

Manitoba Conservation and Climate
Environment and Biodiversity
1007 Century St.
Winnipeg, MB
R3H 0W4

November 26, 2021

Attention: Edwin Yazon, P. Eng.

Subject: File No. 3851
Cell 16 Construction Waste Connections of Canada - Prairie Green Integrated
Waste Management Facility (IWMF)

Dear Mr. Yazon:

The purpose of this letter is to request approval from Manitoba Conservation and Climate to begin waste placement in the completed Cell 16 of Prairie Green Integrated Waste Management Facility. The Facility is owned and operated by Waste Connections of Canada under Environment Act License No. 2177E R5.

As requested, the amended Quality Assurance/Quality Control report is attached for your review. Waste Connections of Canada retained Trek Geotechnical to perform these functions during construction, and to prepare the final report for submission. If you have any questions regarding this report please do not hesitate to contact me at any time.

Sincerely,



Barry Blue
District Manager



Quality Engineering | Valued Relationships

Waste Connections of Canada Inc.

IWMF Prairie Green Cell No.16

Composite Liner Construction Monitoring Program

Prepared for:

Waste Connections of Canada Inc.
Prairie Green Landfill
Rosser, MB
Attention: Barry Blue

Project Number:

1000 089 03

Date:

November 25, 2021
Final Report



Quality Engineering | Valued Relationships

November 25, 2021

Our File No. 1000-089-03

Barry Blue, District Manager
Waste Connections of Canada Inc.
Prairie Green Landfill
Rosser, MB

**RE: Composite Liner Construction Monitoring Report for
IWMF Cell No.16 Construction**

TREK Geotechnical Inc. is pleased to submit our report for the Quality Assurance inspection and testing services for Cell No.16.


This report indicates that the HDPE Geomembrane Liner is continuous underlying Cell 16 and meets the requirements of Licence No. 2177E R5

Please contact the undersigned if you have any questions. Thank you for the opportunity to serve you on this assignment.

Sincerely,

TREK Geotechnical Inc.

Per:


Nelson John Ferreira, Ph.D., P. Eng.
Geotechnical Engineer, Principal
Tel: 204.975.9433 ext. 103

cc: Angela Fidler-Kliewer C. Tech. (TREK Geotechnical)

Revision History

Revision No.	Author	Issue Date	Description
0	AFK	September 28, 2021	Draft Report
1	AFK	November 17, 2021	Final Report
2	AFK	November 25, 2021	Final Report

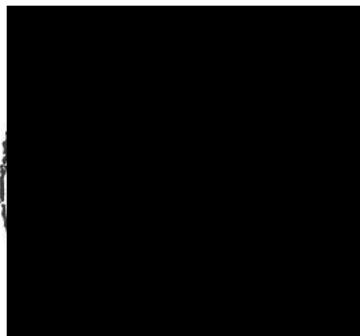
Authorization Signatures

Prepared By:



Angela Fidler-Kliewer C. Tech.
Manager of Laboratory and Field Services

Reviewed By:



Nelson Ferreira, Ph.D., P.Eng.
Senior Geotechnical Engineer



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1.0 Introduction

1.1 Background

The Prairie Green Integrated Waste Management Facility is located approximately 1.6 km north of PTH 101 in the Rural Municipality of Rosser, Township 12, Range 2 East of the Principal Meridian, and north of Winnipeg, Manitoba. Waste Connections of Canada Inc. (WCC) is the facility owner and operates the facility.

This report summarizes the Quality Assurance (QA) inspections and testing services associated with the construction of the composite (GCL/geosynthetic) liner and leachate collection system in Cell No.16. Construction Quality Assurance was conducted in accordance with the Contract Documents and Project Specifications as provided by Golder Associates Ltd. The construction of Cell No.16 commenced on September 21, 2020 (paused for 5 months over the winter) and was completed on August 18, 2021.

1.2 Companies Involved in the Construction of Cell No.16

The following sections summarize the roles and responsibilities of the companies involved, on behalf of Waste Connections of Canada Inc. (WCC) in the design, construction, supervision, review, coordination and quality assurance services associated with the construction of Cell No.16.

Golder Associates Ltd. (Designer):

- Cell No.16 design, excluding geotechnical design; and
- Construction documents, project specifications and tender preparation and review.

Edie Construction Ltd. (Prime Contractor) with Titan Environmental Containment Ltd. (Sub-Contractor):

- The prime contractor for the construction of Cell No.16 was Edie Construction Ltd. (Edie) from Winnipeg, Manitoba. They performed the earthworks, including excavation, and placement of the compacted clay and re-compaction of the clay subgrade;
- Titan Environmental Containment Ltd (Titan) was responsible for the installation of the Geosynthetic Clay Liner (GCL), 1.5 mm (60 mil) thick High Density Polyethylene (HDPE) membrane, 7 mm (275 mil) thick Geocomposite and the non-woven Geotextile cushion;
- Edie installed all elements of the leachate collection system;
- Edie installed the sand drainage layer which consisting of a 300 mm thick sand layer placed above the leachate collection system; and cell floor;

- Edie Construction also carried out quality control surveying of the constructed compacted clay lifts and base grade elevations.

Edie completed on site works with the equipment listed below.

Equipment Make and Model	On Site Tasks
CAT 345 CL Excavator	Excavation
CAT Excavators (320 CL, 330 C)	Compacted clay backfill placement
CAT Rock Trucks (2-730's, 735)	Excavations
CAT 300 Rock Truck	Excavations, compacted clay backfill placement
CAT Rock Trucks (2-250's)	Compacted clay backfill placement
CAT D6H LGP Dozer	Excavations, compacted clay backfill placement, Leveling loose compacted clay backfill lifts, final clay subgrade grading, Leachate collection, blanket and sand drainage spreading and grading
CAT D6R Dozer	Compacted clay backfill placement, leveling loose compacted clay backfill lifts
CAT D6N XL Dozer	Final clay subgrade grading
CAT CP563E Padfoot	Proof rolling and clay backfill compaction
835 Versatile Tractor with Sheepsfoot Roller	Proof rolling and clay backfill compaction

TREK Geotechnical Inc. (Contract Administration and Engineering Services):

- Overall review of the construction of Cell No.16;
- Field density testing on clay backfill subgrade and berm construction to confirm compliance with the design and the project's Environmental Standards.
- QA inspection, testing and approval of the Geosynthetic Clay Liner and the 1.5 mm (60 mil) HDPE membrane liner materials, including review of manufacturer's quality control and materials testing data, field liner sheet installation, non-destructive seam testing, destructive sampling and testing of field seams, repairs and vacuum box testing;
- QA inspection, testing and approval of the leachate collection system and ancillary works;
- Laboratory and field testing, and evaluation of test results, which are presented in this report;
- Verification of specification conformance for the compacted clay backfill, leachate collection stone, sand drainage layer, record surveying services including as-built HDPE liner and leachate collection system locations, quantity measurements and contractor payment certification;
- Geotechnical review and approval of QA inspection and testing results completed on natural materials and quality control procedures for earthworks, including construction of the recompacted clay base and berms;
- QA inspection of the Geosynthetic Clay liner and the 1.5 mm (60 mil) HDPE membrane liner materials;
- Gradation and Constant Head testing following ASTM standards on the sand drainage layer, sub-liner sample stone and leachate collection blanket;
- Laboratory testing of Clay backfill material; and
- Confirmation of testing results on earthworks and liner construction are in accordance with project specifications.

2.0 Cell No.16 Excavation

Stripping of the topsoil and general excavation of Cell No.16 commenced on September 28, 2021.

2.1 Topsoil

The topsoil in Cell No.16 was stripped and stockpiled along the South side of the North Screening Berm. In general, the topsoil thickness was about .15 m.

2.2 Upper Clay

A layer of weathered (upper) clay is present below the topsoil. The weathered clay is silty, brown and contains silt inclusions and rootlets. This soil stratum was approximately 0.4 m to 0.6 m thick and variable in composition throughout the excavation. The upper clay was removed using an excavator and hauled and used to construct the North and West Perimeter Berm.

2.3 Silt Layer

A distinct light brown silt layer was encountered at a depth of between 0.6 m and 0.8 m below ground surface with its thickness varying between 0.9 m and 1.5 m. The silt layer was sub-cut and transported to and placed extending the North Screen Berm.

2.4 Lower Clay

A grey-brown, highly plastic clay was encountered below the silt and extended to the base of the excavation. This soil was selected for use in the North and West Perimeter Berm, as well for use as clay backfill for the Cell No.16 base, and South Separation Berm.

3.0 Permanent West and North Berm Construction

Construction of the West and North Berm commenced in September 2020 and was completed in May 2021. It was constructed primarily of the upper and lower clay backfill from the excavation of Cell No.16.

The clay was placed in loose lifts of about 200 mm to 250 mm thick and compacted using a single drum ride along Padfoot compactor. Quality control testing was performed on each lift during the construction of the berm by field density testing according to ASTM-D2922. The results of the final acceptance testing of the permanent berm are discussed in Section 8.1 of this report and are presented in Appendix A-2.

4.0 South Separation Berm

A south separation berm was constructed on the south limit of the Cell No.16 construction area. This berm was constructed primarily of lower clay obtained from the excavation of Cell No.16. This berm serves as a surface water control berm.

5.0 Recompacted Clay Base Construction Procedures

5.1 Recompacted Clay Base

Cell No.16 was excavated to design base grades. TREK Geotechnical Inc. (TREK) provided survey control and certification (refer to Table 1).

Standard Proctor test results (samples L20-308, L21-124 and L21-127) were performed on the clay backfill along with field density testing which is included in Appendix A-1 and A-2.

Prior to compacting the clay subgrade, moisture conditioning was undertaken using a CAT D6 dozer to dry the soil. Specifications required the clay subgrade achieve a density of at least 95% of its Standard Proctor maximum dry density. Field density testing was performed on the clay subgrade. The field density testing results are discussed in Section 8.1 and included in Appendix A-2. All final field density tests met the project specification.

5.2 Survey Control

The Contractor carried out quality control surveying for all of the earthwork activities. TREK provided quality assurance surveying through various checks using control points on the subgrade and top of the sand drainage layer to verify that the grades and thicknesses were consistent with the Contract Drawings and Specifications. TREK also verified by survey excavated material quantities claimed by the contractor. The final base elevations of Cell No.16 are presented in Table 1 in the Appendices.

5.3 Final Grading and Preparation of Top of Recompacted Clay Base

Once the compaction of the base of the cell was completed, it was graded as per the contract drawings (+/- 30 mm of design grade). The top of the recompacted clay subgrade was then inspected for angular stones which may cause damage to the GCL and HDPE membrane liners. The angular stones were removed and the small holes were filled with clay. The surface of the recompacted clay base was rolled using a smooth drum roller prior to being covered with the GCL and 1.5 mm (60 mil) high density polyethylene (HDPE) membrane liners.

6.0 Soil Testing Procedures and Results

6.1 Field Density Testing

The project specifications require that construction using clay materials (the Permanent West and North Berm, South Separation Berm and base of the cell) be compacted to a minimum of 95% of the Standard Proctor maximum dry density (SPMDD) with no specified requirement for water content. Field density tests (ASTM D2922 and D3017) were performed, using a Troxler 3430 nuclear density gauge.

For the Permanent West and North Berm, a total of 194 field density tests were performed with an additional thirteen re-tests. Moisture corrections (oven dry-backs) were completed on each field density test and the corrected percent proctor value was reported. Field density test results ranged between 95% to greater than 100% of the SPMDD, while moisture contents ranged between 16.7% and 36.2%, as summarized in Field Density Test Reports presented in Appendix A-2. The field density test results meet the specifications for compaction.

For the South Separation Berm, 3 field density tests were performed. Field density test results ranged between 95% to greater than 100% of the SPMDD, while moisture contents ranged between 27.4% and 44.8%, as summarized in Field Density Test Reports presented in Appendix A-2. The test results meet the project field specifications for compaction.

For the subgrade at the base of the cell, a total of 43 field density tests were performed with an additional three re-tests. Field density test results ranged between 97% to greater than 100% of the SPMDD, with moisture contents ranging between 25.0% and 33.2%, as summarized in Field Density Test Reports presented in Appendix A-2. These results meet the project field specifications for compaction.

6.2 Clay Laboratory Testing

6.2.1 Standard Proctor Tests

Standard Proctor tests (ASTM D698) were performed on both the upper and lower clay material from the site to determine the required target density levels for construction. During placement of approximately 23000 m³ of compacted clay for Cell No.16, three Standard Proctor were performed by TREK. The Standard Proctor test results are presented in Appendix A-1.

7.0 Geosynthetic Clay Liner (GCL) Installation

The following section summarizes the installation of the GCL system. All materials utilized, as well as the installation process, met specifications within the Contract Documents and the Project Drawings, and were inspected as per the Construction Quality Assurance Plan. The Contract Documents were received and reviewed by all parties prior the beginning of the construction of Cell No.16.

7.1 Cell Base

Prior to the secondary and primary GCL deployment, the subgrade was inspected by the Geosynthetics Installer, the Contractor and the CQA Inspector and was formally accepted by the Geosynthetics Installer, Titan. Copies of the soil surface acceptance certificates are presented in Appendix B-3.

7.2 GCL Liner Materials

The geosynthetic clay liner (GCL) used on this project consisted of Bentoliner provided by Solmax Geosynthetic LLC. A total of 189 rolls of GCL were delivered and inventoried on site, comprising of 4.27 m wide and 45.72 m long panels. The GCL was installed on the prepared subgrade under the clay liner along the leachate collection trenches, and over the primary HDPE membrane in the sump and covered by HDPE membrane under the leachate extraction pipes. TREK monitored the installation of the liners including, overlaps, tears, defects and subsequent repairs to the material. A list of the GCL material delivered to site is presented in Appendix B-1.

7.3 GCL Panel Deployment

Panel deployment for the secondary and primary liner was carried out between June 22, 2021 and July 10, 2021. Approximately 29,673 m² of GCL material was placed.

Placement of the GCL was accomplished using an ATV and manual labour. A minimum overlap of 150 mm was typically maintained between adjoining panels. Powdered bentonite was placed and spread manually in the overlap.

During deployment of the secondary and primary GCL panels, TREK personnel carried out the following inspection and testing:

- measurements of the panel length;
- confirmation of panel overlap and bentonite placement in the seams;
- visual observations of overall material quality; and
- assignment of a unique identification number for each panel placed.

Upon completion of the GCL installation, the works were inspected by the Geosynthetics Installer (Titan) and the liner CQA Inspector (TREK), prior to HDPE Membrane liner installation.

8.0 HDPE Membrane Liner Installation

The following section summarizes the installation of the HDPE membrane liner system. All materials utilized, as well as the installation process, met specifications within the Technical Specification Manual and the Project Drawings, and were inspected as per the Construction Quality Assurance Plan.

8.1 Membrane Liner Materials

The membrane (liner) material used on this contract consisted of 1.5 mm thick, smooth and textured high-density polyethylene (HDPE) installed by Titan. The textured material was used only on the West and North South slope of Cell No.16.

A total of 24 rolls of 7.5 m wide and 158.5 m long panels of smooth membrane were delivered and 12 rolls of 6.8 m wide and 164.6 m long panels of textured membrane were delivered and inventoried on site for this project. The HDPE liner materials were manufactured and supplied by Solmax Geosynthetic LLC. The Inventory Summary Logs for the 1.5 mm thick membrane is provided in Appendix B-1. The manufacturer's Quality Control (QC) documentation for the membrane materials was provided by Solmax Geosynthetic LLC and indicates that all membrane used in Cell No.16 is in compliance with the project specifications.

8.2 HDPE Liner Panel Deployment

Panel deployment for the primary liner was carried out between June 22, 2021 and July 12, 2021. Repair operations on Cell No.16 took place until July 12, 2021. Approximately 29,609 m² of primary HDPE liner material was placed.

During deployment of the secondary and primary HDPE liner panels, TREK personnel carried out the following inspection and testing:

- measurements of the panel thickness;
- confirmation of panel overlap;
- visual observations of overall sheet quality; and
- assignment of a unique identification number for each panel placed.

Placement of the HDPE membrane was accomplished using an ATV and manual labour. A minimum overlap of 150 mm was typically maintained between adjoining panels. The average panel thickness was determined by averaging the measurements made along each of the leading, two sides and trailing edges utilizing a Starret Micrometer.

Panel numbers were assigned according to the order in which they were installed. Deployment of the secondary and primary HDPE liner consisted of panels S1 to S34 and P1 to P142, respectively. The arrangement and designation of the various panels for the HDPE liner are presented on Drawing 2. The deployment Inspection Logs are provided in Appendix B-5.

Upon completion of the HDPE liner installation, the works were inspected by Titan and TREK personnel.

8.3 Trial Seams

The welding equipment used by Titan, included double hot wedge fusion welders (production welding along panel seams and cap repairs) and hand-held extrusion fillet welders (for detailing, liner repairs, and reconstruction of failed fusion and/or extrusion seam lengths).

TREK personnel monitored trial seams during daily start-up, and at approximately every five hours during continuous operation of each welding apparatus. Six sample coupons were cut from each test sample for tensile strength testing as follows:

- Four coupons were tested in the peel mode in accordance with ASTM D 4437, and
- Two coupons were tested in the shear mode in accordance with ASTM D 4437.

If a welding machine produced two failed trial seams it was taken out of service until it could produce two consecutive passing trial seams. A summary of the daily trial seaming for the equipment used during each workday is provided in Appendix B-6. All machines with passing trial seams test results met the project specifications.

8.4 Production Seams

The HDPE liner seaming process proceeded in conjunction with the panel deployment. The majority of the seams were welded using a double hot wedge fusion welder. Repairs and short seams were made using a hand-held extrusion welding apparatus. All seams (including repairs) welds were observed and documented by TREK personnel. A summary of the panel fusion and extrusion seaming are provided in Appendix B-5. The results of the non-destructive testing on the seams by the air pressure testing method, are provided in Appendix B-8.

8.5 Non-Destructive Testing

All non-destructive seam testing was performed by Titan personnel and observed by TREK personnel on a full-time basis. Two types of non-destructive testing were used on this project:

- Air pressure tests on fusion seams; and
- Vacuum box tests on extrusion seams, patches and beads.

Air pressure testing comprised of the following procedure:

- Sealing off the air channel between the inside and outside tracks of the double fusion weld;
- Inserting a pressure gauge into the air channel;
- Using a portable compressor or pump to pressurize the air channel to a minimum pressure of 210 kPa (30 psi);
- Inspecting the seam along its entire length to confirm that entire seam was pressurized;
- Observing the pressure gauge over a five-minute period. The test is considered a pass (successful) if the pressure drop is less than 21 kPa (3 psi) over this period; and
- Making an incision into the air channel, at the end of the test seam to release the pressurized air.

Vacuum box testing comprised of the following procedure:

- Applying a soapy water solution to the area to be tested;
- Placing a rigid-walled box over the area to be tested. The box was constructed with a clear Plexi-glass top and/or sides with a neoprene gasket around the bottom of the box to facilitate a seal between the box and the HDPE liner;
- Applying a vacuum of 21 kPa to 35 kPa (3 psi to 5 psi) to the inside of the box for a minimum of ten seconds using a portable vacuum pump; and
- Observing for air bubbles, which, if they occur, are indicative of defects or discontinuities of the welding procedure.

Any leaks or discontinuities observed and detected during either testing method were considered a failure (non-conformance). The failed areas were marked and subsequently repaired in accordance with the project specifications and were retested using the procedures described above. All repaired areas were then re-tested and met the acceptance criteria.

Results of the non-destructive testing are provided in Appendix B-8 for the air pressure testing and in Appendix B-11 for the vacuum box testing. All non-destructive testing completed on both fusion and extrusion seaming comply with project specifications.

8.6 Destructive Testing

Destructive test samples of panel fusion welded seams were taken at an average of approximately one for every 218 m length in accordance with project specifications. Extrusion destructive samples were taken randomly or in areas of concern. TREK personnel selected all test locations.

For each destructive sample, ten coupons were cut from the seam and tested in the field by TREK. Waste Connections of Canada retained the remaining part of sample as an archive sample. The destructive coupons that were tested in the field consisted of five coupons tested for peel adhesion strength (peel test mode ASTM D4437) as well as Film Tear Bond (FTB) and five tested for seam strength at yield (shear test mode ASTM D4437)

The specified acceptance criteria for destructive tests are as follows:

- Fusion and extrusion seam under peel mode:
 - Failure by FTB, NSF Standard 54, Definition 2.16;
 - Yield strength for the seam is not to be less than 78 psi;
 - No greater than 10 % of the seam width peels (separates) at any point; and
 - For extrusion seams, the separation that occurs from the edge of the sheet is not to be greater than 3.0 mm (0.12 inch).
- Fusion and extrusion seam under shear mode:
 - Failure by FTB, NSF Standard 54, Definition 2.16; and
 - Yield strength for the seam is not to be less than 120 psi.

Four out of five coupons were required to meet or exceed the acceptance criteria for peel and shear strength failure modes.

A total of 23 fusion destructive tests (DSF designation) and six extrusion test (DSX designation) were conducted of the HDPE liner. The destructive testing results are provided in Appendix B-7. All destructive tests met or exceeded the acceptance criteria for peel and shear strength.

8.7 Repair of Installation Defects

All defects observed on the HDPE liner were assigned a unique identification number and marked by TREK personnel for repair. The defects were repaired by either fusion or extrusion welding methods. The repairs were then tested (non-destructive) by Titan personnel by either the air pressure or vacuum box test method depending on the nature of the repair. Once a noted defect was repaired and tested, it was documented as a “pass” and no other testing was required.

Defect repair locations are shown on Drawing 2 for the HDPE cell liner. The documentation (repairs made and non-destructive testing) of defects and repairs to the seams and panels are included in Appendices B-9 and B-10 for the HDPE liner within the cell and in Appendix B-12 for the HDPE liner within the sump and double composite liner.

9.0 Leachate Collection System Construction

The leachate collection system consists of a HDPE membrane liner, a layer of Geocomposite, and a sand drainage layer. Details of the construction of the system are presented below.

9.1 Drainage Geocomposite Materials and Installation

The installed Geocomposite consists of a HDPE geonet encapsulated in geotextile manufactured by Solmax Geosynthetic LLC. The approximate quantity of Geocomposite placed in the sump of Cell No.16 was 27,425 m², using 4.57 m wide and 61 m long rolls. The Geocomposite inventory list can be found in Appendix B-1. The Manufacturer’s Quality Control documentation for the materials that was provided by Solmax indicates that all Geocomposite used in Cell No.16 complies with the project specifications. The Geocomposite Quality Control documentation can be found in Appendix B-2.

Prior to placing the Geocomposite, the HDPE membrane liner was swept clean of soil and debris. The Geocomposite was placed by Titan personnel and during installation of the Geocomposite, adjacent panels were connected with cable ties spaced every 1.5m. The Geocomposite was continuously sewn using the flat (prayer) seam, with a minimum 150 mm overlap, taking care not to damage the geonet within the Geocomposite or the underlying HDPE membranes.

9.2 Sand Drainage Layer

The Sand Drainage Layer specifications are as follows:

- The sand drainage layer to consist of uniform coarse or medium sand meeting the following requirements:

Medium Sand

- Sand to be free of organic matter (i.e. Roots, leaves, wood, etc.);
- Permeability at least 10^{-3} cm/s or greater at 90% Standard Proctor Maximum Dry Density, as determined by ASTM D2434 test method;
- Minimum porosity of 0.35; and
- Meet the following gradation:

Gradation Sieve Opening Size	% Passing (by Weight)
1 mm	60 %
0.075 mm (No. 200)	10 %

Material for the sand drainage layer was supplied by Glacial Aggregates Limited. The sand was hauled into the cell by a temporary haul road, made of the sand drainage layer with a minimum thickness of approximately 1.5 m over the geocomposite layer. The sand was dumped and spread using one CAT D6N LGP bulldozers to the minimum required thickness of 300 mm. In some areas of the cell a heavier dozer (61.6 kPa) was used to spread the sand to 300 mm thickness. As this dozer was twice the required ground pressure, an investigation was completed by TREK and no damage to underlying Geocomposite or 60 mil HDPE was found. The findings of the investigation are described in detail in a letter to Barry Blue of Waste Connections of Canada Inc. dated August 17, 2021. TREK personnel monitored the transportation and spreading operations for the placement of the sand for compliance with the project specifications.

Nine sand samples were obtained for gradation analyses and hydraulic conductivity. The test results, presented in Appendix A-4, indicate that the gradation of the sand meets the project requirements.

As previously noted, hydraulic conductivity testing (Rigid Wall Constant Head Method) was completed on nine samples following ASTM D2438-68 procedures. The results of the laboratory hydraulic conductivity test are in Appendix A-3. The tested specimen exhibited a hydraulic conductivity greater than the specified maximum of 1×10^{-3} cm/s.

10.0 Cell No.16 Leachate Collection Trenches and Sump Construction

Excavation of the sump and the leachate collection trenches was carried out by Edie. Excavation of the leachate collection trench for Cell No.16 progressed from the South limit of the central collection trench, North to the Cell No.16 permanent sump. An anchor trench was cut on the North side of the sump for embedment of the geosynthetic clay liner (GCL) and secondary HDPE membrane.

Along the leachate collection trenches, the GCL was placed on the prepared subgrade. There was no indication of seepage during the excavation for the sump in Cell No.16. The GCL was placed on the approved subgrade and the secondary HDPE (60 mil) membrane covered the GCL. In the sump, the ends of the GCL and secondary HDPE membrane were placed in the anchor trench. Subsequently, the sub-liner granular blanket (comprised of 19 mm clean stone) and the HDPE sampler pipe (refer to Section 11.3) were placed on a geotextile. The geotextile which was placed under the granular blanket, overlapped to completely encapsulate the granular blanket.

10.1 Sub-liner Sampler Collection System Installation for Cell No.16

Edie excavated the trench for the sub-liner sampling pipe, which is located in the Permanent North Berm in Cell No.16. The sub-liner sampling pipe, consisting of 219 mm O.D. SDR 11.0 HDPE continued up the slope of the berm within the trench and terminated beyond the South crest of the berm. A sub-liner granular blanket, comprised of 19 mm clean stone, was placed in the base of the sump and extended up the 4H:1V berm? slope, approximately 6.0 m, to the bentonite seal. A protective sand layer extended from the bentonite seal to approximately 2 m from the top of the berm, where another 500 mm bentonite seal was placed. Also, one additional 500 mm long bentonite seal was placed in the specified location indicated on the design drawings.

10.2 Leachate Collection Pipe

The leachate collection pipes in the Cell No.16 trench consist of 219 mm O.D. SDR 11.0 HDPE. The collection pipe for Cell No. 16 was perforated for the entire length of the trench up to the Permanent North Berm and then was solid (non-perforated) up the slope of the berm. TREK personnel observed the pipe fusion process, and verified the pipe orientation, pipe type, perforation size, and location in the trench. The granular leachate collection blanket was placed in both trenches, surrounding the pipes.

10.3 Leachate Extraction Pipes for Cell No.16

The leachate extraction piping consisted of 610 mm O.D. SDR 11.0 HDPE, which was assembled on-site. Perforated end caps were butt-fused to the bottom ends of each of the two leachate extraction pipes. The horizontal perforated section was fusion welded to a prefabricated bend at an angle to accommodate the 4H:1V slope. The angled sections were then butt-fused to the non-perforated sections, which were terminated with a HDPE blind flange. A geocushion rub sheet was placed on the slope in the location of the leachate extraction pipes and extended to the top of the Permanent South Berm slope. The pipes were placed on the HDPE rub sheet and the preassembled pipes were lowered from the top of the berm to the sump. The granular leachate collection blanket was placed over the pipe. TREK supervised installation and verified the location of the piping.

10.4 Granular Leachate Collection Blanket

The Granular Leachate Collection Blanket specifications are shown below:

Gradation Sieve Opening Size	% Passing (by Weight)
50 mm	100%
37.5 mm	90 – 100%
19.5 mm	0 – 10 %
12.5 mm	0 – 5 %

- The granular material is to comprise of sound, hard durable dolomite and/or dolomitic limestone and will be free of organic matter (i.e. roots, leaves, wood, etc.) soft, thin elongated or laminated particles, or other deleterious substances, concrete, metals and construction debris; and
- The crushed dolomitic limestone shall not contain greater than 40 % calcite (CaCO₃) as measured by gasometric and/or x-ray diffraction analysis. The granular must not contain organic material (e.g. roots, leaves, wood, etc.) and/or debris such as metal, plastic and concrete.

The aggregate supplied for the granular leachate collection blanket was manufactured from crushed and screened quarry rock and supplied by Glacial Aggregates. Two gradation tests were performed on the leachate granular. The results of the gradation testing indicated that the sampled material was acceptable for the intended use as leachate granular and met the specifications. The test results are summarized in Table 2.

The leachate collection blanket installation entailed controlled transport of the material over the sand drainage layer and carefully spreading the materials. Trucks transported the aggregate into the cell on a temporary haul road that was made of the sand drainage layer and maintained at a minimum thickness of 1.0 m over the geotextile cushion layer. In general, Edie constructed one main haul road from the South, heading North. After the haul road was completed, the aggregate was placed with a CAT 330 excavator at the beginning of the trench and when the trench was wide enough, the stone was spread using a CAT D6N LGP dozer. TREK personnel monitored the truck transport and spreading operations for the placement of the minimum required thickness of 300 mm.

10.5 Geotextile Cushion Materials and Installation

The geotextile cushion placed consists of a non-woven, needle punched polyester TE-E16 (542 g/m² weight) manufactured by SKAPS Industries. The approximate quantity of geotextile cushion placed in the sump of Cell No.16 was 1,045 m², using 4.57 m wide and 91.5 m long rolls. The Manufacturer's Quality Control documentation for the geotextile materials that was provided by Titan Environmental indicates that all geotextile cushion material used in Cell No.16 complies with the project specifications. The geotextile cushion Quality Control documentation can be found in Appendix B-2.

Prior to placing the geotextile cushion, the HDPE membrane liner was swept clean of soil and debris. The cushion was placed by Titan personnel. During installation of the cushion in the sump, adjacent panels were sewn using a flat (prayer) seam with a minimum 50 mm overlap, taking care not to damage the underlying HDPE membranes

10.6 Separator Geotextile Materials and Installation

The separator geotextile consists of a non-woven needle punched polyester TE-E8 (271 g/m² or approximately 8 oz/yd²). Approximately 3,200 m² of geotextile separator material was placed over the granular leachate collection blanket using 4.57 m wide and 183 m long rolls. The manufacturer's Quality Control documentation provided by Titan Environmental indicates that the geotextile separator used complies with the project specifications. The Quality Control documentation can be found in Appendix B-2.

The installation of the separator geotextile over the Cell No.16 granular leachate collection blanket in the trench and sump and was inspected by TREK personnel. The leachate collection blanket was graded with a CAT 330 Excavator and a CAT D6N LGP dozer and the separator geotextile was placed manually over the gravel and continuously sewn using a flat (prayer) seam with a minimum 50 mm overlap.

11.0 Summary

TREK personnel provided full time Construction Quality Assurance, resident inspection and Construction Assurance services. The following activities and components were observed, monitored, inspected and/or reviewed for approval and conformance with specifications:

- Subgrade preparation and berm construction;
- Geosynthetic clay liner installation, placement and seaming procedures;
- Secondary and primary 1.5 mm (60 mil) HDPE membrane installation, placement, seaming, non-destructive and destructive seam testing and repairs;
- Leachate collection system construction, including seaming operations of the geotextile cushion and separator material, and observations of trench excavation operations; and
- North perimeter drainage ditches and the permanent and temporary haul roads.

Based on the results of the field monitoring, observations, inspections and testing, the Cell No.16 recompacted clay base, the geosynthetic clay liner, the 1.5 mm HDPE membrane liner, the leachate drainage layer components, the composite liner system and associated leachate collection system were constructed/installed in accordance with the project specifications and to current accepted industry standards.

12.0 Closure

The geotechnical information provided in this report is in accordance with current engineering principles and practices (Standard of Practice). The information and findings of this report were based on the tests, measurements, and observations made by TREK during construction and are only applicable to those elements. TREK is not responsible for conformance of any elements that were not observed or tested.

All information provided in this report is subject to our standard terms and conditions for engineering services, a copy of which is provided to each of our clients with the original scope of work, or a mutually executed standard engineering services agreement. If these conditions are not attached, and you are not already in possession of such terms and conditions, contact our office and you will be promptly provided with a copy.

This report has been prepared by TREK Geotechnical Inc. (the Consultant) for the exclusive use of Waste Connections of Canada Inc. (the Client) and their agents for the work product presented in the report. Any findings or recommendations provided in this report are not to be used or relied upon by any third parties, except as agreed to in writing by the Client and Consultant prior to use.

Tables

Table 1
Cell 16 Survey Control Points

POINT	NORTHING	EASTING	Design Base Excavation	As-built Base Excavation	Design Drainage Sand (m)	As-built Drainage Sand (m)	Drainage Sand Thickness (m)
1	12640.000	11364.020	236.000	236.007	N/A	N/A	N/A
2	12640.000	11374.770	233.310	233.330	233.610	233.805	0.475
3	12640.000	11385.520	230.620	230.648	230.920	231.077	0.429
4	12700.000	11363.930	236.000	236.021	N/A	N/A	N/A
5	12700.020	11374.680	233.310	233.322	233.610	233.712	0.390
6	12700.030	11385.430	230.620	230.643	230.920	231.170	0.527
7	12760.000	11363.840	236.000	236.014	N/A	N/A	N/A
8	12760.020	11374.590	233.310	233.285	233.610	233.642	0.357
9	12760.030	11385.340	230.620	230.750	230.920	231.094	0.344
10	12820.000	11363.750	236.000	236.023	N/A	N/A	N/A
11	12820.000	11374.520	233.310	233.304	233.610	233.739	0.435
12	12820.000	11385.290	230.620	230.696	230.920	231.036	0.340
13	12880.000	11363.650	236.000	235.982	N/A	N/A	N/A
14	12880.000	11374.470	233.300	233.278	233.600	233.670	0.392
15	12880.000	11385.290	230.620	230.705	230.920	231.047	0.342
16	12931.570	11363.580	236.000	236.101	N/A	N/A	N/A
17	12928.990	11374.430	233.290	233.329	233.590	233.839	0.510
18	12926.420	11385.290	230.620	230.660	230.920	231.305	0.645
19	12947.930	11382.740	236.000	236.062	N/A	N/A	N/A
20	12937.170	11384.020	233.310	233.404	233.610	233.874	0.470
21	12947.750	11440.060	236.000	236.077	N/A	N/A	N/A
22	12937.000	11440.070	233.310	233.340	233.610	233.767	0.427
23	12926.250	11440.080	230.630	230.698	230.930	231.025	0.327
24	12640.000	11400.000	230.330	230.375	230.630	230.750	0.375
25	12640.000	11440.000	230.320	230.359	230.620	230.741	0.382
26	12700.000	11400.000	230.330	230.340	230.630	230.727	0.387
27	12700.000	11440.000	230.320	230.328	230.620	230.731	0.403
28	12760.000	11400.000	230.330	230.359	230.630	230.654	0.295
29	12760.000	11440.000	230.320	230.349	230.620	230.700	0.351
30	12820.000	11400.000	230.330	230.330	230.630	230.690	0.360
31	12820.000	11440.000	230.320	230.316	230.620	230.690	0.374
32	12880.000	11400.000	230.330	230.337	230.630	230.690	0.353
33	12880.000	11440.000	230.320	230.307	230.620	230.730	0.423
61	12669.930	11363.970	236.000	236.006	N/A	N/A	N/A
62	12669.930	11374.720	233.120	233.310	233.420	233.743	0.433
63	12669.960	11385.470	230.630	230.672	230.930	231.150	0.478
64	12669.960	11400.000	230.330	230.400	230.630	230.769	0.369
68	12669.960	11440.000	230.320	230.372	230.620	230.685	0.313
69	12729.930	11363;88	236.000	236.012	N/A	N/A	N/A
70	12729.930	11374.630	233.310	233.315	233.610	233.706	0.391

** survey based on local GPS datum

Table 1
Cell 16 Survey Control Points

POINT	NORTHING	EASTING	Design	As-built Base	Design	As-built	Drainage Sand Thickness
			Base Excavation	Excavation	Drainage Sand (m)	Drainage Sand (m)	
71	12729.930	11385.380	230.630	230.682	230.930	231.187	0.505
72	12729.930	11400.000	230.330	230.350	230.630	230.706	0.356
76	12729.930	11440.000	230.320	230.349	230.620	230.687	0.338
77	12789.930	11363.790	236.000	236.017	N/A	N/A	N/A
78	12789.930	11374.540	233.310	233.300	233.610	233.726	0.426
79	12789.930	11374.540	233.310	230.705	233.610	231.181	0.476
80	12789.930	11400.000	230.330	230.33	230.630	230.700	0.370
84	12789.930	11440.000	230.320	230.346	230.620	230.709	0.363
85	12849.930	11363.700	236.000	235.994	N/A	N/A	N/A
86	12849.930	11374.450	233.310	233.303	233.610	233.710	0.407
87	12849.930	11374.450	233.310	230.665	233.610	231.050	0.385
88	12849.930	11400.000	230.330	230.355	230.630	230.720	0.365
92	12849.930	11440.000	230.320	230.357	230.620	230.772	0.415
93	12909.930	11363.610	236.000	236.006	N/A	N/A	N/A
94	12909.930	11374.360	233.310	233.233	233.610	233.701	0.468
95	12909.930	11385.290	230.630	230.715	230.930	231.033	0.318

** survey based on local GPS datum

TRENCH

POINT	NORTHING	EASTING	Design	As-built Base
			Base Excavation	Excavation
34	12653.640	11420.190	229.930	230.037
35	12700.000	11418.770	229.960	230.010
36	12700.000	11420.190	229.600	229.594
37	12700.000	11421.600	229.960	229.985
38	12760.000	11416.950	229.990	229.976
39	12760.000	11420.190	229.180	229.206
40	12760.000	11423.420	229.990	230.003
41	12820.000	11415.120	230.030	230.027
42	12820.000	11420.190	228.760	228.746
43	12820.000	11425.250	230.030	230.010
44	12880.000	11413.300	230.060	230.096
45	12880.000	11420.190	228.340	228.347
46	12880.000	11427.080	230.060	230.128
47	12895.580	11412.820	230.070	230.051
48	12895.580	11427.550	230.000	229.995
65	12669.930	11419.690	229.940	229.908
66	12669.930	11420.190	228.820	229.800
67	12669.930	11420.680	229.940	229.917
73	12729.930	11417.860	229.970	229.973
74	12729.930	11420.190	229.400	229.370
75	12729.930	11422.510	229.970	229.999
81	12789.930	11416.040	230.010	230.030
82	12789.930	11420.190	228.970	228.950
83	12789.930	11424.330	230.010	230.033
89	12849.930	11414.210	230.050	230.021
90	12849.930	11420.190	228.550	228.522
91	12849.930	11426.160	230.050	230.079

** survey based on local GPS datum

Table 1
Cell 16 Survey Control Points

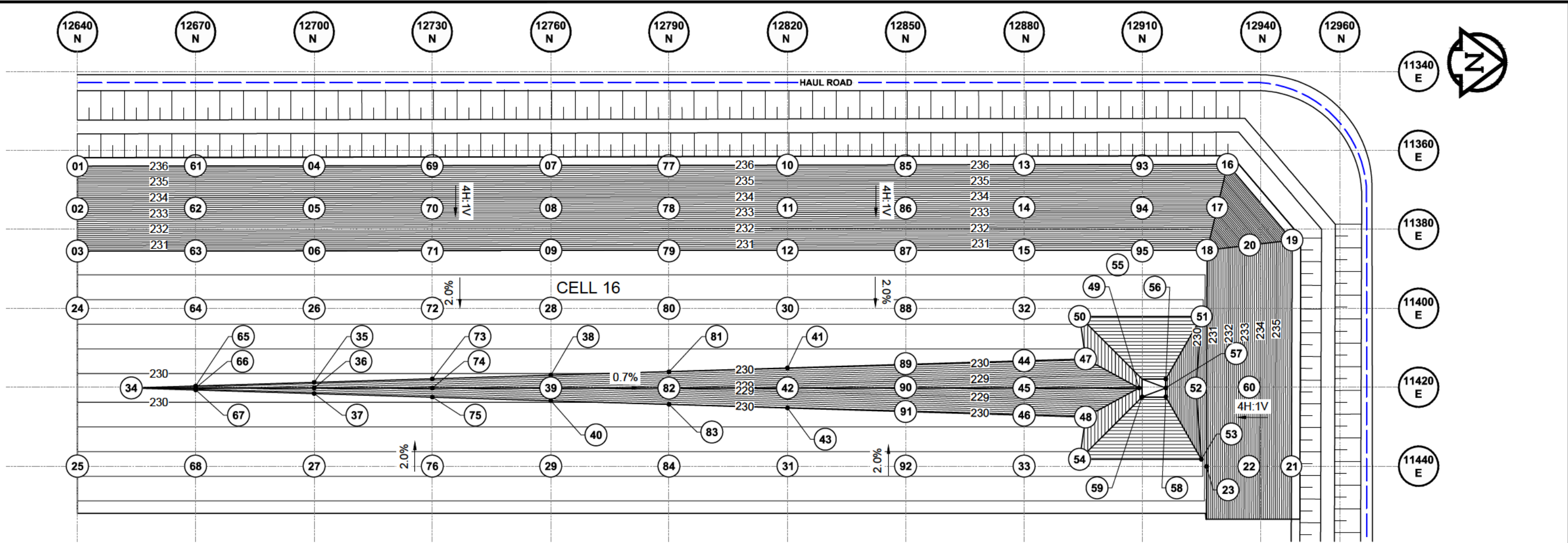
SUMP

POINT	NORTHING	EASTING	Design Base Excavation	As-built Base Excavation
49	12909.130	11420.190	228.140	228.112
50	12894.080	11402.100	230.290	230.304
51	12925.020	11402.100	230.290	230.320
52	12923.520	11420.190	229.930	229.942
53	12924.920	11438.280	230.290	230.272
54	12894.080	11438.280	230.290	230.307
55	12909.920	11417.940	228.030	228.037
56	12915.920	11417.940	228.030	228.026
57	12915.920	11420.190	228.030	228.058
58	12915.920	11422.440	228.030	228.054
59	12909.920	11422.440	228.030	228.059
60	12937.060	11420.000	233.310	233.333

** survey based on local GPS datum

Figures

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POINT	NORTHING (m)	EASTING (m)	ELEVATION (m)	POINT	NORTHING (m)	EASTING (m)	ELEVATION (m)	POINT	NORTHING (m)	EASTING (m)	ELEVATION (m)	POINT	NORTHING (m)	EASTING (m)	ELEVATION (m)	POINT	NORTHING (m)	EASTING (m)	ELEVATION (m)
01	12640.00	11364.02	236.00	13	12880.00	11363.65	236.00	25	12640.00	11440.00	230.32	37	12700.00	11421.60	229.96	49	12909.13	11420.19	228.14
02	12640.00	11374.77	233.31	14	12880.00	11374.47	233.30	26	12700.00	11400.00	230.33	38	12760.00	11416.95	229.99	50	12894.08	11402.10	230.29
03	12640.00	11385.52	230.62	15	12880.00	11385.29	230.62	27	12700.00	11440.00	230.32	39	12760.00	11420.19	229.18	51	12925.02	11402.10	230.29
04	12700.00	11363.93	236.00	16	12931.57	11363.58	236.00	28	12760.00	11400.00	230.33	40	12760.00	11423.42	229.99	52	12923.52	11420.19	229.93
05	12700.02	11374.68	233.31	17	12928.99	11374.43	233.29	29	12760.00	11440.00	230.32	41	12820.00	11415.12	230.03	53	12924.92	11438.28	230.29
06	12700.03	11385.43	230.62	18	12926.42	11385.29	230.62	30	12820.00	11400.00	230.33	42	12820.00	11420.19	228.76	54	12894.08	11438.28	230.29
07	12760.00	11363.84	236.00	19	12947.93	11382.74	236.00	31	12820.00	11440.00	230.32	43	12820.00	11425.25	230.03	55	12909.92	11417.94	228.03
08	12760.02	11374.59	233.31	20	12937.17	11384.02	233.31	32	12880.00	11400.00	230.33	44	12880.00	11413.30	230.06	56	12915.92	11417.94	228.03
09	12760.03	11385.34	230.62	21	12947.75	11440.06	236.00	33	12880.00	11440.00	230.32	45	12880.00	11420.19	228.34	57	12915.92	11420.19	228.03
10	12820.00	11363.75	236.00	22	12937.00	11440.07	233.31	34	12653.64	11420.19	229.93	46	12880.00	11427.08	230.06	58	12915.92	11422.44	228.03
11	12820.00	11374.52	233.31	23	12926.25	11440.08	230.63	35	12700.00	11418.77	229.96	47	12895.58	11412.82	230.07	59	12909.92	11422.44	228.03
12	12820.00	11385.29	230.62	24	12640.00	11400.00	230.33	36	12700.00	11420.19	229.60	48	12895.58	11427.55	230.07	60	12937.06	11420.00	233.31

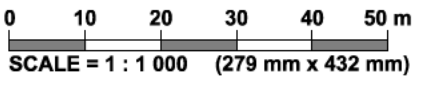
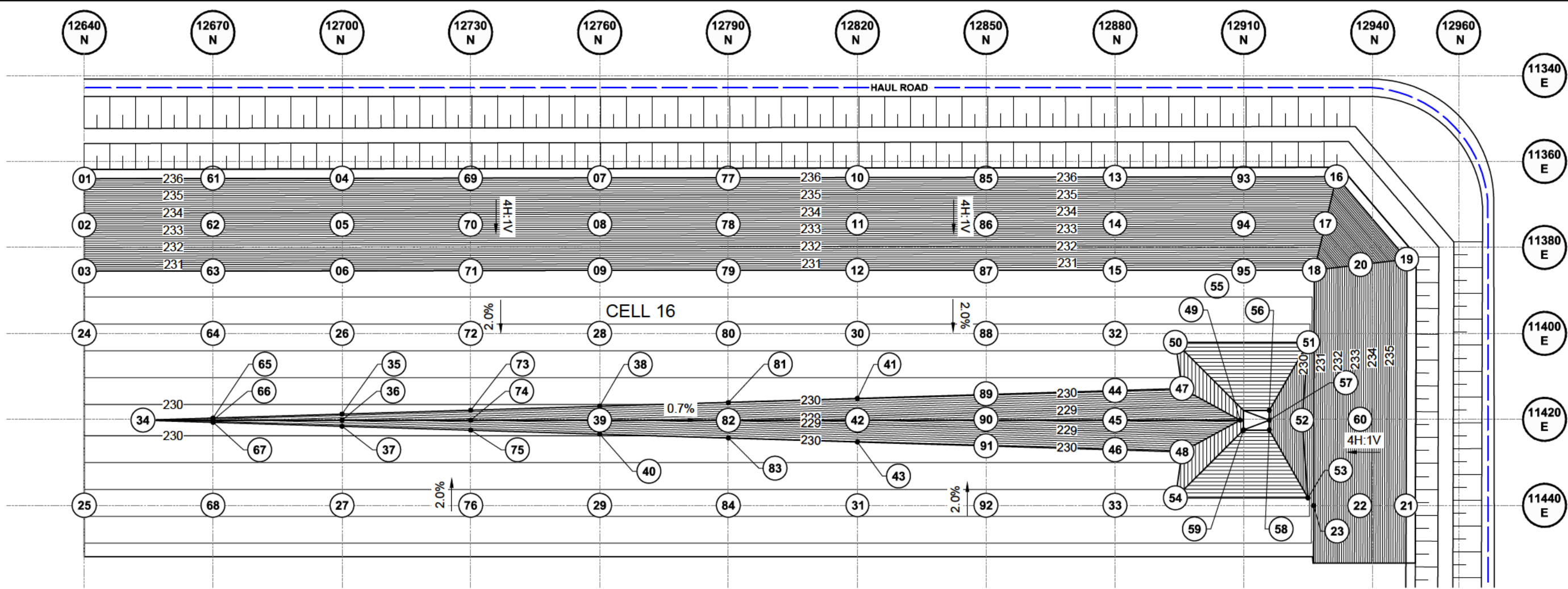


Figure 01A
Cell 16 Survey Control Points

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POINT	NORTHING (m)	EASTING (m)	ELEVATION (m)	POINT	NORTHING (m)	EASTING (m)	ELEVATION (m)	POINT	NORTHING (m)	EASTING (m)	ELEVATION (m)
61	12669.93	11363.97	236.00	73	12729.93	11417.86	229.97	85	12849.93	11363.70	236.00
62	12669.93	11374.72	233.12	74	12729.93	11420.19	229.40	86	12849.93	11374.45	233.31
63	12669.96	11385.47	230.63	75	12729.93	11422.51	229.97	87	12849.93	11385.29	230.63
64	12669.96	11400.00	230.33	76	12729.93	11440.00	230.32	88	12849.93	11400.00	230.33
65	12669.93	11419.69	229.94	77	12789.93	11363.79	236.00	89	12849.93	11414.21	230.05
66	12669.93	11420.19	229.82	78	12789.93	11374.54	233.31	90	12849.93	11420.19	228.55
67	12669.93	11420.68	229.94	79	12789.93	11385.29	230.63	91	12849.93	11426.16	230.05
68	12669.96	11440.00	230.32	80	12789.93	11400.00	230.33	92	12849.93	11440.00	230.32
69	12729.93	11363.88	236.00	81	12789.93	11416.04	230.01	93	12909.93	11363.61	236.00
70	12729.93	11374.63	233.31	82	12789.93	11420.19	228.97	94	12909.93	11374.36	233.31
71	12729.93	11385.38	230.63	83	12789.93	11424.33	230.01	95	12909.93	11385.29	230.63
72	12729.93	11400.00	230.33	84	12789.93	11440.00	230.32				

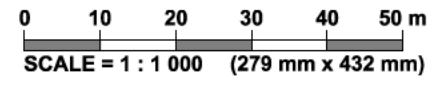
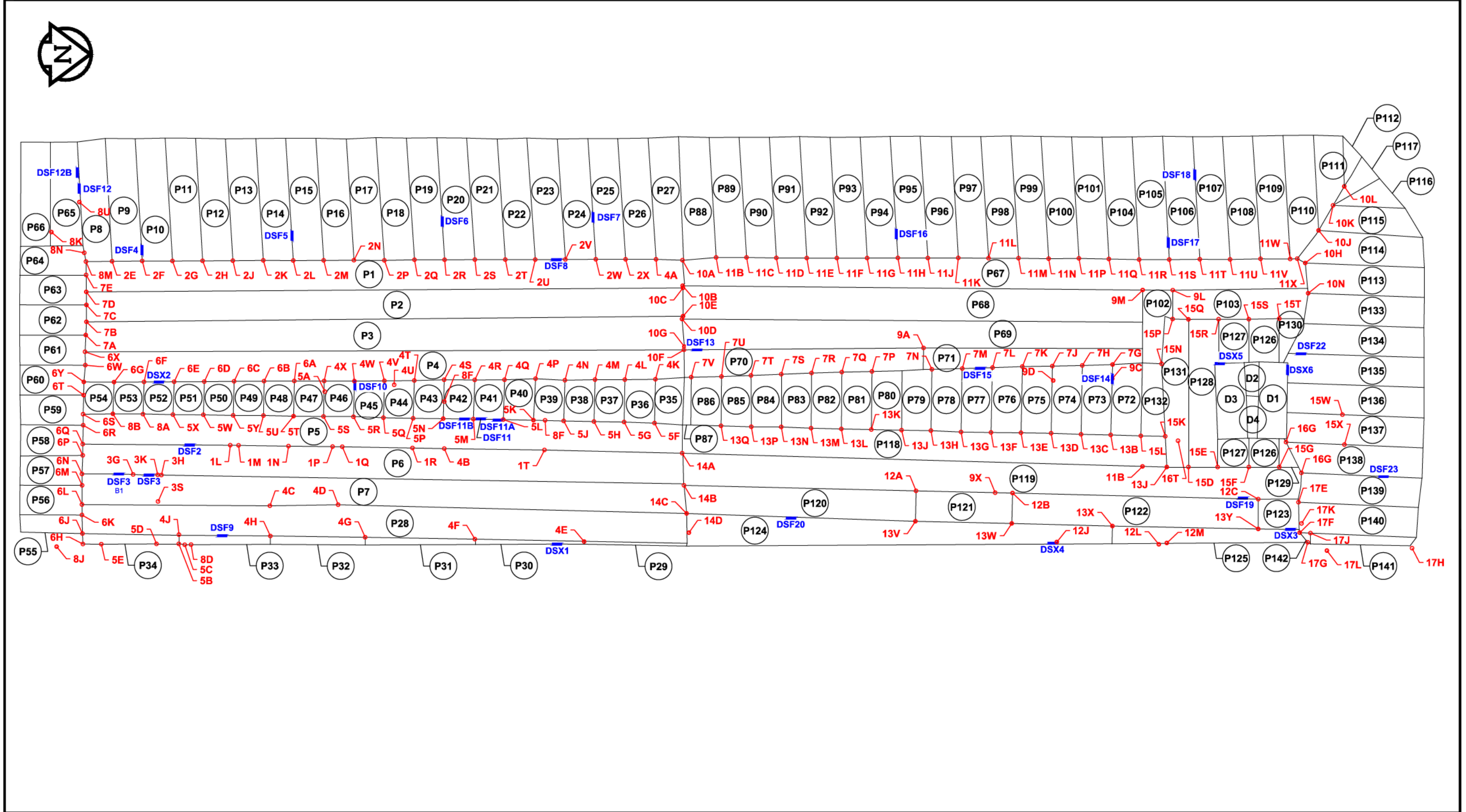


Figure 01B
Cell 16 Survey Control Points

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SCALE: N.T.S.

LEGEND:

- 4C UNIQUE DEFECT IDENTIFICATION NUMBER
- DSF4 6U DESTRUCTIVE LOCATION AND DESIGNATION
- P01 PANEL DESIGNATION NUMBER
- FUSION SEAM

NOTES:

1. PANEL LOCATIONS ARE BASED ON SURVEY COMPLETED BY TREK GEOTECHNICAL.
2. THE DRAWING IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING REPORT.

Figure 02

Cell 16 Geomembrane Panel Layout

Appendix A-1

Summary of Clay Backfill Laboratory Results

Standard Proctor



www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Standard Proctor Compaction Test

ASTM D698-12e2

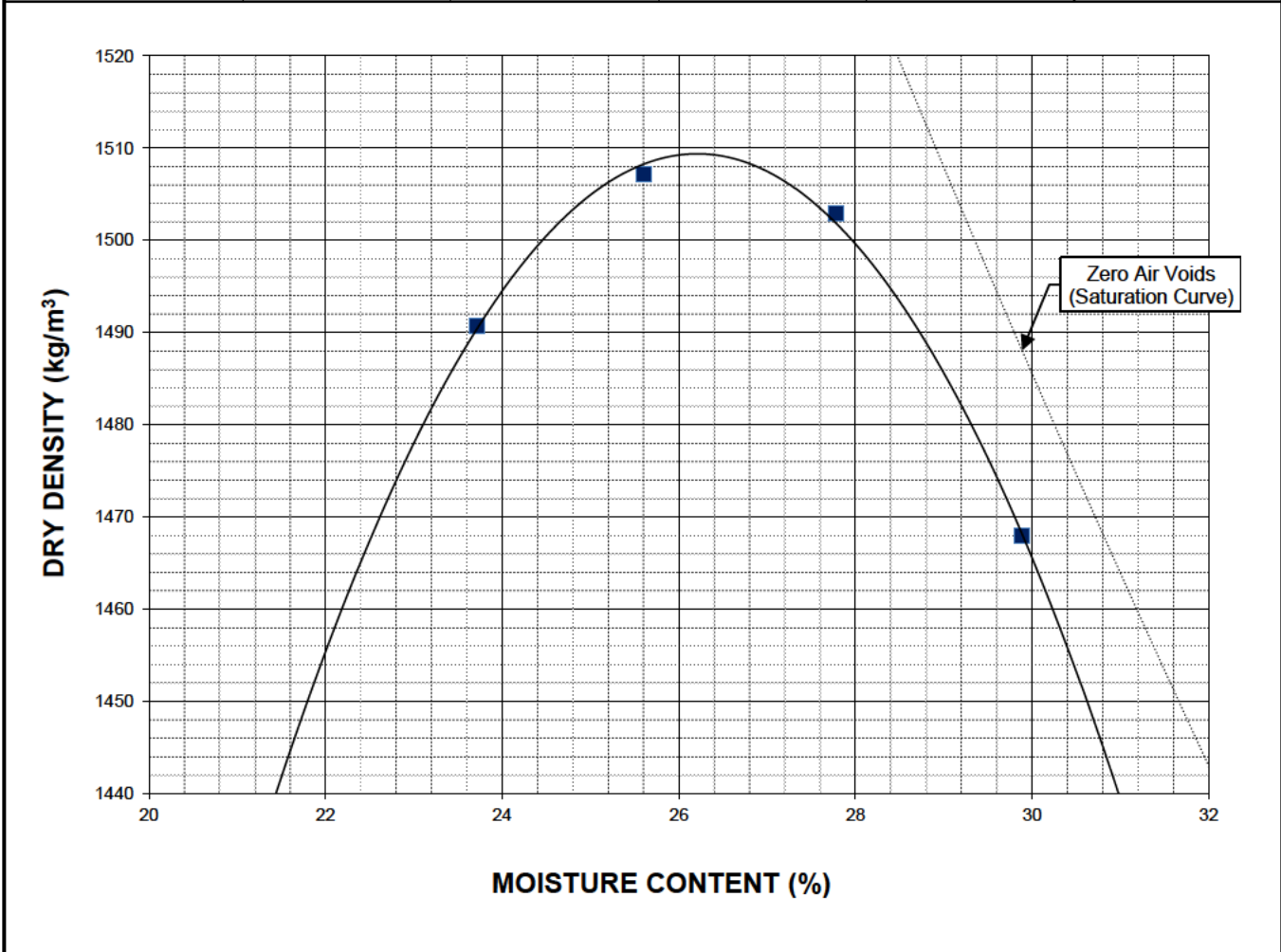
Project No. 1000-089-03
Client Waste Connections
Project Cell 16



Sample # L20-308
Source Onsite Excavation
Material Clay
Sample Date 02-Oct-20
Test Date 06-Oct-20
Technician AB

Maximum Dry Density (kg/m³)	1509
Optimum Moisture (%)	26.2

Trial Number	1	2	3	4	
Wet Density (kg/m ³)	1844	1893	1920	1907	
Dry Density (kg/m ³)	1491	1507	1503	1468	
Moisture Content (%)	23.7	25.6	27.8	29.9	





www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Standard Proctor Compaction Test

ASTM D698-12e2

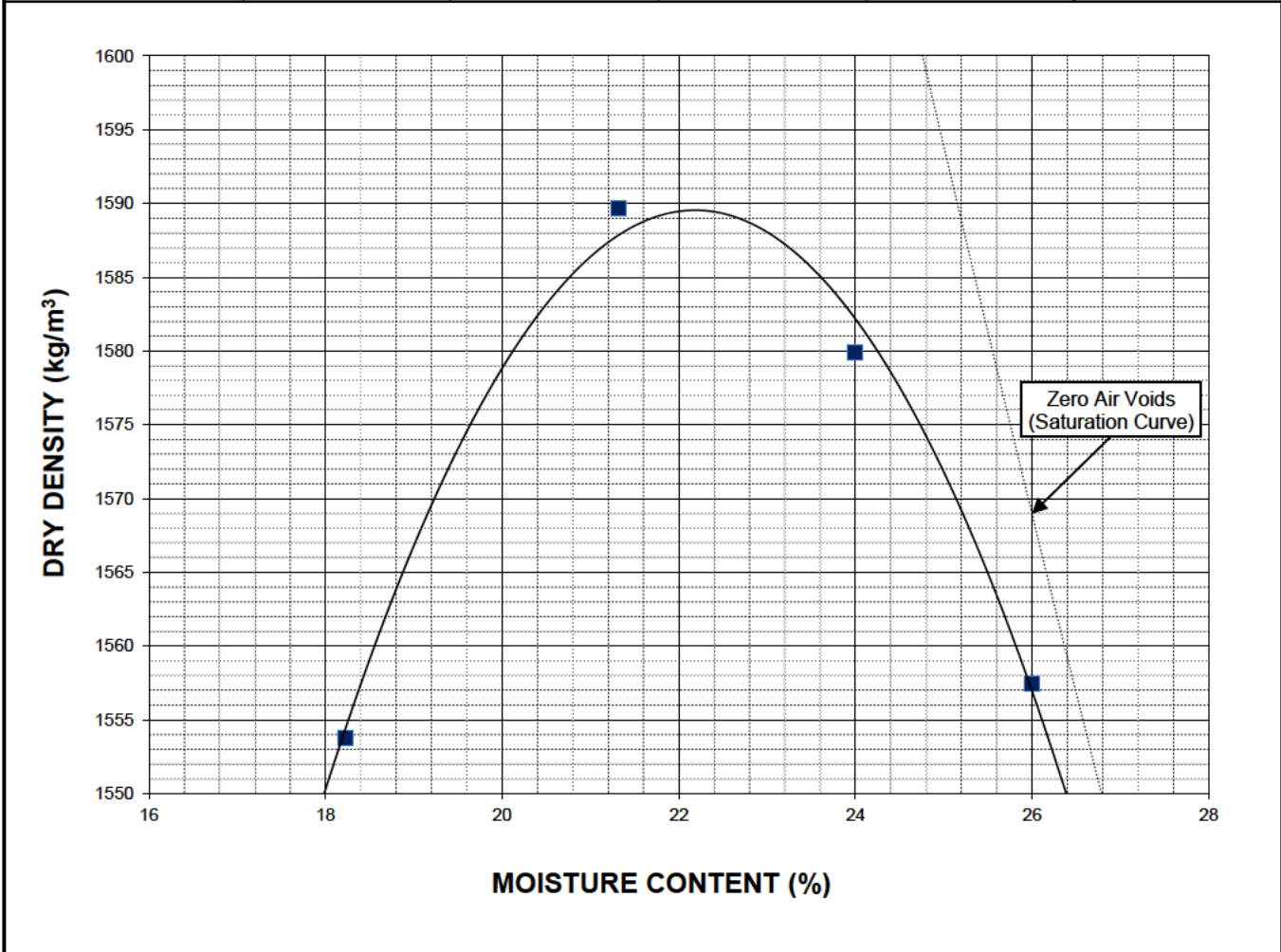
Project No. 1000-089-03
Client Waste Connection
Project Cell 16



Sample # L21-124
Source Berm
Material Clay
Sample Date 23-Apr-21
Test Date 27-Apr-21
Technician BMH

Maximum Dry Density (kg/m³)	1590
Optimum Moisture (%)	22.2

Trial Number	1	2	3	4	
Wet Density (kg/m ³)	1837	1929	1959	1962	
Dry Density (kg/m ³)	1554	1590	1580	1557	
Moisture Content (%)	18.2	21.3	24.0	26.0	





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Standard Proctor Compaction Test

ASTM D698-12e2

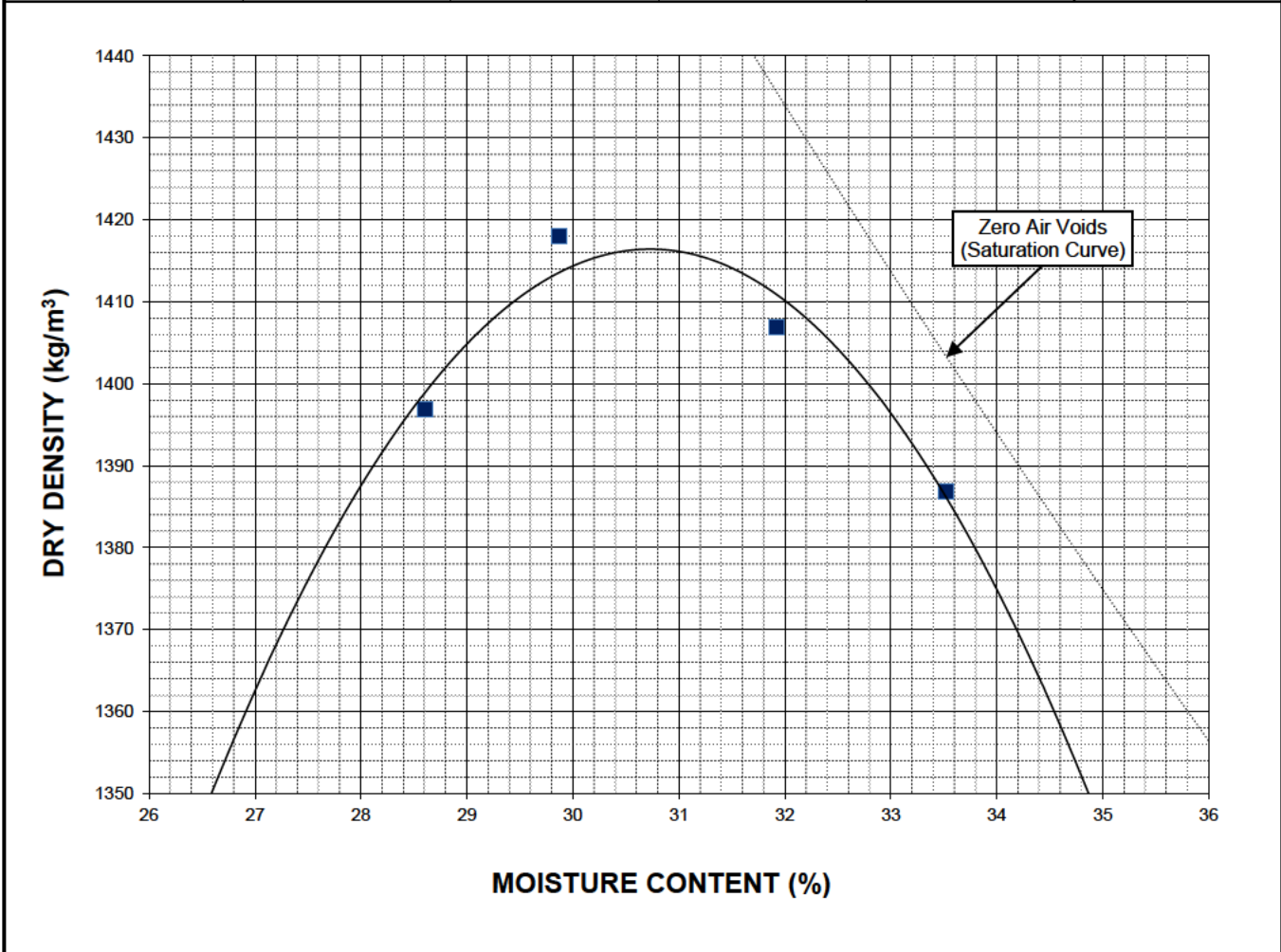
Project No. 1000-089-03
Client Waste Connections
Project Cell 16



Sample # L21-127
Source Cell 16 NW Floor
Material Clay
Sample Date 27-Apr-21
Test Date 29-Apr-21
Technician DS

Maximum Dry Density (kg/m³)	1416
Optimum Moisture (%)	30.7

Trial Number	1	2	3	4	
Wet Density (kg/m ³)	1796	1842	1856	1852	
Dry Density (kg/m ³)	1397	1418	1407	1387	
Moisture Content (%)	28.6	29.9	31.9	33.5	



Appendix A-2

Field Density Test Reports

- **Recompacted Subgrade**
- **West and North Perimeter Berm**
 - **South Separation Berm**



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Field Density Report
ASTM D6938-17A

Project No. 1000-089-03

Client Waste Connections

Project Cell 16

Location Prairie Green IWMF, RM of Rosser, MB

Contractor Edie Construction

Material Clay

Source Onsite excavation

Date Tested 29-Apr-21

Time Tested 9:30

Technician AB

Maximum Dry Density 1416

Optimum Moisture % 30.7

Proctor Sample Number L21-127

Required Density % 95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m ³)	Dry Density (kg/m ³)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
CL1	Lift 1, N - 12819, E - 11390, EL - 230.451	150	1798	1397	1373	28.7%	30.9%	97.0%
CL2	Lift 1, N - 12849, E - 11401, EL - 230.390	150	1837	1410	1363	30.3%	34.8%	96.2%
CL3	Lift 1, N - 12888, E - 11398, EL - 230.368	150	1813	1387	1410	30.7%	28.6%	99.6%
CL4	Lift 1, N - 12905, E - 11391, EL - 230.456	150	1806	1382	1360	30.7%	32.8%	96.0%
CL5	Lift 1, N - 12888, E - 11407, EL - 230.271	150	1786	1352	1334	32.1%	33.9%	94.2%
CL6	Lift 1, N - 128835, E - 11407, EL - 230.066	150	1805	1371	1359	31.7%	32.8%	96.0%

Notes: Tests completed on recompacted 150mm thick lift.
 "CL" stands for Clay Liner



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Field Density Report
ASTM D6938-17A

Project No. 1000-089-03

Client Waste Connections of Canada Inc.

Project Cell 16 Construction

Material Clay

Location Prairie Green IWMF, RM of Rosser, MB

Source Onsite excavation (Cell 16)

Contractor Edie Construction

Date Tested 18-May-21

Maximum Dry Density 1416

Time Tested 1:30

Optimum Moisture % 30.7

Technician AB

Proctor Sample Number L21-127

Required Density % 95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m ³)	Dry Density (kg/m ³)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
CL12	N: 12815, E: 11392, EL: 230.440	150	1925	1563	1539	23.2%	25.1%	100+%
CL13	N: 12794, E: 11402, EL: 230.356	150	1892	1489	1453	27.1%	30.2%	100+%
CL14	N: 12718, E: 11434, EL: 230.196	200	1876	1465	1432	28.1%	31.0%	100+%
CL15	N: 12672, E: 11437, EL: 230.297	200	1910	1524	1482	25.3%	28.9%	100+%
CL16	N: 12667, E: 11403, EL: 230.309	200	1835	1439	1403	27.5%	30.8%	99.1%
CL17	N: 12685, E: 11414, EL: 230.081	200	1883	1498	1463	25.7%	28.7%	100+%
CL18	N: 12751, E: 11429, EL: 230.131	200	1845	1465	1455	25.9%	26.8%	100+%
CL19	N: 12774, E: 11438, EL: 230.329	200	1872	1559	1534	20.1%	22.0%	100+%
CL20	N: 12796, E: 11426, EL: 230.122	200	1938	1585	1562	22.3%	24.1%	100+%
CL21	Retest of CL11	200	1893	1569	1555	20.7%	21.8%	100+%
CL22	Retest of CL10	200	1883	1532	1516	22.9%	24.2%	100+%
CL23	N: 12864, E: 11425, EL: 230.026	200	1839	1434	1414	28.2%	30.1%	99.8%
CL24	N: 12875, E: 11437, EL: 230.222	200	1956	1522	1492	28.5%	31.1%	100+%
CL25	Retest of CL 9	200	1856	1580	1574	17.5%	17.9%	100+%
CL26	Retest of CL 7	200	1873	1563	1548	19.8%	21.0%	100+%

Notes: Tests completed on recompacted 150mm thick lift.
 "CL" stands for Clay Liner



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Field Density Report
ASTM D6938-17A

Project No.	1000-089-03	Material	Clay
Client	Waste Connections	Source	Onsite excavation
Project	Cell 16	Maximum Dry Density	1509
Location	Prairie Green IWMF, RM of Rosser, MB	Optimum Moisture %	26.2
Contractor	Edie Construction	Proctor Sample Number	L20-308
Date Tested	09-Oct-20	Required Density %	95
Time Tested	8:00AM		
Technician	AB		

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m ³)	Dry Density (kg/m ³)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
PB9	Lift 3, N-12640, E-11364	150	1833	1547	1501	18.5%	22.1%	99.5%
PB10	Lift 3, N-12669, E-11370	150	2064	1710	1698	20.7%	21.6%	100+%
PB11	Lift 3, N-12698, E-11359	150	1917	1504	1465	27.5%	30.8%	97.1%
PB12	Lift 2, N-12748, E-11353	150	1947	1660	1650	17.3%	18.0%	100+%
PB13	Lift 1, N-12812, E-11363	150	2017	1684	1635	19.8%	23.4%	100+%
PB14	Lift 1, N-12844, E-11357	150	2087	1649	1710	26.6%	22.1%	100+%

Notes: All tests performed on 200 mm thick lift of clay material.
 "PB" represents Perimeter Berm



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Field Density Report
ASTM D6938-17A

Project No.	1000-089-03	Material	Clay
Client	Waste Connections	Source	Onsite excavation
Project	Cell 16	Maximum Dry Density	1509
Location	Prairie Green IWMF, RM of Rosser, MB	Optimum Moisture %	26.2
Contractor	Edie Construction	Proctor Sample Number	L20-308
Date Tested	13-Oct-20	Required Density %	95
Time Tested	4:00PM		
Technician	AB		

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m ³)	Dry Density (kg/m ³)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
PB15	Lift 4, N-12645, E-11353	150	1893	1549	1527	22.2%	24.0%	100+%
PB16	Lift 4, N-12680, E11358	150	1826	1534	1512	19.0%	20.8%	100+%
PB17	Lift 4, N-12716, E-11362	150	1857	1547	1535	20.0%	21.0%	100+%
PB18	Lift 3, N-12770, E-11355	150	1906	1566	1561	21.7%	22.1%	100+%
PB19	Lift 2, N-12815, E-11365	150	1882	1572	1586	19.7%	18.7%	100+%
PB20	Lift 1, N-12868, E-11357	150	1964	1630	1621	20.5%	21.1%	100+%

Notes: All tests performed on 200 mm thick lift of clay material.
 "PB" represents Perimeter Berm



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Field Density Report
ASTM D6938-17A

Project No.	1000-089-03	Material	Clay
Client	Waste Connections	Source	Onsite excavation
Project	Cell 16	Maximum Dry Density	1509
Location	Prairie Green IWMF, RM of Rosser, MB	Optimum Moisture %	26.2
Contractor	Edie Construction	Proctor Sample Number	L20-308
Date Tested	19-Oct-20	Required Density %	95
Time Tested	16:15		
Technician	AB		

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m ³)	Dry Density (kg/m ³)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
PB26	Lift 6, N-12650, E-11359	150	1785	1505	1475	18.6%	21.0%	97.8%
PB27	Lift 6, N-12680, E-11354	150	1917	1584	1573	21.0%	21.8%	100+%
PB28	Lift 6, N-12720, E-11364	150	1899	1589	1521	19.5%	24.8%	100+%
PB29	Lift 4, N-12770, E-11353	150	1964	1623	1611	21.0%	21.9%	100+%
PB30	Lift 3, N-12823, E-11359	150	1930	1609	1582	20.0%	22.0%	100+%
PB31	Lift 3, N-12868, E-11353	150	1780	1488	1432	19.6%	24.3%	94.9%
PB32	Lift 1, N-12910, E-11360	150	1729	1477	1439	17.1%	20.2%	95.4%

Notes: All tests performed on 200 mm thick lift of clay material.
 "PB" represents Perimeter Berm



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Field Density Report
ASTM D6938-17A

Project No. 1000-089-03

Client Waste Connections

Project Cell 16

Material Clay

Location Prairie Green IWMF, RM of Rosser, MB

Source Onsite excavation

Contractor Edie Construction

Date Tested 20-Oct-20

Maximum Dry Density 1509

Time Tested 9:35

Optimum Moisture % 26.2

Technician AB

Proctor Sample Number L20-308

Required Density % 95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m ³)	Dry Density (kg/m ³)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
PB33	Lift 3, N-12873, E-11352 - Retest of PB31	150	1820	1523	1492	19.5%	22.0%	98.9%
PB34	Lift 3, N-12873, E-11355	150	1768	1489	1456	18.7%	21.5%	96.5%
PB35	Lift 3, N-12873, E-11357	150	2008	1664	1651	20.7%	21.6%	100+%
PB36	Lift 3, N-12873, E-11359	150	1856	1552	1513	19.6%	22.7%	100+%
PB37	Lift 3, N-12873, E-11362	150	1819	1510	1474	20.5%	23.4%	97.7%
PB38	Lift 3, N-12873, E-11365	150	1910	1545	1560	23.6%	22.5%	100+%

Notes: All tests performed on 200 mm thick lift of clay material.
 "PB" represents Perimeter Berm



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Field Density Report
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Project No.	1000-089-03	Material	Clay
Client	Waste Connections	Source	Onsite excavation
Project	Cell 16	Maximum Dry Density	1509
Location	Prairie Green IWMF, RM of Rosser, MB	Optimum Moisture %	26.2
Contractor	Edie Construction	Proctor Sample Number	L20-308
Date Tested	22-Oct-20	Required Density %	95
Time Tested	14:00		
Technician	AB		

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m ³)	Dry Density (kg/m ³)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
PB39	Lift 7, N-12660, E-11357	150	1925	1554	1500	23.9%	28.3%	99.4%
PB40	Lift 5, N-12750, E-11354	150	1957	1591	1597	23.0%	22.5%	100+%
PB41	Lift 5, N-12790, E-11361	150	2000	1630	1623	22.7%	23.2%	100+%
PB42	Lift 4, N-12835, E-11361	150	1841	1498	1469	22.9%	25.4%	97.3%
PB43	Lift 2, N-12885, E-11358	150	1925	1548	1548	24.4%	24.3%	100+%
PB44	Lift 1, N-12948, E-11371	150	1993	1626	1586	22.6%	25.6%	100+%

Notes: All tests performed on 200 mm thick lift of clay material.
 "PB" represents Perimeter Berm



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Field Density Report
ASTM D6938-17A

Project No.	1000-089-03	Material	Clay
Client	Waste Connections	Source	Onsite excavation
Project	Cell 16	Maximum Dry Density	1509
Location	Prairie Green IWMF, RM of Rosser, MB	Optimum Moisture %	26.2
Contractor	Edie Construction	Proctor Sample Number	L20-308
Date Tested	23-Oct-20	Required Density %	95
Time Tested	14:00		
Technician	AB		

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m ³)	Dry Density (kg/m ³)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
PB45	Lift 2, N-12952, E-11380	150	1925	1554	1590	23.9%	21.1%	100+%
PB46	Lift 2, N-12939, E-11362	150	1957	1591	1598	23.0%	22.5%	100+%
PB47	Lift 4, N-12878, E-11354	150	2000	1630	1591	22.7%	25.7%	100+%
PB48	Lift 5, N-12832, E-11358	150	1841	1498	1487	22.9%	23.8%	98.5%
PB49	Lift 6, N-12773, E-11360	150	1925	1548	1522	24.4%	26.5%	100+%
PB50	Lift 7, N-12720, E-11355	150	1993	1626	1634	22.6%	22.0%	100+%
PB51	Lift 8, N-12668, E-11358	150	1900	1562	1537	21.6%	23.6%	100+%

Notes: All tests performed on 200 mm thick lift of clay material.
 "PB" represents Perimeter Berm



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Field Density Report
ASTM D6938-17A

Project No. 1000-089-03
Client Waste Connections
Project Cell 16 **Material** Clay
Location Prairie Green IWMF, RM of Rosser, MB **Source** Onsite excavation
Contractor Edie Construction
Maximum Dry Density 1509
Date Tested 26-Oct-20 **Optimum Moisture %** 26.2
Time Tested 10:15 am and 4:30pm **Proctor Sample Number** L20-308
Technician AB **Required Density %** 95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m ³)	Dry Density (kg/m ³)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
PB52	Lift 3, N-12955, E-11387	150	1817	1511	1492	20.3%	21.7%	98.9%
PB53	Lift 3, N-12928, E-11354	150	1802	1489	1450	21.0%	24.3%	96.1%
PB54	Lift 5, N-12875, E-11365	150	1899	1559	1542	21.8%	23.1%	100+%
PB55	Lift 6, N-12812, E-11358	150	1973	1654	1558	19.3%	26.7%	100+%
PB56	Lift 7, N-12776, E-11352	150	1937	1567	1557	23.6%	24.4%	100+%
PB57	Lift 8, N-12724, E-11360	150	1928	1590	1594	21.3%	21.0%	100+%
PB58	Lift 4, N-12951, E-11395	150	1975	1635	1597	20.8%	23.7%	100+%
PB59	Lift 4, N-12920, E-11357	150	1813	1496	1467	21.2%	23.6%	97.2%
PB60	Lift 6, N-12867, E-11362	150	1859	1503	1489	23.7%	24.8%	98.7%
PB61	Lift 7, N-12805, E-11354	150	1935	1575	1559	22.9%	24.1%	100+%
PB62	Lift 8, N-12742, E-11361	150	1835	1490	1478	23.2%	24.2%	97.9%
PB63	Lift 9, N-12680, E-11363	150	1724	1403	1387	22.9%	24.3%	91.9%

Notes: All tests performed on 200 mm thick lift of clay material.
 "PB" represents Perimeter Berm



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Field Density Report
ASTM D6938-17A

Project No. 1000-089-03

Client Waste Connections

Project Cell 16

Material Clay

Location Prairie Green IWMF, RM of Rosser, MB

Source Onsite excavation (Cell 16)

Contractor Edie Construction

Date Tested 28-Apr-21

Maximum Dry Density 1590

Time Tested 9:30

Optimum Moisture % 22.2

Technician AB

Proctor Sample Number L21-124

Required Density % 95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m ³)	Dry Density (kg/m ³)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
PB65	Lift 5, N - 12944, E-11369, EL - 235.287	300	1895	1560	1530	21.5%	23.8%	96.2%
PB66	Lift 6, N - 12944, E-11369, EL - 235.287	150	1953	1585	1579	23.2%	23.7%	99.3%
PB67	Lift 5, N - 12906, E-11361, EL - 235.296	300	1959	1589	1531	23.3%	28.0%	96.3%
PB68	Lift 6, N - 12906, E-11361, EL - 235.296	150	1911	1536	1500	24.4%	27.4%	94.4%
PB69	Lift 7, N - 12863, E-11362, EL - 235.194	300	1998	1634	1612	22.3%	23.9%	100+%
PB70	Lift 8, N - 12863, E-11362, EL - 235.194	150	1958	1593	1582	22.9%	23.8%	99.5%
PB71	Lift 8, N - 12810, E-11361, EL - 234.897	300	2008	1624	1598	23.6%	25.7%	100+%
PB72	Lift 9, N - 12810, E-11361, EL - 234.897	150	1928	1585	1555	21.6%	24.0%	97.8%
PB73	Lift 8, N - 12762, E-11360, EL - 235.036	300	1958	1582	1573	23.8%	24.4%	99.0%
PB74	Lift 9, N - 12762, E-11360, EL - 235.036	150	1903	1570	1550	21.2%	22.8%	97.5%
PB75	Lift 9, N - 12699, E-11360, EL - 235.157	150	1798	1463	1422	22.9%	26.4%	89.4%

Notes: All tests performed on 200 mm thick lift of clay material.
 "PB" represents Perimeter Berm



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Field Density Report
ASTM D6938-17A

Project No. 1000-089-03

Client Waste Connections

Project Cell 16

Location Prairie Green IWMF, RM of Rosser, MB

Contractor Edie Construction

Material Clay

Source Onsite excavation (Cell 16)

Date Tested 29-Apr-21

Time Tested 9:30

Technician AB

Maximum Dry Density 1590

Optimum Moisture % 22.2

Proctor Sample Number L21-124

Required Density % 95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m ³)	Dry Density (kg/m ³)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
PB76	Retest of PB68	300	1968	1632	1628	20.6%	20.9%	100+%
PB77	Lift 7, N - 12903, E - 11360, EL - 235.300	150	1992	1652	1625	20.6%	22.6%	100+%
PB78	Retest of PB75	150	1937	1615	1608	19.9%	20.5%	100+%

Notes: All tests performed on 200 mm thick lift of clay material.
 "PB" represents Perimeter Berm



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Field Density Report
ASTM D6938-17A

Project No.	1000-089-03	Material	Clay
Client	Waste Connections	Source	Onsite excavation
Project	Cell 16	Maximum Dry Density	1416
Location	Prairie Green IWMF, RM of Rosser, MB	Optimum Moisture %	30.7
Contractor	Edie Construction	Proctor Sample Number	L21-127
Date Tested	30-Apr-21	Required Density %	95
Time Tested	14:30		
Technician	AB		

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m ³)	Dry Density (kg/m ³)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
PB79	Lift 1, N - 12929, E-11397 EL - 230.911	150	1837	1418	1408	29.5%	30.4%	99.5%
PB80	Lift 1, N - 12899, E-11381, EL - 230.786	150	1775	1345	1322	32.0%	34.3%	93.3%
PB81	Lift 1, N - 12862, E-11380, EL - 230.879	150	1845	1450	1389	27.2%	32.9%	98.1%
PB82	Lift 1, N - 12828 E-11379, EL - 230.930	150	1857	1440	1373	29.0%	35.2%	97.0%
PB83	Lift 1, N - 12800, E-11382, EL - 230.980	150	1899	1500	1464	26.6%	29.7%	100+%
PB84	Retest of PB80	150	1833	1400	1382	30.9%	32.6%	97.6%

Notes: All tests performed on 200 mm thick lift of clay material.
 "PB" represents Perimeter Berm



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Field Density Report
ASTM D6938-17A

Project No. 1000-089-03

Client Waste Connections

Project Cell 16

Location Prairie Green IWMF, RM of Rosser, MB

Contractor Edie Construction

Material Clay

Source Onsite excavation (Cell 16)

Date Tested 03-May-21

Time Tested 14:00

Technician AB

Maximum Dry Density 1416

Optimum Moisture % 30.7

Proctor Sample Number L21-127

Required Density % 95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m ³)	Dry Density (kg/m ³)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
PB85	Lift 2, N - 12931, E - 11394, EL - 231.107	150	1833	1412	1378	29.8%	33.0%	97.3%
PB86	Lift 2, N - 12902, E - 11380, EL - 231.010	150	1810	1408	1379	28.6%	31.2%	97.4%
PB87	Lift 2, N - 12870, E - 11379, EL - 231.150	150	1856	1449	1431	28.1%	29.7%	100+%
PB88	Lift 2, N - 12835, E - 11377, EL - 231.192	150	1812	1403	1371	29.2%	32.2%	96.8%
PB89	Lift 2, N - 12796, E - 11379, EL - 231.202	150	1839	1419	1385	29.6%	32.7%	97.8%

Notes: All tests performed on 200 mm thick lift of clay material.
 "PB" represents Perimeter Berm



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Field Density Report
ASTM D6938-17A

Project No. 1000-089-03
Client Waste Connections of Canada Inc.
Project Cell 16 Construction **Material** Clay
Location Prairie Green IWMF, RM of Rosser, MB **Source** Onsite excavation (Cell 16)
Contractor Edie Construction
Date Tested 04-May-21 **Maximum Dry Density** 1416
Time Tested 13:30 **Optimum Moisture %** 30.7
Technician AB **Proctor Sample Number** L21-127
Required Density % 95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m ³)	Dry Density (kg/m ³)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
PB90	Lift 3, N: 12934, E: 11395, EL: 231.416	300	2022	1687	1692	19.9%	19.5%	100+%
PB91	Lift 3, N: 12908, E: 11378, EL: 231.373	300	1821	1450	1440	25.6%	26.4%	100+%
PB92	Lift 3, N: 12874, E: 11377, EL: 231.359	150	1837	1410	1427	30.3%	28.7%	100+%
PB93	Lift 3, N: 12841, E: 11377, EL: 231.389	150	1828	1430	1414	27.8%	29.3%	99.9%
PB94	Lift 3, N: 12809, E: 11378, EL: 231.401	150	1687	1246	1235	35.4%	36.6%	87.2%
PB95	Lift 3, N: 12788, E: 11378, EL: 231.382	150	1745	1272	1258	37.2%	38.8%	88.8%
PB96	Lift 7, N: 12940, E: 11364, EL: 235.398	300	1953	1599	1581	22.1%	23.5%	99.5%
PB97	Lift 8, N: 12940, E: 11364, EL: 235.398	150	2018	1689	1669	19.5%	20.9%	100+%
PB98	Lift 7, N: 12943, E: 11383, EL: 235.418	300	1943	1601	1582	21.4%	22.8%	99.5%
PB99	Lift 8, N: 12943, E: 11383, EL: 235.418	150	2031	1714	1674	18.5%	21.3%	100+%
PB100	Lift 8, N: 12899, E: 11361, EL: 235.364	150	2024	1665	1651	21.6%	22.6%	100+%

Notes: All tests performed on 200 mm thick lift of clay material.
 "PB" represents Perimeter Berm



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Field Density Report
ASTM D6938-17A

Project No. 1000-089-03
Client Waste Connections of Canada Inc.
Project Cell 16 Construction **Material** Clay
Location Prairie Green IWMF, RM of Rosser, MB **Source** Onsite excavation (Cell 16)
Contractor Edie Construction
Date Tested 06-May-21 **Maximum Dry Density** 1416
Time Tested 14:00 **Optimum Moisture %** 30.7
Technician AB **Proctor Sample Number** L21-127
Required Density % 95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m ³)	Dry Density (kg/m ³)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
PB105	Retest of PB94	150	1862	1402	1382	32.8%	34.7%	97.6%
PB106	Retest of PB95	150	1822	1376	1366	32.4%	33.4%	96.5%
PB107	Lift 10, N: 12673, E: 11360, EL: 235.430	150	1917	1527	1470	25.5%	30.4%	100+%
PB108	Lift 10, N: 12737, E: 11361, EL: 235.231	150	1834	1426	1394	28.6%	31.6%	98.4%
PB109	Lift 10, N:12808, E: 11360, EL: 235.064	150	1846	1416	1375	30.4%	34.3%	97.1%
PB110	Lift 10, N: 12863, E: 11361, EL: 235.439	150	1803	1400	1426	28.8%	26.5%	100+%
PB111	Lift 10, N: 12907, E: 11361, EL: 235.742	150	1934	1505	1481	28.5%	30.5%	100+%
PB112	Lift 10, N: 12942, E: 11368, EL: 235.684	150	1863	1464	1444	27.3%	29.0%	100+%
PB113	Lift 1, N: 12947, E: 11418, EL: 235.304	150	1726	1261	1249	36.9%	38.2%	88.2%
PB114	Lift 4, N: 12931, E: 11408, EL: 231.308	150	1764	1326	1323	33.0%	33.3%	93.4%
PB116	Lift 4, N: 12931, E: 11382, EL: 231.861	150	1829	1396	1378	31.0%	32.8%	97.3%
PB117	Lift 4, N: 12903, E: 11378, EL: 231.650	150	1802	1381	1370	30.5%	31.5%	96.8%
PB118	Lift 4, N: 12866, E: 11377, EL: 231.721	150	1865	1482	1460	25.8%	27.7%	100+%
PB119	Lift 4, N: 12829, E: 11378, EL: 231.646	150	1864	1434	1413	30.0%	31.9%	99.8%
PB120	Lift 4, N: 12789, E: 11379, EL: 231.554	150	1834	1410	1381	30.1%	32.8%	97.6%

Notes: All tests performed on 200 mm thick lift of clay material.
 "PB" represents Perimeter Berm



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Field Density Report
ASTM D6938-17A

Project No. 1000-089-03
Client Waste Connections of Canada Inc.
Project Cell 16 Construction **Material** Clay
Location Prairie Green IWMF, RM of Rosser, MB **Source** Onsite excavation (Cell 16)
Contractor Edie Construction
Date Tested 07-May-21 **Maximum Dry Density** 1416
Time Tested 9:00 am, 2:00pm, 5:30 pm **Optimum Moisture %** 30.7
Technician AB **Proctor Sample Number** L21-127
Required Density % 95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m ³)	Dry Density (kg/m ³)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
PB121	Retest of PB114	150	1793	1419	1393	26.4%	28.7%	98.4%
PB122	Lift 1, N: 12949, E: 11409, EL: 234.434	150	1840	1454	1403	26.5%	31.2%	99.1%
PB123	Retest of PB113	150	1832	1404	1366	30.5%	34.1%	96.5%
PB124	Lift 5, N: 12820, E: 11378, EL: 231.865	150	1784	1311	1273	36.1%	40.2%	89.9%
PB125	Lift 5, N: 12878, E: 11376, EL: 231.965	150	1763	1292	1271	36.5%	38.7%	89.8%
PB126	Lift 5, N: 12912, E: 11376, EL: 231.830	150	1951	1494	1456	30.6%	34.0%	100+%
PB127	Retest of PB125	150	1800	1392	1364	29.3%	31.9%	96.3%
PB128	Lift 5, N: 12847, E: 11377, EL: 231.891	150	1842	1410	1385	30.6%	33.0%	97.8%
PB129	Lift 5, N: 12935, E: 11383, EL: 231.820	150	1903	1504	1456	26.5%	30.7%	100+%
PB130	Lift 5, N: 12936, E: 11410, EL: 231.631	150	1833	1426	1408	28.5%	30.2%	99.4%
PB131	Retest of PB124	150	1780	1319	1299	35.0%	37.1%	91.7%

Notes: All tests performed on 200 mm thick lift of clay material.
 "PB" represents Perimeter Berm



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Field Density Report
ASTM D6938-17A

Project No. 1000-089-03
Client Waste Connections of Canada Inc.
Project Cell 16 Construction
Location Prairie Green IWMF, RM of Rosser, MB
Contractor Edie Construction

Material Clay
Source Stockpile West of Cell 15

Date Tested 10-May-21
Time Tested 8:00, 11:45, 14:30
Technician AB

Maximum Dry Density 1373
Optimum Moisture % 31.9
Proctor Sample Number L20-268
Required Density % 95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m ³)	Dry Density (kg/m ³)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
PB132	Lift 5, N: 12798, E: 11378, EL: 231.730	150	1760	1430	1433	23.1%	22.8%	100+%
PB133	Retest of PB131	150	1830	1460	1467	25.3%	24.8%	100+%
PB134	Lift 6, N: 12933, E: 11405, EL: 231.769	150	1823	1451	1431	25.6%	27.4%	100+%
PB135	Lift 6, N: 12928, E: 11380, EL: 232.228	150	1798	1407	1366	27.8%	31.6%	99.5%
PB136	Lift 6, N: 12899, E: 11377, EL: 232.128	150	1878	1514	1466	24.0%	28.1%	100+%
PB137	Lift 6, N: 12867, E: 11377, EL: 232.243	150	1869	1476	1462	26.6%	27.8%	100+%
PB138	Lift 6, N: 12838, E: 11377, EL: 232.238	150	1852	1434	1368	29.1%	35.4%	99.6%
PB139	Lift 6, N: 12789, E: 11377, EL: 232.242	150	1726	1371	1341	25.9%	28.7%	97.7%
PB140	Lift 2, N: 12947, E: 11409, EL: 234.871	150	1849	1464	1441	26.3%	28.3%	100+%
PB141	Lift 2, N: 12947, E: 11429, EL: 234.597	150	1895	1541	1499	23.0%	26.4%	100+%

Notes: All tests performed on 200 mm thick lift of clay material.
 "PB" represents Perimeter Berm



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Field Density Report
ASTM D6938-17A

Project No. 1000-089-03

Client Waste Connections of Canada Inc.

Project Cell 16 Construction

Material Clay

Location Prairie Green IWMF, RM of Rosser, MB

Source Stockpile West of Cell 15

Contractor Edie Construction

Date Tested 11-May-21

Maximum Dry Density 1373

Time Tested 10:00, 13:30

Optimum Moisture % 31.9

Technician AB

Proctor Sample Number L20-268

Required Density % 95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m ³)	Dry Density (kg/m ³)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
PB142	Lift 3, N: 12947, E: 11429, EL: 234.925	150	1760	1430	1370	23.1%	28.4%	99.8%
PB143	Lift 3, N: 12947, E: 11415, EL: 235.019	150	1830	1460	1471	25.3%	24.4%	100+%
PB144	Lift 3, N: 12949, E: 11395, EL: 235.284	150	1823	1451	1444	25.6%	26.2%	100+%
PB145	Lift 7, N: 12934, E: 11409, EL: 232.123	150	1798	1407	1378	27.8%	30.5%	100+%
PB146	Lift 7, N: 12930, E: 11379, EL: 232.624	150	1878	1514	1496	24.0%	25.6%	100+%
PB147	Lift 7, N: 12908, E: 11375, EL: 232.659	150	1869	1476	1423	26.6%	31.3%	100+%

Notes: All tests performed on 200 mm thick lift of clay material.
 "PB" represents Perimeter Berm



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Field Density Report
ASTM D6938-17A

Project No. 1000-089-03
Client Waste Connections of Canada Inc.
Project Cell 16 Construction **Material** Clay
Location Prairie Green IWMF, RM of Rosser, MB **Source** Onsite excavation (Cell 16)
Contractor Edie Construction
Date Tested 12-May-21 **Maximum Dry Density** 1416
Time Tested 7:30, 10:30, 14:00 **Optimum Moisture %** 30.7
Technician AB **Proctor Sample Number** L21-127
Required Density % 95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m ³)	Dry Density (kg/m ³)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
PB148	Lift 7, N: 12875, E:11376, EL: 232.484	150	1827	1469	1428	24.4%	27.9%	100+%
PB149	Lift 7, N: 12850, E: 11375, EL: 232.508	150	1792	1378	1388	30.0%	29.1%	98.0%
PB150	Lift 7, N: 12821, E: 11376, EL: 232.435	150	1816	1448	1433	25.4%	26.8%	100+%
PB151	Lift 7, N: 12803, E: 11376, EL: 232.456	150	1838	1452	1431	26.6%	28.5%	100+%
PB152	Lift 7, N: 12780, E: 11376, EL: 232.561	150	1821	1400	1375	30.1%	32.4%	97.1%
PB153	Lift 8, N: 12936, E: 11409, EL: 232.442	150	1846	1452	1384	27.1%	33.4%	97.7%
PB154	Lift 8, N: 12929, E: 11377, EL: 232.974	150	1796	1386	1363	29.6%	31.7%	96.3%
PB155	Lift 11, N: 12738, E: 11361, EL: 235.532	150	1790	1359	1319	31.7%	35.7%	93.2%
PB156	Lift 11, N: 12822, E: 11362, EL: 235.635	150	1773	1338	1302	32.5%	36.2%	92.0%
PB157	Lift 8, N: 12902, E: 11375, EL: 232.917	150	1814	1487	1450	22.0%	25.1%	100+%
PB158	Lift 8, N: 12874, E: 11375, EL 232.793	150	1838	1447	1457	27.0%	26.2%	100+%
PB159	Lift 8, N: 12838, E: 11375, EL: 232.814	150	1809	1451	1399	24.7%	29.3%	98.8%
PB160	Lift 8, N: 12812, E: 11374, EL: 232.845	150	1863	1425	1388	30.7%	34.2%	98.0%
PB161	Lift 8, N: 12786, E: 11375, EL: 232.727	150	1799	1402	1389	28.3%	29.5%	98.1%
PB162	Lift 11, N: 12667, E: 11362, EL: 235.585	150	1853	1501	1458	23.5%	27.1%	100+%

Notes: All tests performed on 200 mm thick lift of clay material.
 "PB" represents Perimeter Berm



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Field Density Report
ASTM D6938-17A

Project No. 1000-089-03
Client Waste Connections of Canada Inc.
Project Cell 16 Construction
Location Prairie Green IWMF, RM of Rosser, MB
Contractor Edie Construction

Material Clay
Source Onsite excavation (Cell 16)

Date Tested 12-May-21
Time Tested 7:30, 10:30, 14:00
Technician AB

Maximum Dry Density 1416
Optimum Moisture % 30.7
Proctor Sample Number L21-127
Required Density % 95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m ³)	Dry Density (kg/m ³)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
PB163	Lift 11, N: 12702, E: 11362, EL: 235.584	150	1823	1413	1391	29.0%	31.1%	98.2%
PB164	Retest of PB155	150	1863	1449	1405	28.6%	32.6%	99.2%
PB165	Lift 11, N: 12778, E: 11361, EL: 235.608	150	1868	1432	1392	30.4%	34.2%	98.3%
PB166	Retest of PB156	150	1863	1439	1447	29.5%	28.7%	100+%
PB167	Lift 11, N: 12873, E: 11363, EL: 235.772	150	1820	1465	1443	24.2%	26.1%	100+%
PB168	Lift 11, N: 12922, E: 11363, EL: 235.893	150	1791	1465	1446	22.3%	23.9%	100+%
PB169	Lift 11, N: 12942, E: 11368, EL: 235.867	150	1798	1401	1366	28.3%	31.6%	96.5%
PB170	Lift 4, N: 12947, E: 11389, EL: 235.664	150	1826	1468	1449	24.4%	26.0%	100+%
PB171	Lift 4, N: 12947, E: 11433, EL 235.215	150	1846	1423	1389	29.7%	32.9%	98.1%

Notes: All tests performed on 200 mm thick lift of clay material.
 "PB" represents Perimeter Berm



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Field Density Report
ASTM D6938-17A

Project No. 1000-089-03

Client Waste Connections of Canada Inc.

Project Cell 16 Construction

Material Clay

Location Prairie Green IWMF, RM of Rosser, MB

Source Onsite excavation (Cell 16)

Contractor Edie Construction

Date Tested 13-May-21

Maximum Dry Density 1416

Time Tested 1:30

Optimum Moisture % 30.7

Technician AB

Proctor Sample Number L21-127

Required Density % 95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m ³)	Dry Density (kg/m ³)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
PB172	Lift 1, N: 12651, E: 11378, EL: 232.070	150	1935	1552	1507	24.7%	28.4%	100+%
PB173	Lift 1, N: 12677, E: 11377, EL: 232.057	150	1873	1466	1439	27.8%	30.2%	100+%
PB174	Lift 1, N: 12707, E: 11377, EL: 232.124	150	1834	1433	1410	28.0%	30.0%	99.6%
PB175	Lift 4, N: 12946, E: 11384, EL: 235.654	150	1841	1447	1400	27.2%	31.5%	98.9%
PB176	Lift 4, N: 12947, E: 11407, EL: 235.425	150	1863	1449	1400	28.6%	33.1%	98.9%
PB177	Lift 4, N: 12947, E: 11425, EL: 235.350	150	1821	1419	1402	28.3%	29.9%	99.0%

Notes: All tests performed on 200 mm thick lift of clay material.
 "PB" represents Perimeter Berm



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Field Density Report
ASTM D6938-17A

Project No. 1000-089-03

Client Waste Connections of Canada Inc.

Project Cell 16 Construction

Material Clay

Location Prairie Green IWMF, RM of Rosser, MB

Source Onsite excavation (Cell 16)

Contractor Edie Construction

Date Tested 17-May-21

Maximum Dry Density 1416

Time Tested 9:00 AM, 1:00 PM, 4:00 PM

Optimum Moisture % 30.7

Technician AB

Proctor Sample Number L21-127

Required Density % 95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m ³)	Dry Density (kg/m ³)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
PB178	Lift 12, N: 12855, E: 11363, EL: 235.960	150	1891	1588	1554	19.1%	21.7%	97.7%
PB179	Lift 12, N: 12896, E: 11364, EL: 235.973	150	1904	1569	1560	21.4%	22.0%	98.1%
PB180	Lift 12, N: 12940, E: 11368, EL: 236.024	150	1843	1460	1425	26.2%	29.3%	100+%
PB181	Lift 5, N: 12946, E: 11388, EL: 235.824	200	1839	1423	1390	29.2%	32.3%	98.2%
PB182	Lift 5, N: 12947, E: 11404, EL: 235.729	200	1827	1435	1412	27.3%	29.3%	99.7%
PB183	Lift 5, N: 12948, E: 11423, EL: 235.698	200	1803	1410	1379	27.9%	30.7%	97.4%
PB184	Lift 6, N: 12946, E: 11389, EL: 235.996	150	1921	1539	1517	24.8%	26.6%	100+%
PB185	Lift 6, N: 12947, E: 11404, EL: 235.949	150	1893	1508	1512	25.5%	25.2%	100+%
PB186	Lift 6, N: 12948, E: 11422, EL: 235.943	150	1846	1435	1424	28.6%	29.6%	100+%
PB187	Lift 2, N: 12652, E: 11378, EL: 232.320	150	1818	1477	1440	23.1%	26.2%	100+%
PB188	Lift 2, N: 12670, E: 11377, EL: 232.284	150	1816	1483	1472	22.5%	23.4%	100+%
PB189	Lift 2, N: 12697, E: 11376, EL: 232.330	150	1847	1492	1482	23.8%	24.6%	100+%

Notes: All tests performed on 200 mm thick lift of clay material.
 "PB" represents Perimeter Berm



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Field Density Report
ASTM D6938-17A

Project No. 1000-089-03
Client Waste Connections of Canada Inc.
Project Cell 16 Construction **Material** Clay
Location Prairie Green IWMF, RM of Rosser, MB **Source** Stockpile south of Cell 16
Contractor Edie Construction
Date Tested 18-May-21 **Maximum Dry Density** 1400
Time Tested 1:30 **Optimum Moisture %** 27.7
Technician AB **Proctor Sample Number** L21-156
Required Density % 95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m ³)	Dry Density (kg/m ³)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
PB190	Lift 12, N: 12659, E: 11362, EL: 235.780	150	1839	1473	1430	24.8%	28.6%	100+%
PB191	Lift 12, N: 12682, E: 11362, EL: 235.695	150	1846	1452	1406	27.1%	31.3%	100+%
PB192	Lift 12, N: 12730, E: 11363, EL: 236.019	150	1892	1501	1479	26.0%	27.9%	100+%
PB193	Lift 12, N: 12774, E: 11363, EL: 235.956	150	1821	1423	1393	28.0%	30.7%	99.5%
PB194	Lift 12, N: 12814, E: 11364, EL: 235.996	150	1826	1418	1404	28.8%	30.1%	100+%

Notes: All tests performed on 200 mm thick lift of clay material.
 "PB" represents Perimeter Berm

Appendix A-3

Laboratory Hydraulic Conductivity Test Results

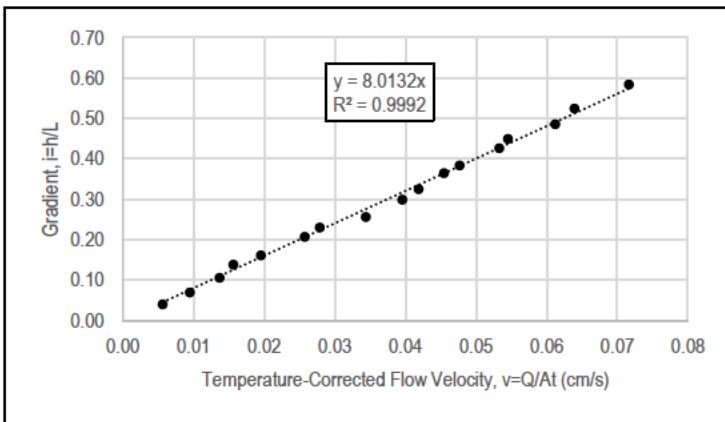
- **Sand Drainage Layer**
-

Project No.	1000-089-03
Client	Waste Connections
Project	Cell 16
Technician	IA

Sample #	DS02
Source	Glacial Aggregates
Material	Sand
Sample Date	July 13, 2021
Test Date	July 20, 2021

Grain Size	
USCS Classification	SW
Maximum Particle Size (mm)	12.5
Oversize Material not used	0%

Density		
Material Properties		
SPMDD (kg/m ³)	1887	
Optimum Moisture Content	9.0%	
Minimum Relative Dry Density (kg/m ³)	1706	
Maximum Relative Dry Density (kg/m ³)	N/A	
Specific Gravity	2.70	
Test Sample		
	Initial	Final
Density (kg/m ³)	1707	2010
Moisture Content	0.0%	11.9%
Dry Density (kg/m ³)	1706	1796
% SPMDD	90%	95%
% Relative Density	N/A	N/A
Void Ratio	0.58	0.50
Porosity	0.37	0.33



Notes
 Linear laminar flow region used to determine average temperature corrected permeability. All tests (1 to 17) interpreted as laminar flow.

Average Temperature Corrected Permeability, k_{20}	1.24E-03 m/s	1.24E-01 cm/s
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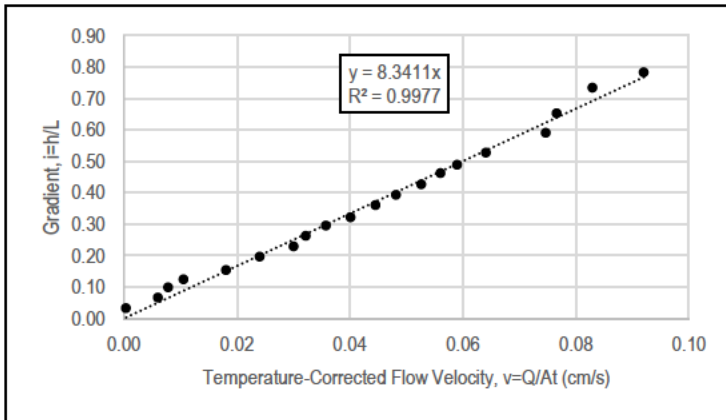
Test No.	Manometers (cm)		Head, h (cm)	Q (cm ³)	t (s)	Q/At (cm/s)	h/L	Temp (°C)	k_{20} (cm/s)
	H ₁	H ₂							
1	76.6	76.0	0.6	211.2	206.5	0.01	0.04	19.6	1.43E-01
2	76.1	75.0	1.1	223.1	129.5	0.01	0.07	19.6	1.38E-01
3	74.9	73.3	1.6	213.5	86	0.01	0.10	19.5	1.31E-01
4	74.8	72.7	2.1	216.6	76.5	0.02	0.14	19.5	1.14E-01
5	74.2	71.7	2.5	218.6	62	0.02	0.16	19.4	1.22E-01
6	71.7	68.5	3.2	213.4	46	0.03	0.21	19.3	1.25E-01
7	70.7	67.2	3.5	200.2	40	0.03	0.23	19.2	1.22E-01
8	68.8	64.9	3.9	221.2	36	0.03	0.26	19.0	1.35E-01
9	66.7	62.2	4.6	208.6	29.5	0.04	0.30	19.0	1.33E-01
10	66.0	61.1	5.0	223.8	30	0.04	0.32	18.9	1.29E-01
11	64.5	58.9	5.6	211.6	26	0.05	0.36	19.1	1.25E-01
12	63.1	57.2	5.8	217.8	25.5	0.05	0.38	19.1	1.24E-01
13	59.1	52.6	6.5	229.0	24	0.05	0.43	19.1	1.25E-01
14	57.9	51.1	6.9	209.9	21.5	0.05	0.45	19.1	1.21E-01
15	55.5	48.1	7.4	225.3	20.5	0.06	0.48	19.2	1.26E-01
16	52.7	44.7	8.0	218.6	19	0.06	0.52	19.3	1.22E-01

Project No.	1000-089-03
Client	Waste Connections
Project	Cell 16
Technician	NM

Sample #	DS03
Source	Glacial Aggregates
Material	Sand
Sample Date	July 14, 2021
Test Date	July 28, 2021

Grain Size	
USCS Classification	SW
Maximum Particle Size (mm)	16
Oversize Material not used	0%

Density		
Material Properties		
SPMDD (kg/m ³)	1932	
Optimum Moisture Content	8.0%	
Minimum Relative Dry Density (kg/m ³)	1789	
Maximum Relative Dry Density (kg/m ³)	N/A	
Specific Gravity	2.70	
Test Sample		
	Initial	Final
Density (kg/m ³)	1771	2010
Moisture Content	0.2%	12.3%
Dry Density (kg/m ³)	1768	1789
% SPMDD	91%	93%
% Relative Density	N/A	N/A
Void Ratio	0.53	0.51
Porosity	0.35	0.34



Notes

Linear laminar flow region used to determine average temperature corrected permeability. All tests (1 to 21) interpreted as laminar flow.

Average Temperature Corrected Permeability, k_{20}	1.22E-03 m/s	1.22E-01 cm/s
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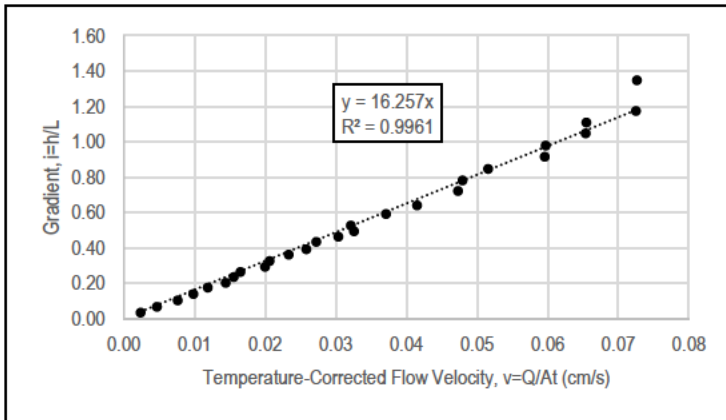
Test No.	Manometers (cm)		Head, h (cm)	Q (cm ³)	t (s)	Q/At (cm/s)	h/L	Temp (°C)	k_{20} (cm/s)
	H ₁	H ₂							
1	77.5	77.0	0.5	103.9	234	0.00	0.03	115.0	1.22E-02
2	77.3	76.3	1.0	99.1	88	0.01	0.07	21.1	9.25E-02
3	77.1	75.6	1.5	149.8	102	0.01	0.10	21.2	8.01E-02
4	76.6	74.7	1.9	202.1	102.5	0.01	0.12	21.2	8.49E-02
5	74.7	72.4	2.4	206.8	61.5	0.02	0.15	21.1	1.17E-01
6	73.0	70.0	3.0	201.2	45.5	0.02	0.20	20.7	1.22E-01
7	71.1	67.6	3.5	207.2	37.5	0.03	0.23	20.6	1.31E-01
8	70.5	66.5	4.0	206.0	35	0.03	0.26	20.4	1.23E-01
9	69.4	64.9	4.5	208.7	32	0.04	0.29	20.3	1.21E-01
10	68.0	63.1	4.9	202.7	28	0.04	0.32	19.9	1.25E-01
11	65.9	60.4	5.5	200.4	25	0.04	0.36	19.8	1.24E-01
12	64.5	58.5	6.0	203.6	23.5	0.05	0.39	19.7	1.23E-01
13	63.0	56.5	6.5	204.1	21.5	0.05	0.43	19.8	1.24E-01
14	60.5	53.5	7.1	202.9	20	0.06	0.46	20.0	1.21E-01
15	59.5	52.0	7.5	202.1	19	0.06	0.49	19.8	1.21E-01
16	56.8	48.7	8.1	201.4	17.5	0.06	0.53	19.7	1.22E-01
17	53.1	44.1	9.0	205.9	15.5	0.07	0.59	19.3	1.27E-01

18	50.2	40.2	10.0	204.8	15	0.08	0.65	19.4	1.17E-01
19	45.6	34.4	11.2	207.3	14	0.08	0.73	19.4	1.13E-01
20	41.4	29.5	12.0	207.1	12.5	0.09	0.78	19.8	1.18E-01

Project No.	1000-089-03
Client	Waste Connections
Project	Cell 16
Technician	NM

Sample #	DS04
Source	Glacial Aggregates
Material	Sand
Sample Date	July 15, 2021
Test Date	July 21, 2021

Grain Size	
USCS Classification	SW
Maximum Particle Size (mm)	12.5
Oversize Material not used	0%



Density		
Material Properties		
SPMDD (kg/m^3)	1920	
Optimum Moisture Content	9.8%	
Minimum Relative Dry Density (kg/m^3)	1835	
Maximum Relative Dry Density (kg/m^3)	N/A	
Specific Gravity	2.70	
Test Sample		
	Initial	Final
Density (kg/m^3)	1769	2053
Moisture Content	0.3%	10.3%
Dry Density (kg/m^3)	1764	1862
% SPMDD	92%	97%
% Relative Density	N/A	N/A
Void Ratio	0.53	0.45
Porosity	0.35	0.31

Notes

Linear laminar flow region used to determine average temperature corrected permeability. All tests (1 to 27) interpreted as laminar flow.

Average Temperature Corrected Permeability, k_{20}	6.24E-04 m/s	6.24E-02 cm/s
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Test No.	Manometers (cm)		Head, h (cm)	Q (cm^3)	t (s)	Q/At (cm/s)	h/L	Temp ($^{\circ}C$)	k_{20} (cm/s)
	H ₁	H ₂							
1	71.0	70.5	0.5	124.1	297	0.00	0.03	18.7	7.22E-02
2	70.5	69.5	1.0	123.0	149.5	0.00	0.07	18.5	7.14E-02
3	70.0	68.5	1.6	122.4	90.5	0.01	0.10	18.8	7.51E-02
4	69.5	67.4	2.1	121.7	70	0.01	0.14	18.7	7.16E-02
5	69.1	66.5	2.6	204.8	97	0.01	0.17	18.8	6.86E-02
6	68.8	65.7	3.1	203.3	80	0.01	0.20	18.5	7.23E-02
7	68.4	64.9	3.6	200.6	73	0.02	0.23	18.7	6.68E-02
8	68.0	64.0	4.0	202.7	70	0.02	0.26	18.4	6.31E-02
9	72.1	67.7	4.4	204.3	58	0.02	0.29	18.6	6.85E-02
10	71.6	66.6	5.0	203.3	55.5	0.02	0.32	18.9	6.36E-02
11	70.8	65.3	5.5	202.3	48.5	0.02	0.36	19.1	6.48E-02
12	70.1	64.1	6.0	205.2	44.5	0.03	0.39	19.1	6.63E-02
13	69.2	62.6	6.6	201.8	41.5	0.03	0.43	19.1	6.31E-02
14	68.4	61.3	7.1	201.0	37.5	0.03	0.46	18.7	6.58E-02
15	68.0	60.5	7.5	207.8	36	0.03	0.49	18.8	6.64E-02
16	67.0	59.0	8.0	205.3	36	0.03	0.52	18.9	6.13E-02
17	65.2	56.2	9.0	201.6	30.5	0.04	0.59	19.0	6.29E-02

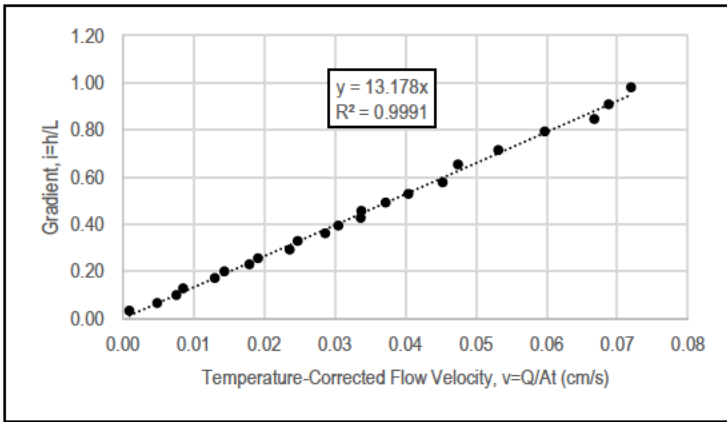
18	63.3	53.5	9.8	207.0	28	0.04	0.64	19.0	6.50E-02
19	61.3	50.3	11.0	202.2	24	0.05	0.72	19.0	6.57E-02
20	59.6	47.7	11.9	205.1	24	0.05	0.78	19.1	6.15E-02
21	57.2	44.3	12.9	207.7	22.5	0.05	0.85	19.2	6.10E-02
22	54.2	40.2	14.0	201.7	19	0.06	0.91	19.0	6.52E-02
23	49.8	34.9	14.9	207.1	19.5	0.06	0.98	19.0	6.12E-02
24	47.7	31.7	16.0	204.3	17.5	0.07	1.05	19.1	6.26E-02
25	47.0	30.1	16.9	205.0	17.5	0.07	1.11	19.2	5.91E-02
26	44.8	26.9	17.9	207.1	16	0.07	1.17	19.1	6.18E-02
27	43.2	22.6	20.6	205.4	16	0.07	1.35	18.7	5.40E-02

Project No.	1000-089-03
Client	Waste Connections
Project	Cell 16
Technician	NM

Sample #	DS05
Source	Glacial Aggregates
Material	Sand
Sample Date	July 16, 2021
Test Date	July 16, 2021

Grain Size	
USCS Classification	SW
Maximum Particle Size (mm)	16
Oversize Material not used	0%

Density		
Material Properties		
SPMDD (kg/m ³)	1966	
Optimum Moisture Content	9.4%	
Minimum Relative Dry Density (kg/m ³)	1766	
Maximum Relative Dry Density (kg/m ³)	N/A	
Specific Gravity	2.68	
Test Sample		
	Initial	Final
Density (kg/m ³)	1757	2024
Moisture Content	0.2%	9.9%
Dry Density (kg/m ³)	1754	1842
% SPMDD	89%	94%
% Relative Density	N/A	N/A
Void Ratio	0.53	0.46
Porosity	0.35	0.31



Notes
 Linear laminar flow region used to determine average temperature corrected permeability. All tests (1 to 27) interpreted as laminar flow.

Average Temperature Corrected Permeability, k_{20}	7.62E-04 m/s	7.62E-02 cm/s
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Test No.	Manometers (cm)		Head, h (cm)	Q (cm ³)	t (s)	Q/At (cm/s)	h/L	Temp (°C)	k_{20} (cm/s)
	H ₁	H ₂							
1	78.0	77.5	0.5	98.3	583	0.00	0.03	19.4	2.86E-02
2	77.5	76.5	1.0	118.8	134.5	0.00	0.07	19.7	7.43E-02
3	76.9	75.4	1.5	123.3	89	0.01	0.10	20.0	7.71E-02
4	76.6	74.6	2.0	202.5	129.5	0.01	0.13	20.0	6.70E-02
5	75.9	73.3	2.6	200.8	84.5	0.01	0.17	19.8	7.66E-02
6	75.2	72.2	3.0	203.0	77.5	0.01	0.20	19.8	7.20E-02
7	74.5	71.0	3.5	200.1	61	0.02	0.23	20.0	7.83E-02
8	74.0	70.1	3.9	203.5	58	0.02	0.26	20.1	7.49E-02
9	72.9	68.5	4.5	200.5	46.5	0.02	0.29	19.9	8.10E-02
10	72.0	67.0	5.0	199.4	44	0.02	0.33	20.0	7.57E-02
11	71.0	65.5	5.5	199.3	38	0.03	0.36	20.0	7.95E-02
12	70.1	64.1	6.0	201.0	36	0.03	0.39	20.0	7.76E-02
13	69.0	62.5	6.5	203.7	33	0.03	0.43	20.1	7.91E-02
14	68.0	61.1	7.0	198.8	32	0.03	0.46	20.2	7.42E-02
15	66.6	59.1	7.5	202.4	29.5	0.04	0.49	20.3	7.57E-02
16	65.0	56.9	8.1	202.0	27.5	0.04	0.53	19.7	7.66E-02
17	63.5	54.7	8.8	201.1	24.5	0.05	0.58	19.6	7.85E-02

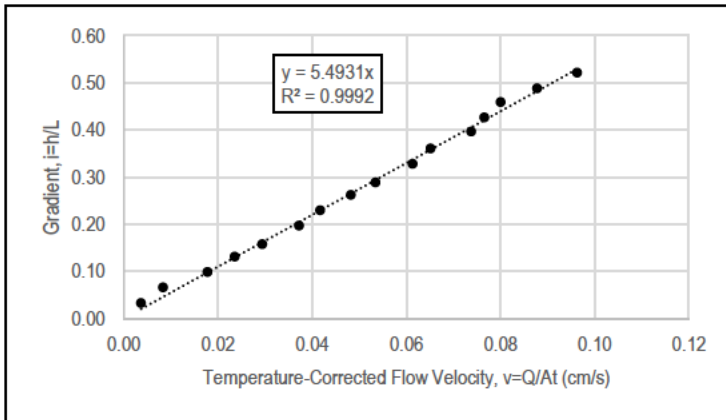
18	60.7	50.7	10.0	200.9	23.5	0.05	0.65	19.4	7.28E-02
19	58.2	47.3	10.9	202.4	21	0.05	0.71	19.6	7.44E-02
20	54.4	42.3	12.1	205.7	19	0.06	0.79	19.6	7.53E-02
21	52.1	39.2	12.9	205.2	17	0.07	0.85	19.5	7.90E-02
22	48.8	34.9	13.9	206.0	16.5	0.07	0.91	19.7	7.58E-02
23	45.3	30.4	15.0	202.7	15.5	0.07	0.98	19.7	7.35E-02

Project No.	1000-089-03
Client	Waste Connections
Project	Cell 16
Technician	NM

Sample #	DS06
Source	Glacial Aggregates
Material	Sand
Sample Date	July 19, 2021
Test Date	August 3, 2021

Grain Size	
USCS Classification	SW
Maximum Particle Size (mm)	16
Oversize Material not used	0%

Density	
Material Properties	
SPMDD (kg/m ³)	1920
Optimum Moisture Content	9.8%
Minimum Relative Dry Density (kg/m ³)	1708
Maximum Relative Dry Density (kg/m ³)	N/A
Specific Gravity	2.68



Test Sample		
	Initial	Final
Density (kg/m ³)	1723	1959
Moisture Content	0.9%	10.8%
Dry Density (kg/m ³)	1708	1768
% SPMDD	89%	92%
% Relative Density	N/A	N/A
Void Ratio	0.57	0.52
Porosity	0.36	0.34

Notes
 Linear laminar flow region used to determine average temperature corrected permeability. All tests (1 to 15) interpreted as laminar flow.

Average Temperature Corrected Permeability, k_{20}	1.83E-03 m/s	1.83E-01 cm/s
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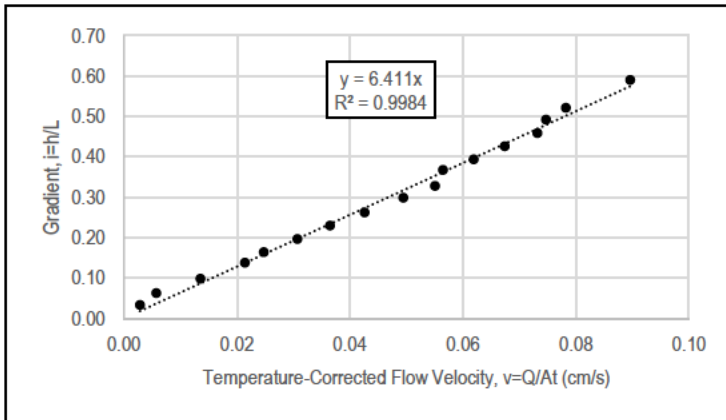
Test No.	Manometers (cm)		Head, h (cm)	Q (cm ³)	t (s)	Q/At (cm/s)	h/L	Temp (°C)	k_{20} (cm/s)
	H ₁	H ₂							
1	77.5	77.0	0.5	123.8	182	0.00	0.03	20.5	1.12E-01
2	76.4	75.4	1.0	122.6	79.5	0.01	0.07	20.4	1.27E-01
3	74.1	72.6	1.5	204.2	62	0.02	0.10	20.5	1.81E-01
4	72.5	70.5	2.0	203.2	46.5	0.02	0.13	20.5	1.80E-01
5	70.8	68.4	2.4	202.0	37.5	0.03	0.16	20.0	1.87E-01
6	68.0	65.0	3.0	202.3	29.5	0.04	0.20	20.3	1.90E-01
7	66.8	63.3	3.5	202.7	26.5	0.04	0.23	20.1	1.82E-01
8	63.7	59.7	4.0	199.8	22.5	0.05	0.26	20.3	1.84E-01
9	61.9	57.5	4.4	201.7	20.5	0.05	0.29	20.3	1.85E-01
10	58.0	53.0	5.0	204.1	18	0.06	0.33	20.4	1.87E-01
11	56.0	50.5	5.5	204.2	17	0.07	0.36	20.3	1.81E-01
12	51.1	45.0	6.1	203.6	15	0.07	0.40	20.2	1.86E-01
13	49.5	43.0	6.5	203.2	14.5	0.08	0.43	20.0	1.80E-01
14	46.5	39.5	7.0	205.6	14	0.08	0.46	20.1	1.75E-01
15	42.6	35.2	7.5	204.8	13	0.09	0.49	19.2	1.80E-01
16	41.2	33.2	8.0	206.2	12	0.10	0.52	19.0	1.85E-01

Project No.	1000-089-03
Client	Waste Connections
Project	Cell 16
Technician	NM

Sample #	DS07
Source	Glacial Aggregates
Material	Sand
Sample Date	July 19, 2021
Test Date	August 3, 2021

Grain Size	
USCS Classification	SW
Maximum Particle Size (mm)	16
Oversize Material not used	0%

Density		
Material Properties		
SPMDD (kg/m ³)	1892	
Optimum Moisture Content	9.3%	
Minimum Relative Dry Density (kg/m ³)	1714	
Maximum Relative Dry Density (kg/m ³)	N/A	
Specific Gravity	2.68	
Test Sample		
	Initial	Final
Density (kg/m ³)	1730	1968
Moisture Content	0.9%	10.8%
Dry Density (kg/m ³)	1714	1776
% SPMDD	91%	94%
% Relative Density	N/A	N/A
Void Ratio	0.56	0.51
Porosity	0.36	0.34



Notes
 Linear laminar flow region used to determine average temperature corrected permeability. All tests (1 to 15) interpreted as laminar flow.

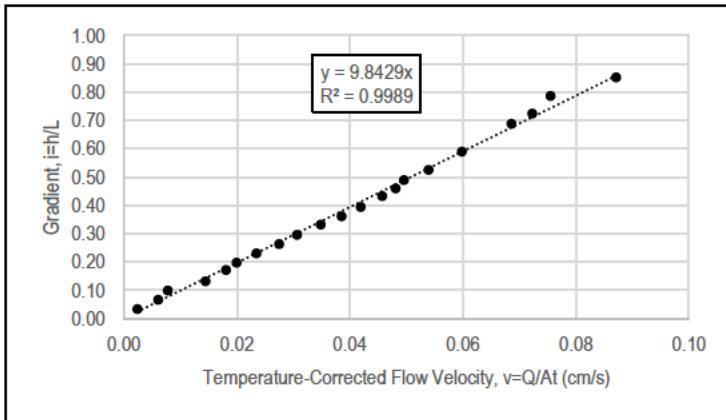
Average Temperature Corrected Permeability, k_{20}	1.57E-03 m/s	1.57E-01 cm/s
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Test No.	Manometers (cm)		Head, h (cm)	Q (cm ³)	t (s)	Q/At (cm/s)	h/L	Temp (°C)	k_{20} (cm/s)
	H ₁	H ₂							
1	78.0	77.5	0.5	122.1	237.5	0.00	0.03	19.3	8.72E-02
2	77.5	76.6	1.0	118.1	112.5	0.01	0.06	20.0	9.21E-02
3	76.0	74.5	1.5	203.6	81	0.01	0.10	20.5	1.38E-01
4	74.0	71.9	2.1	199.4	50	0.02	0.14	20.6	1.56E-01
5	73.0	70.5	2.5	200.5	43.5	0.02	0.16	20.7	1.51E-01
6	71.1	68.1	3.0	203.7	35.5	0.03	0.20	20.8	1.56E-01
7	69.3	65.8	3.5	200.8	29.5	0.04	0.23	20.8	1.59E-01
8	67.1	63.1	4.0	204.1	26	0.04	0.26	20.3	1.63E-01
9	64.8	60.3	4.6	203.1	22.5	0.05	0.30	19.9	1.66E-01
10	62.5	57.5	5.0	201.2	20	0.06	0.33	19.9	1.68E-01
11	60.4	54.8	5.6	201.9	19.5	0.06	0.37	20.1	1.54E-01
12	58.6	52.6	6.0	204.5	18	0.06	0.39	20.1	1.58E-01
13	55.5	49.0	6.5	204.3	16.5	0.07	0.43	20.2	1.58E-01
14	53.1	46.1	7.0	202.0	15	0.07	0.46	20.2	1.60E-01
15	50.5	43.0	7.5	203.4	15	0.07	0.49	19.7	1.52E-01
16	48.1	40.1	8.0	202.0	14	0.08	0.52	20.3	1.50E-01
17	40.95	31.95	9	207	12.5	0.09	0.59	20.4	1.52E-01

Project No.	1000-089-03
Client	Waste Connections
Project	Cell 16
Technician	NM

Sample #	DS08
Source	Glacial Aggregates
Material	Sand
Sample Date	July 27, 2021
Test Date	August 9, 2021

Grain Size	
USCS Classification	SW
Maximum Particle Size (mm)	16
Oversize Material not used	0%



Density		
Material Properties		
SPMDD (kg/m^3)	1902	
Optimum Moisture Content	10.0%	
Minimum Relative Dry Density (kg/m^3)	1753	
Maximum Relative Dry Density (kg/m^3)	N/A	
Specific Gravity	2.68	
Test Sample		
	Initial	Final
Density (kg/m^3)	1757	2001
Moisture Content	0.2%	11.3%
Dry Density (kg/m^3)	1753	1798
% SPMDD	92%	95%
% Relative Density	N/A	N/A
Void Ratio	0.53	0.49
Porosity	0.35	0.33

Notes

Linear laminar flow region used to determine average temperature corrected permeability. All tests (1 to 16) interpreted as laminar flow.

Average Temperature Corrected Permeability, k_{20}	1.00E-03 m/s	1.00E-01 cm/s
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Test No.	Manometers (cm)		Head, h (cm)	Q (cm^3)	t (s)	Q/At (cm/s)	h/L	Temp ($^{\circ}C$)	k_{20} (cm/s)
	H ₁	H ₂							
1	77.8	77.3	0.5	126.1	283.5	0.00	0.03	20.5	7.34E-02
2	77.3	76.3	1.0	125.3	111.5	0.01	0.07	20.3	9.31E-02
3	77.0	75.5	1.5	203.8	140.5	0.01	0.10	20.8	7.91E-02
4	75.5	73.5	2.0	199.6	73.5	0.01	0.13	21.1	1.10E-01
5	74.5	71.9	2.6	201.8	59	0.02	0.17	21.3	1.06E-01
6	74.0	71.0	3.0	203.0	53.5	0.02	0.20	21.6	1.02E-01
7	73.0	69.5	3.5	204.1	45.5	0.02	0.23	21.8	1.02E-01
8	71.7	67.7	4.0	201.8	38.5	0.03	0.26	21.7	1.05E-01
9	70.5	66.0	4.5	204.2	35	0.03	0.29	21.6	1.04E-01
10	69.4	64.3	5.0	205.2	31	0.03	0.33	21.5	1.05E-01
11	68.0	62.5	5.5	200.6	27.5	0.04	0.36	21.4	1.07E-01
12	66.5	60.5	6.0	201.9	25.5	0.04	0.39	21.3	1.07E-01
13	65.0	58.4	6.6	203.1	23.5	0.05	0.43	21.3	1.06E-01
14	63.8	56.8	7.0	202.8	22.5	0.05	0.46	21.0	1.05E-01
15	62.8	55.4	7.5	203.5	22	0.05	0.49	20.8	1.02E-01
16	60.5	52.5	8.0	201.4	20	0.05	0.52	20.8	1.03E-01
17	55.7	46.7	9.0	201.8	18	0.06	0.59	21.0	1.02E-01

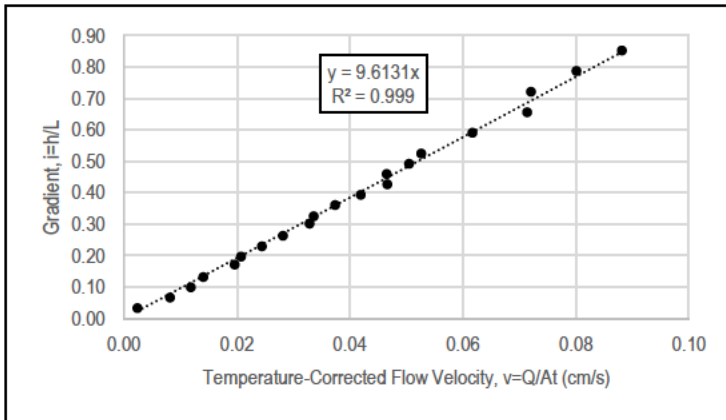
18	54.9	44.4	10.5	200.5	16	0.07	0.69	19.9	9.98E-02
19	50.8	39.8	11.1	203.1	15.5	0.07	0.72	19.6	9.99E-02
20	48.5	36.5	12.0	205.8	15	0.08	0.79	19.7	9.60E-02
21	43.7	30.7	13.0	206.8	13	0.09	0.85	19.9	1.02E-01

Project No.	1000-089-03
Client	Waste Connections
Project	Cell 16
Technician	NM

Sample #	DS09
Source	Glacial Aggregates
Material	Sand
Sample Date	August 12, 2021
Test Date	August 23, 2021

Grain Size	
USCS Classification	SW
Maximum Particle Size (mm)	9.5
Oversize Material not used	0%

Density	
Material Properties	
SPMDD (kg/m ³)	1831
Optimum Moisture Content	12.9%
Minimum Relative Dry Density (kg/m ³)	1723
Maximum Relative Dry Density (kg/m ³)	N/A
Specific Gravity	2.68



Test Sample		
	Initial	Final
Density (kg/m ³)	1726	1977
Moisture Content	0.2%	12.4%
Dry Density (kg/m ³)	1723	1758
% SPMDD	94%	96%
% Relative Density	N/A	N/A
Void Ratio	0.56	0.52
Porosity	0.36	0.34

Notes

Linear laminar flow region used to determine average temperature corrected permeability. All tests (1 to 21) interpreted as laminar flow.

Average Temperature Corrected Permeability, k_{20}	1.02E-03 m/s	1.02E-01 cm/s
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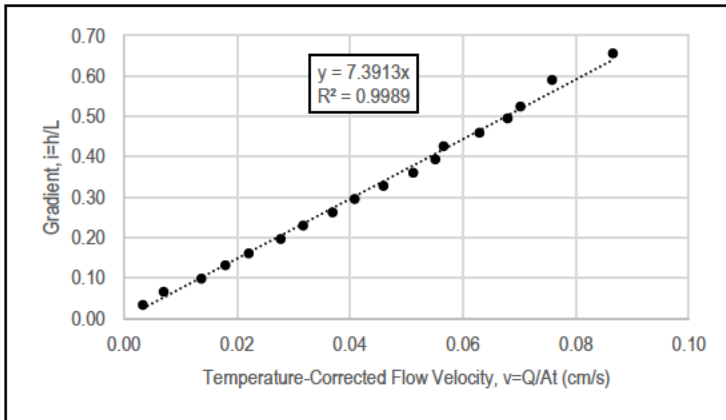
Test No.	Manometers (cm)		Head, h (cm)	Q (cm ³)	t (s)	Q/At (cm/s)	h/L	Temp (°C)	k_{20} (cm/s)
	H ₁	H ₂							
1	76.6	76.1	0.5	130.5	293	0.00	0.03	20.0	7.43E-02
2	75.4	74.4	1.0	208.2	138	0.01	0.07	20.2	1.25E-01
3	74.5	73.0	1.5	206.4	94	0.01	0.10	20.4	1.21E-01
4	74.0	72.0	2.0	208.1	79.5	0.01	0.13	20.6	1.08E-01
5	73.6	71.0	2.6	208.0	57	0.02	0.17	20.6	1.15E-01
6	73.5	70.5	3.0	209.7	54.5	0.02	0.20	20.5	1.06E-01
7	72.3	68.8	3.5	203.5	45	0.02	0.23	20.4	1.07E-01
8	71.1	67.1	4.0	205.7	39.5	0.03	0.26	20.4	1.08E-01
9	69.7	65.1	4.6	209.3	34.5	0.03	0.30	20.3	1.09E-01
10	69.1	64.1	5.0	209.5	34	0.03	0.32	20.1	1.04E-01
11	68.0	62.5	5.5	204.4	30	0.04	0.36	19.8	1.04E-01
12	66.2	60.2	6.0	201.8	26.5	0.04	0.39	19.7	1.07E-01
13	64.5	58.0	6.5	202.9	24	0.05	0.43	19.6	1.10E-01
14	63.5	56.5	7.0	202.4	24	0.05	0.46	19.6	1.01E-01
15	61.6	54.1	7.5	205.1	22.5	0.05	0.49	19.5	1.03E-01
16	61.0	53.0	8.0	203.3	21.5	0.05	0.52	19.3	1.00E-01
17	57.0	48.0	9.0	205.4	18.5	0.06	0.59	19.3	1.05E-01

18	53.5	43.5	10.0	205.3	16	0.07	0.66	19.3	1.09E-01
19	49.1	38.1	11.0	206.4	16	0.07	0.72	19.1	1.00E-01
20	45.8	33.8	12.0	209.0	14.5	0.08	0.79	19.3	1.02E-01
21	39.0	26.0	13.0	206.2	13	0.09	0.85	19.3	1.04E-01

Project No.	1000-089-03
Client	Waste Connections
Project	Cell 16
Technician	NM

Sample #	DS10
Source	Glacial Aggregates
Material	Sand
Sample Date	August 4, 2021
Test Date	August 10, 2021

Grain Size	
USCS Classification	SW
Maximum Particle Size (mm)	16
Oversize Material not used	0%



Density		
Material Properties		
SPMDD (kg/m^3)	1952	
Optimum Moisture Content	9.4%	
Minimum Relative Dry Density (kg/m^3)	1767	
Maximum Relative Dry Density (kg/m^3)	N/A	
Specific Gravity	2.70	
Test Sample		
	Initial	Final
Density (kg/m^3)	1771	1995
Moisture Content	0.3%	10.7%
Dry Density (kg/m^3)	1765	1803
% SPMDD	90%	92%
% Relative Density	N/A	N/A
Void Ratio	0.53	0.50
Porosity	0.35	0.33

Notes

Linear laminar flow region used to determine average temperature corrected permeability. All tests (1 to 21) interpreted as laminar flow.

Average Temperature Corrected Permeability, k_{20}	1.34E-03 m/s	1.34E-01 cm/s
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Test No.	Manometers (cm)		Head, h (cm)	Q (cm^3)	t (s)	Q/At (cm/s)	h/L	Temp ($^{\circ}C$)	k_{20} (cm/s)
	H ₁	H ₂							
1	77.1	76.6	0.5	121.1	194.5	0.00	0.03	20.5	1.03E-01
2	76.5	75.5	1.0	123.3	94	0.01	0.07	20.6	1.08E-01
3	75.1	73.6	1.5	202.6	79.5	0.01	0.10	20.6	1.40E-01
4	74.1	72.1	2.0	203.9	61	0.02	0.13	20.7	1.37E-01
5	73.0	70.6	2.5	201.8	49	0.02	0.16	20.7	1.38E-01
6	71.5	68.5	3.0	201.0	39	0.03	0.20	20.6	1.41E-01
7	70.0	66.5	3.5	199.8	34	0.03	0.23	20.5	1.38E-01
8	68.5	64.5	4.0	201.0	29.5	0.04	0.26	20.3	1.41E-01
9	67.0	62.5	4.5	202.4	27	0.04	0.29	20.1	1.39E-01
10	65.0	60.0	5.0	202.0	24	0.05	0.33	20.0	1.40E-01
11	63.0	57.5	5.5	201.7	21.5	0.05	0.36	20.0	1.42E-01
12	61.6	55.6	6.0	201.9	20	0.06	0.39	20.0	1.40E-01
13	59.0	52.5	6.5	202.1	19.5	0.06	0.43	20.0	1.33E-01
14	57.6	50.6	7.0	201.1	17.5	0.06	0.46	19.9	1.37E-01
15	55.2	47.7	7.6	203.7	16.5	0.07	0.49	19.7	1.37E-01
16	52.9	44.9	8.0	204.0	16	0.07	0.52	19.7	1.34E-01
17	48.3	39.3	9.0	200.7	14.5	0.08	0.59	19.9	1.29E-01

18	43.3	33.3	10.0	204.3	13	0.09	0.66	19.7	1.32E-01
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Appendix A-4

Grain Size Analysis

- Sand Drainage Layer
 - Sub-Liner Sampler Blanket
 - Leachate Collection Stone
-



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Grain Size Analysis (Sieve Method)

ASTM C136-14

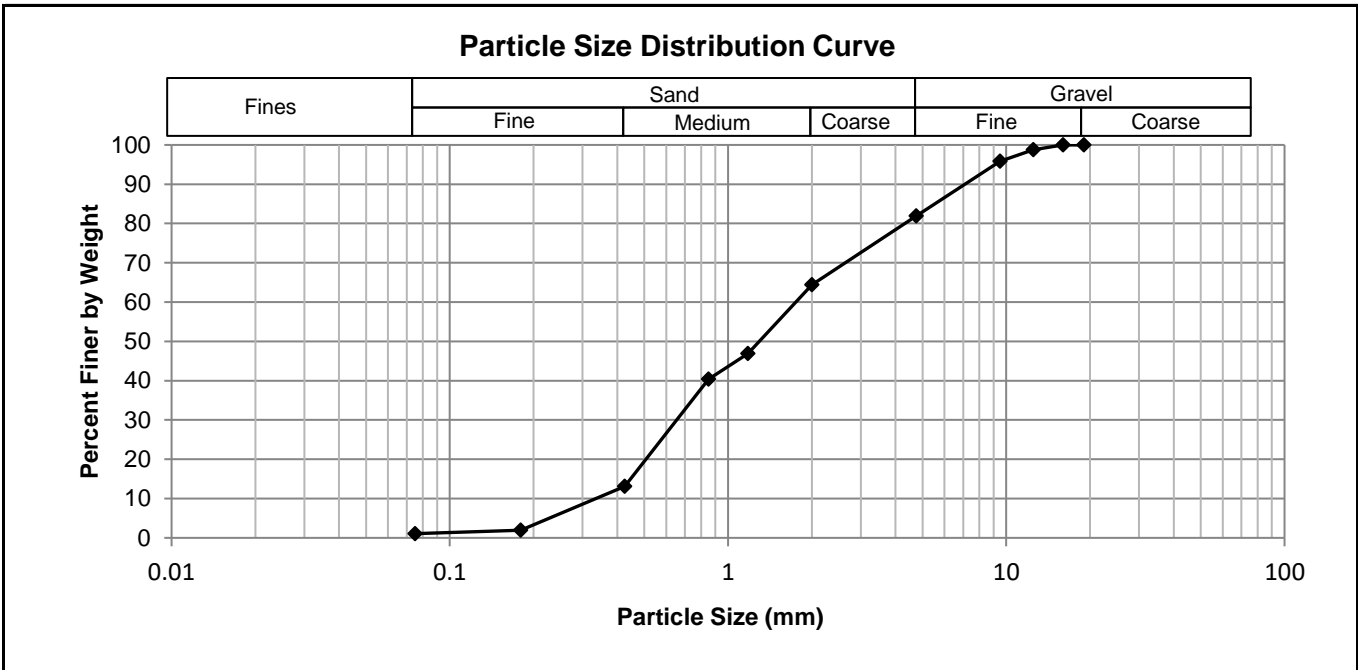
ASTM C117-13

Project No. 1000-089-03
Client Waste Connections
Project Cell 16



Sample # DS01
Source Onsite (Glacial Aggregates)
Soil Desc. Sand
Date Sampled 12-Jul-21
Date Tested 12-Jul-21
Technician IA

Total Weight (kg)	2.04
Cobbles %	0.0
Gravel %	18.1
Sand %	80.9
Fines %	1.1



Sieve Opening (mm)	Percent Passing	Specification (Max)
		Cell 16 Contract Documents Section 13 - 2.1.3
19.0	100	100
16.0	100	
12.5	99	
9.5	96	
4.75	82	
2.000	64	
1.180	47	
1.000	-	60
0.850	40	
0.425	13	
0.180	1.9	
0.075	1.1	10



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Grain Size Analysis (Sieve Method)

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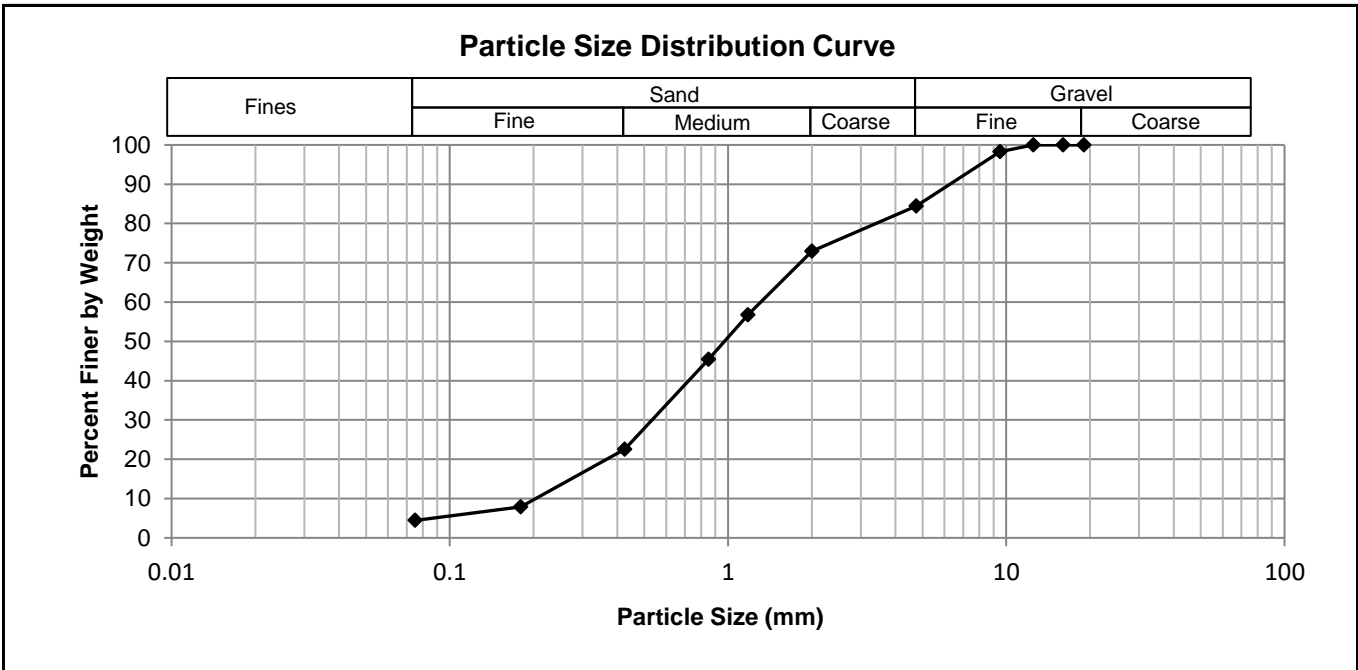
ASTM C117-13

Project No. 1000-089-03
Client Waste Connections
Project Cell 16



Sample # DS02
Source Onsite (Glacial Aggregates)
Soil Desc. Sand
Date Sampled 13-Jul-21
Date Tested 13-Jul-21
Technician IA

Total Weight (kg)	2.65
Cobbles %	0.0
Gravel %	15.6
Sand %	80.0
Fines %	4.4



Sieve Opening (mm)	Percent Passing	Specification (Max)
		Cell 16 Contract Documents
		Section 13 - 2.1.3
19.0	100	100
16.0	100	
12.5	100	
9.5	98	
4.75	84	
2.000	73	
1.180	57	
1.000	-	60
0.850	45	
0.425	23	
0.180	7.9	
0.075	4.4	10



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Grain Size Analysis (Sieve Method)

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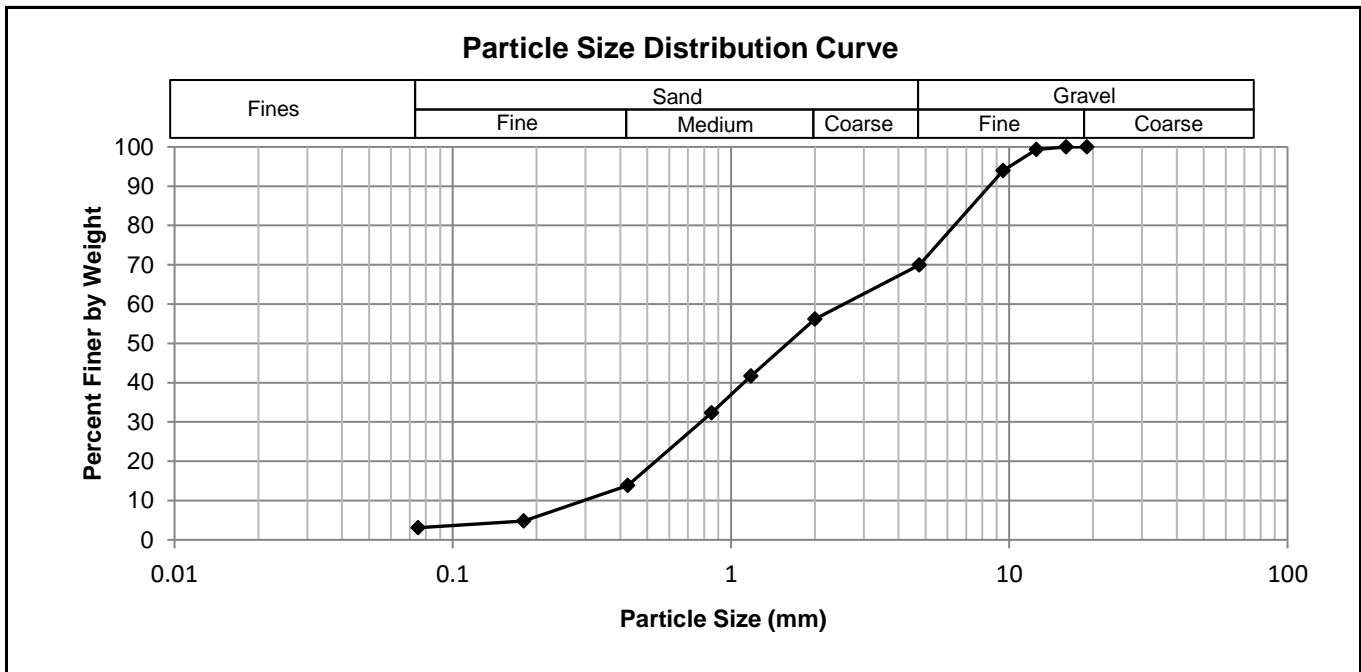
ASTM C117-13

Project No. 1000-089-03
Client Waste Connections
Project Cell 16



Sample # DS03
Source Onsite (Glacial Aggregates)
Soil Desc. Sand
Date Sampled 14-Jul-21
Date Tested 15-Jul-21
Technician NM

Total Weight (kg)	3.11
Cobbles %	0.0
Gravel %	30.1
Sand %	66.8
Fines %	3.1



Sieve Opening (mm)	Percent Passing	Specification (Max)
		Cell 16 Contract Documents
		Section 13 - 2.1.3
19.0	100	100
16.0	100	
12.5	99	
9.5	94	
4.75	70	
2.000	56	
1.180	42	
1.000	-	60
0.850	32	
0.425	14	
0.180	4.8	
0.075	3.1	10



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Grain Size Analysis (Sieve Method)

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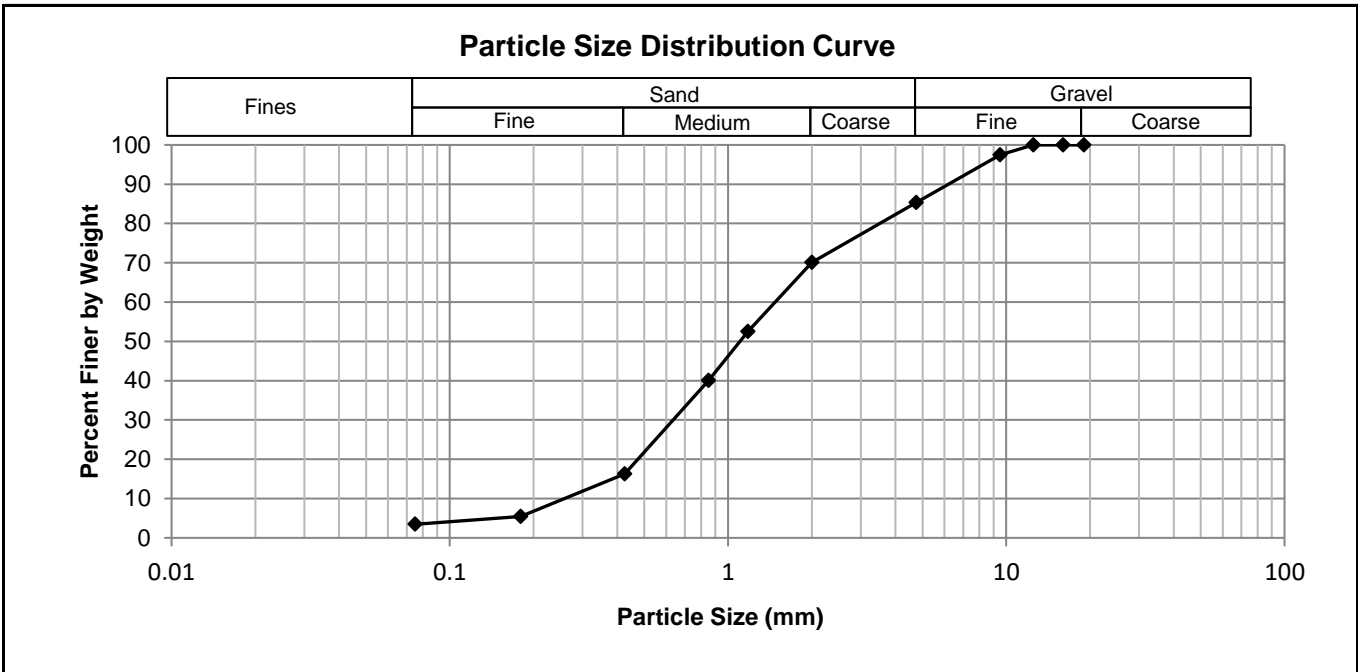
ASTM C117-13

Project No. 1000-089-03
Client Waste Connections
Project Cell 16



Sample # DS04
Source Onsite (Glacial Aggregates)
Soil Desc. Sand
Date Sampled 15-Jul-21
Date Tested 19-Jul-21
Technician ZS

Total Weight (kg)	2.42
Cobbles %	0.0
Gravel %	14.7
Sand %	81.8
Fines %	3.5



Sieve Opening (mm)	Percent Passing	Specification (Max)
		Cell 16 Contract Documents
		Section 13 - 2.1.3
19.0	100	100
16.0	100	
12.5	100	
9.5	97	
4.75	85	
2.000	70	
1.180	53	
1.000	-	60
0.850	40	
0.425	16	
0.180	5.4	
0.075	3.5	10



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Grain Size Analysis (Sieve Method)

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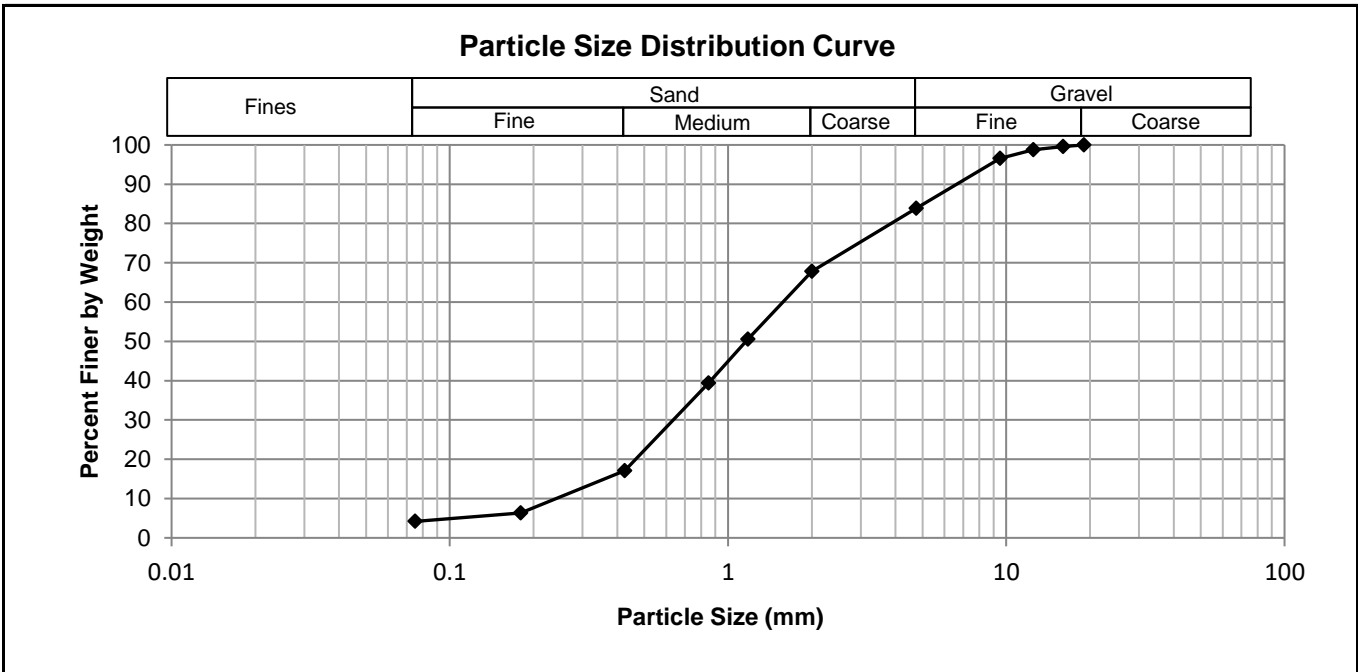
ASTM C117-13

Project No. 1000-089-03
Client Waste Connections
Project Cell 16



Sample # DS05
Source Onsite(Glacial Aggregates)
Soil Desc. Sand
Date Sampled 16-Jul-21
Date Tested 19-Jul-21
Technician ZS

Total Weight (kg)	2.00
Cobbles %	0.0
Gravel %	16.1
Sand %	79.7
Fines %	4.2



Sieve Opening (mm)	Percent Passing	Specification (Max)
		Cell 16 Contract Documents
		Section 13 - 2.1.3
19.0	100	100
16.0	100	
12.5	99	
9.5	97	
4.75	84	
2.000	68	
1.180	51	
1.000	-	60
0.850	39	
0.425	17	
0.180	6.3	
0.075	4.2	10



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Grain Size Analysis (Sieve Method)

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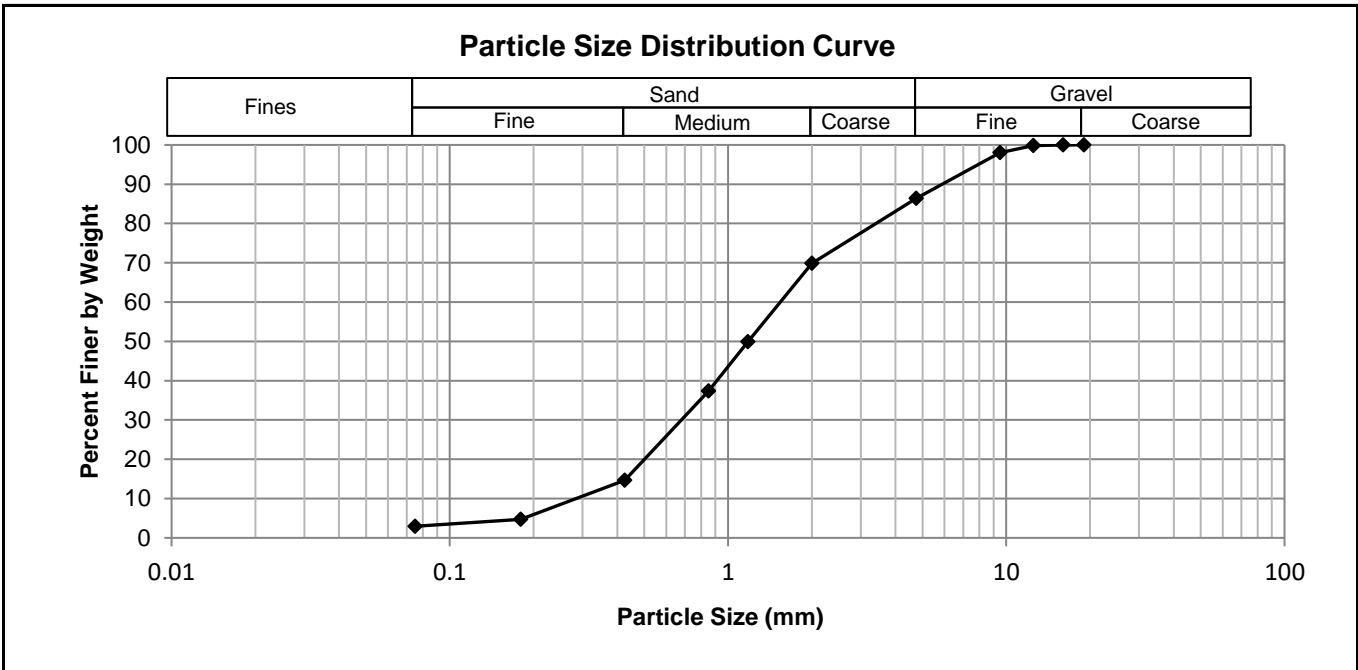
ASTM C117-13

Project No. 1000-089-03
Client Waste Connections
Project Cell 16



Sample # DS06
Source Onsite (Glacial Aggregates)
Soil Desc. Sand
Date Sampled 19-Jul-21
Date Tested 21-Jul-21
Technician JN

Total Weight (kg)	12.90
Cobbles %	0.0
Gravel %	13.6
Sand %	83.5
Fines %	2.9



Sieve Opening (mm)	Percent Passing	Specification (Max)
		Cell 16 Contract Documents
		Section 13 - 2.1.3
19.0	100	100
16.0	100	
12.5	100	
9.5	98	
4.75	86	
2.000	70	
1.180	50	
1.000	-	60
0.850	37	
0.425	15	
0.180	4.7	
0.075	2.9	10



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Grain Size Analysis (Sieve Method)

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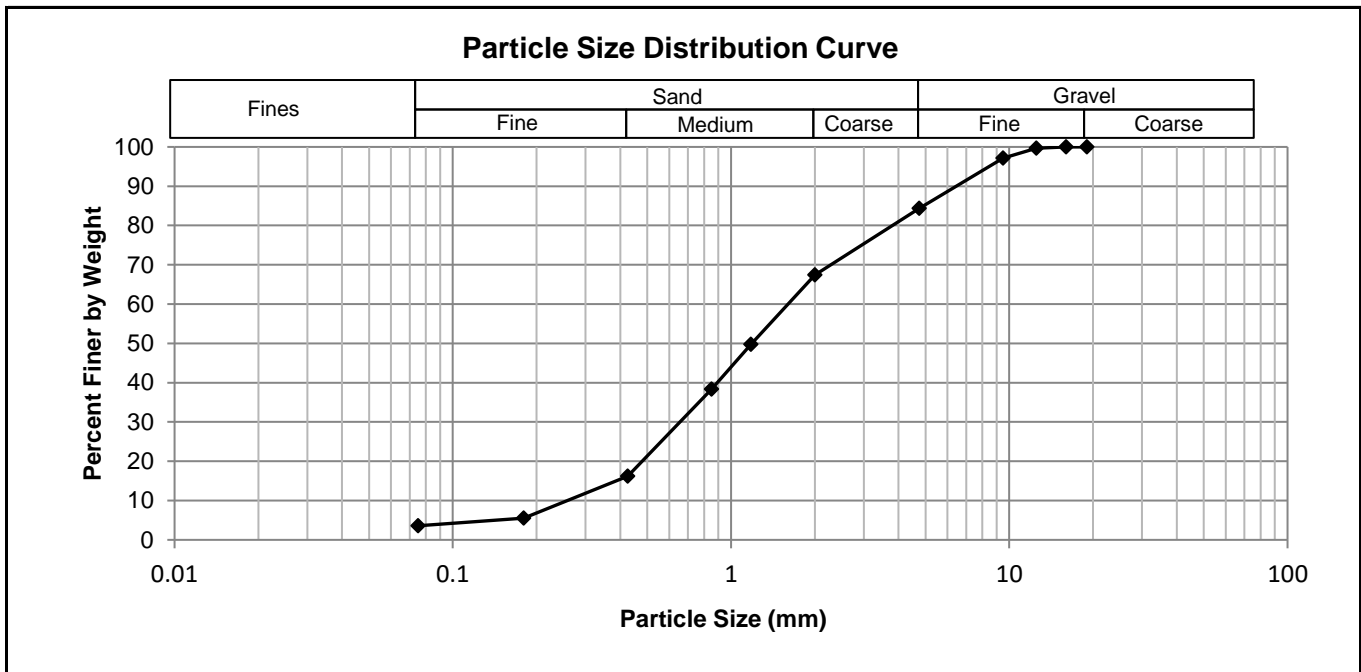
ASTM C117-13

Project No. 1000-089-03
Client Waste Connections
Project Cell 16

Sample # DS07
Source Onsite (Glacial Aggregates)
Soil Desc. Sand
Date Sampled 19-Jul-21
Date Tested 21-Jul-21
Technician JN



Total Weight (kg)	13.80
Cobbles %	0.0
Gravel %	15.6
Sand %	80.8
Fines %	3.6



Sieve Opening (mm)	Percent Passing	Specification (Max)
		Cell 16 Contract Documents
		Section 13 - 2.1.3
19.0	100	100
16.0	100	
12.5	100	
9.5	97	
4.75	84	
2.000	67	
1.180	50	
1.000	-	60
0.850	38	
0.425	16	
0.180	5.5	
0.075	3.6	10



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Grain Size Analysis (Sieve Method)

ASTM C136-14

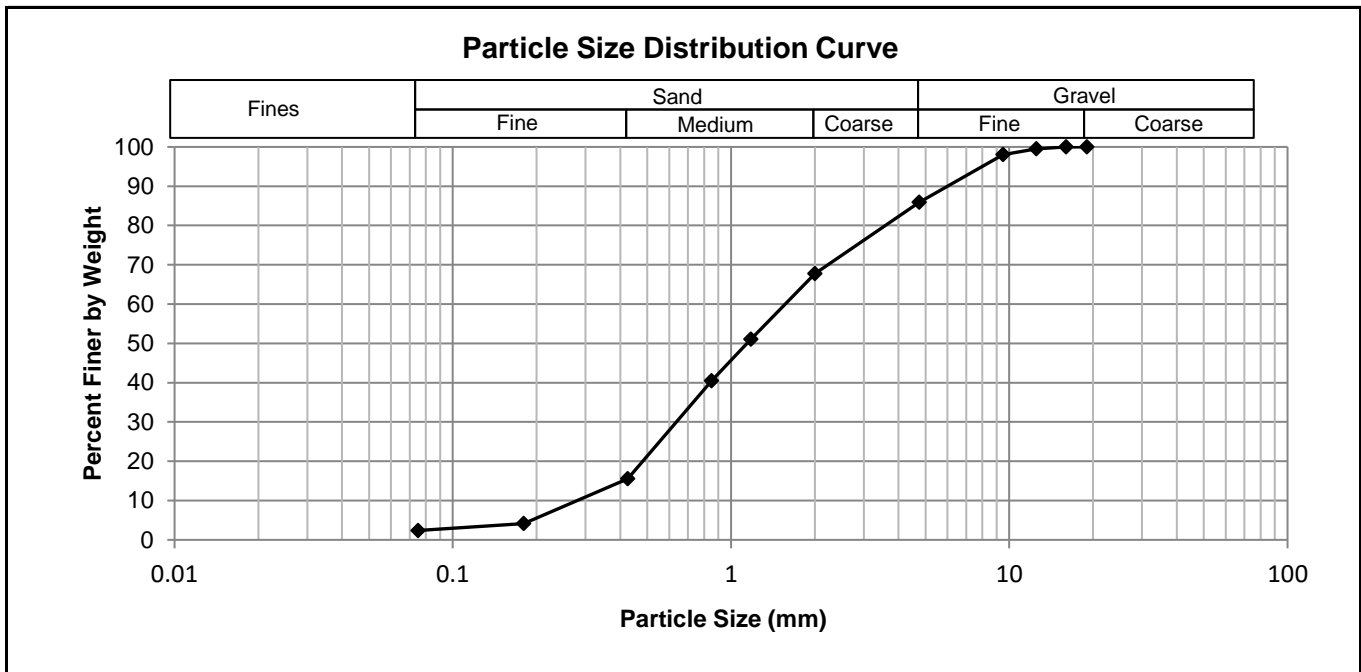
ASTM C117-13

Project No. 1000-089-03
Client Waste Connections
Project Cell 16



Sample # DS08
Source Onsite (Glacial Aggregates)
Soil Desc. Sand
Date Sampled 27-Jul-21
Date Tested 5-Aug-21
Technician ZS

Total Weight (kg)	3.89
Cobbles %	0.0
Gravel %	14.1
Sand %	83.5
Fines %	2.4



Sieve Opening (mm)	Percent Passing	Specification (Max)
		Cell 16 Contract Documents
		Section 13 - 2.1.3
19.0	100	100
16.0	100	
12.5	99	
9.5	98	
4.75	86	
2.000	68	
1.180	51	
1.000	-	60
0.850	40	
0.425	16	
0.180	4.1	
0.075	2.4	10



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Grain Size Analysis (Sieve Method)

ASTM C136-14

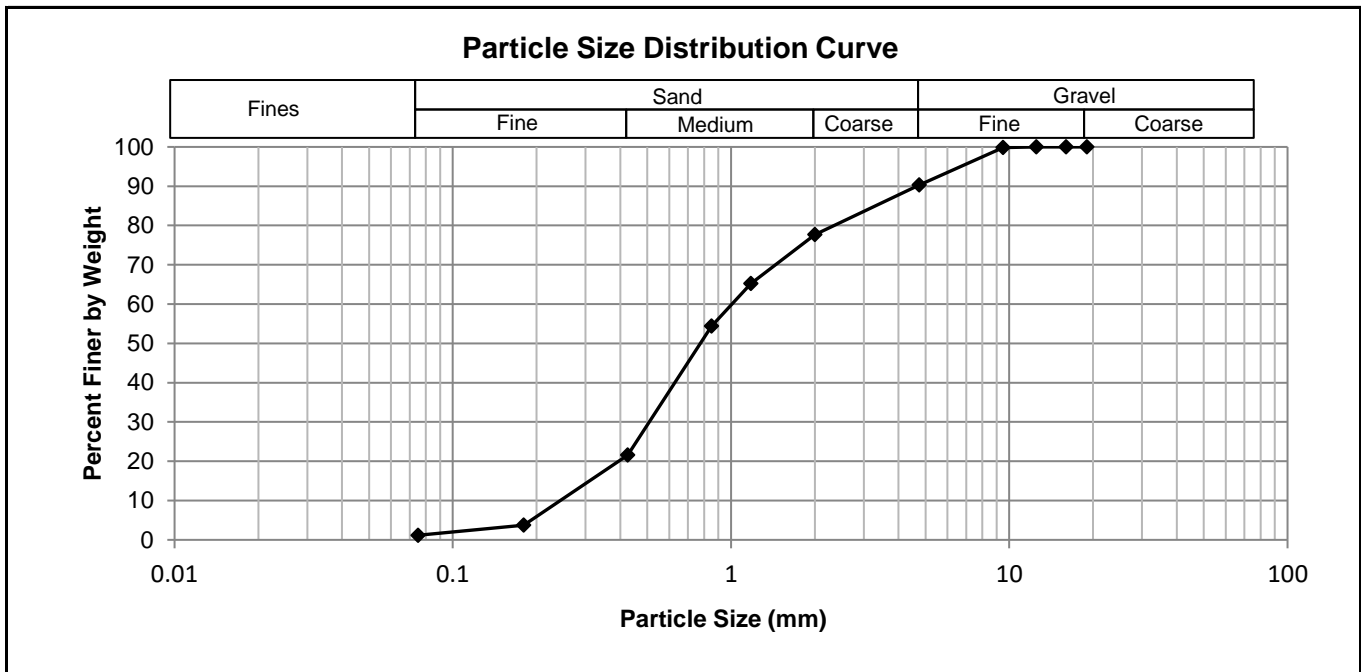
ASTM C117-13

Project No. 1000-089-03
Client Waste Connections
Project Cell 16



Sample # DS9
Source Onsite (Glacial Aggregates)
Soil Desc. Sand
Date Sampled 12-Aug-21
Date Tested 16-Aug-21
Technician MT

Total Weight (kg)	3.23
Cobbles %	0.0
Gravel %	9.7
Sand %	89.2
Fines %	1.2



Sieve Opening (mm)	Percent Passing	Specification (Max)
		Cell 16 Contract Documents
		Section 13 - 2.1.3
19.0	100	100
16.0	100	
12.5	100	
9.5	100	
4.75	90	
2.000	78	
1.180	65	
1.000	-	60
0.850	54	
0.425	22	
0.180	3.7	
0.075	1.2	10



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Grain Size Analysis (Sieve Method)

ASTM C136-14

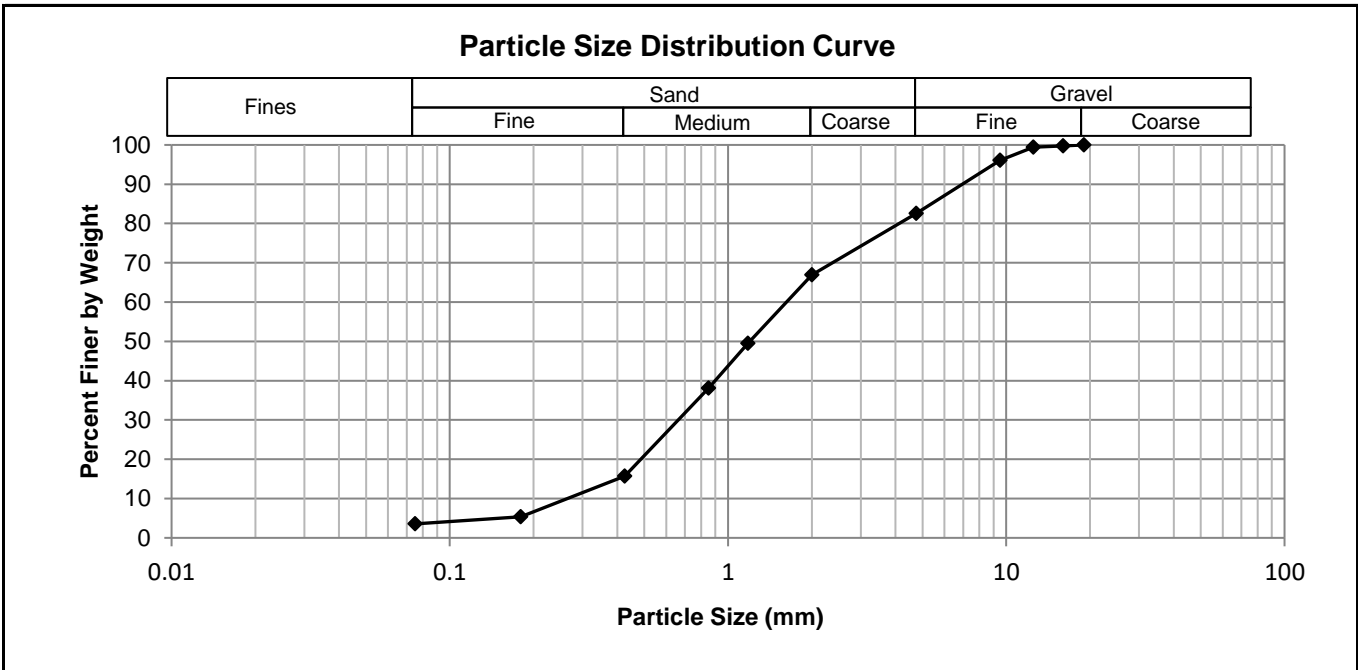
ASTM C117-13

Project No. 1000-089-03
Client Waste Connections
Project Cell 16



Sample # DS10
Source Onsite (Glacial Aggregates)
Soil Desc. Sand
Date Sampled 4-Aug-21
Date Tested 6-Aug-21
Technician ZS

Total Weight (kg)	3.68
Cobbles %	0.0
Gravel %	17.5
Sand %	79.0
Fines %	3.6



Sieve Opening (mm)	Percent Passing	Specification (Max)
		Cell 16 Contract Documents Section 13 - 2.1.3
19.0	100	100
16.0	100	
12.5	99	
9.5	96	
4.75	83	
2.000	67	
1.180	49	
1.000	-	60
0.850	38	
0.425	16	
0.180	5.4	
0.075	3.6	10



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 Tel: 204.975.9433 Fax: 204.975.9435

Grain Size Analysis (Sieve Method)

ASTM C136-14

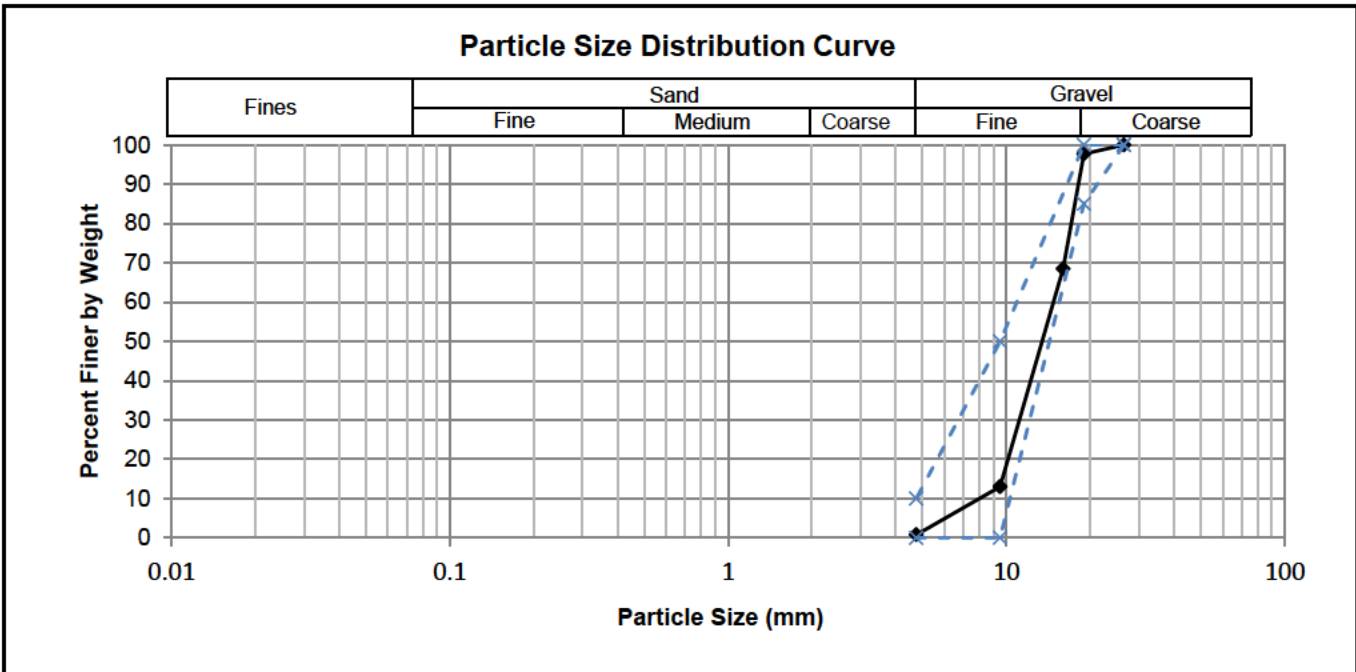
ASTM C117-13

Project No. 1000-089-03
Client Waste Connections
Project Cell 16



Sample # L21-267
Source Glacial Aggregates
Soil Desc. 19 mm clear stone
Date Sampled 29-Jun-21
Date Tested 30-Jun-21
Technician MT

Total Weight (kg)	7.05
Cobbles %	0.0
Gravel %	99.2
Sand %	0.8
Fines %	



Sieve Opening (mm)	Percent Passing	Specification (Min - Max)
37.5		
26.5	100	100-100
19.0	98	85-100
16.0	69	
9.5	13	0-50
4.75	0.8	0-10



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 Winnipeg, MB R3H 0L3
 Tel: 204.975.9433 Fax: 204.975.9435

Grain Size Analysis (Sieve Method)

ASTM C136-14

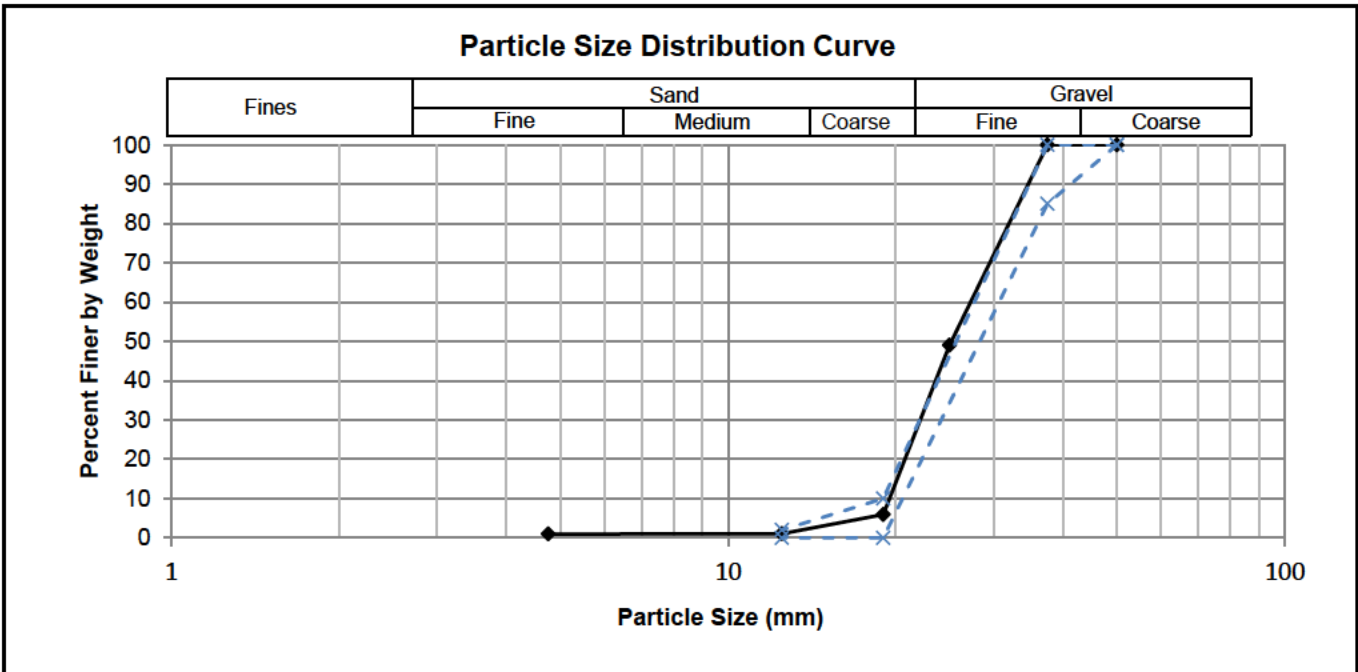
ASTM C117-13

Project No. 1000-089-03
Client Waste Connections
Project Cell 16



Sample # L21-316
Source Glacial Aggregates
Soil Desc. 50 mm clear stone
Date Sampled 22-Jul-21
Date Tested 23-Jul-21
Technician DJ

Total Weight (kg)	20.76
Cobbles %	0.0
Gravel %	99.0
Sand %	1.0
Fines %	0.0



Sieve Opening (mm)	Percent Passing	Specification (Min - Max)
		Waste Connections of Canada Inc.: Granular Leachate Collection Blanket Section 12- 2.2 Material Gradation Requirements
50.0	100	100-100
37.5	100	85-100
25.0	49	
19.0	5.9	0-10
12.5	1.1	0-2
4.75	1.0	



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 Winnipeg, MB R3H 0L3
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Grain Size Analysis (Sieve Method)

ASTM C136-14

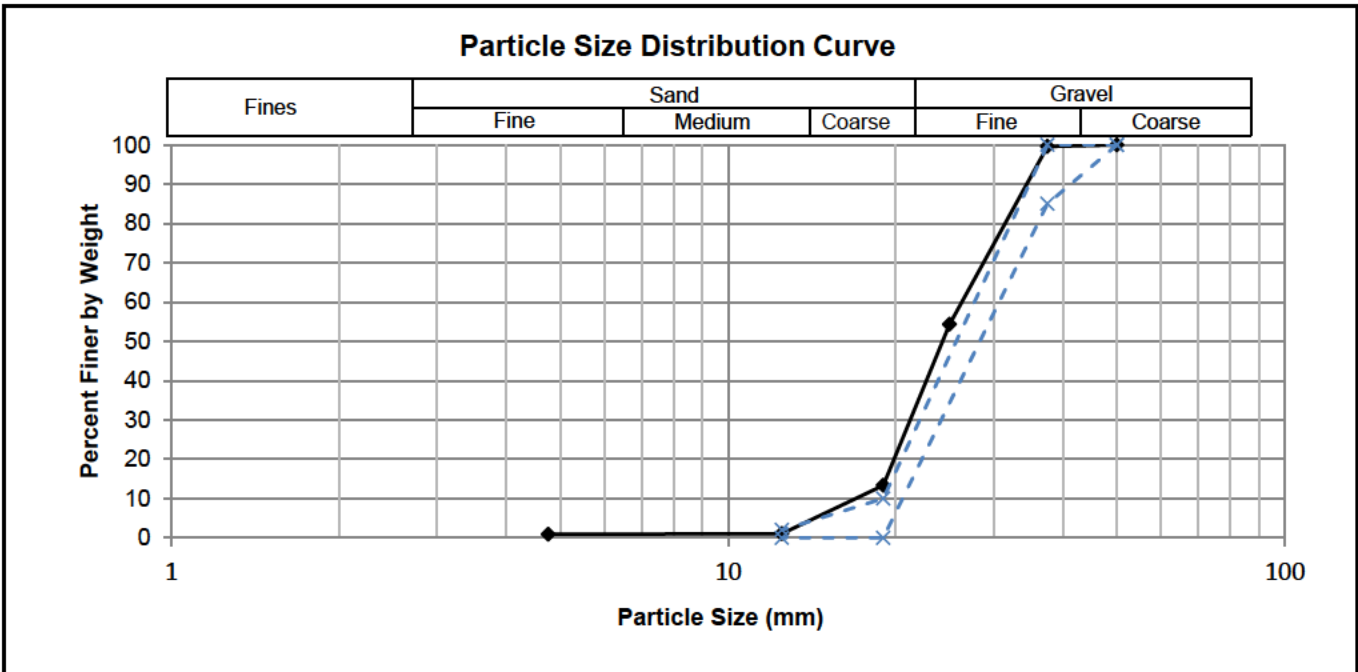
ASTM C117-13

Project No. 1000-089-03
Client Waste Connections
Project Cell 16 Construction



Sample # L21-335-B
Source Glacial Aggregates
Soil Desc. 50 mm clear stone
Date Sampled 30-Jul-21
Date Tested 30-Jul-21
Technician AB

Total Weight (kg)	24.02
Cobbles %	0.0
Gravel %	99.1
Sand %	0.9
Fines %	



Sieve Opening (mm)	Percent Passing	Specification (Min - Max)
		Waste Connections of Canada Inc.: Granular Leachate Collection Blanket Section 12- 2.2 Material Gradation Requirements
50.0	100	100-100
37.5	100	85-100
25.0	54	
19.0	13	0-10
12.5	1.1	0-2
4.75	0.9	

Appendix B-1

Geosynthetic Inventory Control Record



GEOMEMBRANE INVENTORY LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16 Construction
 CONTRACTOR: Titan Environmental
 MATERIAL: GCL

SHEET NUMBER: 1

	ROLL NUMBER	LOT NUMBER	MATERIAL TYPE	DELIVERY DATE	ROLL DIMENSIONS			QC Tested
					Length (m)	Width (m)	Thick (mil)	(y/n)
1	361235	1032421A	GCL	2021-04-16	45.7	4.72	N/A	Y
2	361236	1032421A	GCL	2021-04-16	45.7	4.72	N/A	Y
3	361237	1032421B	GCL	2021-04-16	45.7	4.72	N/A	Y
4	361238	1032421B	GCL	2021-04-16	45.7	4.72	N/A	Y
5	361239	1032421B	GCL	2021-04-16	45.7	4.72	N/A	Y
6	361240	1032421B	GCL	2021-04-16	45.7	4.72	N/A	Y
7	361241	1032421B	GCL	2021-04-16	45.7	4.72	N/A	Y
8	361242	1032421B	GCL	2021-04-16	45.7	4.72	N/A	Y
9	361243	1032421B	GCL	2021-04-16	45.7	4.72	N/A	Y
10	361244	1032421B	GCL	2021-04-16	45.7	4.72	N/A	Y
11	361245	1032421B	GCL	2021-04-16	45.7	4.72	N/A	Y
12	361246	1032421B	GCL	2021-04-16	45.7	4.72	N/A	Y
13	361247	1032421B	GCL	2021-04-16	45.7	4.72	N/A	Y
14	361248	1032421B	GCL	2021-04-16	45.7	4.72	N/A	Y
15	361249	1032421B	GCL	2021-04-16	45.7	4.72	N/A	Y
16	361250	1032421B	GCL	2021-04-16	45.7	4.72	N/A	Y
17								
18								
19								
20								
21								
22								
23								
24								
25								

NOTES :

(1) Geomembrane roll length may vary, roll length often established by roll weight

(2) Material Type Designation

- mem = Geomembrane Sm = Smooth Tx = Textured
- tex = Geotextile
- GCL = Geosynthetic Clay Liner
- gec = Geocomposite
- cus = Geocushion

(3) Thickness dimensions noted are minimum values unless otherwise reported

Trek Form



GEOMEMBRANE INVENTORY LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16 Construction
 CONTRACTOR: Titan Environmental
 MATERIAL: GCL

SHEET NUMBER: 2

	ROLL NUMBER	LOT NUMBER	MATERIAL TYPE	DELIVERY DATE	ROLL DIMENSIONS			QC Tested (y/n)
					Length (m)	Width (m)	Thick (mil)	
1	361122	1032221A	GCL	2021-04-19	45.7	4.72	N/A	Y
2	361123	1032221A	GCL	2021-04-19	45.7	4.72	N/A	Y
3	361124	1032221A	GCL	2021-04-19	45.7	4.72	N/A	Y
4	361125	1032221B	GCL	2021-04-19	45.7	4.72	N/A	Y
5	361126	1032221B	GCL	2021-04-19	45.7	4.72	N/A	Y
6	361127	1032221B	GCL	2021-04-19	45.7	4.72	N/A	Y
7	361128	1032221B	GCL	2021-04-19	45.7	4.72	N/A	Y
8	361129	1032221B	GCL	2021-04-19	45.7	4.72	N/A	Y
9	361130	1032221B	GCL	2021-04-19	45.7	4.72	N/A	Y
10	361131	1032221B	GCL	2021-04-19	45.7	4.72	N/A	Y
11	361132	1032221B	GCL	2021-04-19	45.7	4.72	N/A	Y
12	361133	1032221B	GCL	2021-04-19	45.7	4.72	N/A	Y
13	361134	1032221B	GCL	2021-04-19	45.7	4.72	N/A	Y
14	361135	1032221B	GCL	2021-04-19	45.7	4.72	N/A	Y
15	361136	1032221B	GCL	2021-04-19	45.7	4.72	N/A	Y
16	361137	1032221B	GCL	2021-04-19	45.7	4.72	N/A	Y
17	361138	1032221B	GCL	2021-04-19	45.7	4.72	N/A	Y
18	361139	1032221B	GCL	2021-04-19	45.7	4.72	N/A	Y
19	361140	1032221B	GCL	2021-04-19	45.7	4.72	N/A	Y
20	361141	1032221B	GCL	2021-04-19	45.7	4.72	N/A	Y
21	361142	1032221B	GCL	2021-04-19	45.7	4.72	N/A	Y
22	361143	1032221B	GCL	2021-04-19	45.7	4.72	N/A	Y
23	361144	1032221B	GCL	2021-04-19	45.7	4.72	N/A	Y
24	361145	1032221B	GCL	2021-04-19	45.7	4.72	N/A	Y
25	361146	1032221B	GCL	2021-04-19	45.7	4.72	N/A	Y

NOTES :

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gec = Geocomposite

cus = Geocushion

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Trek Form



GEOMEMBRANE INVENTORY LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16 Construction
 CONTRACTOR: Titan Environmental
 MATERIAL: GCL

SHEET NUMBER: 3

	ROLL NUMBER	LOT NUMBER	MATERIAL TYPE	DELIVERY DATE	ROLL DIMENSIONS			QC Tested
					Length (m)	Width (m)	Thick (mil)	(y/n)
1	361147	1032221B	GCL	2021-04-19	45.7	4.72	N/A	Y
2	361148	1032221B	GCL	2021-04-19	45.7	4.72	N/A	Y
3	361149	1032221B	GCL	2021-04-19	45.7	4.72	N/A	Y
4	361150	1032221C	GCL	2021-04-19	45.7	4.72	N/A	Y
5	361151	1032221C	GCL	2021-04-19	45.7	4.72	N/A	Y
6	361152	1032221C	GCL	2021-04-19	45.7	4.72	N/A	Y
7	361153	1032221C	GCL	2021-04-19	45.7	4.72	N/A	Y
8	361154	1032221C	GCL	2021-04-19	45.7	4.72	N/A	Y
9	361155	1032221C	GCL	2021-04-19	45.7	4.72	N/A	Y
10	361156	1032221C	GCL	2021-04-19	45.7	4.72	N/A	Y
11	361157	1032221C	GCL	2021-04-19	45.7	4.72	N/A	Y
12	361158	1032221C	GCL	2021-04-19	45.7	4.72	N/A	Y
13	361159	1032221C	GCL	2021-04-19	45.7	4.72	N/A	Y
14	361160	1032221C	GCL	2021-04-19	45.7	4.72	N/A	Y
15	361161	1032221C	GCL	2021-04-19	45.7	4.72	N/A	Y
16	361162	1032221C	GCL	2021-04-19	45.7	4.72	N/A	Y
17	361163	1032221C	GCL	2021-04-19	45.7	4.72	N/A	Y
18	361164	1032221C	GCL	2021-04-19	45.7	4.72	N/A	Y
19	361165	1032221C	GCL	2021-04-19	45.7	4.72	N/A	Y
20	361166	1032221C	GCL	2021-04-19	45.7	4.72	N/A	Y
21	361167	1032221C	GCL	2021-04-19	45.7	4.72	N/A	Y
22	361168	1032221C	GCL	2021-04-19	45.7	4.72	N/A	Y
23	361169	1032221C	GCL	2021-04-19	45.7	4.72	N/A	Y
24								
25								

NOTES :

(1) Geomembrane roll length may vary, roll length often established by roll weight

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GCL = Geosynthetic Clay Liner

gec = Geocomposite

cus = Geocushion

(3) Thickness dimensions noted are minimum values unless otherwise reported

Trek Form



GEOMEMBRANE INVENTORY LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16 Construction
 CONTRACTOR: Titan Environmental
 MATERIAL: GCL

SHEET NUMBER: 4

	ROLL NUMBER	LOT NUMBER	MATERIAL TYPE	DELIVERY DATE	ROLL DIMENSIONS			QC Tested (y/n)
					Length (m)	Width (m)	Thick (mil)	
1	361219	1032421A	GCL	2021-04-20	45.7	4.72	N/A	Y
2	361220	1032421A	GCL	2021-04-20	45.7	4.72	N/A	Y
3	361221	1032421A	GCL	2021-04-20	45.7	4.72	N/A	Y
4	361222	1032421A	GCL	2021-04-20	45.7	4.72	N/A	Y
5	361223	1032421A	GCL	2021-04-20	45.7	4.72	N/A	Y
6	361224	1032421A	GCL	2021-04-20	45.7	4.72	N/A	Y
7	361225	1032421A	GCL	2021-04-20	45.7	4.72	N/A	Y
8	361226	1032421A	GCL	2021-04-20	45.7	4.72	N/A	Y
9	361227	1032421A	GCL	2021-04-20	45.7	4.72	N/A	Y
10	361228	1032421A	GCL	2021-04-20	45.7	4.72	N/A	Y
11	361229	1032421A	GCL	2021-04-20	45.7	4.72	N/A	Y
12	361230	1032421A	GCL	2021-04-20	45.7	4.72	N/A	Y
13	361231	1032421A	GCL	2021-04-20	45.7	4.72	N/A	Y
14	361232	1032421A	GCL	2021-04-20	45.7	4.72	N/A	Y
15	361233	1032421A	GCL	2021-04-20	45.7	4.72	N/A	Y
16	361234	1032421A	GCL	2021-04-20	45.7	4.72	N/A	Y
17	360567	1031321C	GCL	2021-04-20	45.7	4.72	N/A	Y
18	360568	1031321C	GCL	2021-04-20	45.7	4.72	N/A	Y
19	360569	1031321C	GCL	2021-04-20	45.7	4.72	N/A	Y
20	360570	1031321C	GCL	2021-04-20	45.7	4.72	N/A	Y
21	360571	1031321C	GCL	2021-04-20	45.7	4.72	N/A	Y
22	360572	1031321D	GCL	2021-04-20	45.7	4.72	N/A	Y
23	360573	1031321D	GCL	2021-04-20	45.7	4.72	N/A	Y
24	360574	1031321D	GCL	2021-04-20	45.7	4.72	N/A	Y
25	361114	1032221A	GCL	2021-04-20	45.7	4.72	N/A	Y

NOTES :

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Trek Form



GEOMEMBRANE INVENTORY LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16 Construction
 CONTRACTOR: Titan Environmental
 MATERIAL: GCL

SHEET NUMBER: 5

	ROLL NUMBER	LOT NUMBER	MATERIAL TYPE	DELIVERY DATE	ROLL DIMENSIONS			QC Tested
					Length (m)	Width (m)	Thick (mil)	(y/n)
1	361115	1032221A	GCL	2021-04-20	45.7	4.72	N/A	Y
2	361116	1032221A	GCL	2021-04-20	45.7	4.72	N/A	Y
3	361117	1032221A	GCL	2021-04-20	45.7	4.72	N/A	Y
4	361118	1032221A	GCL	2021-04-20	45.7	4.72	N/A	Y
5	361119	1032221A	GCL	2021-04-20	45.7	4.72	N/A	Y
6	361120	1032221A	GCL	2021-04-20	45.7	4.72	N/A	Y
7	361121	1032221A	GCL	2021-04-20	45.7	4.72	N/A	Y
8	260550	1031321C	GCL	2021-04-22	45.7	4.72	N/A	Y
9	360551	1031321C	GCL	2021-04-22	45.7	4.72	N/A	Y
10	360552	1031321C	GCL	2021-04-22	45.7	4.72	N/A	Y
11	360555	1031321C	GCL	2021-04-22	45.7	4.72	N/A	Y
12	360556	1031321C	GCL	2021-04-22	45.7	4.72	N/A	Y
13	360557	1031321C	GCL	2021-04-22	45.7	4.72	N/A	Y
14	360558	1031321C	GCL	2021-04-22	45.7	4.72	N/A	Y
15	360559	1031321C	GCL	2021-04-22	45.7	4.72	N/A	Y
16	360560	1031321C	GCL	2021-04-22	45.7	4.72	N/A	Y
17	360561	1031321C	GCL	2021-04-22	45.7	4.72	N/A	Y
18	360562	1031321C	GCL	2021-04-22	45.7	4.72	N/A	Y
19	360563	1031321C	GCL	2021-04-22	45.7	4.72	N/A	Y
20	360564	1031321C	GCL	2021-04-22	45.7	4.72	N/A	Y
21	360565	1031321C	GCL	2021-04-22	45.7	4.72	N/A	Y
22	360566	1031321C	GCL	2021-04-22	45.7	4.72	N/A	Y
23								
24								
25								

NOTES :

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- gec = Geocomposite
- cus = Geocushion

(3) Thickness dimensions noted are minimum values unless otherwise reported

Trek Form



GEOMEMBRANE INVENTORY LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16 Construction
 CONTRACTOR: Titan Environmental
 MATERIAL: GCL

SHEET NUMBER: 6

	ROLL NUMBER	LOT NUMBER	MATERIAL TYPE	DELIVERY DATE	ROLL DIMENSIONS			QC Tested (y/n)
					Length (m)	Width (m)	Thick (mil)	
1	360537	1031321B	GCL	2021-04-22	45.7	4.72	N/A	Y
2	360538	1031321B	GCL	2021-04-22	45.7	4.72	N/A	Y
3	360539	1031321B	GCL	2021-04-22	45.7	4.72	N/A	Y
4	360540	1031321B	GCL	2021-04-22	45.7	4.72	N/A	Y
5	360541	1031321B	GCL	2021-04-22	45.7	4.72	N/A	Y
6	360542	1031321B	GCL	2021-04-22	45.7	4.72	N/A	Y
7	360543	1031321B	GCL	2021-04-22	45.7	4.72	N/A	Y
8	360544	1031321B	GCL	2021-04-22	45.7	4.72	N/A	Y
9	360545	1031321B	GCL	2021-04-22	45.7	4.72	N/A	Y
10	360546	1031321B	GCL	2021-04-22	45.7	4.72	N/A	Y
11	360547	1031321B	GCL	2021-04-22	45.7	4.72	N/A	Y
12	360548	1031321B	GCL	2021-04-22	45.7	4.72	N/A	Y
13	360549	1031321B	GCL	2021-04-22	45.7	4.72	N/A	Y
14	360553	1031321C	GCL	2021-04-22	45.7	4.72	N/A	Y
15	360554	1031321C	GCL	2021-04-22	45.7	4.72	N/A	Y
16	360522	1031321B	GCL	2021-04-26	45.7	4.72	N/A	Y
17	360523	1031321B	GCL	2021-04-26	45.7	4.72	N/A	Y
18	360524	1031321B	GCL	2021-04-26	45.7	4.72	N/A	Y
19	360525	1031321B	GCL	2021-04-26	45.7	4.72	N/A	Y
20	360526	1031321B	GCL	2021-04-26	45.7	4.72	N/A	Y
21	360527	1031321B	GCL	2021-04-26	45.7	4.72	N/A	Y
22	360528	1031321B	GCL	2021-04-26	45.7	4.72	N/A	Y
23	360529	1031321B	GCL	2021-04-26	45.7	4.72	N/A	Y
24	360530	1031321B	GCL	2021-04-26	45.7	4.72	N/A	Y
25	360531	1031321B	GCL	2021-04-26	45.7	4.72	N/A	Y

NOTES :

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(3) Thickness dimensions noted are minimum values unless otherwise reported

Trek Form



GEOMEMBRANE INVENTORY LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16 Construction
 CONTRACTOR: Titan Environmental
 MATERIAL: GCL

SHEET NUMBER: 6

	ROLL NUMBER	LOT NUMBER	MATERIAL TYPE	DELIVERY DATE	ROLL DIMENSIONS			QC Tested
					Length (m)	Width (m)	Thick (mil)	(y/n)
1	360532	1031321B	GCL	2021-04-22	45.7	4.72	N/A	Y
2	360533	1031321B	GCL	2021-04-22	45.7	4.72	N/A	Y
3	360534	1031321B	GCL	2021-04-22	45.7	4.72	N/A	Y
4	360535	1031321B	GCL	2021-04-22	45.7	4.72	N/A	Y
5	360536	1031321B	GCL	2021-04-22	45.7	4.72	N/A	Y
6	361203	1032221D	GCL	2021-04-22	45.7	4.72	N/A	Y
7	361204	1032221D	GCL	2021-04-22	45.7	4.72	N/A	Y
8	361205	1032221D	GCL	2021-04-22	45.7	4.72	N/A	Y
9	361206	1032421A	GCL	2021-04-22	45.7	4.72	N/A	Y
10	361207	1032421A	GCL	2021-04-22	45.7	4.72	N/A	Y
11	361208	1032421A	GCL	2021-04-22	45.7	4.72	N/A	Y
12	361209	1032421A	GCL	2021-04-22	45.7	4.72	N/A	Y
13	361210	1032421A	GCL	2021-04-22	45.7	4.72	N/A	Y
14	361211	1032421A	GCL	2021-04-22	45.7	4.72	N/A	Y
15	361212	1032421A	GCL	2021-04-22	45.7	4.72	N/A	Y
16	361213	1032421A	GCL	2021-04-26	45.7	4.72	N/A	Y
17	361214	1032421A	GCL	2021-04-26	45.7	4.72	N/A	Y
18	361215	1032421A	GCL	2021-04-26	45.7	4.72	N/A	Y
19	361216	1032421A	GCL	2021-04-26	45.7	4.72	N/A	Y
20	361217	1032421A	GCL	2021-04-26	45.7	4.72	N/A	Y
21	361218	1032421A	GCL	2021-04-26	45.7	4.72	N/A	Y
22								
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NOTES :

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(2) Material Type Designation

mem = Geomembrane Sm = Smooth Tx = Textured

tex = Geotextile

GCL = Geosynthetic Clay Liner

gec = Geocomposite

cus = Geocushion

(3) Thickness dimensions noted are minimum values unless otherwise reported

Trek Form



GEOMEMBRANE INVENTORY LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16 Construction
 CONTRACTOR: Titan Environmental
 MATERIAL: GCL

SHEET NUMBER: 8

	ROLL NUMBER	LOT NUMBER	MATERIAL TYPE	DELIVERY DATE	ROLL DIMENSIONS			QC Tested (y/n)
					Length (m)	Width (m)	Thick (mil)	
1	361171	1032221C	GCL	2021-04-28	45.7	4.72	N/A	Y
2	361172	1032221C	GCL	2021-04-28	45.7	4.72	N/A	Y
3	361173	1032221C	GCL	2021-04-28	45.7	4.72	N/A	Y
4	361174	1032221C	GCL	2021-04-28	45.7	4.72	N/A	Y
5	361175	1032221C	GCL	2021-04-28	45.7	4.72	N/A	Y
6	361176	1032221C	GCL	2021-04-28	45.7	4.72	N/A	Y
7	361177	1032221C	GCL	2021-04-28	45.7	4.72	N/A	Y
8	361178	1032221D	GCL	2021-04-28	45.7	4.72	N/A	Y
9	361179	1032221D	GCL	2021-04-28	45.7	4.72	N/A	Y
10	361180	1032221D	GCL	2021-04-28	45.7	4.72	N/A	Y
11	361181	1032221D	GCL	2021-04-28	45.7	4.72	N/A	Y
12	361182	1032221D	GCL	2021-04-28	45.7	4.72	N/A	Y
13	361183	1032221D	GCL	2021-04-28	45.7	4.72	N/A	Y
14	361184	1032221D	GCL	2021-04-28	45.7	4.72	N/A	Y
15	361185	1032221D	GCL	2021-04-28	45.7	4.72	N/A	Y
16	361186	1032221D	GCL	2021-04-28	45.7	4.72	N/A	Y
17	361187	1032221D	GCL	2021-04-28	45.7	4.72	N/A	Y
18	361188	1032221D	GCL	2021-04-28	45.7	4.72	N/A	Y
19	361189	1032221D	GCL	2021-04-28	45.7	4.72	N/A	Y
20	361190	1032221D	GCL	2021-04-28	45.7	4.72	N/A	Y
21	361191	1032221D	GCL	2021-04-28	45.7	4.72	N/A	Y
22	361192	1032221D	GCL	2021-04-28	45.7	4.72	N/A	Y
23	361193	1032221D	GCL	2021-04-28	45.7	4.72	N/A	Y
24	361194	1032221D	GCL	2021-04-28	45.7	4.72	N/A	Y
25	361195	1032221D	GCL	2021-04-28	45.7	4.72	N/A	Y

NOTES :

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tex = Geotextile

GCL = Geosynthetic Clay Liner

gec = Geocomposite

cus = Geocushion

(3) Thickness dimensions noted are minimum values unless otherwise reported

Trek Form



GEOMEMBRANE INVENTORY LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16 Construction
 CONTRACTOR: Titan Environmental
 MATERIAL: GCL

SHEET NUMBER: 9

	ROLL NUMBER	LOT NUMBER	MATERIAL TYPE	DELIVERY DATE	ROLL DIMENSIONS			QC Tested
					Length (m)	Width (m)	Thick (mil)	(y/n)
1	361196	1032221D	GCL	2021-04-28	45.7	4.72	N/A	Y
2	361197	1032221D	GCL	2021-04-28	45.7	4.72	N/A	Y
3	361198	1032221D	GCL	2021-04-28	45.7	4.72	N/A	Y
4	361199	1032221D	GCL	2021-04-28	45.7	4.72	N/A	Y
5	361200	1032221D	GCL	2021-04-28	45.7	4.72	N/A	Y
6	361201	1032221D	GCL	2021-04-28	45.7	4.72	N/A	Y
7	361202	1032221D	GCL	2021-04-28	45.7	4.72	N/A	Y
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NOTES :

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Trek Form



GEOMEMBRANE INVENTORY LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16 Construction
 CONTRACTOR: Titan Environmental
 MATERIAL: Geomembrane

SHEET NUMBER: 5

	ROLL NUMBER	LOT NUMBER	MATERIAL TYPE	DELIVERY DATE	ROLL DIMENSIONS			QC Tested
					Length (m)	Width (m)	Thick (mil)	(y/n)
1	150766	1037703	sm-mem	2021-04-19	158.5	6.8	60	Y
2	150767	1037703	sm-mem	2021-04-19	158.5	6.8	60	Y
3	150768	1037703	sm-mem	2021-04-19	158.5	6.8	60	Y
4	150774	1037703	sm-mem	2021-04-19	158.5	6.8	60	Y
5	150775	1037703	sm-mem	2021-04-19	158.5	6.8	60	Y
6	150776	1037703	sm-mem	2021-04-19	158.5	6.8	60	Y
7	150777	1037703	sm-mem	2021-04-19	158.5	6.8	60	Y
8	150781	1037703	sm-mem	2021-04-19	158.5	6.8	60	Y
9	55509	1042792	tx-mem	2021-04-19	164.6	6.8	60	Y
10	55510	1042792	tx-mem	2021-04-19	164.6	6.8	60	Y
11	55511	1042792	tx-mem	2021-04-19	164.6	6.8	60	Y
12	55512	1042792	tx-mem	2021-04-19	164.6	6.8	60	Y
13	55513	1042792	tx-mem	2021-04-19	164.6	6.8	60	Y
14	55514	1042792	tx-mem	2021-04-19	164.6	6.8	60	Y
15	55515	1042792	tx-mem	2021-04-19	164.6	6.8	60	Y
16	55516	1042792	tx-mem	2021-04-19	164.6	6.8	60	Y
17	55517	1042792	tx-mem	2021-04-19	164.6	6.8	60	Y
18	55518	1042792	tx-mem	2021-04-19	164.6	6.8	60	Y
19	55519	1042792	tx-mem	2021-04-19	164.6	6.8	60	Y
20	55520	1042792	tx-mem	2021-04-19	164.6	6.8	60	Y
21								
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24								
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NOTES :

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- gec = Geocomposite
- cus = Geocushion

(3) Thickness dimensions noted are minimum values unless otherwise reported

Trek Form



GEOMEMBRANE INVENTORY LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16 Construction
 CONTRACTOR: Titan Environmental
 MATERIAL: Geomembrane

SHEET NUMBER: 6

	ROLL NUMBER	LOT NUMBER	MATERIAL TYPE	DELIVERY DATE	ROLL DIMENSIONS			QC Tested
					Length (m)	Width (m)	Thick (mil)	(y/n)
1	150761	1037703	sm-mem	2021-04-22	158.5	6.8	60	Y
2	150762	1037703	sm-mem	2021-04-22	158.5	6.8	60	Y
3	150763	1037703	sm-mem	2021-04-22	158.5	6.8	60	Y
4	150769	1037703	sm-mem	2021-04-22	158.5	6.8	60	Y
5	150770	1037703	sm-mem	2021-04-22	158.5	6.8	60	Y
6	150773	1037703	sm-mem	2021-04-22	158.5	6.8	60	Y
7	150771	1037703	sm-mem	2021-04-22	158.5	6.8	60	Y
8	150759	1037703	sm-mem	2021-04-22	158.5	6.8	60	Y
9	150758	1042792	sm-mem	2021-04-22	164.6	6.8	60	Y
10	150760	1042792	sm-mem	2021-04-22	164.6	6.8	60	Y
11	150772	1042792	sm-mem	2021-04-22	164.6	6.8	60	Y
12	150765	1042792	sm-mem	2021-04-22	164.6	6.8	60	Y
13	150779	1042792	sm-mem	2021-04-22	164.6	6.8	60	Y
14	150780	1042792	sm-mem	2021-04-22	164.6	6.8	60	Y
15	150778	1042792	sm-mem	2021-04-22	164.6	6.8	60	Y
16	150764	1042792	sm-mem	2021-04-22	164.6	6.8	60	Y
17								
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NOTES :

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Trek Form



GEOMEMBRANE INVENTORY LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16 Construction
 CONTRACTOR: Titan Environmental
 MATERIAL: Geotextile

SHEET NUMBER: 6

	ROLL NUMBER	LOT NUMBER	MATERIAL TYPE	DELIVERY DATE	ROLL DIMENSIONS			QC Tested (y/n)
					Length (m)	Width (m)	Type	
1	J20781963	N/A	tex	2021-04-27	91.44	4.57	TE-E8	N
2	J20781926	N/A	tex	2021-04-27	91.44	4.57	TE-E8	N
3	J20781974	N/A	tex	2021-04-27	91.44	4.57	TE-E8	N
4	J20781951	N/A	tex	2021-04-27	91.44	4.57	TE-E8	N
5	J20781964	N/A	tex	2021-04-27	91.44	4.57	TE-E8	N
6	J20781962	N/A	tex	2021-04-27	91.44	4.57	TE-E8	N
7	J20781968	N/A	tex	2021-04-27	91.44	4.57	TE-E8	N
8	J20781961	N/A	tex	2021-04-27	91.44	4.57	TE-E8	N
9	J20781973	N/A	tex	2021-04-27	91.44	4.57	TE-E8	N
10	J20781970	N/A	tex	2021-04-27	91.44	4.57	TE-E8	N
11	J20781975	N/A	tex	2021-04-27	91.44	4.57	TE-E8	N
12	J20781971	N/A	tex	2021-04-27	91.44	4.57	TE-E8	N
13	J105000024	N/A	cus	2021-04-27	91.44	4.57	TE-E8	N
14	J10499992	N/A	cus	2021-04-27	91.44	4.57	TE-E8	N
15	J10499988	N/A	cus	2021-04-27	91.44	4.57	TE-E8	N
16	J10499989	N/A	cus	2021-04-27	91.44	4.57	TE-E8	N
17	J10499974	N/A	cus	2021-04-27	91.44	4.57	TE-E8	N
18	J10499986	N/A	cus	2021-04-27	91.44	4.57	TE-E8	N
19	J10499999	N/A	cus	2021-04-27	91.44	4.57	TE-E8	N
20	J105000038	N/A	cus	2021-04-27	91.44	4.57	TE-E8	N
21	J10499990	N/A	cus	2021-04-27	91.44	4.57	TE-E8	N
22	J10499971	N/A	cus	2021-04-27	91.44	4.57	TE-E8	N
23	J10499977	N/A	cus	2021-04-27	91.44	4.57	TE-E8	N
24	J104999987	N/A	cus	2021-04-27	91.44	4.57	TE-E8	N
25								

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Trek Form



GEOMEMBRANE INVENTORY LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16 Construction
 CONTRACTOR: Titan Environmental
 MATERIAL: Geocomposite

SHEET NUMBER: 6

	ROLL NUMBER	LOT NUMBER	MATERIAL TYPE	DELIVERY DATE	ROLL DIMENSIONS			QC Tested (y/n)
					Length (m)	Width (m)	Type	
1	2849	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
2	2851	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
3	2852	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
4	2854	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
5	2857	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
6	2875	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
7	2884	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
8	2885	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
9	3789	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
10	3793	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
11	3794	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
12	3795	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
13	3796	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
14	3797	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
15	3798	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
16	3799	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
17	3800	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
18	3801	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
19	3802	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
20	3803	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
21	3804	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
22	3805	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
23	3806	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
24	3809	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
25								

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GCL = Geosynthetic Clay Liner

gec = Geocomposite

cus = Geocushion

(3) Thickness dimensions noted are minimum values unless otherwise reported

Trek Form



GEOMEMBRANE INVENTORY LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16 Construction
 CONTRACTOR: Titan Environmental
 MATERIAL: Geocomposite

SHEET NUMBER: 6

	ROLL NUMBER	LOT NUMBER	MATERIAL TYPE	DELIVERY DATE	ROLL DIMENSIONS			QC Tested (y/n)
					Length (m)	Width (m)	Type	
1	3811	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
2	3812	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
3	3815	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
4	3816	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
5	3817	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
6	3818	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
7	3819	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
8	3821	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
9	3822	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
10	3823	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
11	3824	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
12	3825	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
13	3826	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
14	3827	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
15	3828	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
16	3831	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
17	3832	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
18	3843	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
19	3844	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
20	3849	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
21	3850	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
22	3855	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
23	3856	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
24	3857	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
25								

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GCL = Geosynthetic Clay Liner

gec = Geocomposite

cus = Geocushion

(3) Thickness dimensions noted are minimum values unless otherwise reported

Trek Form



GEOMEMBRANE INVENTORY LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16 Construction
 CONTRACTOR: Titan Environmental
 MATERIAL: Geocomposite

SHEET NUMBER: 6

	ROLL NUMBER	LOT NUMBER	MATERIAL TYPE	DELIVERY DATE	ROLL DIMENSIONS			QC Tested (y/n)
					Length (m)	Width (m)	Type	
1	3807	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
2	3808	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
3	3813	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
4	3814	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
5	3833	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
6	3834	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
7	3835	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
8	3836	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
9	3837	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
10	3838	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
11	3839	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
12	3840	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
13	3841	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
14	3842	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
15	3845	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
16	3846	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
17	3847	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
18	3848	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
19	3851	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
20	3852	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
21	3853	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
22	3854	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
23	3858	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
24	3859	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
25								

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cus = Geocushion

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Trek Form



GEOMEMBRANE INVENTORY LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16 Construction
 CONTRACTOR: Titan Environmental
 MATERIAL: Geocomposite

SHEET NUMBER: 6

	ROLL NUMBER	LOT NUMBER	MATERIAL TYPE	DELIVERY DATE	ROLL DIMENSIONS			QC Tested (y/n)
					Length (m)	Width (m)	Type	
1	3807	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
2	3808	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
3	3813	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
4	3814	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
5	3833	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
6	3834	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
7	3835	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
8	3836	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
9	3837	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
10	3838	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
11	3839	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
12	3840	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
13	3841	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
14	3842	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
15	3845	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
16	3846	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
17	3847	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
18	3848	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
19	3851	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
20	3852	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
21	3853	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
22	3854	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
23	3858	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
24	3859	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
25								

NOTES :

(1) Geomembrane roll length may vary, roll length often established by roll weight

(2) Material Type Designation
 mem = Geomembrane Sm = Smooth Tx = Textured
 tex = Geotextile
 GCL = Geosynthetic Clay Liner
 gec = Geocomposite
 cus = Geocushion

(3) Thickness dimensions noted are minimum values unless otherwise reported

Trek Form



GEOMEMBRANE INVENTORY LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16 Construction
 CONTRACTOR: Titan Environmental
 MATERIAL: Geocomposite

SHEET NUMBER: 6

	ROLL NUMBER	LOT NUMBER	MATERIAL TYPE	DELIVERY DATE	ROLL DIMENSIONS			QC Tested (y/n)
					Length (m)	Width (m)	Type	
1	2835	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
2	2837	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
3	2840	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
4	2841	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
5	2842	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
6	2843	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
7	2845	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
8	2862	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
9	2869	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
10	2870	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
11	2871	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
12	2877	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
13	2878	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
14	2880	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
15	2881	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
16	2882	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
17	2883	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
18	2886	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
19	2888	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
20	2891	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
21	2892	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
22	2893	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
23	2894	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
24	2896	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
25								

NOTES :

(1) Geomembrane roll length may vary, roll length often established by roll weight

(2) Material Type Designation

mem = Geomembrane Sm = Smooth Tx = Textured

tex = Geotextile

GCL = Geosynthetic Clay Liner

gec = Geocomposite

cus = Geocushion

(3) Thickness dimensions noted are minimum values unless otherwise reported

Trek Form



GEOMEMBRANE INVENTORY LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16 Construction
 CONTRACTOR: Titan Environmental
 MATERIAL: Geocomposite

SHEET NUMBER: 6

	ROLL NUMBER	LOT NUMBER	MATERIAL TYPE	DELIVERY DATE	ROLL DIMENSIONS			QC Tested (y/n)
					Length (m)	Width (m)	Type	
1	2848	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
2	2850	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
3	2853	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
4	2855	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
5	2856	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
6	2858	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
7	2859	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
8	2860	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
9	2861	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
10	2863	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
11	2864	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
12	2865	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
13	2866	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
14	2867	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
15	2868	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
16	2872	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
17	2873	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
18	2874	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
19	2876	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
20	2879	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
21	2887	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
22	2889	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
23	2890	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
24	2895	N/A	geo	2021-04-30	61	4.57	FrabriNet	N
25								

NOTES :

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(2) Material Type Designation

mem = Geomembrane Sm = Smooth Tx = Textured

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GCL = Geosynthetic Clay Liner

gec = Geocomposite

cus = Geocushion

(3) Thickness dimensions noted are minimum values unless otherwise reported

Trek Form



GEOMEMBRANE INVENTORY LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16 Construction
 CONTRACTOR: Titan Environmental
 MATERIAL: Geocomposite

SHEET NUMBER: 6

	ROLL NUMBER	LOT NUMBER	MATERIAL TYPE	DELIVERY DATE	ROLL DIMENSIONS			QC Tested (y/n)
					Length (m)	Width (m)	Type	
1	2808	N/A	geo	2021-05-10	61	4.57	FrabriNet	N
2	2809	N/A	geo	2021-05-10	61	4.57	FrabriNet	N
3	2810	N/A	geo	2021-05-10	61	4.57	FrabriNet	N
4	2811	N/A	geo	2021-05-10	61	4.57	FrabriNet	N
5	2812	N/A	geo	2021-05-10	61	4.57	FrabriNet	N
6	2813	N/A	geo	2021-05-10	61	4.57	FrabriNet	N
7	2814	N/A	geo	2021-05-10	61	4.57	FrabriNet	N
8	2815	N/A	geo	2021-05-10	61	4.57	FrabriNet	N
9	2816	N/A	geo	2021-05-10	61	4.57	FrabriNet	N
10	2832	N/A	geo	2021-05-10	61	4.57	FrabriNet	N
11	2833	N/A	geo	2021-05-10	61	4.57	FrabriNet	N
12	2834	N/A	geo	2021-05-10	61	4.57	FrabriNet	N
13	2836	N/A	geo	2021-05-10	61	4.57	FrabriNet	N
14	2838	N/A	geo	2021-05-10	61	4.57	FrabriNet	N
15	2839	N/A	geo	2021-05-10	61	4.57	FrabriNet	N
16	2844	N/A	geo	2021-05-10	61	4.57	FrabriNet	N
17								
18								
19								
20								
21								
22								
23								
24								
25								

NOTES :

(1) Geomembrane roll length may vary, roll length often established by roll weight

(2) Material Type Designation

mem = Geomembrane Sm = Smooth Tx = Textured

tex = Geotextile

GCL = Geosynthetic Clay Liner

gec = Geocomposite

cus = Geocushion

(3) Thickness dimensions noted are minimum values unless otherwise reported

Trek Form

Appendix B-2

Geomembrane, GCL and Geocomposite Manufacturer's Quality Control Documents



LIST OF GEOMEMBRANE ROLLS



PROJECT NUMBER: 611
REFERENCE NUMBER: SO-001072
PACKING SLIP NUMBER: Pre-SO-001072-1

PROJECT NAME : PRAIRIE GREEN LF CELL 16 - STONY MOUNTAIN, MB

ROLL NUMBER	RESIN LOT NUMBER	MANUFACT. DATE	RESIN MELT INDEX 190/2.16 g/10 min D1238	RESIN DENSITY g/cc D1505	OIT min D3895	HPOIT min D5885	ESCR SP-NCTL hours D5397
Product Code : 1042792							
HDPE 1.50 mm Black Textured			1.0	> 0.932	100		500
1005-055509	P101053	2021-02-27	0.14	0.934	192		>500 Certified 1005-055487
1005-055510	P101053	2021-02-27	0.14	0.934	192		>500 Certified 1005-055487
1005-055511	P101053	2021-02-27	0.14	0.934	192		>500 Certified 1005-055487
1005-055512	P101053	2021-02-27	0.14	0.934	192		>500 Certified 1005-055487
1005-055513	P101053	2021-02-27	0.14	0.934	192		>500 Certified 1005-055487
1005-055514	P101053	2021-02-27	0.14	0.934	192		>500 Certified 1005-055487
1005-055515	P101053	2021-02-27	0.14	0.934	192		>500 Certified 1005-055487
1005-055516	P101053	2021-02-27	0.14	0.934	192		>500 Certified 1005-055487
1005-055517	P101053	2021-02-27	0.14	0.934	192		>500 Certified 1005-055487
1005-055518	P101053	2021-02-28	0.14	0.934	192		>500 Certified 1005-055487
1005-055519	P101053	2021-02-28	0.14	0.934	192		>500 Certified 1005-055487
1005-055520	P101053	2021-02-28	0.14	0.934	192		>500 Certified 1005-055487

QUANTITY (ROLLS): 12

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TEST RESULTS - ROLLS

PROJECT NUMBER: 611
 REFERENCE NUMBER: SO-001072
 PACKING SLIP NUMBER: Pre-SO-001072-1

PROJECT NAME : PRAIRIE GREEN LF CELL 16 - STONY MOUNTAIN, MB

PRODUCT: 1042792
HDPE 1.50 mm Black Textured

CE Certificate = HD-60-TT-BB

Properties	Thickness ave/min.	GeoM Density	Carbon Black Content	Carbon Black Dispersion	Tensile				Tear Resist.	Puncture Resist.	Dimension Stability	Asperity Height In/Out
					Yield Strength	Elong.	Break Strength	Elong.				
Unit	mm	g/cc	%	Cat 1 and 2	kN/m	%	kN/m	%	N	N	%	mm
Test Method	D5994	D792	D4218	D5596	D6693				D1004	D4833	D1204	D7466
Frequency	Each roll	Every 10 rolls	Every 2 rolls	Every 10 rolls	Every 2 rolls				Every 5 rolls	Every 5 rolls		Every roll
Specification	1.43 / 1.28	≥ 0.940	2.0 - 3.0	Cat. 1 / Cat.	23	13	23	150	200	535		0.40 / 0.40
1005-055509 MD XD	1.47 / 1.40	0.943	2.54	10/10 views	24.6 25.7	20.0 16.4	36.1 33.4	571 573	232 246	593		0.45 / 0.46
1005-055510 MD XD	1.44 / 1.37	0.943	2.58	10/10 views	23.3 25.0	16.8 16.0	37.5 32.9	593 559	232 246	593		0.45 / 0.47
1005-055511 MD XD	1.47 / 1.38	0.943	2.58	10/10 views	23.3 25.0	16.8 16.0	37.5 32.9	593 559	232 246	593		0.45 / 0.47
1005-055512 MD XD	1.47 / 1.34	0.943	2.53	10/10 views	24.8 25.4	19.1 16.5	35.9 34.1	572 580	232 246	593		0.45 / 0.46
1005-055513 MD XD	1.45 / 1.39	0.943	2.53	10/10 views	24.8 25.4	19.1 16.5	35.9 34.1	572 580	219 238	601		0.45 / 0.46
1005-055514 MD XD	1.44 / 1.36	0.943	2.57	10/10 views	24.4 25.5	18.5 16.6	35.9 31.7	578 551	219 238	601		0.45 / 0.47
1005-055515 MD XD	1.44 / 1.37	0.943	2.57	10/10 views	24.4 25.5	18.5 16.6	35.9 31.7	578 551	219 238	601		0.45 / 0.45
1005-055516 MD XD	1.44 / 1.35	0.943	2.54	10/10 views	24.4 24.8	19.8 17.3	36.8 30.1	602 525	219 238	601		0.45 / 0.45
1005-055517 MD XD	1.45 / 1.39	0.943	2.54	10/10 views	24.4 24.8	19.8 17.3	36.8 30.1	602 525	219 238	601		0.47 / 0.46
1005-055518 MD XD	1.44 / 1.38	0.943	2.45	10/10 views	24.7 25.1	18.4 15.8	34.1 32.4	547 563	226 246	585		0.48 / 0.47
1005-055519 MD XD	1.44 / 1.35	0.943	2.45	10/10 views	24.7 25.1	18.4 15.8	34.1 32.4	547 563	226 246	585		0.46 / 0.47
1005-055520 MD XD	1.45 / 1.34	0.943	2.42	10/10 views	24.7 24.8	17.8 15.5	34.7 33.6	553 585	226 246	585		0.45 / 0.47

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Sold-to
 Solmax International Inc.
 2801, Boul. Marie-Victorin
 VARENNES (QUÉBEC) J3X 0J4
 CANADA

Ship-to
 Solmax International Inc.
 2801, Boul. Marie-Victorin
 VARENNES (QUÉBEC) J3X 0J4
 CANADA

Quality Certificate	
Type 3.1 - Norm EN 10204:2004	
Date	02.02.2021
Your purchase order / Date	FEB / 001263 / 08.01.2021
Shipment N°:	1300043364
Our order reference	33075891
Customer	81125995

Page 1 / 1

Material: Our reference
 MDPE HF 513

We certify that the analysis of the characteristics of the batch from which the product dispatched was taken gives the following results :

ISO 1133 is equivalent to ASTM D1238 and ISO 1183 is equivalent to ASTM D1505 Production site : ROUTE INDUSTRIELLE BP 98 - GONFREVILLE L'ORCHER 76700 HARFLEUR FRANCE

Batch	P101053	Quantity	123,75 TO	
Characteristic	Unit	Value	Test Method	
Density	kg/m ³	934.3	ISO 1183	
Melt Index 2,16 kg / 190°C	g/10 min	0.14	ISO 1133	
Melt Index 21,6 kg / 190°C	g/10 min	13.8	ISO 1133	
Delivery number	Quantity	Loading Date		
87321032	24,75 TO	02.02.2021		
87321034	24,75 TO	02.02.2021		
87321035	24,75 TO	02.02.2021		
87321037	24,75 TO	02.02.2021		
87321038	24,75 TO	02.02.2021		

The analysis methods are in accordance with the mentioned standards.

The data and information presented herein are to the best of our knowledge true and accurate. The data refers to specific values of the current lot, provided by the methods and apparatus indicated, and should so be considered.
 Neither TOTAL PETROCHEMICALS nor its subsidiaries assume any responsibility, expressed or implied, for use of said data and information. No information contained in this document can be considered as a suggestion for patent infringement.



LIST OF GEOMEMBRANE ROLLS



PROJECT NUMBER: 611
 REFERENCE NUMBER: SO-001072
 PACKING SLIP NUMBER: Pre-SO-001072-2

PROJECT NAME : PRAIRIE GREEN LF CELL 16 - STONY MOUNTAIN, MB

ROLL NUMBER	RESIN LOT NUMBER	MANUFACT. DATE	RESIN MELT INDEX 190/2.16 g/10 min D1238	RESIN DENSITY g/cc D1505	OIT min D3895	HPOIT min D5885	ESCR SP-NCTL hours D5397
Product Code : 1037703							
HDPE 1.50 mm Black Smooth			1.0	> 0.932	100		500
1001-150758	D661L1IL3B	2021-03-18	0.10	0.937	133		>500 Certified 1001-150683
1001-150759	D661L1IL3B	2021-03-18	0.10	0.937	133		>500 Certified 1001-150683
1001-150760	D661L1IL3B	2021-03-18	0.10	0.937	133		>500 Certified 1001-150683
1001-150761	D661L1IL3B	2021-03-18	0.10	0.937	133		>500 Certified 1001-150683
1001-150762	D661L1IL3B	2021-03-18	0.10	0.937	133		>500 Certified 1001-150683
1001-150763	D661L1IL3B	2021-03-18	0.10	0.937	133		>500 Certified 1001-150683
1001-150764	D661L1IL3B	2021-03-18	0.10	0.937	133		>500 Certified 1001-150683
1001-150765	D661L1IL3B	2021-03-18	0.10	0.937	133		>500 Certified 1001-150683
1001-150766	D661L1IL3B	2021-03-18	0.10	0.937	133		>500 Certified 1001-150683
1001-150767	D661L1IL3B	2021-03-18	0.10	0.937	133		>500 Certified 1001-150683
1001-150768	D661L1IL3B	2021-03-18	0.10	0.937	133		>500 Certified 1001-150683
1001-150769	D661L1IL3B	2021-03-19	0.10	0.937	133		>500 Certified 1001-150683
1001-150770	D661L1IL3B	2021-03-19	0.10	0.937	133		>500 Certified 1001-150683
1001-150771	D661L1IL3B	2021-03-19	0.10	0.937	133		>500 Certified 1001-150683
1001-150772	D661L1IL3B	2021-03-19	0.10	0.937	133		>500 Certified 1001-150683
1001-150773	D661L1IL3B	2021-03-19	0.10	0.937	133		>500 Certified 1001-150683

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LIST OF GEOMEMBRANE ROLLS



PROJECT NUMBER: 611
REFERENCE NUMBER: SO-001072
PACKING SLIP NUMBER: Pre-SO-001072-2

PROJECT NAME : PRAIRIE GREEN LF CELL 16 - STONY MOUNTAIN, MB

1001-150774	D661L1IL3B	2021-03-19	0.10	0.937	133	>500 Certified 1001-150683
1001-150775	D661L1IL3B	2021-03-19	0.10	0.937	133	>500 Certified 1001-150683
1001-150776	D661L1IL3B	2021-03-19	0.10	0.937	133	>500 Certified 1001-150683
1001-150777	D661L1IL3B	2021-03-19	0.10	0.937	133	>500 Certified 1001-150683
1001-150778	D661L1IL3B	2021-03-19	0.10	0.937	133	>500 Certified 1001-150683
1001-150779	D661L1IL3B	2021-03-19	0.10	0.937	133	>500 Certified 1001-150683
1001-150780	D661L1IL3B	2021-03-19	0.10	0.937	133	>500 Certified 1001-150683
1001-150781	D661L1IL3B	2021-03-19	0.10	0.937	133	>500 Certified 1001-150683

QUANTITY (ROLLS): 24

Solmax is not a design professional and has not performed any design services to determine if Solmax's goods comply with any project plans or specifications, or with the application or use of Solmax's goods to any particular system, project, purpose, installation or specification.

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TEST RESULTS - ROLLS

PROJECT NUMBER: 611
 REFERENCE NUMBER: SO-001072
 PACKING SLIP NUMBER: Pre-SO-001072-2

PROJECT NAME : PRAIRIE GREEN LF CELL 16 - STONY MOUNTAIN, MB

PRODUCT: 1037703
 HDPE 1.50 mm Black Smooth

CE Certificate = HD-60-SS-BB

Properties	Thickness ave/min.	GeoM Density	Carbon Black Content	Carbon Black Dispersion	Tensile				Tear Resist.	Puncture Resist.	Dimension Stability	Asperity Height In/Out mm
					Yield Strength	Elong.	Break Strength	Elong.				
Unit	mm	g/cc	%	Cat 1 and 2	kN/m	%	kN/m	%	N	N	%	
Test Method	D5199	D792	D4218	D5596	D6693				D1004	D4833	D1204	
Frequency	Each roll	Every 10 rolls	Every 2 rolls	Every 10 rolls	Every 2 rolls				Every 5 rolls	Every 5 rolls		
Specification	1.50 / 1.35	≥ 0.940	2.0 - 3.0	Cat. 1 / Cat.	23	13	43	700	187	534		
1001-150758 MD XD	1.52 / 1.47	0.944	2.43	10/10 views	25.6 25.7	19.1 17.8	55.3 53.9	916 937	218 237	592		
1001-150759 MD XD	1.53 / 1.49	0.945	2.43	10/10 views	25.6 25.7	19.1 17.8	55.3 53.9	916 937	215 224	594		
1001-150760 MD XD	1.52 / 1.46	0.945	2.47	10/10 views	24.5 25.4	20.0 17.2	54.6 52.2	905 920	215 224	594		
1001-150761 MD XD	1.53 / 1.46	0.945	2.47	10/10 views	24.5 25.4	20.0 17.2	54.6 52.2	905 920	215 224	594		
1001-150762 MD XD	1.66 / 1.60	0.945	2.23	10/10 views	23.4 25.8	16.9 17.4	53.4 54.5	889 961	215 224	594		
1001-150763 MD XD	1.56 / 1.51	0.945	2.23	10/10 views	23.4 25.8	16.9 17.4	53.4 54.5	889 961	215 224	594		
1001-150764 MD XD	1.57 / 1.50	0.947	2.72	10/10 views	24.9 26.0	20.6 16.0	55.0 55.9	897 968	203 217	577		
1001-150765 MD XD	1.55 / 1.48	0.947	2.72	10/10 views	24.9 26.0	20.6 16.0	55.0 55.9	897 968	203 217	577		
1001-150766 MD XD	1.54 / 1.49	0.947	2.43	10/10 views	24.9 25.6	20.5 18.1	53.6 49.9	887 883	203 217	577		
1001-150767 MD XD	1.54 / 1.47	0.947	2.43	10/10 views	24.9 25.6	20.5 18.1	53.6 49.9	887 883	203 217	577		
1001-150768 MD XD	1.55 / 1.48	0.947	2.52	10/10 views	25.8 26.3	18.6 14.1	54.8 55.9	898 965	203 217	577		
1001-150769 MD XD	1.56 / 1.48	0.944	2.52	10/10 views	25.8 26.3	18.6 14.1	54.8 55.9	898 965	218 232	565		
1001-150770 MD XD	1.52 / 1.44	0.944	2.47	10/10 views	25.6 25.9	18.6 17.3	55.5 55.7	908 957	218 232	565		
1001-150771 MD XD	1.53 / 1.46	0.944	2.47	10/10 views	25.6 25.9	18.6 17.3	55.5 55.7	908 957	218 232	565		

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TEST RESULTS - ROLLS

PROJECT NUMBER: 611
 REFERENCE NUMBER: SO-001072
 CKING SLIP NUMBER: Pre-SO-001072-2

PROJECT NAME : PRAIRIE GREEN LF CELL 16 - STONY MOUNTAIN, MB

1001-150772	MD XD	1.52 / 1.46	0.944	2.40	10/10 views	25.3 25.1	18.6 17.2	54.1 55.3	892 956	211 223	574		
1001-150773	MD XD	1.55 / 1.49	0.944	2.40	10/10 views	25.3 25.1	18.6 17.2	54.1 55.3	892 956	211 223	574		
1001-150774	MD XD	1.52 / 1.46	0.944	2.39	10/10 views	26.0 26.1	18.6 17.1	54.1 54.5	881 934	211 223	574		
1001-150775	MD XD	1.52 / 1.45	0.944	2.39	10/10 views	26.0 26.1	18.6 17.1	54.1 54.5	881 934	211 223	574		
1001-150776	MD XD	1.53 / 1.47	0.944	2.74	10/10 views	24.5 26.1	19.3 14.8	54.3 56.0	910 981	211 223	574		
1001-150777	MD XD	1.54 / 1.50	0.944	2.74	10/10 views	24.5 26.1	19.3 14.8	54.3 56.0	910 981	217 223	587		
1001-150778	MD XD	1.54 / 1.51	0.944	2.54	10/10 views	24.1 25.5	17.7 18.0	52.2 54.6	880 942	217 223	587		
1001-150779	MD XD	1.54 / 1.47	0.944	2.54	10/10 views	24.1 25.5	17.7 18.0	52.2 54.6	880 942	217 223	587		
1001-150780	MD XD	1.55 / 1.51	0.944	2.36	10/10 views	23.8 25.4	20.1 18.0	54.3 53.8	892 944	217 223	587		
1001-150781	MD XD	1.54 / 1.46	0.944	2.36	10/10 views	23.8 25.4	20.1 18.0	54.3 53.8	892 944	217 223	587		

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SOLMAX INTERNATIONAL INC
 2801 RTE MARIE-VICTORIN RR 78
 VARENNES QC J3X 1P7

Ship From: SEADRIFT
 Texas, United States

Certificate of Analysis

Customer Information

Product Name
 DOW™ DGDA-5310 NT MDPE GMB Resin

Delivery No. 820437893 / 000010

Order Number 112106138

Shipping Units 195199.999 LB

Date Shipped 2021-02-19 (YYYY-MM-DD)

Shipment No. 38379768

Customer Name SOLMAX INTERNATIONAL INC

Customer PO number 1318-3

Container ID CCBX058744

Specification Number 000000456148

Batch Number D661L1I13B

Manufacturing Date 2021-01-18 (YYYY-MM-DD)

Net Weight 195199.999 LB / 88541.158 KG

Test	Unit	Lower Limit	Upper Limit	Value	Method
Melt Flow Rate @190degC/21.6kg	dg/min	9.0	12.0	11.1	ASTM D1238
Melt Flow Ratio I21.6/I5.0		20.0	40.0	29.2	ASTM D1238
Density ASTM D4703, A1 Proc C, Test within 1 hr	g/cm3	0.9350	0.9390	0.9373	ASTM D792

For inquiries please contact Customer Service or local sales
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Identification:

Type of Material :	PEHD	Formulation :	HD25-09
Roll Number:	1002-108155	Resin Type :	Total HF 513
Production Date :	2020-10-06	Lot Number :	P008027

Oxidative Induction Time (ASTM D3895)

OIT (minutes)	Individual Data		Avg.	S.D.	% CV
	185	184	185	0.71	0.38

High Pressure Oxidative Induction Time (ASTM D5885)

HP OIT (minutes)	Individual Data		Avg.	S.D.	% CV
	440	418	429	15.6	3.6

UV Resistance (ASTM D7238)

- The resistance to degradation was determined in accordance with ASTM D7238
- Apparatus used : Q-PANEL QUV/se - Lamp: UVA-340
- Duration of the test: 1600 hours of UV exposure (total of 1920h)
- Cycle : 80 cycles of UVA (20h of light at 75°C followed by 4h of condensation at 60°C)

HP OIT (minutes) : ASTM D5885 - Initial	Individual Data		Avg.	S.D.	% CV
	440	418	429	15.6	3.6
HP OIT (minutes) : ASTM D5885 - After 1600h of UV	318	357	338	27.6	8.2
PERCENTAGE RETAINED:	79 %				

Air-Oven Aging (ASTM D5721)

- The resistance to degradation was determined in accordance with ASTM D5721
- Duration of the test: The geomembrane was exposed to 90 days in an air oven maintained at 85°C ± 0.5°C
- Rotation of the exposed specimens : once per week

OIT (minutes) : ASTM D3895 - Initial	Individual Data		Avg.	S.D.	% CV
	185	184	185	0.71	0.38
OIT (minutes) : ASTM D3895 - After 90 days of Oven Aging	103	98	101	3.54	3.52
PERCENTAGE RETAINED:	55 %				

HP OIT (minutes) : ASTM D5885 - Initial	Individual Data		Avg.	S.D.	% CV
	440	418	429	15.6	1.5
HP OIT (minutes) : ASTM D5885 - After 90 days of Oven Aging	336	317	327	13.4	4.1
PERCENTAGE RETAINED:	86 %				

The tests were performed by Solmax International. The laboratories of Solmax International are accredited by the GRI.



Simon Gilbert St-Pierre, P.Eng.
 Technical Services



Sold-to

Solmax International Inc.
2801, Boul. Marie-Victorin
VARENNES (QUÉBEC) J3X 0J4
CANADA

Ship-to

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VARENNES (QUÉBEC) J3X 0J4
CANADA

Quality Certificate	
Type 3.1 - Norm EN 10204:2004	
Date	10.09.2020
Your purchase order / Date	SEP1/PO-000845 / 03.09.2020
Shipment N°:	1300040968
Our order reference	33031844
Customer	81125995

Page 1 / 1

Material: Our reference
MDPE HF 513

We certify that the analysis of the characteristics of the batch from which the product dispatched was taken gives the following results :

Batch	P008027	Quantity	49,5 TO
Characteristic	Unit	Value	Test Method
Density	kg/m ³	934,9	ISO 1183
Melt Index 21,6 kg / 190°C	g/10 min	14,7	ISO 1133
Delivery number	Quantity		Loading Date
87219337	24,75 TO		10.09.2020
87219338	24,75 TO		10.09.2020

The analysis methods are in accordance with the mentioned standards.

The data and information presented herein are to the best of our knowledge true and accurate. The data refers to specific values of the current lot, provided by the methods and apparatus indicated, and should so be considered.
Neither TOTAL PETROCHEMICALS nor its subsidiaries assume any responsibility, expressed or implied, for use of said data and information. No information contained in this document can be considered as a suggestion for patent infringement.

ROLL IDENTIFICATION

ROLL NUMBER: 1002-108155
PACKING SLIP NUMBER:
PRODUCT CODE: 1024122 HDPE 80 mils Black Smooth
PRODUCTION DATE: 6 Oct 2020

LENGTH(± 1%): 400.00 ft
WIDTH: 22.30 ft
SHEET AREA: 8,920.0 sqft
WEIGHT: 3,700 lbs

RESIN INFORMATION

RESIN LOT NUMBER: P008027
RESIN TYPE: HDPE Total HF 513
RESIN SUPPLIER: TOTAL FINANCE GLOBAL

PROPERTY	TEST METHOD	RESULTS
Density (g/cc)	ASTM D 1505	0.934
Melt Index (g/10 min.)	ASTM D 1238 (190/2.16)	0.15
ESCR (hrs)	ASTM D 5397	> 500
OIT (min.)	ASTM D 3895	
HP-OIT (min.)	ASTM D 5885	

PHYSICAL PROPERTY		TEST METHOD	TEST FREQUENCY	TECHNICAL DATA	TEST RESULTS
THICKNESS(MIL)	Average	ASTM D5199	Every roll	80.0	81.4
	Minimum			72.0	78.9
ASPERITY(MIL)	Average(In/Out)				
TENSILE PROPERTIES		ASTM D6693	Every 2 rolls		
Yield strength ppi	TD			176	184.3
	MD				181.4
Yield elongation (%)	TD			13	18.3
	MD				19.8
Break strength ppi	TD			324	438
	MD				434.0
Break elongation (%)	TD			700	970
	MD				949
TEAR RESISTANCE (LBS)	TD	ASTM D1004	Every 5 rolls	56	63.9
	MD				61.2
PUNCTURE RESISTANCE(LBS)		ASTM D4833	Every 5 rolls	156	165.1
DENSITY (G/CC)		ASTM D792	Every 10 rolls	≥ 0.940	0.941
CARBON BLACK CONTENT(%)		ASTM D4218	Every 2 rolls	2.0 - 3.0	2.51
CARBON BLACK DISPERSION		ASTM D5596	Every 10 rolls	Cat. 1 & Cat. 2	10
DIMENSIONAL STABILITY (%)	TD				
	MD				



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Identification:

Type of Material :	HDPE	Formulation :	HD76-02
Roll Number:	1001-146135	Resin Type :	DOW DGDA-5310
Production Date :	2020-02-11	Lot Number :	D661JAL3D

Oxidative Induction Time (ASTM D3895)

OIT (minutes)	Individual Data			Avg.	S.D.	% CV
	144	151		148	5	3.4

High Pressure Oxidative Induction Time (ASTM D5885)

HP OIT (minutes)	Individual Data			Avg.	S.D.	% CV
	359	355		357	3	0.7

UV Resistance (ASTM D7238)

- The resistance to degradation was determined in accordance with ASTM D7238
- Apparatus used : Q-PANEL QUV/se - Lamp: UVA-340
- Duration of the test: 1600 hours of UV exposure (total of 1920h)
- Cycle : 80 cycles of UVA (20h of light at 75°C followed by 4h of condensation at 60°C)

HP OIT (minutes) : ASTM D5885 - Initial	Individual Data			Avg.	S.D.	% CV
	359	355		357	3	0.7
HP OIT (minutes) : ASTM D5885 - After 1600h of UV	217	215		216	1	0.7
PERCENTAGE RETAINED:	60 %			Note: No visual change after 1600 hrs		

Air-Oven Aging (ASTM D5721)

- The resistance to degradation was determined in accordance with ASTM D5721
- Duration of the test: The geomembrane was exposed to 90 days in an air oven maintained at 85°C ± 0.5°C
- Rotation of the exposed specimens : once per week

OIT (minutes) : ASTM D3895 - Initial	Individual Data			Avg.	S.D.	% CV
	144	151		148	5	3.4
OIT (minutes) : ASTM D3895 - After 90 days of Oven Aging	74	71		73	2	2.9
PERCENTAGE RETAINED:	49 %					

HP OIT (minutes) : ASTM D5885 - Initial	Individual Data			Avg.	S.D.	% CV
	359	355		357	3	0.7
HP OIT (minutes) : ASTM D5885 - After 90 days of Oven Aging	294	283		289	8	2.7
PERCENTAGE RETAINED:	81 %			Note: No visual change after 90 days		

The tests were performed by Solmax International. The laboratories of Solmax International are accredited by the GRI.



Simon Gilbert St-Pierre, P.Eng.
 Technical Services



DOW CHEMICAL CANADA ULC

SOLMAX INTERNATIONAL INC
 2801 RTE MARIE-VICTORIN RR 78
 VARENNES QC J3X 1P7

Ship From: SEADRIFT
 Texas, United States

Certificate of Analysis

Customer Information

Product Name
 DOW™ DGDA-5310 NT MDPE GMB Resin
 Delivery No. 817174116 / 000010
 Order Number 110418261
 Shipping Units 195899.998 LB
 Date Shipped 2019-10-31 (YYYY-MM-DD)
 Shipment No. 35598978

Customer Name SOLMAX INTERNATIONAL INC
 Customer PO number 118482-3
 Container ID DOWX068347
 Specification Number 000000456148

Batch Number D661JASL3D
 Manufacturing Date 2019-10-28 (YYYY-MM-DD)
 Net Weight 195899.998 LB / 88858.672 KG

Test	Unit	Lower Limit	Upper Limit	Value	Method
Melt Flow Rate @190degC/21.6kg	dg/min	9.0	12.0	11.2	ASTM D1238
Melt Flow Ratio I21.6/I5.0		20.0	40.0	26.1	ASTM D1238
Density ASTM D4703, A1 Proc C, Test within 1 hr	g/cm3	0.9350	0.9390	0.9371	ASTM D792

For inquiries please contact Customer Service or local sales

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ROLL IDENTIFICATION

ROLL NUMBER: 1001-146135
PACKING SLIP NUMBER:
PRODUCT CODE: 1037703 HDPE 1.50 mm Black Smooth
PRODUCTION DATE: 11 Feb 2020

LENGTH(± 1%): 158.50 m
WIDTH: 6.80 m
SHEET AREA: 1,077.8 sqmt
WEIGHT: 1,605 kg

RESIN INFORMATION

RESIN LOT NUMBER: D661JASL3D
RESIN TYPE: HDPE Dow DGDA-5310
RESIN SUPPLIER: DOW CHEMICAL CANADA

PROPERTY	TEST METHOD	RESULTS
Density (g/cc)	ASTM D 1505	0.937
Melt Index (g/10 min.)	ASTM D 1238 (190/2.16)	0.07
ESCR (hrs)	ASTM D 5397	> 500
OIT (min.)	ASTM D 3895	148
HP-OIT (min.)	ASTM D 5885	

PHYSICAL PROPERTY	TEST METHOD	TEST FREQUENCY	TECHNICAL DATA	TEST RESULTS	
THICKNESS(MM)	Average	ASTM D5199	Every roll	1.50	1.56
	Minimum			1.35	1.46
ASPERITY(MM)	Average(In/Out)				
TENSILE PROPERTIES	ASTM D6693	Every 2 rolls			
Yield strength KN/m	TD			23	27.8
	MD				26.5
Yield elongation (%)	TD			13	17.1
	MD				19.5
Break strength KN/m	TD			43	58.8
	MD				56.2
Break elongation (%)	TD			700	972
	MD				887
TEAR RESISTANCE (N)	TD	ASTM D1004	Every 5 rolls	187	220
	MD				209
PUNCTURE RESISTANCE(N)	ASTM D4833	Every 5 rolls		534	591
DENSITY (G/CC)	ASTM D792	Every 10 rolls		≥ 0.940	0.949
CARBON BLACK CONTENT(%)	ASTM D4218	Every 2 rolls		2.0 - 3.0	2.57
CARBON BLACK DISPERSION	ASTM D5596	Every 10 rolls		Cat. 1 / Cat. 2	10
DIMENSIONAL STABILITY (%)	TD				
	MD				



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MANUFACTURING QUALITY CONTROL



PROJECT NUMBER: 654
 REFERENCE NUMBER: SO-091553
 PACKING SLIP NUMBER: Pre-SO-091553-1

PROJECT NAME : PRAIRIE GREEN LF CELL 16 - STONY MOUNTAIN, MB

ROLL NUMBER	MANUFACT. DATE	BENTONITE LOT NUMBER	TOP LAYER 1	BOTTOM LAYER 1
Product Code : 1101165-06791-2				
<u>Bentoliner 4.35 kg/m², NW</u>				
0242-360522	2021-03-18	1031321B	2330-529670	2AW17897-1500-008
0242-360523	2021-03-18	1031321B	2330-529670	2AW17897-1500-008
0242-360524	2021-03-18	1031321B	2330-529670	2AW17897-1500-008
0242-360525	2021-03-18	1031321B	2330-529670	2AW17897-1500-008
0242-360526	2021-03-18	1031321B	2330-529670	2AW17897-1500-008
0242-360527	2021-03-18	1031321B	2330-529670	2AW17897-1500-008
0242-360528	2021-03-18	1031321B	2330-529670	2AW17897-1500-005
0242-360529	2021-03-18	1031321B	2330-529670	2AW17897-1500-005
0242-360530	2021-03-18	1031321B	2330-529670	2AW17897-1500-005
0242-360531	2021-03-18	1031321B	2330-529587	2AW17897-1500-005
0242-360532	2021-03-18	1031321B	2330-529587	2AW17897-1500-005
0242-360533	2021-03-18	1031321B	2330-529587	2AW17897-1500-005
0242-360534	2021-03-18	1031321B	2330-529587	2AW17897-1500-005
0242-360535	2021-03-18	1031321B	2330-529587	2AW17897-1500-005
0242-360536	2021-03-18	1031321B	2330-529587	2AW17897-1500-005
0242-360537	2021-03-18	1031321B	2330-529587	2AW17897-1500-005
0242-360538	2021-03-18	1031321B	2330-529587	2AW17897-1500-013
0242-360539	2021-03-18	1031321B	2330-529587	2AW17897-1500-013
0242-360540	2021-03-18	1031321B	2330-529587	2AW17897-1500-013
0242-360541	2021-03-18	1031321B	2330-529590	2AW17897-1500-013
0242-360542	2021-03-18	1031321B	2330-529590	2AW17897-1500-013

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MANUFACTURING QUALITY CONTROL



PROJECT NUMBER: 654
 REFERENCE NUMBER: SO-091553
 PACKING SLIP NUMBER: Pre-SO-091553-1

PROJECT NAME : PRAIRIE GREEN LF CELL 16 - STONY MOUNTAIN, MB

0242-360543	2021-03-18	1031321B	2330-529590	2AW17897-1500-013
0242-360544	2021-03-18	1031321B	2330-529590	2AW17897-1500-013
0242-360545	2021-03-18	1031321B	2330-529590	2AW17897-1500-013
0242-360546	2021-03-18	1031321C	2330-529590	2AW17897-1500-013
0242-360547	2021-03-18	1031321C	2330-529590	2AW17897-1500-001
0242-360548	2021-03-18	1031321C	2330-529590	2AW17897-1500-001
0242-360549	2021-03-18	1031321C	2330-529590	2AW17897-1500-001
0242-360550	2021-03-18	1031321C	2330-529590	2AW17897-1500-001
0242-360551	2021-03-18	1031321C	2330-529594	2AW17897-1500-001
0242-360552	2021-03-18	1031321C	2330-529594	2AW17897-1500-001
0242-360553	2021-03-18	1031321C	2330-529594	2AW17897-1500-001
0242-360554	2021-03-18	1031321C	2330-529594	2AW17897-1500-001
0242-360555	2021-03-18	1031321C	2330-529594	2AW17897-1500-001
0242-360556	2021-03-18	1031321C	2330-529594	2AW17897-1500-001
0242-360557	2021-03-18	1031321C	2330-529594	2AW17897-1500-010
0242-360558	2021-03-18	1031321C	2330-529594	2AW17897-1500-010
0242-360559	2021-03-18	1031321C	2330-529594	2AW17897-1500-010
0242-360560	2021-03-18	1031321C	2330-529584	2AW17897-1500-010
0242-360561	2021-03-18	1031321C	2330-529584	2AW17897-1500-010
0242-360562	2021-03-18	1031321C	2330-529584	2AW17897-1500-010
0242-360563	2021-03-18	1031321C	2330-529584	2AW17897-1500-010
0242-360564	2021-03-18	1031321C	2330-529584	2AW17897-1500-010
0242-360565	2021-03-18	1031321C	2330-529584	2AW17897-1500-010
0242-360566	2021-03-18	1031321C	2330-529584	2AW17897-1500-010
0242-360567	2021-03-18	1031321C	2330-529584	2AW17897-1500-015
0242-360568	2021-03-18	1031321C	2330-529584	2AW17897-1500-015
0242-360569	2021-03-18	1031321C	2330-529591	2AW17897-1500-015
0242-360571	2021-03-18	1031321C	2330-529591	2AW17897-1500-015
0242-360572	2021-03-18	1031321D	2330-529591	2AW17897-1500-015

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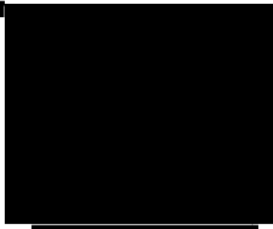
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SOLMAX

MANUFACTURING QUALITY CONTROL



PROJECT NUMBER: 654
REFERENCE NUMBER: SO-091553
PACKING SLIP NUMBER: Pre-SO-091553-1

PROJECT NAME : PRAIRIE GREEN LF CELL 16 - STONY MOUNTAIN, MB

Table with 5 columns: Item ID, Date, Material Code, Quantity, and Part Number. Rows include items like 0242-360573, 0242-361114, etc.

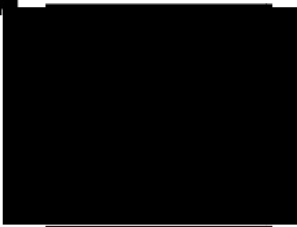
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Solmax Geosynthetics LLC
19103 GUNDEL RD,, HOUSTON, TX, UNITED STATES, 77073

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MANUFACTURING QUALITY CONTROL



PROJECT NUMBER: 654
REFERENCE NUMBER: SO-091553
PACKING SLIP NUMBER: Pre-SO-091553-1

PROJECT NAME : PRAIRIE GREEN LF CELL 16 - STONY MOUNTAIN, MB

0242-361141	2021-03-31	1032221B	2330-529777	2BW17984-1500-016
0242-361142	2021-03-31	1032221B	2330-529777	2BW17984-1500-016
0242-361143	2021-03-31	1032221B	2330-529757	2BW17984-1500-016
0242-361144	2021-03-31	1032221B	2330-529757	2BW17984-1500-016
0242-361145	2021-03-31	1032221B	2330-529757	2BW17984-1500-016
0242-361146	2021-03-31	1032221B	2330-529757	2BW17984-1500-008
0242-361147	2021-03-31	1032221B	2330-529757	2BW17984-1500-008
0242-361148	2021-03-31	1032221B	2330-529757	2BW17984-1500-008
0242-361149	2021-03-31	1032221B	2330-529757	2BW17984-1500-008
0242-361150	2021-03-31	1032221C	2330-529757	2BW17984-1500-008
0242-361151	2021-03-31	1032221C	2330-529757	2BW17984-1500-008
0242-361152	2021-03-31	1032221C	2330-529757	2BW17984-1500-008
0242-361153	2021-03-31	1032221C	2330-529782	2BW17984-1500-008
0242-361154	2021-03-31	1032221C	2330-529782	2BW17984-1500-008
0242-361155	2021-03-31	1032221C	2330-529782	2BW17984-1500-008
0242-361156	2021-03-31	1032221C	2330-529782	2BW17984-1500-007
0242-361157	2021-03-31	1032221C	2330-529782	2BW17984-1500-007
0242-361158	2021-03-31	1032221C	2330-529782	2BW17984-1500-007
0242-361159	2021-03-31	1032221C	2330-529782	2BW17984-1500-007
0242-361160	2021-03-31	1032221C	2330-529782	2BW17984-1500-007
0242-361161	2021-03-31	1032221C	2330-529782	2BW17984-1500-007
0242-361162	2021-03-31	1032221C	2330-529782	2BW17984-1500-007
0242-361163	2021-03-31	1032221C	2330-529795	2BW17984-1500-007
0242-361164	2021-03-31	1032221C	2330-529795	2BW17984-1500-007
0242-361165	2021-03-31	1032221C	2330-529795	2BW17984-1500-007
0242-361166	2021-03-31	1032221C	2330-529795	2BW17984-1500-015
0242-361167	2021-03-31	1032221C	2330-529795	2BW17984-1500-015
0242-361168	2021-03-31	1032221C	2330-529795	2BW17984-1500-015
0242-361169	2021-03-31	1032221C	2330-529795	2BW17984-1500-015

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MANUFACTURING QUALITY CONTROL



PROJECT NUMBER: 654
REFERENCE NUMBER: SO-091553
PACKING SLIP NUMBER: Pre-SO-091553-1

PROJECT NAME : PRAIRIE GREEN LF CELL 16 - STONY MOUNTAIN, MB

0242-361171	2021-03-31	1032221C	2330-529795	2BW17984-1500-015
0242-361172	2021-03-31	1032221C	2330-529795	2BW17984-1500-015
0242-361173	2021-03-31	1032221C	2330-529781	2BW17984-1500-015
0242-361174	2021-03-31	1032221C	2330-529781	2BW17984-1500-015
0242-361175	2021-03-31	1032221C	2330-529781	2BW17984-1500-014
0242-361176	2021-03-31	1032221C	2330-529781	2BW17984-1500-014
0242-361177	2021-03-31	1032221C	2330-529781	2BW17984-1500-014
0242-361178	2021-03-31	1032221D	2330-529781	2BW17984-1500-014
0242-361179	2021-03-31	1032221D	2330-529781	2BW17984-1500-014
0242-361180	2021-03-31	1032221D	2330-529781	2BW17984-1500-014
0242-361181	2021-03-31	1032221D	2330-529781	2BW17984-1500-014
0242-361182	2021-03-31	1032221D	2330-529765	2BW17984-1500-014
0242-361183	2021-03-31	1032221D	2330-529765	2BW17984-1500-014
0242-361184	2021-03-31	1032221D	2330-529765	2BW17984-1500-014
0242-361185	2021-03-31	1032221D	2330-529765	2BW17984-1500-013
0242-361186	2021-03-31	1032221D	2330-529765	2BW17984-1500-013
0242-361187	2021-03-31	1032221D	2330-529765	2BW17984-1500-013
0242-361188	2021-03-31	1032221D	2330-529765	2BW17984-1500-013
0242-361189	2021-03-31	1032221D	2330-529765	2BW17984-1500-013
0242-361190	2021-03-31	1032221D	2330-529765	2BW17984-1500-013
0242-361191	2021-03-31	1032221D	2330-529807	2BW17984-1500-013
0242-361192	2021-03-31	1032221D	2330-529807	2BW17984-1500-013
0242-361193	2021-03-31	1032221D	2330-529807	2BW17984-1500-013
0242-361194	2021-03-31	1032221D	2330-529807	2BW17984-1500-013
0242-361195	2021-03-31	1032221D	2330-529807	2BW17984-1500-003
0242-361196	2021-03-31	1032221D	2330-529807	2BW17984-1500-003
0242-361197	2021-03-31	1032221D	2330-529807	2BW17984-1500-003
0242-361198	2021-03-31	1032221D	2330-529807	2BW17984-1500-003
0242-361199	2021-03-31	1032221D	2330-529807	2BW17984-1500-003

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MANUFACTURING QUALITY CONTROL



PROJECT NUMBER: 654
 REFERENCE NUMBER: SO-091553
 PACKING SLIP NUMBER: Pre-SO-091553-1

PROJECT NAME : PRAIRIE GREEN LF CELL 16 - STONY MOUNTAIN, MB

0242-361200	2021-03-31	1032221D	2330-529807	2BW17984-1500-003
0242-361201	2021-03-31	1032221D	2330-529807	2BW17984-1500-003
0242-361202	2021-03-31	1032221D	2330-529763	2BW17984-1500-003
0242-361203	2021-03-31	1032221D	2330-529763	2BW17984-1500-003
0242-361204	2021-03-31	1032221D	2330-529763	2BW17984-1500-003
0242-361205	2021-03-31	1032221D	2330-529763	2BW17984-1500-006
0242-361206	2021-03-31	1032421A	2330-529763	2BW17984-1500-006
0242-361207	2021-03-31	1032421A	2330-529763	2BW17984-1500-006
0242-361208	2021-03-31	1032421A	2330-529763	2BW17984-1500-006
0242-361209	2021-03-31	1032421A	2330-529763	2BW17984-1500-006
0242-361210	2021-03-31	1032421A	2330-529763	2BW17984-1500-006
0242-361211	2021-03-31	1032421A	2330-529779	2BW17984-1500-006
0242-361212	2021-03-31	1032421A	2330-529779	2BW17984-1500-006
0242-361213	2021-03-31	1032421A	2330-529779	2BW17984-1500-006
0242-361214	2021-03-31	1032421A	2330-529779	2BW17984-1500-006
0242-361215	2021-03-31	1032421A	2330-529779	2BW17984-1500-005
0242-361216	2021-03-31	1032421A	2330-529779	2BW17984-1500-005
0242-361217	2021-03-31	1032421A	2330-529779	2BW17984-1500-005
0242-361218	2021-03-31	1032421A	2330-529779	2BW17984-1500-005
0242-361219	2021-03-31	1032421A	2330-529779	2BW17984-1500-005
0242-361220	2021-03-31	1032421A	2330-529779	2BW17984-1500-005
0242-361221	2021-03-31	1032421A	2330-529779	2BW17984-1500-005
0242-361222	2021-03-31	1032421A	2330-529779	2BW17984-1500-005
0242-361223	2021-03-31	1032421A	2330-529759	2BW17984-1500-005
0242-361224	2021-03-31	1032421A	2330-529759	2BW17984-1500-005
0242-361225	2021-03-31	1032421A	2330-529759	2BW17984-1500-005
0242-361226	2021-03-31	1032421A	2330-529759	2BW17984-1500-002
0242-361227	2021-03-31	1032421A	2330-529759	2BW17984-1500-002
0242-361228	2021-03-31	1032421A	2330-529759	2BW17984-1500-002

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MANUFACTURING QUALITY CONTROL



PROJECT NUMBER: 654
 REFERENCE NUMBER: SO-091553
 PACKING SLIP NUMBER: Pre-SO-091553-1

PROJECT NAME : PRAIRIE GREEN LF CELL 16 - STONY MOUNTAIN, MB

0242-361229	2021-03-31	1032421A	2330-529759	2BW17984-1500-002
0242-361230	2021-04-01	1032421A	2330-529759	2BW17984-1500-002
0242-361231	2021-04-01	1032421A	2330-529775	2BW17984-1500-002
0242-361232	2021-04-01	1032421A	2330-529775	2BW17984-1500-002
0242-361233	2021-04-01	1032421A	2330-529775	2BW17984-1500-002
0242-361234	2021-04-01	1032421A	2330-529775	2BW17984-1500-002
0242-361235	2021-04-01	1032421A	2330-529775	2BW17984-1500-004
0242-361236	2021-04-01	1032421A	2330-529775	2BW17984-1500-004
0242-361237	2021-04-01	1032421B	2330-529775	2BW17984-1500-004
0242-361238	2021-04-01	1032421B	2330-529775	2BW17984-1500-004
0242-361239	2021-04-01	1032421B	2330-529775	2BW17984-1500-004
0242-361240	2021-04-01	1032421B	2330-529775	2BW17984-1500-004
0242-361241	2021-04-01	1032421B	2330-529806	2BW17984-1500-004
0242-361242	2021-04-01	1032421B	2330-529806	2BW17984-1500-004
0242-361243	2021-04-01	1032421B	2330-529806	2BW17984-1500-004
0242-361244	2021-04-01	1032421B	2330-529806	2BW17984-1500-004
0242-361245	2021-04-01	1032421B	2330-529806	2AW17956-1500-017
0242-361246	2021-04-01	1032421B	2330-529806	2AW17956-1500-017
0242-361247	2021-04-01	1032421B	2330-529806	2AW17956-1500-017
0242-361248	2021-04-01	1032421B	2330-529806	2AW17956-1500-017
0242-361249	2021-04-01	1032421B	2330-529806	2AW17956-1500-017
0242-361250	2021-04-01	1032421B	2330-529806	2AW17956-1500-017

QUANTITY (ROLLS): 188

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MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS



PROJECT NUMBER: 654
 REFERENCE NUMBER: SO-091553
 PACKING SLIP NUMBER: Pre-SO-091553-1

PROJECT NAME : PRAIRIE GREEN LF CELL 16 - STONY MOUNTAIN, MB

PRODUCT: 1101165-06791-2
 Bentoliner 4.35 kg/m², NW

Test	Property	Direction	Test Method	Frequency	Unit
	1 Bentonite Mass (0% moisture)		ASTM D5993	1/40,000 ft ²	kg/m ²
	2 Peel Strength (min.avg.)	MD	ASTM D4632	1/40,000 ft ²	N
	3 Peel Strength (min.avg.)	MD	ASTM D6496	1/40,000 ft ²	N/m
	4 Tensile Strength MD (min. avg.)	MD	ASTM D6768	1/40,000 ft ²	kN/m
Test	1	2	3	4	
SPECIFICATIONS	4.35	93	610	8.8	
0242-360522	5.77	169	1,418	9.6	
0242-360523	5.77	169	1,418	9.6	
0242-360524	5.77	169	1,418	9.6	
0242-360525	5.77	169	1,418	9.6	
0242-360526	5.77	169	1,418	9.6	
0242-360527	5.77	169	1,418	9.6	
0242-360528	5.77	169	1,418	9.6	
0242-360529	5.77	169	1,418	9.6	
0242-360530	5.77	169	1,418	9.6	
0242-360531	5.77	169	1,418	9.6	
0242-360532	5.77	169	1,418	9.6	
0242-360533	5.77	169	1,418	9.6	
0242-360534	5.77	169	1,418	9.6	
0242-360535	5.77	169	1,418	9.6	
0242-360536	5.77	169	1,418	9.6	
0242-360537	5.77	169	1,418	9.6	
0242-360538	4.78	187	1,629	9.8	
0242-360539	4.78	187	1,629	9.8	
0242-360540	4.78	187	1,629	9.8	
0242-360541	4.78	187	1,629	9.8	
0242-360542	4.78	187	1,629	9.8	
0242-360543	4.78	187	1,629	9.8	
0242-360544	4.78	187	1,629	9.8	
0242-360545	4.78	187	1,629	9.8	
0242-360546	4.78	187	1,629	9.8	
0242-360547	4.78	187	1,629	9.8	
0242-360548	4.78	187	1,629	9.8	

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MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS



PROJECT NUMBER: 654
REFERENCE NUMBER: SO-091553
PACKING SLIP NUMBER: Pre-SO-091553-1

PROJECT NAME : PRAIRIE GREEN LF CELL 16 - STONY MOUNTAIN, MB

Test	1	2	3	4
0242-360549	4.78	187	1,629	9.8
0242-360550	4.78	187	1,629	9.8
0242-360551	4.78	187	1,629	9.8
0242-360552	4.78	187	1,629	9.8
0242-360553	4.78	187	1,629	9.8
0242-360554	4.48	129	1,068	8.8
0242-360555	4.48	129	1,068	8.8
0242-360556	4.48	129	1,068	8.8
0242-360557	4.48	129	1,068	8.8
0242-360558	4.48	129	1,068	8.8
0242-360559	4.48	129	1,068	8.8
0242-360560	4.48	129	1,068	8.8
0242-360561	4.48	129	1,068	8.8
0242-360562	4.48	129	1,068	8.8
0242-360563	4.48	129	1,068	8.8
0242-360564	4.48	129	1,068	8.8
0242-360565	4.48	129	1,068	8.8
0242-360566	4.48	129	1,068	8.8
0242-360567	4.48	129	1,068	8.8
0242-360568	4.48	129	1,068	8.8
0242-360569	4.48	129	1,068	8.8
0242-360571	4.50	182	1,488	9.4
0242-360572	4.50	182	1,488	9.4
0242-360573	4.50	182	1,488	9.4
0242-360574	4.50	182	1,488	9.4
0242-361114	4.96	249	2,101	9.9
0242-361115	4.96	249	2,101	9.9
0242-361116	4.96	249	2,101	9.9
0242-361117	4.96	249	2,101	9.9
0242-361118	4.96	249	2,101	9.9
0242-361119	4.96	249	2,101	9.9
0242-361120	4.96	249	2,101	9.9
0242-361121	4.96	249	2,101	9.9
0242-361122	4.96	249	2,101	9.9
0242-361123	4.96	249	2,101	9.9
0242-361124	4.96	249	2,101	9.9
0242-361125	4.96	249	2,101	9.9

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MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS



PROJECT NUMBER: 654
 REFERENCE NUMBER: SO-091553
 PACKING SLIP NUMBER: Pre-SO-091553-1

PROJECT NAME : PRAIRIE GREEN LF CELL 16 - STONY MOUNTAIN, MB

Test	1	2	3	4
0242-361126	4.96	249	2,101	9.9
0242-361127	4.96	249	2,101	9.9
0242-361128	4.96	249	2,101	9.9
0242-361129	4.96	249	2,101	9.9
0242-361130	4.57	138	1,138	10.9
0242-361131	4.57	138	1,138	10.9
0242-361132	4.57	138	1,138	10.9
0242-361133	4.57	138	1,138	10.9
0242-361134	4.57	138	1,138	10.9
0242-361135	4.57	138	1,138	10.9
0242-361136	4.57	138	1,138	10.9
0242-361137	4.57	138	1,138	10.9
0242-361138	4.57	138	1,138	10.9
0242-361139	4.57	138	1,138	10.9
0242-361140	4.57	138	1,138	10.9
0242-361141	4.57	138	1,138	10.9
0242-361142	4.57	138	1,138	10.9
0242-361143	4.57	138	1,138	10.9
0242-361144	4.57	138	1,138	10.9
0242-361145	4.57	138	1,138	10.9
0242-361146	4.64	231	1,891	10.7
0242-361147	4.64	231	1,891	10.7
0242-361148	4.64	231	1,891	10.7
0242-361149	4.64	231	1,891	10.7
0242-361150	4.64	231	1,891	10.7
0242-361151	4.64	231	1,891	10.7
0242-361152	4.64	231	1,891	10.7
0242-361153	4.64	231	1,891	10.7
0242-361154	4.64	231	1,891	10.7
0242-361155	4.64	231	1,891	10.7
0242-361156	4.64	231	1,891	10.7
0242-361157	4.64	231	1,891	10.7
0242-361158	4.64	231	1,891	10.7
0242-361159	4.64	231	1,891	10.7
0242-361160	4.64	231	1,891	10.7
0242-361161	4.64	231	1,891	10.7
0242-361162	4.85	182	1,541	10.1

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MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS



PROJECT NUMBER: 654
 REFERENCE NUMBER: SO-091553
 PACKING SLIP NUMBER: Pre-SO-091553-1

PROJECT NAME : PRAIRIE GREEN LF CELL 16 - STONY MOUNTAIN, MB

Test	1	2	3	4
0242-361163	4.85	182	1,541	10.1
0242-361164	4.85	182	1,541	10.1
0242-361165	4.85	182	1,541	10.1
0242-361166	4.85	182	1,541	10.1
0242-361167	4.85	182	1,541	10.1
0242-361168	4.85	182	1,541	10.1
0242-361169	4.85	182	1,541	10.1
0242-361171	4.85	182	1,541	10.1
0242-361172	4.85	182	1,541	10.1
0242-361173	4.85	182	1,541	10.1
0242-361174	4.85	182	1,541	10.1
0242-361175	4.85	182	1,541	10.1
0242-361176	4.85	182	1,541	10.1
0242-361177	4.85	182	1,541	10.1
0242-361178	4.85	182	1,541	10.1
0242-361179	4.79	196	1,629	9.7
0242-361180	4.79	196	1,629	9.7
0242-361181	4.79	196	1,629	9.7
0242-361182	4.79	196	1,629	9.7
0242-361183	4.79	196	1,629	9.7
0242-361184	4.79	196	1,629	9.7
0242-361185	4.79	196	1,629	9.7
0242-361186	4.79	196	1,629	9.7
0242-361187	4.79	196	1,629	9.7
0242-361188	4.79	196	1,629	9.7
0242-361189	4.79	196	1,629	9.7
0242-361190	4.79	196	1,629	9.7
0242-361191	4.79	196	1,629	9.7
0242-361192	4.79	196	1,629	9.7
0242-361193	4.79	196	1,629	9.7
0242-361194	4.79	196	1,629	9.7
0242-361195	4.70	196	1,594	10.2
0242-361196	4.70	196	1,594	10.2
0242-361197	4.70	196	1,594	10.2
0242-361198	4.70	196	1,594	10.2
0242-361199	4.70	196	1,594	10.2
0242-361200	4.70	196	1,594	10.2

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MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS



PROJECT NUMBER: 654
 REFERENCE NUMBER: SO-091553
 PACKING SLIP NUMBER: Pre-SO-091553-1

PROJECT NAME : PRAIRIE GREEN LF CELL 16 - STONY MOUNTAIN, MB

Test	1	2	3	4
0242-361201	4.70	196	1,594	10.2
0242-361202	4.70	196	1,594	10.2
0242-361203	4.70	196	1,594	10.2
0242-361204	4.70	196	1,594	10.2
0242-361205	4.70	196	1,594	10.2
0242-361206	4.70	196	1,594	10.2
0242-361207	4.70	196	1,594	10.2
0242-361208	4.70	196	1,594	10.2
0242-361209	4.70	196	1,594	10.2
0242-361210	4.70	196	1,594	10.2
0242-361211	4.57	178	1,471	9.5
0242-361212	4.57	178	1,471	9.5
0242-361213	4.57	178	1,471	9.5
0242-361214	4.57	178	1,471	9.5
0242-361215	4.57	178	1,471	9.5
0242-361216	4.57	178	1,471	9.5
0242-361217	4.57	178	1,471	9.5
0242-361218	4.57	178	1,471	9.5
0242-361219	4.57	178	1,471	9.5
0242-361220	4.57	178	1,471	9.5
0242-361221	4.57	178	1,471	9.5
0242-361222	4.57	178	1,471	9.5
0242-361223	4.57	178	1,471	9.5
0242-361224	4.57	178	1,471	9.5
0242-361225	4.57	178	1,471	9.5
0242-361226	4.57	178	1,471	9.5
0242-361227	4.54	178	1,401	9.6
0242-361228	4.54	178	1,401	9.6
0242-361229	4.54	178	1,401	9.6
0242-361230	4.54	178	1,401	9.6
0242-361231	4.54	178	1,401	9.6
0242-361232	4.54	178	1,401	9.6
0242-361233	4.54	178	1,401	9.6
0242-361234	4.54	178	1,401	9.6
0242-361235	4.54	178	1,401	9.6
0242-361236	4.54	178	1,401	9.6
0242-361237	4.54	178	1,401	9.6

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MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS



PROJECT NUMBER: 654
 REFERENCE NUMBER: SO-091553
 PACKING SLIP NUMBER: Pre-SO-091553-1

PROJECT NAME : PRAIRIE GREEN LF CELL 16 - STONY MOUNTAIN, MB

Test	1	2	3	4
0242-361238	4.54	178	1,401	9.6
0242-361239	4.54	178	1,401	9.6
0242-361240	4.54	178	1,401	9.6
0242-361241	4.54	178	1,401	9.6
0242-361242	4.54	178	1,401	9.6
0242-361243	4.81	129	1,051	10.7
0242-361244	4.81	129	1,051	10.7
0242-361245	4.81	129	1,051	10.7
0242-361246	4.81	129	1,051	10.7
0242-361247	4.81	129	1,051	10.7
0242-361248	4.81	129	1,051	10.7
0242-361249	4.81	129	1,051	10.7
0242-361250	4.81	129	1,051	10.7

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MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS



PROJECT NUMBER: 654
 REFERENCE NUMBER: SO-091553
 PACKING SLIP NUMBER: Pre-SO-091553-1

PROJECT NAME : PRAIRIE GREEN LF CELL 16 - STONY MOUNTAIN, MB

PRODUCT: 1101165-06791-2
 Bentoliner 4.35 kg/m², NW

Test	Property	Direction	Test Method	Frequency	Unit
1	Mass per Unit Area (min. avg.)		ASTM D5261	1/200,000 ft ²	g/m ²
	Grab Tensile Properties (min. avg)		ASTM D4632	1/200,000 ft ²	
2	Strength (MD)				N
3	Strength (TD)				N
4	Elongation (MD)				%
5	Elongation (TD)				%

Test	1	2	3	4	5
Specification	200	98	98	130	100
2330-529584	254.3	258	391	197	284
2330-529587	254.3	258	391	197	284
2330-529590	234.0	231	285	193	235
2330-529591	234.0	231	285	193	235
2330-529594	234.0	231	285	193	235
2330-529670	228.9	258	271	222	219
2330-529756	234.0	245	218	241	231
2330-529757	254.3	280	325	285	253
2330-529758	254.3	280	325	285	253
2330-529759	254.3	280	325	285	253
2330-529763	254.3	280	325	285	253
2330-529765	244.1	222	200	310	263
2330-529775	224.5	240	191	215	221
2330-529777	224.5	240	191	215	221
2330-529779	224.5	240	191	215	221
2330-529781	228.9	178	218	215	224
2330-529782	228.9	178	218	215	224
2330-529795	267.2	236	249	216	252
2330-529806	253.3	249	258	176	266
2330-529807	253.3	249	258	176	266

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MANUFACTURING QUALITY CONTROL

TEST RESULTS - ROLLS



PROJECT NUMBER: 654
 REFERENCE NUMBER: SO-091553
 PACKING SLIP NUMBER: Pre-SO-091553-1

PROJECT NAME : PRAIRIE GREEN LF CELL 16 - STONY MOUNTAIN, MB

Test	Property	Direction	Test Method	Frequency	Unit
1	Swell Index (min.)		ASTM D5890		ml/2 g
2	Moisture Content (max.)		ASTM D4643		%
3	Fluid Loss (max.)		ASTM D5891		ml

Test	1	2	3
Specification	24	12	18
1031321B	31.0	9.9	15
1031321C	31.0	10.1	14
1031321D	31.0	8.8	15
1032221A	30.0	9.8	15
1032221B	28.5	10.6	15
1032221C	29.5	9.2	15
1032221D	30.0	9.7	15
1032421A	30.0	9.5	15
1032421B	30.5	10.0	14

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TEST RESULTS - ROLLS


PROJECT NUMBER: 654
 REFERENCE NUMBER: SO-091553
 PACKING SLIP NUMBER: Pre-SO-091553-1

PROJECT NAME : PRAIRIE GREEN LF CELL 16 - STONY MOUNTAIN, MB

Test	Property	Direction	Test Method	Frequency	Unit
1	Mass per Unit Area (min. avg.)		ASTM D5261	1/200,000 ft ²	g/m ²
	Grab Tensile Properties (min. avg)		ASTM D4632	1/200,000 ft ²	
2	Strength (MD)				N
3	Strength (TD)				N
4	Elongation (MD)				%
5	Elongation (TD)				%

Test	1	2	3	4	5
Specification	203	400	444	10	10
2AW17897-1500-001	226.2	494	681	21	77
2AW17897-1500-005	226.2	494	681	21	77
2AW17897-1500-008	223.1	516	689	23	81
2AW17897-1500-010	223.8	476	712	23	69
2AW17897-1500-013	223.8	476	712	23	69
2AW17897-1500-015	218.4	512	685	23	66
2AW17956-1500-017	222.4	458	658	20	72
2BW17984-1500-002	215.3	480	747	24	79
2BW17984-1500-003	215.3	480	747	24	79
2BW17984-1500-004	229.9	498	712	25	85
2BW17984-1500-005	229.9	498	712	25	85
2BW17984-1500-006	229.9	498	712	25	85
2BW17984-1500-007	222.1	480	507	17	51
2BW17984-1500-008	222.1	480	507	17	51
2BW17984-1500-010	218.0	476	632	22	86
2BW17984-1500-011	218.0	476	632	22	86
2BW17984-1500-013	213.9	494	556	16	59
2BW17984-1500-014	213.9	494	556	16	59
2BW17984-1500-015	213.9	494	556	16	59
2BW17984-1500-016	221.4	489	796	26	84
2BW17984-1500-017	221.4	489	796	26	84

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GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2021

PRODUCT : NATIONAL® 30

SHIPPED FROM BENTONITE PERFORMANCE MINERALS LLC
 554 US HWY 212
 COLONY PLANT
 BELLE FOURCHE, S D 57717

BOL #	LOAD DATE	LOT CODE	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC MEQ 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
B0004527860	03-14-21	1031321B	8.9	0.08	9.87	13.0	116	33	1014

MARCH	No of CARS	M AVG	STD DEV	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
29		8.67	0.95	0.16	0.23	5.43	13.05	114.62	32.66	1005.97
						2.50	0.64	3.45	1.60	38.41

DATE
02-*

YTD	No of CARS	M AVG	STD DEV	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
114		8.87	0.87	0.17	0.35	4.54	12.97	114.79	32.53	999.11
						2.27	0.70	3.48	1.67	35.59

SOLD TO: GSE CLAY LINING TECHNOLOGY, Co.
 3150 FIRST AVENUE
 SPEARFISH, SD 57783

For any questions contact
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 Tucker Goodvin

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 Cheryl Hofer (chofer@gseworld.com)
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SHIPPED TO: GSE CLAY LINING TECHNOLOGY, Co.
 3150 FIRST AVENUE
 SPEARFISH, SD 57783

Prepared by: TO
 03/15/21

CC: Thomas Anderson
 Jason Tawse
 Thomas Cortner
 File

GSE BENTOLINER

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PRODUCT : NATIONAL® 30

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BOL #	LOAD DATE	LOT CODE	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC MEQ 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
B0004527861	03-14-21	1031321C	9.1	0.71	5.19	12.4	110	31	960

MARCH	No of CARS	M AVG	STD DEV	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
30		8.69	0.94	0.18	0.24	5.43	13.03	114.47	32.60	1004.43
				0.94	0.24	2.46	0.64	3.49	1.60	38.66

DATE
02-*

YTD	No of CARS	M AVG	STD DEV	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
115		8.87	0.87	0.18	0.35	4.55	12.97	114.75	32.52	998.79
				0.87	0.35	2.26	0.69	3.50	1.67	35.62

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 03/15/21

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BOL #	LOAD DATE	LOT CODE	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC MEQ 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
B0004527863	03-15-21	1031321D	7.8	0.02	5.76	12.6	112	35	961

MARCH	No of CARS	M AVG	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN	DATE
32	32	8.66	0.92	0.17	5.40	13.01	114.38	32.66	1003.13	02-*
	STD DEV	0.24	0.24	2.39	0.63	3.41	1.61	38.19		

YTD	No of CARS	M AVG	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
117	117	8.86	0.87	0.17	4.55	12.96	114.73	32.53	998.54
	STD DEV	0.35	0.35	2.24	0.69	3.48	1.67	35.50	

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BOL #	LOAD DATE	LOT CODE	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC MEQ 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
B0004531157	03-22-21	1032221A	8.5	0.10	4.65	13.8	112	31	967

MARCH	No of CARS	M AVG	STD DEV	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN		
48		8.86	0.85	0.20	0.25	5.34	2.24	12.98	0.61	114.17	32.88	991.00
								3.56	1.56	42.14		

DATE
03-*

YTD	No of CARS	M AVG	STD DEV	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN		
133		8.91	0.84	0.18	0.34	4.63	2.22	12.96	0.68	114.61	32.62	994.91
								3.53	1.65	37.32		

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 03/23/21

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BOL #	LOAD DATE	LOT CODE	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC MEQ 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN	MARCH No of CARS	M AVG	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN	DATE
B0004531158	03-23-21	1032221B	9.5	0.65	4.11	13.0	110	29	1010	50	8.86	0.20	5.34	12.98	114.08	32.78	991.14	03-*	
B0004531159	03-23-21	1032221C	8.4	0.04	6.45	13.4	114	32	979	50	STD DEV	0.84	0.25	2.21	0.60	3.53	1.63	41.41	

YTD No of CARS	M AVG	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
135	STD DEV	8.91	0.18	4.64	12.96	114.58	32.59	994.90
		0.84	0.34	2.21	0.67	3.53	1.67	37.11

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BOL #	LOAD DATE	LOT CODE	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC MEQ 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
B0004531158	03-23-21	1032221B	9.5	0.65	4.11	13.0	110	29	1010
B0004531159	03-23-21	1032221C	8.4	0.04	6.45	13.4	114	32	979

MARCH	No of CARS	M AVG	STD DEV	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN	
50		8.86	0.84	0.20	0.25	5.34	2.21	12.98	114.08	32.78	991.14
				0.60	3.53	1.63	41.41				

DATE
03-*

YTD	No of CARS	M AVG	STD DEV	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN	
135		8.91	0.84	0.18	0.34	4.64	2.21	12.96	114.58	32.59	994.90
				0.67	3.53	1.67	37.11				

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GSE BENTOLINER

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BOL #	LOAD DATE	LOT CODE	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC MEQ 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
B0004531162	03-23-21	1032221D	8.8	0.18	3.19	13.6	116	33	978

MARCH	No of CARS	M AVG	STD DEV	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN	
51		8.86	0.83	0.20	0.25	5.30	2.21	13.00	114.12	32.78	990.88
				0.60	3.51	1.61	41.04				

DATE
03-*

YTD	No of CARS	M AVG	STD DEV	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN	
136		8.91	0.84	0.18	0.34	4.63	2.20	12.97	114.59	32.59	994.78
				0.67	3.51	1.67	37.00				

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For any questions contact
 Q A SUPERVISOR
 Tucker Goodvin

Attn: **Bob Stadler (rstadler@gseworld.com)**
Chuck Taylor (ctaylor@gseworld.com)
Cheryl Hofer (chofer@gseworld.com)
(ezimmel@gseworld.com)

SHIPPED TO: GSE CLAY LINING TECHNOLOGY, Co.
 3150 FIRST AVENUE
 SPEARFISH, SD 57783

Prepared by: TO
 03/24/21

CC: Thomas Anderson
 Jason Tawse
 Thomas Cortner
 File

GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2021

PRODUCT : NATIONAL® 30

SHIPPED FROM **BENTONITE PERFORMANCE MINERALS LLC**
 554 US HWY 212
 COLONY PLANT
 BELLE FOURCHE, S D 57717

BOL #	LOAD DATE	LOT CODE	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC MEQ 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
B0004531163	03-24-21	1032421A	9.0	0.40	4.27	12.8	112	30	999

MARCH	No of CARS	M AVG	STD DEV	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
52		8.87	0.83	0.21	0.25	5.28	12.99	114.08	32.73	991.04
						2.19	0.60	3.49	1.64	40.66

DATE
03-*

YTD	No of CARS	M AVG	STD DEV	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
137		8.91	0.83	0.19	0.34	4.63	12.96	114.57	32.58	994.81
						2.19	0.67	3.51	1.67	36.87

SOLD TO: GSE CLAY LINING TECHNOLOGY, Co.
 3150 FIRST AVENUE
 SPEARFISH, SD 57783

For any questions contact
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Cheryl Hofer (chofer@gseworld.com)
(ezimmel@gseworld.com)

SHIPPED TO: GSE CLAY LINING TECHNOLOGY, Co.
 3150 FIRST AVENUE
 SPEARFISH, SD 57783

Prepared by: TO
 03/25/21

CC: Thomas Anderson
 Jason Tawse
 Thomas Cortner
 File

GSE BENTOLINER

CERTIFICATE OF ANALYSIS 2021

PRODUCT : NATIONAL® 30

SHIPPED FROM BENTONITE PERFORMANCE MINERALS LLC
 554 US HWY 212
 COLONY PLANT
 BELLE FOURCHE, S D 57717

BOL #	LOAD DATE	LOT CODE	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC MEQ 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
B0004531164	03-25-21	1032421B	9.6	0.34	2.23	13.4	110	31	1021

MARCH	No of CARS	M AVG	STD DEV	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN	
53		8.88	0.82	0.21	0.25	5.22	2.21	13.00	114.00	32.70	991.60
								0.60	3.50	1.64	40.48

DATE
03-*

YTD	No of CARS	M AVG	STD DEV	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	0 FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN	
138		8.91	0.83	0.19	0.34	4.61	2.20	12.97	114.54	32.57	994.99
								0.67	3.52	1.67	36.81

SOLD TO: GSE CLAY LINING TECHNOLOGY, Co.
 3150 FIRST AVENUE
 SPEARFISH, SD 57783

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 (ezimmel@gseworld.com)

SHIPPED TO: GSE CLAY LINING TECHNOLOGY, Co.
 3150 FIRST AVENUE
 SPEARFISH, SD 57783

Prepared by: TO
 03/26/21

CC: Thomas Anderson
 Jason Tawse
 Thomas Cortner
 File

FabriNet Series, 7.00 mm Nonwoven calendered,

PROPERTY	TEST METHOD	FREQUENCY ⁽¹⁾	UNIT Metric	1114162-06791-3
SPECIFICATIONS				
GEOCOMPOSITE				
Transmissivity	ASTM D4716	1/50,000 m ²	m ² /sec	1x10 ⁻³ Sand Geomembrane
Boundary Conditions Top				
Boundary Conditions Bottom				
Gradient			-	0.02
Load			kPa	300
Seat Time			hour	100
Ply Adhesion Average (min. avg.)	ASTM D7005	1/4,600 m ²	g/cm	178
GEONET CORE				
Thickness (min. avg.)	ASTM D5199	1/4,600 m ²	mm	7.0
Density (min.)	ASTM D792	1/4,600 m ²	g/cc	0.94
Carbon Black Content	ASTM D4218	1/4,600 m ²	%	2.0
Tensile Strength (MD)	ASTM D7179	1/50,000 ft ²	N/mm	11.5
GEOTEXTILE (2)				
Mass	ASTM D5261	1/8,300 m ²	g/m ²	270
Grab Tensile Strength	ASTM D4632	1/8,300 m ²	N	975
Grab Elongation	ASTM D4632	1/8,300 m ²	%	50
CBR Puncture Strength	ASTM D6241	1/50,000 m ²	N	2557
Trapezoidal Tear Strength	ASTM D4533	1/8,300 m ²	N	395
Apparent Opening Size (max.)	ASTM D4751	1/50,000 m ²	mm	0.180
Permittivity	ASTM D4491	1/50,000 m ²	sec-1	1.3
Water Flow Rate	ASTM D4491	1/50,000 m ²	L/min/m ²	3865
UV Resistance-% retained after 500 hrs (typ.)	ASTM D4355	Per formulation	%	70
SUPPLY SPECIFICATIONS(Roll dimensions may vary ±1%)				
Roll Dimension - Width	-		m	4.57
Roll Dimension - Length	-		m	61
Area (Surface/Roll)	-		m ²	278.77

NOTES

2. Component properties prior to lamination.

* The information contained herein is provided for reference purposes only and is not intended as a warranty of guarantee. Final determination of suitability for use contemplated is the sole responsibility of the user. SOLMAX assumes no liability in connection with the use of this information.

Solmax is not a design professional and has not performed any design services to determine if Solmax's goods comply with any project plans or specifications, or with the application or use of Solmax's goods to any particular system, project, purpose, installation or specification.

SOLD TO:
TITAN ENVIR. CONTAINMENT LTD.

 777 QUEST BOULEVARD
 ILE DES CHENES,MB,ROA OT1
 Canada

CONTACT: JANELLE HEBERT

TELEPHONE:
EMAIL:

 1114162-06791-3, FabriNet 7.0 mm, Double Sided 8 oz/yd², Nonwoven Cal.

SHIP TO:
PRAIRIE GREEN LF

 Customer pick-up
 Export to Canada
 WINNIPEG,MB,
 Canada

CONTACT: TBD

TELEPHONE: TBD

EMAIL:

0116-003807	N/A	4.57	61.00	278.77	SQMT	1,216.00	551.57
0116-003808	N/A	4.57	61.00	278.77	SQMT	1,236.00	560.64
0116-003813	N/A	4.57	61.00	278.77	SQMT	1,195.00	542.04
0116-003814	N/A	4.57	61.00	278.77	SQMT	1,195.00	542.04
0116-003833	N/A	4.57	61.00	278.77	SQMT	1,190.00	539.78
0116-003834	N/A	4.57	61.00	278.77	SQMT	1,170.00	530.70
0116-003835	N/A	4.57	61.00	278.77	SQMT	1,180.00	535.24
0116-003836	N/A	4.57	61.00	278.77	SQMT	1,180.00	535.24
0116-003837	N/A	4.57	61.00	278.77	SQMT	1,195.00	542.04
0116-003838	N/A	4.57	61.00	278.77	SQMT	1,165.00	528.43
0116-003839	N/A	4.57	61.00	278.77	SQMT	1,150.00	521.63
0116-003840	N/A	4.57	61.00	278.77	SQMT	1,175.00	532.97
0116-003841	N/A	4.57	61.00	278.77	SQMT	1,175.00	532.97
0116-003842	N/A	4.57	61.00	278.77	SQMT	1,175.00	532.97
0116-003845	N/A	4.57	61.00	278.77	SQMT	1,180.00	535.24
0116-003846	N/A	4.57	61.00	278.77	SQMT	1,194.00	541.59
0116-003847	N/A	4.57	61.00	278.77	SQMT	1,205.00	546.58
0116-003848	N/A	4.57	61.00	278.77	SQMT	1,208.00	547.94
0116-003851	N/A	4.57	61.00	278.77	SQMT	1,185.00	537.51
0116-003852	N/A	4.57	61.00	278.77	SQMT	1,183.00	536.60
0116-003853	N/A	4.57	61.00	278.77	SQMT	1,184.00	537.05
0116-003854	N/A	4.57	61.00	278.77	SQMT	1,190.00	539.78
0116-003858	N/A	4.57	61.00	278.77	SQMT	1,214.00	550.66
0116-003859	N/A	4.57	61.00	278.77	SQMT	1,175.00	532.97

TOTAL PART CODE:	24	Pieces	6,690.48	SQMT	28,515.00	12,934.18
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Net Weight	28,395.00	12,879.74
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SOLMAX GEOSYNTHETICS LLC

 19103 GUNDLE ROAD
 HOUSTON, TEXAS, 77073, UNITED STATES

MF-LOG-02

REV.03/2007-06-01



PACKING LIST

NUMBER: RR-077215

DATE: 28-Apr-2021

SOLD TO:**TITAN ENVIR. CONTAINMENT LTD.**

777 QUEST BOULEVARD
ILE DES CHENES,MB,ROA OT1
Canada

CONTACT: JANELLE HEBERT

TELEPHONE:

EMAIL:

1114162-06791-3, FabriNet 7.0 mm, Double Sided 8 oz/yd², Nonwoven Cal.

SHIP TO:**PRAIRIE GREEN LF**

Customer pick-up
Export to Canada
WINNIPEG,MB,
Canada

CONTACT: TBD

TELEPHONE: TBD

EMAIL:

0116-003811	N/A	4.57	61.00	278.77	SQMT	1,190.00	539.78
0116-003812	N/A	4.57	61.00	278.77	SQMT	1,203.00	545.67
0116-003815	N/A	4.57	61.00	278.77	SQMT	1,223.00	554.74
0116-003816	N/A	4.57	61.00	278.77	SQMT	1,187.00	538.41
0116-003817	N/A	4.57	61.00	278.77	SQMT	1,195.00	542.04
0116-003818	N/A	4.57	61.00	278.77	SQMT	1,197.00	542.95
0116-003819	N/A	4.57	61.00	278.77	SQMT	1,185.00	537.51
0116-003821	N/A	4.57	61.00	278.77	SQMT	1,240.00	562.46
0116-003822	N/A	4.57	61.00	278.77	SQMT	1,185.00	537.51
0116-003823	N/A	4.57	61.00	278.77	SQMT	1,230.00	557.92
0116-003824	N/A	4.57	61.00	278.77	SQMT	1,220.00	553.38
0116-003825	N/A	4.57	61.00	278.77	SQMT	1,170.00	530.70
0116-003826	N/A	4.57	61.00	278.77	SQMT	1,185.00	537.51
0116-003827	N/A	4.57	61.00	278.77	SQMT	1,175.00	532.97
0116-003828	N/A	4.57	61.00	278.77	SQMT	1,190.00	539.78
0116-003831	N/A	4.57	61.00	278.77	SQMT	1,165.00	528.43
0116-003832	N/A	4.57	61.00	278.77	SQMT	1,165.00	528.43
0116-003843	N/A	4.57	61.00	278.77	SQMT	1,180.00	535.24
0116-003844	N/A	4.57	61.00	278.77	SQMT	1,195.00	542.04
0116-003849	N/A	4.57	61.00	278.77	SQMT	1,206.00	547.03
0116-003850	N/A	4.57	61.00	278.77	SQMT	1,189.00	539.32
0116-003855	N/A	4.57	61.00	278.77	SQMT	1,188.00	538.87
0116-003856	N/A	4.57	61.00	278.77	SQMT	1,190.00	539.78
0116-003857	N/A	4.57	61.00	278.77	SQMT	1,195.00	542.04

TOTAL PART CODE	24	Pieces	6,690.48	SQMT	28,648.00	12,994.51
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Net Weight	28,528.00	12,940.11
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SOLMAX GEOSYNTHETICS LLC

19103 GUNDLE ROAD
HOUSTON, TEXAS, 77073, UNITED STATES

MF-LOG-02

REV.03/2007-06-01

SOLD TO:
TITAN ENVIR. CONTAINMENT LTD.

 777 QUEST BOULEVARD
 ILE DES CHENES,MB,ROA OT1
 Canada

CONTACT: JANELLE HEBERT

TELEPHONE:
EMAIL:

 1114162-06791-3, FabriNet 7.0 mm, Double Sided 8 oz/yd², Nonwoven Cal.

SHIP TO:
PRAIRIE GREEN LF

 Customer pick-up
 Export to Canada
 WINNIPEG,MB,
 Canada

CONTACT: TBD

TELEPHONE: TBD

EMAIL:

0116-002849	N/A	4.57	61.00	278.77	SQMT	1,120.00	508.02
0116-002851	N/A	4.57	61.00	278.77	SQMT	1,113.00	504.85
0116-002852	N/A	4.57	61.00	278.77	SQMT	1,135.00	514.83
0116-002854	N/A	4.57	61.00	278.77	SQMT	1,111.00	503.94
0116-002857	N/A	4.57	61.00	278.77	SQMT	1,118.00	507.12
0116-002875	N/A	4.57	61.00	278.77	SQMT	1,091.00	494.87
0116-002884	N/A	4.57	61.00	278.77	SQMT	1,085.00	492.15
0116-002885	N/A	4.57	61.00	278.77	SQMT	1,140.00	517.10
0116-003789	N/A	4.57	61.00	278.77	SQMT	1,130.00	512.56
0116-003793	N/A	4.57	61.00	278.77	SQMT	1,180.00	535.24
0116-003794	N/A	4.57	61.00	278.77	SQMT	1,181.00	535.69
0116-003795	N/A	4.57	61.00	278.77	SQMT	1,184.00	537.05
0116-003796	N/A	4.57	61.00	278.77	SQMT	1,187.00	538.41
0116-003797	N/A	4.57	61.00	278.77	SQMT	1,203.00	545.67
0116-003798	N/A	4.57	61.00	278.77	SQMT	1,182.00	536.15
0116-003799	N/A	4.57	61.00	278.77	SQMT	1,189.00	539.32
0116-003800	N/A	4.57	61.00	278.77	SQMT	1,212.00	549.75
0116-003801	N/A	4.57	61.00	278.77	SQMT	1,183.00	536.60
0116-003802	N/A	4.57	61.00	278.77	SQMT	1,195.00	542.04
0116-003803	N/A	4.57	61.00	278.77	SQMT	1,180.00	535.24
0116-003804	N/A	4.57	61.00	278.77	SQMT	1,199.00	543.86
0116-003805	N/A	4.57	61.00	278.77	SQMT	1,207.00	547.49
0116-003806	N/A	4.57	61.00	278.77	SQMT	1,236.00	560.64
0116-003809	N/A	4.57	61.00	278.77	SQMT	1,215.00	551.12

TOTAL PART CODE	24	Pieces	6,690.48	SQMT	27,976.00	12,689.71
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Net Weight	27,856.00	12,635.27
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SOLMAX GEOSYNTHETICS LLC

 19103 GUNDLE ROAD
 HOUSTON, TEXAS, 77073, UNITED STATES

MF-LOG-02

REV.03/2007-06-01

SOLD TO:
TITAN ENVIR. CONTAINMENT LTD.

 777 QUEST BOULEVARD
 ILE DES CHENES,MB,ROA OT1
 Canada

CONTACT: JANELLE HEBERT

TELEPHONE:
EMAIL:

 1114162-06791-3, FabriNet 7.0 mm, Double Sided 8 oz/yd², Nonwoven Cal.

SHIP TO:
PRAIRIE GREEN LF

 Customer pick-up
 Export to Canada
 WINNIPEG,MB,
 Canada

CONTACT: TBD

TELEPHONE: TBD

EMAIL:

0116-002848	N/A	4.57	61.00	278.77	SQMT	1,135.00	514.83
0116-002850	N/A	4.57	61.00	278.77	SQMT	1,110.00	503.49
0116-002853	N/A	4.57	61.00	278.77	SQMT	1,110.00	503.49
0116-002855	N/A	4.57	61.00	278.77	SQMT	1,112.00	504.40
0116-002856	N/A	4.57	61.00	278.77	SQMT	1,143.00	518.46
0116-002858	N/A	4.57	61.00	278.77	SQMT	1,120.00	508.02
0116-002859	N/A	4.57	61.00	278.77	SQMT	1,123.00	509.38
0116-002860	N/A	4.57	61.00	278.77	SQMT	1,124.00	509.84
0116-002861	N/A	4.57	61.00	278.77	SQMT	1,120.00	508.02
0116-002863	N/A	4.57	61.00	278.77	SQMT	1,124.00	509.84
0116-002864	N/A	4.57	61.00	278.77	SQMT	1,136.00	515.28
0116-002865	N/A	4.57	61.00	278.77	SQMT	1,125.00	510.29
0116-002866	N/A	4.57	61.00	278.77	SQMT	1,130.00	512.56
0116-002867	N/A	4.57	61.00	278.77	SQMT	1,133.00	513.92
0116-002868	N/A	4.57	61.00	278.77	SQMT	1,116.00	506.21
0116-002872	N/A	4.57	61.00	278.77	SQMT	1,109.00	503.03
0116-002873	N/A	4.57	61.00	278.77	SQMT	1,097.00	497.59
0116-002874	N/A	4.57	61.00	278.77	SQMT	1,092.00	495.32
0116-002876	N/A	4.57	61.00	278.77	SQMT	1,103.00	500.31
0116-002879	N/A	4.57	61.00	278.77	SQMT	1,108.00	502.58
0116-002887	N/A	4.57	61.00	278.77	SQMT	1,125.00	510.29
0116-002889	N/A	4.57	61.00	278.77	SQMT	1,120.00	508.02
0116-002890	N/A	4.57	61.00	278.77	SQMT	1,130.00	512.56
0116-002895	N/A	4.57	61.00	278.77	SQMT	1,120.00	508.02

TOTAL PART CODE:	24	Pieces	6,690.48	SQMT	26,865.00	12,185.75
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Net Weight	26,745.00	12,131.34
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SOLMAX GEOSYNTHETICS LLC

 19103 GUNDLE ROAD
 HOUSTON, TEXAS, 77073, UNITED STATES

MF-LOG-02

REV.03/2007-06-01

SOLD TO:
TITAN ENVIR. CONTAINMENT LTD.

 777 QUEST BOULEVARD
 ILE DES CHENES,MB,ROA OT1
 Canada

CONTACT: JANELLE HEBERT

TELEPHONE:
EMAIL:

 1114162-06791-3, FabriNet 7.0 mm, Double Sided 8 oz/yd², Nonwoven Cal.

SHIP TO:
PRAIRIE GREEN LF

 Customer pick-up
 Export to Canada
 WINNIPEG,MB,
 Canada

CONTACT: TBD

TELEPHONE: TBD

EMAIL:

0116-002835	N/A	4.57	61.00	278.77	SQMT	1,119.00	507.57
0116-002837	N/A	4.57	61.00	278.77	SQMT	1,110.00	503.49
0116-002840	N/A	4.57	61.00	278.77	SQMT	1,127.00	511.20
0116-002841	N/A	4.57	61.00	278.77	SQMT	1,104.00	500.77
0116-002842	N/A	4.57	61.00	278.77	SQMT	1,121.00	508.48
0116-002843	N/A	4.57	61.00	278.77	SQMT	1,109.00	503.03
0116-002845	N/A	4.57	61.00	278.77	SQMT	1,116.00	506.21
0116-002862	N/A	4.57	61.00	278.77	SQMT	1,122.00	508.93
0116-002869	N/A	4.57	61.00	278.77	SQMT	1,139.00	516.64
0116-002870	N/A	4.57	61.00	278.77	SQMT	1,133.00	513.92
0116-002871	N/A	4.57	61.00	278.77	SQMT	1,137.00	515.74
0116-002877	N/A	4.57	61.00	278.77	SQMT	1,120.00	508.02
0116-002878	N/A	4.57	61.00	278.77	SQMT	1,153.00	522.99
0116-002880	N/A	4.57	61.00	278.77	SQMT	1,094.00	496.23
0116-002881	N/A	4.57	61.00	278.77	SQMT	1,100.00	498.95
0116-002882	N/A	4.57	61.00	278.77	SQMT	1,100.00	498.95
0116-002883	N/A	4.57	61.00	278.77	SQMT	1,141.00	517.55
0116-002886	N/A	4.57	61.00	278.77	SQMT	1,120.00	508.02
0116-002888	N/A	4.57	61.00	278.77	SQMT	1,120.00	508.02
0116-002891	N/A	4.57	61.00	278.77	SQMT	1,115.00	505.76
0116-002892	N/A	4.57	61.00	278.77	SQMT	1,115.00	505.76
0116-002893	N/A	4.57	61.00	278.77	SQMT	1,120.00	508.02
0116-002894	N/A	4.57	61.00	278.77	SQMT	1,115.00	505.76
0116-002896	N/A	4.57	61.00	278.77	SQMT	1,120.00	508.02

TOTAL PART CODE:	24	Pieces	6,690.48	SQMT	26,870.00	12,188.03
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Net Weight	26,750.00	12,133.61
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SOLMAX GEOSYNTHETICS LLC

 19103 GUNDLE ROAD
 HOUSTON, TEXAS, 77073, UNITED STATES

MF-LOG-02

REV.03/2007-06-01

TE-E8 Certification

TITAN ENVIRONMENTAL CONTAINMEN
777 QUEST BLVD

Proj Name: **

ILES DES CHENES, MB ROA OT1

**

This is to certify that Titan TE-E8 is a needlepunched nonwoven geotextile composed of polypropylene fibers, which are formed into a stable network such that the fibers retain their relative position. Titan TE-E8 geotextile is inert to biological degradation and resists naturally encountered chemicals, alkalis, and acids.

Mechanical Properties	Test Method	Minimum Average Roll Value			
GRAB TENSILE STRENGTH (MD)	ASTM D4632	230	LBS	1024	N
GRAB TENSILE STRENGTH (CD)	ASTM D4632	230	LBS	1024	N
ELONGATION (MD)	ASTM D4632	50	%		
ELONGATION (CD)	ASTM D4632	50	%		
TEAR STRENGTH (MD)	ASTM D4533	95	LBS	423	N
TEAR STRENGTH (CD)	ASTM D4533	95	LBS	423	N
CBR PUNCTURE	ASTM D6241	600	LBS	2670	N
MASS/UNIT WEIGHT	ASTM D5261	8.0	OZ/YD2	271.2	G/M2
THICKNESS	ASTM D5199	90	MILS	2	MM

Mechanical Properties	Test Method	Minimum Roll Value			
PERMITTIVITY	ASTM D4491	1.4	SEC-1		
PERMEABILITY	ASTM D4491	.31	CM/SEC		
WATER FLOW RATE	ASTM D4491	110	GPM/FT2	4481	L/MIN/M2

Mechanical Properties	Test Method	Minimum Test Value			
UV RESISTANCE @ 500 HOURS	ASTM D4355	80	%		

Mechanical Properties	Test Method	Maximum Opening Size			
APPARENT OPENING SIZE - SIEVE	ASTM D4751	100	#		
APPARENT OPENING SIZE - MM	ASTM D4751	.150	MM		

Certification reflects test results at time of manufacturing and shipment. Nicolon Corporation is not responsible for environment or other factors which could alter the physical properties. ASTM D4491 - Tested according to Constant Head procedure.

* * * END OF REPORT * * *

This March 31, 2021



Melissa Medlin, Quality Manager

CERT#: 1017991

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Accreditation #: GAI-LAP-25-97

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365 South Holland Dr.
Pendergrass, GA 30567

Tel 706 693 2226
Tel 888 795 0808

www.tencategeo.us



TE-E16 Certification

TITAN ENVIRONMENTAL CONTAINMEN
777 QUEST BLVD

Proj Name: **

ILES DES CHENES, MB ROA OT1

**

This is to certify that Titan Environmental Containment TE-E16 is a needle punched nonwoven geotextile composed of polypropylene fibers, which are formed into a stable network such that the fibers retain their relative position. Titan Environmental Containment TE-E16 geotextile is inert to biological degradation and resists naturally encountered chemicals, alkalis, and acids.

Mechanical Properties	Test Method	Minimum Average Roll Value			
GRAB TENSILE STRENGTH (MD)	ASTM D4632	425	LBS	1891	N
GRAB TENSILE STRENGTH (CD)	ASTM D4632	425	LBS	1891	N
ELONGATION (MD)	ASTM D4632	50	%		
ELONGATION (CD)	ASTM D4632	50	%		
TEAR STRENGTH (MD)	ASTM D4533	155	LBS	690	N
TEAR STRENGTH (CD)	ASTM D4533	155	LBS	690	N
CBR PUNCTURE	ASTM D6241	1200	LBS	5340	N
MASS/UNIT WEIGHT	ASTM D5261	16.0	OZ/YD2	542.4	G/M2
THICKNESS	ASTM D5199	175	MILS	4	MM

Mechanical Properties	Test Method	Minimum Roll Value			
PERMITTIVITY	ASTM D4491	.7	SEC-1		
PERMEABILITY	ASTM D4491	.31	CM/SEC		
WATER FLOW RATE	ASTM D4491	50	GPM/FT2	2037	L/MIN/M2

Mechanical Properties	Test Method	Minimum Test Value	
UV RESISTANCE @ 500 HOURS	ASTM D4355	80	%

Mechanical Properties	Test Method	Maximum Opening Size	
APPARENT OPENING SIZE - SIEVE	ASTM D4751	100	#
APPARENT OPENING SIZE - MM	ASTM D4751	.150	MM

Certification reflects test results at time of manufacturing and shipment. Nicolon Corporation is not responsible for environment or other factors which could alter the physical properties. ASTM D 4491 - Tested according to Constant Head procedure.

* * * END OF REPORT * * *

This March 31, 2021



Melissa Medlin, Quality Manager

CERT#: 1017992

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Accreditation #: GAI-LAP-25-97

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GEOSYNTHETICS PROPERTIES FOR PRODUCT - TE-E16

Order#: 1135708-000 BOL#: 2248143 PO#: PO610

Geotextile Properties

AOS	CBR	ELONG	ELONG	WATER	GRAB	GRAB	PERME	PERMI T	THI CK	TRAP	TRAP	WEI GHT	
U. S.	PUNC	ATI ON	ATI ON	FLOW	TENSI LE	TENSI LE	ABI LI TY	TI VI TY	NESS	TEAR	TEAR	ASTM	
SI EVE	TURE	(CD)	(MD)	RATE	(CD)	(MD)				(CD)	(MD)	D5261	
ASTM	ASTM	ASTM	ASTM	ASTM	ASTM	ASTM	ASTM	ASTM	ASTM	ASTM	ASTM	ASTM	
D4751	D6241	D4632	D4632	D4491	D4632	D4632	D4491	D4491	D5199	D4533	D4533	D5261	
#	LBS	%	%	GPM/FT2	LBS	LBS	CM/SEC	SEC-1	MI LS	LBS	LBS	OZ/YD2	
J10499971	100	1467	84	62	68	472	554	0.51	0.9	211	209	196	16.5
J10499974	100	1467	84	62	68	472	554	0.51	0.9	211	209	196	16.5
J10499977	100	1467	84	62	68	472	554	0.51	0.9	211	209	196	16.5
J10499986	100	1272	80	59	68	485	598	0.51	0.9	198	203	203	16.5
J10499987	100	1272	80	59	68	485	598	0.51	0.9	198	203	203	16.5
J10499988	100	1272	80	59	68	485	598	0.51	0.9	198	203	203	16.5
J10499989	100	1272	80	59	68	485	598	0.51	0.9	198	203	203	16.5
J10499990	100	1272	80	59	68	485	598	0.51	0.9	198	203	203	16.5
J10499992	100	1272	80	59	68	485	598	0.51	0.9	198	203	203	16.5
J10499999	100	1272	80	59	68	485	598	0.51	0.9	198	203	203	16.5
J10500024	100	1241	81	63	55	480	598	0.36	0.7	193	210	201	16.2
J10500038	100	1551	75	62	55	478	476	0.36	0.7	189	215	186	16.5

Final "put-up" rolls taken from a single master roll and having identical properties and test data. Results may only be available for tested rolls.

Unless specified separately in writing, material results apply only to items tested. No portion of this document may be reproduced whole or in part without the expressed written consent of TenCate. TenCate warrants our products and services to be free from defects in material and workmanship when delivered to TenCate's customers and that our products meet our published specifications.

GEOSYNTHETICS PROPERTIES FOR PRODUCT - TE-E8

Order#: 1135708-000 BOL#: 2248143 PO#: PO610

Geotextile Properties

AOS	CBR	ELONG	ELONG	WATER	GRAB	GRAB	PERME	PERMI T	THI CK	TRAP	TRAP	WEI GHT	
U. S.	PUNC	ATION	ATION	FLOW	TENSI LE	TENSI LE	ABI LI TY	TIVI TY	NESS	TEAR	TEAR	ASTM	
SI EVE	TURE	(CD)	(MD)	RATE	(CD)	(MD)				(CD)	(MD)	D5261	
ASTM	ASTM	ASTM	ASTM	ASTM	ASTM	ASTM	ASTM	ASTM	ASTM	ASTM	ASTM	ASTM	
D4751	D6241	D 4632	D 4632	D4491	D 4632	D 4632	D4491	D4491	D5199	D4533	D4533	D5261	
#	LBS	%	%	GPM/FT2	LBS	LBS	CM/SEC	SEC-1	MI LS	LBS	LBS	OZ/YD2	
J20781926	100	826	77	73	131	309	308	0.56	1.8	137	138	120	9.4
J20781951	100	858	76	70	131	315	294	0.56	1.8	124	132	117	8.9
J20781961	100	858	76	70	131	315	294	0.56	1.8	124	132	117	8.9
J20781962	100	795	79	67	142	289	263	0.62	1.9	128	141	118	8.6
J20781963	100	795	79	67	142	289	263	0.62	1.9	128	141	118	8.6
J20781964	100	795	79	67	142	289	263	0.62	1.9	128	141	118	8.6
J20781968	100	795	79	67	142	289	263	0.62	1.9	128	141	118	8.6
J20781970	100	795	79	67	142	289	263	0.62	1.9	128	141	118	8.6
J20781971	100	795	79	67	142	289	263	0.62	1.9	128	141	118	8.6
J20781973	100	795	79	67	142	289	263	0.62	1.9	128	141	118	8.6
J20781974	100	795	79	67	142	289	263	0.62	1.9	128	141	118	8.6
J20781975	100	795	79	67	142	289	263	0.62	1.9	128	141	118	8.6

Final "put-up" rolls taken from a single master roll and having identical properties and test data. Results may only be available for tested rolls.

Unless specified separately in writing, material results apply only to items tested. No portion of this document may be reproduced whole or in part without the expressed written consent of TenCate. TenCate warrants our products and services to be free from defects in material and workmanship when delivered to TenCate's customers and that our products meet our published specifications.

Appendix B-3

Certificate of Acceptance – Clay Subgrade



TITAN

Environmental Containment

SUB-GRADE ACCEPTANCE

PROJECT: Prairie Green LOCATION: Prairie Green Landfill
 PROJECT #: L-200037 CONTRACTOR: Edie Con -
 OWN: [Redacted] QA/QC: [Redacted]
 ENGINEER: TREK DATE: 27/06/21

This document certifies that on 27/06/21, the project superintendant, Harbor, for TITAN ENVIRONMENTAL CONTAINMENT has inspected the surface of the sub-grade and has found that it meets the installation of the geomembrane and geosynthetics as per engineer specifications.

TITAN ENVIRONMENTAL CONTAINMENT accepts only the surface of the sub-grade and holds no responsibility of the structural strength of the containment system used on this project. Any and all failure causing damage to the geomembranes and geosynthetics being installed on this project will be repaired or replaced at the General contractors or Owners expense.

TITAN ENVIRONMENTAL CONTAINMENT will only accept Sub-grade on a daily installation and will not be held accountable for any damages to Sub-grade out side our control.

Area Being Accepted: North half of cell

TITAN REPRESENTATIVE
27/06/21
 DATE

GENERAL CONTRACTOR, OWNER REPRESENTATIVE
Oct 15/21
 DATE



SUB-GRADE ACCEPTANCE

PROJECT: Prairie Green LOCATION: Prairie Green Landfill
PROJECT #: L-200037 CONTRACTOR: Edg Con.
OWNER: [Redacted] QA/QC: [Redacted]
ENGINEER: TREK DATE: 22/06/21

This document certifies that on 22/06/21, the project superintendent, Shaw, for TITAN ENVIRONMENTAL CONTAINMENT has inspected the surface of the sub-grade and has found that it meets the installation of the geomembrane and geosynthetics as per engineer specifications.

TITAN ENVIRONMENTAL CONTAINMENT accepts only the surface of the sub-grade and holds no responsibility of the structural strength of the containment system used on this project. Any and all failure causing damage to the geomembranes and geosynthetics being installed on this project will be repaired or replaced at the General contractors or Owners expense.

TITAN ENVIRONMENTAL CONTAINMENT will only accept Sub-grade on a daily installation and will not be held accountable for any damages to Sub-grade out side our control.

Area Being Accepted: South half of cell

[Redacted Signature]

TITAN REPRESENTATIVE

22/06/21

DATE

[Redacted Signature]

GENERAL CONTRACTOR, OWNER REPRESENTATIVE

Oct 15/21

DATE

Appendix B-4

Geomembrane Deployment Inspection Summary



GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 1000-089-03 PROJECT TITLE: Cell 16
 OWNER: Waste Connections of Canada CONTRACTOR: Titan Environmental
 LOCATION: Prairie Green IWMF

GEOMEMBRANE: SECONDARY PRIMARY
 SUBGRADE CONDITIONS: Good
 REMARKS: _____

DATE: 22-Jun-21
 SHEET NUMBER: 1

TRANSPORT EQUIPMENT Excavator and Spreader Bar
 MATERIAL: 60 mil HDPE

DESCRIPTION	PANEL NUMBER P1			
ROLL NUMBER	1001-150779			
DEPLOYED LENGTH	133.5			
AMBIENT AIR TEMP.	23			
OBSERVED OVERLAP	150 mm			
REMARKS	6.9 m width			
MONITOR	AB			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	60	64	62	62
	61	63	64	60
	61	62	64	62
	62	62	63	62
AVERAGE	61	63	63	62

DESCRIPTION	PANEL NUMBER P2			
ROLL NUMBER	1001-150778			
DEPLOYED LENGTH	133.5			
AMBIENT AIR TEMP.	23			
OBSERVED OVERLAP	150 mm			
REMARKS	6.9 m width			
MONITOR	AB			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	62	64	62	62
	65	63	64	62
	61	62	62	62
	60	63	62	64
AVERAGE	62	63	63	63

DESCRIPTION	PANEL NUMBER P3			
ROLL NUMBER	1001-150764			
DEPLOYED LENGTH	133.7			
AMBIENT AIR TEMP.	23			
OBSERVED OVERLAP	150 mm			
REMARKS	7.0 m width			
MONITOR	AB			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	64	64	64	61
	63	64	64	62
	63	63	62	62
	62	62	62	64
AVERAGE	63	63	63	62

DESCRIPTION	PANEL NUMBER P4			
ROLL NUMBER	1001-150780			
DEPLOYED LENGTH	135.9			
AMBIENT AIR TEMP.	24			
OBSERVED OVERLAP	150 mm			
REMARKS	6.9 m			
MONITOR	AB			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	63	64	64	61
	62	64	62	60
	60	63	62	64
	62	63	64	63
AVERAGE	62	64	63	62

DESCRIPTION	PANEL NUMBER P5			
ROLL NUMBER	1001-150758			
DEPLOYED LENGTH	134.5			
AMBIENT AIR TEMP.	24			
OBSERVED OVERLAP	150 mm			
REMARKS	6.9 m			
MONITOR	AB			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	62	62	64	64
	61	63	64	63
	64	64	63	62
	64	63	62	63
AVERAGE	63	63	63	63

DESCRIPTION	PANEL NUMBER P6			
ROLL NUMBER	1001-150758			
DEPLOYED LENGTH	135			
AMBIENT AIR TEMP.	24			
OBSERVED OVERLAP	150 mm			
REMARKS	6.9			
MONITOR	AB			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	62	63	64	60
	60	64	65	62
	63	62	63	62
	62	62	62	63
AVERAGE	62	63	64	62

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 1000-089-03 PROJECT TITLE: Cell 16
 OWNER: Waste Connections of Canada CONTRACTOR: Titan Environmental
 LOCATION: Prairie Green IWMF

GEOMEMBRANE: SECONDARY PRIMARY
 SUBGRADE CONDITIONS: Good
 REMARKS: _____

DATE: 22-Jun-21
 SHEET NUMBER: 2

TRANSPORT EQUIPMENT: Excavator and Spreader Bar
 MATERIAL: 60 mil HDPE

DESCRIPTION	PANEL NUMBER P7				PANEL NUMBER				PANEL NUMBER			
	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL
ROLL NUMBER	1001-150765				_____				_____			
DEPLOYED LENGTH	135.5				_____				_____			
AMBIENT AIR TEMP.	24				_____				_____			
OBSERVED OVERLAP	150 mm				_____				_____			
REMARKS	6.9 m				_____				_____			
MONITOR	AB				_____				_____			
SHEET THICKNESS	62 65 65 60				_____				_____			
	60 65 64 62				_____				_____			
	63 64 63 62				_____				_____			
	64 64 62 61				_____				_____			
AVERAGE	62 65 64 61				_____				_____			

DESCRIPTION	PANEL NUMBER				PANEL NUMBER				PANEL NUMBER			
	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL
ROLL NUMBER	_____				_____				_____			
DEPLOYED LENGTH	_____				_____				_____			
AMBIENT AIR TEMP.	_____				_____				_____			
OBSERVED OVERLAP	_____				_____				_____			
REMARKS	_____				_____				_____			
MONITOR	_____				_____				_____			
SHEET THICKNESS	LEAD L SIDE R SIDE TRAIL				LEAD L SIDE R SIDE TRAIL				LEAD L SIDE R SIDE TRAIL			
	_____				_____				_____			
	_____				_____				_____			
AVERAGE	_____				_____				_____			

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 1000-089-03 PROJECT TITLE: Cell 16
 OWNER: Waste Connections of Canada CONTRACTOR: Titan Environmental
 LOCATION: Prairie Green IWMF

GEOMEMBRANE: SECONDARY PRIMARY
 SUBGRADE CONDITIONS: Good
 REMARKS: _____

DATE: 23-Jun-21
 SHEET NUMBER: 3

TRANSPORT EQUIPMENT Excavator and Spreader Bar
 MATERIAL: 60 mil HDPE

DESCRIPTION	PANEL P8				PANEL P9				PANEL P10			
	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL
ROLL NUMBER	1005-055513				1005-055513				1005.055513			
DEPLOYED LENGTH	28.4				28.5				29.4			
AMBIENT AIR TEMP.	23				23				23			
OBSERVED OVERLAP	150 mm				150 mm				150 mm			
REMARKS	6.9 m wide				6.9 m wide				6.9 m wide			
MONITOR	AB				AB				AB			
SHEET THICKNESS	67	62	62	67	68	62	62	67	68	62	64	68
	68	64	62	60	61	62	62	68	69	63	64	61
	60	63	63	60	60	64	62	60	69	63	63	60
	68	62	63	68	69	63	63	68	60	64	62	69
AVERAGE	66	63	63	64	65	63	62	66	67	63	63	65

DESCRIPTION	PANEL P11				PANEL P12				PANEL P13			
	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL
ROLL NUMBER	1005-055513				1005-055513				1005-055511			
DEPLOYED LENGTH	29.2				29.6				29.3			
AMBIENT AIR TEMP.	23				23				24			
OBSERVED OVERLAP	150 mm				150 mm				150 mm			
REMARKS	6.9 m wide				6.9 m wide				6.9 m wide			
MONITOR	AB				AB				AB			
SHEET THICKNESS	67	62	62	68	68	62	61	67	62	64	64	67
	68	60	62	69	69	60	61	68	63	62	63	69
	67	59	61	69	60	60	62	67	62	64	64	60
	69	62	60	60	60	62	63	69	60	63	63	63
AVERAGE	68	61	61	67	64	61	62	68	62	63	64	65

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 1000-089-03 PROJECT TITLE: Cell 16
 OWNER: Waste Connections of Canada CONTRACTOR: Titan Environmental
 LOCATION: Prairie Green IWMF

GEOMEMBRANE: SECONDARY PRIMARY
 SUBGRADE CONDITIONS: Good
 REMARKS: _____

DATE: 23-Jun-21
 SHEET NUMBER: 4

TRANSPORT EQUIPMENT Excavator and Spreader Bar
 MATERIAL: 60 mil HDPE

DESCRIPTION	PANEL NUMBER	P14		
ROLL NUMBER	1005-055511			
DEPLOYED LENGTH	29.3			
AMBIENT AIR TEMP.	24			
OBSERVED OVERLAP	150 mm			
REMARKS	6.9 m wide			
MONITOR	AB			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	62	62	62	62
	59	61	62	63
	60	60	64	62
	62	60	63	60
AVERAGE	61	61	63	62

DESCRIPTION	PANEL NUMBER	P15		
ROLL NUMBER	1005-055511			
DEPLOYED LENGTH	29.5			
AMBIENT AIR TEMP.	24			
OBSERVED OVERLAP	150 mm			
REMARKS	6.9 m wide			
MONITOR	AB			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	63	60	62	62
	62	58	60	60
	62	59	60	59
	59	60	62	62
AVERAGE	62	59	61	61

DESCRIPTION	PANEL NUMBER	P16		
ROLL NUMBER	1005-055511			
DEPLOYED LENGTH	29.3			
AMBIENT AIR TEMP.	32			
OBSERVED OVERLAP	150 mm			
REMARKS	6.9 m wide			
MONITOR	AB			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	58	62	63	59
	60	60	64	60
	58	61	62	61
	59	63	60	60
AVERAGE	59	62	62	60

DESCRIPTION	PANEL NUMBER	P17		
ROLL NUMBER	1005-055511			
DEPLOYED LENGTH	29.5			
AMBIENT AIR TEMP.	32			
OBSERVED OVERLAP	150 mm			
REMARKS	6.9 m wide			
MONITOR	AB			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	66	62	62	62
	60	60	64	62
	64	59	59	60
	63	61	59	64
AVERAGE	63	61	61	62

DESCRIPTION	PANEL NUMBER	P18		
ROLL NUMBER	1005-055518			
DEPLOYED LENGTH	29.2			
AMBIENT AIR TEMP.	32			
OBSERVED OVERLAP	150 mm			
REMARKS	6.9 m wide			
MONITOR	AB			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	63	60	62	63
	62	59	63	63
	60	59	64	61
	62	61	62	60
AVERAGE	62	60	63	62

DESCRIPTION	PANEL NUMBER	P19		
ROLL NUMBER	1005-055518			
DEPLOYED LENGTH	29.5			
AMBIENT AIR TEMP.	32			
OBSERVED OVERLAP	150 mm			
REMARKS	6.9 m wide			
MONITOR	AB			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	61	60	62	63
	60	62	61	62
	60	60	60	60
	60	62	61	62
AVERAGE	60	61	61	62

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 1000-089-03 PROJECT TITLE: Cell 16
 OWNER: Waste Connections of Canada CONTRACTOR: Titan Environmental
 LOCATION: Prairie Green IWMF

GEOMEMBRANE: SECONDARY PRIMARY
 SUBGRADE CONDITIONS: Good
 REMARKS: _____

DATE: 23-Jun-21
 SHEET NUMBER: 5

TRANSPORT EQUIPMENT Excavator and Spreader Bar
 MATERIAL: 60 mil HDPE

DESCRIPTION	PANEL NUMBER P20			
ROLL NUMBER	1005-055518			
DEPLOYED LENGTH	29.5			
AMBIENT AIR TEMP.	32			
OBSERVED OVERLAP	150 mm			
REMARKS	_____			
MONITOR	AB			

SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	63	62	60	59
	64	63	64	60
	63	62	64	60
	61	62	63	60
AVERAGE	63	62	63	60

DESCRIPTION	PANEL NUMBER P21			
ROLL NUMBER	1005-055518			
DEPLOYED LENGTH	30			
AMBIENT AIR TEMP.	32			
OBSERVED OVERLAP	150 mm			
REMARKS	_____			
MONITOR	AB			

SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	59	62	62	63
	60	62	63	64
	59	64	64	63
	62	64	62	61
AVERAGE	60	63	63	63

DESCRIPTION	PANEL NUMBER P22			
ROLL NUMBER	1005-055518			
DEPLOYED LENGTH	29.5			
AMBIENT AIR TEMP.	29			
OBSERVED OVERLAP	150 mm			
REMARKS	_____			
MONITOR	AB			

SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	61	60	60	63
	63	61	60	63
	63	60	61	61
	61	61	60	63
AVERAGE	62	61	60	63

DESCRIPTION	PANEL NUMBER P23			
ROLL NUMBER	1005-055515			
DEPLOYED LENGTH	29.9			
AMBIENT AIR TEMP.	27			
OBSERVED OVERLAP	150 mm			
REMARKS	_____			
MONITOR	AB			

SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	63	62	60	63
	62	60	60	61
	62	62	60	61
	63	62	62	63
AVERAGE	63	62	61	62

DESCRIPTION	PANEL NUMBER P24			
ROLL NUMBER	1005-055515			
DEPLOYED LENGTH	29.2			
AMBIENT AIR TEMP.	27			
OBSERVED OVERLAP	150 mm			
REMARKS	_____			
MONITOR	AB			

SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	62	62	62	61
	62	60	61	61
	62	61	61	61
	61	62	62	63
AVERAGE	62	61	62	62

DESCRIPTION	PANEL NUMBER P25			
ROLL NUMBER	1005-055515			
DEPLOYED LENGTH	29			
AMBIENT AIR TEMP.	27			
OBSERVED OVERLAP	150 mm			
REMARKS	_____			
MONITOR	AB			

SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	62	62	62	61
	61	61	61	63
	62	61	61	62
	62	62	62	63
AVERAGE	62	62	62	62

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 1000-089-03 PROJECT TITLE: Cell 16
 OWNER: Waste Connections of Canada CONTRACTOR: Titan Environmental
 LOCATION: Prairie Green IWMF

GEOMEMBRANE: SECONDARY PRIMARY
 SUBGRADE CONDITIONS: Good
 REMARKS: _____

DATE: 23-Jun-21
 SHEET NUMBER: 6

TRANSPORT EQUIPMENT Excavator and Spreader Bar
 MATERIAL: 60 mil HDPE

DESCRIPTION	PANEL NUMBER P26					PANEL NUMBER P27					PANEL NUMBER				
	ROLL NUMBER	1005-055515					1005-055515								
DEPLOYED LENGTH	29.3					29									
AMBIENT AIR TEMP.	27					27									
OBSERVED OVERLAP	150 mm					150 mm									
REMARKS															
MONITOR															
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL		LEAD	L SIDE	R SIDE	TRAIL		LEAD	L SIDE	R SIDE	TRAIL	
	63	62	62	62		61	63	60	61						
	63	62	62	63		61	61	60	61						
	62	63	63	63		62	61	60	60						
	62	63	63	61		63	61	61	63						
AVERAGE	63	63	63	62		62	62	60	61						

DESCRIPTION	PANEL NUMBER					PANEL NUMBER					PANEL NUMBER				
	ROLL NUMBER														
DEPLOYED LENGTH															
AMBIENT AIR TEMP.															
OBSERVED OVERLAP															
REMARKS															
MONITOR															
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL		LEAD	L SIDE	R SIDE	TRAIL		LEAD	L SIDE	R SIDE	TRAIL	
AVERAGE															

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 1000-089-03 PROJECT TITLE: Cell 16
 OWNER: Waste Connections of Canada CONTRACTOR: Titan Environmental
 LOCATION: Prairie Green IWMMF

GEOMEMBRANE: SECONDARY PRIMARY
 SUBGRADE CONDITIONS: Good
 REMARKS: _____

DATE: 24-Jun-21
 SHEET NUMBER: 8

TRANSPORT EQUIPMENT Excavator and Spreader Bar
 MATERIAL: 60 mil HDPE

DESCRIPTION	PANEL NUMBER P34				PANEL NUMBER				PANEL NUMBER			
	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL
ROLL NUMBER	1001-150780				_____				_____			
DEPLOYED LENGTH	55.8				_____				_____			
AMBIENT AIR TEMP.	27				_____				_____			
OBSERVED OVERLAP	150 mm				_____				_____			
REMARKS	_____				_____				_____			
MONITOR	AB				_____				_____			
SHEET THICKNESS	64 60 60 62				_____				_____			
	62 59 62 60				_____				_____			
	60 60				_____				_____			
	61 62				_____				_____			
	AVERAGE	63 60 61 61				_____				_____		

DESCRIPTION	PANEL NUMBER				PANEL NUMBER				PANEL NUMBER			
	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL
ROLL NUMBER	_____				_____				_____			
DEPLOYED LENGTH	_____				_____				_____			
AMBIENT AIR TEMP.	_____				_____				_____			
OBSERVED OVERLAP	_____				_____				_____			
REMARKS	_____				_____				_____			
MONITOR	_____				_____				_____			
SHEET THICKNESS	_____				_____				_____			
	_____				_____				_____			
	_____				_____				_____			
	_____				_____				_____			
	AVERAGE	_____				_____				_____		

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 1000-089-03 PROJECT TITLE: Cell 16
 OWNER: Waste Connections of Canada CONTRACTOR: Titan Environmental
 LOCATION: Prairie Green IWMF

GEOMEMBRANE: SECONDARY PRIMARY
 SUBGRADE CONDITIONS: Good
 REMARKS: _____

DATE: 25-Jun-21
 SHEET NUMBER: 9

TRANSPORT EQUIPMENT Excavator and Spreader Bar
 MATERIAL: 60 mil HDPE

DESCRIPTION	PANEL P35				PANEL P36				PANEL P37			
	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL
ROLL NUMBER	1001-150773				1001-150773				1001-150773			
DEPLOYED LENGTH	11.2				11.5				11.3			
AMBIENT AIR TEMP.	26				26				26			
OBSERVED OVERLAP	150 mm				150 mm				150 mm			
REMARKS	_____				_____				_____			
MONITOR	AB				AB				AB			
SHEET THICKNESS	60 62 64 64				64 60 62 60				62 60 62 62			
	59 63 62 63				62 62 62 59				62 59 60 60			
AVERAGE	60 63 63 64				63 61 62 60				62 60 61 61			

DESCRIPTION	PANEL P38				PANEL P39				PANEL P40			
	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL
ROLL NUMBER	1001-150773				1001-150773				1001-150773			
DEPLOYED LENGTH	11				11				11.2			
AMBIENT AIR TEMP.	26				26				26			
OBSERVED OVERLAP	150 mm				150 mm				150 mm			
REMARKS	_____				_____				_____			
MONITOR	AB				AB				AB			
SHEET THICKNESS	64 65 62 62				60 62 64 64				64 62 64 60			
	63 62 63 62				61 64 63 63				62 63 63 61			
AVERAGE	64 64 63 62				61 63 64 64				63 63 64 61			

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 1000-089-03 PROJECT TITLE: Cell 16
 OWNER: Waste Connections of Canada CONTRACTOR: Titan Environmental
 LOCATION: Prairie Green IWMF

GEOMEMBRANE: SECONDARY PRIMARY
 SUBGRADE CONDITIONS: Good
 REMARKS: _____

DATE: 25-Jun-21
 SHEET NUMBER: 10

TRANSPORT EQUIPMENT Excavator and Spreader Bar
 MATERIAL: 60 mil HDPE

DESCRIPTION	PANEL P41				PANEL P42				PANEL P43			
	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL
ROLL NUMBER	1001-150773				1001-150758				1001-150758			
DEPLOYED LENGTH	10.6				10				10.3			
AMBIENT AIR TEMP.	26				26				26			
OBSERVED OVERLAP	150 mm				150 mm				150 mm			
REMARKS	_____				_____				_____			
MONITOR	AB				AB				AB			
SHEET THICKNESS	60 61 60 64				62 63 60 59				61 64 64 62			
	62 63 59 62				63 61 59 62				60 62 64 63			
AVERAGE	61 62 60 63				63 62 60 61				61 63 64 63			

DESCRIPTION	PANEL P44				PANEL P45				PANEL P46			
	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL
ROLL NUMBER	1001-150758				1001-150764				1001-150759			
DEPLOYED LENGTH	10.3				10.1				9.8			
AMBIENT AIR TEMP.	26				26				26			
OBSERVED OVERLAP	150 mm				150 mm				150 mm			
REMARKS	_____				_____				_____			
MONITOR	AB				AB				AB			
SHEET THICKNESS	62 59 61 61				64 64 63 62				62 64 65 60			
	60 63 64 60				62 65 64 64				64 63 63 62			
AVERAGE	61 61 63 61				63 65 64 63				63 64 64 61			

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 1000-089-03 PROJECT TITLE: Cell 16
 OWNER: Waste Connections of Canada CONTRACTOR: Titan Environmental
 LOCATION: Prairie Green IWMF

GEOMEMBRANE: SECONDARY PRIMARY
 SUBGRADE CONDITIONS: Good
 REMARKS: _____

DATE: 25-Jun-21
 SHEET NUMBER: 11

TRANSPORT EQUIPMENT Excavator and Spreader Bar
 MATERIAL: 60 mil HDPE

DESCRIPTION	PANEL NUMBER P47			
ROLL NUMBER	1001-150759			
DEPLOYED LENGTH	9.5			
AMBIENT AIR TEMP.	26			
OBSERVED OVERLAP	150 mm			
REMARKS	_____ _____			
MONITOR	AB			
	_____ _____			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	59	63	60	62
	61	61	61	64
	_____ _____			
AVERAGE	60	62	61	63

DESCRIPTION	PANEL NUMBER P48			
ROLL NUMBER	1001-150759			
DEPLOYED LENGTH	8.4			
AMBIENT AIR TEMP.	26			
OBSERVED OVERLAP	150 mm			
REMARKS	_____ _____			
MONITOR	AB			
	_____ _____			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	62	60	64	59
	64	62	62	61
	_____ _____			
AVERAGE	63	61	63	60

DESCRIPTION	PANEL NUMBER P49			
ROLL NUMBER	1001-150759			
DEPLOYED LENGTH	8.6			
AMBIENT AIR TEMP.	26			
OBSERVED OVERLAP	150 mm			
REMARKS	_____ _____			
MONITOR	AB			
	_____ _____			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	62	59	58	64
	60	60	61	62
	_____ _____			
AVERAGE	61	60	60	63

DESCRIPTION	PANEL NUMBER P50			
ROLL NUMBER	1001-150759			
DEPLOYED LENGTH	8.9			
AMBIENT AIR TEMP.	26			
OBSERVED OVERLAP	150 mm			
REMARKS	_____ _____			
MONITOR	AB			
	_____ _____			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	61	60	59	62
	60	62	60	60
	_____ _____			
AVERAGE	61	61	60	61

DESCRIPTION	PANEL NUMBER P51			
ROLL NUMBER	1001-150759			
DEPLOYED LENGTH	8.6			
AMBIENT AIR TEMP.	26			
OBSERVED OVERLAP	150 mm			
REMARKS	_____ _____			
MONITOR	AB			
	_____ _____			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	64	59	62	61
	62	62	64	60
	_____ _____			
AVERAGE	63	61	63	61

DESCRIPTION	PANEL NUMBER P52			
ROLL NUMBER	1001-150759			
DEPLOYED LENGTH	8.1			
AMBIENT AIR TEMP.	26			
OBSERVED OVERLAP	150 mm			
REMARKS	_____ _____			
MONITOR	AB			
	_____ _____			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	62	59	58	64
	60	62	62	62
	_____ _____			
AVERAGE	61	61	60	63

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 1000-089-03 PROJECT TITLE: Cell 16
 OWNER: Waste Connections of Canada CONTRACTOR: Titan Environmental
 LOCATION: Prairie Green IWMF

GEOMEMBRANE: SECONDARY PRIMARY
 SUBGRADE CONDITIONS: Good
 REMARKS: _____

DATE: 25-Jun-21
 SHEET NUMBER: 12

TRANSPORT EQUIPMENT Excavator and Spreader Bar
 MATERIAL: 60 mil HDPE

DESCRIPTION	PANEL NUMBER P53				PANEL NUMBER P54				PANEL NUMBER			
	ROLL NUMBER	1001-150759				1001-150759						
DEPLOYED LENGTH	8.4				8.5							
AMBIENT AIR TEMP.	26				26							
OBSERVED OVERLAP	150 mm				150 mm							
REMARKS												
MONITOR	AB				AB							
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL
	64	64	63	62	62	64	62	64				
	65	62	64	60	65	64	64	65				
AVERAGE	65	63	64	61	64	64	63	65				

DESCRIPTION	PANEL NUMBER				PANEL NUMBER				PANEL NUMBER			
	ROLL NUMBER											
DEPLOYED LENGTH												
AMBIENT AIR TEMP.												
OBSERVED OVERLAP												
REMARKS												
MONITOR												
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL
AVERAGE												

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 1000-089-03 PROJECT TITLE: Cell 16
 OWNER: Waste Connections of Canada CONTRACTOR: Titan Environmental
 LOCATION: Prairie Green IWMF

GEOMEMBRANE: SECONDARY PRIMARY
 SUBGRADE CONDITIONS: Good
 REMARKS: _____

DATE: 26-Jun-21
 SHEET NUMBER: 13

TRANSPORT EQUIPMENT Excavator and Spreader Bar
 MATERIAL: 60 mil HDPE

DESCRIPTION	PANEL P55				PANEL P56				PANEL P57																	
	ROLL NUMBER	DEPLOYED LENGTH	AMBIENT AIR TEMP.	OBSERVED OVERLAP	REMARKS	MONITOR	LEAD	L SIDE	R SIDE	TRAIL	ROLL NUMBER	DEPLOYED LENGTH	AMBIENT AIR TEMP.	OBSERVED OVERLAP	REMARKS	MONITOR	LEAD	L SIDE	R SIDE	TRAIL	ROLL NUMBER	DEPLOYED LENGTH	AMBIENT AIR TEMP.	OBSERVED OVERLAP	REMARKS	MONITOR
	1001-150759	15.1	22	150 mm		AB	62	62	61	62	1001-150759	15.4	22	150 mm		AB	59	64	63	61	1001-150759	15.9	22	150 mm		AB
							60	63	62	62							62	63	62	59						
AVERAGE							61	63	62	62							61	64	63	60						

DESCRIPTION	PANEL P58				PANEL P59				PANEL P60																	
	ROLL NUMBER	DEPLOYED LENGTH	AMBIENT AIR TEMP.	OBSERVED OVERLAP	REMARKS	MONITOR	LEAD	L SIDE	R SIDE	TRAIL	ROLL NUMBER	DEPLOYED LENGTH	AMBIENT AIR TEMP.	OBSERVED OVERLAP	REMARKS	MONITOR	LEAD	L SIDE	R SIDE	TRAIL	ROLL NUMBER	DEPLOYED LENGTH	AMBIENT AIR TEMP.	OBSERVED OVERLAP	REMARKS	MONITOR
	1001-150759	15.2	22	150 mm		AB	62			59	1001-150759	15.4	22	150 mm		AB	61	64	64	62	1001-150763	15.1	22	150 mm		AB
							61			62							59	63	62	61						
AVERAGE							62			61							63	63	64	60						

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 1000-089-03 PROJECT TITLE: Cell 16
 OWNER: Waste Connections of Canada CONTRACTOR: Titan Environmental
 LOCATION: Prairie Green IWMF

GEOMEMBRANE: SECONDARY PRIMARY
 SUBGRADE CONDITIONS: Good
 REMARKS: _____

DATE: 26-Jun-21
 SHEET NUMBER: 14

TRANSPORT EQUIPMENT Excavator and Spreader Bar
 MATERIAL: 60 mil HDPE

DESCRIPTION	PANEL NUMBER	P61				PANEL NUMBER	P62				PANEL NUMBER	P63			
ROLL NUMBER		1001-150763					1001-150763					1001-150763			
DEPLOYED LENGTH		15.1					15					14			
AMBIENT AIR TEMP.		22					22					22			
OBSERVED OVERLAP		150 mm					150 mm					150 mm			
REMARKS		_____					_____					_____			
MONITOR		AB					AB					AB			
SHEET THICKNESS		LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL		
		61	64	64	62	61	62	62	61	59	61	60	61		
		60	62	62	63	64	62	63	60	60	59	59	64		
		_____					60					_____			
AVERAGE		61	63	63	63	63	61	63	61	60	60	60	63		

DESCRIPTION	PANEL NUMBER	P64				PANEL NUMBER	P65				PANEL NUMBER	P66			
ROLL NUMBER		1001-150763					1001-055509					1001-055509			
DEPLOYED LENGTH		14.2					26.5					26			
AMBIENT AIR TEMP.		22					26					26			
OBSERVED OVERLAP		150 mm					150 mm					150 mm			
REMARKS		_____					_____					_____			
MONITOR		AB					AB					AB			
SHEET THICKNESS		LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL		
		61	64	64	59	64	62	60	64	62	59	62	64		
		61	61	63	60	63	60	59	62	64	60	60	63		
		_____					58 62					62 60			
		_____					59 62					62 62			
AVERAGE		61	63	64	60	64	60	61	63	63	61	61	64		

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 1000-089-03 PROJECT TITLE: Cell 16
 OWNER: Waste Connections of Canada CONTRACTOR: Titan Environmental
 LOCATION: Prairie Green IWMF

GEOMEMBRANE: SECONDARY PRIMARY
 SUBGRADE CONDITIONS: Good
 REMARKS: _____

DATE: 28-Jun-21
 SHEET NUMBER: 15

TRANSPORT EQUIPMENT Excavator and Spreader Bar
 MATERIAL: 60 mil HDPE

DESCRIPTION	PANEL P67				PANEL P68				PANEL P69			
	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL
ROLL NUMBER	1001-150769				1001-150761				1001-150768			
DEPLOYED LENGTH	142.5				104				104.5			
AMBIENT AIR TEMP.	24				24				24			
OBSERVED OVERLAP	150 mm				150 mm				150 mm			
REMARKS	_____				_____				_____			
MONITOR	AB				AB				AB			
SHEET THICKNESS	64	64	64	59	63	64	61	64	63	64	62	60
	62	64	63	62	60	63	59	62	61	62	63	63
	62	60			62	62			60	62		
	62	61			62	62			62	62		
AVERAGE	63	63	62	61	62	63	61	63	62	62	62	62

DESCRIPTION	PANEL P70				PANEL P71				PANEL			
	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL
ROLL NUMBER	1001-150768				1001-150161							
DEPLOYED LENGTH	55.5				55							
AMBIENT AIR TEMP.	24				24							
OBSERVED OVERLAP	150 mm				150 mm							
REMARKS	_____				_____				_____			
MONITOR	AB				AB							
SHEET THICKNESS	63	64	62	63	62	64	63	63				
	62	64	60	61	60	62	60	60				
	62	63			62	59						
	62	62			62	60						
AVERAGE	63	63	62	62	61	63	61	62				

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 1000-089-03 PROJECT TITLE: Cell 16
 OWNER: Waste Connections of Canada CONTRACTOR: Titan Environmental
 LOCATION: Prairie Green IWMF

GEOMEMBRANE: SECONDARY PRIMARY
 SUBGRADE CONDITIONS: Good
 REMARKS: _____

DATE: 29-Jun-21
 SHEET NUMBER: 16

TRANSPORT EQUIPMENT Excavator and Spreader Bar
 MATERIAL: 60 mil HDPE

DESCRIPTION	PANEL NUMBER P72				PANEL NUMBER P73				PANEL NUMBER P74			
	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL
ROLL NUMBER	1001-150774				1001-150774				1001-150174			
DEPLOYED LENGTH	18.5				19				18.8			
AMBIENT AIR TEMP.	29				29				29			
OBSERVED OVERLAP	150 mm				150 mm				150 mm			
REMARKS	_____				_____				_____			
MONITOR	AB				AB				AB			
SHEET THICKNESS	63	64	62	60	59	64	61	63	62	63	64	59
	61	62	62	62	62	64	59	61	60	65	62	62
AVERAGE	62	63	62	61	61	64	60	62	61	64	63	61

DESCRIPTION	PANEL NUMBER P75				PANEL NUMBER P76				PANEL NUMBER P77			
	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL
ROLL NUMBER	1001-150774				1001-150774				1001-150774			
DEPLOYED LENGTH	18.5				19				18			
AMBIENT AIR TEMP.	29				29				29			
OBSERVED OVERLAP	150 mm				150 mm				150 mm			
REMARKS	_____				_____				_____			
MONITOR	AB				AB				AB			
SHEET THICKNESS	60	59	61	62	64	62	64	60	59	61	60	64
	59	60	63	60	65	62	62	59	59	59	62	63
AVERAGE	60	60	62	61	65	62	63	60	59	60	61	64

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 1000-089-03 PROJECT TITLE: Cell 16
 OWNER: Waste Connections of Canada CONTRACTOR: Titan Environmental
 LOCATION: Prairie Green IWMF

GEOMEMBRANE: SECONDARY PRIMARY
 SUBGRADE CONDITIONS: Good
 REMARKS: _____

DATE: 29-Jun-21
 SHEET NUMBER: 17

TRANSPORT EQUIPMENT Excavator and Spreader Bar
 MATERIAL: 60 mil HDPE

DESCRIPTION	PANEL NUMBER P78				PANEL NUMBER P79				PANEL NUMBER P80																	
	ROLL NUMBER	DEPLOYED LENGTH	AMBIENT AIR TEMP.	OBSERVED OVERLAP	REMARKS	MONITOR	LEAD	L SIDE	R SIDE	TRAIL	ROLL NUMBER	DEPLOYED LENGTH	AMBIENT AIR TEMP.	OBSERVED OVERLAP	REMARKS	MONITOR	LEAD	L SIDE	R SIDE	TRAIL	ROLL NUMBER	DEPLOYED LENGTH	AMBIENT AIR TEMP.	OBSERVED OVERLAP	REMARKS	MONITOR
	1001-150774	17.5	29	150 mm		AB					1001-150774	17.2	29	150 mm		AB					1001-150766	15.6	29	150 mm		AB
SHEET THICKNESS																										
	60	64	62	59			60	59	60	60	60	64	62	59			60	64	62	59	60	64	62	59		
	62	62	63	59			59	61	59	66	62	60	60	60			62	60	60	60	61	62	61	60		
AVERAGE	61	63	63	59			60	60	60	63	61	62	61	60			61	62	61	60						

DESCRIPTION	PANEL NUMBER P81				PANEL NUMBER P82				PANEL NUMBER P83																	
	ROLL NUMBER	DEPLOYED LENGTH	AMBIENT AIR TEMP.	OBSERVED OVERLAP	REMARKS	MONITOR	LEAD	L SIDE	R SIDE	TRAIL	ROLL NUMBER	DEPLOYED LENGTH	AMBIENT AIR TEMP.	OBSERVED OVERLAP	REMARKS	MONITOR	LEAD	L SIDE	R SIDE	TRAIL	ROLL NUMBER	DEPLOYED LENGTH	AMBIENT AIR TEMP.	OBSERVED OVERLAP	REMARKS	MONITOR
	1001-150774	16.2	29	150 mm		AB					1001-150774	14.5	29	150 mm		AB					1001-150781	14.5	29	150 mm		AB
SHEET THICKNESS																										
	62	59	59	60			64	59	61	62	64	64	61	64			64	64	61	64	64	64	61	64		
	60	60	60	62			62	62	63	60	63	62	63	62			63	62	63	62	63	62	63	62		
AVERAGE	61	60	60	61			63	61	62	61	64	63	62	63			64	63	62	63						

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 1000-089-03 PROJECT TITLE: Cell 16
 OWNER: Waste Connections of Canada CONTRACTOR: Titan Environmental
 LOCATION: Prairie Green IWMF

GEOMEMBRANE: SECONDARY PRIMARY
 SUBGRADE CONDITIONS: Good
 REMARKS: _____

DATE: 29-Jun-21
 SHEET NUMBER: 18

TRANSPORT EQUIPMENT Excavator and Spreader Bar
 MATERIAL: 60 mil HDPE

DESCRIPTION	PANEL P84				PANEL P85				PANEL P86			
	ROLL NUMBER	DEPLOYED LENGTH	AMBIENT AIR TEMP.	OBSERVED OVERLAP	REMARKS	MONITOR	LEAD	L SIDE	R SIDE	TRAIL	AVERAGE	
ROLL NUMBER	1001-150781				1001-150781				1001-150781			
DEPLOYED LENGTH	14.2				14				14			
AMBIENT AIR TEMP.	28				28				28			
OBSERVED OVERLAP	150 mm				150 mm				150 mm			
REMARKS	_____				_____				_____			
MONITOR	AB				AB				AB			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL
	60	60	64	63	62	59	61	60	61	64	62	62
	62	62	63	60	59	61	64	62	60	63	61	59
	_____				_____				_____			
	_____				_____				_____			
AVERAGE	61	61	64	62	61	60	63	61	61	64	62	61

DESCRIPTION	PANEL P87				PANEL				PANEL			
	ROLL NUMBER	DEPLOYED LENGTH	AMBIENT AIR TEMP.	OBSERVED OVERLAP	REMARKS	MONITOR	LEAD	L SIDE	R SIDE	TRAIL	AVERAGE	
ROLL NUMBER	1001-150781				_____				_____			
DEPLOYED LENGTH	14				_____				_____			
AMBIENT AIR TEMP.	28				_____				_____			
OBSERVED OVERLAP	150 mm				_____				_____			
REMARKS	_____				_____				_____			
MONITOR	AB				_____				_____			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL
	59	59	59	61	_____	_____	_____	_____	_____	_____	_____	_____
	62	60	61	60	_____	_____	_____	_____	_____	_____	_____	_____
	_____				_____				_____			
	_____				_____				_____			
AVERAGE	61	60	60	61	_____	_____	_____	_____	_____	_____	_____	_____

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 1000-089-03 PROJECT TITLE: Cell 16
 OWNER: Waste Connections of Canada CONTRACTOR: Titan Environmental
 LOCATION: Prairie Green IWMF

GEOMEMBRANE: SECONDARY PRIMARY
 SUBGRADE CONDITIONS: Good
 REMARKS: _____

DATE: 30-Jun-21
 SHEET NUMBER: 19

TRANSPORT EQUIPMENT Excavator and Spreader Bar
 MATERIAL: 60 mil HDPE

DESCRIPTION	PANEL P88				PANEL P89				PANEL P90			
	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL
ROLL NUMBER	1005-055509				1005-055509				1005-055509			
DEPLOYED LENGTH	28.5				28.8				28.3			
AMBIENT AIR TEMP.	31				31				31			
OBSERVED OVERLAP	150 mm				150 mm				150 mm			
REMARKS	_____				_____				_____			
MONITOR	AB				AB				AB			
SHEET THICKNESS	_____				_____				_____			
	64	62	64	63	64	62	60	64	61	62	64	59
	65	60	61	62	65	60	61	65	59	64	62	60
	_____				_____				_____			
AVERAGE	65	61	63	63	65	61	61	65	60	63	63	60

DESCRIPTION	PANEL P91				PANEL P92				PANEL P93			
	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL
ROLL NUMBER	1005-055512				1005-055512				1005-055512			
DEPLOYED LENGTH	29				29				29.5			
AMBIENT AIR TEMP.	31				31				31			
OBSERVED OVERLAP	150 mm				150 mm				150 mm			
REMARKS	_____				_____				_____			
MONITOR	AB				AB				AB			
SHEET THICKNESS	_____				_____				_____			
	58	63	64	60	61	64	62	58	62	62	60	63
	60	62	62	61	60	64	62	60	64	60	59	64
	_____				_____				_____			
AVERAGE	59	63	63	61	61	64	62	59	63	61	60	64

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 1000-089-03 PROJECT TITLE: Cell 16
 OWNER: Waste Connections of Canada CONTRACTOR: Titan Environmental
 LOCATION: Prairie Green IWMF

GEOMEMBRANE: SECONDARY PRIMARY
 SUBGRADE CONDITIONS: Good
 REMARKS: _____

DATE: 30-Jun-21
 SHEET NUMBER: 20

TRANSPORT EQUIPMENT Excavator and Spreader Bar
 MATERIAL: 60 mil HDPE

DESCRIPTION	PANEL NUMBER P94			
ROLL NUMBER	1005-055512			
DEPLOYED LENGTH	29.5			
AMBIENT AIR TEMP.	31			
OBSERVED OVERLAP	150 mm			
REMARKS	_____ _____			
MONITOR	AB			
	_____ _____			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	64	64	60	62
	66	62	62	64
	_____ _____			
AVERAGE	65	63	61	63

DESCRIPTION	PANEL NUMBER P95			
ROLL NUMBER	1005-055512			
DEPLOYED LENGTH	29.7			
AMBIENT AIR TEMP.	31			
OBSERVED OVERLAP	150 mm			
REMARKS	_____ _____			
MONITOR	AB			
	_____ _____			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	64	62	59	64
	66	60	60	66
	_____ _____			
AVERAGE	65	61	60	65

DESCRIPTION	PANEL NUMBER P96			
ROLL NUMBER	1005-055516			
DEPLOYED LENGTH	29			
AMBIENT AIR TEMP.	31			
OBSERVED OVERLAP	150 mm			
REMARKS	_____ _____			
MONITOR	AB			
	_____ _____			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	64	61	60	63
	65	59	60	65
	_____ _____			
AVERAGE	65	60	60	64

DESCRIPTION	PANEL NUMBER P97			
ROLL NUMBER	1005-055516			
DEPLOYED LENGTH	29.5			
AMBIENT AIR TEMP.	31			
OBSERVED OVERLAP	150 mm			
REMARKS	_____ _____			
MONITOR	AB			
	_____ _____			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	63	62	64	64
	65	60	62	65
	_____ _____			
AVERAGE	64	61	63	65

DESCRIPTION	PANEL NUMBER P98			
ROLL NUMBER	1005-055516			
DEPLOYED LENGTH	29.5			
AMBIENT AIR TEMP.	31			
OBSERVED OVERLAP	150 mm			
REMARKS	_____ _____			
MONITOR	AB			
	_____ _____			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	65	61	62	64
	63	60	60	66
	_____ _____			
AVERAGE	64	61	61	65

DESCRIPTION	PANEL NUMBER P99			
ROLL NUMBER	1005-055516			
DEPLOYED LENGTH	29			
AMBIENT AIR TEMP.	31			
OBSERVED OVERLAP	150 mm			
REMARKS	_____ _____			
MONITOR	AB			
	_____ _____			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	66	60	59	64
	63	59	61	65
	_____ _____			
AVERAGE	65	60	60	65

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 1000-089-03 PROJECT TITLE: Cell 16
 OWNER: Waste Connections of Canada CONTRACTOR: Titan Environmental
 LOCATION: Prairie Green IWMF

GEOMEMBRANE: SECONDARY PRIMARY
 SUBGRADE CONDITIONS: Good
 REMARKS: _____

DATE: 30-Jun-21
 SHEET NUMBER: 21

TRANSPORT EQUIPMENT: Excavator and Spreader Bar
 MATERIAL: 60 mil HDPE

DESCRIPTION	PANEL NUMBER P100				PANEL NUMBER P101				PANEL NUMBER			
	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL
ROLL NUMBER	1005-055516				1005-055510							
DEPLOYED LENGTH	29.3				29							
AMBIENT AIR TEMP.	31				31							
OBSERVED OVERLAP	150 mm				150 mm							
REMARKS												
MONITOR	AB				AB							
SHEET THICKNESS												
	64	60	64	66	66	60	62	61				
	65	62	62	63	64	60	60	65				
AVERAGE	65	61	63	65	65	60	61	63				

DESCRIPTION	PANEL NUMBER				PANEL NUMBER				PANEL NUMBER			
	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL
ROLL NUMBER												
DEPLOYED LENGTH												
AMBIENT AIR TEMP.												
OBSERVED OVERLAP												
REMARKS												
MONITOR												
SHEET THICKNESS												
AVERAGE												

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 1000-089-03 PROJECT TITLE: Cell 16
 OWNER: Waste Connections of Canada CONTRACTOR: Titan Environmental
 LOCATION: Prairie Green IWMF

GEOMEMBRANE: SECONDARY PRIMARY
 SUBGRADE CONDITIONS: Good
 REMARKS: _____

DATE: 01-Jul-21
 SHEET NUMBER: 22

TRANSPORT EQUIPMENT Excavator and Spreader Bar
 MATERIAL: 60 mil HDPE

DESCRIPTION	PANEL P102				PANEL P103				PANEL P104																	
	ROLL NUMBER	DEPLOYED LENGTH	AMBIENT AIR TEMP.	OBSERVED OVERLAP	REMARKS	MONITOR	LEAD	L SIDE	R SIDE	TRAIL	ROLL NUMBER	DEPLOYED LENGTH	AMBIENT AIR TEMP.	OBSERVED OVERLAP	REMARKS	MONITOR	LEAD	L SIDE	R SIDE	TRAIL	ROLL NUMBER	DEPLOYED LENGTH	AMBIENT AIR TEMP.	OBSERVED OVERLAP	REMARKS	MONITOR
	1005-150769	18.5	32	150 mm		AB	60	60	59	62	1001-150781	31.5	32	150 mm		AB	60	62	61	60	1005-055519	29	32	150 mm		AB
							62	60	61	60							66	60	62	66						
AVERAGE							61	60	60	61							65	60	61	66						

DESCRIPTION	PANEL P105				PANEL P106				PANEL P107																	
	ROLL NUMBER	DEPLOYED LENGTH	AMBIENT AIR TEMP.	OBSERVED OVERLAP	REMARKS	MONITOR	LEAD	L SIDE	R SIDE	TRAIL	ROLL NUMBER	DEPLOYED LENGTH	AMBIENT AIR TEMP.	OBSERVED OVERLAP	REMARKS	MONITOR	LEAD	L SIDE	R SIDE	TRAIL	ROLL NUMBER	DEPLOYED LENGTH	AMBIENT AIR TEMP.	OBSERVED OVERLAP	REMARKS	MONITOR
	1005-055519	29.3	32	150 mm		AB	65	60	62	64	1005-055519	29.5	32	150 mm		AB	65	59	59	65	1005-055519	29.3	32	150 mm		AB
							63	60	61	61							62	60	62	65						
AVERAGE							64	60	62	63							63	61	61	64						

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 1000-089-03 PROJECT TITLE: Cell 16
 OWNER: Waste Connections of Canada CONTRACTOR: Titan Environmental
 LOCATION: Prairie Green IWMF

GEOMEMBRANE: SECONDARY PRIMARY
 SUBGRADE CONDITIONS: Good
 REMARKS: _____

DATE: 01-Jul-21
 SHEET NUMBER: 23

TRANSPORT EQUIPMENT Excavator and Spreader Bar
 MATERIAL: 60 mil HDPE

DESCRIPTION	PANEL P108				PANEL P109				PANEL P110																	
	ROLL NUMBER	DEPLOYED LENGTH	AMBIENT AIR TEMP.	OBSERVED OVERLAP	REMARKS	MONITOR	LEAD	L SIDE	R SIDE	TRAIL	ROLL NUMBER	DEPLOYED LENGTH	AMBIENT AIR TEMP.	OBSERVED OVERLAP	REMARKS	MONITOR	LEAD	L SIDE	R SIDE	TRAIL	ROLL NUMBER	DEPLOYED LENGTH	AMBIENT AIR TEMP.	OBSERVED OVERLAP	REMARKS	MONITOR
	1005-055510	29.5	32	150 mm		AB	64	60	60	66	1005-055510	29	32	150 mm		AB	64	62	63	63	1005-055510	26	32	150 mm		AB
							63	62	59	64							65	62	59	66						
AVERAGE							64	61	60	65							63	61	62	63						

DESCRIPTION	PANEL P111				PANEL P112				PANEL P113																	
	ROLL NUMBER	DEPLOYED LENGTH	AMBIENT AIR TEMP.	OBSERVED OVERLAP	REMARKS	MONITOR	LEAD	L SIDE	R SIDE	TRAIL	ROLL NUMBER	DEPLOYED LENGTH	AMBIENT AIR TEMP.	OBSERVED OVERLAP	REMARKS	MONITOR	LEAD	L SIDE	R SIDE	TRAIL	ROLL NUMBER	DEPLOYED LENGTH	AMBIENT AIR TEMP.	OBSERVED OVERLAP	REMARKS	MONITOR
	1005-055510	15.5	32	150 mm		AB	66	60	59	66	1005-055510	5	32	150 mm		AB	62	60	61	66	1005-055510	28.2	32	150 mm		AB
							63	60	59	65							63	62	62	62						
AVERAGE							65	60	59	66							63	61	62	64						

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 1000-089-03 PROJECT TITLE: Cell 16
 OWNER: Waste Connections of Canada CONTRACTOR: Titan Environmental
 LOCATION: Prairie Green IWMF

GEOMEMBRANE: SECONDARY PRIMARY
 SUBGRADE CONDITIONS: Good
 REMARKS: _____

DATE: 01-Jul-21
 SHEET NUMBER: 24

TRANSPORT EQUIPMENT Excavator and Spreader Bar
 MATERIAL: 60 mil HDPE

DESCRIPTION	PANEL NUMBER	P114				PANEL NUMBER	P115				PANEL NUMBER	P116			
ROLL NUMBER		1005-055517					1005-055517					1005-055509			
DEPLOYED LENGTH		28					23					14			
AMBIENT AIR TEMP.		32					32					32			
OBSERVED OVERLAP		150 mm					150 mm					150 mm			
REMARKS		_____					_____					_____			
MONITOR		AB					AB					AB			
SHEET THICKNESS		LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL		
		64	60	62	66	66	59	60	64	65	60	62	66		
		62	62	60	66	64	60	60	62	63	60	62	64		
		_____				_____				_____					
		_____				_____				_____					
AVERAGE		63	61	61	66	65	60	60	63	64	60	62	65		

DESCRIPTION	PANEL NUMBER	P117				PANEL NUMBER					PANEL NUMBER				
ROLL NUMBER		1005-055509					_____					_____			
DEPLOYED LENGTH		3					_____					_____			
AMBIENT AIR TEMP.		32					_____					_____			
OBSERVED OVERLAP		150 mm					_____					_____			
REMARKS		_____					_____					_____			
MONITOR		AB					_____					_____			
SHEET THICKNESS		LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL		
		65	62	60	63										
		63	62	59	61										
		_____				_____				_____					
		_____				_____				_____					
AVERAGE		64	62	60	62										

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 1000-089-03 PROJECT TITLE: Cell 16
 OWNER: Waste Connections of Canada CONTRACTOR: Titan Environmental
 LOCATION: Prairie Green IWMF

GEOMEMBRANE: SECONDARY PRIMARY
 SUBGRADE CONDITIONS: Good
 REMARKS: _____

DATE: 02-Jul-21
 SHEET NUMBER: 25

TRANSPORT EQUIPMENT Excavator and Spreader Bar
 MATERIAL: 60 mil HDPE

DESCRIPTION	PANEL P118				PANEL P119				PANEL P120			
	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL
ROLL NUMBER	1001-150767				1001-150775				1001-150767			
DEPLOYED LENGTH	109				139				52			
AMBIENT AIR TEMP.	35				33				35			
OBSERVED OVERLAP	150 mm				150 mm				150 mm			
REMARKS	_____				_____				_____			
MONITOR	AB				AB				AB			
SHEET THICKNESS	_____				_____				_____			
	60	62	60	62	61	59	60	60	60	62	60	61
	59	60	61	62	61	60	59	59	61	62	61	61
	_____				_____				_____			
AVERAGE	60	61	61	62	61	60	60	60	61	62	61	61

DESCRIPTION	PANEL P121				PANEL P122				PANEL P123			
	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL
ROLL NUMBER	1001-150775				1001-150776				1001-150776			
DEPLOYED LENGTH	22.5				56				10.5			
AMBIENT AIR TEMP.	35				35				35			
OBSERVED OVERLAP	150 mm				150 mm				150 mm			
REMARKS	_____				_____				_____			
MONITOR	AB				AB				AB			
SHEET THICKNESS	_____				_____				_____			
	60	59	62	64	62	59	61	62	64	61	59	62
	60	62	63	62	60	61	60	60	62	63	60	60
	_____				_____				_____			
AVERAGE	60	61	63	63	61	60	61	61	63	62	60	61

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 1000-089-03 PROJECT TITLE: Cell 16
 OWNER: Waste Connections of Canada CONTRACTOR: Titan Environmental
 LOCATION: Prairie Green IWMF

GEOMEMBRANE: SECONDARY PRIMARY
 SUBGRADE CONDITIONS: Good
 REMARKS: _____

DATE: 02-Jul-21
 SHEET NUMBER: 26

TRANSPORT EQUIPMENT Excavator and Spreader Bar
 MATERIAL: 60 mil HDPE

DESCRIPTION	PANEL NUMBER P124				PANEL NUMBER P125				PANEL NUMBER			
	ROLL NUMBER	1001-150776				1001-150781						
DEPLOYED LENGTH	96				43							
AMBIENT AIR TEMP.	34				35							
OBSERVED OVERLAP	150 mm				150 mm							
REMARKS												
MONITOR	AB				AB							
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL
	60	60	62	60	60	62	60	61				
	59	62	62	61	62	60	59	59				
AVERAGE	60	61	62	61	61	61	60	60				

DESCRIPTION	PANEL NUMBER				PANEL NUMBER				PANEL NUMBER			
	ROLL NUMBER											
DEPLOYED LENGTH												
AMBIENT AIR TEMP.												
OBSERVED OVERLAP												
REMARKS												
MONITOR												
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL
AVERAGE												

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 1000-089-03 PROJECT TITLE: Cell 16
 OWNER: Waste Connections of Canada CONTRACTOR: Titan Environmental
 LOCATION: Prairie Green IWMF

GEOMEMBRANE: SECONDARY PRIMARY
 SUBGRADE CONDITIONS: Good
 REMARKS: _____

DATE: 08-Jul-21
 SHEET NUMBER: 27

TRANSPORT EQUIPMENT Excavator and Spreader Bar
 MATERIAL: 60 mil HDPE

DESCRIPTION	PANEL P126				PANEL P127				PANEL P128			
	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL
ROLL NUMBER	777				777				777			
DEPLOYED LENGTH	40.4				39.7				38.4			
AMBIENT AIR TEMP.	22				22				22			
OBSERVED OVERLAP	150 mm				150 mm				150 mm			
REMARKS	_____				_____				_____			
MONITOR	DJ				DJ				DJ			
SHEET THICKNESS	62	63	60	62	62	62	60	62	62	63	60	62
	63	63	61	61	61	62	61	60	60	62	61	61
AVERAGE	63	63	61	62	62	62	61	61	61	63	61	62

DESCRIPTION	PANEL P129				PANEL P130				PANEL P131			
	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL
ROLL NUMBER	777				777				760			
DEPLOYED LENGTH	13.8				15.2				39			
AMBIENT AIR TEMP.	22				22				22			
OBSERVED OVERLAP	150 mm				150 mm				150 mm			
REMARKS	_____				_____				_____			
MONITOR	DJ				DJ				DJ			
SHEET THICKNESS	62	60	59	62	62	63	62	61	62	60	60	61
	61	60	62	61	61	61	63	60	60	60	60	62
AVERAGE	62	60	61	62	62	62	63	61	61	60	60	62

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 1000-089-03 PROJECT TITLE: Cell 16
 OWNER: Waste Connections of Canada CONTRACTOR: Titan Environmental
 LOCATION: Prairie Green IWMF

GEOMEMBRANE: SECONDARY PRIMARY
 SUBGRADE CONDITIONS: Good
 REMARKS: _____

DATE: 08-Jul-21
 SHEET NUMBER: 28

TRANSPORT EQUIPMENT Excavator and Spreader Bar
 MATERIAL: 60 mil HDPE

DESCRIPTION	PANEL NUMBER P132				PANEL NUMBER				PANEL NUMBER			
	ROLL NUMBER	760				_____				_____		
DEPLOYED LENGTH	18.5				_____				_____			
AMBIENT AIR TEMP.	22				_____				_____			
OBSERVED OVERLAP	150 mm				_____				_____			
REMARKS	_____				_____				_____			
MONITOR	DJ				_____				_____			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL
	62	62	60	60	_____	_____	_____	_____	_____	_____	_____	_____
	61	61	60	61	_____	_____	_____	_____	_____	_____	_____	_____
	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
AVERAGE	62	62	60	61	_____				_____			

DESCRIPTION	PANEL NUMBER				PANEL NUMBER				PANEL NUMBER			
	ROLL NUMBER	_____				_____				_____		
DEPLOYED LENGTH	_____				_____				_____			
AMBIENT AIR TEMP.	_____				_____				_____			
OBSERVED OVERLAP	_____				_____				_____			
REMARKS	_____				_____				_____			
MONITOR	_____				_____				_____			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL
	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
AVERAGE	_____				_____				_____			

REVIEWED BY: AFK
 DATE: September 2, 2021

Appendix B-5

Geomembrane Trial Seam Summary



GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 Mil HDPE

X	TF - # = FUSION
	TX - # = EXTRUSION

DATE: June 22, 2021
 SHEET NUMBER: 1

SAMPLE NUMBER	APROX. TIME	WELDING MACHINE NUMBER	WELD TECH.	TEMPERATURES				TEST RESULTS			PASS OR FAIL	MON.	REMARKS
				AMBIENT AIR TEMP.	PREHEAT OR MACHINE SPEED	EXTRUDER	NOZZLE OR WEDGE	INSIDE PEEL MODE STRENGTH	OUTSIDE PEEL MODE STRENGTH	SHEAR MODE STRENGTH			
TF1	1320	WW44	RD	22	700		860	FTB	FTB	FTB	PASS	DS	
								98,106,125,120	113,108,120,124	133,126			
TF2	1320	WW43	AM	22	700		750	FTB	FAIL	FTB	FAIL	DS	90%PEEL
								103,111	112,106				
TF2A	1350	WW43	AM	22	700		750	FTB	FTB	FTB	PASS	DS	
								123,123,114,119	118,110,110,115	122,126			

REVIEWED BY: AFK
 DATE: August 26, 2021



GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 Mil HDPE

X	TF - # = FUSION
	TX - # = EXTRUSION

DATE: June 23, 2021
 SHEET NUMBER: 2

SAMPLE NUMBER	APROX. TIME	WELDING MACHINE NUMBER	WELD TECH.	TEMPERATURES				TEST RESULTS			PASS OR FAIL	MON.	REMARKS
				AMBIENT AIR TEMP.	PREHEAT OR MACHINE SPEED	EXTRUDER	NOZZLE OR WEDGE	INSIDE PEEL MODE STRENGTH	OUTSIDE PEEL MODE STRENGTH	SHEAR MODE STRENGTH			
TF3	1003	WW43	AM	24	650		750	FTB 104	FAIL 71	FTB	FAIL	DS	90%PEEL
TF3A	1003	WW43	AM	24	600		750	FTB 117,116,120,108	FTB 111,112,114,109	FTB 121,123	PASS	DS	
TF4	1000	WW44	RD	24	600		860	FTB 115,104,111,112	FTB 112,106,111,101	FTB 120,122	PASS	DS	
TF5	1500	WW43	AM	25	600		860	FTB 97	FAIL 55	FTB	FAIL	AFK	100%PEEL
TF5A	1520	WW43	AM	25	600		860	FTB 100,112,111,113	FTB 112,111,115,123	FTB 128,130	PASS	AFK	

REVIEWED BY: AFK
 DATE: August 26, 2021



GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 Mil HDPE

X	TF - # = FUSION
	TX - # = EXTRUSION

DATE: June 24, 2021
 SHEET NUMBER: 3

SAMPLE NUMBER	APROX. TIME	WELDING MACHINE NUMBER	WELD TECH.	TEMPERATURES				TEST RESULTS			PASS OR FAIL	MON.	REMARKS
				AMBIENT AIR TEMP.	PREHEAT OR MACHINE SPEED	EXTRUDER	NOZZLE OR WEDGE	INSIDE PEEL MODE STRENGTH	OUTSIDE PEEL MODE STRENGTH	SHEAR MODE STRENGTH			
TF6**	800	WW43	AM	18	550		860	FAIL 113,117,84	FAIL 128,123	FTB	FAIL	DS	90%PEEL
TF6A**	817	WW43	AM	18	500		860	FAIL 131,114,130	FTB 131,131	FTB	FAIL	DS	100%PEEL
TF7	845	WW44	AM	20	500		860	FTB 108,111,123,110	FTB 117,132,118,123	FTB 135,135	PASS	DS	
TF8	1401	WW44	AM	26	650		860	FTB 118,117,114,121	FTB 119,117,114,116	FTB 124,126	PASS	DS	

** Please note that due to two failed trial seams machine WW43 was taken out of service

REVIEWED BY: AFK
 DATE: August 26, 2021



GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 Mil HDPE

X	TF - # = FUSION
	TX - # = EXTRUSION

DATE: June 28, 2021
 SHEET NUMBER: 6

SAMPLE NUMBER	APROX. TIME	WELDING MACHINE NUMBER	WELD TECH.	TEMPERATURES				TEST RESULTS			PASS OR FAIL	MON.	REMARKS
				AMBIENT AIR TEMP.	PREHEAT OR MACHINE SPEED	EXTRUDER	NOZZLE OR WEDGE	INSIDE PEEL MODE STRENGTH	OUTSIDE PEEL MODE STRENGTH	SHEAR MODE STRENGTH			
TF13	1150	WW44	AM	22	650		860	FTB	FAIL	FTB	FAIL	DS	80%PEEL
								114,125	117,69				
TF14	1155	WW15	RD	22	700		850	FAIL	FTB	FTB	FAIL	DS	90%PEEL
								122					
TF13A	1205	WW44	AM	22	600		860	FAIL	FTB	FTB	FAIL	DS	100%PEEL
								125,67					
TF14A	1405	WW15	RD	24	600		850	FAIL	FTB	FTB	FAIL	DS	100%PEEL
								85					
TF15**	1335	WW32	AM	23	600		860	FTB	FAIL	FTB	FAIL	DS	100%PEEL
								115,108,107,100	112,112,108,47				
TF15A**	1410	WW32	AM	24	550		860	FTB	FAIL	FTB	FAIL	DS	100%PEEL
								98,108	102,84				
TF13B	1430	WW44	AM	24	600		860	FTB	FTB	FTB	PASS	DS	
								98,99,96,100	107,100,105,108	125,121			
TF13C	1430	WW44	AM	24	600		860	FTB	FTB	FTB	PASS	DS	
								100,106,106,99	108,108,103,99	121,120			
TF14B	1455	WW15	RD	24	600		850	FTB	FTB	FTB	PASS	DS	
								104,98,106,101	99,104,107,107	120,122			
TF14C	1455	WW15	RD	24	600		850	FTB	FTB	FTB	PASS	DS	
								106,98,106,106	107,98,111,105	124,120			

** Please note that due to two failed trial seams machine WW32 was taken out of service

REVIEWED BY: AFK
 DATE: August 26, 2021



GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 Mil HDPE

X	TF - # = FUSION
	TX - # = EXTRUSION

DATE: June 29, 2021
 SHEET NUMBER: 7

SAMPLE NUMBER	APROX. TIME	WELDING MACHINE NUMBER	WELD TECH.	TEMPERATURES				TEST RESULTS			PASS OR FAIL	MON.	REMARKS
				AMBIENT AIR TEMP.	PREHEAT OR MACHINE SPEED	EXTRUDER	NOZZLE OR WEDGE	INSIDE PEEL MODE STRENGTH	OUTSIDE PEEL MODE STRENGTH	SHEAR MODE STRENGTH			
TF16	847	WW44	AM	18	600		860	FTB	FTB	FTB	PASS	DS	
								125,130,124,121	118,123,118,112	137,136			
TF17	900	WW15	RD	19	600		860	FTB	FTB	FTB	PASS	DS	
								132,121,129,130	118,113,115,118	131,133			
TF18	1645	WW44	AM	30	600		860	FTB	FTB	FTB	PASS	DS	
								107,112,106,100	113,101,109,107	120,120			

REVIEWED BY: AFK
 DATE: August 26, 2021



GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 Mil HDPE

X	TF - # = FUSION
	TX - # = EXTRUSION

DATE: June 30, 2021
 SHEET NUMBER: 8

SAMPLE NUMBER	APROX. TIME	WELDING MACHINE NUMBER	WELD TECH.	TEMPERATURES				TEST RESULTS			PASS OR FAIL	MON.	REMARKS
				AMBIENT AIR TEMP.	PREHEAT OR MACHINE SPEED	EXTRUDER	NOZZLE OR WEDGE	INSIDE PEEL MODE STRENGTH	OUTSIDE PEEL MODE STRENGTH	SHEAR MODE STRENGTH			
TF19	808	WW44	AM	22	600		860	FTB	FTB	FTB	PASS	DS	
								120,123,122,122	123,123,126,123	131,132			
TF20	1330	WW44	AM	31	650		860	FTB	FTB	FTB	PASS	DS	
								98,107,109,112	101,107,108,108	130,133			
TF21A	1430	WW43	RD	31	600		860	FTB	FAIL	FTB	FAIL	DS	100%PEEL
								108	69				
TF21B	1515	WW43	RD	31	660		860	FTB	FAIL	FTB	FAIL	DS	100%PEEL
								92,109,111	111,112,88				
TF22A	1600	WW32	RD	31	640		860	FAIL	FTB	FTB	PASS	DS	100%PEEL
								83					

** Please note that due to two failed trial seams machine WW43 was taken out of service

REVIEWED BY: AFK
 DATE: August 26, 2021



GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 Mil HDPE

X	TF - # = FUSION
	TX - # = EXTRUSION

DATE: July 1, 2021
 SHEET NUMBER: 9

SAMPLE NUMBER	APROX. TIME	WELDING MACHINE NUMBER	WELD TECH.	TEMPERATURES				TEST RESULTS			PASS OR FAIL	MON.	REMARKS
				AMBIENT AIR TEMP.	PREHEAT OR MACHINE SPEED	EXTRUDER	NOZZLE OR WEDGE	INSIDE PEEL MODE STRENGTH	OUTSIDE PEEL MODE STRENGTH	SHEAR MODE STRENGTH			
TF23	818	WW44	AM	22	550		860	FTB	FTB	FTB	PASS	DS	
								116,125,121,121	126,120,130,126	132,137			
TF24	805	WW1	RD	22	650		860	FTB	FTB	FTB	PASS	DS	
								125,123,124,125	128,126,124,123	134,133			
TF25	1255	WW1	RD	29	650		860	FTB	FTB	FTB	PASS	DS	
								113,99,104,107	104,111,112,112	123,129			
TF26	1301	WW44	AM	29	650		860	FTB	FTB	FTB	PASS	DS	
								109,115,120,110	110,107,108,107	136,122			

REVIEWED BY: AFK
 DATE: August 26, 2021



GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 Mil HDPE

X	TF - # = FUSION
	TX - # = EXTRUSION

DATE: July 2, 2021
 SHEET NUMBER: 10

SAMPLE NUMBER	APROX. TIME	WELDING MACHINE NUMBER	WELD TECH.	TEMPERATURES				TEST RESULTS			PASS OR FAIL	MON.	REMARKS
				AMBIENT AIR TEMP.	PREHEAT OR MACHINE SPEED	EXTRUDER	NOZZLE OR WEDGE	INSIDE PEEL MODE STRENGTH	OUTSIDE PEEL MODE STRENGTH	SHEAR MODE STRENGTH			
TF27	815	WW1	RD	22	550		860	FTB	FTB	FTB	PASS	DS	TX /SM
								108,116,105,107	114,127,111,109	138,142			
TF28	1420	WW27	RD	33	650		860	FTB	FAIL	FTB	FAIL	DS	100%PEEL
								102	80				
TF29	1425	WW44	AM	33	650		860	FTB	FTB	FTB	PASS	DS	
								108,111,116,109	111,112,108,110	125,122			
TF28A	1525	WW27	RD	34	650		860	FTB	FTB	FTB	PASS	DS	
								112,105,111,112	110,92,111,109	126,123			

REVIEWED BY: AFK
 DATE: August 26, 2021



GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 Mil HDPE

X	TF - # = FUSION
	TX - # = EXTRUSION

DATE: July 8, 2021
 SHEET NUMBER: 13

SAMPLE NUMBER	APROX. TIME	WELDING MACHINE NUMBER	WELD TECH.	TEMPERATURES				TEST RESULTS			PASS OR FAIL	MON.	REMARKS
				AMBIENT AIR TEMP.	PREHEAT OR MACHINE SPEED	EXTRUDER	NOZZLE OR WEDGE	INSIDE PEEL MODE STRENGTH	OUTSIDE PEEL MODE STRENGTH	SHEAR MODE STRENGTH			
TF33	1434	WW27	AD	25	550		860	FTB	FTB	FTB	PASS	AFK	
								115,115,116,117	117,120,112,121	129,124			
TF34	1434	WW44	AM	25	650		860	FTB	FTB	FTB	PASS	AFK	
								117,126,121,122	110,123,119,120	131,134			
TF35	1510	WW1	AD	25	550		860	FTB	FTB	FTB	PASS	AFK	
								118,117,119,123	123,123,117,120	135,130			

REVIEWED BY: AFK
 DATE: August 26, 2021



GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 Mil HDPE

X	TF - # = FUSION
	TX - # = EXTRUSION

DATE: July 9, 2021
 SHEET NUMBER: 14

SAMPLE NUMBER	APROX. TIME	WELDING MACHINE NUMBER	WELD TECH.	TEMPERATURES				TEST RESULTS			PASS OR FAIL	MON.	REMARKS
				AMBIENT AIR TEMP.	PREHEAT OR MACHINE SPEED	EXTRUDER	NOZZLE OR WEDGE	INSIDE PEEL MODE STRENGTH	OUTSIDE PEEL MODE STRENGTH	SHEAR MODE STRENGTH			
TF36	752	WW44	AM	20	500		860	FTB	FTB	FTB	PASS	AB	Textured / Smooth
								133,129,123,132	126,125,129,117	146,139			
TF37**	1434	WW44	AM	28	650		860	FAIL	FTB	FTB	FAIL	AFK	100%PEEL
								56					
TF37A**	1436	WW44	AM	28	600		860	FAIL	FTB	FTB	FAIL	AFK	
								34					
TF38	1509	WW1	AM	28	550		860	FTB	FTB	FTB	PASS	AFK	
								110,109,113,112	108,114,110,107	126,122			

** Please note that due to two failed trial seams machine WW44 was taken out of service

REVIEWED BY: AFK
 DATE: August 26, 2021



GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 Mil HDPE

X	TF - # = FUSION
	TX - # = EXTRUSION

DATE: July 12, 2021
 SHEET NUMBER: 15

SAMPLE NUMBER	APROX. TIME	WELDING MACHINE NUMBER	WELD TECH.	TEMPERATURES				TEST RESULTS			PASS OR FAIL	MON.	REMARKS
				AMBIENT AIR TEMP.	PREHEAT OR MACHINE SPEED	EXTRUDER	NOZZLE OR WEDGE	INSIDE PEEL MODE STRENGTH	OUTSIDE PEEL MODE STRENGTH	SHEAR MODE STRENGTH			
TF39**	954	WW1	DP	22	570		860	FTB 107	100% PEEL 94,97	FTB	FAIL	AB	SM/SM
TF40**	958	WW1	DP	22	550		860	FTB 107,99	100% PEEL 111,119	FTB	FAIL	AB	TX/SM
TF41	1054	WW44	DP	24	550		860	FTB 112,120,118,129	FTB 118,119,121,118	FTB 131,134	PASS	AB	SM/SM
TF42	1109	WW44	DP	24	510		860	FTB 106,114,117,114	FTB 117,114,120,112	FTB 127,122	PASS	AB	TX/SM

** Please note that due to two failed trial seams machine WW1 was taken out of service

REVIEWED BY: AFK
 DATE: August 26, 2021



GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil smooth HDPE

	TF - # = FUSION
X	TX - # = EXTRUSION

DATE: June 25, 2021
 SHEET NUMBER: 3

SAMPLE NUMBER	APROX. TIME	WELDING MACHINE NUMBER	WELD TECH.	TEMPERATURES				TEST RESULTS			PASS OR FAIL	MON.	REMARKS
				AMBIENT AIR TEMP.	PREHEAT OR MACHINE SPEED	EXTRUDER	NOZZLE OR WEDGE	INSIDE PEEL MODE STRENGTH	OUTSIDE PEEL MODE STRENGTH	SHEAR MODE STRENGTH			
TX5	815	EXT35	RN	17	470	465		FTB		FTB	PASS	DS	
								114,113,109,117		157,153			
TX6	945	EXT35	RN	22	470	465		FTB		FTB	PASS	DS	Old/New
								81,89,98,78		129,129			
TX7	1415	EXT35	RN	26	470	465		FTB		FTB	PASS	DS	Old/New
								78,84,79,78,134		129,124			
TX8	1415	EXT35	RN	26	470	465		FAIL		FTB	FAIL	DS	
								104,57					
TX8A	1600	EXT35	RN	26	470	465		FTB		FTB	PASS	DS	
								100,102,107,100		126,120			

REVIEWED BY: AFK
 DATE: August 26, 2021



GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil smooth HDPE

	TF - # = FUSION
X	TX - # = EXTRUSION

DATE: June 26, 2021
 SHEET NUMBER: 4

SAMPLE NUMBER	APROX. TIME	WELDING MACHINE NUMBER	WELD TECH.	TEMPERATURES				TEST RESULTS			PASS OR FAIL	MON.	REMARKS
				AMBIENT AIR TEMP.	PREHEAT OR MACHINE SPEED	EXTRUDER	NOZZLE OR WEDGE	INSIDE PEEL MODE STRENGTH	OUTSIDE PEEL MODE STRENGTH	SHEAR MODE STRENGTH			
TX9	905	EXT35	RN	19	470	465		Fail		FTB	FAIL	DS	
								69					
TX10**	910	EXT35	RN	19	470	465		FTB		FTB	PASS	DS	
								120,102,98,119		124,124			
TX11	1331	EXT35	RN	26	470	465		FTB		FTB	PASS	DS	
								132,120,125,125		130,125			
TX12	1526	EXT9	DG	26	465	465		FTB		FTB	PASS	DS	
								124,114,120,134		126,123			

**TX10 is the passing trial seam for TX9

REVIEWED BY: AFK
 DATE: August 26, 2021



GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil smooth HDPE

	TF - # = FUSION
X	TX - # = EXTRUSION

DATE: June 30, 2021
 SHEET NUMBER: 6

SAMPLE NUMBER	APROX. TIME	WELDING MACHINE NUMBER	WELD TECH.	TEMPERATURES				TEST RESULTS			PASS OR FAIL	MON.	REMARKS
				AMBIENT AIR TEMP.	PREHEAT OR MACHINE SPEED	EXTRUDER	NOZZLE OR WEDGE	INSIDE PEEL MODE STRENGTH	OUTSIDE PEEL MODE STRENGTH	SHEAR MODE STRENGTH			
TX14	851	EXT9	RN	23	465	465		FTB		FTB	PASS	DS	
								108,100,99,125		134,138			
TX15	1400	EXT9	RN	31	470	465		FTB		FTB	PASS	DS	
								111,111,111,116		124,132			

REVIEWED BY: AFK
 DATE: August 26, 2021



GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil smooth HDPE

	TF - # = FUSION
X	TX - # = EXTRUSION

DATE: July 2, 2021
 SHEET NUMBER: 7

SAMPLE NUMBER	APROX. TIME	WELDING MACHINE NUMBER	WELD TECH.	TEMPERATURES				TEST RESULTS			PASS OR FAIL	MON.	REMARKS
				AMBIENT AIR TEMP.	PREHEAT OR MACHINE SPEED	EXTRUDER	NOZZLE OR WEDGE	INSIDE PEEL MODE STRENGTH	OUTSIDE PEEL MODE STRENGTH	SHEAR MODE STRENGTH			
TX16	830	EXT5	RN	22	470	465		FTB		FTB	PASS	DS	
								112,113,86,117		121,123			
TX17	1355	EXT5	RN	33	470	465		FTB		FTB	PASS	DS	
								108,108,110,104		125,123			

REVIEWED BY: AFK
 DATE: August 26, 2021



GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil smooth HDPE

	TF - # = FUSION
X	TX - # = EXTRUSION

DATE: July 3, 2021
 SHEET NUMBER: 8

SAMPLE NUMBER	APROX. TIME	WELDING MACHINE NUMBER	WELD TECH.	TEMPERATURES				TEST RESULTS			PASS OR FAIL	MON.	REMARKS
				AMBIENT AIR TEMP.	PREHEAT OR MACHINE SPEED	EXTRUDER	NOZZLE OR WEDGE	INSIDE PEEL MODE STRENGTH	OUTSIDE PEEL MODE STRENGTH	SHEAR MODE STRENGTH			
TX18	940	EXT5	RN	28	470	465		FAIL		FTB	FAIL	DS	
								93,81,70					
TX18A	1010	EXT5	RN	29	470	465		FAIL		FTB	FAIL	DS	
								74					
TX18B	1050	EXT5	RN	30	475	465		FTB		FTB	PASS	DS	
								86,94,107,79		120,120			
TX18C	1050	EXT5	RN	30	475	465		FTB		FTB	PASS	DS	
								93,100,92,116		122,126			
TX19	1050	EXT9	DG	30	480	480		FTB		FTB	PASS	DS	
								111,106,111,113		121,130			
TX20	1630	EXT5	RN	34	475	465		FTB		FTB	PASS	AFK	
								93,95,88,102		121,125			

REVIEWED BY: AFK
 DATE: August 26, 2021



GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil smooth HDPE

	TF - # = FUSION
X	TX - # = EXTRUSION

DATE: July 5, 2021
 SHEET NUMBER: 9

SAMPLE NUMBER	APROX. TIME	WELDING MACHINE NUMBER	WELD TECH.	TEMPERATURES				TEST RESULTS			PASS OR FAIL	MON.	REMARKS
				AMBIENT AIR TEMP.	PREHEAT OR MACHINE SPEED	EXTRUDER	NOZZLE OR WEDGE	INSIDE PEEL MODE STRENGTH	OUTSIDE PEEL MODE STRENGTH	SHEAR MODE STRENGTH			
TX21	1200	EXT5	RN	25	475	470		FTB 119,121,120,113		FTB 139,138	PASS	AFK	

REVIEWED BY: AFK
 DATE: August 26, 2021



GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil smooth HDPE

	TF - # = FUSION
X	TX - # = EXTRUSION

DATE: July 9, 2021
 SHEET NUMBER: 11

SAMPLE NUMBER	APROX. TIME	WELDING MACHINE NUMBER	WELD TECH.	TEMPERATURES				TEST RESULTS			PASS OR FAIL	MON.	REMARKS
				AMBIENT AIR TEMP.	PREHEAT OR MACHINE SPEED	EXTRUDER	NOZZLE OR WEDGE	INSIDE PEEL MODE STRENGTH	OUTSIDE PEEL MODE STRENGTH	SHEAR MODE STRENGTH			
TX23	817	EXT5	RN	21	465	475		FTB		FTB	PASS	AFK	
								86,108,103,110		139,139			
TX24	1501	EXT5	RN	28	465	475		FTB		FTB	PASS	AFK	
								121,100,124,122		120,124			
TX25	1545	EXT9	DP	28	470	475		FTB		FTB	PASS	AFK	
								110,113,98,112,95		120,122			

REVIEWED BY: AFK
 DATE: August 26, 2021

Appendix B-6

Geomembrane Seam Welding Inspection



GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

DATE June 22, 2021

SHEET NUMBER 1

FUSION

EXTRUSION

MACHINE # WW44

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF1	1320	RD

SEAM NUMBER	SEAM SECTION *		APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCTIVE			
	START POINT	FINISH POINT					DIGITAL SET	INDICATOR						WEDGE OR BARREL NOZZLE	WEDGE OR BARREL NOZZLE	TEST DATE	MON.
1	P1/P2	NEOS SEOS	1340	22	RD	700	860		133	133		AFK		06-23-21	DS		
2	P3/P4	NEOS SEOS	1425	22	RD	700	860		135	143/125	DSF1	AFK		06-23-21	DS		
3	P5/P6	SEOS NEOS	1715	25	RD	700	860		134	149/110	DSF2	AFK		06-23-21	DS		
4																	
5																	
6																	
7																	
8																	
9																	
10																	
11																	
12																	
13																	
14																	
15																	
16																	
17																	

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY - OVER

402.0

** COLUMNS TO BE USED
 BY THE DATA REVIEWED ONLY

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

DATE June 22, 2021

SHEET NUMBER 2

FUSION

EXTRUSION

MACHINE # WW43

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF2	1320	AM

SEAM NUMBER	SEAM SECTION *		APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCTIVE		
							DIGITAL SET WEDGE OR BARREL NOZZLE	INDICATOR WEDGE OR BARREL NOZZLE						TEST DATE	MON.	
	START POINT	FINISH POINT														
1	P2/P3	NEOS SEOS	1403	22	AM	700	700		134	134		AFK		06-23-21	DS	
2	P6/P7	SEOS NEOS	1523	25	AM	700	700		135	149/121	DSF3	AFK		06-23-21	DS	
3																
4																
5																
6																
7																
8																
9																
10																
11																
12																
13																
14																
15																
16																
17																
DAILY TOTAL									269.0							
DESTRUCTIVE LENGTH CARRY - OVER										121.0						

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY - OVER

269.0

121.0

** COLUMNS TO BE USED
 BY THE DATA REVIEWED ONLY

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

DATE June 23, 2021

SHEET NUMBER 3

PASSING TRIAL SEAMS

X FUSION

EXTRUSION

MACHINE # WW43

NO.	TIME	TECH ID
TF3A	1003	AM
TF5A	1520	AM

SEAM NUMBER	SEAM SECTION *		APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCTIVE	
	START POINT	FINISH POINT					DIGITAL SET	INDICATOR						TEST DATE	MON.
1	P8/P9	EEOS	WEOS	1030	25	AM	600	750	28	149		AFK		06-24-21	DS
2	P9/P10	EEOS	WEOS	1051	25	AM	600	750	28	150/27	DSF4	AFK		06-24-21	DS
3	P10/P11	EEOS	WEOS	1103	25	AM	600	750	29	56		AFK		06-24-21	DS
4	P11/P12	EEOS	WEOS	1124	25	AM	600	750	29	85		AFK		06-24-21	DS
5	P12/P13	EEOS	WEOS	1140	25	AM	600	750	29	114		AFK		06-24-21	DS
6	P13/P14	EEOS	WEOS	1155	25	AM	600	750	29	143		AFK		06-24-21	DS
7	P14/P15	EEOS	WEOS	1209	25	AM	600	750	29	148/24	DSF5	AFK		06-24-21	DS
8	P15/P16	EEOS	WEOS	1314	25	AM	600	750	29	53		AFK		06-24-21	DS
9	P16/P17	EEOS	WEOS	1326	25	AM	600	750	29	82		AFK		06-24-21	DS
10	P17/P18	EEOS	WEOS	1342	25	AM	600	750	29	111		AFK		06-24-21	DS
11	P18/P19	EEOS	WEOS	1358	25	AM	600	750	29	140		AFK		06-24-21	DS
12	P19/P20	EEOS	WEOS	1422	25	AM	600	750	29	150/19	DSF6	AFK		06-24-21	DS
13	P20/P21	EEOS	WEOS	1436	25	AM	600	750	30	49		AFK		06-24-21	DS
14	P21/P22	EEOS	WEOS	1537	25	AM	600	750	30	79		AFK		06-24-21	DS
15	P22/P23	EEOS	WEOS	1604	25	AM	600	750	30	109		AFK		06-24-21	DS
16	P23/P24	EEOS	WEOS	1620	25	AM	600	750	30	139		AFK		06-24-21	DS
17	P14/P25	EEOS	WEOS	1631	25	AM	600	750	29	149/19	DSF7	AFK		06-24-21	DS

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY - OVER

495.0

19.0

** COLUMNS TO BE USED
 BY THE DATA REVIEWED ONLY

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

DATE June 23, 2021

SHEET NUMBER 4

FUSION

EXTRUSION

MACHINE # WW43

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF5A	1520	AM

SEAM NUMBER	SEAM SECTION *		APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCTIVE			
	START POINT	FINISH POINT					DIGITAL SET							INDICATOR		TEST	
							WEDGE OR BARREL	NOZZLE						WEDGE OR BARREL	NOZZLE	DATE	MON.
1	P25/P26	EEOS	WEOS	1655	25	AM	600	750	29	48			AFK	06-24-21	DS		
2	P26/P27	EEOS	WEOS	1710	25	AM	600	750	29	67			AFK	06-24-21	DS		
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	
11																	
12																	
13																	
14																	
15																	
16																	
17																	

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY - OVER

58.0

** COLUMNS TO BE USED
 BY THE DATA REVIEWED ONLY

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

DATE June 24, 2021

SHEET NUMBER 5

X FUSION

EXTRUSION

MACHINE # WW44

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF7	1520	AM

SEAM NUMBER	SEAM SECTION *		APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCTIVE	
	START POINT	FINISH POINT					DIGITAL SET	INDICATOR						TEST DATE	MON.
1	P1/P27	NEOS SEOS	905	22	AM	500	860		6	127		AFK		06-24-21	DS
2	P1/P26	NEOS SEOS	909	22	AM	500	860		7	134		AFK		06-24-21	DS
3	P1/P25	NEOS SEOS	911	22	AM	500	860		7	141		AFK		06-24-21	DS
4	P1/P24	NEOS SEOS	914	22	AM	500	860		7	148		AFK		06-24-21	DS
5	P1/P23	NEOS SEOS	917	22	AM	500	860		7	150/5	DSF8	AFK		06-24-21	DS
6	P1/P22	NEOS SEOS	920	22	AM	500	860		7	12		AFK		06-24-21	DS
7	P1/P21	NEOS SEOS	923	22	AM	500	860		7	19		AFK		06-24-21	DS
8	P1/P20	NEOS SEOS	925	22	AM	500	860		7	26		AFK		06-24-21	DS
9	P1/P19	NEOS SEOS	928	22	AM	500	860		7	33		AFK		06-24-21	DS
10	P1/P18	NEOS SEOS	931	22	AM	500	860		7	40		AFK		06-24-21	DS
11	P1/P17	NEOS SEOS	932	22	AM	500	860		7	47		AFK		06-24-21	DS
12	P1/P16	NEOS SEOS	934	22	AM	500	860		7	54		AFK		06-24-21	DS
13	P1/P15	NEOS SEOS	937	22	AM	500	860		7	61		AFK		06-24-21	DS
14	P1/P14	NEOS SEOS	940	22	AM	500	860		7	68		AFK		06-24-21	DS
15	P1/P13	NEOS SEOS	943	22	AM	500	860		7	75		AFK		06-24-21	DS
16	P1/P12	NEOS SEOS	945	22	AM	500	860		7	82		AFK		06-24-21	DS
17	P1/P11	NEOS SEOS	948	22	AM	500	860		7	89		AFK		06-24-21	DS

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY - OVER

118.0

89.0

** COLUMNS TO BE USED
 BY THE DATA REVIEWED ONLY

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

DATE June 24, 2021

SHEET NUMBER 6

PASSING TRIAL SEAMS

X FUSION

EXTRUSION

MACHINE # WW44

NO.	TIME	TECH ID
TF7	1520	AM
TF8	1401	AM

SEAM NUMBER	SEAM SECTION *		APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCTIVE	
	START POINT	FINISH POINT					DIGITAL SET	INDICATOR						TEST DATE	MON.
1	P1/P10	NEOS SEOS	1000	25	AM	500	860		7	96		AFK		06-24-21	DS
2	P1/P9	NEOS SEOS	1003	25	AM	500	860		7	103		AFK		06-24-21	DS
3	P1/P8	NEOS SEOS	1006	25	AM	500	860		7	110		AFK		06-24-21	DS
4	P7/P28	SEOS NEOS	1435	27	AM	650	860		136	236		AFK		06-24-21	DS
5	P29/P30	WEOS EEOS	1529	27	AM	650	860		2	238		AFK		06-24-21	DS
6	P30/P31	WEOS EEOS	1535	27	AM	650	860		2	240		AFK		06-24-21	DS
7	P31/P32	WEOS EEOS	1538	27	AM	650	860		2	242		AFK		06-24-21	DS
8	P32/P33	WEOS EEOS	1543	27	AM	650	860		2	244		AFK		06-24-21	DS
9	P33/P34	WEOS EEOS	1558	27	AM	650	860		2	246		AFK		06-24-21	DS
10	P28/P34	SEOS NEOS	1618	27	AM	650	860		22	268		AFK		06-24-21	DS
11	P28/P33	SEOS NEOS	1626	27	AM	650	860		21	278/11	DSF9	AFK		06-24-21	DS
12	P28/P32	SEOS NEOS	1640	27	AM	650	860		21	32		AFK		06-24-21	DS
13	P28/P31	SEOS NEOS	1650	27	AM	650	860		24	56		AFK		06-24-21	DS
14	P28/P30	SEOS NEOS	1700	27	AM	650	860		24	80		AFK		06-24-21	DS
15	P28/P29	SEOS NEOS	1710	27	AM	650	860		24	104		AFK		06-24-21	DS
16															
17															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY - OVER

303.0

104.0

** COLUMNS TO BE USED
 BY THE DATA REVIEWED ONLY

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

DATE June 25, 2021

SHEET NUMBER 7

PASSING TRIAL SEAMS

X FUSION

EXTRUSION

MACHINE # WW44

NO.	TIME	TECH ID
TF10	1500	AM

SEAM NUMBER	SEAM SECTION *		APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCTIVE	
	START POINT	FINISH POINT					DIGITAL SET	INDICATOR						TEST DATE	MON.
1	P35/P36	P42/P43	EEOS	1515	25	AM	650	860	11	189		AFK		06-26-21	DS
2	P36/P37	WEOS	EEOS	1522	25	AM	650	860	11	200		AFK		06-26-21	DS
3	P37/P38	WEOS	EEOS	1527	25	AM	650	860	11	211		AFK		06-26-21	DS
4	P38/P39	WEOS	EEOS	1530	25	AM	650	860	11	222		AFK		06-26-21	DS
5	P39/P40	WEOS	EEOS	1535	25	AM	650	860	11	233		AFK		06-26-21	DS
6	P40/P41	WEOS	EEOS	1540	25	AM	650	860	11	244		AFK		06-26-21	DS
7	P41/P42	WEOS	EEOS	1543	25	AM	650	860	10	254		AFK		06-26-21	DS
8	P42/P43	WEOS	EEOS	1547	25	AM	650	860	10	264		AFK		06-26-21	DS
9	P43/P44	WEOS	EEOS	1553	25	AM	650	860	10	274		AFK		06-26-21	DS
10	P44/P45	WEOS	EEOS	1557	25	AM	650	860	10	284		AFK		06-26-21	DS
11	P45/P46	WEOS	EEOS	1600	25	AM	650	860	10	286/8	DSF10	AFK		06-26-21	DS
12	P46/P47	WEOS	EEOS	1606	25	AM	650	860	10	18		AFK		06-26-21	DS
13	P47/P48	WEOS	EEOS	1611	25	AM	650	860	9	27		AFK		06-26-21	DS
14	P48/P49	WEOS	EEOS	1615	25	AM	650	860	9	36		AFK		06-26-21	DS
15	P49/P50	WEOS	EEOS	1619	25	AM	650	860	9	45		AFK		06-26-21	DS
16	P50/P51	WEOS	EEOS	1624	25	AM	650	860	8	53		AFK		06-26-21	DS
17	P51/P52	WEOS	EEOS	1628	25	AM	650	860	8	61		AFK		06-26-21	DS

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY - OVER

169.0

61.0

** COLUMNS TO BE USED
 BY THE DATA REVIEWED ONLY

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

DATE June 25, 2021

SHEET NUMBER 8

X FUSION

 EXTRUSION

MACHINE # WW44

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF10	1500	AM

SEAM NUMBER	SEAM SECTION *		APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCTIVE	
	START POINT	FINISH POINT					DIGITAL SET	INDICATOR						TEST DATE	MON.
1	P52/P53	WEOS	EEOS	1630	25	AM	650	860	8	69		AFK		06-26-21	DS
2															
3															
4															
5															
6															
7															
8															
9															
10															
11															
12															
13															
14															
15															
16															
17															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY - OVER

8.0

69.0

** COLUMNS TO BE USED
 BY THE DATA REVIEWED ONLY

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

DATE June 26, 2021

SHEET NUMBER 9

FUSION

EXTRUSION

MACHINE # WW44

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF11	809	AM

SEAM NUMBER	SEAM SECTION *		APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCTIVE	
	START POINT	FINISH POINT					DIGITAL SET	INDICATOR						TEST DATE	MON.
1	P4/P35	NEOS SEOS	823	20	AM	650	860		7	76		AFK		06-26-21	DS
2	P4/P36	NEOS SEOS	825	20	AM	650	860		7	83		AFK		06-26-21	DS
3	P4/P37	NEOS SEOS	828	20	AM	650	860		7	90		AFK		06-26-21	DS
4	P4/P38	NEOS SEOS	830	20	AM	650	860		7	97		AFK		extruded	DS
5	P4/P39	NEOS SEOS	832	20	AM	650	860		7	104		AFK		06-26-21	DS
6	P4/P40	NEOS SEOS	834	20	AM	650	860		7	111		AFK		06-26-21	DS
7	P4/P41	NEOS SEOS	836	20	AM	650	860		7	118		AFK		06-26-21	DS
8	P4/P42	NEOS SEOS	838	20	AM	650	860		7	125		AFK		06-26-21	DS
9	P4/P43	NEOS SEOS	840	20	AM	650	860		7	132		AFK		06-26-21	DS
10	P4/P44	NEOS SEOS	842	20	AM	650	860		7	139		AFK		06-26-21	DS
11	P4/P45	NEOS SEOS	844	20	AM	650	860		7	146		AFK		06-26-21	DS
12	P4/P46	NEOS SEOS	846	20	AM	650	860		7	153		AFK		06-27-21	DS
13	P4/P47	NEOS SEOS	848	20	AM	650	860		7	160		AFK		06-26-21	DS
14	P4/P48	NEOS SEOS	850	20	AM	650	860		7	167		AFK		06-26-21	DS
15	P4/P49	NEOS SEOS	852	20	AM	650	860		7	174		AFK		06-26-21	DS
16	P4/P50	NEOS SEOS	854	20	AM	650	860		7	181		AFK		06-26-21	DS
17	P4/P51	NEOS SEOS	856	20	AM	650	860		7	188		AFK		06-26-21	DS

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY - OVER

119.0

188.0

** COLUMNS TO BE USED
 BY THE DATA REVIEWED ONLY

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

DATE June 26, 2021

SHEET NUMBER 10

PASSING TRIAL SEAMS

X FUSION

EXTRUSION

MACHINE # WW44

NO.	TIME	TECH ID
TF11	809	AM

SEAM NUMBER	SEAM SECTION *		APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCTIVE	
	START POINT	FINISH POINT					DIGITAL SET	INDICATOR						TEST DATE	MON.
1	P4/P52	NEOS SEOS	858	22	AM	650	860		7	188		AFK		extruded	DS
2	P4/P53	NEOS SEOS	900	22	AM	650	860		7	199		AFK		extruded	DS
3	P4/P54	NEOS SEOS	902	22	AM	650	860		7	202		AFK		06-26-21	DS
4	P5/P54	SEOS NEOS	911	22	AM	650	860		7	209		AFK		extruded	DS
5	P5/P53	SEOS NEOS	913	22	AM	650	860		7	216		AFK		06-26-21	DS
6	P5/P52	SEOS NEOS	915	22	AM	650	860		7	223		AFK		06-26-21	DS
7	P5/P51	SEOS NEOS	918	22	AM	650	860		7	230		AFK		06-26-21	DS
8	P5/P50	SEOS NEOS	920	22	AM	650	860		7	237		AFK		06-26-21	DS
9	P5/P49	SEOS NEOS	922	22	AM	650	860		7	244		AFK		06-26-21	DS
10	P5/P48	SEOS NEOS	924	22	AM	650	860		7	251		AFK		06-26-21	DS
11	P5/P47	SEOS NEOS	927	22	AM	650	860		7	258		AFK		06-26-21	DS
12	P5/P46	SEOS NEOS	929	22	AM	650	860		7	265		AFK		06-27-21	DS
13	P5/P45	SEOS NEOS	935	22	AM	650	860		7	272		AFK		06-26-21	DS
14	P5/P44	SEOS NEOS	937	22	AM	650	860		7	279		AFK		06-26-21	DS
15	P5/P43	SEOS NEOS	939	22	AM	650	860		7	286		AFK		06-26-21	DS
16	P5/P42	SEOS NEOS	941	22	AM	650	860		7	293		AFK		06-26-21	DS
17	P5/P41	SEOS NEOS	943	22	AM	650	860		7	295/5	DSF11	AFK		06-26-21	DS

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY - OVER

119.0

5.0

** COLUMNS TO BE USED
 BY THE DATA REVIEWED ONLY

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

PASSING TRIAL SEAMS

DATE June 26, 2021

SHEET NUMBER 11

X FUSION

EXTRUSION

MACHINE # WW44

NO.	TIME	TECH ID
TF11	809	AM
TF12	1308	AM

SEAM NUMBER	SEAM SECTION *		APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCTIVE	
	START POINT	FINISH POINT					DIGITAL SET	INDICATOR						TEST DATE	MON.
1	P5/P40	SEOS	NEOS	945	22	AM	650	860	7	12		AFK		06-26-21	DS
2	P5/P39	SEOS	NEOS	948	22	AM	650	860	7	19		AFK		06-26-21	DS
3	P5/P38	SEOS	NEOS	950	22	AM	650	860	7	26		AFK		06-26-21	DS
4	P5/P37	SEOS	NEOS	952	22	AM	650	860	7	33		AFK		06-26-21	DS
5	P5/P36	SEOS	NEOS	954	22	AM	650	860	7	37		AFK		06-26-21	DS
6	P5/P35	SEOS	NEOS	957	22	AM	650	860	7	52		AFK		06-26-21	DS
7	P55/P56	SEOS	NEOS	1047	22	AM	650	860	15	67		AFK		06-27-21	AFK
8	P56/P57	SEOS	NEOS	1057	22	AM	650	860	15	82		AFK		06-27-21	AFK
9	P57/P58	SEOS	NEOS	1100	22	AM	650	860	15	97		AFK		06-27-21	AFK
10	P58/P59	SEOS	NEOS	1110	22	AM	650	860	15	112		AFK		06-27-21	AFK
11	P59/P60	SEOS	NEOS	1116	22	AM	650	860	15	127		AFK		06-27-21	AFK
12	P60/P61	SEOS	NEOS	1121	22	AM	650	860	15	142		AFK		06-27-21	AFK
13	P61/P62	NEOS	SEOS	1135	22	AM	650	860	15	157		AFK		06-27-21	AFK
14	P62/P63	NEOS	SEOS	1140	22	AM	650	860	15	162		AFK		06-27-21	AFK
15	P63/P64	NEOS	SEOS	1145	22	AM	650	860	15	166		AFK		06-27-21	AFK
16	P8/P64	WEOS	EEOS	1330	22	AM	650	860	4	169		AFK		06-27-21	AFK
17	P1/P64	WEOS	EEOS	1332	22	AM	650	860	3	295/5	DSF11	AFK		extruded	AFK

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY - OVER

184.0

5.0

** COLUMNS TO BE USED
 BY THE DATA REVIEWED ONLY

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

DATE June 26, 2021

SHEET NUMBER 12

PASSING TRIAL SEAMS

X FUSION

EXTRUSION

MACHINE # WW44

NO.	TIME	TECH ID
TF11	809	AM
TF12	1308	AM

SEAM NUMBER	SEAM SECTION *		APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCTIVE	
	START POINT	FINISH POINT					DIGITAL SET	INDICATOR						TEST DATE	MON.
1	P1/P63	WEOS	EEOS	945	25	AM	650	860	4	173		AFK		06-27-21	AFK
2	P2/P63	WEOS	EEOS	945	25	AM	650	860	3	176		AFK		06-27-21	AFK
3	P2/P62	WEOS	EEOS	945	25	AM	650	860	4	180		AFK		06-27-21	AFK
4	P3/P62	WEOS	EEOS	945	25	AM	650	860	3	183		AFK		06-27-21	AFK
5	P3/P61	WEOS	EEOS	945	25	AM	650	860	4	187		AFK		06-27-21	AFK
6	P4/P61	WEOS	EEOS	945	25	AM	650	860	3	190		AFK		06-27-21	AFK
7	P4/P60	WEOS	EEOS	945	25	AM	650	860	4	194		AFK		06-27-21	AFK
8	P54/P60	WEOS	EEOS	945	25	AM	650	860	3	197		AFK		06-27-21	AFK
9	P54/P59	WEOS	EEOS	945	25	AM	650	860	4	201		AFK		06-27-21	AFK
10	P5/P59	WEOS	EEOS	945	25	AM	650	860	3	204		AFK		06-27-21	AFK
11	P5/P58	WEOS	EEOS	945	25	AM	650	860	4	208		AFK		06-27-21	AFK
12	P6/P58	WEOS	EEOS	945	25	AM	650	860	3	211		AFK		06-27-21	AFK
13	P7/P57	WEOS	EEOS	945	25	AM	650	860	4	215		AFK		06-27-21	AFK
14	P7/P57	WEOS	EEOS	945	25	AM	650	860	3	218		AFK		06-27-21	AFK
15	P7/P56	WEOS	EEOS	945	25	AM	650	860	4	222		AFK		extruded	AFK
16	P28/P56	WEOS	EEOS	945	25	AM	650	860	3	225		AFK		06-27-21	AFK
17	P28/P55	WEOS	EEOS	945	25	AM	650	860	4	229		AFK		06-27-21	AFK

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY - OVER

60.0
229.0

** COLUMNS TO BE USED
 BY THE DATA REVIEWED ONLY

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

DATE June 26, 2021

SHEET NUMBER 13

X FUSION

 EXTRUSION

MACHINE # WW44

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF11	809	AM
TF12	1308	AM

SEAM NUMBER	SEAM SECTION *		APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCTIVE			
	START POINT	FINISH POINT					DIGITAL SET	INDICATOR						WEDGE OR BARREL NOZZLE	WEDGE OR BARREL NOZZLE	TEST DATE	MON.
1	P34/P55	WEOS	EEOS	1353	25	AM	650	860	2	231		AFK		06-27-21	AFK		
2	P8/P65	WEOS	EEOS	1420	25	AM	650	860	26	243/14	DSF12	AFK		06-27-21	AFK		
3	P65/P66	WEOS	EEOS	1431	25	AM	650	860	26	40		AFK		06-27-21	AFK		
4	P64/P65	NEOS	SEOS	1444	25	AM	650	860	7	47		AFK		06-27-21	AFK		
5																	
6																	
7																	
8																	
9																	
10																	
11																	
12																	
13																	
14																	
15																	
16																	
17																	
DAILY TOTAL									61.0								
DESTRUCTIVE LENGTH CARRY - OVER									47.0								

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

** COLUMNS TO BE USED
 BY THE DATA REVIEWED ONLY

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

DATE June 28, 2021

SHEET NUMBER 14

PASSING TRIAL SEAMS

FUSION

EXTRUSION

MACHINE # WW44

NO.	TIME	TECH ID
TF13B	1430	AM
TF13C	1430	AM

SEAM NUMBER	SEAM SECTION *		APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCTIVE	
	START POINT	FINISH POINT					DIGITAL SET	INDICATOR						TEST DATE	MON.
1	P67/P68	NEOS SEOS	1504	25	AM	600	860		104	151		AFK		06-30-21	DS
2	P70/P71	EEOS WEOS	1545	25	AM	600	860		7	158		AFK		06-30-21	DS
3	P69/P71	NEOS SEOS	1555	25	AM	600	860		54	210/2	DSF13	AFK		06-30-21	DS
4	P69/P70	NEOS SEOS	1614	25	AM	600	860		55	57		AFK		06-30-21	DS
5	P1/P67	WEOS EEOS	1703	25	AM	600	860		7	64		AFK		06-30-21	DS
6	P2/P68	WEOS EEOS	1705	25	AM	600	860		7	71		AFK		06-30-21	DS
7	P3/P69	WEOS EEOS	1707	25	AM	600	860		7	78		AFK		06-30-21	DS
8	P4/P70	WEOS EEOS	1709	25	AM	600	860		7	85		AFK		06-30-21	DS
9															
10															
11															
12															
13															
14															
15															
16															
17															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY - OVER

248.0

85.0

** COLUMNS TO BE USED
 BY THE DATA REVIEWED ONLY

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

DATE June 28, 2021

SHEET NUMBER 15

PASSING TRIAL SEAMS

X FUSION

EXTRUSION

MACHINE # WW44

NO.	TIME	TECH ID
TF18	1645	AM

SEAM NUMBER	SEAM SECTION *		APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCTIVE	
	START POINT	FINISH POINT					DIGITAL SET	INDICATOR						TEST DATE	MON.
1	P72/P73	WEOS	EEOS	1702	30	AM	600	860	19	224/15	DSF14	AFK		06-30-21	DS
2	P73/P74	WEOS	EEOS	1711	30	AM	600	860	19	34		AFK		06-30-21	DS
3	P74/P75	WEOS	EEOS	1718	30	AM	600	860	19	53		AFK		06-30-21	DS
4	P75/P76	WEOS	EEOS	1726	30	AM	600	860	18	71		AFK		06-30-21	DS
5	P76/P77	WEOS	EEOS	1735	30	AM	600	860	18	89		AFK		06-30-21	DS
6	P77/P78	WEOS	EEOS	1744	30	AM	600	860	18	107		AFK		06-30-21	DS
7	P78/P79	WEOS	EEOS	1750	30	AM	600	860	17	124		AFK		06-30-21	DS
8	P79/P80	WEOS	EEOS	1800	30	AM	600	860	16	140		AFK		06-30-21	DS
9	P80/P81	WEOS	EEOS	1808	30	AM	600	860	15	155		AFK		06-30-21	DS
10	P81/P82	WEOS	EEOS	1813	30	AM	600	860	15	170		AFK		06-30-21	DS
11	P82/P83	WEOS	EEOS	1823	30	AM	600	860	14	184		AFK		06-30-21	DS
12	P83/P84	WEOS	EEOS	1828	30	AM	600	860	14	198		AFK		06-30-21	DS
13	P84P/85	WEOS	EEOS	1833	30	AM	600	860	14	212		AFK		06-30-21	DS
14	P85/P86	WEOS	EEOS	1838	30	AM	600	860	14	226		AFK		06-30-21	DS
15	P86/P87	WEOS	EEOS	1844	30	AM	600	860	14	240		AFK		06-30-21	DS
16	P35/P87	WEOS	EEOS	1504	30	AM	600	860	14	254		AFK		06-30-21	DS
17															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY - OVER

258.0

254.0

** COLUMNS TO BE USED
 BY THE DATA REVIEWED ONLY

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

DATE June 30, 2021

SHEET NUMBER 16

PASSING TRIAL SEAMS

X FUSION

EXTRUSION

MACHINE # WW44

NO.	TIME	TECH ID
TF19	808	AM

SEAM NUMBER	SEAM SECTION *		APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCTIVE	
	START POINT	FINISH POINT					DIGITAL SET	INDICATOR						TEST DATE	MON.
1	P71/P72	NEOS SEOS	830	25	AM	600	860		7	261		AFK		06-30-21	DS
2	P71/P73	NEOS SEOS	832	25	AM	600	860		7	268		AFK		06-30-21	DS
3	P71/P74	NEOS SEOS	835	25	AM	600	860		7	275		AFK		06-30-21	DS
4	P71/P75	NEOS SEOS	837	25	AM	600	860		7	282		AFK		06-30-21	DS
5	P71/P76	NEOS SEOS	840	25	AM	600	860		7	289		AFK		06-30-21	DS
6	P71/P77	NEOS SEOS	843	25	AM	600	860		7	292/4	DSF15	AFK		06-30-21	DS
7	P71/P78	NEOS SEOS	845	25	AM	600	860		7	12		AFK		06-30-21	DS
8	P71/P79	NEOS SEOS	847	25	AM	600	860		2	14		AFK		06-30-21	DS
9	P70/P79	NEOS SEOS	850	25	AM	600	860		5	17		AFK		06-30-21	DS
10	P70/P80	NEOS SEOS	852	25	AM	600	860		7	24		AFK		06-30-21	DS
11	P70/P81	NEOS SEOS	854	25	AM	600	860		7	31		AFK		06-30-21	DS
12	P70/P82	NEOS SEOS	856	25	AM	600	860		7	38		AFK		06-30-21	DS
13	P70/P83	NEOS SEOS	900	25	AM	600	860		7	45		AFK		06-30-21	DS
14	P70/P84	NEOS SEOS	902	25	AM	600	860		7	52		AFK		06-30-21	DS
15	P70/P85	NEOS SEOS	905	25	AM	600	860		7	59		AFK		06-30-21	DS
16	P70/P86	NEOS SEOS	907	25	AM	600	860		7	66		AFK		06-30-21	DS
17	P70/P87	NEOS SEOS	910	25	AM	600	860		2	68		AFK		06-30-21	DS

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY - OVER

107.0

68.0

** COLUMNS TO BE USED
 BY THE DATA REVIEWED ONLY

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

DATE June 30, 2021

SHEET NUMBER 17

PASSING TRIAL SEAMS

X FUSION

EXTRUSION

MACHINE # WW44

NO.	TIME	TECH ID
TF19	808	AM
TF20	1330	AM

SEAM NUMBER	SEAM SECTION *		APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCTIVE	
	START POINT	FINISH POINT					DIGITAL SET	INDICATOR						TEST DATE	MON.
1	P4/P87	NEOS SEOS	912	25	AM	600	860		7	71		AFK		06-30-21	DS
2	P27/P88	EEOS WEOS	1455	30	AM	650	860		7	92		AFK		07-01-21	DS
3	P88/P89	EEOS WEOS	1508	30	AM	650	860		7	121		AFK		07-01-21	DS
4	P89/P90	EEOS WEOS	1520	30	AM	650	860		7	149		AFK		07-03-21	DS
5	P90/P91	EEOS WEOS	1550	30	AM	650	860		7	177		AFK		07-01-21	DS
6	P91/P92	EEOS WEOS	1606	30	AM	650	860		7	205		AFK		07-01-21	DS
7	P92/P93	EEOS WEOS	1620	30	AM	650	860		7	233		AFK		07-01-21	DS
8	P93/P94	EEOS WEOS	1634	30	AM	650	860		7	261		AFK		07-01-21	DS
9	P94/P95	EEOS WEOS	1650	30	AM	650	860		7	271/19	DSF16	AFK		07-01-21	DS
10	P95/P96	EEOS WEOS	1705	30	AM	650	860		7	48		AFK		07-01-21	DS
11	P96/P97	EEOS WEOS	1715	30	AM	650	860		7	77		AFK		07-01-21	DS
12	P97/P98	EEOS WEOS	1741	30	AM	650	860		7	106		AFK		07-03-21	DS
13	P98/P99	EEOS WEOS	1755	30	AM	650	860		7	135		AFK		07-02-21	DS
14	P99/P100	EEOS WEOS	1810	30	AM	650	860		7	164		AFK		07-02-21	DS
15	P100/P101	EEOS WEOS	1817	30	AM	650	860		7	193		AFK		07-01-21	DS
16															
17															
DAILY TOTAL									105.0						
DESTRUCTIVE LENGTH CARRY - OVER										193.0					

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

** COLUMNS TO BE USED
 BY THE DATA REVIEWED ONLY

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

DATE July 1, 2021

SHEET NUMBER 18

PASSING TRIAL SEAMS

X FUSION

EXTRUSION

MACHINE # WW44

NO.	TIME	TECH ID
TF23	808	AM
TF26	1301	AM

SEAM NUMBER	SEAM SECTION *		APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCTIVE	
	START POINT	FINISH POINT					DIGITAL SET	INDICATOR						TEST DATE	MON.
1	P67/P101	NEOS SEOS	903	26	AM	550	860		7	200		AFK		07-02-21	DS
2	P67/P100	NEOS SEOS	906	26	AM	550	860		7	207		AFK		07-02-21	DS
3	P67/P99	NEOS SEOS	909	26	AM	550	860		7	214		AFK		07-02-21	DS
4	P67/P98	NEOS SEOS	912	26	AM	550	860		7	221		AFK		07-02-21	DS
5	P67/P97	NEOS SEOS	915	26	AM	550	860		7	228		AFK		07-02-21	DS
6	P67/P96	NEOS SEOS	918	26	AM	550	860		7	235		AFK		07-02-21	DS
7	P67/P95	NEOS SEOS	921	26	AM	550	860		7	242		AFK		07-02-21	DS
8	P67/P94	NEOS SEOS	924	26	AM	550	860		7	249		AFK		07-02-21	DS
9	P67/P93	NEOS SEOS	927	26	AM	550	860		7	256		AFK		07-02-21	DS
10	P67/P92	NEOS SEOS	930	26	AM	550	860		7	263		AFK		07-02-21	DS
11	P67/P91	NEOS SEOS	933	26	AM	550	860		7	270		AFK		07-02-21	DS
12	P67/P90	NEOS SEOS	936	26	AM	550	860		7	277		AFK		07-02-21	DS
13	P67/P89	NEOS SEOS	942	26	AM	550	860		7	284		AFK		07-02-21	DS
14	P67/P88	NEOS SEOS	945	26	AM	550	860		7	291		AFK		07-02-21	DS
15	P105/P106	EEOS WEOS	1340	26	AM	550	860		29	295/25	DSF17	AFK		07-02-21	DS
16	P107/P108	EEOS WEOS	1354	26	AM	550	860		29	54		AFK		07-02-21	DS
17	P109/P110	EEOS WEOS	1410	26	AM	550	860		29	83		AFK		07-02-21	DS

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY - OVER

185.0

83.0

** COLUMNS TO BE USED
 BY THE DATA REVIEWED ONLY

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

DATE July 1, 2021

SHEET NUMBER 19

PASSING TRIAL SEAMS

X FUSION

 EXTRUSION

MACHINE # WW44

NO.	TIME	TECH ID
TF23	808	AM
TF26	1301	AM

SEAM NUMBER	SEAM SECTION *		APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCTIVE			
	START POINT	FINISH POINT					DIGITAL SET							INDICATOR		TEST DATE	MON.
							WEDGE OR BARREL	NOZZLE						WEDGE OR BARREL	NOZZLE		
1	P113/P114	SEOS	NEOS	1422	31	AM	550	860	28	111			AFK	07-02-21	DS		
2	P114/P115	SEOS	NEOS	1435	31	AM	550	860	24	135			AFK	07-02-21	DS		
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	
11																	
12																	
13																	
14																	
15																	
16																	
17																	

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY - OVER

52.0
83.0

** COLUMNS TO BE USED
 BY THE DATA REVIEWED ONLY

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

DATE July 2, 2021

SHEET NUMBER 20

FUSION

EXTRUSION

MACHINE # WW44

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF29	1425	AM

SEAM NUMBER	SEAM SECTION *		APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCTIVE	
	START POINT	FINISH POINT					DIGITAL SET	INDICATOR						TEST DATE	MON.
1	P118/P119	SEOS NEOS	1506	34	AM	650	860		109	244		AFK		07-03-21	DS
2	P122/P123	EEOS WEOS	1546	34	AM	650	860		7	251		AFK		07-03-21	DS
3	P121/P122	EEOS WEOS	1610	34	AM	650	860		7	258		AFK		07-03-21	DS
4	P120/P121	WEOS EEOS	1620	34	AM	650	860		7	265		AFK		07-03-21	DS
5	P120/P124	SEOS NEOS	1708	34	AM	650	860		52	285/32	DSF20	AFK		07-03-21	DS
6	P121/P124	SEOS NEOS	1715	34	AM	650	860		22	54		AFK		07-03-21	DS
7	P122/P124	SEOS NEOS	1730	34	AM	650	860		22	76		AFK		07-03-21	DS
8	P122/P125	SEOS NEOS	1745	34	AM	650	860		43	119		AFK		07-03-21	DS
9	P123/P125	SEOS NEOS	1800	34	AM	650	860		10	129		AFK		07-03-21	DS
10															
11															
12															
13															
14															
15															
16															
17															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY - OVER

279.0

83.0

** COLUMNS TO BE USED
 BY THE DATA REVIEWED ONLY

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

DATE July 3, 2021

SHEET NUMBER 21

FUSION

EXTRUSION

MACHINE # WW44

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF30	801	AM

SEAM NUMBER	SEAM SECTION *		APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCTIVE	
	START POINT	FINISH POINT					DIGITAL SET	INDICATOR						TEST DATE	MON.
1	P5/P118	SEOS	NEOS	1506	34	AM	650	860	6	135			AFK	07-03-21	DS
2	P6/P119	EEOS	WEOS	1546	34	AM	650	860	7	142			AFK	07-03-21	DS
3	P7/P120	EEOS	WEOS	1610	34	AM	650	860	7	149			AFK	07-03-21	DS
4	P28/P124	WEOS	EEOS	1620	34	AM	650	860	4	153			AFK	07-03-21	DS
5															
6															
7															
8															
9															
10															
11															
12															
13															
14															
15															
16															
17															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY - OVER

24.0

153.0

** COLUMNS TO BE USED
 BY THE DATA REVIEWED ONLY

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

DATE July 8, 2021

SHEET NUMBER 22

PASSING TRIAL SEAMS

FUSION

EXTRUSION

MACHINE # WW44

NO.	TIME	TECH ID
TF34	1434	AM

SEAM NUMBER	SEAM SECTION *		APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCTIVE	
	START POINT	FINISH POINT					DIGITAL SET	INDICATOR						TEST DATE	MON.
1	P128/P131	WEOS	NEOS	1505	25	AM	650	860	38	297/35	DSF21	AFK		07-08-21	DS
2	P131/P132	WEOS	WEOS	1522	25	AM	650	860	18	53		AFK		07-08-21	DS
3	P72/P132	WEOS	WEOS	1530	25	AM	650	860	18	27		AFK		07-08-21	DS
4	P126/P127	WEOS	EEOS	1538	25	AM	650	860	39	110		AFK		07-09-21	DS
5	P119/P129	NEOS	SEOS	1620	25	AM	650	860	3	113		AFK		07-09-21	DS
6	P119/P126	NEOS	SEOS	1623	25	AM	650	860	7	120		AFK		07-09-21	DS
7	P118/P132	SEOS	NEOS	1627	25	AM	650	860	6	126		AFK		07-09-21	DS
8	P118/P131	WEOS	EEOS	1635	25	AM	650	860	7	133		AFK		07-09-21	DS
9	P119/P131	SEOS	NEOS	1638	25	AM	650	860	11	144		AFK		07-09-21	DS
10	P119/P128	SEOS	NEOS	1642	25	AM	650	860	7	151		AFK		07-09-21	DS
11	P119/P127	SEOS	NEOS	1643	25	AM	650	860	7	158		AFK		07-09-21	DS
12	P133/P134	SEOS	NEOS	1655	25	AM	650	860	32	190		AFK		07-09-21	DS
13	P135/P136	SEOS	NEOS	1707	25	AM	650	860	36	226		AFK		07-09-21	DS
14	P137/P138	SEOS	NEOS	1721	25	AM	650	860	32	259		AFK		07-09-21	DS
15	P138/P139	SEOS	NEOS	1733	25	AM	650	860	28	278/8		AFK		07-09-21	DS
16															
17															
DAILY TOTAL									289.0						
DESTRUCTIVE LENGTH CARRY - OVER										8.0					

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

** COLUMNS TO BE USED
 BY THE DATA REVIEWED ONLY

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

DATE July 9, 2021

SHEET NUMBER 23

FUSION

EXTRUSION

MACHINE # WW44

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF36	752	AM

SEAM NUMBER	SEAM SECTION *		APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCTIVE	
	START POINT	FINISH POINT					DIGITAL SET	INDICATOR						TEST DATE	MON.
1	P119/P139	EEOS WEOS	812	20	AM	500	860		3	11		AFK		07-09-21	DS
2	P129/P139	EEOS WEOS	814	20	AM	500	860		3	14		AFK		07-09-21	DS
3	P129/P138	EEOS WEOS	816	20	AM	500	860		8	22		AFK		07-09-21	DS
4	P126/P137	EEOS WEOS	819	20	AM	500	860		8	30		AFK		07-09-21	DS
5	P126/P136	EEOS WEOS	821	20	AM	500	860		7	37		AFK		07-09-21	DS
6	P126/P135	EEOS WEOS	823	20	AM	500	860		5	42		AFK		07-09-21	DS
7	P130/P135	EEOS WEOS	825	20	AM	500	860		4	46		AFK		07-09-21	DS
8	P130/P134	EEOS WEOS	827	20	AM	500	860		7	53		AFK		07-09-21	DS
9	P130/P133	EEOS WEOS	830	20	AM	500	860		1	54		AFK		07-09-21	DS
10	P103/P133	EEOS WEOS	831	20	AM	500	860		7	63		AFK		07-09-21	DS
11															
12															
13															
14															
15															
16															
17															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY - OVER

53.0

63.0

** COLUMNS TO BE USED
 BY THE DATA REVIEWED ONLY

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

DATE July 12, 2021

SHEET NUMBER 24

PASSING TRIAL SEAMS

X FUSION

 EXTRUSION

MACHINE # WW44

NO.	TIME	TECH ID
TF41	1054	DP
TF42	1109	DP

SEAM NUMBER	SEAM SECTION *		APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCTIVE			
	START POINT	FINISH POINT					DIGITAL SET							INDICATOR		TEST DATE	MON.
							WEDGE OR BARREL	NOZZLE						WEDGE OR BARREL	NOZZLE		
1	P139/P140	SEOS	NEOS	1115	22	DP	550	860	28	91		AFK		07-12-21	DS		
2	P141/P142	EEOS	WEOS	1115	22	DP	550	860	3	94		AFK		07-12-21	DS		
3	P140/P141	SEOS	NEOS	1115	22	DP	550	860	3	97		AFK		07-12-21	DS		
4	P140/P142	SEOS	NEOS	1115	22	DP	550	860	25	122		AFK		07-12-21	DS		
5																	
6																	
7																	
8																	
9																	
10																	
11																	
12																	
13																	
14																	
15																	
16																	
17																	

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY - OVER

59.0

122.0

** COLUMNS TO BE USED
 BY THE DATA REVIEWED ONLY

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

DATE June 28, 2021

SHEET NUMBER 25

PASSING TRIAL SEAMS

X FUSION

 EXTRUSION

MACHINE # WW15

NO.	TIME	TECH ID
TF14B	1455	RD
TF14C	1455	RD

SEAM NUMBER	SEAM SECTION *		APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCTIVE		
	START POINT	FINISH POINT					DIGITAL SET	INDICATOR						TEST DATE	MON.	
								WEDGE OR BARREL NOZZLE								WEDGE OR BARREL NOZZLE
1	P68/P69	NEOS SEOS	1530	25	RD	600	850		104	104		AFK		06-28-21	DS	
2																
3																
4																
5																
6																
7																
8																
9																
10																
11																
12																
13																
14																
15																
16																
17																

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY - OVER

104.0
153.0

** COLUMNS TO BE USED
 BY THE DATA REVIEWED ONLY

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

DATE July 1, 2021

SHEET NUMBER 26

PASSING TRIAL SEAMS

X FUSION

EXTRUSION

MACHINE # WW1

NO.	TIME	TECH ID
TF24	805	RD
TF25	1255	RD

SEAM NUMBER	SEAM SECTION *		APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCTIVE	
	START POINT	FINISH POINT					DIGITAL SET	INDICATOR						TEST DATE	MON.
1	P68/P102	WEOS SEOS	1055	30	RD	650	860		7	7		AFK		07-02-21	DS
2	P69/P102	WEOS EEOS	1058	30	RD	650	860		7	14		AFK		07-02-21	DS
3	P71/P102	WEOS EEOS	1100	30	RD	650	860		3	17		AFK		07-02-21	DS
4	P102/P103	WEOS EEOS	1110	30	RD	650	860		7	24		AFK		07-02-21	DS
5	P67/P103	NEOS SEOS	1120	30	RD	650	860		31	55		AFK		07-02-21	DS
6	P67/P102	NEOS SEOS	1130	30	RD	650	860		7	62		AFK		07-02-21	DS
7	P101/P104	EEOS WEOS	1328	30	RD	650	860		29	91		AFK		07-02-21	DS
8	P104/P105	EEOS WEOS	1337	30	RD	650	860		29	120		AFK		07-02-21	DS
9	P106/P107	EEOS WEOS	1349	30	RD	650	860		29	140/9	DSF18	AFK		07-02-21	DS
10	P108/P109	EEOS WEOS	1358	30	RD	650	860		29	38		AFK		07-02-21	DS
11	P110/P111	EEOS WEOS	1410	30	RD	650	860		21	59		AFK		07-02-21	DS
12	P111/P112	EEOS WEOS	1415	30	RD	650	860		10	69		AFK		07-02-21	DS
13	P116/P117	SEOS NEOS	1422	30	RD	650	860		5	74		AFK		07-02-21	DS
14	P115/P116	SEOS NEOS	1426	30	RD	650	860		17	91		AFK		07-02-21	DS
15	P110/P114	EEOS WEOS	1441	30	RD	650	860		8	99		AFK		07-02-21	DS
16	P111/P115	EEOS WEOS	1444	30	RD	650	860		7	106		AFK		07-02-21	DS
17	P111/P116	EEOS WEOS	1447	30	RD	650	860		6	112		AFK		07-02-21	DS

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY - OVER

252.0

112.0

** COLUMNS TO BE USED
 BY THE DATA REVIEWED ONLY

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

DATE July 2, 2021

SHEET NUMBER 27

FUSION

EXTRUSION

MACHINE # WW1

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF25	1255	RD

SEAM NUMBER	SEAM SECTION *		APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCTIVE			
	START POINT	FINISH POINT					DIGITAL SET							INDICATOR		TEST DATE	MON.
							WEDGE OR BARREL	NOZZLE						WEDGE OR BARREL	NOZZLE		
1	P112/P116	EEOS WEOS	1455	31	RD	550	860		2	114		AFK		07-02-21	DS		
2	P112/P117	EEOS WEOS	1505	31	RD	550	860		5	119		AFK		07-02-21	DS		
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	
11																	
12																	
13																	
14																	
15																	
16																	
17																	

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY - OVER

7.0

119.0

** COLUMNS TO BE USED
 BY THE DATA REVIEWED ONLY

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

DATE July 2, 2021

SHEET NUMBER 28

PASSING TRIAL SEAMS

FUSION

EXTRUSION

MACHINE # WW1

NO.	TIME	TECH ID
TF27	815	RD

SEAM NUMBER	SEAM SECTION *		APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCTIVE	
	START POINT	FINISH POINT					DIGITAL SET	INDICATOR						TEST DATE	MON.
1	P103/P113	EEOS WEOS	835	25	RD	550	860		2	121		AFK		07-02-21	DS
2	P67/P113	EEOS WEOS	836	25	RD	550	860		6	127		AFK		07-02-21	DS
3	P67/P114	NEOS SEOS	838	25	RD	550	860		2	129		AFK		07-02-21	DS
4	P67/P110	NEOS SEOS	839	25	RD	550	860		2	131		AFK		07-02-21	DS
5	P67/P109	NEOS SEOS	840	25	RD	550	860		7	138		AFK		07-02-21	DS
6	P67/P108	NEOS SEOS	842	25	RD	550	860		7	145		AFK		07-02-21	DS
7	P67/P107	NEOS SEOS	845	25	RD	550	860		7	152		AFK		07-02-21	DS
8	P67/106	NEOS SEOS	848	25	RD	550	860		7	159		AFK		07-02-21	DS
9	P67/P105	NEOS SEOS	850	25	RD	550	860		7	166		AFK		07-02-21	DS
10	P67/P104	NEOS SEOS	853	25	RD	550	860		7	173		AFK		07-02-21	DS
11															
12															
13															
14															
15															
16															
17															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY - OVER

54.0

173.0

** COLUMNS TO BE USED
 BY THE DATA REVIEWED ONLY

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

PASSING TRIAL SEAMS

DATE July 8, 2021

SHEET NUMBER 29

X FUSION

EXTRUSION

MACHINE # WW1

NO.	TIME	TECH ID
TF35	1510	AD

SEAM NUMBER	SEAM SECTION *		APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCTIVE			
	START POINT	FINISH POINT					DIGITAL SET							INDICATOR		TEST DATE	MON.
							WEDGE OR BARREL	NOZZLE						WEDGE OR BARREL	NOZZLE		
1	P127/P128	15A WEOS	1530	25	RD	550	860		23	196		AFK		07-08-21	DS		
2	P126/P129	EEOS WEOS	1538	25	RD	550	860		13	209		AFK		07-08-21	DS		
3	P126/P130	EEOS SEOS	1545	25	RD	550	860		15	224		AFK		07-09-21	DS		
4	P103/P130	NEOS SEOS	1626	25	RD	550	860		6	230		AFK		07-09-21	DS		
5	P103/P126	NEOS SEOS	1629	25	RD	550	860		7	237		AFK		07-09-21	DS		
6	P103/P127	NEOS SEOS	1632	25	RD	550	860		7	244		AFK		07-09-21	DS		
7	P103/P128	NEOS SEOS	1634	25	RD	550	860		7	247		AFK		07-09-21	DS		
8	P103/P131	NEOS SEOS	1637	25	RD	550	860		3	257		AFK		07-09-21	DS		
9	P102/P131	WEOS SEOS	1639	25	RD	550	860		10	261		AFK		07-09-21	DS		
10	P102/P132	NEOS SEOS	1642	25	RD	550	860		4	265		AFK		07-09-21	DS		
11	P113/P133	NEOS SEOS	1652	25	RD	550	860		28	293		AFK		07-09-21	DS		
12	P134/P135	NEOS SEOS	1703	25	RD	550	860		32	296/29	DSF22	AFK		07-09-21	DS		
13	P136/P137	NEOS SEOS	1719	25	RD	550	860		37	66		AFK		07-09-21	DS		
14																	
15																	
16																	
17																	

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY - OVER

192.0

66.0

** COLUMNS TO BE USED
 BY THE DATA REVIEWED ONLY

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

DATE July 2, 2021

SHEET NUMBER 30

PASSING TRIAL SEAMS

X FUSION

 EXTRUSION

MACHINE # WW27

NO.	TIME	TECH ID
TF28	1420	RD
TF28A	1525	RD

SEAM NUMBER	SEAM SECTION *		APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCTIVE			
	START POINT	FINISH POINT					DIGITAL SET							INDICATOR		TEST DATE	MON.
							WEDGE OR BARREL	NOZZLE						WEDGE OR BARREL	NOZZLE		
1	P119/P120	SEOS	NEOS	1600	34	RD	650	860	52	52		AFK		07-03-21	DS		
2	P119/P121	SEOS	NEOS	1620	34	RD	650	860	22	74		AFK		07-03-21	DS		
3	P119/P122	SEOS	NEOS	1628	34	RD	650	860	56	126/4	DSF19	AFK		07-03-21	DS		
4	P119/P123	SEOS	NEOS	1640	34	RD	650	860	10	14		AFK		07-03-21	DS		
5	P124/P125	EEOS	WEOS	1729	34	RD	650	860	5	19		AFK		07-03-21	DS		
6																	
7																	
8																	
9																	
10																	
11																	
12																	
13																	
14																	
15																	
16																	
17																	

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY - OVER

145.0
19.0

** COLUMNS TO BE USED
 BY THE DATA REVIEWED ONLY

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

DATE July 3, 2021

SHEET NUMBER 31

PASSING TRIAL SEAMS

X FUSION

EXTRUSION

MACHINE # WW27

NO.	TIME	TECH ID
TF29	750	RD

SEAM NUMBER	SEAM SECTION *		APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCTIVE	
	START POINT	FINISH POINT					DIGITAL SET	INDICATOR						TEST DATE	MON.
1	P87/P118	SEOS	NEOS	857	28	RD	650	860	2	21		AFK		07-03-21	DS
2	P86/P118	SEOS	NEOS	858	28	RD	650	860	7	28		AFK		07-03-21	DS
3	P85/P118	SEOS	NEOS	900	28	RD	650	860	7	35		AFK		07-03-21	DS
4	P84/P118	SEOS	NEOS	902	28	RD	650	860	7	42		AFK		07-03-21	DS
5	P83/P118	SEOS	NEOS	903	28	RD	650	860	7	49		AFK		07-03-21	DS
6	P82/P118	SEOS	NEOS	905	28	RD	650	860	7	56		AFK		07-03-21	DS
7	P81/P118	SEOS	NEOS	908	28	RD	650	860	7	63		AFK		07-03-21	DS
8	P80/P118	SEOS	NEOS	910	28	RD	650	860	7	70		AFK		07-03-21	DS
9	P79/P118	SEOS	NEOS	912	28	RD	650	860	7	77		AFK		07-03-21	DS
10	P78/P118	SEOS	NEOS	915	28	RD	650	860	7	84		AFK		07-03-21	DS
11	P77/P118	SEOS	NEOS	917	28	RD	650	860	7	91		AFK		07-03-21	DS
12	P76/P118	SEOS	NEOS	919	28	RD	650	860	7	98		AFK		07-03-21	DS
13	P75/P118	SEOS	NEOS	922	28	RD	650	860	7	105		AFK		07-03-21	DS
14	P74/P118	SEOS	NEOS	925	28	RD	650	860	7	112		AFK		07-03-21	DS
15	P73/P118	SEOS	NEOS	927	28	RD	650	860	7	119		AFK		07-03-21	DS
16	P72/P118	SEOS	NEOS	930	28	RD	650	860	7	126		AFK		07-03-21	DS
17															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY - OVER

107.0

126.0

** COLUMNS TO BE USED
 BY THE DATA REVIEWED ONLY

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

DATE July 3, 2021

SHEET NUMBER 32

FUSION

EXTRUSION

MACHINE # WW27

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF33	1434	RD

SEAM NUMBER	SEAM SECTION *		APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCTIVE		
	START POINT	FINISH POINT					DIGITAL SET							TEST DATE	MON.	
							WEDGE OR BARREL	WEDGE OR NOZZLE								
1	P127/P128	WEOS 15A	1455	25	AD	550	860		15	141		AFK		07-09-21	AFK	
2																
3																
4																
5																
6																
7																
8																
9																
10																
11																
12																
13																
14																
15																
16																
17																
DAILY TOTAL									15.0							
DESTRUCTIVE LENGTH CARRY - OVER										141.0						

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY - OVER

15.0

141.0

** COLUMNS TO BE USED
 BY THE DATA REVIEWED ONLY

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

DATE June 23, 2021

SHEET NUMBER 1

PASSING TRIAL SEAMS

FUSION

EXTRUSION

MACHINE # EXT 35

NO.	TIME	TECH ID
TX1	820	RN

SEAM NUMBER	SEAM SECTION *		APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES			APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCTIVE		
	START POINT	FINISH POINT					DIGITAL SET		INDICATOR						TEST		
							WEDGE OR BARREL	NOZZLE	WEDGE OR BARREL						NOZZLE	DATE	MON.
1	P3/P4	3D	1J	900	25	RN	465	470		25	25		AFK		06-26-21	DS	
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	
11																	
12																	
13																	
14																	
15																	
16																	
17																	

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY - OVER

25.0

110.0

** COLUMNS TO BE USED
 BY THE DATA REVIEWED ONLY

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

DATE June 24, 2021

SHEET NUMBER 2

PASSING TRIAL SEAMS

FUSION

EXTRUSION

MACHINE # EXT 35

NO.	TIME	TECH ID
TX2	813	RN

SEAM NUMBER	SEAM SECTION *		APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCTIVE	
	START POINT	FINISH POINT					DIGITAL SET	INDICATOR						TEST DATE	MON.
1	P6/P7	3K 3C	842	25	RN	465	470		2	27		AFK		06-25-21	DS
2	P6/P7	3C 3G	845	25	RN	465	470		3	30		AFK		06-25-21	DS
3	P6/P7	3G 3J	850	25	RN	465	470		3	33		AFK		06-25-21	DS
4															
5															
6															
7															
8															
9															
10															
11															
12															
13															
14															
15															
16															
17															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY - OVER

8.0

33.0

** COLUMNS TO BE USED
 BY THE DATA REVIEWED ONLY

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

DATE June 25, 2021

SHEET NUMBER 3

PASSING TRIAL SEAMS

FUSION

EXTRUSION

NO.	TIME	TECH ID
TX6	945	RN
TX7	1415	RN

MACHINE # EXT 35

SEAM NUMBER	SEAM SECTION *		APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCTIVE			
	START POINT	FINISH POINT					DIGITAL SET							INDICATOR		TEST DATE	MON.
							WEDGE OR BARREL	NOZZLE						WEDGE OR BARREL	NOZZLE		
1	P29/ETI	NEOS SEOS	1050	24	RN	465	470		23	55		AFK		06-25-21	DS		
2	P30/ETI	NEOS SEOS	1130	25	RN	465	470		23	65/13	DSX1	AFK		06-25-21	DS		
3	P31/ETI	NEOS SEOS	1200	25	RN	465	470		24	37		AFK		06-25-21	DS		
4	P32/ETI	NEOS SEOS	1620	25	RN	465	470		22	59.0		AFK		06-25-21	DS		
5	P33/ETI	NEOS SEOS	1649	25	RN	465	470		21	80.0		AFK		06-26-21	DS		
6	P34/ETI	NEOS SEOS	1715	25	RN	465	470		22	102.0		AFK		06-26-21	DS		
7																	
8																	
9																	
10																	
11																	
12																	
13																	
14																	
15																	
16																	
17																	

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY - OVER

135.0

102.0

** COLUMNS TO BE USED
 BY THE DATA REVIEWED ONLY

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

DATE June 25, 2021

SHEET NUMBER 4

PASSING TRIAL SEAMS

FUSION

EXTRUSION

MACHINE # EXT 35

NO.	TIME	TECH ID
TX11	1331	RN

SEAM NUMBER	SEAM SECTION *		APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCTIVE	
	START POINT	FINISH POINT					DIGITAL SET	INDICATOR						TEST DATE	MON.
1	P4/P53	SEOS	NEOS	1613	25	RN	465	470	7	109		AFK		06-27-21	DS
2	P30/P31	WEOS	EEOS	1710	25	RN	465	470	2	111		AFK		06-27-21	DS
3	P21/P32	WEOS	EEOS	1715	25	RN	465	470	2	113		AFK		06-27-21	DS
4															
5															
6															
7															
8															
9															
10															
11															
12															
13															
14															
15															
16															
17															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY - OVER

11.0

113.0

** COLUMNS TO BE USED
 BY THE DATA REVIEWED ONLY

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

PASSING TRIAL SEAMS

DATE June 25, 2021

SHEET NUMBER 5

FUSION

EXTRUSION

MACHINE # EXT 35

NO.	TIME	TECH ID
TX13	815	RN

SEAM NUMBER	SEAM SECTION *		APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCTIVE			
	START POINT	FINISH POINT					DIGITAL SET							INDICATOR		TEST DATE	MON.
							WEDGE OR BARREL	NOZZLE						WEDGE OR BARREL	NOZZLE		
1	P4/P38	SEOS	NEOS	847	19	RN	465	470	7	120		AFK		06-27-21	DS		
2	P4/P52	SEOS	NEOS	922	19	RN	465	470	7	124/3	DSX2	AFK		06-27-21	DS		
3	P7/P56	6V	WEOS	935	19	RN	465	470	4	7		AFK		06-27-21	DS		
4	P4/P52	SEOS	8Q	1023	21	RN	465	470	3	10.0		AFK		06-27-21	DS		
5	P4/P52	8Q	NEOS	1025	21	RN	465	470	3	13.0		AFK		06-27-21	DS		
6	P1/P64	EEOS	WEOS	1200	22	RN	465	470	3	16.0		AFK		06-27-21	DS		
7	P45/P46	3X	8V	1205	22	RN	465	470	7	23.0		AFK		06-27-21	DS		
8	P5/P42	8S	NEOS	1215	22	RN	465	470	3	26.0		AFK		06-27-21	DS		
9	P5/P41	SEOS	8C	1230	22	RN	465	470	1	27.0		AFK		06-27-21	DS		
10	P5/P41	8C	NEOS	1230	22	RN	465	470	3	30.0		AFK		06-27-21	DS		
11	P8/P65	8T	8S	1240	22	RN	465	470	3	33.0		AFK		06-27-21	DS		
12	P8/P65	8S	8U	1245	22	RN	465	470	3	36.0		AFK		06-27-21	DS		
13	P44/P45	WEOS	8W	1246	22	RN	465	470	7	43.0		AFK		06-27-21	DS		
14																	
15																	
16																	
17																	

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY - OVER

54.0

43.0

** COLUMNS TO BE USED
 BY THE DATA REVIEWED ONLY

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

DATE June 26, 2021

SHEET NUMBER 6

PASSING TRIAL SEAMS

FUSION

EXTRUSION

MACHINE # EXT 9

NO.	TIME	TECH ID
TX12	815	DG

SEAM NUMBER	SEAM SECTION *		APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCTIVE	
	START POINT	FINISH POINT					DIGITAL SET	INDICATOR						TEST DATE	MON.
	BARREL	NOZZLE					BARREL	NOZZLE							
1	P55/ETI	NEOS 8J	1540	25	DG	465	465		5	5		AFK		06-27-21	DS
2	P55/ETI	8J SEOS	1600	25	DG	465	465		8	13		AFK		06-27-21	DS
3															
4															
5															
6															
7															
8															
9															
10															
11															
12															
13															
14															
15															
16															
17															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY - OVER

13.0

13.0

** COLUMNS TO BE USED
 BY THE DATA REVIEWED ONLY

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

DATE July 3, 2021

SHEET NUMBER 7

PASSING TRIAL SEAMS

FUSION

EXTRUSION

MACHINE # EXT 9

NO.	TIME	TECH ID
TX19	1050	DG

SEAM NUMBER	SEAM SECTION *		APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCTIVE			
	START POINT	FINISH POINT					DIGITAL SET							INDICATOR		TEST DATE	MON.
							WEDGE OR BARREL	NOZZLE						WEDGE OR BARREL	NOZZLE		
1	P124/P145	SEOS	NEOS	1205	34	DG	480	480	10	21/2	DSX3	AFK		06-27-21	DS		
2	P124/ETI	SEOS	NEOS	1215	34	DG	480	480	84	72/14	DSX4	AFK		06-27-21	DS		
3	P125/ETI	SEOS	NEOS	1340	34	DG	480	480	42	56		AFK		06-27-21	DS		
4																	
5																	
6																	
7																	
8																	
9																	
10																	
11																	
12																	
13																	
14																	
15																	
16																	
17																	

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY - OVER

136.0

56.0

** COLUMNS TO BE USED
 BY THE DATA REVIEWED ONLY

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

DATE July 2, 2021

SHEET NUMBER 8

PASSING TRIAL SEAMS

FUSION

EXTRUSION

MACHINE # EXT 5

NO.	TIME	TECH ID
TX16	830	RN

SEAM NUMBER	SEAM SECTION *		APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCTIVE	
	START POINT	FINISH POINT					DIGITAL SET	INDICATOR						TEST DATE	MON.
	BARREL	NOZZLE					BARREL	NOZZLE							
1	P67/P99	Pv NEOS	1125	30	RN	465	470		3	3		AFK		07-05-21	DJ
2	P67/P105	SEOS 9S	1718	35	RN	465	470		2	5		AFK		07-05-21	DJ
3															
4															
5															
6															
7															
8															
9															
10															
11															
12															
13															
14															
15															
16															
17															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY - OVER

5.0
56.0

** COLUMNS TO BE USED
 BY THE DATA REVIEWED ONLY

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

PASSING TRIAL SEAMS

DATE July 2, 2021

SHEET NUMBER 9

FUSION

X EXTRUSION

MACHINE # EXT 5

NO.	TIME	TECH ID
TX18B	1050	RN
TX18C	1050	RN

SEAM NUMBER	SEAM SECTION *		APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCTIVE			
	START POINT	FINISH POINT					DIGITAL SET							INDICATOR		TEST DATE	MON.
							WEDGE OR BARREL	NOZZLE						WEDGE OR BARREL	NOZZLE		
1	P97/P98	11L 6m WOEEOS	1215	34	RN	465	470		6	11			AFK	07-05-21	DJ		
2	P89/P90	10P EEOS	1231	34	RN	465	470		5	16			AFK	07-05-21	DJ		
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	
11																	
12																	
13																	
14																	
15																	
16																	
17																	

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY - OVER

11.0

16.0

** COLUMNS TO BE USED
 BY THE DATA REVIEWED ONLY

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

DATE July 5, 2021

SHEET NUMBER 10

PASSING TRIAL SEAMS

FUSION

EXTRUSION

MACHINE # EXT 5

NO.	TIME	TECH ID
TX21	1200	RN

SEAM NUMBER	SEAM SECTION *		APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCTIVE	
	START POINT	FINISH POINT					DIGITAL SET							TEST DATE	MON.
							WEDGE OR BARREL	WEDGE OR NOZZLE							
1	P122/P125	12	NEOS	1534	25	RN	470	475	11	35		AFK		07-05-21	AFK
2															
3															
4															
5															
6															
7															
8															
9															
10															
11															
12															
13															
14															
15															
16															
17															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY - OVER

11.0

35.0

** COLUMNS TO BE USED
 BY THE DATA REVIEWED ONLY

REVIEWED BY: AFK
 DATE: September 2, 2021



GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

DATE July 12, 2021

SHEET NUMBER 11

PASSING TRIAL SEAMS

FUSION

EXTRUSION

MACHINE # EXT 5

NO.	TIME	TECH ID
TX27	1020	RN

SEAM NUMBER	SEAM SECTION *		APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCTIVE			
	START POINT	FINISH POINT					DIGITAL SET							WEDGE OR BARREL NOZZLE	WEDGE OR BARREL NOZZLE	TEST DATE	MON.
1	P142/ETI	12 NEOS	1330	22	RN	485	480		25	47		AFK		07-12-21	AB		
2	P125/141	EEOS WEOS	1350	22	RN	485	480		4	51		AFK		07-12-21	AB		
3	P123/140	EEOS WEOS	1358	22	RN	485	480		7	58		AFK		07-12-21	AB		
4																	
5																	
6																	
7																	
8																	
9																	
10																	
11																	
12																	
13																	
14																	
15																	
16																	
17																	

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY - OVER

36.0

58.0

** COLUMNS TO BE USED
 BY THE DATA REVIEWED ONLY

REVIEWED BY: AFK
 DATE: September 2, 2021

Appendix B-7

Geomembrane Seam Destructive Test Summary

- **Tensiometer Certificate of Calibration**
 - **Seam Destructive Test Summary**

TT#3



CALIBRATION CERTIFICATE

Tensiometer Model: Pro-Tester T-0100

Device Calibrated: S-Type load cell
Range: 0 - 750 lbs. Tension

Calibration Apparatus:

Model No: M2405-750#

Pro-Cal unit, model TC-0100/A

Serial No: 711143

Dead Weight:

Reference Cell:

A/D Module Model No: T-029

W1 2

R1 2

A/D Module Serial No: 0514711143

W2 152

R2 152

Channel No: N/A

W3 302

R3 302

Indicator reading with no load: 0

Offset: 1.154345

Scale: 3.192095

Applied Force lbs.

Cell Response:

Deviation Error:

2
52
102
152
202
252
302

2
52
102
152
202
252
302

0.00
0.00
0.00
0.00
0.00
0.00
0.00

Total Deviation Error (%): 0.00%

Temperature at time of calibration: 73 degrees F

Excitation Voltage: 5 V DC

This calibration conforms to the standards set by ASTM E4 and is traceable to NIST standards
Manufacture recommendation to Calibrate load cells annually. Valid for one year of date shown.

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.

JM

Date: 1/28/2021

TI #16



CALIBRATION CERTIFICATE

Tensiometer Model: Pro-Tester T-0100

Device Calibrated: S-Type load cell
 Range: 0 - 750 lbs. Tension
 Model No: M2405-750#
 Serial No: 667570

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

A/D Module Model No: T-029
 A/D Module Serial No: 2111667570
 Channel No: N/A

Dead Weight:		Reference Cell:	
W1	<u>2</u>	R1	<u>2</u>
W2	<u>152</u>	R2	<u>152</u>
W3	<u>302</u>	R3	<u>302</u>

Indicator reading with no load: 0

Offset: -3.839895 Scale: 3.183811

Applied Force lbs.

Cell Response:

Deviation Error:

<u>2</u>
<u>52</u>
<u>102</u>
<u>152</u>
<u>202</u>
<u>252</u>
<u>302</u>

<u>2</u>
<u>52</u>
<u>102</u>
<u>152</u>
<u>202</u>
<u>252</u>
<u>302</u>

<u>0.00</u>
<u>0.00</u>
<u>0.00</u>
<u>0.00</u>
<u>0.00</u>
<u>0.00</u>
<u>0.00</u>

Total Deviation Error (%): 0.00%

Temperature at time of calibration: 73 degrees F
 Excitation Voltage: 5 V DC

This calibration conforms to the standards set by ASTM E4 and is traceable to NIST standards
 Manufacture recommendation to Calibrate load cells annually. Valid for one year of date shown.

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.

JM

Date: 1/28/2021



GEOMEMBRANE DESTRUCTIVE TESTING SUMMARY LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connection of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

DATE: June 23,2021

SAMPLE NUMBER	DATE	APPROXIMATE LOCATION	REPAIR CODE	TEST RESULTS			PASS OR FAIL	MON.	REMARKS
				INSIDE PEEL MODE STRENGTH	OUTSIDE PEEL MODE STRENGTH	SHEAR MODE STRENGTH			
DSF 1	6/22/21	10 m S of NEOS P3/P4	3A	FTB	FTB	FTB	PASS	DS	
				102,113,94,112,107	104,105,107,104,108	120,120,123,120,127			
DSF 3	6/22/21	14 m N of SEOS P6/P7	3C	FTB	FAIL	FTB	FAIL	DS	100%PEEL
				91,94,97,101,96	109,105,101,101,103				
DSF 3B	6/23/21	3 m S of P6/P7 DSF 3	3G	FAIL	FAIL	FTB	FAIL	AFK	
				76,102,114,114	111,104,110,66				
DSF 3A	6/23/21	3 m N of DSF 3 P6/P7	3H	FTB	FTB	FTB	PASS	AFK	
				115,116,113,109,113	104,101,117,115,121	120,121,123,120,123			
DSF B1	6/23/21	6 m S of DSF 3 P6/P7	3J	FTB	FTB	FTB	PASS	AFK	
				143,140,109,98,115	124,120,118,127,127	141,142,140,139,139			
DSF 2	6/22/21	24 m N of SEOS P5/P6	3B	FTB	FTB	FTB	PASS	AFK	
				119,122,124,119,117	130,124,133,129,132	141,141,142,143,143			

**Pass: Peel: 91 b/in
 Sheer: 120 lb/in

REVIEWED BY: AFK
 DATE: August 26, 2021



GEOMEMBRANE DESTRUCTIVE TESTING SUMMARY LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connection of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

DATE: June 24, 2021

SAMPLE NUMBER	DATE	APPROXIMATE LOCATION	REPAIR CODE	TEST RESULTS			PASS OR FAIL	MON.	REMARKS
				INSIDE PEEL MODE STRENGTH	OUTSIDE PEEL MODE STRENGTH	SHEAR MODE STRENGTH			
DSF 4	6/23/21	10 m W of EEOS P9/P10	3E	FTB	FTB	FTB	PASS	DS	
				113,112,114,114,103	112,103,103,116,114	128,125,120,123,123			
DSF 5	6/23/21	5 m W of EEOS P14/P15	3M	FTB	FTB	FTB	PASS	DS	
				94,111,108,101,109	110,112,109,113,109	127,121,122,120,126			
DSF 6	6/23/21	10 m W of EEOS P19/P20	3L	FTB	FTB	FTB	PASS	DS	
				107,115,116,118,116	104,106,111,107,108	124,120,124,122,127			
DSF 7	6/23/21	10 m W of EEOS P24/P25	3M	FTB	FTB	FTB	PASS	DS	
				114,105,110,106,107	110,110,117,115,112	122,129,124,125,128			
DSF 8	6/24/21	2 m S of NEOS P1/P23	3N	FTB	FTB	FTB	PASS	DS	Tx/Sm
				117,114,125,123,116	120,119,120,121,117	124,125,124,132,125			

**Pass: Peel: 91 b/in
 Sheer: 120 lb/in

REVIEWED BY: AFK
 DATE: August 26, 2021



GEOMEMBRANE DESTRUCTIVE TESTING SUMMARY LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connection of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

DATE: June 25, 2021

SAMPLE NUMBER	DATE	APPROXIMATE LOCATION	REPAIR CODE	TEST RESULTS			PASS OR FAIL	MON.	REMARKS
				INSIDE PEEL MODE STRENGTH	OUTSIDE PEEL MODE STRENGTH	SHEAR MODE STRENGTH			
DSF 9	6/24/21	10 m N of SEOS P28/P33	3T	FTB	FTB	FTB	PASS	DS	
				108,108,113,110,112	106,111,98,104,105	135,135,135,135,136			
DSX 1	6/25/21	10 m S of NEOS P30/ETI	3W	FTB	FTB	FTB	PASS	DS	
				88,114,74,119,114		123,127,120,129,123			

**Pass: Peel: 91 b/in
 Sheer: 120 lb/in

REVIEWED BY: AFK
 DATE: August 26, 2021



GEOMEMBRANE DESTRUCTIVE TESTING SUMMARY LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connection of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

DATE: June 27, 2021

SAMPLE NUMBER	DATE	APPROXIMATE LOCATION	REPAIR CODE	TEST RESULTS			PASS OR FAIL	MON.	REMARKS
				INSIDE PEEL MODE STRENGTH	OUTSIDE PEEL MODE STRENGTH	SHEAR MODE STRENGTH			
DSX 2	6/27/21	4 m S of NEOS P4/P52	8Q	FTB	FTB	FTB	PASS	AFK	
				107,109,110,110,03		147,143,136,137,138			
DSF 10	6/24/21	2 m E of WEOS P46/P47	3Y	FAIL	FTB	FTB	FAIL	AFK	30%PEEL
				107,116,108,125	125,115,102				
DSF 11	6/26/21	2 m N of SEOS P5/P41	8C	FTB	FAIL	FTB	FAIL	DS	75%PEEL
				111	105,88				
DSF 12	6/26/21	12 m E of WEOS P8/P65	8G	FTB	FAIL	FTB	FAIL	DS	90%PEEL
				96	73,41				
DSF 10A	6/24/21	1 m W of EEOS P45/P46	8V	FTB	FTB	FTB	PASS	DS	
				101,100,117,112,98	101,105,107,103,101	139,143,144,138,145			
DSF 10B	6/24/21	3 m E of WEOS P44/P45	8W	FTB	FTB	FTB	PASS	DS	
				111,113,108,105,109	110,114,113,116,112	138,139,142,139,139			
DSF 11A	6/26/21	2 m S of NEOS P5/P41	8R	FTB	FTB	FTB	PASS	DS	
				124,124,118,122,122	102,101,65,107,114	125,121,128,127,126			
DSF 11B	6/26/21	2 m N of SEOS P5/P42	8S	FTB	FTB	FTB	PASS	DS	
				118,114,118,80,112	120,120,124,113,98	128,124,127,126,129			
DSF 12A	6/26/21	3 m E of DSF12 P8/P65	8U	FTB	FTB	FTB	PASS	DS	
				94,96,107,106,89	78,97,97,115,100	120,130,123,123,125			
DSF 12B	6/26/21	4 m W of DSF12 P8/P65	8T	FTB	FTB	FTB	PASS	DS	
				105,103,83,96,92	97,108,108,98,107	120,127,125,127,123			

**Pass: Peel: 91 b/in
 Sheer: 120 lb/in

REVIEWED BY: AFK
 DATE: August 26, 2021



GEOMEMBRANE DESTRUCTIVE TESTING SUMMARY LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connection of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

DATE: June 30,2021

SAMPLE NUMBER	DATE	APPROXIMATE LOCATION	REPAIR CODE	TEST RESULTS			PASS OR FAIL	MON.	REMARKS
				INSIDE PEEL MODE STRENGTH	OUTSIDE PEEL MODE STRENGTH	SHEAR MODE STRENGTH			
DSF 13	6/28/21	2 m N of SEOS P69/P71	9B	FTB	FTB	FTB	PASS	DS	
				122,118,121,124,120	120,122,113,120,113	129,131,129,132,128			
DSF 14	6/29/21	4 m E of WEOS P73/P72	9C	FTB	FTB	FTB	PASS	DS	
				122,118,116,118,118	112,113,104,115,118	130,129,127,123,128			
DSF 15	6/30/21	2 m S of NEOS P71/P77	9D	FTB	FTB	FTB	PASS	DS	
				115,119,118,119,116	114,108,116,103,102	129,123,125,128,123			

**Pass: Peel: 91 b/in
 Sheer: 120 lb/in

REVIEWED BY: AFK
 DATE: August 26, 2021



GEOMEMBRANE DESTRUCTIVE TESTING SUMMARY LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connection of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

DATE: July 3, 2021

SAMPLE NUMBER	DATE	APPROXIMATE LOCATION	REPAIR CODE	TEST RESULTS			PASS OR FAIL	MON.	REMARKS
				INSIDE PEEL MODE STRENGTH	OUTSIDE PEEL MODE STRENGTH	SHEAR MODE STRENGTH			
DSF 16	6/30/21	10 m W of EEOS P94/P95	9J	FTB	FTB	FTB	PASS	DS	
				105,101,106,109,100	109,111,110,108,110	135,127,136,135,128			
DSF 17	7/1/21	4 m W of EEOS P105/P106	9K	FTB	FTB	FTB	PASS	DS	
				104,102,102,106,103	108,95,105,101,101	133,129,127,126,132			
DSF 18	7/1/21	20 m W of EEOS P106/P107	9N	FTB	FTB	FTB	PASS	DS	
				100,98,97,90,95	104,100,100,97,102	120,122,122,121,120			
DSX 3	7/3/21	8 m N of SEOS 14E/P123	12H	FTB	FTB	FTB	PASS	AFK	
				93,91,90,71,100		120,120,121,120,123			
DSX 4	7/3/21	70 m N of SEOS P124/ETI	12K	FTB	FTB	FTB	PASS	AFK	
				96,102,91,86,91		121,120,120,121,122			
DSF 19	7/3/21	4 m S of NEOS P119/P124	12F	FTB	FTB	FTB	PASS	AFK	
				108,98,106,107,96	104,103,101,104,106	121,122,122,121,120			
DSF 20	7/3/21	20 m E of WEOS P120/P124	12E	FTB	FTB	FTB	PASS	AFK	
				94,105,93,96,105	105,99,106,103,91	123,121,121,122,122			

**Pass: Peel: 91 b/in
 Sheer: 120 lb/in

REVIEWED BY: AFK
 DATE: August 26, 2021



GEOMEMBRANE DESTRUCTIVE TESTING SUMMARY LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connection of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

DATE: July 9, 2021

SAMPLE NUMBER	DATE	APPROXIMATE LOCATION	REPAIR CODE	TEST RESULTS			PASS OR FAIL	MON.	REMARKS
				INSIDE PEEL MODE STRENGTH	OUTSIDE PEEL MODE STRENGTH	SHEAR MODE STRENGTH			
DSF 21	7/8/21	3 m E of WEOS P128/P131	15C	FTB	FTB	FTB	PASS	AFK	
				113,115,114,115,115	123,120,121,122,121	149,149,150,148,154			
DSF 23	7/8/21	8 m S of NEOS P138/P139	15V	FTB	FTB	FTB	PASS	AFK	
				105,101,106,107,111	101,97,96,104,97	132,136,135,133,131			
DSF 22	7/8/21	4 m N of SEOS P134/P135	17A	FTB	FTB	FTB	PASS	AFK	
				90,107,107,91,106	96,99,101,98,103	120,122,121,121,120			
DSX5	7/9/21	1 m N of SEOS P128/D3		FTB	FTB	FTB	PASS	AFK	
				110,113,98,112,115		120,122,123,122,125			
DSX6	7/9/21	4 m W of EEOS P135/D1		FTB	FTB	FTB	PASS	AFK	
				111,115,111,115,108		125,123,123,121,124			

**Pass: Peel: 91 b/in
 Sheer: 120 lb/in

REVIEWED BY: AFK
 DATE: August 26, 2021

Appendix B-8

Geomembrane Seam Pressure Test Summary



GEOMEMBRANE SEAM PRESSURE TEST LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

Date : 23-Jun-21
 Sheet Number 1

	SEAM, NUMBER	SEAM SECTION *		PRESS GAUGE NUMBER	TECH ID	TIME		PRESSURE		OBS. TEST	RESULTS PASS/P	SEAM COMPLETE		MON	REMARKS
		FROM	TO			START	FINISH	INITIAL	FINAL			NO	YES		
1	P1/P2	SEOS	NEOS	1	JP	819	824	51	49	Y	P		X	DS	
2	P2/P3	SEOS	NEOS	2	JP	823	828	49	47	Y	P		X	DS	
3	P6/P7	SEOS	NEOS	1	JP	903	908	53	51	Y	P		X	DS	
4	P3/P4	SEOS	3D	1	JP	943	948	52	50	Y	P	X		DS	
5	P3/P4	IJ	NEOS	1	JP	953	958	52	49	Y	P		X	DS	
6	P5/P6	SEOS	3B	1	JP	1338	1343	54	52	Y	P	X		DS	
7	P5/P6	3B	IN	1	JP	1346	1351	51	48	Y	P	X		DS	
8	P5/P6	IN	IP	1	JP	1400	1405	51	50	Y	P	X		DS	
9	P5/P6	IP	IQ	1	JP	1422	1427	55	54	Y	P	X		DS	
10	P5/P6	IQ	IR	1	JP	1641	1646	54	52	Y	P	X		AFK	
11	P5/P6	IR	NEOS	1	JP	1647	1652	53	50	Y	P		X	AFK	
12															
13															
14															
15															
16															
17															
18															
19															
20															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF.PT.)

REVIEWED BY: AFK
 DATE: 2021-09-02



GEOMEMBRANE SEAM PRESSURE TEST LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

Date : 24-Jun-21
 Sheet Number 2

	SEAM, NUMBER	SEAM SECTION *		PRESS GAUGE NUMBER	TECH ID	TIME		PRESSURE		OBS. TEST	RESULTS PASS/P	SEAM COMPLETE		MON	REMARKS
		FROM	TO			START	FINISH	INITIAL	FINAL			NO	YES		
1	P26/P27	EEOS	WEOS	1	JP	958	1003	49	48	Y	P		X	DS	
2	P25/P26	EEOS	WEOS	1	JP	1020	1025	47	45	Y	P		X	DS	
3	P1/P25	SEOS	NEOS	1	JP	1035	1040	40	39	Y	P		X	DS	
4	P24/P25	EEOS	NEOS	2	JP	1035	1040	40	39	Y	P		X	DS	
5	P1/P24	NEOS	SEOS	3	JP	1029	1034	47	44	Y	P		X	DS	
6	P23/P24	EEOS	WEOS	1	JP	1051	1056	50	47	Y	P		X	DS	
7	P1/P23	SEOS	NEOS	1	JP	1057	1102	47	45	Y	P		X	DS	
8	P22/P23	EEOS	WEOS	2	JP	1057	1102	43	42	Y	P		X	DS	
9	P1/P22	SEOS	NEOS	1	JP	1114	1119	53	50	Y	P		X	DS	
10	P1/P21	NEOS	SEOS	2	JP	1144	1149	41	41	Y	P		X	DS	
11	P20/P21	EEOS	WEOS	1	JP	1143	1148	41	41	Y	P		X	DS	
12	P21/P22	3R	WEOS	2	JP	1133	1138	44	43	Y	P	X		DS	
13	P1/P20	SEOS	NEOS	1	JP	1153	1158	37	35	Y	P		X	DS	
14	P1/P19	NEOS	SEOS	2	JP	1153	1158	39	36	Y	P		X	DS	
15	P21/P22	EEOS	3R	3	JP	1154	1159	38	38	Y	P		X	DS	
16	P18/19	EEOS	WEOS	1	JP	1202	1207	35	33	Y	P		X	DS	
17	P1/P18	SEOS	NEOS	2	JP	1202	1207	35	32	Y	P		X	DS	
18	P17/P18	EEOS	WEOS	3	JP	1202	1207	35	32	Y	P		X	DS	
19	P1/P17	SEOS	NEOS	1	JP	1212	1217	36	33	Y	P		X	DS	
20	P16/P17	EEOS	WEOS	2	JP	1212	1217	37	35	Y	P		X	DS	

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER,
 OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF.PT.)

REVIEWED BY: AFK
 DATE: 2021-09-02



GEOMEMBRANE SEAM PRESSURE TEST LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

Date : 24-Jun-21
 Sheet Number 3

	SEAM, NUMBER	SEAM SECTION *		PRESS GAUGE NUMBER	TECH ID	TIME		PRESSURE		OBS. TEST	RESULTS PASS/P	SEAM COMPLETE		MON	REMARKS
		FROM	TO			START	FINISH	INITIAL	FINAL			NO	YES		
1	P15/P16	EEOS	WEOS	3	JP	1212	1217	36	33	Y	P		X	DS	
2	P14/P15	EEOS	WEOS	1	JP	1223	1228	43	40	Y	P		X	DS	
3	P1/P15	SEOS	NEOS	2	JP	1223	1228	33	32	Y	P		X	DS	
4	P1/P14	NEOS	SEOS	3	JP	1223	1228	33	31	Y	P		X	DS	
5	P13/P14	EEOS	WEOS	1	JP	1231	1236	39	37	Y	P		X	DS	
6	P1/P13	SEOS	NEOS	2	JP	1243	1248	38	35	Y	P		X	DS	
7	P12/P13	EEOS	WEOS	3	JP	1232	1237	38	36	Y	P		X	DS	
8	P1/P12	SEOS	NEOS	1	JP	1242	1247	40	37	Y	P		X	DS	
9	P11/P12	EEOS	WEOS	2	JP	1242	1247	41	40	Y	P		X	DS	
10	P1/P11	SEOS	NEOS	1	JP	1252	1257	36	34	Y	P		X	DS	
11	P10/P11	EEOS	WEOS	2	JP	1252	1257	42	40	Y	P		X	DS	
12	P1/P10	NEOS	SEOS	3	JP	1252	1257	36	33	Y	P		X	DS	
13	P9/P10	EEOS	WEOS	1	JP	1358	1403	37	35	Y	P		X	DS	
14	P8/P9	EEOS	WEOS	2	JP	1358	1403	39	36	Y	P		X	DS	
15	P1/P9	SEOS	NEOS	3	JP	1358	1403	36	36	Y	P		X	DS	
16	P1/P8	NEOS	SEOS	1	JP	1407	1412	37	34	Y	P		X	DS	
17	P28/P34	NEOS	SEOS	1	JP	1815	1820	44	42	Y	P		X	DS	
18	P28/P33	SEOS	NEOS	2	JP	1815	1820	44	43	Y	P		X	DS	
19	P7/P28	3S	4C	1	JP	1829	1834	44	42	Y	P		X	DS	
20	P19/P20	EEOS	WEOS	1	JP	1144	1149	41	41	Y	P		X	DS	

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF.PT.)

REVIEWED BY: AFK
 DATE: 2021-09-02



GEOMEMBRANE SEAM PRESSURE TEST LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

Date : 25-Jun-21
 Sheet Number 4

	SEAM, NUMBER	SEAM SECTION *		PRESS GAUGE NUMBER	TECH ID	TIME		PRESSURE		OBS. TEST	RESULTS PASS/P	SEAM COMPLETE		MON	REMARKS
		FROM	TO			START	FINISH	INITIAL	FINAL			NO	YES		
1	P7/P28	4C	4D	1	JP	837	842	48	45	Y	P	X		DS	
2	P28/P32	NEOS	SEOS	1	JP	845	850	40	39	Y	P		X	DS	
3	P28/P31	SEOS	NEOS	2	JP	845	850	39	39	Y	P		X	DS	
4	P7/P28	NEOS	4D	1	JP	858	903	42	41	Y	P		X	DS	
5	P28/P30	NEOS	SEOS	1	JP	1049	1054	38	37	Y	P		X	DS	
6	P28/P29	SEOS	NEOS	2	JP	1049	1054	40	39	Y	P		X	DS	
7	P29/P30	WEOS	EEOS	1	JP	1549	1554	37	36	Y	P		X	DS	
8															
9															
10															
11															
12															
13															
14															
15															
16															
17															
18															
19															
20															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF.PT.)

REVIEWED BY: AFK
 DATE: 2021-09-02



GEOMEMBRANE SEAM PRESSURE TEST LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

Date : 26-Jun-21
 Sheet Number 5

	SEAM, NUMBER	SEAM SECTION *		PRESS GAUGE NUMBER	TECH ID	TIME		PRESSURE		OBS. TEST	RESULTS PASS/P	SEAM COMPLETE		MON	REMARKS
		FROM	TO			START	FINISH	INITIAL	FINAL			NO	YES		
1	P53/P54	WEOS	EEOS	1	JP	844	849	42	41	Y	P		X	DS	
2	P52/P53	WEOS	EEOS	2	JP	844	849	42	41	Y	P		X	DS	
3	P51/P52	WEOS	EEOS	3	JP	845	850	43	42	Y	P		X	DS	
4	P50/P51	WEOS	EEOS	1	JP	853	858	48	47	Y	P		X	DS	
5	P48/P49	WEOS	EEOS	3	JP	854	859	41	40	Y	P		X	DS	
6	P47/P48	WEOS	EEOS	1	JP	904	909	47	46	Y	P		X	DS	
7	P44/P45	WEOS	EEOS	2	JP	905	910	50	49	Y	P		X	DS	
8	P41/P42	WEOS	EEOS	1	JP	914	919	40	40	Y	P		X	DS	
9	P40/P41	WEOS	EEOS	2	JP	915	920	47	45	Y	P		X	DS	
10	P1/P26	NEOS	SEOS	1	JP	948	953	31	29	Y	P		X	DS	
11	P1/P27	SEOS	NEOS	2	JP	956	1001	33	32	Y	P		X	DS	
12	P7/P28	SEOS	3S	1	JP	1344	1149	30	28	Y	P		X	DS	
13	P4/P35	SEOS	NEOS	1	JP	1359	1404	33	32	Y	P		X	DS	
14	P4/P36	NEOS	SEOS	2	JP	1355	1400	32	29	Y	P		X	DS	
15	P35/P36	WEOS	EEOS	3	JP	1335	1400	46	45	Y	P		X	DS	
16	P36/P37	WEOS	EEOS	1	JP	1405	1410	36	35	Y	P		X	DS	
17	P4/P37	SEOS	NEOS	2	JP	1407	1412	33	31	Y	P		X	DS	
18	P37/P38	WEOS	EEOS	3	JP	1407	1412	39	38	Y	P		X	DS	
19	P38/P39	WEOS	EEOS	1	JP	1411	1416	44	42	Y	P		X	DS	
20															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER,
 OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF.PT.)

REVIEWED BY: AFK
 DATE: 2021-09-02



GEOMEMBRANE SEAM PRESSURE TEST LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

Date : 26-Jun-21
 Sheet Number 6

	SEAM, NUMBER	SEAM SECTION *		PRESS GAUGE NUMBER	TECH ID	TIME		PRESSURE		OBS. TEST	RESULTS PASS/P	SEAM COMPLETE		MON	REMARKS
		FROM	TO			START	FINISH	INITIAL	FINAL			NO	YES		
1	P39/P40	WEOS	EEOS	1	JP	1421	1426	43	42	Y	P		X	DS	
2	P4/P40	NEOS	SEOS	2	JP	1421	1426	37	34	Y	P		X	DS	
3	P4/P41	NEOS	SEOS	3	JP	1423	1428	31	28	Y	P		X	DS	
4	P4/P42	SEOS	NEOS	1	JP	1432	1437	31	29	Y	P		X	DS	
5	P42/P43	WEOS	8F	2	JP	1432	1437	43	42	Y	P	X		DS	
6	P4/P43	NEOS	SEOS	3	JP	1432	1437	31	29	Y	P		X	DS	
7	P43/P44	WEOS	EEOS	1	JP	1439	1444	37	35	Y	P		X	DS	
8	P45/P46	WEOS	EEOS	1	JP	1449	1454	37	35	Y	P		X	DS	
9	P4/P46	NEOS	SEOS	2	JP	1459	1504	34	31	Y	P		X	DS	
10	P4/P48	NEOS	SEOS	1	JP	1456	1503	37	34	Y	P		X	DS	
11	P4/P47	NEOS	SEOS	2	JP	1457	1503	33	30	Y	P		X	DS	
12	P46/P47	WEOS	5A	3	JP	1457	1503	44	42	Y	P	X		DS	
13	P46/P47	5A	EEOS	4	JP	1454	1459	37	35	Y	P		X	DS	
14	P46/P47	NEOS	SEOS	1	JP	1504	1509	32	31	Y	P		X	DS	
15	P4/P49	WEOS	EEOS	2	JP	1503	1508	43	41	Y	P		X	DS	
16	P49/P50	NEOS	SEOS	3	JP	1503	1508	32	30	Y	P		X	DS	
17	P4/P51	NEOS	SEOS	4	JP	1509	1514	35	33	Y	P		X	DS	
18	P4/P54	NEOS	SEOS	1	JP	1514	1519	31	28	Y	P		X	DS	
19	P5/P53	SEOS	NEOS	2	JP	1514	1519	33	32	Y	P		X	DS	
20															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER,
 OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF.PT.)

REVIEWED BY: AFK
 DATE: 2021-09-02



GEOMEMBRANE SEAM PRESSURE TEST LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

Date : 26-Jun-21
 Sheet Number 7

	SEAM, NUMBER	SEAM SECTION *		PRESS GAUGE NUMBER	TECH ID	TIME		PRESSURE		OBS. TEST	RESULTS PASS/P	SEAM COMPLETE		MON	REMARKS
		FROM	TO			START	FINISH	INITIAL	FINAL			NO	YES		
1	P5/P52	NEOS	SEOS	3	JP	1543	1548	39	39	Y	P		X	DS	
2	P5/P51	SEOS	NEOS	4	JP	1543	1548	34	33	Y	P		X	DS	
3	P5/P50	NEOS	SEOS	1	JP	1546	1551	36	36	Y	P		X	DS	
4	P5/P49	SEOS	NEOS	2	JP	1546	1551	31	30	Y	P		X	DS	
5	P5/P48	NEOS	SEOS	3	JP	1547	1552	30	28	Y	P		X	DS	
6	P5/P47	SEOS	WEOS	4	JP	1547	1552	31	29	Y	P		X	DS	
7	P5/P46	NEOS	SEOS	1	JP	1554	1559	34	32	Y	P		X	DS	
8	P5/P44	NEOS	SEOS	3	JP	1609	1614	33	32	Y	P		X	DS	
9	P5/P43	SEOS	NEOS	4	JP	1609	1614	33	32	Y	P		X	DS	
10	P42/P43	EEOS	8F	1	JP	1610	1615	42	41	Y	P		X	DS	
11	P5/P42	NEOS	SEOS	2	JP	1610	1615	38	37	Y	P		X	DS	
12	P5/P41	SEOS	NEOS	3	JP	1610	1615	33	32	Y	P		X	DS	
13	P5/P40	NEOS	SEOS	4	JP	1612	1617	34	32	Y	P		X	DS	
14	P5/P39	SEOS	8E	5	JP	1612	1617	38	35	Y	P	X		DS	
15	P5/P38	NEOS	SEOS	1	JP	1621	1626	40	38	Y	P		X	DS	
16	P5/P37	SEOS	NEOS	2	JP	1621	1626	38	35	Y	P		X	DS	
17	P5/P36	NEOS	SEOS	3	JP	1630	1635	32	32	Y	P		X	DS	
18	P5/P35	SEOS	NEOS	4	JP	1630	1635	33	31	Y	P		X	DS	
19	P5/P45	SEOS	NEOS	1	JP	1641	1646	31	29	Y	P		X	DS	
20															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF.PT.)

REVIEWED BY: AFK
 DATE: 2021-09-02



GEOMEMBRANE SEAM PRESSURE TEST LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

Date : 26-Jun-21
 Sheet Number 8

	SEAM, NUMBER	SEAM SECTION *		PRESS GAUGE NUMBER	TECH ID	TIME		PRESSURE		OBS. TEST	RESULTS PASS/P	SEAM COMPLETE		MON	REMARKS
		FROM	TO			START	FINISH	INITIAL	FINAL			NO	YES		
1	P5/P39	NEOS	8E	1	JP	1705	1710	34	31	Y	P		X	DS	
2															
3															
4															
5															
6															
7															
8															
9															
10															
11															
12															
13															
14															
15															
16															
17															
18															
19															
20															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF.PT.)

REVIEWED BY: AFK
 DATE: 2021-09-02



GEOMEMBRANE SEAM PRESSURE TEST LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

Date : 27-Jun-21
 Sheet Number 9

	SEAM, NUMBER	SEAM SECTION *		PRESS GAUGE NUMBER	TECH ID	TIME		PRESSURE		OBS. TEST	RESULTS PASS/P	SEAM COMPLETE		MON	REMARKS
		FROM	TO			START	FINISH	INITIAL	FINAL			NO	YES		
1	P4/39	NEOS	SEOS	1	JP	842	847	35	33	Y	P		X	AFK	
2	P43/44	WEOS	EEOS	1	JP	851	857	44	43	Y	P		X	AFK	
3	P4/45	NEOS	SEOS	1	JP	859	909	37	34	Y	P		X	AFK	
4	P5/54	NEOS	SEOS	2	JP	906	911	33	32	Y	P		X	AFK	
5	P34/55	WEOS	EEOS	1	JP	925	930	37	34	Y	P		X	AFK	
6	P28/55	WEOS	EEOS	2	JP	925	930	39	36	Y	P		X	AFK	
7	P55/56	NEOS	SEOS	3	JP	925	930	47	46	Y	P		X	AFK	
8	P28/56	WEOS	EEOS	4	JP	925	930	36	33	Y	P		X	AFK	
9	P56/57	NEOS	SEOS	5	JP	926	931	44	44	Y	P		X	AFK	
10	P7/57	WEOS	EEOS	6	JP	946	951	40	37	Y	P		X	AFK	
11	P6/57	WEOS	EEOS	1	JP	937	942	34	37	Y	P		X	AFK	
12	P57/50	NEOS	SEOS	2	JP	937	942	41	38	Y	P		X	AFK	
13	P6/58	WEOS	EEOS	3	JP	941	946	39	37	Y	P		X	AFK	
14	P5/58	WEOS	EEOS	4	JP	946	951	35	32	Y	P		X	AFK	
15	P5/59	WEOS	EEOS	5	JP	938	943	32	30	Y	P		X	AFK	
16	P58/59	NEOS	SEOS	6	JP	938	943	46	45	Y	P		X	AFK	
17	P5/58	WEOS	EEOS	1	JP	957	1002	35	32	Y	P		X	AFK	
18	P54/59	WEOS	EEOS	2	JP	950	955	32	29	Y	P		X	AFK	
19	P59/60	NEOS	SEOS	3	JP	950	955	42	40	Y	P		X	AFK	
20	P54/60	WEOS	EEOS	4	JP	950	955	34	34	Y	P		X	AFK	

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER,
 OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF.PT.)

REVIEWED BY: AFK
 DATE: 2021-09-02



GEOMEMBRANE SEAM PRESSURE TEST LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

Date : 27-Jun-21
 Sheet Number 10

	SEAM, NUMBER	SEAM SECTION *		PRESS GAUGE NUMBER	TECH ID	TIME		PRESSURE		OBS. TEST	RESULTS PASS/P	SEAM COMPLETE		MON	REMARKS
		FROM	TO			START	FINISH	INITIAL	FINAL			NO	YES		
1	P4/60	8H	EEOS	1	JP	959	1004	42	40	Y	P	X		AFK	
2	P4/60	WEOS	8H	2	JP	1006	1011	38	28	Y	P		X	AFK	
3	P4/61	WEOS	EEOS	3	JP	1006	1011	41	40	Y	P		X	AFK	
4	P60/61	NEOS	SEOS	4	JP	1006	1011	37	35	Y	P		X	AFK	
5	P3/61	WEOS	EEOS	5	JP	1007	1012	37	34	Y	P		X	AFK	
6	P61/62	NEOS	SEOS	6	JP	1007	1012	39	38	Y	P		X	AFK	
7	P3/62	WEOS	EEOS	1	JP	1018	1023	42	40	Y	P		X	AFK	
8	P2/62	WEOS	EEOS	2	JP	1018	1024	41	39	Y	P		X	AFK	
9	P62/63	NEOS	SEOS	3	JP	1019	1024	47	45	Y	P		X	AFK	
10	P2/63	WEOS	EEOS	4	JP	1020	1025	39	37	Y	P		X	AFK	
11	P1/63	WEOS	EEOS	5	JP	1020	1025	42	40	Y	P		X	AFK	
12	P63/64	NEOS	SEOS	6	JP	1021	1026	50	49	Y	P		X	AFK	
13	P8/64	WEOS	EEOS	2	JP	1028	1033	41	38	Y	P			AB	
14	P64/65	NEOS	SEOS	3	JP	1029	1034	39	37	Y	P			AB	
15	P8/65	EEOS	8G	4	JP	1029	1034	35	33	Y	P	X		AB	
16	P64/66	NEOS	SEOS	5	JP	1048	1053	34	33	Y	P			AB	
17	P8/65	WEOS	8G,8L	1	JP	1045	1050	35	34	Y	P		X	AB	
18	P65/66	WEOS	8K	2	JP	1047	1052	35	34	Y	P			AB	
19	P65/66	8K	EEOS	3	JP	1048	1053	39	36	Y	P		X	AB	
20															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER,
 OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF.PT.)

REVIEWED BY: AFK
 DATE: 2021-09-02



GEOMEMBRANE SEAM PRESSURE TEST LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

Date : 30-Jun-21
 Sheet Number 11

	SEAM, NUMBER	SEAM SECTION *		PRESS GAUGE NUMBER	TECH ID	TIME		PRESSURE		OBS. TEST	RESULTS PASS/P	SEAM COMPLETE		MON	REMARKS
		FROM	TO			START	FINISH	INITIAL	FINAL			NO	YES		
1	P73/74	WEOS	EEOS	2	DP	907	912	37	34	Y	P		X	DS	
2	P74/75	WEOS	EEOS	3	DP	907	912	36	35	Y	P		X	DS	
3	P75/76	WEOS	EEOS	4	DP	908	913	35	35	Y	P		X	DS	
4	P76/77	WEOS	EEOS	1	DP	925	930	38	35	Y	P		X	DS	
5	P77/78	WEOS	EEOS	2	DP	925	930	37	36	Y	P		X	DS	
6	P78/79	WEOS	EEOS	3	DP	926	931	36	35	Y	P		X	DS	
7	P80/81	WEOS	EEOS	2	DP	938	943	37	37	Y	P		X	DS	
8	P81/82	WEOS	EEOS	3	DP	939	944	36	36	Y	P		X	DS	
9	P82/83	WEOS	EEOS	4	DP	939	944	39	38	Y	P		X	DS	
10	P83/84	WEOS	EEOS	1	DP	955	1000	38	38	Y	P		X	DS	
11	P84/85	WEOS	EEOS	2	DP	948	953	37	36	Y	P		X	DS	
12	P85/86	WEOS	EEOS	3	DP	951	953	37	37	Y	P		X	DS	
13	P86/87	WEOS	EEOS	4	DP	951	953	38	38	Y	P		X	DS	
14	P35/87	WEOS	EEOS	1	DP	1005	1010	37	36	Y	P		X	DS	
15	P69/70	SEOS	NEOS	1	DP	1015	1020	38	37	Y	P		X	DS	
16	P3/69	EEOS	WEOS	2	DP	1026	1031	36	36	Y	P		X	DS	
17	P2/68	EEOS	WEOS	1	DP	1036		34	33	Y	P		X	DS	
18	P68/69	SEOS	NEOS	2	DP	1036	1041	37	36	Y	P		X	DS	
19															
20															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER,
 OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF.PT.)

REVIEWED BY: AFK
 DATE: 2021-09-02



GEOMEMBRANE SEAM PRESSURE TEST LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

Date : 30-Jun-21
 Sheet Number 12

	SEAM, NUMBER	SEAM SECTION *		PRESS GAUGE NUMBER	TECH ID	TIME		PRESSURE		OBS. TEST	RESULTS PASS/P	SEAM COMPLETE		MON	REMARKS
		FROM	TO			START	FINISH	INITIAL	FINAL			NO	YES		
1	P67/P68	SEOS	NEOS	1	DP	1043	1048	35	32	Y	P		X	DS	
2	P1/P67	EEOS	WEOS	2	DP	1045	1050	39	36	Y	P		X	DS	
3	P70/86	NEOS	SEOS	1	DP	1059	1104	40	37	Y	P		X	DS	
4	P70/85	SEOS	NEOS	2	DP	1059	1104	38	36	Y	P		X	DS	
5	P4/70	EEOS	WEOS	1	DP	1108	1113	33	31	Y	P		X	DS	
6	P70/87	NEOS	SEOS	2	DP	1108	1113	34	32	Y	P		X	DS	
7	P4/87	NEOS	7X	3	DP	1108	1113	34	31	Y	P		X	DS	
8	P70/84	NEOS	SEOS	1	DP	1126	1131	39	37	Y	P		X	DS	
9	P70/83	SEOS	NEOS	2	DP	1118	1123	37	34	Y	P		X	DS	
10	P70/82	NEOS	SEOS	3	DP	1125	1130	40	38	Y	P		X	DS	
11	P70/81	SEOS	NEOS	4	DP	1125	1130	39	37	Y	P		X	DS	
12	P79/P80	WEOS	EEOS	1	DP	1138	1143	42	42	Y	P		X	DS	
13	P70/P79	SEOS	NEOS	3	DP	1141	1146	37	35	Y	P		X	DS	
14	P69/P71	SEOS	NEOS	2	DP	1152	1157	36	35	Y	P		X	DS	
15	P71/P79	SEOS	NEOS	3	DP	1151	1156	38	36	Y	P		X	DS	
16	P71/P78	SEOS	NEOS	4	DP	1151	1156	38	35	Y	P		X	DS	
17	P71/P77	NEOS	SEOS	1	DP	1104	1109	40	38	Y	P		X	DS	
18	P71/P76	SEOS	NEOS	2	DP	1104	1109	40	38	Y	P		X	DS	
19															
20															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER,
 OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF.PT.)

REVIEWED BY: AFK
 DATE: 2021-09-02



GEOMEMBRANE SEAM PRESSURE TEST LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

Date : 30-Jun-21
 Sheet Number 13

	SEAM, NUMBER	SEAM SECTION *		PRESS GAUGE NUMBER	TECH ID	TIME		PRESSURE		OBS. TEST	RESULTS PASS/P	SEAM COMPLETE		MON	REMARKS
		FROM	TO			START	FINISH	INITIAL	FINAL			NO	YES		
1	P71/P75	NEOS	SEOS	3	DP	1205	1210	40	38	Y	P		X	DS	
2	P71/P74	SEOS	NEOS	4	DP	1205	1210	40	37	Y	P		X	DS	
3	P71/P73	NEOS	SEOS	1	DP	1214	1219	36	35	Y	P		X	DS	
4	P71/P72	SEOS	NEOS	2	DP	1214	1219	39	37	Y	P		X	DS	
5	P72/P73	WEOS	EEOS	3	DP	1217	1222	40	39	Y	P		X	DS	
6	P70/P71	EEOS	WEOS	1	DP	1623	1628	40	37	Y	P		X	DS	
7	P70/P80	NEOS	SEOS	2	DP	1623	1631	40	37	Y	P		X	DS	
8															
9															
10															
11															
12															
13															
14															
15															
16															
17															
18															
19															
20															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF.PT.)

REVIEWED BY: AFK
 DATE: 2021-09-02



GEOMEMBRANE SEAM PRESSURE TEST LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

Date : 01-Jul-21
 Sheet Number 14

	SEAM, NUMBER	SEAM SECTION *		PRESS GAUGE NUMBER	TECH ID	TIME		PRESSURE		OBS. TEST	RESULTS PASS/P	SEAM COMPLETE		MON	REMARKS
		FROM	TO			START	FINISH	INITIAL	FINAL			NO	YES		
1	P100/P101	EEOS	WEOS	1	DP	1348	1353	41	39	Y	P		X	DS	
2	P96/P97	EEOS	WEOS	3	DP	1350	1355	40	38	Y	P		X	DS	
3	P95/P96	EEOS	WEOS	1	DP	1405	1410	40	39	Y	P		X	DS	
4	P94/P95	EEOS	WEOS	2	DP	1405	1410	40	39	Y	P		X	DS	
5	P93/P94	EEOS	WEOS	3	DP	1406	1411	41	40	Y	P		X	DS	
6	P92/P93	EEOS	WEOS	4	DP	1406	1411	41	40	Y	P		X	DS	
7	P91/P92	EEOS	WEOS	1	DP	1419	1424	41	40	Y	P		X	DS	
8	P90/P91	EEOS	WEOS	2	DP	1419	1424	39	38	Y	P		X	DS	
9	P88/P89	EEOS	WEOS	3	DP	1420	1425	45	45	Y	P		X	DS	
10	P27/P88	EEOS	WEOS	4	DP	1421	1426	38	36	Y	P		X	DS	
11															
12															
13															
14															
15															
16															
17															
18															
19															
20															

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REVIEWED BY: AFK
 DATE: 2021-09-02



GEOMEMBRANE SEAM PRESSURE TEST LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

Date : 02-Jul-21
 Sheet Number 15

	SEAM, NUMBER	SEAM SECTION *		PRESS GAUGE NUMBER	TECH ID	TIME		PRESSURE		OBS. TEST	RESULTS PASS/P	SEAM COMPLETE		MON	REMARKS
		FROM	TO			START	FINISH	INITIAL	FINAL			NO	YES		
1	P101/P104	EEOS	WEOS	1	DP	929	934	41	40	Y	P		X	DS	
2	P104/P105	EEOS	WEOS	2	DP	930	935	39	39	Y	P		X	DS	
3	P107/P108	EEOS	WEOS	1	DP	950	955	43	42	Y	P		X	DS	
4	P108/P109	EEOS	WEOS	2	DP	950	955	42	41	Y	P		X	DS	
5	P109/P110	EEOS	WEOS	3	DP	951	956	43	41	Y	P		X	DS	
6	P113/P114	SEOS	NEOS	4	DP	951	956	43	42	Y	P		X	DS	
7	P114/P115	SEOS	NEOS	1	DP	1003	1008	42	41	Y	P		X	DS	
8	P111/P112	EEOS	WEOS	3	DP	1004	1009	43	41	Y	P		X	DS	
9	P116/P117	SEOS	NEOS	4	DP	1004	1009	40	40	Y	P		X	DS	
10	P115/P116	SEOS	NEOS	1	DP	1013	1018	40	39	Y	P		X	DS	
11	P67/P88	NEOS	SEOS	1	DP	1030	1035	44	42	Y	P		X	DS	
12	P67/P89	SEOS	NEOS	2	DP	1030	1035	43	42	Y	P		X	DS	
13	P67/P90	NEOS	SEOS	3	DP	1031	1036	44	43	Y	P		X	DS	
14	P67/P91	SEOS	NEOS	4	DP	1031	1036	41	40	Y	P		X	DS	
15	P67/P92	NEOS	SEOS	2	DP	1042	1047	43	42	Y	P		X	DS	
16	P67/P93	SEOS	NEOS	3	DP	1042	1047	42	41	Y	P		X	DS	
17	P67/P94	NEOS	SEOS	1	DP	1045	1050	44	43	Y	P		X	DS	
18	P67/P95	SEOS	NEOS	2	DP	1045	1050	41	38	Y	P		X	DS	
19															
20															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER,
 OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF.PT.)

REVIEWED BY: AFK
 DATE: 2021-09-02



GEOMEMBRANE SEAM PRESSURE TEST LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

Date : 02-Jul-21
 Sheet Number 16

	SEAM, NUMBER	SEAM SECTION *		PRESS GAUGE NUMBER	TECH ID	TIME		PRESSURE		OBS. TEST	RESULTS PASS/P	SEAM COMPLETE		MON	REMARKS
		FROM	TO			START	FINISH	INITIAL	FINAL			NO	YES		
1	P67/P96	NEOS	SEOS	1	DP	1057	1102	33	30	Y	P		X	DS	
2	P67/P97	SEOS	NEOS	2	DP	1058	1103	40	38	Y	P		X	DS	
3	P67/P98	SEOS	NEOS	3	DP	1057	1102	36	33	Y	P		X	DS	
4	P98/P99	EEOS	WEOS	1	DP	1106	1111	42	41	Y	P		X	DS	
5	P99/P100	EEOS	WEOS	2	DP	1107	1112	42	41	Y	P		X	DS	
6	P67/P100	SEOS	NEOS	4	DP	1107	1112	37	34	Y	P		X	DS	
7	P67/P101	NEOS	SEOS	1	DP	1125	1130	35	33	Y	P		X	DS	
8	P67/P101	NEOS	SEOS	1	DP	1125	1130	35	33	Y	P		X	DS	
9	P67/P99	SEOS	NEOS	3	DP	1144	1149	38	35	Y	P		X	DS	
10	P112/P117	EEOS	WEOS	1	DP	1608	1613	44	43	Y	P		X	DS	
11	P112/P116	WEOS	EEOS	2	DP	1608	1613	42	41	Y	P		X	DS	
12	P111/P116	EEOS	WEOS	3	DP	1609	1614	44	43	Y	P		X	DS	
13	P111/P115	WEOS	EEOS	4	DP	1609	1614	42	31	Y	P		X	DS	
14	P110/P111	EEOS	WEOS	1	DP	1619	1624	40	39	Y	P		X	DS	
15	P110/P114	EEOS	WEOS	2	DP	1619	1624	42	42	Y	P		X	DS	
16	P110/P114	WEOS	WEOS	3	DP	1619	1624	36	34	Y	P		X	DS	
17	P67/P110	SEOS	NEOS	1	DP	1629	1634	44	44	Y	P		X	DS	
18	P67/P109	NEOS	SEOS	2	DP	1629	1634	43	41	Y	P		X	DS	
19	P67/P108	SEOS	NEOS	3	DP	1630	1635	41	40	Y	P		X	DS	
20															

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 OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF.PT.)

REVIEWED BY: AFK
 DATE: 2021-09-02



GEOMEMBRANE SEAM PRESSURE TEST LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

Date : 02-Jul-21
 Sheet Number 17

	SEAM, NUMBER	SEAM SECTION *		PRESS GAUGE NUMBER	TECH ID	TIME		PRESSURE		OBS. TEST	RESULTS PASS/P	SEAM COMPLETE		MON	REMARKS
		FROM	TO			START	FINISH	INITIAL	FINAL			NO	YES		
1	P67/P107	NEOS	SEOS	4	DP	1630	1635	43	41	Y	P		X	DS	
2	P67/P106	SEOS	NEOS	1	DP	1651	1656	43	41	Y	P		X	DS	
3	P105/P106	EEOS	9Q	2	DP	1643	1648	42	41	Y	P	X		DS	
4	P67/P105	NEOS	9S	2	DP	1651	1656	42	42	Y	P		X	DS	
5	P105/P106	9Q	WEOS	2	DP	1644	1649	43	40	Y	P		X	DS	
6	P67/P104	NEOS	SEOS	4	DP	1652	1657	36	35	Y	P		X	DS	
7	P71/P102	WEOS	EEOS	1	DP	1709	1714	40	38	Y	P		X	DS	
8	P69/P102	EEOS	WEOS	2	DP	1709	1714	39	36	Y	P		X	DS	
9	P68/P102	WEOS	EEOS	3	DP	1709	1714	40	38	Y	P		X	DS	
10	P102/P103	WEOS	EEOS	1	DP	1733	1738	41	39	Y	P		X	DS	
11	P67/P103	SEOS	NEOS	2	DP	1733	1738	44	42	Y	P		X	DS	
12	P67/P113	EEOS	WEOS	1	DP	1750	1755	41	40	Y	P		X	DS	
13	P103/P113	WEOS	EEOS	2	DP	1754	1759	45	44	Y	P		X	DS	
14	P106/P107	EEOS	WEOS	1	DP	1800	1805	42	40	Y	P		X	DS	
15															
16															
17															
18															
19															
20															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF.PT.)

REVIEWED BY: AFK
 DATE: 2021-09-02



GEOMEMBRANE SEAM PRESSURE TEST LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

Date : 03-Jul-21
 Sheet Number 18

	SEAM, NUMBER	SEAM SECTION *		PRESS GAUGE NUMBER	TECH ID	TIME		PRESSURE		OBS. TEST	RESULTS PASS/P	SEAM COMPLETE		MON	REMARKS
		FROM	TO			START	FINISH	INITIAL	FINAL			NO	YES		
1	P67/P102	NEOS	SEOS	1	JP	1149	1154	32	32	Y	P		X	DS	
2	P97/P98	EEOS	WEOS	1	JP	1207	1212	33	32	Y	P		X	DS	
3	P89/P90	10P	WEOS	1	JP	1233	1238	40	40	Y	P		X	DS	
4	P5/P118	EEOS	WEOS	1	JP	1249	1254	31	29	Y	P		X	DS	
5	P6/P119	WEOS	EEOS	2	JP	1249	1254	30	30	Y	P		X	DS	
6	P28/P124	14C	EEOS	1	JP	1255	1300	30	28	Y	P		X	DS	
7	P7/P120	14C	WEOS	1	JP	1301	1306	32	29	Y	P		X	DS	
8	P87/P118	NEOS	SEOS	1	JP	1312	1317	34	32	Y	P		X	DS	
9	P86/P118	SEOS	NEOS	2	JP	1312	1317	36	34	Y	P		X	DS	
10	P85/P118	10G	SEOS	3	JP	1322	1327	30	30	Y	P	X		DS	
11	P85/P118	10G	NEOS	4	JP	1315	1320	42	41	Y	P		X	DS	
12	P84/P118	NEOS	SEOS	1	JP	1320	1325	32	29	Y	P		X	DS	
13	P83/P118	SEOS	NEOS	2	JP	1320	1325	35	33	Y	P		X	DS	
14	P82/P118	NEOS	SEOS	1	JP	1330	1335	36	35	Y	P		X	DS	
15	P81/P118	SEOS	NEOS	2	JP	1330	1335	38	37	Y	P		X	DS	
16	P80/P118	NEOS	SEOS	3	JP	1330	1335	38	35	Y	P		X	DS	
17	P79/P118	SEOS	NEOS	4	JP	1330	1335	34	32	Y	P		X	DS	
18	P78/P118	NEOS	SEOS	1	JP	1343	1348	38	38	Y	P		X	DS	
19															
20															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER,
 OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF.PT.)

REVIEWED BY: AFK
 DATE: 2021-09-02



GEOMEMBRANE SEAM PRESSURE TEST LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

Date : 03-Jul-21
 Sheet Number 19

	SEAM, NUMBER	SEAM SECTION *		PRESS GAUGE NUMBER	TECH ID	TIME		PRESSURE		OBS. TEST	RESULTS PASS/P	SEAM COMPLETE		MON	REMARKS
		FROM	TO			START	FINISH	INITIAL	FINAL			NO	YES		
1	P75/P118	SEOS	NEOS	4	JP	1349	1354	37	35	Y	P		X	DS	
2	P73/P118	SEOS	NEOS	1	JP	1356	1401	40	38	Y	P		X	DS	
3	P72/P118	SEOS	NEOS	2	JP	1403	1408	38	36	Y	P		X	DS	
4	P77/P118	SEOS	NEOS	1	JP	1412	1417	33	32	Y	P		X	DS	
5	P76/P118	NEOS	SEOS	2	JP	1413	1418	34	32	Y	P		X	DS	
6	P74/P118	NEOS	SEOS	1	JP	1423	1428	42	41	Y	P		X	DS	
7	P118/P119	NEOS	SEOS	1	JP	1429	1434	43	42	Y	P		X	DS	
8	P119/P122	NEOS	SEOS	2	JP	1430	1435	44	43	Y	P		X	DS	
9	P122/P123	WEOS	EEOS	3	JP	1430	1435	42	41	Y	P		X	DS	
10	P119/P123	SEOS	NEOS	4	JP	1430	1435	44	43	Y	P		X	DS	
11	P123/P125	SEOS	NEOS	1	JP	1604	1609	45	45	Y	P		X	DS	
12	P124/P125	WEOS	EEOS	2	JP	1614	1619	44	44	Y	P		X	DS	
13	P124/P122	NEOS	SEOS	3	JP	1614	1619	42	41	Y	P		X	DS	
14	P121/P122	EEOS	WEOS	1	JP	1627	1632	33	31	Y	P		X	DS	
15	P121/P119	NEOS	9X	2	JP	1628	1633	45	45	Y	P	X		DS	
16	P121/P119	9X	SEOS	3	JP	1628	1633	38	37	Y	P		X	DS	
17	P121/P124	NEOS	SEOS	4	JP	1627	1632	48	46	Y	P		X	DS	
18	P120/P121	WEOS	EEOS	1	JP	1641	1646	41	40	Y	P		X	DS	
19	P119/P120	NEOS	SEOS	2	JP	1640	1645	45	44	Y	P		X	DS	
20															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF.PT.)

REVIEWED BY: AFK
 DATE: 2021-09-02



GEOMEMBRANE SEAM PRESSURE TEST LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

Date : 03-Jul-21
 Sheet Number 20

	SEAM, NUMBER	SEAM SECTION *		PRESS GAUGE NUMBER	TECH ID	TIME		PRESSURE		OBS. TEST	RESULTS PASS/P	SEAM COMPLETE		MON	REMARKS
		FROM	TO			START	FINISH	INITIAL	FINAL			NO	YES		
1	P122/125	14H	SEOS	1	JP	1716	1721	51	51	Y	P	X		DS	
2	P120/124	NEOS	12E	1	JP	1727	1732	41	40	Y	P	X			
3	P120/124	12E	SEOS	2	JP	1733	1738	31	29	Y	P		X		
4	P122/125	14A	12N	1	JP	1737	1742	58	57	Y	P	X			
5															
6															
7															
8															
9															
10															
11															
12															
13															
14															
15															
16															
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18															
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20															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF.PT.)

REVIEWED BY: AFK
 DATE: 2021-09-02



GEOMEMBRANE SEAM PRESSURE TEST LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

Date : 08-Jul-21
 Sheet Number 21

	SEAM, NUMBER	SEAM SECTION *		PRESS GAUGE NUMBER	TECH ID	TIME		PRESSURE		OBS. TEST	RESULTS PASS/P	SEAM COMPLETE		MON	REMARKS
		FROM	TO			START	FINISH	INITIAL	FINAL			NO	YES		
1	P131/132	EEOS	WEOS	1	JP	1559	1604	53	52	Y	P		X	AFK	
2	P72/132	EEOS	WEOS	2	JP	1600	1605	42	41	Y	P		X	AFK	
3	P131/128	EEOS	WEOS	1	JP	1607	1612	48	46	Y	P		X	DJ	
4	P128/127	EEOS	WEOS	2	JP	1611	1616	53	50	Y	P		X	DJ	
5	P126/129	EEOS	WEOS	1	JP	1619	1624	49	47	Y	P		X	DJ	
6															
7															
8															
9															
10															
11															
12															
13															
14															
15															
16															
17															
18															
19															
20															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF.PT.)

REVIEWED BY: AFK
 DATE: 2021-09-02



GEOMEMBRANE SEAM PRESSURE TEST LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

Date : 09-Jul-21
 Sheet Number 22

	SEAM, NUMBER	SEAM SECTION *		PRESS GAUGE NUMBER	TECH ID	TIME		PRESSURE		OBS. TEST	RESULTS PASS/P	SEAM COMPLETE		MON	REMARKS
		FROM	TO			START	FINISH	INITIAL	FINAL			NO	YES		
1	P119/126	SEOS	NEOS	1	JP	1244	1249	35	33	Y	P		X	AFK	
2	P119/127	SEOS	NEOS	2	JP	858	903	38	36	Y	P		X	AFK	
3	P119/128	SEOS	NEOS	3	JP	858	903	43	41	Y	P		X	AFK	
4	P119/131	NEOS	15H	4	JP	859	904	43	42	Y	P	X		AFK	
5	P118/131	EEOS	WEOS	1	JP	906	911	49	47	Y	P		X	AFK	
6	P119/139	WEOS	EEOS	1	JP	921	926	42	39	Y	P		X	AFK	
7	P119/129	NEOS	SEOS	2	JP	915	920	44	41	Y	P		X	AFK	
8	P138/139	SEOS	NEOS	1	JP	930	935	52	49	Y	P		X	AFK	
9	P118/132	NEOS	SEOS	1	JP	946	951	52	51	Y	P		X	AFK	
10	P102/132	NEOS	SEOS	1	JP	954	959	46	43	Y	P		X	AFK	
11	P102/131	EEOS	WEOS	1	JP	1019	1024	37	34	Y	P		X	AFK	
12	P103/131	NEOS	SEOS	2	JP	1020	1025	41	39	Y	P		X	AFK	
13	P103/128	NEOS	SEOS	3	JP	1020	1025	44	42	Y	P		X	AFK	
14	P127/128	WEOS	15	1	JP	1028	1033	50	49	Y	P	X		AFK	
15	P103/127	NEOS	SEOS	2	JP	1028	1033	41	39	Y	P		X	AFK	
16	P103/126	NEOS	SEOS	3	JP	1135	1140	48	45	Y	P		X	AFK	
17	P103/130	NEOS	SEOS	4	JP	1031	1036	38	36	Y	P		X	AFK	
18	P127/128	15R	15A	1	JP	1036	1041	48	47	Y	P			AFK	
19	P130/133	WEOS	EEOS	1	JP	1043	1048	44	43	Y	P		X	AFK	
20	P130/134	WEOS	EEOS	2	JP	1043	1048	36	35	Y	P		X	AFK	

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER,
 OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF.PT.)

REVIEWED BY: AFK
 DATE: 2021-09-02



GEOMEMBRANE SEAM PRESSURE TEST LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

Date : 09-Jul-21
 Sheet Number 23

	SEAM, NUMBER	SEAM SECTION *		PRESS GAUGE NUMBER	TECH ID	TIME		PRESSURE		OBS. TEST	RESULTS PASS/P	SEAM COMPLETE		MON	REMARKS
		FROM	TO			START	FINISH	INITIAL	FINAL			NO	YES		
1	P133/134	SEOS	NEOS	1	JP	1054	1059	48	46	Y	P		X	AFK	
2	P134/135	SEOS	15U	2	JP	1100	1105	52	51	Y	P	X		AFK	
3	P130/135	WEOS	EEOS	3	JP	1054	1059	42	40	Y	P		X	AFK	
4	P134/135	15U	NEOS	2	JP	1105	1110	43	42	Y	P		X	AFK	
5	P126/130	EEOS	WEOS	3	JP	1110	1115	31	30	Y	P		X	AFK	
6	P126/136	EEOS	WEOS	1	JP	1119	1124	48	48	Y	P		X	AFK	
7	P113/133	SEOS	NEOS	1	JP	1126	1131	41	39	Y	P		X	AFK	
8	P103/133	WEOS	EEOS	2	JP	1129	1134	33	31	Y	P		X	AFK	
9	P135/136	SEOS	NEOS	1	JP	1145	1150	54	51	Y	P		X	AFK	
10	P136/137	SEOS	15W	1	JP	1158	1203	47	45	Y	P	X		AFK	
11	P137/138	SEOS	15X	2	JP	1159	1204	40	39	Y	P	X		AFK	
12	P126/137	WEOS	EEOS	3	JP	1158	1203	33	32	Y	P		X	AFK	
13	P137/138	15X	NEOS	1	JP	1208	1213	44	42	Y	P		X	AFK	
14	P119/131	15H	WEOS	1	JP	1224	1229	40	38	Y	P		X	AFK	
15	P136/137	15W	NEOS	1	JP	1230	1235	50	48	Y	P		X	AFK	
16	P126/127	EEOS	WEOS	1	JP	1315	1320	56	54	Y	P		X	AFK	
17	P129/139	EEOS	WEOS	1	JP	828	833	42	42	Y	P		X	AFK	
18															
19															
20															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER,
 OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF.PT.)

REVIEWED BY: AFK
 DATE: 2021-09-02



GEOMEMBRANE SEAM PRESSURE TEST LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

Date : 12-Jul-21
 Sheet Number 24

	SEAM, NUMBER	SEAM SECTION *		PRESS GAUGE NUMBER	TECH ID	TIME		PRESSURE		OBS. TEST	RESULTS PASS/P	SEAM COMPLETE		MON	REMARKS
		FROM	TO			START	FINISH	INITIAL	FINAL			NO	YES		
1	P139/140	SEOS	NEOS	1	JP	1323	1328	48	46	Y	P		X	AB	
2	P140/141	SEOS	NEOS	2	JP	1328	1333	50	50	Y	P		X	AB	
3	P140/142	SEOS	NEOS	3	JP	1328	1333	53	53	Y	P		X	AB	
4	P141/142	EEOS	WEOS	1	JP	1333	1338	38	37	Y	P		X	AB	
5															
6															
7															
8															
9															
10															
11															
12															
13															
14															
15															
16															
17															
18															
19															
20															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF.PT.)

REVIEWED BY: AFK
 DATE: 2021-09-02

Appendix B-9

Geomembrane Defect Summary



GEOMEMBRANE DEFECT LOG

PROJECT NUMBER: 1000-089-03 PROJECT TITLE: Cell 16
 OWNER: Waste Connections of Canada CONTRACTOR: Titan Environmental
 LOCATION: Prairie Green IWMF MATERIAL: 60 mil HDPE

SHEET NUMBER 1

DEFECT CODE	SEAM, PANEL OR REPAIR NO.	DEFECT LOCATION		DEFECT TYPE	MON.	REMARKS	**	**
		DEFECT LOCATION DESCRIPTION					REPAIR DATE	TEST DATE
A	P2	4.6 m S of NEOP		D	DS		2021-06-23	2021-06-25
B	P2	3.3 m S of NEOP		D	DS		2021-06-23	2021-06-25
C	P2	3.6 m S of NEOP		D	DS		2021-06-23	2021-06-25
D	P2	2.7 m S of NEOP		D	DS		2021-06-23	2021-06-25
E	P2	1.6 m S of NEOP		D	DS		2021-06-23	2021-06-25
F	P2	0.9 m S of NEOP		D	DS		2021-06-30	2021-07-05
G	P2	1.3 m S of NEOP		D	DS		2021-06-23	2021-06-25
H	P4	27.8 m S of NEOP		D	DS		2021-06-23	2021-06-26
J	P3/4	55.0 m S of NEOS		D	DS		2021-06-23	2021-06-25
K	P1	17.8 m S of NEOP		D	DS		2021-06-24	2021-06-27
L	P5/6	33 m N of EEOS		IO	DS		2021-06-23	2021-06-25
M	P5/6	36 m N of EEOS		IO	DS		2021-06-23	2021-06-25
N	P5/6	46 m N of EEOS		IO	DS		2021-06-24	2021-06-25
P	P5/6	56.1 m N of EEOS		IO	DS		2021-06-24	2021-06-25
Q	P5/6	58.1 m N of EEOS		IO	DS		2021-06-24	2021-06-25
R	P5/6	74.1 m N of EEOS		IO	DS		2021-06-24	2021-06-25
S	P5/6	88.3 m N of EEOS		IO	DS		2021-06-24	2021-06-25
T	P5/6	103.6 m N of EEOS		IO	DS		2021-06-24	2021-06-25
U	S5/6	2 m W of EEOP		BO	DS		2021-06-25	2021-06-25
V	P28/ETT	1 m N of SEOP		INT	DS		2021-06-26	2021-06-27
W								
X								

AD- ANIMAL RELATED DAMAGE

B - UNDISPERSED RESIN BEAD

BO - FUSION WELDER BURN

CO - CHANGE OF OVERLAP

CR - CREASE

D - INSTALLATION DAMAGE

DS - # - DESTRUCTIVE TEST NUMBER

PT - PRESSURE TEST CUT

SI - SOIL SURFACE IRRECLARITY

WS - WELDER RESTART

INT - Intersection

WEOS - west end of seam

NEOS - north end of seam

EEOS - east end of seam

SEOS - south end of seam

SEOP - south end of panel

NEOP - north end of panel

WEOP - west end of panel

EEOP - east end of panel

EE - EARTHWORK EQUIPMENT DAMAGE

EXT - EXTENSION

FM - FISHMOUTH

FS - FAILED SEAM LENGTH

FTS - FIELD TEST STRIP

HT - HEAT TACK BURN

IO - INSUFFICIENT OVERLAP (UNDER SPEC)

MD - MAUFACTURER/DELIVERY DAMAGE

T - THREE PANEL INTERSECTION

WR - WRINKLE

REVIEWED BY: AFK

DATE: 02-Sep-21



GEOMEMBRANE DEFECT LOG

PROJECT NUMBER: 1000-089-03 PROJECT TITLE: Cell 16
 OWNER: Waste Connections of Canada CONTRACTOR: Titan Environmental
 LOCATION: Prairie Green IWMF MATERIAL: 60 mil HDPE

SHEET NUMBER 2

DEFECT CODE	DEFECT LOCATION		DEFECT TYPE	MON.	REMARKS	**	**
	SEAM,PANEL OR REPAIR NO.	DEFECT LOCATION DESCRIPTION				REPAIR DATE	TEST DATE
A	P5	1 m S of NEOP	D	AB		2021-06-26	2021-06-27
B	P5	1 m S of NEOP	D	AB		2021-06-26	2021-06-27
C	P5	3 m S of NEOP	D	AB		2021-06-26	2021-06-27
D	P5	3 m S of NEOP	D	AB		2021-06-26	2021-06-27
E	P1/8/9	Intersection	T	AB		2021-06-24	2021-06-25
F	P1/9/10	Intersection	T	AB		2021-06-24	2021-06-25
G	P1/10/11	Intersection	T	AB		2021-06-24	2021-06-25
H	P1/11/12	Intersection	T	AB		2021-06-24	2021-06-25
J	P1/12/13	Intersection	T	AB		2021-06-24	2021-06-25
K	P1/13/14	Intersection	T	AB		2021-06-24	2021-06-25
L	P1/14/15	Intersection	T	AB		2021-06-24	2021-06-25
M	P1/15/16	Intersection	T	AB		2021-06-24	2021-06-25
N	P1/16/17	Intersection	T	AB		2021-06-24	2021-06-25
P	P1/17/18	Intersection	T	AB		2021-06-24	2021-06-25
Q	P1/18/19	Intersection	T	AB		2021-06-24	2021-06-25
R	P1/19/20	Intersection	T	AB		2021-06-24	2021-06-25
S	P1/20/21	Intersection	T	AB		2021-06-24	2021-06-25
T	P1/21/22	Intersection	T	AB		2021-06-24	2021-06-25
U	P1/22/23	Intersection	T	AB		2021-06-24	2021-06-25
V	P1/23/24	Intersection	T	AB		2021-06-24	2021-06-25
W	P1/24/25	Intersection	T	AB		2021-06-24	2021-06-25
X	P1/25/26	Intersection	T	AB		2021-06-24	2021-06-25

AD- ANIMAL RELATED DAMAGE

B - UNDISPERSED RESIN BEAD

BO - FUSION WELDER BURN

CO - CHANGE OF OVERLAP

CR - CREASE

D - INSTALLATION DAMAGE

DS - # - DESTRUCTIVE TEST NUMBER

PT - PRESSURE TEST CUT

SI - SOIL SURFACE IRRECLARITY

WS - WELDER RESTART

INT - Intersection

WEOS - west end of seam

NEOS - north end of seam

EEOS - east end of seam

SEOS - south end of seam

SEOP - south end of panel

NEOP - north end of panel

WEOP - west end of panel

EEOP - east end of panel

EE - EARTHWORK EQUIPMENT DAMAGE

EXT - EXTENSION

FM - FISHMOUTH

FS - FAILED SEAM LENGTH

FTS - FIELD TEST STRIP

HT - HEAT TACK BURN

IO - INSUFFICIENT OVERLAP (UNDER SPEC)

MD - MAUFACTURER/DELIVERY DAMAGE

T - THREE PANEL INTERSECTION

WR - WRINKLE

REVIEWED BY: AFK

DATE: 02-Sep-21



GEOMEMBRANE DEFECT LOG

PROJECT NUMBER: 1000-089-03 PROJECT TITLE: Cell 16
 OWNER: Waste Connections of Canada CONTRACTOR: Titan Environmental
 LOCATION: Prairie Green IWMF MATERIAL: 60 mil HDPE

SHEET NUMBER 3

DEFECT CODE	SEAM,PANEL OR REPAIR NO.	DEFECT LOCATION		DEFECT TYPE	MON.	REMARKS	**	**
		DEFECT LOCATION DESCRIPTION					REPAIR DATE	TEST DATE
A	P3/4	10 m S of NEOS		DSF1	AFK		2021-06-23	2021-06-25
B	P4/5	24 m N of SEOS		DSF2	AFK		2021-06-23	2021-06-25
C	P6/7	14 m N of SEOS		DSF3	AFK		2021-06-23	2021-06-25
D	P3/4	80 m S of NEOS		FS	AFK		2021-06-23	2021-06-25
E	P9/10	1 m W of EEOS		DSF4	AFK		2021-06-24	2021-06-25
F	P14/15	5 m W of EEOS		DSF5	AFK		2021-06-24	2021-06-25
G	P6/7	3 m S of DSF3		DSF3B	AFK		2021-06-23	2021-06-25
H	P6/7	3 m N of DSF3		DSF3A	AFK		2021-06-23	2021-06-25
J	P6/7	6 m S of DSF3B		DSF3B1	AFK		2021-06-24	2021-06-25
K	P6/7	3 m N of DSF3		DSF3A	AFK		2021-06-24	2021-06-25
L	P19/20	10 m W of EEOS		DSF6	AFK		2021-06-24	2021-06-25
M	P24/25	10 m W of EEOS		DSF7	AFK		2021-06-24	2021-06-25
N	P1/23	2 m S of NEOS		DSF8	AFK		2021-06-24	2021-06-26
P	P26/27	15 m W of EEOS		IO	AFK		2021-06-24	2021-06-25
Q	P26/27	10 m W of EEOS		IO	AFK		2021-06-24	2021-06-25
R	P21/22	15 m W of EEOS		PT	AFK		2021-06-24	2021-06-25
S	P7/28	18 m N of SEOS		WR	AFK		2021-06-26	2021-06-26
T	P28/33	10 m N of SEOS		DSF9	AFK		2021-06-26	2021-06-26
U	SI	2 m S + 3 m W of NEOP		D	AFK		2021-06-25	2021-06-25
V	SI	2 m S + 1 m E of NEOP		D	AFK		2021-06-25	2021-06-25
W	P28/ETI	10 m S of NEOS		DSX-1	AFK		2021-06-26	2021-06-27
X	P45/46	2 m E of WEOS		DSF10	AFK		2021-06-26	2021-06-27

AD- ANIMAL RELATED DAMAGE

B - UNDISPERSED RESIN BEAD

BO - FUSION WELDER BURN

CO - CHANGE OF OVERLAP

CR - CREASE

D - INSTALLATION DAMAGE

DS - # - DESTRUCTIVE TEST NUMBER

PT - PRESSURE TEST CUT

SI - SOIL SURFACE IRRECLARITY

WS - WELDER RESTART

INT - Intersection

WEOS - west end of seam

NEOS - north end of seam

EEOS - east end of seam

SEOS - south end of seam

SEOP - south end of panel

NEOP - north end of panel

WEOP - west end of panel

EEOP - east end of panel

EE - EARTHWORK EQUIPMENT DAMAGE

EXT - EXTENSION

FM - FISHMOUTH

FS - FAILED SEAM LENGTH

FTS - FIELD TEST STRIP

HT - HEAT TACK BURN

IO - INSUFFICIENT OVERLAP (UNDER SPEC)

MD - MAUFACTURER/DELIVERY DAMAGE

T - THREE PANEL INTERSECTION

WR - WRINKLE

REVIEWED BY: AFK

DATE: 02-Sep-21



GEOMEMBRANE DEFECT LOG

PROJECT NUMBER: 1000-089-03 PROJECT TITLE: Cell 16
 OWNER: Waste Connections of Canada CONTRACTOR: Titan Environmental
 LOCATION: Prairie Green IWMF MATERIAL: 60 mil HDPE

SHEET NUMBER 4

DEFECT CODE	DEFECT LOCATION		DEFECT TYPE	MON.	REMARKS	**	**
	SEAM, PANEL OR REPAIR NO.	DEFECT LOCATION DESCRIPTION				REPAIR DATE	TEST DATE
A	P1/26/27	Intersection	T	AB		2021-06-24	2021-06-25
B	P5/6	55 m S of NEOP	D	AB		2021-06-25	2021-06-25
C	P7/28	42 m N of SEOP	BO	AB		2021-06-26	2021-06-27
D	P7/28	57 m N of SEOP	BO	AB		2021-06-26	2021-06-26
E	P28/29/30	Intersection	T	AB		2021-06-26	2021-06-27
F	P28/30/31	Intersection	T	AB		2021-06-26	2021-06-27
G	P28/31/32	Intersection	T	AB		2021-06-26	2021-06-26
H	P28/32/33	Intersection	T	AB		2021-06-26	2021-06-26
J	P28/33/34	Intersection	T	AB		2021-06-26	2021-06-26
K	P4/35/36	Intersection	T	AB		2021-06-26	2021-06-27
L	P4/36/37	Intersection	T	AB		2021-06-26	2021-06-27
M	P4/37/38	Intersection	T	AB		2021-06-26	2021-06-27
N	P4/38/39	Intersection	T	AB		2021-06-27	2021-06-27
P	P4/39/40	Intersection	T	AB		2021-06-26	2021-06-27
Q	P4/40/41	Intersection	T	AB		2021-06-26	2021-06-27
R	P4/41/42	Intersection	T	AB		2021-06-26	2021-06-27
S	P4/42/43	Intersection	T	AB		2021-06-26	2021-06-27
T	P4/43/44	Intersection	T	AB		2021-06-27	2021-06-27
U	P44	1 m E of WEOP	D	AB		2021-06-26	2021-06-27
V	P4/44/45	Intersection	T	AB		2021-06-26	2021-06-27
W	P4/45/46	Intersection	T	AB		2021-06-27	2021-06-27
X	P4/46/47	Intersection	T	AB		2021-06-26	2021-06-27

AD- ANIMAL RELATED DAMAGE

B - UNDISPERSED RESIN BEAD

BO - FUSION WELDER BURN

CO - CHANGE OF OVERLAP

CR - CREASE

D - INSTALLATION DAMAGE

DS - # - DESTRUCTIVE TEST NUMBER

PT - PRESSURE TEST CUT

SI - SOIL SURFACE IRRECLARITY

WS - WELDER RESTART

INT - Intersection

WEOS - west end of seam

NEOS - north end of seam

EEOS - east end of seam

SEOS - south end of seam

SEOP - south end of panel

NEOP - north end of panel

WEOP - west end of panel

EEOP - east end of panel

EE - EARTHWORK EQUIPMENT DAMAGE

EXT - EXTENSION

FM - FISHMOUTH

FS - FAILED SEAM LENGTH

FTS - FIELD TEST STRIP

HT - HEAT TACK BURN

IO - INSUFFICIENT OVERLAP (UNDER SPEC)

MD - MAUFACTURER/DELIVERY DAMAGE

T - THREE PANEL INTERSECTION

WR - WRINKLE

REVIEWED BY: AFK

DATE: 02-Sep-21



GEOMEMBRANE DEFECT LOG

PROJECT NUMBER: 1000-089-03 PROJECT TITLE: Cell 16
 OWNER: Waste Connections of Canada CONTRACTOR: Titan Environmental
 LOCATION: Prairie Green IWMF MATERIAL: 60 mil HDPE

SHEET NUMBER 5

DEFECT CODE	DEFECT LOCATION		DEFECT TYPE	MON.	REMARKS	**	**
	SEAM, PANEL OR REPAIR NO.	DEFECT LOCATION DESCRIPTION				REPAIR DATE	TEST DATE
A	P46/47	3 m E of WEOS	BO	AFK		2021-06-26	2021-06-27
B	P33/34/ETI	Intersection	PT	AFK		2021-06-26	2021-06-26
C	P33/ETI	1 m N of SEOS	BO	AFK		2021-06-26	2021-06-26
D	P34/ETI	5 m S of NEOS	D	AFK		2021-06-26	2021-06-26
E	P34/ETI	4 m N of SEOS	D	AFK		2021-06-26	2021-06-26
F	P5/35/36	Intersection	T	AFK		2021-06-26	2021-06-27
G	P5/36/37	Intersection	T	AFK		2021-06-26	2021-06-27
H	P5/37/38	Intersection	T	AFK		2021-06-26	2021-06-27
J	P5/38/39	Intersection	T	AFK		2021-06-26	2021-06-27
K	P5/39/40	Intersection	T	AFK		2021-06-26	2021-06-27
L	P5/40/41	Intersection	T	AFK		2021-06-26	2021-06-27
M	P5/41/42	Intersection	T	AFK		2021-06-26	2021-06-27
N	P5/42/43	Intersection	T	AFK		2021-06-26	2021-06-27
P	P5/43/44	Intersection	T	AFK		2021-06-26	2021-06-27
Q	P5/44/45	Intersection	T	AFK		2021-06-26	2021-06-27
R	P5/45/46	Intersection	T	AFK		2021-06-26	2021-06-27
S	P5/46/47	Intersection	T	AFK		2021-06-26	2021-06-27
T	P5/47/48	Intersection	T	AFK		2021-06-26	2021-06-27
U	P5/48/49	Intersection	T	AFK		2021-06-26	2021-06-27
V	P5/49/50	Intersection	T	AFK		2021-06-26	2021-06-27
W	P5/50/51	Intersection	T	AFK		2021-06-26	2021-06-27
X	P5/51/52	Intersection	T	AFK		2021-06-26	2021-06-27

AD- ANIMAL RELATED DAMAGE

B - UNDISPERSED RESIN BEAD

BO - FUSION WELDER BURN

CO - CHANGE OF OVERLAP

CR - CREASE

D - INSTALLATION DAMAGE

DS - # - DESTRUCTIVE TEST NUMBER

PT - PRESSURE TEST CUT

SI - SOIL SURFACE IRRECLARITY

WS - WELDER RESTART

INT - Intersection

WEOS - west end of seam

NEOS - north end of seam

EEOS - east end of seam

SEOS - south end of seam

SEOP - south end of panel

NEOP - north end of panel

WEOP - west end of panel

EEOP - east end of panel

EE - EARTHWORK EQUIPMENT DAMAGE

EXT - EXTENSION

FM - FISHMOUTH

FS - FAILED SEAM LENGTH

FTS - FIELD TEST STRIP

HT - HEAT TACK BURN

IO - INSUFFICIENT OVERLAP (UNDER SPEC)

MD - MAUFACTURER/DELIVERY DAMAGE

T - THREE PANEL INTERSECTION

WR - WRINKLE

REVIEWED BY: AFK

DATE: 02-Sep-21



GEOMEMBRANE DEFECT LOG

PROJECT NUMBER: 1000-089-03 PROJECT TITLE: Cell 16
 OWNER: Waste Connections of Canada CONTRACTOR: Titan Environmental
 LOCATION: Prairie Green IWMF MATERIAL: 60 mil HDPE

SHEET NUMBER 6

DEFECT CODE	DEFECT LOCATION		DEFECT TYPE	MON.	REMARKS	**	**
	SEAM, PANEL OR REPAIR NO.	DEFECT LOCATION DESCRIPTION				REPAIR DATE	TEST DATE
A	P4/49/50	Intersection	T	AB		2021-06-26	2021-06-27
B	P4/50/51	Intersection	T	AB		2021-06-26	2021-06-27
C	P4/51/52	Intersection	T	AB		2021-06-26	2021-06-27
D	P4/52/53	Intersection	T	AB		2021-06-26	2021-06-27
E	P4/51/52	Intersection	T	AB		2021-06-26	2021-06-27
F	P4/52/53	Intersection	T	AB		2021-06-26	2021-06-27
G	P4/53/54	Intersection	T	AB		2021-06-26	2021-06-27
H	P28/55/OLD	Intersection	T	AB		2021-06-26	2021-06-27
J	P28/34/55	Intersection	T	AB		2021-06-27	2021-06-27
K	P28/55/56	Intersection	T	AB		2021-06-27	2021-06-27
L	P7/28/56	Intersection	T	AB		2021-06-27	2021-06-27
M	P7/56/57	Intersection	T	AB		2021-06-27	2021-06-27
N	P6/7/57	Intersection	T	AB		2021-06-27	2021-06-27
P	P6/7/58	Intersection	T	AB		2021-06-27	2021-06-27
Q	P5/6/58	Intersection	T	AB		2021-06-27	2021-06-27
R	P5/58/59	Intersection	T	AB		2021-06-27	2021-06-27
S	P5/54/59	Intersection	T	AB		2021-06-27	2021-06-27
T	P54/59/60	Intersection	T	AB		2021-06-27	2021-06-27
U	P4/54/60	Intersection	T	AB		2021-06-27	2021-06-27
V	P4/60/61	Intersection	T	AB		2021-06-27	2021-06-27
W	P3/4/61	Intersection	T	AB		2021-06-27	2021-06-27
X	P3/61/62	Intersection	T	AB		2021-06-27	2021-06-27

AD- ANIMAL RELATED DAMAGE

B - UNDISPERSED RESIN BEAD

BO - FUSION WELDER BURN

CO - CHANGE OF OVERLAP

CR - CREASE

D - INSTALLATION DAMAGE

DS - # - DESTRUCTIVE TEST NUMBER

PT - PRESSURE TEST CUT

SI - SOIL SURFACE IRRECLARITY

WS - WELDER RESTART

INT - Intersection

WEOS - west end of seam

NEOS - north end of seam

EEOS - east end of seam

SEOS - south end of seam

SEOP - south end of panel

NEOP - north end of panel

WEOP - west end of panel

EEOP - east end of panel

EE - EARTHWORK EQUIPMENT DAMAGE

EXT - EXTENSION

FM - FISHMOUTH

FS - FAILED SEAM LENGTH

FTS - FIELD TEST STRIP

HT - HEAT TACK BURN

IO - INSUFFICIENT OVERLAP (UNDER SPEC)

MD - MAUFACTURER/DELIVERY DAMAGE

T - THREE PANEL INTERSECTION

WR - WRINKLE

REVIEWED BY: AFK

DATE: 02-Sep-21



GEOMEMBRANE DEFECT LOG

PROJECT NUMBER: 1000-089-03 PROJECT TITLE: Cell 16
 OWNER: Waste Connections of Canada CONTRACTOR: Titan Environmental
 LOCATION: Prairie Green IWMF MATERIAL: 60 mil HDPE

SHEET NUMBER 7

DEFECT CODE	DEFECT LOCATION		DEFECT TYPE	MON.	REMARKS	**	**
	SEAM, PANEL OR REPAIR NO.	DEFECT LOCATION DESCRIPTION				REPAIR DATE	TEST DATE
A	P2/3/62	Intersection	T	AB		2021-06-27	2021-06-27
B	P2/62/63	Intersection	T	AB		2021-06-27	2021-06-27
C	P1/2/63	Intersection	T	AB		2021-06-27	2021-06-27
D	P1/63/64	Intersection	T	AB		2021-06-27	2021-06-27
E	P1/8/64	Intersection	T	AB		2021-06-26	2021-06-27
F	P64/65/66	Intersection	T	AB		2021-06-27	2021-06-27
G	P71/72/73	Intersection	T	AB		2021-06-30	2021-07-05
H	P71/72/73	Intersection	T	AB		2021-06-30	2021-07-05
J	P71/74/75	Intersection	T	AB		2021-06-30	2021-07-05
K	P71/75/76	Intersection	T	AB		2021-06-30	2021-07-05
L	P71/76/77	Intersection	T	AB		2021-06-30	2021-07-05
M	P71/77/78	Intersection	T	AB		2021-06-30	2021-07-05
N	P71/78/79	Intersection	T	AB		2021-06-30	2021-07-05
P	P70/80/81	Intersection	T	AB		2021-06-30	2021-07-05
Q	P70/81/82	Intersection	T	AB		2021-06-30	2021-07-05
R	P70/82/83	Intersection	T	AB		2021-06-30	2021-07-05
S	P70/83/84	Intersection	T	AB		2021-06-30	2021-07-05
T	P70/84/85	Intersection	T	AB		2021-06-30	2021-07-05
U	P70/85/86	Intersection	T	AB		2021-06-30	2021-07-05
V	P70/86/87	Intersection	T	AB		2021-06-30	2021-07-05
W	P4/70/87	Intersection	T	AB		2021-06-30	2021-07-05
X	P4/36/87	Intersection and Seam	T	AB		2021-06-30	2021-07-05

AD- ANIMAL RELATED DAMAGE

B - UNDISPERSED RESIN BEAD

BO - FUSION WELDER BURN

CO - CHANGE OF OVERLAP

CR - CREASE

D - INSTALLATION DAMAGE

DS - # - DESTRUCTIVE TEST NUMBER

PT - PRESSURE TEST CUT

SI - SOIL SURFACE IRRECLARITY

WS - WELDER RESTART

INT - Intersection

WEOS - west end of seam

NEOS - north end of seam

EEOS - east end of seam

SEOS - south end of seam

SEOP - south end of panel

NEOP - north end of panel

WEOP - west end of panel

EEOP - east end of panel

EE - EARTHWORK EQUIPMENT DAMAGE

EXT - EXTENSION

FM - FISHMOUTH

FS - FAILED SEAM LENGTH

FTS - FIELD TEST STRIP

HT - HEAT TACK BURN

IO - INSUFFICIENT OVERLAP (UNDER SPEC)

MD - MAUFACTURER/DELIVERY DAMAGE

T - THREE PANEL INTERSECTION

WR - WRINKLE

REVIEWED BY: AFK

DATE: 02-Sep-21



GEOMEMBRANE DEFECT LOG

PROJECT NUMBER: 1000-089-03 PROJECT TITLE: Cell 16
 OWNER: Waste Connections of Canada CONTRACTOR: Titan Environmental
 LOCATION: Prairie Green IWMF MATERIAL: 60 mil HDPE

SHEET NUMBER 8

DEFECT CODE	SEAM,PANEL OR REPAIR NO.	DEFECT LOCATION			REMARKS	**	**
		DEFECT LOCATION DESCRIPTION	DEFECT TYPE	MON.		REPAIR DATE	TEST DATE
A	P5/52/53	Intersection	T	AFK		2021-06-26	2021-06-27
B	P5/53/54	Intersection	T	AFK		2021-06-26	2021-06-27
C	P5/41	2 m N of SEOS	DSF11	AFK		2021-06-26	2021-06-27
D	P33/ETI	3 m N of SEOS	D	AFK		2021-06-26	2021-06-27
E	P5/39	3 m N of SEOS	BO	AFK		2021-06-26	2021-06-27
F	P42/43	4 m W of EEOS	BO	AFK		2021-06-26	2021-06-27
G	P8/65	12 m E of WEOS	DSF12	AFK		2021-06-26	2021-06-27
H	P4/60	2 m W of EEOS	BO	AFK		2021-06-26	2021-06-27
J	P55/ETI	5 m N of SEOS	IO	AFK		2021-06-26	2021-06-27
K	P65/66	3 m W of EEOS	WR	AFK		2021-06-26	2021-06-27
L	P8/65	10 m E of WEOS	BO	AFK		2021-06-26	2021-06-27
M	P8/64/65	Intersection	WR	AFK		2021-06-26	2021-06-27
N	P8	2 m S + 4 m W of EEOP	WR	AFK		2021-06-26	2021-06-27
P	P7	1 m W + 2 m N of SEOP	WR	AFK		2021-06-26	2021-06-27
Q	P4/52	4 m S of NEOS	DSX2	AFK		2021-06-27	2021-06-27
R	P5/41	2 m S of NEOS	DSF11A	AFK		2021-06-27	2021-06-27
S	P5/42	2 m S of NEOS	DSF11B	AFK		2021-06-27	2021-06-27
T	P8/65	4 m W of DSF12	DSF12B	AFK		2021-06-27	2021-06-27
U	P8/65	3 m E of DSF12	DSF12A	AFK		2021-06-27	2021-06-27
V	P45/46	1 m W of EEOS	DSF10A	AFK		2021-06-27	2021-06-27
W	P44/45	3 m W of EEOS	DSF10B	AFK		2021-06-27	2021-06-27
X							

AD- ANIMAL RELATED DAMAGE

B - UNDISPERSED RESIN BEAD

BO - FUSION WELDER BURN

CO - CHANGE OF OVERLAP

CR - CREASE

D - INSTALLATION DAMAGE

DS - # - DESTRUCTIVE TEST NUMBER

PT - PRESSURE TEST CUT

SI - SOIL SURFACE IRRECLARITY

WS - WELDER RESTART

INT - Intersection

WEOS - west end of seam

NEOS - north end of seam

EEOS - east end of seam

SEOS - south end of seam

SEOP - south end of panel

NEOP - north end of panel

WEOP - west end of panel

EEOP - east end of panel

EE - EARTHWORK EQUIPMENT DAMAGE

EXT - EXTENSION

FM - FISHMOUTH

FS - FAILED SEAM LENGTH

FTS - FIELD TEST STRIP

HT - HEAT TACK BURN

IO - INSUFFICIENT OVERLAP (UNDER SPEC)

MD - MAUFACTURER/DELIVERY DAMAGE

T - THREE PANEL INTERSECTION

WR - WRINKLE

REVIEWED BY: AFK

DATE: 02-Sep-21



GEOMEMBRANE DEFECT LOG

PROJECT NUMBER: 1000-089-03 PROJECT TITLE: Cell 16
 OWNER: Waste Connections of Canada CONTRACTOR: Titan Environmental
 LOCATION: Prairie Green IWMF MATERIAL: 60 mil HDPE

SHEET NUMBER 9

DEFECT CODE	DEFECT LOCATION		DEFECT TYPE	MON.	REMARKS	**	**
	SEAM,PANEL OR REPAIR NO.	DEFECT LOCATION DESCRIPTION				REPAIR DATE	TEST DATE
A	P69/70/71	Intersection	T	AFK		2021-06-30	2021-07-05
B	P69/70/71	2 m N of SEOS	DSF13	AFK		2021-06-30	2021-07-05
C	P72/73	4 m E of WEOS	DSF14	AFK		2021-06-30	2021-07-05
D	P71/77	2 m S of NEOS	DSF15	AFK		2021-06-30	2021-07-05
E	P70/71/79	Intersection	BO	AFK		2021-06-30	2021-07-05
F	P70/79/80	Intersection	BO	AFK		2021-06-30	2021-07-05
G	P2/68	2 m E of WEOS	IO	AFK		2021-06-30	2021-07-05
H	P69/70/71	1 m N + 4 m E of WEOS	D	AFK		2021-06-30	2021-07-05
J	P94/95	10 m W of EEOS	DSF16	AFK		2021-07-03	2021-07-05
K	P105/106	4 m W of EEOS	DSF17	AFK		2021-07-03	2021-07-05
L	P67/102/103	Intersection	T	AFK		2021-07-03	2021-07-05
M	P67/68/102	Intersection	T	AFK		2021-07-03	2021-07-05
N	P106/101	20 m W of EEOS	DSF18	AFK		2021-07-03	2021-07-05
P	P67/88	2 m N of SEOS	IO	AFK		2021-07-02	2021-07-05
Q	P105/106	20 m W of EEOS	IO	AFK		2021-07-03	2021-07-05
R	P74	.5 m N + 4 m E of WEOP	D	AFK		2021-07-03	2021-07-05
S	P67/105	3 m N of SEOS	WR	AFK		2021-07-02	2021-07-05
T	P67/105	2 m S of NEOS	IO	AFK		2021-07-02	2021-07-05
U	P98/99	2 m E of WEOS	PT	AFK		2021-07-02	2021-07-05
V	P67/99	3 m S of NEOS	BO	AFK		2021-07-02	2021-07-05
W	P112/117	WEOS	IO	AFK		2021-07-02	2021-07-05
X	P119/121	4 m S of NEOS	BO	AFK		2021-07-03	2021-07-05

AD- ANIMAL RELATED DAMAGE

B - UNDISPERSED RESIN BEAD

BO - FUSION WELDER BURN

CO - CHANGE OF OVERLAP

CR - CREASE

D - INSTALLATION DAMAGE

DS - # - DESTRUCTIVE TEST NUMBER

PT - PRESSURE TEST CUT

SI - SOIL SURFACE IRRECLARITY

WS - WELDER RESTART

INT - Intersection

WEOS - west end of seam

NEOS - north end of seam

EEOS - east end of seam

SEOS - south end of seam

SEOP - south end of panel

NEOP - north end of panel

WEOP - west end of panel

EEOP - east end of panel

EE - EARTHWORK EQUIPMENT DAMAGE

EXT - EXTENSION

FM - FISHMOUTH

FS - FAILED SEAM LENGTH

FTS - FIELD TEST STRIP

HT - HEAT TACK BURN

IO - INSUFFICIENT OVERLAP (UNDER SPEC)

MD - MAUFACTURER/DELIVERY DAMAGE

T - THREE PANEL INTERSECTION

WR - WRINKLE

REVIEWED BY: AFK

DATE: 02-Sep-21



GEOMEMBRANE DEFECT LOG

PROJECT NUMBER: 1000-089-03 PROJECT TITLE: Cell 16
 OWNER: Waste Connections of Canada CONTRACTOR: Titan Environmental
 LOCATION: Prairie Green IWMF MATERIAL: 60 mil HDPE

SHEET NUMBER 10

DEFECT CODE	DEFECT LOCATION		DEFECT TYPE	MON.	REMARKS	**	**
	SEAM, PANEL OR REPAIR NO.	DEFECT LOCATION DESCRIPTION				REPAIR DATE	TEST DATE
A	P1/27/67	Intersection	T	DS		2021-07-02	2021-07-05
B	P1/67/68	Intersection	T	DS		2021-06-30	2021-07-05
C	P1/2/68	Intersection	T	DS		2021-06-30	2021-07-05
D	P2/68/69	Intersection	T	DS		2021-06-30	2021-07-05
E	P2/3/69	Intersection	T	DS		2021-06-30	2021-07-05
F	P3/69/70	Intersection	T	DS		2021-06-30	2021-07-05
G	P3/4/70	Intersection	T	DS		2021-06-30	2021-07-05
H	P67/113/114	Intersection	T	DS		2021-07-03	2021-07-05
J	P110/114/115	Intersection	T	DS		2021-07-02	2021-07-05
K	P111/115/116	Intersection	T	DS		2021-07-02	2021-07-05
L	P112/116/117	Intersection	T	DS		2021-07-02	2021-07-05
M	P67/103/113	Intersection	T	DS		2021-07-02	2021-07-05
N	P89/90	5 m W of EEOS	IO	DS		2021-07-03	2021-07-05
P	P85/118	1 m S of NEOS	P	DS		2021-07-03	2021-07-05
Q							
R							
S							
T							
U							
V							
W							
X							

AD- ANIMAL RELATED DAMAGE

B - UNDISPERSED RESIN BEAD

BO - FUSION WELDER BURN

CO - CHANGE OF OVERLAP

CR - CREASE

D - INSTALLATION DAMAGE

DS - # - DESTRUCTIVE TEST NUMBER

PT - PRESSURE TEST CUT

SI - SOIL SURFACE IRRECLARITY

WS - WELDER RESTART

INT - Intersection

WEOS - west end of seam

NEOS - north end of seam

EEOS - east end of seam

SEOS - south end of seam

SEOP - south end of panel

NEOP - north end of panel

WEOP - west end of panel

EEOP - east end of panel

EE - EARTHWORK EQUIPMENT DAMAGE

EXT - EXTENSION

FM - FISHMOUTH

FS - FAILED SEAM LENGTH

FTS - FIELD TEST STRIP

HT - HEAT TACK BURN

IO - INSUFFICIENT OVERLAP (UNDER SPEC)

MD - MAUFACTURER/DELIVERY DAMAGE

T - THREE PANEL INTERSECTION

WR - WRINKLE

REVIEWED BY: AFK

DATE: 02-Sep-21



GEOMEMBRANE DEFECT LOG

PROJECT NUMBER: 1000-089-03 PROJECT TITLE: Cell 16
 OWNER: Waste Connections of Canada CONTRACTOR: Titan Environmental
 LOCATION: Prairie Green IWMF MATERIAL: 60 mil HDPE

SHEET NUMBER 11

DEFECT CODE	DEFECT LOCATION		DEFECT TYPE	MON.	REMARKS	**	**
	SEAM, PANEL OR REPAIR NO.	DEFECT LOCATION DESCRIPTION				REPAIR DATE	TEST DATE
A	P27/88/67	Intersection	T	AFK		2021-07-02	2021-07-05
B	P67/88/89	Intersection	T	AFK		2021-07-02	2021-07-05
C	P67/89/90	Intersection	T	AFK		2021-07-03	2021-07-05
D	P67/90/91	Intersection	T	AFK		2021-07-02	2021-07-05
E	P67/91/92	Intersection	T	AFK		2021-07-02	2021-07-05
F	P67/92/93	Intersection	T	AFK		2021-07-02	2021-07-05
G	P67/93/94	Intersection	T	AFK		2021-07-02	2021-07-05
H	P67/94/95	Intersection	T	AFK		2021-07-02	2021-07-05
J	P67/95/96	Intersection	T	AFK		2021-07-02	2021-07-05
K	P67/96/97	Intersection	T	AFK		2021-07-02	2021-07-05
L	P67/97/98	Intersection	T	AFK		2021-07-03	2021-07-05
M	P67/98/99	Intersection	T	AFK		2021-07-02	2021-07-05
N	P67/99/100	Intersection	T	AFK		2021-07-02	2021-07-05
P	P67/100/101	Intersection	T	AFK		2021-07-02	2021-07-05
Q	P67/101/104	Intersection	T	AFK		2021-07-02	2021-07-05
R	P67/104/105	Intersection	T	AFK		2021-07-02	2021-07-05
S	P67/105/106	Intersection	T	AFK		2021-07-02	2021-07-05
T	P67/106/107	Intersection	T	AFK		2021-07-02	2021-07-05
U	P67/107/108	Intersection	T	AFK		2021-07-02	2021-07-05
V	P67/108/109	Intersection	T	AFK		2021-07-02	2021-07-05
W	P67/109/110	Intersection	T	AFK		2021-07-02	2021-07-05
X	P67/110/114	Intersection	T	AFK		2021-07-02	2021-07-05

AD- ANIMAL RELATED DAMAGE

B - UNDISPERSED RESIN BEAD

BO - FUSION WELDER BURN

CO - CHANGE OF OVERLAP

CR - CREASE

D - INSTALLATION DAMAGE

DS - # - DESTRUCTIVE TEST NUMBER

PT - PRESSURE TEST CUT

SI - SOIL SURFACE IRRECLARITY

WS - WELDER RESTART

INT - Intersection

WEOS - west end of seam

NEOS - north end of seam

EEOS - east end of seam

SEOS - south end of seam

SEOP - south end of panel

NEOP - north end of panel

WEOP - west end of panel

EEOP - east end of panel

EE - EARTHWORK EQUIPMENT DAMAGE

EXT - EXTENSION

FM - FISHMOUTH

FS - FAILED SEAM LENGTH

FTS - FIELD TEST STRIP

HT - HEAT TACK BURN

IO - INSUFFICIENT OVERLAP (UNDER SPEC)

MD - MAUFACTURER/DELIVERY DAMAGE

T - THREE PANEL INTERSECTION

WR - WRINKLE

REVIEWED BY: AFK

DATE: 02-Sep-21



GEOMEMBRANE DEFECT LOG

PROJECT NUMBER: 1000-089-03 PROJECT TITLE: Cell 16
 OWNER: Waste Connections of Canada CONTRACTOR: Titan Environmental
 LOCATION: Prairie Green IWMF MATERIAL: 60 mil HDPE

SHEET NUMBER 12

DEFECT CODE	DEFECT LOCATION		DEFECT TYPE	MON.	REMARKS	**	**
	SEAM, PANEL OR REPAIR NO.	DEFECT LOCATION DESCRIPTION				REPAIR DATE	TEST DATE
A	P119/120/121	Intersection	T	AFK		2021-07-03	2021-07-05
B	P119/121/122	Intersection	T	AFK		2021-07-03	2021-07-05
C	P119/122/133	Intersection	T	AFK		2021-07-03	2021-07-05
D	P67/108	3 m N of SEOS	IO	AFK		2021-07-02	2021-07-05
E	P120/124	20 m N of SEOS	DSF20	AFK		2021-07-03	2021-07-05
F	P119/122/133	4 m S of NEOS	DSF19	AFK		2021-07-03	2021-07-05
G	P5/35/87	Intersection	T	AFK		2021-07-03	2021-07-05
H	P124/146	8 m N of SEOS	DSX3	AFK		2021-07-03	2021-07-05
J	P124/ETI	73 m N of SEOS	D	AFK		2021-07-03	2021-07-05
K	P124/ETI	70 m N of SEOS	DSX4	AFK		2021-07-03	2021-07-05
L	P125/ETI	10 m N of SEOS	IO	AFK		2021-07-03	2021-07-05
M	P125/ETI	12m N of SEOS	D	AFK		2021-07-03	2021-07-05
N	P122/125	12 m S of NEOS	IO	AFK		2021-07-05	2021-07-05
P	S29/30	12 m S of NEOS	IO	AFK		2021-07-05	2021-07-05
Q	S30/31/32	Intersection	T	AFK		2021-07-05	2021-07-05
R	S31/32/33	Intersection	T	AFK		2021-07-05	2021-07-05
S							
T							
U							
V							
W							
X							

AD- ANIMAL RELATED DAMAGE

B - UNDISPERSED RESIN BEAD

BO - FUSION WELDER BURN

CO - CHANGE OF OVERLAP

CR - CREASE

D - INSTALLATION DAMAGE

DS - # - DESTRUCTIVE TEST NUMBER

PT - PRESSURE TEST CUT

SI - SOIL SURFACE IRRECLARITY

WS - WELDER RESTART

INT - Intersection

WEOS - west end of seam

NEOS - north end of seam

EEOS - east end of seam

SEOS - south end of seam

SEOP - south end of panel

NEOP - north end of panel

WEOP - west end of panel

EEOP - east end of panel

EE - EARTHWORK EQUIPMENT DAMAGE

EXT - EXTENSION

FM - FISHMOUTH

FS - FAILED SEAM LENGTH

FTS - FIELD TEST STRIP

HT - HEAT TACK BURN

IO - INSUFFICIENT OVERLAP (UNDER SPEC)

MD - MAUFACTURER/DELIVERY DAMAGE

T - THREE PANEL INTERSECTION

WR - WRINKLE

REVIEWED BY: AFK

DATE: 02-Sep-21

Appendix B-10

Geomembrane Repair Summary



GEOMEMBRANE REPAIR LOG

PROJECT NUMBER: 1000-089-03

PROJECT TITLE: Cell 16

OWNER: Waste Connections

CONTRACTOR: Titan Environmental

LOCATION: Prairie Green IWMF

MACHINE NUMBER EXT-35

DATE June 27,2021

SHEET NUMBER 10

NO.	TIME	TECH. ID
TX-13	8:15	RN

	DEFECT CODE	REPAIR DATE	APPROX. TIME	REPAIR TYPE	APPROX. DIMENSION	WELD TECH.	MON.	REMARKS
1	8R	6/27/21	12:25	P	1.0 X 2.0	RN	AFK	
2	8W	6/27/21	12:30	P	1.0 X 2.0	RN	AFK	DSF-10B
3	8X	6/27/21	12:40	P	1.0 X 2.0	RN	AFK	DSF-12B
4	8U	6/27/21	12:50	P	1.0 X 2.0	RN	AFK	DSF-12A
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								

REPAIR TYPE :

RS - RECONSTRUCTED SEAM

G & W - GRIND WELD

P - PATCH

C - CAP

REVIEWED BY: AFK DATE: August 26,2021



GEOMEMBRANE REPAIR LOG

PROJECT NUMBER: 1000-089-03

PROJECT TITLE: Cell 16

OWNER: Waste Connections

CONTRACTOR: Titan Environmental

LOCATION: Prairie Green IWMF

MACHINE NUMBER EXT-9

DATE June 30,2021

SHEET NUMBER 12

NO.	TIME	TECH. ID
TX-9	14:00	RN

	DEFECT CODE	REPAIR DATE	APPROX. TIME	REPAIR TYPE	APPROX. DIMENSION	WELD TECH.	MON.	REMARKS
1	9C	6/30/21	15:20	P	1.0 X 2.0	RN	AFK	
2	9A	6/30/21	15:15	G & W	0.4	RN	AFK	
3	9D	6/30/21	15:25	P	1.0 X 2.0	RN	AFK	
4	9B	6/30/21	15:47	P	1.0 X 2.0	RN	AFK	
5	9E	6/30/21	15:50	G & W	0.4	RN	AFK	
6	9F	6/30/21	15:55	G & W	0.4	RN	AFK	
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								

REPAIR TYPE :

RS - RECONSTRUCTED SEAM

G & W - GRIND WELD

P - PATCH

C - CAP

REVIEWED BY: AFK DATE: August 26,2021



GEOMEMBRANE REPAIR LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental

MACHINE NUMBER EXT-5

NO.	TIME	TECH. ID
TX-17	13:55	RN

DATE July 2,2021

SHEET NUMBER 14

	DEFECT CODE	REPAIR DATE	APPROX. TIME	REPAIR TYPE	APPROX. DIMENSION	WELD TECH.	MON.	REMARKS
1	11X	7/2/21	17:25	G & W	0.4	RN	AFK	
2	10J	7/2/21	17:30	G & W	0.5	RN	AFK	
3	10K	7/2/21	17:32	G & W	0.4	RN	AFK	
4	10L	7/2/21	17:35	P	1.0 X 3.0	RN	AFK	
5	10M	7/2/21	17:37	G & W	0.4	RN	AFK	
6	10N	7/2/21	18:00	G & W	0.4	RN	DS	
7	11T	7/2/21	18:06	G & W	2.5	RN	DS	
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								

REPAIR TYPE : RS - RECONSTRUCTED SEAM G & W - GRIND WELD
 P - PATCH C - CAP

REVIEWED BY: AFK DATE: August 26,2021



GEOMEMBRANE REPAIR LOG

PROJECT NUMBER: 1000-089-03

PROJECT TITLE: Cell 16

OWNER: Waste Connections

CONTRACTOR: Titan Environmental

LOCATION: Prairie Green IWMF

MACHINE NUMBER EXT-9

NO.	TIME	TECH. ID
TX-19	10:50	DG

DATE July 3,2021

SHEET NUMBER 16

	DEFECT CODE	REPAIR DATE	APPROX. TIME	REPAIR TYPE	APPROX. DIMENSION	WELD TECH.	MON.	REMARKS
1	13S	7/3/21	11:15	C	1.5 X 6.0	DG	AFK	
2	12G	7/3/21	11:20	P	1.0 X 2.0	DG	AFK	
3	14C	7/3/21	11:25	C	2.0 X 4.0	DG	AFK	
4	14E	7/3/21	11:50	P	1.0 X 2.0	DG	AFK	
5	14G	7/3/21	12:00	P	0.3 X 0.3	DG	AFK	
6	14D	7/3/21	11:30	P	0.3 X 0.3	DG	AFK	
7	12J	7/3/21	13:15	P	0.3 X 0.3	DG	AFK	
8	12C	7/3/21	14:40	G & W	0.5	DG	AFK	
9	13X	7/3/21	14:50	G & W	0.4	DG	AFK	
10	12A	7/3/21	14:55	G & W	0.4	DG	AFK	
11	12M	7/3/21	12:10	P	0.3 X 0.3	DG	AFK	
12	12N	7/3/21	12:15	G & W	0.4	DG	AFK	
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								

REPAIR TYPE :

RS - RECONSTRUCTED SEAM

G & W - GRIND WELD

P - PATCH

C - CAP

REVIEWED BY: AFK DATE: August 26,2021

Appendix B-1 I

Geomembrane Seam and Repair Vacuum Test Summary



GEOMEMBRANE SEAM and REPAIR VACUUM TEST LOG

PROJECT NUMBER: 1000-089-04
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE
 VACUUM BOX NUMBER 12 SHEET NUMBER 1

SEAMS										
SEAM NUMBER	SEAM SECTION *		TEST DATE	TECH ID	DEFECTS **	SEAM COMPLETE		OBS. TEST	MON.	REMARKS
	FROM	TO				NO	YES			
1	P6/P7	3K - 3C	2021-06-25	JP	NONE	X		Y	DS	
2	P6/P7	3C - 3G	2021-06-25	JP	NONE	X		Y	DS	
3	P6/P7	3G - 3J	2021-06-25	JP	NONE	X		Y	DS	
4	ETI/P29	NEOS - SEOS	2021-06-25	JP	NONE		X	Y	DS	
5	ETI/P30	NEOS - 3W	2021-06-25	JP	NONE	X		Y	DS	
6	ETI/P30	3W - SEOS	2021-06-25	JP	NONE		X	Y	DS	
7	ETI/P31	NEOS - SEOS	2021-06-25	JP	NONE		X	Y	DS	
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										

REPAIRS						
DEFECT CODE	TEST DATE	TECH ID	DEFECTS **	OBS. TEST	MON.	REMARKS
21	IT	2021-06-25	JP	NONE	Y	DS
22	IS	2021-06-25	JP	NONE	Y	DS
23	4B	2021-06-25	JP	NONE	Y	DS
24	IR	2021-06-25	JP	NONE	Y	DS
25	IQ	2021-06-25	JP	NONE	Y	DS
26	IP	2021-06-25	JP	NONE	Y	DS
27	IN	2021-06-25	JP	NONE	Y	DS
28	IM	2021-06-25	JP	NONE	Y	DS
29	IL	2021-06-25	JP	NONE	Y	DS
30	3B	2021-06-25	JP	NONE	Y	DS
31	3M	2021-06-25	JP	NONE	Y	DS
32	3K	2021-06-25	JP	NONE	Y	DS
33	3C	2021-06-25	JP	NONE	Y	DS
34	3G	2021-06-25	JP	NONE	Y	DS
35	3J	2021-06-25	JP	NONE	Y	DS
36	2E	2021-06-25	JP	NONE	Y	DS
37	2F	2021-06-25	JP	NONE	Y	DS
38	3E	2021-06-25	JP	NONE	Y	DS
39	2G	2021-06-25	JP	NONE	Y	DS
40	SM	2021-06-25	JP	NONE	Y	DS
41	2U	2021-06-25	JP	NONE	Y	DS

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)
 ** RECORD QUANTITY OF LEAKS DETECTED AND REFERENCE NEW DEFECT CODE IN REMARKS.

REVIEWED BY: AFK
 DATE: 02-Sep-21



GEOMEMBRANE SEAM and REPAIR VACUUM TEST LOG

PROJECT NUMBER: 1000-089-04
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

VACUUM BOX NUMBER 12 SHEET NUMBER 2

SEAMS										
SEAM NUMBER	SEAM SECTION *		TEST DATE	TECH ID	DEFECTS **	SEAM COMPLETE		OBS. TEST	MON.	REMARKS
	FROM	TO				NO	YES			
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										

REPAIRS						
DEFECT CODE	TEST DATE	TECH ID	DEFECTS **	OBS. TEST	MON.	REMARKS
21	2K	2021-06-25	JP	NONE	Y	DS
22	2L	2021-06-25	JP	NONE	Y	DS
23	3F	2021-06-25	JP	NONE	Y	DS
24	2M	2021-06-25	JP	NONE	Y	DS
25	2N	2021-06-25	JP	NONE	Y	DS
26	2P	2021-06-25	JP	NONE	Y	DS
27	2Q	2021-06-25	JP	NONE	Y	DS
28	2R	2021-06-25	JP	NONE	Y	DS
29	3L	2021-06-25	JP	NONE	Y	DS
30	2S	2021-06-25	JP	NONE	Y	DS
31	2T	2021-06-25	JP	NONE	Y	DS
32	3R	2021-06-25	JP	NONE	Y	DS
33	2U	2021-06-25	JP	NONE	Y	DS
34	3N	2021-06-25	JP	NONE	Y	DS
35	2V	2021-06-25	JP	NONE	Y	DS
36	2W	2021-06-25	JP	NONE	Y	DS
37	3M	2021-06-25	JP	NONE	Y	DS
38	2X	2021-06-25	JP	NONE	Y	DS
39	3P	2021-06-25	JP	NONE	Y	DS
40	3Q	2021-06-25	JP	NONE	Y	DS
41	4A	2021-06-25	JP	NONE	Y	DS

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)

** RECORD QUANTITY OF LEAKS DETECTED AND REFERENCE NEW DEFECT CODE IN REMARKS.

REVIEWED BY: AFK
 DATE: 02-Sep-21



GEOMEMBRANE SEAM and REPAIR VACUUM TEST LOG

PROJECT NUMBER: 1000-089-04
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE
 VACUUM BOX NUMBER 12 SHEET NUMBER 3

SEAMS										
SEAM NUMBER	SEAM SECTION *		TEST DATE	TECH ID	DEFECTS **	SEAM COMPLETE		OBS. TEST	MON.	REMARKS
	FROM	TO				NO	YES			
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										

REPAIRS						
DEFECT CODE	TEST DATE	TECH ID	DEFECTS **	OBS. TEST	MON.	REMARKS
21	IA	2021-06-25	JP	NONE	Y	DS
22	IC	2021-06-25	JP	NONE	Y	DS
23	ID	2021-06-25	JP	NONE	Y	DS
24	IE	2021-06-25	JP	NONE	Y	DS
25	IG	2021-06-25	JP	NONE	Y	DS
26	IB	2021-06-25	JP	NONE	Y	DS
27	3A	2021-06-25	JP	NONE	Y	DS
28	IJ	2021-06-25	JP	NONE	Y	DS
29	3D	2021-06-25	JP	NONE	Y	DS
30						
31						
32						
33						
34						
35						
36						
37						
38						
39						
40						
41						

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)
 ** RECORD QUANTITY OF LEAKS DETECTED AND REFERENCE NEW DEFECT CODE IN REMARKS.

REVIEWED BY: AFK
 DATE: 02-Sep-21



GEOMEMBRANE SEAM and REPAIR VACUUM TEST LOG

PROJECT NUMBER: 1000-089-04
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE
 VACUUM BOX NUMBER 12 SHEET NUMBER 4

SEAMS										
SEAM NUMBER	SEAM SECTION *		TEST DATE	TECH ID	DEFECTS **	SEAM COMPLETE		OBS. TEST	MON.	REMARKS
	FROM	TO				NO	YES			
1	P3/P4	IJ - 3D	2021-06-26	JP	NONE		X	Y	DS	
2	P29/ETI	IV - 5E	2021-06-26	JP	NONE	X		Y	DS	
3	P29/ETI	5E - 5B	2021-06-26	JP	NONE		X	Y	DS	
4	P33/ETI	SEOS - 8D	2021-06-26	JP	NONE	X		Y	DS	
5	P33/ETI	8D - NEOS	2021-06-26	JP	NONE		X	Y	DS	
6	P32/ETI	SEOS - NEOS	2021-06-26	JP	NONE		X	Y	DS	
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										

REPAIRS						
DEFECT CODE	TEST DATE	TECH ID	DEFECTS **	OBS. TEST	MON.	REMARKS
21	IH	2021-06-26	JP	NONE	Y	DS
22	3S	2021-06-26	JP	NONE	Y	DS
23	5E	2021-06-26	JP	NONE	Y	DS
24	5D	2021-06-26	JP	NONE	Y	DS
25	5B	2021-06-26	JP	NONE	Y	DS
26	5C	2021-06-26	JP	NONE	Y	DS
27	8D	2021-06-26	JP	NONE	Y	DS
28	3T	2021-06-26	JP	NONE	Y	DS
29	4J	2021-06-26	JP	NONE	Y	DS
30	4H	2021-06-26	JP	NONE	Y	DS
31	4C	2021-06-26	JP	NONE	Y	DS
32	4G	2021-06-26	JP	NONE	Y	DS
33	4D	2021-06-26	JP	NONE	Y	DS
34	3K	2021-06-26	JP	NONE	Y	DS
35	5C	2021-06-26	JP	NONE	Y	DS
36						
37						
38						
39						
40						
41						

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)
 ** RECORD QUANTITY OF LEAKS DETECTED AND REFERENCE NEW DEFECT CODE IN REMARKS.

REVIEWED BY: AFK
 DATE: 02-Sep-21



GEOMEMBRANE SEAM and REPAIR VACUUM TEST LOG

PROJECT NUMBER: 1000-089-04
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE
 VACUUM BOX NUMBER 12 SHEET NUMBER 5

SEAMS										
SEAM NUMBER	SEAM SECTION *		TEST DATE	TECH ID	DEFECTS **	SEAM COMPLETE		OBS. TEST	MON.	REMARKS
	FROM	TO				NO	YES			
1	P31/P32	4G - ETI	2021-06-27	BT	NONE		X	Y	DS	
2	P30/P31	4F - ETI	2021-06-27	BT	NONE		X	Y	DS	
3	P4/P55	SEOS - NEOS	2021-06-27	BT	NONE		X	Y	DS	
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										

REPAIRS						
DEFECT CODE	TEST DATE	TECH ID	DEFECTS **	OBS. TEST	MON.	REMARKS
21						
22	4F	2021-06-27	BT	NONE	Y	DS
23	3W	2021-06-27	BT	NONE	Y	DS
24	4E	2021-06-27	BT	NONE	Y	DS
25	8A	2021-06-27	BT	NONE	Y	DS
26	6G	2021-06-27	BT	NONE	Y	DS
27	5X	2021-06-27	BT	NONE	Y	DS
28	5W	2021-06-27	BT	NONE	Y	DS
29	6D	2021-06-27	BT	NONE	Y	DS
30	6C	2021-06-27	BT	NONE	Y	DS
31	5V	2021-06-27	BT	NONE	Y	DS
32	5U	2021-06-27	BT	NONE	Y	DS
33	6B	2021-06-27	BT	NONE	Y	DS
34	6A	2021-06-27	BT	NONE	Y	DS
35	5T	2021-06-27	BT	NONE	Y	DS
36	5S	2021-06-27	BT	NONE	Y	DS
37	5A	2021-06-27	BT	NONE	Y	DS
38	4X	2021-06-27	BT	NONE	Y	DS
39	3X	2021-06-27	BT	NONE	Y	DS
40	4W	2021-06-27	BT	NONE	Y	DS
41	4V	2021-06-27	BT	NONE	Y	DS

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)
 ** RECORD QUANTITY OF LEAKS DETECTED AND REFERENCE NEW DEFECT CODE IN REMARKS.

REVIEWED BY: AFK
 DATE: 02-Sep-21



GEOMEMBRANE SEAM and REPAIR VACUUM TEST LOG

PROJECT NUMBER: 1000-089-04
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE
 VACUUM BOX NUMBER 12 SHEET NUMBER 6

SEAMS										
SEAM NUMBER	SEAM SECTION *		TEST DATE	TECH ID	DEFECTS **	SEAM COMPLETE		OBS. TEST	MON.	REMARKS
	FROM	TO				NO	YES			
1	P4/P38	SEOS - NEOS	2021-06-27	BT	NONE		X	Y	DS	
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										

REPAIRS						
DEFECT CODE	TEST DATE	TECH ID	DEFECTS **	OBS. TEST	MON.	REMARKS
21	4U	2021-06-27	BT	NONE	Y	DS
22	5R	2021-06-27	BT	NONE	Y	DS
23	5Q	2021-06-27	BT	NONE	Y	DS
24	SP	2021-06-27	BT	NONE	Y	DS
25	5N	2021-06-27	BT	NONE	Y	DS
26	4S	2021-06-27	BT	NONE	Y	DS
27	4R	2021-06-27	BT	NONE	Y	DS
28	5M	2021-06-27	BT	NONE	Y	DS
29	8C	2021-06-27	BT	NONE	Y	DS
30	5L	2021-06-27	BT	NONE	Y	DS
31	4Q	2021-06-27	BT	NONE	Y	DS
32	4P	2021-06-27	BT	NONE	Y	DS
33	5K	2021-06-27	BT	NONE	Y	DS
34	8E	2021-06-27	BT	NONE	Y	DS
35	5J	2021-06-27	BT	NONE	Y	DS
36	4N	2021-06-27	BT	NONE	Y	DS
37	4M	2021-06-27	BT	NONE	Y	DS
38	4L	2021-06-27	BT	NONE	Y	DS
39	5M	2021-06-27	BT	NONE	Y	DS
40	5G	2021-06-27	BT	NONE	Y	DS
41	5F	2021-06-27	BT	NONE	Y	DS

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)
 ** RECORD QUANTITY OF LEAKS DETECTED AND REFERENCE NEW DEFECT CODE IN REMARKS.

REVIEWED BY: AFK
 DATE: 02-Sep-21



GEOMEMBRANE SEAM and REPAIR VACUUM TEST LOG

PROJECT NUMBER: 1000-089-04
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE
 VACUUM BOX NUMBER 12 SHEET NUMBER 7

SEAMS										
SEAM NUMBER	SEAM SECTION *		TEST DATE	TECH ID	DEFECTS **	SEAM COMPLETE		OBS. TEST	MON.	REMARKS
	FROM	TO				NO	YES			
1	P55/ETI	NEOS - 8J	2021-06-27	BT	NONE	X		Y	DS	6H+IV
2	P55/ETI	8J - SEOS	2021-06-27	BT	NONE		X	Y	DS	
3	P7/P56	6V - WEOS	2021-06-27	BT	NONE		X	Y	DS	
4	P4/P52	SEOS - 8Q	2021-06-27	BT	NONE	X		Y	DS	
5	P4/P52	8Q - NEOS	2021-06-27	BT	NONE		X	Y	DS	
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										

REPAIRS							
DEFECT CODE	TEST DATE	TECH ID	DEFECTS **	OBS. TEST	MON.	REMARKS	
21	4K	2021-06-27	BT	NONE	Y	DS	
22	2D	2021-06-27	BT	NONE	Y	DS	
23	2C	2021-06-27	BT	NONE	Y	DS	
24	2A	2021-06-27	BT	NONE	Y	DS	
25	2B	2021-06-27	BT	NONE	Y	DS	
26	4T	2021-06-27	BT	NONE	Y	DS	
27	6J	2021-06-27	BT	NONE	Y	DS	
28	6H	2021-06-27	BT	NONE	Y	DS	
29	IV	2021-06-27	BT	NONE	Y	DS	
30	8J	2021-06-27	BT	NONE	Y	DS	
31	6K	2021-06-27	BT	NONE	Y	DS	
32	6L	2021-06-27	BT	NONE	Y	DS	
33	8P	2021-06-27	BT	NONE	Y	DS	
34	6M	2021-06-27	BT	NONE	Y	DS	
35	6N	2021-06-27	BT	NONE	Y	DS	
36	6P	2021-06-27	BT	NONE	Y	DS	
37	6Q	2021-06-27	BT	NONE	Y	DS	
38	6R	2021-06-27	BT	NONE	Y	DS	
39	6S	2021-06-27	BT	NONE	Y	DS	
40	8B	2021-06-27	BT	NONE	Y	DS	
41	6E	2021-06-27	BT	NONE	Y	DS	

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)
 ** RECORD QUANTITY OF LEAKS DETECTED AND REFERENCE NEW DEFECT CODE IN REMARKS.

REVIEWED BY: AFK
 DATE: 02-Sep-21



GEOMEMBRANE SEAM and REPAIR VACUUM TEST LOG

PROJECT NUMBER: 1000-089-04
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE
 VACUUM BOX NUMBER 12 SHEET NUMBER 8

SEAMS										
SEAM NUMBER	SEAM SECTION *		TEST DATE	TECH ID	DEFECTS **	SEAM COMPLETE		OBS. TEST	MON.	REMARKS
	FROM	TO				NO	YES			
1	P1/P64	EEOS - WEOS	2021-06-27	BT	NONE		X	Y	AB	7E INT
2	P8/P65	8G - 8L	2021-06-27	BT	NONE		X	Y	AB	
3	P45/P46	38 - 8V	2021-06-27	BT	NONE		X	Y	AB	
4	P44/P45	WEOS - 8W	2021-06-27	BT	NONE		X	Y	AB	
5	P5/P42	8S - NEOS	2021-06-27	BT	NONE		X	Y	AB	
6	P5/P41	8C - SEOS	2021-06-27	BT	NONE	X		Y	AB	
7	P5/P41	8C - NEOS	2021-06-27	BT	NONE		X	Y	AB	
8	P8/P64	8T - 8S	2021-06-27	BT	NONE	X		Y	AB	
9	P8/P65	8S - 8V	2021-06-27	BT	NONE		X	Y	AB	
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										

REPAIRS							
DEFECT CODE	TEST DATE	TECH ID	DEFECTS **	OBS. TEST	MON.	REMARKS	
21	8Q	2021-06-27	BT	NONE	Y	DS	
22	6F	2021-06-27	BT	NONE	Y	DS	
23	6G	2021-06-27	BT	NONE	Y	DS	
24	6T	2021-06-27	BT	NONE	Y	DS	
25	6U	2021-06-27	BT	NONE	Y	DS	
26	8H	2021-06-27	BT	NONE	Y	DS	
27	6V	2021-06-27	BT	NONE	Y	DS	
28	6W	2021-06-27	BT	NONE	Y	DS	
29	6X	2021-06-27	BT	NONE	Y	DS	
30	7A	2021-06-27	BT	NONE	Y	DS	
31	7B	2021-06-27	BT	NONE	Y	DS	
32	7C	2021-06-27	BT	NONE	Y	DS	
33	8N	2021-06-27	BT	NONE	Y	DS	
34	8M	2021-06-27	BT	NONE	Y	DS	
35	7D	2021-06-27	BT	NONE	Y	DS	
36	7E	2021-06-27	BT	NONE	Y	DS	
37	8G	2021-06-27	BT	NONE	Y	DS	
38	8L	2021-06-27	BT	NONE	Y	DS	
39	8K	2021-06-27	BT	NONE	Y	DS	
40	7F	2021-06-27	BT	NONE	Y	DS	
41	8W	2021-06-27	BT	NONE	Y	DS	

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)
 ** RECORD QUANTITY OF LEAKS DETECTED AND REFERENCE NEW DEFECT CODE IN REMARKS.

REVIEWED BY: AFK
 DATE: 02-Sep-21



GEOMEMBRANE SEAM and REPAIR VACUUM TEST LOG

PROJECT NUMBER: 1000-089-04
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE
 VACUUM BOX NUMBER 12 SHEET NUMBER 9

SEAMS										REPAIRS								
SEAM NUMBER	SEAM SECTION *		TEST DATE	TECH ID	DEFECTS **	SEAM COMPLETE		OBS. TEST	MON.	REMARKS	DEFECT CODE	TEST DATE	TECH ID	DEFECTS **	OBS. TEST	MON.	REMARKS	
	FROM	TO				NO	YES											
1											21	8V	2021-06-27	BT	NONE	Y	AB	
2											22	8S	2021-06-27	BT	NONE	Y	AB	
3											23	8R	2021-06-27	BT	NONE	Y	AB	
4											24	8T	2021-06-27	BT	NONE	Y	AB	
5											25	8S	2021-06-27	BT	NONE	Y	AB	
6											26	8U	2021-06-27	BT	NONE	Y	AB	
7											27	1K	2021-06-27	BT	NONE	Y	AB	
8											28	4C	2021-06-27	BT	NONE	Y	AB	
9											29	8C	2021-06-27	BT	NONE	Y	AB	
10											30	8F	2021-06-27	BT	NONE	Y	AB	
11											31							
12											32							
13											33							
14											34							
15											35							
16											36							
17											37							
18											38							
19											39							
20											40							
											41							

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)

** RECORD QUANTITY OF LEAKS DETECTED AND REFERENCE NEW DEFECT CODE IN REMARKS.

REVIEWED BY: AFK
 DATE: 02-Sep-21



GEOMEMBRANE SEAM and REPAIR VACUUM TEST LOG

PROJECT NUMBER: 1000-089-04
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE
 VACUUM BOX NUMBER 12 SHEET NUMBER 10

SEAMS										
SEAM NUMBER	SEAM SECTION *		TEST DATE	TECH ID	DEFECTS **	SEAM COMPLETE		OBS. TEST	MON.	REMARKS
	FROM	TO				NO	YES			
1	P122/P125	NEOS - 12N	2021-07-03	JP	NONE		X	Y	AFK	
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										

REPAIRS						
DEFECT CODE	TEST DATE	TECH ID	DEFECTS **	OBS. TEST	MON.	REMARKS
21	12G	2021-07-05	BT	NONE	Y	AFK
22	13S	2021-07-06	BT	NONE	Y	AFK
23	13R	2021-07-07	BT	NONE	Y	AFK
24	13Q	2021-07-08	BT	NONE	Y	AFK
25	10Q	2021-07-09	BT	NONE	Y	AFK
26	13P	2021-07-10	BT	NONE	Y	AFK
27	13N	2021-07-11	BT	NONE	Y	AFK
28	13M	2021-07-12	BT	NONE	Y	AFK
29	13L	2021-07-13	BT	NONE	Y	AFK
30	13K	2021-07-14	BT	NONE	Y	AFK
31	13J	2021-07-15	BT	NONE	Y	AFK
32	13H	2021-07-16	BT	NONE	Y	AFK
33	13G	2021-07-17	BT	NONE	Y	AFK
34	13F	2021-07-18	BT	NONE	Y	AFK
35	13E	2021-07-19	BT	NONE	Y	AFK
36	13D	2021-07-20	BT	NONE	Y	AFK
37	13C	2021-07-21	BT	NONE	Y	AFK
38	13B	2021-07-22	BT	NONE	Y	AFK
39	13A	2021-07-23	BT	NONE	Y	AFK
40	12C	2021-07-24	BT	NONE	Y	AFK
41	12F	2021-07-25	BT	NONE	Y	AFK

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)
 ** RECORD QUANTITY OF LEAKS DETECTED AND REFERENCE NEW DEFECT CODE IN REMARKS.

REVIEWED BY: AFK
 DATE: 02-Sep-21



GEOMEMBRANE SEAM and REPAIR VACUUM TEST LOG

PROJECT NUMBER: 1000-089-04
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE
 VACUUM BOX NUMBER 12 SHEET NUMBER 11

SEAMS										
SEAM NUMBER	SEAM SECTION *		TEST DATE	TECH ID	DEFECTS **	SEAM COMPLETE		OBS. TEST	MON.	REMARKS
	FROM	TO				NO	YES			
1	P124/ETI	SEOS - NEOS	2021-07-05	BT	NONE		X	Y	DJ	
2	P125/ETI	SEOS - NEOS	2021-07-05	BT	NONE		X	Y	DJ	
3	P67/P99	9V - NEOS	2021-07-05	BT	NONE		X	Y	DJ	
4	P67/P105	SEOS - 9S	2021-07-05	BT	NONE		X	Y	DJ	
5	P122/P125	12N - NEOS	2021-07-05	BT	NONE		X	Y	DJ	
6	P97/P98	11L - 6MW	2021-07-05	BT	NONE		X	Y	DJ	
7	P89/P90	10P - EEOS	2021-07-05	BT	NONE		X	Y	DJ	
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										

REPAIRS						
DEFECT CODE	TEST DATE	TECH ID	DEFECTS **	OBS. TEST	MON.	REMARKS
21	14H	2021-07-05	BT	NONE	Y	DJ
22	13V	2021-07-05	BT	NONE	Y	DJ
23	13W	2021-07-05	BT	NONE	Y	DJ
24	9X	2021-07-05	BT	NONE	Y	DJ
25	12A	2021-07-05	BT	NONE	Y	DJ
26	14J	2021-07-05	BT	NONE	Y	DJ
27	13X	2021-07-05	BT	NONE	Y	DJ
28	12E	2021-07-05	BT	NONE	Y	DJ
29	14A	2021-07-05	BT	NONE	Y	DJ
30	14B	2021-07-05	BT	NONE	Y	DJ
31	14C	2021-07-05	BT	NONE	Y	DJ
32	14D	2021-07-05	BT	NONE	Y	DJ
33	14E	2021-07-05	BT	NONE	Y	DJ
34	12H	2021-07-05	BT	NONE	Y	DJ
35	14F	2021-07-05	BT	NONE	Y	DJ
36	14G	2021-07-05	BT	NONE	Y	DJ
37	12K	2021-07-05	BT	NONE	Y	DJ
38	12J	2021-07-05	BT	NONE	Y	DJ
39	12L	2021-07-05	BT	NONE	Y	DJ
40	12M	2021-07-05	BT	NONE	Y	DJ
41	9C	2021-07-05	BT	NONE	Y	DJ

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)
 ** RECORD QUANTITY OF LEAKS DETECTED AND REFERENCE NEW DEFECT CODE IN REMARKS.

REVIEWED BY: AFK
 DATE: 02-Sep-21



GEOMEMBRANE SEAM and REPAIR VACUUM TEST LOG

PROJECT NUMBER: 1000-089-04
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE
 VACUUM BOX NUMBER 12 SHEET NUMBER 12

SEAMS										
SEAM NUMBER	SEAM SECTION *		TEST DATE	TECH ID	DEFECTS **	SEAM COMPLETE		OBS. TEST	MON.	REMARKS
	FROM	TO				NO	YES			
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										

REPAIRS						
DEFECT CODE	TEST DATE	TECH ID	DEFECTS **	OBS. TEST	MON.	REMARKS
21	7G	2021-07-05	BT	NONE	Y	DJ
22	7H	2021-07-05	BT	NONE	Y	DJ
23	9R	2021-07-05	BT	NONE	Y	DJ
24	7J	2021-07-05	BT	NONE	Y	DJ
25	7K	2021-07-05	BT	NONE	Y	DJ
26	7L	2021-07-05	BT	NONE	Y	DJ
27	9D	2021-07-05	BT	NONE	Y	DJ
28	7M	2021-07-05	BT	NONE	Y	DJ
29	7N	2021-07-05	BT	NONE	Y	DJ
30	9E	2021-07-05	BT	NONE	Y	DJ
31	9F	2021-07-05	BT	NONE	Y	DJ
32	9A	2021-07-05	BT	NONE	Y	DJ
33	9B	2021-07-05	BT	NONE	Y	DJ
34	7P	2021-07-05	BT	NONE	Y	DJ
35	7Q	2021-07-05	BT	NONE	Y	DJ
36	7R	2021-07-05	BT	NONE	Y	DJ
37	7S	2021-07-05	BT	NONE	Y	DJ
38	7T	2021-07-05	BT	NONE	Y	DJ
39	7U	2021-07-05	BT	NONE	Y	DJ
40	7V	2021-07-05	BT	NONE	Y	DJ
41	7W	2021-07-05	BT	NONE	Y	DJ

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)
 ** RECORD QUANTITY OF LEAKS DETECTED AND REFERENCE NEW DEFECT CODE IN REMARKS.

REVIEWED BY: AFK
 DATE: 02-Sep-21



GEOMEMBRANE SEAM and REPAIR VACUUM TEST LOG

PROJECT NUMBER: 1000-089-04
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE
 VACUUM BOX NUMBER 12 SHEET NUMBER 13

SEAMS										
SEAM NUMBER	SEAM SECTION *		TEST DATE	TECH ID	DEFECTS **	SEAM COMPLETE		OBS. TEST	MON.	REMARKS
	FROM	TO				NO	YES			
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										

REPAIRS						
DEFECT CODE	TEST DATE	TECH ID	DEFECTS **	OBS. TEST	MON.	REMARKS
21	10F	2021-07-05	BT	NONE	Y	DJ
22	9H	2021-07-05	BT	NONE	Y	DJ
23	10E	2021-07-05	BT	NONE	Y	DJ
24	9G	2021-07-05	BT	NONE	Y	DJ
25	1F	2021-07-05	BT	NONE	Y	DJ
26	10B	2021-07-05	BT	NONE	Y	DJ
27	10C	2021-07-05	BT	NONE	Y	DJ
28	10A	2021-07-05	BT	NONE	Y	DJ
29	11A	2021-07-05	BT	NONE	Y	DJ
30	9P	2021-07-05	BT	NONE	Y	DJ
31	9M	2021-07-05	BT	NONE	Y	DJ
32	9L	2021-07-05	BT	NONE	Y	DJ
33	10N	2021-07-05	BT	NONE	Y	DJ
34	10H	2021-07-05	BT	NONE	Y	DJ
35	11X	2021-07-05	BT	NONE	Y	DJ
36	11W	2021-07-05	BT	NONE	Y	DJ
37	10J	2021-07-05	BT	NONE	Y	DJ
38	10K	2021-07-05	BT	NONE	Y	DJ
39	10L	2021-07-05	BT	NONE	Y	DJ
40	10M	2021-07-05	BT	NONE	Y	DJ
41	9W	2021-07-05	BT	NONE	Y	DJ

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)

** RECORD QUANTITY OF LEAKS DETECTED AND REFERENCE NEW DEFECT CODE IN REMARKS.

REVIEWED BY: AFK
 DATE: 02-Sep-21



GEOMEMBRANE SEAM and REPAIR VACUUM TEST LOG

PROJECT NUMBER: 1000-089-04
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE
 VACUUM BOX NUMBER 12 SHEET NUMBER 14

SEAMS										
SEAM NUMBER	SEAM SECTION *		TEST DATE	TECH ID	DEFECTS **	SEAM COMPLETE		OBS. TEST	MON.	REMARKS
	FROM	TO				NO	YES			
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										

REPAIRS						
DEFECT CODE	TEST DATE	TECH ID	DEFECTS **	OBS. TEST	MON.	REMARKS
21	11V	2021-07-05	BT	NONE	Y	DJ
22	12D	2021-07-05	BT	NONE	Y	DJ
23	11U	2021-07-05	BT	NONE	Y	DJ
24	11T	2021-07-05	BT	NONE	Y	DJ
25	9N	2021-07-05	BT	NONE	Y	DJ
26	9K	2021-07-05	BT	NONE	Y	DJ
27	9Q	2021-07-05	BT	NONE	Y	DJ
28	11S	2021-07-05	BT	NONE	Y	DJ
29	9T	2021-07-05	BT	NONE	Y	DJ
30	9S	2021-07-05	BT	NONE	Y	DJ
31	11R	2021-07-05	BT	NONE	Y	DJ
32	11Q	2021-07-05	BT	NONE	Y	DJ
33	11P	2021-07-05	BT	NONE	Y	DJ
34	11N	2021-07-05	BT	NONE	Y	DJ
35	9V	2021-07-05	BT	NONE	Y	DJ
36	11M	2021-07-05	BT	NONE	Y	DJ
37	11L	2021-07-05	BT	NONE	Y	DJ
38	11K	2021-07-05	BT	NONE	Y	DJ
39	11J	2021-07-05	BT	NONE	Y	DJ
40	11H	2021-07-05	BT	NONE	Y	DJ
41	9J	2021-07-05	BT	NONE	Y	DJ

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)
 ** RECORD QUANTITY OF LEAKS DETECTED AND REFERENCE NEW DEFECT CODE IN REMARKS.

REVIEWED BY: AFK
 DATE: 02-Sep-21



GEOMEMBRANE SEAM and REPAIR VACUUM TEST LOG

PROJECT NUMBER: 1000-089-04
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE
 VACUUM BOX NUMBER 12 SHEET NUMBER 15

SEAMS										
SEAM NUMBER	SEAM SECTION *		TEST DATE	TECH ID	DEFECTS **	SEAM COMPLETE		OBS. TEST	MON.	REMARKS
	FROM	TO				NO	YES			
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										

REPAIRS						
DEFECT CODE	TEST DATE	TECH ID	DEFECTS **	OBS. TEST	MON.	REMARKS
21	11G	2021-07-05	BT	NONE	Y	DJ
22	11F	2021-07-05	BT	NONE	Y	DJ
23	11E	2021-07-05	BT	NONE	Y	DJ
24	11D	2021-07-05	BT	NONE	Y	DJ
25	11C	2021-07-05	BT	NONE	Y	DJ
26	10P	2021-07-05	BT	NONE	Y	DJ
27	11B	2021-07-05	BT	NONE	Y	DJ
28	7X	2021-07-05	BT	NONE	Y	DJ
29	13T	2021-07-05	BT	NONE	Y	DJ
30	13U	2021-07-05	BT	NONE	Y	DJ
31	12B	2021-07-05	BT	NONE	Y	DJ
32						
33						
34						
35						
36						
37						
38						
39						
40						
41						

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)
 ** RECORD QUANTITY OF LEAKS DETECTED AND REFERENCE NEW DEFECT CODE IN REMARKS.

REVIEWED BY: AFK
 DATE: 02-Sep-21



GEOMEMBRANE SEAM and REPAIR VACUUM TEST LOG

PROJECT NUMBER: 1000-089-04
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE
 VACUUM BOX NUMBER 12 SHEET NUMBER 16

SEAMS										
SEAM NUMBER	SEAM SECTION *		TEST DATE	TECH ID	DEFECTS **	SEAM COMPLETE		OBS. TEST	MON.	REMARKS
	FROM	TO				NO	YES			
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										

REPAIRS						
DEFECT CODE	TEST DATE	TECH ID	DEFECTS **	OBS. TEST	MON.	REMARKS
21	16A	2021-07-07	JP	NONE	Y	AB
22	16B	2021-07-07	JP	NONE	Y	AB
23	16C	2021-07-07	JP	NONE	Y	AB
24						
25						
26						
27						
28						
29						
30						
31						
32						
33						
34						
35						
36						
37						
38						
39						
40						
41						

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)
 ** RECORD QUANTITY OF LEAKS DETECTED AND REFERENCE NEW DEFECT CODE IN REMARKS.

REVIEWED BY: AFK
 DATE: 02-Sep-21



GEOMEMBRANE SEAM and REPAIR VACUUM TEST LOG

PROJECT NUMBER: 1000-089-04
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE
 VACUUM BOX NUMBER 12 SHEET NUMBER 17

SEAMS										
SEAM NUMBER	SEAM SECTION *		TEST DATE	TECH ID	DEFECTS **	SEAM COMPLETE		OBS. TEST	MON.	REMARKS
	FROM	TO				NO	YES			
1	P126/P135	EEOS - 16K	2021-07-09	BT	NONE	X		Y	AB	
2	P126/135	16K - WEOS	2021-07-09	BT	NONE		X	Y	AB	
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										

REPAIRS						
DEFECT CODE	TEST DATE	TECH ID	DEFECTS **	OBS. TEST	MON.	REMARKS
21	15A	2021-07-09	BT	NONE	Y	AB
22	15B	2021-07-09	BT	NONE	Y	AB
23	15Q	2021-07-09	BT	NONE	Y	AB
24	15C	2021-07-09	BT	NONE	Y	AB
25	16Q	2021-07-09	BT	NONE	Y	AB
26	16R	2021-07-09	BT	NONE	Y	AB
27	16P	2021-07-09	BT	NONE	Y	AB
28	15N	2021-07-09	BT	NONE	Y	AB
29	15M	2021-07-09	BT	NONE	Y	AB
30	15L	2021-07-09	BT	NONE	Y	AB
31	15K	2021-07-09	BT	NONE	Y	AB
32	15H	2021-07-09	BT	NONE	Y	AB
33	15D	2021-07-09	BT	NONE	Y	AB
34	15E	2021-07-09	BT	NONE	Y	AB
35	15F	2021-07-09	BT	NONE	Y	AB
36	15G	2021-07-09	BT	NONE	Y	AB
37	16P	2021-07-09	BT	NONE	Y	AB
38	16E	2021-07-09	BT	NONE	Y	AB
39	16L	2021-07-09	BT	NONE	Y	AB
40	15U	2021-07-09	BT	NONE	Y	AB
41	16H	2021-07-09	BT	NONE	Y	AB

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)
 ** RECORD QUANTITY OF LEAKS DETECTED AND REFERENCE NEW DEFECT CODE IN REMARKS.

REVIEWED BY: AFK
 DATE: 02-Sep-21



GEOMEMBRANE SEAM and REPAIR VACUUM TEST LOG

PROJECT NUMBER: 1000-089-04
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE
 VACUUM BOX NUMBER 12 SHEET NUMBER 18

SEAMS										
SEAM NUMBER	SEAM SECTION *		TEST DATE	TECH ID	DEFECTS **	SEAM COMPLETE		OBS. TEST	MON.	REMARKS
	FROM	TO				NO	YES			
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										

REPAIRS						
DEFECT CODE	TEST DATE	TECH ID	DEFECTS **	OBS. TEST	MON.	REMARKS
21	16G	2021-07-09	BT	NONE	Y	AB
22	16F	2021-07-09	BT	NONE	Y	AB
23	15X	2021-07-09	BT	NONE	Y	AB
24	15W	2021-07-09	BT	NONE	Y	AB
25	15V	2021-07-09	BT	NONE	Y	AB
26	16M	2021-07-09	BT	NONE	Y	AB
27	16N	2021-07-09	BT	NONE	Y	AB
28	15T	2021-07-09	BT	NONE	Y	AB
29	15S	2021-07-09	BT	NONE	Y	AB
30	17D	2021-07-09	BT	NONE	Y	AB
31	17B	2021-07-09	BT	NONE	Y	AB
32	17C	2021-07-09	BT	NONE	Y	AB
33	17A	2021-07-09	BT	NONE	Y	AB
34	15R	2021-07-09	BT	NONE	Y	AB
35	16J	2021-07-09	BT	NONE	Y	AB
36	16K	2021-07-09	BT	NONE	Y	AB
37	15P	2021-07-09	BT	NONE	Y	AB
38	16D	2021-07-09	BT	NONE	Y	AB
39						
40						
41						

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)
 ** RECORD QUANTITY OF LEAKS DETECTED AND REFERENCE NEW DEFECT CODE IN REMARKS.

REVIEWED BY: AFK
 DATE: 02-Sep-21



GEOMEMBRANE SEAM and REPAIR VACUUM TEST LOG

PROJECT NUMBER: 1000-089-04
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE
 VACUUM BOX NUMBER 12 SHEET NUMBER 19

SEAMS										
SEAM NUMBER	SEAM SECTION *		TEST DATE	TECH ID	DEFECTS **	SEAM COMPLETE		OBS. TEST	MON.	REMARKS
	FROM	TO				NO	YES			
1	P128/D3	EEOS - 14MW	2021-07-10	BT	NONE		X	Y	AB	
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										

REPAIRS						
DEFECT CODE	TEST DATE	TECH ID	DEFECTS **	OBS. TEST	MON.	REMARKS
21	16S	2021-07-10	JP	NONE	Y	AB
22	16F	2021-07-10	JP	NONE	Y	AB
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						
33						
34						
35						
36						
37						
38						
39						
40						
41						

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)
 ** RECORD QUANTITY OF LEAKS DETECTED AND REFERENCE NEW DEFECT CODE IN REMARKS.

REVIEWED BY: AFK
 DATE: 02-Sep-21



GEOMEMBRANE SEAM and REPAIR VACUUM TEST LOG

PROJECT NUMBER: 1000-089-04
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE
 VACUUM BOX NUMBER 12 SHEET NUMBER 20

SEAMS										
SEAM NUMBER	SEAM SECTION *		TEST DATE	TECH ID	DEFECTS **	SEAM COMPLETE		OBS. TEST	MON.	REMARKS
	FROM	TO				NO	YES			
1	P123/P140	WEOS - EEOS	2021-07-12	BT	NONE		X	Y	AB	
2	P125/P141	WEOS - EEOS	2021-07-12	BT	NONE		X	Y	AB	
3	P142/ETI	SEOS - 17L	2021-07-12	BT	NONE	X		Y	AB	
4	P142/ETI	17L - NEOS	2021-07-12	BT	NONE		X	Y	AB	
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										

REPAIRS						
DEFECT CODE	TEST DATE	TECH ID	DEFECTS **	OBS. TEST	MON.	REMARKS
21	17E	2021-07-12	BT	NONE	Y	AB
22	17K	2021-07-12	BT	NONE	Y	AB
23	17F	2021-07-12	BT	NONE	Y	AB
24	17G	2021-07-12	BT	NONE	Y	AB
25	17J	2021-07-12	BT	NONE	Y	AB
26	17H	2021-07-12	BT	NONE	Y	AB
27						
28						
29						
30						
31						
32						
33						
34						
35						
36						
37						
38						
39						
40						
41						

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)
 ** RECORD QUANTITY OF LEAKS DETECTED AND REFERENCE NEW DEFECT CODE IN REMARKS.

REVIEWED BY: AFK
 DATE: 02-Sep-21

Appendix B-12

- **Geomembrane Secondary Summary**
 - **Double Composite Liner Summary**
-



GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 1000-089-03 PROJECT TITLE: Cell 16
 OWNER: Waste Connections of Canada CONTRACTOR: Titan Environmental
 LOCATION: Prairie Green IWMF

GEOMEMBRANE: **SECONDARY** PRIMARY
 SUBGRADE CONDITIONS: Good
 REMARKS: _____

DATE: 2021-06-24
 SHEET NUMBER: 1

TRANSPORT EQUIPMENT: Excavator and Spreader Bar
 MATERIAL: 60 mil HDPE

DESCRIPTION	PANEL NUMBER S01			
ROLL NUMBER	1001-150773			
DEPLOYED LENGTH	72			
AMBIENT AIR TEMP.	26			
OBSERVED OVERLAP	150 mm			
REMARKS	_____			
MONITOR	AB			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	59	62	63	63
	59	62	64	62
	60	60	62	60
	61	59	64	59
AVERAGE	60	61	63	61

DESCRIPTION	PANEL NUMBER			
ROLL NUMBER	_____			
DEPLOYED LENGTH	_____			
AMBIENT AIR TEMP.	_____			
OBSERVED OVERLAP	150 mm			
REMARKS	_____			
MONITOR	_____			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
AVERAGE				

DESCRIPTION	PANEL NUMBER			
ROLL NUMBER	_____			
DEPLOYED LENGTH	_____			
AMBIENT AIR TEMP.	_____			
OBSERVED OVERLAP	150 mm			
REMARKS	_____			
MONITOR	_____			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
AVERAGE				

DESCRIPTION	PANEL NUMBER			
ROLL NUMBER	_____			
DEPLOYED LENGTH	_____			
AMBIENT AIR TEMP.	_____			
OBSERVED OVERLAP	150 mm			
REMARKS	_____			
MONITOR	_____			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
AVERAGE				

DESCRIPTION	PANEL NUMBER			
ROLL NUMBER	_____			
DEPLOYED LENGTH	_____			
AMBIENT AIR TEMP.	_____			
OBSERVED OVERLAP	150 mm			
REMARKS	_____			
MONITOR	_____			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
AVERAGE				

DESCRIPTION	PANEL NUMBER			
ROLL NUMBER	_____			
DEPLOYED LENGTH	_____			
AMBIENT AIR TEMP.	_____			
OBSERVED OVERLAP	150 mm			
REMARKS	_____			
MONITOR	_____			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
AVERAGE				

REVIEWED BY: AFK
 DATE: 2021-09-03



GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 1000-089-03 PROJECT TITLE: Cell 16
 OWNER: Waste Connections of Canada CONTRACTOR: Titan Environmental
 LOCATION: Prairie Green IWMF

GEOMEMBRANE: **SECONDARY** PRIMARY
 SUBGRADE CONDITIONS: Good
 REMARKS: _____

DATE: 2021-06-25
 SHEET NUMBER: 2

TRANSPORT EQUIPMENT Excavator and Spreader Bar
 MATERIAL: 60 mil HDPE

DESCRIPTION	PANEL NUMBER S02			
ROLL NUMBER	1001-150763			
DEPLOYED LENGTH	7.6			
AMBIENT AIR TEMP.	18			
OBSERVED OVERLAP	150 mm			
REMARKS	_____ _____			
MONITOR	AB			
	_____ _____			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	62	63	60	60
	60	62	59	59
	_____ _____			
AVERAGE	61	63	60	60

DESCRIPTION	PANEL NUMBER S03			
ROLL NUMBER	1001-150763			
DEPLOYED LENGTH	8.1			
AMBIENT AIR TEMP.	18			
OBSERVED OVERLAP	150 mm			
REMARKS	_____ _____			
MONITOR	AB			
	_____ _____			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	62	59	62	62
	60	60	64	60
	_____ _____			
AVERAGE	61	60	62	61

DESCRIPTION	PANEL NUMBER S04			
ROLL NUMBER	1001-150-779			
DEPLOYED LENGTH	8.3			
AMBIENT AIR TEMP.	18			
OBSERVED OVERLAP	150 mm			
REMARKS	_____ _____			
MONITOR	AB			
	_____ _____			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	62	63	60	62
	61	62	62	60
	_____ _____			
AVERAGE	62	62	60	61

DESCRIPTION	PANEL NUMBER S05			
ROLL NUMBER	1001-150779			
DEPLOYED LENGTH	8.2			
AMBIENT AIR TEMP.	18			
OBSERVED OVERLAP	150 mm			
REMARKS	_____ _____			
MONITOR	AB			
	_____ _____			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	60	62	62	59
	63	64	60	60
	_____ _____			
AVERAGE	62	63	61	60

DESCRIPTION	PANEL NUMBER S06			
ROLL NUMBER	1001-150772			
DEPLOYED LENGTH	8.7			
AMBIENT AIR TEMP.	18			
OBSERVED OVERLAP	150 mm			
REMARKS	_____ _____			
MONITOR	AB			
	_____ _____			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	64	63	59	62
	62	60	62	62
	_____ _____			
AVERAGE	63	62	61	62

DESCRIPTION	PANEL NUMBER S07			
ROLL NUMBER	1001-150772			
DEPLOYED LENGTH	8.8			
AMBIENT AIR TEMP.	18			
OBSERVED OVERLAP	150 mm			
REMARKS	_____ _____			
MONITOR	AB			
	_____ _____			
SHEET THICKNESS	LEAD	L SIDE	60	TRAIL
	63	60	61	64
	59	59	60	62
	_____ _____			
AVERAGE	61	59	61	63

REVIEWED BY: AFK
 DATE: 2021-09-03



GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 1000-089-03 PROJECT TITLE: Cell 16
 OWNER: Waste Connections of Canada CONTRACTOR: Titan Environmental
 LOCATION: Prairie Green IWMF

GEOMEMBRANE: **SECONDARY** PRIMARY
 SUBGRADE CONDITIONS: Good
 REMARKS: _____

DATE: 2021-06-25
 SHEET NUMBER: 3

TRANSPORT EQUIPMENT Excavator and Spreader Bar
 MATERIAL: 60 mil HDPE

DESCRIPTION	PANEL NUMBER S08				PANEL NUMBER S09				PANEL NUMBER S10																		
	ROLL NUMBER	DEPLOYED LENGTH	AMBIENT AIR TEMP.	OBSERVED OVERLAP	REMARKS	MONITOR	LEAD	L SIDE	R SIDE	TRAIL	ROLL NUMBER	DEPLOYED LENGTH	AMBIENT AIR TEMP.	OBSERVED OVERLAP	REMARKS	MONITOR	LEAD	L SIDE	R SIDE	TRAIL	ROLL NUMBER	DEPLOYED LENGTH	AMBIENT AIR TEMP.	OBSERVED OVERLAP	REMARKS	MONITOR	
	1001-150778	8.8	18	150 mm		AB	62	59	64	62	1001-150763	9.4	20	150 mm		AB	62	64	62	64	1001-150-779	10.2	20	150 mm		AB	
							60	60	63	59							63	63	62	62							
AVERAGE							61	60	64	61							63	64	62	63							

DESCRIPTION	PANEL NUMBER				PANEL NUMBER				PANEL NUMBER																		
	ROLL NUMBER	DEPLOYED LENGTH	AMBIENT AIR TEMP.	OBSERVED OVERLAP	REMARKS	MONITOR	LEAD	L SIDE	R SIDE	TRAIL	ROLL NUMBER	DEPLOYED LENGTH	AMBIENT AIR TEMP.	OBSERVED OVERLAP	REMARKS	MONITOR	LEAD	L SIDE	60	TRAIL	ROLL NUMBER	DEPLOYED LENGTH	AMBIENT AIR TEMP.	OBSERVED OVERLAP	REMARKS	MONITOR	
AVERAGE																											

REVIEWED BY: AFK
 DATE: 2021-09-03



GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 1000-089-03 PROJECT TITLE: Cell 16
 OWNER: Waste Connections of Canada CONTRACTOR: Titan Environmental
 LOCATION: Prairie Green IWMF

GEOMEMBRANE: **SECONDARY** PRIMARY
 SUBGRADE CONDITIONS: Good
 REMARKS: _____

DATE: 2021-06-29
 SHEET NUMBER: 4

TRANSPORT EQUIPMENT Excavator and Spreader Bar
 MATERIAL: 60 mil HDPE

DESCRIPTION	PANEL NUMBER S11			
ROLL NUMBER	1001-150762			
DEPLOYED LENGTH	17.6			
AMBIENT AIR TEMP.	21			
OBSERVED OVERLAP	150 mm			
REMARKS	_____ _____			
MONITOR	AB			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	60	64	63	60
	62	64	61	61
AVERAGE	61	64	62	61

DESCRIPTION	PANEL NUMBER S12			
ROLL NUMBER	1001-150762			
DEPLOYED LENGTH	18			
AMBIENT AIR TEMP.	21			
OBSERVED OVERLAP	150 mm			
REMARKS	_____ _____			
MONITOR	AB			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	60	64	63	60
	61	61	60	62
AVERAGE	61	63	62	61

DESCRIPTION	PANEL NUMBER S13			
ROLL NUMBER	1001-150-762			
DEPLOYED LENGTH	18.4			
AMBIENT AIR TEMP.	21			
OBSERVED OVERLAP	150 mm			
REMARKS	_____ _____			
MONITOR	AB			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	63	62	64	59
	61	62	63	62
AVERAGE	62	62	64	61

DESCRIPTION	PANEL NUMBER S14			
ROLL NUMBER	1001-150762			
DEPLOYED LENGTH	17.6			
AMBIENT AIR TEMP.	21			
OBSERVED OVERLAP	150 mm			
REMARKS	_____ _____			
MONITOR	AB			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	61	62	64	63
	60	61	64	61
AVERAGE				

DESCRIPTION	PANEL NUMBER S15			
ROLL NUMBER	1001-150762			
DEPLOYED LENGTH	17.6			
AMBIENT AIR TEMP.	21			
OBSERVED OVERLAP	150 mm			
REMARKS	_____ _____			
MONITOR	AB			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	59	64	61	61
	61	62	60	60
AVERAGE				

DESCRIPTION	PANEL NUMBER S16			
ROLL NUMBER	1001-150762			
DEPLOYED LENGTH	17			
AMBIENT AIR TEMP.	21			
OBSERVED OVERLAP	150 mm			
REMARKS	_____ _____			
MONITOR	AB			
SHEET THICKNESS	LEAD	L SIDE	60	TRAIL
	62	60	59	59
	61	60	60	61
AVERAGE				

REVIEWED BY: AFK
 DATE: 2021-09-03



GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 1000-089-03 PROJECT TITLE: Cell 16
 OWNER: Waste Connections of Canada CONTRACTOR: Titan Environmental
 LOCATION: Prairie Green IWMF

GEOMEMBRANE: **SECONDARY** PRIMARY
 SUBGRADE CONDITIONS: Good
 REMARKS: _____

DATE: 2021-06-29
 SHEET NUMBER: 5

TRANSPORT EQUIPMENT Excavator and Spreader Bar
 MATERIAL: 60 mil HDPE

DESCRIPTION	PANEL NUMBER S17			
ROLL NUMBER	1001-150762			
DEPLOYED LENGTH	15.5			
AMBIENT AIR TEMP.	22			
OBSERVED OVERLAP	150 mm			
REMARKS	_____ _____			
MONITOR	AB			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	59	60	60	61
	60	60	61	62
AVERAGE	60	60	61	62

DESCRIPTION	PANEL NUMBER S12			
ROLL NUMBER	1001-150762			
DEPLOYED LENGTH	15.5			
AMBIENT AIR TEMP.	22			
OBSERVED OVERLAP	150 mm			
REMARKS	_____ _____			
MONITOR	AB			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	61	62	64	59
	62	64	63	60
AVERAGE	62	63	64	60

DESCRIPTION	PANEL NUMBER S13			
ROLL NUMBER	1001-150-762			
DEPLOYED LENGTH	14			
AMBIENT AIR TEMP.	22			
OBSERVED OVERLAP	150 mm			
REMARKS	_____ _____			
MONITOR	AB			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	60	63	62	60
	60	61	60	61
AVERAGE	60	62	61	61

DESCRIPTION	PANEL NUMBER S20			
ROLL NUMBER	1001-150766			
DEPLOYED LENGTH	14			
AMBIENT AIR TEMP.	22			
OBSERVED OVERLAP	150 mm			
REMARKS	_____ _____			
MONITOR	AB			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	60	60	63	62
	59	60	62	60
AVERAGE				

DESCRIPTION	PANEL NUMBER S21			
ROLL NUMBER	1001-150766			
DEPLOYED LENGTH	13			
AMBIENT AIR TEMP.	22			
OBSERVED OVERLAP	150 mm			
REMARKS	_____ _____			
MONITOR	AB			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	62	60	59	60
	60	60	60	59
AVERAGE				

DESCRIPTION	PANEL NUMBER S22			
ROLL NUMBER	1001-150766			
DEPLOYED LENGTH	13			
AMBIENT AIR TEMP.	22			
OBSERVED OVERLAP	150 mm			
REMARKS	_____ _____			
MONITOR	AB			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	63	60	63	62
	61	59	64	62
AVERAGE				

REVIEWED BY: AFK
 DATE: 2021-09-03



GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 1000-089-03 PROJECT TITLE: Cell 16
 OWNER: Waste Connections of Canada CONTRACTOR: Titan Environmental
 LOCATION: Prairie Green IWMF

GEOMEMBRANE: **SECONDARY** PRIMARY
 SUBGRADE CONDITIONS: Good
 REMARKS: _____

DATE: 2021-06-29
 SHEET NUMBER: 6

TRANSPORT EQUIPMENT Excavator and Spreader Bar
 MATERIAL: 60 mil HDPE

DESCRIPTION	PANEL NUMBER S23			
ROLL NUMBER	1001-150766			
DEPLOYED LENGTH	12.6			
AMBIENT AIR TEMP.	26			
OBSERVED OVERLAP	150 mm			
REMARKS	_____ _____ _____			
MONITOR	AB			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	60	61	60	61
	59	60	61	63
AVERAGE	60	61	61	62

DESCRIPTION	PANEL NUMBER S24			
ROLL NUMBER	1001-150766			
DEPLOYED LENGTH	13			
AMBIENT AIR TEMP.	26			
OBSERVED OVERLAP	150 mm			
REMARKS	_____ _____ _____			
MONITOR	AB			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	61	64	64	60
	63	62	63	59
AVERAGE	62	63	64	60

DESCRIPTION	PANEL NUMBER S25			
ROLL NUMBER	1001-150766			
DEPLOYED LENGTH	13.5			
AMBIENT AIR TEMP.	26			
OBSERVED OVERLAP	150 mm			
REMARKS	_____ _____ _____			
MONITOR	AB			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	60	64	63	62
	60	64	61	61
AVERAGE	60	64	62	62

DESCRIPTION	PANEL NUMBER S26			
ROLL NUMBER	1001-150766			
DEPLOYED LENGTH	12.5			
AMBIENT AIR TEMP.	26			
OBSERVED OVERLAP	150 mm			
REMARKS	_____ _____ _____			
MONITOR	AB			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	62	64	63	60
	62	64	61	60
AVERAGE	62	64	62	60

DESCRIPTION	PANEL NUMBER			
ROLL NUMBER	_____			
DEPLOYED LENGTH	_____			
AMBIENT AIR TEMP.	_____			
OBSERVED OVERLAP	_____			
REMARKS	_____ _____ _____			
MONITOR	_____			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
AVERAGE				

DESCRIPTION	PANEL NUMBER			
ROLL NUMBER	_____			
DEPLOYED LENGTH	_____			
AMBIENT AIR TEMP.	_____			
OBSERVED OVERLAP	_____			
REMARKS	_____ _____ _____			
MONITOR	_____			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
AVERAGE				

REVIEWED BY: AFK
 DATE: 2021-09-03



GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 1000-089-03 PROJECT TITLE: Cell 16
 OWNER: Waste Connections of Canada CONTRACTOR: Titan Environmental
 LOCATION: Prairie Green IWMF

GEOMEMBRANE: **SECONDARY** PRIMARY
 SUBGRADE CONDITIONS: Good
 REMARKS: _____

DATE: 2021-07-05
 SHEET NUMBER: 7

TRANSPORT EQUIPMENT Excavator and Spreader Bar
 MATERIAL: 60 mil HDPE

DESCRIPTION	PANEL NUMBER S27			
ROLL NUMBER	1001-150770			
DEPLOYED LENGTH	33			
AMBIENT AIR TEMP.	24			
OBSERVED OVERLAP	150 mm			
REMARKS	_____			
MONITOR	AB			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	62	63	63	60
	61	64	60	61
AVERAGE	62	64	62	61

DESCRIPTION	PANEL NUMBER S28			
ROLL NUMBER	1001-150770			
DEPLOYED LENGTH	33.4			
AMBIENT AIR TEMP.	24			
OBSERVED OVERLAP	150 mm			
REMARKS	_____			
MONITOR	AB			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	60	61	64	60
	61	60	63	59
AVERAGE	61	61	64	60

DESCRIPTION	PANEL NUMBER S29			
ROLL NUMBER	1001-150770			
DEPLOYED LENGTH	34			
AMBIENT AIR TEMP.	24			
OBSERVED OVERLAP	150 mm			
REMARKS	_____			
MONITOR	AB			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	60	62	64	62
	59	64	63	60
AVERAGE	60	63	64	61

DESCRIPTION	PANEL NUMBER S30			
ROLL NUMBER	1001-150770			
DEPLOYED LENGTH	34			
AMBIENT AIR TEMP.	24			
OBSERVED OVERLAP	150 mm			
REMARKS	_____			
MONITOR	AB			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	61	62	64	64
	60	62	62	63
AVERAGE	61	62	63	64

DESCRIPTION	PANEL NUMBER S31			
ROLL NUMBER	1001-150770			
DEPLOYED LENGTH	26.5			
AMBIENT AIR TEMP.	24			
OBSERVED OVERLAP	150 mm			
REMARKS	_____			
MONITOR	AB			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	62	59	59	61
	60	60	60	60
AVERAGE	61	60	60	61

DESCRIPTION	PANEL NUMBER S32			
ROLL NUMBER	1001-150763			
DEPLOYED LENGTH	7.2			
AMBIENT AIR TEMP.	24			
OBSERVED OVERLAP	150 mm			
REMARKS	_____			
MONITOR	AB			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	61	59	59	62
	60	61	60	60
AVERAGE	61	60	60	61

REVIEWED BY: AFK
 DATE: 2021-09-03



GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 1000-089-03 PROJECT TITLE: Cell 16
 OWNER: Waste Connections of Canada CONTRACTOR: Titan Environmental
 LOCATION: Prairie Green IWMF

GEOMEMBRANE: **SECONDARY** PRIMARY
 SUBGRADE CONDITIONS: Good
 REMARKS: _____

DATE: 2021-07-05
 SHEET NUMBER: 8

TRANSPORT EQUIPMENT Excavator and Spreader Bar
 MATERIAL: 60 mil HDPE

DESCRIPTION	PANEL NUMBER S33			
ROLL NUMBER	1001-150763			
DEPLOYED LENGTH	34			
AMBIENT AIR TEMP.	24			
OBSERVED OVERLAP	150 mm			
REMARKS	_____			
MONITOR	AB			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	59	63	64	62
	61	61	62	62
AVERAGE	60	62	63	62

DESCRIPTION	PANEL NUMBER S34			
ROLL NUMBER	1001-150763			
DEPLOYED LENGTH	16.8			
AMBIENT AIR TEMP.	24			
OBSERVED OVERLAP	150 mm			
REMARKS	_____			
MONITOR	AB			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	60	63	62	59
	62	64	62	61
AVERAGE	61	64	62	60

DESCRIPTION	PANEL NUMBER			
ROLL NUMBER	_____			
DEPLOYED LENGTH	_____			
AMBIENT AIR TEMP.	_____			
OBSERVED OVERLAP	_____			
REMARKS	_____			
MONITOR	_____			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
AVERAGE				

DESCRIPTION	PANEL NUMBER			
ROLL NUMBER	_____			
DEPLOYED LENGTH	_____			
AMBIENT AIR TEMP.	_____			
OBSERVED OVERLAP	_____			
REMARKS	_____			
MONITOR	_____			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
AVERAGE				

DESCRIPTION	PANEL NUMBER			
ROLL NUMBER	_____			
DEPLOYED LENGTH	_____			
AMBIENT AIR TEMP.	_____			
OBSERVED OVERLAP	_____			
REMARKS	_____			
MONITOR	_____			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
AVERAGE				

DESCRIPTION	PANEL NUMBER			
ROLL NUMBER	_____			
DEPLOYED LENGTH	_____			
AMBIENT AIR TEMP.	_____			
OBSERVED OVERLAP	_____			
REMARKS	_____			
MONITOR	_____			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
AVERAGE				

REVIEWED BY: AFK
 DATE: 2021-09-03



GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

PASSING TRIAL SEAMS

DATE 25-Jun-21

SHEET NUMBER 1

FUSION

EXTRUSION

MACHINE # WW44

NO.	TIME	TECH ID
TF9	804	AM

SEAM NUMBER	SEAM SECTION *		APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCTIVE	
	START POINT	FINISH POINT					DIGITAL SET	INDICATOR						TEST DATE	MON.
1	S1/S2	WEOS	EEOS	832	18	AM	650	860	7	111		AFK		06-25-21	DS
2	S2/S3	WEOS	EEOS	836	18	AM	650	860	7	118		AFK		06-25-21	DS
3	S3/S4	WEOS	EEOS	838	18	AM	650	860	8	126		AFK		06-25-21	DS
4	S4/S5	WEOS	EEOS	842	18	AM	650	860	8	134		AFK		06-25-21	DS
5	S5/S6	WEOS	EEOS	846	18	AM	650	860	8	142		AFK		06-25-21	DS
6	S6/S7	WEOS	EEOS	850	18	AM	650	860	9	151		AFK		06-25-21	DS
7	S7/S8	WEOS	EEOS	853	18	AM	650	860	9	160		AFK		06-25-21	DS
8	S8/S9	WEOS	EEOS	856	18	AM	650	860	9	169		AFK		06-25-21	DS
9	S9/S10	WEOS	EEOS	901	18	AM	650	860	9	178		AFK		06-25-21	DS
10															
11															
12															
13															
14															
15															
16															
17															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY - OVER

74.0

178.0

** COLUMNS TO BE USED
 BY THE DATA REVIEWED ONLY

REVIEWED BY: AFK
 DATE: September 3, 2021



GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

PASSING TRIAL SEAMS

DATE 28-Jun-21

SHEET NUMBER 2

FUSION

EXTRUSION

MACHINE # WW44

NO.	TIME	TECH ID
TF16	847	AM
TF18	1645	AM

SEAM NUMBER	SEAM SECTION *		APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCTIVE	
	START POINT	FINISH POINT					DIGITAL SET	INDICATOR						TEST DATE	MON.
1	S11/S12	WEOS	EEOS	923	22	AM	600	860	17	102		AFK		06-29-21	DS
2	S12/S13	WEOS	EEOS	931	22	AM	600	860	18	120		AFK		06-29-21	DS
3	S13/S14	WEOS	EEOS	940	22	AM	600	860	18	138		AFK		06-29-21	DS
4	S14/S15	WEOS	EEOS	948	22	AM	600	860	17	155		AFK		06-29-21	DS
5	S15/S16	WEOS	EEOS	957	22	AM	600	860	17	172		AFK		06-29-21	DS
6	S16/S17	WEOS	EEOS	1006	22	AM	600	860	16	188		AFK		06-29-21	DS
7	S17/S18	WEOS	EEOS	1012	22	AM	600	860	15	203		AFK		06-29-21	DS
8	S18/S19	WEOS	EEOS	1019	22	AM	600	860	14	217		AFK		06-29-21	DS
9	S19/S20	WEOS	EEOS	1030	22	AM	600	860	14	231		AFK		06-29-21	DS
10	S20/S21	WEOS	EEOS	1038	22	AM	600	860	13	244		AFK		06-29-21	DS
11	S21/S22	WEOS	EEOS	1044	22	AM	600	860	13	257		AFK		06-29-21	DS
12	S22/S23	WEOS	EEOS	1050	22	AM	600	860	12	269		AFK		06-29-21	DS
13	S1/S26	WEOS	EEOS	1120	22	AM	600	860	11	280		AFK		06-29-21	DS
14															
15															
16															
17															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY - OVER

146.0

280.0

** COLUMNS TO BE USED
 BY THE DATA REVIEWED ONLY

REVIEWED BY: AFK
 DATE: September 3, 2021



GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

DATE 28-Jun-21

SHEET NUMBER 3

FUSION

EXTRUSION

MACHINE # WW15

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF17	900	RD

SEAM NUMBER	SEAM SECTION *		APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCTIVE	
	START POINT	FINISH POINT					DIGITAL SET	INDICATOR						TEST DATE	MON.
1	S23/S24	WEOS	EEOS	1053	25	RD	600	860	13	134		AFK		06-29-21	DS
2	S24/S25	WEOS	EEOS	1100	22	RD	600	860	13	147		AFK		06-29-21	DS
3	S25/S26	WEOS	EEOS	1110	22	RD	600	860	12	159		AFK		06-29-21	DS
4															
5															
6															
7															
8															
9															
10															
11															
12															
13															
14															
15															
16															
17															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY - OVER

38.0

159.0

** COLUMNS TO BE USED
 BY THE DATA REVIEWED ONLY

REVIEWED BY: AFK
 DATE: September 3, 2021



GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

DATE 05-Jul-21

SHEET NUMBER 4

FUSION

EXTRUSION

MACHINE # WW44

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF31	1049	AM

SEAM NUMBER	SEAM SECTION *		APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCTIVE	
	START POINT	FINISH POINT					DIGITAL SET	INDICATOR						TEST DATE	MON.
1	S27/S28	SEOS	EEOS	1114	25	AM	650	860	33	186		AFK		07-05-21	DS
2	S28/S29	SEOS	EEOS	1125	25	AM	650	860	33	219		AFK		07-05-21	DS
3	S31/S32	EEOS	EEOS	1140	25	AM	650	860	7	226		AFK		07-05-21	DS
4	S32/S33	NEOS	SEOS	1145	25	AM	650	860	10	236		AFK		07-05-21	DS
5	S31/S33	NEOS	SEOS	1147	25	AM	650	860	26	262		AFK		07-05-21	DS
6	S31/S34	WEOS	EEOS	1303	25	AM	650	860	16	278		AFK		07-05-21	DS
7	S30/S34	WEOS	EEOS	1309	25	AM	650	860	6	284		AFK		07-05-21	DS
8	S29/S34	WEOS	EEOS	1311	25	AM	650	860	7	291		AFK		07-05-21	DS
9	S28/S34	WEOS	EEOS	1314	25	AM	650	860	3	294		AFK		07-05-21	DS
10															
11															
12															
13															
14															
15															
16															
17															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY - OVER

141.0

294.0

** COLUMNS TO BE USED
 BY THE DATA REVIEWED ONLY

REVIEWED BY: AFK
 DATE: September 3, 2021



GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

DATE 05-Jul-21

SHEET NUMBER 5

PASSING TRIAL SEAMS

X FUSION

 EXTRUSION

MACHINE # EXT5

NO.	TIME	TECH ID
TX21	1200	RD

SEAM NUMBER	SEAM SECTION *		APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCTIVE			
	START POINT	FINISH POINT					DIGITAL SET							INDICATOR		TEST DATE	MON.
							WEDGE OR BARREL	NOZZLE						WEDGE OR BARREL	NOZZLE		
1	S11/S24	WEOS	1339	25	RD	475	470		8	24		AFK		07-05-21	DS		
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	
11																	
12																	
13																	
14																	
15																	
16																	
17																	

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY - OVER

8.0

24.0

** COLUMNS TO BE USED
 BY THE DATA REVIEWED ONLY

REVIEWED BY: AFK
 DATE: September 3, 2021



GEOMEMBRANE SEAM PRESSURE TEST LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

Date : 25-Jun-21
 Sheet Number 1

	SEAM, NUMBER	SEAM SECTION *		PRESS GAUGE NUMBER	TECH ID	TIME		PRESSURE		OBS. TEST	RESULTS PASS/P	SEAM COMPLETE		MON	REMARKS
		FROM	TO			START	FINISH	INITIAL	FINAL			NO	YES		
1	S1/S2	WEOS	EEOS	1	DP	914	919	34	32	Y	P		X	DS	
2	S2/S3	WEOS	EEOS	2		915	920	36	35	Y	P		X	DS	
3	S3/S4	WEOS	EEOS	3		946	951	36	35	Y	P		X	DS	
4	S9/S10	EEOS	WEOS	1		917	922	51	51	Y	P		X	DS	
5	S8/S9	EEOS	WEOS	2		918	923	49	49	Y	P		X	DS	
6	S7/S8	EEOS	WEOS	3		919	924	45	44	Y	P		X	DS	
7	S4/S5	EEOS	WEOS	1		926	931	37	36	Y	P		X	DS	
8	S6/S7	WEOS	EEOS	2		929	934	36	35	Y	P		X	DS	
9	S5/S6	WEOS	EEOS	1		1005	1010	38	38	Y	P	X		DS	
10	S5/S6	WEOS	EEOS	2		1005	1010	45	42	Y	P		X	DS	
11															
12															
13															
14															
15															
16															
17															
18															
19															
20															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF.PT.)

REVIEWED BY:
DATE:



GEOMEMBRANE SEAM PRESSURE TEST LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

Date : 29-Jun-21
 Sheet Number 2

	SEAM, NUMBER	SEAM SECTION *		PRESS GAUGE NUMBER	TECH ID	TIME		PRESSURE		OBS. TEST	RESULTS PASS/P	SEAM COMPLETE		MON	REMARKS
		FROM	TO			START	FINISH	INITIAL	FINAL			NO	YES		
1	S11/S12	WEOS	EEOS	1	DP	1006	1011	37	36	Y	P		X	DS	
2	S12/S13	WEOS	EEOS	2	DP	1006	1011	36	36	Y	P		X	DS	
3	S13/S14	WEOS	EEOS	3	DP	1007	1012	39	39	Y	P		X	DS	
4	S14/S15	WEOS	EEOS	1	DP	1016	1021	37	36	Y	P		X	DS	
5	S15/S16	WEOS	EEOS	2	DP	1017	1022	37	36	Y	P		X	DS	
6	S16/S17	WEOS	EEOS	3	DP	1017	1022	38	36	Y	P		X	DS	
7	S17/S18	WEOS	EEOS	1	DP	1039	1044	37	36	Y	P		X	DS	
8	S18/S19	WEOS	EEOS	2	DP	1040	1045	37	35	Y	P		X	DS	
9	S19/S20	WEOS	EEOS	3	DP	1040	1045	35	34	Y	P		X	DS	
10	S20/S21	WEOS	EEOS	1	DP	1100	1105	38	36	Y	P		X	DS	
11	S21/S22	WEOS	EEOS	2	DP	1100	1105	38	36	Y	P		X	DS	
12	S22/S23	WEOS	EEOS	3	DP	1101	1106	36	35	Y	P		X	DS	
13	S23/S24	WEOS	EEOS	1	DP	1114	1119	37	36	Y	P		X	DS	
14	S24/S25	WEOS	EEOS	2	DP	1115	1120	38	36	Y	P		X	DS	
15	S25/S26	WEOS	EEOS	3	DP	1115	1120	39	36	Y	P		X	DS	
16	S26/S1	WEOS	EEOS	1	DP	1123	1128	36	35	Y	P		X	DS	
17															
18															
19															
20															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF.PT.)

REVIEWED BY:
 DATE:



GEOMEMBRANE SEAM PRESSURE TEST LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

Date : 05-Jul-21
 Sheet Number 3

	SEAM, NUMBER	SEAM SECTION *		PRESS GAUGE NUMBER	TECH ID	TIME		PRESSURE		OBS. TEST	RESULTS PASS/P	SEAM COMPLETE		MON	REMARKS
		FROM	TO			START	FINISH	INITIAL	FINAL			NO	YES		
1	S27/S28	NEOS	SEOS	1	JP	1146	1151	42	41	Y	P		X	AFK	
2	S28/S29	NEOS	SEOS	2	JP	1146	1151	47	45	Y	P		X	AFK	
3	S29/S30	12P	SEOS	1	JP	1202	1207	44	43	Y	P	X		AFK	
4	S29/S30	12P	NEOS	2	JP	1202	1207	41	39	Y	P		X	AFK	
5	S30/S32	SEOS	NEOS	1	JP	1224	1229	48	48	Y	P		X	AFK	
6	S30/S31	NEOS	SEOS	2	JP	1224	1229	43	40	Y	P		X	AFK	
7	S31/S32	WEOS	EEOS	1	JP	1231	1236	46	45	Y	P		X	AFK	
8	S31/S33	NEOS	SEOS	2	JP	1231	1236	48	47	Y	P		X	AFK	
9	S32/S33	SEOS	NEOS	1	JP	1237	1242	49	48	Y	P		X	AFK	
10	S11/S34	EEOS	14K	1	JP	1321	1326	49	46	Y	P		X	AFK	
11	S28/S34	EEOS	WEOS	1	JP	1326	1331	38	37	Y	P		X	AFK	
12	S29/S34	EEOS	WEOS	2	JP	1326	1331	37	36	Y	P		X	AFK	
13	S30/S34	WEOS	EEOS	1	JP	1336	1341	42	40	Y	P		X	AFK	
14															
15															
16															
17															
18															
19															
20															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF.PT.)

REVIEWED BY:
DATE:



GEOMEMBRANE SEAM and REPAIR VACUUM TEST LOG

PROJECT NUMBER: 1000-089-04
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE
 VACUUM BOX NUMBER

SHEET NUMBER 1

SEAMS										REPAIRS									
	SEAM NUMBER	SEAM SECTION *		TEST DATE	TECH ID	DEFECTS **	SEAM COMPLETE		OBS. TEST	MON.	REMARKS		DEFECT CODE	TEST DATE	TECH ID	DEFECTS **	OBS. TEST	MON.	REMARKS
		FROM	TO				NO	YES											
1	S11/S34	WEOS	TO 14K	2021-07-05	BT	N		X	Y	DJ		21	3U	2021-06-25	JP	N	Y	DS	
2												22	3V	2021-06-25	JP	N	Y	DS	
3												23	1U	2021-06-25	JP	N	Y	DS	
4												24	14L	2021-07-05	BT	N	Y	DJ	
5												25	14K	2021-07-05	BT	N	Y	DJ	
6												26	14M	2021-07-05	BT	N	Y	DJ	
7												27	12R	2021-07-05	BT	N	Y	DJ	
8												28	12Q	2021-07-05	BT	N	Y	DJ	
9												29	12P	2021-07-05	BT	N	Y	DJ	
10												30	14N	2021-07-05	BT	N	Y	DJ	
11												31	14P	2021-07-05	BT	N	Y	DJ	
12												32							
13												33							
14												34							
15												35							
16												36							
17												37							
18												38							
19												39							
20												40							
												41							

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)

** RECORD QUANTITY OF LEAKS DETECTED AND REFERENCE NEW DEFECT CODE IN REMARKS.

REVIEWED BY:
DATE:



GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 1000-089-03 PROJECT TITLE: Cell 16
 OWNER: Waste Connections of Canada CONTRACTOR: Titan Environmental
 LOCATION: Prairie Green IWMF

GEOMEMBRANE: SECONDARY PRIMARY **Double Composite**

SUBGRADE CONDITIONS: _____
 REMARKS: _____

DATE: 2021-07-09
 SHEET NUMBER: 1

TRANSPORT EQUIPMENT Excavator and Spreader Bar
 MATERIAL: 60 mil HDPE

DESCRIPTION	PANEL NUMBER D01			
ROLL NUMBER	1001-150750			
DEPLOYED LENGTH	18			
AMBIENT AIR TEMP.	31			
OBSERVED OVERLAP	150 mm			
REMARKS	_____ _____			
MONITOR	AB			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	60	62	62	61
	62	63	60	59
AVERAGE	61	63	61	60

DESCRIPTION	PANEL NUMBER D02			
ROLL NUMBER	1001-150750			
DEPLOYED LENGTH	9 X 3.5			
AMBIENT AIR TEMP.	31			
OBSERVED OVERLAP	150 mm			
REMARKS	_____ _____			
MONITOR	AB			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	61	60	60	60
	59	62	60	62
AVERAGE				

DESCRIPTION	PANEL NUMBER D03			
ROLL NUMBER	1001-150750			
DEPLOYED LENGTH	18			
AMBIENT AIR TEMP.	31			
OBSERVED OVERLAP	150 mm			
REMARKS	_____ _____			
MONITOR	AB			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	60	60	61	59
	62	60	60	62
AVERAGE				

DESCRIPTION	PANEL NUMBER D04			
ROLL NUMBER	1001-150750			
DEPLOYED LENGTH	9 X 3.5			
AMBIENT AIR TEMP.	31			
OBSERVED OVERLAP	150 mm			
REMARKS	_____ _____			
MONITOR	AB			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
	59	60	59	62
	62	59	61	62
AVERAGE				

DESCRIPTION	PANEL NUMBER			
ROLL NUMBER	_____			
DEPLOYED LENGTH	_____			
AMBIENT AIR TEMP.	_____			
OBSERVED OVERLAP	150 mm			
REMARKS	_____ _____			
MONITOR	_____			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
AVERAGE				

DESCRIPTION	PANEL NUMBER			
ROLL NUMBER	_____			
DEPLOYED LENGTH	_____			
AMBIENT AIR TEMP.	_____			
OBSERVED OVERLAP	150 mm			
REMARKS	_____ _____			
MONITOR	_____			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL
AVERAGE				

REVIEWED BY: AFK
 DATE: 2021-09-03



GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

DATE 04-Sep-21

SHEET NUMBER 1

PASSING TRIAL SEAMS

X FUSION

 EXTRUSION

MACHINE # WW1

NO.	TIME	TECH ID
TF38	1509	AM

SEAM NUMBER	SEAM SECTION *		APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCTIVE	
	START POINT	FINISH POINT					DIGITAL SET	INDICATOR						TEST DATE	MON.
1	D2/D4	NEOS SEOS	1523	28	AM	550	860		3	67		AFK		07-09-21	AB
2	D1/D2	WEOS EEOS	1525	28	AM	550	860		9	76		AFK		07-09-21	AB
3	D1/D4	WEOS EEOS	1530	28	AM	550	860		9	85		AFK		07-09-21	AB
4	D3/D4	EEOS WEOS	1532	28	AM	550	860		9	94		AFK		07-09-21	AB
5	D2/D3	EEOS WEOS	1535	28	AM	550	860		9	103		AFK		07-09-21	AB
6															
7															
8															
9															
10															
11															
12															
13															
14															
15															
16															
17															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY - OVER

39.0

103.0

** COLUMNS TO BE USED
 BY THE DATA REVIEWED ONLY

REVIEWED BY: AFK
 DATE: September 9, 2021



GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

DATE 09-Jul-21

SHEET NUMBER 1

PASSING TRIAL SEAMS

FUSION

EXTRUSION

MACHINE # EXT5

NO.	TIME	TECH ID
TX23	817	RN

SEAM NUMBER	SEAM SECTION *		APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCTIVE			
	START POINT	FINISH POINT					DIGITAL SET							INDICATOR		TEST DATE	MON.
							WEDGE OR BARREL	NOZZLE						WEDGE OR BARREL	NOZZLE		
1	P126/P135	WEOS	EEOS	1100	25	RD	465	475	4	39		AFK		07-09-21	AB		
2	P128/D3	SEOS	NEOS	1557	25	RD	465	475	2	41		AFK		07-09-21	AB		
3	P127/D3	SEOS	NEOS	1605	25	RD	465	475	5	46		AFK		07-09-21	AB		
4	P127/D4	SEOS	NEOS	1610	25	RD	465	475	2	48		AFK		07-09-21	AB		
5	P126/D1	SEOS	NEOS	1612	25	RD	465	475	7	54		AFK		07-09-21	AB		
6	P137/D1	EEOS	WEOS	1615	25	RD	465	475	7	61		AFK		07-09-21	AB		
7	P136/D1	EEOS	WEOS	1620	25	RD	465	475	7	65/3	DSX6	AFK		07-09-21	AB		
8	P135/D1	EEOS	WEOS	1625	25	RD	465	475	5	8		AFK		07-09-21	AB		
9																	
10																	
11																	
12																	
13																	
14																	
15																	
16																	
17																	

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY - OVER

39.0

24.0

** COLUMNS TO BE USED
 BY THE DATA REVIEWED ONLY

REVIEWED BY: AFK
 DATE: September 3, 2021



GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

DATE 09-Jul-21

SHEET NUMBER 2

PASSING TRIAL SEAMS

FUSION

EXTRUSION

MACHINE # EXT9

NO.	TIME	TECH ID
TX25	1545	DP

SEAM NUMBER	SEAM SECTION *		APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCTIVE			
	START POINT	FINISH POINT					DIGITAL SET							INDICATOR		TEST DATE	MON.
							WEDGE OR BARREL	NOZZLE						WEDGE OR BARREL	NOZZLE		
1	P128/D3	SEOS	NEOS	1618	28	DP	470	475	2	57/1	DSX5	AFK		07-09-21	AB		
2	P127/D3	SEOS	NEOS	1620	28	DP	470	475	7	8		AFK		07-09-21	AB		
3	P127/D2	SEOS	NEOS	1625	28	DP	470	475	2	10		AFK		07-09-21	AB		
4	P126/D2	SEOS	NEOS	1630	28	DP	470	475	2	12		AFK		07-09-21	AB		
5	P126/D1	SEOS	NEOS	1635	28	DP	470	475	5	17		AFK		07-09-21	AB		
6	P130/D1	SEOS	NEOS	1640	28	DP	470	475	1	18		AFK		07-09-21	AB		
7	P135/D1	WEOS	1 m E	1641	28	DP	470	475	1	19		AFK		07-09-21	AB		
8																	
9																	
10																	
11																	
12																	
13																	
14																	
15																	
16																	
17																	

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY - OVER

20.0

19.0

** COLUMNS TO BE USED
 BY THE DATA REVIEWED ONLY

REVIEWED BY: AFK
 DATE: September 3, 2021



GEOMEMBRANE SEAM LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

DATE 10-Jul-21

SHEET NUMBER 3

PASSING TRIAL SEAMS

FUSION

EXTRUSION

MACHINE # EXT5

NO.	TIME	TECH ID
TX26	841	RN

SEAM NUMBER	SEAM SECTION *		APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES		APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCTIVE			
	START POINT	FINISH POINT					DIGITAL SET							INDICATOR		TEST DATE	MON.
							WEDGE OR BARREL	NOZZLE						WEDGE OR BARREL	NOZZLE		
1	P128/D3	EEOS 14m W	1030	28	RN	470	475		14	22		AFK		07-10-21	AB		
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	
11																	
12																	
13																	
14																	
15																	
16																	
17																	

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
 A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

DAILY TOTAL
 DESTRUCTIVE LENGTH CARRY - OVER

14.0

19.0

** COLUMNS TO BE USED
 BY THE DATA REVIEWED ONLY

REVIEWED BY: AFK
 DATE: September 3, 2021



GEOMEMBRANE SEAM PRESSURE TEST LOG

PROJECT NUMBER: 1000-089-03
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE

Date : 09-Jul-21
 Sheet Number 1

	SEAM, NUMBER	SEAM SECTION *		PRESS GAUGE NUMBER	TECH ID	TIME		PRESSURE		OBS. TEST	RESULTS PASS/P	SEAM COMPLETE		MON	REMARKS
		FROM	TO			START	FINISH	INITIAL	FINAL			NO	YES		
1	D2/D4	NEOS	SEOS	1	JP	1545	1550	34	34	Y	P		X	AB	
2	D1/D4	EEOS	WEOS	1	JP	1629	1634	38	37	Y	P		X	AB	
3	D3/D4	EEOS	WEOS	2	JP	1629	1634	47	45	Y	P		X	AB	
4	D1/D2	WEOS	EEOS	1	JP	1654	1659	48	45	Y	P		X	AB	
5	D2/D3	WEOS	EEOS	2	JP	1654	1659	44	43	Y	P		X	AB	
6															
7															
8															
9															
10															
11															
12															
13															
14															
15															
16															
17															
18															
19															
20															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF.PT.)

REVIEWED BY:
DATE:



GEOMEMBRANE SEAM and REPAIR VACUUM TEST LOG

PROJECT NUMBER: 1000-089-04
 OWNER: Waste Connections of Canada
 LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 16
 CONTRACTOR: Titan Environmental
 MATERIAL: 60 mil HDPE
 VACUUM BOX NUMBER

SHEET NUMBER 1

										REPAIRS								
NUMBER	SEAM SECTION *		TEST DATE	TECH ID	DEFECTS **	SEAM COMPLETE		OBS. TEST	MON.	REMARKS		DEFECT CODE	TEST DATE	TECH ID	DEFECTS **	OBS. TEST	MON.	REMARKS
	FROM	TO				NO	YES											
1	P128/D3	SEOS - NEOS	2021-07-05	BT	N		X	Y	AB		21							
2	P127/D3	SEOS - NEOS	2021-07-05	BT	N		X	Y	AB		22							
3	P127/D3	SEOS - NEOS	2021-07-05	BT	N		X	Y	AB		23							
4	P126/D4	SEOS - NEOS	2021-07-05	BT	N		X	Y	AB		24							
5	P137/D1	EEOS - WEOS	2021-07-05	BT	N		X	Y	AB		25							
6	P136/D1	EEOS - WEOS	2021-07-05	BT	N		X	Y	AB		26							
7	P135/D1	EEOS - WEOS	2021-07-05	BT	N		X	Y	AB		27							
8	P128/D3	SEOS - NEOS	2021-07-05	BT	N		X	Y	AB		28							
9	P127/D4	SEOS - NEOS	2021-07-05	BT	N		X	Y	AB		29							
10	P127/D3	SEOS - NEOS	2021-07-05	BT	N		X	Y	AB		30							
11	P127/D2	SEOS - NEOS	2021-07-05	BT	N		X	Y	AB		31							
12	P126/D2	SEOS - NEOS	2021-07-05	BT	N		X	Y	AB		32							
13	P126/D1	SEOS - NEOS	2021-07-05	BT	N		X	Y	AB		33							
14	P130/D1	SEOS - NEOS	2021-07-05	BT	N		X	Y	AB		34							
15	P135/D1	WEOS - 1 m E	2021-07-05	BT	N		X	Y	AB		35							
16											36							
17											37							
18											38							
19											39							
20											40							
											41							

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)

** RECORD QUANTITY OF LEAKS DETECTED AND REFERENCE NEW DEFECT CODE IN REMARKS.

REVIEWED BY:
DATE:

Appendix C

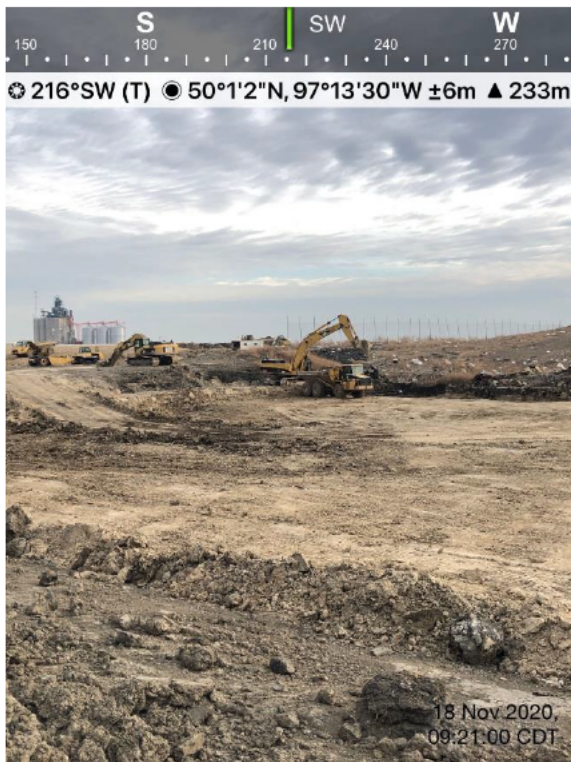
Construction Photo Summary



Silt Excavation of Cell 16 looking East.



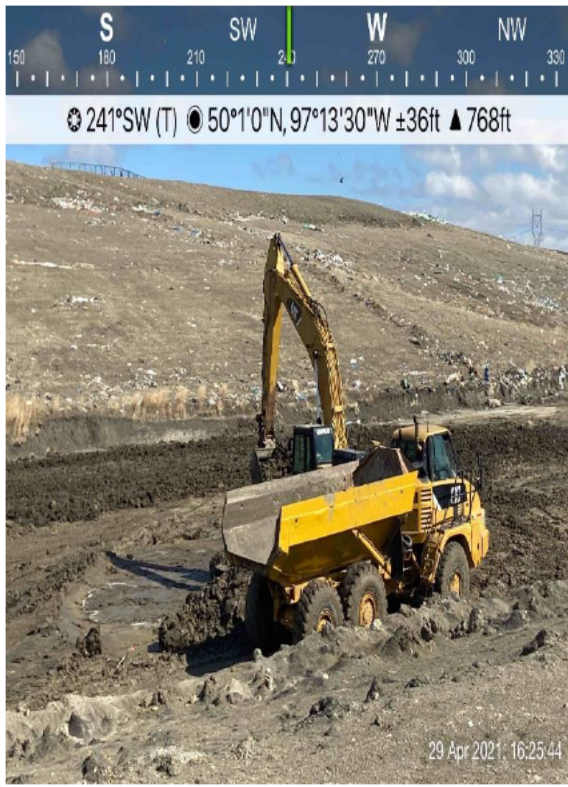
Density test on West Perimeter Berm



Silt Excavation at Northeast Corner of Cell 16



Drying out Cell floor prior to compaction.



Lower Clay excavation on Southwest Floor facing East



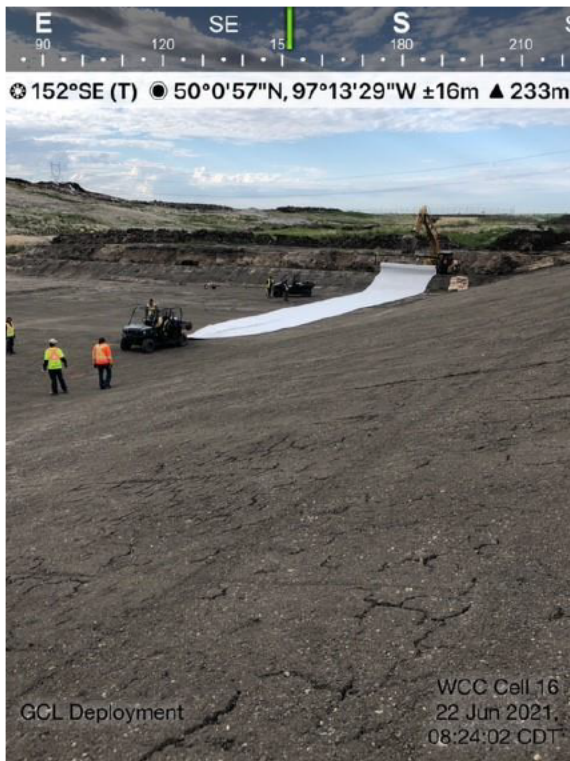
Shaping and Trimming West Perimeter Berm



Smooth drum rolling Cell floor and West Perimeter Berm Slope



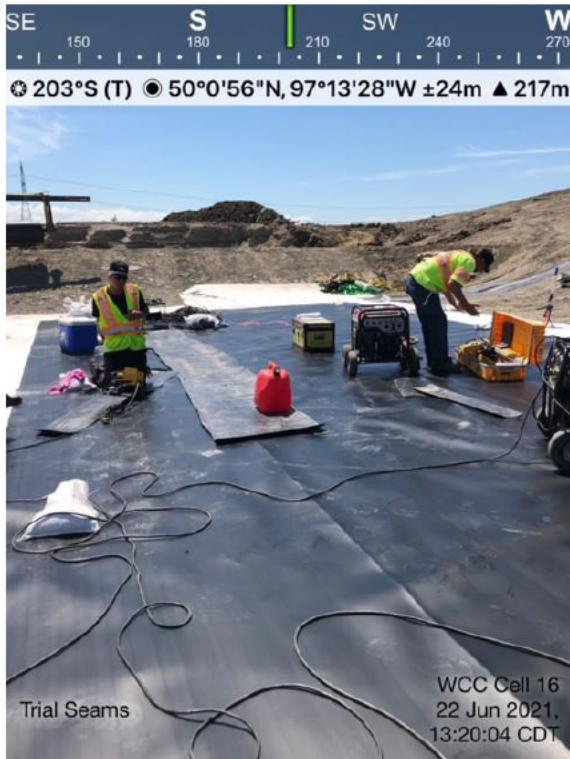
Excavation of Leachate Collection Trench



Placement of first panel of GCL



Placement of first panel of Smooth HDPE Geomembrane



Trial Seam of Smooth HDPE Geomembrane



Fusion Seaming of Smooth HDPE Geomembrane



Texture HDPE Geomembrane of West Perimeter Berm



Air Pressure Test on Fusion Seams



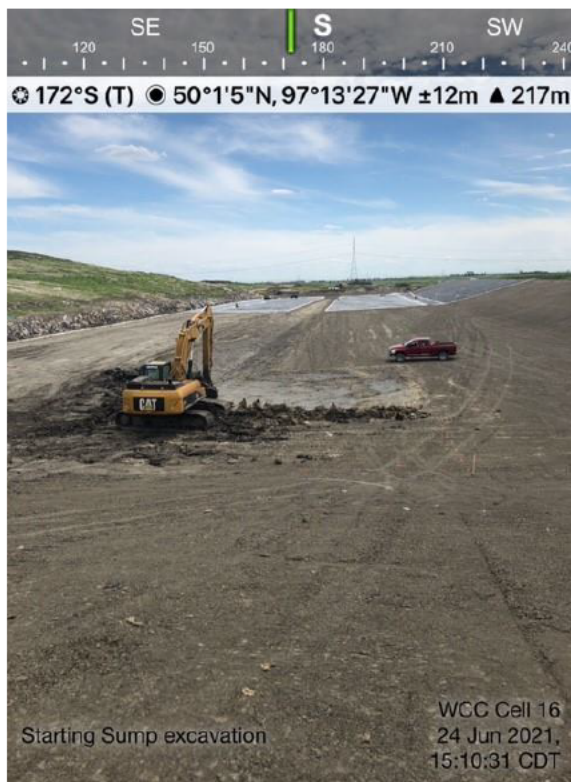
Vacuum Box testing repairs



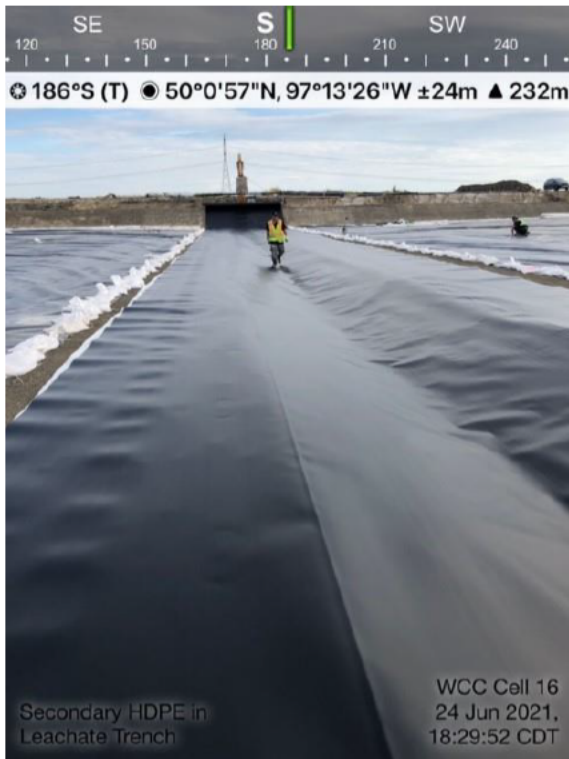
Secondary GCL in Leachate Collection Trench



Bentonite in the seams of GCL panels



Sump Excavation Starting at North End of Cell



Secondary Smooth HDPE Geomembrane in Leachate Trench



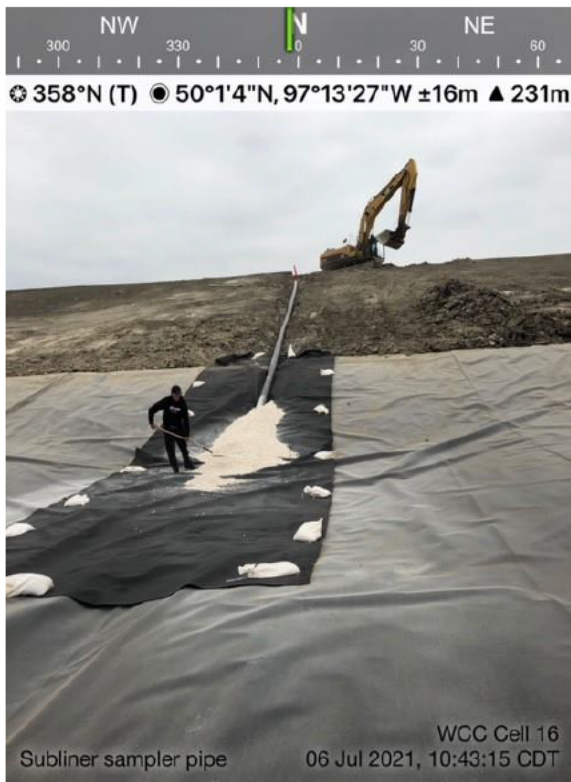
Extrusion Welding East Tie-In to Cell 14



Geocomposite Seam Ties



Sewing Seams of Geocomposite



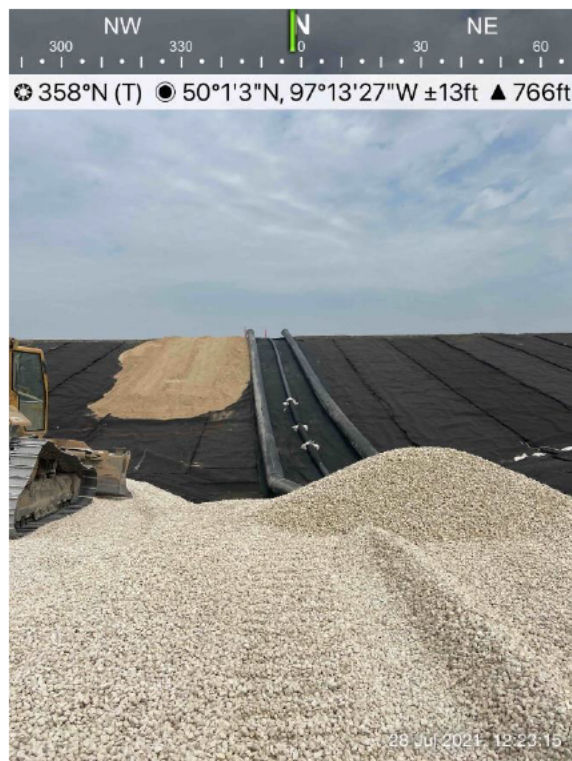
Installation of Sub-liner Sampler HDPE Pipe



Double Composite GCL installation in Sump



Sand Drainage Layer and Leachate Pipe looking South



Leachate Collection Pipes on North Perimeter Berm, Leachate Stone in Sump and Drainage Sand Layer on Slope.



Filter Geotextile in Leachate Collection Trench and Sump



Cell 16 Complete