

Elements of an Effective Erosion & Sediment Control Program

A. Kitchell
Center for Watershed Protection
8/15/06

Photo courtesy Coral Bay Community Council

Overview

- ◆ Why ESC is important
- ◆ Review of USVI Program Requirements
- ◆ Challenges to ESC implementation
- ◆ Key program elements
- ◆ Implementation brainstorm



An aerial photograph of a coastal watershed. The image shows a network of streams and rivers flowing from the inland hills towards a large body of water (likely a bay or ocean) in the lower-left corner. The terrain is a mix of green, brown, and tan, indicating different land uses and vegetation. Several text labels are overlaid on the image, pointing to specific areas of interest. A white box with a black border is located in the lower-left quadrant, containing the text 'Reducing sediment loads to reefs'. Other labels include 'Upland Reforestation' in the upper right, 'Stabilize Slopes' in the upper center, 'Control Construction Sites' on the left side, 'Reduce Channel Erosion' in the center, 'Sediment Basins' in the lower center, and 'Salt Pond Restoration' in the lower right.

Upland Reforestation

Stabilize Slopes

Control Construction Sites

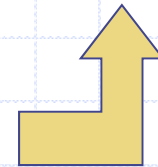
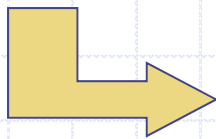
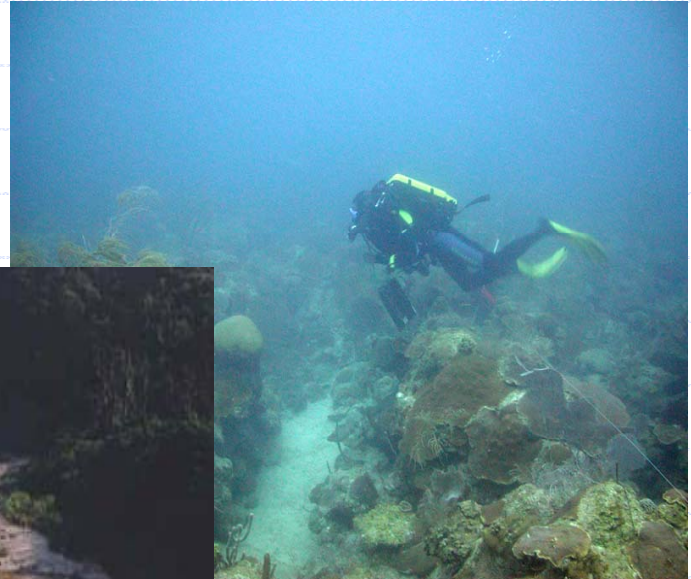
Reduce Channel Erosion

Sediment Basins

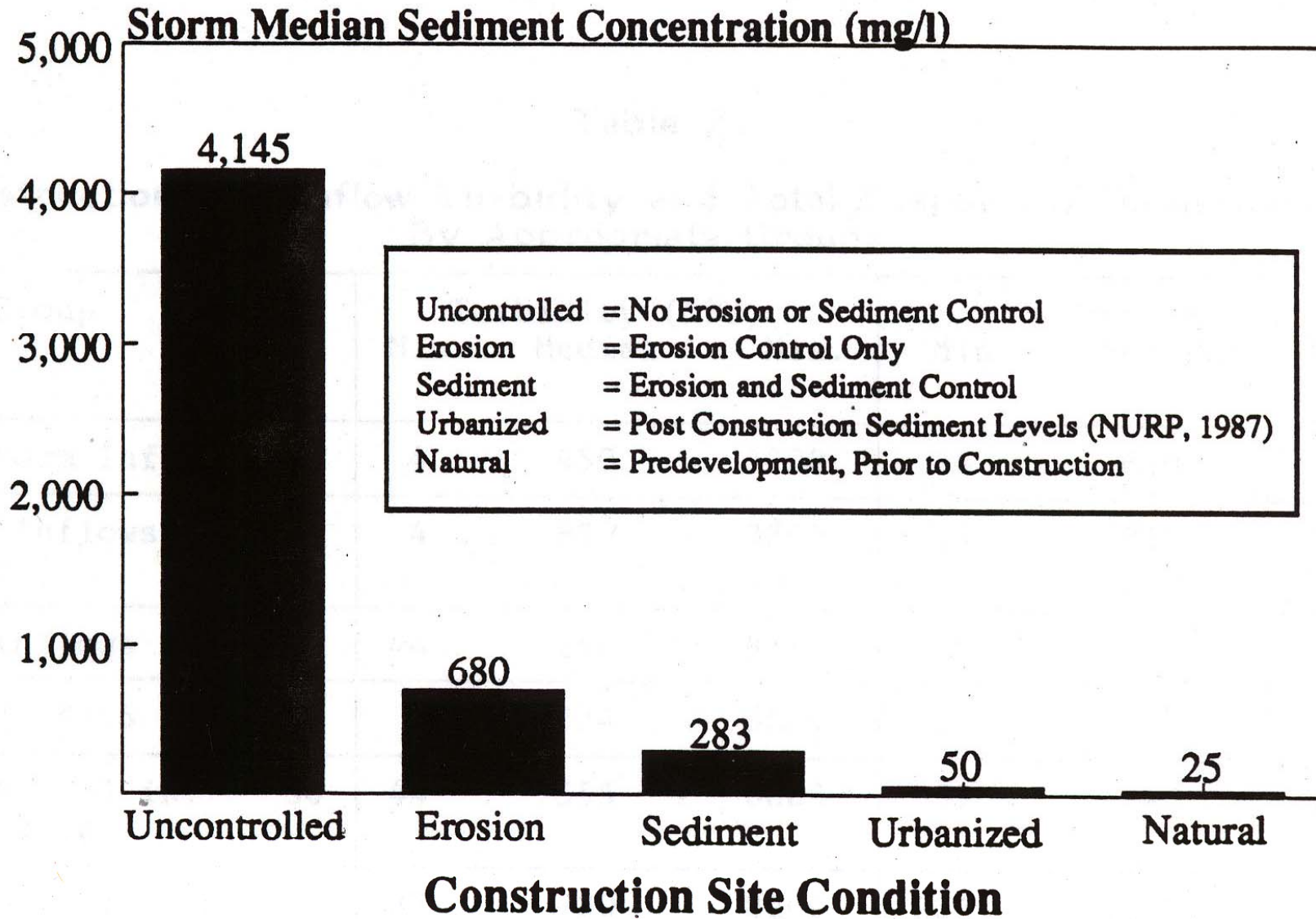
Reducing sediment
loads to reefs

Salt Pond Restoration

Why Implementation at construction sites is important!



Effect of Erosion and Sediment Control Measures On Suspended Sediment Concentrations From Piedmont Construction Sites



Source: Schueler and Lugbill, 1990

EPA requires:

- ◆ Ordinance/regulatory mechanism
- ◆ Site construction plan review
- ◆ Site inspection & enforcement
- ◆ Sanctions to ensure compliance
- ◆ Receipt & consideration of information submitted by public
- ◆ Best management practices (BMPs) & measurable goals

United States Environmental Protection Agency Office of Water (4203) EPA 833-F-00-008 January 2000 Fact Sheet 2.6

EPA

Storm Water Phase II Final Rule

Construction Site Runoff Control Minimum Control Measure

Storm Water Phase II Final Rule Fact Sheet Series

Overview

1.0 - Storm Water Phase II Final Rule: An Overview

Small MS4 Program

2.0 - Small MS4 Storm Water Program Overview

2.1 - Who's Covered? Designation and Waters of Regulated Small MS4s

2.2 - Urbanized Areas: Definition and Designation

Minimum Control Measures

2.3 - Public Education and Outreach

2.4 - Public Participation/Involvement

2.5 - Illicit Discharge Detection and Elimination

2.6 - Construction Site Runoff Control

2.7 - Post-Construction Runoff Control

2.8 - Pollution Prevention/Good Housekeeping

2.9 - Permitting and Reporting: The Process and Requirements

2.10 - Federal and State Operated MS4s: Program Implementation

Construction Program

3.0 - Construction Program Overview

3.1 - Construction Rainfall Excessity Waiver

Industrial "No Exposure"

4.0 - Conditional No Exposure Exclusion for Industrial Activity

Why Is The Control of Construction Site Runoff Necessary?

Polluted storm water runoff from construction sites often flows to MS4s and ultimately is discharged into local rivers and streams. Of the pollutants listed in Table 1, sediment is usually the main pollutant of concern. Sediment runoff rates from construction sites are typically 10 to 20 times greater than those of agricultural lands, and 1,000 to 2,000 times greater than those of forest lands. During a short period of time, construction sites can contribute more sediment to streams than can be deposited naturally during several decades. The resulting siltation, and the contribution of other pollutants from construction sites, can cause physical, chemical, and biological harm to our nation's waters. For example, excess sediment can quickly fill rivers and lakes, requiring dredging and destroying aquatic habitats.

What Is Required?

The Phase II Final Rule requires an operator of a regulated small MS4 to develop, implement, and enforce a program to reduce pollutants in storm water runoff to their MS4 from construction activities that result in a land disturbance of greater than or equal to one acre. The small MS4 operator is required to:

- Have an ordinance or other regulatory mechanism requiring the implementation of proper erosion and sediment controls, and controls for other wastes, on applicable construction sites;
- Have procedures for site plan review of construction plans that consider potential water quality impacts;
- Have procedures for site inspection and enforcement of control measures;
- Have sanctions to ensure compliance (established in the ordinance or other regulatory mechanism);

Table 1

Pollutants Commonly Discharged From Construction Sites
Sediment
Solid and sanitary wastes
Phosphorous (fertilizer)
Nitrogen (fertilizer)
Pesticides
Oil and grease
Concrete truck washout
Construction chemicals
Construction debris

The Top 5 Excuses for Poor ESC Stateside

5. The Plans Never Work in the Field
(who designs these things anyway?)



The Top 5 Excuses for Poor ESC Stateside

4. Nothing is leaving the site



The Top 5 Excuses for Poor ESC Stateside

3. The Subcontractors Trash My Controls!



The Top 5 Excuses for Poor ESC Stateside

2. The Dirt Cops will never catch me



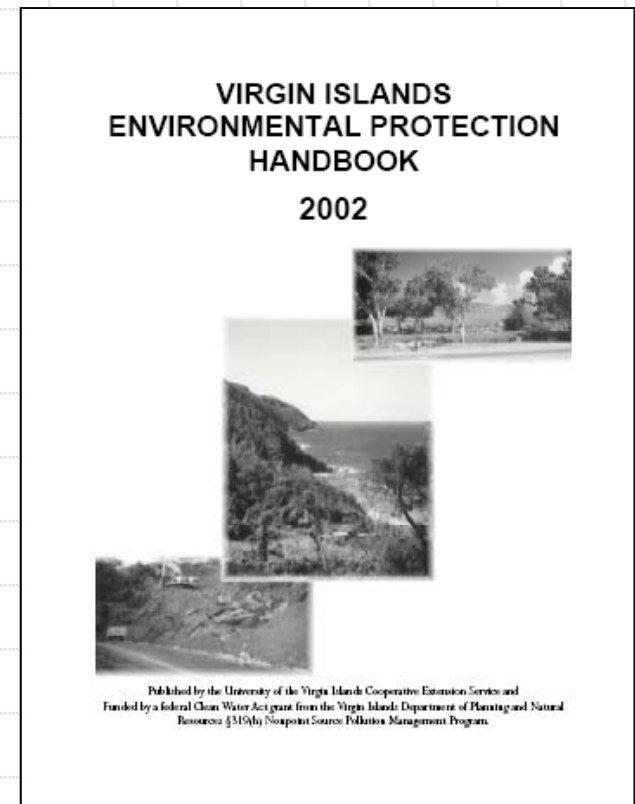
The Top 5 Excuses for Poor ESC Stateside

2. The Dog ate my silt fence



What does USVI require for:

- ◆ Disturbance threshold triggers
- ◆ Review process
- ◆ ESC plan elements
- ◆ Criteria for Tier 1 and 2 or special areas
- ◆ Geotechnical reports for steep slopes
- ◆ Certification or licensing for contractors and inspectors
- ◆ Inspection frequency
- ◆ Violations



USVI challenges to implementation...

- ◆ Inspection inspection inspection (staff capacity)
- ◆ Enforcement authority (do field inspectors have any)
- ◆ Agency coordination
- ◆ Conventional way of doing things
- ◆ Proper design, installation and maintenance of practices (is this education, experience, or material driven?)
- ◆ Big projects versus little projects

What else???

ESC Strategy for USVI

1. Convince local leaders of ESC needs
2. Adopt necessary ordinance language to ensure authority
3. Require submittal of comprehensive ESC plans for early review
4. Increase inspection capacity
5. Balance compliance incentives and penalties
6. Invest in training/certification programs
7. Use public projects to demonstrate good/innovative practices
8. Consider watershed-based criteria*



1. Convincing local leaders

- ◆ Build interagency staff consensus prior to approaching elected officials
- ◆ Provide model program examples
- ◆ Schedule educational site visits
- ◆ Encourage watershed advocates to provide public support
- ◆ ?

2. Adopt necessary ordinance language to ensure authority

- ◆ Reference to a technical manual
- ◆ Enforcement measures to ensure maintenance
- ◆ Flexibility to change the plan in response to field conditions
- ◆ Authority for inspectors to inspect construction sites at regular intervals
- ◆ Measures to protect natural resources such as wetlands and forests
- ◆ A specific plan approval process with guidelines on plan submission

Can we change *shoulds* to *shalls*....

Ordinances

Site Map

Links


In addition to the [model ordinance](#), this section includes several other materials that might be useful in drafting an ordinance or as support material:

- **Erosion and Sediment Control Ordinance from Minneapolis, MN**
Provides a few technical guidelines and references an existing technical document. An example of a very strict ordinance in terms of the sites that are required to submit sediment and erosion control plans.
[WordPerfect Format](#) (95KB, 16pages)
[PDF Format](#) (40KB, 16pages).
- **Clearing and Grading Ordinance from Olympia, WA**
An example of regulating clearing and grading separately from erosion and sediment control.
[WordPerfect Format](#) (66KB, 11pages)
[PDF Format](#) (28KB, 12pages).
- **Erosion and Sediment Control Inspection Checklist from the Lower Platte South Natural Resources District, NE**
A good example of a tool that can help contractors or government inspectors effectively maintain erosion and sediment control measures.
[WordPerfect Format](#) (65KB, 3pages)
[PDF Format](#) (9KB, 3pages).
- **Small site design guideline from the Indiana Department of Natural Resources**
An example of a small site guideline. For sites that are not regulated by the ordinance, guidance material like this might help to reduce erosion and sedimentation.
[WordPerfect Format](#) (42KB, 8pages)
[PDF Format](#) (656KB, 7pages).
- **Pre-Construction Meeting Notice from Montgomery County, MD**
An example notice for a public meeting. Materials like this notice help support the ordinance language and ensure that erosion and sediment control measures are properly installed.
[WordPerfect Format](#) (13KB, 2pages)
[PDF Format](#) (13KB, 3pages).

Erosion and sediment control is widely accepted as a necessary practice, but there are certain ways to make even the most well-crafted ordinance more effective. First, communities need to have the staff and resources to enforce erosion and sediment control regulations; otherwise, the authority to inspect sites becomes useless. In

3. Require submittal of comprehensive ESC plans for early review

- ◆ Discuss ESC in pre-design meeting
- ◆ Provide a plan review checklist
- ◆ Ensure plan includes all important elements (short and long term)
- ◆ Require simplified ESC sketch if full plan not required
- ◆ Cross-check with Design Manual
- ◆ Cross-check with watershed plan
- ◆ Require a revised plan if not optimal
- ◆ Develop rapid review incentives



Sediment & Stormwater Plan Review Checklist

DATE RECEIVED: _____ PROJECT NUMBER: _____

PROJECT NAME: _____

Section G: General Information
Section H: Notes
Section E: E & S
Section S: Stormwater Management

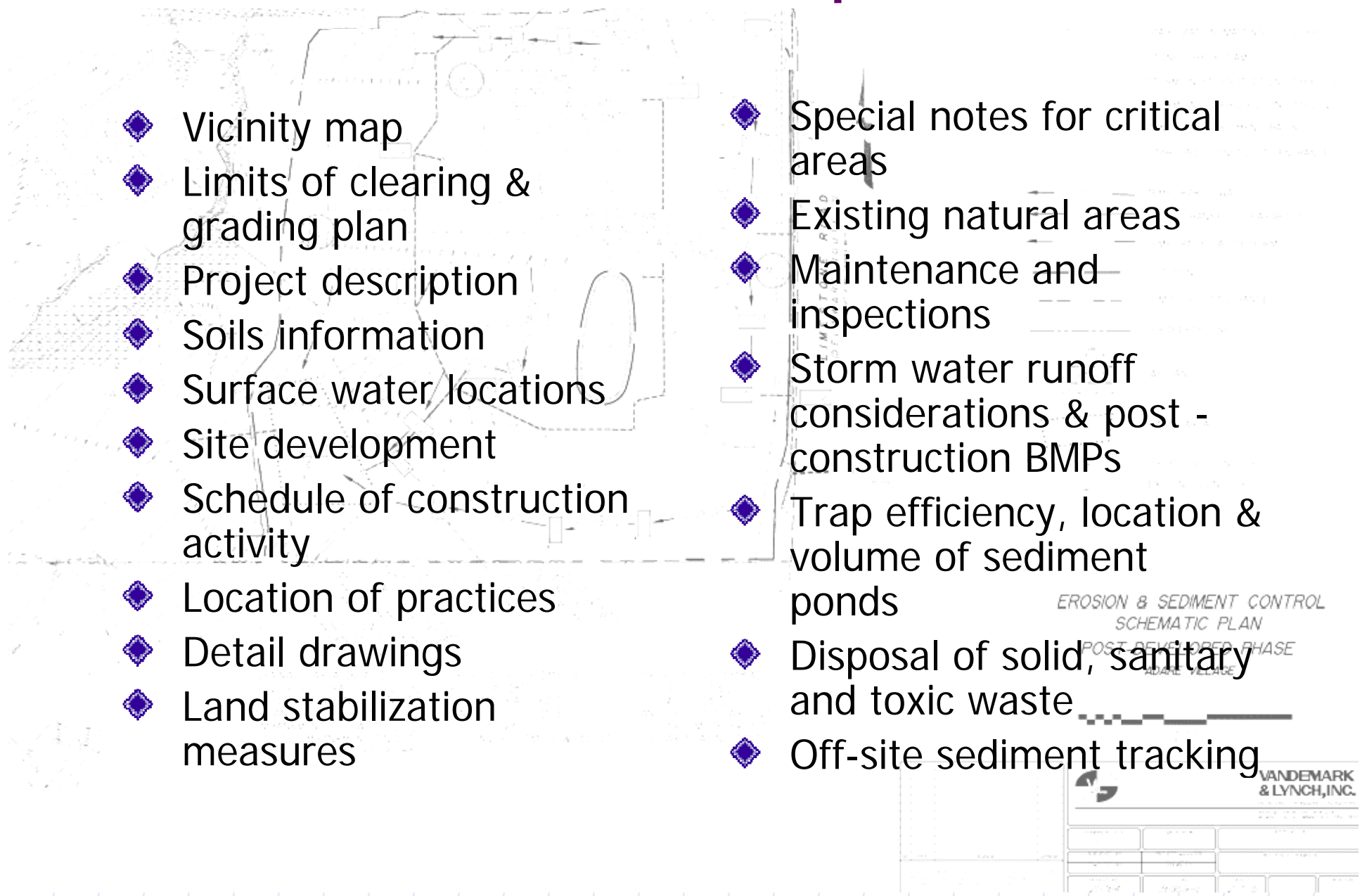
Section G:

1. _____ Completed application signed by the owner, one set of plans, and the checklist must be submitted for review.
2. _____ Provide the name, mailing address, and phone number of the owner of the property, the land developer, the engineer or consultant and the applicant. Provide names of adjacent property owners on the plan.
3. _____ Provide a legend on the Sediment and Stormwater Management Plan.
4. _____ Provide a "limit of disturbance" line and the disturbed area in acres on the plan.
5. _____ Provide a vicinity map with a scale no smaller than 1" = 1 mile.
6. _____ Provide a north arrow on plan.
7. _____ Maximum plan scale of 1" = 100'.
8. _____ Plans should be submitted on 24" x 36" (minimum) sheets unless otherwise approved.
9. _____ When two (2) or more sheets are used to illustrate the plan view, an index sheet is required, illustrating the entire project on one (1) 24" x 36" (minimum) sheet.
10. _____ Provide existing and proposed contours based on mean sea level datum provided at one (1) foot intervals. Total contributing drainage area must be shown regardless of being located on or off-site.
11. _____ Provide existing and proposed spot elevations based on mean sea level datum provided on a fifty-foot grid system. Include high and low points. (This is for small projects only).
12. _____ State and Federal wetlands must be accurately delineated.
13. _____ The National Flood Insurance Program 100 Year Flood Zone must be delineated.
14. _____ Provide soils mapping on plan with a general description of each soil.
15. _____ All streams and drainage ways must be delineated.
16. _____ All sediment and stormwater management practices must be located on the plan.
17. _____ Provide corner and lowest floor elevations for all buildings.
18. _____ Provide the volume of any spoil or borrow material.
19. _____ Show project benchmark and identify elevation and date.

Section H:

1. _____ Include a note that specifies that the DNRREG, Sediment and Stormwater Management Program must be notified in writing five (5) days prior to commencing with construction. Failure to do so constitutes a violation of the approved sediment and stormwater management plan.
2. _____ Include the following statement: "Review and/or approval of the Sediment and Stormwater Management Plan shall not relieve the contractor from his or her responsibilities for compliance with the requirements of the Sediment and Stormwater Regulations, nor shall it relieve the contractor from errors or omissions in the approved plan."
3. _____ Include a signed Owner's Certification that states "I, the undersigned, certify that all land clearing, construction and development shall be done pursuant to the approved plan." This must be signed in ink on each plan submitted or on an original reproduction.

Common Plan Components...

- 
- ◆ Vicinity map
 - ◆ Limits of clearing & grading plan
 - ◆ Project description
 - ◆ Soils information
 - ◆ Surface water locations
 - ◆ Site development
 - ◆ Schedule of construction activity
 - ◆ Location of practices
 - ◆ Detail drawings
 - ◆ Land stabilization measures
 - ◆ Special notes for critical areas
 - ◆ Existing natural areas
 - ◆ Maintenance and inspections
 - ◆ Storm water runoff considerations & post - construction BMPs
 - ◆ Trap efficiency, location & volume of sediment ponds
 - ◆ Disposal of solid, sanitary and toxic waste
 - ◆ Off-site sediment tracking

EROSION & SEDIMENT CONTROL
SCHEMATIC PLAN

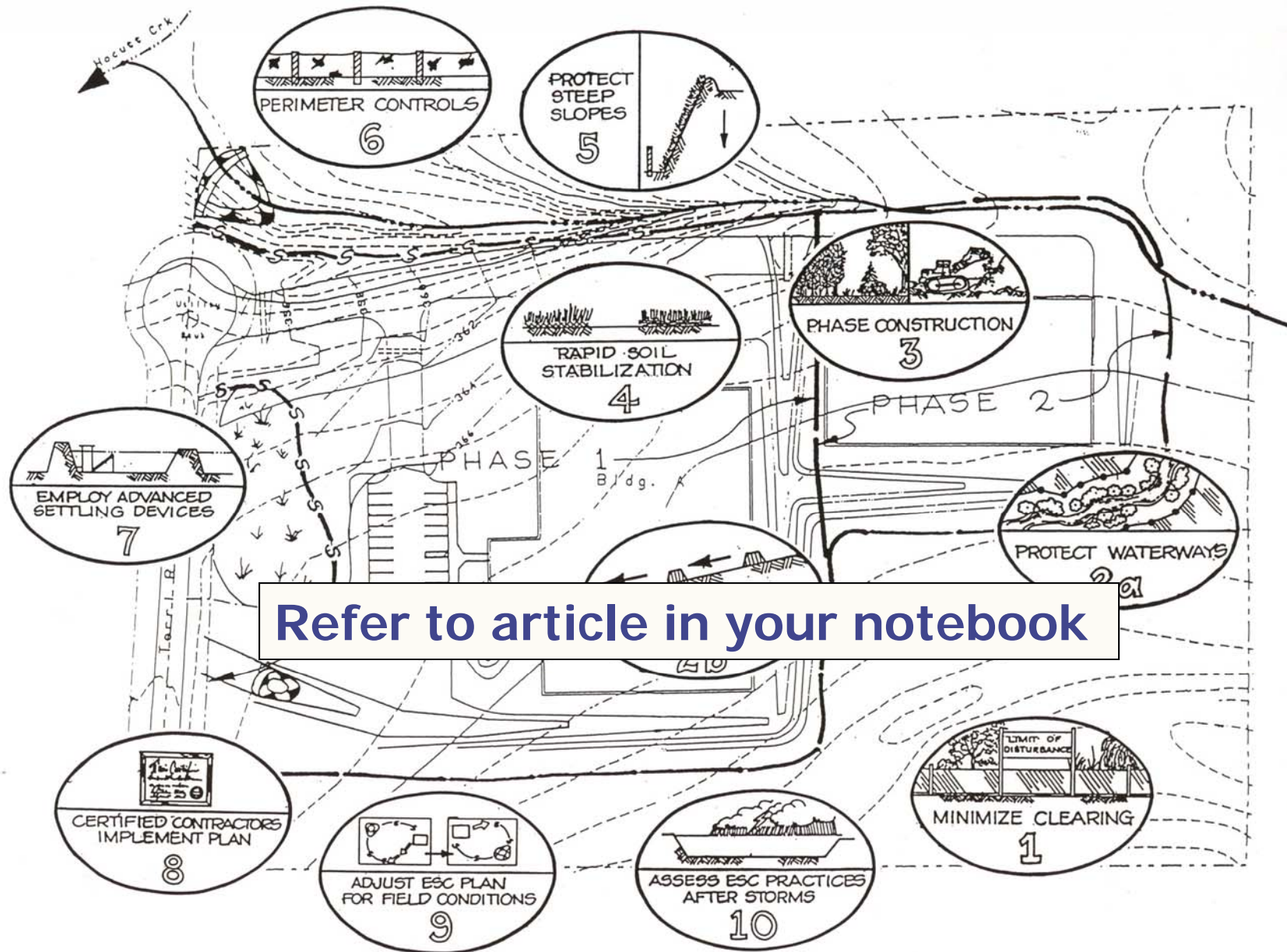
POST-DEVELOPED PHASE
ADAPTED VILLAGE

VANDEMARK
& LYNCH, INC.

USVI really needs to see...

- ◆ Limits of disturbance
- ◆ Guts, wetlands, large trees
- ◆ Grading and stockpiling plan (contours, cut & fill estimates, top soil salvage)
- ◆ Construction schedule
- ◆ Practice location, design, and installation
- ◆ Revegetation plan
- ◆ End of day inspection and repair schedule (during rainy season)

10 Elements of ESC Plan



Sequence Of Construction



- ◆ Protect existing vegetation
- ◆ Stabilized construction access
- ◆ Sediment traps and barriers
- ◆ Runoff conveyance system
- ◆ Clearing and grading
- ◆ Building construction



Maintenance of ESC Practices During Construction

- ◆ All ESC practices require maintenance
- ◆ Cost of ESC maintenance & repair should be included in construction plan
- ◆ Designate on-site contractor for maintenance
- ◆ Set minimum maintenance & periodic self inspection schedule



Maintenance Plan

- ◆ Identify Who Inspects the Site
- ◆ Define Frequency of Inspection
- ◆ Specify performance criteria
- ◆ Budget for routine maintenance/
replacement

Incentives Through Review Process

- ◆ Review & approval process can be time consuming and results in lengthy delay
- ◆ If plan is complete and meets checklist, it becomes a fast-track priority...

PROS

- ◆ Carrot
- ◆ Leads to better plans
- ◆ Encourage interagency coordination

CONS

- ◆ Delays in approval usually a symptom of several issues (lack of staff, etc.) – may not be as simple as moving to top
- ◆ Only applies to review stage, does not ensure good implementation
- ◆ Result in inadequate review?

4. Increase Inspection Capacity

- ◆ Hire more staff
- ◆ Coordinate building/site inspections
- ◆ Increase inspection frequency
- ◆ Create standard inspection checklists/reports
- ◆ Prioritize sites for inspection
 - Watershed
 - Slope
 - Bad actor history
 - Rainy season
- ◆ Consider private inspectors
- ◆ Establish “watchdog” hotline

Preconstruction Meeting

- ◆ Before any clearing & grading can begin
- ◆ Contractor, project engineer, inspector & plan review walk the site
- ◆ Walk through may consider:
 - Field changes to ESC plan
 - Staking limits of disturbance
 - IDing resource protection areas
 - Ensuring all sediment control & tree protection measures are installed



Inspection during construction

- ◆ Assess ESC practices routinely and after storms
 - Prior to construction
 - Routinely – every 7 days
 - Within 24 hours of the end of a storm event of ½" or greater
 - Final site inspection
- ◆ Maintain a record of all inspections on site
- ◆ Inspection reports should be description & prescriptive
- ◆ Keep plans on site for reference



Writing the Report

Documentation

General site conditions

Specific site conditions

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**DNREC
SEDIMENT AND STORMWATER CERTIFIED CONSTRUCTION REVIEWER
INSPECTION REPORT**

Date: 8/14/00 Time Arrived: 8:30 a.m. Time Left: 10:00 a.m.

Project/Site Name: Greater Milford Business Park

Location: Airport Road, Milford, DE

Weather Conditions: Raining, over 4" since 12 noon 8/11/00. Thunderstorms expected.

Site Status: Active completed Date of last inspection: 8/7/00 Active, Inactive, completed

Not Applicable (N/A) Satisfactory (S) Unsatisfactory (U) (see written comments)

1. Stabilized Construction Entrance S
2. Earth Berms/Dikes/Swales S
3. Inlet Protection U note 2 and 3
4. Vegetative Stabilization S
5. Stormwater Management Facilities Construction S
(For Stormwater Management Ponds, Attach Pond Inspection Checklist)
6. Silt Fence S
7. Sediment Traps/Basins S
8. Outlet Protection U note 2
9. Stone Check Dams S

Written Comments:

- 1.) The contractor was on site, but left because of rain
- 2.) Heavy rains since last Friday, August 11, 2000, have caused some problems. Older areas of the job site are taking the weather very well. However the new system of catch basins from the western most outfall of pond 4, basins 26, 27, 36 and 37 have not had proper inlet protections installed and have each failed. This has allowed some sediment into the stormwater system and Pond 4. The pond is processing the runoff adequately and no sediment is leaving the pond. Protection should be re-installed per details on page SWM 10. The outfall entering pond 4 from this system is still not installed, and the area around it is eroding.

5. Balance incentives and penalties to increase compliance

- ◆ Accountability thru sign-offs
Engineers, contractors, operators
- ◆ Performance Bonds
- ◆ Conditions in contracts
- ◆ Clear instructions on inspection reports
(what is to be done by when)
- ◆ Set follow-up expectations
- ◆ Stop work orders
- ◆ Civil fines



Make 'em sign it!

- ◆ Owner/Developer/Operator certification to implement plan
- ◆ Responsible Person certification
- ◆ Right of Entry certification

2. OPERATOR'S CERTIFICATION

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. Further, I hereby certify that the SWPPP meets all Federal State and local erosion and sediment control requirements. I am aware that false statements made herein are punishable as a class A misdemeanor pursuant to Section 210.45 of the Penal Law. "

Name (please print) _____

Title _____

Date: _____

Address: _____

Phone: _____

Email: _____

OWNER CERTIFICATION:
I HEREBY CERTIFY THAT ALL CLEARING, GRADING, CONSTRUCTION AND/OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS PLAN, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE LAND DISTURBING ACTIVITIES WILL HAVE A SEDIMENT AND STORMWATER MANAGEMENT CERTIFICATION FROM THE DELAWARE DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL. I HEREBY AUTHORIZE THE RIGHT OF ENTRY FOR PERIODIC ON SITE INSPECTIONS BY STATE OF DELAWARE, DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL COMPLIANCE PERSONNEL AND/OR AUTHORIZED AGENTS.

Craig Hudson 7/18/02

DATE

HUDSON - REED, L.L.C.
30045 EAGLE'S NEST ROAD
UNIT 2
MILTON, DE 19968
(302) 645-2333

Performance Bonds

- ◆ Financial surety posted prior to plan approval and/or grading permit
- ◆ Motivator for compliance
- ◆ Usually required in code
- ◆ Allows program authority to cash bond & conduct work if applicant is not in compliance

PROS

- ◆ Economic incentive for compliance
- ◆ Good complement to other enforcement tools

CONS

- ◆ Administrative burden (compute bonds, inspections, data base)
- ◆ Politically & administratively difficult to cash bonds & perform work
- ◆ Bonds need a life span

Performance Bond Example: Albemarle County, VA

- ◆ Bond posted for Erosion & Sediment Control & Stormwater Management prior to plan approval
- ◆ Bond estimate based on cost + 25%
- ◆ Partial bond reductions based on inspection – retain 20% until complete
- ◆ Annual renewal fee – extensions beyond 1 year discouraged
- ◆ Bonds tracked in data base
- ◆ Bonds cashed in rare instances
- ◆ Administration – 20% of FTE (60 bonds annually)

Conditions in Contracts

- ◆ Contracts for government work (roads, municipal projects, etc.) specify training, preparation of plans, and compliance
- ◆ May be coordinated with training and/or certification program

PROS

- ◆ Highlights Erosion Control Early in Process (contract)

CONS

- ◆ Often forgotten during construction, except if there is conflict
- ◆ Difficult to Enforce (legal action)

Enforcement Tools

- ◆ Written warning with voluntary compliance
- ◆ Written notice of violation ordering compliance
- ◆ Administrative penalties
- ◆ Civil penalties
- ◆ Compensatory action
- ◆ Criminal prosecution
- ◆ Cost of abatement of the violation / property liens
- ◆ Stop work order
- ◆ Withhold building permits / certificates / payment

% Fees and fines should go back into program....

Civil Penalties

- ◆ Specified in Code
- ◆ Civil Fines for Specified Violations (like a traffic ticket)
- ◆ Requires Trained Inspection Staff

PROS

- ◆ Effective Compliance
- ◆ Easier to Apply than Criminal Penalties

CONS

- ◆ Political Will Needed to Apply Tool
- ◆ Need Control of “Renegade” Inspectors
- ◆ Need Enough Inspectors to Document Conditions at Sites
- ◆ Judges Not Always Sympathetic

Civil Penalties Example: Roanoke County, VA Ticket Book

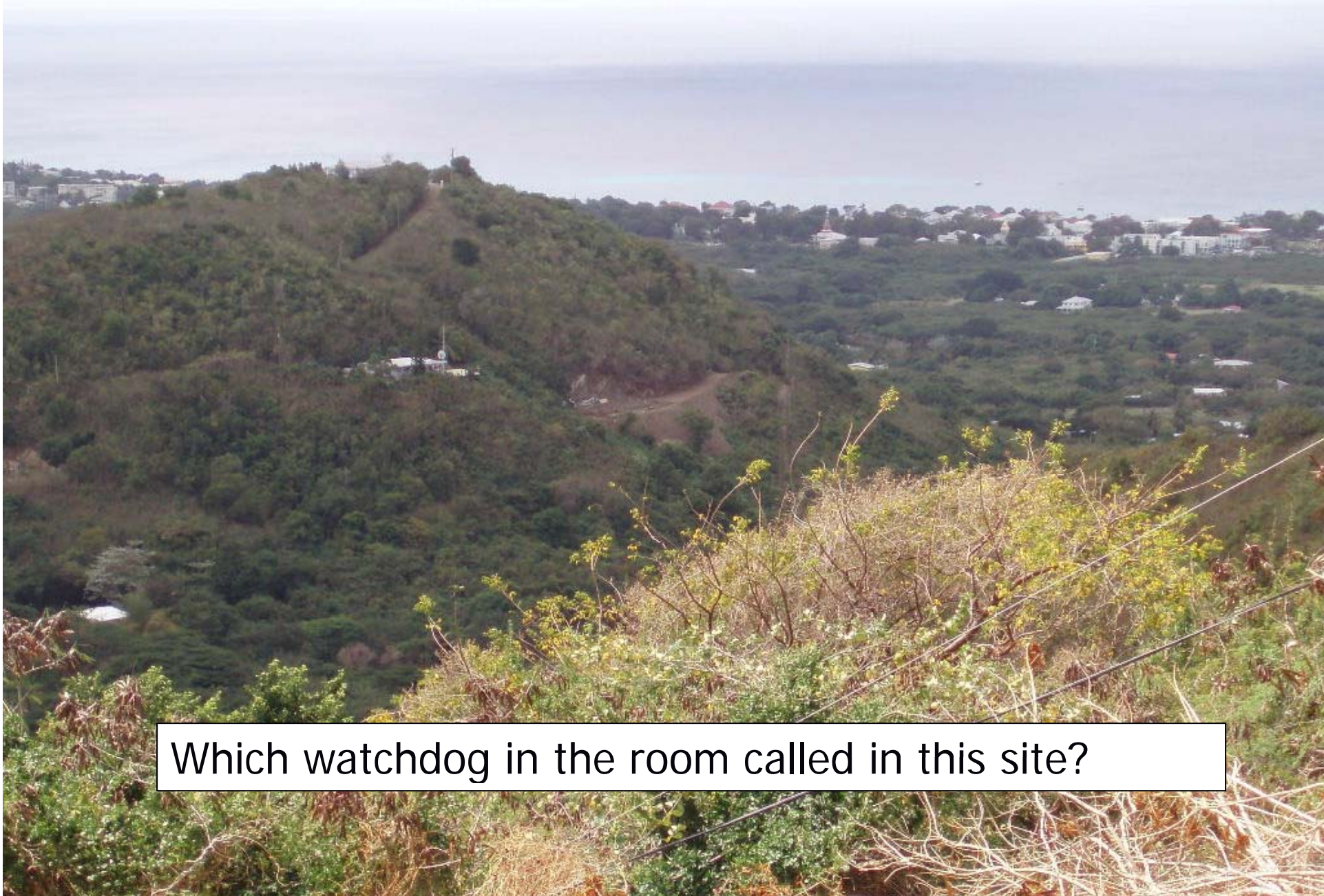
**ROANOKE COUNTY COMMUNITY DEVELOPMENT
EROSION & SEDIMENT CONTROL
SUMMONS**

Project Name/Tax Map #: _____ File No. _____ Inspection Date: _____ Time: _____

Inspected by: _____ Owner/Developer: _____ RLD: _____

Location of Violation(s): _____

_____ LAND DISTURBING WITHOUT A PERMIT	\$1000/DAY	X	_____ DAYS = _____
_____ STD 3.01..... Safety Fence	\$100/DAY	X	_____ DAYS = _____
_____ STD 3.02..... Construction Entrance	\$100/DAY	X	_____ DAYS = _____
_____ STD 3.03..... Construction Road Stabilization	\$100/DAY	X	_____ DAYS = _____
_____ STD 3.04..... Straw Bale Barrier	\$100/DAY	X	_____ DAYS = _____
_____ STD 3.05..... Silt Fence.....	\$100/DAY	X	_____ DAYS = _____
_____ STD 3.06..... Brush Barrier.....	\$100/DAY	X	_____ DAYS = _____
_____ STD 3.07..... Storm Drain Inlet Protection	\$100/DAY	X	_____ DAYS = _____
_____ STD 3.08..... Culvert Inlet Protection	\$100/DAY	X	_____ DAYS = _____



Which watchdog in the room called in this site?

6. Invest in training/certification

- ◆ **Certification/licensing program for contractors, private inspectors, and plan preparers**
 - Attend training, take exam & receive official sanction
 - Maintain an official list
 - List tied to certain requirements – plan approval, weekly inspections, onsite presence, etc.

- ◆ **Training for agency inspectors**
 - Can be tied to private certifications
 - Can consist of a 1 day course covers minimum standards; specs for conservation practices, basic soil mechanics and inspector skills
 - Require recertification every 3 years or so



Private Certification and Licensing: Delaware Sediment & Stormwater Program

- ◆ State requires a Certified Construction Reviewer (CCR) to provide inspection duties
- ◆ State provides certification
- ◆ CCR must become familiar with site plan
- ◆ Reports prepared by CCR on weekly basis
- ◆ ESC controls must be in accordance with approved plan and Handbook
- ◆ Non-compliance must be reported to State
- ◆ State pursues enforcement actions
- ◆ State has ability to revoke certification



Virginia DOT: Contractor Certification

Required for Contractor to Get State Contract for Road Work

The screenshot shows a Mozilla Firefox browser window displaying the Virginia DOT website. The address bar shows the URL: <http://www.virginiadot.org/business/environmental-essce-overview.asp>. The page title is "VDOT Environmental Division, Erosion and Sediment Control". The main content area is titled "Erosion and Sediment Control Contractor Certification" and includes a "Background" section. The background text states: "In accordance with VDOT Road and Bridge Specification §107.14 (a), land disturbing activity which occurs within the VDOT right-of-way must be supervised by a certified Erosion and Sediment Control (ESC) Contractor who is required to be on-site at all times during that land-disturbing activity. Until last year, the Virginia Department of Conservation and Recreation (DCR) and VDOT sponsored a cooperative training for ESC Contractors. This training program was entitled DCR's Erosion and Sediment Control Contractor Certificate of Completion (DCR's Contractor Certificate) program. The former DCR Contractor Certificate program included a one-day training course followed by a 1-hour examination. From April 1999 through June 2001, VDOT contractors successfully obtained over 5,500 individual certifications through DCR's program. The DCR Contractor Certificate program is believed to have provided a key contribution to VDOT project". The page also features a "Business Center" sidebar with links for "Proposals & Bidding", "Contract Awards", "Online Forms", and "Events". A "SWAM Links" section includes "SWAM Certification", "Resources for Virginia Business", and "Virginia Department of Business Assistance". A "Business User" section includes "Traffic Data", "Request for Proposals", "RFP Results", and "Request for Quotes". The Windows taskbar at the bottom shows the Start button and several open applications, including "Inbox - Microsoft...", "Virginia Road an...", and "VDOT Environme...". The system clock shows 7:45 AM.

Training for Inspectors Example: Virginia DCR

- ◆ Erosion and Sediment Control Training and Certification
 - localities are required to have a certified inspector
 - Initial certification requires an Erosion and Sediment Control 101 course and one specifically geared at inspection
 - Inspectors must be recertified every 3 years
 - Recertification can be completed through online course
 - Maintains a list of certified inspectors on website

7. Use public projects to demonstrate good/innovative practices

- ◆ Demo projects that illustrate the use, design, installation and maintenance of innovative erosion and sediment control practices
- ◆ Incorporate into workshops, certifications, tours, websites, etc.

PROS

- ◆ Non-threatening but convincing
- ◆ Allows govt agencies to set good example and high bar
- ◆ Good outreach potential
- ◆ Grants/Funding

CONS

- ◆ Temporary
- ◆ Risk factor – some projects fail
- ◆ One piece of puzzle

Demonstration Projects Example: UVI Cooperative Extension Service

- ◆ CES Home Demonstration Garden
- ◆ Demonstrate use and installation of practices not widely used in the territory: (erosion control mats, hydroseeding, and triangular dikes)
- ◆ Demonstrate the siting, installation, maintenance of silt fencing
- ◆ Display native and adapted grasses and ground covers for erosion control
- ◆ Provide public education and outreach on effective erosion and sediment control methods
- ◆ 4 year project funded through EPA 319 grant

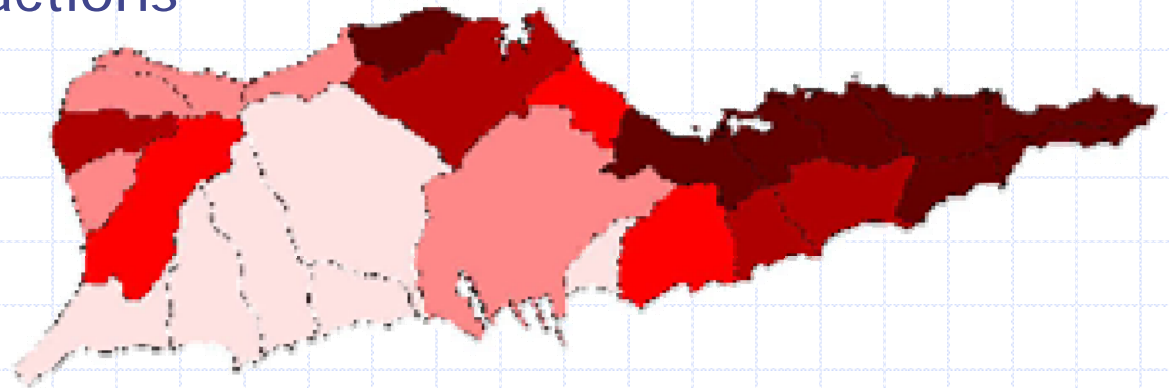


Figure 3.8. Hydroseeding side slopes and outside rim of a sediment basin (Estate New Herrhut, St. Thomas, 1998).

8. Apply watershed-based criteria*

Variable criteria can be based on watershed sensitivity (TMDL, erosion potential, steep slope)

- disturbance thresholds triggering ESC plan
- Plan approval process
- Inspection frequency
- Enforcement actions



Tahoe basin

- B. **Grading season:** Grading shall be prohibited during the period from October 15th through May 1st unless otherwise provided by this Chapter. The County requires complete winterization of any project by October 15th.
- C. **Other agencies:** All grading work shall conform to any restriction required by other federal, state, or local agencies.
- D. **Applicability:** Except for Section 15.14.150 (Exemptions), the provisions of this Chapter shall apply to grading activities in the Tahoe Basin.
- E. **Permit waivers:** The Director may waive the requirement for a grading permit if the work complies with all the following conditions:
 - 1. The excavation does not exceed five (5) feet in vertical depth at its deepest point measured from the original ground surface, and does not exceed three (3) cubic yards per site.
 - 2. The fill does not exceed three (3) feet in vertical depth at its deepest point measured from the original ground surface and the fill material does not exceed three (3) cubic yards per site.
 - 3. Clearing of vegetation does not exceed one-thousand (1,000) square feet in area.

What would it take to implement?

1. Convince local leaders of ESC needs
2. Adopt necessary ordinance language to ensure authority
3. Require submittal of comprehensive ESC plans for early review
4. Increase inspection capacity
5. Balance compliance incentives and penalties
6. Invest in training/certification programs
7. Use public projects to demonstrate good/innovative practices
8. Consider watershed-based criteria*