

Appendix D-4

Innovative Revegetation Study Task 4 Field Visit Observations

Date of Field Visit: 5/28/14

Location: Mountain Area

TerraLogic Team Attendees: Art Hirsch, Aaron DeJoia

The TerraLogic Team conducted a QC inspection for seeding operations on May 28, 2014. The TerraLogic Team, along with CDOT representative, discussed the erosion control and revegetation progress of the project with the Project Engineer, WQCM, Reclamation Contractor, and the ECS. In addition, a field visit was conducted to review the revegetation success at the site. During the site visit, soil samples were obtained from three separate areas including a south facing slope (0-6 inches), north facing slope (0-4 inches) and north facing slope (4-12 inches). The following are TerraLogic's QC observations and recommendations:

Basic Findings 5/28/14:

- 1) According to the ECS topsoil was salvaged and moved offsite due to limited room within the construction area within the ROW. Topsoil stockpiles were reviewed and it was determined that the stockpiles were comprised based on visual evidence of large rocks, electrical wiring, sheet metal, and large woody debris (Picture 1). The grading for topsoil development was visual and not measured.



Picture 1. Topsoil Stockpile for the I-70 Eagle project.

- 2) Seeding methodology was changed from drill seeding to broadcast seeding, racking and hydromulch. The change was requested due to a large proportion of steep (>2:1) slopes on the project site. Change in seeding specifications was authorized by the Project Engineer. Seeding rates were increased 1.5X for the broadcast seeding. It should be noted that during the site inspection *multiple areas that could have been drilled seeded were observed*.
- 3) Site was seeded and hydromulched around November 15, 2013 (within seeding window), little if any hydromulch was observed on the site (Picture 2).



Picture 2. Soil surface with limited hydromulch remaining.

- 4) Revegetation germination appeared to be increased by the use of dozer tracking on the steeper slopes. However a high level of soil compaction was observed in the top 3 to 4 inches of the soil surface. Picture 3 shows evidence of the compaction with most of the staples for the blanket not placed all the way to depth. This increase in soil compaction may impact establishment of the reclamation grasses due to limited rooting depths.



Picture 3. Blanket staples were not able to be installed completely likely due to soil compaction.

- 5) Reclamation contractor did not understand the specification for soil conditioning and fertilizer requirements and therefore *did not apply the specified products*. On the specification sheet no biological nutrient organic based fertilizer, 200 pound humates per acre and 3 cubic yards per 1000 sf spray-on hydraulic organic amendments was specified. The contractor applied humates and fertilizer (Biosol) but did not apply any organic amendments. Additional 18-46-0 to increase total nutrients that was applied. The SWMP did not explain the organic amendments well so it is easy to understand this confusion. The contractor identified the procedure well in a written method statement, which was approved by the Project Engineer.
- 6) A single vegetation transect was performed prior to construction to establish pre-disturbance percent cover; this was meant to be representative of 19.2 acres. The transect was photographed and all photographs were geo-referenced. During the site inspection the TerraLogic team noticed multiple eco-zones within the ROW that likely had varying pre-disturbance vegetative cover. It is probable that one transit is not representative of the entire site and the one location could be very subjective.

- 7) Seed mix was reviewed and appeared appropriate for the site. Seeding rate was calculated at a seeding rate of 212 PLS per square foot. This rate is extremely high and could cause competition during establishment.
- 8) Part of the project site will be landscaped and irrigation will be developed on this part of the project.
- 9) The seed mix documentation provide for review did not have native species and the error was caught late in the process during the DOR phase of the project; a revised seed mix was then established. The FIR or FOR stage is critical to catch potential seed mix errors by the CDOT landscaping representative.
- 10) Seed tags were collected by the Project Engineer and were available for inspection.
- 11) Seed was tested within the past 12 months for viability as documented on the provided seed tag.
- 12) The project is a Construction Manager/General Contactor contact with CDOT holding the Stormwater Permit
- 13) No stockpile salvage during the first phase of construction only the second phase
- 14) The term hydroseeding needs better definition; seed is not incorporated into the mulch during application
- 15) Project Engineer is a former CDOT Resident/Program Engineer and has been in contact with Region 3 landscape professional about Revegetation support
- 16) A seed sample for collected for viability testing