Erosion Control Products (ECP) & Sediment Retention Devices (SRD)
Technical Committee Meeting Agenda
Working Session #9
Wednesday, May 11, 2016 8:00AM – 10:00AM

Please complete the electronic attendance sheet

13 State reps in attendance

1) 8:00AM-8:05AM: Call to Order and Introductions

Current Technical Committee Members
Tracy Stegmaier (Chair/AL) Doug Gesso (KY) Kurt Kelsey (American Excelsior)
Brennan Roney (Vice Chair/GA) Ron Matar (KY) Diane Hitt (East Coast Erosion)
Katheryn Malusky (AASHTO) Lori Belz (MN) Laurie Honsigford (ECTC)
Maribel Wong (AASHTO) Dan Oesch (MO) Ben Ruzowicz (GA S&WCC)
Stephanie Huang (AZ) Ron Poe (NE) Scott Harrison (Terra Novo)
Kevin Palmer (AR) Raghu Namburi (OR) Jett McFalls (TTI)
George Lian (GA) Ray Vaughan (SC) Joel Sprague (TRI)
Scott Hughes (IL) Matt Holstein (SC) Jarrett Nelson (TRI)
Joseph Puthrickal (IA) John Rublein (WI) Jay Sprague (TRI)
Melissa Serio (IA) Peter Kemp (WI) J. P. Johns (Woolpert)
Michael Heller (IA)

Next scheduled Conference Call: July 12th, 12:30-2:00 (Eastern)

2) 8:05AM-8:15AM: Data Mine 3.0 Update
The ECP DataMine 3.0 Task Force has made a lot of progress. In July, we will start Beta testing (hoping to “go live” with the module in Nov.). Current Large Scale reports will be incorporated in DM 3.0 and the public reports page will be phased out.

3) 8:15AM-8:25AM: ECP/SRD Program Overview
A short presentation was given on the use and installation of the products evaluated in the ECP/SRD program. This program looks at product performance, material characteristics, and seeks to educate users on proper and effective installation.

The types of products evaluated are temporary in nature. They are typically used to prevent soil erosion and sediment transport by protecting constructed slopes and ditches or creating barriers around construction perimeters and drainage structures.

Rolled Erosion Control Products (RECP)
Hydraulic Erosion Control Products (HECP)
Sediment Retention Devices (SRD)
4) 8:25AM-8:35AM: SRD Evaluation Program Update
   a) Submission Status – No products submitted as of yet (module not available in DM 2.0).
   b) Pilot Project Update - Testing began April 2016
      • 7 Manufacturers participating
      • 8 Products
      • 2 Test Facilities

   Independent Consultant for Reporting (Woolpert)
   1. Report #1 – Summary of test and data
   2. Report #2 – Testing Analysis (A Task Force will guide this effort.)
      • Repeatability of the Test
      • Conditions and Variables
      • Conclusions/Recommendations for future testing
   c) Impact on ECP Evaluations - Large Scale Slope Testing is on hold until July – currently about 5 products in queue.

5) 8:35AM-9:05AM: ECP Transition from Evaluation Program to Audit Program
   Tracy provided a description of the transition from the current Evaluation Program to the new Audit Program. Hydraulically applied products (HECPs) will be added to the cyclical testing. Cyclical Large Scale Performance Testing will be phased in – (description within the presentation.)
   a) ECP Performance Testing – shifting from bench scale to large scale testing by initially allowing the manufacturer to choose one or both options.
   b) HECP Index Tests – the Task Force working on identifying tests that will become part of the program on a cyclical basis. The use of Infrared Scans as a possible test is being evaluated (see presentation by Allen Gallistel – Minnesota DOT).
      IR testing is difficult on inhomogeneous materials. Testing shows promise but needs some more evaluation and tuning. It is difficult to use this test to check for the exact manufacturer’s product. Testing various products tends to show that they match closely since the materials used are generally the same. The goal is to make sure the products have the same composition on a cyclical basis. Question: What is the definition of “different?” Reply: It is hard to tell at this time. Materials have a shelf life and may change over time. There is TGA analysis that can look at materials and give you a fingerprint. Not quantitative however. Same general cost as IR.

   Action Item: HECP Task Force to consider evaluating the TGA analysis.

   The format of the Large Scale testing reports will likely be revised to a “historical” report summarizing all results over time in addition to the current test data. Large Scale testing with two laboratories has not been correlated yet. There is a need to evaluate any differences in results due to soil types when using multiple laboratories. The SRD pilot project should help with this evaluation. There is concern about costs due to the addition of new testing, audits, etc.

   The committee welcomes any ideas you may have for cost savings.
6) 9:05AM-9:45AM: Industry Concerns

Industry question on proposed timeframe for transition? – The option of selecting cyclical bench and/or cyclical large scale will hopefully be available with DataMine 3.0. There is the potential that as cyclical large scale data is collected that a correlation might be found between index value ranges and expected performance. – One suggestion was to require large scale testing initially, and then alternate with bench scale every three years.

Question on the consideration of more than one test facility? – SRD Pilot will help us identify any correlations. Currently there aren’t any other facilities that have the capability to run the whole suite of tests that are part of program.

Again, consideration should be given to variations in soil types if using more than one laboratory. – Yes, if more than one laboratory is considered the committee will need to evaluate how soil variations impact the testing results.

a) Large Scale Report Updates – The revised graphs (that were completed after the independent testing facility review) have been moved from the ECP webpage into each individual large scale report as an appendix that also includes a narrative explaining the revisions. This has been noted on the website and the explanations have also been posted independent of the reports. The Large Scale Slope testing had no change to the reported C-factors, but the correlating R-factor was revised. The Large Scale Channel testing had minor revisions to the reported maximum allowed shear stress and velocities. (Please reference the ECP website and annual meeting presentation for detailed information.)

Action Item: Update and expand the Committee User Guide.

Discussion: Areas of turbulent flow were removed but are not shown in the revised version.

Question: Are Laminar and Turbulent flow being accurately recorded?

Lab Reply: the effort has been to find linearity in the data. In 95% of runs all is linear. Primarily in the vegetated work there is a lot of turbulence – combination of high flow and grass clumps in the length of the flume which causes every 2 ft measurements to have very high and low depth velocity – comes down to about 6 runs in a one year vegetated area – turbulence produces a data set that bounces around – look for a reasonable length of linearity to use in the calculations. There are cases where there is not a large enough linear area for the calculation. (A small study was funded by WI to determine the areas of linearity.)

Follow up question: Is the exact area analyzed recorded anywhere? Can we standardize the area of evaluation?

Lab Reply: Fairly standardized for low flows.

Question: Should we look at switching the grasses we use?

Lab Reply: WI has seen issues with the grass used, but changing the grass will cause a difference. The protocol calls for what grass develops after 21 days. Trying to simulate field conditions.
Action Item: The TC will evaluate the clumping issue and alternative grass types in efforts to remove that as a variable for the vegetated channel testing while maintaining the validity of previous testing.

Question: Any thoughts on some products having longer grass growth period?
Lab Reply: Report shows general times, but exact amount of weeks is shown also. Have seen Kentucky Bluegrass used extensively. It lays down during various flows. Using a 20’ area of laminar flow for analysis. The high flow event causes the most turbulence. All of the results are above 10 - 12 psf.

Question: Are we wise to go to these high shear stresses?
Lab Reply: Have gone to 14 psf in other testing. You generally do not plan a field condition to be designed past 14 psf. Need to look into a better correlation between laboratory and field.

Question: What is the required pin pattern in the 6460 testing?
Lab Reply: Whatever the manufacturers publish.

Question: What kind of performance do you predict if you double the pin frequency?
Lab Reply: Cannot correlate from one pin frequency to another. The ASTM Standard is written as “whatever/however you do is reported”, not how to do it.

We are doing a complete review of the Large Scale Reports, conducted primarily by Industry. Specific questions and requests for information are sent to the Lead State for response and clarification to be obtained from the Testing Facility (see presentation for specifics). TRI does three Excel regressions (Power, Polynomial and Least Square Fit). One concern is about the best fit use of regression hiding the variability in the dataset - are you comparing “apples to apples”. This review is to help us identify what is missing from reports so users can get from raw data to results and to improve review process.

Question: Should we standardize to one regression?
Lab Reply: Looking for an intercept from the data that gives the highest “R” value. Output does not behave linearly.
State Reply: Need to know the equations used throughout the report. NTPEP working towards what states need to review reports – will continue to work with the laboratories and industry

Follow up question: Is there any reason ASTM can’t address this issue? How about reporting the best equation value and the variability in the data?
State Reply: Need to be consistent with the data. Trend Line is important since DOTs using the data have different conditions and can fall at different locations along the line.

b) Precision & Bias of Index Tests - Do not have tolerance ranges for different index values for use, trying to establish values and pass/fail criteria. Looking for a Large Scale testing trigger. Each of the index tests is performed on 10 random samples and the average is reported for the
10. Do we want to get a true precision/bias? There is a lot of variability within a single roll of a product. Need to look at the data from Cyclical Large Scale testing. Any suggestions on what to do? ASTM is working on it. Tests and the products have a lot of variability.

Question: How does this variability affect performance?
Reply: We don’t fully know at this time. Variability is important for synthetic-base products.

Action Item: Gather more large scale testing data and compare with index testing data to determine if criteria can be established for cyclical large scale test frequency reduction.

c) Standardized Labeling – Industry suggested using ALDOT criteria for a starting point. Issue came up concerning “Location” as it sometimes is located in the coded manufacturer label information and this needs to be addressed. Some industry members are hesitant about putting all of the information on the label and alternately suggested mirroring the labeling code scheme used by REGEO

Action Item: Further discussion to continue in the TC to reach a decision on labeling requirements.

7) 9:45AM-10:00AM: Open Discussion & Meeting Conclusion
   • Request from Industry to add two seats to this Committee – granted one to GMA – Johnathan Curry.

Next ECP/SRD Committee conference call will be Tuesday, July 12\textsuperscript{th}, 2016
Erosion Control Products (ECP) Sediment Retention Devices (SRD) Technical Session

Tracy A. Stegmaier, P.E. – Alabama DOT / Chair
Brennan A. Roney – Georgia DOT / Vice Chair

Erosion Control Products (ECP) Sediment Retention Devices (SRD) Technical Committee

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Brennan Roney (Vice Chair/GA)
Stephanie Huang (AZ)
Kevin Palmer (AR)
George Liu (CA)
Melissa Sarto (CA)
Michael Heller (IA)
Doug Gossen (KY)
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Lori Belz (MN)
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Peter Kemp (WI)

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Diane Hatt (East Coast Erosion)
Laura Hunningford (ECTC)
Ben Rozmaitr (IA S&WCC)
Scott Hanston (Wesanco)
J. P. Johns (Woolpert)

Testing Facility Members
Joel Sprague (TRI)
Jarrett Nelson (TRI)
Jay Sprague (TRI)
Jett McFalls (TTI)

ECP/SRD Participation & Usage

24 States Utilize ECP Program
14 States on Technical Committee

How can you participate?

- Annual Meeting – Working Session
- Quarterly Conference Calls (1.5 hours) – July 12th
- Provide Technical Input
- Opportunity to Listen & Learn
- Special Task Forces

DataMine 3.0 Update

- Task Force (3 State, 3 Manufacturer, 2 Test Facility)
- ECP Test Tree – Complete
- SRD Test Tree – Complete
- July 2016 Alpha Testing
- September 2016 Beta Testing
- November 2016 ECP Module Live
- Early 2017 Reports Webpage Phased Out
ECP/SRD Program Overview

ECP Index Tests Offered:
• ASTM D6475  Mass per Unit Area (Degradables)
• ASTM D6566  Mass per Unit Area (Synthetics)*
• ASTM D6818  Tensile Strength/Strain*
• ASTM D6525  Thickness*
• ASTM D6567  Ground Cover / Light Penetration*
• ASTM D1117  Water Absorption (Degradables)*
• ASTM D792  Specific Gravity (Synthetics)

ECP Bench Scale Tests Offered:
• ASTM D7101  Soil Loss Ratio
• ASTM D7207  Shear Stress Capacity
• ASTM D7322  Seed Germination & Plant Growth

ECP Large Scale Tests Offered:
• ASTM D6459  Slope (Soil Loss Ratio, C-Factor)
• ASTM D6460  Unvegetated Channel (Shear Stress)
• ASTM D6460  Vegetated & Unvegetated Channel (Shear Stress)

SRD Index Tests Offered:
• ASTM D4355  UV Resistance
• ASTM D4491  Permeability
• ASTM D4533  Tear Strength
• ASTM D4632  Tensile Strength
• ASTM D4751  Apparent Opening Size
• ASTM D5261  Mass per Unit Area
• ASTM D6241  Puncture Strength
**ECP/SRD Program Overview**

**SRD Large Scale Tests Offered:**
- ASTM D7351 Toe-of-Slope (Sheet Flow Effectiveness)
- ASTM D7351 Inlet Protection (Sheet Flow) - Modified
- ASTM D7208 Ditch Check Performance
- ASTM D5141 Filtering Efficiency & Flow Rate (Component Test)

**SRD Large Scale Test Proposed:**
- TM11340 Perimeter Performance

**Sediment Retention Devices (SRD)**

**Program Status Update**
- No Products Submitted
- SRD Not Available in DataMine 2.0
- SRD Scheduled for DataMine 3.0
- SRD Pilot Project – Modified Large Scale Perimeter Test

**Sediment Retention Devices (SRD)**

- 7 Manufacturers, 8 Products (2D and 3D)
- 2 Testing Facilities – TRI & TTI
- Independent Consultant for Reporting
  - 1st Report – Testing Summary, Data Summary
- Repeatability
- Conditions/Variables Impacting Tests
- Conclusions/Recommendations for Future Testing
- Testing Began April 2016 – Issues to Correct
- ECP Large Scale Slope ON HOLD until July 2016

**Erosion Control Products (ECP)**

- Optional One-Time Testing (RECP & HECP)
- Large Scale Performance
- 3-year Cyclical Testing (RECP & HECP)

**Audit Program**
- Annual Facility Audit
- 3-year Desktop Audit of QMS

**Erosion Control Products (ECP)**

- 3-year Cyclical Testing (RECP & HECP)
- Add HECPs to Cyclical Testing
- Transition from Bench Scale to Large Scale
- Option to Select Bench and/or Large Scale
- Phase Out Bench Scale

**Infrared Scan Mini Research Project**
- Goal: Cyclical Verification of Product Consistency
- Test Shows Chemical Peaks not Composition
- Allen Gallistel, Minnesota DOT Conducting Testing
- 4 Manufacturers, Approximately 15 Product Samples
- Obstacles:
  - Sample Preparation (As Packaged, As Prepared, As Cured)
  - Water Peak Very Large – Dilutes Other Peaks
• Posted Revised Graphs Moved Into Individual Reports
• Affected Reports Noted as “Amended”
• Explanation Document Added as Appendix
• Explanation Documents Posted Separately

• Large Scale Slope – C Factor Unchanged, R Factor Revised to Reflect Final Velocity of Smaller Raindrops
• Large Scale Channel – Shear and Velocity Limits Revised to Reflect Removing Turbulent Areas from Calculation
• Action Item – Update & Expand ECP User Guide

Large Scale Report Updates

Large Scale Report Updates

Large Scale Report Updates

Goals:
• Facilitate State Technical Review
• Improve Manufacturer Review Process
• Identify Specific Information Needed – Point A to Point B

Process:
• Complete Review of One Large Scale Slope Report
• Conducted by TC Industry Representative
• Send Questions to Lead State Along the Way
• Repeat Process for One Large Scale Channel Report

Progress:
• Large Scale Slope Report Review Started
• First Round of Questions Submitted
• First Round of Responses Received

Large Scale Report Equations

Round 1:
A: All Soil Loss Values Reported are for Dry Soil Loss
A: All References to Soil Type should be Sandy Loam
A: Graph of C-Factor Equation will show Value @ Origin – Best Fit
C: Least Squares Regression not always used for C-Factor Equation ??
Q: Equation Used with Rainfall Data to Determine R-Factor, Chapter 2 ??
Q: LS-Factor Determination, Chapter 4
    Reported LS-Factor = 2.78
    My Interpolation of Tables 4.1, 4.2, 4.3 LS-Factor = 2.950-3.511

Precision and Bias

• Suggested to Establish Index Value Pass/Fail Criteria
• Large Scale Testing Trigger
• Currently Unknown for Index Tests
• Complicated by Degradable Product High Variability
• Index Tests based on 10 Random Samples
• Compared Min and Max Value to Average Value for +/-%
• Identified Middle 68th and 95th Percentile Results

Action Plan
• During Bench to Large Scale Transition, Compare Cyclical Index Values to Cyclical Large Scale Performance Values
• Determine if there is an Acceptable Tolerance Range
• If yes, Relax Cyclical Large Scale w/ Testing Trigger

Suggested ALDOT Requirements as Starting Point
• Provide Installation Instructions
• Provide Labels Clearly Identifying Rolls/Bales
  • City/State of Manufacture
  • Production Date
  • Lot Number

Don’t Forget to Sign-In on the iPad

Next ECP Quarterly Call Tuesday, July 12th
Hydraulically applied Erosion Control Products (HECP)

FT-IR Fingerprint: Feasibility Study

preliminary work

We all have a stake in A&B

Work Done Thus Far

- Samples were received in March from 4 sources
  - From 3 sources: a 50 lb. bale from each
  - From one source: 12 – 1 gallon bags of various materials
- Main issue is the inhomogeneity of the material compared to the measurement technique
- Initial Screening by 1 method has been tried on 4 materials (one from each source)

Initial Procedure

- To "remove" the inhomogeneity and to look at the components applied to the bulk cellulose /"mulch" an ethanol extraction was tried
- A similar water to product ratio was used for the ethanol extraction and the resulting solution was filtered onto a 45° multi-bounce ZnSe ATR crystal
- The solution was dried to avoid interfering alcohol peaks and a spectrum was collected

Product Comparisons

Product Search

Repeatability – some differences

Run 1          Run 2          Run 3

Original Sample  
• Had a longer soak
Second Sample  
• Shorter soak
Third Sample  
• Shorter soak  
• Did see some glass wool on ATR from filter
Further Work

- Continue to look at repeatability
  - Filtering methods
  - Soak Time
  - Solvent to product ratio
- Look at different solvents
- Consider different techniques
  - Open to suggestions

Thank You

Questions?
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