NATURAL RESOURCE TECHNOLOGY
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Mr. Mark Kelly
Midwest Generation, LLC
Powerton Station
13082 East Manito Road
Pekin, IL 61554

July 18, 2014
(2113.2)

RE: Construction Documentation Transmittal
Ash Surge Basin Liner Replacement
Midwest Generation Powerton Generation Station

Dear Mr. Kelly:

Natural Resource Technology, Inc. (NRT) has prepared this correspondence to transmit construction record documents for the liner replacement completed in 2013 for the Ash Surge Basin at the Powerton Station.

Documentation of the major construction components, including field reports, laboratory test results, and documentation drawings are attached to this letter.

Please contact NRT if you have any questions or comments regarding this transmittal.

Sincerely,

NATURAL RESOURCE TECHNOLOGY, INC.

Eric J. Tlachac, PE
Senior Engineer

Joseph R. Ridgway, PE
Environmental Engineer

ATTACHMENTS:

Attachment A: Daily Field Reports
Attachment B: Borrow Source Samples
Attachment C: Geosynthetic Certifications
- C1: Geomembrane Certification
- C2: Geotextile Certification

Attachment D: Geosynthetics Installer Submittals
- D1: Field Tensiometer Calibration
- D2: Installer Crew Resumes
- D3: Subgrade Acceptance
- D4: Geosynthetic Material Installation Certificate
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Attachment E: Geosynthetics Installation
- E1: Trial Weld Summary
- E2: Panel Placement Summary
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- E4: Repair Summary
- E5: Non-Destructive Test Summary

Attachment F: Liner Integrity Survey Reports
- F1: Bare Liner Integrity Survey Report
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Attachment G: Construction Documentation Drawing Set

ATTACHMENT A

DAILY FIELD REPORTS

FIELD NOTE SUMMARY

Project Number / Task: 2113.2 / 4.3
Project Name: Ash Surge Basin Liner Replacement

Date:	July 3, 2013
Work Scope:	Dredging and subgrade preparation
NRT Staff:	Joseph R. Ridgway
Contractors:	Terra Contracting
Weather:	High 60s, sunny
Equipment:	Digital camera

Field Comments:	• Arrive onsite around 08:20, check in at guard shack
	• Inspect Secondary Ash Settling Basin in operation, visually survey exposed liner along perimeter and attachments – in good condition
	• Status update from Ricky Burnett (Terra)
	• Discussion with Bill Gaynor (MWG) and Ricky
	• Slope to weir wall – intended to not alter treatment processes
	  o Bill questions need for slope; will discuss with Maria Race for permitting perspective
	  o Bill proposes not placing cushion and warning layer instead of sloping subgrade to maintain weir wall height; Joseph recommends relocation of marker posts and considering additional post to clearly identify area where liner is not covered, if this approach is taken
	  o Will discuss with group after Bill discusses with Maria
	• Trenching along western slope; road prevents specified 2-foot clearance for trench
	  o Ricky proposes excavating trench with 12-inch backhoe right next to road, backfilling, and placing road subgrade material on top to transition to road – Joseph and Bill agree
	• Uneven Poz-O-Pac bottom; ok if gradual transition, not ok if edges or potholes present
	• Connection of liner to toe of ramp; NRT will make recommendations when ramp is exposed, will likely involve connection to base of ramp and cover with cushion and warning layer to 4 feet up ramp
	• Inspect condition of Poz-O-Pac on slopes; generally in good condition and can remain in place
	  o Some soft or broken spots will require excavation and backfilling with cushion material
	  o Transition to upper slope must remain smooth so that no stress is put on liner
	• Ash removal; varying degrees of removal and difficulty due to condition of subgrade
	  o Bill and Joseph confirm removal of all measurable ash, which will likely require scraping along Poz-O-Pac and some replacement of subgrade material
	• Schedule update – Terra plans to:

	○ Finish dredging in 2 weeks, by 07/17/13 ○ Continue ash removal, removal of soft spots, and backfilling of subgrade next week, and finish in 6 week, by 08/19/13 ○ Have subgrade ready for liner construction by 08/19/13 • Offsite around 11:30
Scope Changes:	• Anchor trench along west slope will not have 2-foot clearance and will be covered with road subgrade material to transition to access road • Poz-O-Pac will remain on slopes, except where it does not provide suitable subgrade
Site Conditions:	Site in good condition

Signature: JRR _____ Date: 07/08/13

Joseph R. Ridgway, PE

South-facing view of eastern slope, Poz-O-Pac and transition in good condition, some ash remains that will be removed

South-facing view of top of western slope, anchor trench will be constructed next to road, road material to be placed on top for transition to road

FIELD NOTE SUMMARY

Project Number / Task: 2113.2 / 4.2
Project Name: Ash Surge Basin Liner Replacement

Date:	August 12, 2013
Work Scope:	Sub-base preparation and geotextile installation
NRT Staff:	Edwards Effiong & Joseph Larson
Contractors:	Terra Contracting & Clean Air and Water Systems
Weather:	High 80s, sunny
Equipment:	Digital camera

Field Comments:	• Arrive onsite around 07:20, check in at guard shack
	• Inspect Secondary Ash Settling Basin state and material on site – basin in good condition except for a small wet spot
	  o 38 HDPE geomembrane rolls
	  o 153 geotextile rolls and one partial roll left over from secondary basin
	• Status update from Erich Hetke (Terra)
	  o Survey of basin done but results not in from surveyor
	• Terra commenced digging the anchor trench and completed 829.7 ft
	• Clean Air and Water Systems (CAAWS) commenced laying the geotextile working from the south end of the basin at 13:16 and called it a day at 16:26
	  o 14.5 rolls expended today
	• Offsite around 15:00

Scope Changes:	• None
Site Conditions:	Site in good condition

Signature: ETE
Edwards T. Effiong

Date: 08/12/13

Terra Crew digging the anchor trench around the basin (looking southwest).

CAAWS crew filling sand bags ahead of the day's work.

Heat bonding geotextile seams (looking east).

Extent of work completed on Day 1, south end of basin (looking southeast)

FIELD NOTE SUMMARY

Project Number / Task: 2113.2 / 4.2
Project Name: Ash Surge Basin Liner Replacement

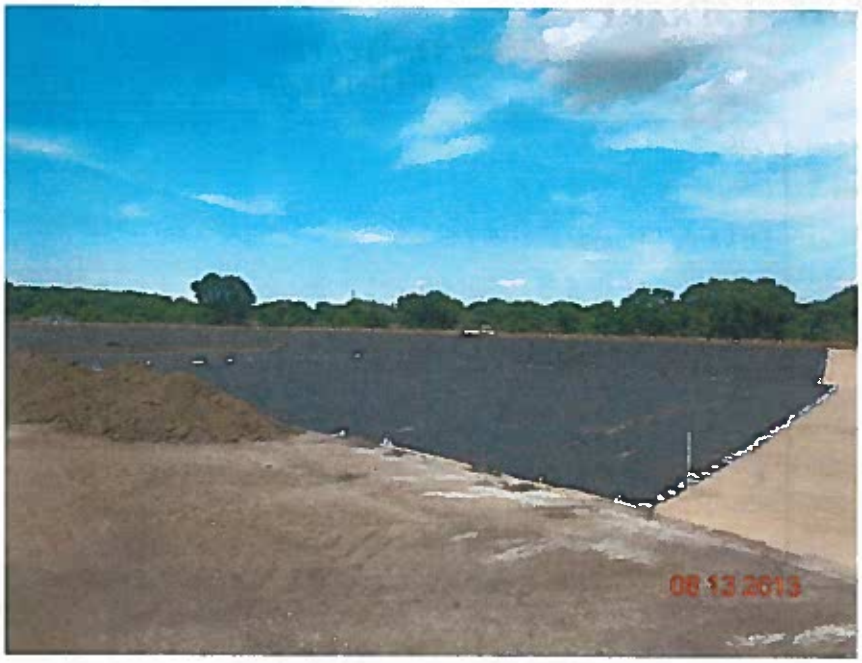
Date:	August 13, 2013
Work Scope:	Geotextile Installation
NRT Staff:	Edwards Effiong, Joseph Larson
Contractors:	Terra Contracting & Clean Air and Water Systems
Weather:	High 70s, cloudy
Equipment:	Digital camera

Field Comments:	• Arrive onsite around 06:50, check in at guard shack
	• CAAWS continued with laying of the geotextile
	  o 23.5 rolls used
	• Brian McKeown of CAAWS was on site at 09:00
	  o Status check on the progress of work and his workers
	• Terra continued digging the anchor trench but there was equipment delays that affected the laying of HDPE
	  o HDPE expected to start Wednesday
	• Offsite around 16:00

Scope Changes:	• None
Site Conditions:	Site in good condition

Signature: ETE _____ Date: 08/13/13

Edwards T. Effiong



Extent of the day's nonwoven geotextile installation (looking northeast).

FIELD NOTE SUMMARY

Project Number / Task: 2113.2 / 4.2
Project Name: Ash Surge Basin Liner Replacement

Date:	August 14, 2013
Work Scope:	Geomembrane installation
NRT Staff:	Edwards Effiong & Joseph Larson
Contractors:	Terra Contracting & Clean Air and Water Systems
Weather:	High 70s, cloudy
Equipment:	Digital camera

Field Comments:	• Arrive onsite around 06:57, check in at guard shack
	• Tailgate meeting
	• CAAWS begins laying HDPE at 08:00 and ends at 17:00
	  o 13 rolls were used
	  o 10 out of the 13 rolls were not completely used. These partial rolls will be used on other sections of the basin
	• CAAWS also completed seaming and air testing the fusion welded geomembrane seams
	• Terra continued digging the anchor trench
	• Offsite around 17:00

Scope Changes:	• None
Site Conditions:	Site in good condition

Signature: ETE Date: 08/14/13

Edwards T. Effiong

Rolling out the first HDPE Panel (looking northeast)

Seaming of the geomembrane panels (looking west)

FIELD NOTE SUMMARY

Project Number / Task: 2113.2 / 4.2
Project Name: Ash Surge Basin Liner Replacement

Date:	August 15, 2013
Work Scope:	Geomembrane installation
NRT Staff:	Edwards Effiong, Joseph Larson, & Joseph Ridgeway
Contractors:	Terra Contracting & Clean Air and Water Systems
Weather:	High 70s, cloudy
Equipment:	Digital camera

Field Comments:	• Arrive onsite around 07:00, check in at guard shack
	• CAAWS continued with liner deployment until 13:14
	  o 9 HDPE (partial rolls) used
	  o More fabric put out towards the northern reaches of the basin after the completion of HDPE installation activities
	  o 18 rolls of nonwoven geotextile fabric deployed
	• CAAWS also commenced air testing of the fusion welded geomembrane seams
	• Terra continued digging the anchor trench
	• Offsite around 17:00

Scope Changes:	• None
Site Conditions:	Site in good condition

Signature: ETE _____ Date: 08/15/13

Edwards T. Effiong

Extent of geotextile and HDPE deployment completed (looking north)

Deployment of geotextile (looking west)

FIELD NOTE SUMMARY

Project Number / Task: 2113.2 / 4.3
Project Name: Ash Surge Basin Liner Replacement

Date:	August 16, 2013
Work Scope:	Subgrade Preparation and Geomembrane Installation
NRT Staff:	Edwards Effiong & Joseph Larson
Contractors:	Terra Contracting & Clean Air and Water Systems
Weather:	High 70s, cloudy
Equipment:	Digital camera

Field Comments:	• Arrive onsite around 07:00, check in at guard shack
	• CAAWS concentrated on the following detail work:
	  o Extrusion welds on geomembrane repair locations
	  o Boot around risers (geomembrane liner penetrations)
	  o Batten strips on outfall and around structures
	• Terra asked for more clarification on the warning layer design for planning purposes
	• Terra continued digging the anchor trench and grading of the south end of the basin
	• Offsite around 17:00

Scope Changes:	• None
Site Conditions:	Site in good condition

Signature: ETE _____ Date: 08/16/13

Edwards T. Effiong

Batten strip connection along the outfall (looking south)

Extrusion weld on a repair location

FIELD NOTE SUMMARY

Project Number / Task: 2113.2 / 4.3
Project Name: Ash Surge Basin Liner Replacement

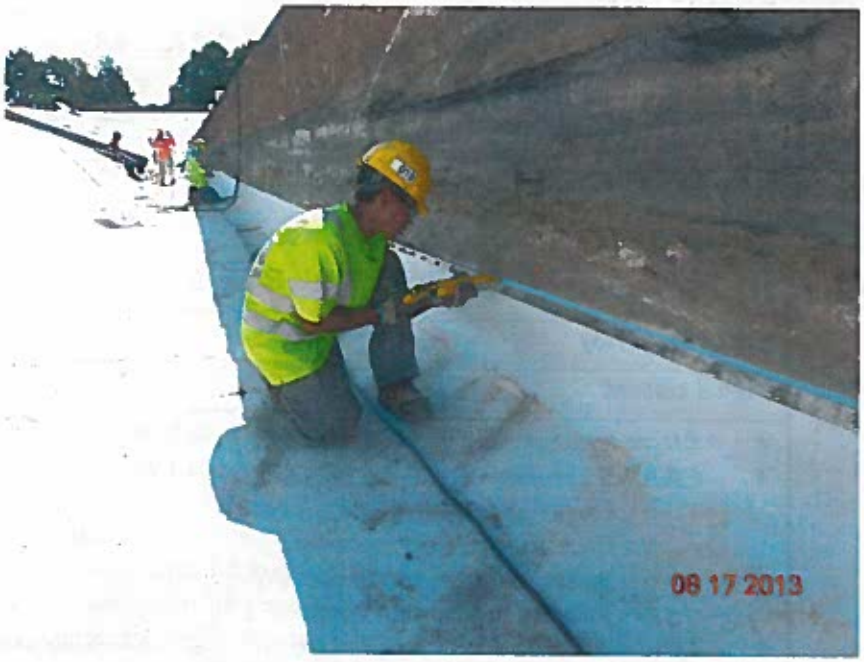
Date:	August 17, 2013
Work Scope:	Geomembrane Installation and Subgrade Preparation
NRT Staff:	Edwards Effiong & Joseph Larson
Contractors:	Terra Contracting & Clean Air and Water Systems
Weather:	High 70s, cloudy
Equipment:	Digital camera

Field Comments:	• Arrive onsite around 07:00, check in at guard shack
	• CAAWS concentrated on the following detail work:
	  o Extrusion welds on repair locations
	  o Boot around risers (geomembrane penetrations)
	  o Batten strips on outfall and around structures
	  o Vacuum testing geomembrane extrusion welds
	• Terra performed documentation survey of geomembrane seams and repairs in preparation for cushion layer placement
	• Terra struck a cable in the trench (Ricky notified MWG)
	• Terra continued digging the anchor trench and grading the south end of the basin
	• Offsite around 15:30

Scope Changes:	• None
Site Conditions:	Site in good condition

Signature: ETE _____ Date: 08/17/13

Edwards T. Effiong



Caulking liner termination on the weir wall (looking east)

Vacuum testing a repair location

Geomembrane boot installation on a riser (looking west)

FIELD NOTE SUMMARY

Project Number / Task: 2113.2 / 4.3
Project Name: Ash Surge Basin Liner Replacement

Date:	August 19, 2013
Work Scope:	Geosynthetics Installation
NRT Staff:	Edwards Effiong & Joseph Larson
Contractors:	Terra Contracting & Clean Air and Water Systems
Weather:	High 80s, cloudy
Equipment:	Digital camera

Field Comments:	• Arrive onsite around 07:00, check in at guard shack
	• CAAWS deployed fabric to the south of the basin
	  o Liner deployment starts at 12:30 and ends at 16:00
	  o 16 rolls of fabrics used
	• Terra informed of minor repairs to be made on inlet wall concrete structure
	• Terra placed clean sand around the overflow structure to bring it up to grade
	• Terra commences repairs on damaged cable
	• Ricky asked for clarification on warning layer design
	• Offsite around 17:00

Scope Changes:	• None
Site Conditions:	Site in good condition

Signature: ETE _____ Date: 08/19/13

Edwards T. Effiong

Placing sand around overflow structure (looking southeast)

Extent of geosynthetics installation at close of day (looking north)

FIELD NOTE SUMMARY

Project Number / Task: 2113.2 / 4.3
Project Name: Ash Surge Basin Liner Replacement

Date:	August 20, 2013
Work Scope:	Geotextile Installation and Geomembrane Repairs & Quality Control
NRT Staff:	Edwards Effiong & Joseph Larson
Contractors:	Terra Contracting & Clean Air and Water Systems
Weather:	High 80s, cloudy
Equipment:	Digital camera
Field Comments:	• Arrive onsite around 07:00, check in at guard shack • CAAWS deployed fabric to the south of the basin o 15 rolls of nonwoven geotextile fabric used • Non-destructive testing continued around the structures using the vacuum box to test geomembrane extrusion welds • Second layer of lining placed over new backfill to bring to grade areas around overflow structure on the east of the basin • Follow-up with Ricky; Bill backs NRT's original approach to warning layer design • Offsite around 17:00
Scope Changes:	• None
Site Conditions:	Site in good condition

Signature: ETE _____ Date: 08/20/13

Edwards T. Effiong

Second layer of geomembrane placed over clean, backfill sand (looking north)

Extent of fabric deployment to the south (looking southeast)

FIELD NOTE SUMMARY

Project Number / Task: 2113.2 / 4.3
Project Name: Ash Surge Basin Liner Replacement

Date:	August 21, 2013
Work Scope:	Liner deployment and detailing
NRT Staff:	Edwards Effiong & Joseph Larson
Contractors:	Terra Contracting & Clean Air and Water Systems
Weather:	High 90s, cloudy
Equipment:	Digital camera
Field Comments:	• Arrive onsite around 07:00, check in at guard shack • Liner deployed from 07:30 to the south of the basin o The southern slope is the last area to be covered with geomembrane • Batten strip installation commenced at the ramp • Air testing performed on the geomembrane seams • Offsite around 18:00
Scope Changes:	• None
Site Conditions:	Site in good condition

Signature: ETE _____ Date: 08/21/13

Edwards T. Effiong

Geomembrane liner deployment towards the south of the basin (looking south)

Extent of geosynthetics deployment on the south end of the basin (looking east)

FIELD NOTE SUMMARY

Project Number / Task: 2113.2 / 4.3
Project Name: Ash Surge Basin Liner Replacement

Date:	August 22, 2013
Work Scope:	Geomembrane Installation and Repairs
NRT Staff:	Edwards Effiong & Joseph Larson
Contractors:	Terra Contracting & Clean Air and Water Systems
Weather:	High 80s, cloudy
Equipment:	Digital camera
Field Comments:	• Arrive onsite around 07:00, check in at guard shack • CAAWS completed the deployment of geosynthetics in the Ash Surge Basin • Detail work commenced, specifically extrusion welding patches on repair locations • Offsite around 17:30
Scope Changes:	• None
Site Conditions:	Site in good condition

Signature: ETE _____ Date: 08/22/13

Edwards T. Effiong

Extrusion welding a geomembrane repair in progress (looking south)

Repairing geomembrane along the ramp (looking southwest)

FIELD NOTE SUMMARY

Project Number / Task: 2113.2 / 4.3
Project Name: Ash Surge Basin Liner Replacement

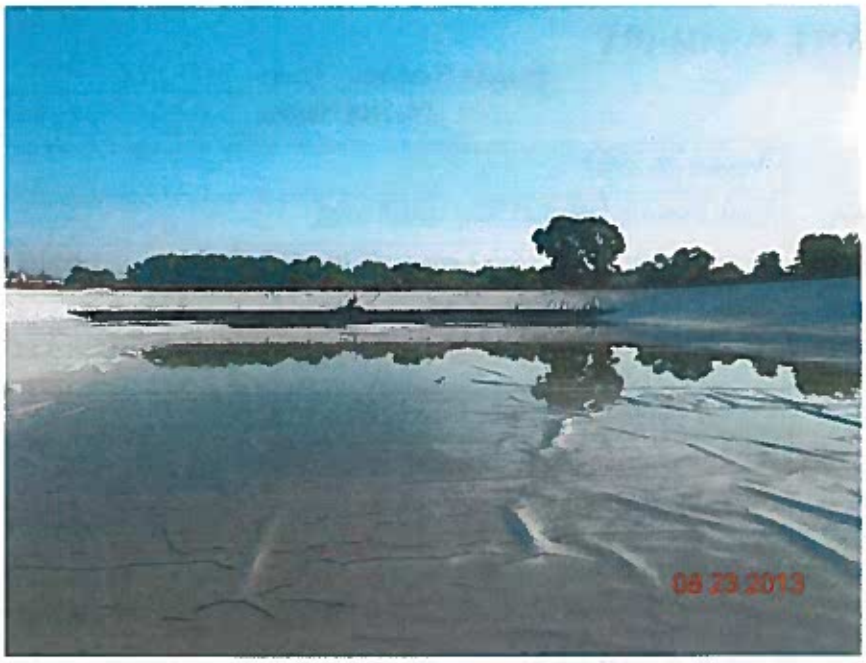
Date:	August 23, 2013
Work Scope:	Geomembrane Repairs and Basin Dewatering
NRT Staff:	Edwards Effiong & Joseph Larson
Contractors:	Terra Contracting & Clean Air and Water Systems
Weather:	High 80s, cloudy
Equipment:	Digital camera

Field Comments:	• Arrive onsite around 07:00, check in at guard shack
	• Basin flooded due to failure of plug on the outlet structure
	  o Terra started pumping water from 06:00
	  o No vacuum testing on locations under water
	• CAAWS continued detail work to the south of the basin, the ramp, and along the trench (any areas not under water)
	• Update with Bill and Ricky
	  o Terra will embark on leak test on liner on Sunday
	• Offsite around 15:30

Scope Changes:	• None
Site Conditions:	Site in good condition

Signature: ETE _____ Date: 08/23/13

Edwards T. Effiong



The flooded basin (looking north)

Geomembrane detail work along the inlet ramp (looking northeast)

FIELD NOTE SUMMARY

Project Number / Task: 2113.2 / 4.3
Project Name: Ash Surge Basin Liner Replacement

Date:	August 26, 2013
Work Scope:	Leak location test and liner detail work
NRT Staff:	Edwards Effiong, Joseph Larson, & Joseph Ridgeway
Contractors:	Terra Contracting & Clean Air and Water Systems
Weather:	High 90s, Clear
Equipment:	Digital camera

Field Comments:	• Joe arrive onsite around 07:00, check in at guard shack
	• Edwards on site 09:30
	• Joseph on site 11:00
	• Terra continued mopping up sediment from behind the weir
	  o Two spots on the batten strips had failed and were fixed by CAAWS
	  o One repair spot given new repair number, the other was beaded
	• CAAWS continued detail work to the south of the basin along the inlet ramp
	  o Repair locations towards the south of the basin were vacuum tested
	• Documentation survey of repair locations completed for half the basin
	• CAAWS commenced laying out fabric for warning layer
	  o Wet basin renders deployment cumbersome
	  o 9 rolls of geotextile used
	• Offsite around 15:30
	• Back on site at 20:00 to observe leak location test
	  o Offsite at 22:00

Scope Changes:	• Leak Location Test on liner added by Terra as an extra precaution (Terra wants same procedure for Secondary Basin and eliminate any chance of carrying over leaks into the warning layer preparation phase)
Site Conditions:	Site in good condition

Signature: ETE
Edwards T. Effiong

Date: 08/26/13

Dewatering the flooded basin (looking west)

Deploying nonwoven geotextile fabric for the warning layer (looking southwest)

FIELD NOTE SUMMARY

Project Number / Task: 2113.2 / 4.3
Project Name: Ash Surge Basin Liner Replacement

Date:	August 27, 2013
Work Scope:	Documentation survey and warning layer fabric deployment
NRT Staff:	Edwards Effiong & Joseph Larson
Contractors:	Terra Contracting & Clean Air and Water Systems
Weather:	High 90s, Clear
Equipment:	Digital camera

Field Comments:	• Arrive onsite around 07:00, check in at guard shack
	• Leak Test from last night revealed three leak locations
	  o R35, R37, and on batten strip (Panel 2) were repaired and vacuum tested
	  o Three holes (P27, R117, and R93) made from surveyor rod were also fixed
	• Documentation survey of repair locations completed
	• CAAWS continued laying out fabric for warning layer
	  o 43 rolls used
	  o More than ¾ of the basin covered
	• Offsite around 17:10

Scope Changes:	• None
Site Conditions:	Site in good condition

Signature: ETE
Edwards T. Effiong

Date: 08/27/13

Extent of upper nonwoven geotextile installation completed to date (looking southeast)

FIELD NOTE SUMMARY

Project Number / Task: 2113.2 / 4.3
Project Names: Ash Surge Basin Liner Replacement

Date:	August 28, 2013
Work Scope:	Warning layer fabric deployment
NRT Staff:	Edwards Effiong & Joseph Larson
Contractors:	Terra Contracting & Clean Air and Water System
Weather:	High 90s, Clear
Equipment:	Digital camera

Field Comments:	• Arrive onsite around 07:00, check in at guard shack
	  o CAAWS completed laying fabric along with panel-for-panel inspection in conjunction with Terra
	• CAAWS, Terra, and NRT all confirm satisfaction with geosynthetics installation
	  o 4 full and one partial roll of geotextile fabric left
	  o 4 full and 4 partial rolls of geomembrane liner left
	• Offsite around 09:30

Scope Changes:	• None
Site Conditions:	Site in good condition

Signature: ETE _____ Date: 08/28/13

Edwards T. Effiong

Extent of the completed geosynthetics (looking southeast)

Geosynthetics liner penetration (looking north)

FIELD NOTE SUMMARY

Project Number / Task: 2113.2 / 4.3
Project Name: Ash Surge Basin Liner Replacement

Date:	September 20, 2013
Work Scope:	Dewatering and placement of cushion layer
NRT Staff:	Joseph R. Ridgway
Contractors:	Terra Contracting
Weather:	70s, cloudy
Equipment:	Digital camera

Field Comments:	• Arrive onsite around 08:45, check in at guard shack
	• Status update from Ricky Burnett (Terra)
	  o Grading/finishing placement of cushion layer is taking much longer than Ricky anticipated
	  o Terra continuing to pump water from the basin
	  o Terra is planning to send a GPS-enabled dozer to the site to aid in placement of specified thickness of cushion and warning layers
	  o Confirm that no extra material shall be added on top of liner along sides of ramp
	  o Discuss failures of plug in discharge pipe – pressure inside plug decreased, Terra to monitor daily
	  o Ricky discusses plan for placement of warning layer – "rough out" stone in 30-ft wide sections, apply water, compact material with roller so that trucks can bring more stone into basin, use GPS dozer for final grading
	  o Ricky notes that MWG water truck has been driving on anchor trench backfill at corners of the basin
	• Notice that liner has torn from the batten strip on the north side of the weir wall, likely due to pressure from water on the liner after the plug failure – one approximately 40-ft section and two approximately 8-ft sections
	  o Terra to schedule repairs with Clean Air and Water Systems
	  o Joseph requested that connection on south side of weir wall be inspected
	  o Confirm from damaged connection that geotextile material not fastened to batten strip
	• Discuss project status with Bill Gaynor (MWG) and Ricky
	  o Discuss placement of jersey barriers at corners of basin to keep water truck off of anchor trench
	• Terra still planning to finish by 10/01/13
	• Offsite around 11:30

Scope Changes:	• Repairs to be scheduled for damaged batten bar connection at north side of weir wall • South side of weir wall to be inspected

Site Conditions:	Site in good condition

Signature: JRR _____ Date: 09/21/13

Joseph R. Ridgway, PE

Damaged connection to batten strip on north side of weir wall, facing southwest

Dewatering basin after plug failure, facing southwest

FIELD NOTE SUMMARY

Project Number / Task: 2113.2 / 4.3
Project Name: Ash Surge Basin Liner Replacement

Date:	October 01, 2013
Work Scope:	Ash Surge Basin Weir Wall Repairs
NRT Staff:	Edwards Effiong
Contractors:	Terra Contracting & Clean Air and Water Systems
Weather:	High 70s, Clear and Sunny
Equipment:	Digital camera
Field Comments:	• Arrive onsite around 06:45, check in at guard shack o CAAWS arrived with a three-man crew at 07:30 • CAAWS, Terra, and NRT do a walk-over survey of all repair locations • NRT and CAAWS agree to take off all affected batten strips and replace them. It is also agreed to cut the liner to relieve the tension in the panels behind the weir wall and add extra liner (patch) along the cut. • Grading of the warning layer proceeding. • Offsite around 17:00
Scope Changes:	• None
Site Conditions:	Site in good condition.

Signature: ETE _____ Date: 10/01/13

Edwards T. Effiong

Section of the torn batten strip (looking southeast)

Batten strip repairs underway (looking west)

FIELD NOTE SUMMARY

Project Number / Task: 2113.2 / 4.3
Project Name: Ash Surge Basin Liner Replacement

Date:	October 02, 2013
Work Scope:	Ash Surge Basin Weir Wall Repairs
NRT Staff:	Edwards Effiong
Contractors:	Terra Contracting & Clean Air and Water Systems
Weather:	High 80s, Fog Advisory in the morning and Sunny afternoon
Equipment:	Digital camera

Field Comments:	• Arrived onsite around 06:55, check in at guard shack
	• The patch work along the weir wall was completed today.
	  o No vacuum test as vac-box broke
	  o Helper went home sick slowing the pace of work
	  o CAAWS ran out of extrusion rod
	• Work on two riser poles and a patch location near the ramp still undone
	• Terra could not get in the repair location survey as anticipated, survey now scheduled for Monday
	• Offsite around 17:35

Scope Changes:	• None
Site Conditions:	Site in good condition. Grading of the warning layer proceeding.

Signature: ETE _____ Date: 10/02/13

Edwards T. Effiong

Geomembrane sections being added to the liner to provide slack for the transition between the basin floor and weir wall (looking southeast)

Repairs on batten strip

FIELD NOTE SUMMARY

Project Number / Task: 2113.2 / 4.3
Project Name: Ash Surge Basin Liner Replacement

Date:	October 03, 2013
Work Scope:	Ash Surge Basin Weir Wall Repairs
NRT Staff:	Edwards Effiong
Contractors:	Terra Contracting & Clean Air and Water Systems
Weather:	High 80s, Rain in the morning and Sunny afternoon
Equipment:	Digital camera

Field Comments:	• Arrived onsite around 07:00, check in at guard shack
	• Work delayed due to early morning thunderstorm.
	• Work on two riser poles and a patch location near the ramp began.
	  o Patch location on panel 38 completed and vac-tested
	  o Vac-test completed on locations behind the weir wall
	  o Riser on panel 17 completed
	  o Riser by panel 31 flooded and repairs not completed
	• CAAWS broke their weld gun after trying to weld in the wet. They are getting a replacement later tonight.
	• Offsite around 14:35

Scope Changes:	• None
Site Conditions:	Rains made the site difficult to work. Much of the work hours were dedicated to pumping water.

Signature: ETE _____ Date: 10/03/13

Edwards T. Effiong

One of the riser pole geomembrane boots being fixed (looking north)

Spark testing the new repairs (looking northeast)

Vacuum testing a new patch along the weir wall (looking east)

Pumping water from riser pole after the rain (looking southeast)

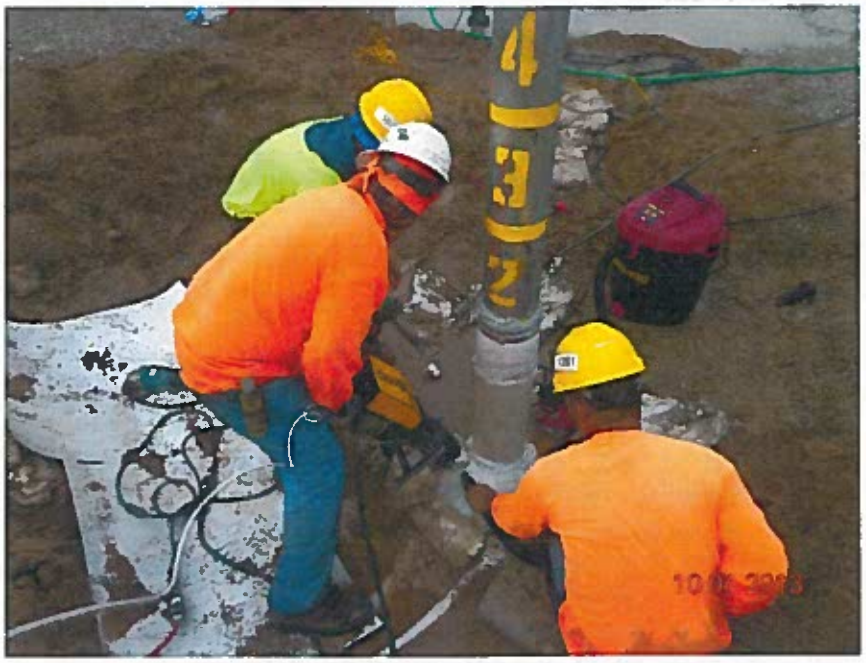
FIELD NOTE SUMMARY

Project Number / Task: 2113.2 / 4.3
Project Name: Ash Surge Basin Liner Replacement

Date:	October 04, 2013
Work Scope:	Ash Surge Basin Weir Wall Repairs
NRT Staff:	Edwards Effiong
Contractors:	Terra Contracting & Clean Air and Water Systems
Weather:	High 70s, Cloudy
Equipment:	Digital camera
Field Comments:	• Arrived onsite around 07:00, check in at guard shack • Work on last riser pole located at P31 completed and spark tested • Work completion forms signed by all • Offsite around 11:00
Scope Changes:	• None
Site Conditions:	Fine morning after the thunderstorms.

Signature: ETE
Edwards T. Effiong

Date: 10/04/13



Last of the riser poles being fixed

Installing the upper nonwoven geotextile over the geomembrane pipe boot (looking east)

FIELD NOTE SUMMARY

Project Number / Task: 2113.2 / 4.3
Project Name: Ash Surge Basin Liner Replacement

Date:	October 10, 2013
Work Scope:	Final material placement and demobilization
NRT Staff:	Joseph R. Ridgway
Contractors:	Terra Contracting
Weather:	70s, sunny
Equipment:	Digital camera

Field Comments:	• Arrive onsite around 09:30, check in at guard shack
	• Inspect repairs at ramp, north side of weir wall, and overflow structures – all repairs look satisfactory
	• Status update from Ricky Burnett (Terra)
	  ○ Placing extra material on ramp to make gradual transition for smooth truck access
	  ○ Removing miscellaneous debris from basin
	  ○ Plan to pull pipe plug in the afternoon
	  ○ Demobilizing all equipment
	• Discuss project completion with Bill Gaynor and Mark Kelly (MWG) and Ricky
	• Offsite around 11:30

Scope Changes:	• None
Site Conditions:	Site in good condition

Signature: JRR
Joseph R. Ridgway, PE

Date: 10/11/13

Damaged connection to batten strip on north side of weir wall, facing southwest

Panoramic view of entire basin from northeast corner, facing southwest

ATTACHMENT B

BORROW SOURCE SAMPLES

Illinois Department of Transportation

FIELD / LAB GRAD. .ONS

I.D. Number

Inspector No. 940-00-0000 Inspector Name Cathy Reynolds Date Sampled 8/20/2013 Seq. No. 13

Mix Plant No. Mix Plant Name Contract No. Job No.

Responsible Loc. 94 Lab PQ Lab Name PEKIN S&G Source Name PEKIN S&G

Source	Mat. Code #	Type Insp.	Orig. I. D. #	Insp. Qty.	Spec.	Article	Sampled From	Wash / Dry
51790-39	027FA01	PRO					SP BELT	wash

	75 (3) or 63 (1/4)	63 (2.5)	50 (2) 25 (1)	45 (1.75) 9.5 (3/8)	37.5 (1.5) 4.75 (4)	25 (1) 2.36 (8)	19 (3/4) 2 (10)	16 (5/8) 1.18 (16)	12.5 (1/2) 0.6 (30)	9.5 (3/8) 0.425 (40)	4.75 (4) 0.3 (50)	2.36 (8)	1.18 (16) 0.18 (80)	0.6 (30)	0.3 (50) 0.16 (100)	0.15 (100)	.075 (200) .075 (200)
CA																	
FA				100	100			61	34		3				0		0

Wash - 0.075 0.0 PI Ratio Test Results APPR Remarks

Sieve CA	Sieve FA	Indiv. Wt. Retained	Cumul. Wt. Retained	Cumul. % Retained	Percent % Passing	Spec. Range Min	Spec. Range Max	Out Flag
63 (2.5)								
50 (2)	25 (1)							
45 (1.75)	9.5 (3/8)	0.0	0.0	0.0	100.0	100	100	In
37.5 (1.5)	4.75 (#4)	1.5	1.5	0.2	99.8	94	100	In
25 (1)	2.36 (#8)							
19 (3/4)	2 (10)							
16 (5/8)	1.18 (#16)	316.0	317.5	39.4	60.6	45	85	In
12.5 (1/2)	0.6 (#30)	215.8	533.3	66.2	33.8			
9.5 (3/8)	0.425 (#40)							
6.3 (1/4)								
4.75 (#4)	0.3 (#50)	251.7	785.0	97.5	2.5	3	28	In
2.36 (#8)								
1.18 (#16)	0.18 (#80)							
0.6 (#30)								
0.425 (#40)								
0.3 (#50)	0.15 (#100)	19.0	804.0	99.9	0.1	0	10	
0.15 (#100)								
0.075 (#200)	0.075 (#200)	0.9	804.9	100.0	0.0	0	3	
PAN		0.4	805.3					
Total Dry Wt.		805.1						
Total Washed Wt.		805.5						
Diff. -0.075 (200)		-0.4	% Washed -0.075	0.0				
Percent Error		0.0%						

Sampled From Codes			
BR	Barge	RD	Road
BE	Belt Stream	SI	Silo / Bin
CF	Cold Feed	SP	Stockpile
HB	Hot Bin	TD	Truck Dump
OB	On Belt (Stopped)	TK	Truck
PR	Production	WB	Weigh Belt
RC	Rail Car		

0.075 / 0425

(Mix Plant Only)

Lot

Bin

Copies: Tester

Agency

MISTIC INPUT

Date Entered

Initials

IFOR DTY03514

MWG13-15_34048

IL 6044 (Rev. 10 / 97)

Basic Quality Statistical Summary Report

Period 01/01/2012 - 09/04/2013
Plant 0078-Newton County
Product 5000-COMM #53 / conn. CM6
Specification COMM #53

Sieve/Test	Tests	Average	St Dev	Target	Specification
1 1/2" (37.5mm)	90	100.0	0.00		100-100
1" (25mm)	90	95.3	1.81		90-100
3/4" (19mm)	90	86.3	3.39		70-90
1/2" (12.5mm)	90	71.6	5.09		55-80
3/8" (9.5mm)	90	62.0	5.56		
#4 (4.75mm)	90	43.7	5.16		35-60
#8 (2.36mm)	90	31.5	4.11		25-50
#16 (1.18mm)	90	23.3	3.43		
#30 (0.6mm)	90	18.4	3.13		12-30
#200 (75um)	90	10.32	1.603	7.2-13.8\10.5	7-14
Pan	90	0.00	0.000		

Comments

Query

Query Selections
Date Created 09/04/2013
Date Range 01/01/2012 - 09/04/2013
Plant Newton County
Sample Type Shipping
Number Of Tests 90

ATTACHMENT C

GEOSYNTHETICS CERTIFICATIONS

ATTACHMENT C1

GEOMEMBRANE CERTIFICATION

GSE Roll Allocation

Order SO-069997
Customer Clean Air and Water Systems, LLC
Project Name Powerton Generating Station

Roll#	Resin Lot	Product Code	Mfg Date	Length
105165101	H8221390	HDT-060AE-WBB-B-W0	12/31/2012	520
105165498	H8221540	HDT-060AE-WBB-B-W0	1/27/2013	520
105165510	H8221542	HDT-060AE-WBB-B-W0	1/28/2013	520
105166745	13C1077	HDT-060AE-WBB-B-W0	4/12/2013	520
105166746	13C1077	HDT-060AE-WBB-B-W0	4/12/2013	520
105166977	H8231829	HDT-060AE-WBB-B-W0	4/28/2013	520
105166978	H8231829	HDT-060AE-WBB-B-W0	4/28/2013	520
105166979	H8231829	HDT-060AE-WBB-B-W0	4/28/2013	520
105166980	H8231829	HDT-060AE-WBB-B-W0	4/28/2013	520
105166981	H8231829	HDT-060AE-WBB-B-W0	4/28/2013	520
105166982	H8231829	HDT-060AE-WBB-B-W0	4/28/2013	520
105166983	H8231829	HDT-060AE-WBB-B-W0	4/28/2013	520
105166984	H8231829	HDT-060AE-WBB-B-W0	4/29/2013	520
105166985	H8231829	HDT-060AE-WBB-B-W0	4/29/2013	520
105166986	H8231829	HDT-060AE-WBB-B-W0	4/29/2013	520
105166987	H8231829	HDT-060AE-WBB-B-W0	4/29/2013	520
105166988	H8231829	HDT-060AE-WBB-B-W0	4/29/2013	520
105166989	H8231829	HDT-060AE-WBB-B-W0	4/29/2013	520

GSE Roll Allocation

Order SO-069997
Customer Clean Air and Water Systems, LLC
Project Name Powerton Generating Station

Roll#	Resin Lot	Product Code	Mfg Date	Length
105166990	H8231829	HDT-060AE-WBB-B-W0	4/29/2013	520
105166991	H8231829	HDT-060AE-WBB-B-W0	4/29/2013	520
105166992	H8231829	HDT-060AE-WBB-B-W0	4/29/2013	520
105166993	H8231829	HDT-060AE-WBB-B-W0	4/29/2013	520
105166994	H8231829	HDT-060AE-WBB-B-W0	4/29/2013	520
105166995	H8231829	HDT-060AE-WBB-B-W0	4/29/2013	520
105166996	H8231829	HDT-060AE-WBB-B-W0	4/29/2013	520
105166997	H8231659	HDT-060AE-WBB-B-W0	4/29/2013	520
105166998	H8231659	HDT-060AE-WBB-B-W0	4/29/2013	520
105166999	H8231659	HDT-060AE-WBB-B-W0	4/29/2013	520
105167000	H8231659	HDT-060AE-WBB-B-W0	4/29/2013	520
105167001	H8231659	HDT-060AE-WBB-B-W0	4/30/2013	520
105167002	H8231659	HDT-060AE-WBB-B-W0	4/30/2013	520
105167003	H8231659	HDT-060AE-WBB-B-W0	4/30/2013	520
105167004	H8231659	HDT-060AE-WBB-B-W0	4/30/2013	520
105167005	H8231659	HDT-060AE-WBB-B-W0	4/30/2013	520

GSE Roll Allocation

Order SO-069997
Customer Clean Air and Water Systems, LLC
Project Name Powerton Generating Station

Roll#	Resin Lot	Product Code	Mfg Date	Length
105167006	H8231659	HDT-060AE-WBB-B-W0	4/30/2013	520
105167007	H8231659	HDT-060AE-WBB-B-W0	4/30/2013	520

GSE Environmental, LLC

ROLL TEST DATA REPORT

GSE QC APPROVED

Report Date: Apr/29/2013

Sales Order No.	Customer Name	Project Location	Product Name	BOL Number
SO-069997	Clean Air and Water Systems, LLC	Pekin IL US	HDT-060AE-WBB-B-W0	

Roll Number	Average Thickness ASTM D5994 (mils)	Minimum Thickness ASTM D5994 (mils)	Yield Strength ASTM D6693 (ppi) MD	Yield Strength ASTM D6693 (ppi) TD	Yield Elongation ASTM D6693 (%) MD	Yield Elongation ASTM D6693 (%) TD	Break Strength ASTM D6693 (ppi) MD	Break Strength ASTM D6693 (ppi) TD	Break Elongation ASTM D6693 (%) MD	Break Elongation ASTM D6693 (%) TD	Tear Resistance ASTM D1004 (lbs) MD	Tear Resistance ASTM D1004 (lbs) TD	Puncture Resistance ASTM D4833 (lbs)	Density ASTM D1505 (g/cc)	Carbon Black Content ASTM D4218 (%)	Carbon Black Dispersion ASTM D5596 (Views in Cat1-Cat2)	Asperity Height GRI GM12 (mils) Side A	Asperity Height GRI GM12 (mils) Side B
105165101	61	58	158	166	17	17	219	202	628	583	53	51	152	0.943	2.49	10	31	19
105165498	64	61	173	182	17	16	250	235	637	628	60	57	158	0.945	2.39	10	19	21
105165510	61	57	151	156	16	17	244	204	660	567	53	52	158	0.945	2.34	10	19	20
105166745	62	59	153	166	17	16	236	202	639	581	53	51	153	0.942	2.12	10	22	24
105166746	63	60	150	154	16	17	223	214	619	643	50	53	150	0.943	2.16	10	21	21
105166977	62	58	166	175	16	16	238	189	638	524	57	57	159	0.944	2.30	10	23	25
105166978	62	60	156	164	16	16	213	211	596	604	54	51	153	0.944	2.27	10	21	23
105166979	62	59	156	164	16	16	213	211	596	604	54	51	153	0.944	2.27	10	21	23
105166980	62	58	156	164	16	16	213	211	596	604	54	51	153	0.944	2.27	10	20	20
105166981	62	58	156	164	16	16	213	211	596	604	54	51	153	0.944	2.27	10	20	20
105166982	62	59	147	157	16	16	245	223	687	659	53	49	146	0.944	2.51	10	21	22
105166983	61	58	147	157	16	16	245	223	687	659	53	49	146	0.944	2.51	10	21	22
105166984	61	59	147	157	16	16	245	223	687	659	53	49	146	0.944	2.51	10	21	21
105166985	62	59	147	157	16	16	245	223	687	659	53	49	146	0.944	2.51	10	21	21
105166986	61	58	146	149	17	16	218	164	642	432	52	50	144	0.944	2.52	10	21	21
105166987	61	55	146	149	17	16	218	164	642	432	52	50	144	0.944	2.52	10	21	21
105166988	61	56	146	149	17	16	218	164	642	432	52	50	144	0.944	2.52	10	20	23
105166989	61	59	146	149	17	16	218	164	642	432	52	50	144	0.944	2.52	10	20	23

Laboratory Manager Jane Allen

19103 Gundle Road Houston, TX 77073

GSE Environmental, LLC

ROLL TEST DATA REPORT

Report Date: Apr/30/2013

Sales Order No.	Customer Name	Project Location	Product Name	BOL Number
SO-069997	Clean Air and Water Systems, LLC	Pekin IL US	HDT-060AE-WBB-B-W0	

Roll Number	Average Thickness ASTM D5994 (mils)	Minimum Thickness ASTM D5994 (mils)	Yield Strength ASTM D6693 (ppi) MD	Yield Strength ASTM D6693 (ppi) TD	Yield Elongation ASTM D6693 (%) MD	Yield Elongation ASTM D6693 (%) TD	Break Strength ASTM D6693 (ppi) MD	Break Strength ASTM D6693 (ppi) TD	Break Elongation ASTM D6693 (%) MD	Break Elongation ASTM D6693 (%) TD	Tear Resistance ASTM D1004 (lbs) MD	Tear Resistance ASTM D1004 (lbs) TD	Puncture Resistance ASTM D4833 (lbs)	Density ASTM D1505 (g/cc)	Carbon Black Content ASTM D4218 (%)	Carbon Black Dispersion ASTM D5596 (Views in Cat1-Cat2)	Asperity Height GRI GM12 (mils) Side A	Asperity Height GRI GM12 (mils) Side B
105166990	62	58	152	161	16	16	237	213	652	612	53	49	151	0.944	2.45	10	20	21
105166991	61	57	152	161	16	16	237	213	652	612	53	49	151	0.944	2.45	10	20	21
105166992	61	56	152	161	16	16	237	213	652	612	53	49	151	0.944	2.45	10	19	20
105166993	61	59	152	161	16	16	237	213	652	612	53	49	151	0.944	2.45	10	19	20
105166994	61	56	153	153	17	16	232	215	658	658	52	50	154	0.945	2.47	10	19	21
105166995	61	57	153	153	17	16	232	215	658	658	52	50	154	0.945	2.47	10	19	21
105166996	61	56	153	153	17	16	232	215	658	658	52	50	154	0.945	2.47	10	20	20
105166997	63	59	153	153	17	16	232	215	658	658	52	50	154	0.945	2.47	10	20	20
105166998	62	58	152	161	17	16	216	212	625	627	52	50	155	0.945	2.40	10	21	21
105166999	63	58	152	161	17	16	216	212	625	627	52	50	155	0.945	2.40	10	21	21
105167000	61	59	152	161	17	16	216	212	625	627	52	50	155	0.945	2.40	10	21	21
105167001	61	58	152	161	17	16	216	212	625	627	52	50	155	0.945	2.40	10	21	21
105167002	62	56	145	151	16	16	231	208	667	615	52	50	149	0.945	2.56	10	21	21
105167003	62	56	145	151	16	16	231	208	667	615	52	50	149	0.945	2.56	10	21	21
105167004	62	57	145	151	16	16	231	208	667	615	52	50	149	0.945	2.56	10	22	21
105167005	62	55	145	151	16	16	231	208	667	615	52	50	149	0.945	2.56	10	22	21

Laboratory Manager

GSE Environmental, LLC

ROLL TEST DATA REPORT

GSE QC APPROVED

Report Date: May/1/2013

Sales Order No.	Customer Name	Project Location	Product Name	BOL Number
SO-069997	Clean Air and Water Systems, LLC	Pekin IL US	HDT-060AE-WBB-B-W0	

Roll Number	Average Thickness ASTM D5994 (mils)	Minimum Thickness ASTM D5994 (mils)	Yield Strength ASTM D6693 (ppi) MD	Yield Strength ASTM D6693 (ppi) TD	Yield Elongation ASTM D6693 (%) MD	Yield Elongation ASTM D6693 (%) TD	Break Strength ASTM D6693 (ppi) MD	Break Strength ASTM D6693 (ppi) TD	Break Elongation ASTM D6693 (%) MD	Break Elongation ASTM D6693 (%) TD	Tear Resistance ASTM D1004 (lbs) MD	Tear Resistance ASTM D1004 (lbs) TD	Puncture Resistance ASTM D4833 (lbs)	Density ASTM D1505 (g/cc)	Carbon Black Content ASTM D4218 (%)	Carbon Black Dispersion ASTM D5596 (Views in Cat1-Cat2)	Asperity Height GRI GM12 (mils) Side A	Asperity Height GRI GM12 (mils) Side B
105167006	62	59	156	159	17	16	247	215	637	629	55	51	151	0.945	2.49	10	19	20
105167007	61	58	156	159	17	16	247	215	637	629	55	51	151	0.945	2.49	10	19	20

Laboratory Manager Jane Allen

GSE ENVIRONMENTAL

Quality Assurance Laboratory Test Results

Job Name: Powerton Generating Station
Sales Order: 69997

Required Testing: ASTM D 3895 -- Standard Test Method for Oxidative Induction Time of Polyolefins by Differential Scanning Calorimetry
ASTM D 5397 – Standard Test Method for Evaluation of Stress Crack Resistance of Polyolefin Geomembranes Using Notched Constant Tensile Load Test

Frequency: D 3895 - 1/200,000 lbs.
D 5397 - 1/200,000 lbs.

Specification: D 3895 - >100 Minutes
D 5397 - >300 Hours

Product Code	Resin Lot Number	Test Results
HDT-060AE-WBB-B-W0	H8221390	PASS
HDT-060AE-WBB-B-W0	H8221540	PASS
HDT-060AE-WBB-B-W0	H8221542	PASS
HDT-060AE-WBB-B-W0	13C1077	PASS
HDT-060AE-WBB-B-W0	H8231829	PASS
HDT-060AE-WBB-B-W0	H8231659	PASS

Approved By:	Debra Gortemiller
Date Approved:	April 30, 2013

GSE ENVIRONMENTAL™

Quality Assurance Laboratory Test Results

Job Name: Powerton Generating Station
SO Number: 69997

The table below summarizes additive performance of GSE Houston products as perceived by OIT retention after UV and Oven Aging per GRI Test Method GM13:

		Oven Aging @ 85° C (ASTM D 5721)				UV Resistance per GRI GM11			
		90 days per ASTM D 5885				1600 hours UV Aging per ASTM D 5885			
Product Type	**Formulation**	Initial HP OIT (min)	Final HP OIT (min)	Retained (%)	GRI Criteria (%)	Initial HP OIT (min)	Final HP OIT (min)	Retained (%)	GRI Criteria (%)
HDPE Geomembrane	Formosa HL3812	744	674	90	80	744	700	95	50

Quality Assurance Laboratory Test Results

Approved By: Debra Gortemiller
Date: April 29, 2013

MWG13-15_34060

GSE ENVIRONMENTAL

Quality Assurance Laboratory Test Results

Job Name: Powerton Generating Station
SO Number: 69997

The table below summarizes additive performance of GSE Houston products as perceived by OIT retention after UV and Oven Aging per GRI Test Method GM13:

		Oven Aging @ 85° C (ASTM D 5721)				UV Resistance per GRI GM11			
		90 days per ASTM D 3895				1600 hours UV Aging per ASTM D 5885			
Product Type	**Formulation**	Initial HP OIT (min)	Final HP OIT (min)	Retained (%)	GRI Criteria (%)	Initial HP OIT (min)	Final HP OIT (min)	Retained (%)	GRI Criteria (%)
HDPE Geomembrane	Chevron Phillips Marlex® K306 + Carbon Black	697	661	94	80	697	565	81	50

GSE ENVIRONMENTAL

Quality Assurance Laboratory Test Results

Approved By: Debra Gortemiller

Date: April 29, 2013

MWG13-15_34062

Formosa Plastics

FORMOSA PLASTICS CORPORATION, TEXAS

201 FORMOSA DRIVE
PO BOX 700
POINT COMFORT TX 77978

PHONE:(888)FPCUSA3

Certificate of Analysis

CUSTOMER:GSE LINING TECHNOLOGY, IN
UP TRACK 14732 WESTFIELD

HOUSTON TX 77070
PRODUCT :HL3812
RAILCAR FPAX200075

S/O NO : SEN2B32
CUSTOMER PO : 03-072045
DATE SHIPPED: 3/20/13
LOT NO : 13C1077
WEIGHT (LB) : 199,550.00
CUSTID:FT03112 SPIDM4

Ref# : MARCH

TEST ITEM	REFERENCE METHOD	TEST VALUE
Melt Index,g/10min	ASTM D1238	.070
HLMI, g/10 min.	ASTM D1238	11.1
Density, g/cm3	ASTM D1505	.9371

Linda Kao

QC SUPERVISOR: LINDA KAO

MWG13-15_34063

CoA Date: 12/11/2012

Certificate of Analysis

Shipped To: GSE ENVIRONMENTAL, LLC
19103 GUNDLE ROAD
WESTFIELD TX 77090
USA

Recipient: BOHAC
Fax:

Delivery #: 88567258
PO #: 03-070880
Weight: 183200 LB
Ship Date: 12/11/2012
Package: BULK
Mode: Hopper Car
Car #: CHVX890285
Seal No: 299803

Product:
MARLEX POLYETHYLENE K306 BULK

Lot Number: H8221390

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.1	g/10mi
HLMI Flow Rate	ASTM D1238	13.0	g/10mi
Density	D1505 or D4883	0.938	g/cm3
Production Date		11/16/2012	

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

For CoA questions contact Customer Service Representative at 800-231-1212

MWG13-15_34064

CPChem

CoA Date: 01/07/2013

Certificate of Analysis

Shipped To: GSE ENVIRONMENTAL, LLC
19103 GUNDLE ROAD
WESTFIELD TX 77090
USA

Recipient: BOHAC
Fax:

Delivery #: 88579499
PO #: 03-070880
Weight: 184400 LB
Ship Date: 01/07/2013
Package: BULK
Mode: Hopper Car
Car #: CHVX898248
Seal No: 303056

Product:
MARLEX POLYETHYLENE K306 BULK

Lot Number: H8221540

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.1	g/10mi
HLMI Flow Rate	ASTM D1238	10.7	g/10mi
Density	D1505 or D4883	0.937	g/cm3
Production Date		12/17/2012	

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

For CoA questions contact Customer Service Representative at 800-231-1212

MWG13-15_34065

CoA Date: 01/02/2013

Certificate of Analysis

Shipped To: GSE ENVIRONMENTAL, LLC
19103 GUNDLE ROAD
WESTFIELD TX 77090
USA

Recipient: BOHAC
Fax:

Delivery #: 88577628
PO #: 03-069994
Weight: 182900 LB
Ship Date: 01/02/2013
Package: BULK
Mode: Hopper Car
Car #: PSPX006916
Seal No: 303050

Product:
MARLEX POLYETHYLENE K306 BULK

Lot Number: H8221542

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.1	g/10mi
HLMI Flow Rate	ASTM D1238	10.9	g/10mi
Density	D1505 or D4883	0.937	g/cm3
Production Date		12/17/2012	

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

For CoA questions contact Customer Service Representative at 800-231-1212

MWG13-15_34066

CoA Date: 04/05/2013

Certificate of Analysis

Shipped To: GSE ENVIRONMENTAL, LLC
19103 GUNDLE ROAD
WESTFIELD TX 77090
USA

Recipient: Gibbs
Fax:

Delivery #: 88629002
PO #: 03-072384
Weight: 185100 LB
Ship Date: 04/05/2013
Package: BULK
Mode: Hopper Car
Car #: CHVX890506
Seal No: 298788

Product:
MARLEX POLYETHYLENE K306 BULK

Lot Number: H8231659

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.1	g/10mi
HLMI Flow Rate	ASTM D1238	11.8	g/10mi
Density	D1505 or D4883	0.938	g/cm3
Production Date		02/03/2013	

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

For CoA questions contact Customer Service Representative at 800-231-1212

MWG13-15_34067

CoA Date: 04/01/2013

Certificate of Analysis

Shipped To: GSE ENVIRONMENTAL, LLC
19103 GUNDLE ROAD
WESTFIELD TX 77090
USA

Recipient: Phouangsavanh
Fax:

Delivery #: 88626423
PO #: 03-072384
Weight: 176400 LB
Ship Date: 04/01/2013
Package: BULK
Mode: Hopper Car
Car #: CHVX889174
Seal No: 305667

Product:
.MARLEX POLYETHYLENE K306 BULK

Lot Number: H8231829

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.1	g/10mi
HLMI Flow Rate	ASTM D1238	14.9	g/10mi
Density	D1505 or D4883	0.937	g/cm3
Production Date		03/09/2013	

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

For CoA questions contact Customer Service Representative at 800-231-1212

MWG13-15_34068

ATTACHMENT C2

GEOTEXTILE CERTIFICATION

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 Synthetic Product Inc.
Phone: (770)564-1857
Fax: (770)564-1818

May 24, 2013
Clean Air & Water Systems
123 Elem Street, P.O. Box 337
Dousman, WI 53118
Ref : Midwest Generation / Powerton Generating Station
PO : 1023-13

Dear Sir/Madam:

This is to certify that SKAPS GE116 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 GE116 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 GE116 conforms to the property values listed below:

PROPERTY	TEST METHOD	UNITS	M.A.R.V. Minimum Average Roll Value
Weight	ASTM D 5261	oz/sy (g/m^2)	16.00 (543)
Grab Tensile	ASTM D 4632	lbs (kN)	425 (1.89)
Grab Elongation	ASTM D 4632	%	50
Trapezoidal Tear	ASTM D 4533	lbs (kN)	150 (0.67)
CBR Puncture	ASTM D 6241	lbs (kN)	1200 (5.34)
Permittivity*	ASTM D 4491	sec^{-1}	0.57
Permeability*	ASTM D 4491	cm/sec	0.25
Water Flow*	ASTM D 4491	$gpm/ft^2(l/min/m^2)$	45 (1834)
AOS*	ASTM D 4751	US Sieve (mm)	100 (0.15)
UV Resistance	ASTM D 4355	%/hrs	70/500

Notes:
* At the time of manufacturing. Handling may change these properties.

PALAK PATEL
QUALITY CONTROL MANAGER

Product : GE116-180

ROLL # ASTM METHOD UNITS TARGET	WEIGHT D5261 oz/sq yd 16.00	MD TENSILE D4632 lbs. 425	MD ELONG D4632 % 50	XMD TENSILE D4632 lbs 425	XMD ELONG D4632 % 50	MD TRAP D4533 lbs. 150	XMD TRAP D4533 lbs 150	CBR PUNCTURE D6241 lbs. 1200	AOS D4751 US Sieve 100	WATER FLOW D4491 gpm/ft^2 45	PERMEAB-ILITY D4491 cm/sec 0.25	PERMITT-IVITY D4491 sec^{-1} 0.57
29606.001	16.65	436	78	459	89	157	169	1232	100	47	0.29	0.63
29606.002	16.65	436	78	459	89	157	169	1232	100	47	0.29	0.63
29606.003	16.65	436	78	459	89	157	169	1232	100	47	0.29	0.63
29606.004	16.65	436	78	459	89	157	169	1232	100	47	0.29	0.63
29606.005	16.13	431	72	453	81	157	169	1232	100	47	0.29	0.63
29606.006	16.13	431	72	453	81	157	169	1232	100	47	0.29	0.63
29606.007	16.13	431	72	453	81	157	169	1232	100	47	0.29	0.63
29606.008	16.13	431	72	453	81	157	169	1232	100	47	0.29	0.63
29606.009	16.13	431	72	453	81	157	169	1232	100	47	0.29	0.63
29606.010	16.57	439	76	461	87	151	163	1206	100	47	0.29	0.63
29606.011	16.57	439	76	461	87	151	163	1206	100	47	0.29	0.63
29606.012	16.57	439	76	461	87	151	163	1206	100	47	0.29	0.63
29606.013	16.57	439	76	461	87	151	163	1206	100	47	0.29	0.63
29606.014	16.57	439	76	461	87	151	163	1206	100	47	0.29	0.63
29606.015	16.30	433	74	455	83	151	163	1206	100	47	0.29	0.63
29606.016	16.30	433	74	455	83	151	163	1206	100	47	0.29	0.63
29606.017	16.30	433	74	455	83	151	163	1206	100	47	0.29	0.63
29606.018	16.30	433	74	455	83	151	163	1206	100	47	0.29	0.63
29606.019	16.30	433	74	455	83	151	163	1206	100	47	0.29	0.63
29606.020	16.43	437	79	458	90	159	166	1227	100	47	0.29	0.63
29606.021	16.43	437	79	458	90	159	166	1227	100	47	0.29	0.63
29606.022	16.43	437	79	458	90	159	166	1227	100	47	0.29	0.63
29606.023	16.43	437	79	458	90	159	166	1227	100	47	0.29	0.63
29606.024	16.43	437	79	458	90	159	166	1227	100	47	0.29	0.63
29606.025	16.34	435	71	450	80	159	166	1227	100	47	0.29	0.63
29606.026	16.34	435	71	450	80	159	166	1227	100	47	0.29	0.63
29606.027	16.34	435	71	450	80	159	166	1227	100	47	0.29	0.63
29606.028	16.34	435	71	450	80	159	166	1227	100	47	0.29	0.63
29606.029	16.34	435	71	450	80	159	166	1227	100	47	0.29	0.63
29606.030	16.51	440	77	463	86	154	161	1211	100	47	0.29	0.63
29606.031	16.51	440	77	463	86	154	161	1211	100	47	0.29	0.63
29606.032	16.51	440	77	463	86	154	161	1211	100	47	0.29	0.63
29606.033	16.51	440	77	463	86	154	161	1211	100	47	0.29	0.63
29606.034	16.51	440	77	463	86	154	161	1211	100	47	0.29	0.63
29606.035	16.14	432	73	456	82	154	161	1211	100	47	0.29	0.63

*All values are MARV.

MWG13-15_34071

Product : GE116-180

ROLL # ASTM METHOD UNITS TARGET	WEIGHT D5261 oz/sq yd 16.00	MD TENSILE D4632 lbs. 425	MD ELONG D4632 % 50	XMD TENSILE D4632 lbs 425	XMD ELONG D4632 % 50	MD TRAP D4533 lbs. 150	XMD TRAP D4533 lbs 150	CBR PUNCTURE D6241 lbs. 1200	AOS D4751 US Sieve 100	WATER FLOW D4491 gpm/ft^2 45	PERMEAB-ILITY D4491 cm/sec 0.25	PERMITT-IVITY D4491 sec^{-1} 0.57
29606.036	16.14	432	73	456	82	154	161	1211	100	47	0.29	0.63
29606.037	16.14	432	73	456	82	154	161	1211	100	47	0.29	0.63
29606.038	16.14	432	73	456	82	154	161	1211	100	47	0.29	0.63
29606.039	16.14	432	73	456	82	154	161	1211	100	47	0.29	0.63
29606.040	16.56	438	80	465	88	156	170	1230	100	47	0.29	0.63
29606.041	16.56	438	80	465	88	156	170	1230	100	47	0.29	0.63
29606.042	16.56	438	80	465	88	156	170	1230	100	47	0.29	0.63
29606.043	16.56	438	80	465	88	156	170	1230	100	47	0.29	0.63
29606.044	16.56	438	80	465	88	156	170	1230	100	47	0.29	0.63
29606.045	16.21	430	70	454	84	156	170	1230	100	47	0.29	0.63
29606.046	16.21	430	70	454	84	156	170	1230	100	47	0.29	0.63
29606.047	16.21	430	70	454	84	156	170	1230	100	47	0.29	0.63
29606.048	16.21	430	70	454	84	156	170	1230	100	47	0.29	0.63
29606.049	16.21	430	70	454	84	156	170	1230	100	47	0.29	0.63
29606.050	16.48	436	76	460	90	152	164	1209	100	46	0.28	0.61
29606.051	16.48	436	76	460	90	152	164	1209	100	46	0.28	0.61
29606.052	16.48	436	76	460	90	152	164	1209	100	46	0.28	0.61
29606.053	16.48	436	76	460	90	152	164	1209	100	46	0.28	0.61
29606.054	16.48	436	76	460	90	152	164	1209	100	46	0.28	0.61
29606.055	16.19	434	72	452	81	152	164	1209	100	46	0.28	0.61
29606.056	16.19	434	72	452	81	152	164	1209	100	46	0.28	0.61
29606.057	16.19	434	72	452	81	152	164	1209	100	46	0.28	0.61
29606.058	16.19	434	72	452	81	152	164	1209	100	46	0.28	0.61
29606.059	16.19	434	72	452	81	152	164	1209	100	46	0.28	0.61
29606.060	16.42	439	78	458	87	160	168	1238	100	46	0.28	0.61
29606.061	16.42	439	78	458	87	160	168	1238	100	46	0.28	0.61
29606.062	16.42	439	78	458	87	160	168	1238	100	46	0.28	0.61
29606.063	16.42	439	78	458	87	160	168	1238	100	46	0.28	0.61
29606.064	16.42	439	78	458	87	160	168	1238	100	46	0.28	0.61
29606.065	16.33	431	74	450	83	160	168	1238	100	46	0.28	0.61
29606.066	16.33	431	74	450	83	160	168	1238	100	46	0.28	0.61
29606.067	16.33	431	74	450	83	160	168	1238	100	46	0.28	0.61
29606.068	16.33	431	74	450	83	160	168	1238	100	46	0.28	0.61
29606.069	16.33	431	74	450	83	160	168	1238	100	46	0.28	0.61
29606.070	16.50	437	80	462	89	150	162	1214	100	46	0.28	0.61

MWG13-15_34072

*All values are MARV.

Product : GE116-180

ROLL # ASTM METHOD UNITS TARGET	WEIGHT D5261 oz/sq yd 16.00	MD TENSILE D4632 lbs. 425	MD ELONG D4632 % 50	XMD TENSILE D4632 lbs 425	XMD ELONG D4632 % 50	MD TRAP D4533 lbs. 150	XMD TRAP D4533 lbs 150	CBR PUNCTURE D6241 lbs. 1200	AOS D4751 US Sieve 100	WATER FLOW D4491 gpm/ft^2 45	PERMEAB-ILITY D4491 cm/sec 0.25	PERMITT-IVITY D4491 sec^{-1} 0.57
29606.071	16.50	437	80	462	89	150	162	1214	100	46	0.28	0.61
29606.072	16.50	437	80	462	89	150	162	1214	100	46	0.28	0.61
29606.073	16.50	437	80	462	89	150	162	1214	100	46	0.28	0.61
29606.074	16.50	437	80	462	89	150	162	1214	100	46	0.28	0.61
29606.075	16.28	435	71	457	80	150	162	1214	100	46	0.28	0.61
29606.076	16.28	435	71	457	80	150	162	1214	100	46	0.28	0.61
29606.077	16.28	435	71	457	80	150	162	1214	100	46	0.28	0.61
29606.078	16.28	435	71	457	80	150	162	1214	100	46	0.28	0.61
29606.079	16.28	435	71	457	80	150	162	1214	100	46	0.28	0.61
29606.080	16.59	440	77	465	86	158	166	1234	100	46	0.28	0.61
29606.081	16.59	440	77	465	86	158	166	1234	100	46	0.28	0.61
29606.082	16.59	440	77	465	86	158	166	1234	100	46	0.28	0.61
29606.083	16.59	440	77	465	86	158	166	1234	100	46	0.28	0.61
29606.084	16.59	440	77	465	86	158	166	1234	100	46	0.28	0.61
29606.085	16.32	432	75	453	82	158	166	1234	100	46	0.28	0.61
29606.086	16.32	432	75	453	82	158	166	1234	100	46	0.28	0.61
29606.087	16.32	432	75	453	82	158	166	1234	100	46	0.28	0.61
29606.088	16.32	432	75	453	82	158	166	1234	100	46	0.28	0.61
29606.089	16.32	432	75	453	82	158	166	1234	100	46	0.28	0.61
29606.090	16.53	436	79	461	90	153	160	1211	100	46	0.28	0.61
29606.091	16.53	436	79	461	90	153	160	1211	100	46	0.28	0.61
29606.092	16.53	436	79	461	90	153	160	1211	100	46	0.28	0.61
29606.093	16.53	436	79	461	90	153	160	1211	100	46	0.28	0.61
29606.094	16.53	436	79	461	90	153	160	1211	100	46	0.28	0.61
29606.095	16.18	434	73	451	85	153	160	1211	100	46	0.28	0.61
29606.096	16.18	434	73	451	85	153	160	1211	100	46	0.28	0.61
29606.097	16.18	434	73	451	85	153	160	1211	100	46	0.28	0.61
29606.098	16.18	434	73	451	85	153	160	1211	100	46	0.28	0.61
29606.099	16.18	434	73	451	85	153	160	1211	100	46	0.28	0.61
29606.100	16.44	439	76	463	88	156	169	1221	100	48	0.29	0.64
29606.101	16.44	439	76	463	88	156	169	1221	100	48	0.29	0.64
29606.102	16.44	439	76	463	88	156	169	1221	100	48	0.29	0.64
29606.103	16.44	439	76	463	88	156	169	1221	100	48	0.29	0.64
29606.104	16.44	439	76	463	88	156	169	1221	100	48	0.29	0.64
29606.105	16.15	430	70	454	81	156	169	1221	100	48	0.29	0.64

*All values are MARV.

MWG13-15_34073

Product : GE116-180

ROLL # ASTM METHOD UNITS TARGET	WEIGHT D5261 oz/sq yd 16.00	MD TENSILE D4632 lbs. 425	MD ELONG D4632 % 50	XMD TENSILE D4632 lbs 425	XMD ELONG D4632 % 50	MD TRAP D4533 lbs. 150	XMD TRAP D4533 lbs 150	CBR PUNCTURE D6241 lbs. 1200	AOS D4751 US Sieve 100	WATER FLOW D4491 gpm/ft^2 45	PERMEAB-ILITY D4491 cm/sec 0.25	PERMITT-IVITY D4491 sec^{-1} 0.57
29606.106	16.15	430	70	454	81	156	169	1221	100	48	0.29	0.64
29606.107	16.15	430	70	454	81	156	169	1221	100	48	0.29	0.64
29606.108	16.15	430	70	454	81	156	169	1221	100	48	0.29	0.64
29606.109	16.15	430	70	454	81	156	169	1221	100	48	0.29	0.64
29606.110	16.59	437	78	460	86	151	165	1217	100	48	0.29	0.64
29606.111	16.59	437	78	460	86	151	165	1217	100	48	0.29	0.64
29606.112	16.59	437	78	460	86	151	165	1217	100	48	0.29	0.64
29606.113	16.59	437	78	460	86	151	165	1217	100	48	0.29	0.64
29606.114	16.59	437	78	460	86	151	165	1217	100	48	0.29	0.64
29606.115	16.10	432	72	452	84	151	165	1217	100	48	0.29	0.64
29606.116	16.10	432	72	452	84	151	165	1217	100	48	0.29	0.64
29606.117	16.10	432	72	452	84	151	165	1217	100	48	0.29	0.64
29606.118	16.10	432	72	452	84	151	165	1217	100	48	0.29	0.64
29606.119	16.10	432	72	452	84	151	165	1217	100	48	0.29	0.64
29606.120	16.67	440	80	464	89	159	167	1235	100	48	0.29	0.64
29606.121	16.67	440	80	464	89	159	167	1235	100	48	0.29	0.64
29606.122	16.67	440	80	464	89	159	167	1235	100	48	0.29	0.64
29606.123	16.67	440	80	464	89	159	167	1235	100	48	0.29	0.64
29606.124	16.67	440	80	464	89	159	167	1235	100	48	0.29	0.64
29606.125	16.14	435	74	455	82	159	167	1235	100	48	0.29	0.64
29606.126	16.14	435	74	455	82	159	167	1235	100	48	0.29	0.64
29606.127	16.14	435	74	455	82	159	167	1235	100	48	0.29	0.64
29606.128	16.14	435	74	455	82	159	167	1235	100	48	0.29	0.64
29606.129	16.14	435	74	455	82	159	167	1235	100	48	0.29	0.64
29606.130	16.69	438	77	459	87	155	160	1210	100	48	0.29	0.64
29606.131	16.69	438	77	459	87	155	160	1210	100	48	0.29	0.64
29606.132	16.69	438	77	459	87	155	160	1210	100	48	0.29	0.64
29606.133	16.69	438	77	459	87	155	160	1210	100	48	0.29	0.64
29606.134	16.69	438	77	459	87	155	160	1210	100	48	0.29	0.64
29606.135	16.11	431	71	453	80	155	160	1210	100	48	0.29	0.64
29606.136	16.11	431	71	453	80	155	160	1210	100	48	0.29	0.64
29606.137	16.11	431	71	453	80	155	160	1210	100	48	0.29	0.64
29606.138	16.11	431	71	453	80	155	160	1210	100	48	0.29	0.64
29606.139	16.11	431	71	453	80	155	160	1210	100	48	0.29	0.64
29606.140	16.41	436	79	461	90	157	170	1230	100	48	0.29	0.64

*All values are MARV.

MWG13-15_34074

Product : GE116-180

ROLL # ASTM METHOD UNITS TARGET	WEIGHT D5261 oz/sq yd 16.00	MD TENSILE D4632 lbs. 425	MD ELONG D4632 % 50	XMD TENSILE D4632 lbs 425	XMD ELONG D4632 % 50	MD TRAP D4533 lbs. 150	XMD TRAP D4533 lbs 150	CBR PUNCTURE D6241 lbs. 1200	AOS D4751 US Sieve 100	WATER FLOW D4491 gpm/ft^2 45	PERMEAB-ILITY D4491 cm/sec 0.25	PERMITT-IVITY D4491 sec^{-1} 0.57
29606.141	16.41	436	79	461	90	157	170	1230	100	48	0.29	0.64
29606.142	16.41	436	79	461	90	157	170	1230	100	48	0.29	0.64
29606.143	16.41	436	79	461	90	157	170	1230	100	48	0.29	0.64
29606.144	16.41	436	79	461	90	157	170	1230	100	48	0.29	0.64
29606.145	16.37	433	73	457	83	157	170	1230	100	48	0.29	0.64
29606.146	16.37	433	73	457	83	157	170	1230	100	48	0.29	0.64
29606.147	16.37	433	73	457	83	157	170	1230	100	48	0.29	0.64
29606.148	16.37	433	73	457	83	157	170	1230	100	48	0.29	0.64
29606.149	16.37	433	73	457	83	157	170	1230	100	48	0.29	0.64
29606.150	16.54	439	76	463	86	150	162	1215	100	46	0.29	0.62
29606.151	16.54	439	76	463	86	150	162	1215	100	46	0.29	0.62
29606.152	16.54	439	76	463	86	150	162	1215	100	46	0.29	0.62
29606.153	16.54	439	76	463	86	150	162	1215	100	46	0.29	0.62
29606.154	16.54	439	76	463	86	150	162	1215	100	46	0.29	0.62
29606.155	16.32	430	70	450	81	150	162	1215	100	46	0.29	0.62
29606.156	16.32	430	70	450	81	150	162	1215	100	46	0.29	0.62
29606.157	16.32	430	70	450	81	150	162	1215	100	46	0.29	0.62
29606.158	16.32	430	70	450	81	150	162	1215	100	46	0.29	0.62
29606.159	16.32	430	70	450	81	150	162	1215	100	46	0.29	0.62
29606.160	16.52	437	78	458	88	160	168	1224	100	46	0.29	0.62
29606.161	16.52	437	78	458	88	160	168	1224	100	46	0.29	0.62
29606.162	16.52	437	78	458	88	160	168	1224	100	46	0.29	0.62
29606.163	16.52	437	78	458	88	160	168	1224	100	46	0.29	0.62
29606.164	16.52	437	78	458	88	160	168	1224	100	46	0.29	0.62
29606.165	16.29	432	75	452	84	160	168	1224	100	46	0.29	0.62
29606.166	16.29	432	75	452	84	160	168	1224	100	46	0.29	0.62
29606.167	16.29	432	75	452	84	160	168	1224	100	46	0.29	0.62
29606.168	16.29	432	75	452	84	160	168	1224	100	46	0.29	0.62
29606.169	16.29	432	75	452	84	160	168	1224	100	46	0.29	0.62
29606.170	16.60	440	80	460	90	152	164	1213	100	46	0.29	0.62
29606.171	16.60	440	80	460	90	152	164	1213	100	46	0.29	0.62
29606.172	16.60	440	80	460	90	152	164	1213	100	46	0.29	0.62
29606.173	16.60	440	80	460	90	152	164	1213	100	46	0.29	0.62
29606.174	16.60	440	80	460	90	152	164	1213	100	46	0.29	0.62
29606.175	16.17	435	72	454	82	152	164	1213	100	46	0.29	0.62

*All values are MARV.

MWG13-15_34075

Product : GE116-180

ROLL # ASTM METHOD UNITS TARGET	WEIGHT D5261 oz/sq yd 16.00	MD TENSILE D4632 lbs. 425	MD ELONG D4632 % 50	XMD TENSILE D4632 lbs 425	XMD ELONG D4632 % 50	MD TRAP D4533 lbs. 150	XMD TRAP D4533 lbs 150	CBR PUNCTURE D6241 lbs. 1200	AOS D4751 US Sieve 100	WATER FLOW D4491 gpm/ft^2 45	PERMEAB-ILITY D4491 cm/sec 0.25	PERMITT-IVITY D4491 sec^{-1} 0.57
29606.176	16.17	435	72	454	82	152	164	1213	100	46	0.29	0.62
29606.177	16.17	435	72	454	82	152	164	1213	100	46	0.29	0.62
29606.178	16.17	435	72	454	82	152	164	1213	100	46	0.29	0.62
29606.179	16.17	435	72	454	82	152	164	1213	100	46	0.29	0.62
29606.180	16.63	438	77	465	87	158	166	1233	100	46	0.29	0.62
29606.181	16.63	438	77	465	87	158	166	1233	100	46	0.29	0.62
29606.182	16.63	438	77	465	87	158	166	1233	100	46	0.29	0.62
29606.183	16.63	438	77	465	87	158	166	1233	100	46	0.29	0.62
29606.184	16.63	438	77	465	87	158	166	1233	100	46	0.29	0.62
29606.185	16.12	433	74	451	80	158	166	1233	100	46	0.29	0.62
29606.186	16.12	433	74	451	80	158	166	1233	100	46	0.29	0.62

*All values are MARV.

ATTACHMENT D

GEOSYNTHETICS INSTALLER SUBMITTALS

ATTACHMENT D1

FIELD TENSIOMETER CALIBRATION

Demtech Services, Inc.

Placerville, California, USA

CALIBRATION CERTIFICATE

Clean Air and Water

Tensiometer Model: Pro-Tester T-0100

Device Calibrated: S-Type load cell
Range: 0 - 750 lbs. Tension
Model No: M2405-750#
Serial No: 668204

Calibration Apparatus:
Pro-Cal unit, model TC-0100/A

A/D Module Model No: T-029
A/D Module Serial No: 2911668204
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: 2.675813 Scale: 3.178533

Applied Force lbs.	Cell Response:	Deviation Error:
2	2	0.00
52	52	0.00
102	102	0.00
152	152	0.00
202	202	0.00
252	252	0.00
302	302	0.00

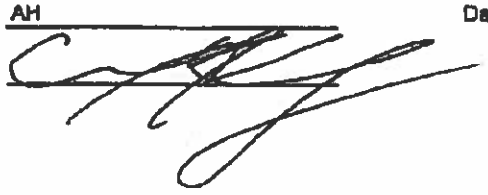
Total Deviation Error (%): 0.00%

Temperature at time of calibration: 73 degrees F
Exitation 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.

AH Date: 06/05/13



MWG13-15_34079

Demtech Services, Inc.

Placerville, California, USA

CALIBRATION CERTIFICATE

Clean Air and Water

Tensiometer Model: Pro-Tester T-0100

Device Calibrated: S-Type load cell
Range: 0 - 750 lbs. Tension
Model No: M2405-750#
Serial No: 681558

Calibration Apparatus:
Pro-Cal unit, model TC-0100/A

A/D Module Model No: T-029
A/D Module Serial No: 2212681556
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: 1.624357 Scale: 3.179799

Applied Force lbs.	Cell Response:	Deviation Error:
2	2	0.00
52	52	0.00
102	102	0.00
152	152	0.00
202	202	0.00
252	252	0.00
302	302	0.00

Total Deviation Error (%): 0.00%

Temperature at time of calibration: 73 degrees F
Exitation 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.

AH

Date: 06/05/13

MWG13-15_34080

Demtech Services, Inc.

Placerville, California, USA

CALIBRATION CERTIFICATE

Clean Air and Water

Tensiometer Model: Pro-Tester T-0100

Device Calibrated: S-Type load cell
Range: 0 - 750 lbs. Tension
Model No: M2405-750#
Serial No: 681564

Calibration Apparatus:
Pro-Cal unit, model TC-0100/A

A/D Module Model No: T-029
A/D Module Serial No: 2212681564
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: 6.082425 Scale: 3.204045

Applied Force lbs.	Cell Response:	Deviation Error:
2	2	0.00
52	52	0.00
102	102	0.00
152	152	0.00
202	202	0.00
252	252	0.00
302	302	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.

AH

Date: 08/30/13

MWG13-15_34081

ATTACHMENT D2

INSTALLER CREW RESUMES

RESUME FOR: Thong Ingels

Thong has been a Superintendent in the flexible membrane liner industry for >20 years. Below is his combined total square footage of flexible membrane liners installed under his management.

EXPERIENCE: Combined Square Footage: >100,000,000

LININGS INSTALLED: HDPE, LLDPE, Polypropylene, Hypalon, PVC, Geonet, Composites, Geosynthetic Clay, Geotextiles and XR-5.

TYPES OF PROJECTS: Heap Leach Pads, Landfills, Ponds, Landfill Caps, Secondary Containment Structures, Underliners and Methane Barriers.

EQUIPMENT KNOWLEDGE: Has extensive knowledge in maintaining and/or operating the following equipment:

- Wedge Welder
- Extrusion Welder
- Sewing Machines
- Tensiometer

TRAINING:

- CPR/First Aid Certified – American Heart Association Heartsaver Course
- 40 Hour HAZMAT - OSHA 29 CFR1910.120 & 1926.65
- OSHA 8 hour refresher (annual)
- 40 Hour MSHA Training
- Hertz Heavy Equipment Training

FIELD RESUME FOR: Sengratana Sengsay

Sengratana's main duty for CAAW Systems, LLC is as Quality Control Technician, and has been in the Flexible Membrane Liner industry for over 10 years. Below is his combined total square footage of Flexible Membrane Liners installed, this number may not include previous employment square footage.

EXPERIENCE: Combined Square Footage: >10,000,000

LININGS INSTALLED: HDPE, LLDPE, Polypropylene, Hypalon, PVC, Geonet, Composites, Geosynthetic Clay, Geotextiles and XR-5.

TYPES OF PROJECTS: Heap Leach Pads, Landfills, Ponds, Landfill Caps, Secondary Containment Structures, Underliners and Methane Barriers.

EQUIPMENT KNOWLEDGE: Has extensive knowledge in maintaining and/or operating the following equipment:

- Wedge Welder
- Extrusion Welder
- Sewing Machines
- Tensiometer

TRAINING:

- In-Field QC Training
- 40 Hr HAZMAT - OSHA 20CFR1910.120

FIELD RESUME FOR: Pheth Vongphrachanh

Pheth's main duty for CAAW Systems, LLC is as a Technician, and has been in the Flexible Membrane Liner industry for over 10 years. Below is his combined total square footage of Flexible Membrane Liners installed, this number may not include previous employment square footage.

EXPERIENCE: Combined Square Footage: >10,000,000

LININGS INSTALLED: HDPE, LLDPE, Polypropylene, Hypalon, PVC, Geonet, Composites, Geosynthetic Clay, Geotextiles and XR-5.

TYPES OF PROJECTS: Heap Leach Pads, Landfills, Ponds, Landfill Caps, Secondary Containment Structures, Underliners and Methane Barriers.

EQUIPMENT KNOWLEDGE: Has extensive knowledge in maintaining and/or operating the following equipment:

- Wedge Welder
- Extrusion Welder
- Sewing Machines
- Tensiometer

TRAINING:

- In-Field Training
- 40 Hr HAZMAT - OSHA 20CFR1910.120

FIELD RESUME FOR: So Khanthavong

So's main duty for CAAW Systems, LLC is as a Technician, and has been in the Flexible Membrane Liner industry for over 10 years. Below is his combined total square footage of Flexible Membrane Liners installed, this number may not include previous employment square footage.

EXPERIENCE: Combined Square Footage: >10,000,000

LININGS INSTALLED: HDPE, LLDPE, Polypropylene, Hypalon, PVC, Geonet, Composites, Geosynthetic Clay, Geotextiles and XR-5.

TYPES OF PROJECTS: Heap Leach Pads, Landfills, Ponds, Landfill Caps, Secondary Containment Structures, Underliners and Methane Barriers.

EQUIPMENT KNOWLEDGE: Has extensive knowledge in maintaining and/or operating the following equipment:

- Wedge Welder
- Extrusion Welder
- Sewing Machines
- Tensiometer

TRAINING:

- In-Field Training
- 40 Hr HAZMAT - OSHA 20CFR1910.120

FIELD RESUME FOR: Phouvanh Xaysana

Phouvanh's main duty for CAAW Systems, LLC is as a Technician, and has been in the Flexible Membrane Liner industry for over 10 years. Below is his combined total square footage of Flexible Membrane Liners installed, this number may not include previous employment square footage.

EXPERIENCE: Combined Square Footage: >10,000,000

LININGS INSTALLED: HDPE, LLDPE, Polypropylene, Hypalon, PVC, Geonet, Composites, Geosynthetic Clay, Geotextiles and XR-5.

TYPES OF PROJECTS: Heap Leach Pads, Landfills, Ponds, Landfill Caps, Secondary Containment Structures, Underliners and Methane Barriers.

EQUIPMENT KNOWLEDGE: Has extensive knowledge in maintaining and/or operating the following equipment:

- Wedge Welder
- Extrusion Welder
- Sewing Machines
- Tensiometer

TRAINING:

- In-Field Training
- 40 Hr HAZMAT - OSHA 20CFR1910.120

FIELD RESUME FOR: Khammy Kounnorath

Khammy's main duty for CAAW Systems, LLC is as a Technician, and has been in the Flexible Membrane Liner industry for over 10 years. Below is his combined total square footage of Flexible Membrane Liners installed, this number may not include previous employment square footage.

EXPERIENCE: Combined Square Footage: >10,000,000

LININGS INSTALLED: HDPE, LLDPE, Polypropylene, Hypalon, PVC, Geonet, Composites, Geosynthetic Clay, Geotextiles and XR-5.

TYPES OF PROJECTS: Heap Leach Pads, Landfills, Ponds, Landfill Caps, Secondary Containment Structures, Underliners and Methane Barriers.

EQUIPMENT KNOWLEDGE: Has extensive knowledge in maintaining and/or operating the following equipment:

- Wedge Welder
- Extrusion Welder
- Sewing Machines
- Tensiometer

TRAINING:

- In-Field Training
- 40 Hr HAZMAT - OSHA 20CFR1910.120

FIELD RESUME FOR: Heum NLN

Heum's main duty for CAAW Systems, LLC is as a Technician, and has been in the Flexible Membrane Liner industry for over 10 years. Below is his combined total square footage of Flexible Membrane Liners installed, this number may not include previous employment square footage.

EXPERIENCE: Combined Square Footage: >10,000,000

LININGS INSTALLED: HDPE, LLDPE, Polypropylene, Hypalon, PVC, Geonet, Composites, Geosynthetic Clay, Geotextiles and XR-5.

TYPES OF PROJECTS: Heap Leach Pads, Landfills, Ponds, Landfill Caps, Secondary Containment Structures, Underliners and Methane Barriers.

EQUIPMENT KNOWLEDGE: Has extensive knowledge in maintaining and/or operating the following equipment:

- Wedge Welder
- Extrusion Welder
- Sewing Machines
- Tensiometer

TRAINING:

- In-Field Training
- 40 Hr HAZMAT - OSHA 20CFR1910.120

FIELD RESUME FOR: Ketsana Vongphanchan

Ketsana's main duty for CAAW Systems, LLC is as a Technician, and has been in the Flexible Membrane Liner industry for over 10 years. Below is his combined total square footage of Flexible Membrane Liners installed, this number may not include previous employment square footage.

EXPERIENCE: Combined Square Footage: >10,000,000

LININGS INSTALLED: HDPE, LLDPE, Polypropylene, Hypalon, PVC, Geonet, Composites, Geosynthetic Clay, Geotextiles and XR-5.

TYPES OF PROJECTS: Heap Leach Pads, Landfills, Ponds, Landfill Caps, Secondary Containment Structures, Underliners and Methane Barriers.

EQUIPMENT KNOWLEDGE: Has extensive knowledge in maintaining and/or operating the following equipment:

- Wedge Welder
- Extrusion Welder
- Sewing Machines
- Tensiometer

TRAINING:

- In-Field Training
- 40 Hr HAZMAT - OSHA 20CFR1910.120

FIELD RESUME FOR: Moon Kala

Moon's main duty for CAAW Systems, LLC is as a Technician, and has been in the Flexible Membrane Liner industry for over 10 years. Below is his combined total square footage of Flexible Membrane Liners installed, this number may not include previous employment square footage.

EXPERIENCE: Combined Square Footage: >10,000,000

LININGS INSTALLED: HDPE, LLDPE, Polypropylene, Hypalon, PVC, Geonet, Composites, Geosynthetic Clay, Geotextiles and XR-5.

TYPES OF PROJECTS: Heap Leach Pads, Landfills, Ponds, Landfill Caps, Secondary Containment Structures, Underliners and Methane Barriers.

EQUIPMENT KNOWLEDGE: Has extensive knowledge in maintaining and/or operating the following equipment:

- Wedge Welder
- Extrusion Welder
- Sewing Machines
- Tensiometer

TRAINING:

- In-Field Training
- 40 Hr HAZMAT - OSHA 20CFR1910.120

FIELD RESUME FOR: Bounloth Lounnarath

Bounloth's main duty for CAAW Systems, LLC is as a Technician, and has been in the Flexible Membrane Liner industry for over 10 years. Below is her combined total square footage of Flexible Membrane Liners installed, this number may not include previous employment square footage.

EXPERIENCE: Combined Square Footage: >10,000,000

LININGS INSTALLED: HDPE, LLDPE, Polypropylene, Hypalon, PVC, Geonet, Composites, Geosynthetic Clay, Geotextiles and XR-5.

TYPES OF PROJECTS: Heap Leach Pads, Landfills, Ponds, Landfill Caps, Secondary Containment Structures, Underliners and Methane Barriers.

EQUIPMENT KNOWLEDGE: Has extensive knowledge in maintaining and/or operating the following equipment:

- Wedge Welder
- Extrusion Welder
- Sewing Machines
- Tensiometer

TRAINING:

- In-Field QC Training
- 40 Hr HAZMAT - OSHA 20CFR1910.120

FIELD RESUME FOR: Detphongsone Outhaaphay

Detphongsone's main duty for CAAW Systems, LLC is as a Technician, and has been in the Flexible Membrane Liner industry for over 10 years. Below is her combined total square footage of Flexible Membrane Liners installed, this number may not include previous employment square footage.

EXPERIENCE: Combined Square Footage: >10,000,000

LININGS INSTALLED: HDPE, LLDPE, Polypropylene, Hypalon, PVC, Geonet, Composites, Geosynthetic Clay, Geotextiles and XR-5.

TYPES OF PROJECTS: Heap Leach Pads, Landfills, Ponds, Landfill Caps, Secondary Containment Structures, Underliners and Methane Barriers.

EQUIPMENT KNOWLEDGE: Has extensive knowledge in maintaining and/or operating the following equipment:

- Wedge Welder
- Extrusion Welder
- Sewing Machines
- Tensiometer

TRAINING:

- In-Field QC Training
- 40 Hr HAZMAT - OSHA 20CFR1910.120

ATTACHMENT D3

SUBGRADE ACCEPTANCE

CERTIFICATE OF ACCEPTANCE OF SUBGRADE SURFACE PREPARATION FOR GEOMEMBRANE INSTALLATION

PROJECT NAME: MWG - Powerton - Ash Surge Basin

LOCATION: Peka, IL

JOB NUMBER: 201330 CLIENT: _____

AREA ACCEPTED: 391,842 sq ft

COMMENTS: subgrade accepted of Geotextile and Geomembrane deployment

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INSTALLER: The undersigned authorized representative of CAAW Systems certifies that he or she has visually inspected the subgrade surface of the area described above and has found the surface to be acceptable for installation of the geosynthetic materials.

CAAW Systems shall be responsible for the integrity of finished geosynthetic material until completion of the installation or demobilization from site.

This certification is based on observations of the subgrade surface conditions only. CAAW Systems has made no subterrain inspections or tests and makes no representations or warranties as to the conditions that may exist below the surface of the subgrade.

CERTIFICATE APPROVED BY:

Installers Acceptance		Inspectors Acceptance	
Company:	Clean Air And Water Systems, LLC	Company:	Natural Resource Technology
By:	[signature]	By:	Joseph A Larsen
Title:	QAQC	Title:	Environmental Scientist
Date:	8-14-13	Date:	8/14/13

ATTACHMENT D4

GEOSYNTHETIC MATERIAL INSTALLATION CERTIFICATE

November 14, 2013

Midwest Generation, LLC
Powerton Generating Station
13082 East Manito Road
Pekin IL 61554-8587

RE: Geosynthetic material installation certification

To Whom It May Concern

The HDPE geomembrane and geotextiles installed in the Ash Surge Basin were installed in accordance with the project specifications and manufactures recommendations.

Sincerely,

Matt Albert

Matt Albert
Project Estimator
CAAW Systems, LLC.

MWG13-15_34097

ATTACHMENT D5

GEOMEMBRANE INSTALLATION WARRANTIES

INSTALLATION WARRANTY- GEOMEMBRANE LINERS

PROJECT NAME: Powerton Generating Station

Subject to the terms and conditions set forth below, Clean Air And Water Systems, LLC warrants to Purchaser, _Midwest Generation, LLC_, that the _60 mil HDPE White Textured Geomembrane_ installed in the _Ash Surge Basin_, was installed by Clean Air And Water Systems, LLC, in accordance with the specifications in a good and workmanlike manner and that the installation of the liner is free from defects in workmanship for a period of two (2) years from the date upon which the material was installed.

This warranty covers only defects in workmanship occurring during the installation of the liner. This warranty does not cover ay damage to, or defects in the liner found to have been a result of misuse, abuse or conditions existing after it was installed, including, but not limited to, rough handling; malicious mischief; vandalism; sabotage; fire; acts of God; acts of the public enemy; acts of war, public rebellion, severe weather conditions of all types; damage due to ice; excessive stress from any source; floating debris; damage due to machinery; foreign objects or animals. Nor does this warranty cover any defects which are found to have been a result of improper or defective design or engineering unless the design or engineering was performed by Clean Air And Water Systems, LLC. In the event circumstances are found to exist which purchaser believes may give rise to a claim under this warranty, the following procedure shall be followed:

a) Purchaser shall give Clean Air And Water Systems, LLC written notice of the facts and circumstances of said claim within ten (10) days of becoming aware of said facts and circumstances. Said notice shall be by registered or certified mail, return receipt requested, postage prepaid, addressed to Member, Clean Air And Water Systems, LLC, 123 Elm Street, PO Box 337, Dousman, Wisconsin 53118. The words "WARRANTY CLAIM" shall be clearly marked on the face of envelope in the lower right hand corner. Said notice shall contain, at a minimum, the name and address of the owner, the name and address of the installation, the name and address of the installer, the date upon which the material was purchased and the facts known to Purchaser upon which the claim is based. Failure to strictly comply with all the requirements of this paragraph shall void this warranty.
b) Within twenty days after receipt of the notice described in paragraph a., above, Clean Air And Water Systems, LLC shall notify Purchaser either that it will send a representative to inspect the allegedly defective liner or that it does not wish to do so. Purchaser shall pay the expenses incurred by Clean Air And Water Systems, LLC in making the inspection, including current per diem rates for personnel involved in making the inspection, in the event Clean Air And Water Systems, LLC determines that the claim is not covered by this warranty.
c) Purchaser SHALL NOT REPAIR, REPLACE, REMOVE, ALTER OR DISTURB ANY LINER, NOR SHALL Purchaser ALLOW ANYONE ELSE TO REPAIR, REPLACE, REMOVE, ALTER, OR DISTURB ANY LINER PRIOR TO SUCH INSPECTION OR RECEIPT OF CLEAN AIR AND WATER SYSTEMS, LLC.'S NOTICE THAT IT ELECTS NOT TO INSPECT. A FAILURE TO STRICTLY COMPLY WITH THIS PARAGRAPH SHALL VOID THIS WARRANTY OR MAY LEAD TO A DETERMINATION THAT THE ALLEGED DEFECTS ARE NOT WITHIN THE SCOPE OF THIS WARRANTY.
d) If Clean Air And Water Systems, LLC determines that the alleged defects are covered by this warranty, Clean Air And Water Systems, LLC shall, in its sole discretion, either repair the defective liner or provide Purchaser with replacement liner. THE REMEDIES PROVIDED HEREIN ARE THE EXCLUSIVE REMEDIES AVAILABLE UNDER THIS WARRANTY. Any determination as to whether a particular defect is covered by this warranty will be made by Clean Air And Water Systems, LLC in its sole and complete discretion.

e) Purchaser agrees that it shall provide Clean Air And Water Systems, LLC with clean, dry and unobstructed access to the liner in order for Clean Air And Water Systems, LLC to perform the inspections and warranty work which may be required pursuant to this warranty.

THE REMEDIES PROVIDED TO Purchaser HEREIN ARE THE EXCLUSIVE REMEDIES AVAILABLE UNDER THIS WARRANTY AND ARE INTENDED FOR THE SOLE BENEFIT OF Purchaser. NEITHER THIS WARRANTY NOR ANY RIGHTS HEREUNDER SHALL BE ASSIGNABLE. CLEAN AIR AND WATER SYSTEMS, LLC SHALL HAVE NO LIABILITY UNDER THIS WARRANTY TO THIRD PARTIES OR STRANGERS TO THIS AGREEMENT. THE WARRANTY SET FORTH ABOVE IS THE ONLY WARRANTY APPLICABLE TO THE LINER AND ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL CLEAN AIR AND WATER SYSTEMS, LLC BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL OR CONSEQUENTIAL DAMAGES FOR, RESULTING FROM, OR IN CONNECTION WITH, ANY LOSS RESULTING FROM THE USE OF THE LINER. IN THE EVENT THE EXCLUSIVE REMEDY PROVIDED HEREIN FAILS IN ITS ESSENTIAL PURPOSE, AND IN THAT EVENT ONLY, Purchaser SHALL BE ENTITLED TO RETURN OF THE PURCHASE PRICE FOR SO MUCH OF THE MATERIAL AS CLEAN AIR AND WATER SYSTEMS, LLC DETERMINES IN ITS SOLE DISCRETION, TO HAVE VIOLATED THE WARRANTY PROVIDED HEREIN. EXCEPT FOR THE WARRANTY SET FORTH ABOVE, NO REPRESENTATION OR WARRANTY MADE BY ANY SALES OR OTHER REPRESENTATIVE CLEAN AIR AND WATER SYSTEMS, LLC, OR ANY OTHER PERSON, CONCERNING THE LINER SHALL BE BINDING UPON CLEAN AIR AND WATER SYSTEMS, LLC.

Any waiver of the terms and conditions of this warranty shall be in writing signed by CLEAN AIR AND WATER SYSTEMS, LLC the failure to insist upon strict compliance with any of the terms and conditions contained herein shall not act as a waiver of strict compliance with all of the remaining terms and conditions or this warranty and shall not operate as a waiver as to any of the terms and conditions of this warranty as to future claims under this warranty.

CLEAN AIR AND WATER SYSTEMS, LLC

Brian McKeown

BY:_____

Brian K. McKeown/ Member

I have read and agree to be bound by the terms and conditions of the foregoing warranty.

By: _____

Title: _____

Company: _____

Date: _____

ATTACHMENT E

GEOSYNTHETICS INSTALLATION

ATTACHMENT E1

TRIAL WELD SUMMARY

Trial Weld Summary

Project Number: 2113.2 / 4.2 Powerton Ash Surge Basin

Project Specifications: Fusion Peel: 91 ppi Extrusion Peel: 78 ppi Shear: 120 ppi

Test No.	Date	Time	Weather (Cloudy/ Sunny)	Amb. Temp. (°F)	Welder I.D.	Machine Number	Temp. Setting/ Speed	Weld Type	PEEL (ppi)						SHEAR (ppi)			Test Result (P/F)	Comments
									Outside Weld			Inside Weld							
									1	2	3	1	2	3	1	2	3		
T1	8/14/2013	8:00	Sunny	70	KK	140	850/5.0	Fus	148	137	132	136	128	136	178	175	192	P	
T2	8/14/2013	7:54	Sunny	70	HN	69	850/5.3	Fus	146	137	146	150	135	128	181	171	173	P	
T3	8/14/2013	12:58	Sunny	80	HN	69	850/5.3	Fus	120	122	128	123	101	110	143	141	140	P	
T4	8/14/2013	13:00	Sunny	80	KK	140	850/5.0	Fus	127	109	120	119	121	116	149	148	130	P	
T5	8/15/2013	8:15	Cloudy	60	KK	140	850/5.0	Fus	132	124	129	122	129	132	171	175	175	P	
T6	8/15/2013	8:18	Cloudy	60	HN	69	850/5.3	Fus	149	134	138	125	136	124	181	168	169	P	
T7	8/15/2013	13:20	Pt. Cldy	72	KK	140	850/5.0	Fus	116	103	114	112	113	125	156	155	159	P	
T8	8/15/2013	13:17	Pt. Cldy	72	HN	69	850/5.3	Fus	126	113	115	148	139	129	157	151	159	P	
T9	8/16/2013	7:45	Sunny	60	VK	46	515/400	Ext	–	–	–	130	139	138	170	176	171	P	
T10	8/16/2013	7:34	Sunny	60	PX	88	500/500	Ext	–	–	–	113	123	123	165	171	180	P	
T11	8/16/2013	7:40	Sunny	60	BL	10	515/400	Ext	–	–	–	114	109	96	161	167	166	P	
T12	8/16/2013	13:10	Pt. Cldy	77	PX	88	500/500	Ext	–	–	–	93	99	98	121	139	133	P	
T13	8/16/2013	13:30	Pt. Cldy	77	VK	46	515/400	Ext	–	–	–	124	129	136	145	155	156	P	
T14	8/16/2013	13:30	Pt. Cldy	77	BL	10	515/400	Ext	–	–	–	138	121	130	171	170	165	P	
T15	8/17/2013	7:41	Pt. Cldy	70	PX	46	500/400	Ext	–	–	–	118	124	138	171	178	174	P	
T16	8/17/2013	7:50	Pt. Cldy	70	BL	10	515/500	Ext	–	–	–	121	133	128	167	173	165	P	
T17	8/17/2013	7:40	Pt. Cldy	70	VP	10	515/500	Ext	–	–	–	133	121	138	171	165	165	P	
T18	8/19/2013	12:30	Pt. Cldy	80	KK	140	850/5.5	Fus	169	106	107	119	117	118	134	140	144	P	
T19	8/19/2013	12:32	Pt. Cldy	80	HN	69	850/5.4	Fus	119	115	127	123	138	111	160	148	159	P	
T20	8/19/2013	13:30	Pt. Cldy	85	VP	10	515/500	Ext	–	–	–	123	119	111	164	155	149	P	
T21	8/20/2013	7:34	Pt. Cldy	70	VP	88	500/400	Ext	–	–	–	128	128	129	163	170	168	P	

MWG13-15_34103

Trial Weld Summary

NATURAL RESOURCE TECHNOLOGY

Project Number: 2113.2 / 4.2 Powerton Ash Surge Basin

Project Specifications: Fusion Peel: 91 ppi Extrusion Peel: 78 ppi Shear: 120 ppi

Test No.	Date	Time	Weather (Cloudy/ Sunny)	Amb. Temp. (°F)	Welder I.D.	Machine Number	Temp. Setting/ Speed	Weld Type	PEEL (ppi)						SHEAR (ppi)			Test Result (P/F)	Comments
									Outside Weld			Inside Weld							
									1	2	3	1	2	3	1	2	3		
T22	8/20/2013	12:37	Pt. Cldy	85	HN	69	850/6.5	Fus	142	141	138	127	140	135	157	152	162	P	
T23	8/20/2013	12:45	Pt. Cldy	85	KK	140	850/6.5	Fus	154	146	145	144	146	145	152	156	147	P	
T24	8/20/2013	13:00	Pt. Cldy	85	VP	88	500/400	Ext	--	--	--	98	112	102	161	158	156	P	
T25	8/21/2013	7:28	Sunny	70	HN	69	850/6.3	Fus	129	128	129	138	131	126	173	162	175	P	
T26	8/21/2013	7:30	Sunny	70	KK	140	850/6.5	Fus	117	121	116	128	111	126	163	164	165	P	
T27	8/21/2013	12:51	Sunny	80	HN	69	850/6.3	Fus	125	116	120	119	119	110	138	135	135	P	
T28	8/21/2013	13:00	Sunny	80	KK	140	850/6.5	Fus	135	135	122	118	112	127	150	154	148	P	
T29	8/21/2013	13:00	Sunny	80	VP	88	850/700	Ext	--	--	--	101	109	110	141	145	152	P	
T30	8/21/2013	13:15	Sunny	80	HN	69	850/7.0	Fus	119	136	134	118	126	140	160	151	148	P	
T31	8/22/2013	7:45	Cloudy	70	KK	140	850/6.0	Fus	126	132	135	141	138	135	176	179	179	P	
T32	8/22/2013	7:50	Cloudy	70	VK	46	515/400	Ext	--	--	--	108	109	91	168	163	167	P	
T33	8/22/2013	8:30	Cloudy	70	BL	10	515/425	Ext	--	--	--	133	122	115	165	166	168	P	
T34	8/22/2013	13:10	Cloudy	80	VK	46	515/400	Ext	--	--	--	141	138	135	156	153	155	P	
T35	8/22/2013	12:50	Cloudy	80	BL	10	515/400	Ext	--	--	--	141	138	135	156	153	155	P	
T36	8/22/2013	12:55	Cloudy	80	VP	88	500/400	Ext	--	--	--	118	124	131	163	161	168	P	
T37	8/23/2013	7:30	Sunny	70	VK	46	515/400	Ext	--	--	--	108	110	99	176	174	174	P	
T38	8/23/2013	7:30	Sunny	70	BL	10	515/400	Ext	--	--	--	135	129	143	171	168	176	P	
T39	8/23/2013	7:10	Sunny	70	VP	88	500/400	Ext	--	--	--	142	146	103	170	168	177	P	
T40	8/23/2013	13:00	Sunny	80	VK	88	500/400	Ext	--	--	--	128	131	121	158	161	165	P	
T41	8/26/2013	8:00	Pt. Cldy	75	VK	46	515/400	Ext	--	--	--	130	126	137	180	181	178	P	
T42	8/26/2013	8:20	Pt. Cldy	75	PX	88	500/400	Ext	--	--	--	109	127	127	177	171	183	P	

Trial Weld Summary

NATURAL RESOURCE TECHNOLOGY

Project Number: 2113.2 / 4.2 Powerton Ash Surge Basin

Project Specifications: Fusion Peel: 91 ppi Extrusion Peel: 78 ppi Shear: 120 ppi

Test No.	Date	Time	Weather (Cloudy/ Sunny)	Amb. Temp. (°F)	Welder I.D.	Machine Number	Temp. Setting/ Speed	Weld Type	PEEL (ppi)						SHEAR (ppi)			Test Result (P/F)	Comments
									Outside Weld			Inside Weld							
									1	2	3	1	2	3	1	2	3		
T43	8/26/2013	14:15	Pt. Cldy	95	VP	88	500/400	Ext	--	--	--	128	98	101	181	167	161	P	
T44	8/27/2013	7:30	Hazy	75	VP	88	500/400	Ext	--	--	--	128	98	101	161	162	170	P	
T45	9/12/2013	13:50	--	92	VP	46	500/400	Ext	--	--	--	160	159	174	193	191	200	P	
T46	10/1/2013	13:10	Sunny	73	PX	76	500/500	Ext	--	--	--	122	115	150	124	147	125	P	
T47	10/2/2013	8:20	Fog	64	VP	76	530/500	Ext	--	--	--	149	143	145	139	194	159	P	
T48	10/2/2013	13:20	Sunny	80	VP	76	530/500	Ext	--	--	--	131	106	155	127	138	129	P	
T49	10/3/2013	9:05	Clear	69	VP	76	500/500	Ext	--	--	--	157	142	146	143	153	171	P	
T50	10/4/2013	8:00	Clear	69	VP	39	500/500	Ext	--	--	--	135	145	146	133	134	167	P	

ATTACHMENT E2

PANEL PLACEMENT SUMMARY

Panel Placement Summary

Project Number: 2113.2 / 4.2 Powerton Ash Surge Basin

Panel Number	Date	Time	Roll Number	Mat. Id.	Final Length (Feet)	Width	Thickness (mils)						Final Area (Sq. Ft.)	COMMENTS
P1	8/14/2013	8:00	6444	HDPE	60	22	--	--	--	--	--	--	1,320	
P2	8/14/2013	8:06	6444	HDPE	60	22	--	--	--	--	--	--	1,320	
P3	8/14/2013	8:09	6444	HDPE	60	22	--	--	--	--	--	--	1,320	
P4	8/14/2013	8:15	6444	HDPE	60	22	--	--	--	--	--	--	1,320	
P5	8/14/2013	8:20	6444	HDPE	60	22	--	--	--	--	--	--	1,320	
P6	8/14/2013	8:28	6444	HDPE	60	22	--	--	--	--	--	--	1,320	
P7	8/14/2013	8:35	6444	HDPE	60	22	--	--	--	--	--	--	1,320	
P8	8/14/2013	8:40	7001	HDPE	60	22	--	--	--	--	--	--	1,320	
P9	8/14/2013	9:00	7001	HDPE	60	22	--	--	--	--	--	--	1,320	
P10	8/14/2013	9:02	7001	HDPE	60	22	--	--	--	--	--	--	1,320	
P11	8/14/2013	9:07	7001	HDPE	57	22	--	--	--	--	--	--	1,254	
P12	8/14/2013	9:11	7001	HDPE	57	22	--	--	--	--	--	--	1,254	
P13	8/14/2013	9:15	7001	HDPE	52	21	--	--	--	--	--	--	1,092	
P14	8/14/2013	9:25	7001	HDPE	24	21	--	--	--	--	--	--	504	
P15	8/14/2013	9:29	7001	HDPE	27	22	--	--	--	--	--	--	594	
P16	8/14/2013	9:35	7001	HDPE	43	22	--	--	--	--	--	--	946	
P17	8/14/2013	10:10	6450	HDPE	351	22	--	--	--	--	--	--	7,722	
P18	8/14/2013	10:18	6450	HDPE	34	22	--	--	--	--	--	--	748	
P19	8/14/2013	10:20	6450	HDPE	11	8	--	--	--	--	--	--	88	
P20	8/14/2013	10:25	6994	HDPE	351	22	--	--	--	--	--	--	7,722	
P21	8/14/2013	10:58	5979	HDPE	360	22	--	--	--	--	--	--	7,920	
P22	8/14/2013	11:15	6984	HDPE	363	22	--	--	--	--	--	--	7,986	
P23	8/14/2013	13:05	6995	HDPE	363	22	80	75	--	--	--	--	7,986	
P24	8/14/2013	13:25	6993	HDPE	363	22	76	75	--	--	--	--	7,986	
P25	8/14/2013	14:01	7004	HDPE	360	22	76	82	--	--	--	--	7,920	
P26	8/14/2013	14:30	6977	HDPE	347	22	80	88	--	--	--	--	7,634	
P27	8/14/2013	15:01	6997	HDPE	361	22	79	74	--	--	--	--	7,942	
P28	8/14/2013	15:38	7003	HDPE	358	22	84	80	--	--	--	--	7,876	
P29	8/14/2013	16:09	6992	HDPE	368	22	77	80	--	--	--	--	8,096	
P30	8/15/2013	8:34	6978	HDPE	355	22	80	85	--	--	--	--	7,810	
P31	8/15/2013	9:00	7007	HDPE	361	22	80	83	--	--	--	--	7,942	
P32	8/15/2013	9:25	6990	HDPE	359	22	80	80	--	--	--	--	7,898	
P33	8/15/2013	9:55	6998	HDPE	361	22	79	80	--	--	--	--	7,942	
P34	8/15/2013	10:13	6983	HDPE	361	22	80	81	--	--	--	--	7,942	
P35	8/15/2013	10:45	6999	HDPE	361	22	75	81	--	--	--	--	7,942	
P36	8/15/2013	11:10	7000	HDPE	360	22	78	82	--	--	--	--	7,920	
P37	8/15/2013	13:30	7006	HDPE	363	22	80	81	--	--	--	--	7,986	
P38	8/15/2013	13:47	6980	HDPE	363	22	76	79	--	--	--	--	7,986	
P39	8/19/2013	12:30	5510	HDPE	360	22	79	80	--	--	--	--	7,920	
P40	8/19/2013	12:35	5101	HDPE	228	22	75	78	--	--	--	--	5,016	
P41	8/19/2013	13:30	5101	HDPE	135	22	75	78	--	--	--	--	2,970	
P42	8/19/2013	14:00	5101	HDPE	289	22	79	80	--	--	--	--	6,358	
P43	8/19/2013	14:05	6994	HDPE	79	22	80	75	--	--	--	--	1,738	
P44	8/19/2013	14:07	6994	HDPE	44	22	76	75	--	--	--	--	968	
P45	8/19/2013	14:18	7004	HDPE	39	22	76	82	--	--	--	--	858	

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Panel Placement Summary

Project Number: 2113.2 / 4.2 Powerton Ash Surge Basin

Panel Number	Date	Time	Roll Number	Mat. Id.	Final Length (Feet)	Width	Thickness (mils)						Final Area (Sq. Ft.)	COMMENTS
P46	8/19/2013	14:20	7004	HDPE	30	22	79	79	--	--	--	--	660	
P47	8/19/2013	14:22	7004	HDPE	24	22	84	81	--	--	--	--	528	
P48	8/19/2013	14:24	7004	HDPE	16	22	80	85	--	--	--	--	352	
P49	8/19/2013	14:26	7004	HDPE	10	22	80	83	--	--	--	--	220	
P50	8/19/2013	14:28	7004	HDPE	5	22	79	80	--	--	--	--	110	
P51	8/19/2013	14:59	6979	HDPE	152	22	77	80	--	--	--	--	3,344	
P52	8/19/2013	15:17	6980	HDPE	151	22	75	76	--	--	--	--	3,322	
P53	8/19/2013	15:30	7006	HDPE	160	22	79	82	--	--	--	--	3,520	
P54	8/19/2013	15:47	6999	HDPE	148	22	80	81	--	--	--	--	3,256	
P55	8/20/2013	12:30	6997	HDPE	154	22	79	80	--	--	--	--	3,388	
P56	8/20/2013	13:00	6993	HDPE	150	22	83	76	--	--	--	--	3,300	
P57	8/20/2013	13:15	6980	HDPE	150	22	76	83	--	--	--	--	3,300	
P58	8/20/2013	13:40	6983	HDPE	156	22	84	80	--	--	--	--	3,432	
P59	8/20/2013	13:40	6983	HDPE	6	22	80	80	--	--	--	--	132	
P60	8/20/2013	13:58	7003	HDPE	18	22	79	77	--	--	--	--	396	
P61	8/20/2013	14:04	7003	HDPE	139	22	79	77	--	--	--	--	3,058	
P62	8/20/2013	14:35	6985	HDPE	192	22	81	82	--	--	--	--	4,224	
P63	8/20/2013	14:45	6985	HDPE	288	22	70	73	--	--	--	--	6,336	
P64	8/20/2013	15:16	6977	HDPE	164	22	79	81	--	--	--	--	3,608	
P65	8/20/2013	15:31	7001	HDPE	154	22	75	79	--	--	--	--	3,388	
P66	8/20/2013	16:06	6984	HDPE	49	22	75	77	--	--	--	--	1,078	
P67	8/20/2013	16:10	6984	HDPE	29	22	76	79	--	--	--	--	638	
P68	8/21/2013	7:30	7002	HDPE	349	22	71	70	--	--	--	--	7,678	
P69	8/21/2013	8:02	7002	HDPE	160	22	73	75	--	--	--	--	3,520	
P70	8/21/2013	8:20	6992	HDPE	158	22	70	77	--	--	--	--	3,476	
P71	8/21/2013	8:22	6984	HDPE	36	22	79	79	--	--	--	--	792	
P72	8/21/2013	8:30	6978	HDPE	168	22	80	85	--	--	--	--	3,696	
P73	8/21/2013	9:00	6996	HDPE	187	22	75	74	--	--	--	--	4,114	
P74	8/21/2013	9:17	6996	HDPE	292	22	80	82	--	--	--	--	6,424	
P75	8/21/2013	9:51	6990	HDPE	60	22	76	76	--	--	--	--	1,320	
P76	8/21/2013	9:58	6982	HDPE	353	22	86	84	--	--	--	--	7,766	
P77	8/21/2013	10:43	6982	HDPE	156	22	75	77	--	--	--	--	3,432	
P78	8/21/2013	11:09	6988	HDPE	196	22	70	74	--	--	--	--	4,312	
P79	8/21/2013	12:59	6988	HDPE	290	22	75	73	--	--	--	--	6,380	
P80	8/21/2013	13:17	6991	HDPE	60	22	86	85	--	--	--	--	1,320	
P81	8/21/2013	13:25	6991	HDPE	360	22	76	79	--	--	--	--	7,920	
P82	8/21/2013	13:53	6981	HDPE	350	22	78	75	--	--	--	--	7,700	
P83	8/21/2013	14:22	6981	HDPE	163	22	79	83	--	--	--	--	3,586	
P84	8/21/2013	14:37	6987	HDPE	194	22	75	76	--	--	--	--	4,268	
P85	8/21/2013	14:52	6987	HDPE	293	22	77	80	--	--	--	--	6,446	
P86	8/21/2013	15:25	6991	HDPE	58	22	82	80	--	--	--	--	1,276	
P87	8/21/2013	15:37	6986	HDPE	348	22	74	73	--	--	--	--	7,656	
P88	8/21/2013	16:02	6986	HDPE	159	22	90	85	--	--	--	--	3,498	
P89	8/21/2013	16:16	6989	HDPE	148	22	76	80	--	--	--	--	3,256	
P90	8/21/2013	16:30	6989	HDPE	293	22	75	76	--	--	--	--	6,446	
P91	8/21/2013	16:49	6998	HDPE	57	22	75	73	--	--	--	--	1,254	

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Panel Placement Summary

Project Number: 2113.2 / 4.2 Powerton Ash Surge Basin

Panel Number	Date	Time	Roll Number	Mat. Id.	Final Length (Feet)	Width	Thickness (mils)						Final Area (Sq. Ft.)	COMMENTS
P92	8/21/2013	16:51	6998	HDPE	45	22	79	80	--	--	--	--	990	
P93	8/21/2013	16:54	6998	HDPE	30	22	75	75	--	--	--	--	660	
P94	8/21/2013	17:01	6990	HDPE	37	22	74	77	--	--	--	--	814	
P95	8/21/2013	17:10	6990	HDPE	39	22	73	71	--	--	--	--	858	
P96	8/21/2013	17:18	6995	HDPE	39	22	77	75	--	--	--	--	858	
P97	8/21/2013	17:24	6995	HDPE	14	21	79	74	--	--	--	--	294	
P98	8/22/2013	7:30	6998	HDPE	31	10	75	71	--	--	--	--	310	
P99	8/22/2013	7:32	6998	HDPE	31	11	75	71	--	--	--	--	341	
P100	8/22/2013	7:35	6998	HDPE	26	9	75	71	--	--	--	--	234	
P101	8/22/2013	7:38	6998	HDPE	21	10	75	71	--	--	--	--	210	
P102	8/22/2013	7:40	6996	HDPE	28	9	74	75	--	--	--	--	252	
P103	8/22/2013	7:43	6996	HDPE	28	12	74	75	--	--	--	--	336	
P104	8/22/2013	7:45	6984	HDPE	33	10	73	70	--	--	--	--	330	
P105	8/22/2013	7:47	6984	HDPE	35	9	73	70	--	--	--	--	315	
P106	8/22/2013	8:00	6984	HDPE	14	9	73	71	--	--	--	--	126	
													389,720	TOTAL

ATTACHMENT E3

PANEL SEAMING SUMMARY

NATURAL RESOURCE TECHNOLOGY

Panel Seaming Summary

Project Number: 2113.2 / 4.2 Powerton Ash Surge Basin

Seam Number	Date Seamed	Final Seam Length (Feet)	Welder Id.	Weld Type	Machine Number	Machine Temp/ Speed or Preheat	Time		Ambient Temp. (°F)	Comments
							Start	Stop		
P1 / P2	8/14/13	60	KK	Fus	140	850/5.0	8:15	8:20	70	Machine 140
P1 / P16	8/14/13	20	KK	Fus	140	850/5.0	11:00	11:05	75	
P1 / P18	8/14/13	21	KK	Fus	140	850/5.0	10:56	11:00	75	
P1 / P19	8/14/13	6	KK	Fus	140	850/5.0	10:55	10:56	75	3 segments - west
P2 / P3	8/14/13	60	HN	Fus	69	850/5.3	8:17	8:27	70	
P3 / P4	8/14/13	60	HN	Fus	69	850/5.3	8:30	8:39	70	
P4 / P5	8/14/13	60	KK	Fus	140	850/5.0	8:30	8:40	70	Burnout
P5 / P6	8/14/13	34	KK	Fus	140	850/5.0	8:45	8:55	70	seam cenered on concrete outlet - batten strip
P6 / P7	8/14/13	60	HN	Fus	69	850/5.3	8:44	8:51	70	
P7 / P8	8/14/13	60	HN	Fus	69	850/5.3	8:56	9:16	70	
P8 / P9	8/14/13	60	KK	Fus	140	850/5.0	9:00	9:10	70	
P9 / P10	8/14/13	60	KK	Fus	140	850/5.0	9:15	9:25	75	
P10 / P11	8/14/13	57	HN	Fus	69	850/5.3	9:21	9:26	75	
P11 / P12	8/14/13	57	HN	Fus	69	850/5.3	9:32	9:36	75	
P12 / P13	8/14/13	57	KK	Fus	140	850/5.0	9:30	9:40	75	
P13 / P14	8/14/13	21	HN	Fus	69	850/5.3	9:59	10:02	75	
P13 / P15	8/14/13	22	HN	Fus	69	850/5.3	9:56	9:59	75	22' not trimmed
P13 / P17	8/14/13	15	HN	Fus	69	850/5.3	10:18	10:23	75	
P14 / P15	8/14/13	24	HN	Fus	69	850/5.3	9:39	9:44	75	
P15 / P17	8/14/13	24	HN	Fus	69	850/5.3	10:23	10:27	75	
P16 / P17	8/14/13	42	KK	Fus	140	850/5.0	10:20	10:25	75	

Panel Seaming Summary

Project Number: 2113.2 / 4.2 Powerton Ash Surge Basin

Seam Number	Date Seamed	Final Seam Length (Feet)	Welder Id.	Weld Type	Machine Number	Machine Temp/ Speed or Preheat	Time		Ambient Temp. (°F)	Comments
							Start	Stop		
P16 / P18	8/14/13	36	KK	Fus	140	850/5.0	10:30	10:35	75	
P17 / P20	8/14/13	62	HN	Fus	69	850/5.3	10:47	10:56	75	between risers
P17 / P20	8/14/13	74	HN	Fus	69	850/5.3	11:24	11:36	75	burn thru slope 14' W of E trench
P17 / P20	8/14/13	216	HN	Fus	69	850/5.3	10:56	11:24	75	east of east riser
P18 / P19	8/14/13	13	KK	Fus	140	850/5.0	10:50	10:52	75	
P20 / P21	8/14/13	353	KK	Fus	140	850/5.0	11:10	12:00	75	
P21 / P22	8/14/13	357	HN	Fus	69	850/5.3	13:16	14:00	80	
P22 / P23	8/14/13	355	KK	Fus	140	850/5.0	13:15	14:05	80	excess panel trimmed
P23 / P24	8/14/13	354	HN	Fus	69	850/5.3	14:09	14:59	80	excess panel trimmed
P24 / P25	8/14/13	352	KK	Fus	140	850/5.0	14:30	15:15	80	panel trimed; burn thru west floor edge
P25 / P26	8/14/13	346	HN	Fus	69	850/5.3	15:12	15:52	80	east wall outlet structure
P26 / P27	8/14/13	351	KK	Fus	140	850/5.0	15:20	16:08	80	burn through west toe
P27 / P28	8/14/13	351	HN	Fus	69	850/5.3	15:56	16:47	80	excess panel trimmed
P28 / P29	8/14/13	354	KK	Fus	140	850/5.0	16:15	17:00	80	excess panel trimmed
P29 / P30	8/15/13	350	KK	Fus	140	850/5.0	8:40	9:30	60	panel trimmed short of anchor trench
P30 / P31	8/15/13	73	HN	Fus	69	850/5.3	9:43	9:53	60	riser to east trench
P30 / P31	8/15/13	281	HN	Fus	69	850/5.3	9:15	9:45	60	
P31 / P32	8/15/13	356	KK	Fus	140	850/5.0	9:35	10:20	60	excess panel trimmed
P32 / P33	8/15/13	356	HN	Fus	69	850/5.3	10:13	10:53	65	excess panel trimmed
P33 / P34	8/15/13	354	KK	Fus	140	850/5.0	10:30	11:20	65	excess panel trimmed
P34 / P35	8/15/13	350	HN	Fus	69	850/5.3	11:16	11:54	65	excess panel trimmed

Panel Seaming Summary

Project Number: 2113.2 / 4.2 Powerton Ash Surge Basin

Seam Number	Date Seamed	Final Seam Length (Feet)	Welder Id.	Weld Type	Machine Number	Machine Temp/ Speed or Preheat	Time		Ambient Temp. (°F)	Comments
							Start	Stop		
P35 / P36	8/15/13	356	KK	Fus	140	850/5.0	11:25	12:05	65	excess panel trimmed
P36 / P37	8/15/13	360	KK	Fus	140	850/5.0	13:35	14:30	72	riser cut from west end 69'
P37 / P38	8/15/13	360	HN	Fus	69	850/5.3	13:59	14:44	72	excess panel trimmed
P38 / P39	8/19/13	360	KK	Fus	140	850/5.0	12:45	13:30	80	
P39 / P40	8/19/13	135	HN	Fus	69	850/5.3	14:10	14:32	80	excess panel trimmed
P39 / P41	8/19/13	138	HN	Fus	69	850/5.3	13:37	14:10	80	
P40 / P41	8/19/13	22	KK	Fus	140	850/5.0	13:35	13:40	80	
P40 / P42	8/19/13	67	KK	Fus	140	850/5.0	14:55	15:05	85	riser to east trench
P40 / P42	8/19/13	143	KK	Fus	140	850/5.0	14:45	14:55	80	P41 to riser
P41 / P42	8/19/13	53	KK	Fus	140	850/5.0	14:25	14:45	85	
P41 / P43	8/19/13	79	KK	Fus	140	850/5.0	14:15	14:25	85	
P42 / P43	8/19/13	22	KK	Fus	140	850/5.0	14:05	14:10	80	
P42 / P51	8/19/13	17	KK	Fus	140	850/5.0	15:33	15:35	85	cut at riser to west (ramp)
P42 / P51	8/19/13	129	KK	Fus	140	850/5.0	15:35	15:50	85	east of riser
P42 / P52	8/19/13	154	KK	Fus	140	850/5.0	15:50	16:15	85	
P43 / P44	8/19/13	48	HN	Fus	69	850/5.3	14:34	14:42	85	
P43 / P51	8/19/13	11	KK	Fus	140	850/5.0	15:30	15:33	85	
P44 / P45	8/19/13	40	HN	Fus	69	850/5.3	14:45	14:51	85	
P45 / P46	8/19/13	33	HN	Fus	69	850/5.3	14:53	15:00	85	
P46 / P47	8/19/13	26	HN	Fus	69	850/5.3	15:01	15:06	85	
P47 / P48	8/19/13	19	HN	Fus	69	850/5.3	15:07	15:13	85	

Panel Seaming Summary

Project Number: 2113.2 / 4.2 Powerton Ash Surge Basin

Seam Number	Date Seamed	Final Seam Length (Feet)	Welder Id.	Weld Type	Machine Number	Machine Temp/ Speed or Preheat	Time		Ambient Temp. (°F)	Comments
							Start	Stop		
P48 / P49	8/19/13	12	HN	Fus	69	850/5.3	15:14	15:16	85	
P49 / P50	8/19/13	6	HN	Fus	69	850/5.3	15:18	15:19	85	
P51 / P52	8/19/13	22	KK	Fus	140	850/5.0	15:20	15:25	85	
P51 / P53	8/19/13	156	HN	Fus	69	850/5.3	15:42	16:03	85	
P52 / P53	8/19/13	3	HN	Fus	69	850/5.3	16:03	16:04	85	
P52 / P54	8/19/13	148	HN	Fus	69	850/5.3	16:09	16:42	85	
P53 / P54	8/19/13	22	HN	Fus	69	850/5.3	16:05	16:08	85	
P53 / P55	8/20/13	154	KK	Fus	140	850/6.5	12:55	13:20	85	
P53 / P56	8/20/13	3	KK	Fus	140	850/6.5	13:25	13:26	85	
P53 / P59	8/20/13	6	KK	Fus	140	850/6.5	13:20	13:25	85	
P54 / P56	8/20/13	149	KK	Fus	140	850/6.5	13:26	13:40	85	
P55 / P57	8/20/13	150	HN	Fus	69	850/6.3	13:25	13:51	85	
P55 / P59	8/20/13	22	KK	Fus	140	850/6.5	13:50	13:55	85	
P55 / P60	8/20/13	22	HN	Fus	69	850/6.3	14:16	14:17	85	
P56 / P58	8/20/13	152	HN	Fus	69	850/6.3	14:19	14:35	85	
P56 / P59	8/20/13	22	KK	Fus	140	850/6.5	14:00	14:04	85	
P57 / P60	8/20/13	22	HN	Fus	69	850/6.3	14:09	14:13	85	
P57 / P61	8/20/13	150	KK	Fus	140	850/6.5	14:20	14:39	85	
P57 / P62	8/20/13	14	KK	Fus	140	850/6.5	14:45	14:50	85	
P58 / P59	8/20/13	6	HN	Fus	69	850/6.3	14:18	14:19	85	
P58 / P60	8/20/13	22	HN	Fus	69	850/6.3	14:00	14:02	85	

Panel Seaming Summary

Project Number: 2113.2 / 4.2 Powerton Ash Surge Basin

Seam Number	Date Seamed	Final Seam Length (Feet)	Welder Id.	Weld Type	Machine Number	Machine Temp/ Speed or Preheat	Time		Ambient Temp. (°F)	Comments
							Start	Stop		
P58 / P62	8/20/13	158	KK	Fus	140	850/6.5	14:53	15:10	85	
P60 / P62	8/20/13	18	KK	Fus	140	850/6.5	14:50	14:53	85	
P61 / P62	8/20/13	22	KK	Fus	140	850/6.5	14:40	14:45	85	
P61 / P63	8/20/13	93	HN	Fus	69	850/6.3	15:09	15:21	85	
P61 / P66	8/20/13	48	HN	Fus	69	850/6.3	16:09	16:15	85	
P62 / P63	8/20/13	192	HN	Fus	69	850/6.3	15:21	15:41	85	
P63 / P64	8/20/13	115	HN	Fus	69	850/6.3	16:32	16:44	85	
P63 / P65	8/20/13	154	KK	Fus	140	850/6.0	15:55	16:15	85	
P63 / P66	8/20/13	22	HN	Fus	69	850/6.3	16:18	16:23	85	
P63 / P67	8/20/13	29	KK	Fus	140	850/6.5	16:35	16:40	85	
P64 / P66	8/20/13	54	HN	Fus	69	850/6.3	16:25	16:44	85	
P64 / P67	8/20/13	22	KK	Fus	140	850/6.5	16:20	16:23	85	Temp 85
P64 / P68	8/21/13	168	HN	Fus	69	850/6.3	7:58	8:15	70	
P65 / P67	8/20/13	22	KK	Fus	140	850/6.5	16:30	16:32	85	
P65 / P68	8/21/13	156	HN	Fus	69	850/6.3	8:18	8:38	70	
P67 / P68	8/21/13	29	HN	Fus	69	850/6.3	8:15	8:18	70	
P68 / P69	8/21/13	156	KK	Fus	140	850/6.5	9:05	9:25	70	P68/P69
P68 / P70	8/21/13	159	KK	Fus	140	850/6.5	8:45	9:00	70	
P68 / P71	8/21/13	36	KK	Fus	140	850/6.5	9:00	9:05	70	
P69 / P71	8/21/13	22	KK	Fus	140	850/6.5	8:35	8:40	70	P69/P71
P69 / P72	8/21/13	62	HN	Fus	69	850/6.3	9:10	9:19	70	riser to east trench

Panel Seaming Summary

Project Number: 2113.2 / 4.2 Powerton Ash Surge Basin

Seam Number	Date Seamed	Final Seam Length (Feet)	Welder Id.	Weld Type	Machine Number	Machine Temp/ Speed or Preheat	Time		Ambient Temp. (°F)	Comments
							Start	Stop		
P69 / P72	8/21/13	95	HN	Fus	69	850/6.3	9:01	9:10	70	riser west to P73
P70 / P71	8/21/13	22	KK	Fus	140	850/6.5	8:25	8:30	70	
P70 / P73	8/21/13	160	HN	Fus	69	850/6.3	9:24	9:43	75	
P71 / P72	8/21/13	3	HN	Fus	69	850/6.3	9:00	9:01	70	
P71 / P73	8/21/13	36	HN	Fus	69	850/6.3	9:43	9:47	75	
P72 / P73	8/21/13	22	KK	Fus	140	850/6.0	9:35	9:40	70	
P72 / P74	8/21/13	166	KK	Fus	140	850/6.5	10:00	10:15	80	
P73 / P74	8/21/13	130	KK	Fus	140	850/6.5	9:45	10:00	75	
P73 / P75	8/21/13	60	HN	Fus	69	850/6.3	10:04	10:12	75	
P74 / P75	8/21/13	22	HN	Fus	69	850/6.3	9:57	10:02	80	
P74 / P76	8/21/13	290	KK	Fus	140	850/6.5	10:35	11:10	80	
P75 / P76	8/21/13	62	KK	Fus	140	850/6.5	10:30	10:35	80	
P76 / P77	8/21/13	158	HN	Fus	69	850/6.3	10:57	11:16	80	
P76 / P78	8/21/13	198	KK	Fus	140	850/6.5	11:15	11:35	80	
P77 / P78	8/21/13	22	HN	Fus	69	850/6.3	11:22	11:26	80	
P77 / P79	8/21/13	155	KK	Fus	140	850/6.5	13:30	13:45	87	
P78 / P79	8/21/13	137	KK	Fus	140	850/6.5	13:15	13:30	87	
P78 / P80	8/21/13	60	HN	Fus	69	850/6.3	13:26	13:27	87	
P79 / P80	8/21/13	22	HN	Fus	69	850/6.3	13:16	13:21	87	
P79 / P81	8/21/13	292	HN	Fus	69	850/6.3	13:58	14:23	87	
P80 / P81	8/21/13	61	HN	Fus	69	850/6.3	13:49	13:58	87	

Panel Seaming Summary

Project Number: 2113.2 / 4.2 Powerton Ash Surge Basin

Seam Number	Date Seamed	Final Seam Length (Feet)	Welder Id.	Weld Type	Machine Number	Machine Temp/ Speed or Preheat	Time		Ambient Temp. (°F)	Comments
							Start	Stop		
P81 / P82	8/21/13	350	KK	Fus	140	850/6.5	14:15	14:55	87	
P82 / P83	8/21/13	163	HN	Fus	69	850/6.3	14:33	14:49	87	
P82 / P84	8/21/13	187	HN	Fus	69	850/6.3	14:58	15:16	87	panels were measured before trimming
P83 / P84	8/21/13	22	KK	Fus	140	850/6.5	15:00	15:05	87	
P83 / P85	8/21/13	163	KK	Fus	140	850/6.5	15:25	15:45	87	
P84 / P85	8/21/13	135	KK	Fus	140	850/6.5	15:15	15:25	87	
P84 / P86	8/21/13	58	HN	Fus	69	850/6.3	15:35	15:43	87	
P85 / P86	8/21/13	22	HN	Fus	69	850/6.3	15:29	15:33	87	
P85 / P87	8/21/13	290	KK	Fus	140	850/6.5	16:05	16:35	87	
P86 / P87	8/21/13	58	KK	Fus	140	850/6.5	16:00	16:05	87	
P87 / P88	8/21/13	159	HN	Fus	69	850/6.3	16:12	16:27	87	
P87 / P89	8/21/13	198	HN	Fus	69	850/6.3	16:36	16:55	87	
P88 / P89	8/21/13	22	KK	Fus	140	850/6.5	16:45	16:50	87	
P88 / P90	8/21/13	62	HN	Fus	69	850/6.3	17:39	17:45	87	E riser to E trench
P88 / P90	8/21/13	94	KK	Fus	140	850/6.5	17:27	17:39	87	
P89 / P90	8/21/13	14	HN	Fus	69	850/6.3	17:00	17:10	87	W riser to P91
P89 / P90	8/21/13	121	HN	Fus	69	850/6.3	17:15	17:27	87	
P89 / P91	8/21/13	58	HN	Fus	69	850/6.3	16:55	17:00	87	
P90 / P91	8/21/13	22	KK	Fus	140	850/6.5	16:55	17:00	87	
P90 / P96	8/21/13	42	KK	Fus	140	850/6.5	17:37	17:42	87	
P90 / P98	8/22/13	22	KK	Fus	140	850/6.0	8:49	8:51	70	

Panel Seaming Summary

Project Number: 2113.2 / 4.2 Powerton Ash Surge Basin

Seam Number	Date Seamed	Final Seam Length (Feet)	Welder Id.	Weld Type	Machine Number	Machine Temp/ Speed or Preheat	Time		Ambient Temp. (°F)	Comments
							Start	Stop		
P90 / P99	8/22/13	31	KK	Fus	140	850/6.0	8:51	9:00	70	
P90 / P100	8/22/13	26	KK	Fus	140	850/6.0	9:00	9:03	75	
P90 / P101	8/22/13	27	KK	Fus	140	850/6.0	9:03	9:05	75	
P90 / P102	8/22/13	27	KK	Fus	140	850/6.0	9:05	9:10	75	
P90 / P103	8/22/13	28	KK	Fus	140	850/6.0	9:10	9:15	75	
P90 / P104	8/22/13	33	KK	Fus	140	850/6.0	9:15	9:20	75	
P90 / P105	8/22/13	33	KK	Fus	140	850/6.0	9:20	9:25	75	
P90 / P106	8/22/13	13	KK	Fus	140	850/6.0	9:25	9:30	75	
P91 / P92	8/21/13	48	KK	Fus	140	850/6.5	17:05	17:10	87	
P91 / P98	8/22/13	6	KK	Fus	140	850/6.0	8:47	8:49	70	
P92 / P93	8/21/13	22	KK	Fus	140	850/6.5	17:25	17:30	87	
P92 / P94	8/21/13	16	KK	Fus	140	850/6.5	17:30	17:35	87	
P92 / P98	8/22/13	9	KK	Fus	140	850/6.0	8:45	8:47	70	
P93 / P94	8/21/13	30	KK	Fus	140	850/6.5	17:15	17:20	87	
P95 / P96	8/21/13	18	KK	Fus	140	850/6.5	17:50	17:52	87	
P95 / P97	8/21/13	26	KK	Fus	140	850/6.5	17:45	17:47	87	
P96 / P97	8/21/13	15	KK	Fus	140	850/6.5	17:52	18:00	87	
P96 / P106	8/22/13	8	KK	Fus	140	850/6.0	8:38	8:40	70	Capped
P98 / P99	8/22/13	8	KK	Fus	140	850/6.0	7:52	7:55	70	
P99 / P100	8/22/13	8	KK	Fus	140	850/6.0	7:55	8:00	70	
P100 / P101	8/22/13	8	KK	Fus	140	850/6.0	8:03	8:05	70	

Panel Seaming Summary

Project Number: 2113.2 / 4.2 Powerton Ash Surge Basin

Seam Number	Date Seamed	Final Seam Length (Feet)	Welder Id.	Weld Type	Machine Number	Machine Temp/ Speed or Preheat	Time		Ambient Temp. (°F)	Comments
							Start	Stop		
P101 / P102	8/22/13	8	KK	Fus	140	850/6.0	8:08	8:10	70	
P102 / P103	8/22/13	8	KK	Fus	140	850/6.0	8:13	8:15	70	
P103 / P104	8/22/13	8	KK	Fus	140	850/6.0	8:18	8:20	70	
P104 / P105	8/22/13	8	KK	Fus	140	850/6.0	8:25	8:30	70	
P105 / P106	8/22/13	8	KK	Fus	140	850/6.0	8:33	8:35	70	

ATTACHMENT E4

REPAIR SUMMARY

Repair Summary

Project Number: 2113.2 / 4.2 Powerton Ash Surge Basin

Repair Number	Date	Time	Oper./Mach.	Repair Location North East	Description	Size of Repair	Date Vacuum Tested	Vac. Test Results (P/F)
R1	8/20/2013	9:00	VP / 88	P6/P7, Structure N	Structure	2'x70'	8/20/2013	P
R2	8/16/2013	14:00	VK / 46	P9/P10, North near trench	Patch	4'x2'	8/17/2013	ELIS
R3	8/16/2013	11:45	BL / 10	P17/P20, Riser 65' W	Boot	6'x5'	8/17/2013	P
R4	8/16/2013	11:15	VK / 46	P17/P20, Riser 74' E	Boot	5'x3'	8/17/2013	P
R5	8/16/2013	8:25	VK / 46	P20/P21, 13' E	Patch	6'x3'	8/17/2013	P
R6	8/16/2013	13:38	BL / 10	P26, Structure E	Patch	14'x6'	8/17/2013	P
R7	8/16/2013	11:30	PX / 88	P24/P25, 75' W	Patch	4'x2'	8/17/2013	P
R8	8/16/2013	11:15	PX / 88	P26/P27, 55' W	Patch	3'x4'	8/17/2013	P
R9	8/16/2013	10:00	PX / 88	P27/P28, 42' W	Patch	5'x2'	8/17/2013	P
R10	8/16/2013	10:10	PX / 88	P27/P28, 9' E of R29	Patch	4'x2'	8/17/2013	P
R11	8/16/2013	7:50	VK / 46	P17, 2' E R17	Patch	1'x1'	8/17/2013	P
R12	8/16/2013	10:25	VK / 46	P30/P31, Riser 73' W	Boot	7'x2'	8/17/2013	P
R13	8/16/2013	9:00	PX / 88	P36/P37, Riser 76' E	Boot	6'x2'	8/17/2013	P
R14	8/16/2013	8:00	VK / 46	P13/P15/P17	Tee	2'x2'	8/17/2013	P
R15	8/16/2013	8:05	VK / 46	P13/P14/P15	Tee	2'x2'	8/17/2013	P
R16	8/16/2013	8:47	VK / 46	P22/P23, E near trench	Patch	2'x1'	8/17/2013	P
R17	8/16/2013	8:55	VK / 46	P23/P24, E near trench	Patch	1'x1'	8/17/2013	P
R18	8/16/2013	8:30	BL / 10	P18/P19, Trench N	Patch	3'x4'	8/17/2013	P
R19	8/16/2013	8:25	BL / 10	P1/P18/P19, Joint N 4'	Tee	1'x2'	8/17/2013	P
R20	8/16/2013	8:20	BL / 10	P1/P16/P18, Joint N 25'	Tee	1'x2'	8/17/2013	P
R21	8/16/2013	8:45	BL / 10	P16/P17, Trench	Patch	2'x4'	8/17/2013	P
R22	8/16/2013	9:00	BL / 10	P17/P20, Trench W 4' across	Patch	2'x4'	8/17/2013	P

ELIS: Electrical Liner Integrity Survey

Repair Summary

Project Number: 2113.2 / 4.2 Powerton Ash Surge Basin

Repair Number	Date	Time	Oper./Mach.	Repair Location North East	Description	Size of Repair	Date Vacuum Tested	Vac. Test Results (P/F)
R23	8/16/2013	9:11	VK / 46	P26/P27, Trench E	Patch	3'x3'	8/26/2013	P
R24	8/16/2013	9:30	VK / 46	P29/P30, 2' from trench	Patch	1'x2'	8/26/2013	P
R25	8/16/2013	9:15	BL / 10	P22/P23, 1' from trench W	Patch	1'x2'	8/26/2013	P
R26	8/16/2013	10:00	BL / 10	P23/P24, 2' from trench W	Patch	1'x2'	8/26/2013	P
R27	8/16/2013	10:30	BL / 10	P24/P25, Trench W	Patch	3'x5'	8/26/2013	P
R28	8/16/2013	9:05	PX / 88	P34/P35, 2' from W trench	Patch	4'x2'	8/26/2013	P
R29	8/16/2013	9:20	PX / 88	P29/P30, 1' from W trench	Patch	2'x5'	8/26/2013	P
R30	8/16/2013	9:45	PX / 88	P27/P28, 2' from W trench	Patch	1'x2'	8/26/2013	P
R31	8/16/2013	13:52	VK / 46	P10/P11, 1' from N trench	Patch	1'x1'	8/26/2013	P
R32	8/16/2013	11:40	VK / 46	P17, 2' E trench	Patch	1'x1'	8/26/2013	P
R33	8/16/2013	15:20	PX / 88	P4/P5, 5' N trench	Patch	7'x2'	8/27/2013	ELIS
R34	8/16/2013	15:13	VK / 46	P12/P13	Outfall	4'x2'	8/27/2013	ELIS
R35	8/16/2013	14:55	VK / 46	P12	Outfall	2'x1'	8/27/2013	ELIS
R36	8/16/2013	14:43	VK / 46	P11/P12	Outfall	1'x1'	8/27/2013	ELIS
R37	8/16/2013	14:40	VK / 46	P10/P11	Outfall	3'x2'	8/27/2013	ELIS
R38	8/16/2013	15:30	VK / 46	P7/P8	Outfall	2'x1'	8/27/2013	ELIS
R39	8/16/2013	13:40	PX / 88	P1/P2	Outfall	3'x2'	8/27/2013	ELIS
R40	8/16/2013	14:50	PX / 88	P1/P16, 2' from outfall	Outfall	1'x1'	8/17/2013	P
R41	8/16/2013	14:45	PX / 88	P16/P17	Outfall	3'x3'	8/17/2013	P
R42	8/17/2013	8:40	VK / 46	P13/P17	Outfall	2'x3'	8/27/2013	ELIS
R43	8/17/2013	8:30	VK / 46	P17	Outfall	8'x1'	8/27/2013	ELIS
R44	8/20/2013	13:30	VP / 88	E Structure	Second Layer	4'x4'	8/20/2013	P

ELIS: Electrical Liner Integrity Survey

Repair Summary

Project Number: 2113.2 / 4.2 Powerton Ash Surge Basin

Repair Number	Date	Time	Oper./Mach.	Repair Location North East	Description	Size of Repair	Date Vacuum Tested	Vac. Test Results (P/F)
R45	8/20/2013	14:00	VP / 88	E Structure	Second Layer	7'x5'	8/20/2013	P
R46	8/22/2013	8:30	VK / 46	P39/P40/P41, 138 E trench	Tee	1'x1'	8/27/2013	ELIS
R47	8/22/2013	8:37	VK / 46	P40/P41/P42, 138 E trench	Tee	1'x2'	8/27/2013	ELIS
R48	8/22/2013	8:45	VK / 46	P42/P51/P52, 154 E trench	Tee	2'x2'	8/27/2013	ELIS
R49	8/22/2013	8:47	VK / 46	P51/P52/P53/P54, 154 E trench	Tee	5'x2'	8/27/2013	ELIS
R50	8/22/2013	9:20	VK / 46	P53/P54/P56/P59, 151 E trench	Tee	2'x21'	8/27/2013	ELIS
R51	8/22/2013	9:22	VK / 46	P53/P54/P56/P59, 152 E trench	Tee	2'x13'	8/27/2013	ELIS
R52	8/22/2013	9:55	VK / 46	P56/P58/P59 154 E trench	Tee	2'x2'	8/27/2013	ELIS
R53	8/22/2013	10:00	VK / 46	P55/P58/P59/P60, 161 E trench	Tee	2'x3'	8/27/2013	ELIS
R54	8/22/2013	10:10	VK / 46	P58/P60/P62, 161 E trench	Tee	2'x2'	8/27/2013	ELIS
R55	8/22/2013	10:15	VK / 46	P57/P60/P62, 180 E trench	Tee	2'x2'	8/27/2013	ELIS
R56	8/22/2013	10:05	VK / 46	P55/P57/P60, 180 E trench	Tee	2'x2'	8/27/2013	ELIS
R57	8/22/2013	10:20	VK / 46	P57/P61/P62, 195 E trench	Tee	3'x2'	8/27/2013	ELIS
R58	8/22/2013	10:25	VK / 46	P62, 195 E trench	Patch	2'x1'	8/27/2013	ELIS
R59	8/22/2013	10:30	VK / 46	P61/P62/P63, 195 E trench	Tee	2'x2'	8/27/2013	ELIS
R60	8/22/2013	8:45	BL / 10	P41/P42/P43, 79 W trench	Tee	2'x2'	8/27/2013	ELIS
R61	8/22/2013	8:50	BL / 10	P43, 76 W trench	Patch	2'x2'	8/27/2013	ELIS
R62	8/22/2013	8:55	BL / 10	P43, 72 W trench	Patch	1'x1'	8/27/2013	ELIS
R63	8/21/2013	14:00	VP / 88	P43, 43 W trench	Patch	2'x1'	8/27/2013	ELIS
R64	8/22/2013	9:45	BL / 10	P42/P51, 20 W ramp	Bad Seam	10'x6'	8/27/2013	ELIS
R65	8/22/2013	10:00	BL / 10	P61/P63/P66, 48 W ramp	Tee	6'x2'	8/27/2013	ELIS
R66	8/22/2013	10:10	BL / 10	P63/P64/P66, 55 W ramp	Tee	2'x1'	8/27/2013	ELIS

ELIS: Electrical Liner Integrity Survey

Repair Summary

Project Number: 2113.2 / 4.2 Powerton Ash Surge Basin

Repair Number	Date	Time	Oper./Mach.	Repair Location North East	Description	Size of Repair	Date Vacuum Tested	Vac. Test Results (P/F)
R67	8/22/2013	10:25	BL / 10	P63/P64, 107 W ramp	Patch	2'x2'	8/27/2013	ELIS
R68	8/22/2013	10:50	BL / 10	P63/P64/P67, 167 W ramp	Tee	2'x2'	8/27/2013	ELIS
R69	8/22/2013	11:00	BL / 10	P63/P65/P67, 196 W ramp	Tee	7'x1'	8/27/2013	ELIS
R70	8/22/2013	10:45	BL / 10	P64/P67/P68, 169 W ramp	Tee	2'x1'	8/27/2013	ELIS
R71	8/22/2013	11:15	BL / 10	P65/P67/P68, 199 W ramp	Tee	2'x2'	8/27/2013	ELIS
R72	8/22/2013	13:15	VK / 46	P38/P39, E trench, 1'	Patch	1'x1'	8/27/2013	ELIS
R73	8/22/2013	13:20	VK / 46	P40/P42, 1' E trench	Patch	1'x1'	8/27/2013	ELIS
R74	8/22/2013	11:25	VK / 46	P40/P42, Riser, 67' E trench	Boot	9'x3'	8/27/2013	ELIS
R75	8/22/2013	13:35	VK / 46	P54/P56, E trench	Patch	1'x2'	8/27/2013	ELIS
R76	8/22/2013	11:20	BL / 10	P68/P69/P71, 164' E trench	Patch	2'x1'	8/27/2013	ELIS
R77	8/22/2013	13:00	BL / 10	P69/P71/P72/P73, 164' E trench	Tee	7'x2'	8/27/2013	ELIS
R78	8/22/2013	13:08	BL / 10	P73, 164' E trench	Patch	2'x1'	8/27/2013	ELIS
R79	8/22/2013	13:15	BL / 10	P72/P73/P74, 163' E trench	Tee	2'x2'	8/27/2013	ELIS
R80	8/22/2013	13:40	BL / 10	P73, 174' E trench	Patch	2'x2'	8/27/2013	ELIS
R81	8/22/2013	13:50	BL / 10	P73, 182' E trench	Patch	2'x2'	8/27/2013	ELIS
R82	8/22/2013	14:00	VK / 46	P56/P58, 1' E trench	Patch	1'x1'	8/27/2013	ELIS
R83	8/22/2013	14:00	BL / 10	P70/P71/P73, 158' W trench	Tee	2'x1'	8/27/2013	ELIS
R84	8/22/2013	14:05	BL / 10	P68/P70/P71, 158' W trench	Tee	2'x2'	8/27/2013	ELIS
R85	8/22/2013	14:15	BL / 10	P73/P74/P75, 62' W trench	Tee	2'x2'	8/27/2013	ELIS
R86	8/22/2013	14:25	BL / 10	P74/P75/P76, 62' W trench	Tee	1'x1'	8/27/2013	ELIS
R87	8/22/2013	15:20	VK / 46	P69/P72, 65' E trench	Boot	8'x3'	8/27/2013	ELIS
R88	8/22/2013	15:15	VK / 46	P72, 71' E trench	Patch	1'x1'	8/27/2013	ELIS

ELIS: Electrical Liner Integrity Survey

Repair Summary

Project Number: 2113.2 / 4.2 Powerton Ash Surge Basin

Repair Number	Date	Time	Oper./Mach.	Repair Location North East	Description	Size of Repair	Date Vacuum Tested	Vac. Test Results (P/F)
R89	8/22/2013	14:55	BL / 10	P78/P79/P80, 62' W trench	Tee	3'x3'	8/27/2013	ELIS
R90	8/22/2013	15:00	BL / 10	P79/P80/P81, 63' W trench	Tee	2'x1'	8/27/2013	ELIS
R91	8/22/2013	15:40	VK / 46	P76/P77/P78, 153' E trench	Tee	8'x2'	8/27/2013	ELIS
R92	8/22/2013	15:50	VK / 46	P77/P78/P79, 153' E trench	Tee	2'x2'	8/27/2013	ELIS
R93	8/22/2013	15:10	BL / 10	P84/P85/P86, 59' W trench	Tee	5'x3'	8/27/2013	ELIS
R94	8/22/2013	15:20	BL / 10	P85/P86/P87, 59' W trench	Tee	2'x1'	8/27/2013	ELIS
R95	8/22/2013	16:25	BL / 10	P87/P89, 45' W trench	Patch	3'x2'	8/27/2013	ELIS
R96	8/22/2013	16:15	BL / 10	P89/P90, 72' W trench riser	Boot	8'x4'	8/27/2013	ELIS
R97	8/22/2013	16:00	VK / 46	P82/P83/P84, 158' E trench	Tee	2'x2'	8/27/2013	ELIS
R98	8/22/2013	16:05	VK / 46	P83/P84/P85, 158' E trench	Tee	2'x2'	8/27/2013	ELIS
R99	8/22/2013	16:22	VK / 46	P87/P88/P89, 154' E trench	Tee	5'x3'	8/27/2013	ELIS
R100	8/22/2013	16:30	VK / 46	P88/P89/P90, 155' E trench	Tee	2'x1'	8/27/2013	ELIS
R101	8/22/2013	16:25	VK / 46	P89, 80' E trench	Patch	2'x1'	8/27/2013	ELIS
R102	8/22/2013	16:15	VP / 88	P42/P43/P51, 12' W ramp	Tee	1'x1'	8/27/2013	ELIS
R103	8/22/2013	16:02	VP / 88	P43, East side ramp	Patch	5'x2'	8/27/2013	ELIS
R104	8/22/2013	15:50	VP / 88	P53, East side ramp	Patch	1'x1'	8/27/2013	ELIS
R105	8/22/2013	15:45	VP / 88	P53, East side ramp	Patch	2'x2'	8/27/2013	ELIS
R106	8/22/2013	15:55	VP / 88	P53, East side ramp	Patch	4'x1'	8/27/2013	ELIS
R107	8/22/2013	15:40	VP / 88	P53/P55, East side ramp	Patch	19'x1'	8/27/2013	ELIS
R108	8/22/2013	15:35	VP / 88	P53/P55, East side ramp	Patch	4'x1'	8/27/2013	ELIS
R109	8/22/2013	15:30	VP / 88	P55/P57, East side ramp	Patch	17x3'	8/27/2013	ELIS
R110	8/22/2013	16:30	VP / 88	P57, East side ramp	Patch	1'x1'	8/27/2013	ELIS

ELIS: Electrical Liner Integrity Survey

Repair Summary

Project Number: 2113.2 / 4.2 Powerton Ash Surge Basin

Repair Number	Date	Time	Oper./Mach.	Repair Location North East	Description	Size of Repair	Date Vacuum Tested	Vac. Test Results (P/F)
R111	8/22/2013	16:35	VP / 88	P57, East side ramp	Patch	1'x1'	8/27/2013	ELIS
R112	8/22/2013	16:55	VP / 88	P57/P61, East side ramp	Patch	2'x3'	8/27/2013	ELIS
R113	8/22/2013	16:25	BL / 10	P87/P89, 45' W trench	Patch	2'x1'	8/27/2013	ELIS
R114	8/23/2013	7:50	BL / 10	P89/P90/P91, 59' W trench	Tee	2'x2'	8/27/2013	ELIS
R115	8/23/2013	8:50	BL / 10	P92/P93/P94, 24' W trench	Tee	2'x2'	8/27/2013	ELIS
R116	8/23/2013	8:00	BL / 10	P91/P92/P98, 48' W trench	Tee	3'x2'	8/27/2013	ELIS
R117	8/23/2013	8:05	BL / 10	P90/P91/P98, 8' E of R 116	Tee	2'x2'	8/27/2013	ELIS
R118	8/23/2013	8:10	BL / 10	P90/P98/P99, 22' E of R117	Tee	2'x2'	8/27/2013	ELIS
R119	8/23/2013	8:15	BL / 10	P90/P99/P100, 32' E of R118	Tee	2'x2'	8/27/2013	ELIS
R120	8/23/2013	8:23	BL / 10	P90/P100/P101, 26' E of R120	Tee	2'x1'	8/27/2013	ELIS
R121	8/23/2013	8:30	BL / 10	P90/P101/P102, 27' E of R120	Tee	2'x2'	8/27/2013	ELIS
R122	8/23/2013	8:40	VK / 46	P90/P102/P103, 156' E trench	Tee	2'x1'	8/27/2013	ELIS
R123	8/23/2013	8:45	VK / 46	P90/P103/P104, 127' E trench	Tee	1'x1'	8/27/2013	ELIS
R124	8/23/2013	8:50	VK / 46	P90/P104/P105, 93' E trench	Tee	2'x1'	8/27/2013	ELIS
R125	8/23/2013	8:55	VK / 46	P90/P105/P106, 54' E trench	Tee	1'x1'	8/27/2013	ELIS
R126	8/23/2013	9:20	VK / 46	P90/P96/P106, 42' E trench	Tee	4'x3'	8/27/2013	ELIS
R127	8/23/2013	8:30	VK / 46	P88/P90, 60' E trench	Patch	7'x3'	8/27/2013	ELIS
R128	8/23/2013	9:25	VK / 46	P95/P96/P97, 14' E trench	Tee	2'x1'	8/27/2013	ELIS
R129	8/23/2013	9:43	VK / 46	P85, 2' E trench	Patch	2'x2'	8/27/2013	ELIS
R130	8/23/2013	9:45	VK / 46	P82/P83, 1' E trench	Patch	1'x1'	8/27/2013	ELIS
R131	8/23/2013	9:00	BL / 10	P92/P93, trench	Patch	6'x2'	8/27/2013	ELIS
R132	8/23/2013	9:10	BL / 10	P91/P92, W trench	Patch	3'x1'	8/27/2013	ELIS

Repair Summary

Project Number: 2113.2 / 4.2 Powerton Ash Surge Basin

Repair Number	Date	Time	Oper./Mach.	Repair Location North East	Description	Size of Repair	Date Vacuum Tested	Vac. Test Results (P/F)
R133	8/23/2013	9:15	BL / 10	P89/P91, W trench	Patch	2'x2'	8/27/2013	ELIS
R134	8/23/2013	9:20	BL / 10	P87/P89, 1' W trench	Patch	2'x2'	8/27/2013	ELIS
R135	8/23/2013	9:40	BL / 10	P86/P87, 1' W trench	Patch	2'x2'	8/27/2013	ELIS
R136	8/23/2013	9:50	BL / 10	P84/P86, 1' W trench	Patch	3'x3'	8/27/2013	ELIS
R137	8/23/2013	10:05	BL / 10	P82/P84, 1' W trench	Patch	2'x2'	8/27/2013	ELIS
R138	8/23/2013	10:15	BL / 10	P81/P82, 1' W trench	Patch	2'x2'	8/27/2013	ELIS
R139	8/23/2013	10:23	BL / 10	P80/P81, 1' W trench	Patch	2'x2'	8/27/2013	ELIS
R140	8/23/2013	10:30	BL / 10	P78/P80, 1' W trench	Patch	2'x2'	8/27/2013	ELIS
R141	8/23/2013	11:00	BL / 10	P76/P78, 1' W trench	Patch	2'x2'	8/27/2013	ELIS
R142	8/23/2013	11:03	BL / 10	P75/P76, 1' W trench	Patch	2'x2'	8/27/2013	ELIS
R143	8/23/2013	11:07	BL / 10	P73/P75, 1' W trench	Patch	2'x2'	8/27/2013	ELIS
R144	8/23/2013	11:10	BL / 10	P70/P73, 1' W trench	Patch	2'x3'	8/27/2013	ELIS
R145	8/23/2013	11:20	BL / 10	P68/P70, 1' W trench	Patch	1'x1'	8/27/2013	ELIS
R146	8/23/2013	8:39	VP / 88	P68, East side ramp	Patch	3'x2'	8/27/2013	ELIS
R147	8/23/2013	8:00	VP / 88	P64/P68, East side ramp	Patch	3'x2'	8/27/2013	ELIS
R148	8/23/2013	7:33	VP / 88	P64/P66, East side ramp	Patch	8'x2'	8/27/2013	ELIS
R149	8/23/2013	10:40	VK / 46	P38/P39, 1' W ramp	Patch	1'x1'	8/27/2013	ELIS
R150	8/23/2013	10:47	VK / 46	P39/P41, 1' W ramp	Patch	1'x1'	8/27/2013	ELIS
R151	8/23/2013	10:55	VK / 46	P41/P43, 1' W ramp	Patch	1'x1'	8/27/2013	ELIS
R152	8/23/2013	11:00	VK / 46	P43/P44, 1' W ramp	Patch	1'x1'	8/27/2013	ELIS
R153	8/23/2013	11:05	VK / 46	P44/P45, 1' W ramp	Patch	2'x1'	8/27/2013	ELIS
R154	8/23/2013	11:12	VK / 46	P45/P46, 1' W ramp	Patch	2'x1'	8/27/2013	ELIS

ELIS: Electrical Liner Integrity Survey

Repair Summary

Project Number: 2113.2 / 4.2 Powerton Ash Surge Basin

Repair Number	Date	Time	Oper./Mach.	Repair Location North East	Description	Size of Repair	Date Vacuum Tested	Vac. Test Results (P/F)
R155	8/23/2013	11:20	VK / 46	P46/P47, 1' W ramp	Patch	2'x2'	8/27/2013	ELIS
R156	8/23/2013	11:25	VK / 46	P47/P48, 1' W ramp	Patch	2'x1'	8/27/2013	ELIS
R157	8/23/2013	11:35	VK / 46	P48/P49, 1' W ramp	Patch	2'x1'	8/27/2013	ELIS
R158	8/23/2013	11:40	VK / 46	P49/P50, 1' W ramp	Patch	1'x1'	8/27/2013	ELIS
R159	8/23/2013	13:58	VK / 88	P100/P101, 6' South R120 (inlet)	Patch	4'x1'	8/27/2013	ELIS
R160	8/23/2013	14:26	VK / 88	P92/P98, south inlet ramp	Patch	10'x2'	8/27/2013	ELIS
R161	8/23/2013	11:00	VK / 46	P45/P46, W ramp	Patch	1'x1'	8/27/2013	ELIS
R162	8/26/2013	8:30	PX / 88	P94, inlet structure, W	Boot	19'x4'	8/27/2013	ELIS
R163	8/26/2013	11:11	PX / 88	P95, inlet structure/trench	Structure	10'x7'	8/26/2013	P
R164	8/26/2013	15:54	VP / 88	P8, weir wall	Patch	10'x2'	8/26/2013	P
R165	8/27/2013	9:35	VP / 88	P85, 2' E trench	Patch	2'x2'	8/27/2013	P
R166	8/26/2013	10:35	PX / 88	P96, 38' E trench	Patch	2'x2'	8/26/2013	P
—	9/12/2013	—	VP / 46	—	Patch	2'x4'	9/12/2013	P
R167	10/1/2013	16:05	PX / 76	Batten strip near weir wall	Strips and patch	102'x3'	10/3/2013	P
R168	10/2/2013	10:30	VP / 76	Patch along weir wall	Patch runs east to west	134'x2'	10/3/2013	P
R169	10/2/2013	17:00	VP / 76	Weir wall	Batton strip	11'x3'	10/3/2013	P
R170	10/2/2013	16:30	VP / 76	P1/P16	Patch	34'x3'	10/3/2013	P
R171	10/3/2013	10:20	VP / 76	P38, 11' from warning layer	Patch	2'x2'	10/3/2013	P
R172	10/3/2013	11:00	VP / 76	Riser on P17, west	Boot	–	Spark Test	P
R173	10/4/2013	9:30	VP / 37	Riser on P31, east	Boot	--	Spark Test	P

ATTACHMENT E5

NON-DESTRUCTIVE TEST SUMMARY

Non-Destructive Test Summary

Project Number: 2113.2 / 4.2 Powerton Ash Surge Basin

Seam Number	Distance/ Location	Air Test: 27-30 psi for 5 min, < 3 psi loss						Vacuum Test		Comments
		Date Air Tested	Air Pressure				Air Test Results	Date Vacuum Tested	Vac. Test Results (P/F)	
			Start		End					
			PSI	Time	PSI	Time				
P1 / P2	BOS - EOS	8/14/2013	30	14:46	30	14:51	P			
P1 / P16	BOS - EOS	8/14/2013	30	14:06	28	14:11	P			
P1 / P18	BOS - EOS	8/14/2013	30	14:17	30	14:22	P			
P1 / P19	BOS - EOS	8/14/2013	30	14:22	30	14:27	P			P1/P19
P2 / P3	BOS - EOS	8/14/2013	30	14:53	30	14:58	P			
P3 / P4	BOS - EOS	8/14/2013	30	14:54	30	14:59	P			
P4 / P5	South 46'	8/14/2013	30	15:05	30	15:10	P			burnout
P4 / P5	North 14'	8/14/2013	30	15:06	30	15:11	P			
P5 / P6	BOS - EOS	8/14/2013	30	15:16	30	15:21	P			
P6 / P7	BOS - EOS	8/14/2013	30	15:23	30	15:28	P			
P7 / P8	BOS - EOS	8/14/2013	30	15:22	28	15:27	P			
P8 / P9	BOS - EOS	8/14/2013	30	15:32	28	15:37	P			
P9 / P10	BOS - EOS	8/14/2013	30	15:33	30	15:38	P			
P10 / P11	BOS - EOS	8/14/2013	30	15:38	30	15:43	P			
P11 / P12	BOS - EOS	8/14/2013	30	15:39	30	15:44	P			
P12 / P13	BOS - EOS	8/14/2013	30	15:46	30	15:51	P			
P13 / P14	BOS - EOS	8/14/2013	30	16:06	29	16:11	P			
P13 / P15	BOS - EOS	8/14/2013	30	16:00	30	16:05	P			
P13 / P17	BOS - EOS	8/14/2013	30	15:52	28	15:57	P			
P14 / P15	BOS - EOS	8/14/2013	30	16:02	28	16:07	P			

BOS: Beginning of Seam
EOS: End of Seam

MWG13-15_34130

Non-Destructive Test Summary

Project Number: 2113.2 / 4.2 Powerton Ash Surge Basin

Seam Number	Distance/ Location	Air Test: 27-30 psi for 5 min, < 3 psi loss						Vacuum Test		Comments
		Date Air Tested	Air Pressure				Air Test Results	Date Vacuum Tested	Vac. Test Results (P/F)	
			Start		End					
			PSI	Time	PSI	Time				
P15 / P17	BOS - EOS	8/14/2013	30	15:53	29	15:58	P			
P16 / P17	BOS - EOS	8/14/2013	30	14:05	30	14:10	P			
P16 / P18	BOS - EOS	8/14/2013	30	14:16	30	14:21	P			
P17 / P20	west of west riser	8/15/2013	30	9:20	30	9:25	P			62'
P17 / P20	between risers	8/15/2013	30	9:21	30	9:26	P			216'
P17 / P20	east of east riser	8/15/2013	30	9:22	30	9:27	P			74'
P18 / P19	BOS - EOS	8/14/2013	30	14:21	28	14:26	P			
P20 / P21	east trench to 14' W	8/15/2013	30	9:33	28	9:38	P			14'
P20 / P21	west of 14' W of E trench	8/15/2013	30	9:34	28	9:39	P			340'
P21 / P22	BOS - EOS	8/15/2013	30	9:35	29	9:40	P			
P22 / P23	BOS - EOS	8/15/2013	30	8:48	30	8:53	P			
P23 / P24	BOS - EOS	8/15/2013	30	9:50	30	9:55	P			
P24 / P25	R7 BOS - EOS west end	8/15/2013	30	10:03	30	10:08	P			63'
P24 / P25	east end to R7	8/15/2013	30	10:04	30	10:09	P			289'
P25 / P26	BOS - EOS	8/15/2013	30	10:07	30	10:12	P			
P26 / P27	west end to R8	8/15/2013	30	10:14	30	10:19	P			56'
P26 / P27	R8 to east end	8/15/2013	30	10:15	30	10:20	P			295'
P27 / P28	west end to R9	8/15/2013	30	10:18	28	10:23	P			40'
P27 / P28	R9 to R10	8/15/2013	30	10:23	30	10:28	P			5'
P27 / P28	R10 to east end	8/15/2013	30	10:24	28	10:29	P			

BOS: Beginning of Seam
EOS: End of Seam

Non-Destructive Test Summary

Project Number: 2113.2 / 4.2 Powerton Ash Surge Basin

Seam Number	Distance/ Location	Air Test: 27-30 psi for 5 min, < 3 psi loss						Vacuum Test		Comments
		Date Air Tested	Air Pressure				Air Test Results	Date Vacuum Tested	Vac. Test Results (P/F)	
			Start		End					
			PSI	Time	PSI	Time				
P28 / P29	BOS - EOS	8/15/2013	30	10:53	30	10:58	P			
P29 / P30	BOS - EOS	8/15/2013	30	11:47	30	11:52	P			
P30 / P31	east end to riser	8/15/2013	30	13:11	30	13:16	P			68'
P30 / P31	riser to west end	8/15/2013	30	13:10	30	13:15	P			280'
P31 / P32	BOS - EOS	8/15/2013	30	11:49	29	11:54	P			
P32 / P33	BOS - EOS	8/15/2013	30	13:18	30	13:23	P			
P33 / P34	BOS - EOS	8/15/2013	30	13:19	30	13:24	P			
P34 / P35	BOS - EOS	8/15/2013	30	14:26	30	14:31	P			
P35 / P36	BOS - EOS	8/15/2013	30	14:27	28	14:32	P			
P36 / P37	east end to riser	8/15/2013	30	14:39	30	14:44	P			291'
P36 / P37	riser to west end	8/15/2013	30	14:57	30	15:02	P			69'
P37 / P38	BOS - EOS	8/15/2013	30	14:50	29	14:55	P			
P38 / P39	BOS - EOS	8/20/2013	30	11:03	30	11:08	P			
P39 / P40	BOS - EOS	8/20/2013	30	10:47	30	10:52	P			
P39 / P41	BOS - EOS	8/20/2013	30	10:46	30	10:51	P			
P40 / P41	BOS - EOS	8/20/2013	30	10:39	30	10:44	P			
P40 / P42	BOS - EOS	8/20/2013	30	10:37	30	10:42	P			
P41 / P42	BOS - EOS	8/20/2013	30	10:38	30	10:43	P			
P41 / P43	BOS - EOS	8/20/2013	30	11:02	30	11:07	P			
P42 / P43	BOS - EOS	8/20/2013	30	11:01	30	11:06	P			

BOS: Beginning of Seam
EOS: End of Seam

Non-Destructive Test Summary

Project Number: 2113.2 / 4.2 Powerton Ash Surge Basin

Seam Number	Distance/ Location	Air Test: 27-30 psi for 5 min, < 3 psi loss						Vacuum Test		Comments
		Date Air Tested	Air Pressure				Air Test Results	Date Vacuum Tested	Vac. Test Results (P/F)	
			Start		End					
			PSI	Time	PSI	Time				
P42 / P51	17' from P43 - EOS	--	--	--	--	--	--			Capped, R64
P42 / P51	BOS - 17' from P43	8/20/2013	30	10:36	30	10:41	P			
P42 / P52	BOS - EOS	8/20/2013	30	10:28	30	10:33	P			
P43 / P44	BOS - EOS	8/20/2013	30	12:07	30	12:12	P			
P43 / P51	BOS - EOS	8/20/2013	30	10:50	28	10:55	P			
P44 / P45	BOS - EOS	8/20/2013	30	12:08	30	12:13	P			
P45 / P46	BOS - EOS	8/20/2013	30	12:09	28	12:14	P			
P46 / P47	BOS - EOS	8/20/2013	30	12:10	30	12:15	P			
P47 / P48	BOS - EOS	8/20/2013	30	12:16	28	12:21	P			
P48 / P49	BOS - EOS	8/20/2013	30	12:17	30	12:22	P			
P49 / P50	BOS - EOS	8/20/2013	30	12:18	28	12:23	P			
P51 / P52	BOS - EOS	8/20/2013	30	10:27	28	10:32	P			
P51 / P53	BOS - EOS	8/20/2013	30	10:26	30	10:31	P			
P52 / P53	--	--	--	--	--	--	--	8/26/13	P	3' cap
P52 / P54	BOS - EOS	8/20/2013	30	10:13	30	10:18	P			
P53 / P54	BOS - EOS	8/20/2013	30	10:14	29	10:19	P			
P53 / P55	BOS - EOS	8/21/2013	30	11:24	30	11:29	P			
P53 / P56	--	--	--	--	--	--	--	8/26/13	P	3' cap
P53 / P59	--	--	--	--	--	--	--	8/26/13	P	5' cap
P54 / P56	20' E of P53 to E trench	8/21/2013	30	16:24	30	16:29	P			west 20' capped

BOS: Beginning of Seam
EOS: End of Seam

MWG13-15_34133

Non-Destructive Test Summary

Project Number: 2113.2 / 4.2 Powerton Ash Surge Basin

Seam Number	Distance/ Location	Air Test: 27-30 psi for 5 min, < 3 psi loss						Vacuum Test		Comments
		Date Air Tested	Air Pressure				Air Test Results	Date Vacuum Tested	Vac. Test Results (P/F)	
			Start		End					
			PSI	Time	PSI	Time				
P55 / P57	BOS - EOS	8/21/2013	30	11:25	30	11:30	P			
P55 / P59	BOS - EOS	8/21/2013	30	13:42	30	13:47	P			
P55 / P60	BOS - EOS	8/21/2013	30	13:40	30	13:45	P			
P56 / P58	BOS - EOS	8/21/2013	30	16:17	30	16:22	P			
P56 / P59	BOS - EOS	8/21/2013	30	13:47	28	13:52	P			
P57 / P60	BOS - EOS	8/21/2013	30	13:39	30	13:44	P			
P57 / P61	BOS - EOS	8/21/2013	30	11:26	30	11:31	P			
P57 / P62	BOS - EOS	8/21/2013	30	13:49	30	13:54	P			
P58 / P59	BOS - EOS	8/21/2013	30	13:41	28	13:46	P			
P58 / P60	BOS - EOS	8/21/2013	30	13:48	28	13:53	P			
P58 / P62	BOS - EOS	8/21/2013	30	16:11	30	16:16	P			
P60 / P62	BOS - EOS	8/21/2013	30	13:49	30	13:54	P			
P61 / P62	BOS - EOS	8/21/2013	30	13:57	28	14:02	P			
P61 / P63	BOS - EOS	8/21/2013	30	13:58	30	14:03	P			
P61 / P66	BOS - EOS	8/21/2013	30	11:28	30	11:33	P			
P62 / P63	BOS - EOS	8/21/2013	30	16:10	30	16:15	P			
P63 / P64	P67 to R67	8/21/2013	30	13:59	30	14:04	P			east 53'
P63 / P64	R67 to P66	8/21/2013	30	13:59	30	14:04	P			west 48'
P63 / P65	BOS - EOS	8/21/2013	30	16:09	28	16:14	P			
P63 / P66	BOS - EOS	8/21/2013	30	14:11	28	14:16	P			

BOS: Beginning of Seam
EOS: End of Seam

Non-Destructive Test Summary

Project Number: 2113.2 / 4.2 Powerton Ash Surge Basin

Seam Number	Distance/ Location	Air Test: 27-30 psi for 5 min, < 3 psi loss						Vacuum Test		Comments
		Date Air Tested	Air Pressure				Air Test Results	Date Vacuum Tested	Vac. Test Results (P/F)	
			Start		End					
			PSI	Time	PSI	Time				
P63 / P67	BOS - EOS	8/21/2013	30	14:28	29	14:33	P			
P64 / P66	BOS - EOS	8/21/2013	30	11:34	29	11:39	P			
P64 / P67	BOS - EOS	8/21/2013	30	14:27	30	14:32	P			
P64 / P68	BOS - EOS	8/21/2013	30	11:36	30	11:41	P			
P65 / P67	BOS - EOS	8/21/2013	30	14:29	30	14:34	P			
P65 / P68	BOS - EOS	8/21/2013	30	16:08	28	16:13	P			
P67 / P68	BOS - EOS	8/21/2013	30	14:30	30	14:35	P			
P68 / P69	BOS - EOS	8/21/2013	30	16:34	30	16:39	P			
P68 / P70	BOS - EOS	8/21/2013	30	16:40	29	16:45	P			
P68 / P71	BOS - EOS	8/21/2013	30	16:33	30	16:38	P			
P69 / P71	BOS - EOS	8/21/2013	30	16:35	28	16:40	P			
P69 / P72	riser west to P71	8/21/2013	30	16:42	30	16:47	P			
P69 / P72	riser east to trench	8/21/2013	30	16:53	30	16:58	P			
P70 / P71	BOS - EOS	8/21/2013	30	16:41	30	16:46	P			
P70 / P73	BOS - EOS	8/21/2013	30	16:50	30	16:55	P			
P71 / P72	BOS - EOS	--	--	--	--	--	--	8/26/2013	P	capped
P71 / P73	BOS - EOS	8/21/2013	30	14:42	30	14:47	P			
P72 / P73	BOS - EOS	8/21/2013	30	16:51	28	16:56	P			
P72 / P74	BOS - EOS	8/21/2013	30	17:02	30	17:07	P			
P73 / P74	BOS - EOS	8/21/2013	30	17:03	30	17:08	P			

BOS: Beginning of Seam
EOS: End of Seam

Non-Destructive Test Summary

Project Number: 2113.2 / 4.2 Powerton Ash Surge Basin

Seam Number	Distance/ Location	Air Test: 27-30 psi for 5 min, < 3 psi loss						Vacuum Test		Comments
		Date Air Tested	Air Pressure				Air Test Results	Date Vacuum Tested	Vac. Test Results (P/F)	
			Start		End					
			PSI	Time	PSI	Time				
P73 / P75	BOS - EOS	8/21/2013	30	17:04	30	17:09	P			
P74 / P75	BOS - EOS	8/21/2013	30	17:05	30	17:10	P			
P74 / P76	BOS - EOS	8/21/2013	30	17:06	30	17:11	P			
P75 / P76	BOS - EOS	8/21/2013	30	17:05	30	17:10	P			
P76 / P77	BOS - EOS	8/21/2013	30	17:14	30	17:19	P			
P76 / P78	BOS - EOS	8/21/2013	30	17:12	30	17:17	P			
P77 / P78	BOS - EOS	8/22/2013	30	8:47	30	8:52	P			
P77 / P79	BOS - EOS	8/22/2013	30	8:49	30	8:54	P			
P78 / P79	BOS - EOS	8/22/2013	30	8:46	30	8:51	P			
P78 / P80	BOS - EOS	8/22/2013	30	8:50	30	8:55	P			
P79 / P80	BOS - EOS	8/22/2013	30	8:54	29	8:59	P			
P79 / P81	BOS - EOS	8/22/2013	30	8:57	30	9:02	P			
P80 / P81	BOS - EOS	8/22/2013	30	8:55	30	9:00	P			
P81 / P82	BOS - EOS	8/22/2013	30	9:02	30	9:07	P			
P82 / P83	BOS - EOS	8/22/2013	30	11:21	30	11:26	P			
P82 / P84	BOS - EOS	8/22/2013	30	9:04	30	9:09	P			
P83 / P84	BOS - EOS	8/22/2013	30	11:22	29	11:27	P			
P83 / P85	BOS - EOS	8/22/2013	30	11:13	30	11:18	P			
P84 / P85	BOS - EOS	8/22/2013	30	11:12	30	11:17	P			
P84 / P86	BOS - EOS	8/22/2013	30	11:10	30	11:15	P			

BOS: Beginning of Seam
EOS: End of Seam

Non-Destructive Test Summary

Project Number: 2113.2 / 4.2 Powerton Ash Surge Basin

Seam Number	Distance/ Location	Air Test: 27-30 psi for 5 min, < 3 psi loss						Vacuum Test		Comments
		Date Air Tested	Air Pressure				Air Test Results	Date Vacuum Tested	Vac. Test Results (P/F)	
			Start		End					
			PSI	Time	PSI	Time				
P85 / P86	BOS - EOS	8/22/2013	30	11:11	30	11:16	P			
P85 / P87	BOS - EOS	8/22/2013	30	11:24	30	11:29	P			
P86 / P87	BOS - EOS	8/22/2013	30	11:23	30	11:28	P			
P87 / P88	BOS - EOS	8/22/2013	30	11:33	30	11:38	P			
P87 / P89	BOS - EOS	8/22/2013	30	11:42	30	11:47	P			
P88 / P89	BOS - EOS	8/22/2013	30	11:39	30	11:44	P			
P88 / P90	BOS - 14'	8/22/2013	30	11:43	30	11:48	P			E riser W to P89
P88 / P90	14' - EOS	8/22/2013	30	14:37	29	14:42	P			E riser to E trench
P89 / P90	BOS - EOS	8/22/2013	30	12:40	30	12:45	P			W riser E to P88
P89 / P90	BOS - EOS	8/22/2013	30	11:31	30	11:36	P			W riser W to P91
P89 / P91	BOS - EOS	8/22/2013	30	11:30	30	11:35	P			
P90 / P91	BOS - EOS	8/22/2013	30	11:40	30	11:45	P			
P90 / P96	BOS - EOS	8/22/2013	30	14:34	30	14:39	P			
P90 / P98	BOS - EOS	8/22/2013	30	1:10	30	1:15	P			
P90 / P99	BOS - EOS	8/22/2013	30	1:19	30	1:24	P			
P90 / P100	BOS - EOS	8/22/2013	30	1:28	30	1:33	P			
P90 / P101	BOS - EOS	8/22/2013	30	1:35	30	1:40	P			
P90 / P102	BOS - EOS	8/22/2013	30	12:54	30	12:59	P			
P90 / P103	BOS - EOS	8/22/2013	30	12:52	28	12:57	P			
P90 / P104	BOS - EOS	8/22/2013	30	14:46	30	14:51	P			

BOS: Beginning of Seam
EOS: End of Seam

Non-Destructive Test Summary

Project Number: 2113.2 / 4.2 Powerton Ash Surge Basin

Seam Number	Distance/ Location	Air Test: 27-30 psi for 5 min, < 3 psi loss						Vacuum Test		Comments
		Date Air Tested	Air Pressure				Air Test Results	Date Vacuum Tested	Vac. Test Results (P/F)	
			Start		End					
			PSI	Time	PSI	Time				
P90 / P105	BOS - EOS	8/22/2013	30	14:44	30	14:49	P			
P90 / P106	BOS - EOS	8/22/2013	30	14:35	28	14:40	P			
P91 / P92	BOS - EOS	8/22/2013	30	11:44	30	11:49	P			
P91 / P98	BOS - EOS	8/22/2013	30	12:45	28	12:50	P			
P92 / P93	BOS - EOS	8/22/2013	30	1:08	30	1:13	P			
P92 / P94	BOS - EOS	8/22/2013	30	1:00	30	1:05	P			
P92 / P98	BOS - EOS	8/22/2013	30	12:59	28	13:04	P			
P93 / P94	BOS - EOS	8/22/2013	30	1:09	30	1:14	P			
P95 / P96	BOS - EOS	8/22/2013	30	14:27	30	14:32	P			
P95 / P97	BOS - EOS	8/22/2013	30	14:26	30	14:31	P			
P96 / P97	BOS - EOS	8/22/2013	30	14:25	30	14:30	P			
P96 / P106	BOS - EOS	--	--	--	--	--	--			Capped
P98 / P99	BOS - EOS	8/22/2013	30	1:12	30	1:17	P			
P99 / P100	BOS - EOS	8/22/2013	30	1:20	30	1:25	P			
P100 / P101	BOS - EOS	8/22/2013	30	1:28	30	1:33	P			
P101 / P102	BOS - EOS	8/22/2013	30	1:34	30	1:39	P			
P102 / P103	BOS - EOS	8/22/2013	30	12:53	28	12:58	P			
P103 / P104	BOS - EOS	8/22/2013	30	14:47	28	14:52	P			
P104 / P105	BOS - EOS	8/22/2013	30	14:45	28	14:50	P			
P105 / P106	BOS - EOS	8/22/2013	30	14:36	30	14:41	P			

BOS: Beginning of Seam
EOS: End of Seam

ATTACHMENT F

LINER INTEGRITY SURVEY REPORTS

ATTACHMENT F1

BARE LINER INTEGRITY SURVEY REPORT

LEAK LOCATION SERVICES, INC.

16124 UNIVERSITY OAK • SAN ANTONIO, TEXAS 78249 • (210) 408-1241 / FAX (210) 408-1242

November 25, 2013

Sheila Keltsch
Terra Contracting Services, LLC
5787 Stadium Drive
Kalamazoo, MI 49009

e-mail: skeltsch@terracontracting.net

Subject: Revised Report for "Leak Location Survey of the Ash Surge Basin located at the MWG Powerton Generating Station near Pekin, Illinois"
LLSI Project 1904A

Dear Mr. Keltsch:

On August 26, 2013, Thane Hefley of Leak Location Services, Inc. (LLSI) conducted a leak location survey of the Ash Surge Basin at the Midwest Generating Powerton Station near Pekin, Illinois. The basin has an area of approximately 279,000 square feet. The basin is lined from the bottom up with a prepared subgrade, existing hypalon liner, 12-inches of existing Poz-O-Pac, 16 ounce nonwoven geotextile and a 60-mil HDPE white textured geomembrane. This report documents the results of this survey.

I. RESULTS

A. Survey

Two leaks were found during the testing of the Ash Surge Basin . Table 1 lists the approximate locations and descriptions of the leaks found in the basin. Figure 1 shows the approximate location of the leaks found in the basin. The leaks were marked for repair by LLSI before leaving the site.

B . Leak Detection Sensitivity Test

The leak location equipment was tested to document the leak detection sensitivity by placing a 1mm hole in a scrap piece of geomembrane with a thickness approximating the thickness of the liner installed. This test was conducted by placing the scrap piece of geomembrane on the soil subgrade near the lagoon. The leak location probe was then scanned near the test hole as a small amount of water is sprayed on the scrap piece of geomembrane to verify the proper operation of the equipment. This test was done with a greater than 100 percent scale deflection.

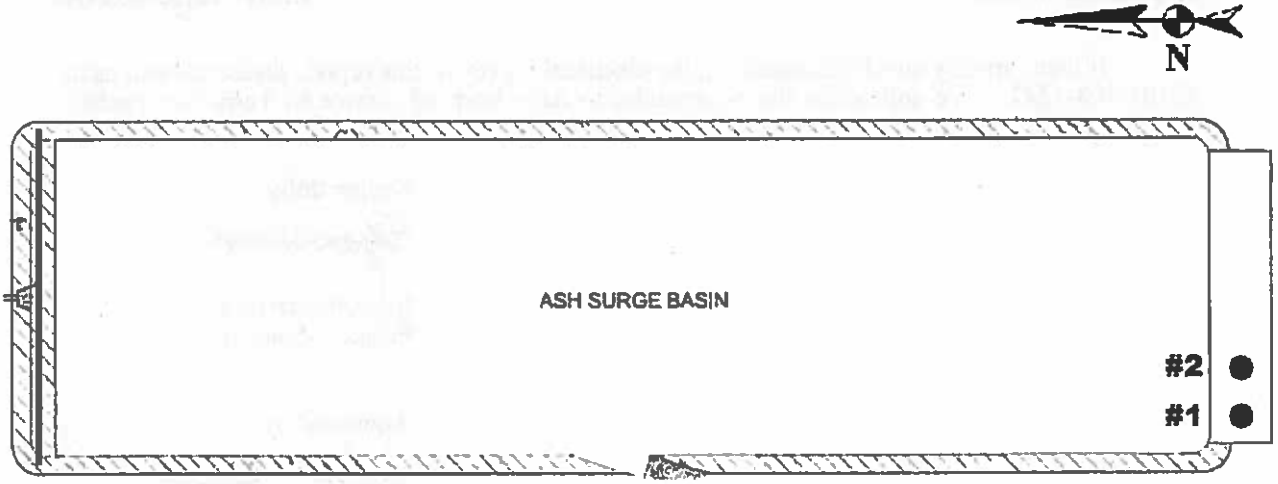

FIGURE 1. APPROXIMATE LOCATIONS OF THE LEAKS FOUND IN THE ASH SURGE BASIN

Table 1. Approximate Locations and Descriptions of the Leaks Found in the Ash Surge Basin

Leak Number	Leak Location	Leak Description
1	On a patch behind the concrete wall.	Extrusion weld on a patch.
2	In the northwest corner of the basin.	Extrusion weld

II. TECHNIQUE

A. Principles of the Electrical Leak Location Method

The principle of the electrical survey method for geomembrane liners is to impress a high DC voltage across the geomembrane and measure the resulting potential gradients on or in the conducting material on the geomembrane. If any holes are present, characteristic anomalies in the potential caused by electrical current flowing through the holes indicate their location.

B. Surveys with Bare Liner

The bare liner survey method detects electrical current that will flow through any holes in the geomembrane liner that are filled with water. A squeegee device is used to push a small amount of water over the liner providing the electrical conduction pathway. A low voltage electrical supply is connected to earth ground and to the squeegee. When a hole in the liner is encountered, electrical current will flow through water in the leak contacting earth ground. This current is monitored using an electronic detector that converts the increase in the current to an audible tone indication. Only the area immediately in front of the squeegee is temporarily covered with water.

If there are any questions regarding the electrical survey or this report, please contact us at (210) 408-1241. We appreciate the opportunity to have been of service to Terra Contracting Services, LLC.

Respectfully,

Edgardo Barraza
Project Manager

Approved by:

Matthew Kemnitz
Senior Project Manager

ATTACHMENT F2

SOIL COVERED LINER INTEGRITY SURVEY REPORT

LEAK LOCATION SERVICES, INC.

16124 UNIVERSITY OAK • SAN ANTONIO, TEXAS 78249 • (210) 408-1241 / FAX (210) 408-1242

October 15, 2013

Sheila Keltsch
Terra Contracting Services, LLC
5787 Stadium Drive
Kalamazoo, MI 49009

Email: skeltsch@terracontracting.net

Subject: Report for "Geomembrane Leak Location Survey of the Ash Surge Basin at the Midwest Powerton Generating Station near Pekin, Illinois; " LLSI Project 1904A

Dear Ms. Keltsch:

On October 7 and 8, 2013, John Ortiz and Dale Kemnitz of Leak Location Services, Inc. (LLSI) conducted a geomembrane leak location survey of the Ash Surge Basin at the Midwest Powerton Generating Station. The basin has an area of approximately 279,000 square feet with a floor area of approximately 205,000 square feet. The basin is lined, from the bottom up, with a prepared subgrade, existing Hypalon liner, 12-inches existing Poz-O-Pac, 16 ounce nonwoven geotextile, 60-mil HDPE white textured geomembrane, 16 ounce nonwoven geotextile, 12-inch cushion soil layer and a 6-inch warning layer. A soil-covered survey was conducted on the floor area. The batten strips connecting the liner to the concrete weir, overflow structure, concrete ramp, and the concrete apron were visually inspected. This report documents the results of the survey.

I. RESULTS

A. Survey

No leaks were found during the soil survey of the floor area of the basin. Three leaks were found during the visual inspection of the concrete structures. Figure 1 shows the approximate locations of the leaks and Table 1 lists the approximate locations and descriptions of the leaks found.

B. Leak Detection Sensitivity

The leak location equipment was tested for sensitivity and proper operation. This procedure was conducted at the beginning and end of each day by LLSI personnel to verify equipment functionality. For a soil-covered survey, a 0.25-inch diameter artificial leak was buried under the cover material and leak location survey lines were run along both sides of the artificial leak. Leak location survey measurements were collected to determine the maximum distance that the simulated leak could be reliably detected. Figure 2 shows plots of data taken with the artificial leak. The leak detection distance was more than 10 feet. Thus, the leak location survey lines could have been spaced 20 feet apart. However, for thoroughness, the survey was conducted on survey lines spaced 10 feet apart.

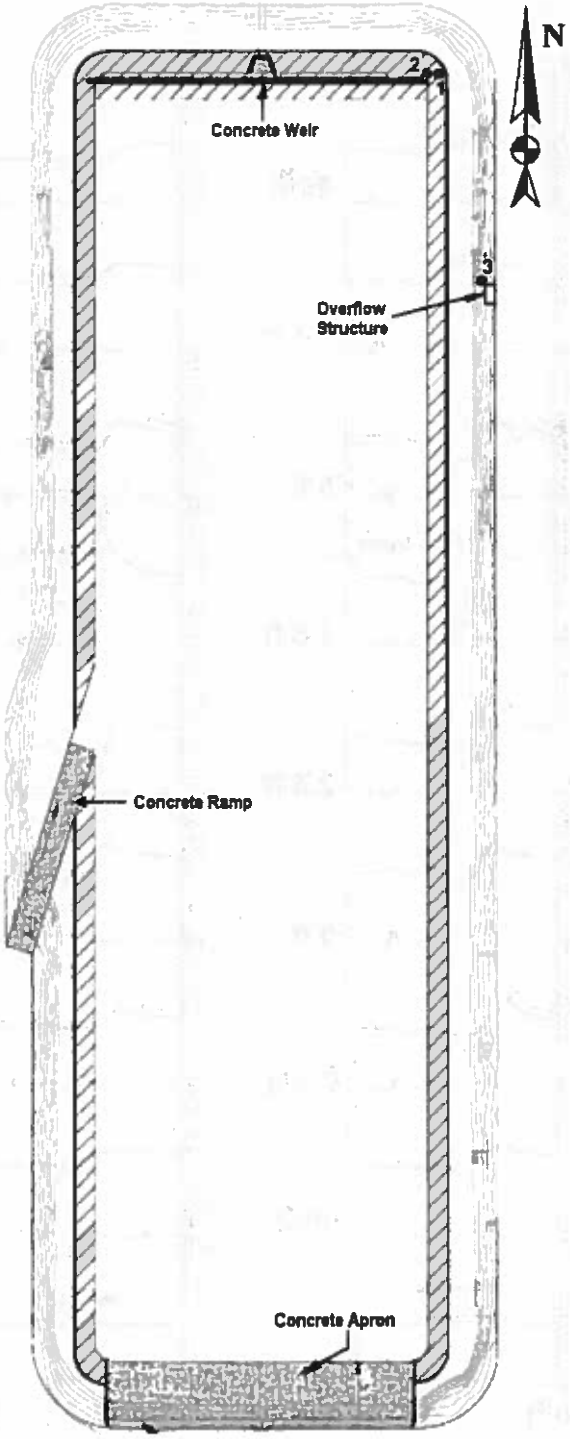

FIGURE 1. APPROXIMATE LOCATIONS OF LEAKS FOUND IN THE BASIN

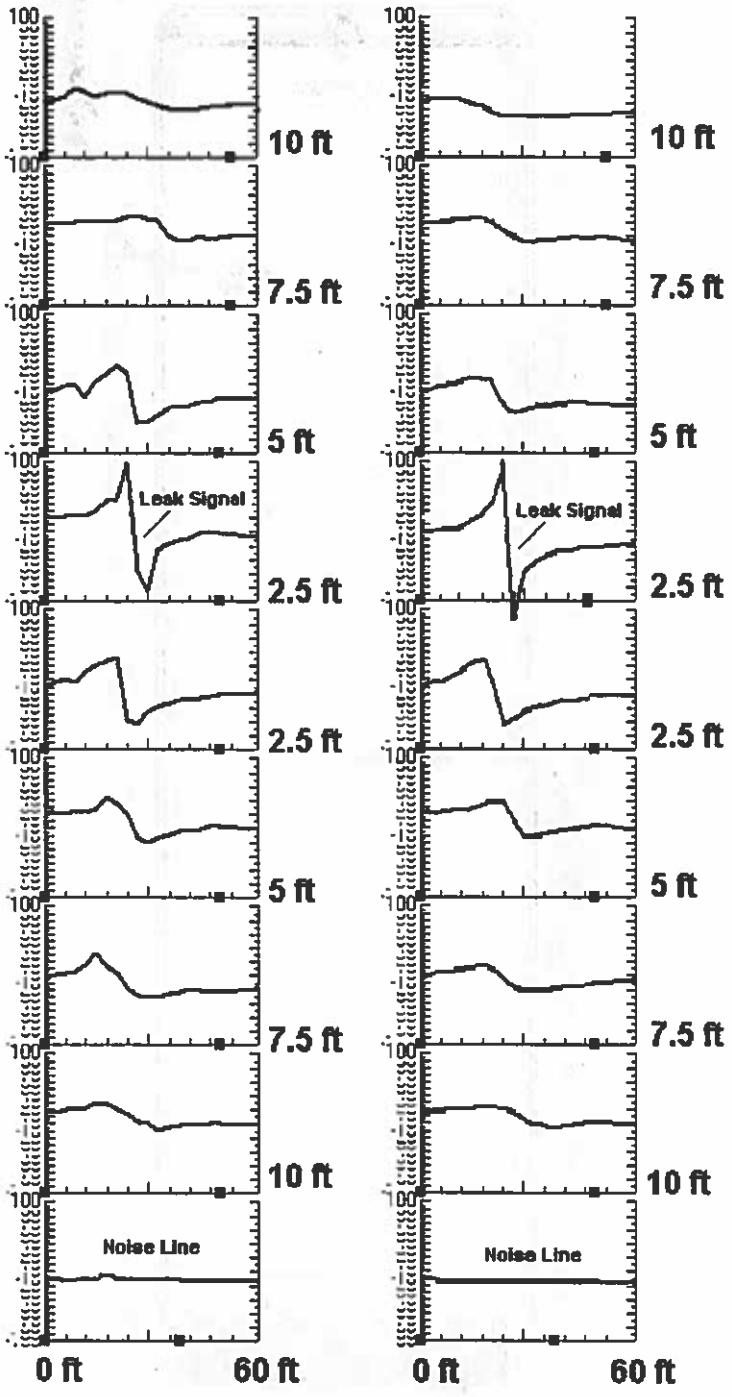

FIGURE 2. PLOTS OF DATA TAKEN WITH A 0.25-INCH ARTIFICIAL LEAKS

Table 1. Approximate Locations and Descriptions of Leaks Found in the Basin

LEAK	LOCATION	DESCRIPTION
1	On the northeast corner of the weir, beneath the batten strip	0.25-inch hole
2	On the northeast corner of the weir	1.0-inch linear slit
3	On the northeast corner of the overflow structure	1.0-inch linear slit

II. PRINCIPLE OF THE ELECTRICAL SURVEY METHOD

A. General

The electrical leak location method detects electrical paths through the liner caused by water or moisture in the leaks. For a single-geomembrane lined system a voltage is connected to one electrode placed in the conductive material covering the liner and returned to a second electrode connected to earth ground. Electrical current flowing through the leaks in the liner produces localized anomalous areas of high current density near the leaks. These areas are located by making electrical potential measurement scans in or on the electrically conductive material covering the geomembrane.

B. Soil-Covered Survey

A high voltage isolated DC power supply was used to impress a voltage across the geomembrane using one electrode placed in the protective cover layer on top of the primary geomembrane and a second electrode placed in the electrically conducting material under the geomembrane. Therefore, the geomembrane liner provides an electrical barrier between the electrodes except where there are holes in the geomembrane. Electrical current flowing through the holes in the geomembrane produces localized anomalous areas of high current density near the holes. This electrical current path is provided by electrically conducting material such as water, sand, rock or soil.

The survey was conducted by making potential gradient measurements on the moist sand material with measurement electrodes spaced approximately 3 feet apart. These measurements were made approximately every 3 feet along numbered survey lines that were spaced approximately 10 feet apart. A portable digital data logger was used to collect the data. The data was then downloaded into a portable computer for display, plotting, and analysis.

When a leak signal is detected, manual measurements are made to locate the position of the leak between the survey lines. The leaks are excavated by others and the leak is isolated from the materials covering the geomembrane. Additional measurements are made to make sure there are no additional leaks in the area.

If there are any questions regarding leak location surveys or this report, please contact us at (210) 408-1241. We appreciate this opportunity to have been of service to Terra Contracting Services, LLC on this important service requirement.

Respectfully,

John Ortiz
Project Manager

Approved by:

Glenn Darilek
Principal Engineer

ATTACHMENT G

CONSTRUCTION DOCUMENTATION DRAWING SET