Construction Management for Compliance: A Contractor's Perspective

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Practical Land Improvement Solutions for Over 35 Years

Discussion Outline

- Corporate Culture
- Knowledge
- Communication / Planning
- Documentation
- Implementing Practices
- Follow-Up / Inspection
- Maintenance
- Adaptation / Flexibility
- Post Project Analysis
- Celebrate Success

Corporate Culture

"Do you foster a culture of compliance?"

What is Corporate Culture?

- Collective behavior of the people who are a part of your organization
- Formed by organization values, visions, norms, working language, systems, and symbols.

Who affects corporate culture?

- Leadership

- Employees

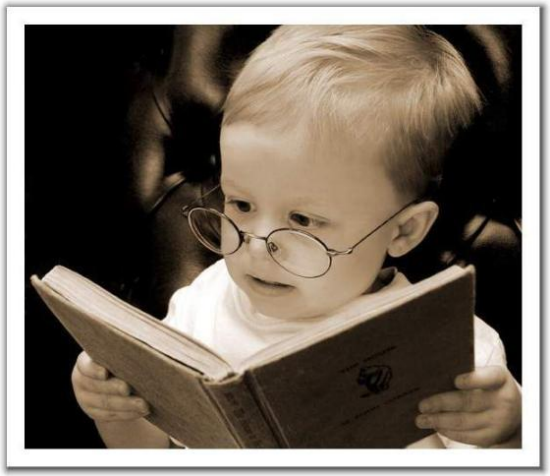
Fostering a Culture of Compliance

- Establish Clear Expectations
- Get Buy-In From Upper Management
- Consistency Across All Levels of the Organization
- Accept No Exceptions
- Establish Metrics
- Evaluate Success

Knowledge

Are you sure you know what you are doing?

Knowledge

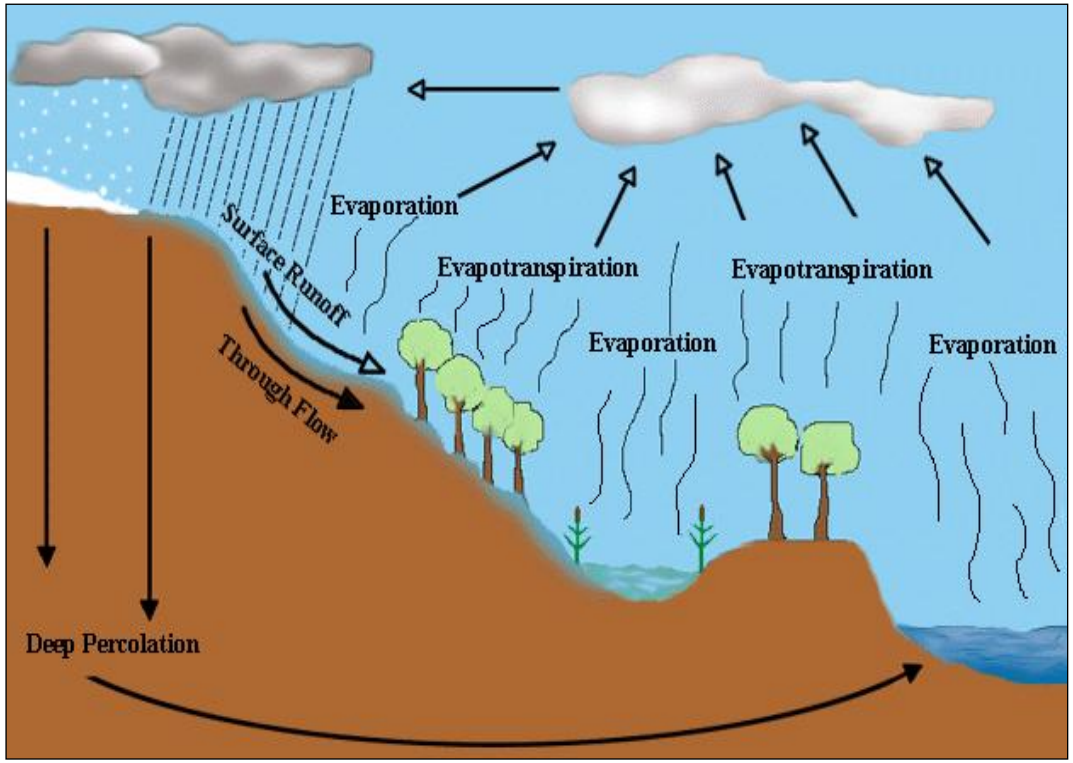


Who should know?

- Internal Employees
- Consultants
- Sub-Contractors
- Clients

Employee Knowledge Base

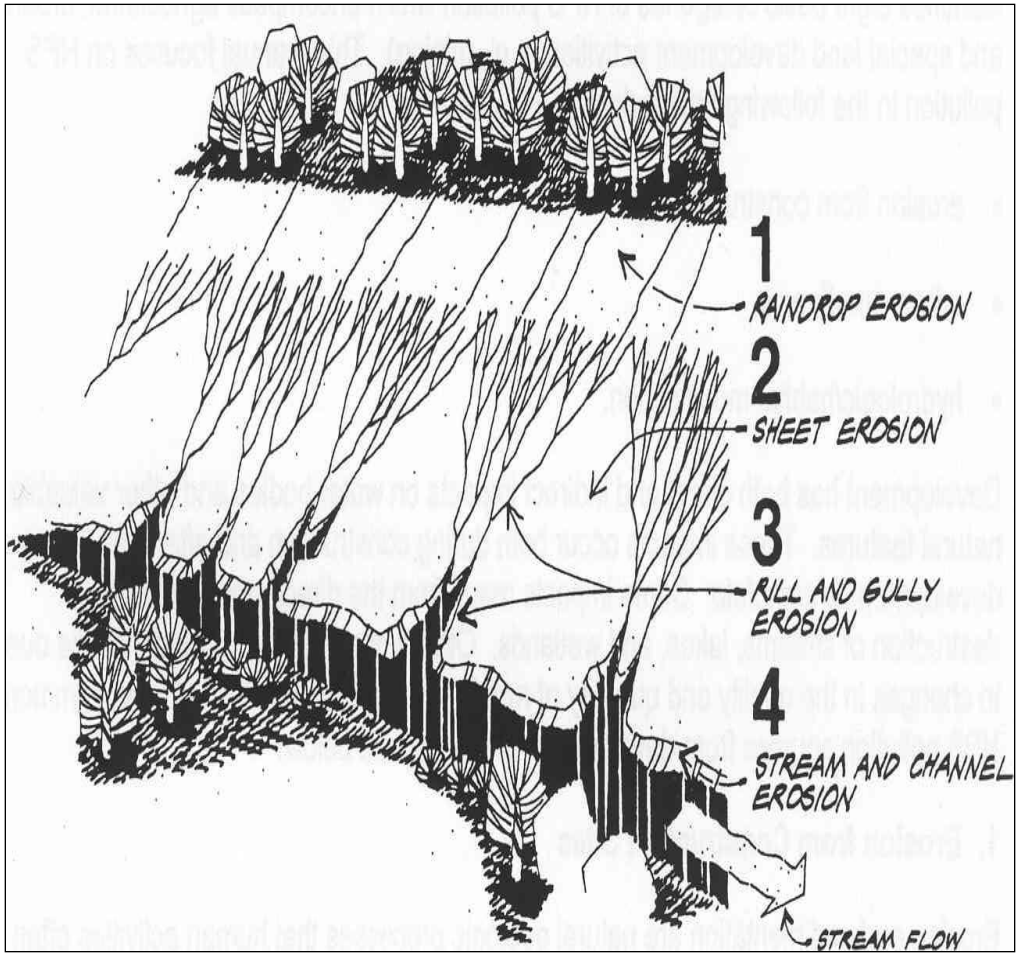
- Ensure superintendents, project managers, and critical employees "know the basics"



Graphics credit: Delaware Dept. of Natural Resources

Employee Knowledge Base

1. Raindrop erosion
2. Sheet erosion
3. Rill and gully erosion
4. Streambank and bed erosion
5. Wind erosion



Graphics credit IL Urban Manual

Consistent Understanding and Terminology

Sediment Control **Vs.** **Erosion Control**

Certifications and Formal Trainings

- CISEC
- CPESC
- CPSWQ
- CESSWI
- CMS4S
- IECA Trainings
- TRCA Training Events
- Webinars
- Private Resources

Consultants, Subcontractors, and Clients

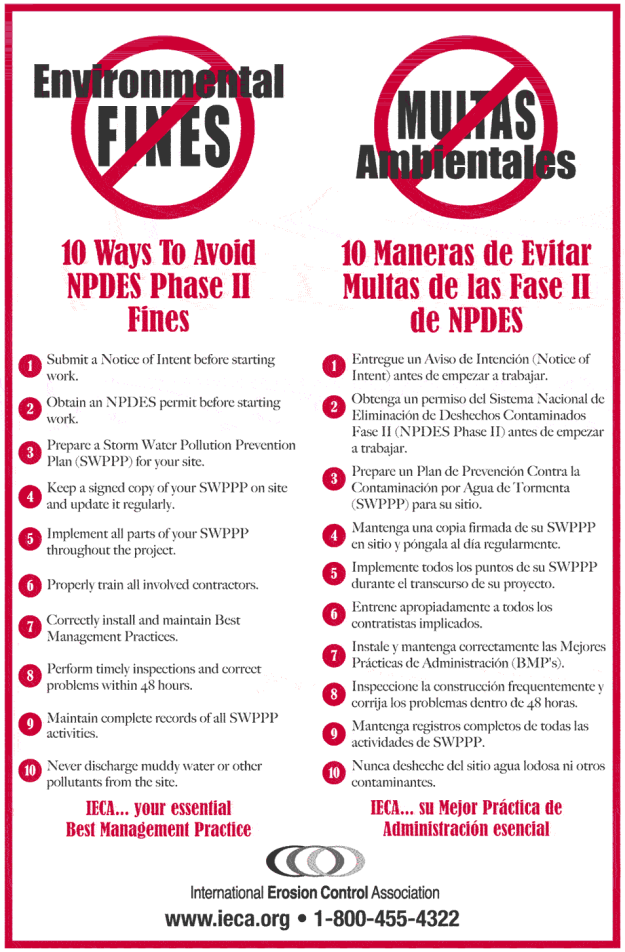
- Establish clear expectations and goals
- Work together in partnership towards the project goals
- Maintain frequent and consistent communication
- Revisit references and work from the same page

Documentation

"If you didn't write it down, it's as if it never happened."

10 Tips to Maintain Compliance - IECA

- Submit a Notice of Intent before starting work.
- Obtain an NPDES permit before starting work.
- Prepare a Storm Water Pollution Prevention Plan (SWPPP) before starting work.
- Keep a signed copy of your SWPPP on site and update it regularly.
- Implement all parts of your SWPPP throughout the project.
- Properly train all involved contractors.
- Correctly install and maintain Best Management Practices.
- Perform timely inspections and correct problems within 48 hours.
- Maintain complete records of all SWPPP activities.
- Never discharge muddy water or other pollutants from the site.



The Storm Water Pollution Prevention Plan

- Prepare a SWPPP prior to starting construction
- Keep a signed and completed copy of the SWPPP on-site at all times

The Storm Water Pollution Prevention Plan - SWPPP

- ✓ Update your SWPPP Regularly
- ✓ Implement all parts of the SWPPP throughout the project

Maintain Complete Records of All SWPPP Activities

- Corrective actions based on inspections shall be made no later than seven calendar days (or as required by your local permits) from inspection. – KEEP A LOG OF REPAIRS
- Changes or modifications to the SWPPP shall be made to correspond to any deficiencies as identified in the inspection reports.

Maintain Complete Records of All SWPPP Activities

- Maintenance logs and repair or replacement of products and practices should be filed as a part of the SWPPP

- Ensure that weekly inspection reports are acted upon and that necessary repairs are made

Communication / Planning

Plan for the worst and expect the best.

Communication

Prior to Construction

- Have a preconstruction meeting about SESC measures
- Assign SESC installation oversight and maintenance responsibilities to someone with major onsite authority
- Communicate SESC objectives to all general contractors, subcontractors, and utility employees

Communication

- Ensure that needed repairs are communicated to the appropriate party in order to get them completed
- Don't wait for someone to contact you about it, take action as soon as possible

Communication

- Signage and notifications can increase public awareness and communicate compliance
- When an inspector does not have to hunt down your documents, you are immediately demonstrating compliance

Communication

Communication

What's that yellow thing for?

Communication

- What message are we sending?

GOOD!!

BAD!!

Planning & Phasing

Contractors and Subcontractors

- Identify each contractor or subcontractor that will be responsible for implementing each measure in the plan. Make sure each role and responsibility is clearly delegated.
- Contractors should sign documentation stating that they understand the stormwater permit, the stormwater pollution prevention plans, and their role in maintaining compliance.
- Develop a clear chain of command and communication plan for when incidents arise, or when issues are identified to quickly and directly address the problem.

Planning and Phasing Work

- Many erosion and sediment control practices are temporary, and are designed to be installed at different periods of the construction activity.
- Practices should be installed as they become appropriate and should not be delayed so that all measures can be installed at the same time.

Implementing Practices Appropriately

"Do it right the first time."

Installation of Practices

- Ensure that you have a knowledgeable and reliable contractor installing erosion and sediment control measures
- Make sure that contractors are using products appropriately

Have Trustworthy Contracting Partners

What do you mean there is a problem with my silt fence?

Coordinate Installations & Activities

Stabilizing disturbed areas can protect your investment

What happened?

Maintenance

- Repair compromised areas
- Remove accumulated silt
- Ensure fence is properly intercepting all drainage routes

Install the Appropriate Practices

Use different practices when appropriate

Follow-Through and Inspections

There are no guarantees.

Why do we perform site inspections?

- Get the practices on the ground
- Ensure effective control measures throughout the construction process

Inspector Who?

- Qualified personnel must perform inspections
  - ✓ Person knowledgeable in the principles and practices of erosion and sediment control
  - ✓ May be a Project/Construction Manager, private contractor, or resident engineer
  - ✓ CPESC – Certified Professional in Erosion and Sediment Control
  - ✓ CISEC – Certified Inspector of Sediment and Erosion Controls
  - ✓ CESSWI – Certified Erosion Sediment and Stormwater Inspector

Performing Proper Site Inspections

- Begin at the discharge point where impacts to downstream areas can be observed
- Start downstream and work uphill

Where Do I Start ?

Performing Proper Site Inspections

- ✓ Disturbed areas

What should be inspected?

Performing Proper Site Inspections

What should be inspected?

- Areas used to store materials

Performing Proper Site Inspections

What should be inspected?

- ✓ Erosion and Sediment Control measures identified on the plans
- ✓ Structural and non-structural practices for their efficacy and condition

Performing Proper Site Inspections

What should be inspected?

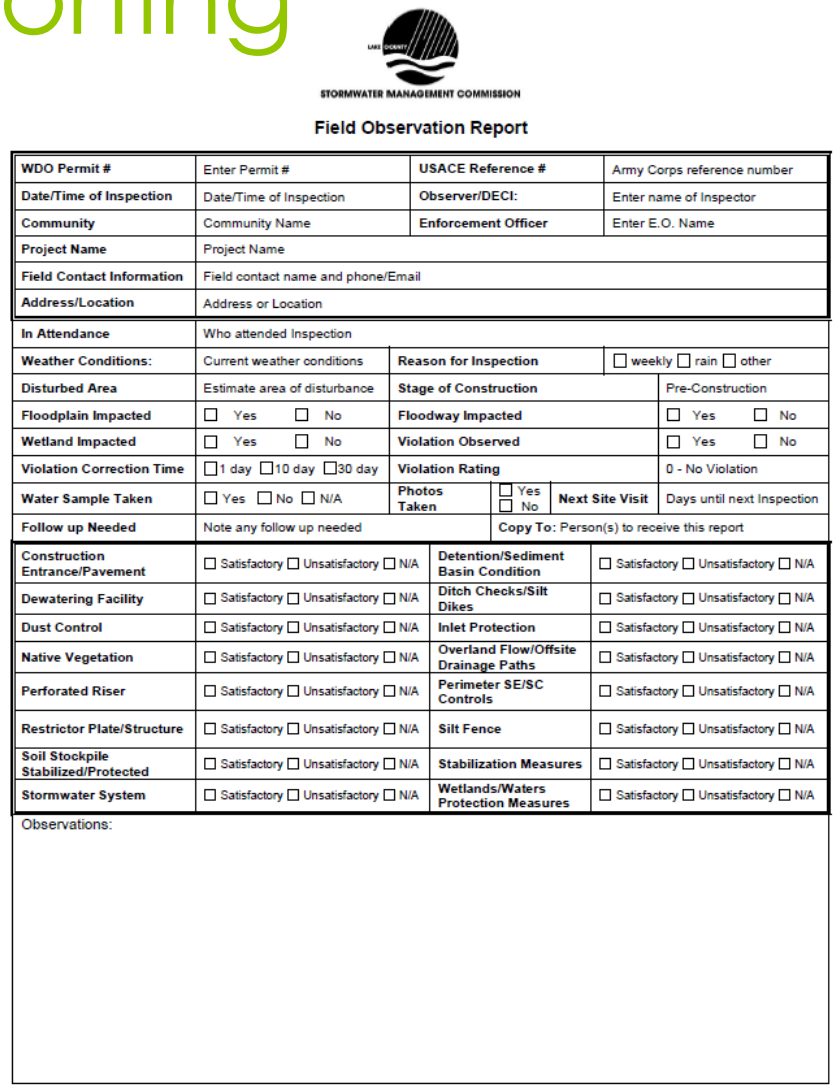
- Examine areas not only for visible erosion or accumulated sediments, but also for potential problem areas or areas where high potential for off-site impacts exist.

- Be Predictive

Are they there? Are they functional?

Inspection Reporting

- Document sites for both temporary & permanent SESC measures
- Look for both erosion control measures and sediment control measures



STORMWATER MANAGEMENT COMMISSION

Field Observation Report

WDO Permit #	Enter Permit #	**USACE Reference #**	Army Corps reference number		
Date/Time of Inspection	Date/Time of Inspection	**Observer/DECI:**	Enter name of Inspector		
Community	Community Name	**Enforcement Officer**	Enter E.O. Name		
Project Name	Project Name				
Field Contact Information	Field contact name and phone/Email				
Address/Location	Address or Location				
In Attendance	Who attended Inspection				
Weather Conditions:	Current weather conditions	**Reason for Inspection**	☐ weekly ☐ rain ☐ other		
Disturbed Area	Estimate area of disturbance	**Stage of Construction**	Pre-Construction		
Floodplain Impacted	☐ Yes ☐ No	**Floodway Impacted**	☐ Yes ☐ No		
Wetland Impacted	☐ Yes ☐ No	**Violation Observed**	☐ Yes ☐ No		
Violation Correction Time	☐1 day ☐10 day ☐30 day	**Violation Rating**	0 - No Violation		
Water Sample Taken	☐ Yes ☐ No ☐ N/A	**Photos Taken**	☐ Yes ☐ No	**Next Site Visit**	Days until next Inspection
Follow up Needed	Note any follow up needed	**Copy To:** Person(s) to receive this report			

Construction Entrance/Pavement	☐ Satisfactory ☐ Unsatisfactory ☐ N/A	**Detention/Sediment Basin Condition**	☐ Satisfactory ☐ Unsatisfactory ☐ N/A
Dewatering Facility	☐ Satisfactory ☐ Unsatisfactory ☐ N/A	**Ditch Checks/Silt Dikes**	☐ Satisfactory ☐ Unsatisfactory ☐ N/A
Dust Control	☐ Satisfactory ☐ Unsatisfactory ☐ N/A	**Inlet Protection**	☐ Satisfactory ☐ Unsatisfactory ☐ N/A
Native Vegetation	☐ Satisfactory ☐ Unsatisfactory ☐ N/A	**Overland Flow/Offsite Drainage Paths**	☐ Satisfactory ☐ Unsatisfactory ☐ N/A
Perforated Riser	☐ Satisfactory ☐ Unsatisfactory ☐ N/A	**Perimeter SE/SC Controls**	☐ Satisfactory ☐ Unsatisfactory ☐ N/A
Restrictor Plate/Structure	☐ Satisfactory ☐ Unsatisfactory ☐ N/A	**Silt Fence**	☐ Satisfactory ☐ Unsatisfactory ☐ N/A
Soil Stockpile Stabilized/Protected	☐ Satisfactory ☐ Unsatisfactory ☐ N/A	**Stabilization Measures**	☐ Satisfactory ☐ Unsatisfactory ☐ N/A
Stormwater System	☐ Satisfactory ☐ Unsatisfactory ☐ N/A	**Wetlands/Waters Protection Measures**	☐ Satisfactory ☐ Unsatisfactory ☐ N/A

Observations:

Inspection Reporting

- Maintenance Logs
- Digital Photos
- Inspection Report Log Maintained On Site

Detention Basin – Sediment Basin	
• Is the basin installed?	☐ Yes ☐ No ☐N/A
• Is the basin adequately stabilized?	☐ Yes ☐ No ☐N/A
• Is there evidence of sufficient coverage of native vegetation?	☐ Yes ☐ No ☐N/A
• Is the emergency overflow constructed with the required materials?	☐ Yes ☐ No ☐N/A
Dewatering	
• Is dewatering directly entering a waterway or wetland?	☐ Yes ☐ No ☐N/A
• Are dewatering activities conveying sediment laden water?	☐ Yes ☐ No ☐N/A
• Are appropriate dewatering BMP's in place and functioning effectively?	☐ Yes ☐ No ☐N/A
• If a sediment bag is being used, is it capturing sediment effectively?	☐ Yes ☐ No ☐N/A
Dust Control – sweeping, vacuuming, spraying, etc.	
• Are dust control measures being used as needed?	☐ Yes ☐ No ☐N/A
• Is dust observed moving offsite due to wind?	☐ Yes ☐ No ☐N/A
• Are roadways being swept or swept and vacuumed when needed?	☐ Yes ☐ No ☐N/A
Inlet Protection – Catch-All basket, filter, silt fence, silt dike, straw bales, gravel dam, etc.	
• Are all storm sewer inlets that are or will be functional during construction protected?	☐ Yes ☐ No ☐N/A
• Is the inlet protection installed correctly to protect the entire inlet?	☐ Yes ☐ No ☐N/A
• Is the inlet protection being maintained?	☐ Yes ☐ No ☐N/A
Miscellaneous	
• Is there an adequately sized receptacle on site for deposition of construction material debris?	☐ Yes ☐ No ☐N/A
• Is there a dedicated, protected area for concrete wash out activities?	☐ Yes ☐ No ☐ N/A
• Are the permitted plans available on site? The Stormwater Pollution Prevention Plan (SWPPP)?	☐ Yes ☐ No ☐ N/A
• If polymers are used, are they being used appropriately in an approved manner?	☐ Yes ☐ No ☐ N/A
• Have any SE/SC measures that are no longer needed been removed?	☐ Yes ☐ No ☐ N/A
Overland Flow – Offsite Drainage	
• Are all permitted overland flow routes constructed?	☐ Yes ☐ No ☐N/A
• Are all permitted overland flow routes free from obstruction?	☐ Yes ☐ No ☐N/A
• Are all permitted overland flow routes stabilized?	☐ Yes ☐ No ☐N/A
• Are all pre-construction overland flow routes protected?	☐ Yes ☐ No ☐ N/A
• Are all pre-construction overland flow routes free from obstruction?	☐ Yes ☐ No ☐ N/A
• Are all points of offsite drainage (ie. water leaving the site) stabilized?	☐ Yes ☐ No ☐ N/A
• Are all points of offsite drainage protected from erosion and sedimentation?	☐ Yes ☐ No ☐ N/A
Perforated Riser	
• Is the perforated riser installed at the outlet?	☐ Yes ☐ No ☐N/A
• Is the perforated riser sized correctly (one pipe size smaller than the outlet pipe)?	☐ Yes ☐ No ☐ N/A
• Is the perforated riser wrapped in hardware cloth or chicken wire, and filter fabric?	☐ Yes ☐ No ☐ N/A
• Is the perforated riser adequately mortared in?	☐ Yes ☐ No ☐ N/A
• Is there an adequate amount of stone at the base of the riser?	☐ Yes ☐ No ☐ N/A
Perimeter SE/SC Controls	
• Are all perimeter soil erosion/sediment controls in place and maintained?	☐ Yes ☐ No ☐ N/A
• Are adjacent wetlands/waters/properties being impacted by SE/SC failures?	☐ Yes ☐ No ☐ N/A

Inspection Reporting

- Make sure inspection reports reflect actual conditions
- Utilize narrative section of report to document in additional detail items that a check box cannot capture

Restrictor Plate – Restrictor Structure	
• Is the restrictor plate or restrictor structure installed?	☐ Yes ☐ No ☐ N/A
• Is the opening(s) or pipe size in the restrictor plate or restrictor structure appropriately sized?	☐ Yes ☐ No ☐ N/A
Silt Fence	
• Does the silt fence meet the AASHTO 288-00 Standard?	☐ Yes ☐ No ☐N/A
• Is the silt fence trenched in properly?	☐ Yes ☐ No ☐N/A
• Is the silt fence backfilled and compacted?	☐ Yes ☐ No ☐N/A
• Is the silt fence maintained and in good condition?	☐ Yes ☐ No ☐N/A
• Is silt fence installed in all areas shown on the permitted plans and in all areas necessary?	☐ Yes ☐ No ☐N/A
Site Stabilization	
• Have all disturbed areas been stabilized with temporary or permanent measures within 14 days of the end of active hydrologic disturbance?	☐ Yes ☐ No ☐N/A ☐ Yes ☐ No ☐N/A
• Are stabilization measures effective?	☐ Yes ☐ No ☐N/A
• Are there areas of disturbance that need additional stabilization measures?	☐ Yes ☐ No ☐N/A
Soil Stockpile	
• Is the soil stockpile located in an approved location (ie. not in floodplain or wetland)?	☐ Yes ☐ No ☐N/A
• Is the soil stockpile adequately stabilized?	☐ Yes ☐ No ☐N/A
• Is the soil stockpile properly enclosed with silt fence?	☐ Yes ☐ No ☐N/A
Stormwater Management System	
• Is the stormwater management system installed and functional, prior to building construction?	☐ Yes ☐ No ☐N/A
• Are all points of concentrated discharge appropriately installed for energy dissipation?	☐ Yes ☐ No ☐N/A
• Are all inlets and catch basins adequately protected from sediment conveyance into the system?	☐ Yes ☐ No ☐N/A
• Is hydrocarbon removal technology in place, functional and maintained where needed?	☐ Yes ☐ No ☐N/A
Temporary Construction Entrance	
• Are all ingress and egress points covered by a temporary construction entrance?	☐ Yes ☐ No ☐N/A
• Is the entrance constructed with 3" coarse aggregate?	☐ Yes ☐ No ☐N/A
• Has an appropriate geotextile material been installed underneath the stone?	☐ Yes ☐ No ☐N/A
• Is the entrance appropriately sized, both in width and length?	☐ Yes ☐ No ☐N/A
• Is the entrance adequately preventing tracking of dirt, mud, and sediment onto roadways?	☐ Yes ☐ No ☐N/A
Triangular Silt Dike	
• Are triangular silt dikes installed in all locations shown on the permitted plan set?	☐ Yes ☐ No ☐N/A
• Are the triangular silt dikes pinned or otherwise secured on the upstream side?	☐ Yes ☐ No ☐N/A
• Are the triangular silt dikes spaced appropriately, ie. the top of the downstream unit should be at the same elevation as the bottom of the unit immediately upstream?	☐ Yes ☐ No ☐N/A
Wetlands and Waters Protection	
• Are all delineated wetlands on site protected by 4' IDOT Standard Construction Fencing?	☐ Yes ☐ No ☐N/A
• Are all adjacent offsite wetlands protected from impact?	☐ Yes ☐ No ☐N/A
• Are illicit discharges into wetlands or bodies of water being prevented?	☐ Yes ☐ No ☐N/A
• Are wetland buffers protected?	☐ Yes ☐ No ☐N/A

Inspector's Signature _____ **Date of Inspection** _____

Maintain Best Management Practices

Don't "Set it, and forget it."

Inspections – Recommendations

Are Practices Being Maintained?

Sediment Traps / Basins

- Know how much storage you have and keep them maintained

Maintenance?

- Leaving practices and sites unmaintained can be hazardous
- Sedimentation Issues
- Safety Issues

Adaptation and Flexibility

"The best laid plans of mice and men……"

Change Practices

- If a rock check dam and coir sediment log wasn't enough, what's next?
- Is just fixing the failed practices appropriate?
- Develop Treatment Train

If it didn't work the first time……

Site Solutions

Developing a Treatment Train

Adaptation

Be creative and think outside the box

Know Who You Are Working With

- Develop good working relationships with designers, reviewers, inspectors, neighbors, and other interested stakeholders
- People skills do make a difference

Subjectivity in Compliance?

- Illinois Water Quality Standards – General Use
  - Offensive Conditions
  - Section 302.203 "Waters of the State shall be free from sludge or bottom deposits, floating debris, visible oil, odor, plant or algal growth, color or turbidity of other than natural origin"

Sometimes non-compliance is easy to agree on

Regulatory Climate

- Subjectivity in compliance?

Do you consider this discharge a violation of water quality regulations?

Post Project Analysis

Expand and expedite the learning curve

Use Past Projects to Help Future Projects

- Did the site stay in compliance from start to finish?
- How satisfied were the stakeholders in the project?
- Were we able to plan ahead and identify most of the problems that we encountered?
- How much were we "scrambling" to keep ahead of the storms?

Project Analysis

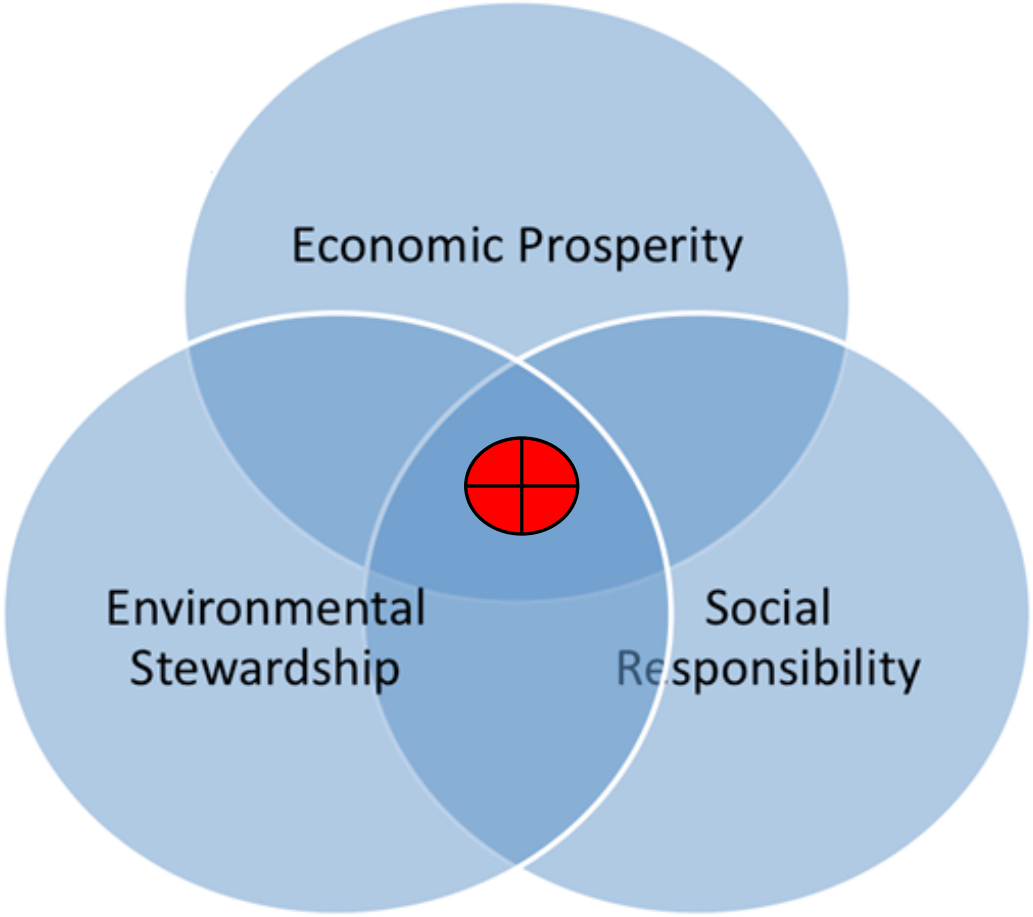
- Develop a “Scorecard” if possible
- How did the project come in to what was budgeted?
- Identify Areas of Improvement – There are always some
- Develop a strategy and plan for continual improvement
  - Training
  - Tooling
  - Staffing
  - Budgeting
  - Technology

Celebrate Success

"The secret of joy in work is one word….excellence."

-- Pearl S. Buck

The Ultimate Goal of Every Responsible Contractor



Celebrate Success

- Take time to recognize employees for their achievements
- Create an atmosphere of excellence
- A successful workplace is a happy workplace

Thank You!

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