Section 1: Water Pollution Control
BEFORE WE START

● PLEASE SET YOUR PAGERS AND CELL PHONES ON VIBRATE
  ➢ * # 9 ALL

● CLASS CHARGE CODES
  ➢ AUTHORIZATION
    ➢ 912076
  ➢ SPECIAL DESIGNATION
    ➢ G0C001
  ➢ ACTIVITY
    ➢ 2059
Construction Academy
(AKA “Boot Camp”)
Construction Academy Curriculum

Introduction
- Introduction, Vision, Mission, Goals

Implementation
- Reporting Contractor’s Activities
  - Control of Materials Entering the Work

Interaction
- Human Relations
  - Preparation of Pay Documents
  - Administrative Issues

Investigation
- Environmental Issues

Safety Issues
Introductions

- Name, work location, and position
- What environmental issue have you been involved with lately?
Environmental Issues

- Objectives
- Water Pollution Control
- Other Environmental Issues
- Archeological Site
- Summary
Objectives

The participant will learn:

- How to identify environmental issues
- Correct and Incorrect BMP Installations
- Understand the environmental requirements, policies, and laws that pertain to Caltrans Construction activities
Section 1: Water Pollution Control
Glossary

- **BMP** - Best Management Practice
- **CPD** – Construction Procedure Directive
- **CSWC** – Construction Storm Water Coordinator
- **EPA** - Environmental Protection Agency
- **NPDES** - National Pollutant Discharge Elimination System
- **NRDC** - Natural Resources Defense Council
- **RWQCB** - Regional Water Quality Control Board
Glossary

- **SAP** – Sampling and Analysis Plan
- **WPCP** - Water Pollution Control Program
- **SWMP** - Storm Water Management Plan
- **SWPPP** - Storm Water Pollution Prevention Plan
- **SWRCB** - State Water Resources Control Board
- **SWTF** - Storm Water Task Force
Introduction

- What are the two primary factors that impact waters adjacent to construction sites?
  - Visible Pollutants: Sediment, PCC, Petroleum
  - Non-Visible Pollutants: Solvents, Acids, Fertilizers
Introduction

Construction Site Pollutants

Erosion and Sedimentation

Construction Wastes
Introduction

One gallon of oil has the potential to contaminate up to one million gallons of water

*StormWater/CleanWater protection program*
Introduction

- Forty percent of all U.S. waters are not fishable or swimmable, according to the U.S. EPA

- “Even a partial accounting shows that hundreds of millions of dollars are lost each year….due to urban stormwater pollution”

  Natural Resources Defense Council
Sediment, the most common pollutant washed from construction sites, clogs the gills of fish, blocks light transmission and increases ocean water temperature …..harming aquatic life, and disturbing the food chain
Introduction

Construction site erosion can be 10 to 1,000 times greater than nature’s erosion process

Ohio Department of Transportation
Introduction

Construction Site Water Pollution Prevention helps to

- Minimize the Potential Impact that Construction Activities may have on Water Bodies and Protect their Beneficial Uses for Future Generations
The Laws

- 1972 Federal Clean Water Act (CWA)
  - Amend to Prohibit Any Discharge of Pollutants from a Point Source, NPDES

- 1987 Amendments to the CWA
  - Added Section 402(p) Establishing the Framework for Regulations Regarding Municipal and Industrial Discharges

- 1990 EPA Published Final Regulations
  - Established Permit Requirements for Storm Water Discharges Associated with Industrial (Including Construction) Activities

- 1992 California’s General Permit was Adopted
  - Established Requirements for Discharges Associated with Construction Activities

- 1999 Caltrans NPDES Permit was issued –03 Permit

- California’s Porter Cologne Water Quality Control Act
The Laws

- General Construction Permit CAS000002 - The ‘02 permit
- Caltrans NPDES Permit CAS000003 - The ‘03 permit

- The 02 Permit was amended in 2001 to include water quality monitoring
- The 03 Permit requires that Caltrans’ construction program complies with the General Construction Activity Permit for construction sites that disturb (1) acre or more
- Both permits can be viewed and downloaded from the State Water Resources Control Board website, www.swrcb.ca.gov
The Law

- Discharge of polluted storm water, into waters of the U.S. is prohibited.

- The National Pollutant Discharge Elimination System (NPDES) permit regulate discharges to waters of the U.S.
Who Enforces These Laws?

- EPA
- SWRCB / RWQCB
- Other Agencies
- Private Citizens
  - NRDC
  - Baykeepers
  - Other Watchdog Groups
What If We Don’t Comply?

- Fines to $27,500 Per Day – Per CWA
- Fines to $15,000 Per Day and $20 a gallon – Per Porter Cologne Act
- Current Regulatory Atmosphere
  - Violators will be held accountable
Contract Special Provisions

- Requires compliance with the NPDES Permit requirements
- Requires the use of Caltrans Storm Water Quality Handbooks
- Defines water pollution control requirements
Manuals

- Caltrans Storm Water Quality Handbooks (March ’03)
  - Project Planning and Design Guide
  - SWPPP / WPCP Preparation Manual
  - Construction Site BMPs Manual

Get Manuals online at [http://www.dot.ca.gov/hq/construc/stormwater.html](http://www.dot.ca.gov/hq/construc/stormwater.html) or hard copies are available from Caltrans Publications

- Construction Manual
- New BMP Field Guidance Manual
- New Dewatering Guide
Construction Site Best Management Practices - BMPs

Objectives:

- Promote Good Housekeeping
- Contain Waste
- Minimize Disturbed Areas
- Stabilize Disturbed Areas
Construction Site Best Management Practices - BMPs

Objectives:

- Protect Slopes and Channels
- Control Site Perimeter
- Control Internal Erosion
Construction Site Best Management Practices - BMPs

- BMP defined – a technique, measure or structural control that is used for a given set of conditions to manage the quantity and improve the quality of storm water runoff in the most cost-effective manner.

- Sometimes referred to as temporary control practices.
BMP Installation

BMP Categories

- Temporary Soil Stabilization
- Temporary Sediment Control
- Wind Erosion Control
- Tracking Control
- Non-Storm Water Management
- Waste Management and Materials Pollution Control
<table>
<thead>
<tr>
<th>ID</th>
<th>BMP Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>SS-1</td>
<td>Scheduling</td>
</tr>
<tr>
<td>SS-2</td>
<td>Preservation of Existing Vegetation</td>
</tr>
<tr>
<td>SS-3</td>
<td>Hydraulic Mulch</td>
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<td>SS-4</td>
<td>Hydroseeding</td>
</tr>
<tr>
<td>SS-5</td>
<td>Soil Binders</td>
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<tr>
<td>SS-6</td>
<td>Straw Mulch</td>
</tr>
</tbody>
</table>
## Temporary Soil Stabilization

<table>
<thead>
<tr>
<th>ID</th>
<th>BMP Name</th>
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<tbody>
<tr>
<td>SS-7</td>
<td>Geotextiles, Plastic Covers, &amp; Erosion Control Blankets/Mats</td>
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<tr>
<td>SS-8</td>
<td>Wood Mulching</td>
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<tr>
<td>SS-9</td>
<td>Earth Dikes/Drainage Swales &amp; Lined Ditches</td>
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<tr>
<td>SS-10</td>
<td>Outlet Protection/Velocity Dissipation Devices</td>
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<tr>
<td>SS-11</td>
<td>Slope Drains</td>
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<tr>
<td>SS-12</td>
<td>Streambank Stabilization</td>
</tr>
</tbody>
</table>
BMP Use - Soil Stabilization

SS-1 Scheduling

Example of Graphical Schedule
BMP Installation - Soil Stabilization

SS-3 Hydraulic Mulch

Caltrans Requirements

- Mulch must be approved by RE or CSWC
- Prior to application, roughen embankment and fill areas
- Hydraulic matrices need 24 hours to dry before rainfall occurs to be effective unless approved by the RE
- Application rates per SS3

Hydraulically applied paper mulch
## Temporary Sediment Control

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<tr>
<th>ID</th>
<th>BMP Name</th>
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<tr>
<td>SC-1</td>
<td>Silt Fence</td>
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<tr>
<td>SC-2</td>
<td>Sediment / Desilting Basin</td>
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<tr>
<td>SC-3</td>
<td>Sediment Trap</td>
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<tr>
<td>SC-4</td>
<td>Check Dam</td>
</tr>
<tr>
<td>SC-5</td>
<td>Fiber Rolls</td>
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<tr>
<td>SC-6</td>
<td>Gravel Bag Berm</td>
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<tr>
<td>SC-7</td>
<td>Street Sweeping and Vacuuming</td>
</tr>
<tr>
<td>SC-8</td>
<td>Sandbag Barrier</td>
</tr>
<tr>
<td>SC-9</td>
<td>Straw Bale Barrier</td>
</tr>
<tr>
<td>SC-10</td>
<td>Storm Drain Inlet Protection</td>
</tr>
</tbody>
</table>
BMP Installation - Sediment Controls

Sediment Controls plus Soil Stabilization = An effective combination
BMP Installation - Sediment Controls
SC-3 Sediment Trap

Requirements

- Size limited by availability of right-of-way
- Not appropriate for drainage areas greater than 5ac
- If captured runoff has not completely infiltrated within 72 hours dewater trap
- Fencing, in accordance with Standard Spec Section 80-"Fencing", shall be provided to prevent unauthorized entry

Sediment Trap without required fencing
BMP Installation - Sediment Controls
SC-5 Fiber Rolls

Correct installation of fiber rolls
BMP Installation - Sediment Controls
SC-10 Storm Drain Inlet Protection

Caltrans Requirements

- Use where ponding will not encroach into highway traffic
- For use in areas where grading is complete
- Not for concentrated flows
## Wind Erosion Control

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<tr>
<th>ID</th>
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<tbody>
<tr>
<td>WE-1</td>
<td>Wind Erosion Control</td>
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# Tracking Control

<table>
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<th>ID</th>
<th>BMP Name</th>
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<tbody>
<tr>
<td>TC-1</td>
<td>Stabilized Construction Entrance/Exit</td>
</tr>
<tr>
<td>TC-2</td>
<td>Stabilized Construction Roadway</td>
</tr>
<tr>
<td>TC-3</td>
<td>Entrance/Outlet Tire Wash</td>
</tr>
</tbody>
</table>
BMP Installation - Tracking Control
TC-1 Stabilized Construction Entrance / Exit

Lack of stabilized entrance / exit
Section 1: Water Pollution Control

BMP Installation - Tracking Control
TC-1 Stabilized Construction Entrance / Exit

Stabilized Construction Entrance/Exit TC-1

Clipped aggregate greater than 75 mm (3 in) but smaller than 150 mm (6 in)

Filter fabric

NOTE: Construct sediment barrier and channel runoff to sediment trapping device

SECTION B-B

Match Existing Grade

Temporary pipe vault as needed

75 m (30 ft)

or four times the circumference of the largest construction vehicle tire, whichever is greater

15 m (69 ft)

or four times the circumference of the largest construction vehicle tire, whichever is greater

Stabilized Construction Entrance/Exit (Type 1)
# Non-Storm Water Management BMPs

<table>
<thead>
<tr>
<th>ID</th>
<th>BMP Name</th>
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</thead>
<tbody>
<tr>
<td>NS-1</td>
<td>Water Conservation Practices</td>
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<tr>
<td>NS-2</td>
<td>Dewatering Operations</td>
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<td>NS-3</td>
<td>Paving and Grinding Operations</td>
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<td>NS-4</td>
<td>Temporary Stream Crossing</td>
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<td>NS-5</td>
<td>Clear Water Diversion</td>
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<tr>
<td>NS-6</td>
<td>Illicit Connection / Illegal Discharge Detection and Reporting</td>
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<tr>
<td>NS-7</td>
<td>Potable Water / Irrigation</td>
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</tbody>
</table>
## Non-Storm Water Management BMPs

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<tr>
<td>NS-8</td>
<td>Vehicle and Equipment Cleaning</td>
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<td>NS-9</td>
<td>Vehicle and Equipment Fueling</td>
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<tr>
<td>NS-10</td>
<td>Vehicle and Equipment Maintenance</td>
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<td>NS-11</td>
<td>Pile Driving Operations</td>
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<td>NS-12</td>
<td>Concrete Curing</td>
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<td>NS-13</td>
<td>Material and Equipment Use Over Water</td>
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<td>NS-14</td>
<td>Concrete Finishing</td>
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<td>NS-15</td>
<td>Demolition/Removal Over or Adjacent to Water</td>
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<td></td>
<td>Structure D</td>
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</table>
BMP Installation - Non-Storm Water
NS-2 Dewatering Operations

Caltrans Requirements

• Notify District Construction Storm Water Coordinator

• Use Caltrans’ Field Guide to Construction Site Dewatering

• Use where groundwater or accumulated precipitation will be discharged from site

• Addresses sediment only

• Notify RE if pollutant other than sediment is present

• Must comply with applicable permits
BMP Installation – Non-Storm Water
NS-6 Illicit Connection / Illegal Discharge

Caltrans Requirements

• Can be in liquid or solid form
  • Refers to discharges and dumping caused by parties other than contractor
• Inspect site before beginning of job
• Proceed with caution – notify RE, and CSWC at time of discovery
BMP Installation - Non-Storm Water
NS-9 Vehicle and Equipment Fueling

Caltrans Requirements
- Fuel on site only when impractical to go off site
- Use a designated area
- Clean up materials and spill kits available
- Protect fueling area from run-on and run-off

Mobile fueling operations require BMPs
## Waste Management and Material Pollution Control BMPs

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<tr>
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<td>Material Delivery and Storage</td>
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<td>WM-2</td>
<td>Material Use</td>
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<td>WM-3</td>
<td>Stockpile Management</td>
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<tr>
<td>WM-4</td>
<td>Spill Prevention and Control</td>
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<td>WM-5</td>
<td>Solid Waste Management</td>
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<td>WM-6</td>
<td>Hazardous Waste Management</td>
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<td>WM-7</td>
<td>Contaminated Soil Management</td>
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<td>WM-8</td>
<td>Concrete Waste Management</td>
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<td>WM-9</td>
<td>Sanitary / Septic Waste Management</td>
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<tr>
<td>WM-10</td>
<td>Liquid Waste Management</td>
</tr>
</tbody>
</table>
BMP Installation - Waste Management
WM-1 Material Delivery and Storage

Caltrans Requirements
• Facility shall provide for a spill containment volume able to contain precipitation from a 24-hour, 25-year storm, plus 10% of the aggregate volume of all containers or 100% of the capacity of the largest container whichever is greater

• Facility shall be impervious to the materials for 72 hours

Substances that require storage in a containment facility

Well maintained temporary containment facility
BMP Installation - Waste Management
WM-1 Material Delivery and Storage

Caltrans Requirements
• Liquids, petroleum products, and substances listed in 40 CFR Parts 110, 117, and 302 require containment
• During rainy season provide permanent cover and side wind protection

Temporary containment facility for fuel
Section 1: Water Pollution Control

BMP Installation - Waste Management
WM-3 Stockpile Management

Caltrans Requirements

• Year-round requirement
• Locate a minimum of 15m away from concentrated flows of storm water, drainage courses, and inlets
• Protect from run-on with a perimeter sediment barrier
BMP Installation – Waste Management

WM-5 Solid Waste Management

Caltrans Requirements

• Solid waste includes litter generated by the public
• Dumpsters of sufficient size and number shall be provided
• Segregate potentially hazardous waste from non-hazardous waste
• Remove from site on a biweekly basis or as directed by the RE
BMP Installation - Waste Management
WM-8 Concrete Waste Management

Controlled concrete washout

Uncontrolled concrete washouts
BMP Installation - Waste Management
WM-8 Concrete Waste Management

Below Grade concrete washout

Above Grade concrete washout

Caltrans Requirements
• PCC and AC waste shall not be allowed to enter storm drains and watercourses
• Line all washouts with 10-mil polyethylene sheeting
• Install signs designating temporary washout areas
• Locate washout facilities a minimum of 15m (50ft) from storm drains, open drainage facilities, and water courses
BMP Installation - **Waste Management**

**WM-9 Sanitary / Septic Waste Management**

**Caltrans Requirements**
- Locate sanitary facilities away from storm drains, water courses
- Secure if subject to high wind
- Contractor to monitor weekly

Locate temporary sanitary facilities away from drainage facilities
Maintenance of BMPs is a critical requirement for an effective water pollution control program.
Water Quality Sampling and Analysis

- First things first
  - Caltrans personnel will not be collecting any samples – this is the responsibility of the contractor or their lab
  - Sampling and Analysis requirements apply only to SWPPP projects
Resolution 2001-046

- San Francisco Bay Keepers lawsuit
- Modification to California's General Construction Permit Monitoring and Reporting Section
- Requires that permittees implement specific sampling and analytical procedures
- Determine whether BMPs implemented on construction site are
  - Preventing further impairment of water bodies by sediment
  - Preventing other pollutants from causing or contributing to exceedances of water quality objectives
Water Quality Sampling and Analysis

What are these new Sampling and Analysis requirements intended to do?

- The new requirements are intended to determine if BMPs implemented on the construction site are effective for preventing sediment/silt and other non-visible pollutants from impacting water quality objectives.
Water Quality Sampling and Analysis

Pollutants Requiring Sampling

Non-Visible

Sediment
Non-Visible Pollutants

- They are not visually detectable in storm water discharges
  - Examples: Acids, Solvents, Lime, Gypsum, Copolymer
    - Toxic properties: Caustic, Carcinogenic, Flammable etc.
Water Quality Sampling and Analysis

Make sure potential non-visible pollutants are:

- Cleaned-up
- Covered
- Contained

C^3
Construction Period Responsibilities

- Cover as topic item in pre-Construction meeting
- Review & approve plan
- Inspections - Caltrans self enforcement
- Request, review, & approve amendments for plan deficiencies
Construction Period Responsibilities

- Report illegal dumping
- Complete annual certificates (June 15th)
- Report non-compliance events to RE
- Complete Notice of Completion of Construction (NCC) at end of Construction
Inspections

● Frequency
  - Prior to anticipated storm events
  - During extended storm events (once each 24-hour period)
  - After actual storm events
  - As specified in the Special Provisions
Notice Of Discharge

- Action required upon discovery of a discharge or if the project receives a written notice or order from any regulatory agency.

- Failure to report is subject to $27,500 fine.
Notice Of Discharge

Applicable Discharges:
- Storm water discharges that contain sediment from DSAs due to the absence of required, failed or damaged BMPs
- Prohibited non-storm water discharges
- Discharges that violate 404 permits or 401 certifications
Inspection Form

Revised Storm Water Quality Inspection Checklist available on Caltrans website

www.dot.ca.gov/hq/construc/sample_analysis_bulletin.doc

Special Provisions or Conceptual SWPPP may require different form
Section 1: Water Pollution Control

Documentation

File Organization

- Category 20
- Inspections - Daily Reports
- Correspondence
- Certifications – Annual due June 15
- SWPPP / WPCP
- Amendments
- Photographs
- Notice of Completion
- Retain for Three Years