	19.2	JM	AB	DX-9
22 11S	5.3	1445	P	6.2	JM	AB	
23 11T	5.3	1450	P	2.2	JM	AB	
24 20H	5.3	1546	P	2.2	JM	AB	
25 11Z	5.3	1542	C	10.2	JM	AB	PS
26 7X	5.3	1535	C	7.2	JM	AB	PS
27 11X	5.3	1530	P	4.2	JM	AB	
28 7Y	5.3	1554	P	8.2	JM	AB	DF-44
29 80L	5.3	1631	P	2.2	JM	AB	
30 7W	5.3	1626	P	2.8	JM	AB	DF-41

DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM.	WELD TECH.	MON.	REMARKS
PS31 11Y	5.3	1535	P	2.3	JM	AB	
PS32 11W	5.3	1516	P	2.2	JM	AB	
PS33 11V	5.3	1508	C	16.2	JM	AB	PS
PS34 20M	5.3	1651	P	2.2	JM	AB	
PS35 11F	5.3	1656	P	2.2	JM	AB	
36 7Z	5.3	1616	P	2.7	JM	AB	
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REPAIR TYPE: P - PATCH, C - CAP, RS - RECONSTRUCTED SEAM, G&W - GRIND WELD

REVIEWED BY: PS DATE 9/6/19

GOLDER FORM: G19-iss
 (January 2005)

Notes

GOLDER ASSOCIATES INC.

- Entire p111/p116 seam length capped by repairs 14B, 16Q (DF-49N), 15Q (DF-49), 16P (DF-49P), 16V (DF-49P2), 16y (DF) and 21B
- 16T (DF-49N2) CAP covers p118/p119 seam to Ecos

(see notes on back)

R. 11A
Line 19: Cap covers entire P111/P112 seam, R. 11B, R. 11P,
caps P110/P112 seam from Seos to 11A (DF-46).

Line 30: Repair 7W caps repairs 14W & 14V.

Line 13: Repair 12X. 12W caps entire P114/P120
seam.

Line 9: Repair 21E covers defect 12P.

GEOMEMBRANE REPAIR LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

PASSING TRIAL SEAMS

NO.	TIME	TECH	NO.	TIME	TECH
1	8:00	ET			
4	13:17	ET			

MACHINE NUMBER: 52
 DATE: 5-3-19
 SHEET NO: 1 of 1

DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM.	WELD TECH.	MON.	REMARKS
1 19Z	5-3	8:43	P	2.7	ET	AB	
2 20B	5-3	9:23	C	2.18	ET	AM	
3 21A	5-3	10:03	C	2.8	ET	AM	
4 20D	5-3	10:24	C	2.10	ET	AM	
5 21D	5-3	10:00	C	2.15	ET	AM	
6 20E	5-3	11:30	C	2.18	ET	AM	
7 20G	5-3	12:00	C	2.22	ET	AM	
8 20A	5-3	13:51	C	2.19	ET	AM	
9 12N	5-3	14:26	P	2.2	ET	AB	
10 20K	5-3	14:35	P	6.2	ET	AB	
11 20N	5-3	15:00	C	10.6	ET	AB	DX-10
12 20J	5-3	15:05	P	2.2	ET	AB	
13 12M	5-3	15:10	P	2.2	ET	AB	
14 12K-12L	5-3	15:15	C	7.2	ET	AB	12K-12L
15 12D	5-3	15:35	P	2.2	ET	AB	
16 12E	5-3	15:20	P	2.2	ET	AB	
17 12F	5-3	15:25	P	4.2	ET	AB	
18 12G	5-3	15:30	P	5.2	ET	AB	
19 12H	5-3	15:40	P	2.2	ET	AB	
20 12I	5-3	15:45	P	2.2	ET	AB	
21 12J	5-3	15:50	P	4.3	ET	AB	
22 11J	5-3	16:48	P	2.2	ET	AB	
23 11K	5-3	16:43	P	2.2	ET	AB	
24 7V	5-3	16:05	P	7.2	ET	AB	
25 14R	5-3	16:30	P	2.2	ET	AB	
26 14T	5-3	16:25	P	2.2	ET	AB	
27 21F	5-3	16:20	P	2.2	ET	AB	
28 21G	5-3	16:15	P	2.2	ET	AB	
29 21H	5-3	16:10	P	2.2	ET	AB	
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DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM.	WELD TECH.	MON.	REMARKS
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REPAIR TYPE: P - PATCH, C - CAP, RS - RECONSTRUCTED SEAM, G&W - GRIND WELD

Line 2: 20B caps P17/P32 seam between 20B - 6G REVIEWED BY: PS DATE 9/6/19

GOLDER FORM: G19-ts

(January 2005)

GOLDER ASSOCIATES INC.

Line 3: 21A caps P17/P32 seam between 6G - 18H
 Line 6: 20E caps P13/P15 seam from 20E to SEDS
 Line 5: 21D caps P9/P11 seam from 21D to 3H.
 Line 7: 20G caps P17/P32 seam from 20D - 20G
 Line 8: 20A caps P79/P80 seam from 20A to 18K
 Line 14: CAPS entire P95/P96 seam. Covers 12L & 12K

Line 1: 19Z caps P45/P57 seam from 19Z to EEO5

GEOMEMBRANE REPAIR LOG

PROJECT NUMBER 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

PASSING TRIAL SEAMS

NO.	TIME	TECH	NO.	TIME	TECH
1	745	JY			

MACHINE NUMBER: 13
 DATE: 5-7-19
 SHEET NO:

DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM.	WELD TECH.	MON.	REMARKS
1	20P	5-7	820	C	10.5	JY	AB PS
2	21L	5-7	840	C	16.5	JY	AB PS
3	21K	5-7	855	C	5.3	JY	AB
4	20Q	5-7	1020	P	7.2	JY	AB
5	20V	5-7	1000	C	16.2	JY	AB
6	7F	5-7	1065	P	3.3	JY	AB - Repeat
7	7Q	5-7	1110	P	2.7	JY	AB
8	14Q	5-7	1130	C	2.17	JY	AB
9	18G	5-7	1205	C	2.16	JY	AB
10	22C	5-7	910	C	2.12	JY	AB
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DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM.	WELD TECH.	MON.	REMARKS
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REPAIR TYPE: P - PATCH, C - CAP, RS - RECONSTRUCTED SEAM, G&W - GRIND WELD

REVIEWED BY: PS DATE 9/6/19

GOLDER FORM: G19-115

(January 2005)

GOLDER ASSOCIATES INC.

Line 5: Repair 20V caps P36/P57 seam from 20V (DF 22N5) to Seos.

Line 8: Repair 14Q caps P84/P85 seam from 14Q (DF 34N) to Neos.

(see notes on back)

Line 9: Repair 18G caps P18/P19 seam
from 18G (TF-10N3) to N205. Caps
repairs 5L & 7M

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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GEOMEMBRANE REPAIR LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

PASSING TRIAL SEAMS

NO.	TIME	TECH	NO.	TIME	TECH
2	745	CF			
3	946	CF			
4	1335	CF			

MACHINE NUMBER: 33
 DATE: 5-7-19
 SHEET NO: 1

DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM.	WELD TECH.	MON.	REMARKS
1	11L	5-7	818	P	2.2	CF	AB
2	21I	5-7	824	P	4.4	CF	AB
3	20R	5-7	813	C	2.7	CF	AB
4	11N	5-7	828	P	2.2	CF	AB
5	11M	5-7	841	P	2.5	CF	AB
6	10Z	5-7	852	P	2.7	CF	AB
7	7R	5-7	1007	P	2.10	CF	AB
8	11F	5-7	1017	P	2.2	CF	AB
9	21J	5-7	1020	P	2.2	CF	AB
10	20W	5-7	1026	D	18.2	CF	AB
11	11E	5-7	1029	P	2.2	CF	AB
12	21N	5-7	1046	P	2.2	CF	AB
13	21M	5-7	1050	P	2.2	CF	AB
14	7P	5-7	1106	P	2.7	CF	AB
15	11H	5-7	1111	P	2.2	CF	AB
16	7S	5-7	1119	P	2.8	CF	AB
17	20T	5-7	1148	P	2.7	CF	AB
18	21P	5-7	1152	P	2.2	CF	AB
19	21Q	5-7	1200	P	2.2	CF	AB
20	20S	5-7	1213	P	3.5	CF	DW
21	21R	5-7	11:29	P	2x2	CF	DW
22	21S	5-7	11:26	P	2x2	CF	DW
23	20I	5-7	11:34	P	2x2	CF	DW
24	21T	5-7	12:07	P	3x5	CF	DW
25	21V	5-7	12:19	P	2x4	CF	DW
26	14Y	5-7	9:53	P	2x4	CF	AB
27	11G	5-7	1036	P	2.2	CF	AB
28	11D	5-7	1040	P	2.2	CF	AB
29	20X	5-7	1655	C	12.16	CF	AB
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DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM.	WELD TECH.	MON.	REMARKS
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REPAIR TYPE: P - PATCH, C - CAP, RS - RECONSTRUCTED SEAM, G&W - GRIND WELD

REVIEWED BY: PJS DATE 9/6/19

GOLDER FORM: G19-tss
 (January 2005)

GOLDER ASSOCIATES INC.

Line 10: Repair 20W caps P29/P30 seam from 20W (DF-22P3) to EEO5.
 Line 29: Caps R. 12R, R. 20F

GEOMEMBRANE REPAIR LOG

PROJECT NUMBER 1896102
OWNER: Consumers Energy
LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
CONTRACTOR: Chesapeake Containment Systems, Inc.

PASSING TRIAL SEAMS

NO.	TIME	TECH	NO.	TIME	TECH
2	830				
3	1450				

MACHINE NUMBER: 13
DATE: 5-8-19
SHEET NO: 1 of 1

DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM.	WELD TECH.	MON.	REMARKS
1 18C	5-8	935	C	2.43	JY	AB	
2 21W		940	P	1			VL-R4Y
3 21X		1510	P	2.7			
4 22B		1540	P	2.7			
5 21Z		1530	P	2.7			
6 22A		1520	P	2.7			
7 21Y	5-8	1550	P	2.7	JY	AB	
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DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM.	WELD TECH.	MON.	REMARKS
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REPAIR TYPE: P - PATCH, C - CAP, RS - RECONSTRUCTED SEAM, G&W - GRIND WELD

REVIEWED BY: PS DATE 9/6/19

GOLDER FORM: G19-iss
(January 2005)

GOLDER ASSOCIATES INC.

Line 1: 18C caps P1/P3 seam from 18C(DF-1P5) to 10X(DF-1P). Caps covers R-1X, R-1Y, 18B(DF-1P4), 17V(DF-1P3), 17T(DF-1P2)

GEOMEMBRANE REPAIR LOG

PROJECT NUMBER 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

PASSING TRIAL SEAMS

NO.	TIME	TECH	NO.	TIME	TECH
1	8:09	CF			

MACHINE NUMBER: 33
 DATE: 5.8.19
 SHEET NO: 1

DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM.	WELD TECH.	MON.	REMARKS
1	17W 5.8	931	C	20.2	CF	AB	
2	18A 5.8	920	C	23.2	CF	AB	
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DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM.	WELD TECH.	MON.	REMARKS
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REPAIR TYPE: P - PATCH, C - CAP, RS - RECONSTRUCTED SEAM, G&W - GRIND WELD

REVIEWED BY: PDS DATE 9/6/19

GOLDER FORM: G19-tss

(January 2005)

GOLDER ASSOCIATES INC.

Line 1: 17W caps P1/P3 seam from 10Y (DF-1N) to 17X (DF-1N/3)
 Line 2: Repair: 18A caps P1/P3 seam from 17X (DF-1N/3) to 19N (DF-1N/5)

GEOMEMBRANE REPAIR LOG

PROJECT NUMBER

OWNER:

CONSUMERS

LOCATION:

WESTOLIVE

PROJECT TITLE:

CONTRACTOR:

PASSING TRIAL SEAMS

NO.	TIME	TECH	NO.	TIME	TECH
3	1425	JY			

MACHINE NUMBER:

13

DATE:

5-10-19

SHEET NO:

1

DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM.	WELD TECH.	MON.	REMARKS
1 22G	5-10	3:57	C	2x81	JY	DW	
2 22J	11	4:15	C	2x116	JY	DW	DX-14
3 22K	11	5:00	C	2x20	JY	DW	
4 22I	11	5:45	C	2x70	JY	DW	
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DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM.	WELD TECH.	MON.	REMARKS
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REPAIR TYPE: P - PATCH, C - CAP, RS - RECONSTRUCTED SEAM, G&W - GRIND WELD

REVIEWED BY:

PS

DATE

9/6/19

GOLDER FORM: G19-1ss
(January 2005)

Line 3: caps patch/seam from 16N to Nees

GOLDER ASSOCIATES INC.

GEOMEMBRANE REPAIR LOG

PROJECT NUMBER

OWNER: CONSUMERS

LOCATION: WEST OLIVE, MI

PROJECT TITLE:

CONTRACTOR: CHESAPEAKE

PASSING TRIAL SEAMS

NO.	TIME	TECH	NO.	TIME	TECH
TX-1	9:08	CF			
TX-2	1415	CF			

MACHINE NUMBER: 33

DATE: 5-10-19

SHEET NO: 1

DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM.	WELD TECH.	MON.	REMARKS
1	22F	5-10	10:14	P	2X10	CF	DW
2	22H	5-10	4:06	CAP	2X115	CF	DW DX-13
3	22L	11	4:50	CAP	2X50	CF	DW
4	22P	11	6:35	CAP	2X11	CF	AB
5	22Q	11	6:24	CAP	2X58	CF	AB
6	22R	11	6:02	CAP	2X10	CF	AB
7	22S	11	5:58	CAP	2X7	CF	AB
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DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM.	WELD TECH.	MON.	REMARKS
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REPAIR TYPE: P - PATCH, C - CAP, RS - RECONSTRUCTED SEAM, G&W - GRIND WELD

REVIEWED BY: PS DATE 9/6/19

GOLDER FORM: G19-tss
(January 2005)

Line 7: Repair 22S caps P11/P12 seam from 3Z to 3Z
 Line 6: Repair 22R caps from 3Z to 3Y
 Line 5: Repair 22Q caps from 3Y to 3X
 Line 4: Repair 22P caps from 3V to 3T

GOLDER ASSOCIATES INC.

GEOMEMBRANE REPAIR LOG

PROJECT NUMBER 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

PASSING TRIAL SEAMS

NO.	TIME	TECH	NO.	TIME	TECH
2	1240	JY			

MACHINE NUMBER: 13
 DATE: 5-11-19
 SHEET NO: 1

DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM.	WELD TECH.	MON.	REMARKS
1 22W	5-11	1315	C	2.22	JY	AB	
2 22N	5-11	1300	P	2.7	JY	AB	
3 22Z	5-11	1350	P	2.50	JY	AB	
4 22Y	5-11	1410	P	2.7	JY	AB	
5 23A	5-11	1405	C	2.13	JY	AB	
6 23B	5-11	1520	C	2.86	JY	AB	DX-16
7							
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28							
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30							

DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM.	WELD TECH.	MON.	REMARKS
31							
32							
33							
34							
35							
36							
37							
38							
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REPAIR TYPE: P - PATCH, C - CAP, RS - RECONSTRUCTED SEAM, G&W - GRIND WELD

REVIEWED BY: PS DATE 9/6/19

GOLDER FORM: G19-tss
 (January 2005)

GOLDER ASSOCIATES INC.

- Repair 22W caps P11/P12 seam from 17Z (DF-8V3) to 20C
- Repair 22Z caps: ↓ from 20C to Neeb

GEOMEMBRANE REPAIR LOG

PROJECT NUMBER 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

PASSING TRIAL SEAMS

NO.	TIME	TECH	NO.	TIME	TECH
1	1000				
3	1355				

MACHINE NUMBER: 33
 DATE: 5-11-19
 SHEET NO: 1 of

DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM.	WELD TECH.	MON.	REMARKS
1 22T	5-11	1017	P	2.7	CF	AB	
2 22D	5-11	1029	P	2.2	CF	AB	
3 22V	5-11	1037	P	2.2	CF	AB	
4 22M	5-11	1100	P	2.7	CF	AB	
5 22X	5-11	1343	C	2162	CF	AB	DX-15
6 23C	5-11	1454	C	2.66	CF	AB	
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8							
9							
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DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM.	WELD TECH.	MON.	REMARKS
31							
32							
33							
34							
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36							
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60							

REPAIR TYPE: P - PATCH, C - CAP, RS - RECONSTRUCTED SEAM, G&W - GRIND WELD

REVIEWED BY: PS DATE 9/6/19

GOLDER FORM: G19-tss
 (January 2005)

GOLDER ASSOCIATES INC.

Line 6: Repair 23C caps P17/P32 seam from Seed to 19T
 Line 5: Repair 22X caps P11/P12 seam from 3T to 19M

GEOMEMBRANE REPAIR LOG

PROJECT NUMBER 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

PASSING TRIAL SEAMS

NO.	TIME	TECH	NO.	TIME	TECH
2	12:30	JY			

MACHINE NUMBER: 13
 DATE: 5-13-19
 SHEET NO: 1041

	DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM.	WELD TECH.	MON.	REMARKS
1	23E	5-13	1332	C	2.136	JY	AB	DX-17
2	23F	5-13	1400	P	2.7	JK	AB	
3	23D	5-13	1345	P	2.7	JY	AB	
4								
5								
6								
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	DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM.	WELD TECH.	MON.	REMARKS
31								
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33								
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REPAIR TYPE: P - PATCH, C - CAP, RS - RECONSTRUCTED SEAM, G&W - GRIND WELD

REVIEWED BY: PS DATE 9/6/19

GOLDER FORM: G19-ss
 (January 2005)

GOLDER ASSOCIATES INC.

Line 1: Repair 23E caps entire P17/P31 seam

PROJECT TITLE: JH Campbell Ash Pond A Closure
CONTRACTOR: Chesapeake Containment Systems, Inc.

MACHINE NUMBER: 33
DATE: 5.13.19
SHEET NO: 1021

NO.	TIME	TECH	NO.	TIME	TECH
1	12:30	CF			

	DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM.	WELD TECH.	MON.	REMARKS
1	23G	5-13	1249	C	2.125	CF	AB	
2	23H	5-13	1400	P	2.7	CF	AB	DX-18
3								
4								
5								
6								
7								
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	DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM.	WELD TECH.	MON.	REMARKS
31								
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REVIEWED BY: PS DATE 9/6/19

GOLDER ASSOCIATES INC.

Line 1: Repair 23G caps P17/P32 seam from AOG to Nos

GEOMEMBRANE REPAIR LOG

PROJECT NUMBER 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

PASSING TRIAL SEAMS

NO.	TIME	TECH	NO.	TIME	TECH
TX-1	1450	JY			

Dozer Damage Repair

MACHINE NUMBER: 13
 DATE: 6-5-19
 SHEET NO: 1 of 1

DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM.	WELD TECH.	MON.	REMARKS
24A	6-5	1528	P	6'10"	JY	DW	
1							
2							
3							
4							
5							
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DEFECT CODE	REPAIR DATE	APPRX. TIME	REPAIR TYPE	APPRX. DIM.	WELD TECH.	MON.	REMARKS
31							
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36							
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REPAIR TYPE: P - PATCH, C - CAP, RS - RECONSTRUCTED SEAM, G&W - GRIND WELD

REVIEWED BY: PS DATE 7/6/19

GOLDER FORM: G19-1es
 (January 2005)

GOLDER ASSOCIATES INC.

APPENDIX J.3

Non-Destructive Air Testing Logs

GEOMEMBRANE SEAM NON-DESTRUCTIVE TEST LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

DATE: 4-19-19
 SHEET NUMBER: 1 of 3

SEAM NUMBER	SEAM SECTION *		VACUUM OR PRESSURE	TECH ID	TIME		PRESSURE		OBS. TEST	RESULTS PASS/ FAIL	SEAM COMPLETE		MON.	REMARKS
	FROM	TO			START	FINISH	INITIAL	FINAL			NO	YES		
1	P28	P29	Ncos - GD	P	VG	740 : 745	30	: 29	Y	P	X		AB	
2	P28	P30	Seos - Ncos	P	VG	741 : 746	30	: 29	Y	P		X		
3	P28	P29	GD - Seos	P	VG	742 : 747	30	: 30	Y	P		X		
4	P29	P30	Wcos - Ecos	P	VG	742 : 747	30	: 29	Y	P		X		
5	P27	P28	Seos - Ncos	P	VG	753 : 758	30	: 29	Y	P		X		
6	P26	P27	Ecos - Wcos	P	VG	754 : 759	30	: 29	Y	P		X		
7	P25	P27	Seos - Ncos	P	VG	803 : 808	30	: 29	Y	P		X		
8	P25	P26	Ncos - BA	P	VG	803 : 808	30	: 29	Y	P	X			
9	P24	P27	Seos - Ncos	P	VG	820 : 825	30	: 29	Y	P		X		
10	P24	P25	Ecos - Wcos	P	VG	821 : 826	30	: 29	Y	P		X		
11	P23	P24	Seos - Ncos	P	VG	834 : 839	30	: 29	Y	P		X		
12	P25	P26	BA - Seos	P	VG	836 : 841	30	: 28	Y	P		X		
13	P23	P25	GL - GL	P	UM	902 : 907	30	: 28	Y	P	X			
14	P23	P25	7C - 7B	P	VG	905 : 910	30	: 29	Y	P	X			
15	P23	P25	7B - 6X	P	VG	913 : 918	30	: 30	Y	P	X			
16	P23	P25	GL - 5V	P	UM	918 : 923	30	: 29	Y	P	X			
17	P23	P25	Ncos - 5Z	P	VG	928 : 933	30	: 29	Y	P	X			
18	P23	P25	7C - 5Z	P	VG	940 : 945	30	: 28	Y	P	X			
19	P19	P21	7D - Seos	P	VG	950 : 955	30	: 29	Y	P	X			
20	P19	P21	7D - Ncos	P	VG	952 : 957	30	: 30	Y	P		X	AB	

* REFERENCE SEAM ENDPOINTS FROM AND END OF SEAM (EOS), A REPAIR NUMBER,
 OR A POINT LOCATION ON THE SEAM (i.e. REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)

GOLDER FORM: G16-125
 (January 2005)

REVIEWED BY: PS

DATE: 9/5/19

GOLDER ASSOCIATES INC.

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GEOMEMBRANE SEAM NON-DESTRUCTIVE TEST LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

DATE: 4-19-19
 SHEET NUMBER: 2043

SEAM NUMBER	SEAM SECTION *		VACUUM OR PRESSURE	TECH ID	TIME		PRESSURE		OBS. TEST	RESULTS PASS/ FAIL	SEAM COMPLETE		MON.	REMARKS
	FROM	TO			START	FINISH	INITIAL	FINAL			NO	YES		
1	P23 / P25	GN - 5V	P	UM	953 : 958		30	: 29	Y	P	X		AB	
2	P22 / P23	Nee - Sees	P	UM	959 : 1004		30	: 28	Y	P		X		
3	P23 / P25	GN - Sees	P	UM	1001 : 1006		30	: 28	Y	P	X			
4	P21 / P22	Ees - Wees	P	UM	1010 : 1015		30	: 28	Y	P		X		
5	P20 / P21	Sees - Nee	P	UM	1013 : 1018		30	: 28	Y	P		X		
6	P19 / P20	Ees - Wees	P	VG	1019 : 1024		30	: 29	Y	P		X		
7	P18 / P19	Sees - Nee	P	VG	1024 : 1029		30	: 30	Y	P		X		
8	P18 / P20	Nee - Sees	P	VG	1027 : 1032		30	: 29	Y	P		X		
9	P20 / P22	Nee - 4L	P	UM	1035 : 1040		30	: 28	Y	P	X			
10	P21 / P23	Sees - GR	P	UM	1047 : 1046		30	: 28	Y	P	X			
11	P1 / P18	5K - 5I	P	VG	1045 : 1050		30	: 29	Y	P	X			
12	P1 / P18	Nee - 5I	P	VG	1047 : 1052		30	: 28	Y	P	X			
13	P21 / P23	Nee - GR	P	VG	1056 : 1101		30	: 28	Y	P		X		
14	P20 / P22	4L - 6V	P	UM	1057 : 1102		30	: 30	Y	P	X			
15	P20 / P22	6V - Sees	P	UM	1102 : 1107		30	: 28	Y	P		X		
16	P1 / P18	5J - 5M	P	VG	1104 : 1109		30	: 28	Y	P	X			
17	P1 / P18	5J - 5K	P	VG	1105 : 1110		30	: 29	Y	P	X			
18	P1 / P18	5M - 4N	P	VG	1111 : 1116		30	: 30	Y	P	X			
19	P23 / P25	6K - 6W	P	UM	1118 : 1123		30	: 28	Y	P	X		V	
20	P1 / P18	4N - 6Y	P	VG	1123 : 1128		30	: 28	Y	P	X		AB	

* REFERENCE SEAM ENDPOINTS FROM AND END OF SEAM (EOS), A REPAIR NUMBER,
 OR A POINT LOCATION ON THE SEAM (i.e. REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)

GOLDER FORM: G14-125
 (January 2005)

REVIEWED BY: TS

DATE: 9/5/19

GOLDER ASSOCIATES INC.

GEOMEMBRANE SEAM NON-DESTRUCTIVE TEST LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

DATE: 4-19-19
 SHEET NUMBER: 3 of 3

SEAM NUMBER	SEAM SECTION *		VACUUM OR PRESSURE	TECH ID	TIME		PRESSURE		OBS. TEST	RESULTS PASS/ FAIL	SEAM COMPLETE		MON.	REMARKS
	FROM	TO			START	FINISH	INITIAL	FINAL			NO	YES		
1	P18 / P19	Seal - A100	P	VG	1024	1029	30	30	Y	P	X	X	AB	AB Repeat
2	P1 / P2	Seal - 2A	P	VG	1134	1139	30	29	Y	P	X			
3	P1 / P3	Neel - 1E	P	VG	1136	1141	30	28	Y	P	X			
4	P2 / P3	Wool - E008	P	VG	1147	1152	30	30	Y	P		X		
5	P1 / P18	GY - Seal	P	JMT	1203	1208	30	27	Y	P		X		
6	P1 / P2	2A - A100	P	VG	1330	1335	30	30	Y	P		X		
7	P1 / P3	1Y - 1X	P	JMT	1450	1455	30	30	Y	P	X			
8	P1 / P3	1X - Seal	P	JMT	1504	1509	30	30	Y	P	X			
9	P1 / P3	1Y - 1E	P	JMT	1516	1515	30	30	Y	P		X		
10	P2 / P4	Neel - Seal	P	VG	1528	1533	30	29	Y	P		X		
11	P2 / P5	Seal - 2G	P	VG	1530	1535	30	29	Y	P	X			
12	P2 / P5	2G - Neel	P	VG	1546	1551	30	27	Y	P		X		
13	P4 / P5	E008 - Wool	P	VG	1557	1602	30	29	Y	P		X		
14	P3 / P4	1E - Neel	P	VG	1606	1611	30	29	Y	P	X			
15	P3 / P4	1E - 1V	P	VG	1609	1614	30	28	Y	P	X			
16	P3 / P4	1T - 1B	P	VG	1619	1624	30	29	Y	P	X			
17	P3 / P4	1T - 1V	P	VG	1622	1627	30	29	Y	P	X			
18	P3 / P4	1B - Seal	P	VG	1626	1631	30	28	Y	P		X	AB	
19	/	-			:	:	:	:						
20	/	-			:	:	:	:						

* REFERENCE SEAM ENDPOINTS FROM AND END OF SEAM (EOS), A REPAIR NUMBER,
 OR A POINT LOCATION ON THE SEAM (i.e. REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)

GOLDER FORM: G16-1ss
 (January 2005)

REVIEWED BY: BS DATE: 9/5/19

GOLDER ASSOCIATES INC.

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GEOMEMBRANE SEAM NON-DESTRUCTIVE TEST LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

DATE: 4-23-19
 SHEET NUMBER: 1 of 3

SEAM NUMBER	SEAM SECTION *		VACUUM OR PRESSURE	TECH ID	TIME		PRESSURE		OBS. TEST	RESULTS PASS/ FAIL	SEAM COMPLETE		MON.	REMARKS
	FROM	TO			START	FINISH	INITIAL	FINAL			NO	YES		
1	P4	1P6	9T - 9S	P	V5	949 : 954	30 : 29	Y	P	X			AB	
2	P4	1P6	9T - News	P	V6	950 : 955	30 : 29	Y	P	X			AB	
3	P6	1P7	Sees - 3R	P	V5	1001 : 1005	30 : 29	Y	P	X			AB	
4	P5	1P6	Sees - 3N	P	V6	958 : 1003	30 : 29	Y	P	X			AB	
5	P5	1P6	3N - News	P	V6	1019 : 1024	30 : 30	Y	P		X		AB	
6	P6	1P7	3R - News	P	V5	1007 : 1012	30 : 28	Y	P		X		AB	
7	P7	1P8	Fees - News	P	V5	1026 : 1031	30 : 29	Y	P		X		AB	
8	P6	1P8	News - 3A	P	V5	1027 : 1032	30 : 30	Y	P	X			AB	
9	P4	1P6	9R - 9S	P	V6	1036 : 1041	30 : 30	Y	P	X			AB	
10	P4	1P6	9R - 9A	P	V5	1040 : 1045	30 : 29	Y	P	X			AB	
11	P4	1P6	9A - Sees	P	V6	1045 : 1050	30 : 28	Y	P		X		AB	
12	P8	1P9	3D - 9V	P	V6	1121 : 1126	30 : 30	Y	P	X			AB	
13	—	—	—	—	—	—	—	—	—	—			—	
14	P9	1P10	Fees - News	P	V5	1159 : 1204	30 : 30	Y	P		X		AB	
15	P8	1P9	News - 9V	P	V6	1200 : 1205	30 : 30	Y	P	X			AB	
16	P8	1P10	Sees - News	P	V5	1312 : 1317	30 : 28	Y	P		X		AB	
17	P7	1P10	Sees - News	P	V6	1320 : 1325	30 : 28	Y	P		X		AB	
18	P10	1P11	Sees - News	P	V6	1328 : 1333	30 : 29	Y	P		X		AB	
19	P9	1P11	News - 3H	P	V5	1336 : 1341	30 : 28	Y	P	X			AB	
20	P11	1P12	3V - News	P	V6	1353 : 1358	30 : 29	Y	P	X			AB	

* REFERENCE SEAM ENDPOINTS FROM AND END OF SEAM (EOS), A REPAIR NUMBER,
 OR A POINT LOCATION ON THE SEAM (i.e., REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)

GOLDER FORM: G16-tss
 (January 2005)

REVIEWED BY: POS DATE: 9/5/19

GOLDER ASSOCIATES INC.

GEOMEMBRANE SEAM NON-DESTRUCTIVE TEST LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

DATE: 4-23-19
 SHEET NUMBER: 2 of 3

SEAM NUMBER	SEAM SECTION *		VACUUM OR PRESSURE	TECH ID	TIME		PRESSURE		OBS. TEST	RESULTS PASS/ FAIL	SEAM COMPLETE		MON.	REMARKS
	FROM	TO			START	FINISH	INITIAL	FINAL			NO	YES		
1	P6	1P8	3A - Sees	P	NT	1337 : 1342	30	: 30	Y	P		X	AB	
2	P8	1P9	3D - Sees	P	NT	1333 : 1338	30	: 30	Y	P		X	AB	
3	P9	1P11	3H - Sees	P	NT	1343 : 1348	30	: 30	Y	P		X	AB	
4	P11	1P12	3Y - Sees	P	NT	1352 : 1357	30	: 29	Y	P	X		AB	
5	P12	1P13	5A - Sees	P	NT	1401 : 1406	30	: 29	Y	P	X		AB	
6	P11	1P12	3V - 3V	P	V6	1406 : 1411	30	: 30	Y	P		X	AB	
7	P12	1P13	5A - 9W	P	NT	1407 : 1412	30	: 28	Y	P	X		AB	
8	P13	1P14	Wes - EOS	P	NT	1416 : 1421	30	: 29	Y	P		X	AB	
9	P12	1P13	Nes - 9W	P	V6	1419 : 1424	30	: 30	Y	P		X	AB	
10	P13	1P15	Nes - 4D	P	V6	1423 : 1428	30	: 29	Y	P	X		AB	
11	P13	1P15	Sees - 4D	P	NT	1430 : 1435	30	: 27	Y	P		X	AB	
12	P15	1P17	Sees - 4I	P	NT	1450 : 1455	30	: 30	Y	P	X		AB	
13	P15	1P17	4I - Nes	P	NT	1454 : 1459	30	: 29	Y	P		X	AB	
14	P14	1P15	4J - Sees	P	NT	1513 : 1518	30	: 27	Y	P	X		AB	
15	P14	1P15	4J - Nes	P	NT	1518 : 1523	30	: 30	Y	P		X	AB	
16	P26	P28	Nes - 6B	P	V6	1521 : 1526	30	: 29	Y	P	X		AB	
17	P26	1P28	6B - Sees	P	V6	1504 : 1509	30	: 29	Y	P		X	AB	
18	P12	1P14	Sees - 10G	P	V6	1440 : 1445	30	: 29	Y	P	X		AB	
19	P12	1P14	10G - 10H	P	V6	1445 : 1450	30	: 30	Y	F	X		AB	Capped
20	P12	1P14	10H - 9X	P	V6	1526 : 1531	30	: 30	Y	P	X		AB	

* REFERENCE SEAM ENDPOINTS FROM AND END OF SEAM (EOS), A REPAIR NUMBER,
 OR A POINT LOCATION ON THE SEAM (i.e., REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)

GOLDER FORM: G16-1ss
 (January 2005)

REVIEWED BY: PS

DATE: 7/5/19

GOLDER ASSOCIATES INC.

GEOMEMBRANE SEAM NON-DESTRUCTIVE TEST LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

DATE: 4-23-19
 SHEET NUMBER: 3 of 3

SEAM NUMBER	SEAM SECTION *		VACUUM OR PRESSURE	TECH ID	TIME		PRESSURE		OBS. TEST	RESULTS PASS/ FAIL	SEAM COMPLETE		MON.	REMARKS
	FROM	TO			START	FINISH	INITIAL	FINAL			NO	YES		
1	P15 / P16	E08 - W088	P	NT	1532 : 1537		30	: 29	Y	P		X	AB	
2	P14 / P16	S08 - N088	P	NT	1536 : 1541		30	: 29	Y	P		X	AB	
3	P16 / P17	S08 - 5G	P	NT	1546 : 1551		30	: 30	Y	P	X		AB	
4	P16 / P17	5G - N088	P	NT	1554 : 1559		30	: 28	Y	P		X	AB	
5	P12 / P14	9X - 9Y	P	VG	1553 : 1558		30	: 29	Y	P	X		AB	
6	P17 / P31	S08 - N088	P	NT	1615 : 1620		30	: 27	Y	P		X	AB	
7	P31 / P32	E08 - W10	P	NT	1620 : 1625		30	: 30	Y	P		X	AB	
8	P17 / P32	W10 - S088	P	VG	1630 : 1635		30	: 28	Y	P		X	AB	
9	P32 / P33	13A - 14F	P	VG	1720 : 1725		30	: 28	Y	P	X		AB	
10	P32 / P33	14F - 6F	P	VG	1724 : 1729		30	: 29	Y	P	X		AB	
11	P12 / P14	9Y - N088	P	VG	1555 : 1600		30	: 29	Y	P		X	AB	
12	/	-			:		:							
13	/	-			:		:							
14	/	-			:		:							
15	/	-			:		:							
16	/	-			:		:							
17	/	-			:		:							
18	/	-			:		:							
19	/	-			:		:							
20	/	-			:		:							

* REFERENCE SEAM ENDPOINTS FROM AND END OF SEAM (EOS), A REPAIR NUMBER,
 OR A POINT LOCATION ON THE SEAM (i.e., REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)

GOLDER FORM: G16-tss
 (January 2005)

REVIEWED BY: PS DATE: 5/5/19

GOLDER ASSOCIATES INC.

GEOMEMBRANE SEAM NON-DESTRUCTIVE TEST LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

DATE: 4-25-19
 SHEET NUMBER: 1 of 3

SEAM NUMBER	SEAM SECTION *		VACUUM OR PRESSURE	TECH ID	TIME		PRESSURE		OBS. TEST	RESULTS PASS/ FAIL	SEAM COMPLETE		MON.	REMARKS
	FROM	TO			START	FINISH	INITIAL	FINAL			NO	YES		
1 P32 / P33	13A	- Nees	P	NT	9:18	9:23	30	-	Y	F	X		AB	Capped
2 P31 / P37	Sees	- Nees	P	NT	9:28	9:33	30	30	Y	P		X	AB	
3 P33 / P37	Eos	- Nees	P	NT	9:30	9:35	30	-	Y	F		X	AB	Capped
4 P31 / P36	Sees	- Nees	P	NT	9:35	9:46	30	29	Y	P		X	AB	
5 P36 / P37	Sees	- Nees	P	NT	9:36	9:41	30	29	Y	P		X	AB	
6 P35 / P36	Sees	- Nees	P	NT	9:40	9:45	30	29	Y	P		X	AB	
7 P31 / P35	Sees	- Nees	P	NT	9:45	9:50	30	30	Y	P		X	AB	
8 P31 / P39	Sees	- Nees	P	NT	9:47	9:52	30	30	Y	P		X	AB	
9 P35 / P39	Sees	- Nees	P	NT	9:56	9:55	30	30	Y	P		X	AB	
10 P33 / P38	Eos	- Nees	P	NT	9:57	10:02	30	27	Y	P		X	AB	
11 P38 / P40	Sees	- Nees	P	NT	10:00	10:05	30	-	Y	F		X	AB	Capped
12 P31 / P33	Sees	- Nees	P	NT	10:05	10:10	30	-	Y	F		X	AB	Capped
13 P34 / P40	Eos	- Nees	P	NT	10:34	10:39	30	30	Y	P		X	AB	
14 P32 / P33	6F	- Sees	P	NT	11:25	11:30	30	28	Y	P		X	AB	
15 P33 / P34	15A	- Sees	P	NT	11:37	11:42	30	28	Y	P	X		AB	
16 P33 / P34	15A	- 15B	P	NT	11:41	11:46	30	28	Y	P	X		AB	
17 P33 / P34	15C	- 15B	P	NT	11:55	12:00	30	29	Y	P	X		AB	
18 P33 / P34	15D	- 15C	P	NT	13:00	13:05	30	29	Y	P	X		AB	
19 P33 / P34	15D	- 6J	P	NT	13:05	13:10	30	29	Y	P	X		AB	
20 P33 / P34	6J	- Nees	P	NT	13:10	13:15	30	28	Y	P		X	AB	

* REFERENCE SEAM ENDPOINTS FROM AND END OF SEAM (EOS), A REPAIR NUMBER,
 OR A POINT LOCATION ON THE SEAM (i.e., REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)

GOLDER FORM: G16-iss
 (January 2005)

REVIEWED BY: TS DATE: 9/5/19

GOLDER ASSOCIATES INC.

GEOMEMBRANE SEAM NON-DESTRUCTIVE TEST LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

DATE: 4-25-19
 SHEET NUMBER: 2 of 3

SEAM NUMBER	SEAM SECTION *		VACUUM OR PRESSURE	TECH ID	TIME		PRESSURE		OBS. TEST	RESULTS PASS/ FAIL	SEAM COMPLETE		MON.	REMARKS
	FROM	TO			START	FINISH	INITIAL	FINAL			NO	YES		
1	P37/P38	Seas - ISG	P	NT	1325	1330	30	28	Y	P	X		AB	
2	P37/P38	ISG - ISH	P	NT	1328	1333	30	28	Y	P	X		AB	
3	P37/P38	ISH - ISI	P	NT	1332	1337	30	29	Y	P	X		AB	
4	P40/P41	Seas - Nees	P	NT	1405	1410	30	30	Y	P		X	AB	
5	P34/P41	Eeos - Wees	P	NT	1417	1422	30	30	Y	P		X	AB	
6	P41/P42	Seas - Nees	P	NT	1415	1420	30	28	Y	P		X	AB	
7	P37/P38	IST - Nees	P	NT	1450	1455	30	30	Y	P		X	AB	
8	P34/P54	Nees - Seas	P	NT	1424	1429	30	28	Y	P		X	AB	
9	P54/P42	Wees - Eeos	P	NT	1430	1435	30	30	Y	P		X	AB	
10	P43/P54	Wees - Eeos	P	NT	1506	1511	30	30	Y	P		X	AB	
11	P43/P56	Eeos - Wees	P	NT	1516	1521	30	30	Y	P		X	AB	
12	P54/P56	Nees - Seas	P	NT	1517	1522	30	28	Y	P		X	AB	
13	P56/P57	Nees - Seas	P	NT	1535	1540	30	29	Y	P		X	AB	
14	P45/P57	Eeos - Nees	P	NT	1537	1542	30	29	Y	P		X	AB	
15	P43/P44	Seas - 8P	P	NT	1520	1525	30	30	Y	P	X		AB	
16	P43/P44	8P - Nees	P	NT	1525	1530	30	29	Y	P		X	AB	
17	P44/P45	Seas - Nees	P	NT	1528	1533	30	29	Y	P		X	AB	
18	P42/P43	Seas - ISW	P	NT	1530	1535	30	-	Y	F	X		AB	capped
19	P42/P43	ISW - ISV	P	NT	1616	1621	30	29	Y	P	X		AB	
20	P42/P43	ISV - IST	P	NT	1618	1623	30	-	Y	F	X		AB	capped

* REFERENCE SEAM ENDPOINTS FROM AND END OF SEAM (EOS), A REPAIR NUMBER,
 OR A POINT LOCATION ON THE SEAM (i.e. REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)

GOLDER FORM: G16-tss
 (January 2005)

REVIEWED BY: TBS DATE: 9/5/19

GOLDER ASSOCIATES INC.

GEOMEMBRANE SEAM NON-DESTRUCTIVE TEST LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

DATE: 4-25-19
 SHEET NUMBER: 3 of 3

SEAM NUMBER	SEAM SECTION *		VACUUM OR PRESSURE	TECH ID	TIME		PRESSURE		OBS. TEST	RESULTS PASS/ FAIL	SEAM COMPLETE		MON.	REMARKS
	FROM	TO			START	FINISH	INITIAL	FINAL			NO	YES		
1	P42/P43	15T - 15S	P	NT	1604	1609	30	29	Y	P	X		AB	
2	P42/P43	15S - Neos	P	NT	1607	1612	30	28	Y	P		X	AB	
3	P55/P56	Neos - Eeos	P	NT	1646	1651	30	30	Y	P		X	AB	
4	P55/P57	Neos - 9A	P	NT	1650	1655	30	29	Y	P		X	AB	
5	P45/P46	Seos - Neos	P	NT	1635	1640	30	29	Y	P		X	AB	
6	P44/P56	Wleas - Eeos	P	NT	1532	1537	30	30	Y	P		X	AB	
7	P54/P55	Neos - Seos	P	NT	1636	1641	30	28	Y	P		X	AB	
8	/	-			:		:							
9	/	-			:		:							
10	/	-			:		:							
11	/	-			:		:							
12	/	-			:		:							
13	/	-			:		:							
14	/	-			:		:							
15	/	-			:		:							
16	/	-			:		:							
17	/	-			:		:							
18	/	-			:		:							
19	/	-			:		:							
20	/	-			:		:							

* REFERENCE SEAM ENDPOINTS FROM AND END OF SEAM (EOS), A REPAIR NUMBER,
 OR A POINT LOCATION ON THE SEAM (i.e. REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)

GOLDER FORM: G16-tss
 (January 2005)

REVIEWED BY: PDS

DATE: 9/5/19

GOLDER ASSOCIATES INC.

GEOMEMBRANE SEAM NON-DESTRUCTIVE TEST LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

DATE: 4-26-19
 SHEET NUMBER: 1 of 2

SEAM NUMBER	SEAM SECTION *		VACUUM OR PRESSURE	TECH ID	TIME		PRESSURE		OBS. TEST	RESULTS PASS/ FAIL	SEAM COMPLETE		MON.	REMARKS
	FROM	TO			START	FINISH	INITIAL	FINAL			NO	YES		
1	P57/P59	Ees - Wres	P	NT	1003	1008	30	28	Y	P		X	AB	
2	P46/P57	Wres - Ees	P	NT	744	749	30	30	Y	P		X	AB	
3	P57/P58	Nes - Sees	P	NT	745	750	30	29	Y	P		X	AB	
4	P46/P58	Ees - Wres	P	NT	751	756	30	30	Y	P		X	AB	
5	P46/P47	Sees - Nes	P	NT	755	800	30	29	Y	P		X	AB	
6	P58/P60	Ees - Wres	P	NT	1147	1152	30	30	Y	P		X	AB	
7	P57/P60	Sees - Nes	P	NT	1145	1150	30	29	Y	P		X	AB	
8	P55/P57	16F - 9A	P	NT	1108	1113	30	30	Y	P	X		AB	
9	P55/P57	16A - 16F	P	NT	1120	1125	30	30	Y	P	X		AB	
10	P55/P57	Sees - 16A	P	NT	1106	1111	30	28	Y	P		X	AB	
11	P55/P59	16J - Nes	P	NT	1320	1325	30	28	Y	P	X		AB	
12	P55/P59	16K - 16J	P	NT	1325	1330	30	30	Y	P	X		AB	
13	P55/P59	9B - 16K	P	NT	1300	1305	30	28	Y	P	X		AB	
14	P47/P48	Sees - 16L	P	NT	1420	1425	30	28	Y	P	X		AB	
15	P47/P58	Wres - Ees	P	NT	1602	1607	30	30	Y	P		X	AB	
16	P58/P61	Nes - Sees	P	NT	1602	1605	30	29	Y	P		X	AB	
17	P60/P61	Nes - 16M	P	NT	1142	1147	30	28	Y	P	X		AB	
18	P60/P61	16M - Sees	P	NT	1152	1157	30	29	Y	P		X	AB	
19	P48/P49	Sees - 8V	P	NT	1618	1623	30	28	Y	P	X		AB	
20	P48/P61	Ees - Wres	P	NT	1606	1611	30	30	Y	P		X	AB	

* REFERENCE SEAM ENDPOINTS FROM AND END OF SEAM (EOS), A REPAIR NUMBER,
 OR A POINT LOCATION ON THE SEAM (ie, REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)

GOLDER FORM: G16-tss
 (January 2005)

REVIEWED BY: TOS DATE: 9/5/19

GOLDER ASSOCIATES INC.

GEOMEMBRANE SEAM NON-DESTRUCTIVE TEST LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

DATE: 4-26-19
 SHEET NUMBER: 2 of 2

SEAM NUMBER	SEAM SECTION *		VACUUM OR PRESSURE	TECH ID	TIME		PRESSURE		OBS. TEST	RESULTS PASS/ FAIL	SEAM COMPLETE		MON.	REMARKS
	FROM	TO			START	FINISH	INITIAL	FINAL			NO	YES		
1	P49/P61	Eos - W22	P	NT	1614	1629	30	29	Y	P		X	AB	
2	P65/P63	N22 - S22	P	NT	1503	1508	30	30	Y	P		X	AB	
3	P76/P77	W22 - E22	P	NT	1455	1500	30	29	Y	P		X	AB	
4	P77/P81	9P - F22	P	NT	1444	1449	30	30	Y	P	X		AB	
5	P77/P81	9P - W22	P	NT	1450	1455	30	30	Y	P		X	AB	
6	P76/P81	N22 - S22	P	NT	1457	1502	30	28	Y	P		X	AB	
7	P87/P88	S22 - N22	P	NT	1524	1529	30	29	Y	P		X	AB	
8	P84/P85	S22 - 11H	P	NT	1420	1425	30	29	Y	P	X		AB	
9	P47/P48	N22 - 16L	P	NT	1646	1651	30	29	Y	P		X	AB	
10	P48/P49	N22 - BV	P	NT	1654	1659	30	28	Y	P		X	AB	
11	P59/P60	14S - S22	P	NT	1158	1203	30	28	Y	P	A		AB	
12	P59/P60	N22 - 14S	P	NT	1135	1140	30	29	Y	P		X	AB	
13	P105/P106	E22 - W22	P	NT	1535	1540	30	29	Y	P		X	AB	
14	P113/P115	S22 - N22	P	NT	1528	1533	30	29	Y	P		X	AB	
15	/	-			:	:	:	:						
16	/	-			:	:	:	:						
17	/	-			:	:	:	:						
18	/	-			:	:	:	:						
19	/	-			:	:	:	:						
20	/	-			:	:	:	:						

* REFERENCE SEAM ENDPOINTS FROM AND END OF SEAM (EOS), A REPAIR NUMBER,
 OR A POINT LOCATION ON THE SEAM (i.e., REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)

GOLDER FORM: G16-tss
 (January 2005)

REVIEWED BY: DS DATE: 9/5/19

GOLDER ASSOCIATES INC.

GEOMEMBRANE SEAM NON-DESTRUCTIVE TEST LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

DATE: 4-27-19
 SHEET NUMBER: 1

SEAM NUMBER	SEAM SECTION *		VACUUM OR PRESSURE	TECH ID	TIME		PRESSURE		OBS. TEST	RESULTS PASS/ FAIL	SEAM COMPLETE		MON.	REMARKS
	FROM	TO			START	FINISH	INITIAL	FINAL			NO	YES		
1	P85/P86	SP02 - N005	P	NT	8:22	8:27	30	29	Y	P		X	AB	
2	P82/P84	SP02 - N005	P	NT	8:16	8:21	30	28	Y	P		X	AB	
3	P84/P85	NH - N005	P	NT	8:43	8:48	30	28	Y	P		X	AB	
4	P88/P90	W005 - E005	P	NT	8:30	8:35	30	30	Y	P		X	AB	
5	P91/P92	Se05 - N005	P	NT	8:52	8:57	30	28	Y	P		X	AB	
6	P88/P91	14V - 14W	P	NT	9:56	9:56	30	30	Y	P	X		AB	
7	P103/P104	W005 - E005	P	NT	10:10	10:15	30	29	Y	P		X	AB	
8	P110/P112	N005 - SP02	P	NT	10:43	10:48	30	27	Y	P		X	AB	
9	P111/P116	W005 - E005	P	NT	10:55	11:00	30	28	Y	P		X	AB	
10	P112/P113	N005 - Se05	P	NT	11:06	11:11	30	30	Y	P		X	AB	
11	P50/P51	Se05 - 8R	P	NT	7:36	7:41	30	28	Y	P		X	AB	
12	P49/P50	Se05 - 8T	P	NT	7:35	7:40	30	30	Y	P		X	AB	
13	P30/P82	Se05 - N005	P	NT	8:10	8:15	30	29	Y	P		X	AB	
14	/	-			:	:	:	:						
15	/	-			:	:	:	:						
16	/	-			:	:	:	:						
17	/	-			:	:	:	:						
18	/	-			:	:	:	:						
19	/	-			:	:	:	:						
20	/	-			:	:	:	:						

* REFERENCE SEAM ENDPOINTS FROM AND END OF SEAM (EOS), A REPAIR NUMBER,
 OR A POINT LOCATION ON THE SEAM (i.e., REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)

GOLDER FORM: G16-tss
 (January 2005)

REVIEWED BY: TDS DATE: 9/5/19

★ See Sheet 5 on 5.3.19

GOLDER ASSOCIATES INC.

GEOMEMBRANE SEAM NON-DESTRUCTIVE TEST LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

DATE: 4-30-19
 SHEET NUMBER: 1 of 2

SEAM NUMBER	SEAM SECTION *		VACUUM OR PRESSURE	TECH ID	TIME		PRESSURE		OBS. TEST	RESULTS PASS/ FAIL	SEAM COMPLETE		MON.	REMARKS
	FROM	TO			START	FINISH	INITIAL	FINAL			NO	YES		
1	P71	P72	Eos - Wees	P	NT	834 : 839	30 : 29		Y	P		X	AB	
2	P70	P71	Eos - Wees	P	NT	824 : 829	30 : 29		Y	P		X	AB	
3	P70	P72	18D - Eos	P	NT	815 : 820	30 : 30		Y	P	X		AB	
4	P70	P72	18D - Wees	P	NT	818 : 823	30 : 30		Y	P		X	AB	
5	P72	P77	Eos - Wees	P	NT	837 : 842	30 : 28		Y	P		X	AB	
6	P70	P77	Eos - Wees	P	NT	754 : 759	30 : 30		Y	P		X	AB	
7	P75	P77	Wees - Sees	P	NT	750 : 755	30 : 30		Y	P		X	AB	
8	P70	P75	Eos - Wees	P	NT	803 : 808	30 : 30		Y	P		X	AB	
9	P69	P70	Eos - Wees	P	NT	747 : 752	30 : 29		Y	P		X	AB	
10	P69	P75	Eos - Wees	P	NT	843 : 848	30 : 28		Y	P		X	AB	
11	P74	P75	Wees - Sees	P	NT	758 : 803	30 : 30		Y	P		X	AB	
12	P69	P74	Eos - Wees	P	NT	848 : 853	30 : 30		Y	P		X	AB	
13	P68	P69	Sees - Wees	P	NT	849 : 854	30 : 30		Y	P		X	AB	
14	P68	P74	Eos - Wees	P	NT	858 : 903	30 : 30		Y	P		X	AB	
15	P73	P74	Wees - Sees	P	NT	900 : 905	30 : 30		Y	P		X	AB	
16	P68	P73	Wees - Eos	P	NT	859 : 904	30 : 30		Y	P		X	AB	
17	P67	P68	Sees - Wees	P	NT	908 : 913	30 : 29		Y	P		X	AB	
18	P67	P73	Eos - Wees	P	NT	912 : 917	30 : 30		Y	P		X	AB	
19	P73	P80	Wees - Sees	P	NT	907 : 912	30 : 29		Y	P		X	AB	
20	P67	P80	Eos - Wees	P	NT	918 : 923	30 : 28		Y	P		X	AB	

* REFERENCE SEAM ENDPOINTS FROM AND END OF SEAM (EOS), A REPAIR NUMBER,
 OR A POINT LOCATION ON THE SEAM (i.e., REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)

GOLDER FORM: G16-iss
 (January 2005)

REVIEWED BY: TDS DATE: 9/5/19

GOLDER ASSOCIATES INC.

GEOMEMBRANE SEAM NON-DESTRUCTIVE TEST LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

DATE: 4-30-19
 SHEET NUMBER: 2 of 2

SEAM NUMBER	SEAM SECTION *		VACUUM OR PRESSURE	TECH ID	TIME		PRESSURE		OBS. TEST	RESULTS PASS/ FAIL	SEAM COMPLETE		MON.	REMARKS
	FROM	TO			START	FINISH	INITIAL	FINAL			NO	YES		
1	P66/P67	SEB - N28	P	NT	920 : 925		30 : 28		Y	P		X	AB	
2	P66/P80	FEES - W28	P	NT	927 : 932		30 : 30		Y	P		X	AB	
3	P78/P80	N28 - SEB	P	NT	928 : 933		30 : 30		Y	P		X	AB	
4	P53/P66	SEB - N28	P	NT	933 : 938		30 : 28		Y	P		X	AB	
5	P53/P78	FEES - W28	P	NT	945 : 950		30 : 30		Y	P		X	AB	
6	P52/P53	SEB - N28	P	NT	942 : 947		30 : 30		Y	P		X	AB	
7	P52/P78	FEES - W28	P	NT	1000 : 1005		30 : 29		Y	P		X	AB	
8	P65/P78	N28 - SEB	P	NT	1003 : 1008		30 : 29		Y	P		X	AB	
9	P52/P65	FEES - W28	P	NT	953 : 958		30 : 29		Y	P		X	AB	
10	P51/P52	SEB - N28	P	NT	950 : 955		30 : 29		Y	P		X	AB	
11	P51/P65	FEES - W28	P	NT	955 : 1000		30 : 30		Y	P		X	AB	
12	P50/P62	FEES - W28	P	NT	1025 : 1030		30 : 30		Y	P		X	AB	
13	P61/P62	N28 - SEB	P	NT	1030 : 1035		30 : 30		Y	P		X	AB	
14	P49/P50	BT - T2N	P	NT	1008 : 1013		30 : 30		Y	P	X		AB	4-27
15	P49/P50	T2N - N28	P	NT	1010 : 1015		30 : 28		Y	P			AB	
16	P50/P51	BR - N28	P	NT	1017 : 1022		30 : 28		Y	P		X	AB	4-27
17	P62/P65	N28 - SEB	P	NT	1023 : 1028		30 : 30		Y	P		X	AB	
18	P75/P76	SEB - N28	P	NT	1040 : 1045		30 : 30		Y	P		X	AB	
19	P49/P62	FEES - W28	P	NT	1028 : 1033		30 : 30		Y	P		X	AB	
20	1	-			:		:							

* REFERENCE SEAM ENDPOINTS FROM AND END OF SEAM (EOS), A REPAIR NUMBER,
 OR A POINT LOCATION ON THE SEAM (i.e. REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)

GOLDER FORM: G16-iss
 (January 2005)

REVIEWED BY: P/S DATE: 9/5/19

GOLDER ASSOCIATES INC.

GEOMEMBRANE SEAM NON-DESTRUCTIVE TEST LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

DATE: 5-1-19
 SHEET NUMBER: 1 of 1

SEAM NUMBER	SEAM SECTION *		VACUUM OR PRESSURE	TECH ID	TIME		PRESSURE		OBS. TEST	RESULTS PASS/ FAIL	SEAM COMPLETE		MON.	REMARKS
	FROM	TO			START	FINISH	INITIAL	FINAL			NO	YES		
1	P63 / P64	Wees - Eeos	P	NT	1434	1439	30	29	Y	P		X	AB	
2	P64 / P65	Nees - Sees	P	NT	1437	1442	30	29	Y	P		X	AB	
3	P61 / P64	Nees - Sees	P	NT	1443	1448	30	28	Y	P		X	AB	
4	P61 / P63	Sees - Nees	P	NT	1458	1503	30	28	Y	P		X	AB	
5	P62 / P63	Eeos - Wees	P	NT	1450	1455	30	29	Y	P		X	AB	
6	P79 / P80	Nees - Sees	P	NT	1410	1415	30	28	Y	P		X	AB	
7	P78 / P79	Eeos - Wees	P	NT	1431	1436	30	30	Y	P		X	AB	
8	P65 / P79	Nees - Sees	P	NT	1802	1807	30	30	Y	P		X	AB	
9	P55 / P59	19R - Sees	P	NT	1506	1511	30	29	Y	P		X	AB	
10	P55 / P59	9B - 19R	P	NT	1500	1505	30	28	Y	P	X		AB	
11	/	-			:		:							
12	/	-			:		:							
13	/	-			:		:							
14	/	-			:		:							
15	/	-			:		:							
16	/	-			:		:							
17	/	-			:		:							
18	/	-			:		:							
19	/	-			:		:							
20	/	-			:		:							

* REFERENCE SEAM ENDPOINTS FROM AND END OF SEAM (EOS), A REPAIR NUMBER,
 OR A POINT LOCATION ON THE SEAM (i.e., REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)

GOLDER FORM: G16-tss
 (January 2005)

REVIEWED BY: PS DATE: 9/5/19

GOLDER ASSOCIATES INC.

GEOMEMBRANE SEAM NON-DESTRUCTIVE TEST LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

DATE: 5-3-19
 SHEET NUMBER: 1 of 5

SEAM NUMBER	SEAM SECTION *		VACUUM OR PRESSURE	TECH ID	TIME		PRESSURE		OBS. TEST	RESULTS PASS/ FAIL	SEAM COMPLETE		MON.	REMARKS
	FROM	TO			START	FINISH	INITIAL	FINAL			NO	YES		
1	P121	P122	Nees - Sees	P	NT	823 : 828	30	29	Y	P		X	AB	
2	P119	P121	Sees - 12R	P	NT	824 : 829	30	30	Y	P	X		AB	
3	P119	P122	Wees - Eees	P	NT	835 : 840	30	29	Y	P		X	AB	
4	P119	P120	Nees - Sees	P	NT	841 : 846	30	30	Y	P		X	AB	
5	P119	P121	Nees - 12R	P	NT	842 : 847	30	29	Y	P		X	AB	
6	P118	P119	Wees - 20F	P	NT	850 : 853	30	30	Y	P	X		AB	
7	P118	P119	Eees - 20F	P	NT	853 : 858	30	30	Y	P		X	AB	
8	P118	P120	Sees - Nees	P	NT	858 : 903	30	30	Y	P		X	AB	
9	P115	P120	Nees - Sees	P	NT	903 : 908	30	30	Y	P		X	AB	
10	P114	P115	Eees - Wees	P	NT	908 : 913	30	28	Y	P		X	AB	
11	P114	P117	Sees - Nees	P	NT	911 : 916	30	30	Y	P		X	AB	
12	P117	P118	Wees - Eees	P	NT	914 : 919	30	28	Y	P		X	AB	
13	P116	P117	Wees - Eees	P	NT	917 : 922	30	29	Y	P		X	AB	
14	P114	P116	Nees - Sees	P	NT	923 : 928	30	30	Y	P		X	AB	
15	P113	P114	Nees - Sees	P	NT	924 : 929	30	30	Y	P		X	AB	
16	P113	P116	Sees - Nees	P	NT	927 : 932	30	30	Y	P		X	AB	
17	P111	P113	Nees - Sees	P	NT	828 : 833	30	28	Y	P		X	AB	
18	P110	P111	Wees - Eees	P	NT	931 : 936	30	28	Y	P		X	AB	
19	P109	P110	Wees - Eees	P	NT	935 : 940	30	28	Y	P		X	AB	
20	P108	P109	Wees - Eees	P	NT	954 : 959	30	29	Y	P		X	AB	

* REFERENCE SEAM ENDPOINTS FROM AND END OF SEAM (EOS), A REPAIR NUMBER,
 OR A POINT LOCATION ON THE SEAM (i.e., REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)

GOLDER FORM: G16-tss
 (January 2005)

REVIEWED BY: PS DATE: 9/5/19

GOLDER ASSOCIATES INC.

GEOMEMBRANE SEAM NON-DESTRUCTIVE TEST LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

DATE: 5-3-19
 SHEET NUMBER: 2045

SEAM NUMBER	SEAM SECTION *		VACUUM OR PRESSURE	TECH ID	TIME		PRESSURE		OBS. TEST	RESULTS PASS/ FAIL	SEAM COMPLETE		MON.	REMARKS
	FROM	TO			START	FINISH	INITIAL	FINAL			NO	YES		
1	P108/P112	Neds - Sea	P	NT	1005 : 1010		30	: 29	Y	P		X	AB	
2	P109/P112	Sees - Neds	P	NT	1018 : 1023		30	: 30	Y	P		X	AB	
3	P107/P108	Weds - Fees	P	NT	1026 : 1031		30	: 29	Y	P		X	AB	
4	P107/P112	Sees - Neds	P	NT	1030 : 1035		30	: 29	Y	P		X	AB	
5	P106/P107	Weds - Fees	P	NT	1037 : 1042		30	: 30	Y	P		X	AB	
6	P106/P112	Sees - Neds	P	NT	1039 : 1044		30	: 29	Y	P		X	AB	
7	P105/P112	Neds - Sees	P	NT	1056 : 1101		30	: 30	Y	P		X	AB	
8	P104/P112	Sea - Neds	P	NT	1106 : 1111		30	: 30	Y	P		X	AB	
9	P104/P105	Weds - Fees	P	NT	1100 : 1105		30	: 30	Y	P		X	AB	
10	P92/P112	Fees - Neds	P	NT	1108 : 1113		30	: 29	Y	P		X	AB	
11	P92/P104	Sees - Neds	P	NT	1112 : 1117		30	: 30	Y	P		X	AB	
12	P92/P103	Sees - 20H	P	NT	1124 : 1129		30	: 30	Y	P	X		AB	
13	P92/P103	Neds - 20H	P	NT	1120 : 1125		30	: 29	Y	P		X	AB	
14	P102/P103	Neds - 20I	P	NT	1126 : 1131		30	: 28	Y	P	X		AB	
15	P102/P103	20I - Fees	P	NT	1129 : 1134		30	: 27	Y	P		X	AB	
16	P92/P102	Sees - Neds	P	NT	1133 : 1138		30	: 28	Y	P		X	AB	
17	P101/P102	Weds - Fees	P	NT	1136 : 1141		30	: 28	Y	P		X	AB	
18	P98/P101	Weds - Fees	P	NT	1140 : 1145		30	: 28	Y	P		X	AB	
19	P92/P101	Neds - Sees	P	NT	1144 : 1149		30	: 28	Y	P		X	AB	
20	P92/P98	Sees - Neds	P	NT	1146 : 1151		30	: 30	Y	P		X	AB	

* REFERENCE SEAM ENDPOINTS FROM AND END OF SEAM (EOS), A REPAIR NUMBER,
 OR A POINT LOCATION ON THE SEAM (i.e. REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)

GOLDER FORM: G16-tss
 (January 2005)

REVIEWED BY: PS DATE: 5/5/19

GOLDER ASSOCIATES INC.

2213

GEOMEMBRANE SEAM NON-DESTRUCTIVE TEST LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

DATE: 5-3-19
 SHEET NUMBER: 3 of 5

SEAM NUMBER	SEAM SECTION *		VACUUM OR PRESSURE	TECH ID	TIME		PRESSURE		OBS. TEST	RESULTS PASS/ FAIL	SEAM COMPLETE		MON.	REMARKS
	FROM	TO			START	FINISH	INITIAL	FINAL			NO	YES		
1	P93 / P98	Wes - Eos	P	NT	1149	1154	30	30	Y	P		X	AB	
2	P92 / P93	Seos - Nws	P	NT	1155	1200	30	29	Y	P		X	AB	
3	P93 / P96	Wes - Eos	P	NT	1306	1311	30	30	Y	P		X	AB	
4	P96 / P98	Wes - Eos	P	NT	1305	1310	30	28	Y	P		X	AB	
5	P93 / P94	Seos - Nws	P	NT	1307	1312	30	27	Y	P		X	AB	
6	P94 / P96	Wes - Eos	P	NT	1313	1318	30	30	Y	P		X	AB	
7	P94 / P95	Seos - Nws	P	NT	1315	1320	30	28	Y	P		X	AB	
8	P96 / P97	Wes - 20J	P	NT	1322	1327	30	29	Y	P	X		AB	
9	P95 / P97	Wes - Eos	P	NT	1324	1329	30	29	Y	P		X	AB	
10	P96 / P97	20J - Eos	P	NT	1326	1331	30	30	Y	P		X	AB	
11	P95 / P99	Seos - Nws	P	NT	1330	1335	30	29	Y	P		X	AB	
12	P97 / P99	Wes - Eos	P	NT	1331	1336	30	29	Y	P		X	AB	
13	P97 / P100	Wes - Eos	P	NT	1341	1346	30	28	Y	P		X	AR	
14	P99 / P100	Seos - Nws	P	NT	1355	1400	30	30	Y	P		X	AB	
15	P86 / P90	Seos - Nws	P	NT	1410	1415	30	30	Y	P		X	AB	
16	P86 / P88	Nws - Seos	P	NT	1418	1423	30	28	Y	P		X	AB	
17	P86 / P87	Wes - Eos	P	NT	1421	1426	30	29	Y	P		X	AB	
18	P88 / P91	14R - Nws	P	NT	1430	1435	30	28	Y	P	X		AB	
19	P88 / P91	14R - 14T	P	NT	1435	1430	30	29	Y	P	X		AB	
20	P90 / P91	Seos - Nws	P	NT	1408	1413	30	29	Y	P		X	AB	

* REFERENCE SEAM ENDPOINTS FROM AND END OF SEAM (EOS), A REPAIR NUMBER,
 OR A POINT LOCATION ON THE SEAM (i.e. REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)

GOLDER FORM: G16-tss
 (January 2005)

REVIEWED BY: PS

DATE: 9/5/19

☆ See Sheet 5, 5.3.19

GOLDER ASSOCIATES INC.

GEOMEMBRANE SEAM NON-DESTRUCTIVE TEST LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

DATE: 5-3-19
 SHEET NUMBER: 4 of 5

	SEAM NUMBER	SEAM SECTION *		VACUUM OR PRESSURE	TECH ID	TIME		PRESSURE		OBS. TEST	RESULTS PASS/ FAIL	SEAM COMPLETE		MON.	REMARKS
		FROM	TO			START	FINISH	INITIAL	FINAL			NO	YES		
★	1	P88 / P89	Noss - Sees	P	NT	1533	: 1538	30	: 28	Y	P		X	AB	
★	2	P89 / P91	Wess - Eess	P	NT	1530	: 1535	30	: 30	Y	P		X	AB	
★	3	P89 / P112	Noss - Sees	P	NT	1535	: 1540	30	: 28	Y	P		X	AB	
★	4	P88 / P91	21I - Sees	P	NT	1526	: 1531	30	: 30	Y	P	X		AB	
★	5	P88 / P91	14W - 21I	P	NT	1524	: 1529	30	: 29	Y	P	X		AB	?
★	6	P88 / P91	14V - 20L	P	NT	1455	: 1500	30	: 30	Y	P	X		AB	?
★	7	P88 / P91	20L - 21H	P	NT	1506	: 1511	30	: 29	Y	P	X		AB	
★	8	P88 / P91	20H - 21G	P	NT	1510	: 1515	30	: 30	Y	P	X		AB	
★	9	P88 / P91	21F - 21G	P	NT	1514	: 1519	30	: 30	Y	P	X		AB	
★	10	P88 / P91	14T - 21F	P	NT	1517	: 1522	30	: 30	Y	P		X	AB	
	11	P91 / P112	Noss - Sees	P	NT	1444	: 1449	30	: 28	Y	P		X	AB	
	12	P85 / P87	Noss - Sees	P	NT	1555	: 1600	30	: 28	Y	P		X	AB	
	13	P83 / P84	Noss - Sees	P	NT	1601	: 1606	30	: 29	Y	P		X	AB	
	14	P82 / P83	Eess - Wess	P	NT	1558	: 1603	35	: 28	Y	P		X	AB	
	15	P30 / P83	Noss - 21J	P	NT	1602	: 1607	30	: 28	Y	P	X		AB	
	16	P30 / P83	Sees - 21J	P	NT	1615	: 1620	30	: 30	Y	P		X	AB	
	17	P29 / P83	Noss - Sees	P	NT	1617	: 1622	30	: 29	Y	P		X	AB	
	18	P120 / P121	Sees - Noss	P	NT	855	: 900	30	: 30	Y	P		X	AB	
	19	/	-			:	:	:	:						
	20	/	-			:	:	:	:						

* REFERENCE SEAM ENDPOINTS FROM AND END OF SEAM (EOS), A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM (i.e., REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)

GOLDER FORM: G16-455
 (January 2005)

See Sheet 5, 5.3.19

REVIEWED BY:

T25

DATE:

9/5/19

GOLDER ASSOCIATES INC.

Handwritten notes at the bottom of the page, including "5-3-19" and "5-11" repeated several times.

GEOMEMBRANE SEAM NON-DESTRUCTIVE TEST LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

DATE: 5.3.19
 SHEET NUMBER: 5 of 5

clarification of P88/P91 seam

SEAM NUMBER	SEAM SECTION *		VACUUM OR PRESSURE	TECH ID	TIME		PRESSURE		OBS. TEST	RESULTS PASS/ FAIL	SEAM COMPLETE		MON.	REMARKS
	FROM	TO			START	FINISH	INITIAL	FINAL			NO	YES		
1 P88/P91	21I	SMS	P	NT	1526	1531	30	30	Y	P	X		AB	5.3.19
2	14W	21I	P	NT	1524	1529	30	29	Y	P	X		AB	5.3.19
3	14V	14W	P	NT	951	956	30	30	Y	P	X		AB	4-27-19
4	14V	20L	P	NT	1455	1500	30	30	Y	P	X		AB	5.3.19
5	20L	21H	P	NT	1506	1511	30	29	Y	P	X		AB	
6	21H	21G	P	NT	1510	1515	30	30	Y	P	X		AB	
7	21F	21G	P	NT	1514	1519	30	30	Y	P	X		AB	
8	14T	21F	P	NT	1517	1522	30	30	Y	P	X		AB	
9	14R	14T	P	NT	1435	1440	30	29	Y	P	X		AB	
10 P88/P91	14R	NEOS	P	NT	1430	1435	30	28	Y	P		X	AB	5.3.19
11	/	-			:	:	:	:						
12	/	-			:	:	:	:						
13	/	-			:	:	:	:						
14	/	-			:	:	:	:						
15	/	-			:	:	:	:						
16	/	-			:	:	:	:						
17	/	-			:	:	:	:						
18	/	-			:	:	:	:						
19	/	-			:	:	:	:						
20	/	-			:	:	:	:						

* REFERENCE SEAM ENDPOINTS FROM AND END OF SEAM (EOS), A REPAIR NUMBER,
 OR A POINT LOCATION ON THE SEAM (i.e. REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)

GOLDER FORM: G16-4ss
 (January 2005)

REVIEWED BY: PS DATE: 9/5/19

GOLDER ASSOCIATES INC.

APPENDIX J.4

Vacuum Testing Logs

GEOMEMBRANE VACUUM TEST LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

REPAIRS

	DEFECT CODE	TEST DATE	TECH ID	DEFECTS **	OBS. TEST	MON.	REMARKS
1	1A	5-8	CP		Y	AB	
2	1B	5-8	CP		Y	AB	
3	1C	5-8	CP		Y	DW	
4	1D	5-8	CP		Y	AB	
5	1E	5-8	CP		Y	AB	
6	1F	5-8	CP		Y	AB	
7	1G	5-8	CP		Y	AB	
8	1H	5-8	CP		Y	AB	
9	1I	5-8	CP		Y	AB	
10	1J	5-8	CP		Y	AB	
11	1K	5-8	CP		Y	AB	
12	1L	5-8	CP		Y	AB	
13	1M	5-8	CP		Y	AB	
14	1N	5-8	CP		Y	AB	
15	1P	5-8	CP		Y	AB	
16	1Q	5-8	CP		Y	AB	
17	1R	5-8	CP		Y	AB	
18	1S	5-8	CP		Y	AB	
19	1T	5-8	CP		Y	AB	
20	1V	5-8	CP		Y	AB	
21	1W	5-8	CP		Y	AB	
22	1X	5-8	CP		Y	AB	
23	1Y	5-8	CP		Y	AB	
24	1Z	5-8	CP		Y	AB	
25	2A	5-8	CP		Y	AB	
26	2B	5-8	CP		Y	AB	
27	2C	5-8	CP		Y	AB	
28	2D	5-8	CP		Y	AB	
29	2E	5-8	CP		Y	AB	
30	2F	5-8	CP		Y	AB	
31	2G	5-8	CP		Y	DW	
32	2H	5-8	CP		Y	AB	
33	2I	5-8	CP		Y	AB	
34	2J	5-8	CP		Y	AB	
35	2K	5-8	CP		Y	AB	
36	2L	5-8	CP		Y	AB	
37	2M	5-8	CP		Y	AB	
38	2N	5-8	CP		Y	AB	
39	2P	5-8	CP		Y	AB	
40	2Q	5-8	CP		Y	AB	
41	2R	5-8	CP		Y	AB	
42	2S	5-8	CP		Y	AB	
43	2T	5-8	CP		Y	AB	
44	2V	5-8	CP		Y	AB	
45	2W	5-8	CP		Y	AB	

REPAIRS

	DEFECT CODE	TEST DATE	TECH ID	DEFECTS **	OBS. TEST	MON.	REMARKS
46	2X	5-8	CP		Y	AB	
47	2Y	5-8	CP		Y	AB	
48	2Z	5-8	CP		Y	AB	
49	3A	5-8	CP		Y	AB	
50	3B	5-8	CP		Y	AB	
51	3C	5-8	CP		Y	AB	
52	3D	5-8	CP		Y	AB	
53	3E	5-8	CP		Y	AB	
54	3F	5-8	CP		Y	AB	
55	3G	5-8	CP		Y	AB	
56	3H	5-8	CP		Y	AB	
57	3I	5-8	CP		Y	AB	
58	3J	5-8	CP		Y	AB	
59	3K	5-8	CP		Y	AB	
60	3L	5-8	CP		Y	AB	
61	3M	5-8	CP		Y	AB	
62	3N	5-8	CP		Y	AB	
63	3P	5-8	CP		Y	AB	
64	3Q	5-8	CP		Y	AB	
65	3R	5-8	CP		Y	AB	
66	3S	5-8	CP		Y	AB	
67	3T	5-8	CP		Y	AB	
68	3V	5-8	CP		Y	AB	
69	3W	5-8	CP		Y	AB	
70	3X	5-8	CP		Y	AB	
71	3Y	5-8	CP		Y	AB	
72	3Z	5-8	CP		Y	AB	
73	4A	5-8	CP		Y	AB	
74	4B	5-8	CP		Y	AB	
75	4C	5-8	CP		Y	AB	
76	4D	5-8	CP		Y	AB	
77	4E	5-8	CP		Y	AB	
78	4F	5-8	CP		Y	AB	
79	4G	5-8	CP		Y	AB	
80	4H	5-8	CP		Y	AB	
81	4I	5-8	CP		Y	AB	
82	4J	5-8	CP		Y	AB	
83	4K	5-8	CP		Y	AB	
84	4L	5-3	CT		Y	Am	
85	4M	5-3	CT		Y	Am	
86	4N	5-3	CT		Y	Am	
87	4P	5-3	CT		Y	Am	
88	4Q	—	—		—	—	
89	4R	5-3	CT		Y	Am	
90	4S	5-8	CP		Y	AB	

** RECORD QUANTITY OF LEAKS DETECTED AND REFERENCE NEW DEFECT CODE IN REMARKS.

GOLDER FORM: G17-100
 (January 2005)

REVIEWED BY: PS DATE 9/6/19

GOLDER ASSOCIATES INC.

GEOMEMBRANE VACUUM TEST LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Svstems, Inc.

REPAIRS						
	DEFECT CODE	TEST DATE	TECH ID	DEFECTS **	OBS. TEST	MON. REMARKS
1	4 T	5.3	CT		✓	AM
2	4 V	5.3	CT		✓	AM
3	4 W	5.3	CT		✓	AM
4	4 X	5.3	CT		✓	AM
5	4 Y	5.8	CP	VL	✓	AB K-21W
6	4 Z	5.8	CP		✓	AB
7	5 A	5.8	CP		✓	AB
8	5 B	5.8	CP		✓	AB
9	5 C	5.8	CP		✓	AB
10	5 D	5.8	CP		✓	AB
11	5 E	5.8	CP		✓	AB
12	5 F	5.8	CP		✓	AB
13	5 A	5.8	CP		✓	AB
14	5 H	5.8	CP		✓	AB
15	5 J	5.3	CT		✓	AM
16	5 J	5.2	NT		✓	AM
17	5 K	5.3	CT		✓	AM
18	5 L	5.3	CT		✓	AM
19	5 M	5.3	CT		✓	AM
20	5 N	5.3	CT		✓	AM
21	5 P	5.3	CT		✓	AM
22	5 Q	5.3	CT		✓	AB
23	5 R	5.3	CT		✓	AM
24	5 S	5.3	CT		✓	AM
25	5 T	5.3	CT		✓	AM
26	5 V	5.8	CP		✓	AB
27	5 W	5.3	CT		✓	AM
28	5 X	5.3	CT		✓	AM
29	5 Y	5.3	CT		✓	AM
30	5 Z	5.7	CP		✓	AB
31	6 A	5.7	CP		✓	AB
32	6 B	5.7	CP		✓	AB
33	6 C	5.8	CP		✓	AB
34	6 D	5.7	CP		✓	AB
35	6 E	5.8	CP		✓	AB
36	6 F	5.8	CP		✓	AB
37	6 G	5.8	CP		✓	AB
38	6 H	5.8	CP		✓	AB
39	6 I	5.2	NT		✓	AM
40	6 J	5.3	CT		✓	AM
41	6 K	5.7	CP		✓	AB
42	6 L	5.8	CP		✓	AB
43	6 M	5.3	CT		✓	AM
44	6 N	5.8	CP		✓	AB
45	6 P	5.3	CT		✓	AM

REPAIRS						
	DEFECT CODE	TEST DATE	TECH ID	DEFECTS **	OBS. TEST	MON. REMARKS
46	6 Q	5.3	CT		✓	AM
47	6 R	5.3	CT		✓	AM
48	6 S	5.3	CT		✓	AM
49	6 T	5.3	CT		✓	AM
50	6 V	5.3	CT		✓	AM
51	6 W	5.7	CP		✓	AB
52	6 X	5.7	CP		✓	AB
53	6 Y	5.3	CT		✓	AM
54	6 Z	5.3	CT		✓	AM
55	7 A	5.3	CT		✓	AM
56	7 B	5.7	CP		✓	AB
57	7 C	5.7	CP		✓	AB
58	7 D	5.3	CT		✓	AM
59	7 E	5.7	CP		✓	AB
60	7 F	5.7	CP		✓	AB
61	7 G	5.7	CP		✓	AB
62	7 H	5.7	CP		✓	AB
63	7 I	5.7	CP		✓	AB
64	7 J	5.7	CP		✓	AB
65	7 K	5.3	CT		✓	AB
66	7 L	5.3	CT		✓	AM
67	7 M	5.3	CT		✓	AM
68	7 N	5.3	CT		✓	AB
69	7 P	5.7	CP		✓	AB
70	7 Q	5.7	CP		✓	AB
71	7 R	5.7	CP		✓	AB
72	7 S	5.7	CP		✓	AB
73	7 T	5.7	CP		✓	AB
74	7 V	5.4	CT		✓	AB
75	7 W	5.7	CP		✓	AB
76	7 X	5.4	CT		✓	AM
77	7 Y	5.4	CT		✓	AM
78	7 Z	5.4	CT		✓	AM
79	8 A	5.7	CP		✓	AB
80	8 B	5.8	CP		✓	AB
81	8 C	5.8	CP		✓	AB
82	8 D	5.3	CT		✓	AM
83	8 E	5.3	CT		✓	AM
84	8 F	5.8	CP		✓	AB
85	8 G	5.3	CT		✓	AM
86	8 H	5.7	CP		✓	AB
87	8 I	5.3	CT		✓	AM
88	8 J	5.8	CP		✓	AB
89	8 K	5.8	CP		✓	AB
90	8 L	5.3	CT		✓	AM

** RECORD QUANTITY OF LEAKS DETECTED AND REFERENCE NEW DEFECT CODE IN REMARKS.

GOLDER FORM: G17-111
 (January 2005)

REVIEWED BY: PS DATE 9/6/19

GOLDER ASSOCIATES INC.

GEOMEMBRANE VACUUM TEST LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Svstms, Inc.

REPAIRS

DEFECT CODE	TEST DATE	TECH ID	DEFECTS **	OBS. TEST	MON.	REMARKS
8M	5.2	NT		✓	AB	
8N	5.2	NT		✓	AB	
8P	5.2	NT		✓	AB	
8Q	5.1	NT		✓	AB	
8R	5.1	NT		✓	AB	
8S	5.3	CP		✓	DW	
8T	5.1	NT		✓	AB	
8V	5.1	NT		✓	AB	
8W	5.3	NT		✓	Am	
8Y	5.2	NT		✓	Am	DF-29
8Z	5.1	NT		✓	AB	DF-32
9A	5.3	NT		✓	AB	
9B	5.2	NT		✓	Am	
9C	5.2	NT		✓	AB	
9D	5.1	NT		✓	AB	
9E	5.1	NT		✓	AB	
9F	5.1	NT		✓	AB	
9G	5.1	NT		✓	AB	
9H	5.1	NT		✓	AB	
9I	5.1	NT		✓	AB	
9J	5.1	NT		✓	AB	
9K	5.1	NT		✓	AB	
9L	5.1	NT		✓	AB	
9M	—	—	—	—	—	
9N	5.2	NT		✓	Am	
9P	5.1	NT		✓	AB	
9Q	5.1	NT		✓	AB	
9R	5.1	NT		✓	AB	
9S	5.1	NT		✓	AB	
9T	5.1	NT		✓	AB	
9V	5.1	NT		✓	AB	
9W	5.8	CP		✓	AB	
9X	5.2	NT		✓	AB	
9Y	5.2	NT		✓	Am	
9Z	5.2	NT		✓	AB	
10A	5.8	CP		✓	AB	
10B	5.8	CP		✓	DW	
10C	5.8	CP		✓	DW	
10D	5.8	CP		✓	AB	
10E	5.8	CP		✓	AB	
10F	5.8	CP		✓	AB	
10G	5.8	CP		✓	AB	
10H	5.8	CP		✓	AB	
10I	5.8	CP		✓	AB	

REPAIRS

DEFECT CODE	TEST DATE	TECH ID	DEFECTS **	OBS. TEST	MON.	REMARKS
10J	5.8	CP		✓	AB	
10K	5.8	CP		✓	AB	
10L	5.8	CP		✓	AB	
10M	5.8	CP		✓	AB	
10N	5.8	CP		✓	AB	
10P	5.8	CP		✓	AB	
10Q	5.8	CP		✓	AB	
10R	5.8	CP		✓	AB	
10S	5.8	CP		✓	AB	
10T	5.8	CP		✓	AB	
10V	5.8	CP		✓	AB	
10W	5.8	CP		✓	AB	
10X	5.8	CP		✓	DW	
10Y	5.8	CP		✓	DW	
10Z	5.7	CP		✓	AB	
11A	5.4	CT		✓	AB	
11B	5.4	CT		✓	AB	
11C	—	—	—	—	—	
11D	5.7	CP		✓	AB	
11E	5.7	CP		✓	AB	
11F	5.8	CP		✓	AB	
11G	5.7	CP		✓	AB	
11H	5.7	CP		✓	AB	
11I	5.7	CP		✓	DW	
11J	5.7	CP		✓	DW	
11K	5.7	CP		✓	DW	
11L	5.7	CP		✓	AB	
11M	5.7	CP		✓	AB	
11N	5.7	CP		✓	AB	
11P	5.4	CT		✓	AB	
11Q	5.4	CT		✓	Am	
11R	5.4	CT		✓	Am	
11S	5.4	CT		✓	Am	
11T	5.4	CT		✓	Am	
11V	5.4	CT		✓	Am	
11W	5.4	CT		✓	Am	
11X	5.4	CT		✓	Am	
11Y	5.4	CT		✓	AB	
11Z	5.4	CT		✓	Am	
12A	5.4	CT		✓	AB	
12B	5.4	CT		✓	AB	
12C	5.4	CT		✓	AB	
12D	5.4	CT		✓	AB	
12E	5.4	CT		✓	AB	
12F	5.4	CT		✓	AB	

** RECORD QUANTITY OF LEAKS DETECTED AND REFERENCE NEW DEFECT CODE IN REMARKS.

GOLDER FORM: G17-100

(January 2005)

REVIEWED BY: PS DATE 9/6/19

GOLDER ASSOCIATES INC.

GEOMEMBRANE VACUUM TEST LOG

PROJECT NUMBER:

1896102

OWNER:

Consumers Energy

LOCATION:

West Olive, Michigan

PROJECT TITLE:

JH Campbell Ash Pond A Closure

CONTRACTOR:

Chesapeake Containment Systems, Inc.

REPAIRS

	DEFECT CODE	TEST DATE	TECH ID	DEFECTS **	OBS. TEST	MON.	REMARKS
1	12 G	5.4	CT		Y	AB	
2	12 H	5.4	CT		Y	AB	
3	12 I	5.4	CT		Y	AB	
4	12 J	5.4	CT		Y	Am	
5	12 K	5.4	CT		Y	AB	
6	12 L	5.4	CT		Y	AB	
7	12 M	5.4	CT		Y	AB	
8	12 N	5.4	CT		Y	AB	
9	12 P	5.4	CT		Y	AB	
10	12 Q	5.4	CT		Y	AB	
11	12 R	5.10	MR		Y	DLO	
12	12 S	5.4	CT		Y	AB	
13	12 T	5.4	CT		Y	AB	
14	12 V	5.4	CT		Y	AB	
15	12 W	5.4	CT		Y	AB	
16	12 X	5.4	CT		Y	AB	
17	12 Y	5.4	CT		Y	Am	
18	12 Z	5.4	CT		Y	Am	
19	13 A	5.2	NT		Y	Am	
20	13 B	5.2	NT		Y	Am	
21	13 C	5.2	NT		Y	Am	
22	13 D	5.2	NT		Y	Am	
23	13 E	5.3	NT		Y	Am	
24	13 F	5.3	NT		Y	Am	
25	13 G	5.3	NT		Y	Am	
26	13 H	5.1	NT		Y	AB	
27	13 I	5.1	NT		Y	AB	
28	13 J	5.1	NT		Y	AB	
29	13 K	5.1	NT		Y	AB	
30	13 L	5.1	NT		Y	AB	
31	13 M	5.1	NT		Y	AB	
32	13 N	5.1	NT		Y	AB	
33	13 P	5.1	NT		Y	AB	
34	13 Q	5.1	NT		Y	AB	
35	13 R	5.1	NT		Y	AB	
36	13 S	5.1	NT		Y	AB	
37	13 T	5.1	NT		Y	AB	
38	13 V	5.1	NT		Y	AB	
39	13 W	5.1	NT		Y	AB	
40	13 X	5.1	NT		Y	AB	
41	13 Y	5.1	NT		Y	AB	
42	13 Z	5.2	NT		Y	Am	
43	14 A	5.8	CP		Y	AB	
44	14 B	5.4	CT		Y	Am	
45	14 C	5.8	CP		Y	AB	

REPAIRS

	DEFECT CODE	TEST DATE	TECH ID	DEFECTS **	OBS. TEST	MON.	REMARKS
46	14 D	5.8	CP		Y	AB	
47	14 E	5.8	CP		Y	AB	
48	14 F	5.8	CP		Y	AB	
49	14 G	5.8	CP		Y	AB	
50	14 H	5.8	CP		Y	AB	
51	14 I	5.8	CP		Y	AB	
52	14 J	5.8	CP		Y	AB	
53	14 K	5.8	CP		Y	AB	
54	14 L	5.2	NT		Y	Am	
55	14 M	5.2	NT		Y	Am	
56	14 N	5.3	CP		Y	AB	
57	14 P	5.1	NT		Y	AB	
58	14 Q	5.7	CP		Y	AB	
59	14 R	5.7	CP		Y	DLO	
60	14 S	5.2	NT		Y	Am	
61	14 T	5.7	CP		Y	DLO	
62	14 V	5.7	CP		Y	AB	
63	14 W	5.7	CP		Y	AB	
64	14 X	5.8	CP		Y	AB	
65	14 Y	5.7	CP		Y	AB	
66	14 Z	5.8	CP		Y	AB	
67	15 A	5.8	CP		Y	AB	
68	15 B	5.8	CP		Y	AB	
69	15 C	5.8	CP		Y	AB	
70	15 D	5.8	CP		Y	AB	
71	15 E	5.8	CP		Y	AB	
72	15 F	5.8	CP		Y	AB	
73	15 G	5.2	NT		Y	Am	
74	15 H	5.2	NT		Y	Am	
75	15 I	5.2	NT		Y	Am	
76	15 J	5.2	NT		Y	AB	
77	15 K	5.8	CP		Y	AB	
78	15 L	5.8	CP		Y	AB	
79	15 M	5.8	CP		Y	AB	
80	15 N	5.8	CP		Y	AB	
81	15 P	5.8	CP		Y	AB	
82	15 Q	5.4	NT		Y	Am	
83	15 R	5.4	NT		Y	Am	
84	15 S	5.1	NT		Y	AB	
85	15 T	5.1	NT		Y	AB	
86	15 V	5.1	NT		Y	AB	
87	15 W	5.1	NT		Y	AB	
88	15 X	5.1	NT		Y	AB	
89	15 Y	5.2	NT		Y	AB	
90	15 Z	5.8	CP		Y	AB	

** RECORD QUANTITY OF LEAKS DETECTED AND REFERENCE NEW DEFECT CODE IN REMARKS.

GOLDER FORM: G17-113

(January 2005)

REVIEWED BY: PS DATE 9/6/19

GOLDER ASSOCIATES INC.

GEOMEMBRANE VACUUM TEST LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

REPAIRS

DEFECT CODE	TEST DATE	TECH ID	DEFECTS **	OBS. TEST	MON.	REMARKS
1 16A	5.2	NT	VL-19x	Y	AM	
2 16B	5.2	NT		Y	AM	
3 16C	5.8	CP		Y	AB	
4 16D	5.1	NT		Y	AB	
5 16E	5.8	CP		Y	AB	
6 16F	5.3	NT		Y	AB	
7 16G	5.2	NT		Y	AM	
8 16H	5.2	NT		Y	AM	
9 16I	5.2	NT		Y	AM	
10 16J	5.2	NT		Y	AM	
11 16K	5.2	NT		Y	AM	
12 16L	5.2	NT		Y	AM	
13 16M	5.2	NT		Y	AM	
14 16N	5.8	CP		Y	AB	
15 16P	5.4	CT		Y	AM	
16 16Q	5.4	CT		Y	AM	
17 16R	5.4	CT		Y	AA	
18 16S	5.8	CP		Y	AB	
19 16T	5.4	CT		Y	AM	
20 16V	5.4	CT		Y	AM	
21 16W	5.2	CP		Y	AB	
22 16X	5.8	CP		Y	AB	
23 16Y	5.4	CT		Y	AM	
24 16Z	5.8	CP		Y	AB	
25 17A	5.8	CP		Y	AB	
26 17B	5.8	CP		Y	AB	
27 17C	5.2	NT		Y	AM	
28 17D	5.3	NT		Y	AM	
29 17E	5.2	NT		Y	AB	
30 17F	5.1	NT		Y	AB	
31 17G	5.1	NT		Y	AB	
32 17H	5.1	NT		Y	AB	
33 17I	5.1	NT		Y	AB	
34 17J	5.2	NT		Y	AM	
35 17K	5.2	NT		Y	AM	
36 17L	5.2	NT		Y	AM	
37 17M	5.2	NT		Y	AM	
38 17N	5.2	NT		Y	AM	
39 17O	5.1	NT		Y	AB	
40 17P	5.1	NT		Y	AB	
41 17Q	5.3	NT		Y	AB	
42 17R	5.3	NT		Y	AB	
43 17S	5.8	CP		Y	AB	
44 17T	5.8	CP		Y	AB	
45 17U	5.8	CP		Y	AB	

** RECORD QUANTITY OF LEAKS DETECTED AND REFERENCE NEW DEFECT CODE IN REMARKS.

REPAIRS

DEFECT CODE	TEST DATE	TECH ID	DEFECTS **	OBS. TEST	MON.	REMARKS
46 17X	5.2	CP		Y	AB	
47 17Y	5.3	NT		Y	AM	DX-5
48 17Z	5.3	NT		Y	AB	
49 18A	5.8	CP		Y	AB	
50 18B	5.8	CP		Y	AB	
51 18C	5.8	CP		Y	AB	
52 18D	5.1	NT		Y	AB	
53 18E	5.1	NT		Y	AB	
54 18F	5.1	NT		Y	AB	
55 18G	5.8	CP		Y	AB	
56 18H	5.8	CP		Y	AB	
57 18I	5.8	CP		Y	AB	
58 18J	5.8	CP		Y	AB	
59 18K	5.2	NT		Y	AM	
60 18L	5.2	NT		Y	AM	
61 18M	5.2	NT		Y	AM	
62 18N	5.2	NT		Y	AM	
63 18O	5.1	NT		Y	AB	
64 18P	5.1	NT		Y	AB	
65 18Q	5.1	NT		Y	AB	
66 18R	5.1	NT		Y	AB	
67 18S	5.1	NT		Y	AB	
68 18T	5.1	NT		Y	AB	
69 18U	5.1	NT		Y	AB	
70 18V	5.1	NT		Y	AB	
71 18W	5.1	NT		Y	AB	
72 18X	5.2	NT		Y	AM	
73 18Y	5.2	NT		Y	AM	
74 18Z	5.2	NT		Y	AM	
75 19A	5.2	NT		Y	AM	
76 19B	5.2	NT		Y	AM	
77 19C	5.2	NT		Y	AM	
78 19D	5.2	NT		Y	AM	
79 19E	5.2	NT		Y	AM	
80 19F	5.2	NT		Y	AM	
81 19G	5.8	CP		Y	AB	
82 19H	5.8	CP		Y	AB	
83 19I	5.8	CP		Y	AB	
84 19J	5.2	NT		Y	AB	
85 19K	5.2	NT		Y	AB	
86 19L	5.2	NT		Y	AB	
87 19M	5.8	CP		Y	AB	
88 19N	5.8	CP		Y	AB	
89 19O	5.2	NT		Y	AM	
90 19P	5.2	NT		Y	AM	

GOLDER FORM: G17-155

(January 2005)

REVIEWED BY: RS DATE 9/6/19

GOLDER ASSOCIATES INC.

GEOMEMBRANE VACUUM TEST LOG

PROJECT NUMBER:

1896102

OWNER:

Consumers Energy

LOCATION:

West Olive, Michigan

PROJECT TITLE:

JH Campbell Ash Pond A Closure

CONTRACTOR:

Chesapeake Containment Systems, Inc.

REPAIRS

	DEFECT CODE	TEST DATE	TECH ID	DEFECTS **	OBS. TEST	MON.	REMARKS
1	19 T	5.8	CP		Y	AB	
2	19 V	5.2	NT		Y	AB	
3	19 W	5.2	NT		Y	AB	
4	19 X	5.2	NT		Y	AM	
5	19 Y						
6	19 Z	5.4	CT		Y	AB	
7	20 A	5.3	CT		Y	AM	
8	20 B	5.8	CP		Y	AB	
9	20 C	5.8	CP		Y	AB	
10	20 D	5.8	CP		Y	AB	
11	20 E	5.8	CP		Y	AB	
12	20 F	5.8	CP		Y	AB	
13	20 G	5.8	CP		Y	AB	
14	20 H	5.8	CP		Y	AB	
15	20 I	5.7	CP		Y	DW	
16	20 J	5.4	CT		Y	AM	
17	20 K	5.4	CT		Y	AB	
18	20 L	5.7	CP		Y	AB	
19	20 M	5.7	CP		Y	AB	
20	20 N	5.7	CP		Y	AB	
21	20 P	5.7	CP		Y	AB	
22	20 Q	5.7	CP		Y	AB	
23	20 R	5.7	CP		Y	AB	
24	20 S	5.7	CP		Y	DW	
25	20 T	5.7	CP		Y	DW	
26	20 V	5.7	CP		Y	AB	
27	20 W	5.8	CP		Y	AB	
28	20 X	5.8	CP		Y	AB	
29	20 Y						
30	20 Z						
31	21 A	5.8	CP		Y	AB	
32	21 B	5.4	CT		Y	AM	
33	21 C	5.4	CT		Y	AM	
34	21 D	5.8	CP		Y	AB	
35	21 E	5.4	CT		Y	AB	
36	21 F	5.4	CT		Y	AM	
37	21 G	5.7	CP		Y	AB	
38	21 H	5.7	CP		Y	AB	
39	21 I	5.7	CP		Y	AB	
40	21 J	5.8	CP		Y	AB	
41	21 K	5.7	CP		Y	AB	
42	21 L	5.7	CP		Y	AB	
43	21 M	5.7	CP		Y	AB	
44	21 N	5.7	CP		Y	AB	
45	21 P	5.7	CP		Y	DW	

REPAIRS

	DEFECT CODE	TEST DATE	TECH ID	DEFECTS **	OBS. TEST	MON.	REMARKS
46	21 Q	5.7	CP		Y	DW	
47	21 R	5.7	CP		Y	DW	
48	21 S	5.7	CP		Y	DW	
49	21 T	5.7	CP		Y	DW	
50	21 V	5.7	CP		Y	DW	
51	21 W	5.8	CP		Y	AB	
52	21 X	5.8	CP		Y	AB	
53	21 Y	5.8	CP		Y	AB	
54	21 Z	5.8	CP		Y	AB	
55	22 A	5.8	CP		Y	AB	
56	22 B	5.8	CP		Y	AB	
57	22 C	5.7	CP		Y	AB	
58	22 D	5.13	CP		Y	AB	
59	22 E	5.1	CP		Y	AB	
60	22 F	5.10	LM		Y	DW	
61	22 G	5.10	LM		Y	AB	
62	22 H	5.10	LM		Y	AB	
63	22 I	5.10	LM		Y	AB	
64	22 J	5.10	LM		Y	AB	
65	22 K	5.10	LM		Y	AB	
66	22 L	5.10	LM		Y	AB	
67	22 M	5.11	LM		Y	AB	
68	22 N	5.11	LM		Y	AB	
69	22 P	5.10	LM		Y	AB	
70	22 Q	5.10	LM		Y	AB	
71	22 R	5.10	LM		Y	AB	
72	22 S	5.10	LM		Y	AB	
73	22 T	5.11	LM		Y	AB	
74	22 V	5.13	CP		Y	AB	
75	22 W	5.11	LM		Y	AB	
76	22 X	5.11	LM		Y	AB	
77	22 Y	5.11	LM		Y	AB	
78	22 Z	5.11	LM		Y	AB	
79	23 A	5.13	CP		Y	AB	
80	23 B	5.13	CP		Y	AB	
81	23 C	5.13	CP		Y	AB	
82	23 D	5.13	CP		Y	AB	
83	23 E	5.13	CP		Y	AB	
84	23 F	5.13	CP		Y	AB	
85	23 G	5.13	CP		Y	AB	
86	23 H	5.13	CP		Y	AB	
87							
88							
89							
90							

** RECORD QUANTITY OF LEAKS DETECTED AND REFERENCE NEW DEFECT CODE IN REMARKS.

GOLDER FORM: G17-255

(January 2005)

REVIEWED BY: PS DATE 9/6/19

GOLDER ASSOCIATES INC.

GEOMEMBRANE VACUUM TEST LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

Dozer Damage Repair

REPAIRS						
	DEFECT CODE	TEST DATE	TECH ID	DEFECTS **	OBS. TEST	MON. REMARKS
1	24A	6.5	JY		✓	DW
2						
3						
4						
5						
6						
7						
8						
9						
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REPAIRS						
	DEFECT CODE	TEST DATE	TECH ID	DEFECTS **	OBS. TEST	MON. REMARKS
46						
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** RECORD QUANTITY OF LEAKS DETECTED AND REFERENCE NEW DEFECT CODE IN REMARKS.

GOLDER FORM: G17-105
 (January 2005)

REVIEWED BY: TPS DATE 9/6/19

GOLDER ASSOCIATES INC.

APPENDIX K

Seam Destructive Test Results

APPENDIX K.1

Fusion Results

GEOMEMBRANE SEAM DESTRUCTIVE SAMPLE LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

SHEET NUMBER 1 of 1

	DESTRUCTIVE		MACHINE NUMBER	DATE REMOVED	FIELD TEST RESULTS		MON.	DATE SHIPPED	LAB TEST STATUS (PASS/FAIL)	DATE OF NOTIFICATION	REMARKS
	SAMPLE NUMBER	SEAM NUMBER			PEEL (PASS/FAIL)	SHEAR (PASS/FAIL)					
1	DF-1	P1/P3	1807	4/19/19	P	: P	AB	4/19/19	F	4/23/19	
2	DF-2	P3/P4	81	4/19/19	P	: P	AB	4/23/19	P	4/24/19	
3	DF-3	P3/P4	85	4/19/19	P	: P	AB	4/23/19	P	4/24/19	
4	DF-4	P4/P6	85	4/23/19	P	: P	AB	4/23/19	P	4/24/19	
5	DF-5	P6/P7	20	4/23/19	P	: P	AB	4/23/19	F	4/24/19	
6	DF-6	P7/P10	85	4/23/19	F	: P	AB	1/1	-	1/1	
7	DF-7	P10/P11	20	4/23/19	P	: P	AB	4/24/19	F	4/25/19	
8	DF-8	P11/P12	20	4/23/19	F	: P	AB	1/1	-	1/1	
9	DF-9	P12/P14	85	4/23/19	P	: P	AB	4/24/19	P	4/25/19	
10	DF-10	P14/P15	20	4/23/19	F	: P	AB	1/1	-	1/1	
11	DF-11	P14/P16	81	4/23/19	P	: P	AB	4/24/19	P	4/25/19	
12	DF-12	P15/P17	81	4/23/19	P	: P	AB	4/24/19	F	4/25/19	
13	DF-13	P1/P18	85	4/19/19	P	: F	AB	1/1	-	1/1	
14	DF-14	P18/P20	20	4/19/19	P	: P	AB	4/30/19	P	5/1/19	
15	DF-15	P1/P18	81	4/19/19	P	: P	AB	4/19/19	P	4/23/19	
16	DF-16	P20/P21	20	4/19/19	P	: P	AB	4/19/19	P	4/23/19	
17	DF-17	P22/P23	81	4/19/19	P	: P	AB	4/19/19	P	4/23/19	
18	DF-18	P23/P25	1807	4/19/19	P	: P	AB	4/19/19	P	4/23/19	
19	DF-19	P25/P26	81	4/19/19	P	: P	AB	4/19/19	P	4/23/19	
20	DF-20	P26/P28	20	4/19/19	P	: P	AB	4/19/19	P	4/23/19	
21	DF-21	P28/P30	81	4/19/19	P	: P	AB	4/19/19	P	4/23/19	
22	DF-22	P17/P32	20	4/26/19	P	: P	AB	4/27/19	F	4/30/19	

REVIEWED BY: _____ DATE: _____

GOLDER FORM: G20-0699
 (JUNE 1999)

GOLDER ASSOCIATES INC.

GEOMEMBRANE SEAM DESTRUCTIVE SAMPLE LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

SHEET NUMBER 2

	DESTRUCTIVE		MACHINE NUMBER	DATE REMOVED	FIELD TEST RESULTS		MON.	DATE SHIPPED	LAB TEST STATUS (PASS/FAIL)	DATE OF NOTIFICATION	REMARKS
	SAMPLE NUMBER	SEAM NUMBER			PEEL (PASS/FAIL)	SHEAR (PASS/FAIL)					
1	DF-23	P31/P33	81	4/25/19	P	: P	AB	4/25/19	P	4/26/19	
2	DF-24	P33/P34	1807	4/25/19	P	: P	AB	4/25/19	P	4/26/19	
3	DF-25	P45/P46	20	4/26/19	P	: P	AB	4/27/19	P	4/30/19	
4	DF-26	P50/P51	81	4/27/19	P	: P	AB	4/27/19	P	4/30/19	
5	DF-27	P49/P50	1807	4/27/19	P	: P	AB	4/27/19	P	4/30/19	
6	DF-28	P34/P34	20	4/26/19	P	: P	AB	4/27/19	P	4/30/19	
7	DF-29	P57/P59	81	4/27/19	P	: P	AB	4/27/19	P	4/30/19	
8	DF-30	P55/P57	1807	4/26/19	P	: P	AB	4/27/19	P	4/30/19	
9	DF-31	P63/P65	20	4/26/19	P	: P	AB	4/27/19	P	5/1/19	
10	DF-32	P69/P70	81	4/27/19	P	: P	AB	4/27/19	P	5/1/19	
11	DF-33	P74/P75	1807	4/27/19	P	: P	AB	4/27/19	F	5/1/19	
12	DF-34	P77/P81	20	4/26/19	F	: P	AB	1/1	-	1/1	
13	DF-35	P30/P82	81	4/27/19	P	: P	AB	4/27/19	P	5/1/19	
14	DF-36	P82/P84	1807	4/27/19	P	: P	AB	4/27/19	P	5/1/19	
15	DF-37	P84/P85	20	4/27/19	P	: P	AB	4/27/19	P	5/1/19	
16	DF-38	P85/P86	81	4/27/19	P	: P	AB	4/27/19	P	5/1/19	
17	DF-39	P88/P90	1807	4/27/19	P	: P	AB	4/27/19	P	5/1/19	
18	DF-40	P91/P92	81	4/27/19	P	: P	AB	4/27/19	P	5/1/19	
19	DF-41	P88/P91	1807	4/27/19	P	: P	AB	4/27/19	P	5/1/19	
20	DF-42	P87/P88	20	4/27/19	P	: P	AB	4/27/19	P	5/1/19	
21	DF-43	P92/P104	81	4/27/19	P	: P	AB	4/27/19	P	5/1/19	
22	DF-44	P103/P104	1807	4/27/19	P	: P	AB	4/27/19	P	5/1/19	

REVIEWED BY: _____ DATE: _____

GOLDER FORM: G20-0699
 (JUNE 1999)

GOLDER ASSOCIATES INC.

GEOMEMBRANE SEAM DESTRUCTIVE SAMPLE LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

SHEET NUMBER 3

DESTRUCTIVE		MACHINE NUMBER	DATE REMOVED	FIELD TEST RESULTS		MON.	DATE SHIPPED	LAB TEST STATUS (PASS/FAIL)	DATE OF NOTIFICATION	REMARKS
SAMPLE NUMBER	SEAM NUMBER			PEEL (PASS/FAIL)	SHEAR (PASS/FAIL)					
1 DF-45	P105/P106	20	4/26/19	P	: P	AB	4/27/19	P	5/1/19	
2 DF-46	P110/P112	81	4/27/19	P	: P	AB	4/27/19	P	5/1/19	
3 DF-47	P112/P113	1807	4/27/19	P	: P	AB	4/27/19	P	5/1/19	
4 DF-48	P113/P115	20	4/26/19	P	: P	AB	4/27/19	P	5/1/19	
5 DF-49	P111/P116	81	4/27/19	F	: P	AB	1/1	-	1/1	
6 DF-1P	P1/P3	1807	4/25/19	F	: P	AB	1/1	-	1/1	
7 DF-1N	P1/P3	1807	4/25/19	F	: P	AB	1/1	-	1/1	
8 DF-6P	P7/P10	85	4/25/19	P	: P	AB	4/25/19	F	4/26/19	
9 DF-6N	P7/P10	85	4/25/19	P	: P	AB	4/25/19	P	4/26/19	
10 DF-10P	P14/P15	20	4/25/19	F	: P	AB	1/1	-	1/1	
11 DF-10N	P14/P15	20	4/25/19	F	: P	AB	1/1	-	1/1	
12 DF-10P2	P14/P15	20	4/25/19	P	: P	AB	4/27/19	P	4/30/19	
13 DF-10N2	P14/P15	20	4/25/19	P	: P	AB	4/27/19	F	4/30/19	
14 DF-13P	P1/P18	85	4/19/19	P	: P	AB	4/19/19	P	4/23/19	
15 DF-6P2	P8/P16	85	1/1	F	: P	AB	1/1	-	1/1	
16 DF-12P	P15/P17	81	4/26/19	P	: P	AB	4/27/19	P	4/30/19	
17 DF-12N	P16/P17	81	4/27/19	P	: P	AB	4/27/19	P	4/30/19	
18 DF-7P	P10/P11	20	4/26/19	P	: P	AB	4/27/19	F	4/30/19	
19 DF-7N	P10/P11	20	4/26/19	P	: P	AB	4/27/19	P	4/30/19	
20 DF-49N	P111/P116	81	1/1	F	: P	AB	1/1	-	1/1	
21 DF-49N2	P118/P119	81	4/27/19	P	: P	AB	4/27/19	P	5/1/19	
22 DF-49P	P111/P116	81	1/1	F	: P	AB	1/1	-	1/1	

REVIEWED BY: DATE:

GOLDER FORM: G20-0699

(JUNE 1999)

GOLDER ASSOCIATES INC.

GEOMEMBRANE SEAM DESTRUCTIVE SAMPLE LOG

PROJECT NUMBER: 1896102 PROJECT TITLE: JH Campbell Ash Pond A Closure
 OWNER: Consumers Energy CONTRACTOR: Chesapeake Containment Systems, Inc.
 LOCATION: West Olive, Michigan
 SHEET NUMBER 4

	DESTRUCTIVE		MACHINE NUMBER	DATE REMOVED	FIELD TEST RESULTS		MON.	DATE SHIPPED	LAB TEST STATUS (PASS/FAIL)	DATE OF NOTIFICATION	REMARKS
	SAMPLE NUMBER	SEAM NUMBER			PEEL (PASS/FAIL)	SHEAR (PASS/FAIL)					
1	DF-49P2	P111/P116	81	4/27/19	F	: P	AB	1/1	-	1/1	
2	DF-49P3	P111/P116	81	4/27/19	P	: P	AB	4/27/19	F	5/1/19	
3	DF-34N	P84/P85	26	4/27/19	P	: P	AB	4/27/19	P	5/1/19	
4	DF-34P	P76/P81	26	4/27/19	P	: P	AB	4/27/19	P	5/1/19	
5	DF-6P3	P8/P9	85	4/27/19	P	: P	AB	4/27/19	P	4/30/19	
6	DF-5P	P6/P7	20	4/27/19	F	: P	AB	1/1	-	1/1	
7	DF-5P2	P6/P7	20	4/27/19	F	: P	AB	1/1	-	1/1	
8	DF-5P3	P6/P7	20	4/27/19	F	: P	AB	1/1	-	1/1	
9	DF-5P4	P6/P8	20	4/27/19	P	: P	AB	4/27/19	F	4/30/19	
10	DF-5N	P6/P7	26	4/27/19	F	: P	AB	1/1	-	1/1	
11	DF-5N2	P6/P7	26	4/27/19	F	: P	AB	1/1	-	1/1	
12	DF-5N3	P6/P7	26	4/27/19	F	: P	AB	1/1	-	1/1	
13	DF-5N4	P9/P11	20	4/27/19	P	: P	AB	4/27/19	F	4/30/19	
14	DF-8P	P11/P12	20	4/30/19	F	: P	AB	1/1	-	1/1	
15	DF-8P2	P11/P12	20	4/30/19	P	: P	AB	4/30/19	F	5/1/19	
16	DF-8N	P11/P12	20	4/30/19	F	: P	AB	1/1	-	1/1	
17	DF-8N2	P11/P12	20	4/30/19	F	: P	AB	1/1	-	1/1	
18	DF-8N3	P11/P12	20	4/30/19	P	: P	AB	4/30/19	P	5/1/19	
19	DF-1P2	P1/P3	1807	4/30/19	F	: P	AB	1/1	-	1/1	
20	DF-1P3	P1/P3	1807	4/30/19	F	: P	AB	1/1	-	1/1	
21	DF-1P4	P1/P3	1807	4/30/19	F	: P	AB	1/1	-	1/1	
22	DF-1P5	P1/P3	1807	4/30/19	P	: P	AB	4/30/19	P	5/1/19	

REVIEWED BY: _____ DATE: _____

GOLDER FORM: G20-0699

(JUNE 1999)

GOLDER ASSOCIATES INC.

GEOMEMBRANE SEAM DESTRUCTIVE SAMPLE LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

SHEET NUMBER 5

	DESTRUCTIVE		MACHINE NUMBER	DATE REMOVED	FIELD TEST RESULTS		MON.	DATE SHIPPED	LAB TEST STATUS (PASS/FAIL)	DATE OF NOTIFICATION	REMARKS
	SAMPLE NUMBER	SEAM NUMBER			PEEL (PASS/FAIL)	SHEAR (PASS/FAIL)					
1	DF-1N2	P1/P3	1807	4/30/17	F	P	AB	1/1	-	5/11/19	
2	DF-1N3	P1/P3	1807	4/30/17	F	P	AB	1/1	-	5/11/19	
3	DF-1N4	P1/P3	1807	4/30/17	P	P	AB	4/30/19	F	5/11/19	
4	DF-10N3	P18/P19	20	5/11/17	P	P	AB	5/12/19	P	5/13/19	
5	DF-22N	P17/P32	20	5/11/17	P	P	AB	5/11/19	F	5/12/19	
6	DF-22P	P17/P32	20	5/11/17	F	P	AB	1/1	-	1/1	
7	DF-33P	P74/P75	1807	5/11/17	P	P	AB	5/11/19	F	5/12/19	
8	DF-33N	P79/P80	1807	5/11/17	P	P	AB	5/11/19	F	5/12/19	
9	DF-33P2	P45/P57	1807	5/13/1	P	P	AB	5/13/1	P	5/14/1	
10	DF-22P2	P17/P32	20	5/12/1	P	P	AB	5/12/19	F	5/13/19	
11	DF-5P5	P6/P8	20	5/12/1	P	P	AB	5/12/19	P	5/13/19	
12	DF-5N5	P9/P11	20	5/12/1	F	P	AB	1/1	-	1/1	
13	DF-7P2	P10/P11	20	5/12/1	P	P	AB	5/12/19	F	5/13/19	
14	DF-8P3	P11/P12	20	5/12/1	P	P	AB	5/12/19	F	5/13/19	
15	DF-1N5	P1/P3	1802	5/12/1	P	P	AB	5/12/19	P	5/13/19	
16	DF-5N6	P9/P11	20	5/12/1	P	P	AB	5/12/19	F	5/13/19	
17	DF-33N2	P79/P80	1807	5/13/1	P	P	AB	5/13/19	P	5/14/19	
18	DF-22N2	P17/P32	20	5/13/1	F	P	AB	1/1	-	1/1	
19	DF-8N4	P11/P12	20	5/13/1	F	P	AB	1/1	-	1/1	
20	DF-22N3	P17/P32	20	5/13/1	F	P	AB	1/1	-	1/1	
21	DF-8N5	P13/P15	20	5/13/1	P	P	AB	5/13/19	P	5/14/19	
22	DF-22N4	P17/P32	20	5/13/1	F	P	AB	1/1	-	1/1	

REVIEWED BY: _____ DATE: _____

GOLDER FORM: G20-0699

(JUNE 1999)

GOLDER ASSOCIATES INC.

GEOMEMBRANE SEAM DESTRUCTIVE SAMPLE LOG

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

SHEET NUMBER 6

	DESTRUCTIVE		MACHINE NUMBER	DATE REMOVED	FIELD TEST RESULTS		MON.	DATE SHIPPED	LAB TEST STATUS (PASS/FAIL)	DATE OF NOTIFICATION	REMARKS
	SAMPLE NUMBER	SEAM NUMBER			PEEL (PASS/FAIL)	SHEAR (PASS/FAIL)					
1	DF-22N5	P36/P37	20	5/16/1	P	: P	AB	5/16/1	P	5/17/19	
2	DF-22P3	P29/P30	20	5/16/1	P	: P	AB	5/16/1	P	5/17/19	
3	DF-50	P8/P9	85	5/18/1	P	: P	AB	5/18/1	P	5/19/19	
4	DF-51	P6/P8	20	5/18/1	P	: P	AB	5/18/1	P	5/19/19	
5	DF-52	P3/P15	20	5/18/1	P	: P	AB	5/18/1	P	5/19/19	
6	DF-53	P15/P17	81	5/18/1	P	: P	AB	5/18/1	P	5/19/19	
7	DF-54	P12/P13	85	5/18/1	P	: P	AB	5/18/1	P	5/19/19	
8		/		/ /		:		/ /		/ /	
9		/		/ /		:		/ /		/ /	
10		/		/ /		:		/ /		/ /	
11		/		/ /		:		/ /		/ /	
12		/		/ /		:		/ /		/ /	
13		/		/ /		:		/ /		/ /	
14		/		/ /		:		/ /		/ /	
15		/		/ /		:		/ /		/ /	
16		/		/ /		:		/ /		/ /	
17		/		/ /		:		/ /		/ /	
18		/		/ /		:		/ /		/ /	
19		/		/ /		:		/ /		/ /	
20		/		/ /		:		/ /		/ /	
21		/		/ /		:		/ /		/ /	
22		/		/ /		:		/ /		/ /	

REVIEWED BY: _____ DATE: _____

GOLDER FORM: G20-0699
 (JUNE 1999)

GOLDER ASSOCIATES INC.

SUMMARY OF DESTRUCTIVE TEST RESULTS
FUSION METHOD
ASTM D6392
CEC
JHC ASH TREATMENT
MICHIGAN

SAMPLE NUMBER	SHEAR		PEEL (1)		PEEL (2)		REMARKS
	STRENGTH (ppi)	BREAK CODE (3)	STRENGTH (ppi)	BREAK CODE (3)	STRENGTH (ppi)	BREAK CODE (3)	
DF-1	26.3	SE 1	83.9	SE 1	60.5	SE 1	FAIL Bound by DF-1P5 and DF-1N5
	100.6	BRK	75.5	SE 1	60.1	SE 1	
	101.1	BRK	72.5	SE 1	78.7	SE 1	
	101.2	BRK	90.5	SE 1	83.7	SE 1	
	100.9	BRK	69.6	SE 1	81.2	SE 1	
DF-1P5	103.8	BRK	77.9	SE 1	76.7	SE 1	PASS Bounds DF-1 series in the previous direction
	104.8	BRK	68.0	SE 1	78.4	SE 1	
	104.1	BRK	85.0	SE 1	78.2	SE 1	
	102.2	BRK	75.9	SE 1	80.9	SE 1	
	102.2	BRK	67.2	SE 1	73.6	SE 1	
DF-1N4	100.4	BRK	83.8	SE 1	81.9	SE 1	FAIL Bound by DF-1P5 and DF-1N5
	100.7	BRK	81.9	SE 1	75.2	AD-BRK (92%)	
	100.9	BRK	77.9	SE 1	75.9	SE 1	
	101.1	BRK	74.6	AD-BRK (11%)	80.5	SE 1	
	100.7	BRK	90.6	SE 1	72.4	AD-BRK (92%)	
DF-1N5	94.2	BRK	88.0	SE 1	65.1	SE 1	PASS Bounds DF-1 series in the next direction
	96.3	BRK	94.3	SE 1	68.3	SE 1	
	97.6	BRK	88.6	SE 1	85.5	SE 1	
	98.9	BRK	93.9	SE 1	74.6	SE 1	
	98.8	BRK	85.3	SE 1	79.5	SE 1	
DF-2	103.2	BRK	77.6	SE 1	73.6	SE 1	PASS
	101.7	BRK	75.5	SE 1	83.1	SE 1	
	101.3	BRK	80.4	SE 1	75.4	SE 1	
	99.5	BRK	89.6	SE 1	82.2	SE 1	
	99.0	BRK	88.1	SE 1	85.2	SE 1	
DF-3	101.5	BRK	92.3	SE 1	80.1	SE 1	PASS
	101.7	BRK	71.0	SE 1	76.2	SE 1	
	101.1	BRK	88.6	SE 1	87.6	SE 1	
	100.4	BRK	98.8	SE 1	86.4	SE 1	
	100.0	BRK	97.2	SE 1	82.9	SE 1	
DF-4	101.4	BRK	82.7	SE 1	78.6	SE 1	PASS
	102.4	BRK	89.4	SE 1	81.7	SE 1	
	102.5	BRK	69.7	SE 1	79.7	SE 1	
	102.0	BRK	92.8	SE 1	83.3	SE 1	
	101.9	BRK	86.0	SE 1	85.0	SE 1	

(1) PEEL (1) represents outer track or top flap.

(2) PEEL (2) represents inner track or bottom flap.

(3) BREAK CODES BASED ON MODES ILLUSTRATED IN ASTM D6392.

DFSUM

SUMMARY OF DESTRUCTIVE TEST RESULTS
FUSION METHOD
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SAMPLE NUMBER	SHEAR		PEEL (1)		PEEL (2)		REMARKS
	STRENGTH (ppi)	BREAK CODE (3)	STRENGTH (ppi)	BREAK CODE (3)	STRENGTH (ppi)	BREAK CODE (3)	
DF-5	90.7	BRK	74.0	AD-BRK (58%)	74.9	AD-BRK (13%)	FAIL Bound by DF-5P5 and DF-7N
	89.8	BRK	77.9	AD-BRK (25%)	58.7	AD-BRK (33%)	
	90.4	BRK	69.2	AD-BRK (22%)	66.7	AD-BRK (33%)	
	90.1	BRK	61.5	AD-BRK (50%)	55.4	AD-BRK (33%)	
	89.8	BRK	67.6	AD-BRK (67%)	78.9	SE 1	
DF-5P4	102.0	BRK	78.8	AD-BRK (15%)	75.3	AD-BRK (38%)	FAIL Bound by DF-5P5 and DF-7N
	102.5	BRK	83.2	AD-BRK (55%)	84.1	AD-BRK (21%)	
	102.0	BRK	76.6	AD-BRK (52%)	82.8	AD-BRK (24%)	
	101.9	BRK	82.3	AD-BRK (23%)	83.3	SE 1	
	101.0	BRK	71.1	AD-BRK (32%)	88.3	SE 1	
DF-5P5	101.3	BRK	91.9	SE 1	85.3	SE 1	PASS Bounds DF-5 in the previous direction
	101.4	BRK	80.5	SE 1	82.7	SE 1	
	101.9	BRK	78.4	SE 1	93.6	SE 1	
	101.7	BRK	91.7	SE 1	90.3	SE 1	
	101.9	BRK	79.8	SE 1	90.7	SE 1	
DF-5N4	98.6	BRK	89.9	SE 1	93.0	SE 1	FAIL Bound by DF-5P5 and DF-7N
	99.3	BRK	89.7	SE 1	85.7	SE 1	
	99.2	BRK	67.5	AD-BRK (62%)	84.5	SE 1	
	98.6	BRK	85.6	SE 1	86.6	SE 1	
	98.2	BRK	76.2	SE 1	68.8	SE 1	
DF-5N6	91.4	BRK	66.5	AD-BRK (38%)	86.5	SE 1	FAIL Bound by DF-5P5 and DF-7N
	92.0	BRK	75.9	SIP	93.1	BRK	
	93.7	BRK	70.6	AD-BRK (27%)	79.6	SE 1	
	95.2	BRK	65.7	SIP	76.2	SE 1	
	96.3	BRK	90.4	SIP	74.3	SIP	
DF-6P	39.5	SE 1	68.4	SE 1	78.3	SE 1	FAIL Bound by DF-6P3 and DF-6N
	64.8	SE 1	60.0	SE 1	81.6	SE 1	
	82.4	BRK	78.2	SE 1	80.8	SE 1	
	41.6	SE 1	77.8	SE 1	78.0	SE 1	
	71.9	BRK	49.3	SE 1	79.1	SE 1	
DF-6P3	98.6	BRK	92.0	SE 1	82.8	SE 1	PASS Bounds DF-6 in the previous direction
	98.1	BRK	86.4	SE 1	79.1	SE 1	
	97.8	BRK	82.6	SE 1	72.7	SE 1	
	97.3	BRK	96.1	SE 1	83.9	SE 1	
	97.4	BRK	96.5	SE 1	84.6	SE 1	

(1) PEEL (1) represents outer track or top flap.

DFSUM

(2) PEEL (2) represents inner track or bottom flap.

(3) BREAK CODES BASED ON MODES ILLUSTRATED IN ASTM D6392.

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SAMPLE NUMBER	SHEAR		PEEL (1)		PEEL (2)		REMARKS
	STRENGTH (ppi)	BREAK CODE (3)	STRENGTH (ppi)	BREAK CODE (3)	STRENGTH (ppi)	BREAK CODE (3)	
DF-6N	85.3	BRK	70.3	SE 1	79.0	SE 1	PASS Bounds DF-6 in the next direction
	85.1	BRK	70.1	SE 1	80.8	SE 1	
	63.9	SE 1	72.6	SE 1	75.6	SE 1	
	85.3	BRK	74.7	SE 1	76.4	SE 1	
	67.3	SE 1	55.1	SE 1	81.2	SE 1	
DF-7	100.5	BRK	82.9	SE 1	71.0	AD-BRK (31%)	FAIL Bound by DF-5P5 and DF-7N
	100.2	BRK	71.2	SE 1	89.3	SE 1	
	99.7	BRK	92.0	AD-BRK (12%)	90.0	SE 1	
	100.4	BRK	91.7	SE 1	93.4	AD-BRK (31%)	
	99.5	BRK	91.4	SE 1	84.1	SE 1	
DF-7P	109.1	BRK	75.2	SE 1	98.8	SE 1	FAIL Bound by DF-5P5 and DF-7N
	110.8	BRK	70.6	AD-BRK (31%)	94.6	SE 1	
	110.1	BRK	72.9	SE 1	93.9	SE 1	
	110.8	BRK	76.9	SE 1	94.1	SE 1	
	108.2	BRK	97.4	SE 1	92.9	SE 1	
DF-7P2	108.4	BRK	94.4	SE 1	83.9	SE 1	FAIL Bound by DF-5P5 and DF-7N
	108.9	BRK	95.6	SIP	84.5	SE 1	
	109.2	BRK	82.9	SE 1	96.5	SE 1	
	110.1	BRK	96.2	SE 1	97.9	SE 1	
	109.5	BRK	82.4	SE 1	89.9	AD-BRK (12%)	
DF-7N	109.5	BRK	103.3	AD-BRK (14%)	96.3	SE 1	PASS Bounds DF-7 in the next direction. Bounds DF-8 in the previous direction.
	110.1	BRK	99.8	SE 1	92.4	SE 1	
	110.1	BRK	89.2	SE 1	95.2	SE 1	
	108.8	BRK	103.8	SE 1	96.9	SE 1	
	108.3	BRK	104.8	AD-BRK (14%)	95.4	SE 1	
DF-8P2	86.7	BRK	85.5	SE 1	48.2	SE 1	FAIL Bound by DF-7N and DF-8N5
	87.1	BRK	78.0	SE 1	69.3	SE 1	
	87.7	BRK	85.3	SE 1	82.9	SE 1	
	61.9	SE 1	65.7	SE 1	24.5	SE 1	
	88.9	BRK	83.2	SE 1	78.9	SE 1	
DF-8P3	94.5	BRK	70.6	AD-BRK (20%)	88.0	SE 1	FAIL Bound by DF-7N and DF-8N5
	94.5	BRK	75.4	AD-BRK (46%)	91.6	BRK	
	96.0	BRK	90.1	SE 1	92.9	SE 1	
	96.5	BRK	79.6	SE 1	85.3	SE 1	
	96.2	BRK	72.9	SE 1	90.9	SE 1	

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SAMPLE NUMBER	SHEAR		PEEL (1)		PEEL (2)		REMARKS
	STRENGTH (ppi)	BREAK CODE (3)	STRENGTH (ppi)	BREAK CODE (3)	STRENGTH (ppi)	BREAK CODE (3)	
DF-8N3	96.7	BRK	73.6	SIP	89.5	SE 1	FAIL Bound by DF-7N and DF-8N5
	96.4	BRK	61.1	SIP	74.1	SE 1	
	96.5	SE 1	74.5	SIP	86.8	SE 1	
	95.2	SE 1	77.8	SE 1	76.6	SE 1	
	99.2	BRK	79.1	SE 1	70.7	SE 1	
DF-8N5	100.4	BRK	88.1	SE 1	81.2	SE 1	PASS Bounds DF-8 in the next direction
	99.6	BRK	74.6	SE 1	84.4	SE 1	
	98.2	SE 1	83.1	SE 1	72.3	SE 1	
	98.3	BRK	79.6	SE 1	73.4	SE 1	
	97.2	BRK	77.0	SE 1	76.5	SE 1	
DF-9	88.9	BRK	81.2	SE 1	80.9	SE 1	PASS
	84.4	SE 1	62.0	SE 1	82.5	SE 1	
	90.7	BRK	79.4	SE 1	75.1	SE 1	
	91.4	BRK	89.5	SE 1	85.5	SE 1	
	91.2	SE 1	91.8	SE 1	79.6	SE 1	
DF-10P2	101.7	BRK	88.4	SE 1	85.8	AD-BRK (14%)	PASS Bounds DF-10 in the previous direction
	102.1	BRK	83.1	SE 1	82.9	SE 1	
	103.2	BRK	82.6	SE 1	73.9	SE 1	
	105.9	BRK	82.5	SE 1	92.1	SE 1	
	104.1	BRK	81.5	SE 1	89.5	SE 1	
DF-10N2	104.5	BRK	74.5	SE 1	65.2	SE 1	FAIL Bound by DF-10P2 and DF-10N3
	104.5	BRK	82.2	SE 1	72.6	AD-BRK (40%)	
	105.7	BRK	84.0	SE 1	83.0	SE 1	
	104.2	BRK	73.4	AD-BRK (50%)	88.5	SE 1	
	101.6	BRK	88.4	SE 1	95.1	SE 1	
DF-10N3	103.4	BRK	83.4	SE 1	84.7	SE 1	PASS Bounds DF-10 in the next direction
	103.8	BRK	84.9	SE 1	78.0	SE 1	
	103.3	BRK	84.2	SE 1	80.8	SE 1	
	102.5	BRK	89.4	SE 1	77.9	SE 1	
	101.8	BRK	83.2	SE 1	88.6	SE 1	
DF-11	108.8	BRK	102.3	SE 1	109.4	SE 1	PASS
	107.7	BRK	110.2	SE 1	111.7	SE 1	
	108.1	BRK	108.9	BRK	91.5	SE 1	
	106.8	BRK	100.0	SE 1	89.4	SE 1	
	106.6	BRK	107.7	SE 1	95.8	SE 1	

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FUSION METHOD
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SAMPLE NUMBER	SHEAR		PEEL (1)		PEEL (2)		REMARKS
	STRENGTH (ppi)	BREAK CODE (3)	STRENGTH (ppi)	BREAK CODE (3)	STRENGTH (ppi)	BREAK CODE (3)	
DF-12	97.1	BRK	84.4	SE 1	78.1	SE 1	FAIL Bound by DF-12P and DF-12N
	96.0	BRK	87.8	SE 1	75.3	SE 1	
	91.6	BRK	84.8	SE 1	73.6	SE 1	
	88.4	BRK	86.4	SE 1	33.2	SE 1	
	47.9	SE 1	89.4	SE 1	57.7	SE 1	
DF-12P	103.6	BRK	82.8	SE 1	81.4	SE 1	PASS Bounds DF-12 in the previous direction
	103.5	BRK	80.8	SE 1	73.9	SE 1	
	102.2	BRK	82.4	SE 1	78.1	SE 1	
	101.4	BRK	81.1	SE 1	76.9	SE 1	
	100.0	BRK	79.4	SE 1	77.2	SE 1	
DF-12N	106.2	BRK	85.8	SE 1	84.1	SE 1	PASS Bounds DF-12 in the next direction
	106.5	BRK	87.4	SE 1	78.5	SE 1	
	106.0	BRK	88.3	SE 1	83.3	SE 1	
	104.8	BRK	86.6	SE 1	79.3	SE 1	
	103.9	BRK	87.2	SE 1	83.7	SE 1	
DF-13P	99.5	BRK	93.9	SE 1	86.8	SE 1	PASS Bounds DF-13 in the previous direction
	100.6	BRK	94.1	AD-BRK (11%)	80.8	SE 1	
	99.7	BRK	94.9	SE 1	85.5	SE 1	
	99.1	BRK	97.7	SE 1	84.5	SE 1	
	97.2	BRK	89.0	SE 1	84.3	SE 1	
DF-14	84.1	BRK	83.5	BRK	79.4	BRK	PASS
	85.3	BRK	79.7	BRK	74.8	BRK	
	85.8	BRK	81.6	SE 1	79.6	BRK	
	85.0	BRK	82.0	SE 1	82.3	BRK	
	83.5	BRK	83.3	BRK	82.9	BRK	
DF-15	91.9	SE 1	85.5	SE 1	81.8	SE 1	PASS
	98.0	SE 1	66.5	SE 1	81.2	SE 1	
	98.8	BRK	81.1	SE 1	76.7	SE 1	
	98.5	BRK	86.4	SE 1	89.2	SE 1	
	98.4	SE 1	80.7	SE 1	95.5	SE 1	
DF-16	96.3	BRK	80.2	SE 1	89.1	SE 1	PASS
	96.0	BRK	80.6	SE 1	89.7	SE 1	
	96.6	BRK	76.6	SE 1	79.0	SE 1	
	96.4	BRK	73.9	SE 1	82.3	SE 1	
	94.4	BRK	76.3	SE 1	85.7	SE 1	

(1) PEEL (1) represents outer track or top flap.

(2) PEEL (2) represents inner track or bottom flap.

(3) BREAK CODES BASED ON MODES ILLUSTRATED IN ASTM D6392.

DFSUM

SUMMARY OF DESTRUCTIVE TEST RESULTS
FUSION METHOD
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SAMPLE NUMBER	SHEAR		PEEL (1)		PEEL (2)		REMARKS
	STRENGTH (ppi)	BREAK CODE (3)	STRENGTH (ppi)	BREAK CODE (3)	STRENGTH (ppi)	BREAK CODE (3)	
DF-17	102.0	SE 1	94.4	SE 1	82.8	SE 1	PASS
	100.9	BRK	82.6	SE 1	74.9	SE 1	
	99.8	BRK	87.3	SE 1	80.6	SE 1	
	99.0	BRK	87.1	SE 1	86.0	SE 1	
	97.7	BRK	80.8	SE 1	77.6	SE 1	
DF-18	97.1	BRK	83.6	SE 1	75.5	SE 1	PASS
	98.4	BRK	80.1	SE 1	77.2	SE 1	
	97.7	BRK	87.6	SE 1	77.4	SE 1	
	98.2	BRK	78.0	SE 1	79.6	SE 1	
	95.8	BRK	89.2	SE 1	75.6	SE 1	
DF-19	99.8	BRK	96.3	SE 1	76.6	SE 1	PASS
	100.8	BRK	95.7	SE 1	73.7	SE 1	
	100.6	BRK	94.9	SE 1	79.5	SE 1	
	101.2	BRK	99.7	SE 1	69.8	SE 1	
	99.6	BRK	94.0	SE 1	70.1	SE 1	
DF-20	108.6	BRK	75.8	SE 1	91.4	SE 1	PASS
	107.3	BRK	80.4	SE 1	94.0	SE 1	
	107.6	BRK	75.9	SE 1	84.3	SE 1	
	107.2	BRK	88.6	SE 1	85.6	SE 1	
	105.4	BRK	77.0	SE 1	96.0	SE 1	
DF-21	97.4	BRK	82.1	SE 1	75.4	SE 1	PASS
	98.6	BRK	75.1	SE 1	88.7	SE 1	
	97.8	BRK	81.5	SE 1	82.7	SE 1	
	97.1	BRK	73.5	SE 1	74.2	SE 1	
	97.1	BRK	80.9	SE 1	74.6	SE 1	
DF-22	97.0	BRK	82.3	SE 1	68.1	AD-BRK (15%)	FAIL Bound by DF-22P3 and DF-22N5
	97.6	BRK	76.5	AD-BRK (27%)	69.9	AD-BRK (23%)	
	97.2	BRK	78.4	AD-BRK (23%)	66.5	SE 1	
	96.1	BRK	73.0	AD-BRK (15%)	72.5	AD-BRK (21%)	
	94.6	BRK	77.8	SE 1	65.4	AD-BRK (20%)	
DF-22P2	88.2	BRK	71.3	SE 1	69.0	AD-BRK (79%)	FAIL Bound by DF-22P3 and DF-22N5
	89.6	BRK	62.0	SE 1	61.3	AD-BRK (83%)	
	90.9	BRK	78.2	SE 1	65.8	AD-BRK (55%)	
	89.6	BRK	79.2	SE 1	58.2	AD-BRK (71%)	
	88.9	BRK	78.7	SE 1	73.5	AD-BRK (42%)	

(1) PEEL (1) represents outer track or top flap.

DFSUM

(2) PEEL (2) represents inner track or bottom flap.

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SAMPLE NUMBER	SHEAR		PEEL (1)		PEEL (2)		REMARKS
	STRENGTH (ppi)	BREAK CODE (3)	STRENGTH (ppi)	BREAK CODE (3)	STRENGTH (ppi)	BREAK CODE (3)	
DF-22P3	110.9	BRK	101.3	SE 1	111.2	SE 1	PASS Bounds DF-22 in the previous direction
	109.2	BRK	94.7	SE 1	104.7	SE 1	
	107.7	BRK	90.1	SE 1	103.9	SE 1	
	107.2	BRK	94.6	SE 1	109.1	SE 1	
	103.4	BRK	89.4	SE 1	105.5	SE 1	
DF-22N	88.8	SE 1	69.6	SE 1	83.4	SE 1	FAIL Bound by DF-22P3 and DF-22N5
	91.2	SE 1	67.1	SE 1	88.5	SE 1	
	91.0	SE 1	66.2	SE 1	89.9	SE 1	
	90.5	BRK	70.2	SE 1	88.3	SE 1	
	89.0	SE 1	70.7	SE 1	67.7	AD-BRK (36%)	
DF-22N5	99.7	BRK	84.3	SE 1	86.1	SE 1	PASS Bounds DF-22 in the next direction
	101.1	BRK	89.1	SE 1	79.2	SE 1	
	101.8	BRK	89.4	SE 1	75.0	SE 1	
	93.9	BRK	86.4	SE 1	85.3	SE 1	
	100.7	BRK	85.3	SE 1	80.7	SE 1	
DF-23	99.4	BRK	75.5	SE 1	78.1	SE 1	PASS
	101.1	BRK	81.7	SE 1	77.2	SE 1	
	101.7	BRK	81.5	SE 1	77.8	SE 1	
	101.6	BRK	91.2	SE 1	71.8	SE 1	
	100.9	BRK	80.5	SE 1	77.6	SE 1	
DF-24	95.3	BRK	93.4	SE 1	79.5	SE 1	PASS
	97.1	BRK	83.7	SE 1	74.5	SE 1	
	97.1	BRK	93.4	SE 1	73.9	SE 1	
	98.4	BRK	79.1	SE 1	78.2	SE 1	
	99.0	BRK	77.1	SE 1	76.6	SE 1	
DF-25	89.6	BRK	86.5	SE 1	85.7	SE 1	PASS
	92.4	BRK	86.5	SE 1	91.7	SE 1	
	93.0	BRK	85.4	SE 1	90.5	BRK	
	93.7	BRK	87.9	SE 1	92.0	SE 1	
	91.9	BRK	84.7	SE 1	88.2	SE 1	
DF-26	91.6	BRK	86.7	SE 1	84.9	SE 1	PASS
	91.8	BRK	89.5	SE 1	88.6	SE 1	
	92.0	BRK	83.2	SE 1	82.2	SE 1	
	92.3	BRK	80.0	SE 1	84.8	SE 1	
	91.2	BRK	87.3	SE 1	87.8	SE 1	

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(3) BREAK CODES BASED ON MODES ILLUSTRATED IN ASTM D6392.

DFSUM

SUMMARY OF DESTRUCTIVE TEST RESULTS
FUSION METHOD
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SAMPLE NUMBER	SHEAR		PEEL (1)		PEEL (2)		REMARKS
	STRENGTH (ppi)	BREAK CODE (3)	STRENGTH (ppi)	BREAK CODE (3)	STRENGTH (ppi)	BREAK CODE (3)	
DF-27	93.9	BRK	92.8	BRK	77.2	SE 1	PASS
	94.9	BRK	96.2	SE 1	71.6	SE 1	
	95.2	BRK	95.8	BRK	77.6	SE 1	
	95.0	BRK	96.4	BRK	70.9	SE 1	
	95.4	BRK	96.3	BRK	70.5	SE 1	
DF-28	91.8	BRK	88.7	BRK	88.2	BRK	PASS
	95.7	BRK	94.3	SE 1	90.9	BRK	
	96.1	BRK	94.0	BRK	86.6	SE 1	
	96.1	BRK	84.7	SE 1	55.5	SE 1	
	94.0	BRK	80.8	SE 1	69.5	SE 1	
DF-29	108.5	BRK	106.5	SE 1	108.8	SE 1	PASS
	106.4	BRK	100.2	SE 1	107.4	SE 1	
	106.0	BRK	104.9	SE 1	104.1	SE 1	
	105.8	BRK	105.6	SE 1	102.4	SE 1	
	104.4	BRK	102.3	SE 1	100.0	SE 1	
DF-30	99.6	BRK	96.7	SE 1	79.6	SE 1	PASS
	100.2	BRK	97.8	SE 1	78.4	SE 1	
	100.6	BRK	97.9	SE 1	88.0	SE 1	
	100.2	BRK	94.4	SE 1	78.5	SE 1	
	99.7	BRK	95.6	BRK	79.9	SE 1	
DF-31	96.1	BRK	90.7	SE 1	86.1	SE 1	PASS
	98.9	BRK	89.5	SE 1	82.5	SE 1	
	99.7	BRK	89.8	SE 1	88.4	SE 1	
	98.5	BRK	75.7	SE 1	86.7	SE 1	
	99.3	BRK	76.1	SE 1	89.5	SE 1	
DF-32	101.3	BRK	91.2	SE 1	91.5	SE 1	PASS
	101.9	BRK	92.3	SE 1	88.7	SE 1	
	103.5	BRK	91.8	BRK	92.5	SE 1	
	102.1	BRK	88.5	SE 1	83.6	SE 1	
	102.4	BRK	90.2	SE 1	89.5	SE 1	
DF-33	66.5	SE 1	84.8	SE 1	76.9	SE 1	FAIL Bound by DF-33P2 and DF-33N2
	69.0	SE 1	59.1	SE 1	78.2	SE 1	
	97.4	SE 1	94.8	SE 1	77.4	SE 1	
	72.8	SE 1	74.6	SE 1	79.8	SE 1	
	91.8	SE 1	87.0	SE 1	81.6	SE 1	

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(3) BREAK CODES BASED ON MODES ILLUSTRATED IN ASTM D6392.

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SUMMARY OF DESTRUCTIVE TEST RESULTS
FUSION METHOD
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SAMPLE NUMBER	SHEAR		PEEL (1)		PEEL (2)		REMARKS
	STRENGTH (ppi)	BREAK CODE (3)	STRENGTH (ppi)	BREAK CODE (3)	STRENGTH (ppi)	BREAK CODE (3)	
DF-33P	95.6	BRK	58.7	AD-BRK (67%)	80.5	SE 1	FAIL Bound by DF-33P2 and DF-33N2
	95.3	BRK	68.3	AD-BRK (63%)	77.4	SE 1	
	93.6	BRK	67.3	AD-BRK (75%)	76.4	SE 1	
	92.9	BRK	87.7	AD-BRK (17%)	77.6	SE 1	
	93.7	BRK	89.4	SE 1	72.8	SE 1	
DF-33P2	115.0	BRK	100.4	SE 1	113.2	SE 1	PASS Bounds DF-33 in the previous direction
	114.8	BRK	103.4	SE 1	114.4	SE 1	
	114.1	BRK	102.5	SE 1	113.7	SE 1	
	114.5	BRK	99.2	SE 1	111.7	SE 1	
	113.2	BRK	101.0	SE 1	112.8	SE 1	
DF-33N	95.5	BRK	90.8	BRK	75.2	SE 1	FAIL Bound by DF-33P2 and DF-33N2
	93.6	BRK	90.5	BRK	78.1	SE 1	
	93.1	BRK	89.6	BRK	81.8	SE 1	
	94.0	BRK	89.0	SE 1	77.9	SE 1	
	94.4	BRK	77.3	AD-BRK (25%)	74.7	SE 1	
DF-33N2	99.1	BRK	97.7	SE 1	79.4	SE 1	PASS Bounds DF-33 in the next direction
	100.1	BRK	92.3	SE 1	78.5	SE 1	
	100.1	BRK	99.3	SE 1	80.4	SE 1	
	98.8	BRK	92.7	SE 1	79.9	SE 1	
	98.0	BRK	95.4	SE 1	75.4	SE 1	
DF-34P	99.5	BRK	83.6	SE 1	86.4	SE 1	PASS Bounds DF-34 in the previous direction
	100.3	BRK	96.7	SE 1	91.6	SE 1	
	100.4	BRK	94.8	SE 1	86.0	SE 1	
	99.9	BRK	96.6	SE 1	92.7	SE 1	
	98.5	BRK	88.3	SE 1	93.3	SE 1	
DF-34N	95.4	BRK	84.0	SE 1	91.6	SE 1	PASS Bounds DF-34 in the next direction
	96.3	BRK	85.6	SE 1	90.8	SE 1	
	97.5	BRK	81.8	SE 1	89.5	SE 1	
	97.5	BRK	91.9	SE 1	92.1	SE 1	
	97.1	BRK	91.7	SE 1	86.1	SE 1	
DF-35	104.3	BRK	90.2	SE 1	89.4	SE 1	PASS
	106.2	BRK	89.5	SE 1	85.7	SE 1	
	105.4	BRK	92.5	SE 1	95.0	SE 1	
	104.4	BRK	90.8	SE 1	91.8	SE 1	
	105.1	BRK	96.1	SE 1	89.7	SE 1	

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SAMPLE NUMBER	SHEAR		PEEL (1)		PEEL (2)		REMARKS
	STRENGTH (ppi)	BREAK CODE (3)	STRENGTH (ppi)	BREAK CODE (3)	STRENGTH (ppi)	BREAK CODE (3)	
DF-36	104.1	BRK	97.0	SE 1	73.4	SE 1	PASS
	103.9	BRK	98.0	BRK	68.6	SE 1	
	103.1	BRK	100.9	SE 1	67.8	SE 1	
	102.5	BRK	98.3	SE 1	73.2	SE 1	
	102.4	BRK	65.6	SE 1	74.5	SE 1	
DF-37	97.1	BRK	92.7	SE 1	84.8	SE 1	PASS
	96.8	BRK	93.0	SE 1	88.2	SE 1	
	97.8	BRK	89.8	SE 1	90.9	SE 1	
	96.7	BRK	83.3	SE 1	90.8	SE 1	
	96.5	BRK	82.5	SE 1	93.4	SE 1	
DF-38	103.8	BRK	89.9	SE 1	82.0	SE 1	PASS
	105.8	BRK	88.8	SE 1	73.1	SE 1	
	106.4	BRK	86.7	SE 1	97.9	SE 1	
	107.3	BRK	96.6	SE 1	87.0	SE 1	
	106.5	BRK	94.2	SE 1	95.3	SE 1	
DF-39	109.1	BRK	109.1	SE 1	111.4	SE 1	PASS
	109.3	BRK	107.6	SE 1	111.6	SE 1	
	110.3	BRK	107.6	SE 1	111.0	SE 1	
	108.8	BRK	102.4	SE 1	106.6	SE 1	
	110.2	BRK	101.8	SE 1	105.5	SE 1	
DF-40	94.6	BRK	87.4	SE 1	83.2	SE 1	PASS
	95.1	BRK	91.3	SE 1	89.1	SE 1	
	96.6	BRK	92.6	SE 1	91.7	SE 1	
	96.9	BRK	94.8	SE 1	92.0	SE 1	
	96.9	BRK	93.8	BRK	89.7	SE 1	
DF-41	104.4	BRK	100.9	SE 1	79.0	SE 1	PASS
	106.7	BRK	84.2	SE 1	82.3	SE 1	
	107.8	BRK	89.5	SE 1	82.4	SE 1	
	106.9	BRK	106.2	SE 1	84.8	SE 1	
	106.3	BRK	94.4	SE 1	78.6	SE 1	
DF-42	98.6	BRK	89.2	SE 1	88.4	SE 1	PASS
	99.9	BRK	75.4	SE 1	81.1	SE 1	
	99.7	BRK	73.5	SE 1	88.0	SE 1	
	98.6	BRK	85.3	SE 1	90.2	SE 1	
	97.1	BRK	87.5	SE 1	94.3	SE 1	

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SAMPLE NUMBER	SHEAR		PEEL (1)		PEEL (2)		REMARKS
	STRENGTH (ppi)	BREAK CODE (3)	STRENGTH (ppi)	BREAK CODE (3)	STRENGTH (ppi)	BREAK CODE (3)	
DF-43	98.8	BRK	81.5	SE 1	100.0	BRK	PASS
	99.8	BRK	73.2	SE 1	89.4	SE 1	
	101.0	BRK	83.1	SE 1	87.8	SE 1	
	101.8	BRK	85.8	SE 1	91.2	SE 1	
	101.5	BRK	83.6	SE 1	87.3	SE 1	
DF-44	96.1	BRK	99.1	BRK	84.5	SE 1	PASS
	97.7	BRK	99.8	SE 1	80.9	SE 1	
	100.2	BRK	101.6	SE 1	84.9	SE 1	
	102.4	BRK	101.8	SE 1	83.9	SE 1	
	102.9	BRK	101.9	BRK	87.1	SE 1	
DF-45	103.5	BRK	89.9	SE 1	94.4	SE 1	PASS
	104.2	BRK	94.0	SE 1	93.6	SE 1	
	103.3	BRK	85.5	SE 1	86.7	SE 1	
	103.2	BRK	88.4	SE 1	90.1	SE 1	
	100.9	BRK	94.1	SE 1	93.7	SE 1	
DF-46	95.3	BRK	82.0	SE 1	81.8	SE 1	PASS Bounds DF-49 in the previous direction
	96.9	BRK	90.1	SE 1	85.7	SE 1	
	97.0	BRK	90.5	SE 1	92.8	SE 1	
	97.1	BRK	92.5	SE 1	96.7	SE 1	
	96.4	BRK	87.3	SE 1	80.9	SE 1	
DF-47	96.5	BRK	94.3	SE 1	83.8	SE 1	PASS
	97.7	BRK	90.5	SE 1	78.9	SE 1	
	97.8	BRK	92.5	AD-BRK (19%)	83.2	SE 1	
	97.6	BRK	93.4	SE 1	82.0	SE 1	
	97.2	BRK	92.4	SE 1	76.8	SE 1	
DF-48	91.9	BRK	84.0	SE 1	85.3	SE 1	PASS
	94.2	BRK	80.5	SE 1	87.8	SE 1	
	94.0	BRK	87.7	SE 1	86.8	SE 1	
	92.2	BRK	83.1	SE 1	83.6	SE 1	
	90.4	BRK	86.8	SE 1	80.5	SE 1	
DF-49P3	100.0	BRK	95.4	SE 1	75.7	SE 1	FAIL Bound by DF-46 and DF-49N2
	99.8	BRK	85.0	AD-BRK (40%)	76.5	SE 1	
	99.6	BRK	63.9	AD-BRK (65%)	74.9	SE 1	
	98.9	BRK	54.7	AD-BRK (92%)	78.9	SE 1	
	96.1	BRK	88.8	SE 1	78.9	SE 1	

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SAMPLE NUMBER	SHEAR		PEEL (1)		PEEL (2)		REMARKS
	STRENGTH (ppi)	BREAK CODE (3)	STRENGTH (ppi)	BREAK CODE (3)	STRENGTH (ppi)	BREAK CODE (3)	
DF-49N2	102.1	BRK	91.8	SE 1	73.8	SE 1	PASS Bounds DF-49 in the next direction
	101.3	BRK	87.6	SE 1	72.5	SE 1	
	101.0	BRK	82.5	SE 1	71.2	SE 1	
	100.7	BRK	83.8	SE 1	71.5	SE 1	
	101.8	BRK	85.9	SE 1	72.5	SE 1	
DF-50	96.5	BRK	89.6	SE 1	80.6	SE 1	PASS
	96.1	BRK	84.4	SE 1	81.0	SE 1	
	96.2	BRK	91.9	SE 1	77.8	SE 1	
	96.2	BRK	77.2	SE 1	79.7	SE 1	
	96.3	BRK	83.5	SE 1	81.0	SE 1	
DF-51	95.8	BRK	76.4	SE 1	85.9	SE 1	PASS
	95.6	BRK	78.9	SE 1	86.7	SE 1	
	96.0	BRK	86.3	SE 1	77.5	SE 1	
	95.9	BRK	84.9	SE 1	81.2	SE 1	
	97.5	BRK	75.1	SE 1	75.0	SE 1	
DF-52	99.0	BRK	72.0	SE 1	77.8	SE 1	PASS
	98.7	BRK	72.1	SE 1	80.1	SE 1	
	99.4	BRK	77.2	SE 1	81.0	SE 1	
	100.2	BRK	71.6	SE 1	58.7	SE 1	
	100.7	BRK	66.8	SE 1	77.8	SE 1	
DF-53	95.3	BRK	81.9	SE 1	92.1	SE 1	PASS
	95.6	BRK	72.2	SE 1	88.9	SE 1	
	93.6	BRK	78.5	SE 1	89.9	SE 1	
	90.5	BRK	85.5	SE 1	96.9	SE 1	
	90.8	BRK	83.0	SE 1	89.9	SE 1	
DF-54	88.4	BRK	77.5	SE 1	84.2	SE 1	PASS
	90.4	BRK	82.1	SE 1	76.0	SE 1	
	91.1	BRK	79.8	SE 1	86.2	SE 1	
	90.9	BRK	67.6	SE 1	84.8	SE 1	
	91.7	BRK	82.1	SE 1	89.5	SE 1	
-	-	-	-	-	-	-	-
	-	-	-	-	-	-	
	-	-	-	-	-	-	
	-	-	-	-	-	-	
	-	-	-	-	-	-	

(1) PEEL (1) represents outer track or top flap.

DFSUM

(2) PEEL (2) represents inner track or bottom flap.

(3) BREAK CODES BASED ON MODES ILLUSTRATED IN ASTM D6392.

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PROJECT TITLE: JH Campbell Ash Pond A Closure
CONTRACTOR: Chesapeake Containment Systems, Inc.

DATE	4-24-19	DESTRUCTIVE NUMBER	DF-1
MONITOR	AB	MACHINE NUMBER	1807
		SEAMER(S) ID	VG

PASSING SAMPLE IN DIRECTION P	DF-1PS
PASSING SAMPLE IN DIRECTION N	DF-1NS

CHRONOLOGICAL SEAMING ORDER		
SEAM OR REPAIR NO.	SEAM DATE	START TIME
_____ SEAMING SHEET # _____ LINE # _____		
_____ SEAMING SHEET # _____ LINE # _____		
_____ SEAMING SHEET # _____ LINE # _____		
_____ SEAMING SHEET # _____ LINE # _____		

P1, P3	4-10-19	1529
SEAMING SHEET # 1		
LINE # 2		

/ _____ SEAMING SHEET # _____ LINE # _____		
/ _____ SEAMING SHEET # _____ LINE # _____		
/ _____ SEAMING SHEET # _____ LINE # _____		
/ _____ SEAMING SHEET # _____ LINE # _____		

START POINT	ILLUSTRATED RECORD OF DESTRUCTIVE SAMPLE TRACKING AND SEAM RECONSTRUCTION	FINISH POINT
----------------	--	-----------------

—————→—————→—————→ **DIRECTION OF SEAMING** —————→—————→—————→

[illegible]

NOTE: COMPLETE SEAMING ORDER INFORMATION FROM FIELD SEAMING LOGS. COMPLETE ILLUSTRATION SECTION FROM DIRECT OBSERVATION OF THE SEAMS. ILLUSTRATE FOR LOW-FR RESTRICTIVE SAMPLES, CAPS AND/OR RECONSTRUCTED SEAMS AND REFERENCE REPAIR NUMBERS.

GOLDER FORM: G21-0699

(JUNE 1999)

REVIEWED BY: DATE:

GOLDER ASSOCIATES INC.

DF-1

Matches Repair Log

Repair	18C (DF-1P5)	Caps	P1/P3	seam	from	18C (DF-1P5)	to	10X (DF-1P)	X
Repair	10X (DF-1P)	Caps	P1/P3	seam	from	10X (DF-1P)	to	1C (DF-1)	X
Repair	10Y (DF-1N)	Caps	P1/P3	seam	from	1C (DF-1)	to	10Y (DF-1N)	X
Repair	17W (DF-1N2)	Caps	P1/P3	seam	from	10Y (DF-1N)	to	17X (DF-1N3)	X
Repair	18A (DF-1N4)	Caps	P1/P3	seam	from	17X (DF-1N3)	to	19N (DF-1N5)	X

FAILED DESTRUCTIVE SAMPLE TRACKING LOG

Page 1 of 1

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy Company
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Cloosure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

DATE: 4.25.19 DESTRUCTIVE NUMBER: DF-5
 MONITOR: AB MACHINE NUMBER: 20
 SEAMER(S) ID: VG

PASSING SAMPLE IN DIRECTION P: DF-SPS
 PASSING SAMPLE IN DIRECTION N: DF-7N

CHRONOLOGICAL SEAMING ORDER		
SEAM OR	SEAM	START
REPAIR-NO.	DATE	TIME
SEAMING SHEET # <u>1</u> LINE # <u>1</u>		
SEAMING SHEET # <u>1</u> LINE # <u>1</u>		
SEAMING SHEET # <u>1</u> LINE # <u>1</u>		
P6, P8 SEAMING SHEET # <u>1</u> LINE # <u>2</u>	4.13	1022
P6, P7 SEAMING SHEET # <u>1</u> LINE # <u>3</u>	4.13	1040
P9, P11 SEAMING SHEET # <u>1</u> LINE # <u>4</u>	4.13	1117
P9, P11 SEAMING SHEET # <u>1</u> LINE # <u>5</u>	4.13	1122
P10, P11 SEAMING SHEET # <u>1</u> LINE # <u>6</u>	4.13	1158
SEAMING SHEET # <u>1</u> LINE # <u>1</u>		

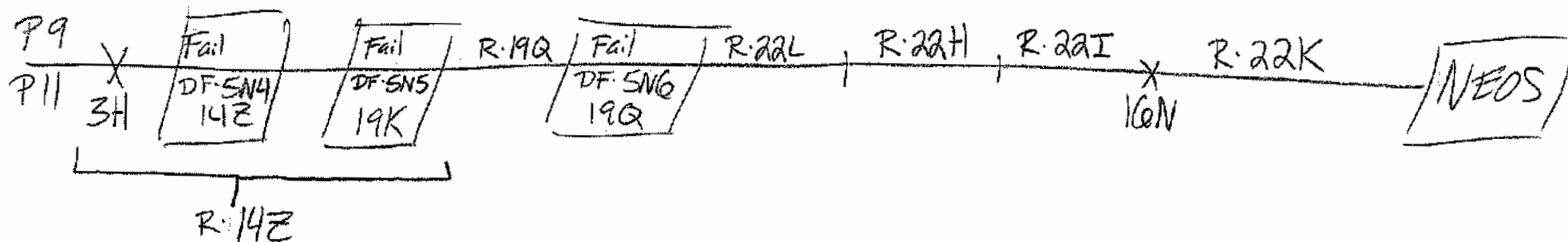
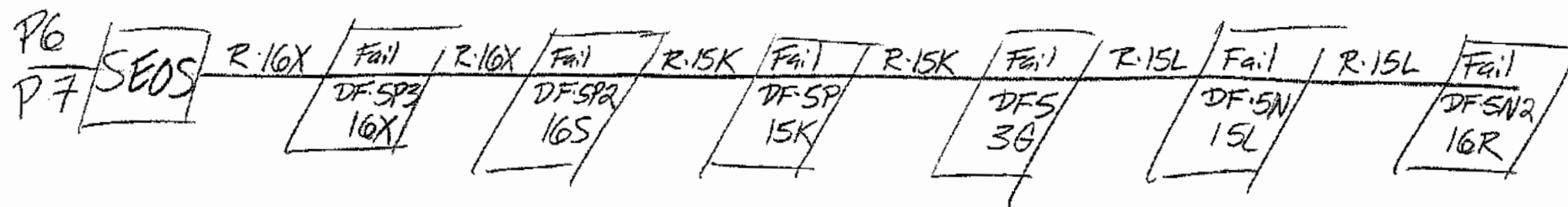
START POINT	ILLUSTRATED RECORD OF DESTRUCTIVE SAMPLE TRACKING AND SEAM RECONSTRUCTION		FINISH POINT		
—————>—————>—————> DIRECTION OF SEAMING <—————<—————<—————<					
PANEL # PANEL #				CONTINUED Y / N SHEET NO.	
PANEL # PANEL #					
PANEL # PANEL #				(P) PREVIOUS DIRECTION	
PANEL # PANEL #	P6 P8	<div><div>PASS DF-SPS 19J</div><div>R.19J X R.16Z 19P</div><div>Fail DF-SP4 16Z</div></div>	R.16Z	News	 -

NOTE: COMPLETE SEAMING ORDER INFORMATION FROM FIELD SEAMING LOGS. COMPLETE ILLUSTRATION SECTION FROM DIRECT OBSERVATION OF THE SEAMS.
 ILLUSTRATE FOLLOW-UP DESTRUCTIVE SAMPLES, CAPS AND/OR RECONSTRUCTED SEAMS AND REFERENCE REPAIR NUMBERS.
 GOLDR FORM: C21-0699

(JUNE 1999)

GOLDER ASSOCIATES INC.

REVIEWED BY: _____ DATE: _____



DF-5

Matches Repair Log

Repair	19J (DF-5P5)	Caps	P6/P8	seam	from	19J (DF-5P5)	to	19P	X
Repair	16Z (DF-5P4)	Caps	P6/P8	seam	from	19P	to	NEOS	X
Repair	16X (DF-5P3)	Caps	P6/P7	seam	from	SEOS	to	16S (DF-5P2)	X
Repair	15K (DF-5P)	Caps	P6/P7	seam	from	16S (DF-5P2)	to	3G (DF-5)	X
Repair	15L (DF-5N)	Caps	P6/P7	seam	from	3G (DF-5)	to	NEOS	X
Repair	21D	Caps	P9/P11	seam	from	SEOS	to	3H	X
Repair	14Z (DF-5N4)	Caps	P9/P11	seam	from	3H	to	19K (DF-5N5)	
Repair	19K (DF-5N5)	Caps	P9/P11	seam	from	19K (DF-5N5)	to	19Q (DF-5N6)	X
Repair	22L	Caps	P9/P11	seam	between	19Q (DF-5N6)	and	22H	X
Repair	22H	Caps	P9/P11	seam	between	22L	and	22I	X
Repair	22I	Caps	P9/P11	seam	between	22H	and	16N	X
Repair	22K	Caps	P9/P11	seam	from	16N	to	22K	X

FAILED DESTRUCTIVE SAMPLE TRACKING LOG

Page 1 of 1

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

DATE: 4-25-19
 MONITOR: AB
 DESTRUCTIVE NUMBER: DF-6
 MACHINE NUMBER: BE
 SEAMER(S) ID: DM

PASSING SAMPLE IN DIRECTION P: DF-6P3
 PASSING SAMPLE IN DIRECTION N: DF-6N

CHRONOLOGICAL SEAMING ORDER			ILLUSTRATED RECORD OF DESTRUCTIVE SAMPLE TRACKING AND SEAM RECONSTRUCTION		FINISH POINT
SEAM OR REPAIR NO.	SEAM DATE	START TIME	START POINT		
SEAMING SHEET # LINE #			PANEL # PANEL #		
SEAMING SHEET # LINE #			PANEL # PANEL #		
P8, P9 SEAMING SHEET # LINE #	4-13-19	1048	PANEL # P8 PANEL # P9	DF-6P3 14X PASS 10'	
P8, P10 SEAMING SHEET # LINE #	4-13-19	1130	PANEL # P8 PANEL # P10	8' R-16B DF-6P2 16B F 18' R-16B 10' R-14X F 4' R-14G DF-6P 10Q	
P7, P10 SEAMING SHEET # LINE #	4-13-19	1134	PANEL # P7 PANEL # P10	4' R-14G X 14G INITIAL DESTRUCTIVE NO. DF-6 7' R-10R FAIL 3J 10' R-10R PASS DF-6N 10R	
SEAMING SHEET # LINE #			PANEL # PANEL #		
SEAMING SHEET # LINE #			PANEL # PANEL #		
SEAMING SHEET # LINE #			PANEL # PANEL #		
SEAMING SHEET # LINE #			PANEL # PANEL #		

NOTE: COMPLETE SEAMING ORDER INFORMATION FROM FIELD SEAMING LOGS. COMPLETE ILLUSTRATION SECTION FROM DIRECT OBSERVATION OF THE SEAMS.

ILLUSTRATE FOLLOW-UP DESTRUCTIVE SAMPLES, CAPS AND/OR RECONSTRUCTED SEAMS AND REFERENCE REPAIR NUMBERS.

GOLDER FORM: G21-0609

(JUNE 1999) Repair 14X caps P8/P9 from Neos to, and including, 14X. REVIEWED BY: PS DATE: 9/10/19

GOLDER ASSOCIATES INC.

Repair 16B caps P8/P10 from Seos to 10Q. Caps defects 16B + 10Q.

Repair 14G caps P8/P10 from 10Q to Neos

Repair 14G also caps P7/P10 from Seos to, and including, 14G.

Repair 10R caps P7/P10 from 14G to 10R. Caps defects 3J + 10R.

Page 1 of 1

PROJECT TITLE: JH Campbell Ash Pond A Cloosure
CONTRACTOR: Chesapeake Containment Systems, Inc.

PASSING SAMPLE IN DIRECTION P DF: 5P5
 PASSING SAMPLE IN DIRECTION N DF: 7N

START POINT		ILLUSTRATED RECORD OF DESTRUCTIVE SAMPLE TRACKING AND SEAM RECONSTRUCTION						FINISH POINT			
		—————> ———> ———> DIRECTION OF SEAMING ———> ———> ———>									
PANEL # PANEL #	<input type="checkbox"/>							<input type="checkbox"/>	CONTINUED Y / N SHEET NO.		
PANEL # PANEL #	<input type="checkbox"/>							<input type="checkbox"/>			
PANEL # PANEL #	<input type="checkbox"/>							<input type="checkbox"/>	(7) PREVIOUS DIRECTION		
PANEL # P9 PANEL # P11	3H	Please see DF-5 Tracking Log						Neg	/ \		
PANEL # P16 PANEL # P11	SEOS	R.22J	F DF-7P2 19L	F DF-7P 15M	10'	FAIL 3L	10'	PASS DF-7N 15N	R.22G	Neg	- - - - -
PANEL # PANEL #	<input type="checkbox"/>							<input type="checkbox"/>	/ \		
PANEL # PANEL #	<input type="checkbox"/>							<input type="checkbox"/>	(8) NEXT DIRECTION		
PANEL # PANEL #	<input type="checkbox"/>							<input type="checkbox"/>			
PANEL # PANEL #	<input type="checkbox"/>							<input type="checkbox"/>	CONTINUED Y / N SHEET NO.		

(JUNE 1999)

Repair 3L CCIPS DF-7

GOLDER ASSOCIATES INC.

REVIEWED BY: _____ DATE: _____

Repair 22G caps P16/P11 seen from 15N to Neos

Repair	220 caps	P10/P11 seam	from	Seos	to	19L (DF-7Pa)
Repair	19L caps		↓	from	19L	to 15M (DF-7P)
Repair	15M caps		↓	from	15M	to 3L (DF-7)
Repair	15N caps		↓	from	3L	to 15N (DF-7N)

DF-7

Matches Repair Log

Repair	22S	Caps	P11/P12	seam	from	SEOS	to	10G	X
Repair	22R	Caps	P11/P12	seam	from	10G	to	3Y	X
Repair	22Q	Caps	P11/P12	seam	from	3Y	to	3X	X
Repair	3X	Caps	P11/P12	seam	from	3X	to	3V	X
Repair	22P	Caps	P11/P12	seam	from	3V	to	3T	X
Repair	22X	Caps	P11/P12	seam	from	3T	to	19M (DF-8P3)	X
Repair	19M (DF-8P3)	Caps	P11/P12	seam	from	19M (DF-8P3)	to	4B	X
Repair	17R (DF-8P2)	Caps	P11/P12	seam	from	4B	to	10S (DF-8P)	X
Repair	10S (DF-8P)	Caps	P11/P12	seam	from	10S (DF-8P)	to	5B (DF-8)	X
Repair	10T (DF-8N)	Caps	P11/P12	seam	from	5B (DF-8)	to	10T	X
Repair	17S (DF-8N2)	Caps	P11/P12	seam	from	10T (DF-8N)	to	17S (DF-8N2)	X
Repair	17Z (DF-8N3)	Caps	P11/P13	seam	from	17S (DF-8N2)	to	17Z (DF-8N3)	X
Repair	22W	Caps	P11/P12	seam	from	17Z (DF-8N3)	to	20C (DF-8N4)	X
Repair	22Z	Caps	P11/P12	seam	from	20C (DF-8N4)	to	NEOS	X
Repair	20E	Caps	P13/P15	seam	from	SEOS	to	20E (DF-8N5)	X

FAILED DESTRUCTIVE SAMPLE TRACKING LOG

Page 1 of 1

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy Company
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Cloosure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

DATE: 4.23.19 DESTRUCTIVE NUMBER: DF-8
 MONITOR: AK MACHINE NUMBER: 20
 SEAMER(S) ID: VG

PASSING SAMPLE IN DIRECTION P: DF-7N
 PASSING SAMPLE IN DIRECTION N: DF-8NS

CHRONOLOGICAL SEAMING ORDER		
SEAM OR REPAIR NO.	SEAM DATE	START TIME
SEAMING SHEET # <u>1</u> LINE # <u>1</u>		
SEAMING SHEET # <u>2</u> LINE # <u>1</u>		
SEAMING SHEET # <u>1</u> LINE # <u>6</u>	<u>4.13</u>	<u>1158</u>
SEAMING SHEET # <u>1</u> LINE # <u>7</u>	<u>4.13</u>	<u>1346</u>
SEAMING SHEET # <u>1</u> LINE # <u>8</u>	<u>4.13</u>	<u>1351</u>
SEAMING SHEET # <u>1</u> LINE # <u>1</u>	<u>4.13</u>	<u>1504</u>
SEAMING SHEET # <u>1</u> LINE # <u>1</u>		
SEAMING SHEET # <u>1</u> LINE # <u>1</u>		
SEAMING SHEET # <u>1</u> LINE # <u>1</u>		

START POINT	ILLUSTRATED RECORD OF DESTRUCTIVE SAMPLE TRACKING AND SEAM RECONSTRUCTION		FINISH POINT
	—————> DIRECTION OF SEAMING <—————		
PANEL # <u>1</u> PANEL # <u>1</u>			
PANEL # <u>1</u> PANEL # <u>1</u>			
PANEL # <u>P10</u> PANEL # <u>P11</u>	<div style="border: 1px solid black; padding: 5px; display: inline-block;"> PASS DF-7N 15N </div> R-226		<u>News</u>
PANEL # <u>P11</u> PANEL # <u>P12</u>	see back		<u>Seos</u>
PANEL # <u>P11</u> PANEL # <u>P12</u>	see back INITIAL DESTRUCTIVE NO. <u>DF-8</u> <div style="border: 1px solid black; padding: 2px; display: inline-block;">FAIL 5B</div> see back		<u>News</u>
PANEL # <u>P13</u> PANEL # <u>P15</u>	R-20E <div style="border: 1px solid black; padding: 5px; display: inline-block;"> PASS DF-8NS 20E </div>		<u>News</u>
PANEL # <u>1</u> PANEL # <u>1</u>			
PANEL # <u>1</u> PANEL # <u>1</u>			
PANEL # <u>1</u> PANEL # <u>1</u>			

CONTINUED
Y / N
SHEET NO.

(P)
PREVIOUS
DIRECTION

(N)
NEXT
DIRECTION

CONTINUED
Y / N
SHEET NO.

NOTE: COMPLETE SEAMING ORDER INFORMATION FROM FIELD SEAMING LOGS. COMPLETE ILLUSTRATION SECTION FROM DIRECT OBSERVATION OF THE SEAMS. ILLUSTRATE FOLLOW-UP DESTRUCTIVE SAMPLES, CAPS AND/OR RECONSTRUCTED SEAMS AND REFERENCE REPAIR NUMBERS.

GOLDER FORM: G21-0699

(JUNE 1999)

REVIEWED BY: _____ DATE: _____

GOLDER ASSOCIATES INC.

P11
 P12 Seos R.22S X R.22R X R.22Q X R.3X X R.22P X R.22X Fail DF.8P3 19M R.19M X
 10G 3Y 3X 3W 3V 3T 4B

P11
 P12 X Fail DF.8P2 17R Fail DF.8P 10S R.10S Fail DF.8N 10T R.10T Fail DF.8N 17S Fail DF.8N2 17Z R.17Z Fail DF.8N3 17Z R.22W Fail DF.8N4 20C
 4B R.17R

P11
 P12 Fail DF.8N4 20C R.22Z Neos

Page 1 of 1

PROJECT TITLE: JH Campbell Ash Pond A Cloosure
CONTRACTOR: Chesapeake Containment Systems, Inc.

PASSING SAMPLE IN DIRECTION P DF-10P2
PASSING SAMPLE IN DIRECTION N DF-10N3

-----> -----> -----> **DIRECTION OF SEAMING** -----> -----> -----

CONTINUED
Y/N
SHEET NO.

(P)
PREVIOUS"
DIRECTION

$$\begin{array}{c} \wedge \\ | \\ | \end{array}$$

⋮

(N)
"NEXT"

CONTINUED:
Y / N
SHEET NO.

GOLDER FORM: G21-0699

(JUNE 1999)

Repair ISF caps P14/P15 seam from ISF (DF-10N2) to 10W (DF-10N) REVIEWED BY:

DATE:

Repair 10W caps P14/P15 seam from 10W (DF-10N) to 5D (DF-10).
 Repair 10V caps P14/P15 seam from 10V (DF-10P) to 5D (DF-10).
 Repair 18G caps P18/P19 seam from, & including, DF-10N3 to Nod.
 Repair 23B caps P14/P16 seam from 5D to Nod

FAILED DESTRUCTIVE SAMPLE TRACKING LOG

Page 1 of 1

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy Company
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

DATE: 4-25-19 DESTRUCTIVE NUMBER: DF-12
 MONITOR: AB MACHINE NUMBER: 81
 SEAMER(S) ID: H/M

PASSING SAMPLE IN DIRECTION P: DF-12P
 PASSING SAMPLE IN DIRECTION N: DF-12N

CHRONOLOGICAL SEAMING ORDER		
SEAM OR	SEAM	START
REPAIR NO.	DATE	TIME
SEAMING SHEET # <u>1</u> LINE # <u>1</u>		
SEAMING SHEET # <u>1</u> LINE # <u>1</u>		
SEAMING SHEET # <u>1</u> LINE # <u>1</u>		
SEAMING SHEET # <u>1</u> LINE # <u>1</u>		

P15, P17	4.13.19	1610
SEAMING SHEET # <u>1</u> LINE # <u>6</u>		

P16, P17	4.13.19	1625
SEAMING SHEET # <u>1</u> LINE # <u>7</u>		

SEAMING SHEET # <u>1</u> LINE # <u>1</u>		
---	--	--

SEAMING SHEET # <u>1</u> LINE # <u>1</u>		
---	--	--

SEAMING SHEET # <u>1</u> LINE # <u>1</u>		
---	--	--

START POINT	ILLUSTRATED RECORD OF DESTRUCTIVE SAMPLE TRACKING AND SEAM RECONSTRUCTION	FINISH POINT
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	—————> DIRECTION OF SEAMING <—————	
PANEL # <u>1</u> PANEL # <u>1</u>		
PANEL # <u>1</u> PANEL # <u>1</u>		
PANEL # <u>1</u> PANEL # <u>1</u>		
PANEL # <u>1</u> PANEL # <u>1</u>		
PANEL # <u>P15</u> PANEL # <u>P17</u>	<div style="display: flex; justify-content: space-between;"> <div> <p>PASS</p> <p>DF-12P 15P</p> </div> <div> <p>INITIAL DESTRUCTIVE NO. <u>DF-12</u></p> <p>R-15P X 10P R-15Z</p> <p>FAIL</p> <p>4K</p> </div> <div> <p>8'</p> <p>R-17A</p> </div> </div>	Needs
PANEL # <u>P16</u> PANEL # <u>P17</u>	<div style="display: flex; justify-content: space-between;"> <div> <p>X</p> <p>R-17B</p> <p>14D</p> </div> <div> <p>PASS</p> <p>DF-12N 16C</p> </div> </div>	Needs
PANEL # <u>1</u> PANEL # <u>1</u>		
PANEL # <u>1</u> PANEL # <u>1</u>		
PANEL # <u>1</u> PANEL # <u>1</u>		

NOTE: COMPLETE SEAMING ORDER INFORMATION FROM FIELD SEAMING LOGS. COMPLETE ILLUSTRATION SECTION FROM DIRECT OBSERVATION OF THE SEAMS. ILLUSTRATE FOLLOW-UP DESTRUCTIVE SAMPLES, CAPS AND/OR RECONSTRUCTED SEAMS AND REFERENCE REPAIR NUMBERS.

GOLDER FORM: G21-0699

(JUNE 1999)

- Repair 16C caps P16/P17 seam from 16C to 14D
- Repair 17B caps P16/P17 seam from 14D to 5605.
- Repair 17A caps P15/P17 seam from Needs to 4K
- Repair 15Z caps P15/P17 seam from 4K to 10P
- Repair 15P caps P15/P17 seam from 10P to 15P.

GOLDER ASSOCIATES INC.

REVIEWED BY: _____ DATE: _____

Page 1 of 1

PROJECT TITLE: JH Campbell Ash Pond A Cloosure
CONTRACTOR: Chesapeake Containment Systems, Inc.

PASSING SAMPLE IN DIRECTION P DF-13P
PASSING SAMPLE IN DIRECTION N -

START POINT	ILLUSTRATED RECORD OF DESTRUCTIVE SAMPLE TRACKING AND SEAM RECONSTRUCTION	FINISH POINT
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DIRECTION OF SEAMING

[illegible]

PANEL # _____
 PANEL # _____

PANEL #		(P) PREVIOUS DIRECTION
PANEL #		

[illegible]

INITIAL DESTRUCTIVE NO. DF-13

PANEL # P1 News 10' FAIL 15' 5M
PANEL # P18 DF-12P R.5N 5N R.5N

CONTINUED
Y/N
SHEET NO.

(P)
PREVIOUS"
DIRECTION

$$\begin{array}{c} \diagup \quad \diagdown \\ | \\ | \\ | \\ | \\ | \\ \hline | \\ | \\ | \\ | \\ | \\ \diagdown \quad \diagup \end{array}$$

(N)
"NEXT"
DIRECTION

CONTINUED?
Y / N
SHEET NO.

REVIEWED BY: _____ DATE: _____

Note: Wedge #85 only seamed 15' at P1/P18 past DF-13. This 15' section of seam was capped by repair SN performed by **GOLDER ASSOCIATES INC.** gun #46 on 4-19-19. Wedge #85 was never used again.

FAILED DESTRUCTIVE SAMPLE TRACKING LOG

Page 1 of 1

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy Company
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Cloosure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

DATE: 5-1-19 DESTRUCTIVE NUMBER: DF-22
 MONITOR: AB MACHINE NUMBER: 20
 SEAMER(S) ID: VG

PASSING SAMPLE IN DIRECTION P DF-22P3
 PASSING SAMPLE IN DIRECTION N DF-22N5

CHRONOLOGICAL SEAMING ORDER		
SEAM OR	SEAM	START
REPAIR NO.	DATE	TIME
SEAMING SHEET # <u>1</u> LINE # <u>1</u>		
SEAMING SHEET # <u>1</u> LINE # <u>1</u>		
P29, P30 SEAMING SHEET # <u>1</u> LINE # <u>3</u>	4.17	0920
P17, P31 SEAMING SHEET # <u>1</u> LINE # <u>4</u>	4.17	1001
P17, P32 SEAMING SHEET # <u>1</u> LINE # <u>5</u>	4.17	1032
P36, P37 SEAMING SHEET # <u>1</u> LINE # <u>6</u>	4.17	1420
SEAMING SHEET # <u>1</u> LINE # <u>1</u>		
SEAMING SHEET # <u>1</u> LINE # <u>1</u>		
SEAMING SHEET # <u>1</u> LINE # <u>1</u>		

START POINT	ILLUSTRATED RECORD OF DESTRUCTIVE SAMPLE TRACKING AND SEAM RECONSTRUCTION		FINISH POINT
PANEL # <u>1</u> PANEL # <u>1</u>			
PANEL # <u>1</u> PANEL # <u>1</u>			
PANEL # <u>P29</u> PANEL # <u>P30</u>	<div style="border: 1px solid black; padding: 5px; display: inline-block;"> PASS DF-22P3 20W </div> R-20W		<div style="border: 1px solid black; padding: 5px; display: inline-block;"> Pass </div>
PANEL # <u>P17</u> PANEL # <u>P31</u>	R-23E		<div style="border: 1px solid black; padding: 5px; display: inline-block;"> Pass </div>
PANEL # <u>P17</u> PANEL # <u>P32</u>	R-23C/Fail R-18I Fail INITIAL DESTRUCTIVE NO. <u>DF-22</u> <div style="border: 1px solid black; padding: 2px; display: inline-block;">DF-22P2 19I</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">DF-22P 18I</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">FAIL</div> See Back		<div style="border: 1px solid black; padding: 5px; display: inline-block;"> Pass </div>
PANEL # <u>P36</u> PANEL # <u>P37</u>	R-20V		<div style="border: 1px solid black; padding: 5px; display: inline-block;"> PASS DF-22N5 20V </div>
PANEL # <u>1</u> PANEL # <u>1</u>			
PANEL # <u>1</u> PANEL # <u>1</u>			
PANEL # <u>1</u> PANEL # <u>1</u>			

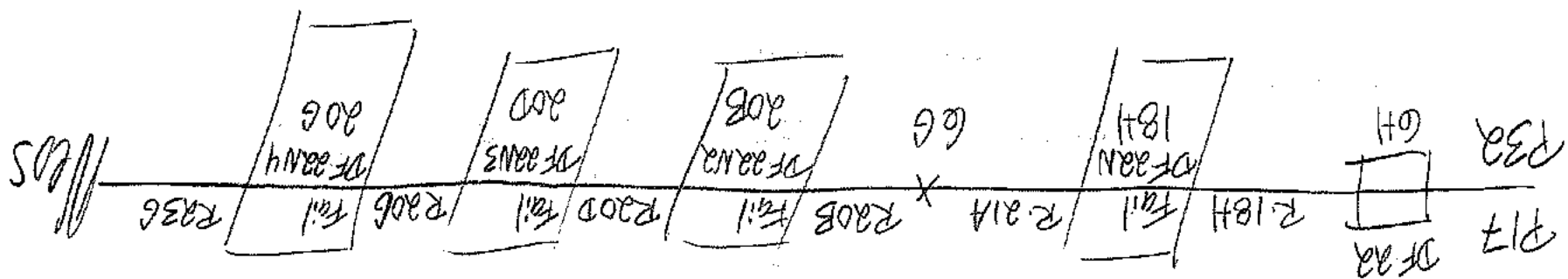
NOTE: COMPLETE SEAMING ORDER INFORMATION FROM FIELD SEAMING LOGS. COMPLETE ILLUSTRATION SECTION FROM DIRECT OBSERVATION OF THE SEAMS. ILLUSTRATE FOLLOW-UP DESTRUCTIVE SAMPLES, CAPS AND/OR RECONSTRUCTED SEAMS AND REFERENCE REPAIR NUMBERS.

GOLDER FORM: G21-0699

(JUNE 1999)

REVIEWED BY: _____ DATE: _____

GOLDER ASSOCIATES INC.



DF-22

Matches Repair Log

Repair	20W	Caps	P29/P30	seam	from	20W (DF-22P3)	to	EEOS	X
Repair	23C	Caps	P17/P32	seam	from	SEOS	to	19I (DF-22P2)	X
Repair	18I	Caps	P17/P32	seam	from	19I (DF-22P2)	to	6H (DF-22)	X
Repair	18H	Caps	P17/P32	seam	from	6H (DF-22)	to	18H (DF-22N)	X
Repair	21A	Caps	P17/P32	seam	from	18H (DF-22N)	to	6G	X
Repair	20B	Caps	P17/P32	seam	from	6G	to	20B (DF-22N2)	X
Repair	20D	Caps	P17/P32	seam	from	20B (DF-22N2)	to	20D (DF-22N3)	X
Repair	20G	Caps	P17/P32	seam	from	20D (DF-22N3)	to	20G (DF-22N4)	X
Repair	23G	Caps	P17/P32	seam	from	20G (DF-22N4)	to	NEOS	X
Repair	23E	Caps	P17/P31	seam	from	SEOS	to	NEOS	X
Repair	20V	Caps	P36/P37	seam	from	SEOS	to	20V (DF-22N5)	X

FAILED DESTRUCTIVE SAMPLE TRACKING LOG

Page 1 of 1

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy Company
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Cloosure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

DATE: 5-1-19
 MONITOR: AB
 DESTRUCTIVE NUMBER: DF-33
 MACHINE NUMBER: 1807
 SEAMER(S) ID: UM

PASSING SAMPLE IN DIRECTION P: DF-33P2
 PASSING SAMPLE IN DIRECTION N: DF-33N2

CHRONOLOGICAL SEAMING ORDER		
SEAM OR REPAIR NO.	SEAM DATE	START TIME
SEAMING SHEET # LINE #		
SEAMING SHEET # LINE #		
SEAMING SHEET # LINE #		
P45, P57 SEAMING SHEET # 2 LINE # 11	4.22	1621
P74, P75 SEAMING SHEET # 2 LINE # 12	4.22	1739
P79, P80 SEAMING SHEET # 2 LINE # 13	4.22	1805
SEAMING SHEET # LINE #		
SEAMING SHEET # LINE #		
SEAMING SHEET # LINE #		

START POINT		ILLUSTRATED RECORD OF DESTRUCTIVE SAMPLE TRACKING AND SEAM RECONSTRUCTION				FINISH POINT
		----->----->-----> DIRECTION OF SEAMING ----->----->----->				
PANEL #						
PANEL #						
PANEL #						
PANEL #						
PANEL #						
PANEL #	P45	DF-33P2 19Z 13'				
PANEL #	P57	News	PASS	R-19Z		EEOS
PANEL #	P74	Seos	INITIAL DESTRUCTIVE NO. DF-33 10' F 23' X R-18J DF-33P 18J 19C 19B	FAIL 9L	R-9L	News
PANEL #	P75					
PANEL #	P79	Seos	10' F R-20A R-18K DF-33N 18K	PASS DF-33N2 20A		News
PANEL #	P80					
PANEL #						
PANEL #						
PANEL #		Repair 19Z caps P45/P52 seam from 19Z (DF-33P2)				
PANEL #		to EEOS.				
PANEL #						

CONTINUED
Y/N
SHEET NO.

(P)
PREVIOUS
DIRECTION

(N)
"NEXT"
DIRECTION

CONTINUED
Y/N
SHEET NO.

NOTE: COMPLETE SEAMING ORDER INFORMATION FROM FIELD SEAMING LOGS. COMPLETE ILLUSTRATION SECTION FROM DIRECT OBSERVATION OF THE SEAMS.
 ILLUSTRATE FOLLOW-UP DESTRUCTIVE SAMPLES, CAPS AND/OR RECONSTRUCTED SEAMS AND REFERENCE REPAIR NUMBERS.

GOLDER FORM: G21-0699

(JUNE 1999)

Repair 20A caps P79/P80 seam from DF-33N2 to DF-33N

Repair 18K caps ↓ from DF-33N to Seos.

Repair 9L caps P74/P75 seam from Nees to 19B. Including 9L (DF-33).

Repair 19B caps P74/P75 seam from 19B to 19C
 Repair 18J caps ↓ from 19C to Seos

REVIEWED BY: DATE:

GOLDER ASSOCIATES INC.

FAILED DESTRUCTIVE SAMPLE TRACKING LOG

Page 1 of 1

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy Company
 LOCATION: West Olive, Michigan
 DATE: 4-25-19
 MONITOR: AS
 DESTRUCTIVE NUMBER: DF-34
 MACHINE NUMBER: 20
 SEAMER(S) ID: VG

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.
 PASSING SAMPLE IN DIRECTION P: DF-34P
 PASSING SAMPLE IN DIRECTION N: DF-34N

CHRONOLOGICAL SEAMING ORDER		
SEAM OR	SEAM	START
REPAIR NO.	DATE	TIME
SEAMING SHEET # <u>1</u> LINE # <u>1</u>		
SEAMING SHEET # <u>1</u> LINE # <u>1</u>		
SEAMING SHEET # <u>1</u> LINE # <u>1</u>		
P76, P81 SEAMING SHEET # <u>2</u> LINE # <u>1</u>	4.22.19	1828
P77, P81 SEAMING SHEET # <u>2</u> LINE # <u>2</u>	4.22.19	1830
P84, P85 SEAMING SHEET # <u>1</u> LINE # <u>1</u>	4.24.19	1000
SEAMING SHEET # <u>1</u> LINE # <u>1</u>		
SEAMING SHEET # <u>1</u> LINE # <u>1</u>		
SEAMING SHEET # <u>1</u> LINE # <u>1</u>		

START POINT	ILLUSTRATED RECORD OF DESTRUCTIVE SAMPLE TRACKING AND SEAM RECONSTRUCTION		FINISH POINT
	—————> DIRECTION OF SEAMING <—————		
PANEL # <u>1</u> PANEL # <u>1</u>			
PANEL # <u>1</u> PANEL # <u>1</u>			
PANEL # <u>1</u> PANEL # <u>1</u>			
PANEL # P76 PANEL # P81	5' R.14P	10' R.22C	Seos
PANEL # P77 PANEL # P81	7' R.9P	8' R.9P	Wcos
PANEL # P84 PANEL # P85	12' R.14Q	14Q	Seos
PANEL # <u>1</u> PANEL # <u>1</u>			
PANEL # <u>1</u> PANEL # <u>1</u>			
PANEL # <u>1</u> PANEL # <u>1</u>			

CONTINUED
Y/N
SHEET NO.

(P)
PREVIOUS
DIRECTION

(N)
"NEXT"
DIRECTION

CONTINUED
Y/N
SHEET NO.

NOTE: COMPLETE SEAMING ORDER INFORMATION FROM FIELD SEAMING LOGS. COMPLETE ILLUSTRATION SECTION FROM DIRECT OBSERVATION OF THE SEAMS.
 ILLUSTRATE FOLLOW-UP DESTRUCTIVE SAMPLES, CAPS AND/OR RECONSTRUCTED SEAMS AND REFERENCE REPAIR NUMBERS.
 GOLDER FORM: G21-0699

(JUNE 1999)

REVIEWED BY: _____ DATE: _____

Repair 9P caps entire P77/P81 seam
 Repair 14P caps P76/P81 seam from R.14P to Neos
 Repair 14Q caps P84/P85 seam from Neos to 14Q (DF-34N).
 Repair 22C caps P81/P76 seam from 14P to Seos.

GOLDER ASSOCIATES INC.

Page 1 of 1

1896102

Consumers Energy Company

West Olive, Michigan

4-27-19

AK

DESTRUCTIVE NUMBER

MACHINE NUMBER

SEAMER(S) ID

DF-40

3

4/20

JH Campbell Ash Pond A Cloosure

Chesapeake Containment Systems, Inc.

PASSING SAMPLE IN DIRECTION P

PASSING SAMPLE IN DIRECTION N

DF- 46

DF-49NR

SEAMING SHEET # _____
LINE # _____

-----> -----> -----> **DIRECTION OF SEAMING** -----> -----> ----->

[illegible]

CONTINUED†
Y / N
SHEET NO.

(JUNE 1999)

REVIEWED BY: DATE:

GOLDER ASSOCIATES INC.

Repair 16T caps P118/P119 seam from 16T (DF 49N2) to Ecos.

Repair 21B & 16Y caps entire P111/P116 seam from Weos to Eeos including 14B, 16Q, 15Q, 16P, 16V.

Repair 11A caps entire P111/P112, including 11B & 11D

Repair 11A caps P110/P112, seam from 505 to 11A (DF. 46)

APPENDIX K.2

Extrusion Results

GEOMEMBRANE SEAM DESTRUCTIVE SAMPLE LOG

PROJECT NUMBER: 1896102 PROJECT TITLE: JH Campbell Ash Pond A Closure
 OWNER: Consumers Energy CONTRACTOR: Chesapeake Containment Systems, Inc.
 LOCATION: West Olive, Michigan
 SHEET NUMBER 1

	DESTRUCTIVE		MACHINE NUMBER	DATE REMOVED	FIELD TEST RESULTS		MON.	DATE SHIPPED	LAB TEST STATUS (PASS/FAIL)	DATE OF NOTIFICATION	REMARKS
	SAMPLE NUMBER	SEAM NUMBER			PEEL (PASS/FAIL)	SHEAR (PASS/FAIL)					
1	DX-1	T/W	3	4/19/19	P	: P	AB	4/19/19	P	4/24/19	T/W = trial weld
2	DX-2	T/W	46	4/19/19	P	: P	AB	4/19/19	P	4/24/19	
3	DX-3	T/W	52	4/19/19	P	: P	AB	4/19/19	P	4/24/19	
4	DX-4	R10R/P7	46	4/26/19	P	: P	AB	4/27/19	P	4/30/19	
5	DX-5	17E/P40	52	4/30/19	P	: P	AB	4/30/19	P	5/1/19	
6	DX-6	P47/R16L	46	5/2/19	P	: P	AB	5/2/19	F	5/13/19	
7	DX-7	P74/R19B	52	5/2/19	P	: P	AB	5/2/19	P	5/13/19	
8	DX-8	P6/R19J	46	5/2/19	P	: P	AB	5/2/19	P	5/13/19	
9	DX-9	P112/R11R	46	5/16/19	P	: P	AB	5/16/19	P	5/17/19	
10	DX-10	P97/R20V	52	5/16/19	P	: P	AB	5/16/19	P	5/17/19	
11	DX-11	T/W	13	5/17/19	P	: P	AB	5/17/19	P	5/18/19	
12	DX-12	T/W	33	5/17/19	P	: P	AB	5/17/19	P	5/18/19	
13	DX-13	P49/R8S	46	5/16/19	P	: P	AB	5/16/19	P	5/17/19	
14	DX-14	P7/R16E	46	5/16/19	P	: P	AB	5/16/19	P	5/17/19	
15	DX-15	P9/R22H	33	5/11/19	P	: P	AB	5/11/19	P	5/14/19	
16	DX-16	P11/R22J	13	5/11/19	P	: P	AB	5/11/19	P	5/14/19	
17	DX-17	P11/R22X	33	5/11/19	P	: P	AB	5/11/19	P	5/14/19	
18	DX-18	P14/R23B	13	5/11/19	P	: P	AB	5/11/19	P	5/14/19	
19	DX-19	P17/R22E	13	5/13/19	P	: P	AB	5/13/19	P	5/14/19	
20	DX-20	P32/R22G	33	5/13/19	P	: P	AB	5/13/19	P	5/14/19	
21		1		1/1		:		1/1		1/1	
22		1		1/1		:		1/1		1/1	

REVIEWED BY: DATE:

GOLDER FORM: G20-0699
 (JUNE 1999)

GOLDER ASSOCIATES INC.

SUMMARY OF DESTRUCTIVE TEST RESULTS
EXTRUSION METHOD
ASTM D6392
CEC
JHC ASH TREATMENT
MICHIGAN

SAMPLE NUMBER	<u>SHEAR</u>		<u>PEEL</u>		REMARKS
	STRENGTH (ppi)	BREAK CODE (1)	STRENGTH (ppi)	BREAK CODE (1)	
DX-1	124.9	BRK 2	116.7	SE 3	PASS
	122.8	BRK 2	112.1	SE 3	
	124.5	BRK 2	107.8	SE 3	
	122.4	BRK 2	113.6	SE 3	
	121.6	BRK 2	110.5	SE 3	
DX-2	103.3	BRK 1	90.4	SE 3	PASS
	101.6	BRK 1	96.9	SE 3	
	100.3	BRK 1	90.5	SE 3	
	99.6	BRK 1	95.1	SE 3	
	98.3	BRK 1	96.7	SE 3	
DX-3	102.9	BRK 1	95.0	SE 3	PASS
	101.5	BRK 1	90.5	SE 3	
	100.5	BRK 1	81.6	SE 3	
	99.2	BRK 1	97.0	BRK 1	
	97.8	BRK 1	91.6	SE 3	
DX-4	103.1	BRK 1	98.9	SE 3	PASS
	102.0	BRK 1	95.0	SE 3	
	101.7	BRK 1	67.2	SE 3	
	100.0	BRK 2	90.5	SE 3	
	99.1	BRK 2	89.3	SE 3	
DX-5	102.7	BRK 2	102.1	BRK 2	PASS
	102.3	BRK 2	100.6	SE 3	
	100.1	BRK 2	96.1	SE 3	
	101.0	BRK 2	97.3	SE 3	
	100.0	BRK 2	88.4	SE 3	
DX-6	102.2	BRK 2	68.0	AD1	FAIL Bound by DX-6P and DX-6N
	101.6	BRK 2	80.5	SE 3	
	102.6	BRK 2	92.7	SE 3	
	96.4	BRK 2	77.9	SE 3	
	105.3	BRK 2	89.7	SE 3	
DX-6P	106.5	BRK 1	81.8	SE 3	PASS Bounds DX-6 in the previous direction
	107.2	BRK 1	81.4	SE 3	
	107.9	BRK 1	81.4	SE 3	
	106.4	BRK 1	85.7	SE 3	
	107.0	BRK 1	87.7	SE 3	

(1) BREAK CODES BASED ON MODES ILLUSTRATED IN ASTM D6392.

DESUM

SUMMARY OF DESTRUCTIVE TEST RESULTS
EXTRUSION METHOD
ASTM D6392
CEC
JHC ASH TREATMENT
MICHIGAN

SAMPLE NUMBER	<u>SHEAR</u>		<u>PEEL</u>		REMARKS
	STRENGTH (ppi)	BREAK CODE (1)	STRENGTH (ppi)	BREAK CODE (1)	
DX-6N	104.2	BRK 2	96.1	SE 3	PASS Bounds DX-6 in the next direction
	105.3	BRK 2	82.2	SE 3	
	106.6	BRK 1	82.7	SE 3	
	106.4	BRK 1	81.3	SE 3	
	105.4	BRK 1	80.0	SE 3	
DX-7	102.5	BRK 2	87.8	SE 3	PASS
	102.9	BRK 2	86.8	SE 3	
	103.2	BRK 2	70.4	SE 3	
	101.9	BRK 2	81.1	SE 3	
	102.1	BRK 2	60.7	SE 3	
DX-8	105.3	BRK 2	96.2	SE 3	PASS
	105.7	BRK 2	91.2	SE 3	
	105.7	BRK 2	98.5	SE 3	
	106.2	BRK 2	88.0	SE 3	
	106.7	BRK 2	98.0	SE 3	
DX-9	99.4	BRK 2	84.4	SE 3	PASS
	99.0	BRK 2	96.3	SE 3	
	98.1	BRK 2	92.6	SE 3	
	97.7	BRK 2	91.0	SE 3	
	98.1	BRK 1	82.5	SE 3	
DX-10	86.1	BRK 1	90.9	SE 3	PASS
	100.1	BRK 2	102.0	SE 3	
	100.4	BRK 2	88.0	SE 3	
	100.0	BRK 2	76.3	SE 3	
	99.4	BRK 2	73.5	SE 3	
DX-11	90.9	BRK 2	90.5	BRK 2	PASS
	92.8	BRK 2	91.4	BRK 2	
	94.2	BRK 2	91.0	BRK 2	
	93.6	BRK 2	93.1	SE 3	
	88.2	BRK 2	92.5	SE 2	
DX-12	103.2	BRK 2	78.6	SE 3	PASS
	104.1	BRK 2	79.0	SE 3	
	102.7	BRK 2	80.0	SE 3	
	100.9	BRK 2	86.0	SE 3	
	102.7	BRK 2	78.0	SE 3	

(1) BREAK CODES BASED ON MODES ILLUSTRATED IN ASTM D6392.

DESUM

SUMMARY OF DESTRUCTIVE TEST RESULTS
EXTRUSION METHOD
ASTM D6392
CEC
JHC ASH TREATMENT
MICHIGAN

SAMPLE NUMBER	<u>SHEAR</u>		<u>PEEL</u>		REMARKS
	STRENGTH (ppi)	BREAK CODE (1)	STRENGTH (ppi)	BREAK CODE (1)	
DX-13	102.5	BRK 1	86.4	SE 3	PASS
	101.3	BRK 1	84.0	SE 3	
	101.0	BRK 1	76.4	SE 3	
	101.6	BRK 1	83.6	SE 3	
	100.9	BRK 1	88.7	SE 3	
DX-14	116.5	BRK 1	95.9	SE 3	PASS
	116.3	BRK 1	110.8	SE 3	
	114.6	BRK 1	105.9	SE 3	
	112.5	BRK 1	97.1	SE 3	
	110.2	BRK 1	96.4	SE 3	
DX-15	93.9	SE 1	96.5	SE 3	PASS
	97.4	SE 1	91.7	SE 3	
	98.4	BRK 1	96.4	SE 3	
	99.5	BRK 1	92.9	SE 3	
	102.4	BRK 1	90.1	SE 3	
DX-16	100.9	BRK 2	76.9	SE 3	PASS
	100.9	BRK 2	78.5	SE 3	
	100.4	BRK 2	85.5	SE 3	
	103.2	BRK 1	79.2	SE 3	
	101.7	BRK 2	71.9	SE 3	
DX-17	103.6	BRK 1	97.5	SE 3	PASS
	104.6	BRK 1	99.0	SE 3	
	104.4	BRK 1	94.0	SE 3	
	104.4	BRK 1	76.9	SE 3	
	105.0	BRK 1	75.7	SE 3	
DX-18	98.3	BRK 2	92.5	SE 1	PASS
	98.0	BRK 2	84.0	SE 1	
	98.4	BRK 2	84.4	SE 1	
	99.1	BRK 2	96.2	SE 1	
	100.5	BRK 2	92.4	SE 1	
-	-	-	-	-	-
	-	-	-	-	
	-	-	-	-	
	-	-	-	-	
	-	-	-	-	

(1) BREAK CODES BASED ON MODES ILLUSTRATED IN ASTM D6392.

DESUM

FAILED DESTRUCTIVE SAMPLE TRACKING LOG

Page 1 of 1

PROJECT NUMBER: 1896102
 OWNER: Consumers Energy Company
 LOCATION: West Olive, Michigan

PROJECT TITLE: JH Campbell Ash Pond A Closure
 CONTRACTOR: Chesapeake Containment Systems, Inc.

DATE: 5-3-19
 MONITOR: AB
 DESTRUCTIVE NUMBER: DX-G
 MACHINE NUMBER: 46
 SEAMER(S) ID: CT

PASSING SAMPLE IN DIRECTION P: DX-GP
 PASSING SAMPLE IN DIRECTION N: DX-GN

CHRONOLOGICAL SEAMING ORDER		
SEAM OR	SEAM	START
REPAIR NO.	DATE	TIME
SEAMING SHEET # LINE #		
SEAMING SHEET # LINE #		
SEAMING SHEET # LINE #		
SEAMING SHEET # LINE #		

SEAMING SHEET # LINE #		
---------------------------	--	--

SEAMING SHEET # LINE #		
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SEAMING SHEET # LINE #		
---------------------------	--	--

SEAMING SHEET # LINE #		
---------------------------	--	--

SEAMING SHEET # LINE #		
---------------------------	--	--

START POINT	ILLUSTRATED RECORD OF DESTRUCTIVE SAMPLE TRACKING AND SEAM RECONSTRUCTION	FINISH POINT
-------------	---	--------------

—————>—————>—————> DIRECTION OF SEAMING —————>—————>—————>

PANEL # PANEL #										CONTINUED Y/N SHEET NO.
PANEL # PANEL #										
PANEL # PANEL #										(P) PREVIOUS DIRECTION
PANEL # PANEL #										1A
PANEL # PANEL #										
PANEL # PANEL #										
PANEL # PANEL #										
PANEL # PANEL #										(N) "NEXT" DIRECTION
PANEL # PANEL #										CONTINUED Y/N SHEET NO.

16F ← DX of
 19W
 DX-G
 INITIAL DESTRUCTIVE NO.
 PASS
 FAIL
 DX-GP
 R.20Q
 DX of → 16L
 capped by → R.21L
 18E
 R.21K
 DX of → 8S
 DX-GN
 R.20P

Repair 21L caps 19W & 16L

NOTE: COMPLETE SEAMING ORDER INFORMATION FROM FIELD SEAMING LOGS. COMPLETE ILLUSTRATION SECTION FROM DIRECT OBSERVATION OF THE SEAMS.

ILLUSTRATE FOLLOW-UP DESTRUCTIVE SAMPLES, CAPS AND/OR RECONSTRUCTED SEAMS AND REFERENCE REPAIR NUMBERS.

GOLDER FORM: G21-0699

(JUNE 1999)

REVIEWED BY: _____ DATE: _____

GOLDER ASSOCIATES INC.

APPENDIX L

Stormwater System Information

Bush Concrete Products, Inc.

Manhole Specification Sheet

Date:	8/23/18
Customer:	RYAN INC
Work Order:	76987
Project Name:	JH CAMPBELL
P.O.#:	
Contact:	JOHN
Engineer:	CONSUMERS
Date Required:	ASAP

Prepared by:	TD
Checked by:	
Setup/Cut by:	
Final Inspect by:	
Delivered by:	

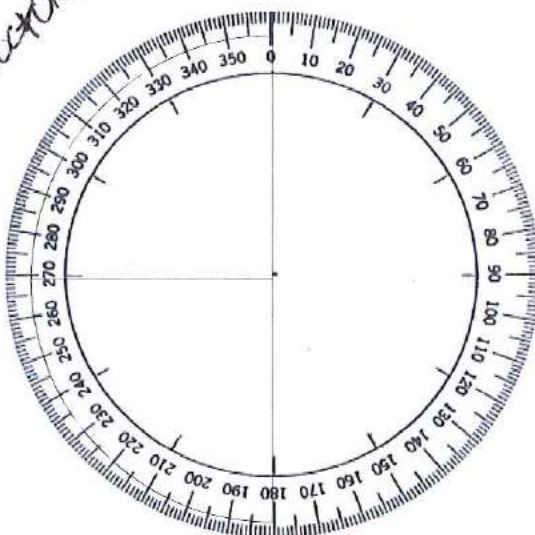
Special Notes	
1/2" HOLES AROUND STRUCTURE	
AT 12" OC AT 618.5	

Core or Cast	Core	Manhole #	POND A
Diameter (Inches)	60	Base Configuration	
O-rings	No	Loose/Alt/None	Attached
Leech Basin	No	Extended / Flush	Extended
Steps	No	Leech Hole	No
Flow Channel	No	Special For This Structure	
Boots	No		
Asphalt Paint	No		

Print Specifications	
Rim/T.O.C. Elevation	620.00
Cast Iron	
Adjustment	0.16
Top of Concrete	619.84
Lowest Invert	615.00
Depth of Sump	1.50
Required Sump Depth	1.50
Sump Excess/(Def.)	-
Total Concrete Height	6.34

Inverts should be entered in clockwise order beginning with lowest elevation.	Unit of Measure	Description	Invert #1	Invert #2	Invert #3	Invert #4	Invert #5
	Feet	Base or Riser	Base	Base	Base	Base	Base
	(Optional)	Elevation	615.00	618.50	618.50	N/A	N/A
		Direction (NSEW)	N/A	N/A	N/A	N/A	N/A
	Inches	Pipe Size	30	6	6		
		Pipe Type	Concrete	Corrugated	Corrugated		
		Boot Type	N/A	N/A	N/A	N/A	N/A
Coring Machine Data	Inches	Hole Size	42	8	8	N/A	N/A
	Degrees	Location	0	180	270	360	360
	Inches	Elev Abv Bottom	17.8	64.8	64.8	#VALUE!	#VALUE!
Casting Location	Degrees	Location	N/A	N/A	N/A	N/A	N/A
	Inches	Top of Hole	59.8	72.8	72.8	#VALUE!	#VALUE!
	Inches	Top of Cored Sec.	74	74	74	74	74
	Inches	Clearance/ (Interference)	14.0	1.0	1.0	#VALUE!	#VALUE!

1/2" HOLES
AROUND STRUCTURE



Manhole Construction			
Slab Top	Base Section		5.67
Standard	Riser with Hole		
		Riser(s)	
	Qty	Size	
	-	6.67	-
	-	5.33	-
	-	4.00	-
	-	3.00	-
	-	2.67	-
	-	2.00	-
	-	1.33	-
	-	1.00	-
	-	-	-
		TOP	0.67
		Grade Rings	
Yard Locat'n	Qty	Size	
	-	2 Inch GR	-
	-	3 Inch GR	-
		Total Concrete Height	6.34
		Sump Excess/(Def.)	-

Bush Concrete Products, Inc.

Manhole Specification Sheet

Date:	8/23/18
Customer:	RYAN INC
Work Order:	76987
Project Name:	JH CAMPBELL
P.O.#:	
Contact:	JOHN
Engineer:	CONSUMERS
Date Required:	ASAP

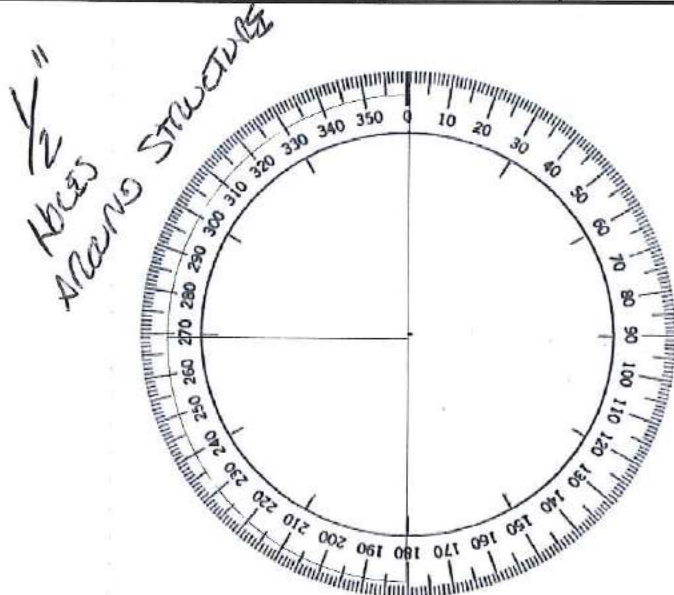
Core or Cast	Core	Manhole #	POND B
Diameter (Inches)	60	Base Configuration	
O-rings	No	Loose/Att/None	Attached
Leech Basin	No	Extended / Flush	Extended
Steps	No	Leech Hole	No
Flow Channel	No	Special For This Structure	
Boots	No		
Asphalt Paint	No		

Prepared by:	TD
Checked by:	
Setup/Cut by:	
Final Inspect by:	
Delivered by:	

Special Notes	
1/2" HOLES AROUND STRUCTURE	
AT 12" OC AT 620.5	

Print Specifications	
Rim/T.O.C. Elevation	622.00
Cast Iron	
Adjustment	0.16
Top of Concrete	621.84
Lowest Invert	617.00
Depth of Sump	1.50
Required Sump Depth	1.50
Sump Excess/(Def.)	-
Total Concrete Height	6.34

<i>Inverts should be entered in clockwise order beginning with lowest elevation.</i>	Unit of Measure	Description	Invert #1	Invert #2	Invert #3	Invert #4	Invert #5
		Base or Riser	Base	Base	Base	Base	Base
	Feet	Elevation	617.00	620.50	620.50	N/A	N/A
	(Optional)	Direction (NSEW)	N/A	N/A	N/A	N/A	N/A
	Inches	Pipe Size	30	6	6		
		Pipe Type	Concrete	Corrugated	Corrugated		
		Boot Type	N/A	N/A	N/A	N/A	N/A
Coring Machine Data	Inches	Hole Size	42	8	8	N/A	N/A
	Degrees	Location	0	180	270	360	360
	Inches	Elev Abv Bottom	17.8	64.8	64.8	#VALUE!	#VALUE!
Casting Location	Degrees	Location	N/A	N/A	N/A	N/A	N/A
	Inches	Top of Hole	59.8	72.8	72.8	#VALUE!	#VALUE!
	Inches	Top of Cored Sec.	74	74	74	74	74
	Inches	Clearance/					
		(Interference)	14.0	1.0	1.0	#VALUE!	#VALUE!



Manhole Construction		
Slab Top	Base Section	5.67
Standard	Riser with Hole	
Riser(s)		
Qty	Size	
-	6.67	-
-	5.33	-
-	4.00	-
-	3.00	-
-	2.67	-
-	2.00	-
-	1.33	-
-	1.00	-
-	-	-
TOP		0.67
Grade Rings		
Yard Locat'n	Qty	Size
	-	2 Inch GR
	-	3 Inch GR
Total Concrete Height		6.34
Sump Excess/(Def.)		-

Bush Concrete Products, Inc.

Manhole Specification Sheet

Date:	8/23/18
Customer:	RYAN INC
Work Order:	76987
Project Name:	JH CAMPBELL
P.O.#:	
Contact:	JOHN
Engineer:	CONSUMERS
Date Required:	ASAP

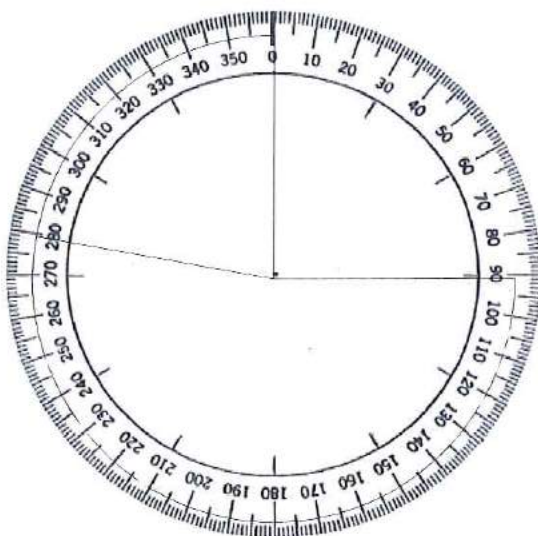
Prepared by:	TD
Checked by:	
Setup/Cut by:	
Final Inspect by:	
Delivered by:	

Special Notes	

Core or Cast	Core	Manhole #	JUNCTION
Diameter (Inches)	96	Base Configuration	
O-rings	No	Loose/Att/None	Attached
Leech Basin	No	Extended / Flush	Extended
Steps	Yes	Leech Hole	No
Flow Channel	No	Special For This Structure	
Boots	No		
Asphalt Paint	No		

Print Specifications	
Rim/T.O.C. Elevation	624.00
Cast Iron	
Adjustment	1.00
Top of Concrete	623.00
Lowest Invert	614.50
Depth of Sump	1.00
Required Sump Depth	1.00
Sump Excess/(Def.)	-
Total Concrete Height	9.50

<i>Inverts should be entered in clockwise order beginning with lowest elevation.</i>	Unit of Measure	Description	Invert #1	Invert #2	Invert #3	Invert #4	Invert #5
		Base or Riser	Base	Base	Base	Base	Base
	Feet	Elevation	614.50	615.50	615.80	N/A	N/A
	(Optional)	Direction (NSEW)	N/A	N/A	N/A	N/A	N/A
	Inches	Pipe Size	30	24	30		
		Pipe Type	Concrete	Corrugated	Concrete		
		Boot Type	N/A	N/A	N/A	N/A	N/A
Coring Machine Data	Inches	Hole Size	42	32	42	N/A	N/A
	Degrees	Location	0	90	280	360	360
	Inches	Elev Abv Bottom	11.8	25.8	27.3	#VALUE!	#VALUE!
Casting Location	Degrees	Location	N/A	N/A	N/A	N/A	N/A
	Inches	Top of Hole	53.8	57.8	69.3	#VALUE!	#VALUE!
	Inches	Top of Cored Sec.	78	78	78	78	78
	Inches	Clearance/ (Interference)	24.0	20.0	8.4	#VALUE!	#VALUE!

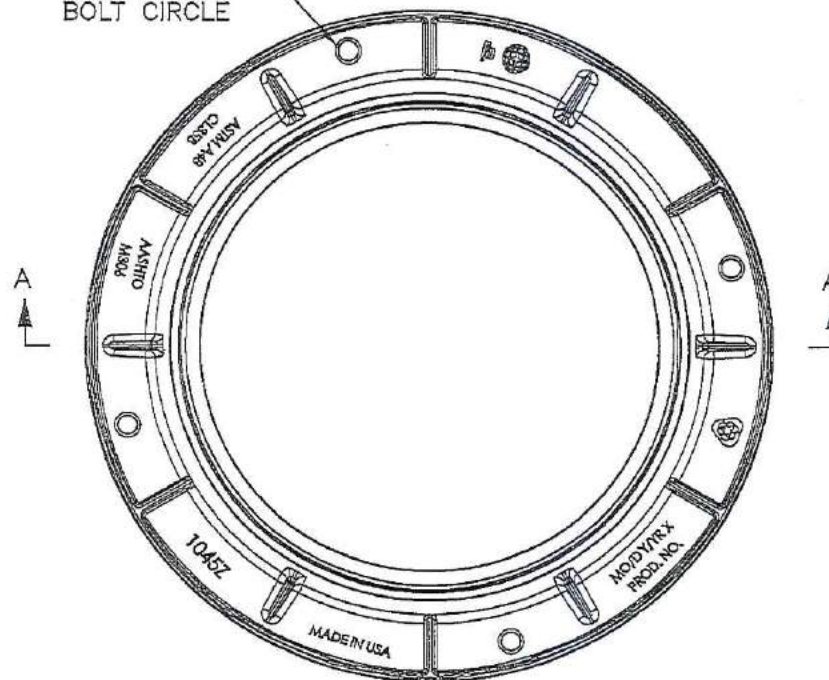


Manhole Construction			
Standard	Base Section		6.00
Standard	Riser with Hole		
		Riser(s)	
	Qty	Size	
	-	6.67	-
	-	5.33	-
	-	4.00	-
	-	3.00	-
	-	2.67	-
	1	2.00	2.00
	-	1.33	-
	-	1.00	-
	-	-	-
		TOP	1.50
		Grade Rings	
Yard Locat'n	Qty	Size	
	-	2 Inch GR	-
	-	3 Inch GR	-
		Total Concrete Height	9.50
		Sump Excess/(Def.)	-

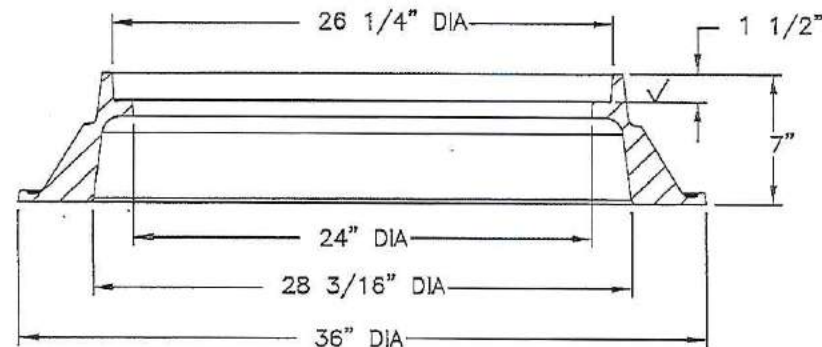
1045Z Frame



(4) 1" BOLT HOLES
EQUALLY SPACED ON A DIA 32 3/4"
BOLT CIRCLE



PLAN VIEW



SECTION A-A

Product Number

00104510

Design Features

- Materials
 - Gray Iron (CL35B)
- Design Load
 - Heavy Duty
- Open Area
 - n/a
- Coating
 - Dipped
- √ Designates Machined Surface

Certification

- ASTM A48
-
- Country of Origin: USA

Drawing Revision

07/16/2015 Designer: LCK
1/23/2017 Revised By: MAH

Disclaimer

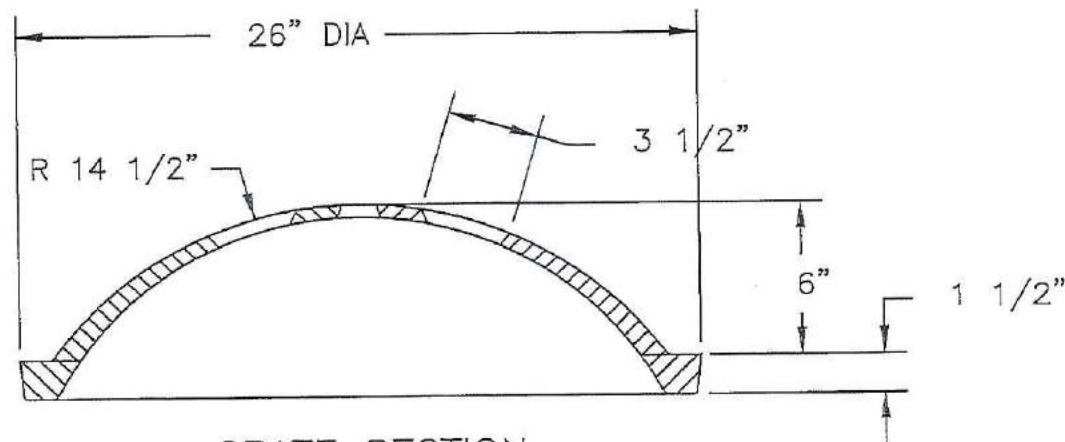
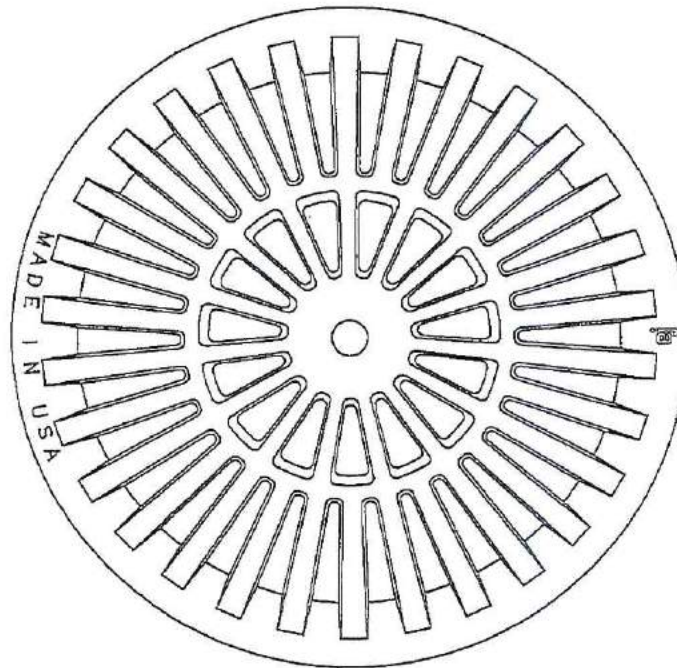
Weights (lbs./kg) dimensions (inches/mm) and drawings provided for your guidance. We reserve the right to modify specifications without prior notice.

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Contact

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ejcc.com

1040 O2 Grate



GRATE SECTION

Product Number

00104045

Design Features

- Materials
Gray Iron (CL35B)
- Design Load
Heavy Duty
- Open Area
185 sq in
- Coating
Dipped
- √ Designates Machined Surface

Certification

- ASTM A48
-
- Country of Origin: USA

Drawing Revision

05/10/2005 Designer: TCL
6/30/2017 Revised By: CSF

Disclaimer

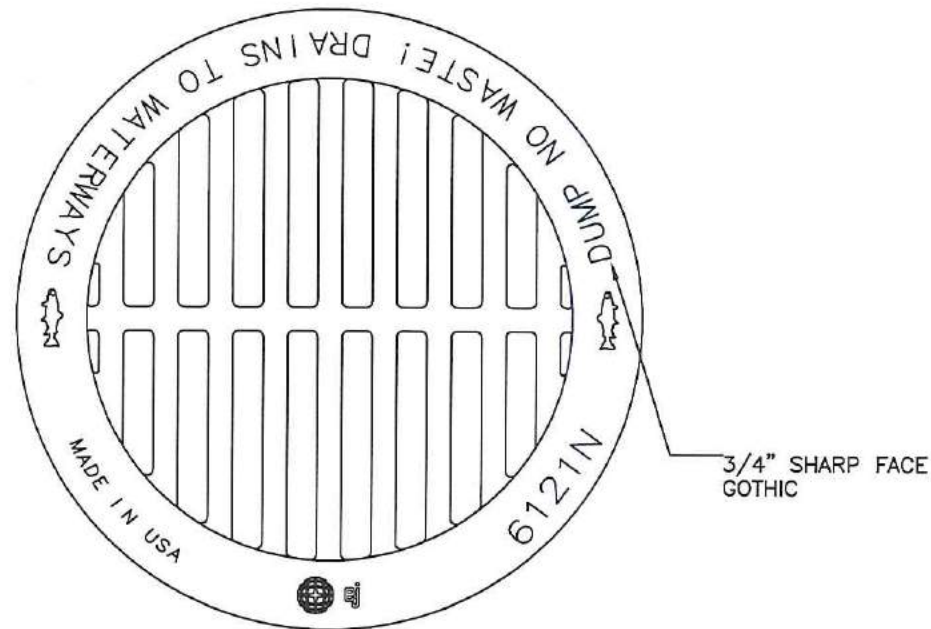
Weights (lbs./kg) dimensions (inches/mm) and drawings provided for your guidance. We reserve the right to modify specifications without prior notice.

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6121N Grate



Product Number

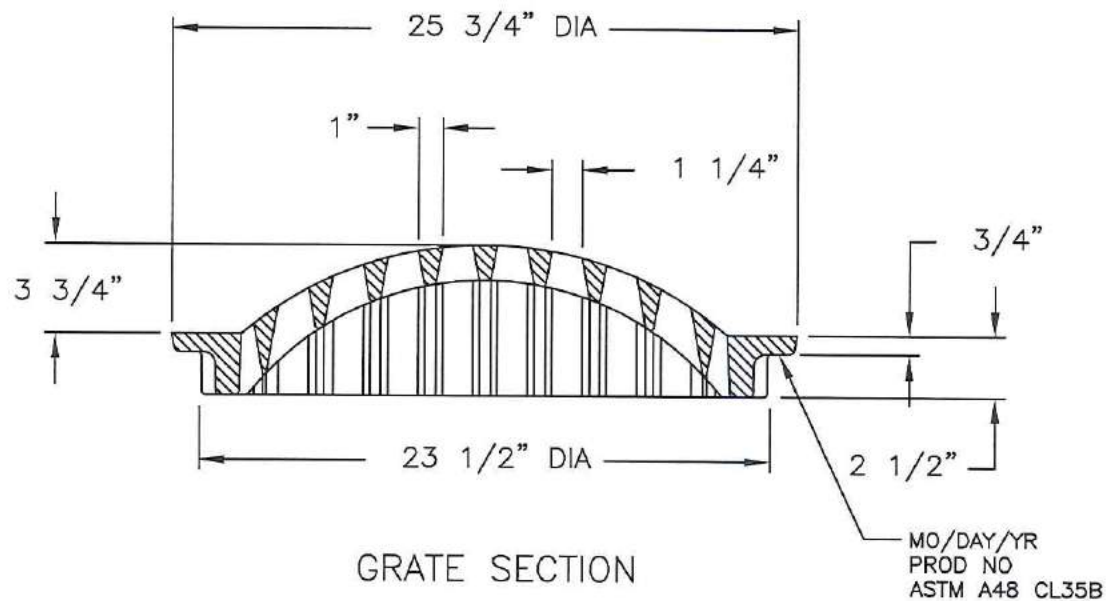
00612130

Design Features

- Materials
Gray Iron (CL35B)
- Design Load
Heavy Duty
- Open Area
155 sq in
- Coating
Dipped
- ✓ Designates Machined Surface

Certification

- ASTM A48
-
- Country of Origin: USA



Drawing Revision

4/9/2014 Designer: DJH
7/22/2014 Revised By: DJH

Disclaimer

Weights (lbs./kg) dimensions (inches/mm) and drawings provided for your guidance. We reserve the right to modify specifications without prior notice.

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SUBMITTAL PACKAGE

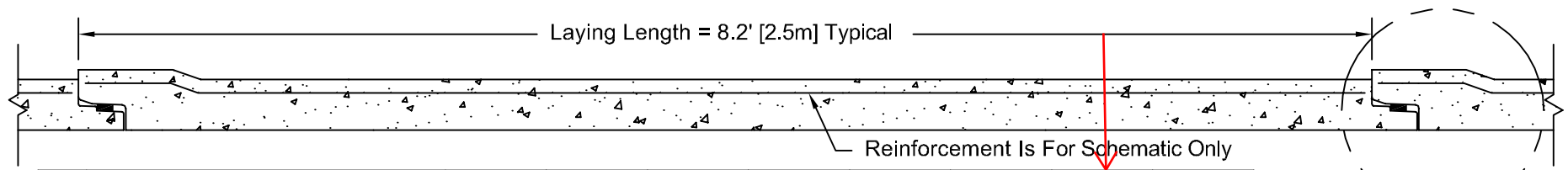
JH Cambell Power Plant

West Olive, Michigan

STORM SEWER MATERIALS

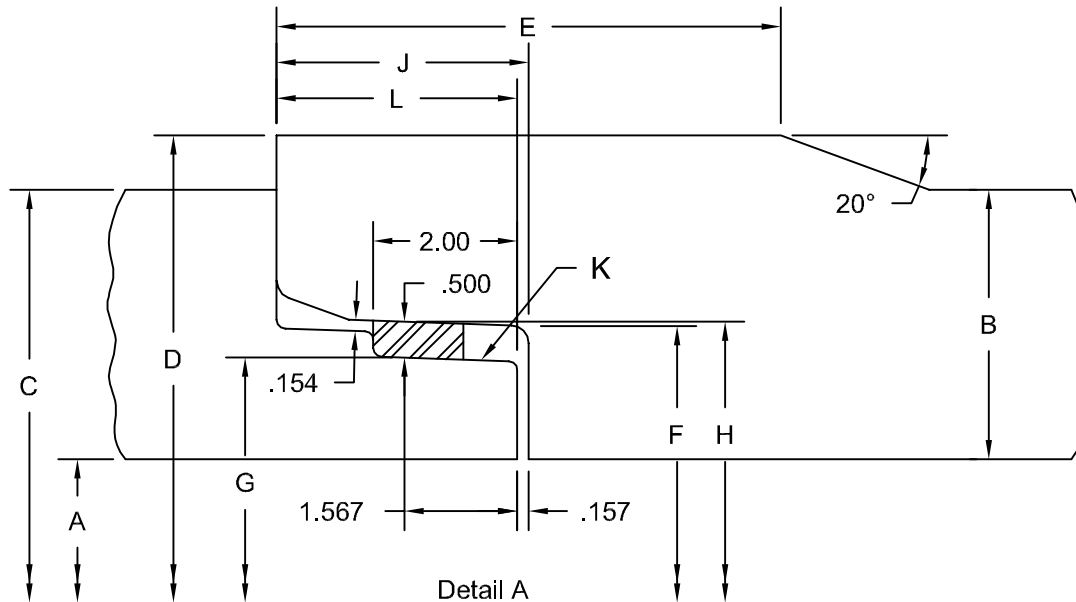
CONTRACTOR: Ryan Incorporated Central

SUPPLIER: Core & Main



A	Pipe Diameter (In)	12	15	18	21	24	27	30	36
	Pipe Diameter (mm)	300	375	450	525	600	675	750	900
B	B-Wall Thickness (12" B + 1/4")	2.25	2.25	2.50	2.75	3.00			4.00
	C-Wall Thickness						4.00	4.25	4.75
C	B-Wall Outside Diameter	16.5	19.5	23.0	26.5	30.0			44.0
	C-Wall Outside Diameter						35.0	38.5	45.5
D	Bell Outside Diameter	19.625	23.500	27.000	30.000	33.000	36.000	39.500	45.500
E	Bell Length	6.5	6.5	6.5	7.0	7.0			
F	Bell Inside Diameter	15.258	18.709	21.709	24.709	27.709	30.709	34.000	40.000
G	Diameter @ Back Of Gasket	14.408	17.859	20.859	23.859	26.859	29.859	33.150	39.150
H	Diameter @ Front Of Gasket	15.367	18.818	21.818	24.818	27.818	31.818	34.109	40.109
J	Bell Depth	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
K	Joint Taper	2°	2°	2°	2°	2°	2°	2°	2°
L	Tongue Depth	3.343	3.343	3.343	3.343	3.343	3.343	3.343	3.343
	Type Of Gasket Required	288-4G	288-4G	288-4G	288-4G	288-4G	288-4G	288-4G	288-4G
	Approx. Weight / L.F. B-Wall	93#	127#	168#	214#	264#			524#
	Approx. Weight / L.F. C-Wall						420#	476#	654#

Class 4

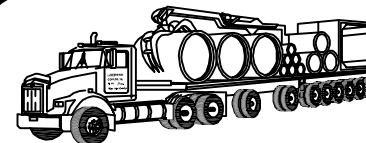


Note:

All Pipe Is Manufactured And Tested In Accordance With Current ASTM C-14, ASTM C-76 Or ASTM C-655 Specifications As Required.

All Gaskets Meet ASTM C-443 Requirements.

All Gasket Materials Meet ASTM C-361 Requirements.



Northern Concrete Pipe, Inc.

401 Kelton Street
Bay City, MI 48706
1 800 222 9918

5281 Lansing Road
Charlotte, MI 48813
1 800 874 9701

12"Ø To 36"Ø Precast Concrete Pipe & Joint Detail

Date 11 Sep 98	Revised 04 Aug 03	Drawn By BmG	Scale NTS	1.1
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350 Golden Oak Parkway
Cleveland, OH 44146
Phone: 440/439-5821
Fax: 440/439-1544
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September 18, 2018

Mr. John Burt
Ryan Incorporated Central
2700 East Racine Street
Janesville, WI 53547

Re: Additional Information
Fabriform Downchutes

Project:
Geotech No. 18-4514
JH Campbell Plant Pond Closure

John,
Enclosed please find the additional information requested by Jeff Piaskowski with Golder Associates.

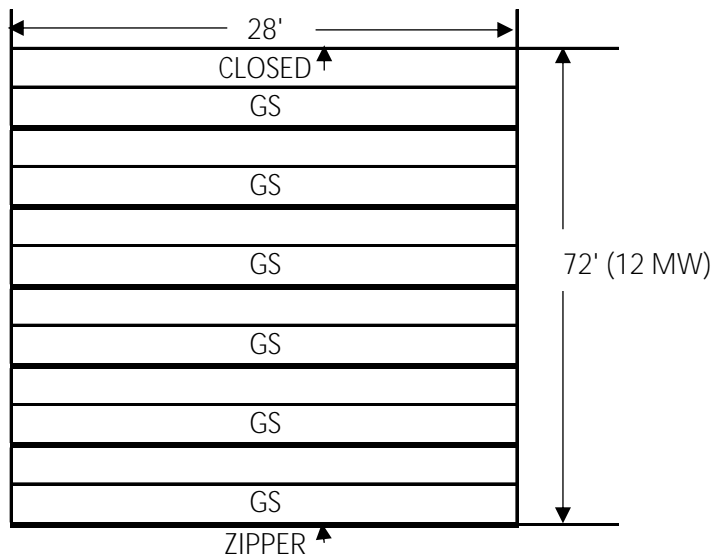
Respectfully submitted,
GEOTECH SERVICES, INC.

Tom Rainsberger
Tom Rainsberger

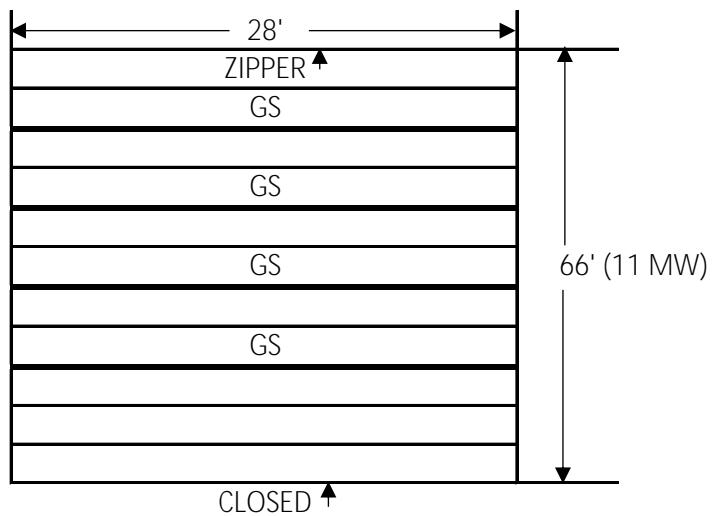
Attachments:
Shop Drawings
Grout Break Report
Past work

2 Pages
1 Page
3 Page

PANEL A MAKE 1 EACH

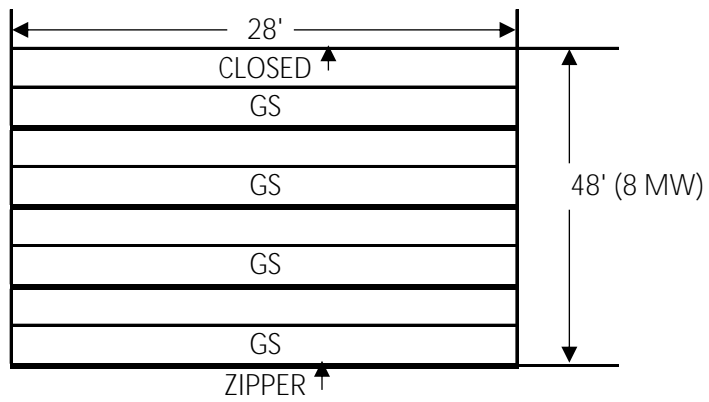


PANEL B MAKE 1 EACH

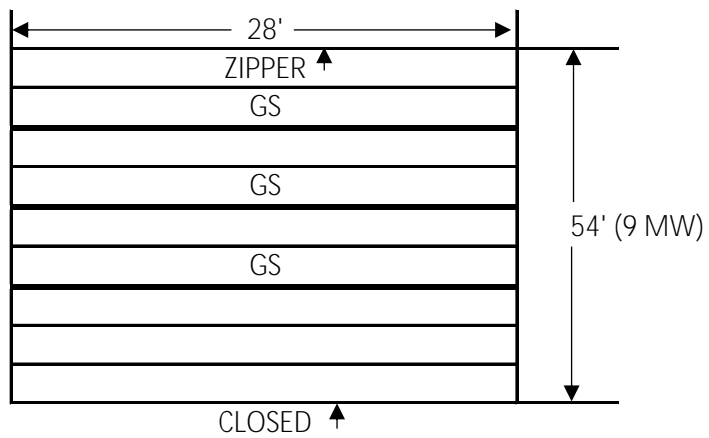


NOTE: PANELS ARE 4" ARTICULATING SQUARE BLOCK MAT
LEFT AND RIGHT SIDES ARE CLOSED, TOP AND BOTTOM AS INDICATED

PANEL C MAKE 1 EACH



PANEL D MAKE 1 EACH



NOTE: PANELS ARE 4" ARTICULATING SQUARE BLOCK MAT
LEFT AND RIGHT SIDES ARE CLOSED, TOP AND BOTTOM AS INDICATED



SOLAR TESTING LABORATORIES, INC.

Geotechnical and Environmental Engineering, Materials Testing, and Construction Inspection

1125 Valley Belt Road, Brooklyn Heights, Ohio 44131

Phone: 216-741-7007 • Fax: 216-741-7011

www.stlOhio.com



GROUT REPORT

PROJECT:	JOB NO. 4254 - ODOT 130521	FILE NO.:	A14083X04
	THE SHELLY COMPANY	REPORT NO.:	017
CLIENT:	GEOTECH SERVICES, INC.	DATE:	7/1/14

CLASS (PSI):	2000	MASONS ON SITE:	LABORERS ON SITE:
CEMENT:	TYPE I		WEIGHT (LB): 650
FLY ASH:			WEIGHT (LB): 250
FINE AGGREGATE:	SAND		WEIGHT (LB): 2300
ADMIXTURE:	7% AIR		WATER (GAL): 55
REINFORCEMENT:			CURING:
MATERIALS USED:			
PLACEMENT LOCATION:	422 WEST BRIDGE ABUTMENTS.		
METHOD PLACED:	PUMPED		
CYLINDERS MADE BY:	GEOTECH SERVICES, INC.		

REMARKS: The compressive strength tests were performed in accordance with ASTM specifications.

7/15/14 (14-DAY TEST)

MARK (GTSG)	CYLINDER SIZE (IN)	COMPRESSIVE STRENGTH		REMARKS
		LOAD (LB)	STRENGTH (PSI)	
1	3 x 6	20,790	2941	TRUCK #1
3	3 x 6	17,950	2539	TRUCK #2
5	3 x 6	21,960	3106	TRUCK #3
7	3 x 6	19,160	2710	TRUCK #4

7/29/14 (28-DAY TESTS)

2	3 x 6	26,660	3771	TRUCK #1
4	3 x 6	25,120	3553	TRUCK #2
6	3 x 6	27,440	3881	TRUCK #3
8	3 x 6	26,270	3716	TRUCK #4

SOLAR TESTING LABORATORIES, INC.

Dennis L. Sanderson

Vice President/General Manager

paf 7/30/14

Certified Small Business Enterprise



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concrete stabilization.



Deep Foundations Civil Construction High Density Polyurethane
Foam Technology Erosion Control Ground Improvement Concrete Restoration Earth Retention

CASE STUDY



Erosion Control Fabric Formed Concrete

Fort Martin Power Station

Situation: Ft Martin was experiencing uncontrolled runoff of contaminated rain water from the gypsum stockpile storage area. The perimeter collection ditch was installed to collect the runoff and channel it to a controlled treatment area. The Fabric form channel liner was needed to prevent surface erosion and to prevent exfiltration of the untreated runoff water.

Geotech Services Solution: Fabric Form grout filled fabric containers come in numerous sizes and configurations developed for many different purposes. They can also be custom cut and shaped for unusual surfaces. Geotech Services Inc installs fabric forms designed by others and sometimes develops site specific details. Fabric formed grout bags are most commonly used for erosion control, often in combination with soil retention, or protection from scouring of flowing water, but there have been many instances where unique applications as imagined by designers have been created.

Geotech Services uses the highest quality weather resistant fabric, and good quality grout that is often pumped in the forms over a substantial distance due to difficult access.

There are several sites along Lake Erie where large fabric form bags installed by Geotech Services have protected the toes of embankments against scour, erosion and slope failure for more than 15 years. This is a technology that works well where the toe of the embankment is difficult to reach with typical construction equipment.

The use of Fabric form concrete in the "remote" mountainous terrain was more cost efficient and resulted in better quality liner than "conventional" placement of clay soil liners or cast-in-place channel liners.



Let Geotech Solve Your Erosion Control and Creek Maintenance Problems.

GEOTECH SERVICES, INC. IS A UNIQUE SPECIALTY CONTRACTOR WITH A HISTORY OF EROSION CONTROL REVETMENTS INSTALLED THROUGHOUT NORTHEASTERN OHIO.



Geotech Services and its Project Management Team has more than 30 years of experience working with fabric formed concrete bags. We often assist engineers in the design spec/application because of our unique experience with this valuable erosion control product.

Specially Engineered Fabric Forms* for Varied Applications.



FILTERPOINT
for greater relief of hydrostatic uplift



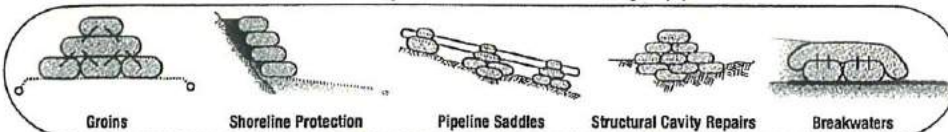
UNIMAT
for minimal hydraulic friction/maximum impermeability



ARTICULATING BLOCK
for slopes subject to severe underscour and high velocities

CONCRETE BAGS

for severe verticals and tough concrete forming applications



* A Product approved by ODOT, ODNR, and the Army Corps of Engineers.

▶ **Fast, Easy
Site Preparation**

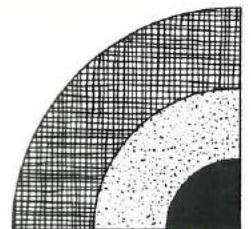
▶ **Environmentally
Friendly**

▶ **Proven Erosion
Control System**

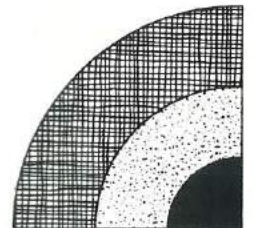
▶ **Maintenance Free**

▶ **Attractive Long Lasting
Applications**

*For pictures of other installed sites
refer to backside.*



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350 Golden Oak Parkway
Cleveland, OH 44146
Phone: 440/439-5821
Fax: 440/439-1544
www.geotechs-services.com

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September 11, 2018

Mr. John Burt
Ryan Incorporated Central
2700 East Racine Street
Janesville, WI 53547

Re: Submittals
Fabriform Downchutes

Project:
Geotech No. 18-4514
JH Campbell Plant Pond Closure

John,
Enclosed please find the submittal package for the Fabriform Downchutes on this project.

Respectfully submitted,
GEOTECH SERVICES, INC.

Tom Rainsberger
Tom Rainsberger

Attachments:
Fabriform Material Data
Installation
Grout Mix Design

3 Pages
1 Page
1 Page



The FABRIFORM® Process utilizes a double-layer, 100% nylon fabric form, especially woven for optimum strength, stability, adhesion, and filtering characteristics, combined with a highly fluid fine aggregate concrete (grout) to provide an economical hard armor solution for erosion control. Fabriform revetments can be cast underwater as well as in-the-dry.

Fabriform® Articulating Square Block Technical Data

DESIGNS BASED ON OVER 40 YEARS OF EXPERIENCE

The diagram illustrates a 3D perspective of a rectangular articulating square block (ASB). The top surface is marked with a grid of dashed lines representing the articulation points. Dimensions are indicated: 'L' for length and 'W' for width. Two sets of cables are shown: 'Transverse Cables (optional)' running across the width and 'Slope Cables (optional)' running along the length. The block is shown with a textured, possibly aggregate, surface.

Designation Style	CAST-IN-PLACE							
	Block Size (LxW)*		Average Thickness*		Coverage Per		Dry Weight***	
	in.	mm	in.	mm	Y ³ Mortar	M ³ Mortar	lb / ft ²	kg / m ²
4" ASB	30 x 30	750 x 750	4	100	75 ²	9.11 m ²	45	220
6" ASB	30 x 30	750 x 750	6	150	50 ft ²	6.07 m ²	68	330
8" ASB	30 x 30	750 x 750	8	200	38 ft ²	4.55 m ²	90	440

* Dimensions shown are nominal net cast-in-place block sizes, without articulating hinges. Articulating hinges are approximately 1.5" (37.5 mm) wide and provide relief for hydrostatic pressures.

** Nominal.

*** Dry Weight based on a specific weight of 2.1 or 135 lb/cf. Unit Weight may vary with material proportions and source.

Articulating Square Block (ASB) revetment fabric is a form for casting in place heavy-duty, square concrete blocks in a non-staggered joint pattern. ASB revetments may be reinforced by cables inserted between the two layers of fabric prior to fine aggregate concrete (grout) injection. Reinforcing cables interlock the cast-in-place concrete blocks when the ASB revetment articulates due to changing soil and water conditions. Fabriform ASB revetments are designed to articulate in both directions, unlike conventional articulating block revetments. Un-reinforced ASB revetments should only be used where minimal settlement is anticipated and a high coefficient of hydraulic friction is required.

ASB revetment fabrics are a woven double-layered fabric of 100% high-tenacity, multifilament nylon of which at least 50% by weight consists of textured fibers for optimum filtering characteristics and adhesion to the grout. Nylon yarns also provide a relatively high resistance to ultraviolet light and alkali degradation. Block thickness is controlled by two rows of spacer cords in each block. Lateral flow of grout is controlled by shop-installed bulk-heads (grout stops) located at predetermined intervals as required.

The ASB revetment fabric is shop-assembled in predetermined panel sizes to fit site topography. The panels are convenient to handle and are joined together side-by-side at the job site by means of sewing or zipper closures attached to both the upper and lower layers of fabric. Reinforcing cables, which are installed perpendicular to block length, are referred to as "slope cables." Transverse cables, parallel to block length, may also be inserted if required. Final selection of cable(s) for each job is at the discretion of the Engineer (Designer).

The panels will contract when they are injected with grout. Allowance must be made for this contraction when preparing shop drawings of panel assemblies. Contraction will vary with site conditions. For budgetary estimates, a minimum contraction allowance should be made for approximately 21% additional fabric to cover the cast-in-place area.

NOTE:

Information contained in this publication is offered in good faith as a guide to placement of Fabriform® erosion control revetments. It is based on experience obtained under a variety of conditions. However, information contained herein will not apply to every job and dimensions and quantities shown are approximate only and will vary as a result of site conditions and installation procedures. The user is cautioned to obtain from others such professional and technical services as may, in his own judgment, be necessary or desirable to insure effective and economical installations.

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CONSTRUCTION TECHNIQUES, INC.

P.O. Box 42067

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TEL 216.267.7310 FAX 216.267.9310

WEB www.fabriform1.com EMAIL fabriform@fabriform1.com

Guide Specifications: Fabriform® Articulating Block Fabric and Revetment Installation

PAGE 2 OF 4

I. GENERAL

A. Scope of Work

The work shall consist of furnishing all labor, materials, and equipment for installing fabric-formed concrete revetment as indicated in the contract drawings and specified herein.

B. Description

The work shall consist of installing a reinforced (or un-reinforced) concrete revetment, as indicated in the contract drawings, by positioning a specially woven, dual wall, 100% nylon fabric form on the slope or surface to be protected and injecting it with fine aggregate concrete (grout). The surfaces to be protected shall be prepared and graded to such an extent that they are normally stable in the absence of erosive forces.

C. Qualifications of Contractor and Manufacturer

The Contractor shall furnish records of past successful experience in performing this type of work. The Manufacturer shall furnish records of past successful experience in the manufacture of articulating square block revetment. The Contractor and Manufacturer shall save the Owner harmless from liability of any kind arising from the use of any patented or unpatented invention in the performance of this work.

II. MATERIALS

A. Fiber and Fabric Specifications

Fiber and fabric materials shall meet the minimum requirements, as listed and reported by an independent testing agency, shown below:

PROPERTY	TEST METHOD	UNIT	VALUE	
PHYSICAL				
Composition			NYLON	
Weight (both layers)	ASTM D-5261	oz/yd (g/m)	13 (440)	
Thickness	ASTM D-5199	mils (mm)	30 (0.76)	
MECHANICAL				
Grab Tensile Strength	ASTM D-4632	lbf (N)	WARP	400 (1780)
			FILL	250 (1110)
Grab Tensile Elongation	ASTM D-4632	%	WARP	30
			FILL	30
Wide Width Strip Tensile Strength	ASTM D-4595	lbf/in (kN/m)	WARP	300 (52.5)
			FILL	200 (35)
Elongation At Break	ASTM D-4595	%	WARP	15
			FILL	20
Trapezoidal Tear Strength	ASTM D-4533	lbf (N)	WARP	175 (775)
			FILL	150 (665)
HYDRAULIC				
Apparent Opening Size (AOS)	ASTM D 4751	U.S. Standard (mm)	40 (0.425)	
Flow Rate		gal/min/sf (l/min/m)	90 (3665)	

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CONSTRUCTION TECHNIQUES, INC.

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TEL 216.267.7310 FAX 216.267.9310

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Guide Specifications: Fabriform® Articulating Block Fabric and Revetment Installation

PAGE 3 OF 4

B. Fabric Design

Fabric-forming material shall consist of double-layer, open-selvage fabric joined in a mat configuration. Fabric shall be woven of 100% high-tenacity, continuous multifilament nylon of which at least 50% by weight shall be textured fiber. Polyester, staple and partially orientated yarn shall not be allowed. The tensile strength of spacer cords used to control block thickness shall total not less than 600 lbs (2.7kN) at each section of control.

Fabric, designated as _____ ASBNN on the drawings, shall be woven in such a manner as to provide non-staggered articulation joints surrounding fine aggregate concrete-filled square blocks measuring approximately _____" x 30" x 30" (See Note 1 below). Square block thickness shall be measured as described in Section III.D of this specification.

NOTE 1: Designer will indicate here the fabric designation required from choice of fabric styles listed below. Fabric style designates approximate nominal thickness and size:

4" ASBNN – 4" x 30" x 30" (100mm x 750mm x 750mm); 6" ASBNN – 6" x 30" x 30" (150mm x 750mm x 750mm);

8" ASBNN – 8" x 30" x 30" (200mm x 750mm x 750mm)

The two layers of fabric shall be connected together in each block with spacer cords of such a length as to positively control thickness of the finished block and to produce a pronounced corrugation in the surface of the form, when filled, to serve as evidence of complete and uniform filling of the fabric block form.

Forms for individual blocks shall be interconnected with conduits, top, bottom, and sides to allow for passage of fluid grout between all adjacent blocks and to provide a sheath for protection of cables, if required, between adjacent blocks. In both the slope and transverse directions, cast-in-place distance between conduits is approximately 17.5" (440mm) within each block and 14" (355mm) between consecutive, adjacent blocks. The flat width of each conduit as woven shall be not less than 3" (75mm) or more than 5" (125mm).

C. Fabric Porosity

Fabric porosity is essential for the successful execution of this work. At the direction of the Engineer, the Contractor shall demonstrate the suitability of fabric design by injecting the proposed grout into 5½" (140 mm) diameter sleeves. The sleeves shall be constructed of a single layer of the same basic fabric material. Test cylinders, 12" (300 mm) long, shall be cut from each specimen and tested in accordance with ASTM C-39. This test will be run once at the start of the project unless otherwise directed by the engineer. (See Item G below).

D. Relief of Hydrostatic Uplift

Fabric, designated as _____ ASBNN on the drawings, shall be woven in such a manner as to provide interwoven bands of attachments between blocks. These bands shall control the length and width block dimensions and also act as filter strips to provide relief of hydrostatic uplift beneath the completed revetment.

E. Tensile Reinforcing Members (if required)

Tensile reinforcing members (cables), where required, shall be threaded through cable conduits between adjacent blocks. Cables, when used, are normally threaded through every conduit parallel to the slope. Transverse cables may also be threaded through conduits perpendicular to the slope, at the option of the designer. Slope cables shall consist of _____dia. on approximately _____in. (_____ mm) centers cast-in-place. Transverse cables shall consist of _____dia. on approximately _____in. (_____ mm) centers cast-in-place. (See Note 3 below).

Where necessary, cables shall be joined by means of copper connectors. Aluminum connectors in direct contact with cement grout will not be permitted. All cables and connectors shall be completely embedded in the hardened grout. Exposed cables between adjacent blocks will not be permitted.

Note 3: Designer normally specifies 11/32" diameter (27mm circumference) nylon cable with 5,200 lb. breaking strength. Other types of cable may be specified, such as 1/4" diameter (20mm circumference) polyester cable with 3,700 lb. breaking strength. Cable spacing must be a multiple of conduit spacing as called for in Section II. B.

F. Fabric Assembly

ASB Fabric shall be factory assembled into predetermined panel sizes. The ASB fabric rolls are first cut into the lengths specified on the shop drawings. These fabric pieces are then joined together, top layer to top layer and bottom layer to bottom layer. This will allow for the finished revetment to have the full block thickness between the top and bottom seam. A single seam in which all four layers of fabric are joined at one point will not be permitted. All factory seams shall face downwards and shall be made using a double-needled machine utilizing the Standard Type 401 stitch. Zipper closures shall be attached to the sides of the ASB panels as required for connection of adjacent panels at the site location. If required, bulkheads (grout stops) may be installed parallel to and in between individual mill widths at predetermined intervals to regulate the flow of fine aggregate concrete. Grout stops shall be designed as to produce full block thickness along the full length of the grout stop. Completed ASB panels shall be inspected to verify that full block dimensions are maintained throughout the panel.

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Guide Specifications: Fabriform® Articulating Block Fabric and Revetment Installation

PAGE 4 OF 4

G. Fine Aggregate Concrete (Grout)

Fine aggregate concrete (grout) shall consist of a mixture of portland cement, fine aggregate, and water so proportioned and mixed as to provide a readily flowable grout. Admixtures and/or a pozzolan may be used with the approval of the Engineer. Use of super plasticizers requires special precautions; silica fume is not recommended. The hardened fine aggregate concrete shall exhibit a compressive strength of 2,500 psi (17 MPa) at 28 days when specimens are made and tested according to the provisions of ASTM C-31 and C-39. The average compressive strength of fabric cast test cylinders, as described in Paragraph C above, shall be at least 20% higher at 7 days than that of companion test cylinders made in accordance with ASTM C-31, and not less than 3,000 psi (21 MPa) at 28 days.

III. INSTALLATION

A. Fabric Storage

Immediately following receipt of fabric on the job site, fabric shall be inspected and stored in a clean, dry area where it will not be subject to mechanical damage or exposure to moisture or direct sunlight. Fabric allowed to become wet and then dried before installation may be subject to shrinkage.

B. Site Preparation

The surface to be protected shall be constructed to the line and dimensions as shown on the contract drawings. The area shall be free of all obstruction and organic material, such as rocks and roots. Areas below grade shall be brought to grade using engineered fill or a drainage stone as specified by the Engineer. Anchor and flank trench installation will be in accordance with project plans and specifications.

C. Fabric Placement

The ASB fabric panels shall be positioned over a geotextile filter fabric, as specified by the Engineer, and zipped together at their approximate design location making the appropriate allowance for approximately 10% contraction of the fabric in each direction which will occur as a result of grout injection. Cables shall be securely attached to the ground anchor system at the crown of the slope to prevent slippage of the fabric as it is being filled with fine aggregate concrete. Cable length shall be approximately 10% less than fabric length and the ends of cables which protrude through the fabric shall be provided with clips and external washers so that the cable will be placed in tension when the fabric envelope is filled with grout. Cables shall each be fastened to separate points of attachment so that the point of anchorage is in a direct line with the cable itself.

If joining of panels as described above is impractical, adjacent panels may be overlapped a minimum of 3 feet (900 mm), subject to Engineer's approval. In no case will simple butt joints between panels be allowed. However, a modified butt joint where an underlayment of similar fabric is sewn to one panel and overlapped a minimum of 2 feet (600mm) by the adjacent panel is allowed subject to Engineer's approval.

D. Fine Aggregate Concrete Injection

Following placement of ASB fabric panels over the geotextile filter cloth, fine aggregate concrete shall be injected between the upper and lower layers of fabric through small slits cut in the upper layer of fabric. The injection pipe shall be wrapped tightly at the point of injection with a strip of burlap during pumping. First pump the upper edge of the mat which has been placed in the anchor trench followed by injection into the lower edge, working back up the slope. Avoid overpressuring of the fabric. After pumping, the burlap shall be pushed into the slit as the injection pipe is withdrawn in order to minimize spillage of fine aggregate concrete on the revetment surface. The burlap seal shall be removed prior to the final set of the fine aggregate concrete and the injection area hand finished. The sequence of fine aggregate concrete injection shall be such as to insure complete filling of the revetment-forming fabric to the thickness specified by the fabric manufacturer.

Foot traffic will not be permitted on the freshly pumped mat when such traffic will cause permanent indentations in the mat surface. Walk boards shall be used where necessary.

Excessive fine aggregate concrete which has been inadvertently spilled on the mat surface shall be cleaned up with a broom and shovel. Use of a water hose to remove spilled grout from the surface of a freshly pumped mat will not be permitted.

During grout injection, the mat thickness may be measured by inserting a short piece of stiff wire through the mat at several locations from the crest to the toe of the slope. Any mat measuring less than 90% of the average of all thickness measurements shall be re-injected until desired average thickness has been attained.

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GROUT MIX DESIGN

650# CEMENT

250# FLY ASH

2300# SAND

55 GALLONS WATER

7% AIR



Date: 10/08/2018 **Project No.:** 1896102.01
To: Andrew Baird
Company: Consumers Energy
From: Jeff Piaskowski (Golder)
cc: Bryan Weldon, Dave List
Email: jpiaskowski@golder.com
RE: **SUBMITTAL 14 – POND A FINAL COVER DRAIN TILE**

R = Reviewed; **RWN** = Reviewed With Notes; **R&R** = Revise and Resubmit; **REJ** = Rejected

RWN – Pond A Final Cover Drain Tile (10/2/2018) - The proposed drain tile (attached) was reviewed for general compliance with Section 334500 Stormwater Works and Plan details. The following notes were developed in review.

1. Drain Tile shall be 6-inch diameter.
2. Drain Tile shall be perforated.
3. Drain Tile shall be wrapped with filter sock in accordance with Manufacturer's recommendations.

ADS SINGLE WALL HEAVY DUTY PIPE SPECIFICATION

Scope

This specification describes 3- through 24-inch (75 to 600 mm) ADS single wall heavy duty polyethylene pipe, for use in gravity-flow drainage applications.

Pipe Requirements

ADS single wall corrugated heavy duty pipe shall have annular interior and exterior corrugations.

- 3- through 6-inch (75 to 150 mm) shall meet ASTM F405
- 8- through 24-inch (200 to 600 mm) shall meet ASTM F667.

Joint Performance

Joints for 3- to 24- inch (75 – 600 mm) shall be made with split or snap couplings. Standard connections shall meet the requirements of the ASTM F405 or ASTM F667. Gasketed connections shall incorporate a closed-cell synthetic expanded rubber gasket meeting the requirements of ASTM D1056 Grade 2A2. Gaskets, when applicable, shall be installed by the pipe manufacturer.

Fittings

Fittings shall conform to ASTM F405 or ASTM F667.

Material Properties

Pipe and fitting material shall be high density polyethylene conforming with the minimum requirements of cell classification 423410C as defined and described in the latest version of ASTM D3350; or ASTM D1248 Type III, Class C, Category 4, Grade P33.

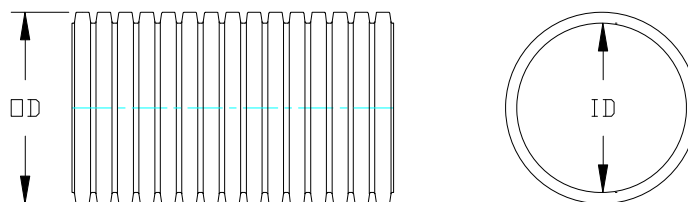
Installation

Installation shall be in accordance with ASTM D2321 and ADS installation guidelines, with the exception that minimum cover in trafficked areas for 3- through 24-inch (75 to 600 mm) diameters shall be one foot (0.3 m). Contact your local ADS representative or visit our website at www.ads-pipe.com for a copy of the installation guidelines.

Pipe Dimensions

	Nominal Diameter, in (mm)									
Pipe I.D. in (mm)	3 (75)	4 (100)	5 (125)	6 (150)	8 (200)	10 (250)	12 (300)	15 (375)	18 (450)	24 (600)
Pipe O.D.* in (mm)	3.6 (91)	4.6 (117)	5.8 (147)	7 (178)	9.5 (241)	12 (305)	14.5 (368)	18 (457)	22 (559)	28 (711)
Perforations	All diameters available with or without perforations.									

*Pipe O.D. values are provided for reference purposes only, values stated for 3- through 8-inch are ± 0.5 inch. Contact a sales representative for exact values.



ADS FILTER SOCK SPECIFICATION

Scope

This specification describes 2- through 48-inch (50- to 1200 mm) ADS SOCK synthetic wrap.

Filter Fabric Requirements

The ADS SOCK shall meet the requirements of ASTM D6707.

ADS sock products as listed on this specification meet Ontario Provincial Standard Specification 1860, Material Specifications for Geotextiles, dated March 1998.

Filter Fabric Properties

Property	Test Method	
Material	-	Polyester
Fabric	-	Knitted
Permittivity (min.)	ASTM D4491	5.5 sec ⁻¹
Puncture Resistance (min.)	ASTM D6241	1000 N
AOS (max.)	ASTM D4751	0.600 mm 30 U.S. Sieve
FOS (max.)	CAN/CGSB-148.1, M10-94	450 microns
Mass (relaxed)	ASTM D3887	3.0-3.9 oz/yd ²
Mass (applied minimum)		2.7-3.5 oz/yd ²
Thickness (min.)	ASTM D4491	24.0 mils
Permeability (K) (min.)	ASTM D4491	0.390 cm/sec
Burst Strength (min.)	ASTM D3786	760 kpa
Air Permeability (min.)	ASTM D737	700 ft ³ /ft ² /min
Water Flow Rate (min.)	ASTM D4491 (2" constant head)	300 gal/min/ft ²
Yarn Denier	-	150
Specific Gravity	-	1.3
Melt Temperature	-	450° F

APPENDIX M

Seed, Fertilizer, and Mulch Information



Seed & Turf Supply

BRADLEY, MICHIGAN 49311
BRIGHTON, MICHIGAN 48114

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(800) 482-3130

WWW.RHINOSEED.COM

JH CAMPBELL MIX

PURITY:

43.87 %	CREeping RED FESCUE
24.81 %	PERENNIAL RYEGRASS
24.45 %	SWORD HARD FESCUE
4.82 %	KENTUCKY BLUEGRASS

LOT#:

BT18K248B1

GERMINATION:

85 %
90 %
85 %
85 %

INERT: 1.77 % CROP: 0.07 % WEED: 0.04 %

NET WEIGHT: 50 LBS.

TESTED: 08/18

The Andersons®

19-19-19 FERTILIZER

GUARANTEED ANALYSIS

TOTAL NITROGEN (N).....	19.0%
7.4%.....Ammoniacal Nitrogen	
11.6%.....Urea Nitrogen	19.0%
AVAILABLE PHOSPHATE (P ₂ O ₅).....	19.0%
SOLUBLE POTASH (K ₂ O).....	
Plant Nutrients derived from urea, ammonium phosphate and potassium chloride.	

DIRECTIONS FOR USE: Use in accordance with recommendations of a qualified individual or institution, such as, but not limited to, a certified crop advisor, agronomist, university crop extension publication, or apply according to recommendations in your approved nutrient management plan.

The Andersons, Inc.
P.O. Box 119 • Maumee, Ohio 43537

Net Weight 50 lbs.
22.7 kg

GUARANTEED ANALYSIS

TOTAL NITROGEN (N)..... 19.0%

7.4%....Ammoniacal Nitrogen

11.6%....Urea Nitrogen

AVAILABLE PHOSPHATE (P_2O_5)..... 19.0%

SOLUBLE POTASH (K_2O)..... 19.0%

Plant Nutrients derived from urea, ammonium phosphate, and potassium chloride.

DIRECTIONS FOR USE: Use in accordance with recommendations of a qualified individual or institution, such as, but not limited to, a certified crop advisor, agronomist, university crop extension publication, or apply according to recommendations in your approved nutrient management plan.

Amdersons



JH CAMPBELL MIX

**Premium
Grass
Seed**



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