NATURAL RESOURCE TECHNOLOGY
ENVIRONMENTAL CONSULTANTS

234 W. FLORIDA STREET, FIFTH FLOOR
MILWAUKEE, WISCONSIN 53204
(P) 414.837.3607
(F) 414.837.3608

Mr. Terry Kosmatka
Midwest Generation, LLC
Joliet Generating Station
1800 Channahon Road
Joliet, IL 60436

July 16, 2014
(2113.1)

RE: Construction Documentation Transmittal
South Pond #3 Liner Replacement
Midwest Generation, LLC Joliet Generating Station

Dear Mr. Kosmatka:

Natural Resource Technology, Inc. (NRT) has prepared this correspondence to transmit construction record documents for the liner replacement completed in 2013 for South Pond #3 at the Joliet Generating Station. Major components of construction generally occurred as follows:

Construction Component	Date
Start of Ash Removal	July 24, 2013
Replacement Liner Preconstruction Meeting	August 21, 2013
Ash Removal Completed	August 23, 2013
Start of Replacement Liner Subbase Construction	August 28, 2013
Sampling Building Foundations Poured	September 10, 2013
Start of Geosynthetics Installation	September 13, 2013
Subbase Construction Complete	September 14, 2013
Last Date of Geosynthetics Installation	September 19, 2013
Start of Warning and Cushion Layer Installation	September 20, 2013
Warning and Cushion Layer Installation Complete	October 4, 2013
Pond Returned to Service	October 18, 2013

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.

Ryan J. Baeten, PE
Environmental Engineer

Joseph R. Ridgway, PE
Environmental Engineer

NATURAL RESOURCE TECHNOLOGY

ATTACHMENTS:

Attachment A: Daily Field Reports
Attachment B: Structural Fill and Concrete Structures
- B1: Borrow Source Samples
- B2: Concrete Pillar Design

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
- D5: Geomembrane Installation Warranties

Attachment E: Geosynthetics Installation
- E1: Trial Weld Summary
- E2: Panel Placement Summary
- E3: Panel Seaming Summary
- E4: Repair Summary
- E5: Non-Destructive Test Summary

Attachment F: Liner Integrity Survey Report
Attachment G: Construction Documentation Drawing Set

ATTACHMENT A

DAILY FIELD REPORTS

FIELD NOTE SUMMARY

Project Number / Task: 2113.3 / 3.3
Project Name: Ash Pond 3 Liner Replacement – Joliet Generating Station

Date:	Friday August 23, 2013
Work Scope:	Onsite training, inspect subgrade
NRT Staff:	Joseph Ridgway
Contractors:	Beemsterboer
Weather:	High 70s/low 80s F, mostly sunny
Equipment:	Digital camera

Field Comments:	• Joseph arrives onsite at 08:00 and checks in at Guard Shack, attempts to get contractor badge access applied to Joliet station
	• 08:30 – Begin training for general contractor at all sites, and site-specific training for Joliet, Waukegan, Will County, and Powerton Stations
	• 10:20 – Proceed to Ash Pond 3 to inspect subgrade and review project status
	  o Shape of slopes in good condition
	  o Unsuitable material present in some areas of slope
	  o Various poles still present, to be removed
	  o Vegetation present in some locations, will be removed
	  o Beemsterboer is loading trucks with sludge for offsite disposal and pumping sludge from container located along base of north slope
	• Joseph offsite at 11:30

Scope Changes:	None
Site Conditions:	Wet along haul roads

Signature: JRR _____ Date: August 23, 2013

Joseph Ridgway, Project Engineer

FIELD NOTE SUMMARY

Project Number / Task: 2113.3 / 3.3

Project Name: Ash Pond 3 Liner Replacement – Joliet Generating Station

Date:	Friday September 6, 2013
Work Scope:	Onsite training, inspect subgrade
NRT Staff:	Joseph Ridgway
Contractors:	Brieser Construction
Weather:	High 60s, mostly sunny
Equipment:	Digital camera

Field Comments:	• Joseph arrives onsite at 08:50 and checks in at Guard Shack
	• Check in with Dan Bobzin with Brieser Construction on project status
	  o Working on slopes, removing rocks
	  o Anticipate decreasing 2-foot runoff distance to anchor trench at top of north slope due to limited space along road
	  o Marker posts have not been filled with concrete yet. Will be filled after cushion and warning layer are placed
	  o Placing screenings near inlet and outlet structures where Poz-o-Pac was removed
	• Joseph points out portions of subgrade that do not meet specifications due to vegetation and the presence of large stones
	• Inspect downslope cylindrical foundations that were poured for sampling building foundations
	• Joseph identifies issue with attaching liner to upslope Sampling Building foundation.
	  o Elevation issue, relative to overflow structure
	  o Cylindrical foundations proximity to rectangular concrete pad makes attachment not possible
	  o Discuss solution with Harrison with MWG and Dan Bobzin
	  o Brieser will remove rectangular concrete pad, cut cylindrical foundations down, pour new rectangular pad to rebuild foundation, and connect with new rectangular pad for bollard attachment and access to sampling building
	  o New foundation and concrete pad will allow liner attachment and increase elevation clearance of liner relative to overflow structure
	• Joseph offsite at 12:00

Scope Changes:	None
Site Conditions:	Wet along haul roads

JRR

Signature: _____ **Date:** September 6, 2013

Joseph Ridgway, Project Engineer

View of basin facing east

View of Sampling Building downslope cylindrical foundations, facing west

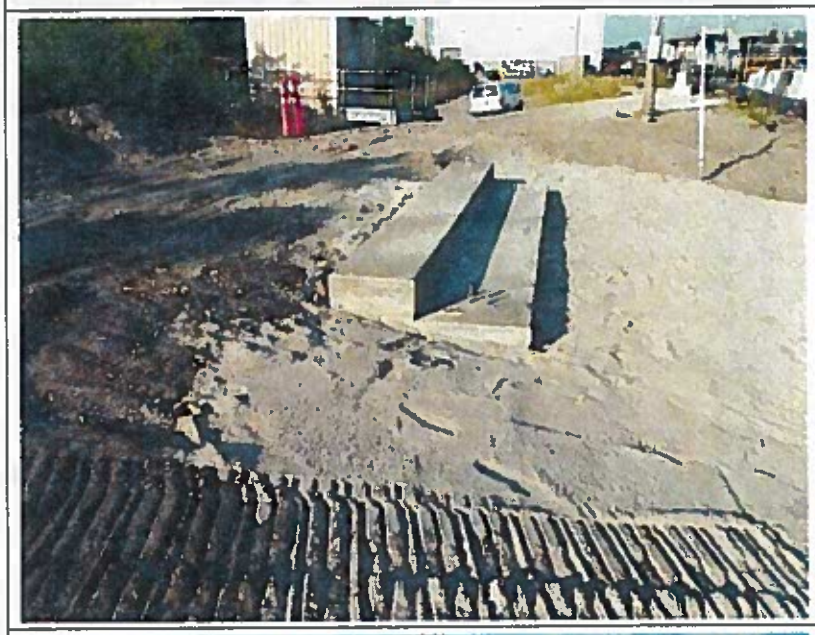
View of Sampling Building upslope cylindrical foundations near rectangular concrete pad, facing south

FIELD NOTE SUMMARY

Project Number / Task: 2113.3 / 3.3
Project Name: South Pond 3 Liner Replacement

Date:	Wednesday, September 11, 2013
Work Scope:	Inspect subgrade and observe concrete pour for sampling building foundation
NRT Staff:	Ryan J. Baeten
Contractors:	Brieser Construction 1 - Foreman (Dan Bobzin) 1 - Laborer (John) 1 - Operator 1 - Truck Driver
Weather:	High of 92, sunny, and humid
Equipment:	1 - CAT 320E Excavator 1 - Dump Truck (Deb's Way, Inc.) 1 - CAT CS-433E Smooth Drum 1 - Takeuchi TL250 Track Loader 1 - Water Truck

Field Comments:	• Arrived onsite at 8:00 AM, check in at guard shack.
	• Received site specific safety training from Terry Kosmatka (MWG).
	• Met with Dan Bobzin in the work area and discussed the following:
	  o Concrete support structure for the sampling building was poured yesterday.
	  o Concrete structures where batten strips will connect the geomembrane.
	  o General subbase conditions.
	• Brieser worked on smoothing out concrete surfaces to provide an acceptable surface for attaching the geomembrane. This was completed by cutting and grinding the concrete in some places and simply removing adhered soils in others.
	• Brieser placed screening material along the upper half of the pond slopes for preparation of geomembrane installation.
	• Screening material placed in the sump areas at the end of the concrete inlet and outlet aprons was conditioned by adding moisture and compacted to provide a solid subgrade for liner installation.
	• A roll inventory was taken on the geomembrane and geotextile staged onsite (see Initial Roll Inventory forms).
	• 14:00 - RJB and Brieser offsite.

Scope Changes:	None
Site Conditions:	Dry and dusty
Concrete support structure for the sampling building, looking southwest	
Preparing concrete surfaces for geomembrane batten connection, looking southwest	

Screening material placement along upper portion of the slope, looking northwest

Moisture conditioning screenings placed in sump prior to compaction, looking northwest

Geosynthetics stored onsite, looking southwest

RJB

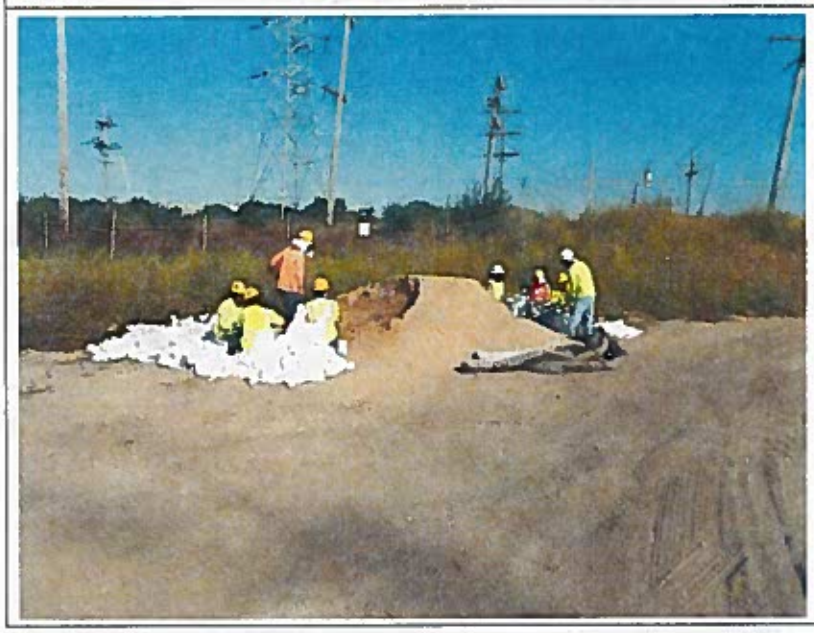
Signature: _____ Date: 9/11/2013

Ryan Baeten, PE

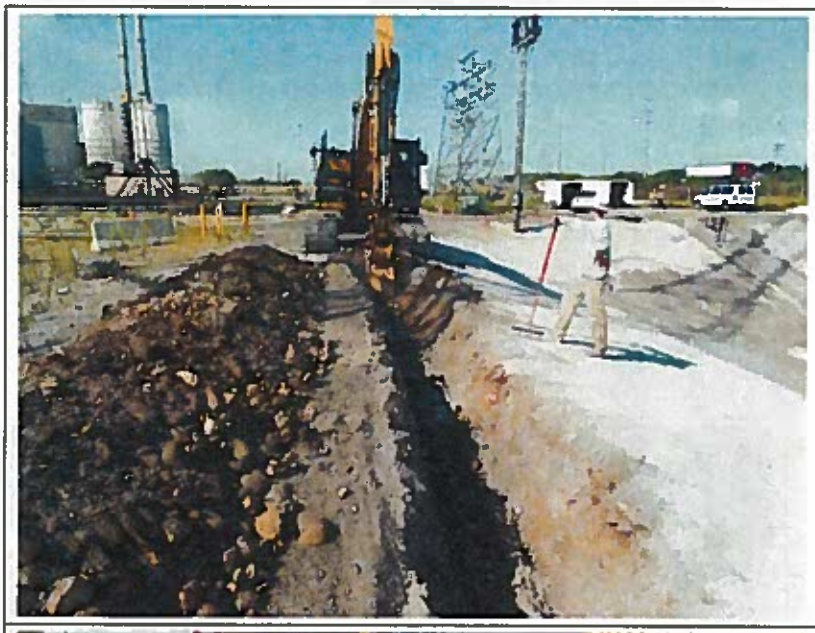
FIELD NOTE SUMMARY

Project Number / Task: 2113.3 / 3.3
Project Name: South Pond 3 Liner Replacement

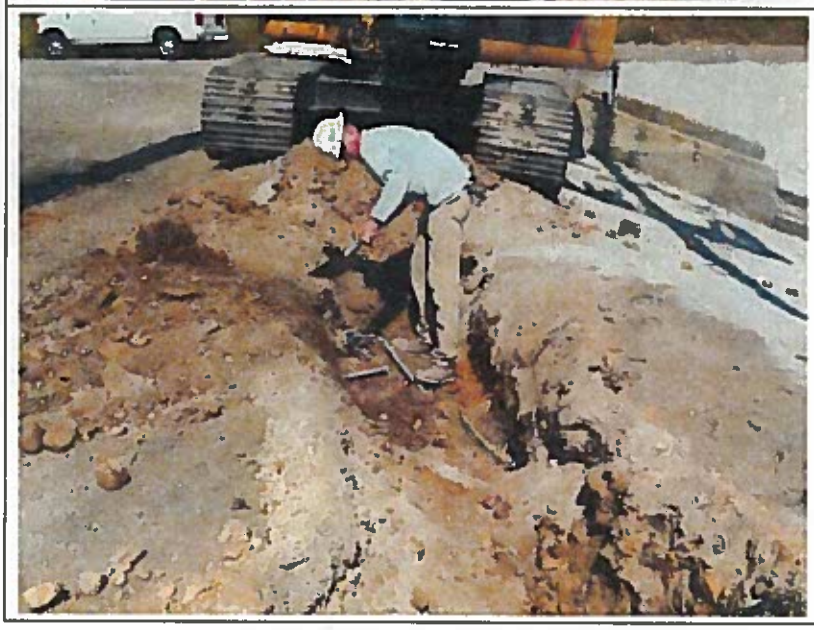
Date:	Thursday, September 12, 2013
Work Scope:	Inspect subgrade and possible geosynthetics deployment
NRT Staff:	Ryan J. Baeten
Contractors:	Brieser Construction 1 - Foreman (Dan Bobzin) 1 - Operator (Tony) Clean Air and Water Systems (CAAWS) 1 - Superintendent (Thong Ingles) 10 - Technicians
Weather:	High of 82°F, sunny, dry, wind 15 - 25 mph
Equipment:	1 - CAT 320E Excavator 1 - Skytrack 8042 Telehandler (rented from Illinois Truck and Equipment) 1 - CAT CS-433E Smooth Drum 1 - Takeuchi TL250 Track Loader 1 - Water Truck
Field Comments:	07:30 AM RJB and CAAWS on-site 08:00 AM CAAWS attended safety training with Terry Kosmatka CAAWS sent 2 technicians to MWG Powerton for geomembrane repairs. The remaining technicians filled sandbags. Dan, Thong, and I walked the site to discuss installation, specifically, connections to the concrete structures. Thong left the site around 09:00 to get batten strips and other supplies from the Dousman, WI office. Thong did not return to the site. Brieser excavated a portion of the anchor trench from the North Concrete Inlet, around the south of the pond to the southeast corner of the pond. During excavation of the anchor trench a buried power line was damaged. The line connects to the power pole south of the North Concrete Inlet. Terry Kosmatka (MWG) was notified by Brieser and an electrician was called out to repair the line. Also exposed during anchor trench excavation was an old abandoned 8 inch diameter steel pipe. The pipe extends through the anchor trench and stops near the crest of the pond slope. MWG directed Brieser to cut the pipe back as needed to install the geosynthetics. 09:00 Joseph Ridgeway (NRT) onsite to observe progress. During the site walk with Joseph, Gerald, and Harrison (MWG) joined us to learn about progress and upcoming work plans. The anchor trench was excavated around MW02 on the pond side, requiring

	some fill material to achieve a minimum 6 inches above the top of the overflow riser, measured from the top of the steel baffle. Screenings were used to raise the crest of slope and moisture conditioned to achieve compaction. Dan (Brieser) rounded the corners of the existing North Concrete Inlet and Recycle Sump to achieve a smooth connection for the geomembrane batten.
Scope Changes:	None
Site Conditions:	Dry and dusty
CAAWS technicians filling sand bags, looking north	

Anchor trench excavation, looking west



Hand exposing damaged utility south of the North Concrete Inlet Structure



Abandoned 8 inch diameter pipe near the North Concrete Inlet Structure, looking south

Preparation of concrete surface for geomembrane batten connection, looking west

RJB

Signature: _____ Date: 9/12/2013

Ryan J. Baeten, PE

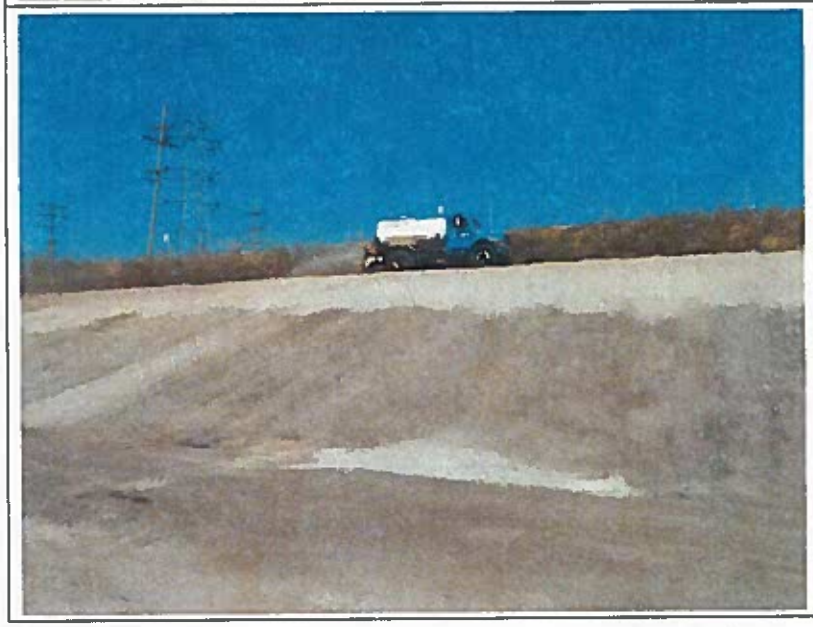
FIELD NOTE SUMMARY

Project Number / Task: 2113.3 / 3.3
Project Name: South Pond 3 Liner Replacement

Date:	Friday, September 13, 2013
Work Scope:	Observe and document geosynthetics installation
NRT Staff:	Ryan J. Baeten
Contractors:	Brieser Construction 1 - Foreman (Dan Bobzin) 2 - Operators Clean Air and Water Systems (CAAWS) 1 - Superintendent (Thong Ingles) 10 - Technicians
Weather:	Low 57°F High 71°F, sunny, dry, wind 10 - 15 mph
Equipment:	1 - CAT 320E Excavator 1 - Skytrack 8042 Telehandler (rented from Illinois Truck and Equipment) 1 - CAT CS-433E Smooth Drum (idle) 1 - Takeuchi TL250 Track Loader 1 - Water Truck
Field Comments:	06:30 RJB and CAAWS on-site Clennon Electric Contractors and Engineers of Wilmington, IL onsite to repair the buried power line damaged yesterday by Brieser. Sang (CAAWS) provided test data and an archive sample from repairs made at the MWG Powerton site yesterday. 08:18 CAAWS installed geotextile in approximately ¾ of the pond south of a line projected from the inlet structure east to west and parallel to the north slope. Geotextile seams were heat bonded. Wane (Brieser) onsite to perform a safety audit on Brieser and CAAWS (subcontractor to Brieser). Water truck wetted the haul roads in an attempt to knock down the dust. CAAWS prepared batten strip connections on the concrete structures for the inlet apron and recycle sump. Geomembrane trial welds were conducted and passed the project requirements. Geomembrane panels P1 to P15 deployed and seamed.
Scope Changes:	None
Site Conditions:	Dry and dusty

Geotextile deployment, looking southwest

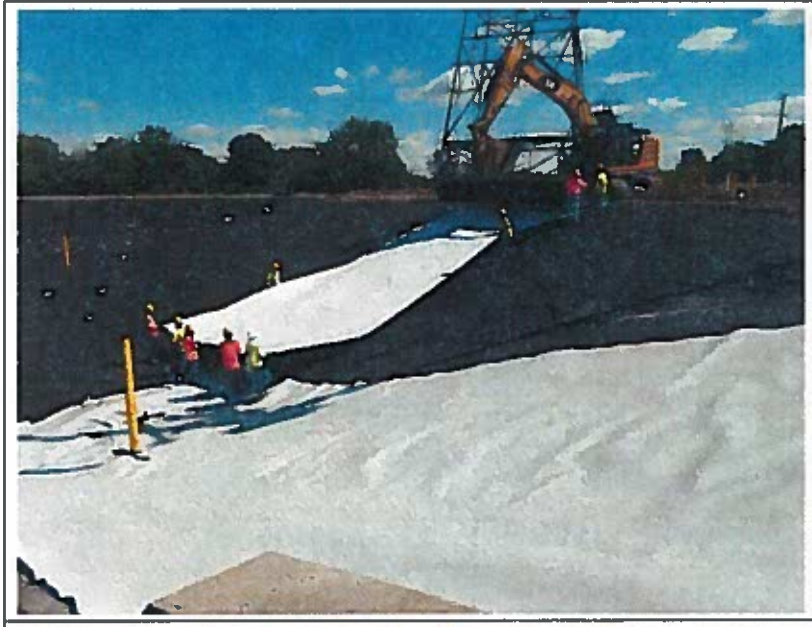
Water truck wetting haul roads to control dust, looking north



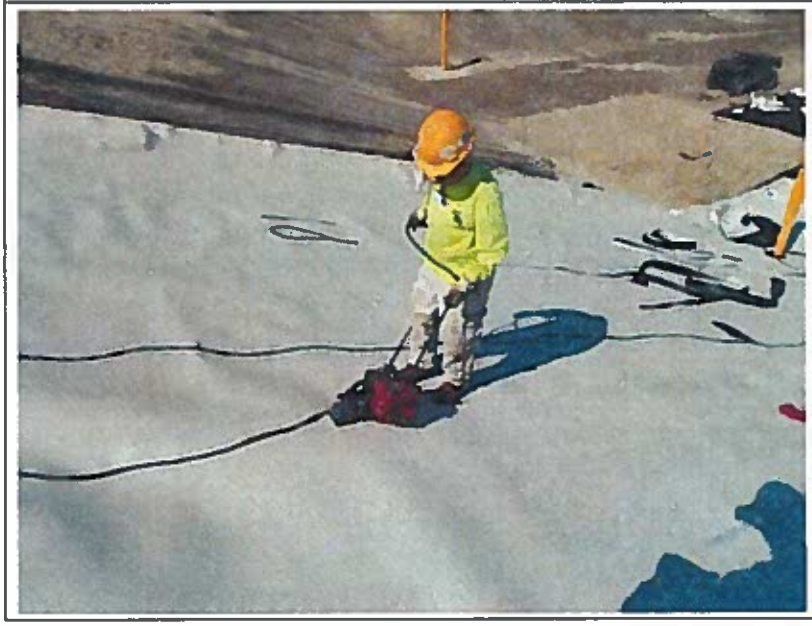
Preparation of batten strip connection to the inlet structure, looking south

Preparing geomembrane trial weld, looking north

Geomembrane panel deployment, looking south



Geomembrane production seaming, looking north



Signature: RJB
Ryan J. Baeten, PE

Date: 9/13/2013

FIELD NOTE SUMMARY

Project Number / Task: 2113.3 / 3.3
Project Name: South Pond 3 Liner Replacement

Date:	Saturday, September 14, 2013
Work Scope:	Observe and document geosynthetics installation
NRT Staff:	Ryan J. Baeten & Edwards-Sawyer Effiong
Contractors:	Brieser Construction 1 - Foreman (Dan Bobzin) 2 - Operators Clean Air and Water Systems (CAAWS) 1 - Superintendent (Thong Ingles) 10 - Technicians
Weather:	Low 47°F High 73°F, sunny, dry, wind 5 - 10 mph
Equipment:	1 - CAT 320E Excavator 1 - Skytrack 8042 Telehandler (rented from Illinois Truck and Equipment) 1 - CAT CS-433E Smooth Drum (idle) 1 - Takeuchi TL250 Track Loader 1 - Water Truck
Field Comments:	06:30 RJB, ESE, Brieser, and CAAWS on-site Geomembrane trial welds were conducted and passed the project requirements. Geomembrane panels P16 to P48 were deployed and seamed. Non-destructive air testing was performed on the completed fusion welds. 16:30 work done for the day.
Scope Changes:	None
Site Conditions:	Dry and dusty

Geomembrane panel deployment, looking southwest

Testing trial welds in the tensiometer, looking southeast

Performing non-destructive air testing of the geomembrane fusion welded seams

Panel seaming, looking west

RJB

Signature: _____ Date: 9/14/2013

Ryan J. Baeten, PE

FIELD NOTE SUMMARY

Project Number / Task: 2113.3 / 3.3
Project Name: South Pond 3 Liner Replacement

Date:	Sunday, September 15, 2013
Work Scope:	Observe and document geosynthetics installation
NRT Staff:	Ryan J. Baeten & Edwards-Sawyer Effiong
Contractors:	Brieser Construction 1 - Foreman (Dan Bobzin) 2 - Operators Clean Air and Water Systems (CAAWS) 1 - Superintendent (Thong Ingles) 10 - Technicians
Weather:	Low 54°F High 66°F, cloudy, dry, chance of rain, wind 5 - 10 mph
Equipment:	1 - CAT 320E Excavator 1 - Skytrack 8042 Telehandler (rented from Illinois Truck and Equipment) 1 - CAT CS-433E Smooth Drum (idle) 1 - Takeuchi TL250 Track Loader 1 - Water Truck
Field Comments:	06:30 RJB, ESE, Brieser, and CAAWS on-site Due to the potential for rain, only geotextile was deployed in the remaining area of the pond. Remaining anchor trench was excavated. Non-destructive air testing was conducted on fusion welded seams and documented. Rain on and off during the morning and became steady at 11:30. 12:00 work done for the day.
Scope Changes:	None
Site Conditions:	Dry and dusty

Excavation of the geosynthetics anchor trench, looking northeast

Installation of geotextile over the remaining pond area, looking northwest

Non-destructive air testing fusion welded geomembrane seams, looking northwest

RJB

Signature: _____ Date: 9/14/2013

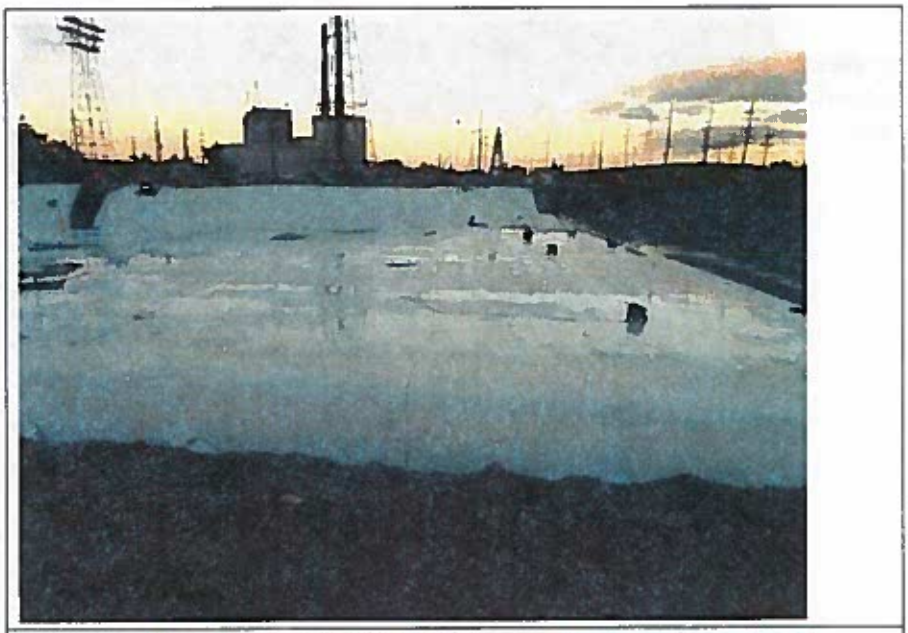
Ryan J. Baeten, PE

FIELD NOTE SUMMARY

Project Number / Task: 2113.3 / 3.3
Project Names: South Pond 3 Liner Replacement

Date:	Monday, September 16, 2013
Work Scope:	Observe and document geosynthetics installation
NRT Staff:	Ryan J. Baeten & Edwards-Sawyer T. Effiong
Contractors:	Brieser Construction 1 - Foreman (Dan Bobzin) 1 - Welder 2 - Operators Clean Air and Water Systems (CAAWS) 1 - Superintendent (Thong Ingles) 10 - Technicians
Weather:	Low 46°F High 67°F, cloudy, wet, wind 10 - 20 mph
Equipment:	1 - CAT 320E Excavator 1 - CAT CS-433E Smooth Drum (idle) 1 - Takeuchi TL250 Track Loader 1 - Water Truck
Field Comments:	6:30 RJB, ETE, Brieser, and CAAWS on-site Due to the rain yesterday, the site was too wet to work in the morning. CAAWS left and retuned at12:00 to resume work. Detail work (batten strip, repairs, and non-destructive testing) was conducted on the slopes where there was no standing water. Brieser worked on pumping the standing water from the pond all day. Water was also under the liner and several holes were cut in the geomembrane to remove the trapped water. A welder for Brieser worked on modifying the galvanized steel supports for the sampling building to accommodate the new concrete foundations installed.
Scope Changes:	None
Site Conditions:	Wet

Site conditions in the morning, looking southwest



Brieser welder modifying the sampling building supports, looking north

Brieser pumping water from the pond, looking east

Extrusion welding geomembrane repair, looking east

Extrusion welding geomembrane boot around marker post, looking northwest

RJB

Signature: _____ Date: 9/16/2013

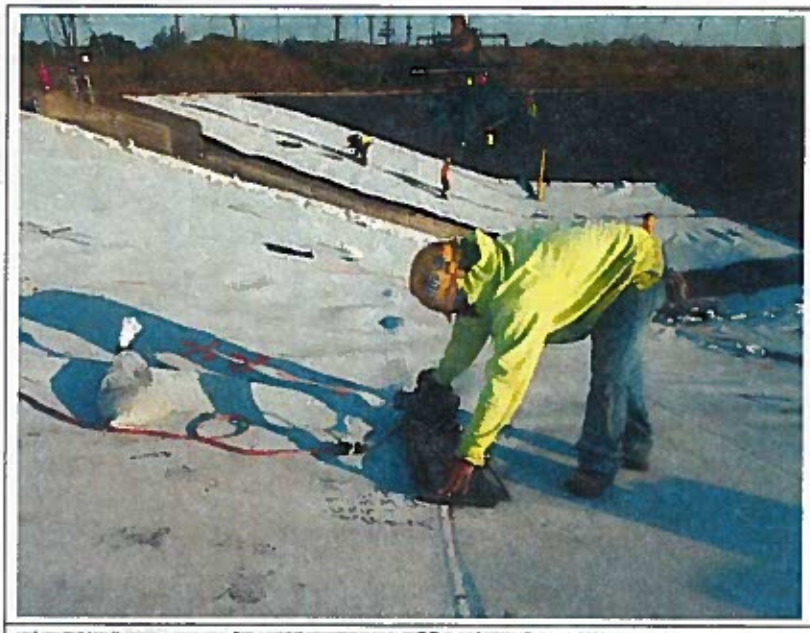
Ryan J. Baeten, PE

FIELD NOTE SUMMARY

Project Number / Task: 2113.3 / 3.3
Project Names: South Pond 3 Liner Replacement

Date:	Tuesday, September 17, 2013
Work Scope:	Observe and document geosynthetics installation
NRT Staff:	Ryan J. Baeten & Edwards-Sawyer T. Effiong
Contractors:	Brieser Construction 1 - Foreman (Dan Bobzin) 2 - Operators Clean Air and Water Systems (CAAWS) 1 - Superintendent (Thong Ingles) 8 - Technicians
Weather:	Low 50°F High 73°F, partly cloudy, dry, wind 5 - 10 mph
Equipment:	1 - CAT 320E Excavator 1 - CAT CS-433E Smooth Drum (idle) 1 - Takeuchi TL250 Track Loader 1 - Water Truck
Field Comments:	6:30 RJB, ETE, Brieser, and CAAWS on-site Geomembrane panels P49 through P78 were installed and the seams fusion welded. CAAWS continued detail work, non-destructive testing, and batten strip installation. Brieser continued dewatering the cell from Sunday's rain event. Due to the potential for more rain tonight, CAAWS worked to seal up repairs on the pond floor (some repairs were temporarily welded).
Scope Changes:	None
Site Conditions:	Dry

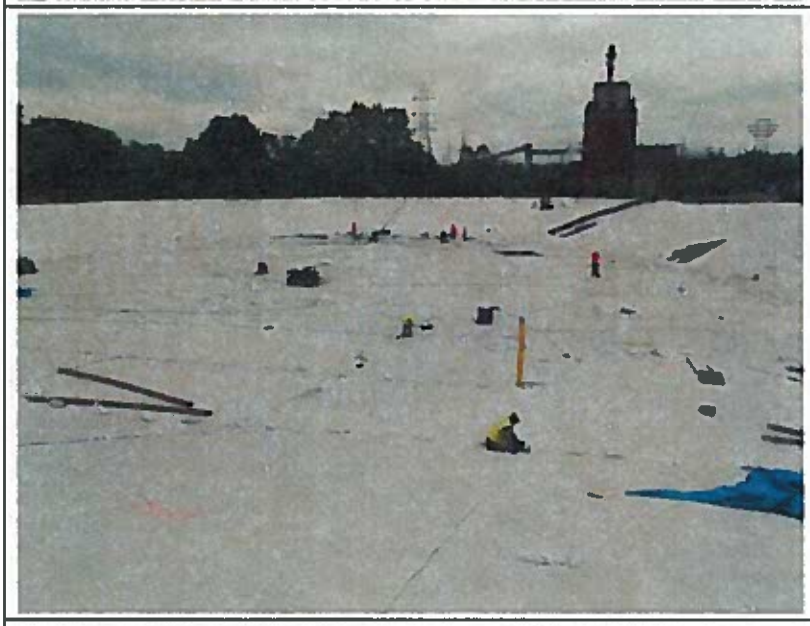
Non-destructive testing geomembrane extrusion weld (vacuum box) and geomembrane panel deployment in the background, looking north



Geomembrane trial weld prior to production seaming, looking southwest

Non-destructive testing geomembrane fusion welded seam, looking southeast

Overall pond installation activities, looking south



RJB

Signature: _____ Date: 9/17/2013

Ryan J. Baeten, PE

FIELD NOTE SUMMARY

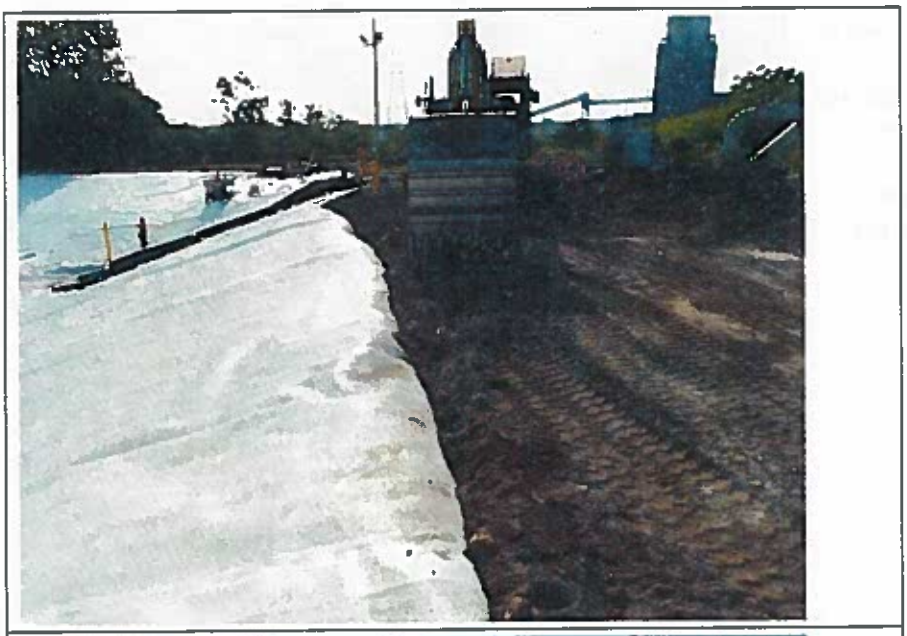
Project Number / Task: 2113.3 / 3.3
Project Names: South Pond 3 Liner Replacement

Date:	Wednesday, September 18, 2013
Work Scope:	Observe and document geosynthetics installation
NRT Staff:	Ryan J. Baeten & Edwards-Sawyer T. Effiong
Contractors:	Brieser Construction 1 - Foreman (Dan Bobzin) 2 - Operators Clean Air and Water Systems (CAAWS) 1 - Superintendent (Thong Ingles) 8 - Technicians
Weather:	Low 50°F High 73°F, partly cloudy, dry, wind 5 - 10 mph
Equipment:	1 - CAT 320E Excavator 1 - CAT CS-433E Smooth Drum (idle) 1 - Takeuchi TL250 Track Loader 1 - Water Truck
Field Comments:	6:30 RJB, ETE, Brieser, and CAAWS on-site CAAWS continued detail work on the geomembrane liner (non-destructive testing, extrusion welding repairs, and installing batten strip connections on the recycle sump structure). Trench backfilling was initiated after verification that all detail work and testing on the geomembrane was complete around the pond perimeter. Brieser painted depth indications on the marker posts as measure from the liner surface. The posts were painted yellow and the lines and numbers were painted red. DLZ surveyed the geomembrane panel layout and repair locations.
Scope Changes:	None
Site Conditions:	Dry

Non-destructive testing geomembrane repairs (vacuum box), looking east

Installing geomembrane pipe boot around marker post, looking east

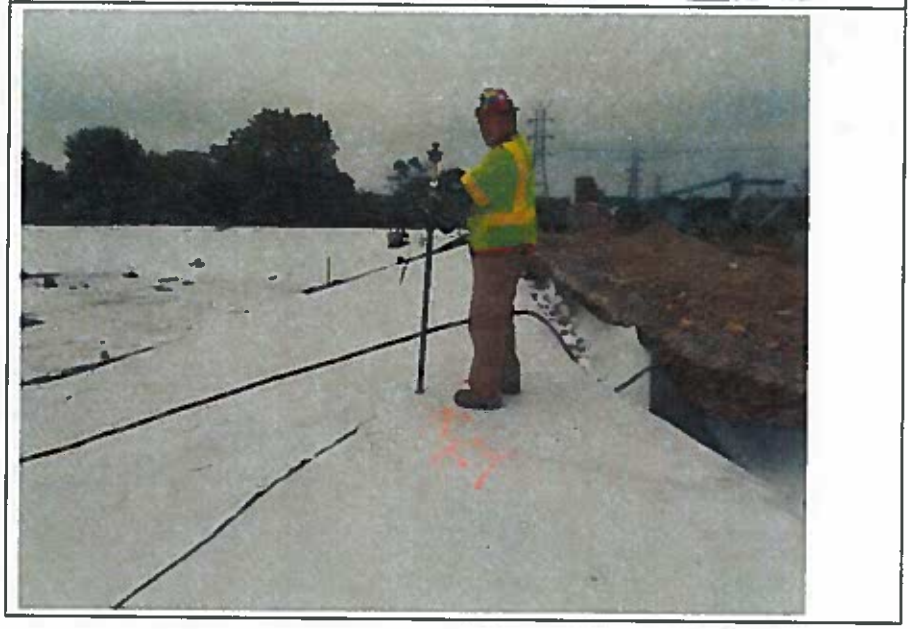
Backfilling anchor trench, looking south



Painting depth indications on the marker posts, looking northwest

Installation of batten connection to the recycle basin structure, looking east

Surveyor collecting locations of panel intersections and repair locations, looking south



RJB

Signature: _____ Date: 9/18/2013

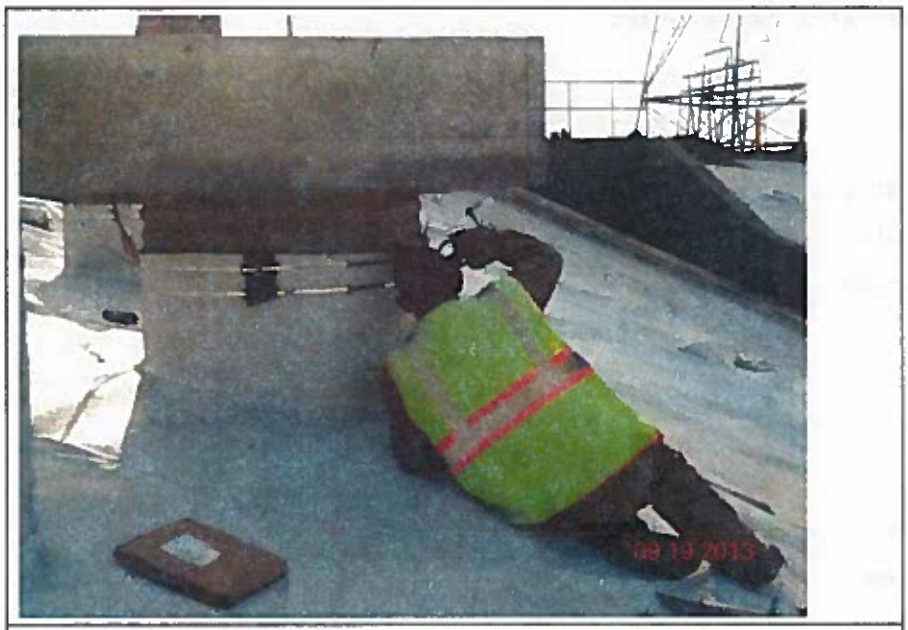
Ryan J. Baeten, PE

FIELD NOTE SUMMARY

Project Number / Task: 2113.3 / 3.3
Project Name: South Pond 3 Liner Replacement

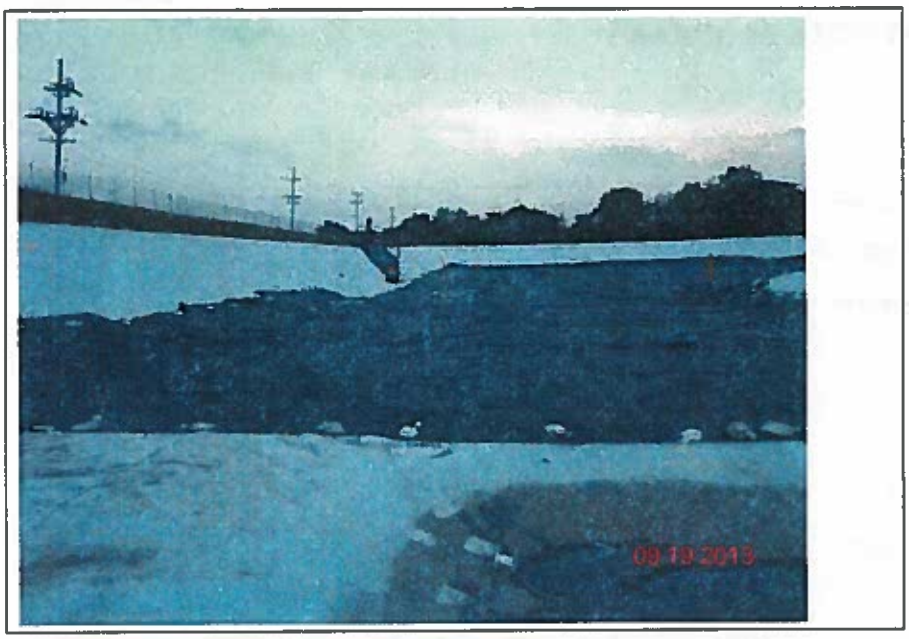
Date:	Thursday, September 19, 2013
Work Scope:	Observe and document geosynthetics installation
NRT Staff:	Ryan J. Baeten & Edwards-Sawyer Effiong
Contractors:	Brieser Construction 1 - Foreman (Dan Bobzin) 2 - Operators Clean Air and Water Systems (CAAWS) 1 - Superintendent (Thong Ingles) 10 - Technicians
Weather:	Low 64°F High 89°F, humid, Sunny
Equipment:	1 - CAT 320E Excavator 1 - Skytrack 8042 Telehandler (rented from Illinois Truck and Equipment) 1 - CAT CS-433E Smooth Drum (idle) 1 - Takeuchi TL250 Track Loader 1 - Water Truck
Field Comments:	6:30 RJB, ESE, Brieser, and CAAWS on-site All works on the structures (inlet and outlet) completed and last round of repairs done. Vacuum and spark tests on welded seams also conducted and documented. 19:45 work done for the day.
Scope Changes:	None
Site Conditions:	Humid and Hot

Boot strapping on substation structure, looking west



Vacuum testing along southwest slope

Deployment of geotextile, looking east

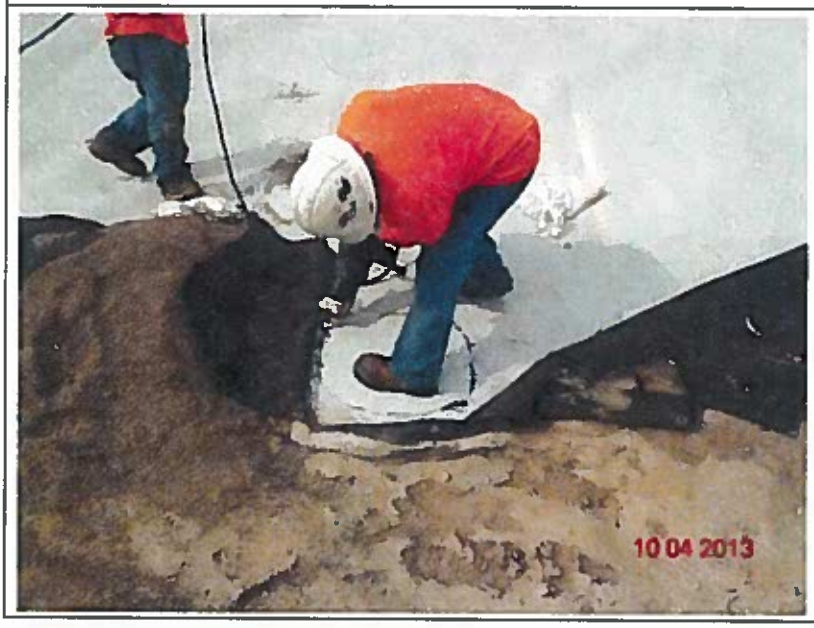


Signature: EE
Edwards Effiong

Date: 9/19/2013

FIELD NOTE SUMMARY

Project Number / Task: 2113.3 / 3.3
Project Name: South Pond 3 Liner Repairs

Date:	Friday, October 04, 2013
Work Scope:	Observe and document geosynthetics Repairs
NRT Staff:	Edwards-Sawyer Effiong
Contractors:	Brieser Construction 1 – Operator (Anthony Martin) Clean Air and Water Systems (CAAWS) 3 - Technicians
Weather:	Low 64°F High 79°F, humid, Sunny
Equipment:	None
Field Comments:	13:15 ETE, Brieser, and CAAWS on-site All repairs on three riser poles and one patch on liner completed. Vacuum and spark tests on welded seams also conducted and documented. 16:00 work done for the day.
Scope Changes:	None
Site Conditions:	Humid and Hot
A new patch on panel 54, looking north	

New patch on riser on west slope

Welding the new patch, looking west

ETE

Signature: _____ Date: 10/04/2013

Edwards Effiong

ATTACHMENT B

STRUCTURAL FILL AND CONCRETE STRUCTURES

ATTACHMENT B1

BORROW SOURCE SAMPLES

LAFARGE AGGREGATES & CONCRETE

Gradation Test Report

Plant 30260-Joliet
Product CA-6-042CM06 AG3043
Specification IDOT CM06 Spec - 2011

1816898330

Sample Information

Sample No 1816898330
Date Sampled 05/16/2013 07:08
Date Completed 05/16/2013 07:08
Sampled By Michael Hennessey
Tested By Michael Hennessey
Type Shipping
Method Bucket Blend/Sam Pad
Location Underbelt East
Process
Ledge
Other IDOT

Weather
Temp
Split Sample ☐
Resample ☐
Lot / Sublot
Quad / Quantity

Sequence M51613
Code

Test Note

Gradation Results

Unit	Moist Mass	Dry Mass	Wash Mass	Moisture %	Wash Loss %	Procedure
g	5556.80	5457.00	4911.00	1.8	10.0	

Sieve	Mass Retained	Cum Mass Retained	Ind % Retained	% Retained	% Passing	Target	Specification	Comment
1 1/2" (37.5mm)	0.0	0.0	0	0	100		100-100	
1" (25mm)	186.5	186.5	3	3	97	90-100	90-100	
3/4" (19mm)	392.3	578.8	7	11	89			
5/8" (16mm)	373.1	951.9	7	17	83			
1/2" (12.5mm)	305.2	1257.1	6	23	77	61-81	60-90	
3/8" (9.5mm)	375.5	1632.6	7	30	70			
1/4" (6.3mm)	460.8	2093.4	8	38	62			
#4 (4.75mm)	262.0	2355.4	5	43	57	39-59	34-60	
#8 (2.36mm)	634.7	2990.1	12	55	45			
#16 (1.18mm)	519.3	3509.4	10	64	36	22-38	10-40	
#40 (0.425mm)	486.6	3996.0	9	73	27			
#200 (75um)	805.3	4801.3	14.9	88.0	12.0	7-12	4-12	
Pan	106.9	4908.2	12.0	100.0	0.0			

LAFARGE AGGREGATES & CONCRETE

Gradation Test Report

Plant 30260-Joliet
Product Stone Sand-013FM05 AG2037
Specification 013FM05

Sample Information

Sample No 1829723052
Date Sampled 08/19/2013 11:19
Date Completed 08/19/2013 11:19
Sampled By Travis Meeker
Tested By Travis Meeker
Type Shipping
Method Bucket Blend/Sam Pad
Location Shipping Stockpile
Process
Ledge
Other IDOT

Weather Sunny
Temp 80
Split Sample ☐
Resample ☐
Sequence T81913
Code
Lot / Sublot
Quad / Quantity

Test Note

Gradation Results

Unit	Moist Mass	Dry Mass	Wash Mass	Moisture %	Wash Loss %	Procedure
g	806.90	787.20	655.80	2.5	16.7	

Sieve	Mass Retained	Cum Mass Retained	Ind % Retained	% Retained	% Passing	Target	Specification	Comment
3/8" (9.5mm)	0.0	0.0	0	0	100		100-100	
#4 (4.75mm)	0.0	0.0	0	0	100		84-100	
#8 (2.36mm)	73.2	73.2	9	9	91			
#16 (1.18mm)	148.0	221.2	19	28	72			
#30 (0.6mm)	120.5	341.7	15	43	57			
#50 (0.3mm)	115.4	457.1	15	58	42			
#100 (0.15mm)	105.3	562.4	13	71	29		0-40	
#200 (75um)	82.2	644.6	10.4	81.7	18.3		0-30	
Pan	12.7	657.3	18.3	100.0	0.0			

LAFARGE AGGREGATES & CONCRETE

Quality Test Report

Plant 30260-Joliet
Product Stone Sand-013FM05 AG2037
Specification 013FM05

1995556135

Sample Information

Sample No 1995556135
Date Sampled 03/16/2011 11:09
Date Completed 03/16/2011 11:09
Sampled By Tom Wehner
Tested By Tom Wehner
Type Shipping
Method Bucket Blend/Sam Pad
Location Stockpile East
Process
Ledge Underground Bench
Other

Weather
Temp
Split Sample ☐
Resample ☐
Lot / Sublot
Quad / Quantity

Sequence T031611
Code

Test Note
South end
NOTE some larger material noted in pile.

Gradation Results

Unit	Moist Mass	Dry Mass	Wash Mass	Moisture %	Wash Loss %	Procedure
g	913.40	862.60	751.10	5.9	12.9	

Sieve	Mass Retained	Cum Mass Retained	Ind % Retained	% Retained	% Passing	Target	Specification	Comment
3/8" (9.5mm)	0.0	0.0	0	0	100		100-100	
#4 (4.75mm)	39.9	39.9	5	5	95		84-100	
#8 (2.36mm)	165.3	205.2	19	24	76			
#16 (1.18mm)	173.9	379.1	20	44	56			
#30 (0.6mm)	114.6	493.7	13	57	43			
#50 (0.3mm)	89.4	583.1	10	68	32			
#100 (0.15mm)	77.4	660.5	9	77	23		0-40	
#200 (75um)	68.3	728.8	7.9	84.6	15.4		0-30	
PAN (0um)	21.6	750.4	15.4	100.0	0.0			

Other Test Results

Test Name	Date	Result	Unit	Target	Specification	Comment
	Procedure	Lab			Tested By	
Total Moisture	03/16/2011 11:09	5.89	%			
		Joliet			Tom Wehner	

Ryan Baeten

From: Mike Schmidt <mschmidt@brieserconstruction.com>
Sent: Wednesday, August 28, 2013 4:53 AM
To: Joseph Ridgway
Cc: Terry Kosmatka (tkosmatka@mwgen.com)
Subject: FA05

Based on ASTM D 2487 Appendix 2, the FA-5 we are supplying to your project would be classified as follows:

Crushed Dolomitic Limestone - "Well Graded Sand with Silt (SW - SM)" - 82% Coarse to Fine Sand; 18% Silty (estimated) fines, dry, light gray, no reaction with HCl.

Mike Schmidt
Estimator/Project Manager
Brieser Construction Company
http://www.brieserconstruction.com
mschmidt@brieserconstruction.com
24101 S. Municipal Drive
Channahon, IL 60410
P 815-521-0900 ext129
C 815-693-3337
F 815-521-0999

ATTACHMENT B2

CONCRETE PILLAR DESIGN

BRIESER CONSTRUCTION INC.

MWGEN- JOLIET WATER SAMPLER SHELTER

1

7/24/13

MWG13-15_33915

ATTACHMENT C

GEOSYNTHETICS CERTIFICATIONS

ATTACHMENT C1

GEOMEMBRANE CERTIFICATION

GSE Roll Allocation

Order SO-069998
Customer Clean Air and Water Systems, LLC
Project Name Joliet Station 29

Roll#	Resin Lot	Product Code	Mfg Date	Length
105167009	H8231659	HDT-060AE-WBB-B-W0	4/30/2013	520
105167014	H8231659	HDT-060AE-WBB-B-W0	4/30/2013	520
105167015	H8231659	HDT-060AE-WBB-B-W0	4/30/2013	520
105167016	H8231659	HDT-060AE-WBB-B-W0	4/30/2013	520
105167017	H8231659	HDT-060AE-WBB-B-W0	5/1/2013	520
105167018	H8231659	HDT-060AE-WBB-B-W0	5/1/2013	520
105167019	H8231659	HDT-060AE-WBB-B-W0	5/1/2013	520
105167020	H8231659	HDT-060AE-WBB-B-W0	5/1/2013	520
105167021	H8231659	HDT-060AE-WBB-B-W0	5/1/2013	520
105167022	H8231659	HDT-060AE-WBB-B-W0	5/1/2013	520
105167023	H8231659	HDT-060AE-WBB-B-W0	5/1/2013	520

GSE Environmental, LLC

ROLL TEST DATA REPORT

GSE QC APPROVED

Report Date: May/2/2013

Sales Order No.	*Customer Name*	*Project Location*	*Product Name*	*BOL Number*
SO-069998	Clean Air and Water Systems, LLC	Joliet 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 (Move to Cat1-Cat2)	Asperity Height GRI GM12 (mils) Side A	Asperity Height GRI GM12 (mils) Side B
105167009	61	57	156	159	17	16	247	215	637	629	55	51	151	0.945	2.49	10	20	19
105167014	61	58	163	166	16	15	221	203	612	590	54	52	151	0.945	2.59	10	19	22
105167015	61	60	157	157	16	16	225	200	626	613	53	50	153	0.945	2.31	10	20	23
105167016	61	59	157	157	16	16	225	200	626	613	53	50	153	0.945	2.31	10	20	23
105167017	61	59	157	157	16	16	225	200	626	613	53	50	153	0.945	2.31	10	20	22
105167018	60	58	157	157	16	16	225	200	626	613	53	50	153	0.945	2.31	10	20	22
105167019	61	60	150	158	16	16	198	208	546	609	54	50	149	0.945	2.31	10	20	23
105167020	61	58	150	158	16	16	198	208	546	609	54	50	149	0.945	2.31	10	20	23
105167021	61	59	150	158	16	16	198	208	546	609	54	50	149	0.945	2.31	10	20	23
105167022	61	59	150	158	16	16	198	208	546	609	54	50	149	0.945	2.31	10	20	23
105167023	62	58	143	150	17	16	222	206	646	639	51	47	144	0.943	2.24	10	25	30

Laboratory Manager Jane Allen

19103 Gundle Road Houston, TX 77073

GSE ENVIRONMENTAL™

Quality Assurance Laboratory Test Results

Job Name: Joliet Station 29
Sales Order: 69998

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	H8231659	PASS

Approved By: Debra Gortemiller
Date Approved: May 2, 2013

MWG13-15_33920

GSE ENVIRONMENTAL™

Quality Assurance Laboratory Test Results

Job Name: Joliet Station 29
SO Number: 69998

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: May 2, 2013

MWG13-15_33922

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_33923

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 / Joliet Station 29
PO : 1024-13

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
29607.01	16.44	436	79	462	88	157	169	1226	100	49	0.30	0.65
29607.02	16.44	436	79	462	88	157	169	1226	100	49	0.30	0.65
29607.03	16.44	436	79	462	88	157	169	1226	100	49	0.30	0.65
29607.04	16.44	436	79	462	88	157	169	1226	100	49	0.30	0.65
29607.05	16.21	431	71	455	85	157	169	1226	100	49	0.30	0.65
29607.06	16.21	431	71	455	85	157	169	1226	100	49	0.30	0.65
29607.07	16.21	431	71	455	85	157	169	1226	100	49	0.30	0.65
29607.08	16.21	431	71	455	85	157	169	1226	100	49	0.30	0.65
29607.09	16.21	431	71	455	85	157	169	1226	100	49	0.30	0.65
29607.10	16.57	439	76	464	90	154	161	1201	100	49	0.30	0.65
29607.11	16.57	439	76	464	90	154	161	1201	100	49	0.30	0.65
29607.12	16.57	439	76	464	90	154	161	1201	100	49	0.30	0.65
29607.13	16.57	439	76	464	90	154	161	1201	100	49	0.30	0.65
29607.14	16.57	439	76	464	90	154	161	1201	100	49	0.30	0.65
29607.15	16.11	434	73	453	83	154	161	1201	100	49	0.30	0.65
29607.16	16.11	434	73	453	83	154	161	1201	100	49	0.30	0.65
29607.17	16.11	434	73	453	83	154	161	1201	100	49	0.30	0.65
29607.18	16.11	434	73	453	83	154	161	1201	100	49	0.30	0.65
29607.19	16.11	434	73	453	83	154	161	1201	100	49	0.30	0.65
29607.20	16.62	437	78	461	86	159	167	1238	100	49	0.30	0.65
29607.21	16.62	437	78	461	86	159	167	1238	100	49	0.30	0.65
29607.22	16.62	437	78	461	86	159	167	1238	100	49	0.30	0.65
29607.23	16.62	437	78	461	86	159	167	1238	100	49	0.30	0.65
29607.24	16.62	437	78	461	86	159	167	1238	100	49	0.30	0.65
29607.25	16.37	432	75	456	81	159	167	1238	100	49	0.30	0.65
29607.26	16.37	432	75	456	81	159	167	1238	100	49	0.30	0.65
29607.27	16.37	432	75	456	81	159	167	1238	100	49	0.30	0.65
29607.28	16.37	432	75	456	81	159	167	1238	100	49	0.30	0.65
29607.29	16.37	432	75	456	81	159	167	1238	100	49	0.30	0.65
29607.30	16.45	440	80	463	89	151	163	1218	100	49	0.30	0.65
29607.31	16.45	440	80	463	89	151	163	1218	100	49	0.30	0.65
29607.32	16.45	440	80	463	89	151	163	1218	100	49	0.30	0.65
29607.33	16.45	440	80	463	89	151	163	1218	100	49	0.30	0.65
29607.34	16.45	440	80	463	89	151	163	1218	100	49	0.30	0.65
29607.35	16.25	430	72	452	84	151	163	1218	100	49	0.30	0.65

*All values are MARV.

MWG13-15_33926

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
29607.36	16.25	430	72	452	84	151	163	1218	100	49	0.30	0.65
29607.37	16.25	430	72	452	84	151	163	1218	100	49	0.30	0.65
29607.38	16.25	430	72	452	84	151	163	1218	100	49	0.30	0.65
29607.39	16.25	430	72	452	84	151	163	1218	100	49	0.30	0.65
29607.40	16.64	436	77	465	87	156	170	1231	100	49	0.30	0.65
29607.41	16.64	436	77	465	87	156	170	1231	100	49	0.30	0.65
29607.42	16.64	436	77	465	87	156	170	1231	100	49	0.30	0.65

*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: 681558

Calibration Apparatus:

Pro-Cal unit, model TC-0100/A

A/D Module Model No: T-029
A/D Module Serial No: 2212681558
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

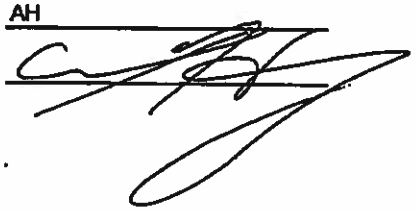
Total Deviation Error (%): 0.00%

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_33930

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:		Reference Cell:	
W1	2	R1	2
W2	152	R2	152
W3	302	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_33931

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

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www.caawsystems.com

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 - Joliet Station - South Pond 3

LOCATION: Joliet, IL

JOB NUMBER: 201325 CLIENT: _____

AREA ACCEPTED: 117,000 sq ft

COMMENTS: Subgrade acceptable to lay geotextile and Geomembrane

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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:	[signature]
Title:	PM QC	Title:	Engineer
Date:	9-12-13	Date:	9/12/2013

ATTACHMENT D4

GEOSYNTHETIC MATERIAL INSTALLATION CERTIFICATE

November 1, 2013

Midwest Generation, LLC
Joliet Generating Station 29
1800 Channahon Road
Joliet, IL 60436

RE: Geosynthetic material installation certification

To Whom It May Concern

The HDPE geomembrane and geotextiles installed in the South Ash Pond 3 were installed in accordance with the project specifications and manufactures recommendations.

Sincerely,

Matt Albert

Matt Albert
Project Estimator
CAAW Systems, LLC.

MWG13-15_33947

ATTACHMENT D5

GEOMEMBRANE INSTALLATION WARRANTIES

INSTALLATION WARRANTY- GEOMEMBRANE LINERS

PROJECT NAME: Joliet 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 _South Ash Pond 3_, 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: 2113.3 MWG - Joliet South Pond 3

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	4	1	2	3	4	1	2	3	4		
TW1	9/13/2013	13:43	Sunny	66	HN	69	850/5.3	Fus	135	135	139	146	138	128	141	139	163	159	163	166	P	
TW2	9/13/2013	13:57	Sunny	66	KK	402	850/5.3	Fus	115	121	122	123	122	129	139	129	158	166	169	161	P	
TW3	9/14/2013	7:34	Sunny	43	HN	69	850/5.3	Fus	140	138	163	144	133	128	142	144	211	210	211	208	P	
TW4	9/14/2013	7:30	Sunny	43	KK	402	850/4.5	Fus	127	149	136	127	139	156	148	153	191	196	203	204	P	
TW5	9/14/2013	13:30	Sunny	69	KK	402	850/5.5	Fus	132	127	117	107	134	119	129	122	159	163	169	172	P	
TW6	9/14/2013	13:30	Sunny	69	HN	69	850/5.3	Fus	127	136	125	130	146	127	133	131	151	161	157	151	P	
TW7	9/14/2013	15:02	Sunny	69	VP	69	850/5.5	Fus	105	104	110	104	117	115	117	121	160	159	159	160	P	
TW8	9/16/2013	12:47	Sunny	62	VK	46	550/440	Ext	–	–	–	–	111	95	117	117	185	186	194	183	P	
TW9	9/16/2013	13:06	Sunny	62	BL	10	500/400	Ext	–	–	–	–	98	109	99	105	172	171	180	180	P	
TW10	9/17/2013	7:35	Sunny	51	KK	402	850/4.5	Fus	135	146	150	132	134	145	148	136	187	179	183	167	P	
TW11	9/17/2013	7:41	Sunny	51	HN	69	850/5.3	Fus	141	133	147	137	135	131	147	138	192	177	192	170	P	
TW12	9/17/2013	13:40	Cloudy	68	KK	402	850/5.0	Fus	136	137	147	133	126	146	142	128	181	174	184	175	P	
TW13	9/17/2013	13:44	Cloudy	68	HN	69	850/5.3	Fus	139	149	147	143	153	122	135	135	177	174	180	176	P	
TW14	9/17/2013	15:51	Cloudy	68	VK	46	550/445	Ext	–	–	–	–	130	128	140	129	197	188	187	180	P	
TW15	9/17/2013	16:00	Cloudy	68	BL	10	500/400	Ext	–	–	–	–	100	108	101	103	156	146	160	149	P	
TW16	9/18/2013	7:35	Cloudy	60	VK	46	550/445	Ext	–	–	–	–	165	122	102	147	190	192	192	192	P	
TW17	9/18/2013	7:30	Cloudy	60	BL	10	500/400	Ext	–	–	–	–	121	123	131	120	191	181	184	186	P	
TW18	9/18/2013	13:15	Cloudy	81	VK	46	550/440	Ext	–	–	–	–	105	106	117	115	141	141	139	144	P	
TW19	9/18/2013	13:18	Cloudy	81	BL	10	500/400	Ext	–	–	–	–	132	122	129	129	151	148	153	142	P	
TW20	9/19/2013	7:30	Cloudy	68	BL	10	500/400	Ext	–	–	–	–	118	98	97	98	142	142	144	147	P	
TW21	9/19/2013	8:00	Cloudy	68	VP	46	500/400	Ext	–	–	–	–	104	111	96	105	155	157	148	152	P	

MWG13-15_33953

Trial Weld Summary

Project Number: 2113.3 MWG - Joliet South Pond 3

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	4	1	2	3	4	1	2	3	4		
TW22	9/19/2013	13:20	Sunny	86	BL	10	500/400	Ext	--	--	--	--	101	109	103	92	152	144	144	147	P	
TW23	9/19/2013	13:50	Sunny	86	VP	46	500/400	Ext	--	--	--	--	141	127	141	144	161	160	161	159	P	
TW24	10/4/2014	14:05	Sunny	76	VP	37	500/500	Ext	--	--	--	--	113	122	130	124	126	121	132	122	P	

ATTACHMENT E2

PANEL PLACEMENT SUMMARY

Panel Placement Summary

Project Number: *2113.3 MWG - Joliet South Pond 3*

Panel Number	Date	Time	Roll Number	Mat. Id.	Final Length (Feet)	Width	Thickness (mils)		Final Area (Sq. Ft.)	COMMENTS
P1	9/13/13	13:44	*7021	HDPE	51	22	76	78	1,122	
P2	9/13/13	14:04	*7021	HDPE	69	22	78	75	1,518	
P3	9/13/13	14:15	*7021	HDPE	38/49	22	80	75	957	
P4	9/13/13	14:23	*7021	HDPE	19/27	22	70	85	506	
P5	9/13/13	14:34	*7021	HDPE	0/16	19	82	81	152	
P6	9/13/13	14:39	*7021	HDPE	78	22	80	81	1,716	
P7	9/13/13	14:49	*7021	HDPE	79	22	85	80	1,738	
P8	9/13/13	14:54	*7021	HDPE	79/83	22	79	80	1,782	
P9	9/13/13	15:03	*7019	HDPE	73/67	22	77	83	1,540	
P10	9/13/13	15:10	*7019	HDPE	73/48	22	79	81	1,331	
P11	9/13/13	15:18	*7019	HDPE	58	22	80	79	1,276	
P12	9/13/13	15:29	*7019	HDPE	47/37/52	22	78	75	997	
P13	9/13/13	15:40	*7019	HDPE	67	22	73	79	1,474	
P14	9/13/13	15:44	*7019	HDPE	67	22	71	78	1,474	
P15	9/13/13	15:50	*7019	HDPE	66	22	80	79	1,452	
P16	9/14/13	7:34	*7020	HDPE	67/61	22	63	68	1,408	
P17	9/14/13	7:35	*7020	HDPE	61/68	22	68	68	1,419	
P18	9/14/13	7:42	*7020	HDPE	68	22/3	61	63	850	
P19	9/14/13	8:01	*7020	HDPE	63	20	67	65	1,260	
P20	9/14/13	8:04	*7020	HDPE	14	8	70	69	112	
P21	9/14/13	8:16	*7020	HDPE	39	20	66	70	780	
P22	9/14/13	8:21	*7020	HDPE	39/23	20	68	68	620	
P23	9/14/13	8:27	*7020	HDPE	0/23	22	67	70	253	
P24	9/14/13	10:19	*7020	HDPE	85	22	67	68	1,870	
P25	9/14/13	9:01	*7014	HDPE	83	22	66	68	1,826	
P26	9/14/13	10:31	*7014	HDPE	87	22	66	68	1,914	
P27	9/14/13	10:43	*7014	HDPE	87	22	68	70	1,914	
P28	9/14/13	10:50	*7014	HDPE	87/83	22	68	71	1,870	
P29	9/14/13	10:55	*7014	HDPE	83/66	22	71	71	1,639	
P30	9/14/13	11:09	*7009	HDPE	275	22	66	68	6,050	
P31	9/14/13	11:28	*7009	HDPE	211	22	68	67	4,642	
P32	9/14/13	11:35	*7009	HDPE	26/31	22	67	69	627	
P33	9/14/13	11:39	*7022	HDPE	64	22	68	68	1,408	
P34	9/14/13	11:45	*7022	HDPE	221	22	69	70	4,862	
P35	9/14/13	13:43	*7022	HDPE	145/137	22	64	66	3,102	
P36	9/14/13	13:59	*7017	HDPE	19	22	65	66	418	
P37	9/14/13	13:56	*7022	HDPE	82	22	69	68	1,804	
P38	9/14/13	14:08	*7017	HDPE	220/236	22	66	66	5,016	
P39	9/14/13	14:20	*7017	HDPE	70	22	68	67	1,540	
P40	9/14/13	14:24	*7017	HDPE	57/40	22	67	67	1,067	
P41	9/14/13	14:26	*7017	HDPE	40/20	22	68	70	880	
P42	9/14/13	14:35	*7017	HDPE	20/0	18	60	64	180	
P43	9/14/13	14:46	*7023	HDPE	144	22	62	63	3,168	
P44	9/14/13	14:51	*7017	HDPE	0/18	9	–	–	81	
P45	9/14/13	14:53	*7023	HDPE	16	10/14	67	66	192	

Panel Placement Summary

Project Number: *2113.3 MWG - Joliet South Pond 3*

Panel Number	Date	Time	Roll Number	Mat. Id.	Final Length (Feet)	Width	Thickness (mils)		Final Area (Sq. Ft.)	COMMENTS
P46	9/14/13	15:03	*7023	HDPE	38/88	22	62	67	1,386	
P47	9/14/13	15:08	*7023	HDPE	0/10	22	63	64	110	
P48	9/14/13	15:12	*7023	HDPE	38/29	26	66	64	871	
P49	9/17/13	7:31	*7023	HDPE	77	22	65	66	1,694	
P50	9/17/13	7:42	*7023	HDPE	75/75/37	22	66	65	1,371	
P51	9/17/13	7:45	*7023	HDPE	40/55	22	64	66	1,045	
P52	9/17/13	7:49	*7018	HDPE	37/23	22	65	67	660	
P53	9/17/13	7:51	*7018	HDPE	0/23	18	65	64	207	
P54	9/17/13	8:07	*7018	HDPE	89/55/55	22	62	62	1,459	
P55	9/17/13	8:15	*7018	HDPE	89	22	65	66	1,958	
P56	9/17/13	8:23	*7018	HDPE	90	22	62	64	1,980	
P57	9/17/13	8:34	*7018	HDPE	93/106	22	66	67	2,189	
P58	9/17/13	8:42	*7018	HDPE	71	22	67	65	1,562	
P59	9/17/13	8:48	*7018	HDPE	26	22	65	64	572	
P60	9/17/13	9:11	*7016	HDPE	93	22	65	66	2,046	
P61	9/17/13	9:26	*7016	HDPE	93	22	67	68	2,046	
P62	9/17/13	9:45	*7016	HDPE	92/90	22	66	66	2,002	
P63	9/17/13	9:46	*7016	HDPE	14	11	67	65	154	
P64	9/17/13	10:32	*7016	HDPE	60	22	69	68	1,320	
P65	9/17/13	10:38	*7016	HDPE	83	22	66	67	1,826	
P66	9/17/13	10:43	*7016	HDPE	59	22	67	66	1,298	
P67	9/17/13	10:49	*7017	HDPE	35/25	22	68	68	660	
P68	9/17/13	10:58	*7014	HDPE	5/25	22	66	68	330	
P69	9/17/13	11:00	*7014	HDPE	0/5	4	65	67	10	
P70	9/17/13	11:07	*7015	HDPE	85	21	64	65	1,785	
P71	9/17/13	11:21	*7015	HDPE	86	22	68	67	1,892	
P72	9/17/13	11:43	*7015	HDPE	87	22	66	66	1,914	
P73	9/17/13	11:55	*7015	HDPE	90	22	65	67	1,980	
P74	9/17/13	12:14	*7015	HDPE	90	22	66	65	1,980	
P75	9/17/13	13:46	*7015	HDPE	50	22	68	72	1,100	
P76	9/17/13	13:53	*7019	HDPE	24	22	65	68	528	
P77	9/17/13	13:56	*7014	HDPE	13	22	67	67	286	
P78	9/17/13	13:58	*7015	HDPE	9	18	--	--	162	
								Total:	111,971	SF

ATTACHMENT E3

PANEL SEAMING SUMMARY

Panel Seaming Summary

Project Number: 2113.3 MWG - Joliet South Pond 3

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	9/13/2013	11	KK	FUS	402	850/4.5	14:47	14:49	69	From P2/P3 to marker post
P1 / P3	9/13/2013	22	KK	FUS	402	850/4.5	14:42	14:45	69	
P1 / P4	9/13/2013	27	KK	FUS	402	850/4.5	14:37	14:42	71	
P2 / P3	9/13/2013	49	KK	FUS	402	850/4.5	14:23	14:32	71	
P2 / P6	9/13/2013	70	KK	FUS	402	850/4.5	14:53	15:04	69	
P2 / P78	9/17/2013	18	KK	FUS	402	850/5.0	15:38	15:40	70	
P2 / CAP	9/17/2013	4	KK	FUS	402	850/5.0	15:37	15:38	70	
P3 / P4	9/13/2013	22	HN	FUS	69	850/5.3	14:31	14:34	71	
P3 / P5	9/13/2013	15	HN	FUS	69	850/5.3	14:38	14:40	69	
P4 / P5	9/13/2013	--	HN	FUS	69	850/5.3	14:45	14:46	69	within anchor trench
P4 / P5	9/13/2013	14	HN	FUS	69	850/5.3	14:48	14:50	69	Power pole (PP) to P3
P4 / P5	9/13/2013	5	--	--	--	--	--	--	--	Patch from crest of trench to PP
P6 / P7	9/13/2013	80	HN	FUS	69	850/5.3	14:57	15:08	69	
P6 / P54	9/17/2013	8	KK	FUS	402	850/5.0	15:20	15:21	70	
P6 / P55	9/17/2013	10	KK	FUS	402	850/5.0	15:18	15:20	70	
P6 / CAP	9/17/2013	9	KK	FUS	402	850/5.0	15:36	15:37	70	
P7 / P8	9/13/2013	82	KK	FUS	402	850/4.5	15:09	15:22	69	
P7 / P55	9/17/2013	12	KK	FUS	402	850/5.0	15:17	15:18	70	
P7 / P56	9/17/2013	10	KK	FUS	402	850/5.0	15:15	15:17	70	
P8 / P10	9/13/2013	25	HN	FUS	69	850/5.3	15:39	15:42	69	
P8 / P11	9/13/2013	59	KK	FUS	402	850/4.5	15:27	15:35	69	

Panel Seaming Summary

Project Number: 2113.3 MWG - Joliet South Pond 3

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		
P8 / P56	9/17/2013	12	KK	FUS	402	850/5.0	15:14	15:15	70	
P8 / P57	9/17/2013	11	KK	FUS	402	850/5.0	15:13	15:14	70	
P9 / P10	9/13/2013	74	HN	FUS	69	850/5.3	15:27	15:35	69	
P9 / P13	9/13/2013	72	HN	FUS	69	850/5.3	15:49	15:59	69	
P9 / P32	9/14/2013	14	VP	FUS	140	850/5.1	15:51	15:53	71	
P9 / P35	9/14/2013	10	VP	FUS	140	850/5.1	15:53	15:55	71	
P10 / P11	9/13/2013	24	KK	FUS	402	850/4.5	15:53	15:56	69	
P10 / P12	9/13/2013	24	KK	FUS	402	850/4.5	15:56	16:00	69	
P10 / P31	9/14/2013	20	VP	FUS	140	850/5.1	15:48	15:50	71	
P10 / P32	9/14/2013	12	VP	FUS	140	850/5.1	15:50	15:51	71	
P11 / P12	9/13/2013	47	KK	FUS	402	850/4.5	15:39	15:46	69	in/out @ 9' from P10
P11 / P57	9/17/2013	12	KK	FUS	402	850/5.0	15:12	15:13	70	
P11 / P59	9/17/2013	10	KK	FUS	402	850/5.0	15:11	15:12	70	
P12 / P30	9/14/2013	18	VP	FUS	140	850/5.1	15:43	15:46	71	
P12 / P31	9/14/2013	19	VP	FUS	140	850/5.1	15:46	15:48	71	
P12 / P59	9/17/2013	15	KK	FUS	402	850/4.5	10:05	10:07	62	North - South
P12 / P59	9/17/2013	5	KK	FUS	402	850/5.0	15:10	15:11	70	East - West
P12 / P60	9/17/2013	13	KK	FUS	402	850/4.5	10:15	10:17	62	
P12 / P63	9/17/2013	11	KK	FUS	402	850/4.5	9:50	9:51	62	
P13 / P14	9/13/2013	70	HN	FUS	69	850/5.3	16:05	16:14	69	
P13 / P35	9/14/2013	15	VP	FUS	140	850/5.1	15:55	15:58	71	

Panel Seaming Summary

Project Number: 2113.3 MWG - Joliet South Pond 3

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		
P13 / P38	9/14/2013	10	VP	FUS	140	850/5.1	15:58	15:59	71	
P14 / P15	9/13/2013	67	KK	FUS	402	850/4.5	16:07	16:19	69	
P14 / P38	9/14/2013	19	VP	FUS	140	850/5.1	15:59	16:02	71	
P14 / P43	9/14/2013	7	VP	FUS	140	850/5.1	16:02	16:03	71	
P15 / P16	9/14/2013	67	HN	FUS	69	850/5.3	7:53	8:03	48	
P15 / P43	9/14/2013	20	HN	FUS	69	850/5.3	15:45	15:50	71	
P16 / P17	9/14/2013	62	KK	FUS	402	850/4.5	7:56	8:07	48	
P16 / P46	9/14/2013	23	HN	FUS	69	850/5.3	15:50	15:54	71	
P17 / P18	9/14/2013	68	HN	FUS	69	850/5.3	8:14	8:24	50	
P17 / P48	9/14/2013	23	HN	FUS	69	850/5.3	15:54	15:56	71	
P18 / P20	9/14/2013	22	KK	FUS	402	850/4.5	8:13	8:17	50	
P18 / P25	9/14/2013	12	KK	FUS	402	850/4.5	10:43	10:45	65	
P18 / P48	9/14/2013	3	HN	FUS	69	850/5.3	15:56	15:57	71	
P19 / P20	9/14/2013	20	KK	FUS	402	850/4.5	8:22	8:25	50	Repair @ marker post
P19 / P21	9/14/2013	22	KK	FUS	402	850/4.5	8:54	8:57	52	
P19 / P22	9/14/2013	20	KK	FUS	402	850/4.5	8:50	8:54	51	
P19 / P23	9/14/2013	13	KK	FUS	402	850/4.5	8:47	8:49	50	
P19 / P23	9/14/2013	10	KK	FUS	402	850/4.5	8:49	8:50	51	
P19 / P25	9/14/2013	19	KK	FUS	402	850/4.5	10:38	10:42	64	
P20 / P25	9/14/2013	8	KK	FUS	402	850/4.5	10:42	10:43	64	
P21 / P22	9/14/2013	39	HN	FUS	69	850/5.3	8:30	8:36	50	

Panel Seaming Summary

Project Number: 2113.3 MWG - Joliet South Pond 3

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		
P21 / P25	9/14/2013	43	KK	FUS	402	850/4.5	10:31	10:38	63	
P22 / P23	9/14/2013	25	KK	FUS	402	850/4.5	8:31	8:36	50	
P23 / P23	9/14/2013	5	KK	FUS	402	850/4.5	8:38	8:39	50	cut for guy wire
P24 / P25	9/14/2013	85	HN	FUS	69	850/5.3	10:30	10:42	63	
P24 / P26	9/14/2013	87	HN	FUS	69	850/5.3	10:52	11:04	67	
P24 / P47	9/14/2013	16	KK	FUS	402	850/5.5	15:58	16:00	71	
P24 / P48	9/14/2013	7	KK	FUS	402	850/5.5	16:00	16:01	71	
P25 / P48	9/14/2013	22	KK	FUS	402	850/5.5	16:01	16:03	71	
P26 / P27	9/14/2013	88	KK	FUS	402	850/4.5	10:51	11:05	66	
P26 / P46	9/14/2013	13	KK	FUS	402	850/5.5	15:55	15:57	71	
P26 / P47	9/14/2013	10	KK	FUS	402	850/5.5	15:57	15:58	71	
P27 / P28	9/14/2013	88	KK	FUS	402	850/4.5	11:11	11:24	67	
P27 / P45	9/14/2013	16	KK	FUS	402	850/5.5	15:52	15:54	71	
P27 / P46	9/14/2013	5	KK	FUS	402	850/5.5	15:54	15:55	71	
P28 / P29	9/14/2013	84	HN	FUS	69	850/5.3	11:14	11:25	67	
P28 / P43	9/14/2013	5	KK	FUS	402	850/5.5	15:48	15:49	71	
P28 / P44	9/14/2013	19	KK	FUS	402	850/5.5	15:50	15:52	71	
P29 / P39	9/14/2013	8	KK	FUS	402	850/5.5	15:45	15:46	71	
P29 / P40	9/14/2013	23	KK	FUS	402	850/5.5	15:20	15:23	71	
P29 / P41	9/14/2013	24	KK	FUS	402	850/5.5	15:23	15:25	71	
P29 / P42	9/14/2013	19	KK	FUS	402	850/5.5	15:25	15:29	71	

Panel Seaming Summary

Project Number: 2113.3 MWG - Joliet South Pond 3

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		
P29 / P43	9/14/2013	19	KK	FUS	402	850/5.5	15:46	15:48	71	
P30 / P31	9/14/2013	212	KK	FUS	402	850/4.5	11:32	12:03	67	
P30 / P33	9/14/2013	64	KK	FUS	402	850/4.5	12:03	12:13	67	
P30 / P60	9/17/2013	20	HN	FUS	69	850/5.3	15:20	15:22	70	
P30 / P61	9/17/2013	22	HN	FUS	69	850/5.3	15:17	15:20	70	
P30 / P62	9/17/2013	22	HN	FUS	69	850/5.3	16:15	16:17	70	
P30 / P64	9/17/2013	64	HN	FUS	69	850/5.3	10:41	10:50	63	
P30 / P65	9/17/2013	22	HN	FUS	69	850/5.3	14:55	14:50	70	
P30 / P70	9/17/2013	22	HN	FUS	69	850/5.3	14:58	15:00	70	
P30 / P71	9/17/2013	22	HN	FUS	69	850/5.3	15:00	15:03	70	
P30 / P72	9/17/2013	22	HN	FUS	69	850/5.3	15:03	15:56	70	
P30 / P73	9/17/2013	22	HN	FUS	69	850/5.3	15:56	15:57	70	
P30 / P74	9/17/2013	22	HN	FUS	69	850/5.3	15:59	16:12	70	
P30 / P77	9/17/2013	22	HN	FUS	69	850/5.3	16:12	16:15	70	
P31 / P32	9/14/2013	30	HN	FUS	69	850/5.3	12:00	12:04	67	
P31 / P33	9/14/2013	22	HN	FUS	69	850/5.3	11:43	11:46	67	
P31 / P34	9/14/2013	158	HN	FUS	69	850/5.3	12:04	12:24	67	
P32 / P34	9/14/2013	22	HN	FUS	69	850/5.3	11:56	11:59	67	
P32 / P35	9/14/2013	26	KK	FUS	402	850/5.5	13:51	13:54	69	
P33 / P34	9/14/2013	63	KK	FUS	402	850/4.5	12:16	12:25	67	
P34 / P35	9/14/2013	119	KK	FUS	402	850/5.5	13:54	14:09	69	

Panel Seaming Summary

Project Number: 2113.3 MWG - Joliet South Pond 3

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		
P34 / P36	9/14/2013	19	KK	FUS	402	850/5.5	14:09	14:11	69	
P34 / P37	9/14/2013	82	KK	FUS	402	850/5.5	14:11	14:21	69	
P35 / P36	9/14/2013	22	HN	FUS	69	850/5.3	14:04	14:07	69	
P35 / P38	9/14/2013	137	HN	FUS	69	850/5.3	14:18	14:35	69	
P36 / P37	9/14/2013	22	HN	FUS	69	850/5.3	14:08	14:11	69	
P36 / P38	9/14/2013	19	HN	FUS	69	850/5.3	14:35	14:37	70	
P37 / P38	9/14/2013	80	HN	FUS	69	850/5.3	14:37	14:49	70	
P38 / P39	9/14/2013	71	KK	FUS	402	850/5.5	14:29	14:38	70	
P38 / P43	9/14/2013	144	HN	FUS	69	850/5.3	14:55	15:14	71	
P39 / P40	9/14/2013	55	KK	FUS	402	850/5.5	14:42	14:49	71	
P39 / P43	9/14/2013	22	HN	FUS	69	850/5.3	15:17	15:20	71	
P40 / P41	9/14/2013	42	KK	FUS	402	850/5.5	14:51	14:57	71	
P41 / P42	9/14/2013	21	KK	FUS	402	850/5.5	15:01	15:04	71	
P43 / P44	9/14/2013	18	HN	FUS	69	850/5.3	15:35	15:38	71	
P43 / P45	9/14/2013	17	HN	FUS	69	850/5.3	15:33	15:35	71	
P43 / P46	9/14/2013	185	HN	FUS	69	850/5.3	15:23	15:33	71	
P44 / P45	9/14/2013	10	VP	FUS	140	850/5.1	15:22	15:23	71	
P45 / P46	9/14/2013	16	VP	FUS	140	850/5.1	15:19	15:21	71	
P46 / P47	9/14/2013	21	VP	FUS	140	850/5.1	15:32	15:33	71	
P46 / P48	9/14/2013	38	VP	FUS	140	850/5.1	15:28	15:32	71	
P47 / P48	9/14/2013	12	VP	FUS	140	850/5.1	15:25	15:27	71	

Panel Seaming Summary

Project Number: 2113.3 MWG - Joliet South Pond 3

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		
P49 / P50	9/17/2013	80	KK	FUS	402	850/4.5	7:48	8:01	60	
P49 / P54	9/17/2013	21	HN	FUS	69	850/5.3	8:59	9:02	62	
P49 / P78	9/17/2013	18	KK	FUS	402	850/5.0	15:45	15:47	70	
P49 / CAP	9/17/2013	4	KK	FUS	402	850/5.0	15:47	15:48	70	
P50 / P51	9/17/2013	8	HN	FUS	69	850/5.3	9:08	9:09	62	P54 to Marker Post
P50 / P51	9/17/2013	17	HN	FUS	69	850/5.3	9:10	9:13	62	Marker Post to P52
P50 / P52	9/17/2013	37	HN	FUS	69	850/5.3	8:02	8:08	60	
P50 / P54	9/17/2013	14	HN	FUS	69	850/5.3	9:02	9:04	62	North - South
P50 / P54	9/17/2013	15	HN	FUS	69	850/5.3	9:06	9:08	62	East - West
P51 / P52	9/17/2013	22	KK	FUS	402	850/4.5	8:26	8:29	62	North - South
P51 / P53	9/17/2013	18	KK	FUS	402	850/4.5	8:29	8:33	62	
P51 / P54	9/17/2013	55	HN	FUS	69	850/5.3	8:14	8:22	60	
P52 / P53	9/17/2013	23	KK	FUS	402	850/4.5	8:10	8:14	60	
P54 / P55	9/17/2013	90	HN	FUS	69	850/5.3	8:26	8:38	62	
P55 / P56	9/17/2013	90	HN	FUS	69	850/5.3	8:41	8:52	62	
P56 / P57	9/17/2013	92	KK	FUS	402	850/4.5	8:40	8:54	62	
P57 / P58	9/17/2013	70	KK	FUS	402	850/4.5	9:06	9:18	62	
P57 / P59	9/17/2013	26	KK	FUS	402	850/4.5	9:03	9:06	62	
P58 / P59	9/17/2013	13	KK	FUS	402	850/4.5	8:57	8:59	62	
P58 / P60	9/17/2013	69	KK	FUS	402	850/4.5	10:24	10:35	62	
P58 / P63	9/17/2013	11	KK	FUS	402	850/4.5	9:58	9:59	62	

Panel Seaming Summary

Project Number: 2113.3 MWG - Joliet South Pond 3

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		
P59 / P63	9/17/2013	14	KK	FUS	402	850/4.5	10:07	10:09	62	
P60 / P61	9/17/2013	92	HN	FUS	69	850/5.3	9:45	9:58	62	
P60 / P63	9/17/2013	13	KK	FUS	402	850/4.5	10:20	10:24	62	
P61 / P62	9/17/2013	93	HN	FUS	69	850/5.3	10:04	10:18	62	
P62 / P75	9/17/2013	50	KK	FUS	402	850/5.0	14:55	15:01	70	
P62 / P76	9/17/2013	24	KK	FUS	402	850/5.0	14:50	14:55	70	
P62 / P77	9/17/2013	16	KK	FUS	402	850/5.0	14:48	14:50	70	
P64 / P65	9/17/2013	22	KK	FUS	402	850/4.5	10:48	10:50	64	
P64 / P66	9/17/2013	22	HN	FUS	69	850/5.3	11:28	11:30	64	
P64 / P67	9/17/2013	35	HN	FUS	69	850/5.3	10:58	11:03	64	
P65 / P66	9/17/2013	59	KK	FUS	402	850/4.5	10:50	10:59	64	
P65 / P70	9/17/2013	85	HN	FUS	69	850/5.3	11:38	11:50	64	
P66 / P67	9/17/2013	22	HN	FUS	69	850/5.3	11:06	11:09	64	
P66 / P68	9/17/2013	22	HN	FUS	69	850/5.3	11:09	11:12	64	
P66 / P69	9/17/2013	7	HN	FUS	69	850/5.3	11:20	11:21	64	
P67 / P68	9/17/2013	25	KK	FUS	402	850/4.5	11:02	11:07	64	
P68 / P69	9/17/2013	7	HN	FUS	69	850/5.3	11:15	11:16	64	
P70 / P71	9/17/2013	86	HN	FUS	69	850/5.3	11:58	12:10	64	
P71 / P72	9/17/2013	87	HN	FUS	69	850/5.3	12:14	12:26	64	
P72 / P73	9/17/2013	90	HN	FUS	69	850/5.3	14:11	14:23	69	
P73 / P74	9/17/2013	90	HN	FUS	69	850/5.3	14:28	14:41	70	

Panel Seaming Summary

Project Number: 2113.3 MWG - Joliet South Pond 3

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		
P74 / P75	9/17/2013	51	KK	FUS	402	850/5.0	14:27	14:35	70	
P74 / P76	9/17/2013	25	KK	FUS	402	850/5.0	14:24	14:27	70	
P74 / P77	9/17/2013	20	KK	FUS	402	850/5.0	14:22	14:24	70	
P75 / P76	9/17/2013	22	KK	FUS	402	850/5.0	14:01	14:04	68	
P76 / P77	9/17/2013	22	KK	FUS	402	850/5.0	14:10	14:13	69	
P78 / CAP	9/17/2013	9	KK	FUS	402	850/5.0	15:24	15:25	70	

ATTACHMENT E4

REPAIR SUMMARY

Repair Summary

Project Number: 2113.3 MWG - Joliet South Pond 3

Repair Number	Date	Time	Oper./Mach.	Repair Location North East	Description	Size of Repair (ft)	Date Vacuum Tested	Vac. Test Results (P/F)
R1	9/16/2013	13:05	BL / 10	P1/P4 @ crest of trench	cut	2x3	9/17/2013	P
R2	9/16/2013	14:40	BL / 10	P4/P5 @ COT	cut	3x3	9/17/2013	P
R3	9/16/2013	14:30	BL / 10	P4, 6' from COT, 4' N of P5	Power Pole	5x7	9/17/2013	P
R4	9/16/2013	13:15	BL / 10	P3/P4/P5, 9' from COT	tee	2x2	9/17/2013	P
R5	9/16/2013	13:10	BL / 10	P1/P3/P4, 27' from COT	tee	3x3	9/17/2013	P
R6	9/16/2013	15:00	BL / 10	P1/P2/P3, 22' E of R5	tee	3x3	9/17/2013	P
R7	9/16/2013	15:10	BL / 10	P1/P2, 48' from COT, 11' N of R6	cut	6x4	9/17/2013	P
R8	9/16/2013	13:05	VK / 46	P7/P8, 3' from COT	cut	3x2	9/17/2013	P
R9	9/16/2013	12:52	VK / 46	P8/P9/P10, 5' from COT	tee	3x3	9/17/2013	P
R10	9/16/2013	13:15	VK / 46	P8/P10/P11, 25' from COT	tee	6x3	9/18/2013	P
R11	9/16/2013	13:10	VK / 46	P10/P11/P12, 24' E of R10	tee	2x2	9/18/2013	P
R12	9/18/2013	11:25	VK / 46	P12, 6' from P11, 12' from R11	cut	10x5	9/18/2013	P
R13	9/17/2013	17:00	BL / 10	P10/P12/P31, 14' from R12	tee	2x2	9/18/2013	P
R14	9/17/2013	17:05	BL / 10	P12/P30/P31, 16' from R13	tee	2x2	9/18/2013	P
R15	9/16/2013	15:30	BL / 10	P17/P18, 13' from COT	cut	3x2	9/19/2013	P
R16	9/16/2013	16:30	BL / 10	P19/P23, 1' from COT	cut	3x5	9/18/2013	P
R17	9/16/2013	16:15	BL / 10	P19/P23, 14' from COT	tee	1x1	9/18/2013	P
R18	9/16/2013	16:10	BL / 10	P19/P22/P23, 23' from COT	tee	1x1	9/18/2013	P
R19	9/16/2013	16:00	BL / 10	P19/P21/P22, 42' from COT	tee	1x1	9/18/2013	P
R20	9/16/2013	15:50	BL / 10	P19/P21/P25, 62' from COT	tee	1x1	9/18/2013	P
R21	9/16/2013	13:45	VK / 46	P24/P26, 1' from COT	cut	1x1	9/18/2013	P
R22	9/16/2013	13:52	VK / 46	P27/P28, 1' from COT	cut	1x1	9/18/2013	P

COT = Crest of Trench

MWG13-15_33989

Repair Summary

Project Number: 2113.3 MWG - Joliet South Pond 3

Repair Number	Date	Time	Oper./Mach.	Repair Location North East	Description	Size of Repair (ft)	Date Vacuum Tested	Vac. Test Results (P/F)
R23	9/16/2013	14:00	VK / 46	P28/P29, 1' from COT	cut	1x2	9/18/2013	P
R24	9/16/2013	14:05	VK / 46	P29/P41/P42, 19' from COT	tee	1x1	9/18/2013	P
R25	9/16/2013	14:10	VK / 46	P29/P40/P41, 43' from COT	tee	1x1	9/18/2013	P
R26	9/16/2013	14:50	VK / 46	P29/P39/P40, 23' from R25	riser, cut	6x4	9/18/2013	P
R27	9/16/2013	14:55	VK / 46	P29/P39/P43, 63' from COT	tee	1x1	9/18/2013	P
R28	9/16/2013	15:15	VK / 46	P28/P29/P43, 80' from COT	patch	7x1	9/18/2013	P
R29	9/16/2013	15:17	VK / 46	P28/P43/P44, 80' from COT	patch	7x1	9/18/2013	P
R30	9/16/2013	15:25	VK / 46	P43/P44/P45, 16' from R28	tee	1x1	9/18/2013	P
R31	9/16/2013	15:50	VK / 46	P38/P39/P43, 70' from COT	tee	4x1	9/18/2013	P
R32	9/16/2013	16:10	VK / 46	P36/P37/P38, 80' from COT	tee	2x1	9/18/2013	P
R33	9/16/2013	16:05	VK / 46	P35/P36/P38, 99' from COT	tee	2x1	9/18/2013	P
R34	9/16/2013	16:15	VK / 46	P34/P36/P37, 82' from COT	tee	1x1	9/18/2013	P
R35	9/16/2013	16:30	VK / 46	P34/P35/P36, 101' from COT	tee	1x1	9/18/2013	P
R36	9/17/2013	16:10	VK / 46	P27/P28/P44/P45, 87' from COT	tee	3x1	9/18/2013	P
R37	9/17/2013	16:15	VK / 46	P27/P45/P46, 87' from COT	tee	2x1	9/18/2013	P
R38	9/17/2013	16:05	VK / 46	P43/P45/P46, 120' from COT	tee	1x1	9/18/2013	P
R39	9/17/2013	16:20	VK / 46	P26/P46/P47, 86' from COT	tee	3x1	9/18/2013	P
R40	9/17/2013	16:22	VK / 46	P24/P26/P47, 86' from COT	tee	2x1	9/18/2013	P
R41	9/17/2013	16:27	VK / 46	P27/P47/P48, 83' from COT	tee	2x1	9/18/2013	P
R42	9/17/2013	16:32	VK / 46	P24/P25/P48, 84' from COT	tee	2x1	9/18/2013	P
R43	9/17/2013	16:45	VK / 46	P19/P20/P25, 62' from COT	tee	2x1	9/18/2013	P
R44	9/17/2013	16:43	VK / 46	P18/P20/P25, 70' from COT	tee	2x2	9/18/2013	P

COT = Crest of Trench

Repair Summary

Project Number: 2113.3 MWG - Joliet South Pond 3

Repair Number	Date	Time	Oper./Mach.	Repair Location North East	Description	Size of Repair (ft)	Date Vacuum Tested	Vac. Test Results (P/F)
R45	9/17/2013	16:41	VK / 46	P18/P25/P48, 81' from COT	tee	3x2	9/18/2013	P
R46	9/17/2013	16:41	VK / 46	P17/P18/P48, 68' from COT	tee	1x1	9/18/2013	P
R47	9/17/2013	16:50	VK / 46	P16/P17/P46/P48, 61' from COT	tee	2x2	9/18/2013	P
R48	9/17/2013	17:02	VK / 46	P15/P16/P43/P46, 64' from COT	tee	5x3	9/18/2013	P
R49	9/17/2013	16:05	BL / 10	P14/P15/P38/P43, 63' from COT	tee	7x4	9/18/2013	P
R50	9/17/2013	16:20	BL / 10	P13/P14/P38, 68' from COT	tee	2x1	9/18/2013	P
R51	9/17/2013	16:15	BL / 10	P13/P35, 62' from COT	patch	8x8	9/18/2013	P
R52	9/17/2013	16:30	BL / 10	P9/P13/P35, 67' from COT	tee	3x2	9/18/2013	P
R53	9/17/2013	16:35	BL / 10	P9/P32/P35, 71' from COT	tee	2x2	9/18/2013	P
R54	9/17/2013	16:50	BL / 10	P9/P10/P32, 71' from COT	tee	3x2	9/18/2013	P
R55	9/17/2013	16:55	BL / 10	P10/P31/P32, 250' from COT	tee	3x3	9/18/2013	P
R56	9/17/2013	16:45	BL / 10	P31/P32/P34, 221' from COT	tee	2x2	9/18/2013	P
R57	9/17/2013	16:40	BL / 10	P32/P34/P35, 220' from COT	tee	2x2	9/18/2013	P
R58	9/17/2013	17:00	VK / 46	P26/P27/P46, 86' from COT	tee	4x3	9/18/2013	P
R59	9/17/2013	17:15	VK / 46	P26/P27, 60' from COT	patch	5x5	9/18/2013	P
R60	9/17/2013	17:25	VK / 46	P46/P47/P48, 152' from COT	tee	5x5	9/18/2013	P
R61	9/17/2013	17:10	VK / 46	P46/P48, 16' from R60	patch	10x6	9/18/2013	P
R62	9/17/2013	17:10	BL / 10	P31/P33/P34, 63' from COT	tee	3x2	9/18/2013	P
R63	9/17/2013	17:15	BL / 10	P30/P31/P33, 64' from COT	tee	2x1	9/18/2013	P
R64	9/17/2013	17:20	BL / 10	P30/P64, 56' from COT	cut	2x2	9/18/2013	P
R65	9/17/2013	17:25	BL / 10	P30/P64/P65, 59' from COT	tee	3x1	9/18/2013	P
R66	9/17/2013	17:30	BL / 10	P30/P65/P70, 83' from COT	tee	2x1	9/18/2013	P

COT = Crest of Trench

Repair Summary

Project Number: 2113.3 MWG - Joliet South Pond 3

Repair Number	Date	Time	Oper./Mach.	Repair Location North East	Description	Size of Repair (ft)	Date Vacuum Tested	Vac. Test Results (P/F)
R67	9/18/2013	17:35	BL / 10	P70, 80' from COT	patch	2x2	9/18/2013	P
R68	9/17/2013	17:40	BL / 10	P30/P70/P71, 86' from COT	tee	2x1	9/18/2013	P
R69	9/18/2013	9:05	BL / 10	P30/P71/P72, 86' from COT	tee	1x1	9/18/2013	P
R70	9/18/2013	9:10	BL / 10	P30/P72/P73, 87' from COT	tee	2x1	9/18/2013	P
R71	9/18/2013	9:15	BL / 10	P30.P73/P74, 89' from COT	tee	1x1	9/18/2013	P
R72	9/18/2013	9:30	BL / 10	P30/P74/P77, 89' from COT	tee	1x1	9/18/2013	P
R73	9/18/2013	10:11	BL / 10	P74/P76/P77, 74' from COT	tee	2x2	9/18/2013	P
R74	9/18/2013	10:40	VK / 46	P62/P76, 68' from COT	marker post	4x2	9/18/2013	P
R75	9/18/2013	10:40	VK / 46	P62/P76/P77, 73' from COT	tee	4x2	9/18/2013	P
R76	9/18/2013	10:40	VK / 46	P30/P62/P77, 89' from COT	tee	1x1	9/18/2013	P
R77	9/18/2013	9:56	VK / 46	P30/P61/P62, 91' from COT	tee	1x1	9/18/2013	P
R78	9/18/2013	10:02	VK / 46	P30/P60/P61, 92' from COT	tee	2x2	9/18/2013	P
R79	9/18/2013	10:40	VK / 46	P12/P30/P60, 90' from COT	tee	7x5	9/18/2013	P
R80	9/18/2013	10:45	VK / 46	P11/P12/P59, 98' from COT	tee	6x2	9/18/2013	P
R81	9/18/2013	8:00	VK / 46	P12/P59/P63, 16' from R80	tee	2x2	9/18/2013	P
R82	9/18/2013	8:05	VK / 46	P12/P60/P63, 10' from R79	tee	2x1	9/18/2013	P
R83	9/18/2013	7:45	VK / 46	P58/P60/P63, 69' from COT	tee	2x2	9/18/2013	P
R84	9/18/2013	7:55	VK / 46	P58/P59/P63, 70' from COT	tee	3x3	9/18/2013	P
R85	9/18/2013	7:58	VK / 46	P57/P58/P59, 70' from COT	tee	3x1	9/18/2013	P
R86	9/18/2013	18:00	VK / 46	P16/P17, anchor trench	burn out	2x3	9/18/2013	P
R87	9/18/2013	9:00	BL / 10	P64, 55' from COT	marker post	7x5	9/18/2013	P
R88	9/18/2013	7:55	BL / 10	P64/P65/P66, 59' from COT	tee	5x3	9/18/2013	P

COT = Crest of Trench

Repair Summary

Project Number: 2113.3 MWG - Joliet South Pond 3

Repair Number	Date	Time	Oper./Mach.	Repair Location North East	Description	Size of Repair (ft)	Date Vacuum Tested	Vac. Test Results (P/F)
R89	9/18/2013	10:05	BL / 10	P76/P77, 73' from COT	cut	1x1	9/18/2013	P
R90	9/18/2013	10:15	VK / 46	P30, 186' from COT, 4' N of P31	rock	4x4	9/18/2013	P
R91	9/18/2013	8:00	BL / 10	P64/P66/P67, 33' from COT	tee	3x2	9/18/2013	P
R92	9/18/2013	8:05	BL / 10	P66/P67/P68, 24' from COT	tee	1x1	9/18/2013	P
R93	9/18/2013	8:10	BL / 10	P66/P68/P69, 4' from COT	tee	3x2	9/18/2013	P
R94	9/18/2013	8:40	VK / 46	P74/P75/P76, 51' from COT	tee	1x1	9/18/2013	P
R95	9/18/2013	8:31	VK / 46	P62/P75/P76, 50' from COT	tee	3x2	9/18/2013	P
R96	9/18/2013	8:15	VK / 46	P61, 30' from COT	patch	1x1	9/18/2013	P
R97	9/18/2013	8:13	VK / 46	P61/P62, 27' from COT	cut	4x3	9/18/2013	P
R98	9/18/2013	11:40	VK / 46	P11/P57/P59, 105' from COT	tee	2x2	9/18/2013	P
R99	9/18/2013	11:45	VK / 46	P8/P11/P57, 83' from COT	tee	2x2	9/18/2013	P
R100	9/18/2013	13:25	VK / 46	P8/P56/P57, 91' from COT	tee	2x2	9/18/2013	P
R101	9/18/2013	13:47	VK / 46	P7/P8/P56, 79' from COT	tee	2x2	9/18/2013	P
R102	9/18/2013	13:51	VK / 46	P7/P55/P56, 89' from COT	tee	2x2	9/18/2013	P
R103	9/18/2013	13:56	VK / 46	P6/P7/P55, 78' from COT	tee	2x1	9/18/2013	P
R104	9/18/2013	14:10	VK / 46	P6/P54/P55, 89' from COT	tee	2x2	9/18/2013	P
R105	9/18/2013	14:17	VK / 46	P6/P49/P54/R106, 75' from COT	tee	6x4	9/18/2013	P
R106	9/18/2013	14:31	VK / 46	P2/P6/P49/R78, 72' from COT	cap	9x5	9/18/2013	P
R107	9/18/2013	14:31	VK / 46	P2/P6/R106, 70' from COT	tee	2x2	9/18/2013	P
R108	9/18/2013	14:31	VK / 46	P2/P6/P49/P78/R106, 70' from COT	cap	9x2	9/18/2013	P
R109	9/18/2013	14:42	VK / 46	P49/P50/P54, 76' from COT	tee	2x2	9/18/2013	P
R110	9/18/2013	14:45	VK / 46	P50/P54, 76' from COT	elbow	3x3	9/18/2013	P

COT = Crest of Trench

Repair Summary

Project Number: 2113.3 MWG - Joliet South Pond 3

Repair Number	Date	Time	Oper./Mach.	Repair Location North East	Description	Size of Repair (ft)	Date Vacuum Tested	Vac. Test Results (P/F)
R111	9/18/2013	14:50	VK / 46	P50/P51/P54, 54' from COT	tee	2x2	9/18/2013	P
R112	9/18/2013		VK / 46	P50/P51, 56' from COT	marker post	7x4	9/18/2013	P
R113	9/18/2013		VK / 46	P51/P52/P53, 17' from COT	tee	2x2	9/18/2013	P
R114	9/18/2013		VK / 46	P50/P51/P52, 40' from COT	tee	3x2	9/18/2013	P
R115	9/18/2013	14:06	VK / 46	P7, 57' from COT, 4' E of P6	patch	1x1	9/18/2013	P
R116	9/18/2013	15:32	VK / 46	P52, 24' from COT	patch	1x1	9/18/2013	P
R117	9/18/2013	15:30	VK / 46	P52, 23' from COT	patch	1x1	9/18/2013	P
R118	9/18/2013	15:35	VK / 46	P10, 65' from COT, 3' N of P9	patch	1x1	9/18/2013	P
R119	9/18/2013	15:40	VK / 46	P31, 225' from COT, 9' S of P30	patch	1x1	9/18/2013	P
R120	9/18/2013	15:30	BL / 10	P19/P20, 62' from COT	marker post	7x6	9/19/2013	P
R121	9/19/2013	9:10	BL / 10	Outlet Structure	Detail work round	2x26	9/19/2013	P
R122	9/19/2013	10:32	BL / 10	P22/P23, 15' from COT	Sampling Bldg Support	6x5	9/19/2013	P
R123	9/19/2013	11:45	BL / 10	P22, 21' from COT	Outlet Structure	9x8	9/19/2013	P
R124	9/19/2013	10:10	BL / 10	P22, 21' from COT	Sampling Bldg Support	5x5	9/19/2013	P
R125	9/19/2013	13:30	BL / 10	P23, 7' from COT	guy wire	5x4	9/19/2013	P
R126	9/19/2013	7:40	BL / 10	P22/P23, crest of trench	around steps	5x1	9/19/2013	P
R127	9/18/2013	13:20	BL / 10	P18/P20, 70' from COT	patch	3x3	9/19/2013	P
R128	9/19/2013	13:55	BL / 10	P9/P35, 67' from COT	patch	1x2	9/19/2013	P
R129	9/19/2013	13:50	BL / 10	P38, 202' from COT	patch	2x2	9/19/2013	P
R130	9/19/2013	13:45	BL / 10	P43, 121' from COT	patch	2x1	9/19/2013	P
R131	9/19/2013	14:05	BL / 10	P36, 92' from COT	patch	6x1	9/19/2013	P
R132	9/19/2013	14:00	BL / 10	P36, 84' from COT	patch	1x1	9/19/2013	P

COT = Crest of Trench

Repair Summary

Project Number: 2113.3 MWG - Joliet South Pond 3

Repair Number	Date	Time	Oper./Mach.	Repair Location North East	Description	Size of Repair (ft)	Date Vacuum Tested	Vac. Test Results (P/F)
R133	9/19/2013	16:20	BL / 10	P35/P36, 101' from COT	patch	1x1	9/19/2013	P
R134	9/19/2013	13:00	VP / 46	P2/P49, 51' from COT	patch	3x2	9/19/2013	P
R135	9/19/2013	15:15	VP / 46	P1/P49, Structure	Inlet Structure	2x10	9/19/2013	P
R136	10/4/2014	14:30	VP / 37	P50/P51	Riser	1x1	Spark Test (10/4/13)	P
R137	10/4/2014	14:42	VP / 37	P54, 44' from COT	patch	2x2	10/4/2013	P
R138	10/4/2014	14:50	VP / 37	P12	bead	< 6"	10/4/2013	P
R139	10/4/2014	14:55	VP / 37	P76	bead	< 1"	10/4/2013	P

COT = Crest of Trench

ATTACHMENT E5

NON-DESTRUCTIVE TEST SUMMARY

Non-Destructive Test Summary

Project Number: 2113.3 MWG - Joliet South Pond 3

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	9/14/2013	30	8:20	28	8:25	P			
P1 / P3	BOS - EOS	9/14/2013	30	8:04	28	8:09	P			
P1 / P4	BOS - EOS	9/14/2013	30	8:03	29	8:08	P			
P2 / P3	BOS - EOS	9/14/2013	30	8:15	30	8:20	P			
P2 / P6	BOS - EOS	9/14/2013	30	8:22	30	8:27	P			
P2 / P78	BOS - EOS	9/18/2013	30	9:46	30	9:51	P			
P2 / CAP	BOS - EOS	9/18/2013	30	9:39	30	9:44	P			
P3 / P4	BOS - EOS	9/14/2013	30	8:05	28	8:10	P			
P3 / P5	BOS - EOS	9/14/2013	30	8:14	28	8:19	P			
P4 / P5	BOS - EOS	9/14/2013	30	8:13	28	8:18	P			
P6 / P7	BOS - EOS	9/14/2013	30	8:23	30	8:28	P			
P6 / P54	BOS - EOS	9/18/2013	30	9:27	28	9:32	P			
P6 / P55	BOS - EOS	9/18/2013	30	9:26	29	9:31	P			
P6 / CAP	BOS - EOS	9/18/2013	30	9:33	30	9:38	P			
P7 / P8	BOS - EOS	9/14/2013	30	8:27	30	8:32	P			
P7 / P55	BOS - EOS	9/18/2013	30	9:20	28	9:25	P			
P7 / P56	BOS - EOS	9/18/2013	30	9:18	30	9:23	P			
P8 / P10	BOS - EOS	9/14/2013	30	8:45	28	8:50	P			
P8 / P11	BOS - EOS	9/14/2013	30	8:36	30	8:41	P			
P8 / P56	BOS - EOS	9/18/2013	30	9:10	28	9:15	P			

BOS: Beginning of Seam
EOS: End of Seam

Non-Destructive Test Summary

Project Number: 2113.3 MWG - Joliet South Pond 3

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				
P8 / P57	BOS - EOS	9/18/2013	29	9:08	30	9:13	P			
P9 / P10	BOS - EOS	9/14/2013	30	8:47	28	8:52	P			
P9 / P13	BOS - EOS	9/16/2013	30	14:55	30	15:00	P			
P9 / P32	BOS - EOS	9/16/2013	30	15:26	30	15:31	P			
P9 / P35	BOS - EOS	9/16/2013	30	15:04	28	15:09	P			
P10 / P11	BOS - EOS	9/14/2013	30	9:04	28	9:09	P			
P10 / P12	BOS - EOS	9/14/2013	30	9:05	30	9:10	P			
P10 / P31	BOS - EOS	9/16/2013	30	15:53	30	15:58	P			
P10 / P32	BOS - EOS	9/16/2013	30	15:30	28	15:35	P			
P11 / P12	BOS - 6'	9/14/2013	30	9:14	28	9:19	P			
P11 / P12	6' - EOS	9/14/2013	30	9:15	29	9:20	P			
P11 / P57	BOS - EOS	9/18/2013	30	8:58	30	9:03	P			
P11 / P59	BOS - EOS	9/18/2013	29	9:03	28	9:08	P			
P12 / P30	BOS - EOS	9/16/2013	30	16:07	30	16:12	P			
P12 / P31	BOS - EOS	9/16/2013	30	15:54	28	15:59	P			
P12 / P59	BOS - EOS	9/17/2013	30	14:17	30	14:22	P			North - South
P12 / P60	BOS - EOS	9/17/2013	30	14:18	28	14:23	P			
P12 / P63	BOS - EOS	9/17/2013	30	14:28	30	14:33	P			
P13 / P14	BOS - EOS	9/16/2013	30	14:32	30	14:37	P			
P13 / P35	BOS - EOS	9/16/2013	30	14:44	30	14:49	P			

BOS: Beginning of Seam
E[illegible] End of Seam

Non-Destructive Test Summary

Project Number: 2113.3 MWG - Joliet South Pond 3

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				
P13 / P38	BOS - EOS	9/16/2013	30	14:28	28	14:33	P			
P14 / P15	BOS - EOS	9/16/2013	30	14:11	29	14:16	P			
P14 / P38	BOS - EOS	9/17/2013	30	15:14	30	15:19	P			
P14 / P43	BOS - EOS	9/16/2013	30	14:14	28	14:19	P			
P15 / P16	BOS - EOS	9/16/2013	30	13:58	29	14:03	P			
P15 / P43	BOS - EOS	9/16/2013	30	14:01	28	14:06	P			
P16 / P17	BOS - EOS	9/16/2013	30	13:42	30	13:47	P			
P16 / P46	BOS - EOS	9/16/2013	30	13:43	29	13:48	P			
P17 / P18	BOS - 54'	9/16/2013	30	13:27	28	13:32	P			
P17 / P18	54' - EOS	9/16/2013	30	13:30	28	13:35	P			
P17 / P48	BOS - EOS	9/16/2013	30	13:40	30	13:45	P			
P18 / P20	BOS - EOS	9/14/2013	30	11:47	30	11:52	P			
P18 / P25	BOS - EOS	9/14/2013	30	11:34	28	11:39	P			
P19 / P20	BOS - EOS	9/14/2013	30	11:36	28	11:41	P			
P19 / P21	BOS - EOS	9/14/2013	30	13:59	30	14:04	P			
P19 / P22	BOS - EOS	9/14/2013	30	13:56	28	14:01	P			
P19 / P23	14' - EOS	9/14/2013	30	14:02	28	14:07	P			
P19 / P23	BOS - 14'	9/14/2013	30	14:07	28	14:12	P			
P19 / P25	BOS - EOS	9/14/2013	30	11:51	29	11:56	P			
P20 / P25	BOS - EOS	9/14/2013	30	11:35	28	11:40	P			

BOS: Beginning of Seam
EOS: End of Seam

Non-Destructive Test Summary

Project Number: 2113.3 MWG - Joliet South Pond 3

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				
P21 / P22	BOS - EOS	9/14/2013	30	13:55	30	14:00	P			
P21 / P25	BOS - EOS	9/14/2013	30	11:49	29	11:54	P			
P22 / P23	BOS - EOS	9/14/2013	30	14:03	30	14:08	P			
P23 / P23	BOS - EOS	9/14/2013	30	14:10	28	14:15	P			
P24 / P25	BOS - EOS	9/16/2013	30	13:24	30	13:29	P			
P24 / P26	BOS - EOS	9/16/2013	30	12:18	30	12:23	P			
P24 / P47	BOS - EOS	9/16/2013	30	12:11	30	12:16	P			
P24 / P48	BOS - EOS	9/16/2013	30	12:30	30	12:35	P			
P25 / P48	BOS - EOS	9/16/2013	30	13:25	30	13:30	P			
P26 / P27	BOS - EOS	9/15/2013	30	11:12	30	11:17	P			
P26 / P46	BOS - EOS	9/15/2013	30	11:13	28	11:18	P			
P26 / P47	BOS - EOS	9/16/2013	30	12:19	28	12:24	P			
P27 / P28	BOS - EOS	9/15/2013	30	10:50	30	10:55	P			
P27 / P45	BOS - EOS	9/15/2013	30	11:00	30	11:05	P			
P27 / P46	BOS - EOS	9/15/2013	30	11:11	30	11:16	P			
P28 / P29	BOS - EOS	9/15/2013	30	10:39	30	10:44	P			
P28 / P43	BOS - EOS	9/15/2013	30	10:40	28	10:45	P			
P28 / P44	BOS - 4'	9/15/2013	--	--	--	--	F			Patch (R29) Poor overlap
P28 / P44	4' - EOS	9/15/2013	30	10:58	28	11:03	P			
P29 / P39	BOS - EOS	9/15/2013	30	10:20	30	10:25	P			

BOS: Beginning of Seam
E nd of Seam

Non-Destructive Test Summary

Project Number: 2113.3 MWG - Joliet South Pond 3

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				
P29 / P40	BOS - EOS	9/15/2013	30	10:31	29	10:36	P			
P29 / P41	BOS - EOS	9/15/2013	30	10:09	30	10:14	P			
P29 / P42	BOS - EOS	9/15/2013	30	10:08	28	10:13	P			
P29 / P43	BOS - EOS	9/15/2013	30	10:38	28	10:43	P			
P30 / P31	BOS - EOS	9/16/2013	30	15:55	30	16:00	P			
P30 / P33	BOS - EOS	9/16/2013	30	15:42	29	15:47	P			
P30 / P60	BOS - EOS	9/18/2013	30	8:50	30	8:55	P			
P30 / P61	BOS - EOS	9/18/2013	30	8:37	29	8:42	P			
P30 / P62	BOS - EOS	9/18/2013	30	8:27	30	8:32	P			
P30 / P64	BOS - 56'	9/17/2013	30	15:26	30	15:31	P			
P30 / P64	56' - EOS	9/17/2013	--	--	--	--	F			Patch (R65)
P30 / P65	BOS - EOS	9/17/2013	30	15:45	28	15:50	P			
P30 / P70	BOS - EOS	9/17/2013	30	15:48	28	15:53	P			
P30 / P71	BOS - EOS	9/17/2013	30	16:17	30	16:22	P			
P30 / P72	BOS - EOS	9/17/2013	30	16:19	30	16:24	P			
P30 / P73	BOS - EOS	9/17/2013	30	16:39	28	16:44	P			
P30 / P74	BOS - EOS	9/17/2013	30	16:30	30	16:35	P			
P30 / P77	BOS - EOS	9/18/2013	30	7:29	28	7:34	P			
P31 / P32	BOS - EOS	9/16/2013	30	15:52	28	15:57	P			
P31 / P33	BOS - EOS	9/16/2013	30	15:40	28	15:45	P			

BOS: Beginning of Seam
EOS: End of Seam

Non-Destructive Test Summary

Project Number: 2113.3 MWG - Joliet South Pond 3

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				
P31 / P34	BOS - EOS	9/16/2013	30	15:37	30	15:42	P			
P32 / P34	BOS - EOS	9/16/2013	30	15:38	29	15:43	P			
P32 / P35	BOS - EOS	9/16/2013	30	15:14	29	15:19	P			
P33 / P34	BOS - EOS	9/16/2013	30	15:34	28	15:39	P			
P34 / P35	BOS - EOS	9/16/2013	30	15:33	30	15:38	P			
P34 / P36	BOS - EOS	9/16/2013	30	15:22	29	15:27	P			
P34 / P37	BOS - EOS	9/16/2013	30	15:07	30	15:12	P			
P35 / P36	BOS - EOS	9/16/2013	30	15:21	28	15:26	P			
P35 / P38	BOS - EOS	9/16/2013	30	15:06	30	15:11	P			
P36 / P37	BOS - EOS	9/16/2013	30	14:48	29	14:53	P			
P36 / P38	BOS - EOS	9/16/2013	30	14:50	28	14:55	P			
P37 / P38	BOS - EOS	9/16/2013	30	14:39	30	14:44	P			
P38 / P39	BOS - EOS	9/16/2013	30	14:38	30	14:43	P			
P38 / P43	BOS - EOS	9/16/2013	30	14:22	30	14:27	P			
P39 / P40	BOS - EOS	9/15/2013	30	10:17	30	10:22	P			
P39 / P43	BOS - EOS	9/15/2013	30	10:37	30	10:42	P			
P40 / P41	BOS - EOS	9/15/2013	30	10:10	30	10:15	P			
P41 / P42	BOS - EOS	9/15/2013	30	10:21	30	10:26	P			
P43 / P44	BOS - EOS	9/15/2013	30	10:47	30	10:52	P			
P43 / P45	BOS - EOS	9/16/2013	30	14:08	30	14:13	P			

BOS: Beginning of Seam
EOS: End of Seam

Non-Destructive Test Summary

Project Number: 2113.3 MWG - Joliet South Pond 3

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				
P43 / P46	BOS - EOS	9/16/2013	30	14:00	30	14:05	P			
P44 / P45	BOS - EOS	9/15/2013	30	10:48	28	10:53	P			
P45 / P46	BOS - EOS	9/15/2013	30	11:02	28	11:07	P			
P46 / P47	BOS - EOS	9/15/2013	30	11:14	28	11:19	P			
P46 / P48	BOS - EOS	9/16/2013	30	13:39	29	13:44	P			
P47 / P48	BOS - EOS	9/16/2013	29	12:20	28	12:25	P			
P49 / P50	BOS - EOS	9/17/2013	30	11:17	30	11:22	P			
P49 / P54	BOS - EOS	9/17/2013	30	11:15	30	11:20	P			
P49 / P78	BOS - EOS	9/18/2013	30	9:53	30	9:58	P			
P49 / CAP	BOS - EOS	9/18/2013	30	9:34	28	9:39	P			
P50 / P51	BOS - 4'	9/17/2013	30	11:30	29	11:35	P			
P50 / P51	4' - EOS	9/17/2013	30	11:31	28	11:36	P			
P50 / P52	BOS - EOS	9/17/2013	30	11:39	28	11:44	P			
P50 / P54	BOS - EOS	9/17/2013	30	11:26	30	11:31	P			
P50 / P54	BOS - EOS	9/17/2013	30	11:16	30	11:21	P			
P51 / P52	BOS - EOS	9/17/2013	30	11:40	30	11:45	P			
P51 / P53	BOS - EOS	9/17/2013	30	11:41	30	11:46	P			
P51 / P54	BOS - EOS	9/17/2013	30	11:29	28	11:34	P			
P52 / P53	BOS - EOS	9/17/2013	30	11:42	29	11:47	P			
P54 / P55	BOS - EOS	9/17/2013	30	11:14	30	11:19	P			

BOS: Beginning of Seam
EOS: End of Seam

Non-Destructive Test Summary

Project Number: 2113.3 MWG - Joliet South Pond 3

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 / P56	BOS - EOS	9/17/2013	30	10:40	30	10:45	P			
P56 / P57	BOS - EOS	9/17/2013	30	10:39	30	10:44	P			
P57 / P58	BOS - EOS	9/17/2013	30	10:38	30	10:43	P			
P57 / P59	BOS - EOS	9/17/2013	30	10:36	28	10:41	P			
P58 / P59	BOS - EOS	9/17/2013	30	14:16	30	14:21	P			
P58 / P60	BOS - EOS	9/17/2013	30	14:30	30	14:35	P			
P58 / P63	BOS - EOS	9/17/2013	30	14:31	30	14:36	P			
P59 / P63	BOS - EOS	9/17/2013	30	14:25	30	14:30	P			
P60 / P61	BOS - EOS	9/17/2013	30	14:19	30	14:24	P			
P60 / P63	BOS - EOS	9/17/2013	30	14:29	28	14:34	P			
P61 / P62	BOS - 28'	9/17/2013	30	14:40	30	14:45	P			
P61 / P62	28' - EOS	9/17/2013	30	14:39	28	14:44	P			
P62 / P75	BOS - EOS	9/17/2013	30	17:30	30	17:35	P			
P62 / P76	Marker Post - EOS	9/17/2013	30	17:20	30	17:25	P			
P62 / P76	BOS - Marker Post	9/18/2013	--	--	--	--	--			
P62 / P77	BOS - EOS	9/18/2013	--	--	--	--	--			
P64 / P65	BOS - EOS	9/17/2013	30	14:59	28	15:04	P			
P64 / P66	BOS - EOS	9/17/2013	30	15:00	30	15:05	P			
P64 / P67	BOS - EOS	9/17/2013	30	15:03	28	15:08	P			
P65 / P66	BOS - EOS	9/17/2013	30	15:02	30	15:07	P			

BOS: Beginning of Seam
EOS: End of Seam

Non-Destructive Test Summary

Project Number: 2113.3 MWG - Joliet South Pond 3

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				
P65 / P70	BOS - EOS	9/17/2013	30	15:46	29	15:51	P			
P66 / P67	BOS - EOS	9/17/2013	30	15:27	29	15:32	P			
P66 / P68	BOS - EOS	9/17/2013	30	15:28	28	15:33	P			
P66 / P69	BOS - EOS	9/17/2013	30	15:36	30	15:41	P			
P67 / P68	BOS - EOS	9/17/2013	30	15:39	30	15:44	P			
P68 / P69	BOS - EOS	9/17/2013	30	15:35	28	15:40	P			
P70 / P71	BOS - EOS	9/17/2013	30	15:48	30	15:53	P			
P71 / P72	BOS - EOS	9/17/2013	30	16:16	30	16:21	P			
P72 / P73	BOS - EOS	9/17/2013	30	16:18	30	16:23	P			
P73 / P74	BOS - EOS	9/17/2013	30	16:27	30	16:32	P			
P74 / P75	BOS - EOS	9/17/2013	30	17:09	30	17:14	P			
P74 / P76	BOS - EOS	9/18/2013	30	8:16	30	8:21	P			
P74 / P77	BOS - EOS	9/17/2013	30	16:48	30	16:53	P			
P75 / P76	BOS - EOS	9/17/2013	30	17:11	30	17:16	P			
P76 / P77	Mid-seam - EOS	9/18/2013	30	8:02	29	8:07	P			
P76 / P77	BOS - Mid-seam	9/18/2013	30	8:10	29	8:15	P			
P78 / CAP	BOS - EOS	9/18/2013	--	--	--	--	F			Cap (R108)

BOS: Beginning of Seam
EOS: End of Seam

ATTACHMENT F

LINER INTEGRITY SURVEY REPORT

LEAK LOCATION SERVICES, INC.

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

October 7, 2013

Mike Schmidt
Brieser Construction
24101 South Municipal Drive
Channahon, IL 60410

Email: mschmidt@brieserconstruction.com

Subject: Report for "Geomembrane Leak Location Survey of the South Pond #3 Located at the Joliet Generating Station No. 29 near Joliet, Illinois;" LLSI Project 1911

Dear Mr. Schmidt:

On September 30, 2013 Matthew Kemnitz and Dale Kemnitz of Leak Location Services, Inc. (LLSI) conducted a geomembrane leak location survey of the South Pond #3 near Joliet, Illinois. The pond has an area of approximately 44,400 square feet. The floor area of the ash pond is lined from the bottom up with prepared subgrade, 12-inches of existing Poz-O-Pac, 16 ounce nonwoven geotextile, 12-inch cushion soil cushion layer and a 6-inch warning layer. This report documents the results of the survey.

I. RESULTS

A. Survey of South Pond #3

No leaks were found during the survey of the South Pond #3. The leak location equipment and survey procedures were demonstrated to be capable of detecting a 0.25 inch diameter artificial leak. The artificial leak was buried under the drainage material and placed on the top of the primary geomembrane. The other end of the wire was connected to an electrode between the geomembrane. Leak location survey measurements were made on the drainage material to determine the distance that the artificial leak can be detected. Figure 1 shows a plot of the data taken with the artificial leak. The leak detection distance was more than 10 feet. So the leak location survey lines could have been spaced 20 feet apart. However, for thoroughness, the survey was conducted on survey lines spaced 5 feet apart.

II. TECHNIQUE

A. General

The electrical leak location method detects electrical paths through the liner caused by water or moisture in the leaks. A voltage is connected to one electrode in the material covering the liner and to an electrode in contact with a conductive media under the geomembrane. 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 on the material on the geomembrane.

Surveys with material covering the liner are conducted by making point-by-point potential measurements using special electrodes and a portable digital data acquisition system. The potential measurements are made along survey lines with a fixed measurement electrode separation. The data is downloaded to a computer for storage and plotting. When a suspect area is located, manual measurements are made to further isolate the leak.

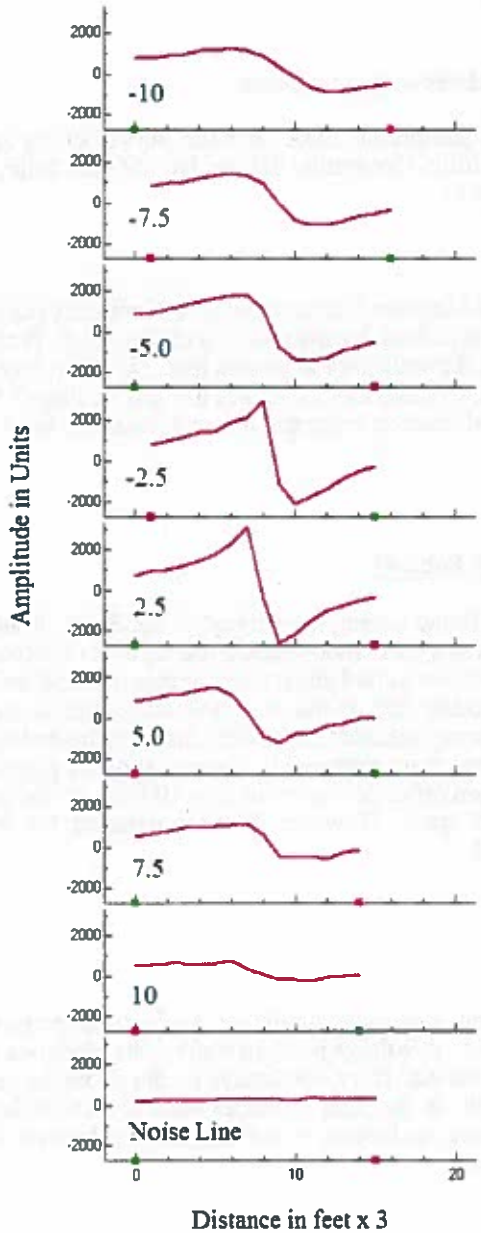

FIGURE 1. PLOT OF DATA TAKEN WITH A 0.25-INCH ARTIFICIAL LEAK

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 6-inch thick warning layer located on top of the primary geomembrane and a second electrode placed in contact with earth ground. 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 of the South Pond #3 was conducted by making potential gradient measurements on the moist warning layer with measurement electrodes spaced approximately 3 feet apart. These measurements were made approximately every 3 feet along numbered survey lines that were spaced approximately 5 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.

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 Brieser Construction Company on this important service requirement.

Respectfully,

Matthew Kemnitz
Senior Project Manager

ATTACHMENT G

CONSTRUCTION DOCUMENTATION DRAWING SET