Prepared For

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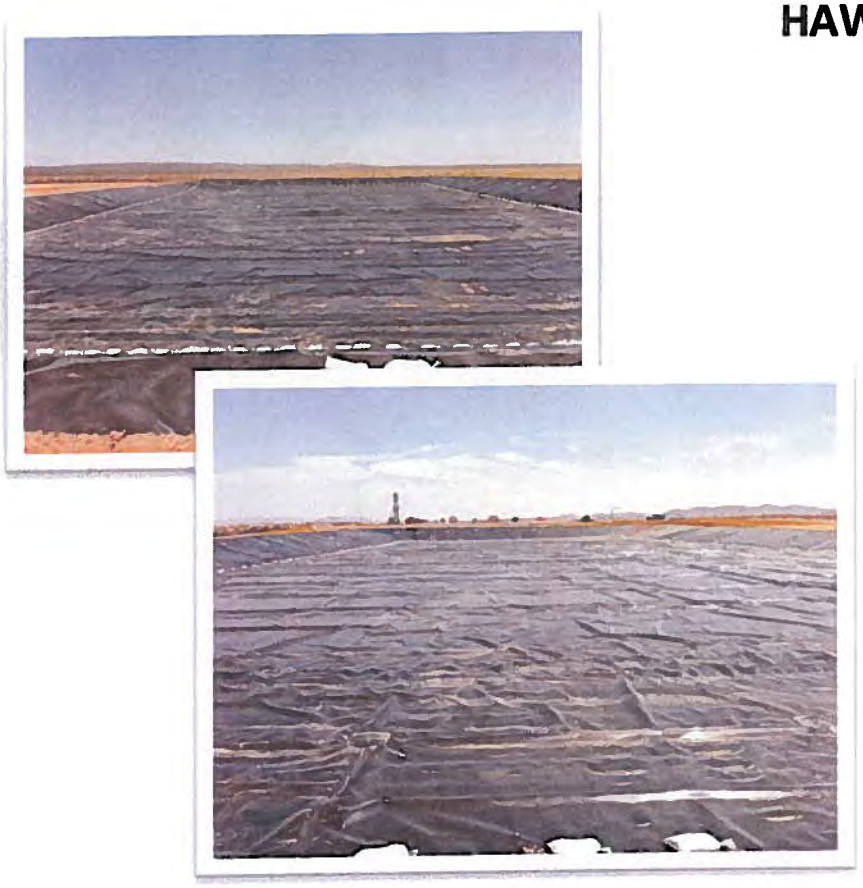
FINAL CONSTRUCTION QUALITY ASSURANCE REPORT EAST WASTE PILE COMPOSTING PAD and SURFACE IMPOUNDMENT A and B

HAWES COMPOSTING FACILITY



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SECTION 1.0 INTRODUCTION

1.1 General Information

This Construction Quality Assurance and (CQA) Final Construction Report has been prepared for the Nursery Products Hawes Composting Facility (HCF) located in San Bernardino County, California (Site). This CQA Final Construction Report has been prepared in accordance with and meets the requirements as outlined in the approved Nursery Products Final Design, Construction Quality Assurance Plan & Technical Specifications as prepared by Geosyntec Consultants, dated May 2011, and to support the Report of Waste Discharge (ROWD) for the HCF.

This CQA Final Construction report has been prepared by the CQA consultant for HCF, Zero Energy Institute, LLC (ZEI) which is an independent party not affiliated with the contractors, geosynthetics installer-manufacturer or HCF. ZEI had the overall responsibility for managing, coordinating, and implementing the CQA activities and confirming that the contractor's construction quality control activities were performed in strict compliance with the approved plans and specifications and industry standard of care. Critical construction activities related to geosynthetic manufacturing, geosynthetics installations, earthwork removals, earthworks placement (cut and fills), earthworks CQC material conformance testing, and civil improvements were monitored and documented by ZEI. Construction activities documented in this report cover the composting facility construction only, as designed by Geosyntec Consultants.

Key HCF project team members included:

- HCF Owner: Nursery Products, owners' representative Chris Seney, Construction Manager (CM) and site Resident Engineer (RE) for HCF.
- General Contractor: Quantum Contractors, responsible for general construction including earthworks, grading, lines and grades, piping, and mechanical as delineated in the design drawings and technical specifications.
- Geosynthetic General Contractor: EC Applications, Inc. (ECA), contracted directly by the owner to provide geosynthetic installation, responsible for the geosynthetic supply (60-mil HDPE and GCL) and installation including monitoring systems i.e. lysimeters, and leak detection sumps, material handling, storage, placement, seaming, anchoring against wind up-lift, CQC testing and evaluation.
- Geosynthetic Manufacturers: Agru America manufactured and supplied the 60-mil High Density Polyethylene (HDPE) liner. CETCO Lining Technologies manufactured and supplied the Geosynthetic Clay Liner (GCL) Bentomat ST. Skaps Industries manufactured and supplied the 8.0 oz Geotextile Fabric. All manufacturers provided materials that met or exceeded the project requirements.
- Geomembrane Testing Laboratory: Precision Geosynthetics Laboratory (PGL), responsible for the independent testing for the HDPE destructive seam testing. PGL provided peel and shear testing, density and thickness evaluations.
- Soils Testing and Soils Laboratory CQA: Sladden Engineering, responsible for independent laboratory and field moisture density material compliance. Sladden

conducted tests on representative soils samples to evaluate their properties and verify compliance with the design drawings and technical specifications.

- Third Party, Independent CQA Consultant: CQA monitoring was performed by ZEI. ZEI is the CQA Consultant for HCF, and had the overall responsibility of managing, coordinating, and implementing the CQA activities and confirming that the contractor's construction quality control activities were performed in accordance with the approved CQA Plan. ZEI's Project Manager Mr. Shannon Goodrich and certifying professional engineer Mr. Doug Hilts had the overall responsibility for Quality Assurance. All CQA and Contractor's CQC documentation has been reviewed, evaluated, and approved by ZEI and are represented in this report.

1.2 Purpose

The purpose of this construction report is to provide quality assurance documentation showing that: (i) work has been performed in compliance with the construction documents; (ii) physical conformance sampling and field testing was completed successfully, on materials and workmanship at the appropriate frequencies outlined in the CQA Plan; (iii) verify that the required CQC and CQA documentation is complete and accurate, as outlined in the Construction Quality Assurance Plan & Technical Specifications.

SECTION 2.0 HCF CONSTRUCTION OVERVIEW

2.1 Facility Construction:

The HCF is a biosolids and green material composting facility located in San Bernardino County, CA. The facility will compost biosolids and green materials to produce agricultural grade compost in compliance with U.S. Environmental Protection Agency (EPA) Code of Federal Regulations (CFR), and the California Code of Regulations, Title 14 (14 CCR). The composting process will occur in windrows on approximately 72-acres (when built out completely) on a "waste pile" designated as East Waste Pile and West Waste Pile. The waste pile is a prepared engineered fill pad that consists of native soil prepared and compacted to a firm and unyielding condition. The engineered waste pile is graded to slope towards the two (2) geosynthetic lined surface impoundments A (East) and B (West) located on the northerly portion of the HFC. The construction included stormwater control berms around the perimeter of the facility to control site run-off and off site run-on. In addition the waste pile is divided into two sections, East Section and West Section, separated by a common diversion berm constructed as an engineered fill. A berm was also constructed to separate the waste pile from the surface impoundments. Each surface impoundment is equipped with underliner leak detection sumps and Vadose monitoring lysimeters located beneath the lined impoundment systems.
This report covers work performed and built on the waste pile East Section only, surface impoundment A and surface impoundment B. The West Section of the waste pile will be completed at a later date. The ZEI CQA program was performed on the following construction materials, workmanship and installation practices:

2.1.1 Earthworks for the Waste Pile: Visual monitoring and CQA laboratory and field testing were performed on the waste pile liner which consisted of a minimum of 12-inches of engineered fill composed of native subgrade that has been processed, scarified, moisture conditioned and compacted to 90 percent relative compaction as defined by American Society for Testing and Materials (ASTM D 1557). Monitoring of the waste pile perimeter berm was also performed during construction. The earthen berm was constructed of an engineered fill consisting of on-site soil compacted to 90 percent relatives compaction using ASTM D 1557 as the standard. **This report covers only construction and CQA work performed on the East Section of the waste pile.** See Appendix A, Sladden Engineering CQA Earthworks Testing for East Waste Pile & Surface Impoundments A and B

2.1.2 Surface Impoundments (Ponds A and B) Liner Soil Foundation: Visual monitoring and CQA testing were performed on the two (2) surface impoundments Pond A and Pond B. The two surface impoundments were constructed to contain stormwater from the 1,000-year, 24-hour storm event over the entire facility drainage area. Surface Impoundment A (approximately 10.5 acre feet) is located in the northwest corner of the facility and Surface Impoundment B (approximately 6.5 acre feet) is located in the northeast portion of the facility. The two surface impoundments were constructed in accordance with the approved Regional Water Quality Control Board (RWQCB) drawings and construction was designated as a single composite liner system. The constructed liner system includes (from bottom to top, in order of construction):

- Six (6) inches of prepared compacted native subgrade moisture conditioned and compacted to a minimum 90 percent of the maximum dry density per ASTM D 1557;
- Leak detection monitoring sumps under the lowest part of each surface impoundment that consists of a composite liner of a geosynthetic clay liner (GCL) and a smooth 60-mil high density polyethylene (HDPE) flexible membrane liner, and a cushion geotextile fabric that surrounds and envelopes a gravel drainage layer
- A GCL liner on the pond floor and side slopes anchored in an earthen filled anchor trench at the perimeter top of slope; and
- A 60-mil HDPE liner on the pond floor and side slopes anchored in an earthen filled anchor trench at the perimeter top of slope.

The geosynthetic 60-mil HDPE is the primary liner for the surface impoundments. To provide additional protection to downward migration of water and a smooth surface on which the HDPE was placed, a GCL was included in the liner section beneath the HDPE liner. The GCL consist of powdered, bentonite clay sewn in between two layers of geotextile fabric. The surface impoundment liner systems are ballast on the bottom of the impoundment floor and anchored down to avoid up-lift by wind.

2.1.3 Facility Perimeter Berm: A variable height berm with slopes of 2:1 (horizontal to vertical) was constructed around the perimeter of the HCF to control stormwater run-off, to and from the facility, respectively. The berms consisted of an engineered fill made up of processed and compacted native soil.

2.1.4 Surface Impoundment Diversion Berm: The surface impoundment diversion berms were constructed to allow stormwater to flow through three defined diversion openings to control and diverse flow. The surface impoundment diversion berm is located upstream of the surface impoundments, as shown on the contract drawings.

2.1.5 Leak Detection Monitoring Sumps: The HCF construction included a leak detection monitoring sump (LDMS) below the lowest portion of each surface impoundment. The LDMS allows for detection of the potential vertical migration of water and removal of a water sample for testing. The LDMS consist of, from bottom to top, a GCL, a HDPE geomembrane, cushion geotextile, 2-feet of clean gravel, and a non-woven filter fabric. A 6-inch diameter PVC pipe was installed within the gravel zone to allow access for moisture detecting equipment and to allow for sampling and/or pumping of liquids from the LDMS.

2.1.6 Lysimeter Monitoring Zone: The liner system construction included a lysimeter built five feet below the lowest portion of each surface impoundment. The lysimeter was constructed to detect potential vertical migration of water and removal of water samples for testing. The lysimeter is composed of, from bottom to top, a GCL, Geomembrane, cushion geotextile, 2-feet of clean gravel, and a nonwoven filter fabric. A 6-inch diameter PVC pipe with ends perforated was installed within the gravel zone to allow access. The lysimeter was constructed to detect potential leakage from the above lined system.

2.1.7 Manufacturers Quality Assurance (MQA) Materials Review and Acceptance: As required by project technical specifications, the geosynthetic material was not to be placed until a complete third party review was performed on the ECA geosynthetic submittal packages. ZEI was responsible for reviewing all MQA submittal packages and determining if the materials manufactured and delivered to the site met or exceeded the project Technical Specifications and CQA Plan. The QA review was performed by ZEI CQA Representative. The MQA test data was received for each roll of smooth HDPE, GCL and geotextile delivered by ECA, and then reviewed by the CQA Representative for material requirement compliance. All geosynthetic material QA data was reviewed and subsequently approved for its use in construction. No material delivered was determined to be out of compliance, in final assessment. The liner materials were placed on an approved roll list cataloging only approved rolls for use in construction. The Contractor was provided a copy of the approved roll list and required to deploy material from that list only. The CQA Representative inspected each roll of material before placement for QA audit. All geosynthetic material was off-loaded,

handled and stored in accordance with the manufacturer's recommendations. See Appendix B Geosynthetic Manufacturer's Quality Assurance (MQA).

2.1.8 *CQA Monitoring, Testing and Documentation:* One (1) full time CQA Representative was on-site at all times during the liner construction for the HCF site. For this project, ZEI's Mr. James Hansen, and as-needed Mr. Brett Jordan, were the lead CQA Representatives. Mr. Hansen and Mr. Jordan managed the day to day Hawes Composting Facility CQA program for all geosynthetic activities. These activities included submittal review, manufacturer's roll certification review, inventory, material sampling, installation monitoring, inspection and testing. They also supervised all installation methods and practices and provided documentation as outlined in this report.

Before liner deployment, all subgrade surfaces were inspected by ZEI, ECA and Nursery Products. Subgrade conditions were documented and approved by all parties before the liner was deployed. Subgrade certification reports were prepared for the approved surfaces.

GCL and HDPE panel placement was controlled with a unique panel number on each panel (sheet) placed. Panels were visually inspected for imperfections or damage. Imperfections or damaged areas observed were located and documented on a defect log sheet. They were then repaired and nondestructively tested until a passing result was witnessed and documented.

Prior to production panel welding and each welding shift (four to five hours), trial welds were documented by ZEI. Trial welds were performed under identical production seaming conditions. Operators and machines passing trail seams were permitted to perform production welding. The operator was identified by his initials and machine number. Potential seaming problems were observed and corrected through the trial welding process before actual welding began. Elements of the successful trial did not change during production welding.

Production welding was controlled by closely monitoring the material condition, wedge machine's (equipment) speed, operation temperature, and noting of proper overlap. For each technician, cumulative seam length totals were recorded to control destructive sample frequencies on ZEI's Seam Control Log. All seam imperfections were recorded, repaired, and non-destructively tested until a passing result was witnessed by ZEI's CQA Representative.

Imperfections and defects were assigned a unique control number. Defects were located on field forms by measuring to the nearest stationary mark. All defects were repaired and nondestructively tested until a passing result was witnessed by ZEI's CQA Representative.

The entire HDPE liner system was 100 percent non-destructively tested. Fusion weld (wedge machine) seams were non-destructively tested by performing the air

pressure test. Air was introduced into the hollow seam chamber until approximately 27 - 30 psi was achieved. The tests were monitored for five minutes and a passing result was recorded if the pressure remained in the channel. A loss of only three (3) psi was permitted for seams. Extrusion welds were tested using a vacuum box chamber with a soap/water solution.

Destructive sampling and testing were prepared as described in the Technical Specifications. The destructive sample was clearly marked on each seam specimen. A unique destructive number was assigned to each sample for QA control. The samples were approximately 42 inches long by 12 inches wide, with seam centered. The liner installer and CQA Representative had samples cut out of their portion and field-tested for seam strength. The remaining portion was delivered to the independent CQA laboratory for testing in accordance with project specifications.

A detailed field as-built drawing was performed for the GCL and HDPE liner of each surface impoundment. Panel locations, panel identification, seam numbers, sumps, and pipe extensions were recorded on this drawing. Destructive test locations and defect repairs were also recorded on this drawing. See Appendix C ECA CQC Documentation Surface Impoundment A and B.

SECTION 3.0 CONSTRUCTION QUALITY ASSURANCE PROGRAM

Nursery Products owns and operates the composting facility located in San Bernardino County, California. Quantum Contractors was the General Contractor responsible for all earthworks construction, piping and construction of the diversion berms. Quantum also assisted ECA as needed with the surface impoundment liner ballast system in the pond floor and perimeter earthen filled anchor trenches construction. Quantum used one (1) Caterpillar G14 Grader equipped with laser guidance GPS for grade control and rear ripper shanks approximately 14-inches in length to rip and scarify the native soil material. Quantum typically used two (2) Caterpillar 623 Earth Moving Scrappers to excavate and haul fill material to the waste pile fill locations. Two (2) water trucks continuously moisture conditioned the engineered fill soil to control dust. One (1) Caterpillar D4 Bull Dozer and a Case 420 Backhoe were used for lighter earthworks. For compaction, Quantum typically used a large smooth drum roller with a vibrator for soil consolidation.

3.1 Earthworks for the Waste Pile:

Visual monitoring and CQA laboratory and field testing were performed on the waste pile compacted soil. The compacted soil consisted of a minimum of 12-inches of engineered fill composed of native subgrade that has been processed, scarified, moisture conditioned and compacted to 90 percent relative compaction as defined by American Society for Testing and Materials (ASTM D 1557). Representative bulk soil samples were obtained prior to earthworks and tested for physical properties and reviewed for compliance. All soil material within the project excavation limits was determined to be suitable for the engineered fill construction. Conformance was determined by laboratory and field monitoring and QA testing. The contractor

was required to clear and grub and strip away all vegetation within the waste pile limits. Quantum scarified all waste pile fills by ripping the native soil down to 12 inches and adding water to moisture condition the soil for compaction. Prior to additional fill lift placement, the entire area was scarified to assist in bonding between soil lifts. Fill placement and moisture conditioning was monitored closely to verify conformance with the CQA Plan. The report covers construction of the East Section waste pile. The West Section will be completed at a later date.

Construction of the waste pile perimeter berm around the facility was also monitored for compliance. The earthen berm consisted of an engineered fill consisting of on-site soil compacted to 90 percent relatives compaction using ASTM D 1557 as the standard.

3.2 Surface Impoundments (Ponds A and B) Liner Soil Foundation & Sumps:

Visual monitoring and CQA testing was performed on the two (2) surface impoundments Pond A and Pond B. The two surface impoundments are identical with respect to material and liner section design and construction. Surface Impoundment A (approximately 10.5 acre feet) located in the northwest corner of the facility was constructed first and Surface Impoundment B (approximately 6.5 acre feet) located in the northeast portion of the facility was constructed last. The two surface impoundments were constructed in accordance with the approved Regional Water Quality Control Board (RWQCB) drawings and construction is designated as a single composite liner system. The constructed liner system includes (from bottom to top, in order of construction) Vados Zone Lysimeters and Leak Detection Sumps:

1. Compacted native subgrade, smooth and unyielding;
2. GCL;
3. 60-mil (smooth) HDPE Liner;
4. Geotextile cushions fabric;
5. Detection Sump, Equipped with a Sump Leak Detection PVC Pipe; and
6. Drainage rock, with Geotextile, 8.0 oz. fully wrapped.

The leak detection and monitoring system included the construction of Vados Monitoring Lysimeters and Leak Detection Monitoring Sumps. These monitoring detection systems were constructed in accordance with the Geosyntec Consultant design, per detail M and N, Sheet8.

3.3 Surface Impoundment A and B Earthworks and Liner System:

The earthworks for both surface impoundments were constructed using the same means and methods as the waste pile cut and fill. The impoundments were excavated to the design lines and grades. At times, in isolated areas, Quantum encountered a thin sand layer within the surface impoundment limits. This fine sand was removed by over excavation. The excavated area was then backfilled with select engineered fill in thin control lift thicknesses. Each new lift of engineered fill was scarified, moisture conditioned, and compacted in approximately 8-inch loose lifts. Heavy equipment provided the compaction means and the final compaction was performed using a vibratory roller. Grade control was provided by Quantum Contractors. Using GPS equipment the contractor performed rough grading. The subgrade and side slope were processed by mechanical scarifying and ripping of the native material down to a minimum 8-

inches until fully loosened. The native soil was moisture conditioned to approximate optimum moisture content and compacted to a minimum of 90 percent relative compaction as defined by ASTMD 1557. The ZEI soil technicians provided compaction results of the in-place density and moisture by means of a field nuclear gauge as defined by ASTM D 6938. All CQA testing was performed in accordance with the approved CQA Plan. No failing results were documented in this final report and any defects were removed and or re-worked until a passing field test was documented. The typical surface impoundment section is a follows:

1. Prepared subgrade surface compacted to 90 percent relative maximum dry density;
2. Subgrade anchor ballast system to protect against wind up-lift
3. GCL; and
4. 60-mil (smooth) HDPE Liner.

Earthwork was constructed in accordance with the approved CQA Plan and design drawings. In this particular design the 60-mil HDPE liner and the GCL were the primary containment geosynthetic materials.

3.4 CQA Project Objectives:

ZEI's Construction Quality Assurance (CQA) program objectives during construction were as follows:

1. Provided quality control procedures and a quality assurance program to demonstrate that the Hawes Composting Facility design was properly implemented by performing monitoring, inspections, and testing during all phases of construction.
2. Prepared and maintained documentation which demonstrated that the design had been implemented and the performance requirements had been met.
3. Served as a reference source for personnel who performed and monitored the construction activities.
4. Established lines of communication and responsibilities for all personnel.

The CQA program used by ZEI included continuous oversight to ensure the construction means and methods met the project requirements; that observations and testing procedures were implemented by qualified personnel; that procedures were in compliance with the approved project documents, applicable regulations, standards, and project specifications; and that all work, including the final product, was appropriately documented, filed, and made readily available for review. Implementation of the quality control (QC) program consisted of tests and observations during construction that assisted the Owner in producing the required quality product. ZEI's CQA program ensured that every aspect of the approved project specifications, as pertaining to the waste pile and surface impoundments, were followed to the project specifications and industry standards. ZEI's detailed CQA program provided evidence that the liner system was manufactured, delivered, installed and tested in accordance with the approved specifications. All geosynthetic liner components of the project and methods of inspection covered in this CQA Construction Report are described in detail hereafter.

SECTION 4.0 CONSTRUCTION QUALITY ASSURANCE DOCUMENTATION

4.1 Construction Contractor, Key Members, and Suppliers:

4.1.1 Project Designer and General Contractor

Geosyntec Consultants was responsible for the design and technical specification preparation for the HCF. The designer assured the design met the construction and operational requirements of the Regulator's and Owner, and met or exceeded other regulatory requirements. Geosyntec Consultants is located at 10875 Rancho Bernardo Road, Suite 200, San Diego, Ca. 92127.

Quantum Contractors was responsible for the earthworks, mechanical, piping, and overall quality control as it relates to workmanship and materials. Quantum Contractors is located in Blue Jay, CA 92317. Contractor's License # 840155.

4.1.2 Construction Manager

Nursery Products, the Owner, ensured the construction of the facility in accordance with the design drawings and specifications. They implemented additional quality control and quality assurance procedures and techniques necessary for construction.

4.1.3 Geosynthetic Installation Contractor

EC Applications was contracted by Nursery Products to supply and install all geosynthetics components for this project. ECA is a licensed geosynthetic installation contractor located at 415 W. Traft Ave, Suite H, Orange, CA 92865.

4.1.4 Material Manufacturers

4.1.4.1 HDPE Geomembrane Liner

Agru America manufactured and supplied all 60-mil smooth HDPE liner and welding rod used for construction. Quality Control (QC) during the manufacture of the geomembrane was strictly monitored by Agru's in-house testing program.

4.1.4.2 GCL

Cetco Lining Technologies manufactured and supplied all of GCL used in construction. Cetco Bentomat ST materials are manufactured from a premium grade high bentonite powder. All rolls delivered to the site were accepted by the ZEI CQA representative. For quality assurance purposes, each roll was audited and identified with the manufacturer's roll number to cross reference with material certifications to ensure that each roll deployed met or exceeded the manufacturer's and project specifications. The GCL used in construction exceeded the project requirements.

4.1.4.3 Geotextile

The geotextile that served as a cushion and drainage filter fabric was manufactured by Skaps Industries. The 8.0 oz. geotextile was manufactured with 100-percent continuous filament polyester, nonwoven, needle punched, and engineered fabric.

4.1.5 Independent Geomembrane Laboratory Testing

Precision Geosynthetic Laboratories (PGL) of Anaheim, California was contracted by ZEI as the third party geosynthetic-testing laboratory of record. The HDPE seam welds and material conformance properties were tested and reviewed for compliance with the approved project technical specifications. PGL is a certified geosynthetic laboratory, accredited by the Geosynthetic Accreditation Institute (GAI). See Appendix D Geosynthetic Independent Laboratory Test Results

Services performed by PGL included:

Destructive Seam Strength Testing (a total of 16 tests performed):

Seam Peel Adhesion ..... ASTM D6392
Shear Bonded Strength, ... ASTM D6392

Conformance destructive seam sampling was conducted in accordance with project technical specifications. All geomembrane seams samples or destructive samples (DS) were tested in accordance to the project specifications and determined to meet and or exceed the requirements.

4.2 Construction Quality Control/Quality Assurance

The CQC/CQA methods used during liner construction consisted of a planned system of inspection and documentation performed independently of each other by both ECA and ZEI. This CQA monitoring program included daily monitoring, reporting, verification , audits and evaluations of materials and product workmanship necessary to determine and document the quality of the materials and installation. The CQA methods used to assess construction was in accordance with the construction drawings and project specifications.

4.2.1 Manufacturer's Certifications

Prior to accepting the engineered geosynthetic materials for use in construction, geosynthetic material manufacturers wererequired to submit all Manufacturer Quality Assurance/Manufacturer Quality Control (MQA/MQC) test results. The MQA/MQC test results included results from in-house testing on all rolls of GCL and HDPE liner before delivery. After manufacturer approval, rolls were then prepared and delivered to the site for use in construction. The manufacturer roll certification lists and supporting test results were submitted to the CQA Representative for final review and approval. As the

materials were delivered to the project site, each roll of material was visual inspected, documented, and inventoried for material description, manufacturer's identification control number, roll number, material weight, and dimension. The field inventory was then checked against the submitted manufacturer's MQA data to verify that the delivered material had been tested by the manufacturer and that it met or exceeded project requirements. When the review was complete and approved, an approved roll list was prepared. All geosynthetic materials delivered to the site met or exceeded the minimum project requirements.

4.2.2 Agru America CQA/CQC Manufacturing Program

Agru America's In house Quality Control (QC) program is an ongoing system of monitoring and testing materials as they are manufactured. The manufacturing QC program is essential to manufacturing and is strictly adhered to by all individuals involved in the process. Agru's QC department reserved the right to reject raw materials or manufactured materials not meeting their standards and project specifications.

The Agrus' Quality Assurance (QA) program is a process of verifying compliant materials with acceptable procedures for training, manufacturing, testing, materials handling, data review, and distribution. The QA department verifies the validity of the test results, the correctness of the test procedures, the operation of test equipment, and the ongoing training of their QC personnel.

Agrus' QC laboratory is fully equipped to perform a wide range of conformance tests on all types of geomembrane, geonet, and extrusion rod. Samples are die cut with hydraulic press to preserve the uniformity of testing. Equipment used for physical testing included differential scanning calorimetry, density gradient columns, melt flow index testers, microtome, stereo microscopes, and index friction.

QC test results were stored in a computer database for ease of retrieval. Hard copies were reviewed then submitted to ZEI's CQA Representative for final approval.

4.2.3 Waste Pile and Surface Impoundment Subgrade Certification

Prepared soil subgrade processing, placement, compaction, inspection and conformance evaluations were monitored by ZEI. Quality Assurance reviews and supervision were performed by ZEI. Continuous monitoring and testing was performed regularly to test for moisture content and percent compaction. Prior to geosynthetic material placement, a visual soil surface inspection was performed. Each subgrade certification was conducted by an Owner representative, the geosynthetic installation contractor, and ZEI's CQA representative. All parties ensured that no deleterious material that could potentially damage the liner system was present in the areas to be lined. This included a visual inspection for rocks, yielding soils, moisture content, structural abnormalities, or any deleterious materials on the subgrade surface. Soil surface approval was made before GCL and HDPE liner was deployed over any subgrade or structure.

4.2.4 Geosynthetic Testing Documentation, Materials, and Installation Methods

4. 2.4.1 GCL, HDPE Liner and Welding Rod

CETCO GCL: Ninety Six (96) rolls of Bentomat ST GCL or 216,600 square feet of GCL were delivered to the HCF and accepted by the CQA Representative after a complete QA review of the manufacturer's certifications and cross-referencing with specifications. For Quality Control/Quality Assurance purposes, each roll was identified with the manufacturer's roll number to cross reference with material certifications and roll conformance testing. As each roll was deployed in the field, a visual inspection was performed to locate any imperfections from the manufacturing processes and/or deployment damage. All imperfections were located, documented, and repaired.

Agru HDPE Liner: Twenty Two (22) rolls of Agru 60-mil HDPE liner or 273,240 square feet of HDPE were delivered to the HFC and accepted by the CQA Representative after a complete QA review of the manufacturer's certifications and cross-referencing with specifications. For Quality Control/Quality Assurance purposes, each roll was identified with the manufacturer's roll number to cross reference with material certifications and roll conformance testing. As each roll was deployed in the field, a visual inspection was performed to locate any imperfections from the manufacturing processes and/or deployment damage. All imperfections were located, documented, and repaired. All repairs were non-destructively tested for compliance with the project specifications.

4.2.4.2 Liner Deployment

The geosynthetic 60-mil HDPE liner is the primary liner for the surface impoundments. To provide additional resistance to downward migration of water, and to provide a smooth surface on which to install the HDPE liner, a GCL was included in the liner system section beneath the HDPE liner. The GCL consists of powdered, bentonite clay sewn in between two layers of synthetic geotextile fabric. In addition, the GCL provides a hydraulic conductivity two orders of magnitude lower than the prescriptive liner requirements. The GCL helps to protect the vados zone if a leak were to occur in the HDPE liner because the GCL will hydrate to "self-seal" a leak in the liner system.

The surface impoundment liner section is ballasted on the impoundment floor bottom as designed and anchored around the perimeter of the impoundment by a 2-foot minimum horizontal run and a 9-foot minimum run of liner buried at the downward slope inclination of approximately 2:1 (horizontal/vertical) so that the edge of the liner is a minimum of 4-feet below the ground surface.

Deployment of the 60-mil HDPE liner was performed using a forklift equipped with a deployment spreader bar for placement ease. The liner was placed in such a way that no damage occurred to the liner during placement. Wind was carefully

monitored during deployment to ensure that sufficient personnel were present during the deployment. Liner temperatures were also monitored closely. If ambient liner temperatures (measured 6 inches above liner surface) would have approached 32 ° F or 122°F then welding activities would have been shut down. However, liner temperatures as measured by a field thermometer did not approach the limits specified.

All deployed panels were placed with a minimum 6-inch panel overlap. The proper overlap was marked on the HDPE liner roll to aid the deployment crew in straightening the panels. Immediately after geomembrane panels running through anchor trenches or at toes of slopes/walls were welded, sandbags were placed along the entire length of the line to prevent stress-bridging at those locations. All boundary HDPE material was placed in an approved anchor trench and secured with approved select fill soil. During panel deployment, individual panels were marked with the deployed footage, identified with a unique panel number, and the manufacturers roll number.

4.2.4.3 Pre-Qualifying Trial Welds

Prior to production seaming or repair work, each welder was required to perform a start-up trial weld. Trial welds were conducted for each machine/operator combination, per working period, under identical work conditions and environment. The trial welds were performed using the same material as the production liner and were then tested for shear and peel seam strengths. Upon completion of a passing trial, the technician commenced with welding.

4.2.4.4 Fusion Welding

The most efficient and frequently used method to join HDPE panels is the fusion weld (split wedge weld). The split wedge welder utilizes an electrically heated wire copper wedge. The heated wedge is regulated by a programmable controller with an audible off temperature alarm and a variable speed drive that operates at specified speeds depending on panel mil thickness and machine model. The heated wedge passes between the top and bottom edge of the adjacent HDPE panels and two nip rollers compress the heated material together (fusion). This allows the machine to propel itself along the seam at a constant rate. Located between the split wedge and the two rollers is a stinger which forms a hollow chamber along the length of the weld, making it possible for a non-destructive air pressure test to be conducted after the seam was completed.

Seaming technicians continuously cleaned the material directly ahead of the wedge to remove blown dust ahead of the welder. Due to the high expansion rates of HDPE liner, it was necessary to "trim the lap" of the seam that would otherwise have resulted in a hump or a wrinkle along the seam.

4.2.4.5 Extrusion Welding

The other method of joining panels, and more commonly used to make repairs on HDPE liner, is extrusion welding. Extrusion welds are generally used in situations where wedge welding is inappropriate. This welding process introduces a molten resin bead along the edge of overlapped HDPE material. Located on the barrel of the extrusion gun is a hot air preheating gun that heats the weld area directly before the extrudate is applied. The molten resin bead results then in a partially liquefied parent material. This homogeneous bond between the surface of the parent material and the molten welding rod, or bead, is typically stronger than the surrounding material. The extrusion machine was equipped with gauges that relay temperature readings from the apparatus.

Each extrusion weld was prepared in the following manner. The HDPE patch or overlap to be welded was heat tacked to the parent sheet using a hot air (leister) gun. Technicians then ground a one-inch wide by continuous area on both the top and bottom sheets along the area to be welded. All tacking and grinding was carefully performed to ensure no damage was done during repair (e.g. hot air gun burns or over grinding). At the same time, the CQA Representative ensured that all of the surface areas to be welded were properly ground to ensure the proper bond occurred between surfaces. Subsequently, the molten welding rod (or bead) was applied to the specified area. Ground areas were monitored to ensure that no over grinding was performed and that these areas remained free of dust. This was achieved by restricting the grinding technician to a reasonable distance from the welding technician and the extrusion gun. All welding rods were wiped clean of dust before utilizing it in the machine.

4.2.4.6 CQA Documentation

Pertinent liner documentation was recorded on the liner. Included in the documentation were destructive and non-destructive testing, air channel testing on dual track fusion welds, and vacuum box testing on extrusion welds, and the technician who repaired the defect. This information was transferred to the appropriate documentation forms. In addition, the CQA Representative monitored 100% of all testing and noted complete details in field CQA documentation. Panel placements with the corresponding roll numbers, panel lengths, and panel identification were recorded at the time of deployment. A complete list of repairs was recorded.

All production seaming was monitored by the CQA Representative, who documented seam numbers, welder identifications, machine identifications, speeds and times of operation, and machine temperatures. The seam control documentation was initially written on the liner and then transferred to CQA documentation. Each welder was tracked for linear feet of production weld in order to control destructive sampling frequencies.

CQA report forms were completed for subgrade certifications, completion certifications, inventory, panel placement, trial welds, defects, destructive seam testing, seaming and non-destructive testing, and daily inspection reports. A daily CQA review consisting of a conformance audit, accuracy, and compliance with the project specifications was conducted.

4.2.4.7 Non-Destructive Testing

All HDPE liner seams and repairs were 100% non-destructively tested using either one of the two standard testing methods. Tests performed depended on the welding method applied to the Liner Material.

4.2.4.7.1 Air pressure Testing

Air pressure testing was performed on all wedge weld seams. This procedure involved sealing off both ends of the seam and inserting a manometer (or pressure gauge) into the air channel. The manometer apparatus included a hollow stem needle attached to a pressure gauge needle and air-fitting for inflation of the channel. Each air channel was pressurized to approximately 27 - 30 psi for a period of no less than fiveminutes. The channel maintained the initial pressure with no more than 3-psi drop or a failure was designated to the seam. Upon completion of the air test, the air was released from the opposite end of the manometer setup. This ensured that the full seam length was pressurized and therefore tested. Test results were documented on the liner and then later transcribed to the corresponding CQA forms after the seam was approved by the CQA Representative. All non-destructive test holes were repaired at ends of test channel.

4.2.4.7.2 Vacuum Box Testing

Extrusion welds were primarily tested using a vacuum box chamber. This nondestructive test used a rigid, transparent box with a soft rubber gasket that was equipped with a small vacuum motor to create a negative pressure zone just above the liner. This allowed for a visual confirmation of the seam integrity. Extrusion welds were allowed to cool for at least five minutes prior to testing. The section to be tested was wetted with soapy water and the vacuum box was placed over the seam, thus energizing the vacuum to observe any defects that appeared. A minimum value of 30 psi on the pressure gauge was obtained for approximately 15 seconds. If there was a hole in the liner, it would have been observed by small bubbles foaming up from the hole. If no bubbles were observed, the operator would reposition the box to the next section to be tested. A vacuum box test was approved when the CQA Representative observed that no bubbles were produced and initialed the test area.

4.2.4.8 Destructive Testing and Sampling

Destructive seam sampling was another method of ensuring seam quality. Samples were taken directly from in-place seams on the geomembrane. For every 500 linear feet of seam welded, destructive samples were removed and tested for peel and shear strengths. Project specifications also allowed the frequency of sampling to be decreased or increased based on previous seam test results. This was performed for every operator/machine pair used during installation. As stated, destructive samples were taken in accordance with manufacturer's recommendations and the project specifications. Samples were appropriately marked along the seam and identified with a unique destructive identification number, operator, weld machine settings, machine number, date, seam identification, and feature location. Each destructive sample was given a specific code so it could be easily referenced and tracked.

The destructive samples taken were approximately 1-foot by 3 ½ -feet in size with the seam centered. The first 18" portion of the sample was for field-testing and seam strength evaluation. From this 18" sample, ten (10) coupons were cut and tested in the field before it was sent to the laboratory. The next one-foot portion of each sample was sent to PGL for third party testing. The next one-foot section was kept for project archives.

A total of eighteen (18) destructive samples were taken from the surface impoundment A and B.

4.2.4.9 Field As-Built Drawings

A field panel layout (as-built) drawing was completed after each liner layer was done. The field as-built drawings shows panel location and orientation, panel numbers, destructive samples, repair locations, sumps, and pipe extensions.

4.2.4.10 Compliance/Non-compliance and Corrective Actions

Any failure to meet the aforementioned standard and criteria in sections 4.2.4.7 Non-Destructive Testing and 4.2.4.8, Destructive Testing and Sampling, constituted non-compliance. Non-compliance for a non-destructive test was any failure to pass criteria set to determine passing seam or patched area. A corrective action in the case of a failed vacuum box test was to patch the defective area and retest the newly repaired area using the same method. A pressure test failure involved locating the failure along the seam, cutting the failed area out, and performing a pressure test on either side of this zone. Extruded patches were repaired over the failed area then vacuum box tested for compliance.

All destructive seam sample test results, laboratory or field, did meet or exceed project specifications. Five coupons were tested in peel adhesion and five tested for shear strength in accordance with ASTM D 6392.

SECTION 5.0 SUMMARY

5.1 General

It should be noted that the test specimens and test samples used for this report are believed to be representative of the material produced under the designation herein stated. However, these results are indicative of only the specimens that were actually tested. The testing herein is based upon accepted industry practices for construction QA/QC and Laboratory procedures as well as the test methods listed. It should also be noted that ZEI observed, monitored, and performed CQA testing to the limitations of one person and cannot be responsible for operational and maintenance performance of the liner system. It is recommended that a comprehensive maintenance plan and annual inspection plan be prepared and followed to limit potential damage during the designed intent usage.

Property lines, elevations, lines and grades were not controlled by the CQA firm. Nursery Products was responsible for coordinating the final as-built survey with a state licensed professional surveyor. The survey records are included in this report as a reference and should provide evidence that the HCF site was constructed to the lines and grades outlined in the design drawings and CQA Plan. See Appendix E Waste Pile & Surface Impoundment As-built Survey.

ZEI takes no responsibility for lines, grades, property lines, boundaries, or ground water wells.

Appendix F, ZEI CQA Daily Summary Reports and Photo Documentation presents documentation prepared by the CQA Representative from field records and used to assist ZEI in preparing this certification report. These forms are a crucial part of the ZEI CQA program and provide our field inspectors/engineers with a planned system for audits and inspections. Each form was designed to capture all pertinent field activities as related to the installation of all geosynthetics. These forms are designed to prompt CQA activities, provide a database for testing, inspection, and track noncompliance elements. The ZEI CQA program has proven successful on many large and very challenging geosynthetic liner systems. This program has also been utilized to train regulatory, state and city personnel. Reproduction of this report, forms, and CQA data will require written authorization from Zero Energy Institute, LLC.

The findings and professional opinions contained in this report were prepared in accordance with generally accepted professional principles and practices for construction performed in the greater Southern California region. ZEI and their subconsultants make no other warranty, expressed or implied.

SECTION 6.0 CQA CERTIFICATION

I hereby acknowledge that the composite liner system installed for Nursery Products at the Hawes Composting Facility, San Bernadino, California is constructed in general compliance with the project designs and specifications. I further submit that the information and data presented in this report are true and accurate to the best of my knowledge.

Printed Name of CQA Project Manager

SHANNON M. GOODRICH

Signature of the CQA Project Manager

Printed Name of CQA Engineer

Douglas Hilts

Signature of CQA Engineer

REGISTERED PROFESSIONAL ENGINEER
DOUGLAS HILTS
No. C044763
Exp. 3/31/2014
CIVIL
STATE OF CALIFORNIA

Appendix A

Sladden Engineering
CQA Earthworks Testing for East Waste Pile
and Surface Impoundments A and B

County of San Bernardino — Environmental Management Group
BUILDING AND SAFETY DEPARTMENT

ENGINEERED – GRADING INSPECTION REPORT

Owner Nursery Products Index No. _____ Tract No. APN 092-021-04

Job Address 14999 Cougar Rd. Hesperia, 92345 Permit No. B201200437

☐ ROUGH GRADING INSPECTION

☐ ENGINEERING GEOLOGIST *(If required)* N/A

Grading on the site was completed in accordance with the approved Engineering Geology Report. Cut slopes are stable at their graded inclinations.

CERTIFIED LOT NOS _____ DATE _____

GEOLOGIST _____ REGISTRATION NO. _____

SIGNATURE _____ PHONE NO. _____

ADDRESS _____

REMARKS _____

☒ SOILS ENGINEER

All fills were installed upon properly prepared base material, benched and compacted in compliance with Section 7010, U.B.C., and where the report of an engineering geologist has recommended the installation of buttress fills or other measures, such work has been completed in accordance with the approved design. Fill settlement monitoring (if any) has been completed on all certified lots.

☐ YES ☒ NO LOT NOS. _____

CERTIFIED LOT NOS. Phase I - Eastern Half DATE 5/16/12

SOILS ENGINEER R. H. Anderson - Sladden Engineering REGISTRATION NO. 45307

SIGNATURE _____ PHONE NO. (951) 845-7743

ADDRESS 450 Egan Avenue, Beaumont, CA. 92543

REMARKS _____

REGISTERED PROFESSIONAL ENGINEER — EXPANSIVE SOILS — ROBERT L. ANDERSON — No. C 45307 — CIVIL — STATE OF CALIFORNIA

☐ GRADING ENGINEER

The rough grading has been completed in accordance with the approved plans including: grading to approximate final elevations; property lines staked; swales and terraces ready for paving; berms installed; and required drainage slopes provided; and where reports of an engineering geologist and/or soils engineer have been prepared, the recommendations contained therein have been followed.

CERTIFIED LOT NOS. Phase I - Eastern Half DATE 5/25/2012

GRADING ENGINEER Douglas Hilts - Hills Consulting Group, Inc. REGISTRATION NO. C 44763

SIGNATURE _____ PHONE NO. (909) 590-5200

ADDRESS 1670 Quail Country Ave., Chino Hills, CA 91709

REMARKS Limited to eastern half Waste Pile Compost Area and Surface Impoundments A & B. Property lines by others per attached Survey.

REGISTERED PROFESSIONAL ENGINEER — DOUGLAS HILTS — No. C 44763 — Exp. 3/31/14 — CIVIL — STATE OF CALIFORNIA

☐ FINAL GRADING INSPECTION

The grading has been satisfactorily completed in accordance with the approved plans. All required drainage devices have been installed; slope planting established and adequate provisions have been made for drainage of surface waters from each building site. The recommendations of the soils engineer and/or engineering geologist (if such persons were employed) have been incorporated in the work.

CERTIFIED LOT NOS _____ DATE _____

GRADING ENGINEER _____ REGISTRATION NO. _____

SIGNATURE _____ PHONE NO. _____

ADDRESS _____

REMARKS _____

DEPARTMENT USE ONLY.

☐ N/A As-Graded Geology Report Reviewed By *(Name)* _____ _____ *Review Date*

Inspection Report Reviewed By *(Name)* _____ _____ *Review Date*

Rough Grade Inspector *(Signature)* _____ _____ *Date*

Final Grade Inspector *(Signature)* _____ _____ *Date*

Sladden Engineering

45090 Golf Center Parkway, Suite F, Indio, CA 92201 (760) 863-0713 Fax (760) 863-0847
6782 Stanton Avenue, Suite A, Buena Park, CA 90621 (714) 523-0952 Fax (714) 523-1369
450 Egan Avenue, Beaumont, CA 92223 (951) 845-7743 Fax (951) 845-8863
800 E. Florida Avenue, Hemet, CA 92543 (951) 766-8777 Fax (951) 766-8778

May 15, 2012

Project No. 622-12006
12-05-020

Zero Energy Institute, LLC
Zero Energy International, LLC
3550 Windsor Road
Oceanside, California 92056

Project: Phase 1 Site Improvements
Hawes Composting Facility
APN 0492-021-24
Hinkley/Kramer Junction Area
San Bernardino County, California

Subject: Compaction Report

Ref: Update Geotechnical Investigation prepared by Geosyntec Consultants dated January 31, 2012; Project No. SC0554

Summarized in this report are the results of in-place density tests performed at the subject site during the grading of Phase 1 (eastern portion) and along with pertinent observations. The Hawes Composting facility project site is located west of Barstow, approximately 10 miles west of Hinkley Road, 12.3 miles east of Kramer Junction, one mile south of State Route (SR) 58, and one mile west of Helendale Road in the County of San Bernardino, California. Testing was performed during the rough grading of the eastern portion of the project site and within the detention pond areas A & B.

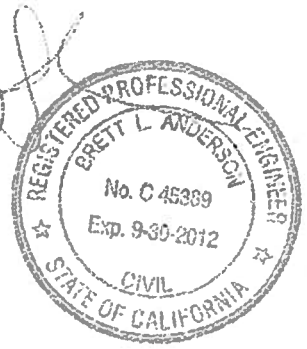
Field testing was performed from February 20, 2012 through May 10, 2012. Testing indicates that a minimum of 90 percent relative compaction was attained in the areas tested, as required by the project specifications. The passing test results indicate compliance with the project specifications at the tested locations and depths but are no guarantee or warranty of the contractors work.

Field Tests: In-place moisture/density tests were performed using a nuclear density gauge in accordance with test methods ASTM D 2922 and ASTM D 3017. A total of 103 density tests were performed. Test results are summarized on the attached data sheets. The approximate test locations are indicated on the attached plan.

Laboratory Tests: The moisture-density relationships for the tested materials were determined in the laboratory in accordance with ASTM Test Method D 1557-91.

If there are any questions regarding this report or the testing summarized herein, please contact the undersigned.

Respectfully submitted
SLADDEN ENGINEERING



Brett L. Anderson
Principal Engineer

Grading/gl

Copies 4/ Zero Energy Institute, LLC

Test Results

Project Name: Hawes Composting Facility - Phase 1 — **Project No.:** 622-12006

Location: Hinkley/Kramer Junction, San Bernardino County, Ca. — **Report No.:** 12-05-020

Test No.	Date Tested	Location	Elevation	Dry Density In place	% Moisture in Place	Relative Compaction	Maximum Density
1	2/20/2012	Per Plan Test Site East Side	NG	119.2	6.0	92	130.0
2	2/20/2012	Per Plan Test Site East Side	1.0'	117.2	10.7	93	126.5
3	2/20/2012	Per Plan Test Site East Side	2.0'	117.1	11.1	93	126.5
4	2/20/2012	Per Plan Test Site East Side	2.0'	118.8	13.9	92	129.0
5	2/20/2012	Per Plan Test Site East Side	2.0'	121.2	9.3	93	130.0
6	2/20/2012	Per Plan Test Site East Side	NG	117.6	10.6	93	126.5
7	2/20/2012	Per Plan Test Site East Side	1.0'	114.8	14.5	91	126.5
8	2/20/2012	Per Plan Test Site East Side	2.0'	124.3	9.3	96	130.0
9	2/20/2012	Per Plan Test Site East Side	2.0'	119.9	10.1	92	130.0
10	2/20/2012	Per Plan Test Site East Side	1.0'	125.1	8.4	94	133.5
11	2/20/2012	Per Plan Test Site East Side	2.0'	118.5	11.9	94	126.5
12	2/20/2012	Per Plan Test Site East Side	NG	123.2	7.3	92	133.5
13	2/29/2012	Per Plan Test Site East Side	2.0'	120.0	7.4	92	130.0
14	2/29/2012	Per Plan Test Site East Side	3.0'	122.8	8.5	94	130.0
15	2/29/2012	Per Plan Test Site East Side	1.0'	117.5	8.0	90	130.0
16	2/29/2012	Per Plan Test Site East Side	4.0'	117.8	13.1	93	126.5
17	2/29/2012	Per Plan Test Site East Side	4.0'	121.1	10.7	96	126.5
18	2/29/2012	Per Plan Test Site East Side	1.0'	119.0	7.0	92	130.0
19	2/29/2012	Per Plan Test Site East Side	4.0'	120.7	9.8	94	129.0
20	2/29/2012	Per Plan Test Site East Side	1.0'	119.7	8.8	92	130.0
21	2/29/2012	Per Plan Test Site East Side	3.0'	126.9	8.0	95	133.0
22	2/29/2012	Per Plan Test Site East Side	4.0'	119.1	8.9	92	129.0
23	2/29/2012	Per Plan Test Site East Side	1.0'	116.7	8.8	92	126.5
24	2/29/2012	Per Plan Test Site East Side	2.0'	117.4	8.5	93	126.5
25	2/29/2012	Per Plan Test Site East Side	3.0'	119.1	7.5	92	130.0
26	2/29/2012	Per Plan Test Site East Side	2.0'	118.5	10.9	94	126.5
27	2/29/2012	Per Plan Test Site East Side	3.0'	124.1	8.5	93	133.0
28	2/29/2012	Per Plan Test Site East Side	3.0'	120.6	7.8	93	130.0
29	2/29/2012	Per Plan Test Site East Side	2.0'	116.5	8.5	92	126.5
30	2/29/2012	Per Plan Test Site East Side	4.0'	119.5	10.3	94	126.5
31	2/29/2012	Per Plan Test Site East Side	2.0'	117.8	9.1	91	129.0
32	2/29/2012	Per Plan Test Site East Side	4.0'	119.2	8.2	92	129.0
33	2/29/2012	Per Plan Test Site East Side	1.0'	126.1	8.2	95	133.0
34	2/29/2012	Per Plan Test Site East Side	2.0'	126.6	8.4	95	133.0
35	2/29/2012	Per Plan Test Site East Side	2.0'	115.4	9.2	91	126.5
36	2/29/2012	Per Plan Pond Area B	SG	118.1	8.3	92	129.0
37	2/29/2012	Per Plan Pond Area B	SG	120.0	8.9	93	129.0
38	2/29/2012	Per Plan Pond Area B	SG	115.9	*6.9	90	129.0
39	2/29/2012	Retest #38	SG	117.5	**9.2	91	129.0
40	2/29/2012	Per Plan Pond Area B	SG	118.3	9.7	91	130.0
41	2/29/2012	Per Plan Pond B Sump	SG	121.2	11.4	94	129.0

Test Results

Project Name: Hawes Composting Facility - Phase 1 **Project No.:** 622-12006

Location: Hinkley/Kramer Junction, San Bernardino County, Ca. **Report No.:** 12-05-020

Test No.	Date Tested	Location	Elevation	Dry Densityin Place	% Moisture in Place	Relative Compaction	Maximum Density
42	3/5/2012	Per Plan Pond Slope B	SG	116.3	11.6	92	126.5
43	3/5/2012	Per Plan Pond Slope B	SG	116.6	11.2	92	126.5
44	3/5/2012	Per Plan Pond Slope B	SG	119.9	6.6	92	130.0
45	3/5/2012	Per Plan Pond Slope B	SG	118.5	6.6	91	130.0
46	3/5/2012	Per Plan Pond Slope B	SG	124.5	6.4	96	130.0
		Sump B					
47	4/2/2012	Per Plan	4.0'	119.0	7.2	92	130.0
48	4/2/2012	Per Plan Pond A Sump	SG	119.9	8.0	92	130.0
49	4/2/2012	Per Plan	2.0'	117.5	6.9	90	130.0
50	4/2/2012	Per Plan	3.0'	118.1	8.0	90	130.5
51	4/2/2012	Per Plan	6.0'	116.8	9.6	90	130.5
52	4/2/2012	Per Plan	3.0'	119.2	9.4	92	129.0
53	4/2/2012	Per Plan	5.0'	118.7	7.5	90	131.5
54	4/2/2012	Per Plan	3.0'	118.8	7.6	90	131.5
55	4/2/2012	Per Plan	1.0'	116.3	9.1	90	129.0
56	4/2/2012	Per Plan	6.0'	122.7	6.9	92	133.5
57	4/2/2012	Per Plan	2.0'	116.9	7.2	90	130.0
58	4/2/2012	Per Plan	2.0'	121.0	6.7	91	133.5
59	4/2/2012	Per Plan	1.0'	123.0	5.0	92	134.0
60	4/2/2012	Per Plan	2.0'	125.1	6.2	93	134.0
61	4/2/2012	Per Plan	1.0'	125.0	5.8	93	134.0
62	4/2/2012	Per Plan	2.0'	124.9	8.9	93	134.0
63	4/2/2012	Per Plan	2.0'	127.1	7.7	95	134.0
64	4/2/2012	Per Plan	1.0'	122.5	5.9	91	134.0
65	4/2/2012	Per Plan	1.0'	123.1	6.0	92	134.0
66	4/13/2012	Per Plan Pond A	On Slope	123.60	7.1	94	131.5
67	4/13/2012	Per Plan Pond A	BOP	129	6.3	96	134.0
68	4/13/2012	Per Plan Pond A	BOP	122.9	6.6	93	131.5
69	4/13/2012	Per Plan Pond A	BOP	125.9	10.4	96	131.5
70	4/13/2012	Per Plan Pond A	BOP	120.4	8.0	92	131.5
71	4/13/2012	Per Plan Pond A	BOP	116.7	9.7	92	126.5
72	4/13/2012	Per Plan Pond A	BOP	122.0	8.6	93	131.5
73	4/13/2012	Per Plan Pond A	BOP	129.6	8.3	97	134.0
74	4/13/2012	Per Plan Pond A	BOP	127.6	7.5	95	134.0
75	4/13/2012	Per Plan Pond A	BOP	123.4	6.7	94	131.5
76	4/13/2012	Per Plan Pond A	BOP	119.3	7.8	91	131.5
77	4/13/2012	Per Plan Pond A	On Slope	122.2	8.6	93	131.5
78	4/13/2012	Per Plan Pond A	On Slope	116.8	10.4	92	126.5
79	4/13/2012	Per Plan Pond A	On Slope	120.3	8.3	91	131.5
80	4/13/2012	Per Plan Pond A	On Slope	121.7	8.7	93	131.5
81	4/13/2012	Per Plan Pond A	On Slope	122.6	8.4	93	131.5
82	4/13/2012	Per Plan Pond A	On Slope	116.9	10.4	92	126.5
83	4/13/2012	Per Plan Pond A	On Slope	115.2	10.0	91	126.5
84	4/13/2012	Per Plan Pond A	On Slope	115.6	9.0	91	126.5
85	4/13/2012	Per Plan Pond A	On Slope	122.4	8.0	93	131.5
86	4/13/2012	Per Plan	2.0'	126.6	9.3	91	139.5

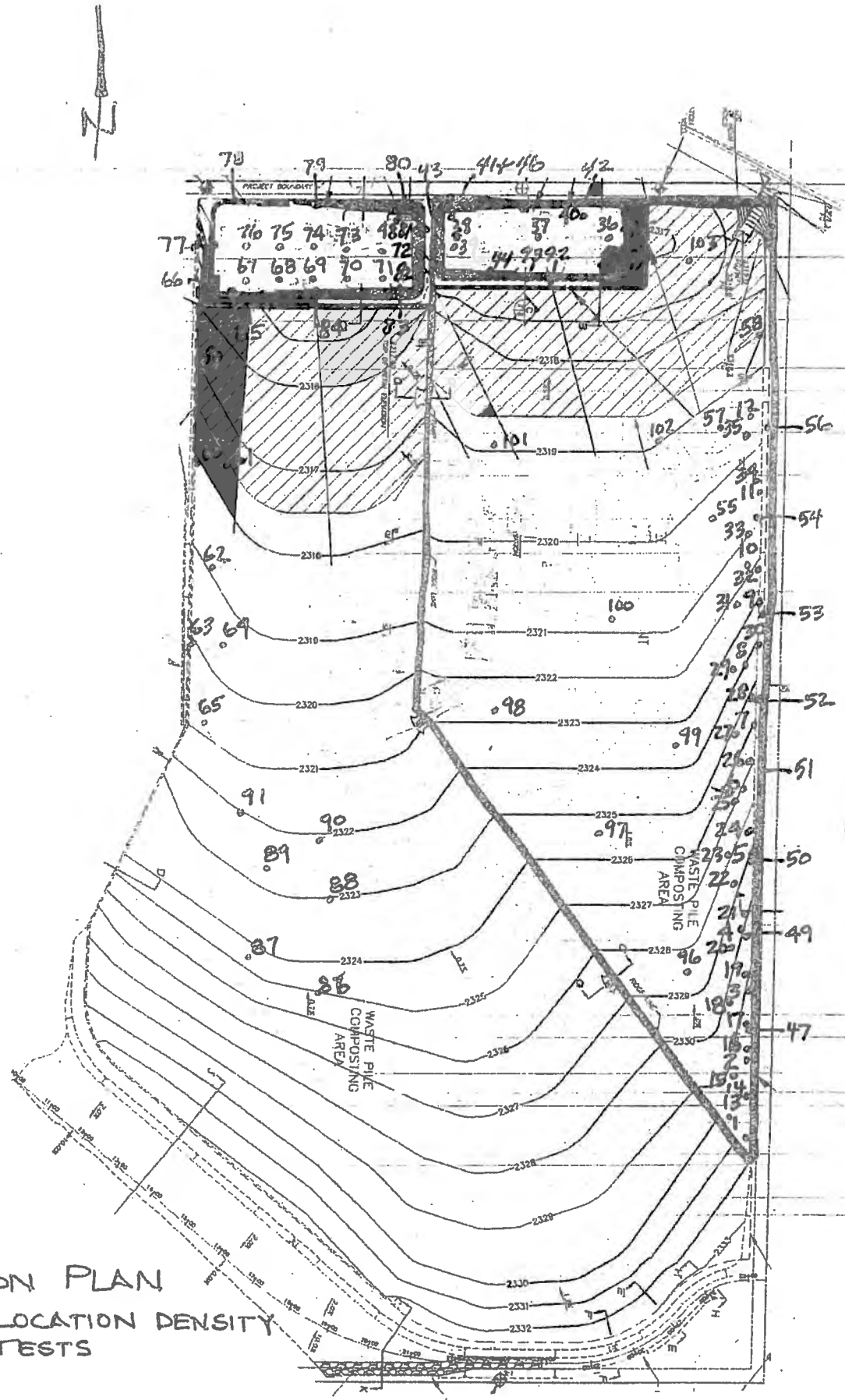
Test Results

Project Name: Hawes Composting Facility - Phase 1 **Project No.:** 622-12006

Location: Hinkley/Kramer Junction, San Bernardino County, Ca. **Report No.:** 12-05-020

Test No.	Date Tested	Location	Elevation	Dry Densityin Place	% Moisture in Place	Relative Compaction	Maximum Density
87	4/13/2012	Per Plan	1.0'	126.3	10.4	91	139.5
88	4/13/2012	Per Plan	SG	119.6	8.3	95	126.5
89	4/13/2012	Per Plan	0.5'	126.9	10.1	97	131.5
90	4/13/2012	Per Plan	SG	123.8	8.7	94	131.5
91	4/13/2012	Per Plan	1.5'	120.4	10.2	92	131.5
92	5/10/2012	Per Plan Pond B	SG	121.8	6.6	94	130.0
93	5/10/2012	Per Plan Pond B	SG	119.8	7.8	92	130.0
94	5/10/2012	Per Plan Pond B	SG	122.3	8.4	92	133.5
95	5/10/2012	Per Plan Pond B	SG	122.0	7.9	91	133.5
96	5/10/2012	Per Plan Pond B	SG	115.4	5.1	91	126.5
97	5/10/2012	Per Plan Pond B	SG	116.7	7.6	92	126.5
98	5/10/2012	Per Plan Pond B	SG	119.3	4.3	92	130.0
99	5/10/2012	Per Plan Pond B	SG	117.5	7.2	90	130.0
100	5/10/2012	Per Plan Pond B	SG	121.7	5.7	91	133.5
101	5/10/2012	Per Plan Pond B	SG	119.5	6.3	92	130.0
102	5/10/2012	Per Plan Pond B	SG	124.6	5.2	93	133.5
103	5/10/2012	Per Plan Pond B	SG	114.5	3.7	91	126.5

NG = Natural Grade
SG = Subgrade
BOP = Bottom of Pond



LOCATION PLAN

• APPROX. LOCATION DENSITY TESTS

FILE : 622-12006

SLADDEN ENGINEERING

54971

Sladden Engineering

Buena Park	Coachella Valley	Beaumont	Hemet
(714) 523-0952	(760) 863-0713	(951) 845-7743	(951) 766-8777

Date 2-20-12

FIELD MEMO

Job No. 622-12006

Project Name HAWES COMPOSTING FACILITY

Client ZERO ENERGY INSTITUTE

Site Address S.W. HWY 58 & HELENDALE RD
HINKLEY AREA of SAN BRDN. Co.

Job Phone

Work Done DENSITY TESTS TAKEN AS DIRECTED BY ZERO ENERGY INSTITUTE FORMAN JAMES HANSEN. EAST SIDE OF SITE AT ~~BOTTOM~~ BASE OF EXISTING GRADE TO +2.0' OF FILL.

Test Summary / Footings Inspected

Test No.	Location	Elev.	Dry Density	Moist %	% Relative Compaction	Ref. Max pcf	Moist %
1	N/G = EXIST. GRADE	N/G	111.2	6.0	92	130	9
2		1'	117.2	10.7	93	126.5	11
3		2'	117.1	11.1	93	126.5	11
4		2'	118.8	13.9			
5		2'	121.2	9.3	93	130	9
6		N/G	117.6	10.6	93	126.5	11
7		1'	114.8	14.5			
8		2'	124.3	9.3	96	130	9
9		2'	119.9	10.1	92	130	9
10		1'	125.1	8.4	94	133.5	8.5

Comments:

11	2'	118.5	11.9	94	126.5	11
12	N/G	123.2	7.3	92	133.5	8.5

DENSITY TESTS SATISFACTORY ABOVE 90% RELATIVE COMPACTION.

DAVE
Field Tech.

Super. or Agent

24 hour notice requested to schedule Field Technician. Thank you for the opportunity to be of service.

REV.08/10

55446

Sladden Engineering

Buena Park	Coachella Valley	Beaumont	Hemet
(714) 523-0952	(760) 863-0713	(951) 845-7743	(951) 766-8777

1 OF 3

Date 2-29-12

FIELD MEMO

Job No. 622-12006

Project Name HAWES COMPOSTING FACILITY

Client ZERO ENERGY INSTITUTE

Site Address S.W. HWY 58 & HELENDALE RD. HINKLEY AREA SAN BERN. CO.

Job Phone

Work Done DENSITY TESTS TAKEN AS DIRECTED BY ZERO ENERGY INSTITUTE FOREMAN JAMES HANSEN. TESTS 1, 2 + 3 TAKEN @ subgrade OF BOTTOM IMPALEMENT POND 'B'.

Test Summary / Footings Inspected

Test No.	Location	Elev.	Dry Density	Moist %	% Relative Compaction	Ref. Max pcf	Moist %
1	EAST SIDE POND AREA	s/c	118.1	8.3	91	129	10.5
2	MIDDLE "	"	120.0	8.9	93	129	10.5
3	WEST " RETEST #4 PAGE 3 of 3 SATISFACTORY	"	115.9	(6.9)	90	129	10.5
FILL EAST 100' WIDE FILL AREA CONTINUED							
13		+2'	120.0	7.4	92	130	9
14		+3'	122.8	8.5	94	130	9
15		+1'	117.5	8.0	90	130	9
16		+4'	117.8	13.1	93	126.5	11
17		+4'	121.1	10.7	96	126.5	11
18		+1'	119.0	7.0	92	130	9

Comments:

TEST # 3 FAILED TO MEET MINIMUM MOISTURE CONTENT. RETESTED AFTER REWORKING TEST #4 ON PAGE 3 of 3.

ALL OTHER DENSITY TESTS ARE SATISFACTORY ABOVE 90% RELATIVE COMPACTION.

DAVE
Field Tech.

Super. or Agent

24 hour notice requested to schedule Field Technician. Thank you for the opportunity to be of service.

REV.08/10

55444

Sladden Engineering

Buena Park (714) 523-0952 | **Coachella Valley** (760) 863-0713 | **Beaumont** (951) 845-7743 | **Hemet** (951) 766-8777

2 OF 3

Date 2-29-12 CONT.

FIELD MEMO

Job No. 622-12006

Project Name _____ Client _____

Site Address _____

Job Phone _____

Work Done

Test Summary / Footings Inspected

Test No.	Location	Elev.	Dry Density	Moist %	% Relative Compaction	Ref. Max pcf	Moist %
	EAST SIDE FILL CONTINUED						
19		+ 4'	120.7	9.8	93	129	10.5
20		+ 1'	119.7	8.8	92	130	9.0
21		+ 3'	126.9	8.0	95	133	8.5
22		+ 4'	119.1	8.9	92	129	10.5
23		+ 1'	116.7	8.8	92	126.5	11.0
24		+ 2'	117.4	8.5	93	126.5	11.0
25		+ 3'	119.1	7.5	92	130	9.0
26		+ 2'	118.5	10.9	94	126.5	11
27		+ 3'	124.1	8.5	93	133	8.5
28		+ 3'	120.6	7.8	93	130	9.0

Comments:

DAVE
Field Tech.

Super. or Agent

24 hour notice requested to schedule Field Technician. Thank you for the opportunity to be of service.

REV.08/10

55445

Sladden Engineering

Buena Park	Coachella Valley	Beaumont	Hemet
(714) 523-0952	(760) 863-0713	(951) 845-7743	(951) 766-8777

3 of 3

Date 2-29-12

FIELD MEMO

Job No. 622-12006

Project Name _____ Client _____

Site Address _____

Job Phone _____

Work Done

Test Summary / Footings Inspected

Test No.	Location	Elev.	Dry Density	Moist %	% Relative Compaction	Ref. Max pcf	Moist %
29		+2'	116.5	8.5	92	126.5	11.0
30		+4'	119.5	10.3	94	126.5	11.0
31		+2'	117.8	9.1	91	129	10.5
32		+4'	119.2	8.2	92	129	10.5
33		+1'	126.1	8.2	95	133	8.5
34		+2'	126.6	8.4	95	133	8.5
35		+2'	115.4	9.2	91	126.5	11.0
Bottom 5/6	IMPALAMENT POND 'B'						
4	RETEST OF #3	5/6	117.5	9.2	91	129	10.5
5	EAST SIDE NORTH	5/6	118.3	9.7	91	130	9.0

Comments: NWC POND AREA

6	LYESIMATOR SUMP BOTTOM	Bottom Sump 5/6	121.2	11.4	94	129	10.5

DAVE
Field Tech.

Super. or Agent

24 hour notice requested to schedule Field Technician. Thank you for the opportunity to be of service.

REV.08/10

Sladden Engineering

55442

Buena Park	Coachella Valley	Beaumont	Hemet
(714) 523-0952	(760) 863-0713	(951) 845-7743	(951) 766-8777

Date 3-5-12

FIELD MEMO

Job No. 622-12006

Project Name HAWES COMPOSTING FACILITY

Client ZERO ENERGY INSITUTE

Site Address S.W. HWY 58 + HELENDALE RD.
HINKLEY AREA SAN BERNARD. CO.

Job Phone

Work Done DENSITY TESTS TAKEN AS DIRECTED BY ZERO ENERGY INSTITUTE FOREMAN JAMES HANSEN SLOPE SUBGRADE IMPALEMENT POND 'B'. TEST #5 BOTTOM OF POND, SUBGRADE OVER SUMP AREA (NW C) POND 'B'.

Test Summary / Footings Inspected

Test No.	POND SLOPE Location	Elev.	Dry Density	Moist %	% Relative Compaction	Ref. Max pcf	Moist %
1	NORTH	SG	116.3	11.6	92	126.5	11.1
2	WEST	"	116.6	11.2	92	126.5	11.1
3	SOUTH	"	119.9	6.6	92	130.	9
4	EAST	"	118.5	6.6	91	130	9
5	SUMP AREA POND SUBGRADE	"	124.5	6.4	96	130	9

Comments:

DENSITY TESTS SATISFACTORY ABOVE 90% RELATIVE COMPACTION.

DAVE
Field Tech.

Super. or Agent

24 hour notice requested to schedule Field Technician. Thank you for the opportunity to be of service.

REV.08/10

55430

Sladden Engineering

Buena Park (714) 523-0952 | Coachella Valley (760) 863-0713 | Beaumont (951) 845-7743 | Hemet (951) 766-8777

1 OF 2

Date 4-2-12

FIELD MEMO

Job No. 622-12006

Project Name HAWES COMPOSTING FACILITY

Client ZERO ENERGY INSTITUTE

Site Address S.W. of HWY 58 & HELENDALE RD. HINKLEY AREA SAN BERNARDINO CO.

Job Phone

Work Done DENSITY TESTS TAKEN AS DIRECTED BY ZERO ENERGY INSTITUTE FOREMAN JAMES HANSEN. FILL PLACED ALONG EAST SIDE OF SITE. TESTS #1-12 EXCEPT # 2: BOTTOM SUMP AREA IMPALEMENT POND 'A'. (2 of 2): FILL PLACED ALONG WEST SIDE OF SITE 100' WIDE FROM TOP OF POND SLOPE SOUTH 1000' TEST 13-19

Test Summary / Footings Inspected

Test No.	Location: NORTH OF SOUTHERN SITE LIMIT	Location: DIST. WEST OF EASTERN LIMIT	Approx. Elev. Fill from (E.G)	Dry Density	Moist %	% Relative Compaction	Ref. Max pcf	Moist %	
1	300'	20'	+4'	119	7.2	92	130	9	
2	BOTTOM SUMP AREA POND 'A'		S/G	119.9	8.0	92	130	9	
3	500'	75'	+2'	117.5	6.9	90	130	9	
4	650'	50'	+3'	118.1	8.0	>90%			RBR
5	850'	10'	+6'	116.8	9.6	790%			
6	1050'	55'	+3'	119.2	9.4	92	129	10.5	
7	1250'	20'	+5'	118.7	7.5	>90%			GREY
8	1450'	60'	+3'	118.8	7.6	790%			"
9	1450'	145'	+1'	116.3	9.1	>90%			RBR
10	1650'	25'	+6'	122.7	6.9	92	133.5	9	
Comments: 11	1650'	150'	+2'	116.9	7.2	90	130	9	
12	1850'	60'	+2'	121	6.7	91	133.5	9	

DENSITY TESTS SATISFACTORY ABOVE 90% RELATIVE COMPACTION.

DAVE
Field Tech.

Super. or Agent

24 hour notice requested to schedule Field Technician. Thank you for the opportunity to be of service.

REV.08/10

Sladden Engineering

55429

Buena Park	Coachella Valley	Beaumont	Hemet
(714) 523-0952	(760) 863-0713	(951) 845-7743	(951) 766-8777

2 OF 2

Date 4-2-12

FIELD MEMO

Job No. 622-12006

Project Name HAWES COMPOST FACILITY

Client ZERO ENERGY INSTITUTE

Site Address

Job Phone

Work Done

Test Summary / Footings Inspected

Test No.	Location		Approx. Elev. Fill From (E.G.)	Dry Density	Moist %	% Relative Compaction	Ref. Max pcf	Moist %
	SOUTH OF TOP OF SLOPE FOR POND	DIST. EAST OF WESTERN LIMITS						
13	160'	30'	+1'	123	5.0	>90%		
14	370'	15'	+2'	125.1	6.2	"		
15	370'	75'	+1'	125	5.8	"		
16	570'	50'	+2'	124.9	8.9	"		
17	770'	30'	+2'	122.1	7.7	"		
18	770'	90'	+1'	122.5	5.9	"		
19	970'	60'	+1'	123.1	6.0	"		

Comments:

DENSITY TESTS SATISFACTORY ABOVE 90% RELATIVE COMPACTION.

DAVE
Field Tech.

Super. or Agent

24 hour notice requested to schedule Field Technician. Thank you for the opportunity to be of service.

REV.08/10

Sladden Engineering

55511

Buena Park	Coachella Valley	Beaumont	Hemet
(714) 523-0952	(760) 863-0713	(951) 845-7743	(951) 766-8777

Date 4-13-12

FIELD MEMO

Job No. 622-12006

Project Name Hawes Composting Facility

Site Address S.W. of Hwy 58 + Helendale RD
Hinkley Area San Bernardino Co

Job Phone

Client Zero Energy Institute

Pg 1 of 2

Work Done Density test taken on Slopes + Bottom S.G of Pond A.

Test Summary / Footings Inspected

Test No.	Location	Elev.	Dry Density	Moist %	% Relative Compaction	Ref. Max pcf	Moist %
1	55' North of Top of Slope SWC of Pond A	On slope	123.6	7.1	94%	131.5	8.5
2	75' East of test # 1	Bottom of Pond	129.0	6.3	96%	134.0	8.0
3	75' East of Test # 2		122.9	6.6	93%	131.5	8.5
4	75' East of Test # 3		125.9	10.4	96%	↓	↓
5	75' East of Test # 4		120.4	8.0	92%	↓	↓
6	75' East of test # 5		116.7	9.7	92%	126.5	11.0
7	50' North of test # 6		122.0	8.6	93%	131.5	8.5
8	50' North of test # 5		129.6	8.3	96%	134.0	8.0
9	50' North of test # 4		127.6	7.5	94%	↓	↓
10	50' North of test # 3	↓	123.4	6.7	94%	131.5	8.5

Comments:

All test Satisfactory 96% or Greater

Josh
Field Tech.

Super. or Agent

24 hour notice requested to schedule Field Technician. Thank you for the opportunity to be of service.

REV.08/10

55514

Sladden Engineering

Buena Park	Coachella Valley	Beaumont	Hemet
(714) 523-0952	(760) 863-0713	(951) 845-7743	(951) 766-8777

Date 4-13-12

FIELD MEMO

Job No. 622-12606

Project Name Hawes Composting Facility

Site Address S.W of Hwy 58 + Helendale Rd
Hinkley Area San Bernardino Co

Job Phone

Client Zero Energy Institute

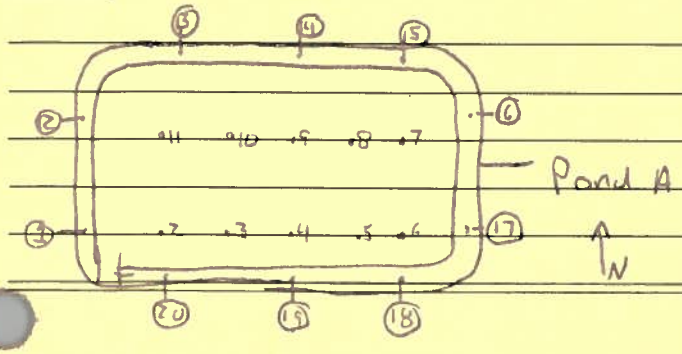
Pg 2 of 2

Work Done Density test on Slopes + Bottom S.G of Pond A

Test Summary / Footings Inspected

Test No.	Location	Elev.	Dry Density	Moist %	% Relative Compaction	Ref. Max pcf	Moist %
11	50' North of test # 2	Bottom of Pond	119.3	7.8	91%	131.5	8.5
12	50' North of test # 1	on West Slope	122.2	8.6	93%	↓	↓
13	West end of North Slope	~~Bo~~ on Slope	116.8	10.4	92%	126.5	11.0
14	Center of North Slope	↓	120.3	8.3	91%	131.5	8.5
15	East End of North Slope		121.7	8.7	93%	↓	↓
16	Northend of East Slope		122.6	8.4	93%	↓	↓
17	South End of East Slope		116.9	10.4	92%	126.5	11.0
18	East End of South Slope		115.2	14.0	91%	↓	↓
19	Center of South Slope		115.6	9.0	91%	↓	↓
20	West End of South Slope	↓	122.4	8.0	93%	131.5	8.5

Comments:



All test 90% or Greater

Field Tech.

Super. or Agent

24 hour notice requested to schedule Field Technician. Thank you for the opportunity to be of service.

REV.08/10

Sladden Engineering

55515

Buena Park	Coachella Valley	Beaumont	Hemet
(714) 523-0952	(760) 863-0713	(951) 845-7743	(951) 766-8777

Date 4-13-12

FIELD MEMO

Job No. 622-12006

Project Name Howes Composting Facility

Site Address S.W of Hwy 58 + Helendale Rd
Hinkley Area of SanBernardino Co

Job Phone

Client Zero Energy Institute

Work Done Density test on Fill Area South of Pond A

Test Summary / Footings Inspected

Test No.	Location	Elev.	Dry Density	Moist %	% Relative Compaction	Ref. Max pcf	Moist %
1	Fill area 1,570 ft South of Pond A	-2.0	126.6	9.3	96%	134.5	
2	Fill Area 1,460 ft South of Pond A	-1.0	126.3	10.4	96%	↓	
3	Fill Area 1,345 ft South of Pond A	5.6	119.6	8.3	95%	126.5	11
4	Fill Area 1,325 ft South of Pond A	-.5	126.9	10.1	96%	131.5	
5	Fill Area 1,225 ft South of Pond A	5.6	123.8	8.7	94%	131.5	8.5
6	Fill Area 1,125 ft South of Pond A	-1.5	120.4	10.2	92%	↓	

Comments:

All test 90% or Greater

Josh
Field Tech.

Super. or Agent

24 hour notice requested to schedule Field Technician. Thank you for the opportunity to be of service.

REV.08/10

Appendix B

Geosynthetic Manufacturer's Quality Assurance
GCL and HDPE Liner

SUBMITTAL CONTROL FORM

ECApplications INC.

DATE: APRIL 27, 2011

JOB NO: 103004

SUBMITTAL NO: 5

PROJECT: NURSERY PRODUCTS HAWES COMPOSTING FACILITY

TO: **Nursery Products**
ATTN: **Chris Seney P. E.**
12277 Apple Valley Rd, Ste. 131
Apple Valley, CA 92308
PHONE: **760-272-1098**
FAX:
EMAIL: **nurseryproducts@charter.net**

FROM: **EC Applications, Inc. (ECA)**
Chris Fore
415 W. Taft Ave, Suite H
Orange, CA 92865
PHONE: **(714) 921-9848 x 104**
cfore@ecapplications.com

WE ARE SUBMITTING THE ENCLOSED:

☐ SHOP DRAWINGS ☐ CERTIFICATES OF COMPLIANCE ☐ SAMPLES
☐ MATERIAL DATA ☒ QC INFORMATION ☐ OTHER

THESE ARE TRANSMITTED FOR:

☒ APPROVAL ☐ INFORMATION ☐ RESUBMIT
☐ AS REQUESTED ☐ FOR REVIEW PREV SUB NO:

ITEM NO.	DESCRIPTION OF ITEM	NO. OF COPIES	CONTRACT REFERENCE/SPEC SECTION OR DRAWING SHEET NO.
1	*Geomembrane Manufacturers Quality Control Certifications*	1	*Design Plan April, 2010*

NOTE:

THE ABOVE SUBMITTED ITEMS HAVE BEEN REVIEWED IN DETAIL AND ARE CORRECT AND IN GENERAL CONFORMANCE WITH THE CONTRACT DRAWINGS AND SPECIFICATIONS EXCEPT AS OTHERWISE STATED.

Chris Fore

EC Applications, Inc. AUTHORIZED SIGNATURE

IF THE ABOVE VARIANCES ARE ACCEPTABLE, PLEASE CONFIRM IN WRITING WITHIN TEN (10) DAYS, OTHERWISE WE WILL PROCEED PER THE PROPOSED VARIANCES

CoA Date: 01/27/2011

Certificate of Analysis

Shipped To: AGRU AMERICA INC
2000 EAST NEWLANDS
FERNLEY NV 89408
USA

Recipient: PALMER
Fax:

CPC Delivery #: 88203328
PO #: 005824
Weight: 196200 LB
Ship Date: 01/27/2011
Package: BULK
Mode: Hopper Car
Car #: PSPX002048
Seal No: 267514

Product:
MARLEX POLYETHYLENE K307 BULK

Lot Number: 7110029

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.24	g/10mi
HLMI Flow Rate	ASTM D1238	21	g/10mi
Density	D1505 or D4883	0.937	g/cm3
Pellet Count	P02.08.03	27	pel/g
Production Date		01/06/2011	

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP.
However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.

Troy Griffin
Quality Systems Coordinator

For CoA questions contact Customer Service Representative at +1-832-813-4782

CoA Date: 02/18/2011

Certificate of Analysis

Shipped To: AGRU AMERICA INC
2000 EAST NEWLANDS
FERNLEY NV 89408
USA

Recipient: PALMER
Fax:

CPC Delivery #: 88215793
PO #: 005832
Weight: 48,000 LB (est.)
Ship Date: 02/24/2011
Package: BULK
Mode: Hopper Truck

Product:
MARLEX POLYETHYLENE K307 BULK

Lot Number: 8110197

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.27	g/10mi
HLMI Flow Rate	ASTM D1238	22	g/10mi
Density	D1505 or D4883	0.938	g/cm3
Pellet Count	P02.08.03	27	pel/g
Production Date		02/17/2011	

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP.
However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.

Troy Griffin
Quality Systems Coordinator

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

agru america quality control dept

quality certificate

ROLL # **906313-11** Lot # **7110029** **Liner Type:SMOOTH HDPE**

		METRIC		ENGLISH					
Thickness Measurement ASTM D5199 (Modified)	MIN:	**1.472**	mm	**58**	mil	Thickness	**1.5mm**		**60mil**	
	MAX:	**1.647**	mm	**65**	mil	Length	**164.594**	m	**540**	feet
	AVE:	**1.556**	mm	**61**	mil	Width	**7.00**	m	**23.0**	feet

OIT(Standard) ASTM D3895 minutes **174**

Specific Gravity ASTM D792		Density	g/cc				**.941**
MFI ASTM D1238 COND. E GRADE:	**K307**	Melt Flow Index 190°C /2160 g	- g /10 min				**.24**
Carbon Black Content ASTM D4218		Range	%				**2.12**
Carbon Black Dispersion ASTM D5596		Category					**10 IN CAT 1**
Tensile Strength ASTM D6693 (2 inches / minute)		Average Strength @ Yield	**26**	N/mm	**149**	ppi	**2,478** psi
		Average Strength @ Break	**50**	N/mm	**287**	ppi	**4,780** psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield		Average Elongation @ Yield	%				**15.93**
Lo = 2.0" Break		Average Elongation @ Break	%				**822.0**
Dimensional Stability ASTM D1204 (Modified)		Average Dimensional Change	%				**-0.31**
Tear Resistance ASTM D1004 (Modified)		Average Tear Resistance		**203** N			**45.729** lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)		Load		**378** N			**84.932** lbs
Puncture Resistance ASTM D4833 (Modified)		Load		**550** N			**123.61** lbs
ESCR ASTM D1693		Minimum Hrs w / o Failures	1500 hrs				**CERTIFIED**
Notched Constant Tensile Load ASTM D5397		pass / fail @ 30%	300 hrs				**pass**

Customer: **Erosion Control**
PO: **8385 Hawes Composting Fac.**
Destination **Barstow, CA**

Date: **2/11/11**

Signature: .....
Manager, Quality Control Department

60HDSM FRM REV 06 12/23/05

agru america quality control dept

quality certificate

ROLL # **906314-11** Lot # **7110029** **Liner Type:SMOOTH HDPE**

Thickness Measurement ASTM D5199 (Modified)		METRIC		ENGLISH		Thickness	**1.5mm**		**60mil**
	MIN:	**1.466**	mm	**58**	mil	Length	**164.594**	m	**540** feet
	MAX:	**1.637**	mm	**64**	mil	Width	**7.00**	m	**23.0** feet
	AVE:	**1.544**	mm	**61**	mil	OIT(Standard) ASTM D3895		minutes	**174**

Specific Gravity ASTM D792		Density	g/cc				**.941**
MFI ASTM D1238 COND. E GRADE:	**K307**	Melt Flow Index 190ºC /2160 g	- g /10 min				**.24**
Carbon Black Content ASTM D4218		Range	%				**2.12**
Carbon Black Dispersion ASTM D5596		Category					**10 IN CAT 1**
Tensile Strength ASTM D6693 (2 inches / minute)		Average Strength @ Yield	**26**	N/mm	**149**	ppi	**2,478** psi
		Average Strength @ Break	**50**	N/mm	**287**	ppi	**4,780** psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield		Average Elongation @ Yield	%				**15.93**
Lo = 2.0" Break		Average Elongation @ Break	%				**822.0**
Dimensional Stability ASTM D1204 (Modified)		Average Dimensional Change	%				**-0.31**
Tear Resistance ASTM D1004 (Modified)		Average Tear Resistance		**203** N			**45.729** lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)		Load		**378** N			**84.932** lbs
Puncture Resistance ASTM D4833 (Modified)		Load		**550** N			**123.61** lbs
ESCR ASTM D1693		Minimum Hrs w / o Failures	1500 hrs				**CERTIFIED**
Notched Constant Tensile Load ASTM D5397		pass / fail @ 30%	300 hrs				**pass**

Customer: **Erosion Control**
PO: **8385 Hawes Composting Fac.**
Destination **Barstow, CA**

Date:..... **2/11/11**

Signature.....

Manager, Quality Control Department

60HDSM.FRM
REV 06
12/23/05

agru america
quality control dept

quality certificate

ROLL # **906315-11** Lot # **7110029** **Liner Type:SMOOTH HDPE**

		METRIC		ENGLISH				
Thickness Measurement ASTM D5199 (Modified)	MIN:	**1.451**	mm	**57**	mil	Thickness	**1.5mm**	**60mil**
	MAX:	**1.64**	mm	**65**	mil	Length	**164.594** m	**540** feet
	AVE:	**1.539**	mm	**61**	mil	Width	**7.00** m	**23.0** feet
						OIT(Standard) ASTM D3895	minutes	**174**

Specific Gravity ASTM D792		Density		g/cc				**.941**
MFI ASTM D1238 COND. E GRADE:	**K307**	Melt Flow Index 190°C /2160 g	-	g /10 min				**.24**
Carbon Black Content ASTM D4218		Range		%				**2.12**
Carbon Black Dispersion ASTM D5596		Category						**10 IN CAT 1**
Tensile Strength ASTM D6693 (2 inches / minute)		Average Strength @ Yield		**26** N/mm		**149** ppi	**2,478**	psi
		Average Strength @ Break		**50** N/mm		**287** ppi	**4,780**	psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield		Average Elongation @ Yield		%			**15.93**	
Lo = 2.0" Break		Average Elongation @ Break		%			**822.0**	
Dimensional Stability ASTM D1204 (Modified)		Average Dimensional Change		%			**-0.31**	
Tear Resistance ASTM D1004 (Modified)		Average Tear Resistance			**203** N		**45.729**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)		Load			**378** N		**84.932**	lbs
Puncture Resistance ASTM D4833 (Modified)		Load			**550** N		**123.61**	lbs
ESCR ASTM D1693		Minimum Hrs w / o Failures		1500 hrs			**CERTIFIED**	
Notched Constant Tensile Load ASTM D5397		pass / fail @ 30%		300 hrs			**pass**	

Customer: **Erosion Control**
PO: **8385 Hawes Composting Fac.**
Destination **Barstow, CA**

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ROLL # **906316-11** Lot # **7110029** **Liner Type:SMOOTH HDPE**

Thickness Measurement ASTM D5199 (Modified)		METRIC		ENGLISH		Thickness	**1.5mm**	**60mil**
	MIN:	**1.478**	mm	**58**	mil	Length	**164.594** m	**540** feet
	MAX:	**1.629**	mm	**64**	mil	Width	**7.00** m	**23.0** feet
	AVE:	**1.544**	mm	**61**	mil	OIT(Standard) ASTM D3895	minutes	**174**

Specific Gravity ASTM D792		Density	g/cc			**.941**
MFI ASTM D1238 COND. E GRADE:	**K307**	Melt Flow Index 190ºC /2160 g	- g /10 min			**.24**
Carbon Black Content ASTM D4218		Range	%			**2.05**
Carbon Black Dispersion ASTM D5596		Category				**10 IN CAT 1**
Tensile Strength ASTM D6693 (2 inches / minute)		Average Strength @ Yield	**26** N/mm	**149** ppi	**2,478**	psi
		Average Strength @ Break	**50** N/mm	**287** ppi	**4,780**	psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield		Average Elongation @ Yield	%		**15.93**	
Lo = 2.0" Break		Average Elongation @ Break	%		**822.0**	
Dimensional Stability ASTM D1204 (Modified)		Average Dimensional Change	%		**-0.31**	
Tear Resistance ASTM D1004 (Modified)		Average Tear Resistance	**203** N		**45.729**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)		Load	**378** N		**84.932**	lbs
Puncture Resistance ASTM D4833 (Modified)		Load	**550** N		**123.61**	lbs
ESCR ASTM D1693		Minimum Hrs w / o Failures	1500 hrs		**CERTIFIED**	
Notched Constant Tensile Load ASTM D5397		pass / fail @ 30%	300 hrs		**pass**	

Customer: **Erosion Control**
PO: **8385 Hawes Composting Fac.**
Destination **Barstow, CA**

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ROLL # **906317-11** Lot # **7110029** **Liner Type:SMOOTH HDPE**

		METRIC		ENGLISH					
Thickness Measurement ASTM D5199 (Modified)	MIN:	**1.475**	mm	**58**	mil	Thickness	**1.5mm**	**60mil**	
	MAX:	**1.639**	mm	**65**	mil	Length	**164.594**	m	**540** feet
	AVE:	**1.546**	mm	**61**	mil	Width	**7.00**	m	**23.0** feet

OIT(Standard) ASTM D3895 minutes **174**

Specific Gravity ASTM D792		Density	g/cc				**.941**
MFI ASTM D1238 COND. E GRADE:	**K307**	Melt Flow Index 190ºC /2160 g	- g /10 min				**.24**
Carbon Black Content ASTM D4218		Range	%				**2.29**
Carbon Black Dispersion ASTM D5596		Category					**10 IN CAT 1**
Tensile Strength ASTM D6693 (2 inches / minute)		Average Strength @ Yield		**26**	N/mm	**149** ppi	**2,478** psi
		Average Strength @ Break		**50**	N/mm	**287** ppi	**4,780** psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield		Average Elongation @ Yield	%				**15.93**
Lo = 2.0" Break		Average Elongation @ Break	%				**822.0**
Dimensional Stability ASTM D1204 (Modified)		Average Dimensional Change	%				**-0.31**
Tear Resistance ASTM D1004 (Modified)		Average Tear Resistance		**203**	N	**45.729**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)		Load		**378**	N	**84.932**	lbs
Puncture Resistance ASTM D4833 (Modified)		Load		**550**	N	**123.61**	lbs
ESCR ASTM D1693		Minimum Hrs w / o Failures	1500 hrs				**CERTIFIED**
Notched Constant Tensile Load ASTM D5397		pass / fail @ 30%	300 hrs				**pass**

Customer: **Erosion Control**
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ROLL # **906318-11** Lot # **7110029** **Liner Type:SMOOTH HDPE**

		METRIC		ENGLISH	
Thickness Measurement ASTM D5199 (Modified)	MIN:	**1.496**	mm	**59**	mil
	MAX:	**1.623**	mm	**64**	mil
	AVE:	**1.548**	mm	**61**	mil

Thickness	**1.5mm**		**60mil**	
Length	**164.594**	m	**540**	feet
Width	**7.00**	m	**23.0**	feet
OIT(Standard) ASTM D3895		minutes	**174**	

Specific Gravity ASTM D792		Density		g/cc			**.941**	
MFI ASTM D1238 COND. E GRADE:	**K307**	Melt Flow Index 190°C /2160 g	-	g /10 min			**.24**	
Carbon Black Content ASTM D4218		Range		%			**2.06**	
Carbon Black Dispersion ASTM D5596		Category					**10 IN CAT 1**	
Tensile Strength ASTM D6693 (2 inches / minute)		Average Strength @ Yield		**23** N/mm	**134**	ppi	**2,236**	psi
		Average Strength @ Break		**49** N/mm	**281**	ppi	**4,684**	psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield		Average Elongation @ Yield		%			**14.63**	
Lo = 2.0" Break		Average Elongation @ Break		%			**847.7**	
Dimensional Stability ASTM D1204 (Modified)		Average Dimensional Change		%			**-0.31**	
Tear Resistance ASTM D1004 (Modified)		Average Tear Resistance		**203** N			**45.729**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)		Load		**378** N			**84.932**	lbs
Puncture Resistance ASTM D4833 (Modified)		Load		**550** N			**123.61**	lbs
ESCR ASTM D1693		Minimum Hrs w / o Failures		1500 hrs			**CERTIFIED**	
Notched Constant Tensile Load ASTM D5397		pass / fail @ 30%		300 hrs			**pass**	

Customer: **Erosion Control**
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Destination **Barstow, CA**

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ROLL # **908466-11** Lot # **8110197** **Liner Type:SMOOTH HDPE**

		METRIC		ENGLISH	
Thickness Measurement ASTM D5199 (Modified)	MIN:	**1.52**	mm	**60**	mil
	MAX:	**1.593**	mm	**63**	mil
	AVE:	**1.542**	mm	**61**	mil

Thickness	**1.5mm**		**60mil**	
Length	**164.594**	m	**540**	feet
Width	**7.00**	m	**23.0**	feet
OIT(Standard) ASTM D3895		minutes	**216**	

Specific Gravity ASTM D792		Density		g/cc			**.945**	
MFI ASTM D1238 COND. E GRADE:	**K307**	Melt Flow Index 190°C /2160 g	-	g /10 min			**.23**	
Carbon Black Content ASTM D4218		Range		%			**2.26**	
Carbon Black Dispersion ASTM D5596		Category					**10 IN CAT 1**	
Tensile Strength ASTM D6693 (2 inches / minute)		Average Strength @ Yield		**26** N/mm	**149**	ppi	**2,485**	psi
		Average Strength @ Break		**50** N/mm	**287**	ppi	**4,789**	psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield		Average Elongation @ Yield		%			**17.13**	
Lo = 2.0" Break		Average Elongation @ Break		%			**875.9**	
Dimensional Stability ASTM D1204 (Modified)		Average Dimensional Change		%			**-0.28**	
Tear Resistance ASTM D1004 (Modified)		Average Tear Resistance		**223** N			**50.104**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)		Load		**398** N			**89.532**	lbs
Puncture Resistance ASTM D4833 (Modified)		Load		**557** N			**125.20**	lbs
ESCR ASTM D1693		Minimum Hrs w / o Failures		1500 hrs			**CERTIFIED**	
Notched Constant Tensile Load ASTM D5397		pass / fail @ 30%		300 hrs			**ONGOING**	

Customer: **Erosion Control**
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ROLL # **908467-11** Lot # **8110197** **Liner Type:SMOOTH HDPE**

		METRIC		ENGLISH					
Thickness Measurement ASTM D5199 (Modified)	MIN:	**1.499**	mm	**59**	mil	Thickness	**1.5mm**		**60mil**	
	MAX:	**1.597**	mm	**63**	mil	Length	**164.594**	m	**540**	feet
	AVE:	**1.544**	mm	**61**	mil	Width	**7.00**	m	**23.0**	feet

OIT(Standard) ASTM D3895 minutes **216**

Specific Gravity ASTM D792		Density	g/cc			**.945**	
MFI ASTM D1238 COND. E GRADE:	**K307**	Melt Flow Index 190ºC /2160 g	- g /10 min			**.23**	
Carbon Black Content ASTM D4218		Range	%			**2.26**	
Carbon Black Dispersion ASTM D5596		Category				**10 IN CAT 1**	
Tensile Strength ASTM D6693 (2 inches / minute)		Average Strength @ Yield	**26** N/mm	**149** ppi		**2,485** psi	
		Average Strength @ Break	**50** N/mm	**287** ppi		**4,789** psi	
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield		Average Elongation @ Yield	%			**17.13**	
Lo = 2.0" Break		Average Elongation @ Break	%			**875.9**	
Dimensional Stability ASTM D1204 (Modified)		Average Dimensional Change	%			**-0.28**	
Tear Resistance ASTM D1004 (Modified)		Average Tear Resistance	**223** N			**50.104** lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)		Load	**398** N			**89.532** lbs	
Puncture Resistance ASTM D4833 (Modified)		Load	**557** N			**125.20** lbs	
ESCR ASTM D1693		Minimum Hrs w / o Failures	1500 hrs			**CERTIFIED**	
Notched Constant Tensile Load ASTM D5397		pass / fail @ 30%	300 hrs			**ONGOING**	

Customer: **Erosion Control**
PO: **8385 Hawes Composting Fac.**
Destination **Barstow, CA**

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ROLL # **908468-11** Lot # **8110197** **Liner Type:SMOOTH HDPE**

		METRIC		ENGLISH					
Thickness Measurement ASTM D5199 (Modified)	MIN:	**1.489**	mm	**59**	mil	Thickness	**1.5mm**		**60mil**
	MAX:	**1.577**	mm	**62**	mil	Length	**164.594**	m	**540** feet
	AVE:	**1.54**	mm	**61**	mil	Width	**7.00**	m	**23.0** feet
						OIT(Standard) ASTM D3895		minutes	**216**

Specific Gravity ASTM D792		Density	g/cc			**.945**
MFI ASTM D1238 COND. E GRADE:	**K307**	Melt Flow Index 190°C /2160 g	- g /10 min			**.23**
Carbon Black Content ASTM D4218		Range	%			**2.17**
Carbon Black Dispersion ASTM D5596		Category				**10 IN CAT 1**
Tensile Strength ASTM D6693 (2 inches / minute)		Average Strength @ Yield	**26** N/mm	**149** ppi	**2,485** psi	
		Average Strength @ Break	**50** N/mm	**287** ppi	**4,789** psi	
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield		Average Elongation @ Yield	%			**17.13**
Lo = 2.0" Break		Average Elongation @ Break	%			**875.9**
Dimensional Stability ASTM D1204 (Modified)		Average Dimensional Change	%			**-0.28**
Tear Resistance ASTM D1004 (Modified)		Average Tear Resistance	**223** N		**50.104** lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)		Load	**398** N		**89.532** lbs	
Puncture Resistance ASTM D4833 (Modified)		Load	**557** N		**125.20** lbs	
ESCR ASTM D1693		Minimum Hrs w / o Failures	1500 hrs			**CERTIFIED**
Notched Constant Tensile Load ASTM D5397		pass / fail @ 30%	300 hrs			**ONGOING**

Customer: **Erosion Control**
PO: **8385 Hawes Composting Fac.**
Destination **Barstow, CA**

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ROLL # **908469-11** Lot # **8110197** **Liner Type:SMOOTH HDPE**

		METRIC		ENGLISH					
Thickness Measurement ASTM D5199 (Modified)	MIN:	**1.509**	mm	**59**	mil	Thickness	**1.5mm**		**60mil**	
	MAX:	**1.562**	mm	**61**	mil	Length	**164.594**	m	**540**	feet
	AVE:	**1.544**	mm	**61**	mil	Width	**7.00**	m	**23.0**	feet

OIT(Standard) ASTM D3895 minutes **216**

Specific Gravity ASTM D792		Density	g/cc				**.945**
MFI ASTM D1238 COND. E GRADE:	**K307**	Melt Flow Index 190°C /2160 g	- g /10 min				**.23**
Carbon Black Content ASTM D4218		Range	%				**2.17**
Carbon Black Dispersion ASTM D5596		Category					**10 IN CAT 1**
Tensile Strength ASTM D6693 (2 inches / minute)		Average Strength @ Yield		**26**	N/mm	**149** ppi	**2,485** psi
		Average Strength @ Break		**50**	N/mm	**287** ppi	**4,789** psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield		Average Elongation @ Yield	%				**17.13**
Lo = 2.0" Break		Average Elongation @ Break	%				**875.9**
Dimensional Stability ASTM D1204 (Modified)		Average Dimensional Change	%				**-0.28**
Tear Resistance ASTM D1004 (Modified)		Average Tear Resistance		**223**	N		**50.104** lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)		Load		**398**	N		**89.532** lbs
Puncture Resistance ASTM D4833 (Modified)		Load		**557**	N		**125.20** lbs
ESCR ASTM D1693		Minimum Hrs w / o Failures	1500 hrs				**CERTIFIED**
Notched Constant Tensile Load ASTM D5397		pass / fail @ 30%	300 hrs				**ONGOING**

Customer: **Erosion Control**
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Destination **Barstow, CA**

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ROLL # **908470-11** Lot # **8110197** **Liner Type:SMOOTH HDPE**

		METRIC		ENGLISH	
Thickness Measurement ASTM D5199 (Modified)	MIN:	**1.506**	mm	**59**	mil
	MAX:	**1.584**	mm	**62**	mil
	AVE:	**1.542**	mm	**61**	mil

Thickness	**1.5mm**		**60mil**	
Length	**164.594**	m	**540**	feet
Width	**7.00**	m	**23.0**	feet
OIT(Standard) ASTM D3895		minutes	**216**	

Specific Gravity ASTM D792		Density			g/cc			**.945**	
MFI ASTM D1238 COND. E GRADE:	**K307**	Melt Flow Index 190ºC /2160 g			- g /10 min			**.23**	
Carbon Black Content ASTM D4218		Range			%			**2.11**	
Carbon Black Dispersion ASTM D5596		Category						**10 IN CAT 1**	
Tensile Strength ASTM D6693 (2 inches / minute)		Average Strength @ Yield	**26**	N/mm		**148**	ppi	**2,473**	psi
		Average Strength @ Break	**47**	N/mm		**270**	ppi	**4,506**	psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield		Average Elongation @ Yield			%			**15.44**	
Lo = 2.0" Break		Average Elongation @ Break			%			**837.8**	
Dimensional Stability ASTM D1204 (Modified)		Average Dimensional Change			%			**-0.28**	
Tear Resistance ASTM D1004 (Modified)		Average Tear Resistance		**223**	N			**50.104**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)		Load		**398**	N			**89.532**	lbs
Puncture Resistance ASTM D4833 (Modified)		Load		**557**	N			**125.20**	lbs
ESCR ASTM D1693		Minimum Hrs w / o Failures	1500 hrs					**CERTIFIED**	
Notched Constant Tensile Load ASTM D5397		pass / fail @ 30%	300 hrs					**ONGOING**	

Customer: **Erosion Control**
PO: **8385 Hawes Composting Fac.**
Destination **Barstow, CA**

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ROLL # **908571-11** Lot # **8110197** **Liner Type:SMOOTH HDPE**

Thickness Measurement ASTM D5199 (Modified)		METRIC		ENGLISH		Thickness	**1.5mm**	**60mil**
	MIN:	**1.511**	mm	**59**	mil	Length	**164.594** m	**540** feet
	MAX:	**1.59**	mm	**63**	mil	Width	**7.00** m	**23.0** feet
	AVE:	**1.551**	mm	**61**	mil	OIT(Standard) ASTM D3895	minutes	**216**

Specific Gravity ASTM D792		Density	g/cc			**.945**
MFI ASTM D1238 COND. E GRADE:	**K307**	Melt Flow Index 190ºC /2160 g	- g /10 min			**.23**
Carbon Black Content ASTM D4218		Range	%			**2.11**
Carbon Black Dispersion ASTM D5596		Category				**10 IN CAT 1**
Tensile Strength ASTM D6693 (2 inches / minute)		Average Strength @ Yield	**26** N/mm	**148** ppi	**2,473**	psi
		Average Strength @ Break	**47** N/mm	**270** ppi	**4,506**	psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break		Average Elongation @ Yield	%		**15.44**	
		Average Elongation @ Break	%		**837.8**	
Dimensional Stability ASTM D1204 (Modified)		Average Dimensional Change	%		**-0.28**	
Tear Resistance ASTM D1004 (Modified)		Average Tear Resistance	**223** N		**50.104**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)		Load	**398** N		**89.532**	lbs
Puncture Resistance ASTM D4833 (Modified)		Load	**557** N		**125.20**	lbs
ESCR ASTM D1693		Minimum Hrs w / o Failures	1500 hrs		**CERTIFIED**	
Notched Constant Tensile Load ASTM D5397		pass / fail @ 30%	300 hrs		**ONGOING**	

Customer: **Erosion Control**
PO: **8385 Hawes Composting Fac.**
Destination **Barstow, CA**

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ROLL # **908572-11** Lot # **8110197** **Liner Type:SMOOTH HDPE**

		METRIC		ENGLISH					
Thickness Measurement ASTM D5199 (Modified)	MIN:	**1.501**	mm	**59**	mil	Thickness	**1.5mm**		**60mil**	
	MAX:	**1.571**	mm	**62**	mil	Length	**164.594**	m	**540**	feet
	AVE:	**1.546**	mm	**61**	mil	Width	**7.00**	m	**23.0**	feet

OIT(Standard) ASTM D3895 minutes **216**

Specific Gravity ASTM D792		Density		g/cc			**.945**	
MFI ASTM D1238 COND. E GRADE:	**K307**	Melt Flow Index 190°C /2160 g	-	g /10 min			**.23**	
Carbon Black Content ASTM D4218		Range		%			**2.24**	
Carbon Black Dispersion ASTM D5596		Category					**10 IN CAT 1**	
Tensile Strength ASTM D6693 (2 inches / minute)		Average Strength @ Yield		**26** N/mm	**148** ppi		**2,473** psi	
		Average Strength @ Break		**47** N/mm	**270** ppi		**4,506** psi	
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield		Average Elongation @ Yield		%			**15.44**	
Lo = 2.0" Break		Average Elongation @ Break		%			**837.8**	
Dimensional Stability ASTM D1204 (Modified)		Average Dimensional Change		%			**-0.28**	
Tear Resistance ASTM D1004 (Modified)		Average Tear Resistance			**223** N		**50.104** lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)		Load			**398** N		**89.532** lbs	
Puncture Resistance ASTM D4833 (Modified)		Load			**557** N		**125.20** lbs	
ESCR ASTM D1693		Minimum Hrs w / o Failures		1500 hrs			**CERTIFIED**	
Notched Constant Tensile Load ASTM D5397		pass / fail @ 30%		300 hrs			**ONGOING**	

Customer: **Erosion Control**
PO: **8385 Hawes Composting Fac.**
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ROLL # **908573-11** Lot # **8110197** **Liner Type:SMOOTH HDPE**

		METRIC		ENGLISH					
Thickness Measurement ASTM D5199 (Modified)	MIN:	**1.508**	mm	**59**	mil	Thickness	**1.5mm**		**60mil**	
	MAX:	**1.581**	mm	**62**	mil	Length	**164.594**	m	**540**	feet
	AVE:	**1.54**	mm	**61**	mil	Width	**7.00**	m	**23.0**	feet

OIT(Standard) ASTM D3895 minutes **216**

Specific Gravity ASTM D792		Density	g/cc				**.945**
MFI ASTM D1238 COND. E GRADE:	**K307**	Melt Flow Index 190ºC /2160 g	- g /10 min				**.23**
Carbon Black Content ASTM D4218		Range	%				**2.24**
Carbon Black Dispersion ASTM D5596		Category					**10 IN CAT 1**
Tensile Strength ASTM D6693 (2 inches / minute)		Average Strength @ Yield	**26** N/mm		**148** ppi	**2,473**	psi
		Average Strength @ Break	**47** N/mm		**270** ppi	**4,506**	psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield		Average Elongation @ Yield	%			**15.44**	
Lo = 2.0" Break		Average Elongation @ Break	%			**837.8**	
Dimensional Stability ASTM D1204 (Modified)		Average Dimensional Change	%			**-0.28**	
Tear Resistance ASTM D1004 (Modified)		Average Tear Resistance		**223** N		**50.104**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)		Load		**398** N		**89.532**	lbs
Puncture Resistance ASTM D4833 (Modified)		Load		**557** N		**125.20**	lbs
ESCR ASTM D1693		Minimum Hrs w / o Failures	1500 hrs			**CERTIFIED**	
Notched Constant Tensile Load ASTM D5397		pass / fail @ 30%	300 hrs			**ONGOING**	

Customer: **Erosion Control**
PO: **8385 Hawes Composting Fac.**
Destination **Barstow, CA**

Date: **2/25/11**

Signature.....
Manager, Quality Control Department

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ROLL # **908574-11** Lot # **8110197** **Liner Type:SMOOTH HDPE**

		METRIC		ENGLISH					
Thickness Measurement ASTM D5199 (Modified)	MIN:	**1.521**	mm	**60**	mil	Thickness	**1.5mm**	**60mil**	
	MAX:	**1.573**	mm	**62**	mil	Length	**164.594**	m	**540** feet
	AVE:	**1.545**	mm	**61**	mil	Width	**7.00**	m	**23.0** feet
						OIT(Standard) ASTM D3895		minutes	**216**

Specific Gravity ASTM D792		Density		g/cc			**.945**	
MFI ASTM D1238 COND. E GRADE:	**K307**	Melt Flow Index 190ºC /2160 g	-	g /10 min			**.23**	
Carbon Black Content ASTM D4218		Range		%			**2.24**	
Carbon Black Dispersion ASTM D5596		Category					**10 IN CAT 1**	
Tensile Strength ASTM D6693 (2 inches / minute)		Average Strength @ Yield		**26** N/mm	**148** ppi	**2,473** psi		
		Average Strength @ Break		**47** N/mm	**270** ppi	**4,506** psi		
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield		Average Elongation @ Yield		%			**15.44**	
Lo = 2.0" Break		Average Elongation @ Break		%			**837.8**	
Dimensional Stability ASTM D1204 (Modified)		Average Dimensional Change		%			**-0.28**	
Tear Resistance ASTM D1004 (Modified)		Average Tear Resistance		**223** N		**50.104** lbs		
Puncture Resistance FTMS 101 Method 2065 (Modified)		Load		**398** N		**89.532** lbs		
Puncture Resistance ASTM D4833 (Modified)		Load		**557** N		**125.20** lbs		
ESCR ASTM D1693		Minimum Hrs w / o Failures		1500 hrs			**CERTIFIED**	
Notched Constant Tensile Load ASTM D5397		pass / fail @ 30%		300 hrs			**ONGOING**	

Customer: **Erosion Control**
PO: **8385 Hawes Composting Fac.**
Destination **Barstow, CA**

Date: **2/25/11**

Signature: .....
Manager, Quality Control Department

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ROLL # **908575-11** Lot # **8110197** **Liner Type:SMOOTH HDPE**

		METRIC		ENGLISH					
Thickness Measurement ASTM D5199 (Modified)	MIN:	**1.491**	mm	**59**	mil	Thickness	**1.5mm**	**60mil**	
	MAX:	**1.584**	mm	**62**	mil	Length	**164.594**	m	**540** feet
	AVE:	**1.539**	mm	**61**	mil	Width	**7.00**	m	**23.0** feet

OIT(Standard) ASTM D3895 minutes **216**

Specific Gravity ASTM D792		Density	g/cc				**.945**
MFI ASTM D1238 COND. E GRADE:	**K307**	Melt Flow Index 190ºC /2160 g	- g /10 min				**.23**
Carbon Black Content ASTM D4218		Range	%				**2.23**
Carbon Black Dispersion ASTM D5596		Category					**10 IN CAT 1**
Tensile Strength ASTM D6693 (2 inches / minute)		Average Strength @ Yield		**26**	N/mm	**148** ppi	**2,465** psi
		Average Strength @ Break		**48**	N/mm	**272** ppi	**4,537** psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield		Average Elongation @ Yield	%				**16.33**
Lo = 2.0" Break		Average Elongation @ Break	%				**829.7**
Dimensional Stability ASTM D1204 (Modified)		Average Dimensional Change	%				**-0.28**
Tear Resistance ASTM D1004 (Modified)		Average Tear Resistance		**222**	N		**49.996** lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)		Load		**402**	N		**90.416** lbs
Puncture Resistance ASTM D4833 (Modified)		Load		**549**	N		**123.53** lbs
ESCR ASTM D1693		Minimum Hrs w / o Failures	1500 hrs				**CERTIFIED**
Notched Constant Tensile Load ASTM D5397		pass / fail @ 30%	300 hrs				**ONGOING**

Customer: **Erosion Control**
PO: **8385 Hawes Composting Fac.**
Destination **Barstow, CA**

Date: **2/25/11**

Signature: .....

Manager, Quality Control Department

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ROLL # **908576-11** Lot # **8110197** **Liner Type:SMOOTH HDPE**

Thickness Measurement ASTM D5199 (Modified)		METRIC		ENGLISH		Thickness	**1.5mm**		**60mil**
	MIN:	**1.496**	mm	**59**	mil	Length	**164.594**	m	**540** feet
	MAX:	**1.58**	mm	**62**	mil	Width	**7.00**	m	**23.0** feet
	AVE:	**1.548**	mm	**61**	mil	OIT(Standard) ASTM D3895		minutes	**216**

Specific Gravity ASTM D792		Density	g/cc				**.945**
MFI ASTM D1238 COND. E GRADE:	**K307**	Melt Flow Index 190ºC /2160 g	- g /10 min				**.23**
Carbon Black Content ASTM D4218		Range	%				**2.23**
Carbon Black Dispersion ASTM D5596		Category					**10 IN CAT 1**
Tensile Strength ASTM D6693 (2 inches / minute)		Average Strength @ Yield	**26**	N/mm	**148**	ppi	**2,465** psi
		Average Strength @ Break	**48**	N/mm	**272**	ppi	**4,537** psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break		Average Elongation @ Yield	%				**16.33**
		Average Elongation @ Break	%				**829.7**
Dimensional Stability ASTM D1204 (Modified)		Average Dimensional Change	%				**-0.28**
Tear Resistance ASTM D1004 (Modified)		Average Tear Resistance		**222** N			**49.996** lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)		Load		**402** N			**90.416** lbs
Puncture Resistance ASTM D4833 (Modified)		Load		**549** N			**123.53** lbs
ESCR ASTM D1693		Minimum Hrs w / o Failures	1500 hrs				**CERTIFIED**
Notched Constant Tensile Load ASTM D5397		pass / fail @ 30%	300 hrs				**ONGOING**

Customer: **Erosion Control**
PO: **8385 Hawes Composting Fac.**
Destination **Barstow, CA**

Date: **2/25/11**

Signature.....

Manager, Quality Control Department

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ROLL # **908577-11** Lot # **8110197** **Liner Type:SMOOTH HDPE**

Thickness Measurement ASTM D5199 (Modified)		METRIC		ENGLISH		Thickness	1.5mm	60mil
	MIN:	1.509	mm	59	mil	Length	164.594 m	540 feet
	MAX:	1.56	mm	61	mil	Width	7.00 m	23.0 feet
	AVE:	1.545	mm	61	mil	OIT(Standard) ASTM D3895	minutes	216

Specific Gravity ASTM D792		Density	g/cc			.945
MFI ASTM D1238 COND. E GRADE:	K307	Melt Flow Index 190°C /2160 g	- g /10 min			.23
Carbon Black Content ASTM D4218		Range	%			2.23
Carbon Black Dispersion ASTM D5596		Category				10 IN CAT 1
Tensile Strength ASTM D6693 (2 inches / minute)		Average Strength @ Yield	26 N/mm	148 ppi	2,465 psi	
		Average Strength @ Break	48 N/mm	272 ppi	4,537 psi	
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break		Average Elongation @ Yield	%			16.33
		Average Elongation @ Break	%			829.7
Dimensional Stability ASTM D1204 (Modified)		Average Dimensional Change	%			-0.28
Tear Resistance ASTM D1004 (Modified)		Average Tear Resistance	222 N		49.996 lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)		Load	402 N		90.416 lbs	
Puncture Resistance ASTM D4833 (Modified)		Load	549 N		123.53 lbs	
ESCR ASTM D1693		Minimum Hrs w / o Failures	1500 hrs			CERTIFIED
Notched Constant Tensile Load ASTM D5397		pass / fail @ 30%	300 hrs			ONGOING

Customer: **Erosion Control**
PO: **8385 Hawes Composting Fac.**
Destination **Barstow, CA**

Date: **2/25/11**

Signature.....
Manager, Quality Control Department

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ROLL # **908578-11** Lot # **8110197** **Liner Type:SMOOTH HDPE**

Thickness Measurement ASTM D5199 (Modified)		METRIC		ENGLISH		Thickness	**1.5mm**	**60mil**
	MIN:	**1.518**	mm	**60**	mil	Length	**164.594** m	**540** feet
	MAX:	**1.566**	mm	**62**	mil	Width	**7.00** m	**23.0** feet
	AVE:	**1.546**	mm	**61**	mil	OIT(Standard) ASTM D3895	minutes	**216**

Specific Gravity ASTM D792		Density	g/cc				**.945**
MFI ASTM D1238 COND. E GRADE:	**K307**	Melt Flow Index 190°C /2160 g	- g /10 min				**.23**
Carbon Black Content ASTM D4218		Range	%				**2.14**
Carbon Black Dispersion ASTM D5596		Category					**10 IN CAT 1**
Tensile Strength ASTM D6693 (2 inches / minute)		Average Strength @ Yield	**26** N/mm		**148** ppi	**2,465**	psi
		Average Strength @ Break	**48** N/mm		**272** ppi	**4,537**	psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield		Average Elongation @ Yield	%			**16.33**	
Lo = 2.0" Break		Average Elongation @ Break	%			**829.7**	
Dimensional Stability ASTM D1204 (Modified)		Average Dimensional Change	%			**-0.28**	
Tear Resistance ASTM D1004 (Modified)		Average Tear Resistance		**222** N		**49.996**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)		Load		**402** N		**90.416**	lbs
Puncture Resistance ASTM D4833 (Modified)		Load		**549** N		**123.53**	lbs
ESCR ASTM D1693		Minimum Hrs w / o Failures	1500 hrs			**CERTIFIED**	
Notched Constant Tensile Load ASTM D5397		pass / fail @ 30%	300 hrs			**ONGOING**	

Customer: **Erosion Control**
PO: **8385 Hawes Composting Fac.**
Destination **Barstow, CA**

Date: **2/25/11**

Signature: .....
Manager, Quality Control Department

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ROLL # **908579-11** Lot # **8110197** **Liner Type:SMOOTH HDPE**

Thickness Measurement ASTM D5199 (Modified)		METRIC		ENGLISH		Thickness	**1.5mm**	**60mil**
	MIN:	**1.506**	mm	**59**	mil	Length	**164.594** m	**540** feet
	MAX:	**1.592**	mm	**63**	mil	Width	**7.00** m	**23.0** feet
	AVE:	**1.554**	mm	**61**	mil	OIT(Standard) ASTM D3895	minutes	**216**

Specific Gravity ASTM D792		Density	g/cc			**.945**	
MFI ASTM D1238 COND. E GRADE:	**K307**	Melt Flow Index 190°C /2160 g	- g /10 min			**.23**	
Carbon Black Content ASTM D4218		Range	%			**2.14**	
Carbon Black Dispersion ASTM D5596		Category				**10 IN CAT 1**	
Tensile Strength ASTM D6693 (2 inches / minute)		Average Strength @ Yield	**26** N/mm	**148** ppi		**2,465**	psi
		Average Strength @ Break	**48** N/mm	**272** ppi		**4,537**	psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break		Average Elongation @ Yield	%			**16.33**	
		Average Elongation @ Break	%			**829.7**	
Dimensional Stability ASTM D1204 (Modified)		Average Dimensional Change	%			**-0.28**	
Tear Resistance ASTM D1004 (Modified)		Average Tear Resistance	**222** N			**49.996**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)		Load	**402** N			**90.416**	lbs
Puncture Resistance ASTM D4833 (Modified)		Load	**549** N			**123.53**	lbs
ESCR ASTM D1693		Minimum Hrs w / o Failures	1500 hrs			**CERTIFIED**	
Notched Constant Tensile Load ASTM D5397		pass / fail @ 30%	300 hrs			**ONGOING**	

Customer: **Erosion Control**
PO: **8385 Hawes Composting Fac.**
Destination **Barstow, CA**

Date: **2/25/11**

Signature.....
Manager, Quality Control Department

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ROLL # **908580-11** Lot # **8110197** **Liner Type:SMOOTH HDPE**

Thickness Measurement ASTM D5199 (Modified)		METRIC		ENGLISH		Thickness	**1.5mm**	**60mil**
	MIN:	**1.523**	mm	**60**	mil	Length	**164.594** m	**540** feet
	MAX:	**1.581**	mm	**62**	mil	Width	**7.00** m	**23.0** feet
	AVE:	**1.553**	mm	**61**	mil	OIT(Standard) ASTM D3895	minutes	**216**

Specific Gravity ASTM D792		Density	g/cc				**.945**
MFI ASTM D1238 COND. E GRADE:	**K307**	Melt Flow Index 190ºC /2160 g	- g /10 min				**.23**
Carbon Black Content ASTM D4218		Range	%				**2.14**
Carbon Black Dispersion ASTM D5596		Category					**10 IN CAT 1**
Tensile Strength ASTM D6693 (2 inches / minute)		Average Strength @ Yield	**26**	N/mm	**148**	ppi	**2,465** psi
		Average Strength @ Break	**48**	N/mm	**272**	ppi	**4,537** psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break		Average Elongation @ Yield	%				**16.33**
		Average Elongation @ Break	%				**829.7**
Dimensional Stability ASTM D1204 (Modified)		Average Dimensional Change	%				**-0.28**
Tear Resistance ASTM D1004 (Modified)		Average Tear Resistance	**222**	N			**49.996** lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)		Load	**402**	N			**90.416** lbs
Puncture Resistance ASTM D4833 (Modified)		Load	**549**	N			**123.53** lbs
ESCR ASTM D1693		Minimum Hrs w / o Failures	1500 hrs				**CERTIFIED**
Notched Constant Tensile Load ASTM D5397		pass / fail @ 30%	300 hrs				**ONGOING**

Customer: **Erosion Control**
PO: **8385 Hawes Composting Fac.**
Destination **Barstow, CA**

Date: **2/25/11**

Signature: .....
Manager, Quality Control Department

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SUBMITTAL CONTROL FORM

ECApplications INC.

DATE: APRIL 27, 2011

JOB NO: 103004

SUBMITTAL NO: 9

PROJECT: NURSERY PRODUCTS HAWES COMPOSTING FACILITY

TO:	**Nursery Products**	FROM:	**EC Applications, Inc. (ECA)**
ATTN:	**Chris Seney P. E.**		**Chris Fore**
	12277 Apple Valley Rd, Ste. 131		**415 W. Taft Ave, Suite H**
	Apple Valley, CA 92308		**Orange, CA 92865**
PHONE:	**760-272-1098**	PHONE:	**(714) 921-9848 x 104**
FAX:			**cfore@ecapplications.com**
EMAIL:	**nurseryproducts@charter.net**		

WE ARE SUBMITTING THE ENCLOSED:

☐ SHOP DRAWINGS ☐ CERTIFICATES OF COMPLIANCE ☐ SAMPLES

☐ MATERIAL DATA ☒ QC INFORMATION ☐ OTHER

THESE ARE TRANSMITTED FOR:

☒ APPROVAL ☐ INFORMATION ☐ RESUBMIT

☐ AS REQUESTED ☐ FOR REVIEW PREV SUB NO:

ITEM NO.	DESCRIPTION OF ITEM	NO. OF COPIES	CONTRACT REFERENCE/SPEC SECTION OR DRAWING SHEET NO.
1	*GCL Manufacturers Quality Control Certifications*	*1*	*Design Plan April, 2010*

NOTE:

THE ABOVE SUBMITTED ITEMS HAVE BEEN REVIEWED IN DETAIL AND ARE CORRECT AND IN GENERAL CONFORMANCE WITH THE CONTRACT DRAWINGS AND SPECIFICATIONS EXCEPT AS OTHERWISE STATED.

Chris Fore

EC Applications, Inc. AUTHORIZED SIGNATURE

IF THE ABOVE VARIANCES ARE ACCEPTABLE, PLEASE CONFIRM IN WRITING WITHIN TEN (10) DAYS, OTHERWISE WE WILL PROCEED PER THE PROPOSED VARIANCES

CETCO®

GRI GEI GII GSI GAI GCI

GAI-LAP accredited

Date: 4/14/2011
Purchase Order: 11007
ORDER NUMBER: 027141703

EC Appications
415 W. Taft Avenue
Orange, CA 92865
cfore@ecapplications.com; rbrito@ecapplications.com

To Whom it May Concern:

Please find enclosed the MQA/MQC test data package for Geosynthetic Clay Liner shipments to EC Appications.

The enclosed data package includes results of all the MQC tests required by ASTM D5889, with the exception of index flux/hydraulic conductivity. This test, which is run according to ASTM D5887, is normally performed once per production lot (once per week), unless a higher frequency is required by the project specifications. Because of the GCL's low permeability, this test can take several weeks to complete. The index flux/hydraulic conductivity results associated with this lot of material will be provided under separate cover as soon as they are available.

Although the index flux/hydraulic conductivity test results are not yet available, CETCO accepts responsibility for our GCL should the index flux/hydraulic conductivity tests produce unacceptable results. If, upon delivery and prior to installation, individual rolls of GCL are found to be nonconforming to accepted project specifications, CETCO will replace the nonconforming material at no charge.

Questions regarding this information should be directed to Chris Athanassopoulos, Technical Support Engineer, at (847) 851-1831.

Sincerely,

Roger B. Wilkerson
Quality Assurance Coordinator
CETCO Lovell Plant

GEOSYNTHETIC CLAY LINER
MANUFACTURING QUALITY ASSURANCE DATA PACKAGE

PROJECT NAME: Dalton Trucking Yard
CUSTOMER P.O.: 11007
ORDER NUMBER: 027141703
PREPARED FOR: EC Appications

CONTENTS:

- Product Certifications
- GCL Order packing list and MQA tracking form
- GCL manufacturing quality control test data
- Bentonite clay certification
- Raw material test results

PREPARED BY: Roger B. Wilkerson
Quality Assurance Coordinator
CETCO
P.O. Box 428
92 Hwy. 37
Lovell, WY 82431
Telephone: 800-322-1149 ext. 413
E-Mail: rwilke@cetco.com

CETCO®

PRODUCT CERTIFICATIONS

PROJECT NAME: Dalton Trucking Yard
CUSTOMER P.O.: 11007
ORDER NUMBERS: 027141703
PREPARED FOR: EC Appications

The GCL manufactured for the above-referenced order number(s) is certified to meet the values listed in the tables below:

GCL PROPERTY SPECIFICATIONS FOR BENTOMAT STM

Test Method	Test Method Property	Test Frequency	Certified Value
ASTM D 5891	Bentonite Fluid Loss	1 per 50 Tons	18 ml Max
ASTM D 5993	Bentonite Mass/Area	40,000 sq ft (4000 sq m)	0.50 lb /sq ft Min
ASTM D 5890	Bentonite Swell Index	1 per 50 Tons	24 ml/2g Min
ASTM D 6768	GCL Grab Strength	200,000 sq ft (20,000 sq m)	30 lbs/in MARV
ASTM D 6243	GCL Hydrated Internal Shear Strength	Periodic	500 psf typ @ 200 psf normal load
ASTM D 5887	GCL Hydraulic Conductivity	Weekly	1.0E-8 cm/ sec Max
ASTM D 5887	GCL Index Flux	Weekly	3.0E-8 m3/m2/sec Max
ASTM D 6496	GCL Peel Strength	40,000 sq ft (4000 sq m)	3.5 lbs/in Min

Bentonite property tests are performed at a bentonite processing facility before shipment to CETCO's production facility
All tensile testing is in the machine direction using ASTM D 6768. All peel strength testing is performed using
ASTM D 6496. Upon request tensile and peel results can be reported per modified ASTM D 4632 using 4 inch grips

NEEDLE DETECTION AND REMOVAL PROCEDURE

CETCO hereby affirms that all Bentomat® geosynthetic clay liner material manufactured for this project is continually passed under a magnet for needle removal and then screened with a metal detection device. CETCO certifies Bentomat® to be essentially free of broken needles and fragments of needles that would negatively effect the performance of the final product.

Roger B. Wilkerson
Quality Assurance Coordinator

CETCO

GCL PACKING LIST AND MQA TRACKING FORM

Listing of finished and raw materials used to produce certification package number 000271417

GCL								Geotextiles				Clay
LO-BENTOMAT STM								N/W-WHITE			LO-WOVEN-STM	LO-CG 50
Order	GCL Lot #	GCL Roll #	Length	Width	weight	sq ft	Roll # Tested	Cap Lot #	Cap Roll #	Roll # Tested	Base Roll #	Clay Lot #
027141703	201116LO	52	150	15	2005	2250	50	201112CV	00000900	00000896	WEA018273-1	040811A
027141703	201116LO	53	150	15	1990	2250	50	201112CV	00000900	00000896	WEA018273-1	040811A
027141703	201116LO	54	150	15	2005	2250	50	201112CV	00000900	00000896	WEA018273-1	040811A
027141703	201116LO	56	150	15	2030	2250	50	201112CV	00000900	00000896	WEA018273-1	040811B
027141703	201116LO	57	150	15	1995	2250	50	201112CV	00000900	00000896	WEA018273-1	040811B
027141703	201116LO	64	150	15	2055	2250	50	201112CV	00000871	00000871	WEA018273-4	040811B
027141703	201116LO	73	150	15	2040	2250	67	201113CV	00000981	00000977	WEA018273-4	040811B
027141703	201116LO	78	150	15	2040	2250	67	201113CV	00000981	00000977	WEA018273-4	040811B
027141703	201116LO	79	150	15	2035	2250	67	201113CV	00000981	00000977	WEA018273-4	040811B
027141703	201116LO	80	150	15	2030	2250	67	201113CV	00000968	00000961	WEA018273-4	040811B
027141703	201116LO	81	150	15	2050	2250	67	201113CV	00000968	00000961	WEA018273-4	040811B
027141703	201116LO	82	150	15	2045	2250	67	201113CV	00000968	00000961	WEA018273-4	040811B
027141703	201116LO	83	150	15	1990	2250	67	201113CV	00000968	00000961	WEA018273-4	040811B
027141703	201116LO	84	150	15	1995	2250	84	201113CV	00000968	00000961	WEA018273-4	040811B
027141703	201116LO	86	150	15	2030	2250	84	201113CV	00000968	00000961	WEA018273-3	040811B
027141703	201116LO	87	150	15	2010	2250	84	201112CV	00000872	00000871	WEA018273-3	040811B
027141703	201116LO	88	150	15	2030	2250	84	201112CV	00000872	00000871	WEA018273-3	040811B
027141703	201116LO	89	150	15	2040	2250	84	201112CV	00000872	00000871	WEA018273-3	040811B
					Total sq ft:	**40500**					Total Number of Rolls Certified: **18**	

CETCO

GCL MANUFACTURING QUALITY CONTROL TEST DATA

The following rolls in GCL certification package number 000271417 have been tested in our production facility lab.

Product	Lot # Tested	Roll # Tested	Mass Area	Grab Strength	Peel Strength 6496
		ASTM Test Method:	D 5993	D 6768	D 6496
		Required Value:	0.50 lb /sq ft Min	30 lbs/in MARV	3.5 lbs/in Min
LO-BENTOMAT STM	201116LO	50	0.58	97.4	5.3
LO-BENTOMAT STM	201116LO	67	0.60	97.4	5.3
LO-BENTOMAT STM	201116LO	84	0.57	97.4	6.0

BENTONITE CLAY CERTIFICATION

The Bentonite Clay used to produce package 000271417

has been tested by American Colloid Company and yielded the following test results.

Clay Lot #	Moist	Swell	Fluid Loss
ASTM Test Method:	D 2216	D 5890	D 5891
Required Value:	12% Max	24 ml/2g Min	18 ml Max
040811A	11.20	28.00	14.80

CETCO

GEOTEXTILE TEST RESULTS FROM MATERIAL SUPPLIERS

The GCL in certification package number 000271417 was manufactured with geotextiles which were tested with the following results.

BASE GEOTEXTILE

Material	Roll Number	Mass Area oz/yd2	Grab Strength lbs
MATTEX	WEA018273-1	3.5	187.5
MATTEX	WEA018273-3	3.5	187.5
MATTEX	WEA018273-4	3.5	187.1

COVER GEOTEXTILE

Material	Roll Number	Mass Area oz/yd2	Grab Strength lbs
CV-NON-WOVEN	00000871	7.1	39.9
CV-NON-WOVEN	00000896	6.5	35.3
CV-NON-WOVEN	00000961	6.7	39.9
CV-NON-WOVEN	00000977	6.5	33.2

Certifications from our suppliers are on file at our production facility.

An '*' or 'PT' indicates supplier certifications were unavailable prior to shipping so testing was performed at a CETCO lab.

CETCO®

GRI GEI GII GSI GAI GCI

GAI-LAP accredited

Date: 4/15/2011
Purchase Order: 11007
ORDER NUMBER: 027141704

EC Appications
415 W. Taft Avenue
Orange, CA 92865
cfore@ecapplications.com; rbrito@ecapplications.com

To Whom it May Concern:

Please find enclosed the MQA/MQC test data package for Geosynthetic Clay Liner shipments to EC Appications.

The enclosed data package includes results of all the MQC tests required by ASTM D5889, with the exception of index flux/hydraulic conductivity. This test, which is run according to ASTM D5887, is normally performed once per production lot (once per week), unless a higher frequency is required by the project specifications. Because of the GCL's low permeability, this test can take several weeks to complete. The index flux/hydraulic conductivity results associated with this lot of material will be provided under separate cover as soon as they are available.

Although the index flux/hydraulic conductivity test results are not yet available, CETCO accepts responsibility for our GCL should the index flux/hydraulic conductivity tests produce unacceptable results. If, upon delivery and prior to installation, individual rolls of GCL are found to be nonconforming to accepted project specifications, CETCO will replace the nonconforming material at no charge.

Questions regarding this information should be directed to Chris Athanassopoulos, Technical Support Engineer, at (847) 851-1831.

Sincerely,

Roger B. Wilkerson
Quality Assurance Coordinator
CETCO Lovell Plant

CETCO

GEOSYNTHETIC CLAY LINER
MANUFACTURING QUALITY ASSURANCE DATA PACKAGE

PROJECT NAME: Dalton Trucking Yard
CUSTOMER P.O.: 11007
ORDER NUMBER: 027141704
PREPARED FOR: EC Appications

CONTENTS:

- Product Certifications
- GCL Order packing list and MQA tracking form
- GCL manufacturing quality control test data
- Bentonite clay certification
- Raw material test results

PREPARED BY: Roger B. Wilkerson
Quality Assurance Coordinator
CETCO
O. Box 428
Hwy. 37
Lovell, WY 82431
Telephone: 800-322-1149 ext. 413
E-Mail: rwilke@cetco.com

CETCO

PRODUCT CERTIFICATIONS

PROJECT NAME: Dalton Trucking Yard
CUSTOMER P.O.: 11007
ORDER NUMBERS: 027141704
PREPARED FOR: EC Appications

The GCL manufactured for the above-referenced order number(s) is certified to meet the values listed in the tables below:

GCL PROPERTY SPECIFICATIONS FOR BENTOMAT STM

Test Method	Test Method Property	Test Frequency	Certified Value
ASTM D 5891	Bentonite Fluid Loss	1 per 50 Tons	18 ml Max
ASTM D 5993	Bentonite Mass/Area	40,000 sq ft (4000 sq m)	0.50 lb /sq ft Min
ASTM D 5890	Bentonite Swell Index	1 per 50 Tons	24 ml/2g Min
ASTM D 6768	GCL Grab Strength	200,000 sq ft (20,000 sq m)	30 lbs/in MARV
ASTM D 6243	GCL Hydrated Internal Shear Strength	Periodic	500 psf typ @ 200 psf normal load
ASTM D 5887	GCL Hydraulic Conductivity	Weekly	1.0E-8 cm/ sec Max
ASTM D 5887	GCL Index Flux	Weekly	3.0E-8 m3/m2/sec Max
ASTM D 6496	GCL Peel Strength	40,000 sq ft (4000 sq m)	3.5 lbs/in Min

Bentonite property tests are performed at a bentonite processing facility before shipment to CETCO's production facility.
All tensile testing is in the machine direction using ASTM D 6768. All peel strength testing is performed using
ASTM D 6496. Upon request tensile and peel results can be reported per modified ASTM D 4632 using 4 inch grips

NEEDLE DETECTION AND REMOVAL PROCEDURE

CETCO hereby affirms that all Bentomat® geosynthetic clay liner material manufactured for this project is continually passed under a magnet for needle removal and then screened with a metal detection device. CETCO certifies Bentomat® to be essentially free of broken needles and fragments of needles that would negatively effect the performance of the final product.

Roger B. Wilkerson
Quality Assurance Coordinator

CETCO

GCL PACKING LIST AND MQA TRACKING FORM

Listing of finished and raw materials used to produce certification package number 000271417

GCL								Geotextiles				Clay
LO-BENTOMAT STM								N/W-WHITE			LO-WOVEN-STM	LO-CG 50
Order	GCL Lot #	GCL Roll #	Length	Width	weight	sq ft	Roll # Tested	Cap Lot #	Cap Roll #	Roll # Tested	Base Roll #	Clay Lot #
027141704	201115LO	6	150	15	2000	2250	1	201113CV	00000970	00000961	WEA018273-15	040611A
027141704	201115LO	48	150	15	1980	2250	35	201112CV	00000829	00000828	WEA018303-13	040611A
027141704	201116LO	55	150	15	2005	2250	50	201112CV	00000900	00000896	WEA018273-1	040811A
027141704	201116LO	59	150	15	2015	2250	50	201112CV	00000871	00000871	WEA018273-1	040811B
027141704	201116LO	60	150	15	2000	2250	50	201112CV	00000871	00000871	WEA018273-4	040811B
027141704	201116LO	61	150	15	2045	2250	50	201112CV	00000871	00000871	WEA018273-4	040811B
027141704	201116LO	62	150	15	2040	2250	50	201112CV	00000871	00000871	WEA018273-4	040811B
027141704	201116LO	66	150	15	2040	2250	50	201112CV	00000868	00000868	WEA018273-4	040811B
027141704	201116LO	67	150	15	2040	2250	67	201112CV	00000868	00000868	WEA018273-4	040811B
027141704	201116LO	68	150	15	2025	2250	67	201112CV	00000868	00000868	WEA018273-4	040811B
027141704	201116LO	70	150	15	2025	2250	67	201112CV	00000868	00000868	WEA018273-4	040811B
027141704	201116LO	71	150	15	2020	2250	67	201112CV	00000868	00000868	WEA018273-4	040811B
027141704	201116LO	72	150	15	2015	2250	67	201112CV	00000868	00000868	WEA018273-4	040811B
027141704	201116LO	74	150	15	2050	2250	67	201113CV	00000981	00000977	WEA018273-4	040811B
027141704	201116LO	75	150	15	2050	2250	67	201113CV	00000981	00000977	WEA018273-4	040811B
027141704	201116LO	76	150	15	2015	2250	67	201113CV	00000981	00000977	WEA018273-4	040811B
027141704	201116LO	77	150	15	2010	2250	67	201113CV	00000981	00000977	WEA018273-4	040811B
027141704	201116LO	85	150	15	1990	2250	84	201113CV	00000968	00000961	WEA018273-4	040811B
						Total sq ft:	**40500**				Total Number of Rolls Certified: **18**	

CETCO

GCL MANUFACTURING QUALITY CONTROL TEST DATA

The following rolls in GCL certification package number 000271417 have been tested in our production facility lab.

Product	Lot # Tested	Roll # Tested	Mass Area	Grab Strength	Peel Strength 6496
		ASTM Test Method:	D 5993	D 6768	D 6496
		Required Value:	0.50 lb /sq ft Min	30 lbs/in MARV	3.5 lbs/in Min
LO-BENTOMAT STM	201115LO	1	0.65	82.8	6.6
LO-BENTOMAT STM	201115LO	35	0.66	82.8	6.0
LO-BENTOMAT STM	201116LO	50	0.58	97.4	5.3
LO-BENTOMAT STM	201116LO	67	0.60	97.4	5.3
LO-BENTOMAT STM	201116LO	84	0.57	97.4	6.0

BENTONITE CLAY CERTIFICATION

The Bentonite Clay used to produce package 000271417

has been tested by American Colloid Company and yielded the following test results.

Clay Lot #	Moist	Swell	Fluid Loss
ASTM Test Method:	D 2216	D 5890	D 5891
Required Value:	12% Max	24 ml/2g Min	18 ml Max
040611A	11.50	25.00	15.20
040811A	11.20	28.00	14.80

GEOTEXTILE TEST RESULTS FROM MATERIAL SUPPLIERS

The GCL in certification package number 000271417 was manufactured with geotextiles which were tested with the following results.

BASE GEOTEXTILE

Material	Roll Number	Mass Area oz/yd2	Grab Strength lbs
MATTEX	WEA018273-1	3.5	187.5
MATTEX	WEA018273-15	3.5	190.1
MATTEX	WEA018273-4	3.5	187.1
MATTEX	WEA018303-13	3.5	187.4

COVER GEOTEXTILE

Material	Roll Number	Mass Area oz/yd2	Grab Strength lbs
CV-NON-WOVEN	00000828	7.2	43.1
CV-NON-WOVEN	00000868	6.9	38.2
CV-NON-WOVEN	00000871	7.1	39.9
CV-NON-WOVEN	00000896	6.5	35.3
CV-NON-WOVEN	00000961	6.7	39.9
CV-NON-WOVEN	00000977	6.5	33.2

Certifications from our suppliers are on file at our production facility.

An '*' or 'PT' indicates supplier certifications were unavailable prior to shipping so testing was performed at a CETCO lab.

CETCO®

GRI GEI GII GSI GAI GCI

GAI-LAP accredited

Date: 4/18/2011
Purchase Order: 11007
ORDER NUMBERS: 027141701, 027141702, 027141705

EC Appications
415 W. Taft Avenue
Orange, CA 92865
cfore@ecapplications.com; rbrito@ecapplications.com

To Whom it May Concern:

Please find enclosed the MQA/MQC test data package for Geosynthetic Clay Liner shipments to EC Appications.

The enclosed data package includes results of all the MQC tests required by ASTM D5889, with the exception of index flux/hydraulic conductivity. This test, which is run according to ASTM D5887, is normally performed once per production lot (once per week), unless a higher frequency is required by the project specifications. Because of the GCL's low permeability, this test can take several weeks to complete. The index flux/hydraulic conductivity results associated with this lot of material will be provided under separate cover as soon as they are available.

Although the index flux/hydraulic conductivity test results are not yet available, CETCO accepts responsibility for our GCL should the index flux/hydraulic conductivity tests produce unacceptable results. If, upon delivery and prior to installation, individual rolls of GCL are found to be nonconforming to accepted project specifications, CETCO will replace the nonconforming material at no charge.

Questions regarding this information should be directed to Chris Athanassopoulos, Technical Support Engineer, at (847) 851-1831.

Sincerely,

Roger B. Wilkerson
Quality Assurance Coordinator
CETCO Lovell Plant

GEOSYNTHETIC CLAY LINER
MANUFACTURING QUALITY ASSURANCE DATA PACKAGE

PROJECT NAME: Dalton Trucking Yard
CUSTOMER P.O.: 11007
ORDER NUMBERS: 027141701, 027141702, 027141705
PREPARED FOR: EC Appications

CONTENTS:

- Product Certifications
- GCL Order packing list and MQA tracking form
- GCL manufacturing quality control test data
- Bentonite clay certification
- Raw material test results

PREPARED BY: Roger B. Wilkerson
Quality Assurance Coordinator
CETCO
P.O. Box 428
92 Hwy. 37
Lovell, WY 82431
Telephone: 800-322-1149 ext. 413
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PRODUCT CERTIFICATIONS

PROJECT NAME: Dalton Trucking Yard
CUSTOMER P.O.: 11007
ORDER NUMBERS: 027141701, 027141702, 027141705
PREPARED FOR: EC Appications

The GCL manufactured for the above-referenced order number(s) is certified to meet the values listed in the tables below:

GCL PROPERTY SPECIFICATIONS FOR BENTOMAT STM

Test Method	Test Method Property	Test Frequency	Certified Value
ASTM D 5891	Bentonite Fluid Loss	1 per 50 Tons	18 ml Max
ASTM D 5993	Bentonite Mass/Area	40,000 sq ft (4000 sq m)	0.50 lb /sq ft Min
ASTM D 5890	Bentonite Swell Index	1 per 50 Tons	24 ml/2g Min
ASTM D 6768	GCL Grab Strength	200,000 sq ft (20,000 sq m)	30 lbs/in MARV
ASTM D 6243	GCL Hydrated Internal Shear Strength	Periodic	500 psf typ @ 200 psf normal load
ASTM D 5887	GCL Hydraulic Conductivity	Weekly	1.0E-8 cm/ sec Max
ASTM D 5887	GCL Index Flux	Weekly	3.0E-8 m3/m2/sec Max
ASTM D 6496	GCL Peel Strength	40,000 sq ft (4000 sq m)	3.5 lbs/in Min

Bentonite property tests are performed at a bentonite processing facility before shipment to CETCO's production facility.
All tensile testing is in the machine direction using ASTM D 6768. All peel strength testing is performed using
ASTM D 6496. Upon request tensile and peel results can be reported per modified ASTM D 4632 using 4 inch grips

NEEDLE DETECTION AND REMOVAL PROCEDURE

CETCO hereby affirms that all Bentomat® geosynthetic clay liner material manufactured for this project is continually passed under a magnet for needle removal and then screened with a metal detection device. CETCO certifies Bentomat® to be essentially free of broken needles and fragments of needles that would negatively effect the performance of the final product.

Roger B. Wilkerson
Quality Assurance Coordinator

CETCO

GCL PACKING LIST AND MQA TRACKING FORM

Listing of finished and raw materials used to produce certification package number 000271417

GCL								Geotextiles				Clay
LO-BENTOMAT STM								N/W-WHITE			LO-WOVEN-STM	LO-CG 50
Order	GCL Lot #	GCL Roll #	Length	Width	weight	sq ft	Roll # Tested	Cap Lot #	Cap Roll #	Roll # Tested	Base Roll #	Clay Lot #
027141705	201115LO	1	150	15	2050	2250	1	201113CV	00000966	00000961	WEA018273-15	040611A
027141705	201115LO	2	150	15	2010	2250	1	201113CV	00000966	00000961	WEA018273-15	040611A
027141705	201115LO	3	150	15	2015	2250	1	201113CV	00000966	00000961	WEA018273-15	040611A
027141705	201115LO	4	150	15	2015	2250	1	201113CV	00000970	00000961	WEA018273-15	040611A
027141705	201115LO	5	150	15	2010	2250	1	201113CV	00000970	00000961	WEA018273-15	040611A
027141705	201115LO	7	150	15	2010	2250	1	201113CV	00000970	00000961	WEA018273-15	040611A
027141705	201115LO	8	150	15	2005	2250	1	201113CV	00000970	00000961	WEA018273-15	040611A
027141701	201115LO	9	150	15	2000	2250	1	201113CV	00000970	00000961	WEA018273-15	040611B
027141701	201115LO	10	150	15	2005	2250	1	201113CV	00000970	00000961	WEA018273-15	040611B
027141701	201115LO	11	150	15	1985	2250	1	201113CV	00000969	00000961	WEA018273-15	040611B
027141702	201115LO	12	150	15	1990	2250	1	201113CV	00000969	00000961	WEA018273-15	040611B
027141702	201115LO	13	150	15	1985	2250	1	201113CV	00000969	00000961	WEA018273-15	040611B
027141702	201115LO	14	150	15	2000	2250	1	201113CV	00000969	00000961	WEA018273-15	040611B
027141702	201115LO	15	150	15	1995	2250	1	201113CV	00000969	00000961	WEA018273-15	040611B
027141702	201115LO	16	150	15	2005	2250	1	201113CV	00000969	00000961	WEA018273-15	040611B
027141702	201115LO	17	150	15	2010	2250	1	201113CV	00000969	00000961	WEA018273-15	040611B
027141701	201115LO	18	150	15	2005	2250	18	201112CV	00000818	00000818	WEA018273-15	040611B
027141701	201115LO	19	150	15	2000	2250	18	201112CV	00000818	00000818	WEA018273-16	040611B
027141702	201115LO	20	150	15	2005	2250	18	201112CV	00000818	00000818	WEA018273-16	040611B
027141702	201115LO	21	150	15	2010	2250	18	201112CV	00000818	00000818	WEA018273-16	040611B
027141702	201115LO	22	150	15	2025	2250	18	201112CV	00000818	00000818	WEA018273-16	040611B
027141702	201115LO	23	150	15	2000	2250	18	201112CV	00000818	00000818	WEA018273-16	040611B
027141702	201115LO	24	150	15	2005	2250	18	201112CV	00000818	00000818	WEA018273-16	040611B
027141701	201115LO	25	150	15	2000	2250	18	201112CV	00000845	00000843	WEA018273-16	040611B
027141702	201115LO	26	150	15	1995	2250	18	201112CV	00000845	00000843	WEA018273-16	040611B
027141702	201115LO	27	150	15	1995	2250	18	201112CV	00000845	00000843	WEA018273-16	040611B
027141702	201115LO	28	150	15	2005	2250	18	201112CV	00000845	00000843	WEA018273-16	040611B
027141701	201115LO	29	150	15	2010	2250	18	201112CV	00000845	00000843	WEA018273-16	040611B
027141702	201115LO	30	150	15	2015	2250	18	201112CV	00000845	00000843	WEA018273-16	040611B
027141702	201115LO	31	150	15	2000	2250	18	201112CV	00000845	00000843	WEA018273-16	040611B
027141705	201115LO	32	150	15	1995	2250	18	201112CV	00000828	00000828	WEA018273-16	040611B

Order	GCL Lot #	GCL Roll #	Length	Width	weight	sq ft	Roll # Tested	Cap Lot #	Cap Roll #	Roll # Tested	Base Roll #	Clay Lot #
027141701	201115LO	33	150	15	2085	2250	18	201112CV	00000828	00000828	WEA018273-16	040611B
027141701	201115LO	34	150	15	1990	2250	18	201112CV	00000828	00000828	WEA018273-16	040611B
027141702	201115LO	35	150	15	2010	2250	35	201112CV	00000828	00000828	WEA018273-16	040611B
027141701	201115LO	36	150	15	1990	2250	35	201112CV	00000828	00000828	WEA018273-16	040611B
027141701	201115LO	37	150	15	2000	2250	35	201112CV	00000828	00000828	WEA018273-16	040611B
027141702	201115LO	38	150	15	2005	2250	35	201112CV	00000828	00000828	WEA018273-16	040611B
027141701	201115LO	39	150	15	2000	2250	35	201112CV	00000832	00000828	WEA018273-16	040611B
027141705	201115LO	40	150	15	2010	2250	35	201112CV	00000832	00000828	WEA018273-16	040611B
027141701	201115LO	41	150	15	2015	2250	35	201112CV	00000832	00000828	WEA018273-16	040611B
027141701	201115LO	42	150	15	1985	2250	35	201112CV	00000832	00000828	WEA018273-16	040611B
027141701	201115LO	43	150	15	1985	2250	35	201112CV	00000832	00000828	WEA018273-16	040611B
027141705	201115LO	44	150	15	1995	2250	35	201113CV	00000966	00000961	WEA018273-15	040611A
027141701	201115LO	45	150	15	2005	2250	35	201113CV	00000966	00000961	WEA018303-13	040611A
027141701	201115LO	46	150	15	2010	2250	35	201112CV	00000829	00000828	WEA018303-13	040611A
027141701	201115LO	47	150	15	1985	2250	35	201112CV	00000829	00000828	WEA018303-13	040611A
027141705	201116LO	50	150	15	1985	2250	50	201112CV	00000891	00000884	WEA018273-1	040811A
027141705	201116LO	51	150	15	1975	2250	50	201112CV	00000891	00000884	WEA018273-1	040811A
027141705	201116LO	58	150	15	1990	2250	50	201112CV	00000900	00000896	WEA018273-1	040811B
027141705	201116LO	63	150	15	2060	2250	50	201112CV	00000871	00000871	WEA018273-4	040811B
027141705	201116LO	65	150	15	2050	2250	50	201112CV	00000871	00000871	WEA018273-4	040811B
027141705	201116LO	69	150	15	2030	2250	67	201112CV	00000868	00000868	WEA018273-4	040811B
					Total sq ft	**117000**					Total Number of Rolls Certified: **52**	

GCL MANUFACTURING QUALITY CONTROL TEST DATA

The following rolls in GCL certification package number 000271417 have been tested in our production facility lab.

Product	Lot # Tested	Roll # Tested	Mass Area	Grab Strength	Peel Strength 6496
		ASTM Test Method	D 5993	D 6768	D 6496
		Required Value:	0.50 lb /sq ft Min	30 lbs/in MARV	3.5 lbs/in Min
LO-BENTOMAT STM	201115LO	1	0.65	82.8	6.6
LO-BENTOMAT STM	201115LO	18	0.60	82.8	6.0
LO-BENTOMAT STM	201115LO	35	0.66	82.8	6.0
LO-BENTOMAT STM	201116LO	50	0.58	97.4	5.3
LO-BENTOMAT STM	201116LO	67	0.60	97.4	5.3

BENTONITE CLAY CERTIFICATION

The Bentonite Clay used to produce package 000271417

has been tested by American Colloid Company and yielded the following test results.

Clay Lot #	Moist	Swell	Fluid Loss
ASTM Test Method:	D 2216	D 5890	D 5891
Required Value:	12% Max	24 ml/2g Min	18 ml Max
040611A	11.50	25.00	15.20
040611B	10.20	24.00	15.20
040811A	11.20	28.00	14.80

CETCO

GEOTEXTILE TEST RESULTS FROM MATERIAL SUPPLIERS

The GCL in certification package number 000271417 was manufactured with geotextiles which were tested with the following results.

BASE GEOTEXTILE

Material	Roll Number	Mass Area oz/yd2	Grab Strength lbs
MATTEX	WEA018273-1	3.5	187.5
MATTEX	WEA018273-15	3.5	190.1
MATTEX	WEA018273-16	3.5	192.0
MATTEX	WEA018273-4	3.5	187.1
MATTEX	WEA018303-13	3.5	187.4

COVER GEOTEXTILE

Material	Roll Number	Mass Area oz/yd2	Grab Strength lbs
CV-NON-WOVEN	00000818	6.7	37.3
CV-NON-WOVEN	00000828	7.2	43.1
CV-NON-WOVEN	00000843	6.7	40.7
CV-NON-WOVEN	00000868	6.9	38.2
CV-NON-WOVEN	00000871	7.1	39.9
CV-NON-WOVEN	00000884	6.8	36.4
CV-NON-WOVEN	00000896	6.5	35.3
CV-NON-WOVEN	00000961	6.7	39.9

Certifications from our suppliers are on file at our production facility.

An '*' or 'PT' indicates supplier certifications were unavailable prior to shipping so testing was performed at a CETCO lab.

SUBMITTAL CONTROL FORM

ECApplications INC.

DATE: FEBRUARY 22, 2012

JOB NO: 103004

SUBMITTAL NO: 12

PROJECT: NURSERY PRODUCTS HAWES COMPOSTING FACILITY

TO:	**Nursery Products**	FROM:	**EC Applications, Inc. (ECA)**
ATTN:	**Chris Sency P. E.**		**Chris Fore**
	12277 Apple Valley Rd, Ste. 131		**415 W. Taft Ave, Suite H**
	Apple Valley, CA 92308		**Orange, CA 92865**
PHONE:	**760-272-1098**	PHONE:	**(714) 921-9848 x 104**
FAX:			**cfore@ecapplications.com**
EMAIL:	**nurseryproducts@charter.net**		

WE ARE SUBMITTING THE ENCLOSED:

☐ SHOP DRAWINGS ☐ CERTIFICATES OF COMPLIANCE ☐ SAMPLES

☐ MATERIAL DATA ☒ QC INFORMATION ☐ OTHER

THESE ARE TRANSMITTED FOR:

☒ APPROVAL ☐ INFORMATION

☐ RESUBMIT

☐ AS REQUESTED ☐ FOR REVIEW PREV SUB NO:

ITEM NO.	DESCRIPTION OF ITEM	NO. OF COPIES	CONTRACT REFERENCE/SPEC SECTION OR DRAWING SHEET NO.
1	*Geotextile Manufacturers Quality Control Certifications*	1	*Design Plan April, 2010*

NOTE:

THE ABOVE SUBMITTED ITEMS HAVE BEEN REVIEWED IN DETAIL AND ARE CORRECT AND IN GENERAL CONFORMANCE WITH THE CONTRACT DRAWINGS AND SPECIFICATIONS EXCEPT AS OTHERWISE STATED.

Chris Fore

EC Applications, Inc. AUTHORIZED SIGNATURE

IF THE ABOVE VARIANCES ARE ACCEPTABLE, PLEASE CONFIRM IN WRITING WITHIN TEN (10) DAYS, OTHERWISE WE WILL PROCEED PER THE PROPOSED VARIANCES

SKAPS Industries (Nonwoven Division)
335, Athena Drive
Athens, GA 30601 (U.S.A.)
Phone (706) 354-3700 Fax (706) 354-3737
E-mail: info@skaps.com

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

January 23, 2012
EC Applications Inc.
650 N. Batavia Street
Orange, CA, 92868

Dear Sir/Madam:

This is to certify that SKAPS GT180 is a high quality needle-punched nonwoven geotextile made of 100% polypropylene staple fibers, randomly networked to form a high strength dimensionally stable fabric. SKAPS GT180 resists ultraviolet deterioration, rotting, biological degradation. The fabric is inert to commonly encountered soil chemicals. Polypropylene is stable within a pH range of 2 to 13. SKAPS GT180 conforms to the property values listed below:

PROPERTY	TEST METHOD	UNITS	M.A.R.V. Minimum Average Roll Value
Weight(Typical)	ASTM D 5261	oz/sy (g/m^2)	8.00 (271)
Grab Tensile	ASTM D 4632	lbs (kN)	205 (0.91)
Grab Elongation	ASTM D 4632	%	50
Trapezoidal Tear	ASTM D 4533	lbs (kN)	85 (0.38)
Puncture Resistance	ASTM D 4833	lbs (kN)	130 (0.58)
Permittivity*	ASTM D 4491	sec^{-1}	1.40
Water Flow*	ASTM D 4491	gpm/ft^2($l/min/m^2$)	90 (3667)
AOS*	ASTM D 4751	US Sieve (mm)	80 (0.18)
UV Resistance	ASTM D 4355	%/hrs	70/500

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

ANURAG SHAH
QUALITY CONTROL MANAGER

Produ GT180-180

ROLL # ASTM METHOD UNITS TARGET	WEIGHT* D5261 oz/sq yd 8.00	MD TENSILE D4632 lbs. 205	MD ELONG D4632 % 50	XMD TENSILE D4632 lbs 205	XMD ELONG D4632 % 50	MD TRAP D4533 lbs. 85	XMD TRAP D4533 lbs 85	PUNCTURE D4833 lbs. 130	AOS D4751 US Sieve 80	WATER FLOW D4491 gpm/ft^2 90	PERMITTIVITY D4491 sec^{-1} 1.40
030368072	8.01	211	68	233	89	94	109	137	80	113	1.51
030368073	8.01	211	68	233	89	94	109	137	80	113	1.51

*Weight is typical. All other values are MARV.

Appendix C

HDPE &GCL
CQC Documentation
Surface Impoundments A and B

Pond A

EC Applications Inc.
Preweld Test Report

Project Name: Nursery Products Job # 103004 Superintendent: Vicente Figueroa

Material Type: 60 mil HDPE Primary [x] Pond [x] A Peel Test Extrusion Minimum ____ PPI

Job Description: Secondary [ ] Cell [ ] Peel Test Fusion Minimum ____ PPI

Reported By : victor rodriguez Pad [ ] Shear Test Minimum ____ PPI

Other :

Liner Types S = Smooth T = Textured SG = Super Grip

Weld Date / Liner Type	Time AM / PM	Operator Name/ ID	Mach No.	Mach Speed	Mach Temp	Preheat Temp	Ambient Temp		Coupon 1 A	Coupon 1 B	Coupon 2 A	Coupon 2 B	Coupon 3 A	Coupon 3 B	Coupon 4 A	Coupon 4 B	Coupon 5 A	Coupon 5 B	Test Results
3/9/12	10:00	Librado Dominguez	53	3.2	750		60	Peel	134	139	121	117	135	111	125	123	126	142	Pass
s to s	AM							Shear	171		178		182		182		188		
3/9/12	10:05	Emilio Gutierrez	59	3.5	750		60	Peel	123	130	141	122	130	133	138	135	135	125	Pass
to	AM							Shear	178		182		176		177		181		
3/9/12	10:15	Roque Martinez	108		550	420	60	Peel	141		167		142		140		153		Pass
to	AM							Shear	182		176		174		182		180		
3/9/12	10:20	Roque Martinez	52	3.5	750		60	Peel	143	130	147	125	147	140	135	127	143	120	Pass
to	AM							Shear	166		172		160		167		170		
3/9/12	10:25	Mario Gonzalez	101		500	450	60	Peel	145		128		128		140		139		Pass
to	AM							Shear	167		152		160		156		158		
3/9/12	1:10	Librado Dominguez	53	4	750		70	Peel	140	144	139	130	134	120	136	135	132	135	Pass
to	pm							Shear	136		134		158		152		157		
3/9/12	1:15	Emilio Gutierrez	59	4	750		70	Peel	132	125	147	136	124	131	136	127	129	129	Pass
to	pm							Shear	161		161		165		162		158		
3/9/12	1:20	Roque Martinez	108		500	500	70	Peel	141		140		154		140		136		Pass
to	pm							Shear	150		160		160		158		154		
3/10/12	7:15	Librado Dominguez	53	4	750		60	Peel	132	130	133	128	139	133	128	134	138	128	Pass
to	AM							Shear	182		165		183		180		184		
3/10/12	8:20	Emilio Gutierrez	59	3.5	750		60	Peel	138	150	138	133	131	129	136	131	136	141	Pass
to	AM							Shear	157		157		160		152		151		
3/10/12	8:00	Roque Martinez	102		550	500	60	Peel	126		124		124		130		125		Pass
to	AM							Shear	167		168		168		170		167		
3/12/12	8:00	Roque Martinez	102		550	500	50	Peel	122		111		130		111		115		Pass
to	AM							Shear	185		175		189		186		180		
3/12/12	10:05	Librado Dominguez	53	4	750		55	Peel	130	99	107	136	122	131	138	108	132	115	Pass
to	AM							Shear	163		162		165		167		166		
3/12/12	10:05	Emilio Gutierrez	59	3.5	750		55	Peel	108	116	130	126	118	146	121	123	116	116	Pass
to	AM							Shear	171		175		172		172		174		
3/12/12	12:50	Emilio Gutierrez	59	3.5	750		65	Peel	120	124	127	125	119	126	118	117	115	124	Pass
to	pm							Shear	148		143		141		142		148		
3/12/12	12:48	Librado Dominguez	53	4	750		65	Peel	124	127	123	126	137	148	136	140	146	140	Pass
to	pm							Shear	158		158		151		155		156		
3/12/12	12:30	Roque Martinez	102		520	400	65	Peel	139		148		146		148		145		Pass
to								Shear	156		149		155		151		158		
3-13-12	8:38	Roque Martinez	102		550	500	50	Peel	122		126		119		120		143		Pass
to								Shear	170		165		165		170		168		
	:							Peel											
to								Shear											
	:							Peel											
to								Shear											

EC Applications Inc.
Destructive Sample Information

Project Name: Nursery Products Job # 103004 Superintendent: Vicente Figueroa

Material Type: 60 mil HDPE Primary x Pond x A Peel Test Extrusion Minimum ____ PPI

Job Description: ____ Secondary ____ Cell ____ Peel Test Fusion Minimum ____ PPI

Reported By: victor rodriguez Pad ____ Shear Test Minimum ____ PPI

Other: ____

D.S. No.	Seam No.	Weld Date	Operator Name/ ID	Mach No.	Mach Speed	Mach Temp	Preheat Temp	Ambient Temp		Coupon 1 A / B	Coupon 2 A / B	Coupon 3 A / B	Coupon 4 A / B	Coupon 5 A / B	Test Results
1	2 / 4	3/9/12	Librado Dominguez	53	4	750		60	Peel	126 / 102	123 / 139	122 / 132	122 / 127	130 / 128	Pass
									Shear	150	146	169	169	149	
2	5 / 6	3/9/12	Roque Martinez	52	3.5	750		60	Peel	124 / 113	138 / 107	130 / 133	124 / 127	100 / 130	Pass
									Shear	159	150	159	143	153	
3	8 / 10	3/9/12	Roque Martinez	52	3.5	750		60	Peel	130 / 91	108 / 101	125 / 92	110 / 109	97 / 130	Pass
									Shear	158	167	160	163	161	
4	1 / 11	3/9/12	Emilio Gutierrez	59	4	750		70	Peel	113 / 111	113 / 110	112 / 109	114 / 105	105 / 106	Pass
									Shear	150	145	165	140	142	
5	14 / 15	3/9/12	Emilio Gutierrez	59	4	750		70	Peel	118 / 108	111 / 113	115 / 104	110 / 112	114 / 101	Pass
									Shear	160	135	160	144	152	
6	1 / 18	3/9/12	Librado Dominguez	53	4	750		70	Peel	111 / 60	115 / 115	130 / 125	133 / 135	128 / 132	Pass
									Shear	138	156	140	152	156	
7	2 / 21	3/10/12	Librado Dominguez	53	4	750		60	Peel	108 / 97	114 / 117	123 / 101	115 / 108	121 / 124	Pass
									Shear	158	161	160	164	159	
8	24 / 25	3/10/12	Emilio Gutierrez	59	4	750		60	Peel	133 / 115	139 / 125	112 / 133	125 / 132	128 / 131	Pass
									Shear	152	162	157	160	161	
9	27 / 28	3/12/12	Emilio Gutierrez	59	3.5	750		65	Peel	125 / 134	126 / 135	132 / 125	128 / 140	124 / 128	Pass
									Shear	161	158	164	159	160	
10	28 / 30	3/12/12	Librado Dominguez	53	4	750		65	Peel	116 / 118	117 / 123	107 / 117	120 / 123	120 / 116	Pass
									Shear	157	160	157	162	158	
11	38 / 39	3/12 12	Emilio Gutierrez	59	3 5	750		65	Peel	130 / 113	122 / 117	119 / 110	127 / 122	124 / 131	Pass
									Shear	182	180	179	180	181	
12	42 / 40	3/12/12	Librado Dominguez	53	4	750		65	Peel	120 / 126	114 / 137	124 / 121	129 / 123	125 / 121	Pass
									Shear	177	177	178	180	169	
13	/								Peel						
									Shear						
14	/								Peel						
									Shear						
15	/								Peel						
									Shear						
16	/								Peel						
									Shear						
17	/								Peel						
									Shear						
18	/								Peel						
									Shear						

EC Applications Inc.
2

Project Name

Material Type

Job Description

Reported By

Other

Job #

Primary x Pond x

Secondary Cell

Pad

x A

Superintendent:

Air Pressure Test

Air Pressure Hold Time

Allowable Air Pressure Loss

4,714 Total LF of Welding to Date Combined

Extrusion LF Weld Total To Date 1,950

Fusion LF Weld Tot

Weld Date	Seam No.	Seam Length	Time Welded	Operator Name/ ID	Mach No.	Mach Speed	Mach Temp	Preheat Temp	Ambient Temp
3/9/12	3 / 4	23	10:28	emilio gutierrez	59	3.5	750		48
3/9/12	2 / 4	103	10:24	librado dominguez	53	3.2	750		48
3/9/12	2 / 3	107	10:35	librado dominguez	53	3.2	750		50
3/9/12	4 / 5	104	10:40	emilio gutierrez	59	3.5	750		50
3/9/12	3 / 5	107	10:55	emilio gutierrez	59	3.5	750		55
3/9/12	5 / 6	211	10:45	roque martinez	52	3.5	750		55
3/9/12	6 / 7	212	11:05	librado dominguez	53	3.2	750		60
3/9/12	7 / 8	212	11:20	emilio gutierrez	59	3.5	750		60
3/9/12	9 / 10	23	11:30	librado dominguez	53	3.2	750		60
3/9/12	8 / 10	108	11:27	roque martinez	52	3.5	750		60
3/9/12	8 / 9	106	11:48	roque martinez	52	3.5	750		65
3/9/12	10 / 11	109	11:38	librado dominguez	53	3.2	750		65
3/9/12	9 / 11	106	11:56	librado dominguez	53	3.2	750		65
3/9/12	11 / 1	215	11:58	emilio gutierrez	59	3.5	750		65
3/9/12	12 / 13	38	1:35	librado dominguez	53	4	750		70
3/9/12	13 / 14	43	1:45	librado dominguez	53	4	750		70
3/9/12	[illegible] / 15	44	1:46	emilio gutierrez	59	[illegible]	750		70

Test Date	Test Type	AT Time In PSI IN	AT Time Out PSI OUT	PSI Loss	Test Results
3/9/12	Air Pressure	5:09 / 30	5:14 / 30		Pass
3/9/12	Air Pressure	5:13 / 30	5:18 / 30		Pass
3/9/12	Air Pressure	5:04 / 30	5:09 / 30		Pass
3/9/12	Air Pressure	5:09 / 30	5:14 / 30		Pass
3/9/12	Air Pressure	5:03 / 30	5:08 / 30		Pass
3/9/12	Air Pressure	4:56 / 30	4:59 / 30		Pass
3/9/12	Air Pressure	4:55 / 30	5:00 / 30		Pass
3/9/12	Air Pressure	4:44 / 30	4:49 / 30		Pass
3/9/12	Air Pressure	4:25 / 30	4:30 / 30		Pass
3/9/12	Air Pressure	4:26 / 30	4:31 / 30		Pass
3/9/12	Air Pressure	4:42 / 30	4:47 / 30		Pass
3/9/12	Air Pressure	4:25 / 30	4:30 / 30		Pass
3/9/12	Air Pressure	4:37 / 30	4:42 / 30		Pass
3/9/12	Air Pressure	4:36 / 30	4:41 / 30		Pass
3/9/12	Air Pressure	2:24 / 30	2:29 / 30		Pass
3/9/12	Air Pressure	2:25 / 30	2:30 / 30		Pass
3/9/12	Air Pressure	2:26 / 30	[illegible]		Pass

EC Applications Inc.
2

Project Name: Nursery Products
Material Type: 60 mil HDPE
Job Description:
Reported By victor rodriguez
Other

Job # 103004

Primary	x	Pond	x
Secondary		Cell	
		Pad	

x

Superintendent:

Air Pressure Test
Air Pressure Hold Time
Allowable Air Pressure Loss

4,714 **Total LF of Welding to Date Combined**

Extrusion LF Weld Total To Date 1,950

Fusion LF Weld Tot

Weld Date	Seam No.	Seam Length	Time Welded	Operator Name/ ID	Mach No.	Mach Speed	Mach Temp	Preheat Temp	Ambient Temp
3/9/12	15 / 16	46	1:55	librado dominguez	53	4	750		70
3/9/12	16 / 17	46	2:06	librado dominguez	53	4	750		70
3/9/12	17 / 18	46	2:14	librado dominguez	53	4	750		70
3/9/12	19 / 20	43	2:23	librado dominguez	53	4	750		70
3/9/12	18 / 20	23	2:34	librado dominguez	53	4	750		70
3/9/12	18 / 19	23	2:36	librado dominguez	53	4	750		70
3/9/12	1 / 12	23	3:07	librado dominguez	53	4	750		70
3/9/12	1 / 14	23	3:10	librado dominguez	53	4	750		70
3 9 12	1 / 15	23	3:12	librado dominguez	53	4	750		70
3/9/12	1 / 16	23	3:14	librado dominguez	53	4	750		70
3/9/12	1 / 17	23	3:16	librado dominguez	53	4	750		70
3/9/12	1 / 18	23	3:18	librado dominguez	53	4	750		70
3/9/12	1 / 19	51	3:20	librado dominguez	53	4	750		70
3/10/12	2 / 21	210	8:56	librado dominguez	53	4	750		60
3/10/12	21 / 22	208	9:02	emilio gutierrez	59	4	750		60
3/10/12	23 / 24	23	9:24	librado dominguez	53	4	750		60
3/10/12	[illegible] / 23	105	9:52	librado dominguez	53	[illegible]	750		60

Test Date	Test Type	AT Time In PSI IN	AT Time Ou PSI OUT	PSI Loss	Test Results
3/9/12	Air Pressure	2:37 / 30	2:42 / 30		Pass
3/9/12	Air Pressure	2:44 / 30	2:49 / 30		Pass
3/9/12	Air Pressure	2:45 / 30	2:50 / 30		Pass
3/9/12	Air Pressure	2:56 / 30	3:01 / 30		Pass
3/9/12	Air Pressure	2:58 / 30	3:03 / 30		Pass
3/9/12	Air Pressure	2:50 / 30	2:55 / 30		Pass
3/9/12	Air Pressure	3:35 / 30	3:40 / 30		Pass
3/9/12	Air Pressure	3:53 / 30	3:58 / 30		Pass
3/9/12	Air Pressure	3:55 / 30	4:00 / 30		Pass
3/9/12	Air Pressure	3:56 / 30	4:01 / 30		Pass
3/9/12	Air Pressure	4:05 / 30	4:10 / 30		Pass
3/9/12	Air Pressure	4:08 / 30	4:13 / 30		Pass
3/9/12	Air Pressure	4:15 / 30	4:20 / 30		Pass
3/10/12	Air Pressure	10:00 / 30	10:05 / 30		Pass
3/10/12	Air Pressure	10:06 / 30	10:11 / 30		Pass
3/10/12	Air Pressure	10:22 / 30	10:27 / 30		Pass
3/10/12	Air Pressure	10:26 / 30	[illegible]		Pass

EC Applications Inc.
2

Project Name: N

Job # 1

Superintendent:

Material Type:

Primary x **Pond** x x

Job Description

Secondary **Cell**

Reported By t r rodrig ez **Pad**

Other

Air Pressure Test

Air Pressure Hold Time

Allowable Air Pressure L s

4,714 **Total LF of Welding to Date Combined**

Extrusion LF Weld Total To Date 1,950

Fusion LF Weld Tot

Weld Date	Seam No.	Seam Length	Time Welded	Operator Name/ ID	Mach No.	Mach Speed	Mach Temp	Preheat Temp	Ambient Temp
3/10/12	22 / 24	104	9:34	librado dominguez	53	4	750		60
3/10/12	24 / 25	104	9:55	emilio gutierrez	59	4	750		60
3/10/12	23 / 25	105	10:14	emilio gutierrez	59	4	750		60
3/12/12	25 / 27	210	##:42	librado dominguez	53	4	750		55
3/12/12	27 / 28	210	10:46	emilio gutierrez	59	3.5	750		55
3/12/12	28 / 30	104	11:08	librado dominguez	53	4	750		60
3/12/12	28 / 29	106	11:27	librado dominguez	53	4	750		60
3/12/12	29 / 30	23	11:08	librado dominguez	53	4	750		60
3/12/12	30 / 26	104	11:33	emilio gutierrez	59	3.5	750		60
3/12/12	29 / 26	60	11:50	emilio gutierrez	59	3.5	750		60
3/12/12	26 / 31	51	1:36	librado dominguez	53	4	750		70
3/12/12	31 / 32	25	1:28	librado dominguez	53	4	750		70
3/12/12	33 / 34	28	1:42	emilio gutierrez	59	3.5	750		70
3/12/12	34 / 35	53	1:46	librado dominguez	53	4	750		70
3/12/12	31 / 34	33	2:00	emilio gutierrez	59	3.5	750		70
3/12/12	32 / 33	23	2:05	emilio gutierrez	59	3.5	750		70
3/12/12	[illegible] / 36	53	1:56	librado dominguez	53	[illegible]	750		70

Test Date	Test Type	AT Time In PSI IN	AT Time Ou PSI OUT	PSI Loss	T st Resu t
3/10/12	Air Pressure	10:06 / 30	10:11 / 30		Pass
3/10/12	Air Pressure	10:24 / 30	10:29 / 30		Pass
3/10/12	Air Pressure	10:34 / 30	10:39 / 30		Pass
3/12/12	Air Pressure	1:15 / 30	1:20 / 30		Pass
3/12/12	Air Pressure	1:17 / 30	1:23 / 30		Pass
3/12/12	Air Pressure	1:18 / 30	1:23 / 30		Pass
3/12/12	Air Pressure	1:40 / 30	1:45 / 30		Pass
3/12/12	Air Pressure	1:30 / 30	1:35 / 30		Pass
3/12/12	Air Pressure	1:20 / 30	1:25 / 30		Pass
3/12/12	Air Pressure	1:34 / 30	1:39 / 30		Pass
3/12/12	Air Pressure	2:47 / 30	2:53 / 30		Pass
3/12/12	Air Pressure	2:51 / 30	2:56 / 30		Pass
3/12/12	Air Pressure	2:57 / 30	3:02 / 30		Pass
3/12/12	Air Pressure	2:48 / 30	2:53 / 30		Pass
3/12/12	Air Pressure	2:50 / 30	2:55 / 30		Pass
3/12/12	Air Pressure	2:56 / 30	3:01 / 30		Pass
3/12/12	Air Pressure	3:04 / 30	[illegible]		Pass

EC Applications Inc.
2

Project Name: Nursery Products **Job #** 1 [illegible] **Superintendent:** [illegible]

Material Type: 60 mil HDPE **Primary** x **Pond** x x **Air Pressure Test**

Job Description: **Secondary** **Cell** **Air Pressure Hold Time**

Reported By victor rod guez **Pad** **Allowable Air Pressure Loss**

Other

4,714 **Total LF of Welding to Date Combined** **Extrusion LF Weld Total To Date** 1,950 **Fusion LF Weld Tot**

Weld Date	Seam No.	Seam Length	Time Welded	Operator Name/ ID	Mach No.	Mach Speed	Mach Temp	Preheat Temp	Ambient Temp
3/12/12	36 / 37	53	2:04	librado dominguez	53	4	750		70
3/12/12	37 / 38	51	2:31	librado dominguez	53	4	750		70
3/12/12	26 / 35	23	2:29	librado dominguez	53	4	750		70
3/12/12	26 / 36	23	2:27	librado dominguez	53	4	750		70
3/12/12	26 / 37	23	2:28	librado dominguez	53	4	750		70
3/12/12	25 / 38	18	2:38	librado dominguez	53	4	750		70
3/12/12	38 / 39	48	4:40	emilio gutierrez	59	3 5	750		70
3/12/12	26 / 40	23	4:50	librado dominguez	53	4	750		70
3/12/12	29 / 40	71	4:38	librado dominguez	53	4	750		70
3/12/12	39 / 41	46	4:55	emilio gutierrez	59	3 5	750		70
3/12/12	41 / 42	37	5:00	librado dominguez	53	4	750		70
3/12/12	40 / 42	23	5:18	librado dominguez	53	4	750		70
3/12/12	40 / 41	23	5:20	librado dominguez	53	4	750		70
3/12/12	39 / 40	23	5:23	librado dominguez	53	4	750		70
	/		:						
	/		:						
	/								

Test Date	Test Type	AT Time In PSI IN	AT Time Out PSI OUT	PSI Loss	Test Results
3/12/12	Air Pressure	3:08 / 30	3:13 / 30		Pass
3/12/12	Air Pressure	3:12 / 30	3:17 / 30		Pass
3/12/12	Air Pressure	3:00 / 30	3:05 / 30		Pass
3/12/12	Air Pressure	3:04 / 30	3:09 / 30		Pass
3/12/12	Air Pressure	3:05 / 30	3:10 / 30		Pass
3/12/12	Air Pressure	3:12 / 30	3:17 / 30		Pass
3/12/12	Air Pressure	5:06 / 30	5:11 / 30		Pass
3/12/12	Air Pressure	5:00 / 30	5:05 / 30		Pass
3/12/12	Air Pressure	4:55 / 30	5:00 / 30		Pass
3/12/12	Air Pressure	5:12 / 30	5:17 / 30		Pass
3/12/12	Air Pressure	5:16 / 30	5:21 / 30		Pass
3/12/12	Air Pressure	5:25 / 30	5:30 / 30		Pass
3/12/12	Air Pressure	5:26 / 30	5:31 / 30		Pass
3/12/12		5:27 / 30	5:32 / 30		Pass
		:	:		Pass
		:	:		Pass
		:			

ECApplications, Inc.

Daily Panel Placement

Page 1

Project Name: Nursery Products **Job #** 103004 **Deployment Date**

Superintendent: Vicente Figueroa **Material Type:** 60 Mil

[X] Primary **Secondary** [ ] **Cell** [ ] **Pond** [ ] **Pad** [ ] **Other:**

Description (i.e. Phase #, Cell #, Pond # etc.)

Roll Stock Width

Panel #	Roll #	Final Length Avg	Final Width Avg	Initial Length Avg	Initial Width Avg	Notes	Initial SF	Final SF	Lineal Feet Trench
cap 1	8572	150.00 LF	7 50 LF	150.00 LF	7.50 LF		1 125	1 125	
cap 2	8572 - -	150.00 LF	7 50 LF	150.00 LF	7 50 LF	Notes:	1,125	1 125	
cap 3	8572	90 00 LF	7 50 LF	90 00 LF	7 50 LF	Notes	675	675	
		LF	LF	LF	LF		-	-	
		LF	LF	LF	LF		Initial	Final S	
		LF	LF	LF	LF	Note	Initial S	Final SF	
		LF	LF	LF	LF	Notes.	Initial SF	Final SF	
		LF	LF	LF	LF	Notes:	Initial SF	Final SF	

Material in Anchor Trench		
Total LF In Trench This Page	-	LF
Depth and Width Allowed in Trench	10	LF
Total SF Trench This Page	-	SF
Total Panel SF This Page	2,925	SF
Total Pay Area This Page	2,925	SF
LF In Trench Previous	-	LF
LF In Trench To Date	-	LF
SF In Trench Previous	-	SF
Total SF in Trench to Date	-	SF
Total Panel SF Previous	-	SF
Total Panel SF To Date	2,925	SF
Total Pay Area To Date Including Anchor Trench	[illegible]25	
Initial Quantity Previous	-	SF
Initial Quantity This Page	2,925	SF
Initial Quantity To Date	2,925	SF

ECApplications, Inc.

Daily Panel Placement

Page 1

Project Name: Nursery Products **Job #** 103004 **Deployment Date** 03/08/12

Superintendent: Vicente Figueroa **Material Type:** 60 mil.HDPE

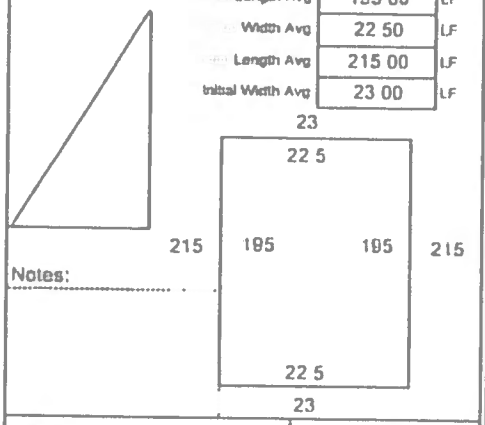
[x] Primary Secondary [ ] Cell [ ] Pond [x] Pad [ ] Other:

Description (i.e Phase #, Cell #, Pond # etc.)

Roll Stock Width 23

Panel # 1 — Roll # 8468

Length Avg	195 00	LF
Width Avg	22 50	LF
Length Avg	215 00	LF
Initial Width Avg	23 00	LF

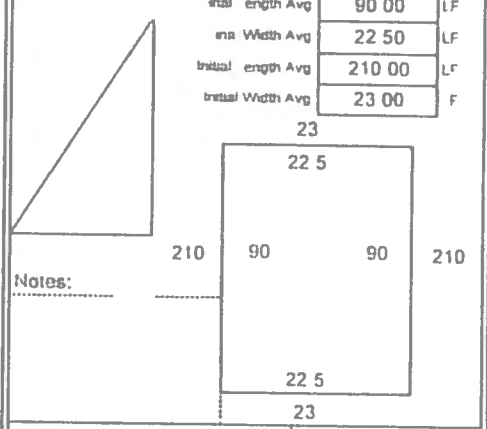


Notes:

Initial SF	4,945	Lineal Feet Trench	
Final SF	4,388		45

Panel # 2 — Roll # 8468

Final Length Avg	90 00	LF
Final Width Avg	22 50	LF
Initial Length Avg	210 00	LF
Initial Width Avg	23 00	F

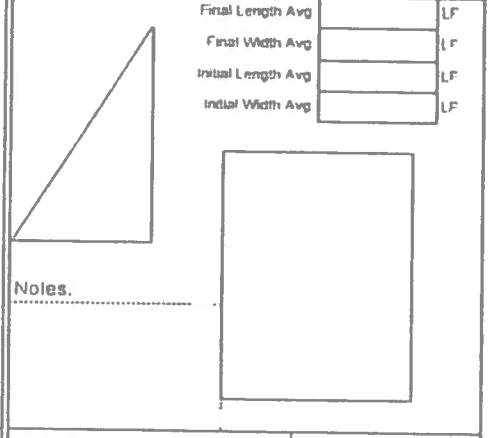


Notes:

Initial SF	4,830	Lineal Feet Trench	
Final SF	2,025		45

Panel # — Roll

Final Length Avg		LF
Final Width Avg		LF
Initial Length Avg		LF
Initial Width Avg		LF

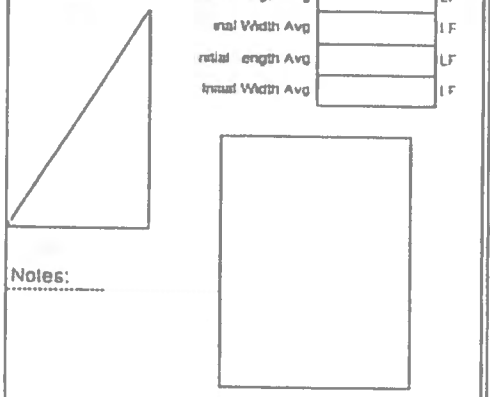


Notes.

Initial SF		Lineal Feet Trench	
Final SF			

Panel # — Roll

Final Length Avg		LF
Final Width Avg		LF
Initial Length Avg		LF
Initial Width Avg		LF

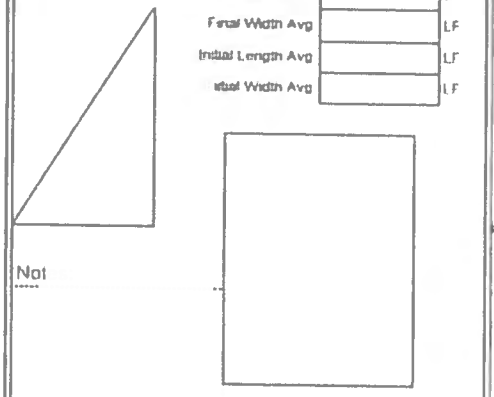


Notes:

Initial SF		Lineal Feet Trench	
Final SF			

Panel # — Roll

Final Length Avg		LF
Final Width Avg		LF
Initial Length Avg		LF
Initial Width Avg		LF

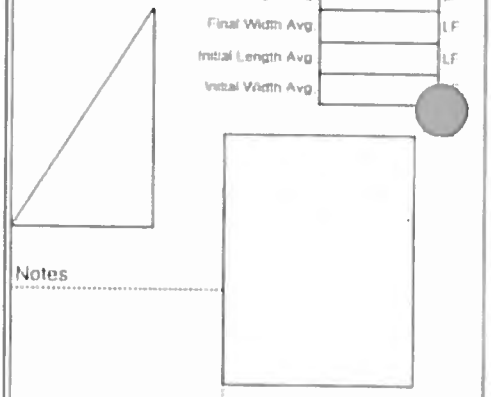


Not

Initial		Lineal Feet Trench	
Final			

Panel # — Roll

Final Length Avg		LF
Final Width Avg		LF
Initial Length Avg		LF
Initial Width Avg		LF

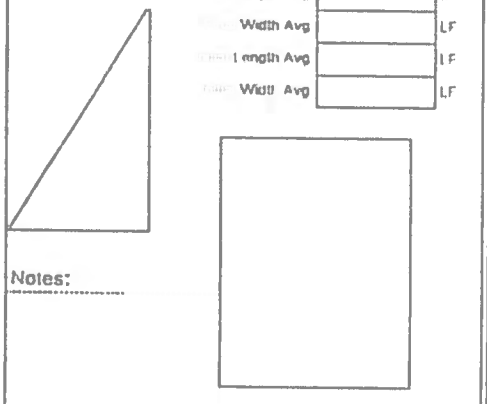


Notes

Initial SF		Lineal Feet Trench	
Final SF			

Panel # — Roll

Length Avg		LF
Width Avg		LF
Length Avg		LF
Width Avg		LF

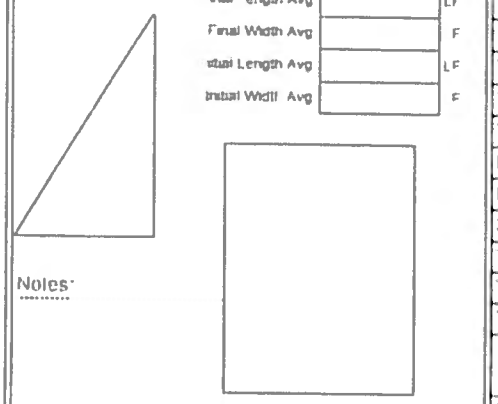


Notes:

Initial SF		Lineal Feet Trench	
Final SF			

Panel # — Roll

Final Length Avg		LF
Final Width Avg		F
Initial Length Avg		LF
Initial Width Avg		F



Notes:

Initial SF		Lineal Feet Trench	
Final SF			

Material in Anchor Trench

Total LF In Trench This Page	90.00	LF
Depth and Width Allowed in Trench	10	LF
Total SF Trench This Page	**900**	**SF**
Total Panel SF This Page	**6,413**	**SF**
Total Pay Area This Page	**7,313**	**SF**
LF In Trench Previous	-	LF
LF In Trench To Date	90	LF
SF In Trench Previous	-	SF
Total SF in Trench to Date	900	SF
Total Panel SF Previous	-	SF
Total Panel SF To Date	6,413	SF
Total Pay Area To Date Including Anchor Trench	7,[illegible]	
Initial Quantity Previous	-	SF
Initial Quantity This Page	9,775	SF
Initial Quantity To Date	9,775	SF

ECApplications, Inc.

Daily Panel Placement

Project Name: Nursery Products **Job #** 103004 **Deployment Date** 03/09/12

Superintendent: Vicente Figueroa **Material Type:** 60 mi HDPE

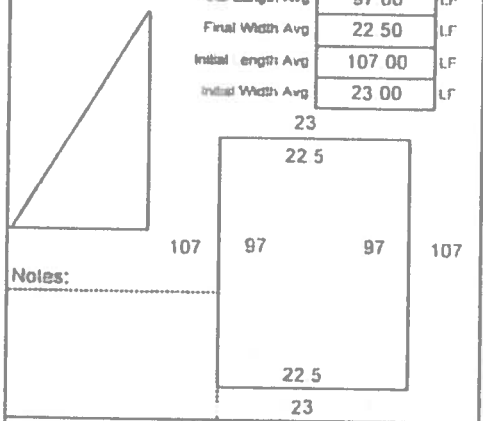
[X] Primary [ ] Secondary [ ] Cell [X] Pond [ ] Pad [ ] Other:

Description (i.e. Phase #, Cell #, Pond # etc.)

Roll Stock Width 23

Panel # 3 | **Roll #** 8468

Final Length Avg	97.00	LF
Final Width Avg	22.50	LF
Initial Length Avg	107.00	LF
Initial Width Avg	23.00	LF

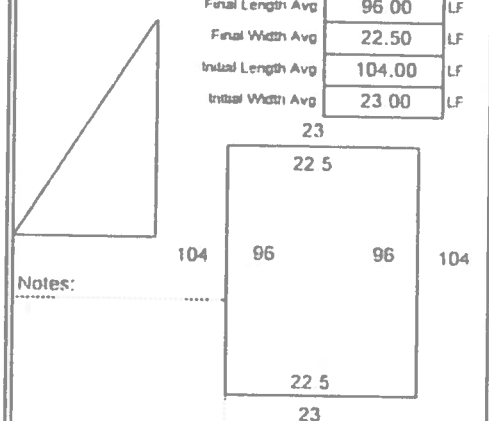


Notes:

Initial SF	2,461	Lineal Feet Trench	22.5
Final SF	2,183		

Panel # 4 | **Roll #** 6316

Final Length Avg	96.00	LF
Final Width Avg	22.50	LF
Initial Length Avg	104.00	LF
Initial Width Avg	23.00	LF

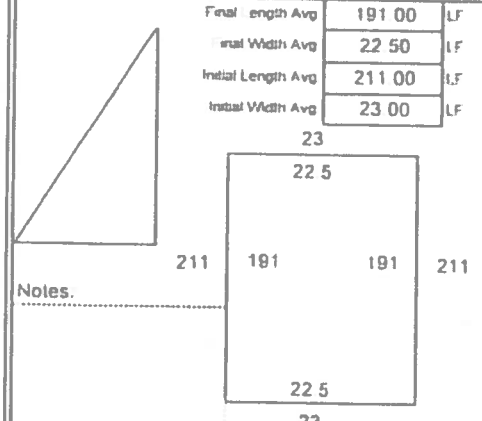


Notes:

Initial SF	2,392	Lineal Feet Trench	22.5
Final SF	2,160		

Panel # 5 | **Roll #** 6316

Final Length Avg	191.00	LF
Final Width Avg	22.50	LF
Initial Length Avg	211.00	LF
Initial Width Avg	23.00	LF

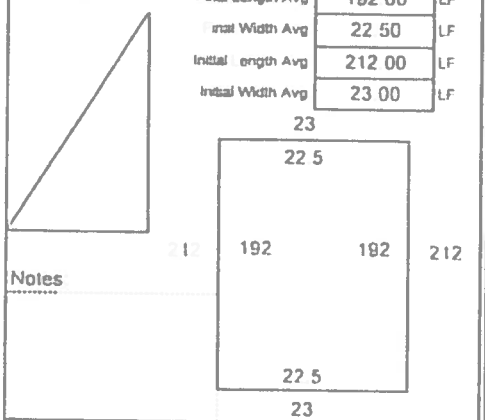


Notes:

Initial SF	4,853	Lineal Feet Trench	45
Final SF	4,298		

Panel # 6 | **Roll #** 6316

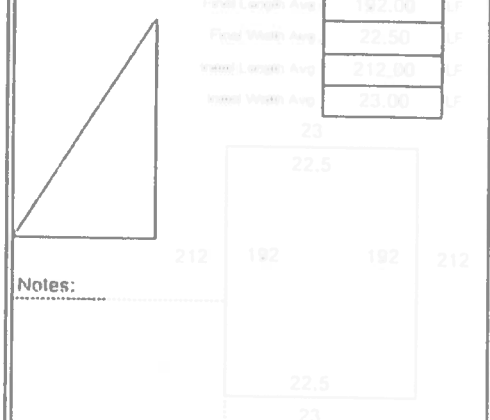
Final Length Avg	192.00	LF
Final Width Avg	22.50	LF
Initial Length Avg	212.00	LF
Initial Width Avg	23.00	LF



Notes

Initial SF	4,876	Lineal Feet Trench	45
Final SF	4,320		

Panel # 7 | **Roll #** 8469

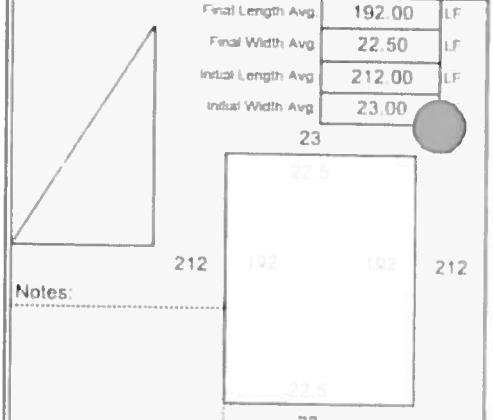


Notes:

Initial SF	4,876	Lineal Feet Trench	45
Final SF	4,320		

Panel # 8 | **Roll #** 8469

Final Length Avg	192.00	LF
Final Width Avg	22.50	LF
Initial Length Avg	212.00	LF
Initial Width Avg	23.00	LF

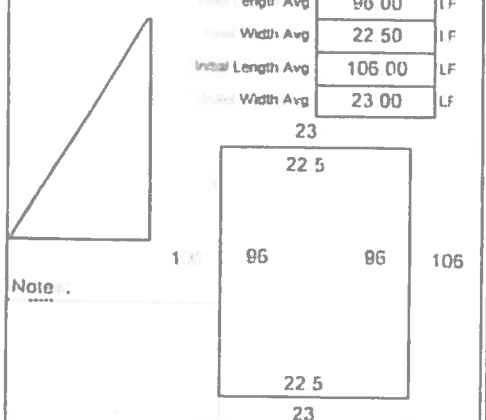


Notes:

Initial SF	4,876	Lineal Feet Trench	45
Final SF	4,320		

Panel # 9 | **Roll #** 8469

Final Length Avg	96.00	LF
Final Width Avg	22.50	LF
Initial Length Avg	106.00	LF
Initial Width Avg	23.00	LF

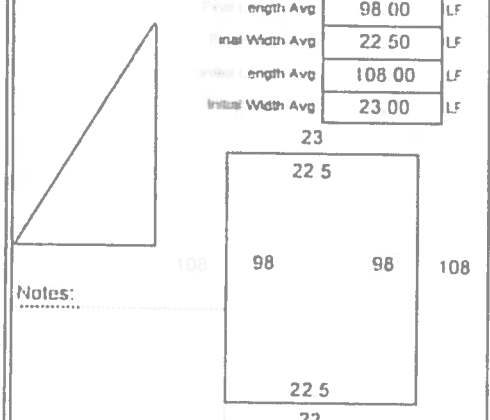


Notes:

Initial SF	2,438	Lineal Feet Trench	22.5
Final SF	2,160		

Panel # 10 | **Roll #** 8578

Final Length Avg	98.00	LF
Final Width Avg	22.50	LF
Initial Length Avg	108.00	LF
Initial Width Avg	23.00	LF



Notes:

Initial SF	2,484	Lineal Feet Trench	22.5
Final SF	2,205		

Material In Anchor Trench

Total LF In Trench This Page	270.00	LF
Depth and Width Allowed in Trench	10	LF
Total SF Trench This Page	**2,700**	SF
Total Panel SF This Page	**25,965**	SF
Total Pay Area This Page	**28,665**	SF
LF In Trench Previous	90	LF
LF In Trench To Date	360	LF
SF In Trench Previous	900	SF
Total SF In Trench To Date	3,600	SF
Total Panel SF Previous	6,413	SF
Total Panel SF To Date	32,378	SF
Total Pay Area To Date Including Anchor Trench	35,	
Initial Quantity Previous	9,775	SF
Initial Quantity This Page	29,256	SF
Initial Quantity To Date	39,031	SF

ECApplications, Inc.

Daily Panel Placement

Project Name. Nursery Products **Job #** 103004 **Deployment Date** 03/09/12

Superintendent: Vicente Figueroa **Material Type:** 60 mil HDPE

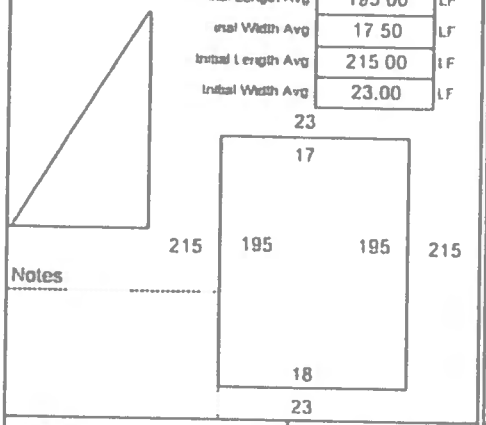
[X] Primary Secondary [ ] Cell [ ] Pond [X] Pad [ ] Other:

Description (I.e Phase #, Cell #, Pond # etc.)

Roll Stock Width 23

Panel # 11 | **Roll #** 8578

Final Length Avg	195 00	LF
Final Width Avg	17 50	LF
Initial Length Avg	215 00	LF
Initial Width Avg	23.00	LF

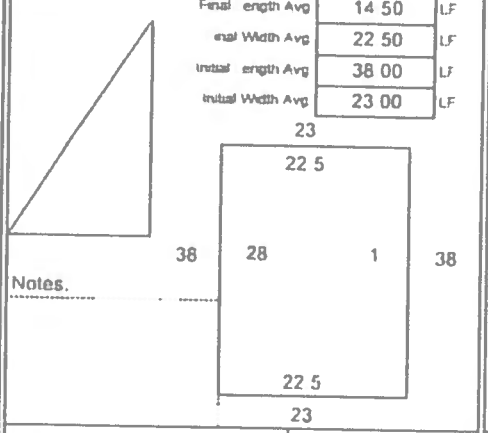


Notes

Initial SF	4,945	Lineal Feet Trench	
Final SF	3,413		45

Panel # 12 | **Roll #** 8578

Final Length Avg	14 50	LF
Final Width Avg	22 50	LF
Initial Length Avg	38 00	LF
Initial Width Avg	23 00	LF

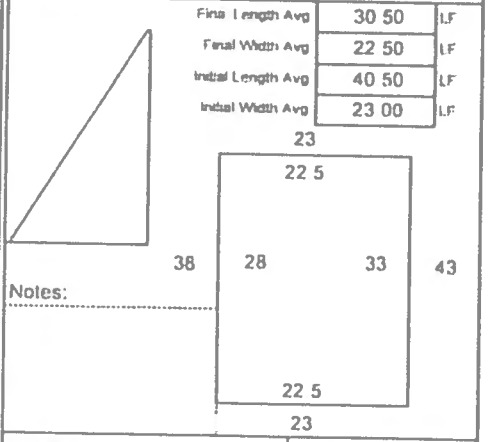


Notes.

Initial SF	874	Lineal Feet Trench	
Final SF	326		23

Panel # 13 | **Roll #** 8578

Final Length Avg	30 50	LF
Final Width Avg	22 50	LF
Initial Length Avg	40 50	LF
Initial Width Avg	23 00	LF

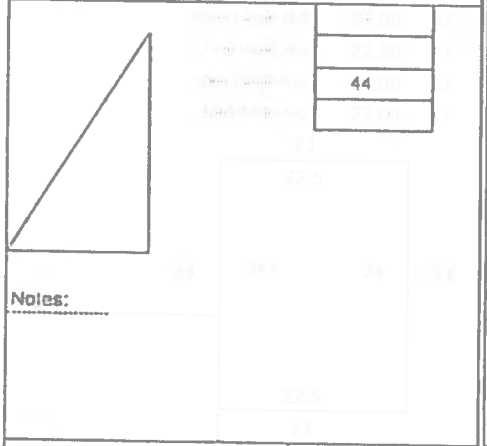


Notes:

Initial SF	932	Lineal Feet Trench	
Final SF	686		23

Panel # 14 | **Roll #** 8578

	44	

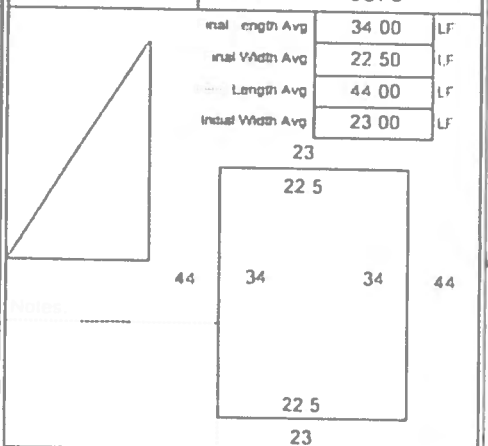


Notes:

Initial SF	1 012	Lineal Feet Trench	
Final SF	765		23

Panel # 15 | **Roll #** 8578

Final Length Avg	34 00	LF
Final Width Avg	22 50	LF
Initial Length Avg	44 00	LF
Initial Width Avg	23 00	LF

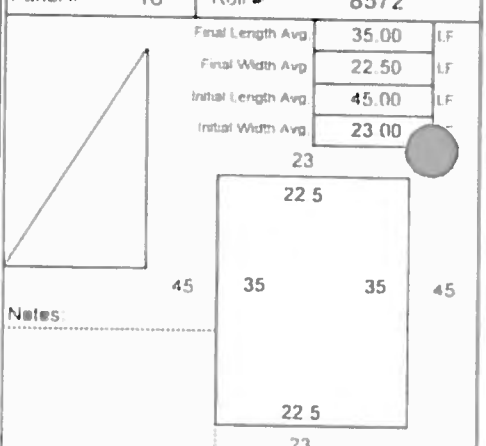


Notes:

Initial	1 012	Lineal Feet Trench	
Final	765		23

Panel # 16 | **Roll #** 8572

Final Length Avg	35.00	LF
Final Width Avg	22.50	LF
Initial Length Avg	45.00	LF
Initial Width Avg	23.00	LF

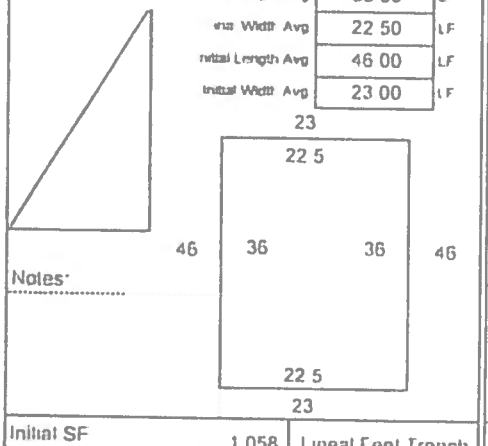


Notes:

Initial SF	1,035	Lineal Feet Trench	
Final SF	788		23

Panel # 1 | **Roll #** 8572

Final Length Avg	36 00	LF
Final Width Avg	22 50	LF
Initial Length Avg	46 00	LF
Initial Width Avg	23 00	LF

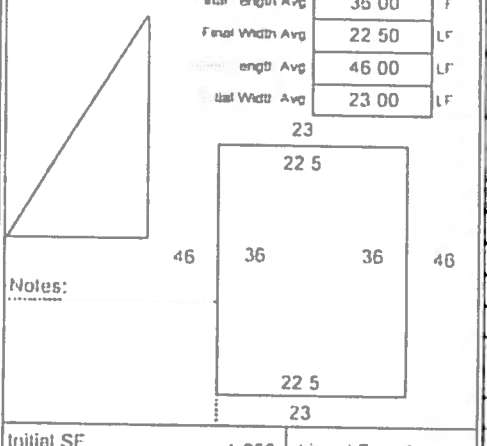


Notes:

Initial SF	1,058	Lineal Feet Trench	
Final SF	810		23

Pane # 18 | **Roll #** 8572

Final Length Avg	36 00	LF
Final Width Avg	22 50	LF
Initial Length Avg	46 00	LF
Initial Width Avg	23 00	LF



Notes:

Initial SF	1,058	Lineal Feet Trench	
Final SF	810		23

Material in Anchor Trench

Total LF In Trench This Page	206.00	LF
Depth and Width Allowed in Trench	10	LF
Total SF Trench This Page	**2,060**	**SF**
Total Panel SF This Page	**8,363**	**SF**
Total Pay Area This Page	**10,423**	**SF**
LF In Trench Previous	360	LF
LF In Trench To Date	566	LF
SF In Trench Previous	3,600	SF
Total SF in Trench to Date	5,660	SF
Total Panel SF Previous	32,378	SF
Total Panel SF To Date	40,740	SF
Total Pay Area To Date Including Anchor Trench	**46,**	
Initial Quantity Previous	39,031	SF
Initial Quantity This Page	11,926	SF
Initial Quantity To Date	50,957	SF

ECApplications, Inc.

Daily Panel Placement

Project Name: Nursery Products **Job #** 103004 **Deployment Date** 03/09 12

Superintendent: Vicente Figueroa **Material Type:** 60 mil HDPE

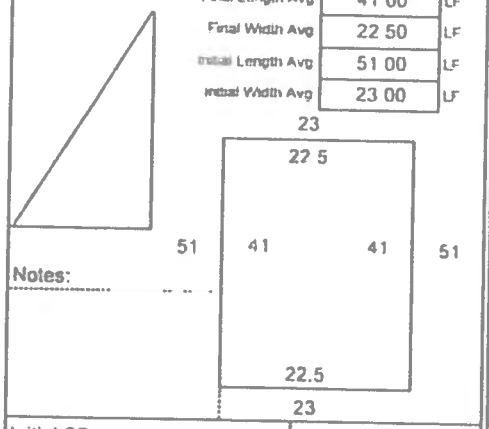
[X] Primary Secondary [ ] Cell [ ] Pond [X] Pad [ ] Other:

Description (i.e. Phase #, Cell #, Pond # etc.)

Roll Stock Width 23

Panel # 19 | **Roll #** 8572

Final Length Avg	41 00	LF
Final Width Avg	22 50	LF
Initial Length Avg	51 00	LF
Initial Width Avg	23 00	LF

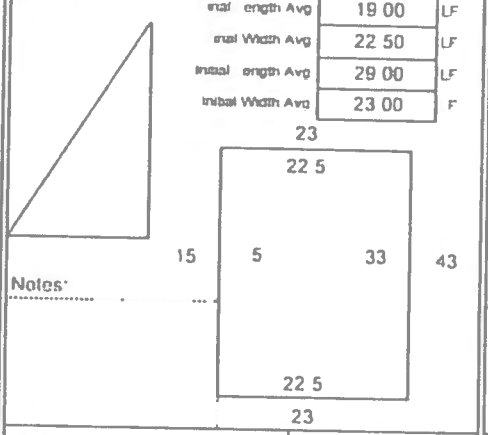


Notes:

Initial SF	1,173	Lineal Feet Trench	
Final SF	923		23

Panel # 20 | **Roll #** 8572

Final Length Avg	19 00	LF
Final Width Avg	22 50	LF
Initial Length Avg	29 00	LF
Initial Width Avg	23 00	LF

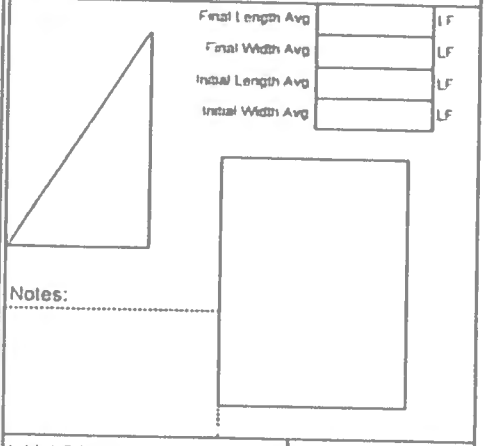


Notes:

Initial SF	667	Lineal Feet Trench	
Final SF	428		35

Panel # | **Roll #**

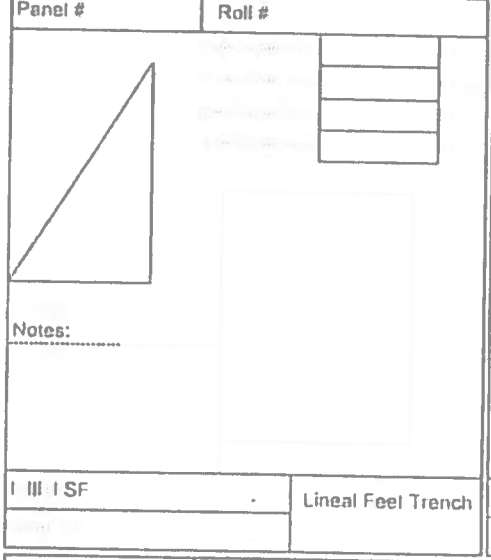
Final Length Avg		LF
Final Width Avg		LF
Initial Length Avg		LF
Initial Width Avg		LF



Notes:

Initial SF		Lineal Feet Trench	
Final SF			

Panel # | **Roll #**

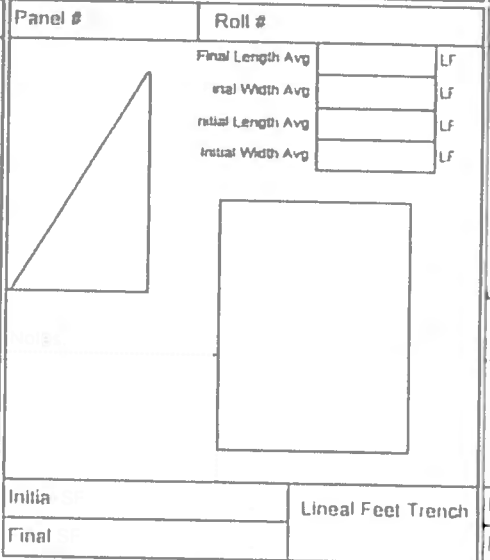


Notes:

Initial SF		Lineal Feet Trench
Final SF		

Panel # | **Roll #**

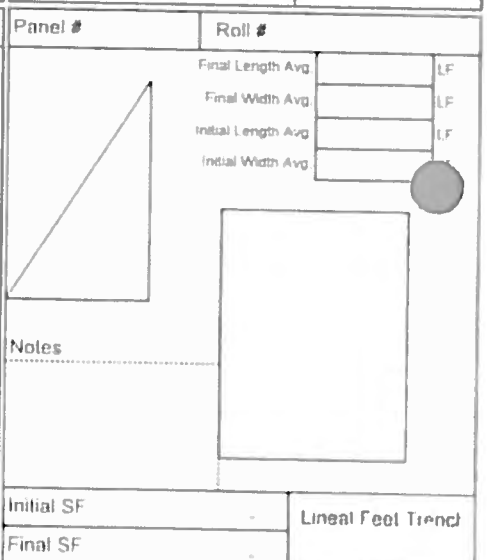
Final Length Avg		LF
Final Width Avg		LF
Initial Length Avg		LF
Initial Width Avg		LF



Initial SF		Lineal Feet Trench
Final SF		

Panel # | **Roll #**

Final Length Avg		LF
Final Width Avg		LF
Initial Length Avg		LF
Initial Width Avg		LF

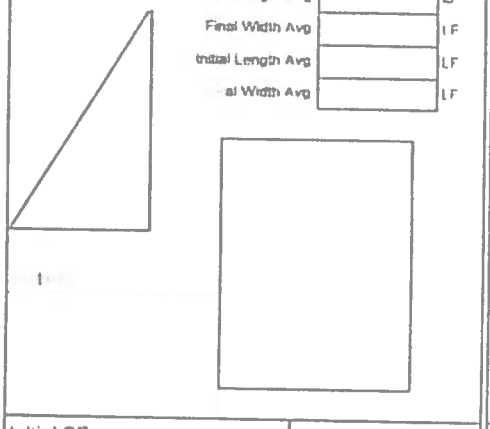


Notes

Initial SF		Lineal Feet Trench
Final SF		

Panel # | **Roll #**

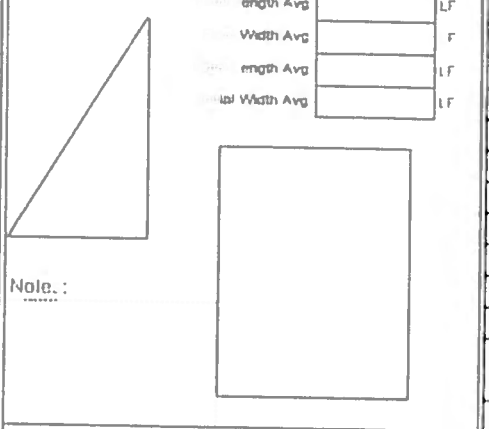
Final Length Avg		LF
Final Width Avg		LF
Initial Length Avg		LF
Initial Width Avg		LF



Initial SF		Lineal Feet Trench
Final SF		

Panel # | **Roll #**

Final Length Avg		LF
Final Width Avg		LF
Initial Length Avg		LF
Initial Width Avg		LF



Notes:

Initial SF		Lineal Feet Trench
Final SF		

Material in Anchor Trench

Total LF In Trench This Page	58.00	LF
Depth and Width Allowed in Trench	10	LF
Total SF Trench This Page	**580**	**SF**
Total Panel SF This Page	**1,350**	**SF**
Total Pay Area This Page	**1,930**	**SF**
LF In Trench Previous	566	LF
LF In Trench To Date	624	LF
SF In Trench Previous	5,660	SF
Total SF in Trench to Date	6,240	SF
Total Panel SF Previous	40,740	SF
Total Panel SF To Date	42,090	SF
Total Pay Area To Date Including Anchor Trench	**48,**	
Initial Quantity Previous	50,957	SF
Initial Quantity This Page	1,840	SF
Initial Quantity To Date	52,797	SF

ECApplications, Inc.

Daily Panel Placement

Project Name: Nursery Products **Job #** 103004 **Deployment Date** 03/10/12

Superintendent: Vicente Figueroa **Material Type:** 60 mil HDPE

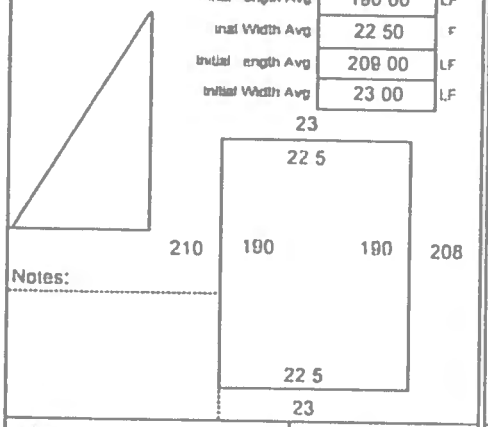
[X] Primary Secondary [ ] Cell [ ] Pond [X] Pad [ ] Other:

Description (i.e. Phase #, Cell #, Pond # etc.)

Roll Stock Width 23

Panel # 21 — Roll # 8580

Final Length Avg	190 00	LF
Final Width Avg	22 50	LF
Initial Length Avg	209 00	LF
Initial Width Avg	23 00	LF

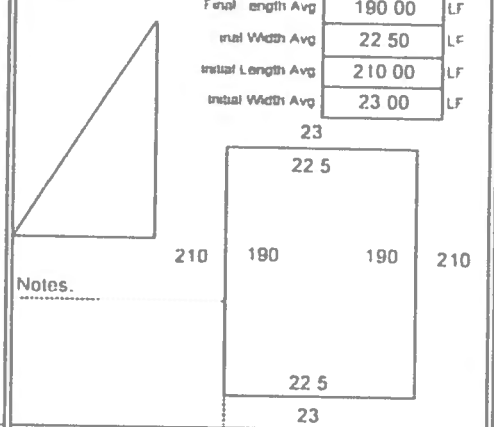


Notes:

Initial SF	4,807	Lineal Feet Trench	
Final SF	4,275		45

Panel # 22 — Roll # 8580

Final Length Avg	190 00	LF
Final Width Avg	22 50	LF
Initial Length Avg	210 00	LF
Initial Width Avg	23 00	LF

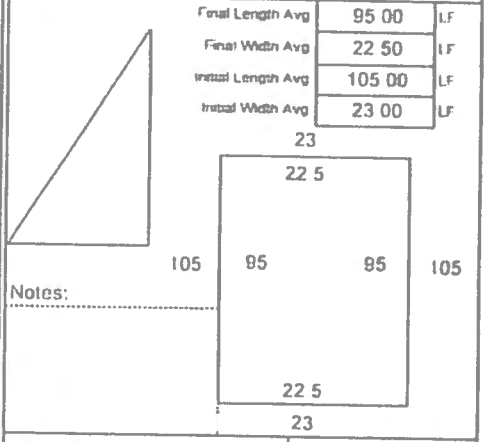


Notes.

Initial SF	4,830	Lineal Feet Trench	
Final SF	4 275		45

Panel # 23 — Roll # 8580

Final Length Avg	95 00	LF
Final Width Avg	22 50	LF
Initial Length Avg	105 00	LF
Initial Width Avg	23 00	LF

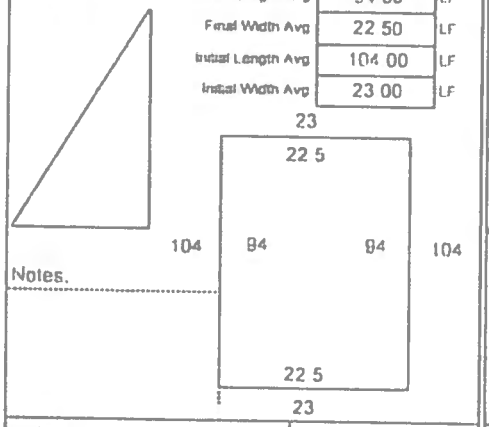


Notes:

Initial SF	2 415	Lineal Feet Trench	
Final SF	2 138		22 5

Panel # 24 — Roll # 8470

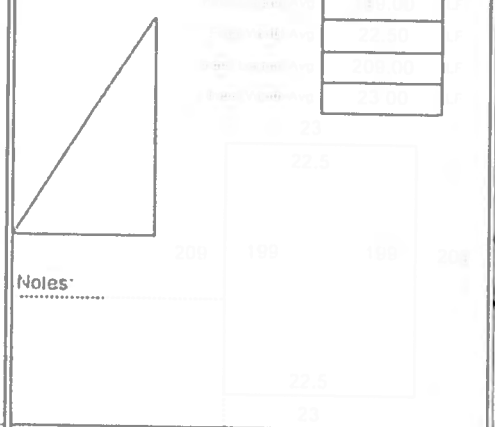
Final Length Avg	94 00	LF
Final Width Avg	22 50	LF
Initial Length Avg	104 00	LF
Initial Width Avg	23 00	LF



Notes.

Initial SF	2 392	Lineal Feet Trench	
Final SF	2 115		22 5

Panel # 25 — R ll # 8470

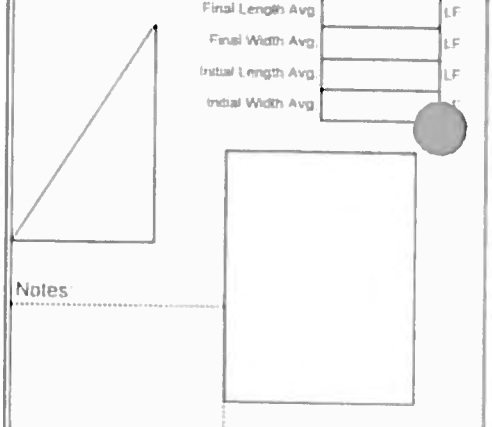


Notes:

Initial SF	4 807	Lineal Feet Trench	
Final SF	4 478		45

Panel # — Roll

Final Length Avg	LF
Final Width Avg	LF
Initial Length Avg	LF
Initial Width Avg	LF

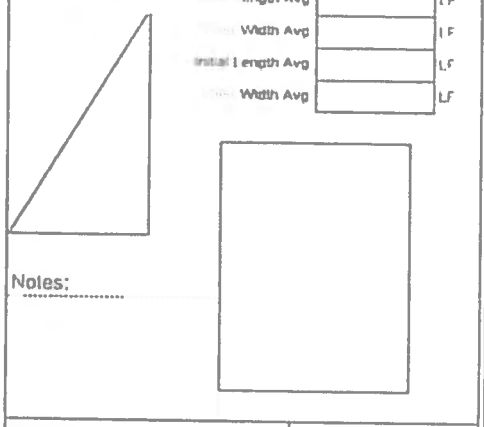


Notes

Initial SF		Lineal Feet Trench	
Final SF			

Panel # — oll

ength Avg	LF
Width Avg	LF
Initial Length Avg	LF
Width Avg	LF

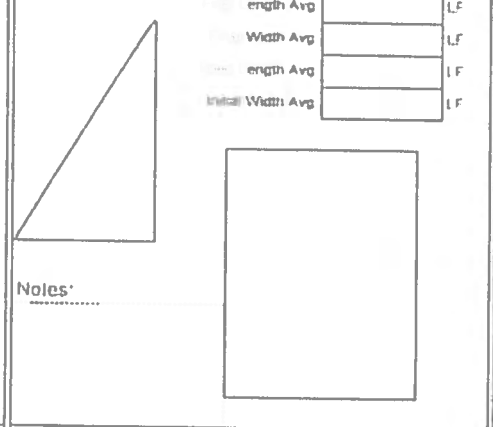


Notes:

Initial SF		Lineal Feet Trench	
Final SF			

Panel # — Roll

ength Avg	LF
Width Avg	LF
ength Avg	LF
Initial Width Avg	LF



Notes:

Initial SF		Lineal Feet Trench	
Final SF			

Material in Anchor Trench

Total LF In Trench This Page	180.00	LF
Depth and Width Allowed In Trench	10	LF
Total SF Trench This Page	**1,800**	SF
Total Panel SF This Page	**17,280**	SF
Total Pay Area This Page	**19,080**	SF
LF In Trench Previous	624	LF
LF In Trench To Date	804	LF
SF In Trench Previous	6,240	SF
Total SF in Trench to Date	8,040	SF
Total Panel SF Previous	42,090	SF
Total Panel SF To Date	59,370	SF
Total Pay Area To Date Including Anchor Trench	**67,**	
Initial Quantity Previous	52,797	SF
Initial Quantity This Page	19,251	SF
Initial Quantity To Date	72,048	SF

ECApplications, Inc.

Daily Panel Placement

Project Name: Nursery Products **Job #** 103004 **Deployment Date** 03/12/12

Superintendent: Vicente Figueroa **Material Type:** 60 mil HDPE

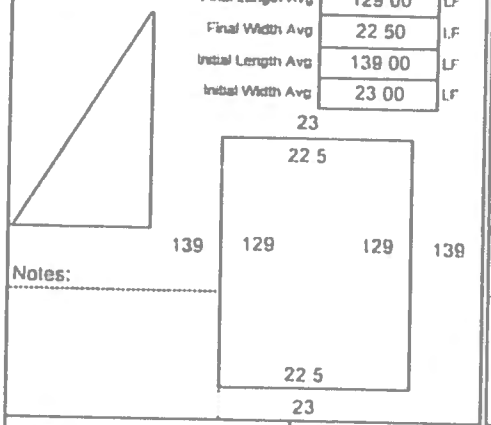
[X] Primary Secondary [ ] Cell [ ] Pond [X] Pad [ ] Other:

Description (i.e. Phase #, Cell #, Pond # etc.)

Roll Stock Width 23

Panel # 26 — Roll # 8470

Final Length Avg	129 00	LF
Final Width Avg	22 50	LF
Initial Length Avg	139 00	LF
Initial Width Avg	23 00	LF

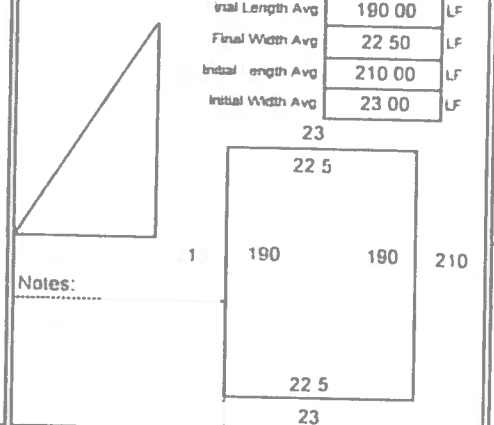


Notes:

Initial SF	3,197	Lineal Feet Trench	
Final SF	2 903		22 5

Panel # 27 — Roll # 8571

inal Length Avg	190 00	LF
Final Width Avg	22 50	LF
Initial ength Avg	210 00	LF
Initial Width Avg	23 00	LF

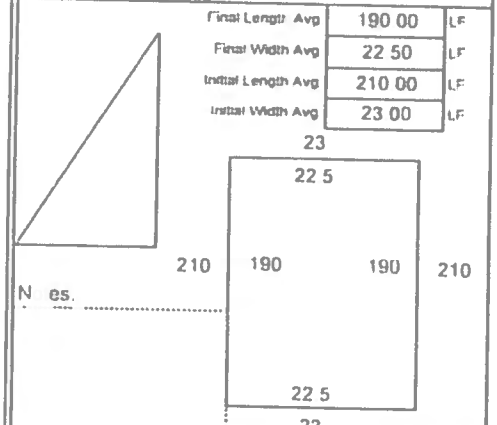


Notes:

Initial SF	4,830	Lineal Feet Trench	
Final SF	4 275		45

Panel # 28 — Roll # 8571

Final Length Avg	190 00	LF
Final Width Avg	22 50	LF
Initial Length Avg	210 00	LF
Initial Width Avg	23 00	LF

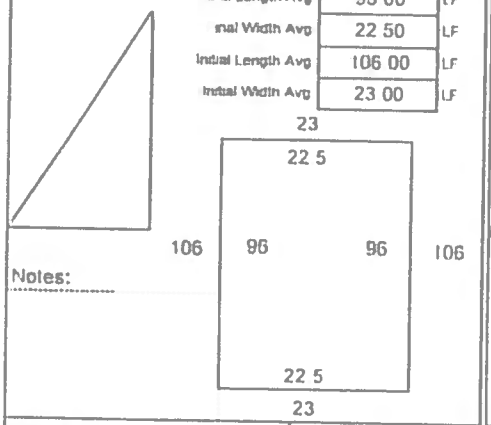


N es.

Ini al F	4 830	Lineal Feet Trench	
Fi al	4,275		45

Panel # 29 — Roll # 8571

inal Length Avg	96 00	LF
inal Width Avg	22 50	LF
Initial Length Avg	106 00	LF
Initial Width Avg	23 00	LF

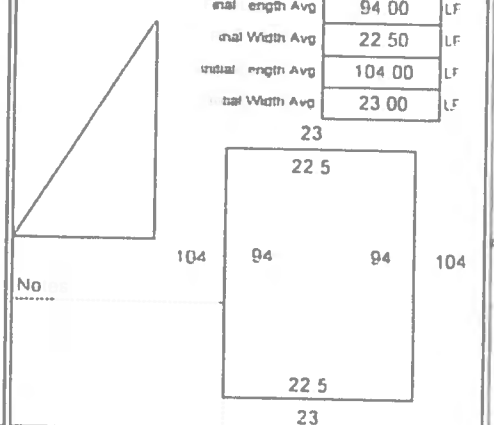


Notes:

Initial SF	2 438	Lineal Feet Trench	
Final SF	2 160		22 5

Panel # 30 — Roll # 8572

inal ength Avg	94 00	LF
inal Width Avg	22 50	LF
Initial ength Avg	104 00	LF
tial Width Avg	23 00	LF

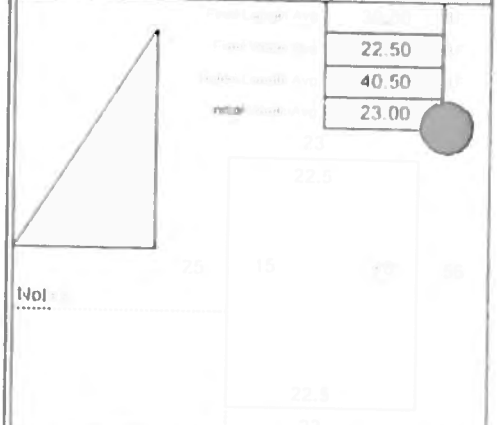


No

Initial SF	2 392	Lineal Feet Trench	
Final SF	2 115		22 5

Panel # 31 — Roll # 8467

	22.50
	40.50
	23.00

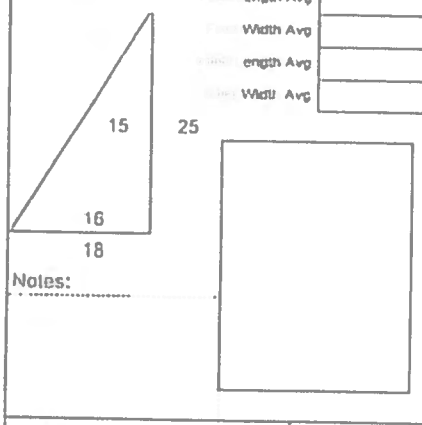


Not

Initial SF	932	Lineal Feet Trench	
Final SF	686		22.5

Panel # 32 — Rol # 8467

ength Avg		LF
Width Avg		LF
ength Avg		LF
Widt Avg		LF

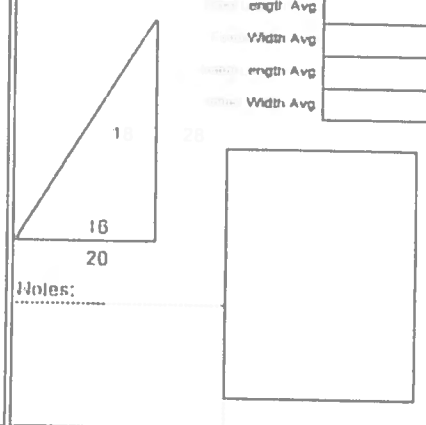


Notes:

Initial SF	225	Lineal Feet Trench	
Final SF	120		20

Panel # 3 — Roll # 8467

engt Avg		LF
Width Avg		LF
ength Avg		F
Width Avg		F



Notes:

Initial SF	280	Lineal Feet Trench	
Final SF	144		20

Material in Anchor Trench		
Total LF In Trench This Page	220.00	
Depth and Width Allowed in Trench	10	I
Total SF Trench This Page	**2,200**	**SF**
Total Panel SF This Page	**16,678**	**SF**
Total Pay Area This Page	**18,878**	**SF**
LF In Trench Previous	804	LF
LF In Trench To Date	1,024	LF
SF In Trench Previous	8,040	SF
Total SF in Trench to Date	10,240	SF
Total Panel SF Previous	59,370	SF
Total Panel SF To Date	76,048	SF
Total Pay Area To Date Including Anchor Trench	**86,**	
Initial Quantity Previous	72,048	SF
Initial Quantity This Page	19,124	SF
Initial Quantity To Date	91,171	SF

ECApplications, Inc.

Daily Panel Placement

Page 7

Project Name: NURSERY PRODUCTS **Job #** 10300 **Deployment Date**

Superintendent: Vicente Figueroa **Material Type:** 60 Mil HDPE

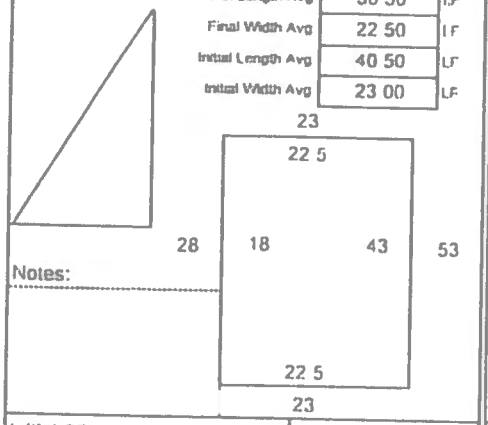
[X] Primary Secondary [ ] Cell [ ] Pond [ ] Pad [ ] Other:

Description (I.e. Phase #, Cell #, Pond # etc.)

Roll Stock Width

Panel # 34 | **Roll #** 8467

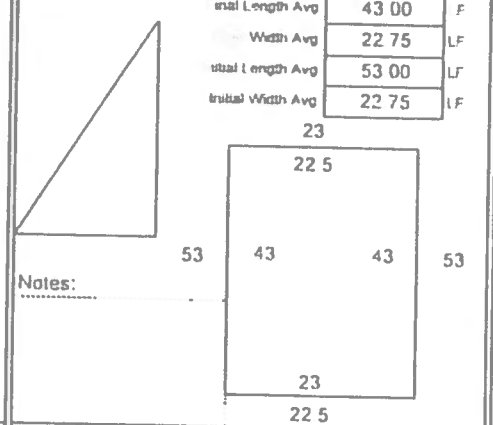
Final Length Avg	30 50	LF
Final Width Avg	22 50	LF
Initial Length Avg	40 50	LF
Initial Width Avg	23 00	LF



Initial SF	932	Lineal Feet Trench
Final SF	686	22.5

Panel # 35 | **Roll #** 8467

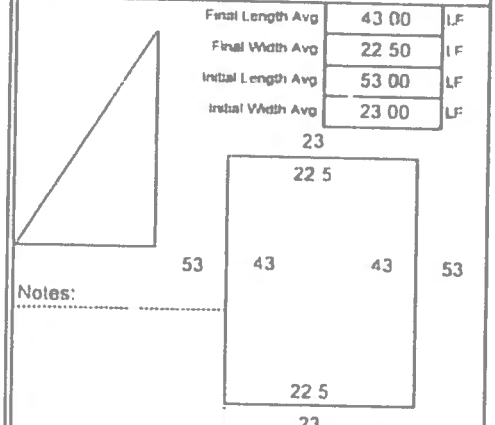
Initial Length Avg	43 00	LF
Final Width Avg	22 75	LF
Initial Length Avg	53 00	LF
Initial Width Avg	22 75	LF



Initial SF	1,206	Lineal Feet Trench
Final SF	978	22 5

Panel # 36 | **Roll #** 8467

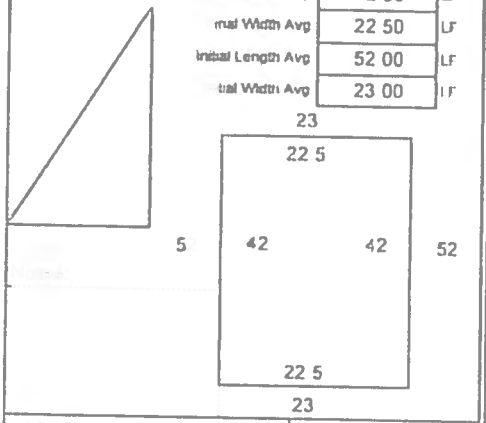
Final Length Avg	43 00	LF
Final Width Avg	22 50	LF
Initial Length Avg	53 00	LF
Initial Width Avg	23 00	LF



Initial SF	1 219	Lineal Feet Trench
Final SF	968	22 5

Panel # 37 | **Roll #** 8467

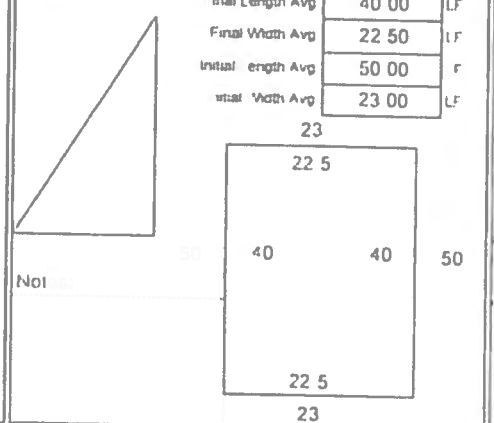
Initial Length Avg	42 00	LF
Initial Width Avg	22 50	LF
Initial Length Avg	52 00	LF
Initial Width Avg	23 00	LF



Initial SF	1 196	Lineal Feet Trench
Final SF	945	22 5

Panel # 38 | **Roll #** 8467

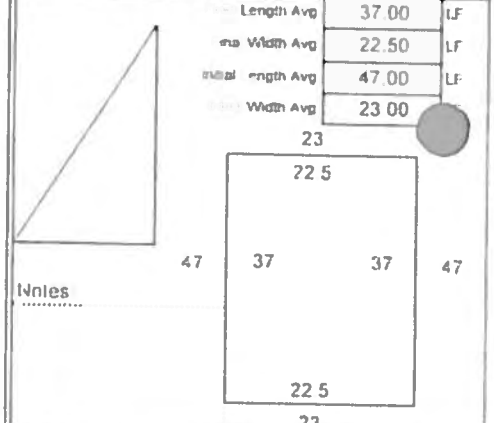
Initial Length Avg	40 00	LF
Final Width Avg	22 50	LF
Initial Length Avg	50 00	LF
Initial Width Avg	23 00	LF



Initial SF	1 150	Lineal Feet Trench
Final SF	90	22 5

Panel # 39 | **Roll #** 8467

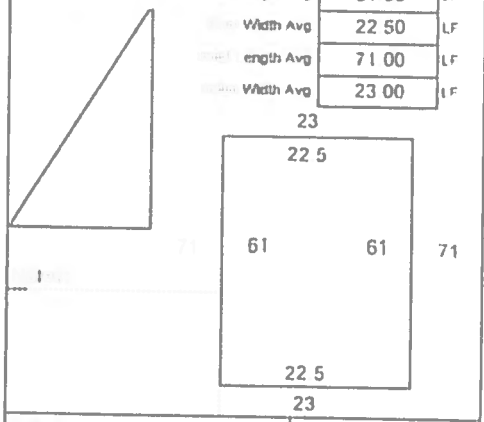
Length Avg	37 00	LF
Width Avg	22 50	LF
Length Avg	47 00	LF
Width Avg	23 00	LF



Initial SF	1,081	Lineal Feet Trench
Final SF	833	22 5

Panel # 40 | **Roll #** 8467

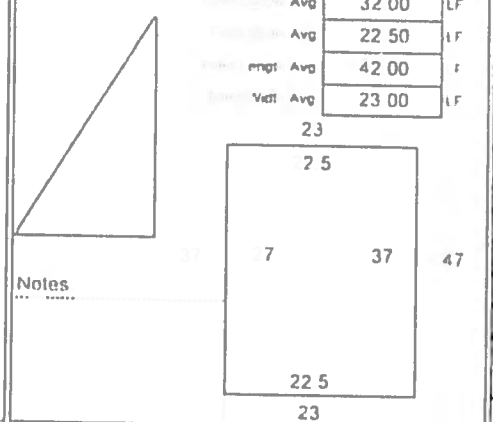
Length Avg	61 00	LF
Width Avg	22 50	LF
Length Avg	71 00	LF
Width Avg	23 00	LF



Initial SF	1 633	Lineal Feet Trench
Final SF	1 373	22 5

Panel # 41 | **Roll #** 8577

Avg	32 00	LF
Avg	22 50	LF
Length Avg	42 00	LF
Width Avg	23 00	LF



Initial SF	966	Lineal Feet Trench
Final SF	20	22 5

Material in Anchor Trench		
Total LF In Trench This Page	180 00	LF
Depth and Width Allowed in Trench	10	LF
Total SF Trench This Page	**1,800**	SF
Total Panel SF This Page	7402	SF
Total Pay Area This Page	9,202	SF
LF In Trench Previous	86	LF
LF In Trench To Date	98	LF
SF In Trench Previous		SF
Total SF in Trench to Date		SF
Total Panel SF Previous		SF
Total Panel SF To Date		SF
Total Pay Area To Date Including Anchor Trench		
Initial Quantity Previous	91,171	SF
Initial Quantity This Page	9387	SF
Initial Quantity To Date	100,558	SF

ECApplications, Inc.
Daily Panel Placement

Project Name: NURSERY PRODUCTS **Job #** 103004 **Page** 8

Superintendent: Vicente Figueroa **Deployment Date** ______

Material Type: 60 Mil HDPE

[X] Primary [ ] Secondary [ ] Cell [X] Pond [ ] Pad **Other:** ______

Description (i.e. Phase #, Cell #, Pond # etc.) ______ **Roll Stock Width** ______

Panel # 42 **Roll #** 8577

Final Length Avg	27 00	LF
Final Width Avg	22 50	LF
Initial Length Avg	37 00	LF
Initial Width Avg	23 00	LF

Sketch dimensions: 23, 22 5, 37, 27, 27, 37, 22.5, 23

Notes:

Initial SF	851	Lineal Feet Trench
Final SF	608	22 5

Panel # ______ **Roll #** ______

Final Length Avg		LF
Final Width Avg		LF
Initial Length Avg		LF
Initial Width Avg		LF

Notes:

Initial SF		Lineal Feet Trench
Final SF		

Panel # ______ **Roll #** ______

Final Length Avg		LF
Final Width Avg		LF
Initial Length Avg		LF
Initial Width Avg		LF

Notes:

Initial SF		Lineal Feet Trench
Final SF		

Panel # ______ **Roll #** ______

Final Length Avg		LF
Final Width Avg		LF
Initial Length Avg		LF
Initial Width Avg		LF

Notes:

Initial SF		Lineal Feet Trench
Final SF		

Panel # ______ **Roll #** ______

Final Length Avg		LF
Final Width Avg		LF
Initial Length Avg		LF
Initial Width Avg		LF

Notes:

Initial		Lineal Feet Trench
Final SF		

Panel # ______ **Roll #** ______

Final Length Avg		LF
Final Width Avg		LF
Initial Length Avg		LF
Initial Width Avg		

Notes:

Initial SF		Lineal Feet Trench
Final SF		

Panel # ______ **Roll #** ______

Final Length Avg		LF
Final Width Avg		LF
Initial Length Avg	215 00	LF
Initial Width Avg		LF

Sketch dimension: 430

Notes

Initial SF		Lineal Feet Trench
Final SF		

Panel # ______ **Roll #** ______

Final Length Avg		LF
Final Width Avg		LF
Initial Length Avg		LF
Initial Width Avg		LF

Notes:

Initial SF		Lineal Feet Trench
Final SF		

Material in Anchor Trench

Total LF In Trench This Page	22.50	LF
Depth and Width Allowed in Trench	10	LF
Total SF Trench This Page	**225**	**SF**
Total Panel SF This Page	71	**SF**
Total Pay Area This Page		**SF**
LF In Trench Previous		LF
LF In Trench To Date		LF
SF In Trench Previous		SF
Total SF in Trench to Date		SF
Total Panel SF Previous		SF
Total Panel SF To Date		SF
Total Pay Area To Date Including Anchor Trench		
Initial Quantity Previous	100,553	SF
Initial Quantity This Page	851	SF
Initial Quantity To Date	101,404	SF

EC Applications Inc.

Repair Report

Project Name: Nursery Products
Job # : 103004
Superintendent: Vicente Figueroa
Material Type: 60 mil HDPE
Primary x Pond x A
Job Description:
Secondary Cell
Reported by : victor rodriguez
Pad
Other:

Damage Codes					SF Patch Material	Test Type	Abbrv.	Repair Types
CR --Crease	FS --Failed Seam	MatD --Material Defect	LL --Lost Lap	CF --Custom Fit	391	Vacuum	*S=South	C Cap St p
DS --Destruct Sample	WR --Wrinkle	WS --Welder Restart	MD --Mechanical Damage	PB --Pipe Boot		Air Pressure	*N=North	P Patch
SI --Subgrade Irregularity	AV --Airvent	RW --Roller Wrinkle	DO --Damage By Others	BO --Burn Out	LF Welded	Spark	*W=West	B--Extrusion Bead
SJ --Seam Joint	AO --Add On	CS --Concrete Structure		AT Air Test	594.00	Air Lance	*E=East	

Repair Number	Damage Code	Seam Number	Panel Number	Location	Repair Type	Patch (Feet)			Bead (Inches)	Date Welded	Operator Name	Machine Number	Test Type	Test Results	Date Complete
1	SJ	1-12-13		23N From Anchor Trench	P	3	x	2		3/10/12	Roque Martinez	102	Vacuum	Pass	3/10/12
2	WR	1-13		33N From Anchor Trench	P	2	x	2		3/10/12	Roque Martinez	102	Vacuum	Pass	3/10/12
3	SJ	1-13-14		46N From Anchor Trench	P	2	x	2		3/10/12	Roque Martinez	102	Vacuum	Pass	3/10/12
4	DS#5	14-15		69N From Anchor Trench	P	8	x	2		3/10/12	Roque Martinez	102	Vacuum	Pass	3/10/12
5	SJ	1-15-16		92N From Anchor Trench	P	2	x	2		3/10/12	Roque Martinez	102	Vacuum	Pass	3/10/12
6	SJ	1-16-17		125N From Anchor Trench	P	2	x	2		3/10/12	Roque Martinez	102	Vacuum	Pass	3/10/12
7	SJ	1-1718		148N From Anchor Trench	P	3	x	2		3/10/12	Roque Martinez	102	Vacuum	Pass	3/10/12
8	DS#6	1-18		170N From Anchor Trench	P	8	x	2		3/10/12	Roque Martinez	102	Vacuum	Pass	3/10/12
9	WR	1-19		185N From Anchor Trench	P	6	x	2		3/10/12	Roque Martinez	102	Vacuum	Pass	3/10/12
10	SJ	18-19-20		23S From Anchor Trench	P	2	x	2		3/10/12	Roque Martinez	102	Vacuum	Pass	3/10/12
11	SJ	11-10-9		109N From Anchor Trench	P	2	x	2		3/10/12	Roque Martinez	102	Vacuum	Pass	3/10/12
12	DS#3	8-10		109N From Anchor Trench	P	8	x	2		3/10/12	Roque Martinez	102	Vacuum	Pass	3/10/12
13	MD		11	50N 8W From Anchor Trench	B		x		6	3/10/12	Roque Martinez	102	Vacuum	Pass	3/10/12
14	DS#4	1-11		4N From Anchor Trench	P	6	x	2		3/10/12	Roque Martinez	102	Vacuum	Pass	3/10/12
15	BO	10-11		8N From Anchor Trench	P	4	x	2		3/10/12	Roque Martinez	102	Vacuum	Pass	3/10/12
16	WS	9-11		197N From Anchor Trench	B		x		6	3/10/12	Roque Martinez	102	Vacuum	Pass	3/10/12
17	DS#2	5-6		3N From Anchor Trench	P	6	x	2		3/10/12	Roque Martinez	102	Vacuum	Pass	3/10/12
18	SJ	3-4-5		107N From Anchor Trench	P	3	x	2		3/10/12	Roque Martinez	102	Vacuum	Pass	3/10/12
19	SJ	234		107N From Anchor Trench	P	4	x	2		3/10/12	Roque Martinez	102	Vacuum	Pass	3/10/12
20	DO		4	104N 3W From Anchor Trench	P	1	x	1		3/10/12	Roque Martinez	102	Vacuum	Pass	3/10/12
21	[illegible]	4-5		15N From Anchor Trench	P	2	x	[illegible]		3/10/12	Roque Martinez	102	Vacuum	[illegible]s	3/10/12

EC Applications Inc.

Repair Report

Project Name Nursery Products

Material Type 60 mil HDPE

Job Description:

Reported by : victor rodriguez

Other

Job # : 103004

Primary	x	**Pond**	x
Secondary		**Cell**	
		Pad	

A

Superintendent: Vicente Figueroa

Damage Codes

CR –Crease; DS –Destruct Sample; SI –Subgrade Irregularity; SJ –Seam Joint; FS –Failed Seam; WR –Wrinkle; AV –Airvent; AO –Add On; MatD –Material Defect; WS –Welder Restart; RW –Roller Wrinkle; CS –Concrete Structure; LL –Lost Lap; MD –Mechanical Damage; DO –Damage By Others; CF –Custom Fit; PB –Pipe Boot; BO –Burn Out; AT –Air Test

SF Patch Material 391

LF Welded 594 00

Test Type Vacuum, Air Pressure, Spark, Air Lance

Abbrv *S=South, *N=North, *W=West, *E=East

Repair Types C Cap Strip, P–Patch, B -Extrus on Bead

Repair Number	Damage Code	Seam Number	Panel Number	Location		Repair Type	Patch (Feet)			Bead (Inches)	Date Welded	Operator Name	Machine Number	Test Type	Test Results	Date Complete
22	DS#1	2-4		3N.	From Anchor Trench	P	5	x	2		3/10/12	Roque Martinez	102	Vacuum	Pass	3/10/12
23	MD		2	16n.2w	From Anchor Trench	P	1	x	1		3/10/12	Roque Martinez	102	Vacuum	Pass	3/10/12
24	WR	2-21		30n.	From Anchor Trench	P	3	x	2		3/10/12	Roque Martinez	102	Vacuum	Pass	3/10/12
25	WR	2-21		180n	From Anchor Trench	P	5	x	2		3/10/12	Roque Martinez	102	Vacuum	Pass	3/10/12
26	BO	21-22		200N.	From Anchor Trench	P	2	x	2		3/10/12	Roque Martinez	102	Vacuum	Pass	3/10/12
27	WS	23-25		200N	From Anchor Trench	B		x		6	3/10/12	Roque Martinez	102	Vacuum	Pass	3/10/12
28	BO	23-25		150N	From Anchor Trench	P	4	x	2		3/10/12	Roque Martinez	102	Vacuum	Pass	3/10/12
29	SJ	23-24-25		104N.3W	From Anchor Trench	P	4	x	2		3/10/12	Roque Martinez	102	Vacuum	Pass	3/10/12
30	SJ	22-23-24		104N 3W	From Anchor Trench	P	2	x	2		3/10/12	Roque Martinez	102	Vacuum	Pass	3/10/12
31	MD		23	100N.3E	From Anchor Trench	P	2	x	2		3/10/12	Roque Martinez	102	Vacuum	Pass	3/10/12
32	BO	22-24		45N	From Anchor Trench	P	2	x	2		3/10/12	Roque Martinez	102	Vacuum	Pass	3/10/12
33	WS	22-24		10N	From Anchor Trench	P	1	x	1		3/10/12	Roque Martinez	102	Vacuum	Pass	3/10/12
34	WS	27-28		8N	From Anchor Trench	B		x		6	3/12/12	Roque Martinez	102	Vacuum	Pass	3/12/12
35	DS#10	28-30		2N	From Anchor Trench	P	8	x	2		3/12/12	Roque Martinez	102	Vacuum	Pass	3/12/12
36	DS#7	21-2		206N	From Anchor Trench	P	6	x	2		3/12/12	Roque Martinez	102	Vacuum	Pass	3/12/12
37	DS#9	27-28		2S	From Anchor Trench	P	6	X	2		3/12/12	Roque Martinez	102	Vacuum	Pass	3/12/12
38	BO	28-29		10S.	From Anchor Trench	P	6	x	2		3/12/12	Roque Martinez	102	Vacuum	Pass	3/12/12
39	SJ	28-29-30		104N.	From Anchor Trench	P	3	x	2		3/12/12	Roque Martinez	102	Vacuum	Pass	3/12/12
40	SJ	26-29-30		104N	From Anchor Trench	P	3	x	2		3/12/12	Roque Martinez	102	Vacuum	Pass	3/12/12
41	SJ	1-32-33-34			From Anchor Trench	p	4	x	2		3/12/12	Roque Martinez	102	Vacuum	Pass	3/12/12
42	W	26-31		50	From Anchor Trench	P	2	x			3/12/12	Roque Martinez	102	Vacuum	Pass	3/12/12

EC Applications Inc.

Repair Report

Project Name: Nursery Products
Material Type: 60 mil HDPE
Job Description:
Reported by: victor rodriguez
Other:

Job # : 103004

Primary	x	Pond	x
Secondary		Cell	
		Pad	

A

Superintendent: Vicente Figueroa

Damage Codes

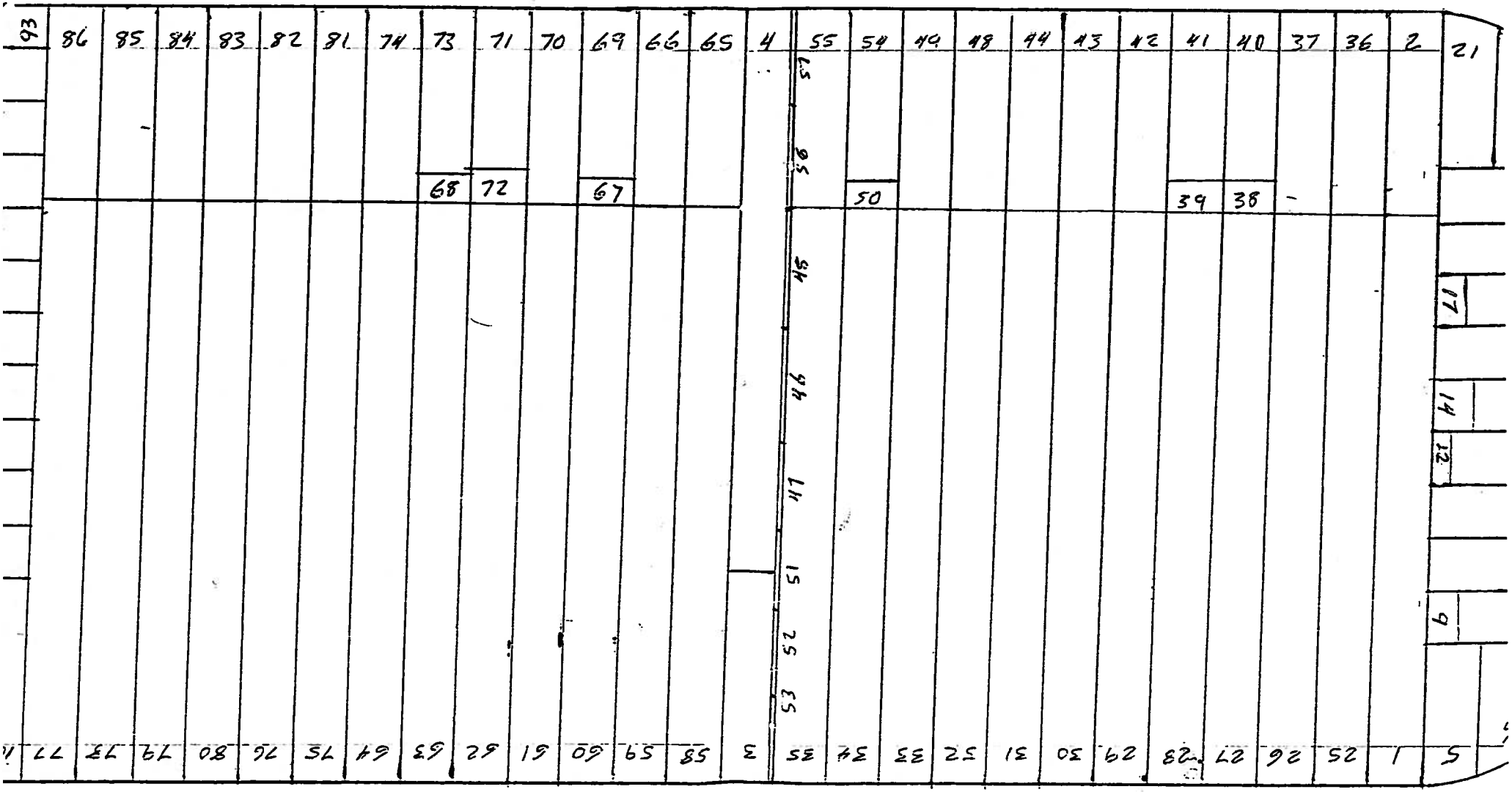
R rease — FS –Failed Seam — MatD –Material Defect — LL –Lost Lap — CF –Custom Fit
DS Destruct Sample — WR –Wrinkle — WS –Welder Restart — MD –Mechanical Damage — PB –Pipe Boot
S_ –Subgrade Irregularity — AV –Airvent — RW –Roller Wrinkle — DO –Damage By Others — BO –Burn Out
SJ Seam Joint — AO –Add On — CS –Concrete Structure — AT –Air Test

SF Patch Material: 391
LF Welded: 594.00

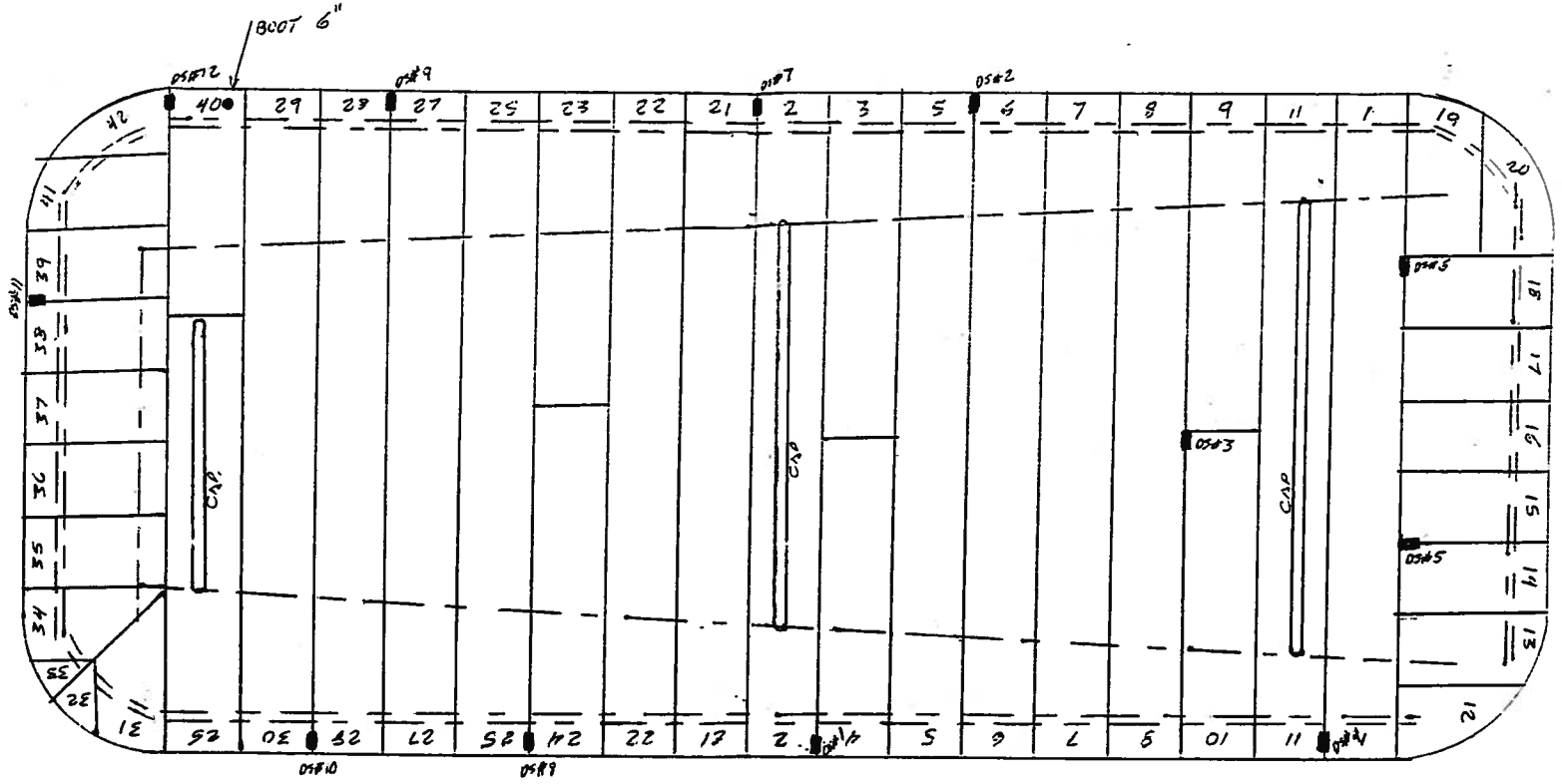
Test Type	Abbrv.	Repair Types
Vacuum	*S=South	C–Cap Strip
Air Pressure	*N=North	P- Patch
Spark	*W=West	B Extrusion Bead
Air Lance	*E=East	

Repair Number	Damage Code	Seam Number	Panel Number	Location		Repair Type	Patch (Feet)			Bead (Inches)	Date Welded	Operator Name	Machine Number	Test Type	Test Results	Date Complete
43	SJ	26-34-35		56	From Anchor Trench	P	4	x	4		3/12/12	Roque Martinez	102	Vacuum	Pass	3/12/12
44	SJ	26-35-36		79	From Anchor Trench	P	2	x	2		3/12/12	Roque Martinez	102	Vacuum	Pass	3/12/12
45	SJ	26-36-37		102	From Anchor Trench	P	2	x	2		3/12/12	Roque Martinez	102	Vacuum	Pass	3/12/12
46	SJ	26-37-38		125	From Anchor Trench	P	2	x	2		3/13/12	Roque Martinez	102	Vacuum	Pass	3/13/12
47	SJ	26-38-40		140	From Anchor Trench	P	5	x	2		3/13/12	Roque Martinez	102	Vacuum	Pass	3/13/12
48	BO	26-40			From Anchor Trench	P	2	x	2		3/13/12	Roque Martinez	102	Vacuum	Pass	3/13/12
49	SJ	26-29-40		135	From Anchor Trench	P	4	x	2		3/13/12	Roque Martinez	102	Vacuum	Pass	3/13/12
50	SJ	38-39-40		148	From Anchor Trench	P	2	x	2		3/13/12	Roque Martinez	102	Vacuum	Pass	3/13/12
51	SJ	39-40-41		171	From Anchor Trench	P	3	x	2		3/13/12	Roque Martinez	102	Vacuum	Pass	3/13/12
52	SJ	40-41-42		194	From Anchor Trench	P	2	x	2		3/13/12	Roque Martinez	102	Vacuum	Pass	3/13/12
53	DS#11	38-39			From Anchor Trench	P	6	x	2		3/13/12	Roque Martinez	102	Vacuum	Pass	3/13/12
54	BO	38-39			From Anchor Trench	P	4	x	2		3/13/12	Roque Martinez	102	Vacuum	Pass	3/13/12
55	DS#12	40-42			From Anchor Trench	P	6	x	2		3/13/12	Roque Martinez	102	Vacuum	Pass	3/13/12
56	DS#8	24-25		2'	From Anchor Trench	P	6	x	2		3/13/12	Roque Martinez	102	Vacuum	Pass	3/13/12
57								x								
58								x								
59								x								
60								x								
61								x								
62								x								
63								x								

Job # 103004 GCL Pond "A"



NURSERY PRODUCTS
JOB # 103004
60 MIL HDPE Pond A



Subgrade Acceptance Form

Project Name: HAWES

Job Number: HAW12-001

Project Manager: Shannon Goodrich

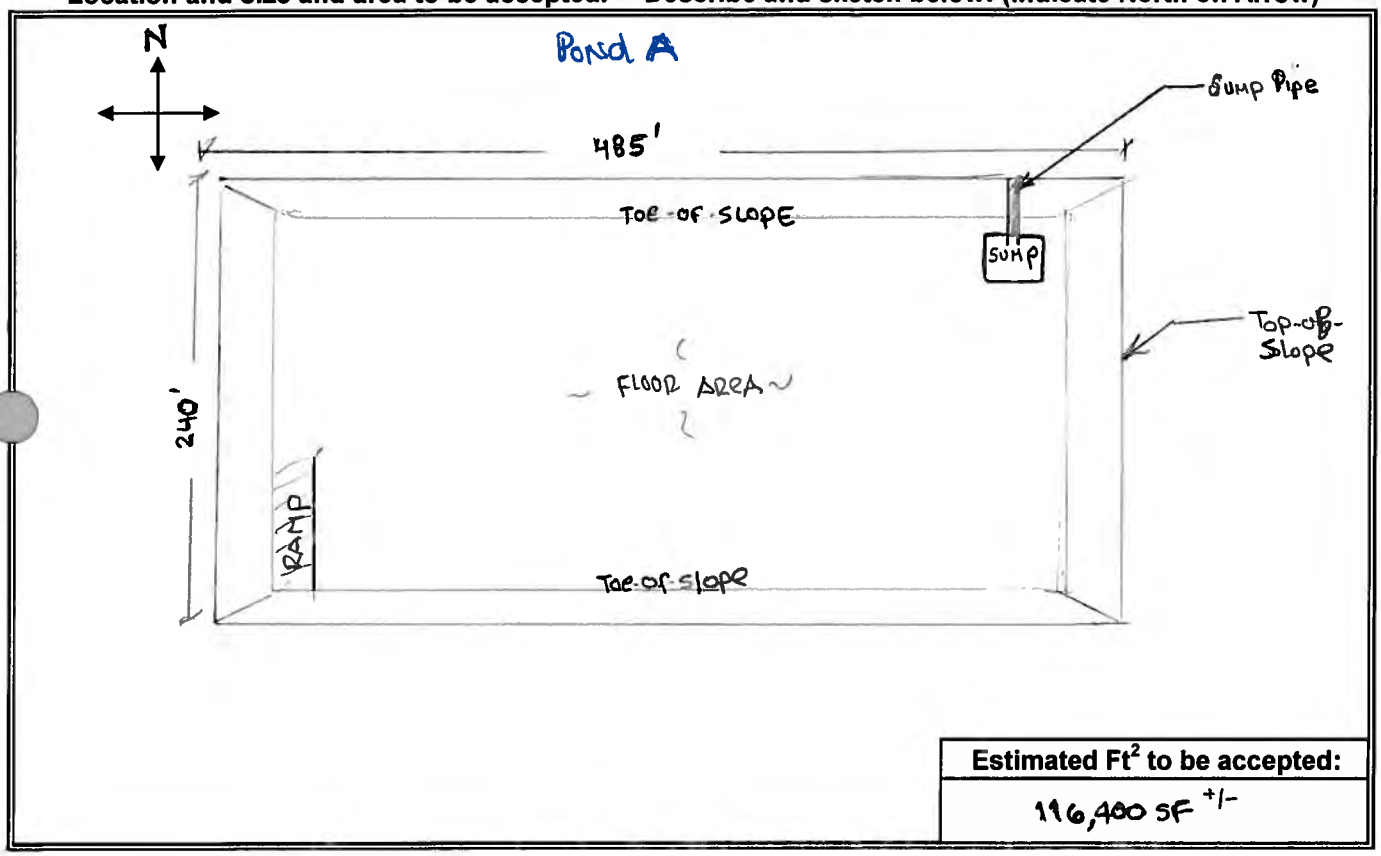
Date: 4/17/12

Field Supervisor Brett Jordan

This certification is based on observations of the surface of the subgrade only. No subterranean inspections or tests have been performed by Zero Energy Institute, and ZEI makes not representations or warranties regarding conditions which may exist below the surface of the subgrade. ZEI accepts no responsibility for conformance of the subgrade to this project's specifications.

The soil subgrade accepted on this date refers to its present condition. Any changes in the subgrade condition that result from the effects of inclement weather and/or other forces beyond the control of ZEI and remedial work to correct the resulting deficiencies, will be the direct responsibility of the General Contractor.

Location and size and area to be accepted. Describe and sketch below: (Indicate North on Arrow)



Estimated Ft² to be accepted:
116,400 SF +/-

ECA is an authorized representative of the geosynthetic manufacturer's materials being installed on this project. I the undersigned, an authorized respresentative of ECA, accept the above described subgrade area as suitable to be lined.

Name (Print)	Signature	Title	Date
Vicente Figueroa	Vicente V. Figueroa	Superintendent	4/17/2012

I the undersigned, an authorized representative of Zero Energy Institute the Inspecting Engineers, approve of the subgrade as being constructed to the specifications.

Name (Print)	Signature	Title	Date
Shannon Goodrich		CM	4/17/12

Pond B

ECApplications, Inc.
Preweld Test Report

Project Name: Nursery Products Hawes Composting **Job Number** 103004 **Superintendent:**

Material Type: GCL and 60 Mil HDPE Liner **Primary** X

Job Description: **Secondary** X

Reported By Juan Delgado **Other**

Liner Types **S = Smooth** **T = Textured** **SG = Super Grip**

Pond B **Cell** **Pad**

Peel Test Extrusion Minimum 78 PPI

Peel Test Fusion Minimum 91 PPI

Shear Test Minimum 120 PPI

Weld Date / Liner Type	Time am / pm	Operator Name/ ID	Mach No.	Mach Speed	Mach Temp	Preheat Temp	Ambient Temp		Coupon 1 A / B	Coupon 2 A / B	Coupon 3 A / B	Coupon 4 A / B	Coupon 5 A / B	Test Results
4/17/12	2:04	Librado Dominguez	74	4.5	750			Peel	127 / 121	120 / 122	126 / 119	120 / 115	119 / 118	P
S TO S	PM							Shear	141	138	139	132	142	
4/18/12	9:00	Emilio Gutierrez	59	4.5	700			Peel	126 / 133	126 / 130	119 / 122	125 / 123	127 / 113	P
S TO S	am							Shear	159	144	160	151	162	
4/18/12	9:00	Joel Dominguez	53	4	750			Peel	133 / 135	122 / 134	131 / 145	129 / 130	143 / 132	P
S TO S	AM							Shear	136	146	152	145	149	
4/18/12	9:065	Librado Dominguez	74	4.5	750			Peel	120 / 117	121 / 140	110 / 96	108 / 99	111 / 116	P
S TO S	AM							Shear	151	145	158	142	154	
4/18/12	12:00	Mario Gonzalez	102		480	480		Peel	102 /	102 /	112 /	116 /	111 /	P
S TO S	PM							Shear	124	126	125	126	130	
4/19/12	7:52	Librado Dominguez	74	4.5	750			Peel	125 / 140	117 / 128	123 / 124	126 / 128	129 / 133	P
S TO S	AM							Shear	127	128	131	129	131	
4/19/12	8:00	Joel Dominguez	53	4	750			Peel	138 / 110	109 / 122	121 / 101	130 / 134	135 / 131	P
S TO S	AM							Shear	148	149	164	152	163	
4/19/12	8:00	Emilio Gutierrez	59	4.5	700			Peel	126 / 122	127 / 126	136 / 124	137 / 118	121 / 131	P
S TO S	AM							Shear	155	147	154	142	148	
4/23/12	6:54	Librado Dominguez	74	4	750			Peel	117 / 120	116 / 121	120 / 119	111 / 115	119 / 113	P
TO	AM							Shear	153	134	142	146	146	
4/23/12	7:36	Emilio Gutierrez	59	4.5	700			Peel	113 / 131	120 / 115	129 / 147	115 / 120	127 / 129	P
TO	AM							Shear	156	139	155	137	155	
4/23/12	9:00	Joel Dominguez	53	4	750			Peel	146 / 118	123 / 112	129 / 134	103 / 136	135 / 123	P
S TO	AM							Shear	154	146	152	149	151	
4/23/12	9:10	Raymundo Bailong	102		470	375		Peel	120 /	121 /	118 /	120 /	130 /	P
S TO	AM							Shear	196	182	178	190	183	
4/23/12	10:46	Librado Dominguez	104		450	380		Peel	123 /	129 /	115 /	121 /	125 /	P
S TO S	AM							Shear	190	185	168	196	170	
4/23/12	12:40	Raymundo Bailong	102		470	390		Peel	117 /	104 /	111 /	104 /	120 /	P
S TO S	PM							Shear	134	124	121	123	126	
4/30/12	11:20	Emilio Gutierrez	59	4	700			Peel	116 / 111	108 / 107	115 / 118	103 / 103	114 / 113	P
S TO S	AM							Shear	120	120	121	120	120	
4/30/12	1:00	Alejandro Flores	74	5	750			Peel	122 / 112	118 / 109	118 / 110	117 / 125	120 / 123	P
S TO S	PM							Shear	133	123	129	130	133	
4/30/12	1:00	Joel Dominguez	102		450	380		Peel	110 /	112 /	112 /	118 /	0 /	P
S TO S	PM							Shear	125	127	130	127	124	

ECApplications, Inc.
Preweld Test Report

Project Name: Nursery Products Hawes Composting **Job Number** 103004 **Superintendent:**

Material Type: GCL and 60 Mil HDPE Liner **Primary** X **Pond** B **Peel Test Extrusion Minimum** 78 **PPI**

Job Description: **Secondary** X **Cell** **Peel Test Fusion Minimum** 91 **PPI**

Reported By Juan Delgado **Other** **Pad** **Shear Test Minimum** 120 **PPI**

Liner Types S = Smooth T = Textured SG = Super Grip

Weld Date / Liner Type	Time am | pm	Operator Name/ ID	Mach No.	Mach Speed	Mach Temp	Preheat Temp	Ambient Temp		Coupon 1 A	Coupon 1 B	Coupon 2 A	Coupon 2 B	Coupon 3 A	Coupon 3 B	Coupon 4 A	Coupon 4 B	Coupon 5 A	Coupon 5 B	Test Results
4/30/12	12:55	Librado Dominguez	53	4	750			Peel	128	133	133	130	131	133	135	134	128	129	P
S TO S	PM							Shear	139		144		146		144		148		
5/1/12	8:00	Librado Dominguez	53	3.5	750			Peel	131	129	136	140	136	132	133	140	136	135	P
S TO S	AM							Shear	159		163		166		160		163		
5/1/12	8:30	Raymundo Bailong	102		435	350		Peel	120		126		127		130		133		P
S TO S	AM							Shear	139		141		144		146		144		
5/1/12	9:00	Librado Dominguez	103		450	350		Peel	106		106		108		101		106		P
S TO S	AM							Shear	153		135		148		150		139		
5/1/12	12:50	Librado Dominguez	102		435	350		Peel	123		126		127		137		125		P
S TO S	PM							Shear	139		142		143		144		139		
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ECApplications, Inc.
Destructive Sample Information

Project Name: Nursery Products Hawes Composting

Job Number: 103004

Superintendent: Vicente Figueroa

Material Type: GCL and 60 Mil HDPE Liner

Primary: X

Secondary: X

Other:

Pond: B

Cell:

Pad:

Job Description:

Reported By: Juan Delgado

Peel Test Extrusion Minimum: 91 PPI

Peel Test Fusion Minimum: 78 PPI

Shear Test Minimum: 120 PPI

D.S. No.	Seam No.		Weld Date	Operator Name/ ID	Mach No.	Mach Speed	Mach Temp	Preheat Temp		Coupon 1 A	Coupon 1 B	Coupon 2 A	Coupon 2 B	Coupon 3 A	Coupon 3 B	Coupon 4 A	Coupon 4 B	Coupon 5 A	Coupon 5 B	Test Results
1	22	23	4/18/12	Emilio Gutierrez	59	4.5	700		Peel	109	130	108	124	113	134	119	129	117	126	P
									Shear	151		150		158		160		157		
2	26	27	4/23/12	Joel Dominguez	73	4	750		Peel	137	116	110	107	124	116	122	133	111	124	P
									Shear	148		142		149		150		148		
3	32	3	4/8/23	Emilio Gutierrez	59	4	700		Peel	128	118	117	100	125	133	119	106	123	124	P
									Shear	158		155		158		160		157		
4	36	37	4/30/12	Emilio Gutierrez	59	4.5	700		Peel	118	139	126	122	131	132	123	120	116	118	P
									Shear	150		142		147		146		143		
5	41	16	4/30/12	Alejandro Flores	74	4.5	750		Peel	125	115	136	112	121	114	118	107	128	107	P
									Shear	141		139		144		143		146		
6	52	51	4/30/12	Librado Dominguez	53	4.5	750		Peel	130	122	118	117	129	124	127	119	111	119	P
									Shear	150		1463		149		150		147		
									Peel											
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ECApplications, Inc.

Daily Panel Placement

Project Name: Nursery Products **Job #** 103004 **Deployment Date**

Superintendent: Vicente Figueroa **Material Type:** 60 Mil HDPE Liner

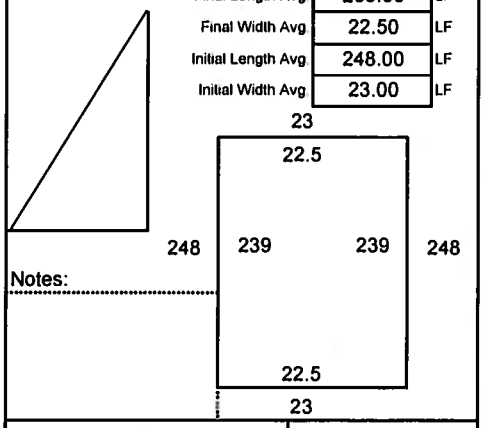
[X] Primary Secondary [ ] Cell [ ] Pond [ ] Pad [ ] Other:

Description (i.e. Phase #, Cell #, Pond # etc.)

Roll Stock Width

Panel # 1 — Roll # 6314

Final Length Avg	239.00	LF
Final Width Avg	22.50	LF
Initial Length Avg	248.00	LF
Initial Width Avg	23.00	LF

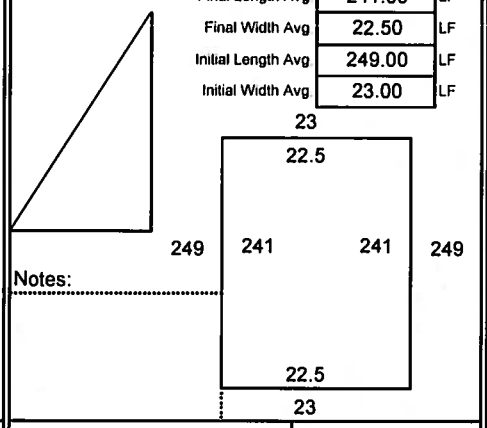


Notes:

Initial SF	5,704	Lineal Feet Trench	
Final SF	5,378		45

Panel # 2 — Roll # 6314

Final Length Avg	241.00	LF
Final Width Avg	22.50	LF
Initial Length Avg	249.00	LF
Initial Width Avg	23.00	LF

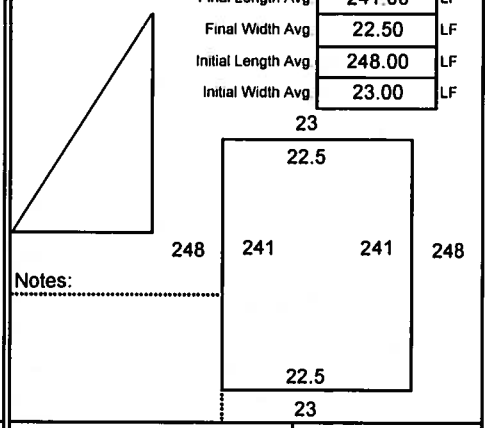


Notes:

Initial SF	5,727	Lineal Feet Trench	
Final SF	5,423		45

Panel # 3 — Roll # 8466

Final Length Avg	241.00	LF
Final Width Avg	22.50	LF
Initial Length Avg	248.00	LF
Initial Width Avg	23.00	LF

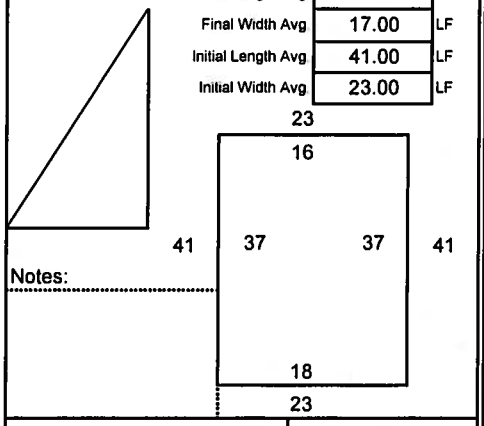


Notes:

Initial SF	5,704	Lineal Feet Trench	
Final SF	5,423		45

Panel # 4 — Roll # 8466

Final Length Avg	37.00	LF
Final Width Avg	17.00	LF
Initial Length Avg	41.00	LF
Initial Width Avg	23.00	LF

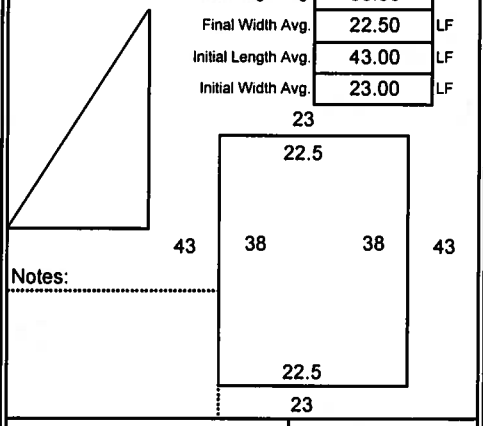


Notes:

Initial SF	943	Lineal Feet Trench	
Final SF	629		53

Panel # 5 — Roll # 8466

Final Length Avg.	38.00	LF
Final Width Avg.	22.50	LF
Initial Length Avg.	43.00	LF
Initial Width Avg.	23.00	LF

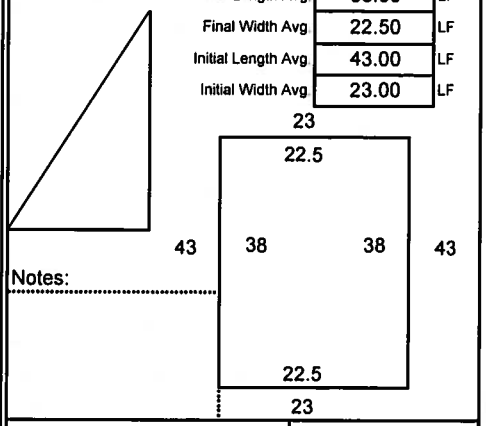


Notes:

Initial SF	989	Lineal Feet Trench	
Final SF	855		22.5

Panel # 6 — Roll # 8466

Final Length Avg.	38.00	LF
Final Width Avg.	22.50	LF
Initial Length Avg.	43.00	LF
Initial Width Avg.	23.00	LF

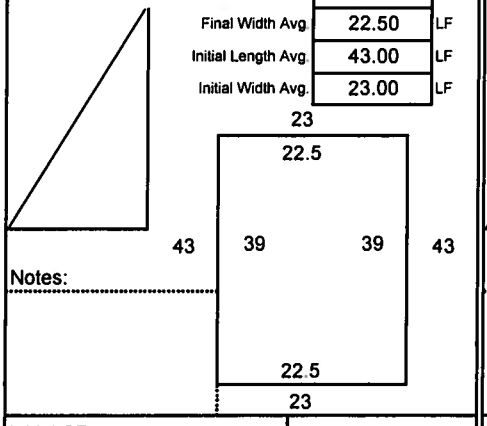


Notes:

Initial SF	989	Lineal Feet Trench	
Final SF	855		22.5

Panel # 7 — Roll # 8466

Final Length Avg.	39.00	LF
Final Width Avg.	22.50	LF
Initial Length Avg.	43.00	LF
Initial Width Avg.	23.00	LF

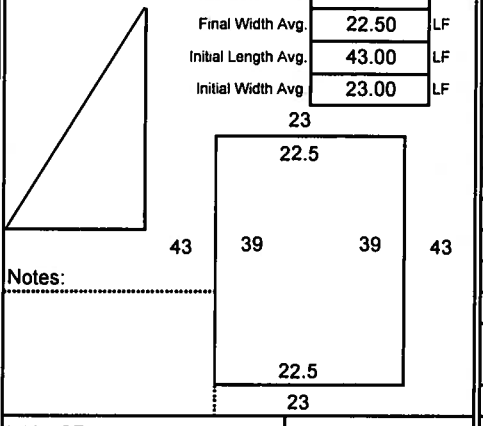


Notes:

Initial SF	989	Lineal Feet Trench	
Final SF	878		22.5

Panel # 8 — Roll # 8466

Final Length Avg.	39.00	LF
Final Width Avg.	22.50	LF
Initial Length Avg.	43.00	LF
Initial Width Avg.	23.00	LF



Notes:

Initial SF	989	Lineal Feet Trench	
Final SF	878		22.5

Material in Anchor Trench

Total LF In Trench This Page	278.00	LF
Depth and Width Allowed in Trench	3	LF
Total SF Trench This Page	**834**	**SF**
Total Panel SF This Page	**20,317**	**SF**
Total Pay Area This Page	**21,151**	**SF**
LF In Trench Previous	-	LF
LF In Trench To Date	278	LF
SF In Trench Previous	-	SF
Total SF in Trench to Date	834	SF
Total Panel SF Previous	-	SF
Total Panel SF To Date	20,317	SF
Total Pay Area To Date Including Anchor Trench	**21,151**	
Initial Quantity Previous	-	SF
Initial Quantity This Page	22,034	SF
Initial Quantity To Date	22,034	SF

ECApplications, Inc.

Daily Panel Placement

Project Name: Nursery Products **Job #** 103004 **Deployment Date** 09/08/09

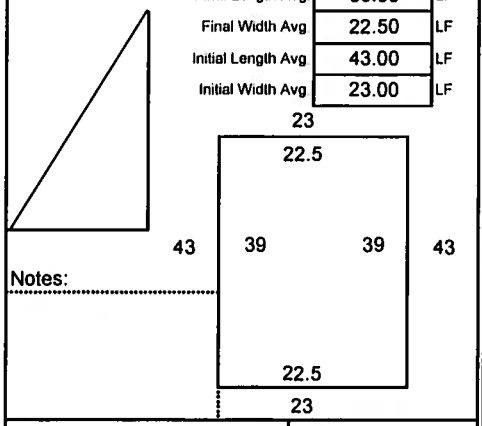
Superintendent: Vicente Figueroa **Material Type:** 60 Mil HDPE Liner

[X] Primary Secondary [ ] Cell [ ] Pond [X] Pad [ ] Other:

Description (i.e. Phase #, Cell #, Pond # etc.) **Roll Stock Width**

Panel # 9 — Roll # 8573

Final Length Avg	39.00	LF
Final Width Avg	22.50	LF
Initial Length Avg	43.00	LF
Initial Width Avg	23.00	LF

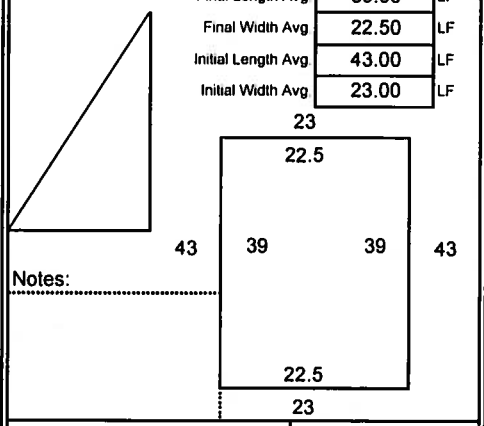


Notes:

Initial SF	989	Lineal Feet Trench	
Final SF	878		22.5

Panel # 10 — Roll # 8573

Final Length Avg	39.00	LF
Final Width Avg	22.50	LF
Initial Length Avg	43.00	LF
Initial Width Avg	23.00	LF

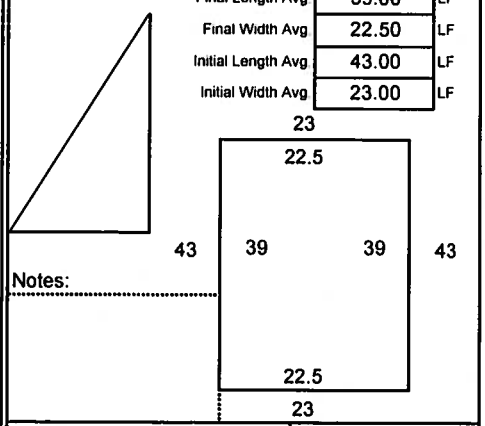


Notes:

Initial SF	989	Lineal Feet Trench	
Final SF	878		22.5

Panel # 11 — Roll # 8573

Final Length Avg	39.00	LF
Final Width Avg	22.50	LF
Initial Length Avg	43.00	LF
Initial Width Avg	23.00	LF

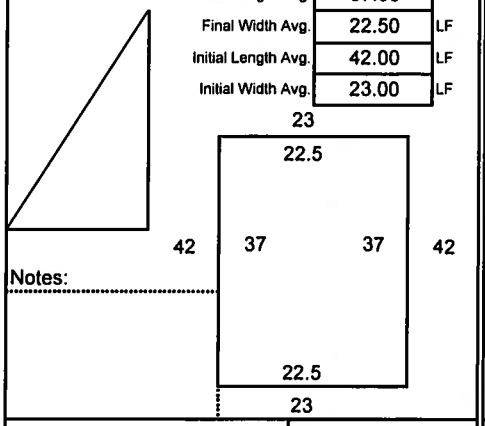


Notes:

Initial SF	989	Lineal Feet Trench	
Final SF	878		22.5

Panel # 12 — Roll # 8573

Final Length Avg.	37.00	LF
Final Width Avg.	22.50	LF
Initial Length Avg.	42.00	LF
Initial Width Avg.	23.00	LF

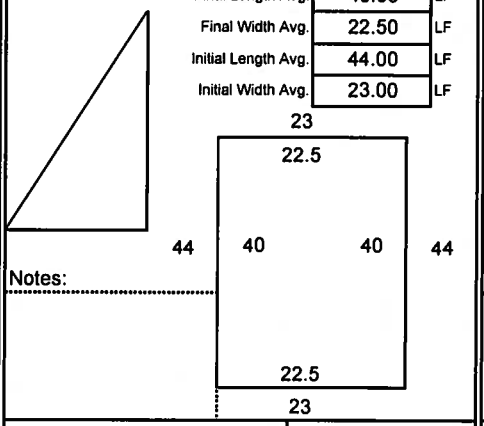


Notes:

Initial SF	966	Lineal Feet Trench	
Final SF	833		22.5

Panel # 13 — Roll # 8573

Final Length Avg.	40.00	LF
Final Width Avg.	22.50	LF
Initial Length Avg.	44.00	LF
Initial Width Avg.	23.00	LF

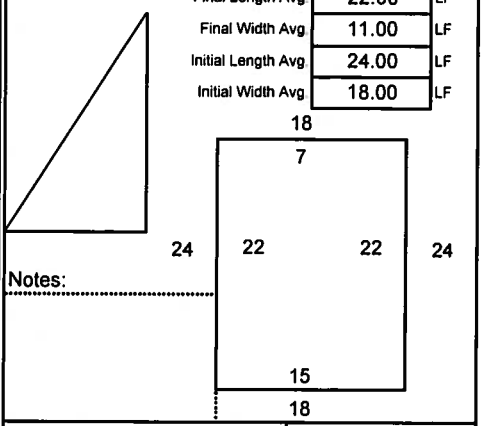


Notes:

Initial SF	1,012	Lineal Feet Trench	
Final SF	900		22.5

Panel # 14 — Roll # 8573

Final Length Avg.	22.00	LF
Final Width Avg.	11.00	LF
Initial Length Avg.	24.00	LF
Initial Width Avg.	18.00	LF

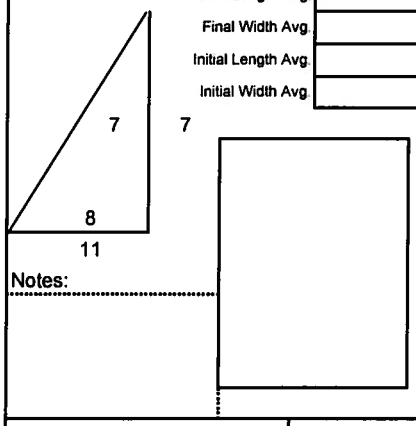


Notes:

Initial SF	432	Lineal Feet Trench	
Final SF	242		18

Panel # 15 — Roll # 8573

Final Length Avg.		LF
Final Width Avg.		LF
Initial Length Avg.		LF
Initial Width Avg.		LF

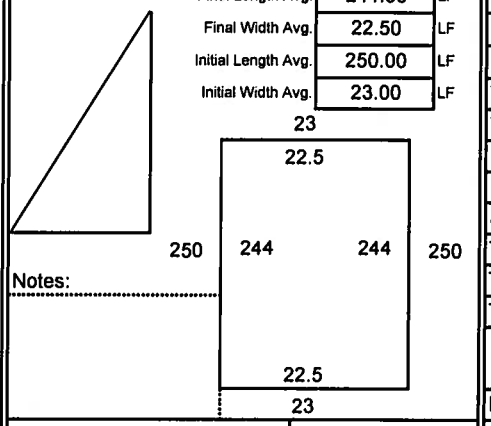


Notes:

Initial SF	39	Lineal Feet Trench	
Final SF	28		3

Panel # 16 — Roll # 8573

Final Length Avg.	244.00	LF
Final Width Avg.	22.50	LF
Initial Length Avg.	250.00	LF
Initial Width Avg.	23.00	LF



Notes:

Initial SF	5,750	Lineal Feet Trench	
Final SF	5,490		45

Material in Anchor Trench		
Total LF In Trench This Page	178.50	LF
Depth and Width Allowed in Trench	3	LF
Total SF Trench This Page	**536**	**SF**
Total Panel SF This Page	**10,125**	**SF**
Total Pay Area This Page	**10,661**	**SF**
LF In Trench Previous	278	LF
LF In Trench To Date	457	LF
SF In Trench Previous	834	SF
Total SF in Trench to Date	1,370	SF
Total Panel SF Previous	20,317	SF
Total Panel SF To Date	30,442	SF
Total Pay Area To Date Including Anchor Trench	**31,811**	
Initial Quantity Previous	22,034	SF
Initial Quantity This Page	11,166	SF
Initial Quantity To Date	33,200	SF

ECApplications, Inc.

Daily Panel Placement

Project Name: Nursery Products **Job #** 103004 **Deployment Date**

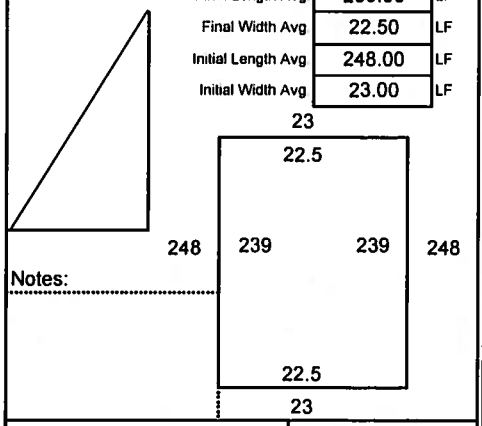
Superintendent: Vicente Figueroa **Material Type:** 60 Mil HDPE Liner

[X] Primary Secondary [ ] Cell [ ] Pond [X] Pad [ ] Other:

Description (i.e. Phase #, Cell #, Pond # etc.) **Roll Stock Width**

Panel # 17 — Roll # 8577

Final Length Avg	239.00	LF
Final Width Avg	22.50	LF
Initial Length Avg	248.00	LF
Initial Width Avg	23.00	LF

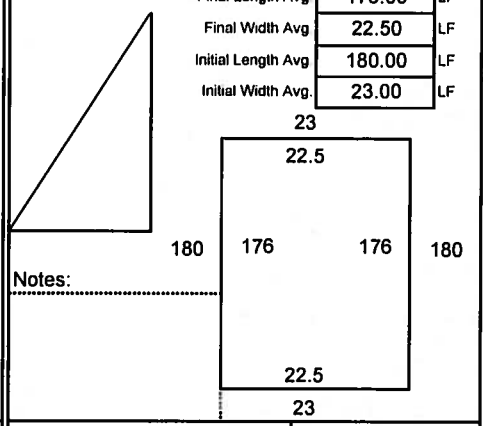


Notes:

Initial SF	5,704	Lineal Feet Trench	
Final SF	5,378		45

Panel # 18 — Roll # 8577

Final Length Avg	176.00	LF
Final Width Avg	22.50	LF
Initial Length Avg	180.00	LF
Initial Width Avg	23.00	LF

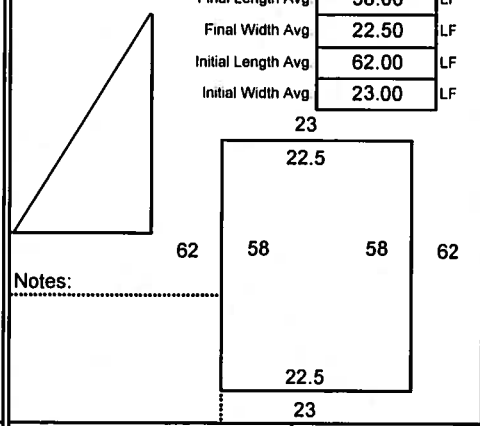


Notes:

Initial SF	4,140	Lineal Feet Trench	
Final SF	3,960		22.5

Panel # 19 — Roll # 8579

Final Length Avg	58.00	LF
Final Width Avg	22.50	LF
Initial Length Avg	62.00	LF
Initial Width Avg	23.00	LF

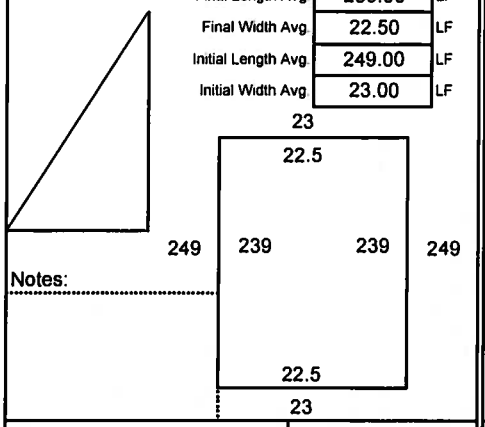


Notes:

Initial SF	1,426	Lineal Feet Trench	
Final SF	1,305		22.5

Panel # 20 — Roll # 8579

Final Length Avg	239.00	LF
Final Width Avg	22.50	LF
Initial Length Avg	249.00	LF
Initial Width Avg	23.00	LF

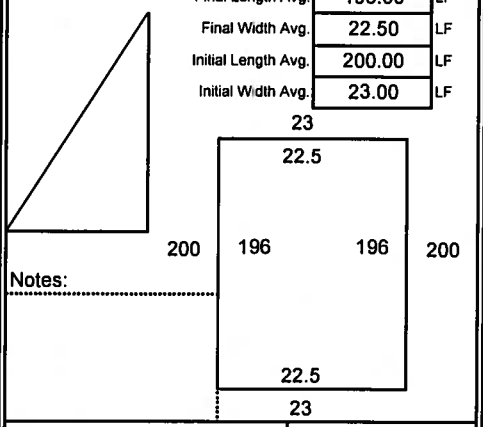


Notes:

Initial SF	5,727	Lineal Feet Trench	
Final SF	5,378		45

Panel # 21 — Roll # 8579

Final Length Avg.	196.00	LF
Final Width Avg.	22.50	LF
Initial Length Avg.	200.00	LF
Initial Width Avg.	23.00	LF

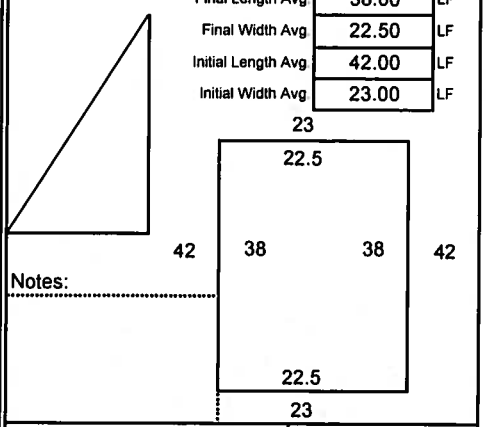


Notes:

Initial SF	4,600	Lineal Feet Trench	
Final SF	4,410		22.5

Panel # 22 — Roll # 8574

Final Length Avg	38.00	LF
Final Width Avg	22.50	LF
Initial Length Avg	42.00	LF
Initial Width Avg	23.00	LF

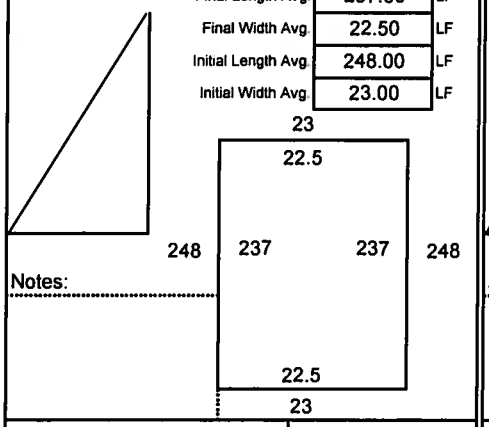


Notes:

Initial SF	966	Lineal Feet Trench	
Final SF	855		22.5

Panel # 23 — Roll # 8574

Final Length Avg.	237.00	LF
Final Width Avg.	22.50	LF
Initial Length Avg.	248.00	LF
Initial Width Avg.	23.00	LF

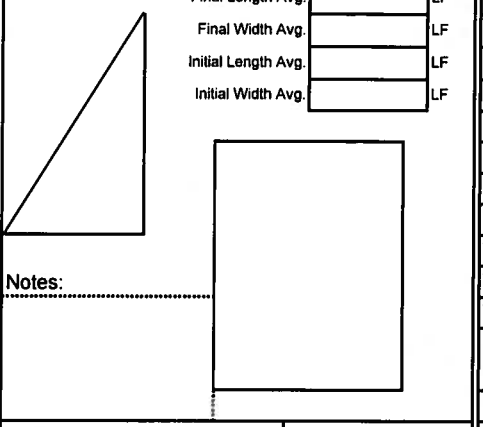


Notes:

Initial SF	5,704	Lineal Feet Trench	
Final SF	5,333		45

Panel # — Roll

Final Length Avg.		LF
Final Width Avg.		LF
Initial Length Avg.		LF
Initial Width Avg.		LF



Notes:

Initial SF	-	Lineal Feet Trench	
Final SF	-		

Material In Anchor Trench		
Total LF In Trench This Page	225.00	LF
Depth and Width Allowed in Trench	3	LF
Total SF Trench This Page	**675**	**SF**
Total Panel SF This Page	**26,618**	**SF**
Total Pay Area This Page	**27,293**	**SF**
LF In Trench Previous	457	LF
LF In Trench To Date	682	LF
SF In Trench Previous	1,370	SF
Total SF in Trench to Date	2,045	SF
Total Panel SF Previous	30,442	SF
Total Panel SF To Date	57,059	SF
Total Pay Area To Date Including Anchor Trench	**59,104**	
Initial Quantity Previous	33,200	SF
Initial Quantity This Page	28,267	SF
Initial Quantity To Date	61,467	SF

ECApplications, Inc.

Daily Panel Placement

Project Name: Nursery Products **Job #** 103004 **Deployment Date**

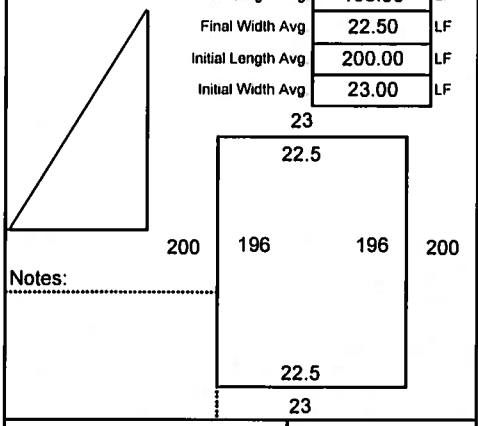
Superintendent: Vicente Figueroa **Material Type:** 60 Mil HDPE Liner

[X] **Primary** **Secondary** [ ] **Cell** [ ] **Pond** [X] **Pad** [ ] **Other:**

Description (i.e. Phase #, Cell #, Pond # etc.) **Roll Stock Width**

Panel # 24 | **Roll # 8574**

Final Length Avg	196.00	LF
Final Width Avg	22.50	LF
Initial Length Avg	200.00	LF
Initial Width Avg	23.00	LF

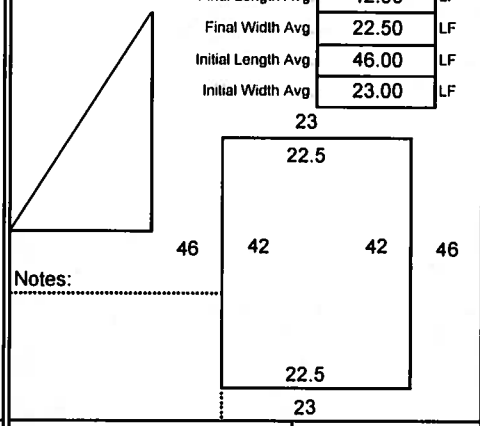


Notes:

Initial SF	4,600	Lineal Feet Trench	
Final SF	4,410		22.5

Panel # 25 | **Roll # 6313**

Final Length Avg	42.00	LF
Final Width Avg	22.50	LF
Initial Length Avg	46.00	LF
Initial Width Avg	23.00	LF

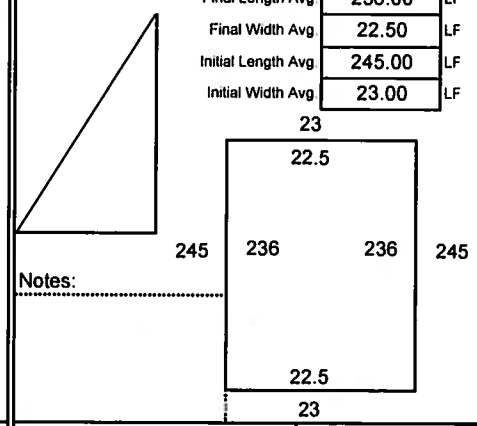


Notes:

Initial SF	1,058	Lineal Feet Trench	
Final SF	945		22.5

Panel # 26 | **Roll # 6313**

Final Length Avg	236.00	LF
Final Width Avg	22.50	LF
Initial Length Avg	245.00	LF
Initial Width Avg	23.00	LF

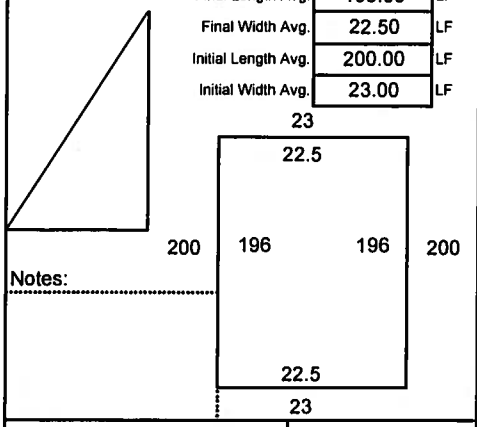


Notes:

Initial SF	5,635	Lineal Feet Trench	
Final SF	5,310		45

Panel # 27 | **Roll # 6313**

Final Length Avg.	196.00	LF
Final Width Avg.	22.50	LF
Initial Length Avg.	200.00	LF
Initial Width Avg.	23.00	LF

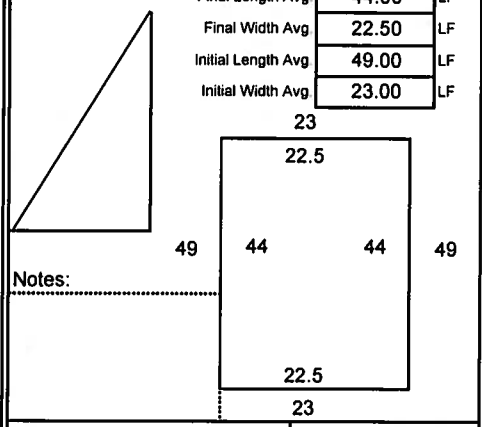


Notes:

Initial SF	4,600	Lineal Feet Trench	
Final SF	4,410		22.5

Panel # 28 | **Roll # 8575**

Final Length Avg	44.00	LF
Final Width Avg	22.50	LF
Initial Length Avg	49.00	LF
Initial Width Avg	23.00	LF

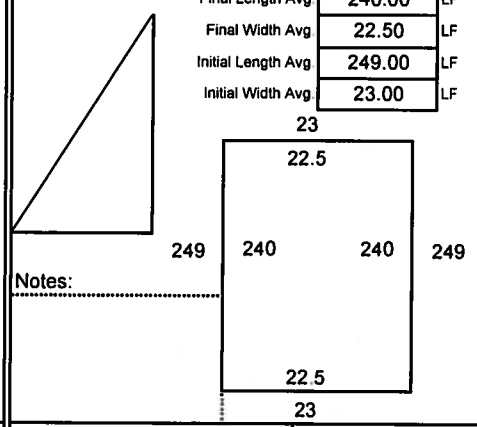


Notes:

Initial SF	1,127	Lineal Feet Trench	
Final SF	990		22.5

Panel # 29 | **Roll # 8575**

Final Length Avg	240.00	LF
Final Width Avg	22.50	LF
Initial Length Avg	249.00	LF
Initial Width Avg	23.00	LF

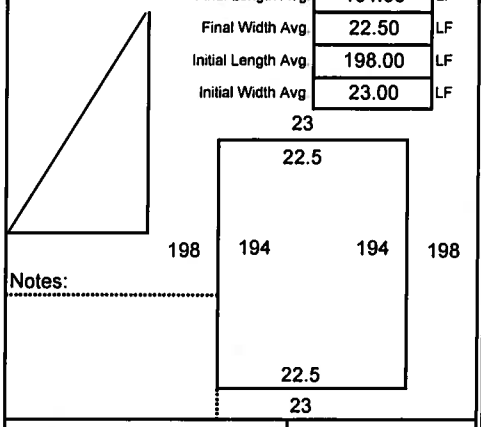


Notes:

Initial SF	5,727	Lineal Feet Trench	
Final SF	5,400		45

Panel # 30 | **Roll # 8575**

Final Length Avg	194.00	LF
Final Width Avg	22.50	LF
Initial Length Avg	198.00	LF
Initial Width Avg	23.00	LF

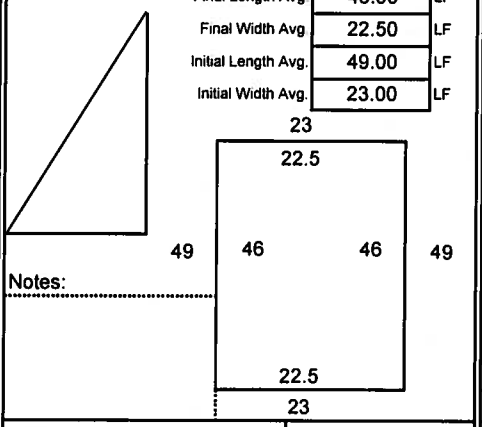


Notes:

Initial SF	4,554	Lineal Feet Trench	
Final SF	4,365		22.5

Panel # 31 | **Roll # 6317**

Final Length Avg	46.00	LF
Final Width Avg	22.50	LF
Initial Length Avg	49.00	LF
Initial Width Avg	23.00	LF



Notes:

Initial SF	1,127	Lineal Feet Trench	
Final SF	1,035		22.5

Material in Anchor Trench		
Total LF In Trench This Page	225.00	LF
Depth and Width Allowed in Trench	3	LF
Total SF Trench This Page	**675**	**SF**
Total Panel SF This Page	**26,865**	**SF**
Total Pay Area This Page	**27,540**	**SF**
LF In Trench Previous	682	LF
LF In Trench To Date	907	LF
SF In Trench Previous	2,045	SF
Total SF in Trench to Date	2,720	SF
Total Panel SF Previous	57,059	SF
Total Panel SF To Date	83,924	SF
Total Pay Area To Date Including Anchor Trench	**86,644**	
Initial Quantity Previous	61,467	SF
Initial Quantity This Page	28,428	SF
Initial Quantity To Date	89,895	SF

ECApplications, Inc.

Daily Panel Placement

Project Name: Nursery Products **Job #** 103004 **Deployment Date**

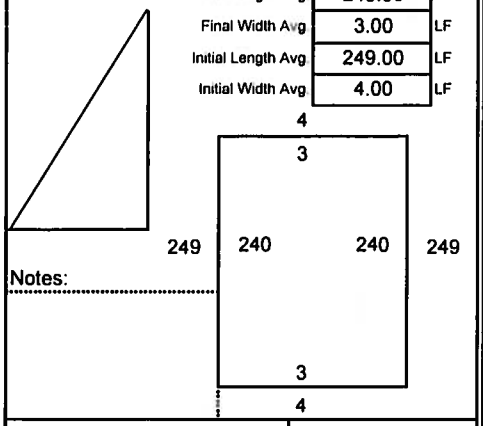
Superintendent: Vicente Figueroa **Material Type:** 60 Mil HDPE Liner

[X] Primary Secondary [ ] Cell [ ] Pond [X] Pad [ ] Other:

Description (i.e. Phase #, Cell #, Pond # etc.) **Roll Stock Width**

Panel # 32 — Roll # 8466

Final Length Avg	240.00	LF
Final Width Avg	3.00	LF
Initial Length Avg	249.00	LF
Initial Width Avg	4.00	LF

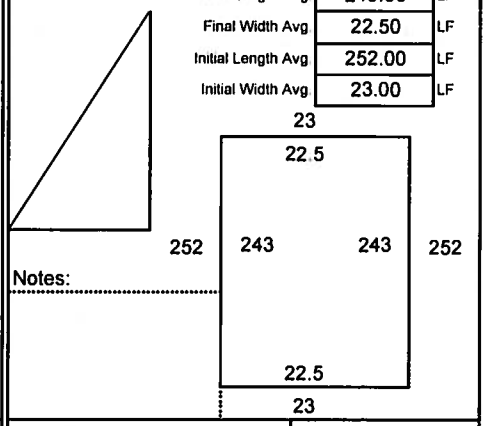


Notes:

Initial SF	996	Lineal Feet Trench	
Final SF	720		6

Panel # 33 — Roll # 6317

Final Length Avg	243.00	LF
Final Width Avg	22.50	LF
Initial Length Avg	252.00	LF
Initial Width Avg	23.00	LF

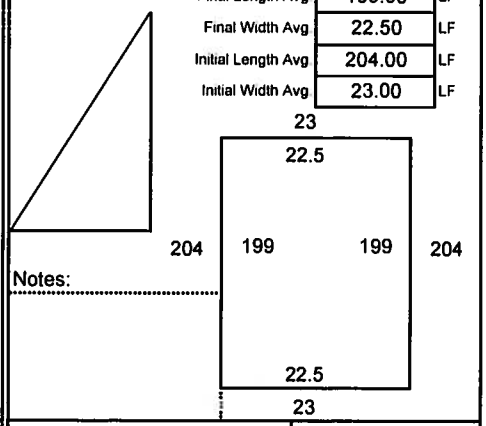


Notes:

Initial SF	5,796	Lineal Feet Trench	
Final SF	5,468		45

Panel # 34 — Roll # 6317

Final Length Avg	199.00	LF
Final Width Avg	22.50	LF
Initial Length Avg	204.00	LF
Initial Width Avg	23.00	LF

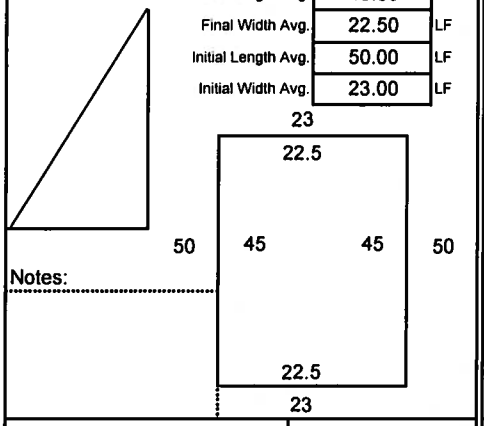


Notes:

Initial SF	4,692	Lineal Feet Trench	
Final SF	4,478		45

Panel # 35 — Roll # 6315

Final Length Avg.	45.00	LF
Final Width Avg.	22.50	LF
Initial Length Avg.	50.00	LF
Initial Width Avg.	23.00	LF

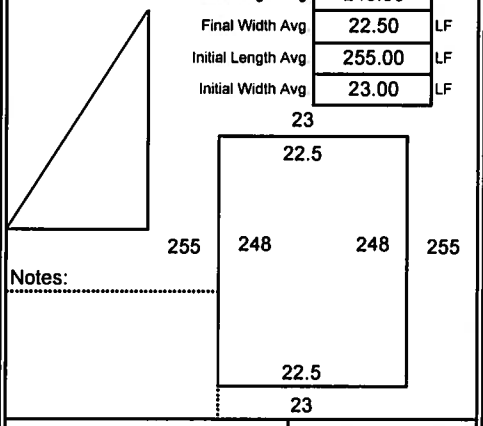


Notes:

Initial SF	1,150	Lineal Feet Trench	
Final SF	1,013		22.5

Panel # 36 — Roll # 6315

Final Length Avg	248.00	LF
Final Width Avg	22.50	LF
Initial Length Avg	255.00	LF
Initial Width Avg	23.00	LF

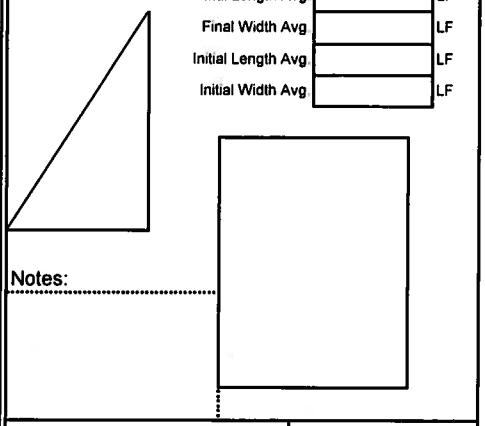


Notes:

Initial SF	5,865	Lineal Feet Trench	
Final SF	5,580		45

Panel # — Roll

Final Length Avg		LF
Final Width Avg		LF
Initial Length Avg		LF
Initial Width Avg		LF

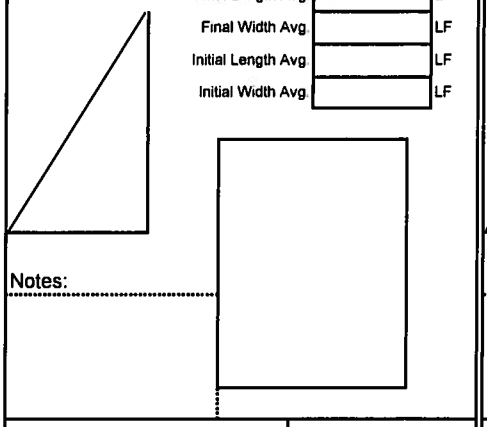


Notes:

Initial SF	-	Lineal Feet Trench	
Final SF	-		

Panel # — Roll

Final Length Avg.		LF
Final Width Avg.		LF
Initial Length Avg.		LF
Initial Width Avg.		LF

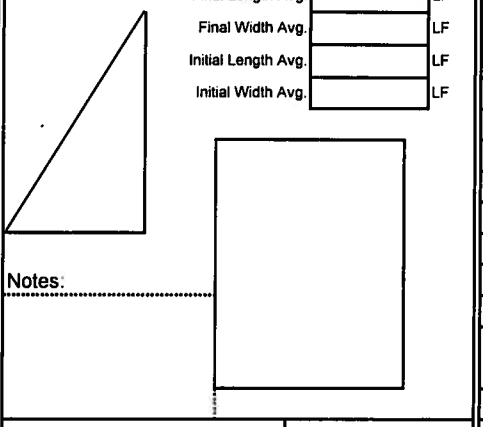


Notes:

Initial SF	-	Lineal Feet Trench	
Final SF	-		

Panel # — Roll

Final Length Avg.		LF
Final Width Avg.		LF
Initial Length Avg.		LF
Initial Width Avg.		LF



Notes:

Initial SF	-	Lineal Feet Trench	
Final SF	-		

Material in Anchor Trench

Total LF In Trench This Page	163.50	LF
Depth and Width Allowed in Trench	3	LF
Total SF Trench This Page	**491**	**SF**
Total Panel SF This Page	**17,258**	**SF**
Total Pay Area This Page	**17,748**	**SF**
LF In Trench Previous	907	LF
LF In Trench To Date	1,070	LF
SF In Trench Previous	2,720	SF
Total SF in Trench to Date	3,210	SF
Total Panel SF Previous	83,924	SF
Total Panel SF To Date	101,182	SF
Total Pay Area To Date Including Anchor Trench	**104,392**	
Initial Quantity Previous	89,895	SF
Initial Quantity This Page	18,499	SF
Initial Quantity To Date	108,394	SF

ECApplications, Inc.

Daily Panel Placement

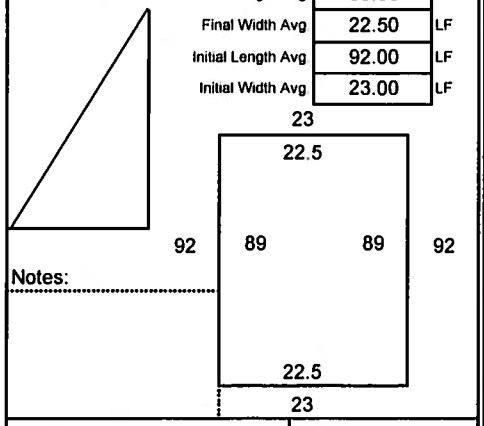
Project Name: Nursery Products **Job #** 103004 **Deployment Date**

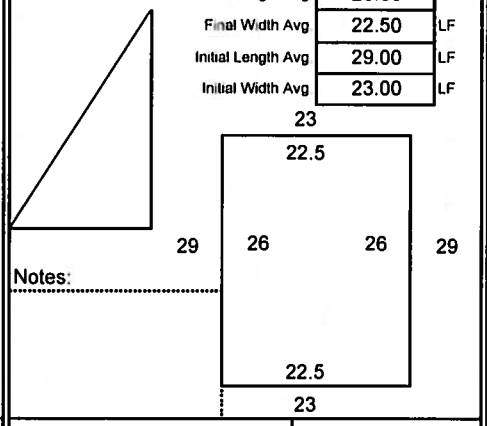
Superintendent: Vicente Figueroa **Material Type:** 60 Mil HDPE Liner

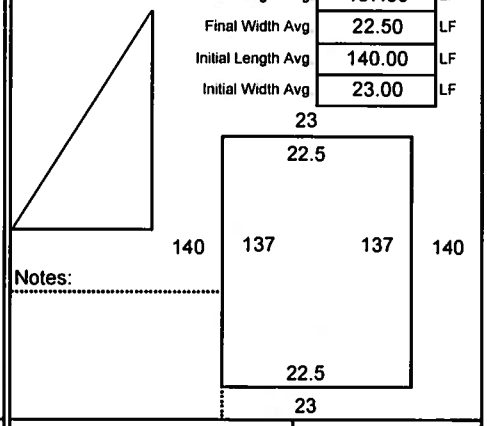
[X] Primary Secondary [ ] Cell [ ] Pond [X] Pad [ ] Other:

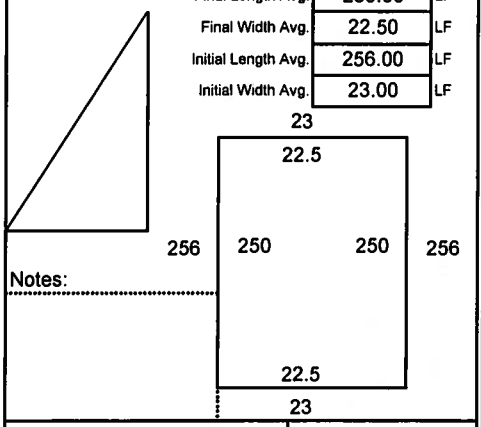
Description (i.e. Phase #, Cell #, Pond # etc.) **Roll Stock Width**

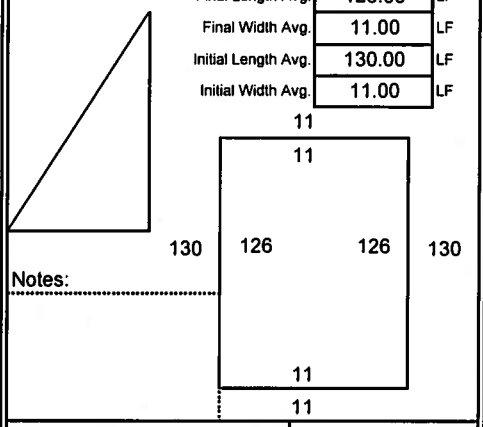
Panel #	Roll #	Final Length Avg	Final Width Avg	Initial Length Avg	Initial Width Avg	Notes	Initial SF	Lineal Feet Trench	Final SF	Lineal Feet Trench
37	6315	89.00 LF	22.50 LF	92.00 LF	23.00 LF		2,116	22.5	2,003	
38	8576	26.00 LF	22.50 LF	29.00 LF	23.00 LF		667		585	
39	6315	137.00 LF	22.50 LF	140.00 LF	23.00 LF		3,220	22.5	3,083	
40	8576	250.00 LF	22.50 LF	256.00 LF	23.00 LF		5,888	45	5,625	
41	8576	126.00 LF	11.00 LF	130.00 LF	11.00 LF		1,430	22.5	1,386	
42	8576	113.00 LF	11.00 LF	117.00 LF	13.00 LF		1,521	13	1,243	
43	8576	45.00 LF	22.50 LF	48.00 LF	23.00 LF		1,104	22.5	1,013	
44	8576	46.00 LF	22.50 LF	52.00 LF	23.00 LF		1,196	22.5	1,035	

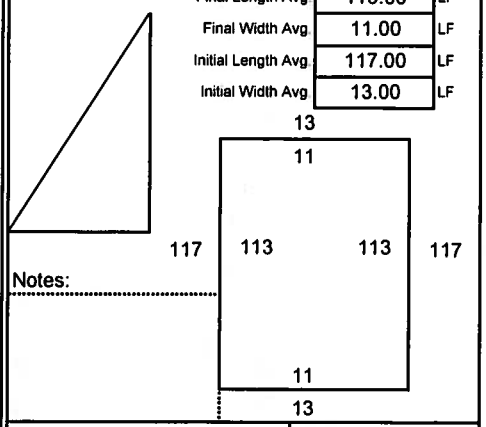


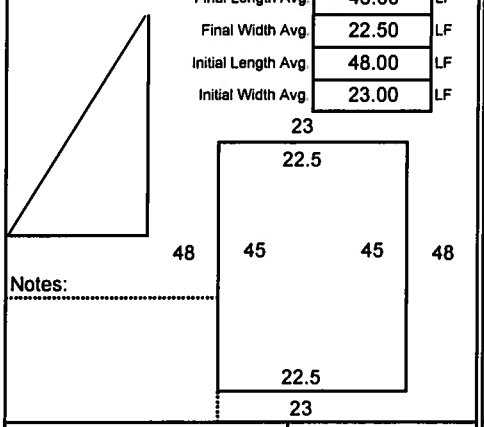


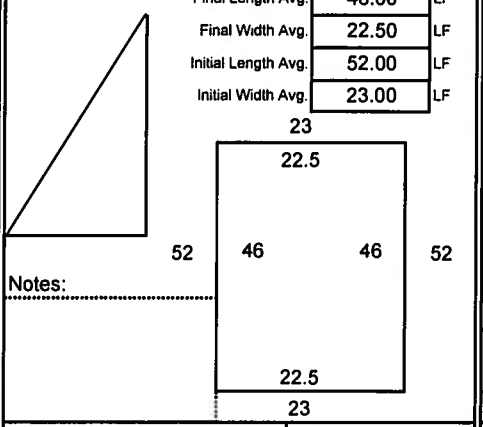












Material In Anchor Trench		
Total LF In Trench This Page	170.50	LF
Depth and Width Allowed in Trench	3	LF
Total SF Trench This Page	**512**	**SF**
Total Panel SF This Page	**15,972**	**SF**
Total Pay Area This Page	**16,483**	**SF**
LF In Trench Previous	1,070	LF
LF In Trench To Date	1,241	LF
SF In Trench Previous	3,210	SF
Total SF in Trench to Date	3,722	SF
Total Panel SF Previous	101,182	SF
Total Panel SF To Date	117,153	SF
Total Pay Area To Date Including Anchor Trench	**120,875**	
Initial Quantity Previous	108,394	SF
Initial Quantity This Page	17,142	SF
Initial Quantity To Date	125,536	SF

ECApplications, Inc.

Daily Panel Placement

Project Name: Nursery Products **Job #** 103004 **Deployment Date**

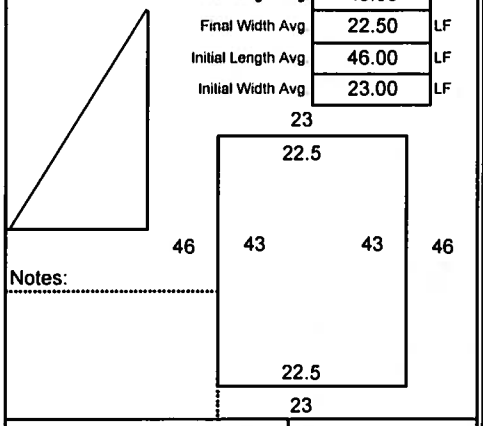
Superintendent: Vicente Figueroa **Material Type:** 60 Mil HDPE Liner

[X] Primary Secondary [ ] Cell [ ] Pond [X] Pad [ ] Other:

Description (i.e. Phase #, Cell #, Pond # etc.) **Roll Stock Width**

Panel # 45 | **Roll # 6318**

Final Length Avg	43.00	LF
Final Width Avg	22.50	LF
Initial Length Avg	46.00	LF
Initial Width Avg	23.00	LF

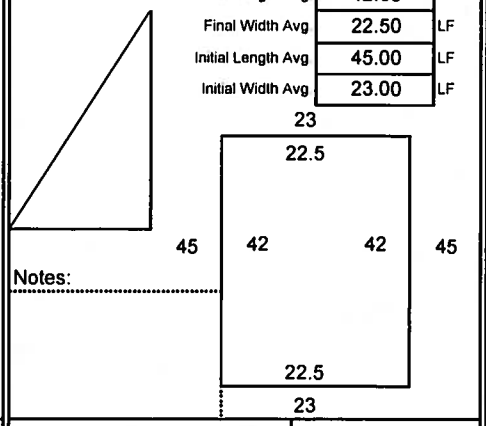


Notes:

Initial SF	1,058	Lineal Feet Trench	
Final SF	968		22.5

Panel # 46 | **Roll # 6318**

Final Length Avg	42.00	LF
Final Width Avg	22.50	LF
Initial Length Avg	45.00	LF
Initial Width Avg	23.00	LF

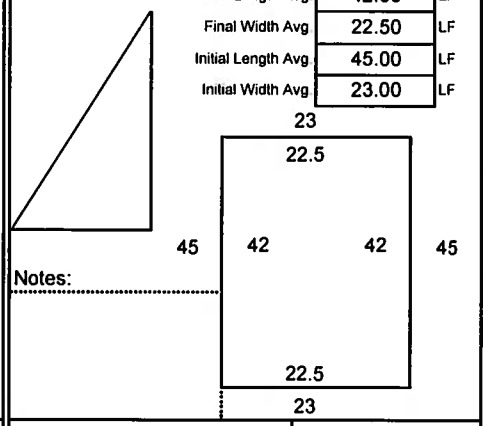


Notes:

Initial SF	1,035	Lineal Feet Trench	
Final SF	945		22.5

Panel # 47 | **Roll # 6318**

Final Length Avg	42.00	LF
Final Width Avg	22.50	LF
Initial Length Avg	45.00	LF
Initial Width Avg	23.00	LF

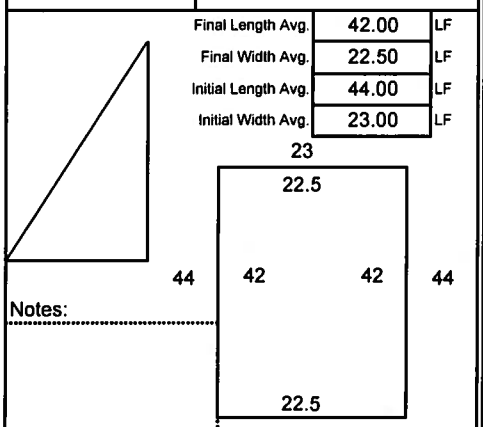


Notes:

Initial SF	1,035	Lineal Feet Trench	
Final SF	945		22.5

Panel # 48 | **Roll # 6318**

Final Length Avg.	42.00	LF
Final Width Avg.	22.50	LF
Initial Length Avg.	44.00	LF
Initial Width Avg.	23.00	LF

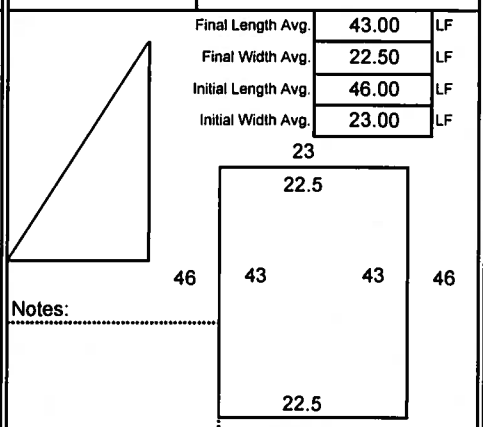


Notes:

Initial SF	1,012	Lineal Feet Trench	
Final SF	945		22.5

Panel # 49 | **Roll # 6318**

Final Length Avg.	43.00	LF
Final Width Avg.	22.50	LF
Initial Length Avg.	46.00	LF
Initial Width Avg.	23.00	LF

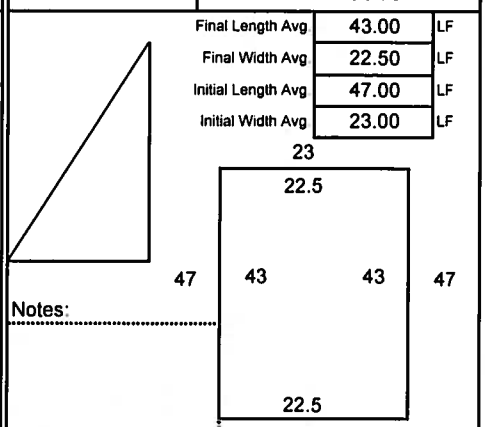


Notes:

Initial SF	1,058	Lineal Feet Trench	
Final SF	968		22.5

Panel # 50 | **Roll # 6318**

Final Length Avg	43.00	LF
Final Width Avg	22.50	LF
Initial Length Avg	47.00	LF
Initial Width Avg	23.00	LF

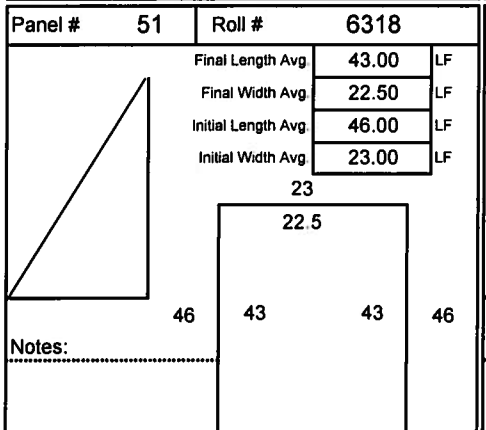


Notes:

Initial SF	1,081	Lineal Feet Trench	
Final SF	968		22.5

Panel # 51 | **Roll # 6318**

Final Length Avg	43.00	LF
Final Width Avg	22.50	LF
Initial Length Avg	46.00	LF
Initial Width Avg	23.00	LF

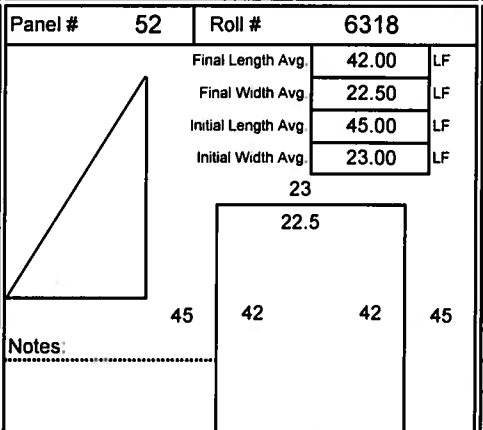


Notes:

Initial SF	1,058	Lineal Feet Trench	
Final SF	968		22.5

Panel # 52 | **Roll # 6318**

Final Length Avg	42.00	LF
Final Width Avg	22.50	LF
Initial Length Avg	45.00	LF
Initial Width Avg	23.00	LF



Notes:

Initial SF	1,035	Lineal Feet Trench	
Final SF	945		22.5

Material in Anchor Trench		
Total LF In Trench This Page	180.00	LF
Depth and Width Allowed in Trench	3	LF
Total SF Trench This Page	**540**	**SF**
Total Panel SF This Page	**7,650**	**SF**
Total Pay Area This Page	**8,190**	**SF**
LF In Trench Previous	1,241	LF
LF In Trench To Date	1,421	LF
SF In Trench Previous	3,722	SF
Total SF in Trench to Date	4,262	SF
Total Panel SF Previous	117,153	SF
Total Panel SF To Date	124,803	SF
Total Pay Area To Date Including Anchor Trench	**129,065**	
Initial Quantity Previous	125,536	SF
Initial Quantity This Page	8,372	SF
Initial Quantity To Date	133,908	SF

ECApplications, Inc.

Daily Panel Placement

Project Name: Nursery Products **Job #** 103004 **Deployment Date**

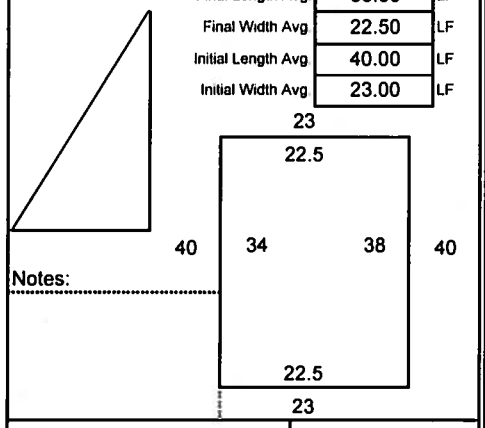
Superintendent: Vicente Figueroa **Material Type:** 60 Mil HDPE Liner

[X] **Primary** **Secondary** [ ] **Cell** [ ] **Pond** [X] **Pad** [ ] **Other:**

Description (I.e. Phase #, Cell #, Pond # etc.) **Roll Stock Width**

Panel #	Roll #	Final Length Avg	Final Width Avg	Initial Length Avg	Initial Width Avg	Initial SF	Final SF	Lineal Feet Trench
53	6318	36.00 LF	22.50 LF	40.00 LF	23.00 LF	920	810	35
						-	-	
						-	-	
						-	-	
						-	-	
						-	-	

Notes:



Material In Anchor Trench		
Total LF In Trench This Page	35.00	LF
Depth and Width Allowed in Trench	3	LF
Total SF Trench This Page	**105**	**SF**
Total Panel SF This Page	**810**	**SF**
Total Pay Area This Page	**915**	**SF**
LF In Trench Previous	1,421	LF
LF In Trench To Date	1,456	LF
SF In Trench Previous	4,262	SF
Total SF in Trench to Date	4,367	SF
Total Panel SF Previous	124,803	SF
Total Panel SF To Date	125,613	SF
Total Pay Area To Date Including Anchor Trench	**129,980**	
Initial Quantity Previous	133,908	SF
Initial Quantity This Page	920	SF
Initial Quantity To Date	134,828	SF

ECApplications, Inc.
Seam Control Form

Project Name: Nursery Products Hawes Composting
Material Type: GCL and 60 Mil HDPE Liner
Job Description:
Reported By Juan Delgado

Job Number 103004
Superintendent: Vicente Figueroa

Primary	X	Pond	B
Secondary	X	Cell	
Other		Pad	

Air Pressure Test	30	PSI
Air Pressure Hold Time	5	Minutes
Allowable Air Pressure Loss	2	PSI

Total LF of Welding to Date Combined
Extrusion LF Weld Total To Date
Fusion LF Weld Total To Date:

Weld Date	Seam No.	Seam Length	Time Welded	Operator Name/ ID	Mach No.	Mach Speed	Mach Temp	Preheat Temp	Test Date	Test Type	AT Time In PSI IN	AT Time Out PSI OUT	PSI Loss	Test Results
4/17/12	4 / 5	42	1:20 pm	Emilio Gutierrez	59	4.5	700		4/17/12	AT	2:24 30	2:29 30		P
4/17/12	5 / 6	41	1:19 pm	Joel Dominguez	53	3.5	750		4/17/12	AT	2:25 30	2:30 30		P
4/17/12	6 / 7	42	1:30 pm	Joel Dominguez	53	3.5	750		4/17/12	AT	2:26 30	2:31 30		P
4/17/12	7 / 8	42	1:22 pm	Joel Dominguez	53	3.5	750		4/17/12	AT	2:27 30	2:32 30		P
4/17/12	8 / 9	41	1:35 pm	Emilio Gutierrez	59	4.5	700		4/17/12	AT	2:29 30	2:34 30		P
4/17/12	9 / 10	42	1:50 pm	Emilio Gutierrez	59	4.5	700		4/17/12	AT	2:54 30	2:59 30		P
4/17/12	10 / 11	42	2:03 pm	Emilio Gutierrez	59	4.5	700		4/17/12	AT	2:55 30	3:00 30		P
4/17/12	11 / 12	41	2:00 pm	Joel Dominguez	53	3.5	750		4/17/12	AT	3:01 30	3:06 30		P
4/17/12	12 / 14	17	2:36 pm	Joel Dominguez	53	3.5	750		4/17/12	AT	3:10 30	3:15 30		P
4/17/12	12 / 13	22	2:40 pm	Joel Dominguez	53	3.5	750		4/17/12	AT	3:02 30	3:07 30		P
4/17/12	15 / 13	9	2:27 pm	Emilio Gutierrez	59	4.5	700		4/17/12	AT	3:27 30	3:32 30		P
4/17/12	14 / 13	22	2:29 pm	Emilio Gutierrez	59	4.5	700		4/17/12	AT	3:10 30	3:15 30		P
4/17/12	14 / 15	10	2:15 pm	Joel Dominguez	53	3.5	750		4/17/12	AT	3:27 30	3:32 30		P
4/17/12	13 / 1	47	3:12 pm	Emilio Gutierrez	59	4.5	700		4/17/12	AT	3:40 30	3:45 30		P
4/17/12	12 / 1	22.5	3:19 pm	Emilio Gutierrez	59	4.5	700		4/17/12	AT	3:43 30	3:48 30		P
4/17/12	11 / 1	22.5	3:21 pm	Emilio Gutierrez	59	4.5	700		4/17/12	AT	3:43 30	3:48 30		P
4/17/12	10 / 1	22.5	3:24 pm	Emilio Gutierrez	59	4.5	700		4/17/12	AT	3:46 30	3:51 30		P

ECApplications, Inc.
Seam Control Form

Project Name: Nursery Products Hawes Composting
Material Type: GCL and 60 Mil HDPE Liner
Job Description:
Reported By Juan Delgado

Job Number 103004
Superintendent: Vicente Figueroa

Primary	X	Pond	B
Secondary	X	Cell	
Other		Pad	

Air Pressure Test	30	PSI
Air Pressure Hold Time	5	Minutes
Allowable Air Pressure Loss	2	PSI

Total LF of Welding to Date Combined
Extrusion LF Weld Total To Date
Fusion LF Weld Total To Date:

Weld Date	Seam No.		Seam Length	Time Welded	Operator Name/ ID	Mach No.	Mach Speed	Mach Temp	Preheat Temp
4/17/12	9	1	22.5	3:27 pm	Emilio Gutierrez	59	4.5	700	
4/17/12	8	1	22.5	3:30 pm	Emilio Gutierrez	59	4.5	700	
4/17/12	7	1	22.5	3:33 pm	Emilio Gutierrez	59	4.5	700	
4/17/12	6	1	22.5	3:36 pm	Emilio Gutierrez	59	4.5	700	
4/17/12	5	1	22.5	3:39 pm	Emilio Gutierrez	59	4.5	700	
4/17/12	4	1	20	3:42 pm	Emilio Gutierrez	59	4.5	700	
4/18/12	17	1	246	9:52 am	Emilio Gutierrez	59	4.5	700	
4/18/12	17	19	59	9:10 am	Joel Dominguez	53	4	750	
4/18/12	18	19	22.5	10:00 am	Joel Dominguez	53	4	750	
4/18/12	17	18	149	9:46 am	Librado Dominguez	74	4.5	750	
4/18/12	19	20	59	10:18 am	Librado Dominguez	74	4.5	750	
4/18/12	20	18	179	10:27 am	Librado Dominguez	74	4.5	750	
4/18/12	20	21	199	10:20 am	Joel Dominguez	53	4.5	750	
4/18/12	21	22	22.5	10:37 am	Emilio Gutierrez	59	4	700	
4/18/12	20	22	41	10:40 am	Joel Dominguez	53	4	750	
4/18/12	21	23	200	10:54 am	Emilio Gutierrez	59	4.5	700	
4/18/12	22	23	42	11:21 am	Emilio Gutierrez	59	4.5	700	
4/18/12	23	2	245	11:00 am	Joel Dominguez	53	4	750	
4/18/12	2	24	200	8:35 am	Joel Dominguez	53	4	750	

Test Date	Test Type	AT Time In PSI IN	AT Time Out PSI OUT	PSI Loss	Test Results
4/17/12	AT	4:02 / 30	4:07 / 30		P
4/17/12	AT	4:02 / 30	4:07 / 30		P
4/17/12	AT	4:05 / 30	4:10 / 30		P
4/17/12	AT	4:054 / 30	4:59 / 30		P
4/17/12	AT	4:07 / 30	4:12 / 30		P
4/17/12	AT	4:13 / 30	4:18 / 30		P
4/18/12	AT	4:50 / 30	4:55 / 30		P
4/18/12	AT	4:48 / 30	4:53 / 30		P
4/18/12	AT	4:47 / 30	4:52 / 30		P
4/18/12	AT	4:48 / 30	4:53 / 30		P
4/18/12	AT	4:45 / 30	4:50 / 30		P
4/18/12	AT	4:46 / 30	4:51 / 30		P
4/18/12	AT	4:30 / 30	4:35 / 30		P
4/18/12	AT	4:30 / 30	4:35 / 30		P
4/18/12	AT	4:27 / 30	4:32 / 30		P
4/18/12	AT	4:35 / 30	4:40 / 30		P
4/18/12	AT	4:20 / 30	4:25 / 30		P
4/18/12	AT	4:40 / 30	4:45 / 30		P
4/23/12	AT	1:10 / 30	1:15 / 30		P

ECApplications, Inc.
Seam Control Form

Project Name: Nursery Products Hawes Composting

Material Type: GCL and 60 Mil HDPE Liner

Job Description:

Reported By Juan Delgado

Job Number 103004

Superintendent: Vicente Figueroa

Primary	X	Pond	B
Secondary	X	Cell	
Other		Pad	

Air Pressure Test	30	PSI
Air Pressure Hold Time	5	Minutes
Allowable Air Pressure Loss	2	PSI

Total LF of Welding to Date Combined

Extrusion LF Weld Total To Date

Fusion LF Weld Total To Date:

Weld Date	Seam No.	Seam Length	Time Welded	Operator Name/ ID	Mach No.	Mach Speed	Mach Temp	Preheat Temp	Test Date	Test Type	AT Time In PSI IN	AT Time Out PSI OUT	PSI Loss	Test Results
4/19/12	24 / 25	22.5	8:47 am	Emilio Gutierrez	59	4.5	700		4/23/12	AT	1:05 30	1:10 30		P
4/19/12	25 / 2	45	9:08 am	Joel Dominguez	53	4	750		4/23/12	AT	1:05 30	1:10 30		P
4/19/12	24 / 23	200	8:57 am	Emilio Gutierrez	59	4.5	700		4/23/12	AT	1:10 30	1:15 30		P
4/19/12	25 / 23	46	9:23 am	Joel Dominguez	53	4	750		4/23/12	AT	1:07 30	1:12 30		P
4/23/12	26 / 28	48	7:48 am	Librado Dominguez	74	4	750		4/23/12	AT	1:20 30	1:25 30		P
4/23/12	26 / 27	200	9:02 am	Joel Dominguez	53	4	750		4/23/12	AT	1:20 30	1:25 30		P
4/23/12	27 / 28	22.5	7:41 am	Librado Dominguez	74	4	750		4/23/12	AT	1:20 30	1:25 30		P
4/23/12	28 / 29	48	7:50 am	Joel Dominguez	53	4	750		4/23/12	AT	1:20 30	1:25 30		P
4/23/12	29 / 27	200	7:57 am	Joel Dominguez	53	4	750		4/23/12	AT	1:30 30	1:35 30		P
4/23/12	29 / 31	49	8:14 am	Librado Dominguez	74	4	750		4/23/12	AT	1:30 30	1:35 30		P
4/23/12	31 / 30	22.5	8:02 am	Librado Dominguez	74	4	750		4/23/12	AT	1:30 30	1:35 30		P
4/23/12	29 / 30	198	8:24 am	Librado Dominguez	74	4	750		4/23/12	AT	1:25 30	1:30 30		P
4/23/12	31 / 32	49	8:24 am	Emilio Gutierrez	59	4.5	700		4/23/12	AT	1:30 30	1:35 30		P
4/23/12	30 / 32	199	8:30 am	Emilio Gutierrez	59	4.5	700		4/23/12	AT	1:30 30	1:35 30		P
4/23/12	32 / 3	248	9:28 am	Emilio Gutierrez	59	4	700		4/23/12	AT	1:40 30	1:45 30		P
4/23/12	3 / 33	248	8:30 am	Joel Dominguez	53	4	750		4/23/12	AT	1:43 30	1:48 30		P
4/23/12	33 / 34	20	9:00 am	Joel Dominguez	53	4	750		4/23/12	AT	1:47 30	1:52 30		P
4/23/12	33 / 35	49	9:28 am	Joel Dominguez	53	4	750		4/23/12	AT	1:47 30	1:52 30		P
4/23/12	34 / 35	22.5	9:06 am	Librado Dominguez	74	4	750		4/23/12	AT	1:55 30	2:00 30		P

ECApplications, Inc.
Seam Control Form

Project Name: Nursery Products Hawes Composting

Material Type: GCL and 60 Mil HDPE Liner

Job Description:

Reported By Juan Delgado

Job Number 103004

Superintendent: Vicente Figueroa

Primary	X	Pond	B
Secondary	X	Cell	
Other		Pad	

Air Pressure Test	30	PSI
Air Pressure Hold Time	5	Minutes
Allowable Air Pressure Loss	2	PSI

Total LF of Welding to Date Combined

Extrusion LF Weld Total To Date

Fusion LF Weld Total To Date:

Weld Date	Seam No.		Seam Length	Time Welded	Operator Name/ ID	Mach No.	Mach Speed	Mach Temp	Preheat Temp
4/23/12	34	36	201	9:15 am	Librado Dominguez	74	4	750	
4/23/12	35	36	49	9:53 am	Librado Dominguez	74	4	750	
4/30/12	37	38	22.5	12:05 pm	Emilio Gutierrez	59	4.5	700	
4/30/12	38	39	22.5	11:58 am	Emilio Gutierrez	59	4.5	700	
4/30/12	36	37	90	12:49 pm	Emilio Gutierrez	59	4.5	700	
4/30/12	36	38	22	1:00 pm	Emilio Gutierrez	59	4.5	700	
4/30/12	36	39	138	1:04 pm	Emilio Gutierrez	59	4.5	700	
4/30/12	37	40	89	12:45 pm	Librado Dominguez	53	4.5	750	
4/30/12	38	40	27	12:53 pm	Librado Dominguez	53	4.5	750	
4/30/12	39	40	135	12:56 pm	Librado Dominguez	53	4.5	750	
4/30/12	40	42	113	1:29 pm	Librado Dominguez	53	4.5	750	
4/30/12	41	42	9	2:02 pm	Librado Dominguez	53	4	750	
4/30/12	40	41	130	2:05 pm	Librado Dominguez	53	4	750	
4/30/12	42	16	113	2:23 pm	Alejandro Florez	74	5	750	
4/30/12	41	16	130	3:17 pm	Alejandro Florez	74	5	750	
4/30/12	43	44	46	1:45 pm	Emilio Gutierrez	59	4.5	700	
4/30/12	44	45	47	2:05 pm	Emilio Gutierrez	59	4.5	700	
4/30/12	45	46	45	2:34 pm	Emilio Gutierrez	59	4.5	700	
4/30/12	46	47	44	2:30 pm	Librado Dominguez	53	4.5	750	

Test Date	Test Type	AT Time In PSI IN	AT Time Out PSI OUT	PSI Loss	Test Results
4/23/12	AT	2:00 30	2:05 30		P
4/23/12	AT	1:48 30	1:53 30		P
5/1/12	AT	8:50 30	8:55 30		P
5/1/12	AT	8:35 30	8:40 30		P
5/1/12	AT	8:55 30	9:00 30		P
5/1/12	AT	8:45 30	8:50 30		P
5/1/12	AT	8:45 30	8:50 30		P
5/1/12	AT	8:50 30	8:55 30		P
5/1/12	AT	8:50 30	8:55 30		P
5/1/12	AT	8:35 30	8:40 30		P
5/1/12	AT	8:58 30	9:03 30		P
5/1/12	AT	9:09 30	9:14 30		P
5/1/12	AT	8:58 30	9:03 30		P
5/1/12	AT	9:15 30	9:20 30		P
5/1/12	AT	9:04 30	9:09 30		P
5/1/12	AT	10:20 30	10:25 30		P
5/1/12	AT	10:20 30	10:25 30		P
5/1/12	AT	10:15 30	10:20 30		P
5/1/12	AT	10:10 30	10:15 30		P

ECApplications, Inc.
Seam Control Form

Project Name: Nursery Products Hawes Composting
Job Number 103004
Superintendent: Vicente Figueroa

Material Type: GCL and 60 Mil HDPE Liner
Job Description:
Reported By Juan Delgado

Primary X **Pond** B
Secondary X **Cell**
Other **Pad**

Air Pressure Test 30 PSI
Air Pressure Hold Time 5 Minutes
Allowable Air Pressure Loss 2 PSI

Total LF of Welding to Date Combined
Extrusion LF Weld Total To Date
Fusion LF Weld Total To Date:

Weld Date	Seam No.	Seam Length	Time Welded	Operator Name/ ID	Mach No.	Mach Speed	Mach Temp	Preheat Temp	Test Date	Test Type	AT Time In PSI IN	AT Time Out PSI OUT	PSI Loss	Test Results
4/30/12	47 / 48	44	2:24 pm	Librado Dominguez	53	4.5	750		5/1/12	AT	10:05 / 30	10:10 / 30		P
4/30/12	48 / 49	43	2:35 pm	Librado Dominguez	53	4.5	750		5/1/12	AT	9:35 / 30	9:40 / 30		P
4/30/12	49 / 50	44	2:42 pm	Librado Dominguez	53	4.5	750		5/1/12	AT	9:50 / 30	9:55 / 30		P
4/30/12	50 / 51	44	2:49 pm	Librado Dominguez	53	4.5	750		5/1/12	AT	9:45 / 30	9:50 / 30		P
4/30/12	51 / 52	43	2:56 pm	Librado Dominguez	53	4.5	750		5/1/12	AT	9:40 / 30	9:45 / 30		P
4/30/12	43 / 53	45	3:08 pm	Emilio Gutierrez	59	4.5	700		5/1/12	AT	10:20 / 30	10:25 / 30		P
5/1/12	52 / 56	22	8:20 am	Librado Dominguez	53	3.5	750		5/1/12	AT	9:40 / 30	9:45 / 30		P
5/1/12	51 / 16	22.5	8:22 am	Librado Dominguez	53	3.5	750		5/1/12	AT	9:45 / 30	9:50 / 30		P
5/1/12	50 / 16	22.5	8:25 am	Librado Dominguez	53	3.5	750		5/1/12	AT	9:50 / 30	9:55 / 30		P
5/1/12	49 / 16	22.5	8:27 am	Librado Dominguez	53	3.5	750		5/1/12	AT	9:55 / 30	10:00 / 30		P
5/1/12	48 / 16	22.5	8:30	Librado Dominguez	53	3.5	750		5/1/12	AT	10:05 / 30	10:10 / 30		P
5/1/12	47 / 16	22.5	8:33	Librado Dominguez	53	3.5	750		5/1/12	AT	10:40 / 30	10:45 / 30		P
5/1/12	46 / 16	22.5	8:36	Librado Dominguez	53	3.5	750		5/1/12	AT	10:15 / 30	10:20 / 30		P
5/1/12	45 / 16	22.5	8:39	Librado Dominguez	53	3.5	750		5/1/12	AT	10:20 / 30	10:25 / 30		P
5/1/12	44 / 16	7	8:41	Librado Dominguez	53	3.5	750		5/1/12	AT	10:20 / 30	10:25 / 30		P
5/1/12	44 / 16	15	9:10	Raymundo Bailon	102		435	350	5/1/12	VT	:	:		P
5/1/12	43 / 16	22.5	9:23	Raymundo Bailon	103		435	350	5/1/12	VT	:	:		P
5/1/12	16 / 53	20	9:55	Raymundo Bailon	103		435	350	5/1/12	VT	:	:		P
	/		:								:	:		

ECApplications, Inc.
Repair Report

Reported By: Juan Delgado **Superintendent:** Vicente Figueroa **Job Number :** 103004

Project Name: Nursery Products Hawes **Primary** [X] **Cell** [ ] **Pad** [ ]

Material Type: GCL and 60 Mil HDPE Liner **Secondary** [X] **Pond** [B] **Other** ______

Job Description: ______

Damage Codes				SF Patch Material	Test Type	Abbrv.	Repair Types
CR --Crease	BO --Burn Out	PB --Pipe Boot	CF --Custom Fit	184	Vacuum	*S=South	C--Cap Strip
DS --Destruct Sample	FS --Failed Seam	MatD --Material Defect	LL --Lost Lap		Air Pressure	*N=North	P--Patch
SI --Subgrade Irregularity	WR --Wrinkle	WS --Welder Restart	MD --Mechanical Damage	LF Welded	Spark	*W=West	B--Extrusion Bead
SJ --Seam Joint	AV --Airvent	RW --Roller Wrinkle	DO --Damage By Others	306.00	Air Lance	*E=East	
	AO --Add On	FM --Fishmouth	AT --Air test				

Repair Number	Damage Code	Seam Number	Panel Number	Location	Repair Type	Patch (Feet)			Bead (Inches)	Date Welded	Operator Name	Machine Number	Test Type	Test Results	Date Complete
1	SJ	4/5/1		40' to W AT	P	2	x	2		4/23/12	Librado Dominguez	104	VT	P	4/23/12
2	SJ	6/5/1		40' to W AT	P	3	x	2		4/23/12	Librado Dominguez	104	VT	P	4/23/12
3	SJ	6/7/1		41' to W AT	P	3	x	2		4/23/12	Librado Dominguez	104	VT	P	4/23/12
4	SJ	7/8/1		41' to W AT	P	2	x	2		4/23/12	Librado Dominguez	104	VT	P	4/23/12
5	SJ	8/9/1		41' to W AT	P	2	x	2		4/23/12	Librado Dominguez	104	VT	P	4/23/12
6	SJ	9/10/11		41' to W AT	P	2	x	2		4/23/12	Librado Dominguez	104	VT	P	4/23/12
7	SJ	10/11/1		37' to W AT	P	2	x	2		4/23/12	Librado Dominguez	104	VT	P	4/23/12
8	SJ	11/12		37' to W AT	P	2	x	2		4/23/12	Librado Dominguez	104	VT	P	4/23/12
9	BO	12/1		37' to W AT and 5' to Seam 12/13	P	3	x	2		4/23/12	Librado Dominguez	104	VT	P	4/23/12
10	SJ	12/13/1		35' to W AT	P	2	x	2		4/23/12	Librado Dominguez	104	VT	P	4/23/12
11	SJ	12/14/13		15' to W AT	P	2	x	2		4/23/12	Librado Dominguez	104	VT	P	4/23/12
12	BO	10/11		8' to W AT	P	3	x	2		4/23/12	Librado Dominguez	104	VT	P	4/23/12
13	BO	11/12		1' to W AT	P	2	x	2		4/23/12	Librado Dominguez	104	VT	P	4/23/12
14	SJ	14/15/13		5' to W AT	P	2	x	2		4/23/12	Librado Dominguez	104	VT	P	4/23/12
15	BO	17/19		6' to N AT	P	2	x	2		4/23/12	Librado Dominguez	104	VT	P	4/23/12
16	BO	17/19		18' to N AT	P	2	x	2		4/23/12	Librado Dominguez	104	VT	P	4/23/12
17	BO	17/1		48' to N AT	P	2	x	2		4/23/12	Librado Dominguez	104	VT	P	4/23/12
18	SJ	18/19/17		59' to N AT	P	3	x	3		4/23/12	Librado Dominguez	104	VT	P	4/23/12
19	BO	20/22		10' to S AT	P	2	x	2		4/23/12	Librado Dominguez	104	VT	P	4/23/12
20	SJ	23		34' to S AT and 2' to Seam 20/27	P	2	x	2		4/23/12	Librado Dominguez	104	VT	P	4/23/12
21	S[illegible]	20/21/22		39' to S AT	P	5	[illegible]	2		4/23/12	Librado Dominguez	104	VT	P	4/23/12

ECApplications, Inc.
Repair Report

Reported By: Juan Delgado **Superintendent:** Vicente Figueroa **Job Number :** 103004

Project Name: Nursery Products Hawes **Primary** X **Cell** ☐ **Pad** ☐

Material Type: GCL and 60 Mil HDPE Liner **Secondary** X **Pond** B **Other**

Job Description:

Damage Codes					SF Patch Material	Test Type	Abbrv.	Repair Types
CR –Crease	BO –Bum Out	PB –Pipe Boot	CF –Custom Fit		184	Vacuum	*S=South	C–Cap Strip
DS –Destruct Sample	FS –Failed Seam	MatD –Material Defect	LL –Lost Lap			Air Pressure	*N=North	P–Patch
SI –Subgrade Irregularity	WR –Wrinkle	WS –Welder Restart	MD –Mechanical Damage		LF Welded	Spark	*W=West	B–Extrusion Bead
SJ –Seam Joint	AV –Airvent	RW –Roller Wrinkle	DO –Damage By Others		306.00	Air Lance	*E=East	
	AO –Add On	FM –Fishmouth	AT –Air test					

Repair Number	Damage Code	Seam Number	Panel Number	Location	Repair Type	Patch (Feet)			Bead (Inches)	Date Welded	Operator Name	Machine Number	Test Type	Test Results	Date Complete
22	BO	19/20		12' to S AT	P	2	x	2		4/23/12	Librado Dominguez	104	VT	P	4/23/12
23	WR		2	33' to N AT and 3' to Seam 23/2	P	6	x	2		4/23/12	Raymundo Bailon	102	VT	P	4/17/12
24	BO	2/23		4' to S AT	P	2	x	2		4/23/12	Raymundo Bailon	102	VT	P	5/1/12
25	SJ	23/22/21		39' to S AT	P	2	x	2		4/23/12	Raymundo Bailon	102	VT	P	5/1/12
26	WR		2	28' to S AT and 5' to Seam 2/23	P	6	x	2		4/23/12	Raymundo Bailon	102	VT	P	5/1/12
27	BO	2/23		14' to S AT	P	3	x	3		4/23/12	Raymundo Bailon	102	VT	P	5/1/12
28	DS # 1	22/23		5' to S AT	P	7	x	2		5/1/12	Raymundo Bailon	102	VT	P	5/1/12
29	BO	25/26		8' to S AT	P	3	x	2		5/1/12	Raymundo Bailon	102	VT	P	5/1/12
30	BO	2/25		35' to S AT	P	2	x	2		5/1/12	Raymundo Bailon	102	VT	P	5/1/12
31	SJ	2/24/25		43' to S AT	P	6	x	2		5/1/12	Raymundo Bailon	102	VT	P	5/1/12
32	SJ	241/25/26		43' to S AT	P	6	x	2		5/1/12	Raymundo Bailon	102	VT	P	5/1/12
33	SJ	28/29/27		43' to N AT	P	6	x	2		5/1/12	Raymundo Bailon	102	VT	P	5/1/12
34	SJ	27/28/26		43' to N AT	P	6	x	2		5/1/12	Raymundo Bailon	102	VT	P	5/1/12
35	DS # 2	27/26		40' to N AT	P	6	x	2		5/1/12	Raymundo Bailon	102	VT	P	5/1/12
36	SJ	29/31/30		44' to N AT	P	2	x	2		5/1/12	Raymundo Bailon	102	VT	P	5/1/12
37	SJ		31	40' to N AT and 2' to Seam 29/31	P	2	x	2		5/1/12	Raymundo Bailon	102	VT	P	5/1/12
38	SJ	31/32/30		44' to N AT	P	3	x	2		5/1/12	Raymundo Bailon	102	VT	P	5/1/12
39	SJ		31	38' to N AT and 3' to Seam 31/32	P	2	x	2		4/23/12	Raymundo Bailon	102	VT	P	5/1/12
40	BO	32/3		84' to N AT	P	4	x	2		4/30/12	Joel Dominguez	102	VT	P	5/1/12
41	DS # 3	32/3		125' to N AT	P	6	x	2		5/1/12	Joel Dominguez	102	VT	P	5/1/12
42	BO	3/32		14' to N AT	P	5	x	2		4/30/12	Joel Dominguez	102	VT	P	5/1/12

ECApplications, Inc.
Repair Report

Reported By: Juan Delgado **Superintendent:** Vicente Figueroa **Job Number :** 103004

Project Name: Nursery Products Hawes **Primary** X **Cell** ☐ **Pad** ☐

Material Type: GCL and 60 Mil HDPE Liner **Secondary** X **Pond** B **Other**

Job Description:

Damage Codes					SF Patch Material	Test Type	Abbrv.	Repair Types
CR –Crease	BO –Bum Out	PB –Pipe Boot	CF –Custom Fit		184	Vacuum	*S=South	C–Cap Strip
DS –Destruct Sample	FS –Failed Seam	MatD –Material Defect	LL –Lost Lap			Air Pressure	*N=North	P–Patch
SI –Subgrade Irregularity	WR –Wrinkle	WS –Welder Restart	MD –Mechanical Damage		LF Welded	Spark	*W=West	B–Extrusion Bead
SJ –Seam Joint	AV –Airvent	RW –Roller Wrinkle	DO –Damage By Others		306.00	Air Lance	*E=East	
	AO –Add On	FM –Fishmouth	AT –Air test					

Repair Number	Damage Code	Seam Number	Panel Number	Location	Repair Type	Patch (Feet)			Bead (Inches)	Date Welded	Operator Name	Machine Number	Test Type	Test Results	Date Complete
43	BO	3/33		22' to S AT	P	6	x	2		4/30/12	Joel Dominguez	102	VT	P	5/1/12
44	BO	3/33		3' to S AT	P	3	x	2		4/30/12	Joel Dominguez	102	VT	P	5/1/12
45	SJ	33/34/35		43' to S AT	P	2	x	2		4/30/12	Joel Dominguez	102	VT	P	5/1/12
46	SJ	34/35		43' to S AT	P	2	x	2		5/1/12	Librado Dominguez	103	VT	P	5/1/12
47	DS# 4	36/37		63' to N AT	P	6	x	2		5/1/12	Librado Dominguez	103	VT	P	5/1/12
48	SJ	40/37/38		85' to N AT	P	2	x	2		5/1/12	Librado Dominguez	103	VT	P	5/1/12
49	SJ	38/37/36		85' to N AT	P	2	x	2		5/1/12	Librado Dominguez	103	VT	P	5/1/12
50	SJ	38/39/40		114' to N AT	P	2	x	2		5/1/12	Librado Dominguez	103	VT	P	5/1/12
51	SJ	38/39/36		114' to N AT	P	2	x	2		5/1/12	Librado Dominguez	103	VT	P	5/1/12
52	N	39/40		16' to S AT	P	3	x	2		5/1/12	Librado Dominguez	103	VT	P	5/1/12
53	N	41/16		14' to S AT	P	2	x	2		5/1/12	Librado Dominguez	103	VT	P	5/1/12
54	DS# 5	41/16		21' to S AT	P	6	x	2		5/1/12	Raymundo Bailon	102	VT	P	5/1/12
55	BO	41/16		48' to S AT	P	1	x	2		5/1/12	Raymundo Bailon	102	VT	P	5/1/12
56	BO	41/16		85' to S AT	P	6	x	2		5/1/12	Raymundo Bailon	102	VT	P	5/1/12
57	BO	41/16		106' to S AT	P	4	x	2		5/1/12	Raymundo Bailon	102	VT	P	5/1/12
58	SJ	41/42/40		131' to S AT	P	2	x	2		5/1/12	Raymundo Bailon	102	VT	P	5/1/12
59	SJ	41/42/16		131' to S AT	P	2	x	2		5/1/12	Raymundo Bailon	102	VT	P	5/1/12
60	BO	42/16		153' to S AT	P	5	x	2		5/1/12	Raymundo Bailon	102	VT	P	5/1/12
61	WR		16	153' to S AT and 6' to Seam 42/16	P	2	x	2		5/1/12	Raymundo Bailon	102	VT	P	5/1/12
62	BO	42/16		165' to S AT	P	5	x	2		5/1/12	Raymundo Bailon	102	VT	P	5/1/12
63	BO	42/16		177' to S AT	P	6	x	2		5/1/12	Raymundo Bailon	102	VT	P	5/1/12

ECApplications, Inc.
Repair Report

Reported By: Juan Delgado **Superintendent:** Vicente Figueroa **Job Number :** 103004

Project Name: Nursery Products Hawes **Primary** X **Cell** **Pad**

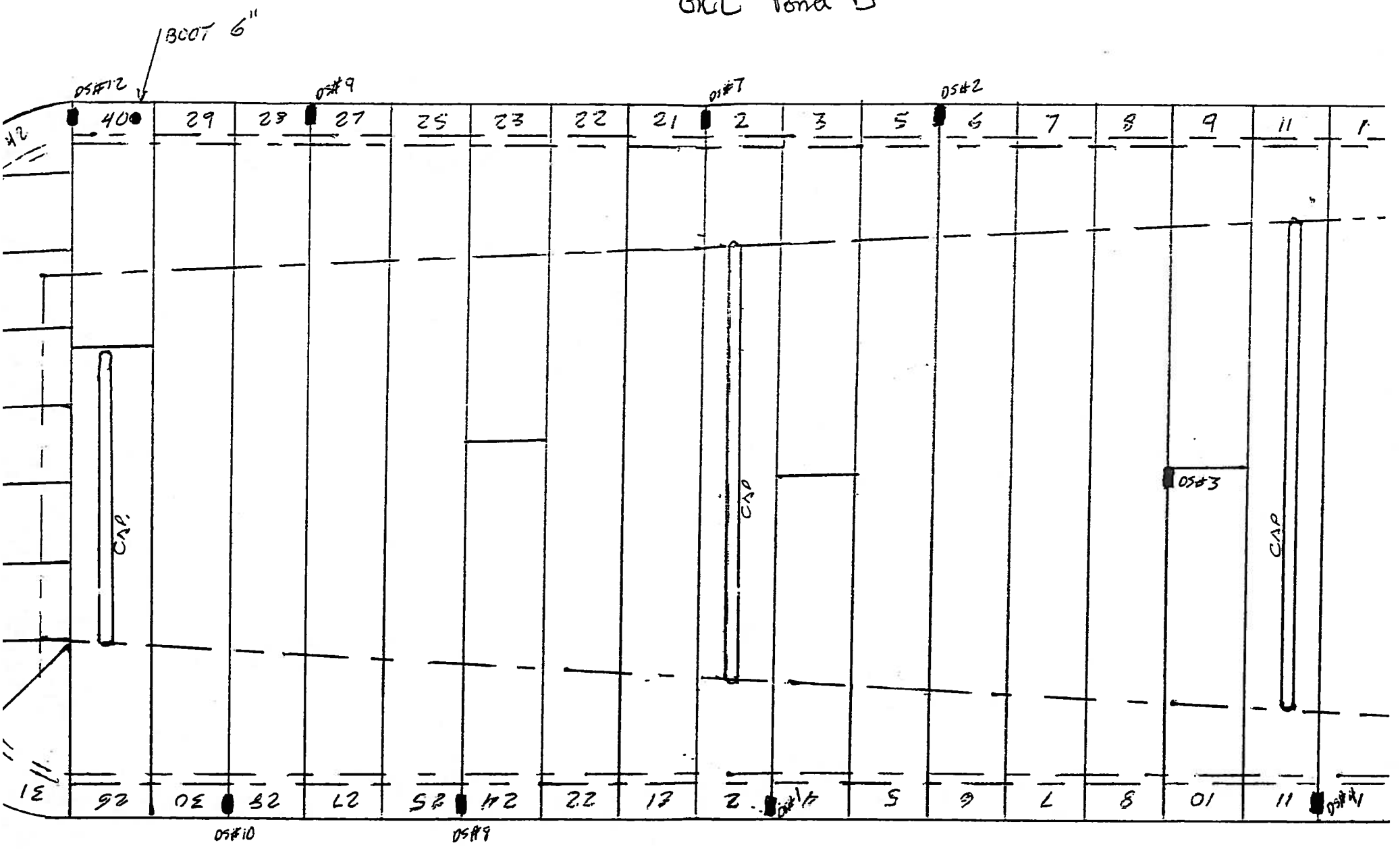
Material Type: GCL and 60 Mil HDPE Liner **Secondary** X **Pond** B **Other**

Job Description:

Damage Codes				SF Patch Material	Test Type	Abbrv.	Repair Types
CR –Crease	BO –Bum Out	PB –Pipe Boot	CF –Custom Fit	184	Vacuum	*S=South	C–Cap Strip
DS –Destruct Sample	FS –Failed Seam	MatD –Material Defect	LL –Lost Lap		Air Pressure	*N=North	P–Patch
SI –Subgrade Irregularity	WR –Wrinkle	WS –Welder Restart	MD –Mechanical Damage	LF Welded	Spark	*W=West	B–Extrusion Bead
SJ –Seam Joint	AV –Airvent	RW –Roller Wrinkle	DO –Damage By Others	306.00	Air Lance	*E=East	
	AO –Add On	FM –Fishmouth	AT –Air test				

Repair Number	Damage Code	Seam Number	Panel Number	Location	Repair Type	Patch (Feet)			Bead (Inches)	Date Welded	Operator Name	Machine Number	Test Type	Test Results	Date Complete
64	BO	42/16		186' to S AT	P	5	x	2		5/1/12	Raymundo Bailon	102	VT	P	5/1/12
65	BO	42/16		200' to S AT	P	7	x	2		5/1/12	Librado Dominguez	102	VT	P	5/1/12
66	P.B		16	6' to N AT and 3' to Seam 16/5	P	10	x	6		5/1/12	Librado Dominguez	102	VT	P	5/1/12
67	SJ	44/16		46' To E AT	P	6	x	4		5/1/12	Raymundo Bailon	102	VT	P	5/1/12
68	SJ	44/45/16		45' To E AT	P	3	x	2		5/1/12	Raymundo Bailon	102	VT	P	5/1/12
69	SJ	45/46/16		44' To E AT	P	6	x	2		5/1/12	Raymundo Bailon	102	VT	P	5/1/12
70	SJ	46/47/16		44' To E AT	P	2	x	2		5/1/12	Raymundo Bailon	102	VT	P	5/1/12
71	SJ	47/48/16		44' To E AT	P	2	x	1		5/1/12	Raymundo Bailon	102	VT	P	5/1/12
72	SJ	48/49/16		43' To E AT	P	2	x	2		5/1/12	Raymundo Bailon	102	VT	P	5/1/12
73	SJ	49/50/16		43' To E AT	P	2	x	2		5/1/12	Raymundo Bailon	102	VT	P	5/1/12
74	SJ	50/51/16		43' To E AT	P	8	x	2		5/1/12	Raymundo Bailon	102	VT	P	5/1/12
75	SJ	51/52/16		42' To E AT	P	2	x	2		5/1/12	Raymundo Bailon	102	VT	P	5/1/12
76	DS # 6	51/52		30' To E AT	P	6	x	2		5/1/12	Raymundo Bailon	102	VT	P	5/1/12
77	BO	16/52		102' To E AT	P	6	x	2		5/1/12	Raymundo Bailon	102	VT	P	5/1/12
78	Ballast		16	7' to S Toe	P	6	x	117		4/30/12	Joel Dominguez	102	VT	P	5/1/12
79	Ballast		16	1' to N AT	P	10	x	52		5/1/12	Raymundo Bailon	102	VT	P	5/1/12
80	Ballast		3	1' to N Toe	P	6	x	171		4/18/12	Mario Gonzalez	102	VT	P	5/1/12
81	Ballast		2	1' S Toe	P	6	x	172		4/18/12	Mario Gonzalez	102	VT	P	4/18/12
82	Ballast		1	1' to N Toe	P	6	x	187		4/18/12	Mario Gonzalez	102	VT	P	4/23/12

GCL Pond B


BCOT 6"
OS#12
OS#9
OS#7
OS#2
40
29
28
27
25
23
22
21
2
3
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7
8
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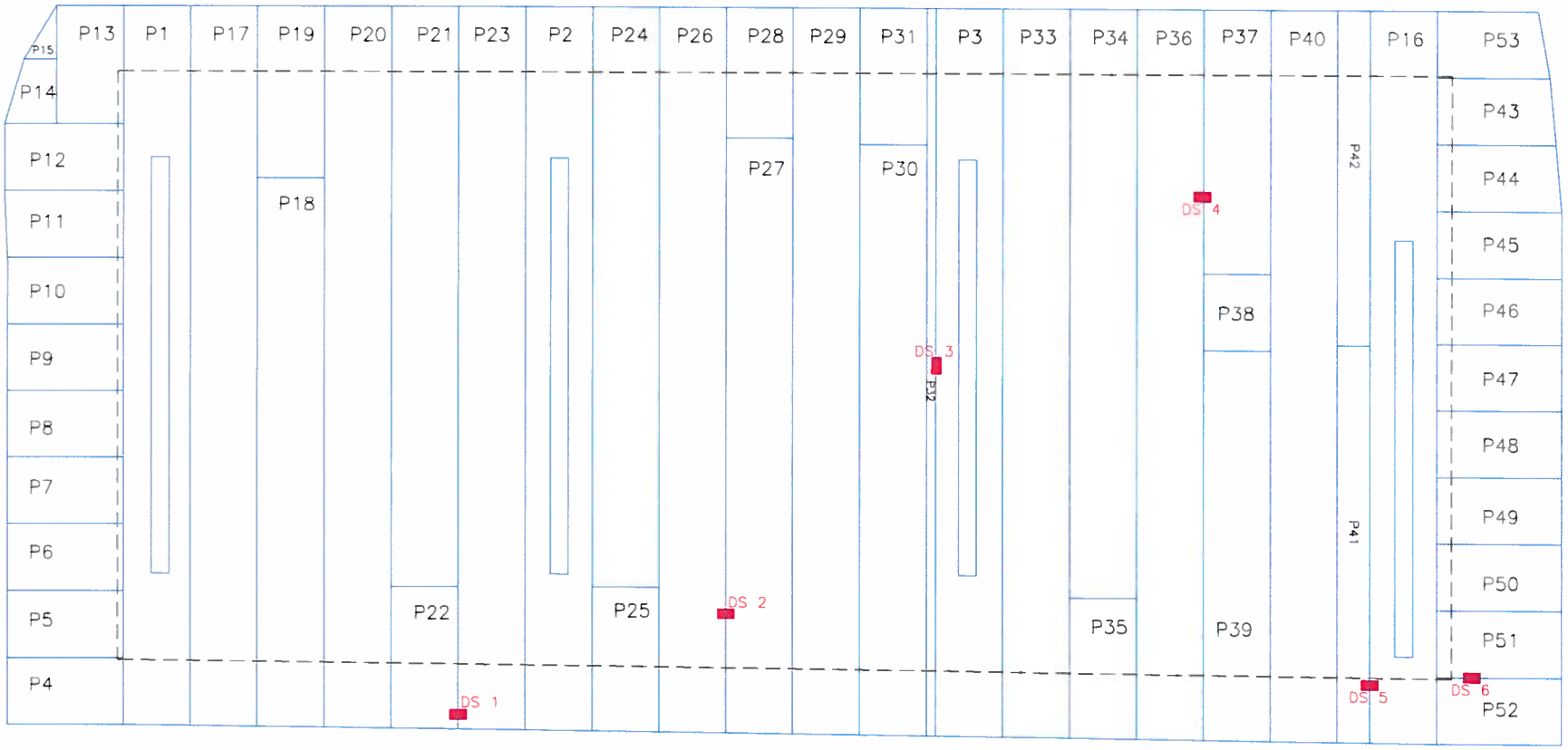
OS#3
CAP
OS#10
OS#8
OS#1



REVISIONS/NOTES
P. PANEL NUMBERS
Destructive Samples
Repairs larger then the destructive samples
Pipe Penetration Boot

Nursery Products Hawes Composting Facility

Retention Basins B
Geomembrane
AS-Built

60 Mil Smooth HDPE Liner

ECApplications INC.
415 W. Toft Ave. Suite H
ORANGE, CA 92865
TELEPHONE: (714) 921-9848
FAX: (866) 475-1225
Email: www.ecapplications.com

DRAWN BY:	KB	CHKD. BY:	CF
DATE:	5-19-2011	APPROV. BY:	CF
PLOT SCALE:	1" = 50'	DANISH FLATS POND 14	
PROJECT NO:	113041		

DWG NO: 1

ZEI

Subgrade Acceptance Form

Project Name: _____ Job Number: _____

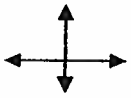
Project Manager: _____ Date: 3-12-12

Field Supervisor _____

This certification is based on observations of the surface of the subgrade only. No subterranean inspections or tests have been performed by EC Applications INC. makes not representations or warranties regarding conditions which may exist below the surface of the subgrade. EC Applications INC. accepts no responsibility for conformance of the subgrade to this project's specifications.

The soil subgrade accepted on this date refers to its present condition. Any changes in the subgrade condition that result from the effects of inclement weather and/or other forces beyond the control of Layfield and remedial work to correct the resulting deficiencies, will be the direct responsibility of the General Contractor.

Location and size and area to be accepted. Describe and sketch below: (Indicate North on Arrow)



P26/P42

Estimated Ft^2 to be accepted:

EC Applications INC. is an authorized representative of the geosynthetic manufacturer's materials being installed on this project.

I the undersigned, an authorized respresentative of ECA, accept the above described subgrade area as suitable to be lined.

Name (Print)	Signature	Title	Date
Vicente Figueroa	Vicente V Figueroa	Superintendent	3/12/12

I the undersigned, an authorized representative of _____ the Inspecting Engineers, approve of the subgrade as being constructed to the specifications.

Name (Print)	Signature	Title	Date

ZEI

Subgrade Acceptance Form

ect Name: Hawes

Job Number: Hawes -001

Project Manager: CHris Seney

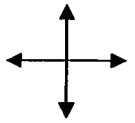
Date: 4/2/12

Field Supervisor

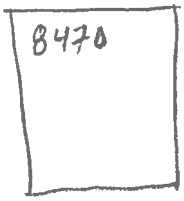
This certification is based on observations of the surface of the subgrade only. No subterranean inspections or tests have been performed by EC Applications INC. makes not representations or warranties regarding conditions which may exist below the surface of the subgrade. EC Applications INC. accepts no responsibility for conformance of the subgrade to this project's specifications.

The soil subgrade accepted on this date refers to its present condition. Any changes in the subgrade condition that result from the effects of inclement weather and/or other forces beyond the control of Layfield and remedial work to correct the resulting deficiencies, will be the direct responsibility of the General Contractor.

Location and size and area to be accepted. Describe and sketch below: (Indicate North on Arrow)



Pond A Lysimeter subgrade



Estimated Ft² to be accepted:

EC Applications INC. is an authorized representative of the geosynthetic manufacturer's materials being installed on this project.

I the undersigned, an authorized respresentative of ECA, accept the above described subgrade area as suitable to be lined.

Name (Print)	Signature	Title	Date
Vicente V Figueroa	Vicente Figueroa	Superintendent	4/2/12

I the undersigned, an authorized representative of _____ the Inspecting Engineers, approve of the subgrade as being constructed to the specifications.

Field Form #11

Rev.1
1/2008

ZEI

Subgrade Acceptance Form

Project Name: _____ Job Number: _____

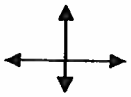
Project Manager: _____ Date: 3-8-12

Field Supervisor _____

This certification is based on observations of the surface of the subgrade only. No subterranean inspections or tests have been performed by EC Applications INC. makes not representations or warranties regarding conditions which may exist below the surface of the subgrade. EC Applications INC. accepts no responsibility for conformance of the subgrade to this project's specifications.

The soil subgrade accepted on this date refers to its present condition. Any changes in the subgrade condition that result from the effects of inclement weather and/or other forces beyond the control of Layfield and remedial work to correct the resulting deficiencies, will be the direct responsibility of the General Contractor.

Location and size and area to be accepted. Describe and sketch below: (Indicate North on Arrow)



P1 TO P2 Anchor Trench 1 and 2

Estimated Ft^2 to be accepted:

EC Applications INC. is an authorized representative of the geosynthetic manufacturer's materials being installed on this project.

I the undersigned, an authorized respresentative of ECA, accept the above described subgrade area as suitable to be lined.

Vicente V Figueroa	Vicente Figueroa	Superintendent	3/8/12
Name (Print)	Signature	Title	Date

I the undersigned, an authorized representative of _____ the Inspecting Engineers, approve of the subgrade as being constructed to the specifications.

Name (Print)	Signature	Title	Date

Field Form #11

Rev.1
1/2008

ZEI

Subgrade Acceptance Form

Project Name: _____ Job Number: _____

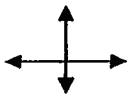
Project Manager: _____ Date: 3-10-12

Field Supervisor _____

This certification is based on observations of the surface of the subgrade only. No subterranean inspections or tests have been performed by EC Applications INC. makes not representations or warranties regarding conditions which may exist below the surface of the subgrade. EC Applications INC. accepts no responsibility for conformance of the subgrade to this project's specifications.

The soil subgrade accepted on this date refers to its present condition. Any changes in the subgrade condition that result from the effects of inclement weather and/or other forces beyond the control of Layfield and remedial work to correct the resulting deficiencies, will be the direct responsibility of the General Contractor.

Location and size and area to be accepted. Describe and sketch below: (Indicate North on Arrow)



P21 TO P25

Estimated Ft^2 to be accepted:

EC Applications INC. is an authorized representative of the geosynthetic manufacturer's materials being installed on this project.

I the undersigned, an authorized respresentative of ECA, accept the above described subgrade area as suitable to be lined.

Name (Print)	Signature	Title	Date
VICENTE FIGUEROA	Vicente Figueroa	Superintendent	3/10/12

I the undersigned, an authorized representative of _____ the Inspecting Engineers, approve of the subgrade as being constructed to the specifications.

Name (Print)	Signature	Title	Date

ZEI

Subgrade Acceptance Form

Project Name: _____ Job Number: _____

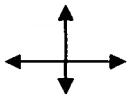
Project Manager: _____ Date: 3-9-12

Field Supervisor _____

This certification is based on observations of the surface of the subgrade only. No subterranean inspections or tests have been performed by EC Applications INC. makes not representations or warranties regarding conditions which may exist below the surface of the subgrade. EC Applications INC. accepts no responsibility for conformance of the subgrade to this project's specifications.

The soil subgrade accepted on this date refers to its present condition. Any changes in the subgrade condition that result from the effects of inclement weather and/or other forces beyond the control of Layfield and remedial work to correct the resulting deficiencies, will be the direct responsibility of the General Contractor.

Location and size and area to be accepted. Describe and sketch below: (Indicate North on Arrow)



P3 to P20

Estimated Ft² to be accepted:

EC Applications INC. is an authorized representative of the geosynthetic manufacturer's materials being installed on this project.

I the undersigned, an authorized respresentative of ECA, accept the above described subgrade area as suitable to be lined.

Name (Print)	Signature	Title	Date
Vicente F. Gonzalez	Vicente V. Figueroa	Superintendent	3/9/12

I the undersigned, an authorized representative of _____ the Inspecting Engineers, approve of the subgrade as being constructed to the specifications.

Name (Print)	Signature	Title	Date

Appendix D

Geosynthetic Independent Laboratory Test Results

Precision Geosynthetic Laboratories International

A Texas Research International Company

GAI-LAP
Initial: GVZ #:0.13
DATE: 03/14/2012

Shannon Goodrich
Zero Energy Institute
3550 Windsor Road
Oceanside, CA, 92056

Dear Mr. Goodrich:

Thank you for consulting Precision Geosynthetic Laboratories International (PGLI) for your material testing needs.

Enclosed is the ***final*** laboratory report for the seam testing of twelve (12) 60mil HDPE Seam samples.

PROJECT NAME: Hawes Composting Facilty Surface Impoundment "A"

REFERENCE PGL JOB NO.: G120211

DATE RECEIVED: March 13, 2012 **DATE REPORTED:** March 14, 2012

SAMPLES DELIVERED BY: Zero Energy Institue, CA

SAMPLE IDENTIFICATIONS:

SAMPLE ID	PGLI CONTROL NUMBER
DS-1 P4/P2	80137
DS-2 P6/P5	80138
DS-3 P10/P8	80139
DS-4 P1/P11	80140
DS-5 P15/P14	80141
DS-6 P1/P18	80142
DS-7 P21/P2	80143
DS-8 P25/P24	80144
DS-9 P28/P27	80145
DS-10 P28/P30	80146
DS-11 P38/P39	80147
DS-12 P42/P40	80148

TESTS REQUIRED/PERFORMED:

TEST METHOD	DESCRIPTION
ASTM D6392	Shear Bond Strength
ASTM DD6392	Peel Bond Adhesion

TEST CONDITIONS: The samples were conditioned for a minimum of one hour in the laboratory at 22 ± 2°C (71.6 ± 3.6°F) and at 60 ± 10% relative humidity prior to test.

TEST RESULTS: The test results are summarized in Tables 1 to 6.

PRECISION GEOSYNTHETIC LABORATORIES INTERNATIONAL

Maria Espitia

Maria Espitia
Quality Assurance

Carmelo V. Zantua
Technical/Laboratory Director

TABLE
SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: **Zero Energy Institute**
PROJECT: **Hawes Composting Facility**
DATE REC'D: **13-Mar-12**

MATERIAL: **60mil HDPE SEAM**
SEAM TYPE: **Fusion Weld**
PGLI JOB #: **G120211**

QC'd By: Maria Cipitia
TEST METHOD: ASTM D6392
DATE REPORT: 14-Mar-12

Crosshead Speed: 2 in/min		SHEAR EVALUATION				Crosshead Speed: 2 in/min	PEEL EVALUATION			
SAMPLE ID	PGLI CONTROL #	MAXIMUM STRENGTH (lb/in width)	% Elongation	Locus of Break	PROJECT SPEC. (lb/in width)	SPECIMEN NUMBER	MAXIMUM STRENGTH (lb/in width)	% INCURSION (%)	LOCUS OF BREAK	PROJECT SPEC. (lb/in width)
DS- 1	**80137**	171	> 50%	BRK		1 Outside	136	0	SE1	
P4/P2		172	> 50%	BRK		2 Outside	127	0	SE1	
		176	> 50%	BRK		3 Outside	126	0	SE1	
		175	> 50%	BRK		4 Outside	131	0	SE1	
		176	> 50%	BRK		5 Outside	138	0	SE1	
						AVG:	**132**			91
						STD. DEV.	**5**			
						1 Inside	137	0	SE1	
						2 Inside	136	0	SE1	
						3 Inside	140	0	SE1	
						4 Inside	150	0	SE1	
						5 Inside	141	0	SE1	
	AVG.	**174**			120	**AVG:**	**141**			91
	STD. DEV.	**2**				STD. DEV.	**6**			
DS- 2	**80138**	180	> 50%	BRK		1 Outside	138	0	SE1	
P6/P5		181	> 50%	BRK		2 Outside	141	0	SE1	
		176	> 50%	BRK		3 Outside	140	0	SE1	
		179	> 50%	BRK		4 Outside	127	0	SE1	
		178	> 50%	BRK		5 Outside	131	0	SE1	
						AVG:	**135**			91
						STD. DEV.	**6**			
						1 Inside	130	0	SE1	
						2 Inside	127	0	SE1	
						3 Inside	125	0	SE1	
						4 Inside	125	0	SE1	
						5 Inside	126	0	SE1	
	AVG:	**179**			120	**AVG:**	**127**			91
	STD. DEV.	**2**				STD. DEV.	**2**			

BREAK DESCRIPTION (ASTM D6392 FUSION):

AD	ADHESION FAILURE.
BRK	BREAK IN SHEETING.
SE1	BREAK AT OUTER EDGE OF SEAM.
SE2	BREAK AT INNER EDGE OF SEAM.
AD-BRK	BREAK IN FIRST SEAM AFTER SOME ADHESION FAILURE.
SIP	SEPARATION IN THE PLANE OF THE SHEET.

EXTRUSION:

AD1	ADHESION FAILURE. SPECIMENS DELAMINATED UNDER THE BEAD.
AD2	ADHESION FAILURE.
AD-WLD	BREAK THROUGH THE FILLET.
SE1	BREAK AT BOTTOM EDGE OF SEAM.
SE2	BREAK AT TOP EDGE OF SEAM.
SE3	BREAK AT BOTTOM EDGE OF SEAM (for PEEL only)
BRK1	BREAK IN BOTTOM SHEETING.
BRK2	BREAK IN TOP SHEETING.
AD-BRK	BREAK IN FIRST SEAM AFTER SOME ADHESION FAILURE.
HT	BREAK AT EDGE OF HOT TACK
SIP	SEPARATION IN THE PLANE OF THE SHEET.

TABLE 2
SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: **Zero Energy Institute**
PROJECT: **Hawes Composting Facility**
DATE REC'D: **13-Mar-12**

MATERIAL: **60mil HDPE SEAM**
SEAM TYPE: **Fusion Weld**
PGLI JOB #: **G120211**

QC'd By: Maria Espitia
TEST METHOD: ASTM D6392
DATE REPORT: 14-Mar-12

Crosshead Speed: 2 in/min		SHEAR EVALUATION				Crosshead Speed: 2 in/min	PEEL EVALUATION			
SAMPLE ID	PGLI CONTROL #	MAXIMUM STRENGTH (lb/in width)	% Elongation	Locus of Break	PROJECT SPEC. (lb/in width)	SPECIMEN NUMBER	MAXIMUM STRENGTH (lb/in width)	% INCURSION (%)	LOCUS OF BREAK	PROJECT SPEC. (lb/in width)
DS- 3	**80139**	171	> 50%	BRK		1 Outside	138	0	SE1	
P10/P8		172	> 50%	BRK		2 Outside	140	0	SE1	
		176	> 50%	BRK		3 Outside	141	0	SE1	
		175	> 50%	BRK		4 Outside	138	0	SE1	
		174	> 50%	BRK		5 Outside	141	0	SE1	
						AVG:	**140**			91
						STD. DEV.	**2**			
						1 Inside	129	0	SE1	
						2 Inside	135	0	SE1	
						3 Inside	142	0	SE1	
						4 Inside	140	0	SE1	
						5 Inside	130	0	SE1	
	AVG.	**174**			120	**AVG:**	**135**			91
	STD. DEV.	**2**				STD. DEV.	**6**			
DS- 4	**80140**	172	> 50%	BRK		1 Outside	138	0	SE1	
P1/P11		174	> 50%	BRK		2 Outside	140	0	SE1	
		173	> 50%	BRK		3 Outside	127	0	SE1	
		174	> 50%	BRK		4 Outside	125	0	SE1	
		171	> 50%	BRK		5 Outside	135	0	SE1	
						AVG:	**133**			91
						STD. DEV.	**7**			
						1 Inside	136	0	SE1	
						2 Inside	142	0	SE1	
						3 Inside	140	0	SE1	
						4 Inside	127	0	SE1	
						5 Inside	138	0	SE1	
	AVG:	**173**			120	**AVG:**	**137**			91
	STD. DEV.	**1**				STD. DEV.	**6**			

BREAK DESCRIPTION (ASTM D6392 FUSION):

AD	ADHESION FAILURE.
BRK	BREAK IN SHEETING.
SE1	BREAK AT OUTER EDGE OF SEAM.
SE2	BREAK AT INNER EDGE OF SEAM.
AD-BRK	BREAK IN FIRST SEAM AFTER SOME ADHESION FAILURE.
SIP	SEPARATION IN THE PLANE OF THE SHEET.

EXTRUSION:

AD1	ADHESION FAILURE. SPECIMENS DELAMINATED UNDER THE BEAD.
AD2	ADHESION FAILURE.
AD-WLD	BREAK THROUGH THE FILLET.
SE1	BREAK AT BOTTOM EDGE OF SEAM.
SE2	BREAK AT TOP EDGE OF SEAM.
SE3	BREAK AT BOTTOM EDGE OF SEAM (for PEEL only)
BRK1	BREAK IN BOTTOM SHEETING.
BRK2	BREAK IN TOP SHEETING.
AD-BRK	BREAK IN FIRST SEAM AFTER SOME ADHESION FAILURE.
HT	BREAK AT EDGE OF HOT TACK
SIP	SEPARATION IN THE PLANE OF THE SHEET.

TABLE 8
SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: **Zero Energy Institute**
PROJECT: **Hawes Composting Facility**
DATE REC'D: **13-Mar-12**

MATERIAL: **60mil HDPE SEAM**
SEAM TYPE: **Fusion Weld**
PGLI JOB #: **G120211**

QC'd By: Maria Espitia
TEST METHOD: ASTM D6392
DATE REPORT: 14-Mar-12

Crosshead Speed: 2 in/min		SHEAR EVALUATION				Crosshead Speed: 2 in/min	PEEL EVALUATION			
SAMPLE ID	PGLI CONTROL #	MAXIMUM STRENGTH (lb/in width)	% Elongation	Locus of Break	PROJECT SPEC. (lb/in width)	SPECIMEN NUMBER	MAXIMUM STRENGTH (lb/in width)	% INCURSION (%)	LOCUS OF BREAK	PROJECT SPEC. (lb/in width)
DS- 5	**80141**	176	> 50%	BRK		1 Outside	137	0	SE1	
P15/P14		180	> 50%	BRK		2 Outside	140	0	SE1	
		176	> 50%	BRK		3 Outside	142	0	SE1	
		179	> 50%	BRK		4 Outside	137	0	SE1	
		178	> 50%	BRK		5 Outside	135	0	SE1	
						AVG:	**138**			91
						STD. DEV.	**3**			
						1 Inside	138	0	SE1	
						2 Inside	130	0	SE1	
						3 Inside	131	0	SE1	
						4 Inside	130	0	SE1	
						5 Inside	141	0	SE1	
	AVG.	**178**			120	**AVG:**	**134**			91
	STD. DEV.	**2**				STD. DEV.	**5**			
DS- 6	**80142**	178	> 50%	BRK		1 Outside	140	0	SE1	
P1/P18		174	> 50%	BRK		2 Outside	143	0	SE1	
		176	> 50%	BRK		3 Outside	138	0	SE1	
		176	> 50%	BRK		4 Outside	135	0	SE1	
		180	> 50%	BRK		5 Outside	140	0	SE1	
						AVG:	**139**			91
						STD. DEV.	**3**			
						1 Inside	142	0	SE1	
						2 Inside	140	0	SE1	
						3 Inside	138	0	SE1	
						4 Inside	135	0	SE1	
						5 Inside	136	0	SE1	
	AVG:	**177**			120	**AVG:**	**138**			91
	STD. DEV.	**2**				STD. DEV.	**3**			

BREAK DESCRIPTION (ASTM D6392 FUSION):

AD	ADHESION FAILURE.
BRK	BREAK IN SHEETING.
SE1	BREAK AT OUTER EDGE OF SEAM.
SE2	BREAK AT INNER EDGE OF SEAM.
AD-BRK	BREAK IN FIRST SEAM AFTER SOME ADHESION FAILURE.
SIP	SEPARATION IN THE PLANE OF THE SHEET.

EXTRUSION:

AD1	ADHESION FAILURE. SPECIMENS DELAMINATED UNDER THE BEAD.
AD2	ADHESION FAILURE.
AD-WLD	BREAK THROUGH THE FILLET.
SE1	BREAK AT BOTTOM EDGE OF SEAM.
SE2	BREAK AT TOP EDGE OF SEAM.
SE3	BREAK AT BOTTOM EDGE OF SEAM (for PEEL only)
BRK1	BREAK IN BOTTOM SHEETING.
BRK2	BREAK IN TOP SHEETING.
AD-BRK	BREAK IN FIRST SEAM AFTER SOME ADHESION FAILURE.
HT	BREAK AT EDGE OF HOT TACK
SIP	SEPARATION IN THE PLANE OF THE SHEET.

TABLE 1
SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: **Zero Energy Institute**
PROJECT: **Hawes Composting Facility**
DATE REC'D: **13-Mar-12**

MATERIAL: **60mil HDPE SEAM**
SEAM TYPE: **Fusion Weld**
PGLI JOB #: **G120211**

QC'd By: Maria Cipitia
TEST METHOD: ASTM D6392
DATE REPORT: 14-Mar-12

Crosshead Speed: 2 in/min		SHEAR EVALUATION				Crosshead Speed: 2 in/min	PEEL EVALUATION			
SAMPLE ID	PGLI CONTROL #	MAXIMUM STRENGTH (lb/in width)	% Elongation	Locus of Break	PROJECT SPEC. (lb/in width)	SPECIMEN NUMBER	MAXIMUM STRENGTH (lb/in width)	% INCURSION (%)	LOCUS OF BREAK	PROJECT SPEC. (lb/in width)
DS- 7	**80143**	171	> 50%	BRK		1 Outside	135	0	SE1	
P21/P2		174	> 50%	BRK		2 Outside	140	0	SE1	
		172	> 50%	BRK		3 Outside	141	0	SE1	
		172	> 50%	BRK		4 Outside	138	0	SE1	
		170	> 50%	BRK		5 Outside	127	0	SE1	
						AVG:	**136**			91
						STD. DEV.	**6**			
						1 Inside	122	0	SE1	
						2 Inside	130	0	SE1	
						3 Inside	127	0	SE1	
						4 Inside	125	0	SE1	
						5 Inside	138	0	SE1	
	AVG.	**172**			120	**AVG:**	**128**			91
	STD. DEV.	**1**				STD. DEV.	**6**			
DS- 8	**80144**	168	> 50%	BRK		1 Outside	142	0	SE1	
P25/P24		169	> 50%	BRK		2 Outside	140	0	SE1	
		170	> 50%	BRK		3 Outside	127	0	SE1	
		170	> 50%	BRK		4 Outside	127	0	SE1	
		167	> 50%	BRK		5 Outside	130	0	SE1	
						AVG:	**133**			91
						STD. DEV.	**7**			
						1 Inside	131	0	SE1	
						2 Inside	127	0	SE1	
						3 Inside	126	0	SE1	
						4 Inside	131	0	SE1	
						5 Inside	127	0	SE1	
	AVG:	**169**			120	**AVG:**	**128**			91
	STD. DEV.	**1**				STD. DEV.	**2**			

BREAK DESCRIPTION (ASTM D6392 FUSION):

AD	ADHESION FAILURE.
BRK	BREAK IN SHEETING.
SE1	BREAK AT OUTER EDGE OF SEAM.
SE2	BREAK AT INNER EDGE OF SEAM.
AD-BRK	BREAK IN FIRST SEAM AFTER SOME ADHESION FAILURE.
SIP	SEPARATION IN THE PLANE OF THE SHEET.

EXTRUSION:

AD1	ADHESION FAILURE. SPECIMENS DELAMINATED UNDER THE BEAD.
AD2	ADHESION FAILURE.
AD-WLD	BREAK THROUGH THE FILLET.
SE1	BREAK AT BOTTOM EDGE OF SEAM.
SE2	BREAK AT TOP EDGE OF SEAM.
SE3	BREAK AT BOTTOM EDGE OF SEAM (for PEEL only)
BRK1	BREAK IN BOTTOM SHEETING.
BRK2	BREAK IN TOP SHEETING.
AD-BRK	BREAK IN FIRST SEAM AFTER SOME ADHESION FAILURE.
HT	BREAK AT EDGE OF HOT TACK
SIP	SEPARATION IN THE PLANE OF THE SHEET.

TABLE 5
SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: **Zero Energy Institute**
PROJECT: **Hawes Composting Facility**
DATE REC'D: **13-Mar-12**

MATERIAL: **60mil HDPE SEAM**
SEAM TYPE: **Fusion Weld**
PGLI JOB #: **G120211**

QC'd By: Maria Cipitia
TEST METHOD: ASTM D6392
DATE REPORT: 14-Mar-12

Crosshead Speed: 2 in/min						Crosshead Speed: 2 in/min				
		SHEAR EVALUATION				PEEL EVALUATION				
SAMPLE ID	PGLI CONTROL #	MAXIMUM STRENGTH (lb/in width)	% Elongation	Locus of Break	PROJECT SPEC. (lb/in width)	SPECIMEN NUMBER	MAXIMUM STRENGTH (lb/in width)	% INCURSION (%)	LOCUS OF BREAK	PROJECT SPEC. (lb/in width)
DS- 9	**80145**	175	> 50%	BRK		1 Outside	139	0	SE1	
P28/P27		176	> 50%	BRK		2 Outside	141	0	SE1	
		175	> 50%	BRK		3 Outside	140	0	SE1	
		174	> 50%	BRK		4 Outside	140	0	SE1	
		174	> 50%	BRK		5 Outside	138	0	SE1	
						AVG:	**140**			91
						STD. DEV.	**1**			
						1 Inside	137	0	SE1	
						2 Inside	130	0	SE1	
						3 Inside	135	0	SE1	
						4 Inside	136	0	SE1	
						5 Inside	137	0	SE1	
	AVG.	**175**			120	**AVG:**	**135**			91
	STD. DEV.	**1**				STD. DEV.	**3**			
DS- 10	**80146**	172	> 50%	BRK		1 Outside	140	0	SE1	
P28/P30		176	> 50%	BRK		2 Outside	138	0	SE1	
		174	> 50%	BRK		3 Outside	142	0	SE1	
		173	> 50%	BRK		4 Outside	138	0	SE1	
		173	> 50%	BRK		5 Outside	137	0	SE1	
						AVG:	**139**			91
						STD. DEV.	**2**			
						1 Inside	136	0	SE1	
						2 Inside	127	0	SE1	
						3 Inside	127	0	SE1	
						4 Inside	130	0	SE1	
						5 Inside	128	0	SE1	
	AVG:	**174**			120	**AVG:**	**130**			91
	STD. DEV.	**2**				STD. DEV.	**4**			

BREAK DESCRIPTION (ASTM D6392 FUSION):

AD	ADHESION FAILURE.
BRK	BREAK IN SHEETING.
SE1	BREAK AT OUTER EDGE OF SEAM.
SE2	BREAK AT INNER EDGE OF SEAM.
AD-BRK	BREAK IN FIRST SEAM AFTER SOME ADHESION FAILURE.
SIP	SEPARATION IN THE PLANE OF THE SHEET.

EXTRUSION:

AD1	ADHESION FAILURE. SPECIMENS DELAMINATED UNDER THE BEAD.
AD2	ADHESION FAILURE.
AD-WLD	BREAK THROUGH THE FILLET.
SE1	BREAK AT BOTTOM EDGE OF SEAM.
SE2	BREAK AT TOP EDGE OF SEAM.
SE3	BREAK AT BOTTOM EDGE OF SEAM (for PEEL only)
BRK1	BREAK IN BOTTOM SHEETING.
BRK2	BREAK IN TOP SHEETING.
AD-BRK	BREAK IN FIRST SEAM AFTER SOME ADHESION FAILURE.
HT	BREAK AT EDGE OF HOT TACK
SIP	SEPARATION IN THE PLANE OF THE SHEET.

TABLE 6
SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: **Zero Energy Institute**
PROJECT: **Hawes Composting Facility**
DATE REC'D: **13-Mar-12**

MATERIAL: **60mil HDPE SEAM**
SEAM TYPE: **Fusion Weld**
PGLI JOB #: **G120211**

QC'd By: Maria Cipitia
TEST METHOD: ASTM D6392
DATE REPORT: 14-Mar-12

Crosshead Speed: 2 in/min		SHEAR EVALUATION				Crosshead Speed: 2 in/min	PEEL EVALUATION			
SAMPLE ID	PGLI CONTROL #	MAXIMUM STRENGTH (lb/in width)	% Elongation	Locus of Break	PROJECT SPEC. (lb/in width)	SPECIMEN NUMBER	MAXIMUM STRENGTH (lb/in width)	% INCURSION (%)	LOCUS OF BREAK	PROJECT SPEC. (lb/in width)
DS- 11	**80147**	180	> 50%	BRK		1 Outside	135	0	SE1	
P38/P39		181	> 50%	BRK		2 Outside	140	0	SE1	
		180	> 50%	BRK		3 Outside	143	0	SE1	
		179	> 50%	BRK		4 Outside	137	0	SE1	
		179	> 50%	BRK		5 Outside	135	0	SE1	
						AVG:	**138**			91
						STD. DEV.	**3**			
						1 Inside	142	0	SE1	
						2 Inside	127	0	SE1	
						3 Inside	127	0	SE1	
						4 Inside	130	0	SE1	
						5 Inside	130	0	SE1	
	AVG.	**180**			120	**AVG:**	**131**			91
	STD. DEV.	**1**				STD. DEV.	**6**			
DS- 12	**80148**	176	> 50%	BRK		1 Outside	131	0	SE1	
P42/P40		175	> 50%	BRK		2 Outside	127	0	SE1	
		178	> 50%	BRK		3 Outside	128	0	SE1	
		178	> 50%	BRK		4 Outside	129	0	SE1	
		174	> 50%	BRK		5 Outside	129	0	SE1	
						AVG:	**129**			91
						STD. DEV.	**2**			
						1 Inside	131	0	SE1	
						2 Inside	130	0	SE1	
						3 Inside	131	0	SE1	
						4 Inside	129	0	SE1	
						5 Inside	125	0	SE1	
	AVG:	**176**			120	**AVG:**	**129**			91
	STD. DEV.	**2**				STD. DEV.	**2**			

BREAK DESCRIPTION (ASTM D6392 FUSION):

AD	ADHESION FAILURE.
BRK	BREAK IN SHEETING.
SE1	BREAK AT OUTER EDGE OF SEAM.
SE2	BREAK AT INNER EDGE OF SEAM.
AD-BRK	BREAK IN FIRST SEAM AFTER SOME ADHESION FAILURE.
SIP	SEPARATION IN THE PLANE OF THE SHEET.

EXTRUSION:

AD1	ADHESION FAILURE. SPECIMENS DELAMINATED UNDER THE BEAD.
AD2	ADHESION FAILURE.
AD-WLD	BREAK THROUGH THE FILLET.
SE1	BREAK AT BOTTOM EDGE OF SEAM.
SE2	BREAK AT TOP EDGE OF SEAM.
SE3	BREAK AT BOTTOM EDGE OF SEAM (for PEEL only)
BRK1	BREAK IN BOTTOM SHEETING.
BRK2	BREAK IN TOP SHEETING.
AD-BRK	BREAK IN FIRST SEAM AFTER SOME ADHESION FAILURE.
HT	BREAK AT EDGE OF HOT TACK
SIP	SEPARATION IN THE PLANE OF THE SHEET.

Precision Geosynthetic Laboratories International

A Texas Research International Company

GAI-LAP

Initial: CVZ #:0.13

DATE: 05/04/2012

Shannon Goodrich
Zero Energy Institute
3550 Windsor Road
Oceanside, CA, 92056

Dear Mr. Goodrich:

Thank you for consulting Precision Geosynthetic Laboratories International (PGLI) for your material testing needs.

Enclosed is the ***final*** laboratory report for the seam testing of six (6) 60mil HDPE Seam samples.

PROJECT NAME: Hawes Composting Facilty Surface Impoundment "B"

REFERENCE PGL JOB NO.: G120423

DATE RECEIVED: May 4, 2012 **DATE REPORTED:** May 4, 2012

SAMPLES DELIVERED BY: Zero Energy Institue, CA

SAMPLE IDENTIFICATIONS:

SAMPLE ID	PGLI CONTROL NUMBER
DS-1 P22/P23	81261
DS-2 P26/P27	81262
DS-3 P03/P32	81263
DS-4 P36/P37	81264
DS-5 P16/P41	81265
DS-6 P51/P52	81266

TESTS REQUIRED/PERFORMED:

TEST METHOD	DESCRIPTION
ASTM D6392	Shear Bond Strength
ASTM D6392	Peel Bond Adhesion

TEST CONDITIONS: The samples were conditioned for a minimum of one hour in the laboratory at 22 ± 2°C (71.6 ± 3.6°F) and at 60 ± 10% relative humidity prior to test.

TEST RESULTS: The test results are summarized in Tables 1 to 3.

PRECISION GEOSYNTHETIC LABORATORIES INTERNATIONAL

Maria Espitia

Maria Espitia
Quality Assurance

Carmelo V. Zantua
Technical/Laboratory Director

TABLE 1
SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: **Zero Energy Institute**
PROJECT: **Hawes Composting Facility**
DATE REC'D: **4-May-12**

MATERIAL: **60mil HDPE SEAM**
SEAM TYPE: **Fusion Weld**
PGLI JOB #: **G120423**

QC'd By: Maria Capitia
TEST METHOD: ASTM D6392
DATE REPORT: 4-May-12

Crosshead Speed: 2 in/min		SHEAR EVALUATION				Crosshead Speed: 2 in/min	PEEL EVALUATION			
SAMPLE ID	PGLI CONTROL #	MAXIMUM STRENGTH (lb/in width)	% Elongation	Locus of Break	PROJECT SPEC. (lb/in width)	SPECIMEN NUMBER	MAXIMUM STRENGTH (lb/in width)	% INCURSION (%)	LOCUS OF BREAK	PROJECT SPEC. (lb/in width)
DS- 1	**81261**	167	> 50%	BRK		1 Outside	130	0	SE1	
P22/P23		166	> 50%	BRK		2 Outside	127	0	SE1	
		167	> 50%	BRK		3 Outside	136	0	SE1	
		169	> 50%	BRK		4 Outside	141	0	SE1	
		165	> 50%	BRK		5 Outside	129	0	SE1	
						AVG:	**133**			91
						STD. DEV.	**6**			
						1 Inside	130	0	SE1	
						2 Inside	136	0	SE1	
						3 Inside	130	0	SE1	
						4 Inside	131	0	SE1	
						5 Inside	127	0	SE1	
	AVG.	**167**			120	**AVG:**	**131**			91
	STD. DEV.	**1**				STD. DEV.	**3**			
DS- 2	**81262**	163	> 50%	BRK		1 Outside	136	0	SE1	
P26/P27		160	> 50%	BRK		2 Outside	141	0	SE1	
		162	> 50%	BRK		3 Outside	127	0	SE1	
		161	> 50%	BRK		4 Outside	130	0	SE1	
		160	> 50%	BRK		5 Outside	124	0	SE1	
						AVG:	**132**			91
						STD. DEV.	**7**			
						1 Inside	127	0	SE1	
						2 Inside	130	0	SE1	
						3 Inside	137	0	SE1	
						4 Inside	130	0	SE1	
						5 Inside	127	0	SE1	
	AVG:	**161**			120	**AVG:**	**130**			91
	STD. DEV.	**1**				STD. DEV.	**4**			

BREAK DESCRIPTION (ASTM D6392 FUSION):

AD	ADHESION FAILURE.
BRK	BREAK IN SHEETING.
SE1	BREAK AT OUTER EDGE OF SEAM.
SE2	BREAK AT INNER EDGE OF SEAM.
AD-BRK	BREAK IN FIRST SEAM AFTER SOME ADHESION FAILURE.
SIP	SEPARATION IN THE PLANE OF THE SHEET.

EXTRUSION:

AD1	ADHESION FAILURE. SPECIMENS DELAMINATED UNDER THE BEAD.
AD2	ADHESION FAILURE.
AD-WLD	BREAK THROUGH THE FILLET.
SE1	BREAK AT BOTTOM EDGE OF SEAM.
SE2	BREAK AT TOP EDGE OF SEAM.
SE3	BREAK AT BOTTOM EDGE OF SEAM (for PEEL only)
BRK1	BREAK IN BOTTOM SHEETING.
BRK2	BREAK IN TOP SHEETING.
AD-BRK	BREAK IN FIRST SEAM AFTER SOME ADHESION FAILURE.
HT	BREAK AT EDGE OF HOT TACK
SIP	SEPARATION IN THE PLANE OF THE SHEET.

TABLE 2
SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: **Zero Energy Institute**
PROJECT: **Hawes Composting Facility**
DATE REC'D: **4-May-12**

MATERIAL: **60mil HDPE SEAM**
SEAM TYPE: **Fusion Weld**
PGLI JOB #: **G120423**

QC'd By: Maria Espitia
TEST METHOD: ASTM D6392
DATE REPORT: 4-May-12

Crosshead Speed: 2 in/min		SHEAR EVALUATION				Crosshead Speed: 2 in/min	PEEL EVALUATION			
SAMPLE ID	PGLI CONTROL #	MAXIMUM STRENGTH (lb/in width)	% Elongation	Locus of Break	PROJECT SPEC. (lb/in width)	SPECIMEN NUMBER	MAXIMUM STRENGTH (lb/in width)	% INCURSION (%)	LOCUS OF BREAK	PROJECT SPEC. (lb/in width)
DS- 3	**81263**	170	> 50%	BRK		1 Outside	138	0	SE1	
P03/P32		171	> 50%	BRK		2 Outside	141	0	SE1	
		168	> 50%	BRK		3 Outside	140	0	SE1	
		165	> 50%	BRK		4 Outside	127	0	SE1	
		168	> 50%	BRK		5 Outside	137	0	SE1	
						AVG:	**137**			91
						STD. DEV.	**6**			
						1 Inside	130	0	SE1	
						2 Inside	131	0	SE1	
						3 Inside	135	0	SE1	
						4 Inside	130	0	SE1	
						5 Inside	127	0	SE1	
	AVG.	**168**			120	**AVG:**	**131**			91
	STD. DEV.	**2**				STD. DEV.	**3**			
DS- 4	**81264**	165	> 50%	BRK		1 Outside	125	0	SE1	
P36/P37		167	> 50%	BRK		2 Outside	124	0	SE1	
		167	> 50%	BRK		3 Outside	123	0	SE1	
		169	> 50%	BRK		4 Outside	130	0	SE1	
		168	> 50%	BRK		5 Outside	127	0	SE1	
						AVG:	**126**			91
						STD. DEV.	**3**			
						1 Inside	130	0	SE1	
						2 Inside	131	0	SE1	
						3 Inside	137	0	SE1	
						4 Inside	135	0	SE1	
						5 Inside	130	0	SE1	
	AVG:	**167**			120	**AVG:**	**133**			91
	STD. DEV.	**1**				STD. DEV.	**3**			

BREAK DESCRIPTION (ASTM D6392 FUSION):

AD	ADHESION FAILURE.
BRK	BREAK IN SHEETING.
SE1	BREAK AT OUTER EDGE OF SEAM.
SE2	BREAK AT INNER EDGE OF SEAM.
AD-BRK	BREAK IN FIRST SEAM AFTER SOME ADHESION FAILURE.
SIP	SEPARATION IN THE PLANE OF THE SHEET.

EXTRUSION:

AD1	ADHESION FAILURE. SPECIMENS DELAMINATED UNDER THE BEAD.
AD2	ADHESION FAILURE.
AD-WLD	BREAK THROUGH THE FILLET.
SE1	BREAK AT BOTTOM EDGE OF SEAM.
SE2	BREAK AT TOP EDGE OF SEAM.
SE3	BREAK AT BOTTOM EDGE OF SEAM (for PEEL only)
BRK1	BREAK IN BOTTOM SHEETING.
BRK2	BREAK IN TOP SHEETING.
AD-BRK	BREAK IN FIRST SEAM AFTER SOME ADHESION FAILURE.
HT	BREAK AT EDGE OF HOT TACK
SIP	SEPARATION IN THE PLANE OF THE SHEET.

TABLE 3.
SEAM PEEL AND SHEAR TEST RESULTS

CLIENT: **Zero Energy Institute**
PROJECT: **Hawes Composting Facility**
DATE REC'D: **4-May-12**

MATERIAL: **60mil HDPE SEAM**
SEAM TYPE: **Fusion Weld**
PGLI JOB #: **G120423**

QC'd By: Maria Espitia
TEST METHOD: ASTM D6392
DATE REPORT: 4-May-12

Crosshead Speed: 2 in/min		SHEAR EVALUATION				Crosshead Speed: 2 in/min	PEEL EVALUATION			
SAMPLE ID	PGLI CONTROL #	MAXIMUM STRENGTH (lb/in width)	% Elongation	Locus of Break	PROJECT SPEC. (lb/in width)	SPECIMEN NUMBER	MAXIMUM STRENGTH (lb/in width)	% INCURSION (%)	LOCUS OF BREAK	PROJECT SPEC. (lb/in width)
DS- 5	**81265**	168	> 50%	BRK		1 Outside	133	0	SE1	
P16/P41		165	> 50%	BRK		2 Outside	130	0	SE1	
		165	> 50%	BRK		3 Outside	127	0	SE1	
		167	> 50%	BRK		4 Outside	135	0	SE1	
		166	> 50%	BRK		5 Outside	136	0	SE1	
						AVG:	**132**			91
						STD. DEV.	**4**			
						1 Inside	141	0	SE1	
						2 Inside	130	0	SE1	
						3 Inside	127	0	SE1	
						4 Inside	130	0	SE1	
						5 Inside	136	0	SE1	
	AVG.	**166**			120	**AVG:**	**133**			91
	STD. DEV.	**1**				STD. DEV.	**6**			
DS- 6	**81266**	163	> 50%	BRK		1 Outside	141	0	SE1	
P51/P52		164	> 50%	BRK		2 Outside	129	0	SE1	
		164	> 50%	BRK		3 Outside	130	0	SE1	
		167	> 50%	BRK		4 Outside	127	0	SE1	
		163	> 50%	BRK		5 Outside	136	0	SE1	
						AVG:	**133**			91
						STD. DEV.	**6**			
						1 Inside	141	0	SE1	
						2 Inside	130	0	SE1	
						3 Inside	127	0	SE1	
						4 Inside	131	0	SE1	
						5 Inside	136	0	SE1	
	AVG:	**164**			120	**AVG:**	**133**			91
	STD. DEV.	**2**				STD. DEV.	**6**			

BREAK DESCRIPTION (ASTM D6392 FUSION):

AD	ADHESION FAILURE.
BRK	BREAK IN SHEETING.
SE1	BREAK AT OUTER EDGE OF SEAM.
SE2	BREAK AT INNER EDGE OF SEAM.
AD-BRK	BREAK IN FIRST SEAM AFTER SOME ADHESION FAILURE.
SIP	SEPARATION IN THE PLANE OF THE SHEET.

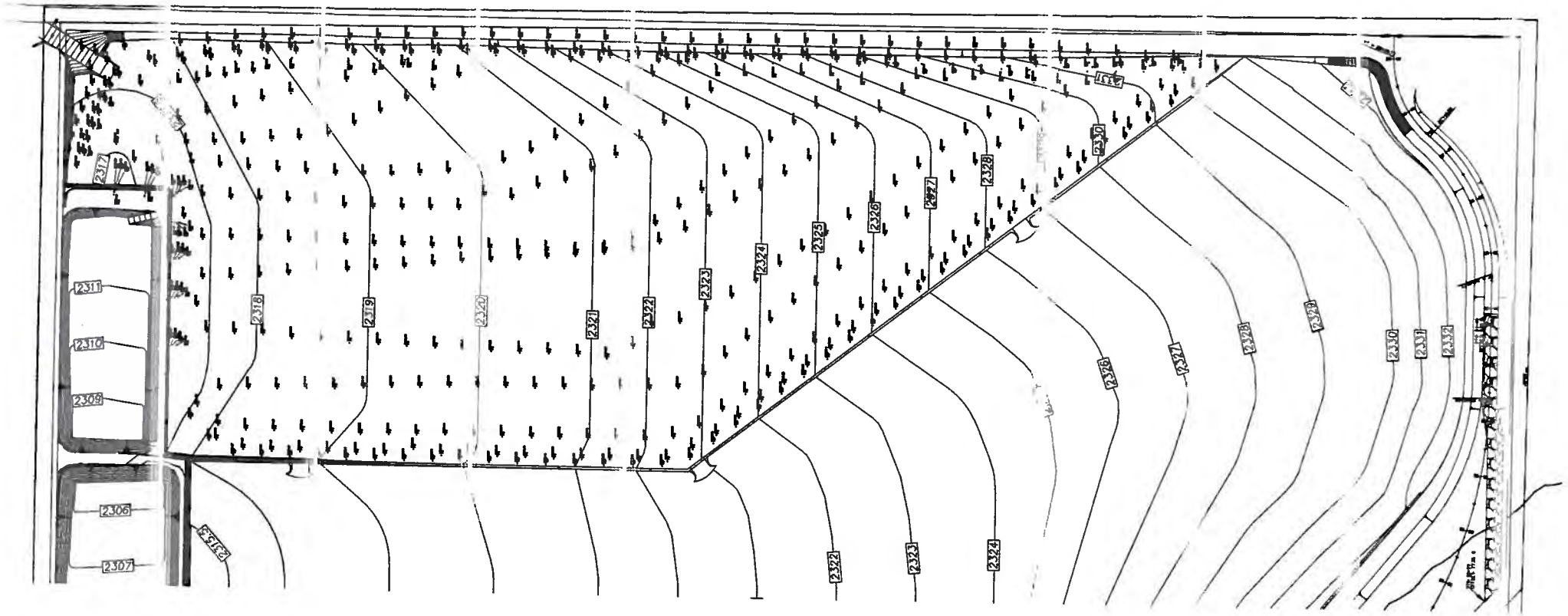
EXTRUSION:

AD1	ADHESION FAILURE. SPECIMENS DELAMINATED UNDER THE BEAD.
AD2	ADHESION FAILURE.
AD-WLD	BREAK THROUGH THE FILLET.
SE1	BREAK AT BOTTOM EDGE OF SEAM.
SE2	BREAK AT TOP EDGE OF SEAM.
SE3	BREAK AT BOTTOM EDGE OF SEAM (for PEEL only)
BRK1	BREAK IN BOTTOM SHEETING.
BRK2	BREAK IN TOP SHEETING.
AD-BRK	BREAK IN FIRST SEAM AFTER SOME ADHESION FAILURE.
HT	BREAK AT EDGE OF HOT TACK
SIP	SEPARATION IN THE PLANE OF THE SHEET.

Appendix E

East Waste Pile and Surface Impoundments
As-Built Survey

Phase 1 - East Half



Appendix F

ZEI CQA Daily Summary Reports

and Photo Documentation

ZERO ENERGY INSTITUTE

CQA DAILY SUMMARY REPORT

Hawes Composting Facility

Location:	San Bernardino County	Owner:	Nursery Products
CM:	Nursery Products	General:	Quantum
Engineer:	Geosyntec Consultants	Installer:	EC Applications Inc
Inspection CQA:	Zero Energy Institute	Prepared by:	James Hansen
Submitted to:	Nursery Products		

Report No. 1

Report Date **Thursday** February 9 2012 **Onsite:** 2:00pm to 5:30pm

Weather: AM: Clear, Warm, Low Winds PM: warm and breeze at 75 degree

CQA Personnel: ZEI CQA Personnel: James Hansen

Hawes Composting Facility: Work Performed:

- On-site at 2:00 pm, clear and breeze at 75 degrees.
- Quantum continued to clear and grubbing organic from surface impoundment pond A and B. Water trucks are moisture conditioning soil that is going to be used for engineered fill.
- Off-site at 5:30 pm.

Personnel:
Quantum: (2)-laborers, (1) Superintendent, (5) Operator
EC Applications Inc: (0) Superintendent, (0) laborer, (0) operators
ZEI CQA: James Hansen
Equipment: (1) John Deere Blade. (2) 623 Scrappers. (2) Water Trucks.

Meetings, Action Items and Resolutions:

- ZEI was on site to attend turtle training.

Action Item: ☐ **Action Correction Item: Attachments: Photo's**

Hawes Composting Facility

Water truck moisture conditioning soil

Clear and Grubbing on Surface Impoundment Pound

ZERO ENERGY INSTITUTE

CQA DAILY SUMMARY REPORT

Hawes Composting Facility

Location:	San Bernardino County	Owner:	Nursery Products
CM:	Nursery Products	General:	Quantum
Engineer:	Geosyntec Consultants	Installer:	EC Applications Inc
Inspection CQA:	Zero Energy Institute	Prepared by:	James Hansen
Submitted to:	Nursery Products		

Report No. 2

Report Date **Monday** February 13 2012 **Onsite:** 9:00am to 2:30pm

Weather: AM: Clear, Warm, Low Winds PM: warm and breeze at 73 degree

CQA Personnel: ZEI CQA Personnel: James Hansen

Hawes Composting Facility: Work Performed:

- On-site at 9:00 am, clear and breeze at 73 degrees.
- Quantum continued to clear and grubbing organic from surface impoundment pond A and B. Water trucks are moisture conditioning soil that is going to be used for engineered fill.
- Quantum began scarifying sub grade 12" and compacting to 90% with two 623 scrappers wheel rolling. Then placing fill material on the East side of composting area where fill was needed and compacting with two 623 scrappers wheel rolling material.
- Off-site at 2:30 pm.

Personnel:
Quantum: (2)-laborers, (1) Superintendent, (5) Operator
EC Applications Inc: (0) Superintendent, (0) laborer, (0) operators
ZEI CQA: James Hansen
Equipment: (1) John Deere Blade. (2) 623 Scrappers. (2) Water Trucks.

Meetings, Action Items and Resolutions:

- None.

Action Item: ☐ **Action Correction Item: Attachments: Photo's**

Hawes Composting Facility

Water truck moisture conditioning soil

Blade scarifying sub grade

ZERO ENERGY INSTITUTE

CQA DAILY SUMMARY REPORT

Hawes Composting Facility

Location:	San Bernardino County	Owner:	Nursery Products
CM:	Nursery Products	General:	Quantum
Engineer:	Geosyntec Consultants	Installer:	EC Applications Inc
Inspection CQA:	Zero Energy Institute	Prepared by:	James Hansen
Submitted to:	Nursery Products		

Report No. 3

Report Date **Wednesday** February 15 2012 **Onsite:** 10:30am to 4:00pm

Weather: AM: Overcast, Cold, and High Winds PM: cold and windy at 52 degree

CQA Personnel: ZEI CQA Personnel: James Hansen

Hawes Composting Facility: Work Performed:

- On-site at 10:30 am, cold and windy at 52 degrees.
- Quantum began removing material from surface impoundment pond B. Water trucks are moisture conditioning soil that is going to be used for engineered fill on the East side of composting area where fill is needed. Two 623 scrappers are placing material on the east side and compacting material by wheel rolling to 90% compacting. Between compacted lifts blade is scarifying and wind rolling dry material to moisture conditioned.
- Off-site at 4:00 pm.

Personnel:
Quantum: (2)-laborers, (1) Superintendent, (5) Operator
EC Applications Inc: (0) Superintendent, (0) laborer, (0) operators
ZEI CQA: James Hansen
Equipment: (1) John Deere Blade. (2) 623 Scrappers. (2) Water Trucks.

Meetings, Action Items and Resolutions:

- None.

Action Item: ☐ **Action Correction Item: Attachments: Photo's**

Hawes Composting Facility

Water truck moisture conditioning material and scrapper is removing from pond B

Blade wind rolling material in east fill area

Hawes Composting Facility

Two 623 scrappers placing fill material on the East side

ZERO ENERGY INSTITUTE

CQA DAILY SUMMARY REPORT

Hawes Composting Facility

Location:	San Bernardino County	Owner:	Nursery Products
CM:	Nursery Products	General:	Quantum
Engineer:	Geosyntec Consultants	Installer:	EC Applications Inc
Inspection CQA:	Zero Energy Institute	Prepared by:	James Hansen
Submitted to:	Nursery Products		

Report No. 4

Report Date **Thursday** February 16 2012 **Onsite:** 9:00am to 4:00pm

Weather: AM: Overcast, Cold, and High Winds PM: cold and windy at 54 degree

CQA Personnel: ZEI CQA Personnel: James Hansen

Hawes Composting Facility: Work Performed:

- On-site at 9:00 am, cold and windy at 54 degrees.
- Quantum continued removing material from surface impoundment pond B. Water trucks are moisture conditioning soil that is going to be used for engineered fill on the East side of composting area where fill is needed. Two 623 scrappers are placing material on the east side and compacting material by wheel rolling to 90% compacting. Between compacted lifts blade is scarifying and wind rolling dry material to moisture conditioned.
- Off-site at 4:00 pm.

Personnel:
Quantum: (2)-laborers, (1) Superintendent, (5) Operator
EC Applications Inc: (0) Superintendent, (0) laborer, (0) operators
ZEI CQA: James Hansen
Equipment: (1) John Deere Blade. (2) 623 Scrappers. (2) Water Trucks.

Meetings, Action Items and Resolutions:

- None.

Action Item: ☐ **Action Correction Item: Attachments: Photo's**

Hawes Composting Facility

Water truck moisture conditioning material in pond B

Blade wind rolling material in East fill area

Hawes Composting Facility

Two 623 scrappers placing fill material on the East side

623 scrapper removing material from pond B

ZERO ENERGY INSTITUTE

CQA DAILY SUMMARY REPORT

Hawes Composting Facility

Location:	San Bernardino County	Owner:	Nursery Products
CM:	Nursery Products	General:	Quantum
Engineer:	Geosyntec Consultants	Installer:	EC Applications Inc
Inspection CQA:	Zero Energy Institute	Prepared by:	James Hansen
Submitted to:	Nursery Products		

Report No. 5

Report Date **Monday** February 20 2012 **Onsite:** 6:30am to 3:00pm

Weather: AM: Clear, Cold, and low Winds PM: cold and breeze at 34 degree

CQA Personnel: ZEI CQA Personnel: James Hansen

Hawes Composting Facility: Work Performed:

- On-site at 6:30 am, cold and windy at 34 degrees.
- Quantum continued removing material from surface impoundment pond B. Water trucks are moisture conditioning soil that is going to be used for engineered fill on the East side of composting area where fill is needed. Two 623 scrappers are placing material on the east side and compacting material by wheel rolling to 90% compacting. Between compacted lifts blade is scarifying and wind rolling dry material to moisture conditioned.
- Sladden Engineering was on-site to perform nuclear density tests on fill placed on the East side of composting area.
- Off-site at 3:00 pm.

Personnel:
Quantum: (2)-laborers, (1) Superintendent, (5) Operator
EC Applications Inc: (0) Superintendent, (0) laborer, (0) operators
ZEI CQA: James Hansen
Equipment: (1) John Deere Blade. (2) 623 Scrappers. (2) Water Trucks.

Meetings, Action Items and Resolutions:

- None.

Hawes Composting Facility

Action Item: ☐ **Action Correction Item: Attachments: Photo's**

Water truck moisture conditioning material in pond B

Blade wind rolling material in East fill area

Hawes Composting Facility

Two 623 scrappers placing fill material on the East side

623 scrapper removing material from pond B

Hawes Composting Facility

Testing soil placed on the East side of composting area

ZERO ENERGY INSTITUTE

CQA DAILY SUMMARY REPORT

Hawes Composting Facility

Location:	San Bernardino County	Owner:	Nursery Products
CM:	Nursery Products	General:	Quantum
Engineer:	Geosyntec Consultants	Installer:	EC Applications Inc
Inspection CQA:	Zero Energy Institute	Prepared by:	James Hansen
Submitted to:	Nursery Products		

Report No. 6

Report Date **Tuesday** February 21 2012 **Onsite:** 8:00am to 3:00pm

Weather: AM: Clear, Cold, and low Winds PM: cold and breeze at 35 degree

CQA Personnel: ZEI CQA Personnel: James Hansen

Hawes Composting Facility: Work Performed:

- On-site at 8:00 am, cold and windy at 35 degrees.
- Quantum continued removing material from surface impoundment pond B. Water trucks are moisture conditioning soil that is going to be used for engineered fill on the East side of composting area where fill is needed. Two 623 scrappers are placing material on the east side and compacting material by wheel rolling to 90% compacting. Between compacted lifts blade is scarifying and wind rolling dry material to moisture conditioned.
- Off-site at 3:00 pm.

Personnel:
Quantum: (2)-laborers, (1) Superintendent, (5) Operator
EC Applications Inc: (0) Superintendent, (0) laborer, (0) operators
ZEI CQA: James Hansen
Equipment: (1) John Deere Blade, (2) 623 Scrappers, (2) Water Trucks, (1) Smooth drum roller, (1) Back-hoe.

Meetings, Action Items and Resolutions:

- None.

Action Item: ☐ **Action Correction Item: Attachments: Photo's**

Hawes Composting Facility

Water truck moisture conditioning material in pond B

Blade wind rolling material in East fill area

Hawes Composting Facility

Two 623 scrappers placing fill material on the East side

623 scrappers removing material from pond B

ZERO ENERGY INSTITUTE

CQA DAILY SUMMARY REPORT

Hawes Composting Facility

Location:	San Bernardino County	Owner:	Nursery Products
CM:	Nursery Products	General:	Quantum
Engineer:	Geosyntec Consultants	Installer:	EC Applications Inc
Inspection CQA:	Zero Energy Institute	Prepared by:	James Hansen
Submitted to:	Nursery Products		

Report No. 7

Report Date **Wednesday** February 22 2012 **Onsite:** 9:00am to 4:00pm

Weather: AM: Clear, Warm, and low Winds PM: Warm and breeze at 50 degree

CQA Personnel: ZEI CQA Personnel: James Hansen

Hawes Composting Facility: Work Performed:

- On-site at 9:00 am, Warm and windy at 50 degrees.
- Quantum continued removing material from surface impoundment pond B. Water trucks are moisture conditioning soil that is going to be used for engineered fill on the East side of composting area where fill is needed. Two 623 scrappers are placing material on the east side and compacting material by wheel rolling to 90% compacting. Between compacted lifts blade is scarifying and wind rolling dry material to moisture conditioned.
- EC Application on-site to unload 44 rolls of GCL that were being delivered to site.
- Off-site at 4:00 pm.

Personnel:
Quantum: (2)-laborers, (1) Superintendent, (5) Operator
EC Applications Inc: (1) Superintendent, (0) laborer, (0) operators
ZEI CQA: James Hansen
Equipment: (1) John Deere Blade, (2) 623 Scrappers, (2) Water Trucks, (1) Smooth drum roller, (1) Back-hoe, (1) Fork Lift.

Meetings, Action Items and Resolutions:

- None.

Hawes Composting Facility

Action Item: ☐ **Action Correction Item: Attachments: Photo's**

Water truck moisture conditioning material placed on the east

Blade wind rolling material in East fill area

Hawes Composting Facility

Two 623 scrappers placing fill material on the East side

623 scrappers removing material from pond B

Hawes Composting Facility

Truck delivering GCL to site

Forklift unloading truck GCL

ZERO ENERGY INSTITUTE

CQA DAILY SUMMARY REPORT

Hawes Composting Facility

Location:	San Bernardino County	Owner:	Nursery Products
CM:	Nursery Products	General:	Quantum
Engineer:	Geosyntec Consultants	Installer:	EC Applications Inc
Inspection CQA:	Zero Energy Institute	Prepared by:	James Hansen
Submitted to:	Nursery Products		

Report No. 8

Report Date **Thursday** February 23 2012 **Onsite:** 9:00am to 5:00pm

Weather: AM: Clear, Warm, and low Winds PM: Warm and breeze at 55 degree

CQA Personnel: ZEI CQA Personnel: James Hansen

Hawes Composting Facility: Work Performed:

- On-site at 9:00 am, Warm and windy at 55 degrees.
- Quantum continued removing material from surface impoundment pond B and began removing soil from pond A. Water trucks are moisture conditioning soil that is going to be used for engineered fill on the East side of composting area where fill is needed. Two 623 scrappers are placing material on the east side and compacting material by wheel rolling to 90% compacting. Between compacted lifts blade is scarifying and wind rolling dry material to moisture conditioned.
- EC Application on-site to unload 48 rolls of GCL and 21 rolls of HDPE that were being delivered to site.
- Off-site at 4:00 pm.

Personnel:
Quantum: (2)-laborers, (1) Superintendent, (5) Operator
EC Applications Inc: (1) Superintendent, (0) laborer, (0) operators
ZEI CQA: James Hansen
Equipment: (1) John Deere Blade, (2) 623 Scrappers, (2) Water Trucks, (1) Smooth drum roller, (1) Back-hoe, (1) Fork Lift.

Meetings, Action Items and Resolutions:

- None.

Hawes Composting Facility

Action Item: ☐ **Action Correction Item: Attachments: Photo's**

Water truck moisture conditioning material placed on the east

623 scrappers removing material from pond A

Hawes Composting Facility

Two 623 scrappers placing fill material on the East side

623 scrappers removing material from pond B

Hawes Composting Facility

Forklift unloading truck GCL

Forklift unloading truck HDPE

ZERO ENERGY INSTITUTE

CQA DAILY SUMMARY REPORT

Hawes Composting Facility

Location:	San Bernardino County	Owner:	Nursery Products
CM:	Nursery Products	General:	Quantum
Engineer:	Geosyntec Consultants	Installer:	EC Applications Inc
Inspection CQA:	Zero Energy Institute	Prepared by:	James Hansen
Submitted to:	Nursery Products		

Report No. 9

Report Date **Monday** February 27 2012 **Onsite:** 6:30am to 5:00pm

Weather: AM: Clear, Cold, and low Winds PM: Cold and breeze at 40 degree

CQA Personnel: ZEI CQA Personnel: James Hansen

Hawes Composting Facility: Work Performed:

- On-site at 6:30 am, cold and windy at 40 degrees.
- Quantum continued removing material from surface impoundment pond A. Water trucks are moisture conditioning soil that is going to be used for engineered fill on the East side of composting area where fill is needed. Two 623 scrappers are placing material on the east side and compacting material by wheel rolling to 90% compacting. Between compacted lifts blade is scarifying and wind rolling dry material to moisture conditioned.
- Quantum began ripping and moisture conditioning cell floor of pond B. Blade is grading slopes to six inches above grade to be ripped, moisture conditioned, and recompacted to 90%.
- Off-site at 5:00 pm.

Personnel:
Quantum: (2)-laborers, (1) Superintendent, (5) Operator
EC Applications Inc: (1) Superintendent, (0) laborer, (0) operators
ZEI CQA: James Hansen
Equipment: (1) John Deere Blade, (2) 623 Scrappers, (2) Water Trucks, (1) Smooth drum roller, (1) Back-hoe, (1) Fork Lift.

Meetings, Action Items and Resolutions:

- None.

Hawes Composting Facility

Action Item: ☐ **Action Correction Item: Attachments: Photo's**

Water truck moisture conditioning material placed on the east

623 scrapper removing material from pond A

Hawes Composting Facility

Removing soil from slope of pond B

Two 623 scrappers placing fill material on the East side

Hawes Composting Facility

Ripping cell floor of pond B

ZERO ENERGY INSTITUTE

CQA DAILY SUMMARY REPORT

Hawes Composting Facility

Location:	San Bernardino County	Owner:	Nursery Products
CM:	Nursery Products	General:	Quantum
Engineer:	Geosyntec Consultants	Installer:	EC Applications Inc
Inspection CQA:	Zero Energy Institute	Prepared by:	James Hansen
Submitted to:	Nursery Products		

Report No. 10

Report Date **Wednesday** February 29 2012 **Onsite:** 8:00am to 5:00pm

Weather: AM: Clear, Cold, and low Winds PM: Cold and breeze at 42 degree

CQA Personnel: ZEI CQA Personnel: James Hansen

Hawes Composting Facility: Work Performed:

- On-site at 6:30 am, cold and windy at 42 degrees.
- Quantum continued removing material from surface impoundment pond A. Water trucks are moisture conditioning soil that is going to be used for engineered fill on the East side of composting area where fill is needed. Two 623 scrappers are placing material on the east side and compacting material by wheel rolling to 90% compacting. Between compacted lifts blade is scarifying and wind rolling dry material to be moisture conditioned.
- Quantum continued ripping and moisture conditioning cell slopes and floor of pond B. Smooth drum roller is compacting cell floor to 90%.
- Quantum began digging Lysimeter sump and compacting sub grade of Lysimeter sump to 90% compacting.
- Sladden Engineering was on-site testing east composting fill area and cell floor of pond B.
- Off-site at 5:00 pm.

Personnel:
Quantum: (2)-laborers, (1) Superintendent, (5) Operator
EC Applications Inc: (0) Superintendent, (0) laborer, (0) operators
ZEI CQA: James Hansen
Equipment: (1) John Deere Blade, (2) 623 Scrappers, (2) Water Trucks, (1) Smooth drum roller, (1) Back-hoe, (1) Fork Lift.

Hawes Composting Facility

Meetings, Action Items and Resolutions:

- Sladden Engineering and ZEI attended tortoise training with biologist from Nursery Products.

Action Item: ☐ **Action Correction Item: Attachments: Photo's**

Water truck moisture conditioning material in pond A

623 scrapper removing material from pond A

Hawes Composting Facility

Ripping slopes of pond B

Smooth drum rolling cell floor of pond B

Hawes Composting Facility

Ripping cell floor of pond B

Compacting soil under Lysimeter Sump in pond B

Hawes Composting Facility

Moisture conditioning slopes of pond B

ZERO ENERGY INSTITUTE

CQA DAILY SUMMARY REPORT

Hawes Composting Facility

Location:	San Bernardino County	Owner:	Nursery Products
CM:	Nursery Products	General:	Quantum
Engineer:	Geosyntec Consultants	Installer:	EC Applications Inc
Inspection CQA:	Zero Energy Institute	Prepared by:	James Hansen
Submitted to:	Nursery Products		

Report No. 11

Report Date **Wednesday** March 1 2012 **Onsite:** 8:30am to 3:00pm

Weather: AM: Clear, Cold, and High Winds PM: Cold and windy at 41 degree

CQA Personnel: ZEI CQA Personnel: James Hansen

Hawes Composting Facility: Work Performed:

- On-site at 6:30 am, cold and windy at 41 degrees.
- Quantum continued removing material from surface impoundment pond A. Water trucks are moisture conditioning soil that is going to be used for engineered fill on the East side of composting area where fill is needed. Two 623 scrappers are placing material on the east side and compacting material by wheel rolling to 90% compacting. Between compacted lifts blade is scarifying and wind rolling dry material to be moisture conditioned.
- Quantum continued ripping and moisture conditioning cell slopes of pond B. D4 Dozer is compacting slopes to 90%.
- Quantum continued digging Lysimeter sump in pond B.
- Off-site at 3:00 pm.

Personnel:
Quantum: (2)-laborers, (1) Superintendent, (5) Operator
EC Applications Inc: (0) Superintendent, (0) laborer, (0) operators
ZEI CQA: James Hansen
Equipment: (1) John Deere Blade, (2) 623 Scrappers, (2) Water Trucks, (1) Smooth drum roller, (1) Back-hoe, (1) Fork Lift, (1) John Deere D4 Dozer.

Meetings, Action Items and Resolutions:

Hawes Composting Facility

- Sladden Engineering and ZEI attended tortoise training with biologist from Nursery Products.

Action Item: ☐ **Action Correction Item: Attachments: Photo's**

Water truck moisture conditioning slopes of pond B

623 scrappera removing material from pond A

Hawes Composting Facility

Compacting slopes of pond B with D4 dozer

Removing soil from Lysimeter sump in pond B

ZERO ENERGY INSTITUTE

CQA DAILY SUMMARY REPORT

Hawes Composting Facility

Location:	San Bernardino County	Owner:	Nursery Products
CM:	Nursery Products	General:	Quantum
Engineer:	Geosyntec Consultants	Installer:	EC Applications Inc
Inspection CQA:	Zero Energy Institute	Prepared by:	James Hansen
Submitted to:	Nursery Products		

Report No. 12

Report Date **Wednesday** March 4 2012 **Onsite:** 8:00am to 3:00pm

Weather: AM: Clear, Warm, and Low Winds PM: Cold and breeze at 47 degree

CQA Personnel: ZEI CQA Personnel: James Hansen

Hawes Composting Facility: Work Performed:

- On-site at 6:30 am, warm and windy at 47 degrees.
- Quantum continued removing material from surface impoundment pond A. Water trucks are moisture conditioning soil that is going to be used for engineered fill on the East side of composting area where fill is needed. Two 623 scrappers are placing material on the east side and compacting material by wheel rolling to 90% compacting. Between compacted lifts blade is scarifying and wind rolling dry material to be moisture conditioned.
- Quantum continued ripping and moisture conditioning cell slopes of pond B. D4 Dozer is compacting slopes to 90%.
- Quantum began replacing and compacting material in Lysimeter sump in pond B due to sand material in Lysimeter sump.
- Off-site at 3:00 pm.

Personnel:
Quantum: (2)-laborers, (1) Superintendent, (5) Operator
EC Applications Inc: (0) Superintendent, (0) laborer, (0) operators
ZEI CQA: James Hansen
Equipment: (1) John Deere Blade, (2) 623 Scrappers, (2) Water Trucks, (1) Smooth drum roller, (1) Back-hoe, (1) Fork Lift, (1) John Deere D4 Dozer.

Hawes Composting Facility

Meetings, Action Items and Resolutions:

- Sladden Engineering and ZEI attended tortoise training with biologist from Nursery Products.

Action Item: ☐ **Action Correction Item: Attachments: Photo's**

Water truck moisture conditioning slopes of pond B

Replacing and compacting soil in Lysimeter sump in pond B

Hawes Composting Facility

Compacting slopes of pond B with D4 dozer

Placing soil for Lysimeter sump back fill in pond B

ZERO ENERGY INSTITUTE

CQA DAILY SUMMARY REPORT

Hawes Composting Facility

Location:	San Bernardino County	Owner:	Nursery Products
CM:	Nursery Products	General:	Quantum
Engineer:	Geosyntec Consultants	Installer:	EC Applications Inc
Inspection CQA:	Zero Energy Institute	Prepared by:	James Hansen
Submitted to:	Nursery Products		

Report No. 13

Report Date **Wednesday** March 5 2012 **Onsite:** 8:00am to 4:00pm

Weather: AM: Clear, Warm, and low Winds PM: warm and breeze at 47 degree

CQA Personnel: ZEI CQA Personnel: James Hansen

Hawes Composting Facility: Work Performed:

- On-site at 8:00 am, warm and breeze at 47 degrees.
- Quantum continued removing material from surface impoundment pond A. Water trucks are moisture conditioning soil that is going to be used for engineered fill on the East side of composting area where fill is needed. Two 623 scrappers are placing material on the east side and compacting material by wheel rolling to 90% compacting. Between compacted lifts blade is scarifying and wind rolling dry material to be moisture conditioned.
- Quantum continued moisture conditioning slopes and floor of pond B. Smooth drum roller is compacting slopes and cell floor to 90%.
- Quantum began racking slopes and floor of pond B to prepare sub grade for HDPE deployment.
- Sladden Engineering was on-site testing east fill area, pond B slopes, pond B cell floor, and pond B Lysimeter sump sub grade.
- EC Applications filling sand bag for HDPE deployment.
- Off-site at 4:00 pm.

Personnel:
Quantum: (2)-laborers, (1) Superintendent, (5) Operator
EC Applications Inc: (1) Superintendent, (5) laborer, (0) operators
ZEI CQA: James Hansen
Equipment: (1) John Deere Blade, (2) 623 Scrappers, (2) Water Trucks, (1) Smooth drum roller, (1) Back-hoe, (1) Fork Lift.

Hawes Composting Facility

Meetings, Action Items and Resolutions:

- EC Applications attended tortoise training with biologist from Nursery Products.

Action Item: ☐ **Action Correction Item: Attachments: Photo's**

Water truck moisture conditioning slopes of pond B

623 scrapper removing material from pond A

Hawes Composting Facility

Smooth drum rolling slopes of pond B

Smooth drum rolling cell floor of pond B

Hawes Composting Facility

Nuclear density testing slope of pond B

Racking sub grade of pond B

Hawes Composting Facility

Moisture conditioning slopes of pond B

Filling sandbags for HDPE deployment

ZERO ENERGY INSTITUTE

CQA DAILY SUMMARY REPORT

Hawes Composting Facility

Location:	San Bernardino County	Owner:	Nursery Products
CM:	Nursery Products	General:	Quantum
Engineer:	Geosyntec Consultants	Installer:	EC Applications Inc
Inspection CQA:	Zero Energy Institute	Prepared by:	James Hansen
Submitted to:	Nursery Products		

Report No. 14

Report Date **Wednesday** March 7 2012 **Onsite:** 9:00am to 4:00pm

Weather: AM: Clear, Warm, and low Winds PM: warm and breeze at 42 degree

CQA Personnel: ZEI CQA Personnel: James Hansen

Hawes Composting Facility: Work Performed:

- On-site at 9:00 am, warm and breeze at 42 degrees.
- Quantum continued removing material from surface impoundment pond A. Water trucks are moisture conditioning soil that is going to be used for engineered fill on the East side of composting area where fill is needed. Two 623 scrappers are placing material on the east side and compacting material by wheel rolling to 90% compacting. Between compacted lifts blade is scarifying and wind rolling dry material to be moisture conditioned.
- Quantum continued moisture conditioning slopes and floor of pond B. Smooth drum roller is compacting slopes and cell floor to 90%.
- Quantum continued racking slopes and floor of pond B to prepare sub grade for HDPE deployment.
- Off-site at 4:00 pm.

Personnel:
Quantum: (2)-laborers, (1) Superintendent, (5) Operator
EC Applications Inc: (0) Superintendent, (0) laborer, (0) operators
ZEI CQA: James Hansen
Equipment: (1) John Deere Blade, (2) 623 Scrappers, (2) Water Trucks, (1) Smooth drum roller, (1) Back-hoe, (1) Fork Lift.

Meetings, Action Items and Resolutions:

- None.

Hawes Composting Facility

Action Item: ☐ **Action Correction Item: Attachments: Photo's**

Preparing sub grade of pond B

623 scrappers removing material from pond A

Hawes Composting Facility

Smooth drum rolling anchor trench of pond B

Racking sub grade of pond B

ZERO ENERGY INSTITUTE

CQA DAILY SUMMARY REPORT

Hawes Composting Facility

Location:	San Bernardino County	Owner:	Nursery Products
CM:	Nursery Products	General:	Quantum
Engineer:	Geosyntec Consultants	Installer:	EC Applications Inc
Inspection CQA:	Zero Energy Institute	Prepared by:	James Hansen
Submitted to:	Nursery Products		

Report No. 15

Report Date **Thursday** March 8 2012 **Onsite:** 7:00am to 5:00pm

Weather: AM: Clear, Cold, and low Winds PM: warm and breeze at 72 degree

CQA Personnel: ZEI CQA Personnel: James Hansen

Hawes Composting Facility: Work Performed:

- On-site at 7:00 am, cold and breeze at 34 degrees.
- Quantum continued moisture conditioning slopes and floor of pond B. Smooth drum roller is compacting slopes and cell floor to 90%.
- Quantum continued racking slopes and floor of pond B to prepare sub grade for HDPE deployment.
- Quantum began digging anchor trench around pond B.
- Quantum began digging 1st and 2nd anchor trench in the bottom of pond B.
- Quantum back filling and compacting material placed in 1st and 2nd anchor trench on top of geotextile in the bottom of pond B.
- EC Applications INC. places 27,300 SF (13-rolls) of GCL. EC began to detail GCL placed on approved subgrade. EC places GCL and secures panels in anchor trench 1 and 2 in pond B with a 12" overlap with bentonite on but seam that do not have super groove.
- EC Applications INC. places HDPE liner on top of GCL in anchor trench 1 and 2 in Pond B.
- EC Applications INC. places 12oz Geotextile on top of HDPE liner in anchor trench 1 and 2 in Pond B.
- EC Applications INC. Wedge Welding and Panel Deployment Summary: No change

1. Previous Seam Total: 0 – Feet
2. 03/8/12 Total: 0 – Feet
3. Cumulative Seam Total: 0 - Feet
4. Previous EC installed Total SF: 0 - SF

Hawes Composting Facility

5. 03/8/12 Installed: 0 - SF
6. Cumulative Liner Installed: 0 - SF

- Off-site at 5:00 pm.

Personnel:
Quantum: (2)-laborers, (1) Superintendent, (5) Operator
EC Applications Inc: (1) Superintendent, (7) laborer, (2) operators
ZEI CQA: James Hansen
Equipment: (1) John Deere Blade, (2) 623 Scrappers, (2) Water Trucks, (1) Smooth drum roller, (1) Back-hoe, (1) Fork Lift, (1) Bobcat

Meetings, Action Items and Resolutions:

- None.

Action Item: ☐ **Action Correction Item: Attachments: Photo's**

Preparing sub grade of pond B

Hawes Composting Facility

Smooth drum rolling anchor trench of pond B

Compacting bottom of anchor trench #1 in pond B

Hawes Composting Facility

Smooth drum rolling subgrade of pond B

Placing GCL in anchor trench #1 in pond B

Hawes Composting Facility

Placing Geomembrane in anchor trench #1 in pond B

Placing 12 oz Geotextile in anchor trench # 1 in pond B

Hawes Composting Facility

Compacting back fill material in anchor trench #1 in pond B

ZERO ENERGY INSTITUTE

CQA DAILY SUMMARY REPORT

Hawes Composting Facility

Location:	San Bernardino County	Owner:	Nursery Products
CM:	Nursery Products	General:	Quantum
Engineer:	Geosyntec Consultants	Installer:	EC Applications Inc
Inspection CQA:	Zero Energy Institute	Prepared by:	James Hansen
Submitted to:	Nursery Products		

Report No. 16

Report Date **Friday** March 9 2012 **Onsite:** 6:00am to 6:30pm

Weather: AM: Clear, Cold, and low Winds PM: warm and breeze at 74 degree

CQA Personnel: ZEI CQA Personnel: James Hansen

Hawes Composting Facility: Work Performed:

- On-site at 6:00 am, cold and breeze at 34 degrees.
- Quantum continued moisture conditioning slopes and floor of pond B. Smooth drum roller is compacting slopes and cell floor to 90%.
- Quantum continued racking slopes and floor of pond B to prepare sub grade for HDPE deployment.
- Quantum began digging and compacting subgrade of Lysimeter sump in the bottom of pond B.
- EC Applications INC. places 27,300 SF (13-rolls) of GCL. EC began to detail GCL placed on approved subgrade. EC places GCL and secures panels in Lysimeter sump, 1st anchor trench to the East slope, North to South slope and cell floor between 1st and 2nd anchor trench in pond B with a 12" overlap with bentonite on but seam that do not have super groove.
- EC Applications INC. places HDPE liner on top of GCL in Lysimeter sump, 1st anchor trench to the East slope, North to South slope and cell floor between 1st and 2nd anchor trench in Pond B.
- EC Applications INC. places 12oz Geotextile on top of HDPE liner in Lysimeter sump in Pond B.
- EC Applications INC. places rock on top of geotextile in Lysimeter sump in pond B.
- EC Applications INC. places geotextile on top of rock in Lysimeter sump in pond B.
- EC Applications INC. Wedge Welding and Panel Deployment Summary: No change

1. Previous Seam Total: 0 – Feet
2. 03/8/12 Total: 0 – Feet
3. Cumulative Seam Total: 0 - Feet

Hawes Composting Facility

4. Previous EC installed Total SF: 0 - SF
5. 03/8/12 Installed: 0 - SF
6. Cumulative Liner Installed: 0 - SF

- Off-site at 6:30 pm.

Personnel:
Quantum: (2)-laborers, (1) Superintendent, (5) Operator
EC Applications Inc: (1) Superintendent, (7) laborer, (2) operators
ZEI CQA: James Hansen
Equipment: (1) John Deere Blade, (2) 623 Scrappers, (2) Water Trucks, (1) Smooth drum roller, (1) Back-hoe, (1) Fork Lift, (1) Bobcat

Meetings, Action Items and Resolutions:

- None.

Action Item: ☐ **Action Correction Item: Attachments: Photo's**

Preparing sub grade of pond B

Hawes Composting Facility

Preparing subgrade of Lysimeter sump in pond B

Placing bentonite in butt seams of GCL placed in pond B

Hawes Composting Facility

Trial weld being pulled for fusion weld

Placing GCL on the east slope and cell floor in pond B

Hawes Composting Facility

Placing HDPE liner on top of GCL on the east slope and cell floor in pond B

Air pressure testing fusion welded seam of HDPE liner in pond B

Hawes Composting Facility

Placing GCL on the North to South slope and cell floor between 1st and 2nd anchor trench in pond B

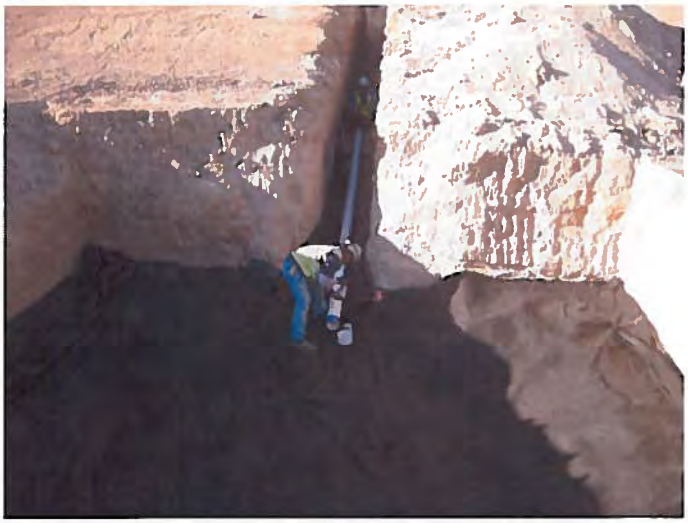
Placing HDPE liner on top of GCL on the North to South slope and cell floor between 1st and 2nd anchor trench in pond B

Hawes Composting Facility

Placing GCL in Lysimeter sump in pond B

Placing HDPE liner on top of GCL in Lysimeter sump in pond B

Hawes Composting Facility



Placing geotextile and pipe in Lysimeter sump in pond B

Placing rock back fill on top of 12oz geotextile in Lysimeter sump in pond B

Hawes Composting Facility

Pond B picture from the West side looking to the East side.

ZERO ENERGY INSTITUTE

CQA DAILY SUMMARY REPORT

Hawes Composting Facility

Location:	San Bernardino County	Owner:	Nursery Products
CM:	Nursery Products	General:	Quantum
Engineer:	Geosyntec Consultants	Installer:	EC Applications Inc
Inspection CQA:	Zero Energy Institute	Prepared by:	James Hansen
Submitted to:	Nursery Products		

Report No. 17

Report Date **Saturday** March 10 2012 **Onsite:** 6:30am to 4:30pm

Weather: AM: Clear, Cold, and low Winds PM: warm and breeze at 79 degree

CQA Personnel: ZEI CQA Personnel: James Hansen

Hawes Composting Facility: Work Performed:

- On-site at 6:30 am, cold and breeze at 37 degrees.
- Quantum continued removing material from surface impoundment pond A. Water trucks are moisture conditioning soil that is going to be used for engineered fill on the East side of composting area where fill is needed. Two 623 scrappers are placing material on the east side and compacting material by wheel rolling to 90% compacting. Between compacted lifts blade is scarifying and wind rolling dry material to be moisture conditioned.
- Quantum continued moisture conditioning slopes and floor of pond B. Smooth drum roller is compacting slopes and cell floor to 90%.
- Quantum continued racking slopes and floor of pond B to prepare sub grade for HDPE deployment.
- Quantum began digging 3rd anchor trench in the bottom of pond B.
- Quantum back filling and compacting material placed on top of geotextile in Lysimeter sump in pond B.
- EC Applications INC. places 27,300 SF (13-rolls) of GCL. EC began to detail GCL placed on approved subgrade. EC places GCL and secures panels on North to South slope and cell floor between 2nd and 3rd anchor trench in pond B with a 12" overlap with bentonite on but seam that do not have super groove.
- EC Applications INC. places HDPE liner on top of GCL on North to South slope and cell floor between 2nd and 3rd anchor trench in Pond B.
- EC Applications INC. began repairing and vacuum box testing repairs made to HDPE liner.
- EC Applications INC. Wedge Welding and Panel Deployment Summary: No change

Hawes Composting Facility

1. Previous Seam Total: 0 – Feet
2. 03/8/12 Total: 0 – Feet
3. Cumulative Seam Total: 0 - Feet
4. Previous EC installed Total SF: 0 - SF
5. 03/8/12 Installed: 0 - SF
6. Cumulative Liner Installed: 0 - SF

- Off-site at 4:30 pm.

Personnel:
Quantum: (2)-laborers, (1) Superintendent, (5) Operator
EC Applications Inc: (1) Superintendent, (7) laborer, (2) operators
ZEI CQA: James Hansen
Equipment: (1) John Deere Blade, (2) 623 Scrappers, (2) Water Trucks, (1) Smooth drum roller, (1) Back-hoe, (1) Fork Lift, (1) Bobcat

Meetings, Action Items and Resolutions:

- None.

Action Item: ☐ **Action Correction Item: Attachments: Photo's**

Preparing sub grade of pond B

Hawes Composting Facility

Geotextile placed in Lysimeter sump in pond B

Placing bentonite in butt seams of GCL placed in pond B

Hawes Composting Facility

Trial weld being pulled for fusion weld

Placing GCL on the North slope, South slope, cell floor between 2nd and 3rd anchor trench in pond B

Hawes Composting Facility

Placing HDPE liner on the North slope, South slope, cell floor between 2nd and 3rd anchor trench in pond B

Air pressure testing fusion welded seam of HDPE liner in pond B

Hawes Composting Facility

Compacting material placed on top of geotextile in Lysimeter sump in pond B

Cleaning and fusion welding seam of HDPE liner in pond B

Hawes Composting Facility

Extrusion welding repair made to HDPE liner in pond B

Vacuum box testing extrusion weld on cap of anchor trench in pond B

Hawes Composting Facility

Cap over anchor trench in pond B

Digging 3rd anchor trench in pond B

Hawes Composting Facility

623 scrapper placing fill material on the East side of compost area

Two 623 scrapper removing material from pond A

Hawes Composting Facility

Pond B picture from the West side looking to the East side.

ZERO ENERGY INSTITUTE

CQA DAILY SUMMARY REPORT

Hawes Composting Facility

Location:	San Bernardino County	Owner:	Nursery Products
CM:	Nursery Products	General:	Quantum
Engineer:	Geosyntec Consultants	Installer:	EC Applications Inc
Inspection CQA:	Zero Energy Institute	Prepared by:	James Hansen
Submitted to:	Nursery Products		

Report No. 18

Report Date **Monday** March 12 2012 **Onsite:** 6:30am to 5:00pm

Weather: AM: Clear, Cold, and low Winds PM: warm and breeze at 76 degree

CQA Personnel: ZEI CQA Personnel: James Hansen

Hawes Composting Facility: Work Performed:

- On-site at 6:30 am, cold and breeze at 40 degrees.
- Quantum began ripping and moisture conditioning subgrade on the West side fill of composting area.
- Quantum continued moisture conditioning slopes and floor of pond B. Smooth drum roller is compacting slopes and cell floor to 90%.
- Quantum continued racking slopes and floor of pond B to prepare sub grade for HDPE deployment.
- Quantum began digging and compacting subgrade of sump in the bottom of pond B.
- EC Applications INC. places 27,300 SF (13-rolls) of GCL. EC began to detail GCL placed on approved subgrade. EC places GCL and secures panels on North to South slope and cell floor between 2nd and 3rd anchor trench, on East slope to 3rd anchor trench, and in sump in pond B with a 12" overlap with bentonite on but seam that do not have super groove.
- EC Applications INC. places HDPE liner on top of GCL on North to South slope and cell floor between 2nd and 3rd anchor trench on East slope to 3rd anchor trench, and in sump in Pond B.
- EC Applications INC. places 12oz Geotextile on top of HDPE liner in sump in Pond B.
- EC Applications INC. places rock on top of geotextile in sump in pond B.
- EC Applications INC. places geotextile on top of rock in sump in pond B.
- EC Applications INC. continued repairing and vacuum box testing repairs made to HDPE liner.
- EC Applications INC. Wedge Welding and Panel Deployment Summary: No change

1. Previous Seam Total: 0 – Feet

Hawes Composting Facility

2. 03/8/12 Total: 0 – Feet
3. Cumulative Seam Total: 0 - Feet
4. Previous EC installed Total SF: 0 - SF
5. 03/8/12 Installed: 0 - SF
6. Cumulative Liner Installed: 0 - SF

- Off-site at 5:00 pm.

Personnel:
Quantum: (2)-laborers, (1) Superintendent, (5) Operator
EC Applications Inc: (1) Superintendent, (7) laborer, (2) operators
ZEI CQA: James Hansen
Equipment: (1) John Deere Blade, (2) 623 Scrappers, (2) Water Trucks, (1) Smooth drum roller, (1) Back-hoe, (1) Fork Lift, (1) Bobcat

Meetings, Action Items and Resolutions:

- None.

Action Item: ☐ **Action Correction Item: Attachments: Photo'**

Hawes Composting Facility

Compacting and preparing subgrade of sump in pond B

Placing bentonite in butt seams of GCL placed in pond B

Hawes Composting Facility

Trial weld being pulled for fusion weld

Placing GCL on the North slope, South slope, cell floor between 2nd and 3rd anchor trench in pond B

Hawes Composting Facility

Placing HDPE liner on the North slope, South slope, cell floor between 2nd and 3rd anchor trench in pond B

Air pressure testing fusion welded seam of HDPE liner in pond B

Hawes Composting Facility

Compacting back fill material in anchor trench # 3 in pond B

Fusion welding seam of HDPE liner in pond B

Hawes Composting Facility

Extrusion welding repair made to HDPE liner in pond B

Vacuum box testing extrusion weld on cap of anchor trench in pond B

Hawes Composting Facility

Cap over anchor trench # 3 in pond B

HDPE liner placed in sump in pond B

Hawes Composting Facility

Geotextile and pipe placed in sump in pond B

Rock placed in sump in pond B

Hawes Composting Facility

Geotextile placed on top of rock in sump in pond B

GCL placed on top of geotextile in sump in pond B

Hawes Composting Facility

HDPE liner placed on top of GCL in sump in pond B

Ripping subgrade material on the West side of compost area

Hawes Composting Facility

Moisture conditioning subgrade material on the West side of compost area

ZERO ENERGY INSTITUTE

CQA DAILY SUMMARY REPORT

Hawes Composting Facility

Location:	San Bernardino County	Owner:	Nursery Products
CM:	Nursery Products	General:	Quantum
Engineer:	Geosyntec Consultants	Installer:	EC Applications Inc
Inspection CQA:	Zero Energy Institute	Prepared by:	James Hansen
Submitted to:	Nursery Products		

Report No. 19

Report Date **Tuesday** March 13 2012 **Onsite:** 7:00am to 11:30pm

Weather: AM: Clear, Cold, and low Winds PM: warm and breeze at 70 degree

CQA Personnel: ZEI CQA Personnel: James Hansen

Hawes Composting Facility: Work Performed:

- On-site at 7:00 am, cold and breeze at 47 degrees.
- Quantum continued removing material from surface impoundment pond A. Water trucks are moisture conditioning soil that is going to be used for engineered fill on the East side of composting area where fill is needed. Two 623 scrappers are placing material on the east side and compacting material by wheel rolling to 90% compacting. Between compacted lifts blade is scarifying and wind rolling dry material to be moisture conditioned.
- Quantum began back filling anchor trench around pond B.
- EC Applications INC. began repairing and vacuum box testing repairs made to HDPE liner.
- Off-site at 11:30 pm.

Personnel:
Quantum: (2)-laborers, (1) Superintendent, (5) Operator
EC Applications Inc: (1) Superintendent, (2) laborer, (2) operators
ZEI CQA: James Hansen
Equipment: (1) John Deere Blade, (2) 623 Scrappers, (2) Water Trucks, (1) Smooth drum roller, (1) Back-hoe, (1) Fork Lift, (1) Bobcat

Meetings, Action Items and Resolutions:

- None.

Hawes Composting Facility

Action Item: ☐ **Action Correction Item: Attachments: Photo's**

Extrusion welding repair made to HDPE liner in pond B

Vacuum box testing extrusion weld on repair in pond B

Hawes Composting Facility

623 scrapper removing material from pond A

Blade back filling anchor trench around pond B

ZERO ENERGY INSTITUTE

CQA DAILY SUMMARY REPORT

Hawes Composting Facility

Location:	San Bernardino County	Owner:	Nursery Products
CM:	Nursery Products	General:	Quantum
Engineer:	Geosyntec Consultants	Installer:	EC Applications Inc
Inspection CQA:	Zero Energy Institute	Prepared by:	James Hansen
Submitted to:	Nursery Products		

Report No. 19

Report Date **Tuesday** March 13 2012 **Onsite:** 7:00am to 11:30pm

Weather: AM: Clear, Cold, and low Winds PM: warm and breeze at 70 degree

CQA Personnel: ZEI CQA Personnel: James Hansen

Hawes Composting Facility: Work Performed:

- On-site at 7:00 am, cold and breeze at 47 degrees.
- Quantum continued removing material from surface impoundment pond A. Water trucks are moisture conditioning soil that is going to be used for engineered fill on the East side of composting area where fill is needed. Two 623 scrappers are placing material on the east side and compacting material by wheel rolling to 90% compacting. Between compacted lifts blade is scarifying and wind rolling dry material to be moisture conditioned.
- Quantum began back filling anchor trench around pond B.
- EC Applications INC. began repairing and vacuum box testing repairs made to HDPE liner.
- Off-site at 11:30 pm.

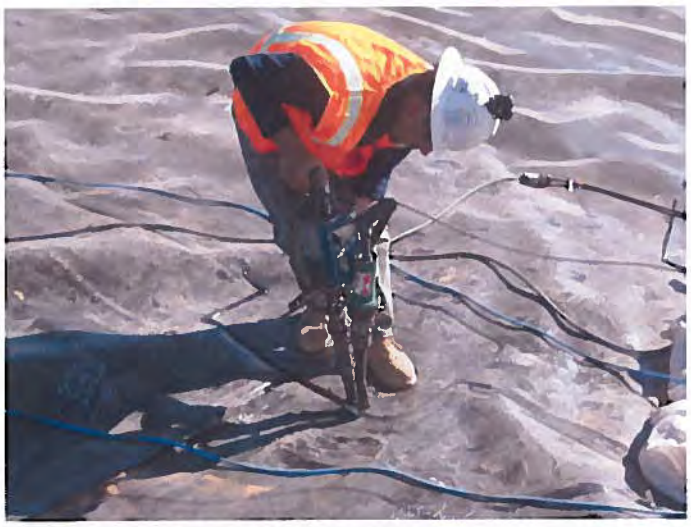
Personnel:
Quantum: (2)-laborers, (1) Superintendent, (5) Operator
EC Applications Inc: (1) Superintendent, (2) laborer, (2) operators
ZEI CQA: James Hansen
Equipment: (1) John Deere Blade, (2) 623 Scrappers, (2) Water Trucks, (1) Smooth drum roller, (1) Back-hoe, (1) Fork Lift, (1) Bobcat

Meetings, Action Items and Resolutions:

- None.

Hawes Composting Facility

Action Item: ☐ **Action Correction Item: Attachments: Photo's**



Extrusion welding repair made to HDPE liner in pond B

Vacuum box testing extrusion weld on repair in pond B

Hawes Composting Facility

623 scrapper removing material from pond A

Blade back filling anchor trench around pond B

ZERO ENERGY INSTITUTE

CQA DAILY SUMMARY REPORT

Hawes Composting Facility

Location:	San Bernardino County	Owner:	Nursery Products
CM:	Nursery Products	General:	Quantum
Engineer:	Geosyntec Consultants	Installer:	EC Applications Inc
Inspection CQA:	Zero Energy Institute	Prepared by:	James Hansen
Submitted to:	Nursery Products		

Report No. 20

Report Date **Wednesday** March 21 2012 **Onsite:** 8:00am to 1:00pm

Weather: AM: Clear, Cold, and low Winds PM: warm and breeze at 77 degree

CQA Personnel: ZEI CQA Personnel: James Hansen

Hawes Composting Facility: Work Performed:

- On-site at 8:00 am, cold and breeze at 56 degrees.
- Quantum continued removing material from surface impoundment pond A. Water trucks are moisture conditioning soil that is going to be used for engineered fill on the West side of composting area where fill is needed. Two 623 scrappers are placing material on the east side and compacting material by wheel rolling to 90% compacting. Between compacted lifts blade is scarifying and wind rolling dry material to be moisture conditioned.
- Off-site at 1:00 pm.

Personnel:
Quantum: (2)-laborers, (1) Superintendent, (5) Operator
EC Applications Inc: (0) Superintendent, (0) laborer, (0) operators
ZEI CQA: James Hansen
Equipment: (1) John Deere Blade, (2) 623 Scrappers, (2) Water Trucks, (1) Smooth drum roller, (1) Back-hoe, (1) Fork Lift

Meetings, Action Items and Resolutions:

- None.

Action Item: ☐ **Action Correction Item: Attachments: Photo's**

Hawes Composting Facility

623 scrapper placing fill material on the West side of compost area

Moisture condition material in pond A

Hawes Composting Facility

Two 623 scrappers removing material from pond A

Subgrade of pond A

Hawes Composting Facility

Pond B picture from the East side looking to the West side.

ZERO ENERGY INSTITUTE

CQA DAILY SUMMARY REPORT

Hawes Composting Facility

Location:	San Bernardino County	Owner:	Nursery Products
CM:	Nursery Products	General:	Quantum
Engineer:	Geosyntec Consultants	Installer:	EC Applications Inc
Inspection CQA:	Zero Energy Institute	Prepared by:	James Hansen
Submitted to:	Nursery Products		

Report No. 21

Report Date **Monday April** 02 2012 **Onsite:** 7:00am to 4:30pm

Weather: AM: Clear, Cold, and low Winds PM: warm and breeze at 85 degree

CQA Personnel: ZEI CQA Personnel: James Hansen

Hawes Composting Facility: Work Performed:

- On-site at 7:00 am, cold and breeze at 62 degrees.
- Quantum continued removing soil overburden in the cut (center of waste pile) area and placing fill in the west fill area. Using two (2) scrappers Quantum excavated approximately 5,100 cubic yards. Area which received fill material was scarified to a minimum depth of 8 inches using the rippers on the grading equipment. Fill material watered, leveled and compacted in-place until firm and unyielding. No pumping or expansive material witnessed.
- Sladden Engineering on-site to test compliance on Moisture/Density for all fill placement and Pond A Lysimeter subgrade.
- EC Applications (ECA) on site to install Pond A Lysimeter sump. Area of Lysimeter previously excavated, shaped per plan and compacted subgrade using hand-wackier. Lysimeter area approved for lining. ECA places GCL in sump area to lines and grades per plan. Bentonite power used at butt-seams and all overlaps. GCL heat tacked together. 60 Mil HDPE liner placed directly above HDPE liner. ECA uses extrusion equipment to join panels. All pre-welds passed the min. specification. All welding monitored then tested non-destructively via. vacuum box method. Geotextile placed directly above the HDPE liner for protection, geotextile overlapped and heat tacked together. Sump collection gravel rock placed lightly on the Lysimeter section and consolidated with hand tamper. Lysimeter gravel wrapped in full.
- Off-site at 5:00 pm.

Personnel:
Quantum: (2)-laborers, (1) Superintendent, (5) Operator
EC Applications Inc: (0) Superintendent, (0) laborer, (0) operators

Hawes Composting Facility

ZEI CQA: Brett Jordan
Equipment: (1) John Deere Blade, (2) 623 Scrappers, (2) Water Trucks, (1) Smooth drum roller, (1) Back-hoe, (1) Fork Lift

Meetings, Action Items and Resolutions:

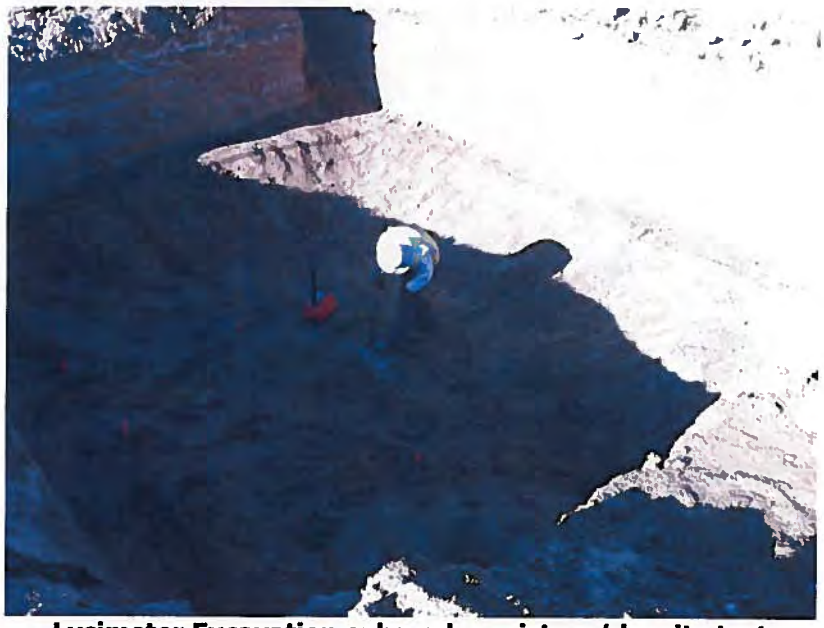
- Lysimeter Pond A construction
- Sladden Engineering on-site to test fill soil

Action Item: ☐ **Action Correction Item: Attachments: Photo's**

Hawes Composting Facility

Pond B rough grade

Pond A bottom Lysimeter Excavation



Lysimeter Excavation subgrade moisture/density test

Hawes Composting Facility

GCL placed in Lysimeter subgrade Pond A

Geotextile cushion fabric placed above 60-mil HDPE Liner

Hawes Composting Facility

Pre-Approved gravel for Lysimeter & Sump rock

Completed Lysimeter with gravel wrapped by geotextile

ZERO ENERGY INSTITUTE

CQA DAILY SUMMARY REPORT

Hawes Composting Facility

Location:	San Bernardino County	Owner:	Nursery Products
CM:	Nursery Products	General:	Quantum
Engineer:	Geosyntec Consultants	Installer:	EC Applications Inc
Inspection CQA:	Zero Energy Institute	Prepared by:	James Hansen
Submitted to:	Nursery Products		

Report No. 22

Report Date **Tuesday April** 03 2012 **Onsite:** 7:00am to 4:30pm

Weather: AM: Clear, Cold, and low Winds PM: warm and breeze at 88 degree

CQA Personnel: ZEI CQA Personnel: James Hansen

Hawes Composting Facility: Work Performed:

- On-site at 7:00 am, cold and breeze at 62 degrees.
- Quantum continued removing soil overburden in the cut (center of waste pile) area and placing fill in the west fill area. Using two (2) scrappers Quantum excavated approximately 5,200 cubic yards. Area which received fill material was scarified to a minimum depth of 8 inches using the rippers on the grading equipment. Fill material watered, leveled and compacted in-place until firm and unyielding. No pumping or expansive material witnessed.
- Nursery Products working on access road.
- Quantum completed backfill operation Pond A Lysimeter to rough subgrade elevation. Lifts placed in approximately 1-foot deep, watered and compacted with smooth drum roller. Fill material firm and unyielding, no pumping or expansive soil witnessed.
- Off-site at 5:00 pm.

Personnel:
Quantum: (2)-laborers, (1) Superintendent, (5) Operator
EC Applications Inc: (0) Superintendent, (0) laborer, (0) operators
ZEI CQA: Brett Jordan
Equipment: (1) John Deere Blade, (2) 623 Scrappers, (2) Water Trucks, (1) Smooth drum roller, (1) Back-hoe, (1) Fork Lift

Meetings, Action Items and Resolutions:

Action Item: ☐ **Action Correction Item: Attachments: Photo's**

Hawes Composting Facility

Easterly Fill Limits (looking South)

Hawes Composting Facility

Equipment working in Easterly Fill

Cat 623 Scrapper in center waste-pile cut area

Hawes Composting Facility

Pond A Anchor Trench excavation

Water Truck in Fill Area

ZERO ENERGY INSTITUTE

CQA DAILY SUMMARY REPORT

Hawes Composting Facility

Location:	San Bernardino County	Owner:	Nursery Products
CM:	Nursery Products	General:	Quantum
Engineer:	Geosyntec Consultants	Installer:	EC Applications Inc
Inspection CQA:	Zero Energy Institute	Prepared by:	James Hansen
Submitted to:	Nursery Products		

Report No. 23

Report Date **Monday April** 09 2012 **Onsite:** 6:30am to 4:30pm

Weather: AM: Clear, Cold, and Some light Winds PM: warm and breeze at 80 degree

CQA Personnel: ZEI CQA Personnel: James Hansen

Hawes Composting Facility: Work Performed:

- On-site at 6:30 am, cold and breeze at high 50's degrees.
- Quantum continued removing soil overburden in the cut (center of waste pile) area and placing fill in the west fill area. Using two (2) scrappers Quantum excavated approximately 5,000 cubic yards. Area which received fill material was scarified to a minimum depth of 8 inches using the rippers on the grading equipment. Fill material watered, leveled and compacted in-place until firm and unyielding. No pumping or expansive material witnessed.
- Quantum starts to fine grade Pond A subgrade. Using a grader Quantum grades the subgrade level and smooth, water added to moisture condition the soil and assist in compaction. Quantum grade checker on-site to set and control finish grade. Smooth drum roller compacts surface of Pond A subgrade.
- Quantum starts to rip and re-compact Pond A side-slopes. Material ripped to about 8-inches, watered and shaped with the dozer. Using a smooth drum roller Quantum compacts side-slopes to a firm and unyielding condition.
- Off-site at 4:30 pm.

Personnel:
Quantum: (2)-laborers, (1) Superintendent, (5) Operator
EC Applications Inc: (0) Superintendent, (0) laborer, (0) operators
ZEI CQA: Brett Jordan
Equipment: (1) John Deere Blade, (2) 623 Scrappers, (2) Water Trucks, (1) Smooth drum roller, (1) Back-hoe, (1) Fork Lift

Meetings, Action Items and Resolutions:

Hawes Composting Facility

Action Item: ☐ **Action Correction Item: Attachments: Photo's**

Grader Fine Grades Pond A subgrade

Scrapper hauls fill soil to Pond A

Hawes Composting Facility

Pond A South-Slope Scarified and watered

Pond A side-slope grading

ZERO ENERGY INSTITUTE

CQA DAILY SUMMARY REPORT

Hawes Composting Facility

Location:	San Bernardino County	Owner:	Nursery Products
CM:	Nursery Products	General:	Quantum
Engineer:	Geosyntec Consultants	Installer:	EC Applications Inc
Inspection CQA:	Zero Energy Institute	Prepared by:	James Hansen
Submitted to:	Nursery Products		

Report No. 24

Report Date **Tuesday April** 10 2012 **Onsite:** 6:30am to 4:30pm

Weather: AM: Clear, Cold, and Some Strong Winds PM: warm, high winds at 70 degree

CQA Personnel: ZEI CQA Personnel: James Hansen

Hawes Composting Facility: Work Performed:

- On-site at 6:30 am, cold and breeze at high 50's degrees.
- Quantum continued removing soil overburden in the cut (center of waste pile) area and placing fill in the west fill area. Using two (2) scrappers Quantum excavated approximately 5,000 cubic yards. Area which received fill material was scarified to a minimum depth of 8 inches using the rippers on the grading equipment. Fill material watered, leveled and compacted in-place until firm and unyielding. No pumping or expansive material witnessed. Some scrapper loads taken to Pond A for fill as-needed, material suitable for fill in ponds.
- Quantum continues to fine grade Pond A subgrade. Using a grader and small dozer Quantum grades the subgrade and side-slopes level and smooth, water added to moisture condition the soil and assist in compaction. Quantum grade checker on-site to set and control finish grade. Smooth drum roller compacts surface of Pond A subgrade.
- Quantum continues to rip and re-compact Pond A side-slopes. Material ripped to about 8-inches, watered and shaped with the dozer. Using a smooth drum roller Quantum compacts side-slopes to a firm and unyielding condition.
- Off-site at 4:30 pm.

Personnel:
Quantum: (2)-laborers, (1) Superintendent, (5) Operator
EC Applications Inc: (0) Superintendent, (0) laborer, (0) operators
ZEI CQA: Brett Jordan
Equipment: (1) John Deere Blade, (2) 623 Scrappers, (2) Water Trucks, (1) Smooth drum roller, (1) Back-hoe, (1) Fork Lift

Hawes Composting Facility

Meetings, Action Items and Resolutions:

Action Item: ☐ **Action Correction Item: Attachments: Photo's**

Pond A Northerly Anchor Trench

Pond A ripping and scarifying subgrade

Hawes Composting Facility

Pond A Scarified and watered

Pond A Elevation Grade Check

ZERO ENERGY INSTITUTE

CQA DAILY SUMMARY REPORT

Hawes Composting Facility

Location:	San Bernardino County	Owner:	Nursery Products
CM:	Nursery Products	General:	Quantum
Engineer:	Geosyntec Consultants	Installer:	EC Applications Inc
Inspection CQA:	Zero Energy Institute	Prepared by:	James Hansen
Submitted to:	Nursery Products		

Report No. 25

Report Date **Thursday April** 12 2012 **Onsite:** 6:30am to 4:30pm

Weather: AM: Clear, Cold, and Some Strong Winds PM: warm, high winds at 70 degree

CQA Personnel: ZEI CQA Personnel: James Hansen

Hawes Composting Facility: Work Performed:

- On-site at 6:30 am, cold and breeze at high 50's degrees.
- Quantum continued removing soil overburden in the cut (center of waste pile) area and placing fill in the west fill area. Using two (2) scrappers Quantum excavated approximately 5,200 cubic yards. Area which received fill material was scarified to a minimum depth of 8 inches using the rippers on the grading equipment. Fill material watered, leveled and compacted in-place until firm and unyielding. No pumping or expansive material witnessed. Some scrapper loads taken to Pond A for fill as-needed, material suitable for fill in ponds.
- Quantum continues to fine grade Pond A subgrade and side-slopes. Using a grader and small dozer Quantum grades the subgrade and side-slopes level and smooth, water added to moisture condition the soil and assist in compaction. Quantum grade checker on-site to set and control finish grade. Smooth drum roller compacts surface of Pond A subgrade.
- Quantum continues to rip and re-compact Pond A side-slopes. Material ripped to about 8-inches, watered and shaped with the dozer. Using a smooth drum roller Quantum compacts side-slopes to a firm and unyielding condition.
- Off-site at 3:30 pm.

Personnel:
Quantum: (2)-laborers, (1) Superintendent, (5) Operator
EC Applications Inc: (0) Superintendent, (0) laborer, (0) operators
ZEI CQA: Brett Jordan
Equipment: (1) John Deere Blade, (2) 623 Scrappers, (2) Water Trucks, (1) Smooth drum roller, (1) Back-hoe, (1) Fork Lift

Hawes Composting Facility

Meetings, Action Items and Resolutions:

Action Item: ☐ **Action Correction Item: Attachments: Photo's**

Pond A Subgrade Preparation

Hawes Composting Facility

Pond A ripping and scarifying subgrade

Pond A Scarified and watered

Hawes Composting Facility

Pond A Elevation Grade Check

ZERO ENERGY INSTITUTE

CQA DAILY SUMMARY REPORT

Hawes Composting Facility

Location:	San Bernardino County	Owner:	Nursery Products
CM:	Nursery Products	General:	Quantum
Engineer:	Geosyntec Consultants	Installer:	EC Applications Inc
Inspection CQA:	Zero Energy Institute	Prepared by:	James Hansen
Submitted to:	Nursery Products		

Report No. 26

Report Date **Friday April** 13 2012 **Onsite:** 7:00am to 12:30pm

Weather: AM: Clear, cold, and some winds PM: warm, high winds at 70 degree

CQA Personnel: ZEI CQA Personnel: Brett Jordan

Hawes Composting Facility: Work Performed:

- On-site at 7:00 am, cold and breeze at high 50's degrees.
- Quantum continued removing soil overburden in the cut (center of waste pile) area and placing fill in the west fill area. Using two (2) scrappers Quantum excavated approximately 5,400 cubic yards. Area which received fill material was scarified to a minimum depth of 8 inches using the rippers on the grading equipment. Fill material watered, leveled and compacted in-place until firm and unyielding. No pumping or expansive material witnessed. Some scrapper loads taken to Pond A for fill as-needed, material suitable for fill in ponds.
- Quantum continues to fine grade Pond A subgrade and side-slopes. Using a grader and small dozer Quantum grades the subgrade and side-slopes level and smooth, water added to moisture condition the soil and assist in compaction. Quantum grade checker on-site to set and control finish grade.
- Smooth drum roller compacts surface of Pond A subgrade.
- Quantum preparing perimeter anchor trench Pond A for lining installation scheduled for early next week.
- Quantum starts to shape and excavate the Pond A low-point leak detection sump per plan.
- Off-site at 3:30 pm.

Personnel:
Quantum: (2)-laborers, (1) Superintendent, (5) Operator
EC Applications Inc: (0) Superintendent, (0) laborer, (0) operators
ZEI CQA: Brett Jordan
Equipment: (1) John Deere Blade, (2) 623 Scrappers, (2) Water Trucks, (1) Smooth drum roller, (1) Back-hoe, (1) Fork Lift

Hawes Composting Facility

Meetings, Action Items and Resolutions:

Action Item: ☐ **Action Correction Item: Attachments: Photo's**

Pond A Subgrade Preparation

Pond A Moisture/Density Test Side-slopes

Hawes Composting Facility

Pond A Smooth Drum Rolled Surface

Pond A Racked Smooth

ZERO ENERGY INSTITUTE

CQA DAILY SUMMARY REPORT

Hawes Composting Facility

Location:	San Bernardino County	Owner:	Nursery Products
CM:	Nursery Products	General:	Quantum
Engineer:	Geosyntec Consultants	Installer:	EC Applications Inc
Inspection CQA:	Zero Energy Institute	Prepared by:	James Hansen
Submitted to:	Nursery Products		

Report No. 27

Report Date **Monday April** 16 2012 **Onsite:** 10:00am to 3:30pm

Weather: AM: Clear, cold, and some winds PM: warm, high winds at 78 degree

CQA Personnel: ZEI CQA Personnel: Brett Jordan

Hawes Composting Facility: Work Performed:

- On-site at 7:00 am, cold and breeze at high 50's degrees.
- Quantum continues to fine grade Pond A subgrade and side-slopes in preparation for liner installation. Using a grader and small dozer Quantum grades the subgrade and side-slopes level and smooth, water added to moisture condition the soil and final smooth drum rolling was performed. Subgrade is good condition for lining.
- Quantum continues to cut and preparing perimeter anchor trench Pond A for lining installation.
- Quantum continues to shape and excavate the Pond A low-point leak detection sump per plan. Bottom edges rolled smooth into collection sump area. Quantum digs sump collection trench up slope to termination end point. Area watered lightly to avoid drying out.
- Quantum starts digging Pond A floor anchor trenches (4) in total. Anchor Ballast trench constructed per plan.
- Off-site at 3:30 pm.

Personnel:
Quantum: (2)-laborers, (1) Superintendent, (5) Operator
EC Applications Inc: (0) Superintendent, (0) laborer, (0) operators
ZEI CQA: Brett Jordan
Equipment: (1) John Deere Blade, (2) 623 Scrappers, (2) Water Trucks, (1) Smooth drum roller, (1) Back-hoe, (1) Fork Lift

Meetings, Action Items and Resolutions:

Action Item: ☐ **Action Correction Item: Attachments: Photo's**

Hawes Composting Facility

Pond A Subgrade & Leak Detection Sump up Slope

Floor Ballast Anchor Trench

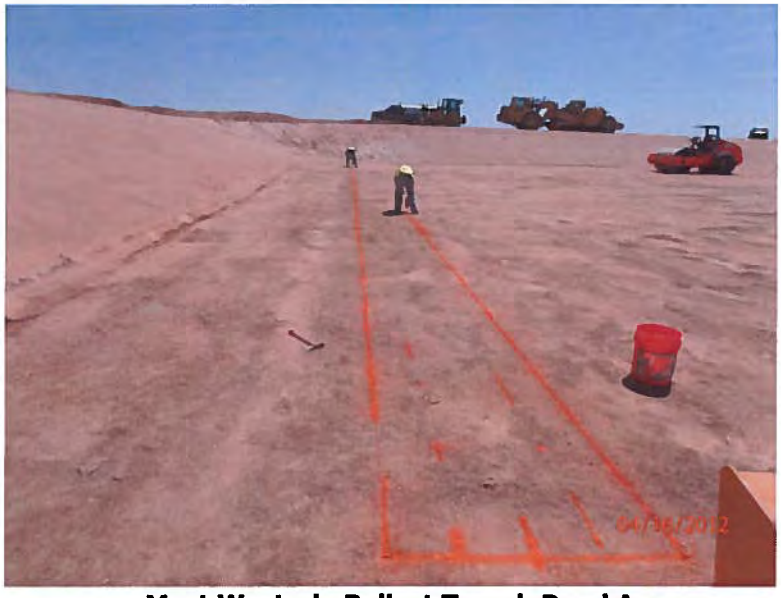
Hawes Composting Facility

Pond A Floor Ballast Trench Compacted Bottom

Pond A Ballast System per plan

Hawes Composting Facility

Leak Detention Collection Trench Pond A



Most Westerly Ballast Trench Pond A

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CQA DAILY SUMMARY REPORT

Hawes Composting Facility

Location:	San Bernardino County	Owner:	Nursery Products
CM:	Nursery Products	General:	Quantum
Engineer:	Geosyntec Consultants	Installer:	EC Applications Inc
Inspection CQA:	Zero Energy Institute	Prepared by:	James Hansen
Submitted to:	Nursery Products		

Report No. 28

Report Date **Tuesday April** 17 2012 **Onsite:** 6:30 am to 4:30pm

Weather: AM: Clear, cold, and some winds PM: warm, high winds at 78 degree

CQA Personnel: ZEI CQA Personnel: Brett Jordan

Hawes Composting Facility: Work Performed:

- On-site at 7:00 am, cold and breeze at high 50's degrees.
- Quantum continues to cut and preparing perimeter anchor trench Pond A for HDPE lining installation.
- ECA arrives on-site and started placing approved GCL in floor ballast anchor trenches. GCL placed directly above prepared trench subgrade, all GCL overlaps placed with bentonite powder sealant. GCL panels marked by ECA and inspected by ZEI CQA personnel. The GCL was covered immediately by the approved 60-mil HDPE liner. ECA prepared start up trial weld using the extrusion gun, all samples passed project requirements. HDPE panel joined and tested via. vacuum box test, result passed.
- Geotextile cushion facbric was then placed directly above the ballast HDPE to protect the liner from the soil ballast material. Ballast trench approved for backfill.
- Quantum starts placing ballast fill material above liner section. Care was used to place in shallow lift and protect the liner system. No damages observed during fill placement.
- ECA starts to place GCL on the approved subgrade west slope, ramp area lined to first ballast trench.
- Off-site at 3:30 pm.

Personnel:
Quantum: (2)-laborers, (1) Superintendent, (5) Operator. ECA -10 guys
EC Applications Inc: (0) Superintendent, (0) laborer, (0) operators
ZEI CQA: Brett Jordan
Equipment: (1) John Deere Blade, (2) 623 Scrappers, (2) Water Trucks, (1) Smooth drum roller, (1) Back-hoe, (1) Fork Lift

Hawes Composting Facility

Meetings, Action Items and Resolutions:

Action Item: ☐ **Action Correction Item: Attachments: Photo's**

Pond A GCL deployed at Ballast Trench

Pond A Floor Ballast Anchor Trench GCL (looking south) most westerly trench

Hawes Composting Facility

Pond A Floor Ballast Trench 60-mil HDPE Liner above GCL (no exposed GCL)

Pond A Ballast System Geotextile above the HDPE for cushion and protection

Hawes Composting Facility

Ballast fill above liner system

Most Westerly Ballast Trench and Ramp area GCL Pond A

ZERO ENERGY INSTITUTE

CQA DAILY SUMMARY REPORT

Hawes Composting Facility

Location:	San Bernardino County	Owner:	Nursery Products
CM:	Nursery Products	General:	Quantum
Engineer:	Geosyntec Consultants	Installer:	EC Applications Inc
Inspection CQA:	Zero Energy Institute	Prepared by:	James Hansen
Submitted to:	Nursery Products		

Report No. 29

Report Date **Wednesday April** 18 2012 **Onsite:** 6:30 am to 4:30pm

Weather: AM: Clear, cold, and some winds PM: warm, high winds at 78 degree

CQA Personnel: ZEI CQA Personnel: Brett Jordan

Hawes Composting Facility: Work Performed:

- On-site at 7:00 am, cold and breeze at high 50's degrees.
- Quantum continues to cut high spot locations center of the waste fill area. Using two scrappers, two water truck, and the grader, Quantum continued to cut and fill waste pile
- ECA continued to place GCL and HDPE liner. ECA places leak detection collection sump GCL, HDPE, geotextile and piping.
- Before welding, ECA performed pre-weld trials to ensure compliance. All trial weld passed project specifications.
- ECA shapes end point of the ballast trenches making relief cuts in corners and extrusion welding per industry standard. ECA completes ballast trench #2 then continues to place HDPE above GCL.
- Quantum continues to placing ballast fill material above liner section. Care was used to place in shallow lift and protect the liner system. No damages observed during fill placement.
- ECA completed in-house quality control (QC) performing air test on fusion wedge welds and vacuum box tests on fusion welds. All QC results placed directly on liner and witnessed by the on-site CQA.
- Off-site at 3:30 pm.

Personnel:
Quantum: (2)-laborers, (1) Superintendent, (5) Operator. ECA -10 guys
EC Applications Inc: (0) Superintendent, (0) laborer, (0) operators
ZEI CQA: Brett Jordan
Equipment: (1) John Deere Blade, (2) 623 Scrappers, (2) Water Trucks, (1) Smooth drum roller, (1) Back-hoe, (1) Fork Lift

Hawes Composting Facility

Meetings, Action Items and Resolutions:

Action Item: ☐ **Action Correction Item: Attachments: Photo's**

Pond A GCL deployed north slope

Pond A Leak Detection Sump

Hawes Composting Facility

Pond A Floor leak detection sump and riser pipe

Pond A leak detection sump system

Hawes Composting Facility

Pond A Extrusion Weld Cap on Ballast Trench to Close System

Pond A ballast system closure

ZERO ENERGY INSTITUTE

CQA DAILY SUMMARY REPORT

Hawes Composting Facility

Location:	San Bernardino County	Owner:	Nursery Products
CM:	Nursery Products	General:	Quantum
Engineer:	Geosyntec Consultants	Installer:	EC Applications Inc
Inspection CQA:	Zero Energy Institute	Prepared by:	Shannon Goodrich
Submitted to:	Nursery Products		

Report No. 30

Report Date **Thursday April** 19 2012 **Onsite:** 6:30 am to 11:00 am

Weather: AM: Clear, cold, and some winds PM: warm, high winds at 78 degree

CQA Personnel: ZEI CQA Personnel: Brett Jordan

Hawes Composting Facility: Work Performed:

- On-site at 6:30 am, cold and breeze at low 60's degrees.
- Quantum continues to cut high spot locations center of the waste fill area. Using two scrappers, two water truck, and the grader, Quantum continued to cut and fill waste pile, fill being placed on the westerly fill area.
- ECA continued to place GCL and HDPE liner. Before welding, ECA performed pre-weld trials to ensure compliance. All trial weld passed project specifications.
- ECA continue to perform quality control (QC) on all field seams. Vacuum box test conducted on the extrusion welds and air test performed on all fusion welds. All QC results documented on the liner surface to ensure compliance.
- Quantum continues to placing ballast fill material above liner section. Care was used to place in shallow lift and protect the liner system. No damages observed during fill placement.
- ECA completed in-house quality control (QC) performing air test on fusion wedge welds and vacuum box tests on fusion welds. All QC results placed directly on liner and witnessed by the on-site CQA.
- Quantum and ECA left site due to fatal accident, an ECA laborer hit by a bobcat.
- Off-site at 11:00 pm.

Personnel:
Quantum: (2)-laborers, (1) Superintendent, (5) Operator. ECA -10 guys
EC Applications Inc: (0) Superintendent, (0) laborer, (0) operators
ZEI CQA: Brett Jordan
Equipment: (1) John Deere Blade, (2) 623 Scrappers, (2) Water Trucks, (1) Smooth drum roller, (1) Back-hoe, (1) Fork Lift

Hawes Composting Facility

Meetings, Action Items and Resolutions:

Action Item: ☐ **Action Correction Item: Attachments: Photo's**

ECA trial weld before production seaming

Pond A Quality Control Vacuum Box Testing

Hawes Composting Facility

Pond A HDPE Installation

Pond A Quality Control (QC) test documentation Air-Test

ZERO ENERGY INSTITUTE

CQA DAILY SUMMARY REPORT

Hawes Composting Facility

Location:	San Bernardino County	Owner:	Nursery Products
CM:	Nursery Products	General:	Quantum
Engineer:	Geosyntec Consultants	Installer:	EC Applications Inc
Inspection CQA:	Zero Energy Institute	Prepared by:	Shannon Goodrich
Submitted to:	Nursery Products		

Report No. 31

Report Date **Monday April** 23 2012 **Onsite:** 11:00 am to 4:00 am

Weather: AM: Clear, cold, and some winds PM: warm, high winds at 78 degree

CQA Personnel: ZEI CQA Personnel: Brett Jordan

Hawes Composting Facility: Work Performed:

- Called By Chris Seney of Nursery Products and notified that liner was being installed by ECA.
- On-site at 11:00 am, warm and breeze at low 70's degrees.
- Quantum continues to cut/fill operations of the waste fill area. Using two scrappers, two water trucks, and the grader, Quantum continued to cut and fill waste pile, fill being placed on the westerly fill area.
- ECA continued to place GCL and HDPE liner. Before welding, ECA performed pre-weld trials to ensure compliance. All trial weld passed project specifications.
- ECA continue to perform quality control (QC) on all field seams. Vacuum box test conducted on the extrusion welds and air test performed on all fusion welds. All QC results documented on the liner surface to ensure compliance.
- Quantum completed the placement of ballast fill material above liner section. Care was used to place in shallow lift and protect the liner system. No damages observed during fill placement. All ballast system and leak detention sump construction completed.
- ECA completed in-house quality control (QC) performing air test on fusion wedge welds and vacuum box tests on fusion welds. All QC results placed directly on liner and witnessed by the on-site CQA.
- Off-site at 4:00 pm.

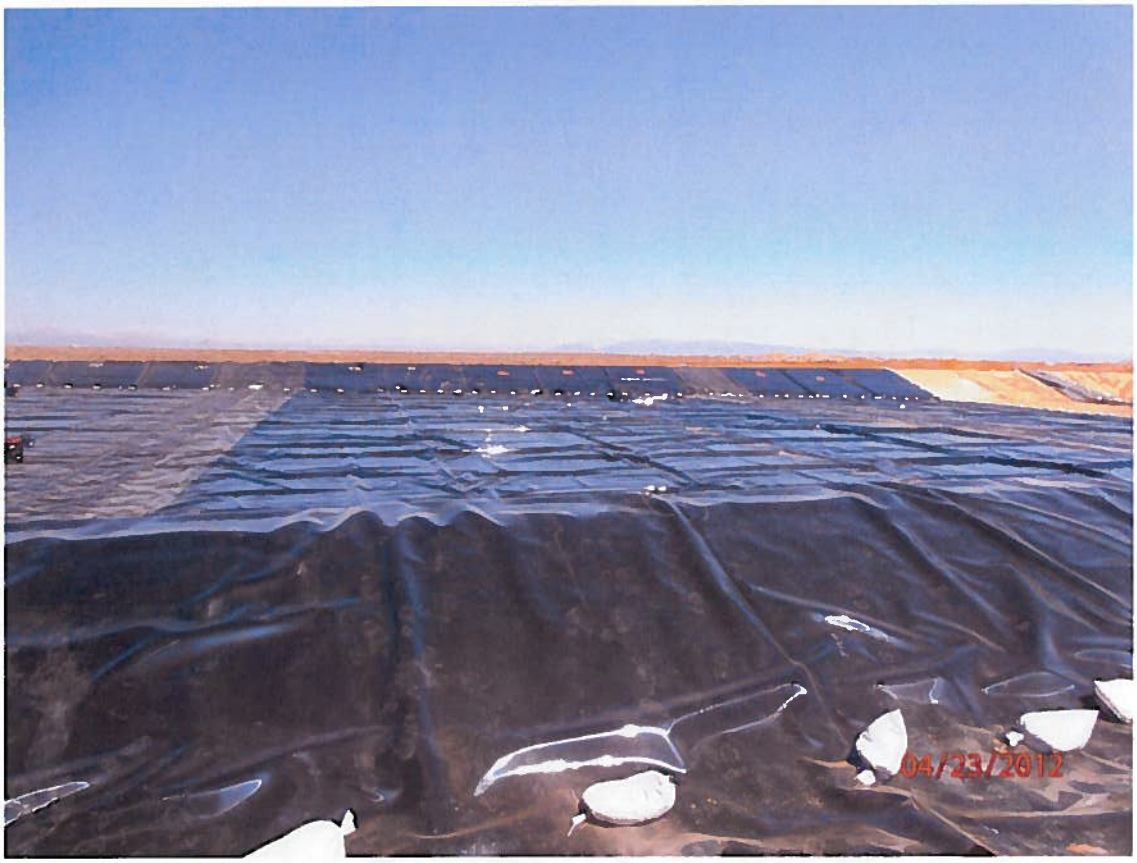
Personnel:
Quantum: (2)-laborers, (1) Superintendent, (5) Operator. ECA -10 guys
EC Applications Inc: (0) Superintendent, (0) laborer, (0) operators
ZEI CQA: Brett Jordan

Hawes Composting Facility

Equipment: (1) John Deere Blade, (2) 623 Scrappers, (2) Water Trucks, (1) Smooth drum roller, (1) Back-hoe, (1) Fork Lift

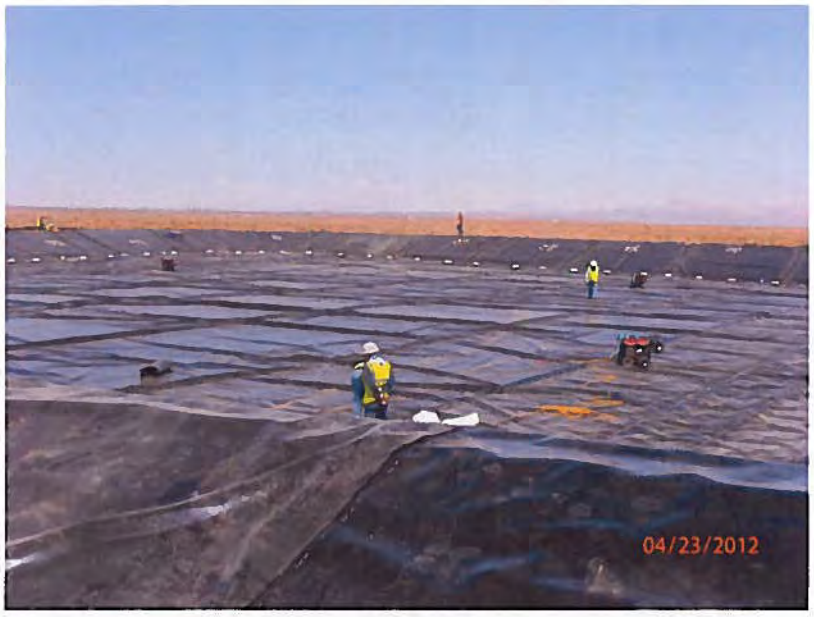
Meetings, Action Items and Resolutions:

Action Item: ☐ **Action Correction Item: Attachments: Photo's**



Pond A 60 Mil HDPE anchor trench (looking North)

Hawes Composting Facility



Pond A Quality Control Destructive Seam Samplking

Pond A HDPE Morning Trail "Pre-Weld" Samples

Hawes Composting Facility

Pond A HDPE Liner Anchor Trench fill and compaction

ZERO ENERGY INSTITUTE

CQA DAILY SUMMARY REPORT

Hawes Composting Facility

Location:	San Bernardino County	Owner:	Nursery Products
CM:	Nursery Products	General:	Quantum
Engineer:	Geosyntec Consultants	Installer:	EC Applications Inc
Inspection CQA:	Zero Energy Institute	Prepared by:	Shannon Goodrich
Submitted to:	Nursery Products		

Report No. 32

Report Date **Tuesday April** 24 2012 **Onsite:** 6:30 am to 10:00 am

Weather: AM: Clear, cold, and some winds PM: warm, high winds at 80 degree

CQA Personnel: ZEI CQA Personnel: Brett Jordan

Hawes Composting Facility: Work Performed:

- On-site at 6:30 am, warm and breeze at low 60's degrees.
- Quantum continues to cut/fill operations of the waste fill area. Using two scrappers, two water trucks, and the grader, Quantum continued to cut and fill waste pile, fill being placed on the westerly fill area. Quantum relocates fill operation to the most easterly fill area. Lift placed in shallow lifts about 6-inch, watered, leveled and compacted.
- ECA continued to place GCL and HDPE liner. Before welding, ECA performed pre-weld trials to ensure compliance. All trial weld passed project specifications.
- ECA and ZEI locate destructive seam sample locations. Samples taken from the in-place liner seams and tested for compliance in the field. All results passed seam strength requirements. Samples taken to the independent geomembrane laboratory for peel and shear testing.
- ECA continue to perform quality control (QC) on all field seams. Vacuum box test conducted on the extrusion welds and air test performed on all fusion welds. All QC results documented on the liner surface to ensure compliance. ECA completes all QC field seam and repair Pond A. ZEI and ECA perform final walk, in total (8) liner technicians and ZEI walk the entire liner surface and inspect the HDPE for imperfections. No imperfections observed. ECA clean up and demobilize form site.
- Off-site at 10:00 pm.

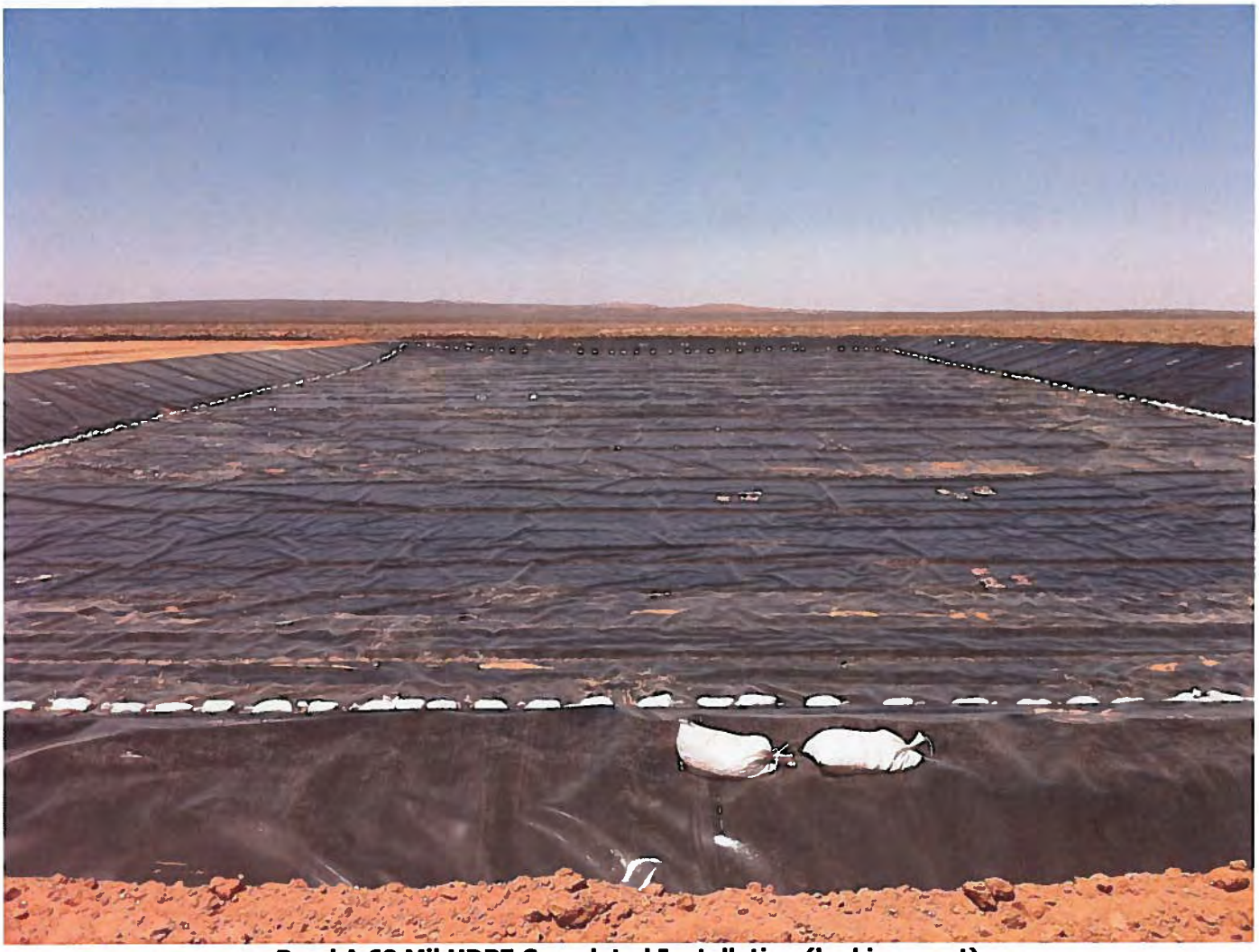
Personnel:
Quantum: (2)-laborers, (1) Superintendent, (5) Operator. ECA -10 guys
EC Applications Inc: (1) Superintendent, (9) laborer, (0) operators

Hawes Composting Facility

ZEI CQA: Brett Jordan
Equipment: (1) John Deere Blade, (2) 623 Scrappers, (2) Water Trucks, (1) Smooth drum roller, (1) Back-hoe, (1) Fork Lift

Meetings, Action Items and Resolutions:

Action Item: ☐ **Action Correction Item: Attachments: Photo's**



Pond A 60 Mil HDPE Completed Installation (looking west)

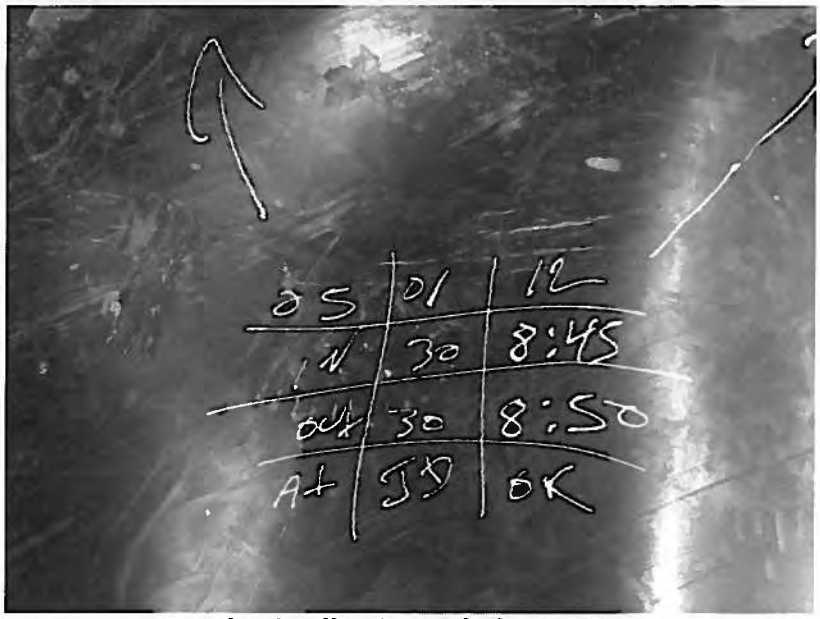
Hawes Composting Facility

Pond A Quality Control Documentation Repair

Pond A HDPE Completed Liner Ballast System

Hawes Composting Facility

Pond A HDPE Liner Seam Destruct #2 Location and Repair



Pond A Quality Control Air Test Data

Hawes Composting Facility

Pond A Final Anchor Trench Backfill & Compaction

Pond A Completed (looking west)