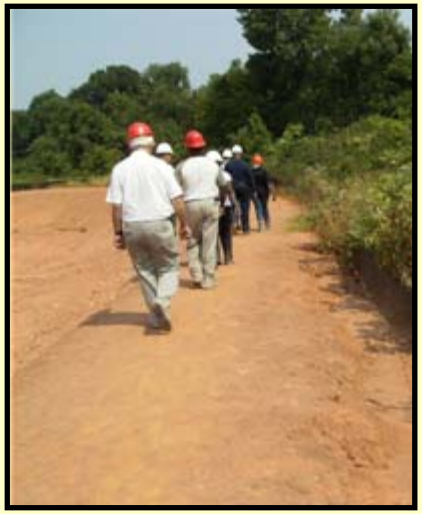
Department of the Environment

Welcomes you to the State's



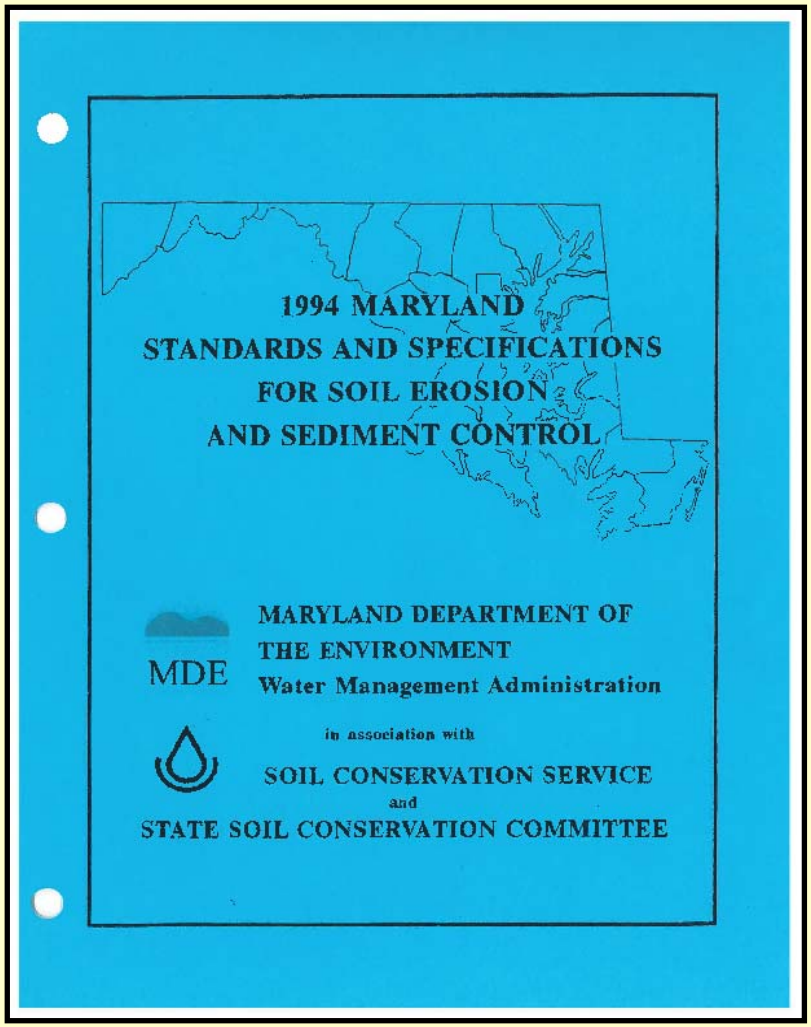
Soil Erosion and Sediment Control Responsible Personnel Training Program

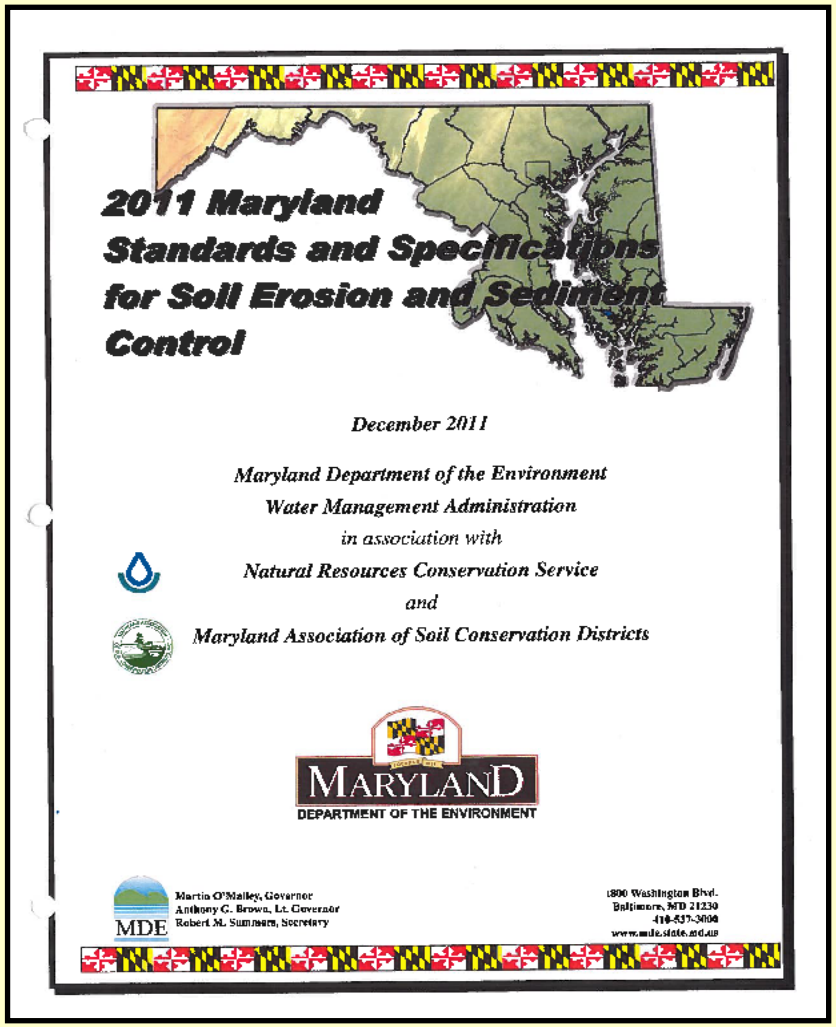
MDE

Responsible Personnel Training

- Environment Article, Section 4-104 requires that any foreman, superintendent, or project engineer who is in charge of on-site clearing and grading operations or sediment control has attended an MDE approved training program.
- Maryland Code of Regulations (COMAR) 26.17.01.06 establishes the content and procedural elements of the training program.

2011 Regulation Update





MARYLAND

What's New in the Regulations

- 20 acre grading unit
- 3 to 7 day stabilization requirements
- Protection of natural resource areas
- Standards and Specifications handbook with material and detail updates

Certification

- Upon successful completion of this training course, you will be issued a Responsible Personnel Certification Card
- Certification is valid for three years and is automatically renewed unless you are notified that additional training is required

Sediment Control Class Outline

Part I

- Maryland's Water Resources
- The Natural Erosion Process
- Construction Site Runoff
- Sediment Control Laws and Regulations
- Inspection Responsibilities

Part II

- Maryland's Standards and Specifications
  - Planning and design
  - Grading and Stabilization
  - Water Conveyance
  - Erosion Control
  - Filtering
  - Dewatering
  - Sediment trapping
  - Miscellaneous

This class is dedicated to Richard Trickett (1955-2012) who will be remembered for his remarkable knowledge and tireless quest to improve sediment control in the State of Maryland.

Sediment Control Class -- Part 1

- Maryland's Water Resources
- The Erosion Process
- Construction Site Runoff
- Laws and Regulations
- Inspection Responsibilities

The Earth's Water Balance

Two-thirds of the Earth's surface

is covered by water

97% of the Earth's water is salt water

and good for recreation (Ocean City, MD)

And 2% of the freshwater

is frozen in polar ice caps

And 1% is readily available for our use

simply stated,
there just isn't much of it.

Maryland's Water Resources

- Domestic Water Supply
- Average use is 100 gallons/person/day
- 68% of Maryland's population is served by drinking water that comes from surface waters

Maryland's Water Resources

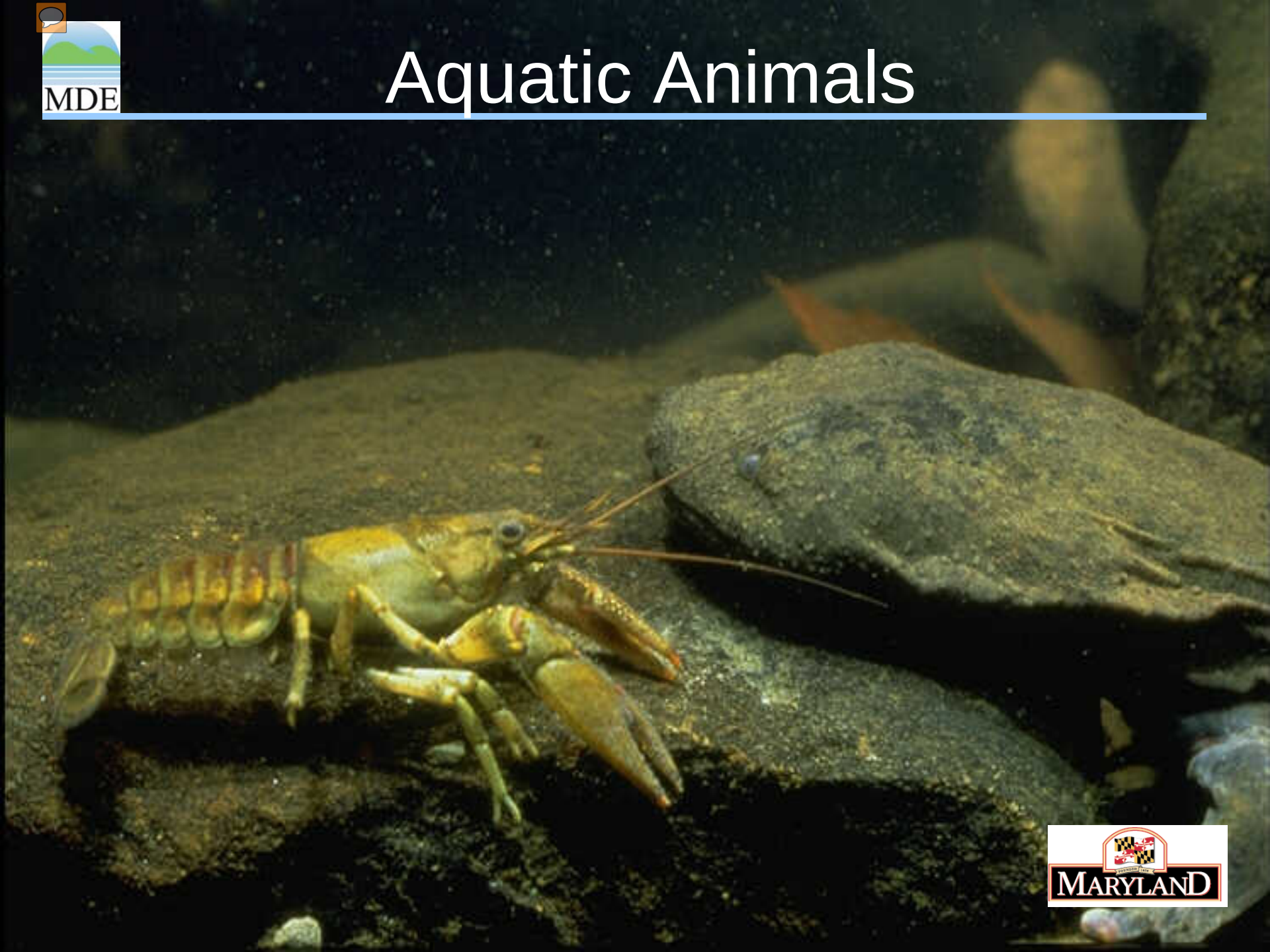
Provides
Wildlife
Habitat

Wetland Plants and Ecosystems

Terrestrial Animals

Waterfowl

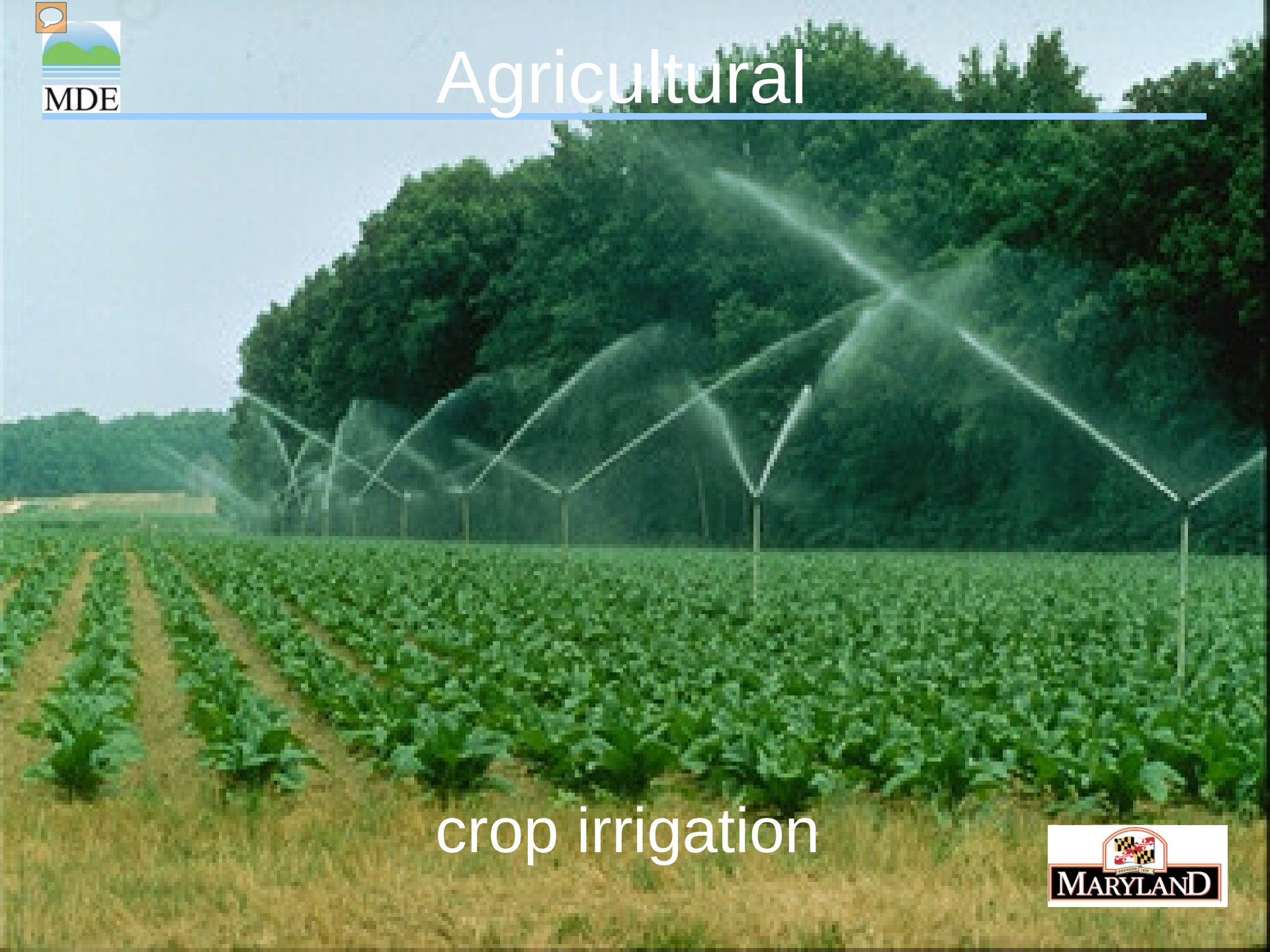
Aquatic Animals



Maryland's Water Resources

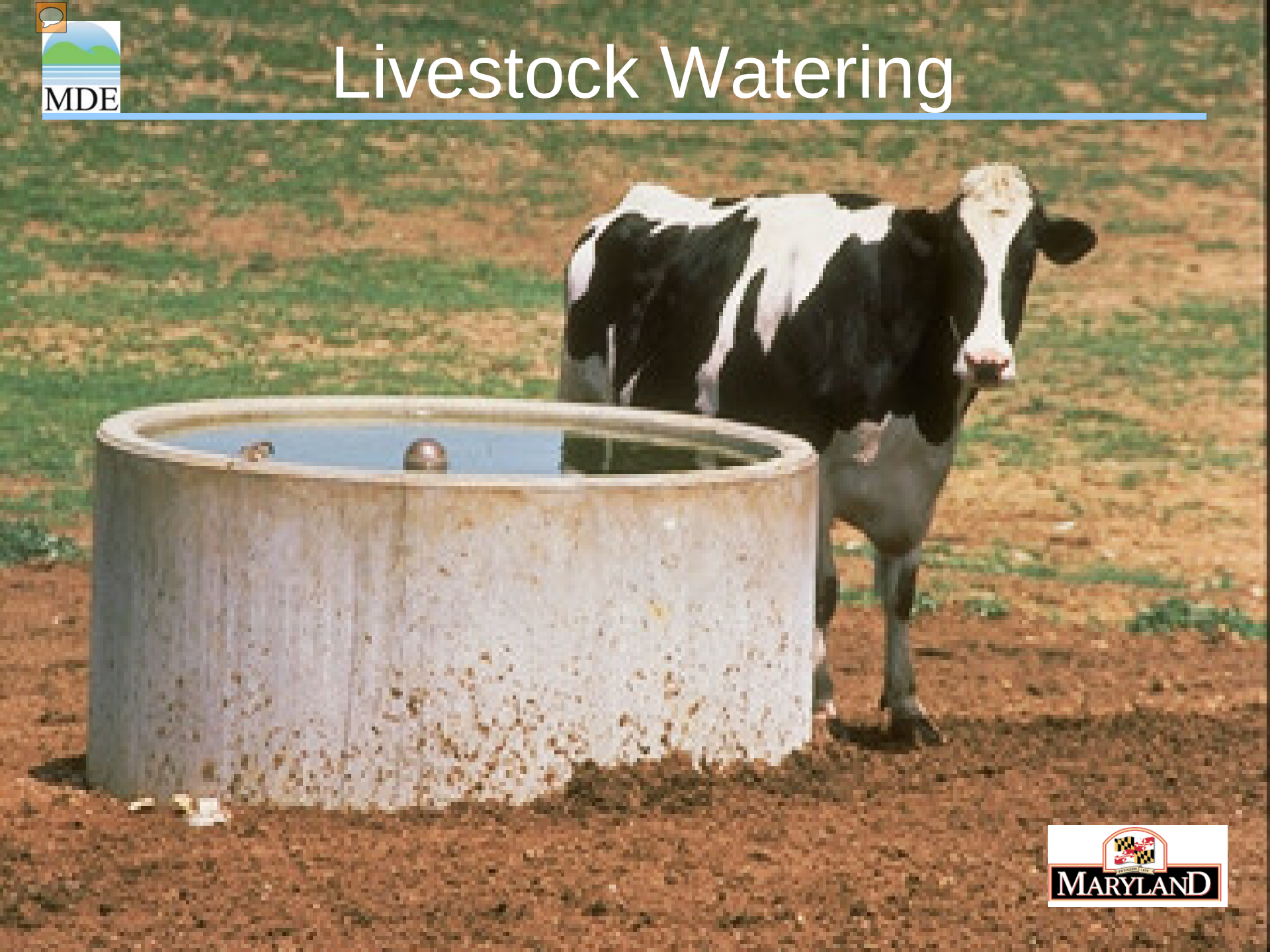
Supports Maryland's Economy

Agricultural



crop irrigation

Livestock Watering



Power Generation

Conowingo Dam

Commercial

Maintenance
of shipping channels

Chesapeake Bay

Recreational Uses

Fishing

Boating

Scenic Landscapes

The Natural Erosion Process

The wearing away of
the land
by the action of
water, wind, ice, and
gravity.

Water

Wind

Glaciers

Gravity

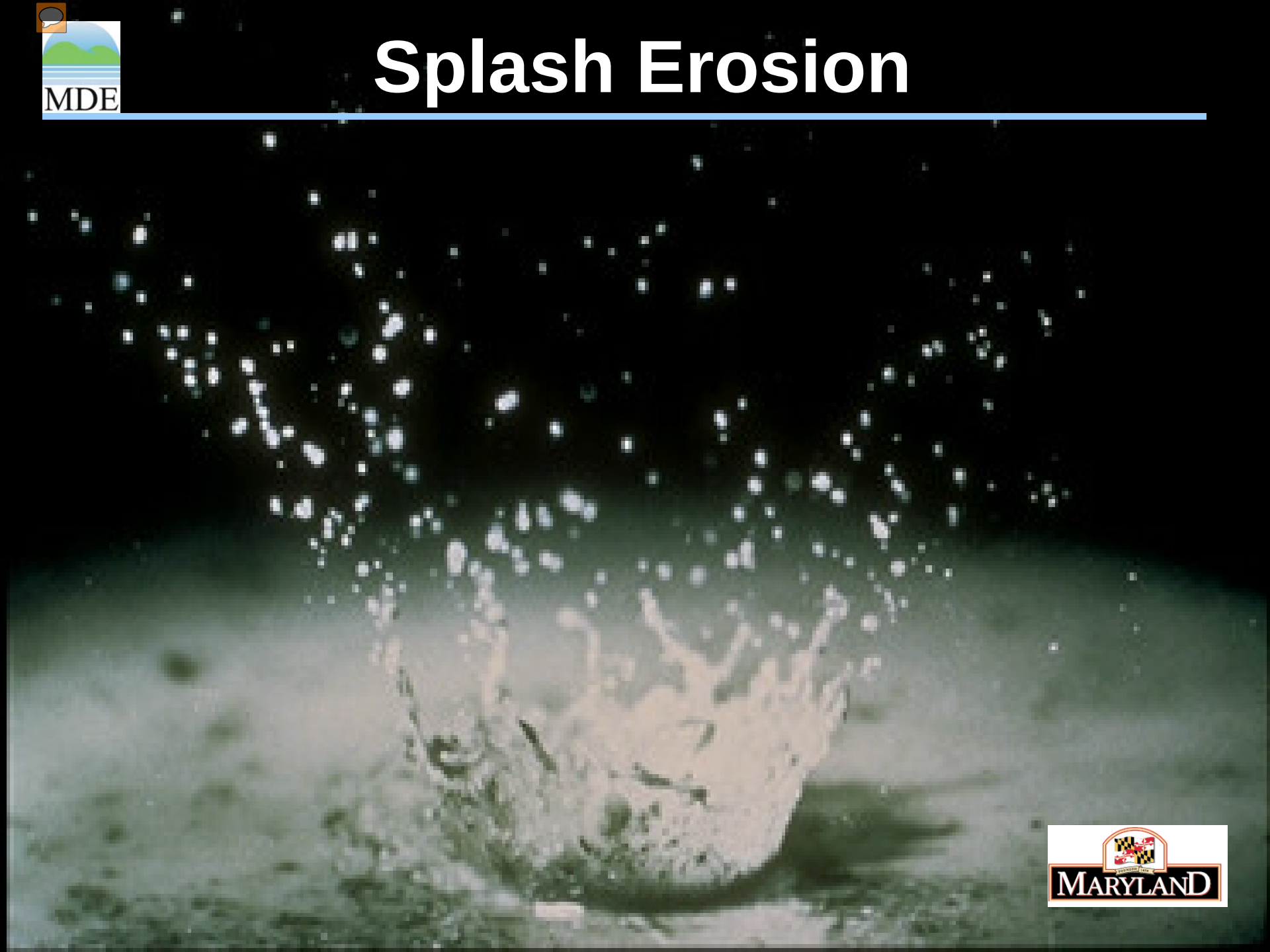
Calvert Cliffs, Maryland

Land Development

Accelerates the natural erosion process and can cause significant harm to Maryland's water resources

Construction Site Runoff

Splash Erosion



Soil Saturation

Gully Erosion

Overland Flow

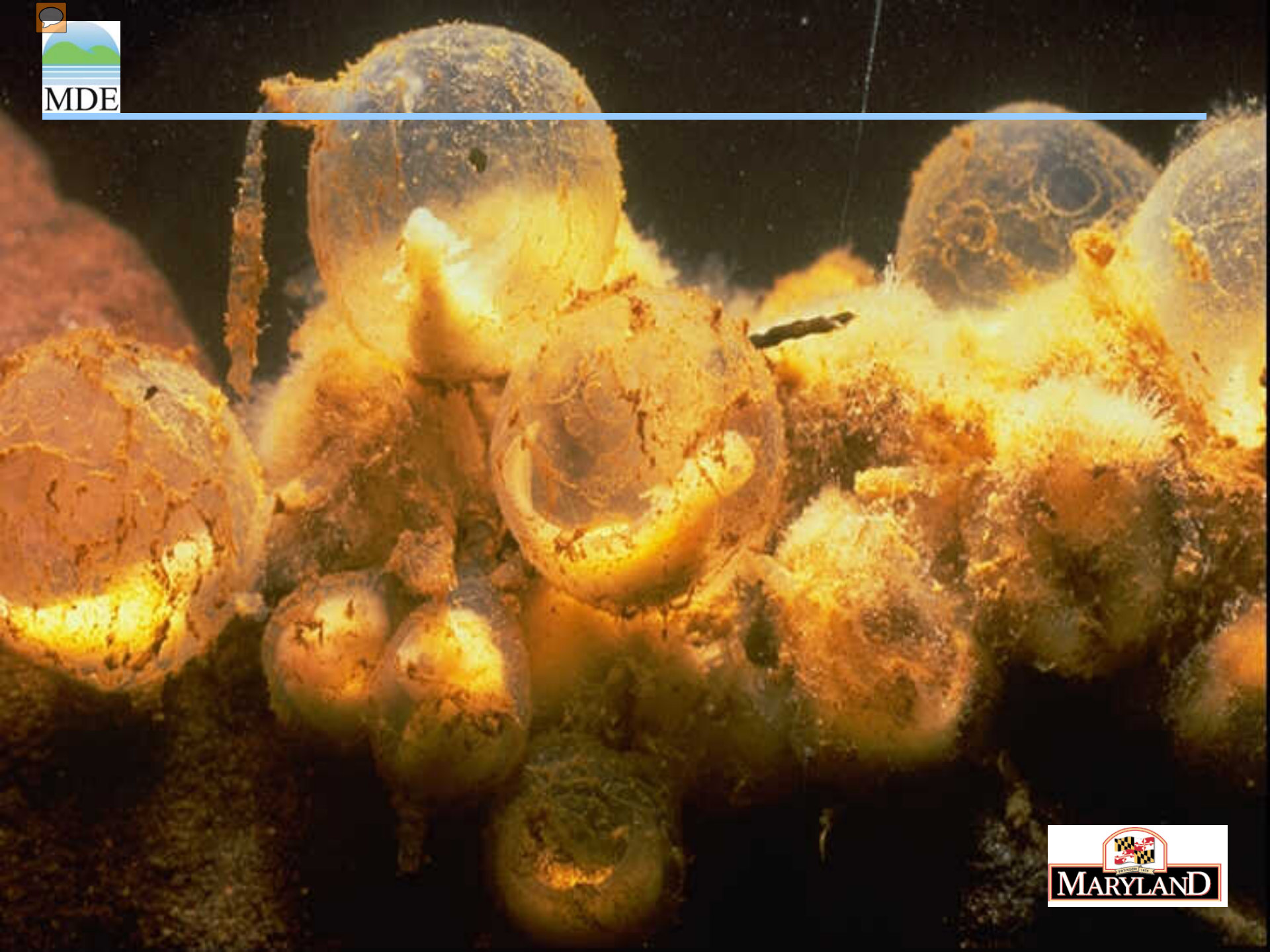
Sediment Transport

Sedimentation

Sedimentation Impacts

- **Water Quality**
- **Flooding**
- **Navigation**
- **Eutrophication**
- **Public Health**

Water Quality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Flooding

Navigation

Sediment Control Measures

Maryland's standards and specifications provide a variety of measures to control sediment-related water quality problems caused by earth disturbance

MARYLAND

Vegetative Cover

Filtering

Trapping

Maryland Law and Regulation

- An erosion and sediment control plan is required for all grading activities that disturb:
  - 5,000 square feet or more of land area
  - 100 cubic yards of earth or more
- It is unlawful to add, introduce, leak, spill, or otherwise emit soil or sediment into waters of the State or place soil or sediment in a position or location likely to be washed into waters of the State

State Legislative History

- 1965 -- Montgomery County develops the first sediment control program in the country
- 1968 -- Baltimore County develops a sediment control program
- 1970 – Maryland mandates that all counties and municipalities establish sediment control programs

State Legislative History

- 1973 – Grading and building permits are tied to sediment control plan approval
- 1980 – Training and responsible personnel certification required
- 1984 – The State is responsible for enforcing the law unless delegated to a local jurisdiction

MDE

STATE OF MARYLAND
EROSION AND SEDIMENT CONTROL
DELEGATED JURISDICTIONS

Map Date - 17 April 2013

MARYLAND

Martin O'Malley, Governor
Anthony G. Brown, Lt. Gover
Robert M. Summers, Ph.D, Sec

MARYLAND

Federal Requirements

- 1992 -- National Pollutant Discharge Elimination System (NPDES) General Permit regulates earth disturbance of 5 acres or more
- 2004 -- NPDES now regulates earth disturbance of 1 acre or more
- A notice of intent (NOI) must be submitted to MDE to comply with the provisions of a statewide General Permit
- Projects that will disturb 150 acres or more and which discharge to a water listed as impaired on Maryland's 303(d) list must apply for an individual permit

MDE NOI Form

MARYLAND DEPARTMENT OF THE ENVIRONMENT

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) APPLICATION FOR INDIVIDUAL OR GENERAL PERMIT FOR STORMWATER ASSOCIATED WITH CONSTRUCTION ACTIVITY

STATE OF MARYLAND APPLICATION FORM/NOTICE OF INTENT

MDE USE ONLY	Permit Number:	

Projects that will disturb 150 acres or more and which discharge to a water listed as impaired on Maryland's 303(d) list must apply for an individual permit. All other projects may apply for a general permit. The Maryland Department of the Environment (MDE) may later determine that an individual permit is required for some projects.

Applicant Information	
This application is for (check one):	A General Permit for Stormwater Associated with Construction Activity ☐ An Individual Permit for Stormwater Associated with Construction Activity ☐
Name of site/project:	
Phase (if applicable):	
Name of Owner or Organization Responsible for site/project:	
Street Address of Owner or Organization (not site/project)	Street: City: County: State: Zip Code:
Mailing Address of Owner or Organization (not site/project), if different from street address	Street/P.O. Box: City: County: State: Zip Code:
Required Tax Information	For an organization, Federal Tax Identification Number: For an individual, Social Security Number:

Public Participation

- In order to better accommodate public participation, MDE posts NOI applications and related data into a database that is available on MDE's website
- There is a minimum 45-day public participation period for sites of 3 acres or more of disturbed area and a 30-day period for disturbances of less than 3 acres
- During this time, citizens may ask to review the available erosion and sediment control and stormwater management plans, which can be found at the authorized approval authority’s location

On-Site Personnel

Self-Inspection

Additional Federal NOI Requirements

Fuel Storage Containment

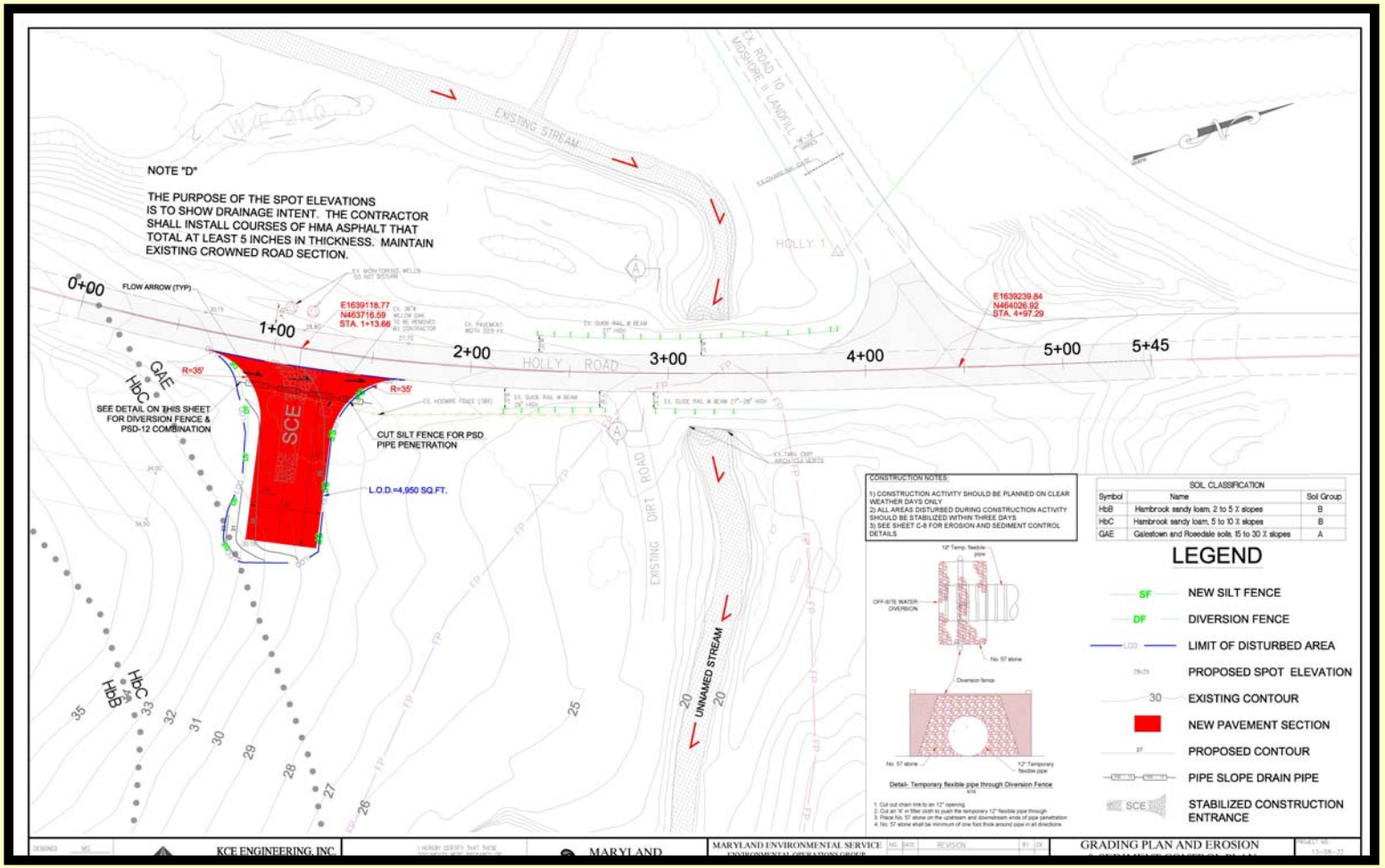
Concrete Wash-Out

MDE Standard Inspection Form

STANDARD INSPECTION FORM
GENERAL PERMIT FOR STORMWATER ASSOCIATED WITH CONSTRUCTION ACTIVITY

General Information			
Project Name			
Permittee			
NOI #		**Date of Inspection**	
Start Time		**End Time**	
Inspector's Name(s)			
Green Card Certification #			
Inspector's Contact Information			
Describe present phase of construction	☐ Clearing/Grubbing ☐ Rough Grading ☐ Infrastructure ☐ Demolition ☐ Building Construction ☐ Final Grading ☐ Final Stabilization Notes:		
Type of Inspection: ☐ Weekly routine ☐ Pre-storm event ☐ During storm event ☐ Post-storm event ☐ Due to a discharge of significant amounts of sediment			
Has there been a storm event since the last inspection? ☐ Yes ☐ No **If yes, provide:** Storm Start Date & Time: Storm Duration (hrs): Approximate Amount of Precipitation (in):			

Plan Basics


NOTE "D"
THE PURPOSE OF THE SPOT ELEVATIONS IS TO SHOW DRAINAGE INTENT. THE CONTRACTOR SHALL INSTALL COURSES OF HMA ASPHALT THAT TOTAL AT LEAST 5 INCHES IN THICKNESS. MAINTAIN EXISTING CROWNED ROAD SECTION.
EXISTING STREAM
HOLLY ROAD
EXISTING DIRT ROAD
UNNAMED STREAM
0+00
1+00
2+00
3+00
4+00
5+00
5+45
FLOW ARROW (TYP)
E1639118.77
N463716.59
STA. 1+13.66
E1639239.84
N464026.92
STA. 4+97.29
R=35'
SCE
SEE DETAIL ON THIS SHEET FOR DIVERSION FENCE & PSD-12 COMBINATION
CUT SILT FENCE FOR PSD PIPE PENETRATION
L.O.D.=4,950 SQ.FT.
CONSTRUCTION NOTES:
1) CONSTRUCTION ACTIVITY SHOULD BE PLANNED ON CLEAR WEATHER DAYS ONLY
2) ALL AREAS DISTURBED DURING CONSTRUCTION ACTIVITY SHOULD BE STABILIZED WITHIN THREE DAYS
3) SEE SHEET C-8 FOR EROSION AND SEDIMENT CONTROL DETAILS
SOIL CLASSIFICATION
Symbol | Name | Soil Group
HbB | Hambrook sandy loam, 2 to 5 % slopes | B
HbC | Hambrook sandy loam, 5 to 10 % slopes | B
GAE | Galestown and Rowedale soils, 15 to 30 % slopes | A
LEGEND
SF NEW SILT FENCE
DF DIVERSION FENCE
LOD LIMIT OF DISTURBED AREA
PROPOSED SPOT ELEVATION
30 EXISTING CONTOUR
NEW PAVEMENT SECTION
PROPOSED CONTOUR
PIPE SLOPE DRAIN PIPE
SCE STABILIZED CONSTRUCTION ENTRANCE
Detail- Temporary flexible pipe through Diversion Fence
KCE ENGINEERING, INC.
MARYLAND
MARYLAND ENVIRONMENTAL SERVICE
GRADING PLAN AND EROSION

Plan Basics Cont'd

- Areas of special concern (wetlands, streams, buffers, highly erodible soils, steep slopes)
- Existing and proposed topography
- Stormwater drainage patterns and proposed stormwater management
- Proposed grading and earth disturbance
- Limits of disturbance and grading units

Plan Basics Cont'd

- Proposed practices
- Sequence of construction
- Temporary and permanent stabilization requirements
- Inspection requirements and notification
- Plan approval stamp, signature, and date
- Owner/developer certification

Developer's Responsibilities

- Have Certified Responsible Personnel on-site
- Maintain permits and approved plans on-site
- Request inspection prior to starting
    - Pre-construction meeting
- Implement controls per sequence of construction and approved plans
    - Limit initial clearing and grubbing
- Contact the local enforcement authority for modifications when the approved erosion and sediment control plan is not working effectively

Developer's Responsibilities Cont'd

- Maintain controls continually
- Meet stabilization requirements
  - 3 days for perimeter controls and steep slopes
  - 7 days stabilization for all other areas
- Complete self-inspection requirements
  - Weekly and next day after a rain event

Enforcement Agency

- Conduct pre-construction meeting
- Perform on-site inspection with developer's responsible personnel

- Make a complete inspection of the approved plan and controls
- Determine compliance with implementation and maintenance requirements

Enforcement Agency Cont'd

- Write a report of the general findings
- Note any specific violations found
- Indicate enforcement action taken
- Conduct routine and follow-up inspections
- Inspect at least once every two weeks (average)

Inspection Reports

Person Contacted: L. KAHL/ L. LLOYD/ D. PARINA/ M. SCHAFFER

Type of Site: Residential

Installation ☐ Maintenance ☑ Reinspection ☐ Complaint ☐ Final ☐

A - ADEQUATE I - INADEQUATE

Dikes/Swales - Required	A	I
Location	☑	☐
Compaction	☐	☑
Stabilization	☐	☑
Maintenance	☐	☑

Silt Fence - Required	A	I
Location	☑	☐
Keyed In	☐	☑
Staked In	☐	☑
Maintenance	☐	☑

Super Silt Fence - Required	A	I
Location	☐	☑
Keyed In	☐	☑
Staked In	☐	☑
Maintenance	☐	☑

Storm Drain - Not Required	A	I
Inlet Protection	☐	☐
Outlet Protection	☐	☐

#2 Stone Drive - Required	A	I
Size	☐	☑
Filter Fabric	☐	☑
Maintenance	☐	☑

Stabilization - Required	A	I
3 Days	☐	☑
7 Days	☐	☑

Sediment Traps - Not Required	A	I
Stabilization	☐	☐
Outfall Protection	☐	☐
Inflow Protection	☐	☐
Clean Out	☐	☐
Trap Size	☐	☐
Outlet/Crest Size	☐	☐
Maintenance	☐	☐

TSOS / TGOS - Not Required	A	I
Baffle Board	☐	☐
Weir Crest	☐	☐
Maintenance	☐	☐
Filter Fabric	☐	☐

Sediment - Required	A	I
Stabilization	☑	☐
Outfall Protection	☑	☐
Inflow Protection	☑	☐
Clean Out	☑	☐
Basin Size	☑	☐
Dewatering	☐	☑
Maintenance	☑	☐

DETAILS:

1.) BASIN #1 : DEWATERING DEVICE IS CLOGGED, REPAIR AS IS REQUIRED TO DEWATER TO ELEVATION 159.20

2.) STABILIZE LOTS 353-365, AREA DISTURBED BY UTILITY INSTALLATION AND INSTALL A LENGTH OF S.S.F. TO PREVENT RUNOFF FROM ENTERING PAVED SURFACES ALONG EXISTING BUILDING LOTS.

3.) CLEAN THE PUBLIC ROADWAYS OF TRACKING AND INSTALL / IMPROVE SCE'S TO PREVENT TRACKING ONTO THE PUBLIC ROADS. ROADS SHOULD BE KEPT CLEAN TO PREVENT TRACKING OF SEDIMENT AT ALL TIMES

Corrections must be completed by 1/23/2013 or a STOP WORK ORDER will be issued and you could be subject to Civil Penalties.

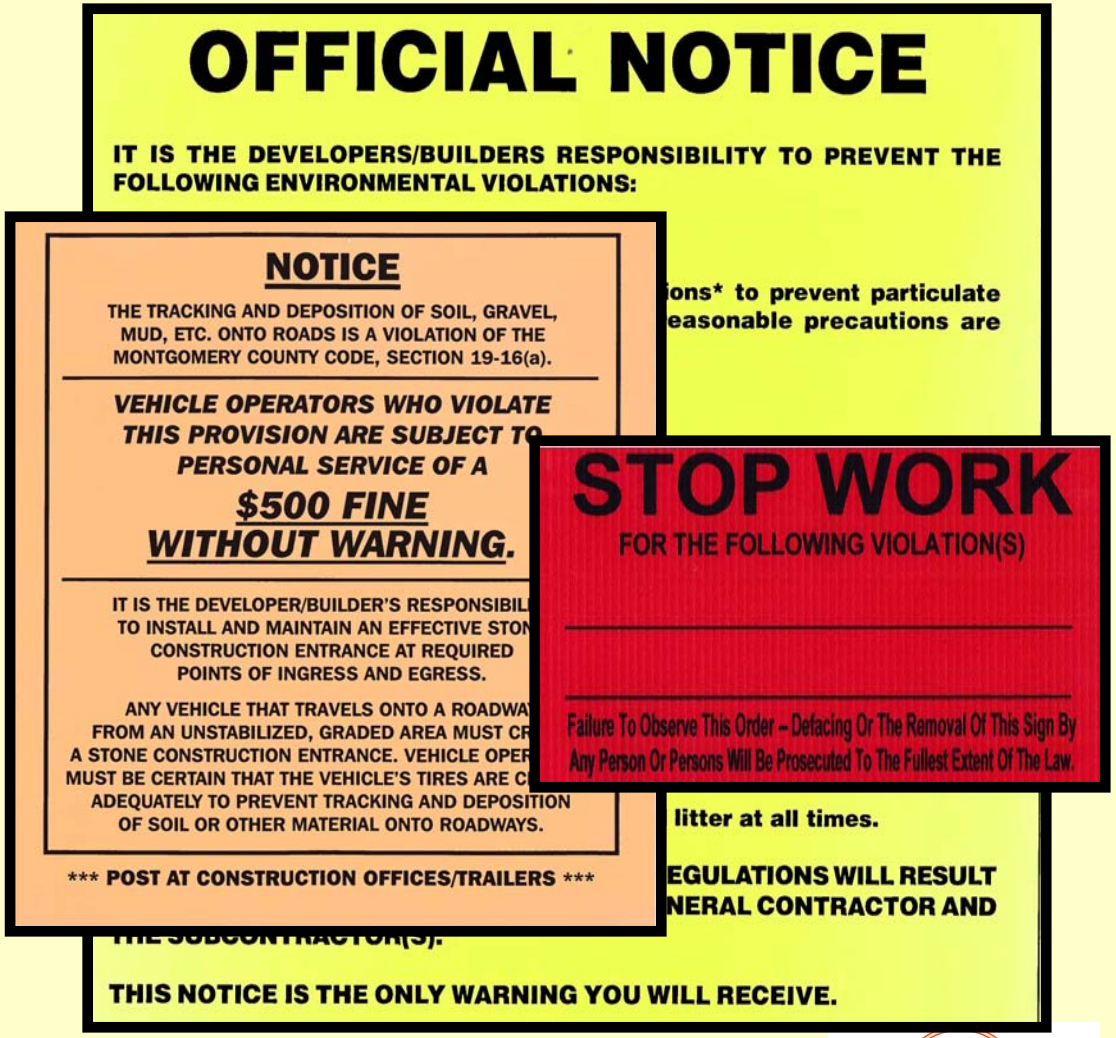
Inspection Date: 1/16/2013 Reinspection Date: 1/23/2013 Mailed ☐ Emailed ☑ Received By ☐

Cause for Enforcement

- Direct acts of pollution
- Starting construction without an approved erosion and sediment control plans
- Substantial noncompliance with approved plan
- Failure to make corrections
- Recurring minor violations
- Working outside approved limits of disturbance

Progressive Enforcement

- Field investigation report
- Violation notice
- Administrative fine
- Stop work order
- Initiate bond default
- Civil or criminal penalty
- Any action can be taken at any time in the enforcement process



Progressive Penalties

- Administrative ($1,000 per violation)
  - Sediment Control Law
- Bond default and mitigation
  - provided for in local ordinances
- Civil ($10,000 and 1 year prison term)
  - Sediment Control Law
- Criminal ($50,000 and 1 year prison term)
  - Sediment Pollution Law

Course Outline -- Part 2

- Maryland's Standards and Specifications
  - Planning and design
  - Grading and Stabilization
  - Water Conveyance
  - Erosion Control
  - Filtering
  - Dewatering
  - Sediment trapping
  - Miscellaneous

Environmental Site Design

- The Stormwater Management Act of 2007 defines Environmental Site Design (ESD) as using small-scale stormwater management practices, non-structural techniques, and site planning to mimic natural hydrologic runoff characteristics and minimize the impact of land development on water resources.

Planning Principles

- Plan the development to fit the site
- Protect natural resources
- Avoid steep slopes and highly erodible soils
- Minimize disturbed area
- Stabilized exposed soils as soon as practicable
- Control and manage all runoff
- Protect perimeter areas and retain sediment on-site
- Make provisions for inspecting and maintaining sediment controls

Design Steps

- Identify existing drainage patterns, drainage boundaries, and slopes
- Identify areas of special concern
- Fingerprint site and layout development
- Determine phasing requirements and select initial erosion and sediment controls
- Identify interim and final drainage patterns as the project proceeds and select appropriate controls
- Prepare the sequence of construction

Grading Unit

- A grading unit is the maximum contiguous area allowed to be graded at a given time and is limited to 20 acres

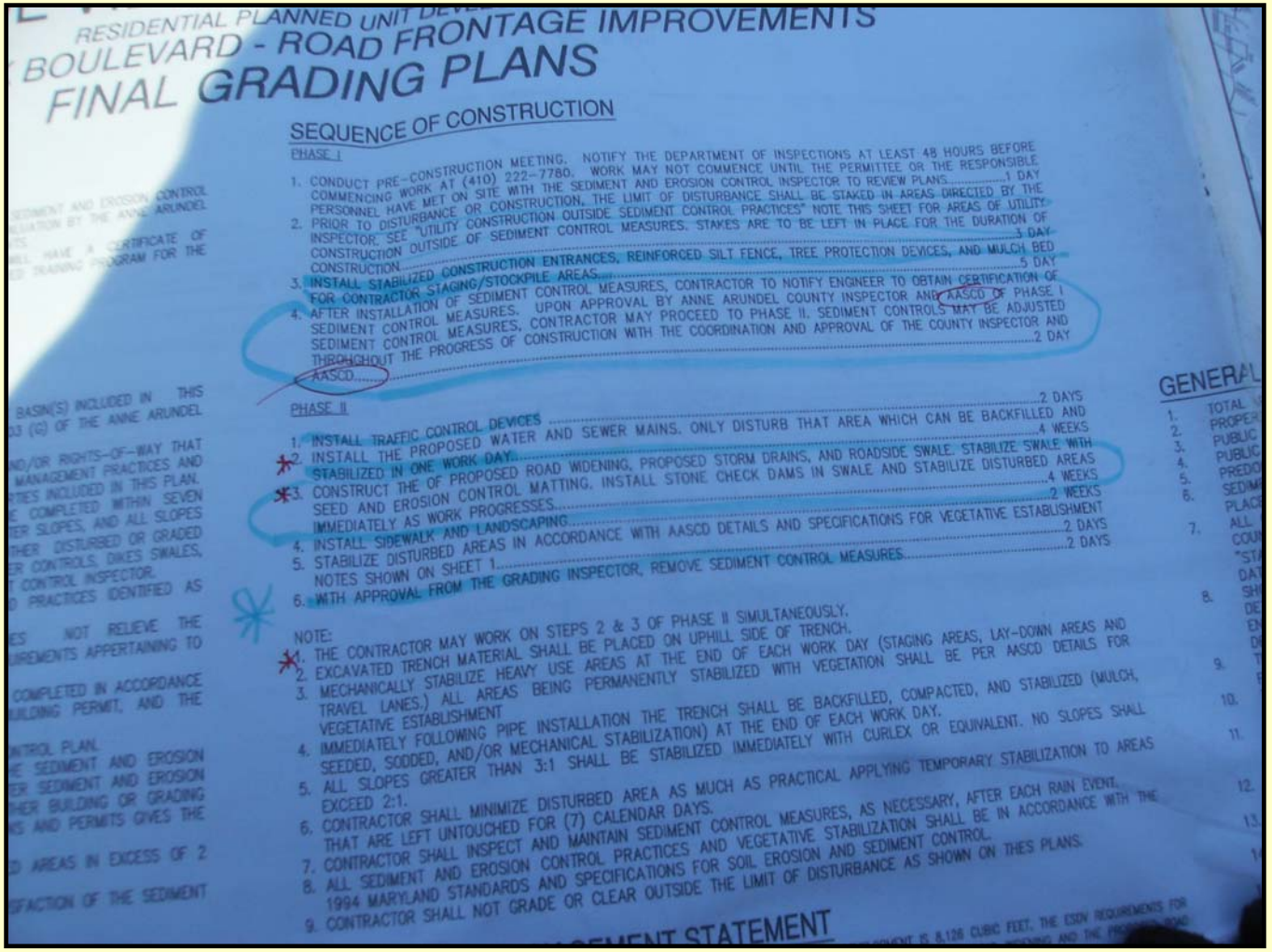
- A Project is to be sequenced so that grading activities begin on one grading unit at a time

Grading Unit Cont'd

- Work may proceed to a subsequent grading unit when at least 50 percent of the disturbed area in the preceding grading unit has been stabilized and approved by the enforcement authority

- No more than 30 acres cumulatively may be disturbed at a given time

The Sequence of Construction



Sequence of Construction (typical)

1. Contact enforcement authority for a pre-construction meeting
2. Limit clearing and grubbing to only that area necessary for initial implementation of perimeter sediment controls
3. Install and stabilize perimeter controls
4. Request inspection of controls
5. Clear and grub within installed perimeter controls
6. Install and stabilize remaining sediment controls
7. Request inspection of controls

Sequence of Construction Cont'd

8. Install utilities
9. Grade site
10. Construct buildings and roads
11. Complete grading, landscaping, and stabilization
12. Request inspection prior to removal of controls
13. With approval, remove sediment controls
14. Stabilize areas disturbed by removal of sediment controls
15. Repeat sequence for subsequent grading units/phases

Maintenance

- **Example #1 silt fence:** Accumulated sediment and debris must be removed when bulges develop in the silt fence or when sediment reaches 25 percent of the fence height. The geotextile must be replaced if torn. If undermining occurs, reinstall fence.

Maintenance Cont'd

- **Example # 2 earth dike:** The line, grade, and cross section must be maintained. Accumulated sediment and debris must be removed and positive drainage maintained. The earth dike and point of discharge must be kept free of erosion and continuously meet the requirements for Adequate Vegetative Establishment in accordance with Section B-4 Vegetative Stabilization.

Maintenance Cont'd

- **Example # 3 inlet protection:** Storm drain inlet protection requires frequent maintenance. To maintain function and avoid premature clogging, accumulated sediment needs to be removed after each rain event. If the inlet protection does not completely drain within 24 hours after a storm event, it is clogged. When this occurs, remove accumulated sediment and clean, or replace the geotextile and stone.