

Appendix B-4

Tier IV- Alternatives Analysis Top Research Variables

Priority #	Test Variable Name	Process	Technical	Description	Hypothesis/ Rationale	General Testing Approach
1	Salvage soil and/or existing soil management and use based upon soil testing data		x	Identify salvaged soil site conditions and chemical characteristics to identify amendment needs	The lack of soil testing for projects is negatively impacting the viability of revegetation studies by not having the correct level of micor and micronutrients and organic matter	
2	Former construction site forensic analysis		x	Visit current and former construction sites and evaluate revegetation success based upon plant and soil based metrics	Improved revegetation occur if contractors follow specifications; evaluate revegetation success and plant community establishment using several onsite metrics via field visits; can be done in FY 14-15	
3	Plant seed selection based upon reference native species and ecozones at project area		x			
4	Construction revegetation QC management	x		Quality control and assurance steps can be taken to ensure design and specs are being implemented in the field. Variables: testing of seed pls, seed tags, depth of soil preparation, depth of topsoil, seeding schedule, topsoil testing in place to determine fert requirements, drill seed equipment testing, inspection of surface loosening, inspection of amendment application and quantity.	The lack of construction quality control during revegetation is impacting the effectiveness of revegetation	Visit sites identified by CDOT statewide
5	Vegetative cover calculation methodology consistency	x		Review, evaluate and modify existing CDOT calculation guidance; it is possible that improper methodology and calculations can make it more difficult to reach 70% vegetative cover	The CDOT methodology is not being applied correctly thus causing projects to be under the General Stormwater Permit longer than necessary	Re-evaluate the CDOT approach; go into the field and verify reference transect cover calculations; evaluate selected closed construction site calculations; modify guidance document; provide training on proper vegetative cover determinations
6	Soil amendment-compost studies		x	Variables to test: Humate, mychorrizzia, surface applied amendments as options to compost, combinations of soil amendments, organic fertilizer vs inorganic fertilizer, amended topsoil vs no topsoil, weed introduction and compost extract.		
7	Seeding Method (Drill, Broadcast, Pitting, Imprinting)		x			
8	Most important combination of organic or other fertilizers and amendments based upon soil chemistry conditions (existing soils and salvaged soils)		x		Improved revegetation will occur based upon know existing soil chemistry conditions and adding soil nutrients/amendments	
9	Critical Project Design Criteria for Revegetation Success		x	Identify areas of concern for success(Variables) such as design criteria (slope, max length, shoulders, rundowns, channel slope, drainage design (channels, shoulders and slope drainage), scope of work (objectives), revegetation: seed mix, specs, review of seed mixes with industry. Nothing new here, with the exception of reviewing seed species and selection with weed industry and reclamation experts as opposed to project reviews. CDOT will require training to certify designs are being prepared properly.		
10	Temporary seeding through general on larger projects and final seeding completed by qualified revegetation contractor	x				
11	Evaluate seeding windows based upon eco-zones					
12	Evaluate seed viability for construction sites					