

Maryland State Highway Administration

Erosion and Sediment Control (ESC) Initiatives **- An organizational change from Design to** **Operation**

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Erosion and Sediment Control (ESC) Initiatives

- An organizational change from Design to Operation

What is Erosion and Sediment Control

1. Reduce potential for land to erode,
2. If erosion is inevitable, control the sediment on site.

Erosion can occur anytime during construction or operation. ESC requires programmatic attention and commitment.

Erosion and Sediment Control in Maryland

Erosion and Sediment Control

Law - Environment Article Title 4, §4-101-413

Regulation - COMAR Title 26.17.01

- 1961: Sediment Defined As A Pollutant
- 1970: Statewide Program Initiated
- 1983: Responsible Personnel Certification Required
- 1988-1989: First Pilot of SHA's Quality Assurance Inspections
- 1992: Agricultural Land Management Practices Become Subject To Sediment Pollution Law
- 1994: Latest Edition Of Standards & Specifications

Erosion and Sediment Control in Maryland

State Highway Administration (SHA)'s ESC Program

- Design and Plans as per Maryland Department of the Environment (MDE)'s Standards and Specifications
- Construction as per Plans and Modifications approval as necessary during the progress of work
- SHA – MDE Memorandum of Agreement for Self Inspection – Also known as Quality Assurance and Rating Program

Erosion and Sediment Control (ESC) Initiatives



Erosion and sediment
Control implementation
has been...

.....One way street.

- Owner's Requirement
- Regulatory Hammer

- SHA initiated efforts to improve collaborative efforts between the SHA and the contractors to achieve better results by addressing ...

- Education
- Policy Development
- Research
- Regulation

Erosion and Sediment Control (ESC) Initiatives

1. Education and Anticipated Results

- SHA ESC Certification Training Program
- ESC Field Guide

2. Policy Development and Regulations

- New Processes and Specification (Incentive/Liquidated Damages)
- New Quality Assurance Inspection -Rating System

3. Research

- Study of Flocculants
- New Products Evaluation

Education - SHA's ESC Certification Training Program

Two Part Certification

1. For Inspectors & Contractors

- Require SHA certification to work on SHA projects
- Require recertification every three years
- Day and Half training Launched training in cooperation with Maryland Highway Contractor's Association
- SHA staff as well as contractors must be certified

2. For Designers

- Require SHA certification to work on SHA projects
- Additional one day of training with Inspector training as a prerequisite
- Training Being Developed and to be launched in 2006

ESC Training Outline for Inspectors/Contractors

Emphasize more practical considerations

- Introduction to
 - Environmental Stewardship
 - Objectives of E/S Control Program
 - SHA Initiatives and Expectation
- Review of Basic Hydrology and Hydraulics
- Review of Basic Erosion Mechanics
- Review of Basic Vegetative Stabilization
- Review of Basic Nutrient Management
- Highlights of Erosion and Sediment Control Devices
- Review of Basic Waterway Construction

Continued...

ESC Training Outline for Inspectors/Contractors

- Review of SHA's Revised Specification for Erosion and Sediment Control
- Review and Exercise of Revised Quality Assurance Form and Inspection Checklist
- Protocols for Construction Compliance
- Importance of ESC Preconstruction Meeting
- Review of Closeout of Project Process
- Review of Design Build Process
- Review of Costs implications of Compliance Vs Noncompliance
- SHA Organization – Who to contact and When
- Competence testing required at the end of the training

Education - ESC Field Guide

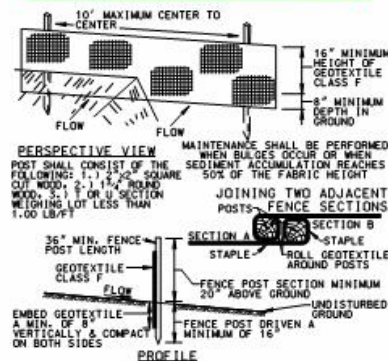


Field Guide for Erosion and Sediment Control

This field guide is intended to serve as a supplemental document to the 1994 Maryland Standards and Specifications for Soil Erosion Sediment Control and Maryland SHA Standard Specifications for Construction and Materials to be used by MD SHA Staff, Inspection Personnel, and Contractors.

State Highway Administration
Maryland Department of Transportation

Silt Fence MDE Detail E-15-3 or Revised SHA SPI 308.03.28



Includes:

- Quality Assurance Rating System
- Details for All Standard Controls
- Inspection Troubleshooting Guidelines

Previous Rating Form (Subjective)
Site Information – Status & condition
Recommended Action
Comments
Rating

[illegible]

New QA Rating System

DOC# 010405
CD07730 300.01

Page 1 of 4

STATE HIGHWAY ADMINISTRATION INTERESTED PARTY QUALITY ASSURANCE EROSION AND SEDIMENT CONTROL FIELD INVESTIGATION REPORT

DISTRICT: COUNTY: CONTRACT NO: DATE OF INSPECTION: TIME:
PROJECT DESCRIPTION:
CONTRACTOR:
S H A PROJECT REPRESENTATIVE:
QUALITY ASSURANCE INSPECTOR:

SITE STATUS: ☐ CURRENTLY ACTIVE ☐ CURRENTLY INACTIVE
SITE CONDITIONS: ☐ COMPLIANCE ☐ NEEDS CORRECTIONS ☐ NON-COMPLIANCE
REASON FOR INSPECTION: ☐ ROUTINE INVESTIGATION ☐ CITIZEN COMPLAINT ☐ M.D.E. COMPLAINT ☐ OTHER
*RECOMMENDED ACTION: ☐ NOTIFY CONTRACTOR ☐ FOLLOWUP INSPECTION ☐ NOTIFY M.D.E.
☐ **SHUT DOWN GRADING OPERATIONS ☐ **SHUT DOWN ENTIRE PROJECT
☐ REFER TO NOTES ON ATTACHED SHEETS)
☐ NO GRADE

GRADE

Section	Number of Points Awarded	Number of Points Possible
1		
2		
3		
4		
5		
TOTAL		
Numerical Grade - (X/Y) x 100 =		
6	Bonus Area Number of Points Awarded	
TOTAL		

RATING: ☐ A ☐ B ☐ C ☐ D ☐ F

(A=100-90, B=80-89.9, C=70-79.9, D=60-69.9, F=<60)

QUALITY ASSURANCE INSPECTOR: DATE:

CONTRACTOR: DATE:

** Immediately notify District Engineer / ADE
Construction, RCE, and District / Deputy District
Office of Construction

RECEIVED BY: (S.H.A. REPRESENTATIVE)
(SIGNATURE IMPLIES RECEIPT OF THIS REPORT ONLY)

ORIGINAL: Project Engineer
cc: District Office of Construction
District Engineer

Regional Construction Engineer
Quality Assurance Inspector

Construction Inspection Division / RCE
Construction

Score Summary
Section

Rating Section

DOI: 10.1046/j.1365-2230.2000.01104.x

Pass Value	1. IS PROSPECTIVE SCORER? * If So, Project is automatically Based on "F".	Y	N	Per Approved	N/A	Per Disallowed
1	1 Have all permits and approvals been obtained (SHAWADE)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1	1.2 Are special LDC, wetlands, buffers, floodplains and/or use provisions, area delineated (acute work area)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1	1.3 Is project in sequence according to plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	1.3.1 Are critical areas in place prior to disturbing area of intended canal?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	1.3.2 Are canals removed with MDE approval?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	1.4 Have changes been approved?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	1.4.1 Have canal crossings been requested and approved?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	1.4.2 Have canal diversions been requested and approved?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1	1.5 Have changes been implemented?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1	1.6 Is construction E & S report completed and submitted daily?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1	1.7 Are dust/pneumatics area approved?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1	1.8 Is ESCR available on-site?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	1.9 Are disturbed area contained within the LDC?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	1.10 Is grading limited to continuous grading unit?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22	- Total Possible Points	Subtotal -				

2. AIR CONTROLS PROPERLY
INSTALLED?

180 TALLIES:						SUBTOTAL:							
Y	N	NA	Pa	21	Pa		Pa	31	Y	N	NA	Pa	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		211	1	Wax handling	1	311	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		212	1	Earth Dike	1	312	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		213	1	Temporary Swale	1	313	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		214	1	Permeable Earth Swale	1	314	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		22		Division Fence	1	32	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		221	2	Grade Stabilization Structures	2	321	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		222	1	Pipe Slope Check	2	322	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		223	1	Key-up Inflow Prevention	1	323	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		224	2	Onsite Inflow Prevention	2	324	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		23		Street Check Check	2	33	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		231	3	Setback Trapping Device	3	331	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		232	3	Setback Traps	3	332	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		233	2	Setback Barriers	2	333	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		24		Street Curb Structures	2	34	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		241	2	Detouring Pavement	2	341	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		242	2	Removable Pumping Station	2	342	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		243	2	Swamp Pits	2	343	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		244	2	Portable Sediment Tanks	2	344	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		25		Detouring Signs	2	35	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		251	2	Filtrating Pavement	2	351	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		252	3	Silt Fence	3	352	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		253	1	Super Silt Fence	1	353	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		254	1	Grass Prevention	1	354	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		26		Street Gate Dike	2	36	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		261	1	Load Shedding and Structural Stabilization	1	361	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		262	1	Stabilized Construction Entrance	1	362	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		27		Rock Curb Prevention	1	37	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		271	3	Miscellaneous Prevention	1	371	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		272	1	Temporary Access Recovery Channel	1	372	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		28		Dust Control	1	38	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		281	1	Special Pavement	1	381	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		282	1		1	382	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		283	1		1	383	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Subtotal =				42		- Total Possible Points -	40	Subtotal =					
Total Points Available = 42								Total Points Available = 40					

3. ARM CONTROLS TWO LEVEL MAINTAINING?

MATH 111A QUIZ 7						
Pro	31	Y	N	Pro	NGA	Pro
1	311	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	
1	312	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	
1	313	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	
1	314	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	
	32					
2	321	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	
1	322	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	
1	323	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	
2	324	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	
	33					
3	331	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	
3	332	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	
2	333	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	
	34					
2	341	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	
2	342	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	
2	343	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	
2	344	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	
	35					
2	351	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	
3	352	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	
1	353	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	
1	354	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	
	36					
1	361	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	
1	362	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	
	37					
1	371	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	
1	372	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	
	38					
1	381	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	
1	382	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	
1	383	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	
40	Subtotal =					
Total Correct Available = 40						

New QA Rating System(Page 3)

Stabilization
Section

Bonus
Points
Section

COQ21 010445
CP00220 38001

Page 3 of 4

Para. Value	4. IS STABILIZATION PROVIDED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS?	Y	N	Pa Awarded	NGA	Pa Deducted
	4.1 Is stabilization provided as specified?					
1	4.1.1 Temporary seed	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	
1	4.1.2 Permanent seed	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	
3	4.1.3 Stabilization mulch	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	
1	4.1.4 Sod	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	
1	4.1.5 Silt	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	
1	4.1.6 Other	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	
	4.2 Is stabilization provided in the specified amount?					
2	4.2.1 Seed/soil stabilization	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	
2	4.2.2 24 hour stabilization	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	
2	4.2.3 72 hour stabilization	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	
2	4.2.4 7-14 day stabilization	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	
1	4.3 Is mechanical stabilization provided during construction?	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	
1	4.4 Is the stabilization performed as specified?	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	
2	4.5 Is soil being stabilized as specified?	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	
20	- Total Possible Points			Subtotal -		-
				Total Points Available = 20		

Para. Value	5. IS CORRECTIVE ACTION TIMELY?	Score
5	5.1 No corrective action needed	<input type="checkbox"/>
4	5.2 Action completed < 24 hours	<input type="checkbox"/>
3	5.3 Action completed within 24 < 48 hours	<input type="checkbox"/>
2	5.4 Action completed within 48 < 72 hours	<input type="checkbox"/>
1	5.5 Action completed > 72 hours	<input type="checkbox"/>
0	5.6 Action not completed	<input type="checkbox"/>
5	- Total Possible Points	Total Points Awarded -

Para. Value	6. IS THE CONTRACTOR PROACTIVE?	Y	N	Pa Awarded
1	6.1 Is sole duty of ESCM E&S monitoring?	<input type="checkbox"/>	<input type="checkbox"/>	
1	6.2 Recognizes and requests change in security measures as warranted by scope of work?	<input type="checkbox"/>	<input type="checkbox"/>	
1	6.3 ESCM conducts daily joint inspections with SMA staff?	<input type="checkbox"/>	<input type="checkbox"/>	
1	6.4 Contractor initiates corrective action	<input type="checkbox"/>	<input type="checkbox"/>	
1	6.5 Contractor provides Environmental Awareness/oversight by using employees	<input type="checkbox"/>	<input type="checkbox"/>	
5	- Total Possible Points	Total Awarded		

Timely
Corrective
Action
Section

ESC – Incentives and Liquidated Damages

Apply incentive / Liquidated Damages to all projects that require formal plan approval from Maryland Department of the Environment

Allow incentive / Liquidated Damages to be prorated throughout the project duration and provide opportunity to earn incentive if the actions improve over the time (Quarterly and project completion incentive payment)

Base the incentive / Liquidated damages on objective parameters and hold contractor accountable

When a 'D' or 'F' rating is given to a project, SHA will impose liquidated damages on the Contractor, "D" Rating will shut down the grading operation, "F" Rating will shut down complete project except ESC corrective measures

When a project receives two 'F' ratings the ESC certification issued by SHA will be revoked from the project superintendent and the Erosion and Sediment Control Manager for a period of not less than six months and until successful completion of SHA ESC Certification Training or recertification

Erosion and Sediment Control (ESC) Research Initiatives



“Sediment Trapping Ponds are efficient but not always effective...”

Erosion and Sediment Control (ESC) Research Initiatives

Study for use of Flocculants

Methodology included:

- Literature Search
- Laboratory testing (Alum, Polymer)
- Design of delivery unit
- Initial trials
- Implementation
- Monitoring and evaluation

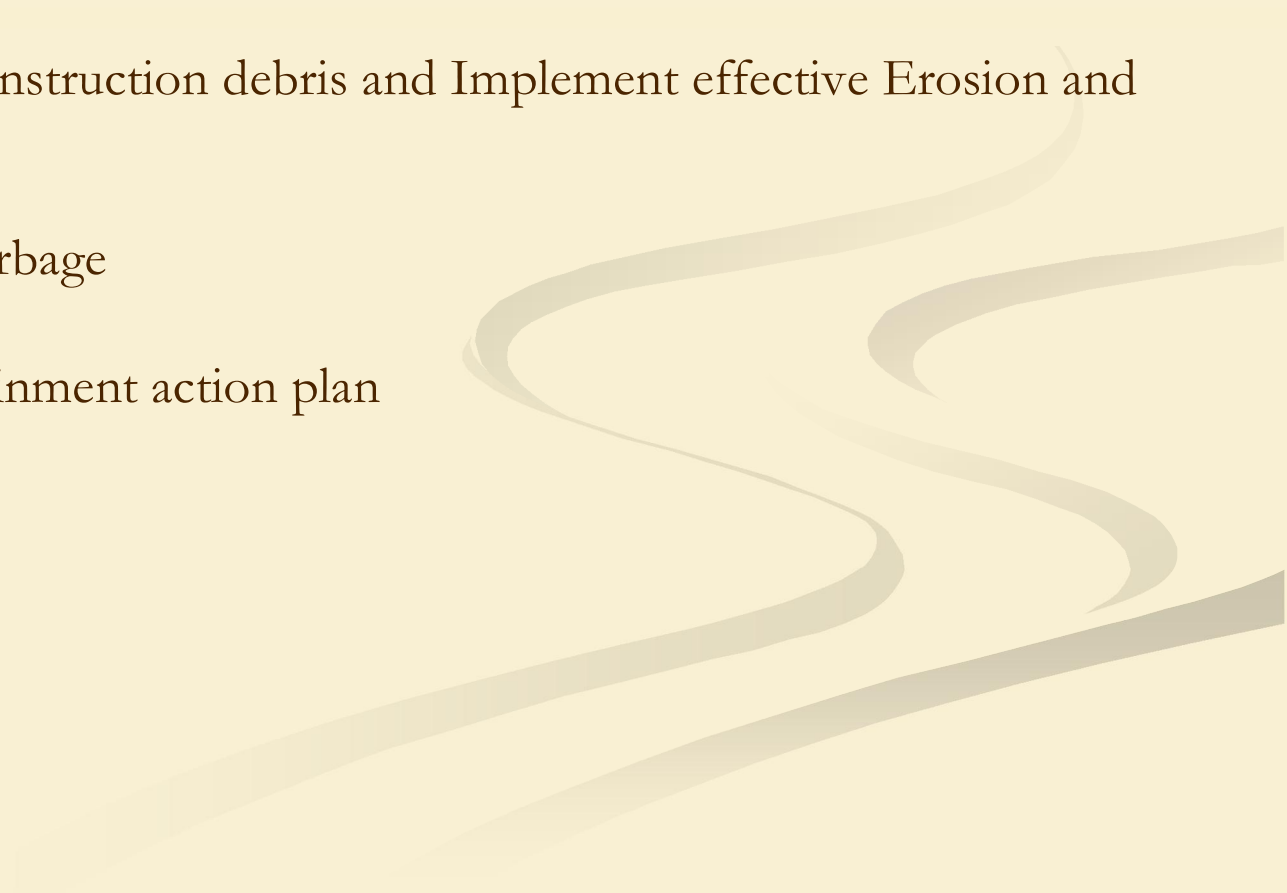
Study of Alum


- Good results over a range of storm events
- High intensity storm that exceeded hydraulic capacity of pond - 92% sediment removal, compared to similar storm without Alum for same pond - 10% sediment removal

Study of Polymer

- Efficiencies ranged between 90 - 99% reduction for ponds with good physical design
- Some concerns of its health effect on fish and others
- Study and evaluation continues..

Committing to Overall Environmental Stewardship

- Containment of concrete cleanout discharge
 - Containment of machine fluids
 - Proper disposal of construction debris and Implement effective Erosion and Sediment Control
 - Proper disposal of garbage
 - Develop a spill containment action plan
 - Tree protection
 - Habitat protection
- 
- A decorative graphic consisting of several overlapping, wavy, light-colored lines that flow from the right side of the slide towards the left, creating a sense of movement and depth.



True or False?
Erosion and Sediment Controls are needed during construction only.

Concludes..
SHA's ESC Initiatives to achieve positive results.

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