Water Pollution Control for Caltrans Construction Personnel

CTSW-OT-06-137.17.4

Introduction: Your Facilitators

- Who am I?
- What is my background?
- What is my storm water background?

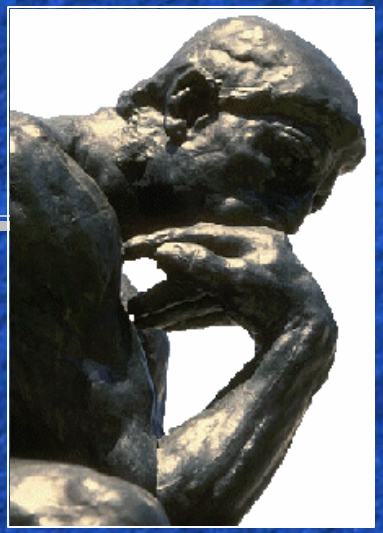
Introduction: About You

- Who are you?
- What is your storm water background?
- What do you want to learn from this class?

Why Are You Here?

- To Learn About Past and Current Regulatory Issues
- To Comply With Permit Requirements for Training
- To Review Caltrans' General Requirements for Water Pollution Control on Construction Sites
- To Be Introduced to the New Specifications and Manuals

What You Will Learn



- Why Water Pollution Should be Prevented
- Monetary Fines are Real
- Which Documents Govern on Caltrans Construction Sites
- Correct and Incorrect BMP Installations
- An Introduction to Sampling and Analysis Plans
- How to Prepare for and Conduct WPC Inspections
- What to Expect and Do During Regulatory Inspections
- How to Handle the Paperwork

Introduction: Course Administration

- Sign-in / Attendance Forms
- Breaks
- Restrooms
- Emergency Exits
- Classroom Etiquette

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

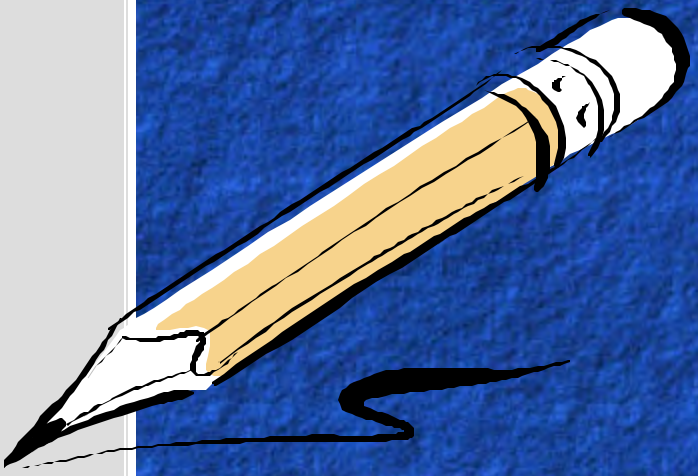
Glossary

- **SAP** – Sampling and Analysis Plan
- **SWMP** - Storm Water Management Plan
- **SWPPP** - Storm Water Pollution Prevention Plan
- **SWRCB** - State Water Resources Control Board
- **WPCM** – Water Pollution Control Manager
- **WPCP** - Water Pollution Control Program

Taking the Pre-Test

- Evaluates your current level of knowledge
- Questions cover course topics
- Time limit: 15 minutes
- Will take the same test at the end of the course to evaluate what you learned
- Will review answers at the end of the course

Pre-Test



Introduction

- **Course Highlights**
  - Introduction
  - The Law
  - Regulatory Fines
  - Permits, Specs and Manuals
  - Construction Site BMPs
  - Introduction to Water Quality Sampling and Analysis
  - Inspection Procedures
  - Communication
  - Documentation

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

Introduction

Water Pollution Prevention

- Overall Purpose
  - ⇒ To Reduce Potential Environmental and Human Health Impacts
  - ⇒ Comply with State and Federal Laws

Introduction

- 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

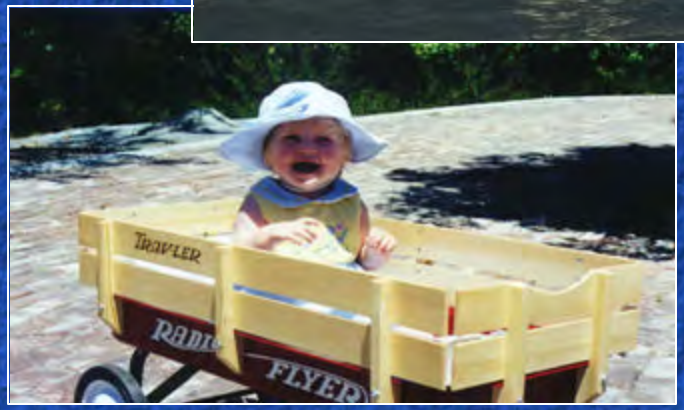
- Construction site erosion can be 10 to 1,000 times greater than nature's erosion process

  Ohio Department of Transportation

Introduction

Construction Site Water Pollution Prevention

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



Introduction

- **Course Highlights**
  - Introduction
  - **The Law**
  - Regulatory Fines
  - Permits, Specs and Manuals
  - Construction Site BMPs
  - Introduction to Water Quality Sampling and Analysis
  - Inspection Procedures
  - Communication
  - Documentation

The Law

- 1972 Federal Clean Water Act (CWA)
  - Amend to Prohibit Any Discharge of Pollutants from a Point Source
- 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
  - Amended 1999, modified in 2001 and 2003
- 1999 Caltrans NPDES Permit was issued –03 Permit
- Local MS4 Permits (SWMP)

The Law

- 1972 Federal Clean Water Act (CWA)
  - Amend to Prohibit Any Discharge of Pollutants from a Point Source
- 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
  - Amended 1999, modified in 2001 and 2003
- 1999 Caltrans NPDES Permit was issued –03 Permit
- 2005 Lake Tahoe Hydrologic Unit Permit
  - = 1 acres of soil disturbance

Who Enforces These Laws?

- EPA
- SWRCB / RWQCB
- Other Agencies

- **Private Citizens**
  - ⇒ NRDC
  - ⇒ Baykeepers
  - ⇒ Other Watchdog Groups

Introduction

- **Course Highlights**
  - Introduction
  - The Law
  - **Regulatory Fines**
  - Permits, Specs and Manuals
  - Construction Site BMPs
  - Introduction to Water Quality Sampling and Analysis
  - Inspection Procedures
  - Communication
  - Documentation

What If We Don't Comply?

- Fines to $32,500 Per Day / Occurrence – Per CWA
- Fines to $15,000 Per Day and $20 a gallon – Per Porter Cologne Act
- Current Regulatory Atmosphere
  - "The Learning Curve is Over"

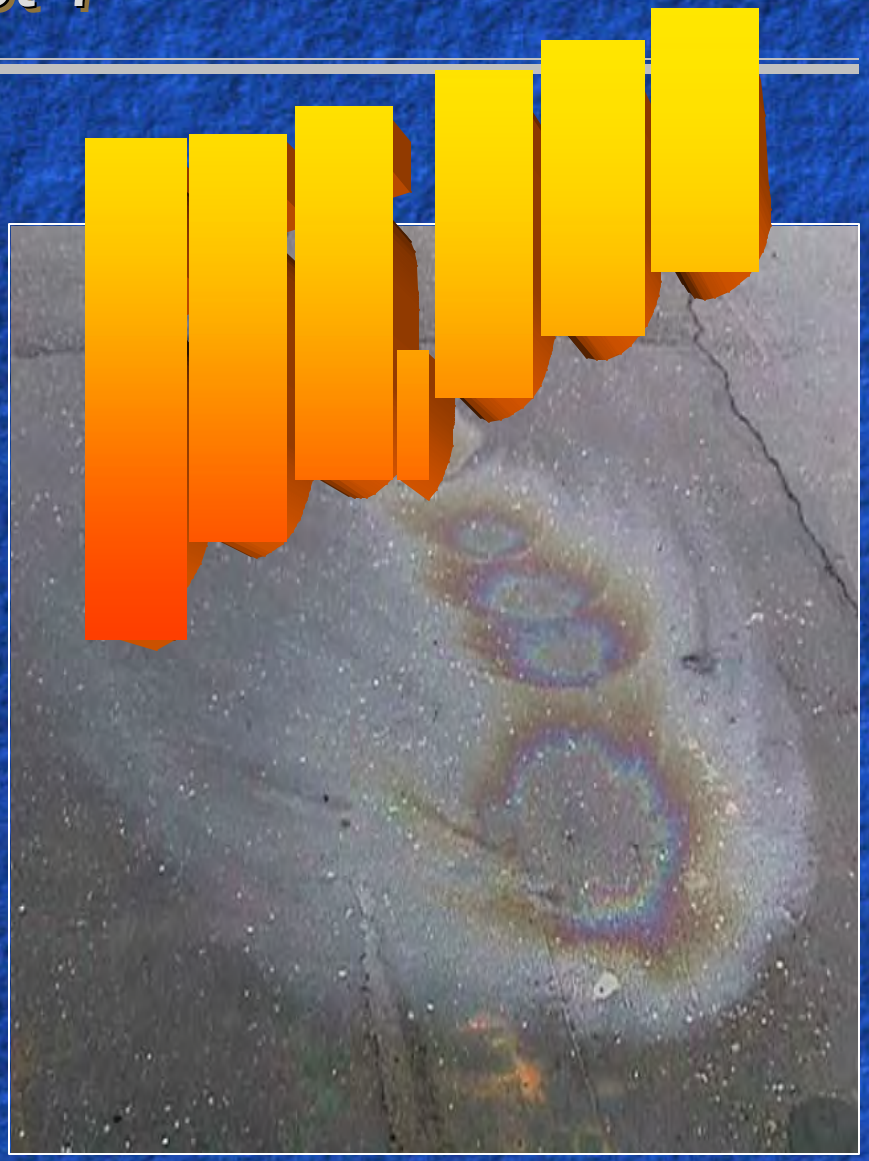
Violation and Order for Compliance 1998 District 12

USEPA Region 9 Cited Contractor and Agency as Follows:

- "…excessive amounts of sediment to the storm drain…"

Violation and Order for Compliance 1998 District 7

- "…excessive amounts of sediment to the storm drain…"
- "…discharge of false work and miscellaneous construction debris to ...Creek and ... River."
- " A sheen of fuel floating on the storm water ... 40 feet from a drain inlet."



Violation and Order for Compliance 2000 County of Sacramento

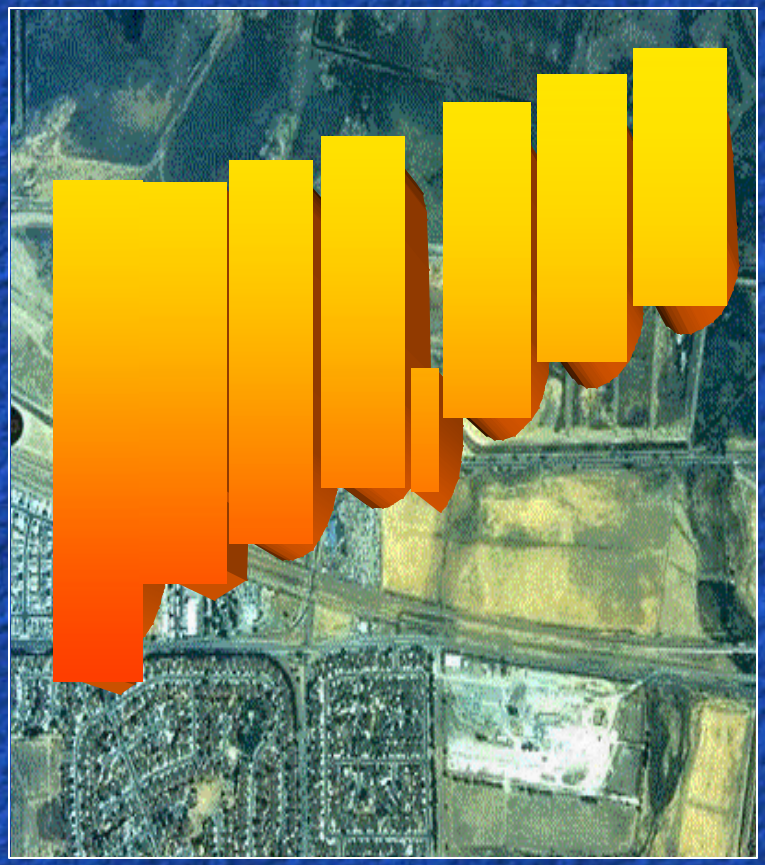
- Lower Laguna Bypass Roadway Construction
  - ⇒ "Violated permit for discharges of sediment"
  - ⇒ "Failed to Develop a SWPPP"
- County waived the appeal and paid the penalty

Violation and Order for Compliance 2000 Home Builder…Redding

- "No effective erosion control and minimal sediment control measures…."
- Notes:
  - EPA visited the site in 1998 and 1999
  - RWQCB issued two prior violation notices that went unheeded

Violation and Order for Compliance 2001 Home Builder…Central Valley

- No SWPPP
- Non-compliance for two years
- Discharge to a sensitive habitat

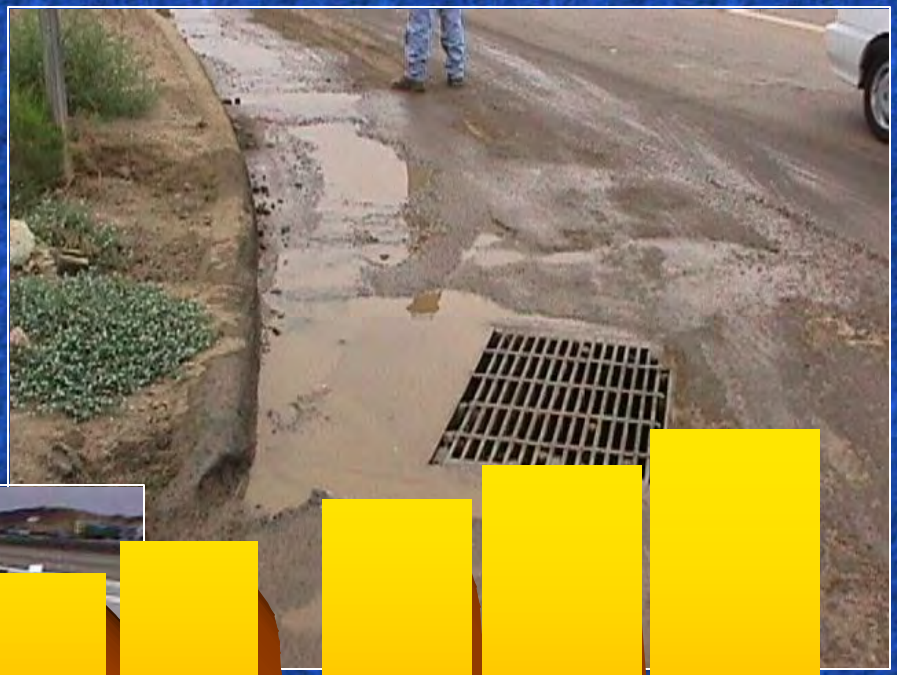


Violation and Order for Compliance 2000 Yucaipa Valley Water District

- **Discharging Water with Slightly Elevated Levels of:**
  - **Coliform**
  - **Turbidity**
  - **Nitrogen**
- **"…to protect those who wade or play in San Timoteo Creek…"**

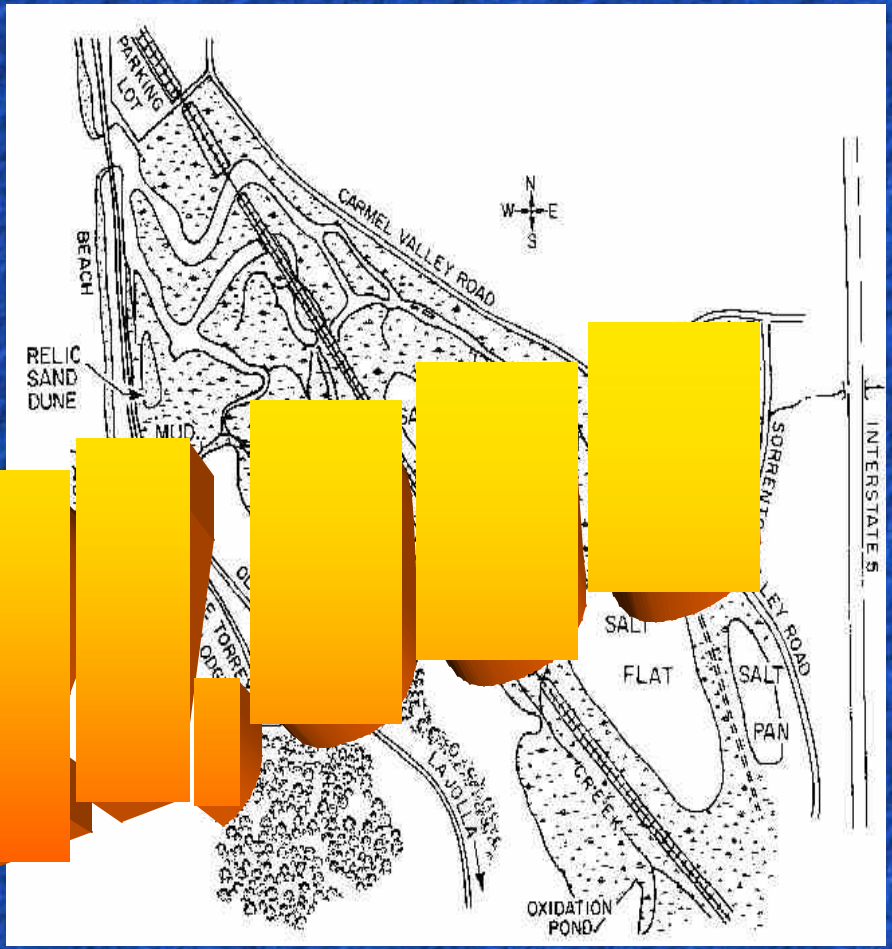
Violation and Order for Compliance 1998 District 11

- "..sloppy runoff-control practices at Caltrans construction sites, drainage facilities and maintenance yards"
  San Diego Baykeeper



Violation and Order for Compliance 2000 City of San Diego

- "Failing to curb erosion along a dirt road above the Los Penasquitos Lagoon"



Introduction

- **Course Highlights**
  - Introduction
  - The Law
  - Regulatory Fines
  - **Permits, Specs and Manuals**
  - Construction Site BMPs
  - Introduction to Water Quality Sampling and Analysis
  - Inspection Procedures
  - Communication
  - Documentation

Permits

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

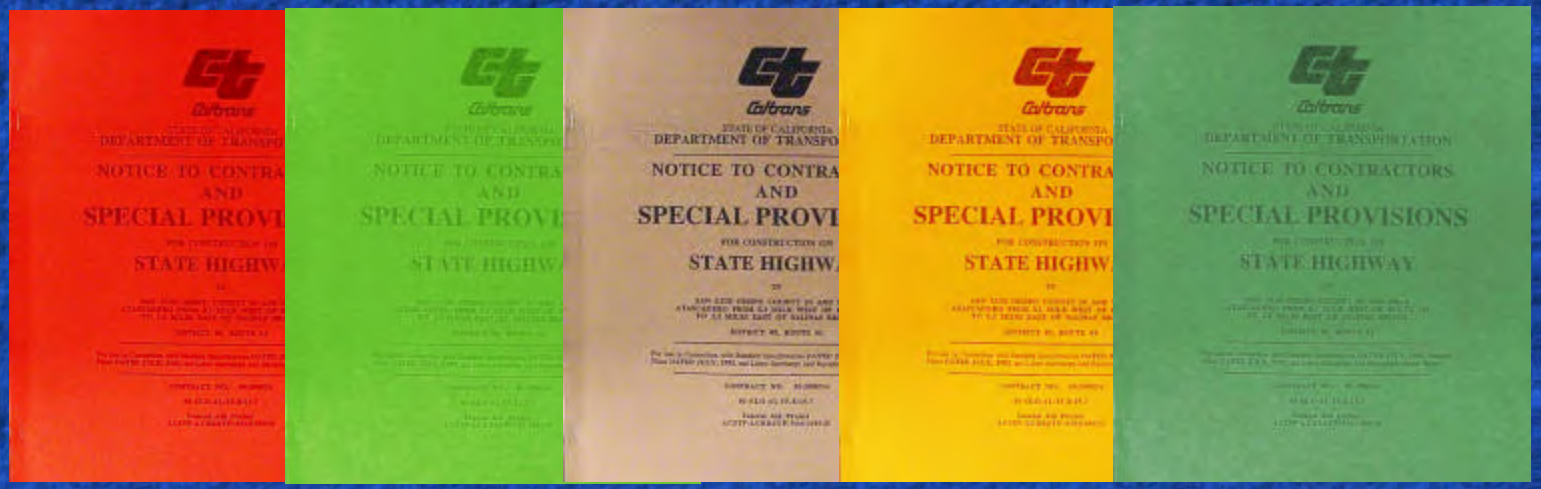
  - The 02 Permit was amended in 2001 to include monitoring, and in 2003 to cover 1 acre or more soil disturbance
  - The 03 Permit requires that Caltrans' construction program complies with the General Construction Activity Permit for construction sites that disturb 1 acres or more
  - Both permits can be viewed and downloaded from the State Water Resources Control Board website, www.swrcb.ca.gov

Specifications

- Caltrans Standard Specifications, Section 7-1.01G
  - Requires contractors to prepare and implement a program to control water pollution effectively during the construction of **all** projects.
  - SWPPP/WPCP and BMPs must meet requirements of this section
  - Key Points
    - 70,000 m^2 (17 acres) rule
    - Scheduling
- Sections 10,16,18, and 20

Contract Special Provisions

- **Contract Special Provisions - Section 10**
  - Issued to satisfy the NPDES Permit requirements
  - Defines water pollution control requirements



Contract Special Provisions

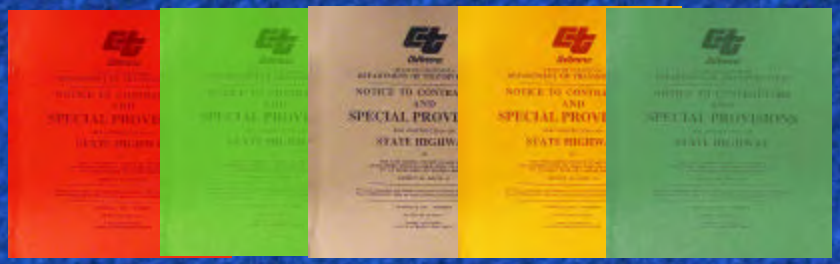
- **Contents of Water Pollution Control Section**
  - ⇒ Identifies plan required (SWPPP or WPCP)
  - ⇒ Statewide or Local Permit, Other Agency Permits
  - ⇒ Identifies Caltrans Storm Water Quality Handbooks – 2000 or 2003

Contract Special Provisions

- **Contents of Water Pollution Control Section (Continued)**
  - ⇒ The SWPPP/WPCP contents and approval process
  - ⇒ Additional required BMPs
  - ⇒ Identifies cost breakdown requirements
  - ⇒ Identifies Permanent Control Measures
  - ⇒ Designation of a WPC Manager

Contract Special Provisions

- **Contents of Water Pollution Control Section (Continued)**
  - Defines active and non-active Disturbed Soil Areas (DSAs)
  - Defines the rainy and non-rainy seasons
  - Defines maximum active DSAs during the rainy season – usually 5 acres
  - Rainy season implementation plan

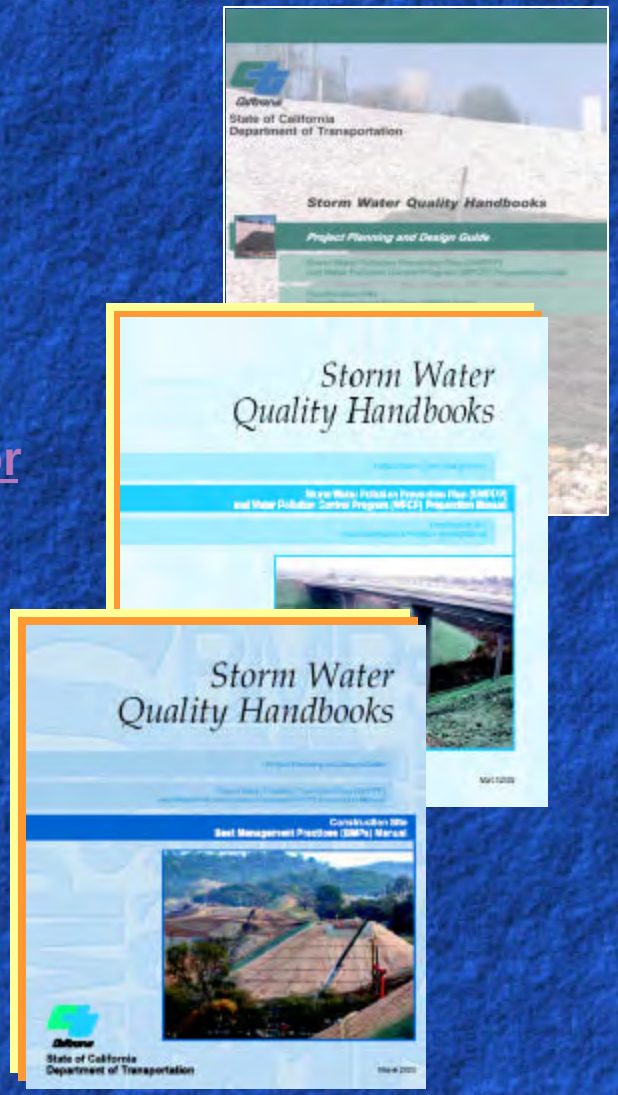


Contract Special Provisions

- **Contents of Water Pollution Control Section (Continued)**
  - ⇒ Inspection and maintenance requirements
  - ⇒ Move-In/Out (Permanent Erosion Control)
  - ⇒ Maintenance cost sharing on some BMPs
  - ⇒ Progress Payments / Retention
  - ⇒ Runoff Monitoring

Manuals

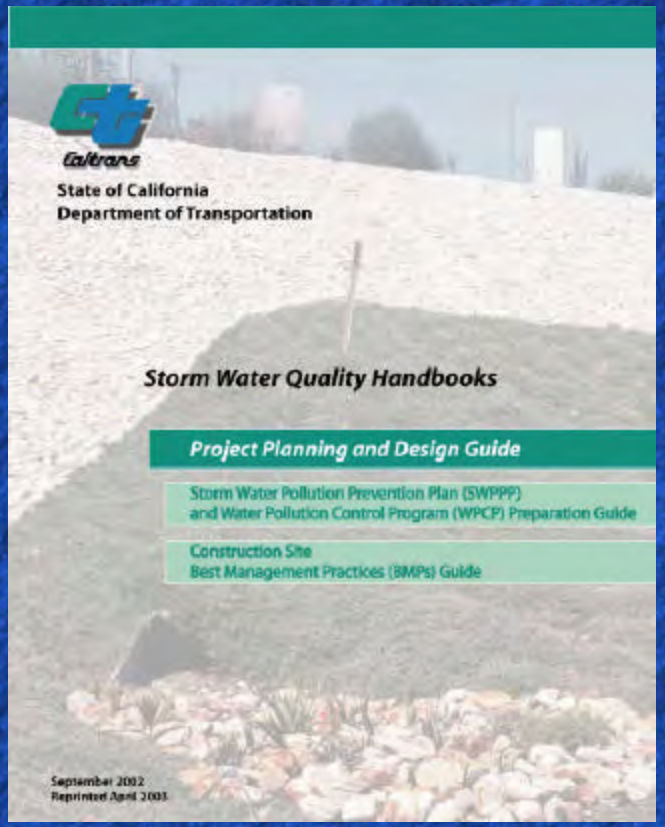
- Caltrans Storm Water Quality Handbooks
  - ⇒ Project Planning and Design Guide
  - ⇒ SWPPP / WPCP Preparation Manual
  - ⇒ Construction Site BMPs Manual
    - **Get Manuals online at http://www.dot.ca.gov/hq/construc/stormwater/manuals.htm or hard copies are available from Caltrans Publications**
- Construction Manual
- Construction Site BMP Field Manual and Troubleshooting Guide
- Dewatering Guide
- Guidance for Temporary Soil Stabilization



Manuals

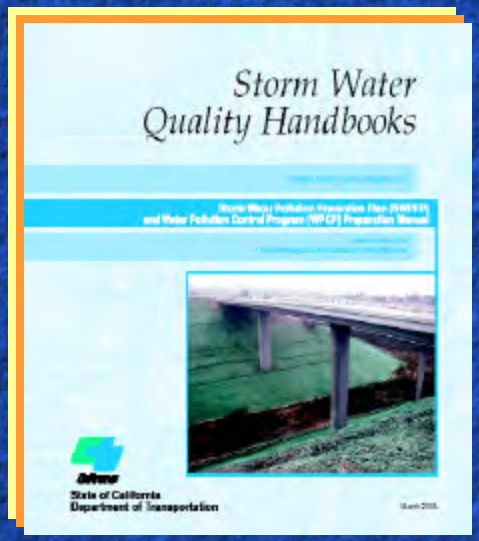
- Caltrans Storm Water Quality Handbooks
  - Project Planning and Design Guide
  - SWPPP / WPCP Preparation Manual
  - Construction Site BMPs Manual

- Construction Manual
- Construction Site BMP Field Manual and Troubleshooting Guide
- Dewatering Guide
- Guidance for Temporary Soil Stabilization



Manuals

- Caltrans Storm Water Quality Handbooks
  - ⇒ Project Planning and Design Guide
  - ⇒ SWPPP / WPCP Preparation Manual
  - ⇒ Construction Site BMPs Manual

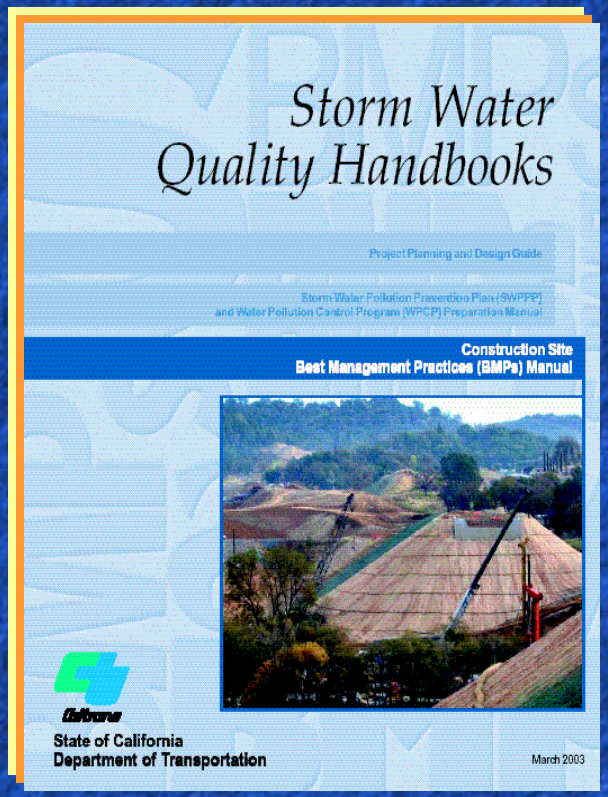


- Construction Manual
- Construction Site BMP Field Manual and Troubleshooting Guide
- Dewatering Guide
- Guidance for Temporary Soil Stabilization

Manuals

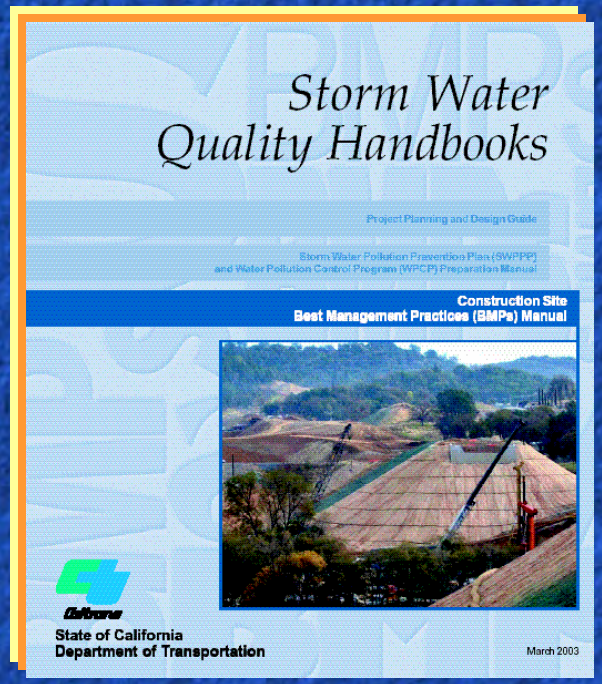
- Caltrans Storm Water Quality Handbooks
  - ⇒ Project Planning and Design Guide
  - ⇒ SWPPP / WPCP Preparation Manual
  - ⇒ Construction Site BMPs Manual

- Construction Manual
- Construction Site BMP Field Manual and Troubleshooting Guide
- Dewatering Guide
- Guidance for Temporary Soil Stabilization



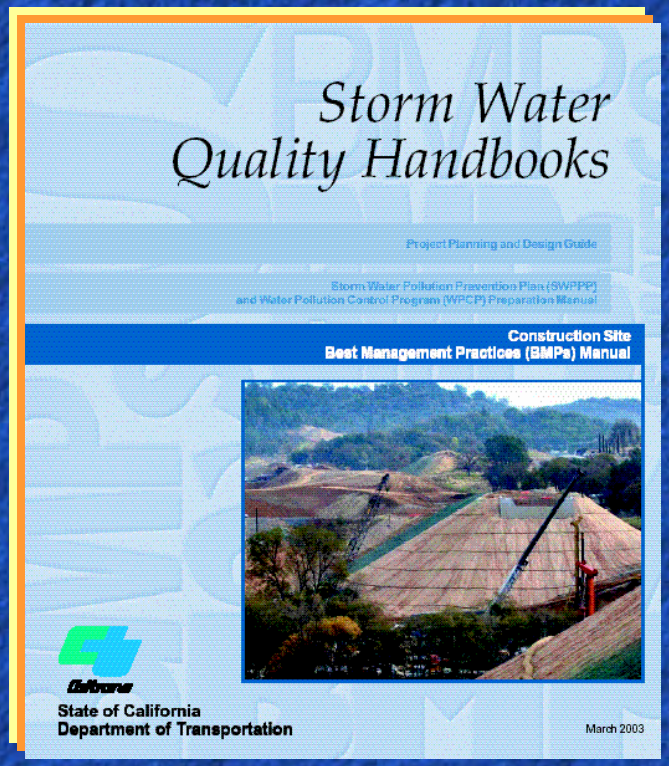
Manuals

- Construction Site BMPs Manual
  - Guidelines for the selection and implementation of construction site BMPs
  - Major changes compared to 2000 Handbooks
    - Revised Rainy Season/Rainfall Area Definitions
    - Procedures for Rainfall Area 7
    - BMP Placement on Slopes
    - EC and SC Requirements for DSAs



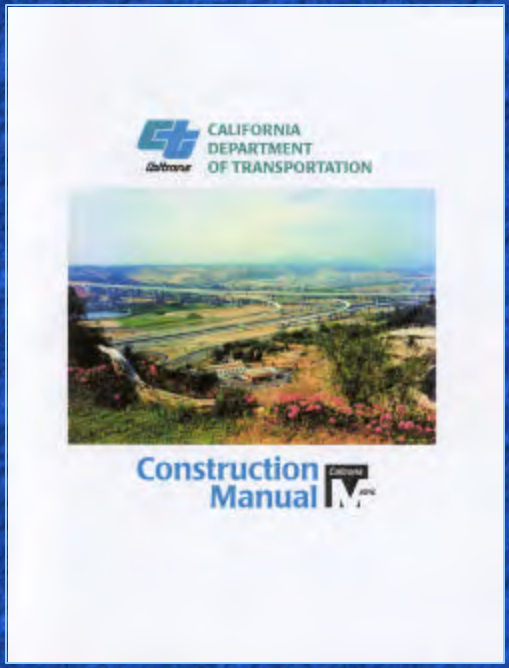
Manuals

- Construction Site BMPs Manual
  - Major changes compared to 2000 Handbooks (cont)
    - Selection of Temporary Soil Stabilization Controls
    - BMP Working Details
    - BMP Inspections
    - New BMPs



Manuals

- Caltrans Storm Water Quality Handbooks
  - ⇒ Project Planning and Design Guide
  - ⇒ SWPPP / WPCP Preparation Manual
  - ⇒ Construction Site BMPs Manual



- Construction Manual
- Construction Site BMP Field Manual and Troubleshooting Guide
- Dewatering Guide
- Guidance for Temporary Soil Stabilization

Manuals

- Caltrans Storm Water Quality Handbooks
  - Project Planning and Design Guide
  - SWPPP / WPCP Preparation Manual
  - Construction Site BMPs Manual

State of California
Department of Transportation

Construction Site
Best Management Practice
(BMP)
Field Manual
and
Troubleshooting Guide

CTSW-RT-02-007

January 2003

- Construction Manual
- Construction Site BMP Field Manual and Troubleshooting Guide
- Dewatering Guide
- Guidance for Temporary Soil Stabilization

Manuals

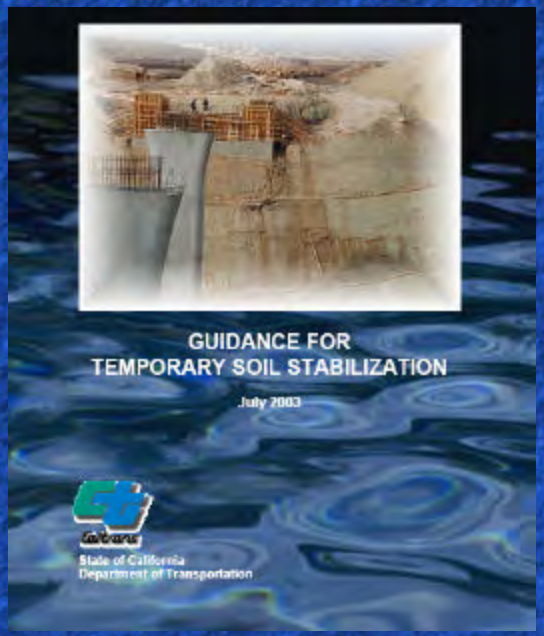
- Construction Site BMP Field Manual and Troubleshooting Guide
  - ⇒ “Tool Box” for field personnel
  - ⇒ Principles of Erosion and Sediment Control
  - ⇒ Trouble Shooting Guide
  - ⇒ BMP Selection Installation and Maintenance

Manuals

- Caltrans Storm Water Quality Handbooks
  - Project Planning and Design Guide
  - SWPPP / WPCP Preparation Manual
  - Construction Site BMPs Manual
- Construction Manual
- Construction Site BMP Field Manual and Troubleshooting Guide
- Dewatering Guide
- Guidance for Temporary Soil Stabilization

Manuals

- Caltrans Storm Water Quality Handbooks
  - Project Planning and Design Guide
  - SWPPP / WPCP Preparation Manual
  - Construction Site BMPs Manual
- Construction Manual
- Construction Site BMP Field Manual and Troubleshooting Guide
- Dewatering Guide
- Guidance for Temporary Soil Stabilization



Manuals

- **Get Manuals online at http://www.dot.ca.gov/hq/construc/stormwater/manuals.htm or hard copies are available from Caltrans Publications**

Who Wants To Be A Millionaire?

Millionaire Review Question #1

What agency has the authority to enforce the Clean Water Act in California?

A) RWQCB

B) Dept of Fish and Game

C) EPA

D) A, B & C

Millionaire Review Question #2

Construction site erosion can be how many times greater than nature's erosion process?

a) 10 - 100

b) 10 - 1,000

c) Mach 2

d) 100 - 10,000

Millionaire Review Question #3

In the Standard Specifications which section Requires contractors to prepare and implement a program to control water pollution?

a) 16-2.01H

b) 20-1.09P

c) 10-1.01A

d) 7-1.01G

Millionaire Review Question #4

The SWPPP / WPCP Preparation Manual **is one of the two CT Storm Water Quality Handbooks for Construction. What is the other one?**

a) Construction Manual

b) Construction Site BMP Manual

c) Construction Site ESC Manual

d) ESC Practices Manual

Millionaire Review Question #5

According to the *StormWater/CleanWater Protection Program:*

One gallon of oil has the potential to contaminate up to how many gallons of water?

a) 100,000

b) 1.5 million

c) 1 million

d) 500,000

Millionaire Review Question #6

Water pollution control requirements are found in this section of the Special Provisions?

a) 16

b) 18

c) 10

d) 5

Video

- **Water Pollution Controls While you Work; Temporary Controls on Highway Construction Sites**

Construction Site Best Management Practices

- **Course Highlights**
  - Introduction
  - The Law
  - Regulatory Fines
  - Permits, Specs and Manuals
  - **Construction Site BMPs**
  - Introduction to Water Quality Sampling and Analysis
  - Inspection Procedures
  - Communication
  - Documentation

Construction Site Best Management Practices

- **Section Highlights**
  - BMP Installation
  - Maintenance of BMPs
  - Missing and Improperly Implemented BMPs

Construction Site Best Management Practices

- **BMP defined – Any program, technology, process, siting criteria, operating method, measure, or device that controls, prevents, removes, or reduces pollution**

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

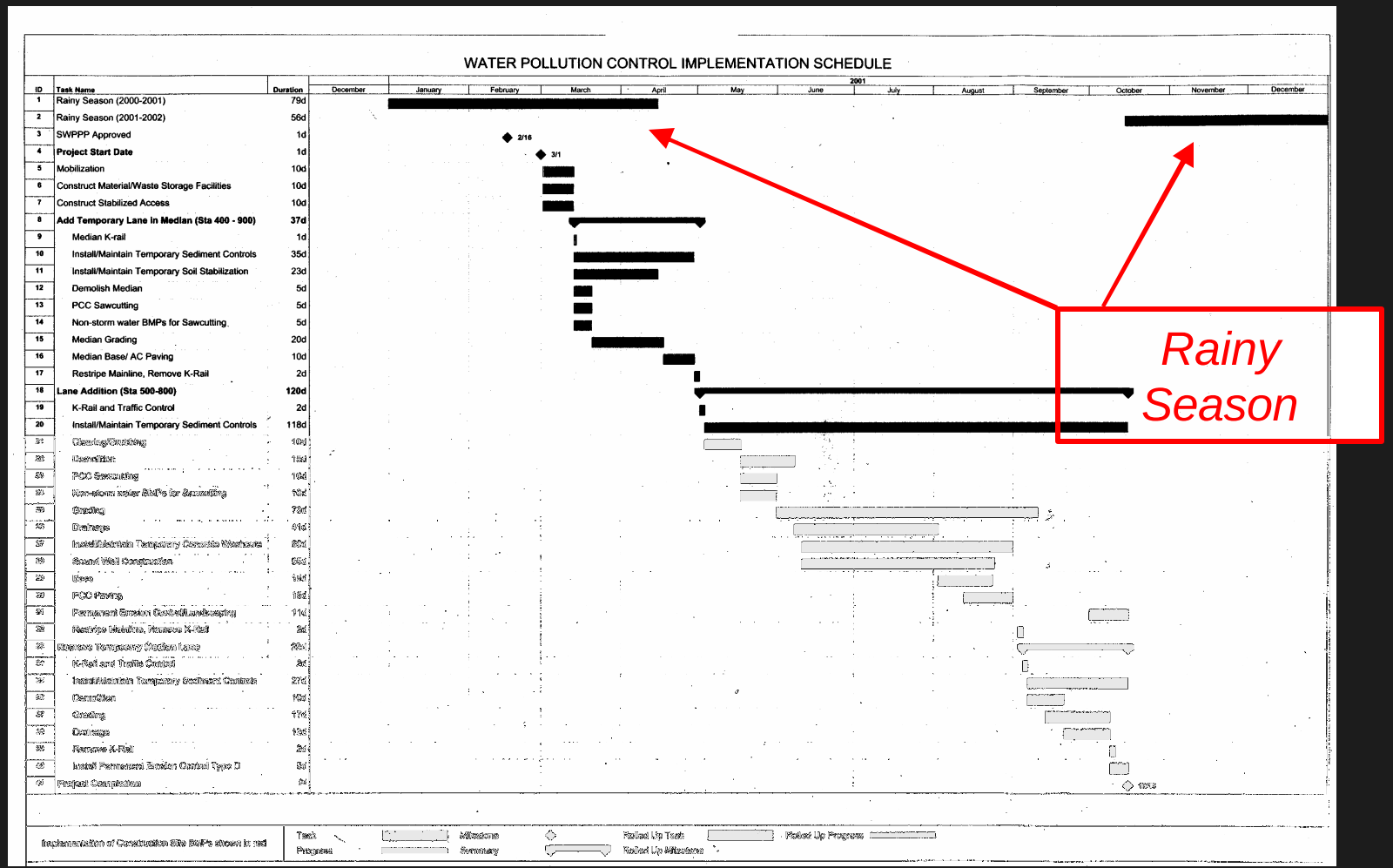
Temporary Soil Stabilization

ID	BMP Name
SS-1	Scheduling
SS-2	Preservation of Existing Vegetation
SS-3	Hydraulic Mulch
SS-4	Hydroseeding
SS-5	Soil Binders
SS-6	Straw Mulch
SS-7	Geotextiles, Plastic Covers, & Erosion Control Blankets/Mats
SS-8	Wood Mulching
SS-9	Earth Dikes/Drainage Swales & Lined Ditches
SS-10	Outlet Protection/Velocity Dissipation Devices
SS-11	Slope Drains
SS-12	Streambank Stabilization

BMP Use - Soil Stabilization

SS-1 Scheduling

Example of Graphical Schedule



BMP Installation - Soil Stabilization

SS-3 Hydraulic Mulch

Hydraulically applied mulch

Caltrans Requirements

- Mulch must be approved by Engineer or CSWC; paper mulches not permitted
- Prior to application, roughen embankment and fill areas
- Hydraulic matrices need 24 hours to dry before rainfall occurs to be effective
- Application rates per Standard Specs 20-2.07 and 2.08, SS3 or manufacturers recommendation

BMP Installation - Soil Stabilization
SS-4 Hydroseeding

Hydroseeded slopes show vegetation growth

Caltrans Requirements

- Seed mix must comply with the Standard Specifications and Special Provisions
- Hydroseeding mixture requires approval by the Landscape Architect and CSWC
- Prior to application, roughen embankment and fill areas; crimping punching required
- Limited to use when adequate time for growing is allowed
- Steep slopes are difficult to protect with temporary seeding

BMP Installation - Soil Stabilization
SS-4 Hydroseeding

Unstabilized slope vs. Stabilized slope

BMP Installation - Soil Stabilization
SS-5 Soil Binders

Application of Soil Binder

Caltrans Requirements

- Are temporary and may require reapplication; especially after storm event
- Soil type will dictate which kind of soil binder to use
- Must be environmentally benign, and shall not stain paved or painted surfaces; sampling may be required
- Do not apply during or immediately before a rainfall
- Application rates per SS5

BMP Installation - Soil Stabilization
SS-6 Straw Mulch

Effective Combination of Erosion and Sediment Control

Caltrans Requirements

- Apply straw at a minimum rate of 3,570 kg/ha (2 tons/acre) or as per Special Provisions
- A tackifier (glue) is the preferred method of anchoring straw
- Straw needs to last long enough to achieve erosion control objective

BMP Installation - Soil Stabilization

Lack of soil stabilization

BMP Installation - Soil Stabilization SS-7 Geotextiles, Plastic Covers, EC Blankets/Mats

Erosion Control Blankets

Caltrans Requirements

- Used when disturbed soil may be difficult to stabilize
- Materials selected by the contractor must be approved by the Engineer
- Certifications of compliance shall be in accordance with Section 6-1.07
- Blankets and mats must be removed and disposed of prior to application of permanent soil stabilization unless approved by RE

BMP Installation – Soil Stabilization SS-9 Earth Dikes/Drainage Swales/Lined Ditches

Caltrans Requirements

- Conveyances shall be stabilized
- Not suitable for trapping sediment
- Do not divert runoff onto other property

BMP Installation – Soil Stabilization SS-9 Earth Dikes/Drainage Swales/Lined Ditches

- **Collect runoff from deck cure**

Temporary Sediment Control

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

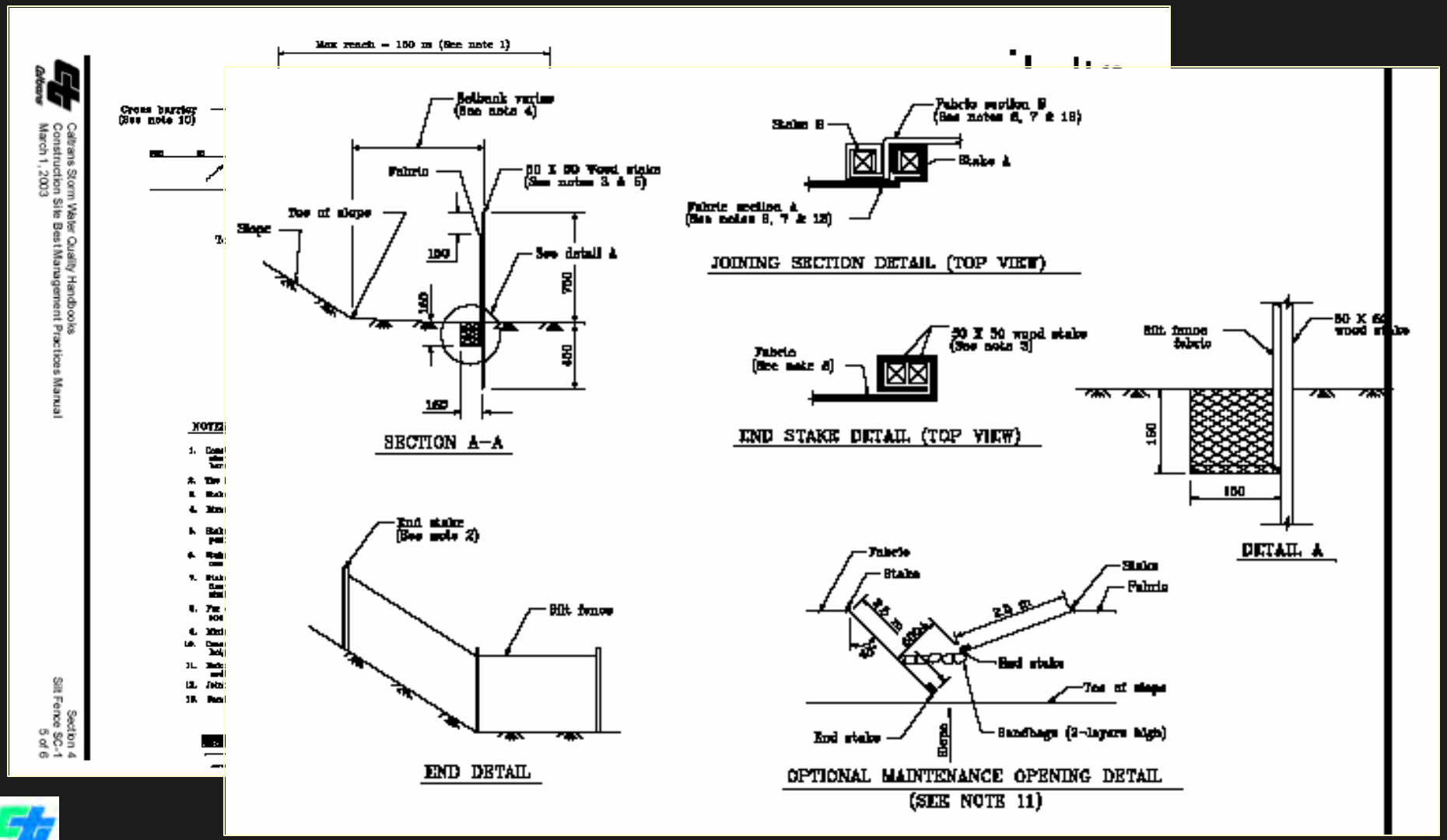
BMP Installation - Sediment Controls SC-1 Silt Fence

Incorrect installation of silt fence, bottom portion not properly keyed in, improper overlap

Caltrans Requirements

- Not effective unless keyed in
- Locate on level contours
- Use along the perimeter of a project
- Don't use in streams, channels, anywhere flow is concentrated, or where subject to creeping, slumping, or landslide
- Locate in areas suitable for ponding and sediment deposition
- Maintain to provide an adequate sediment holding capacity

BMP Installation - Sediment Controls SC-1 Silt Fence



BMP Installation - Sediment Controls
SC-1 Silt Fence, SS-6 Straw Mulch

Correct installation of silt fence on a slope stabilized with Straw Mulch

Straw Mulch application

BMP Installation - Sediment Controls

BMP Installation - Sediment Controls

Lack of sediment control

BMP Installation - Sediment Controls

SC-3 Sediment Trap

Sediment Trap

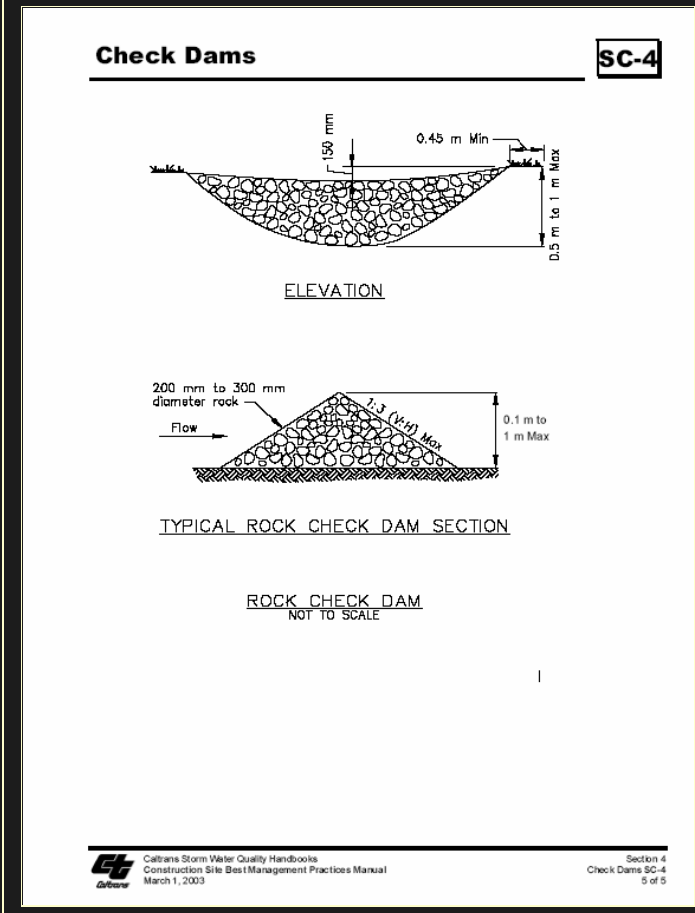
Requirements

- Size limited by availability of right-of-way
- Not appropriate for drainage areas greater than 5 acres
- If captured runoff has not completely infiltrated within 72 hours dewater trap
- Safety fencing may be required

BMP Installation - Sediment Controls
SC-4 Check Dams

Caltrans Requirements

- Don't use in live streams or channels
- Not to be constructed from straw bales or a silt fence
- High flows shall safely flow over check dam without upstream flooding or damage to check dam
- Backwater from downstream check dam shall reach toe of upstream dam



BMP Installation - Sediment Controls
SC-5 Fiber Rolls

Incorrect installation of fiber rolls; too far apart, not trenched in

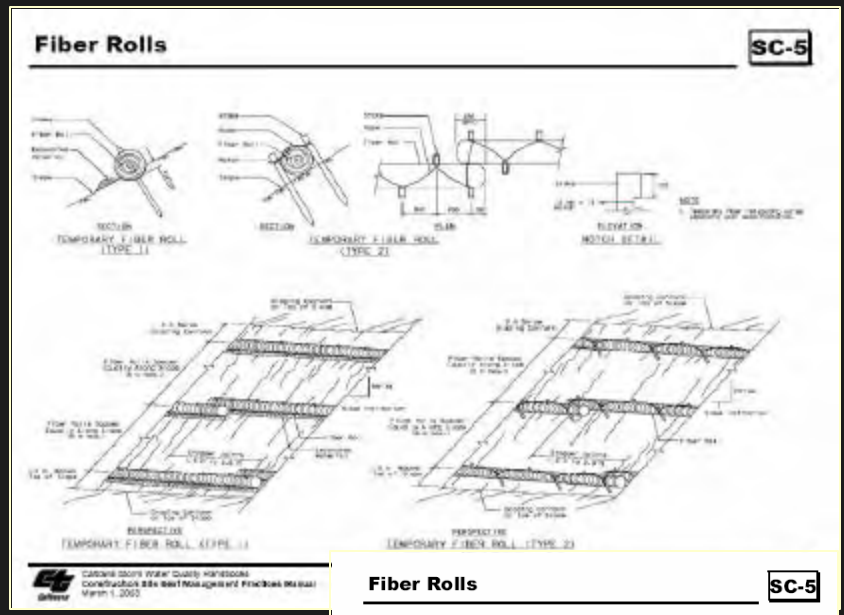
Caltrans Requirements

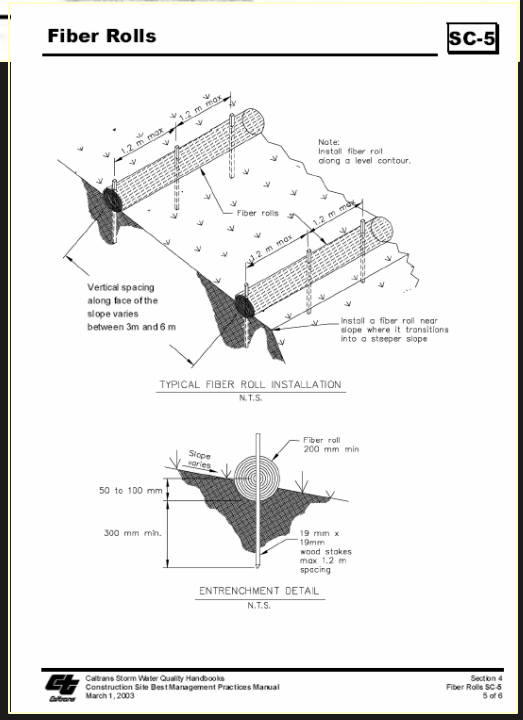
- Use along the top, face, and at grade breaks of exposed and erodible slopes
- Use along the perimeter of a project
- Locate on level contours
- Use around temporary stockpiles
- Must be trenched in and overlapped

BMP Installation – Sediment Controls

SC-5 Fiber Rolls

Correct installation of fiber rolls





BMP Installation - Sediment Control
SC-7 Street Sweeping and Vacuuming

Street sweeping and vacuuming

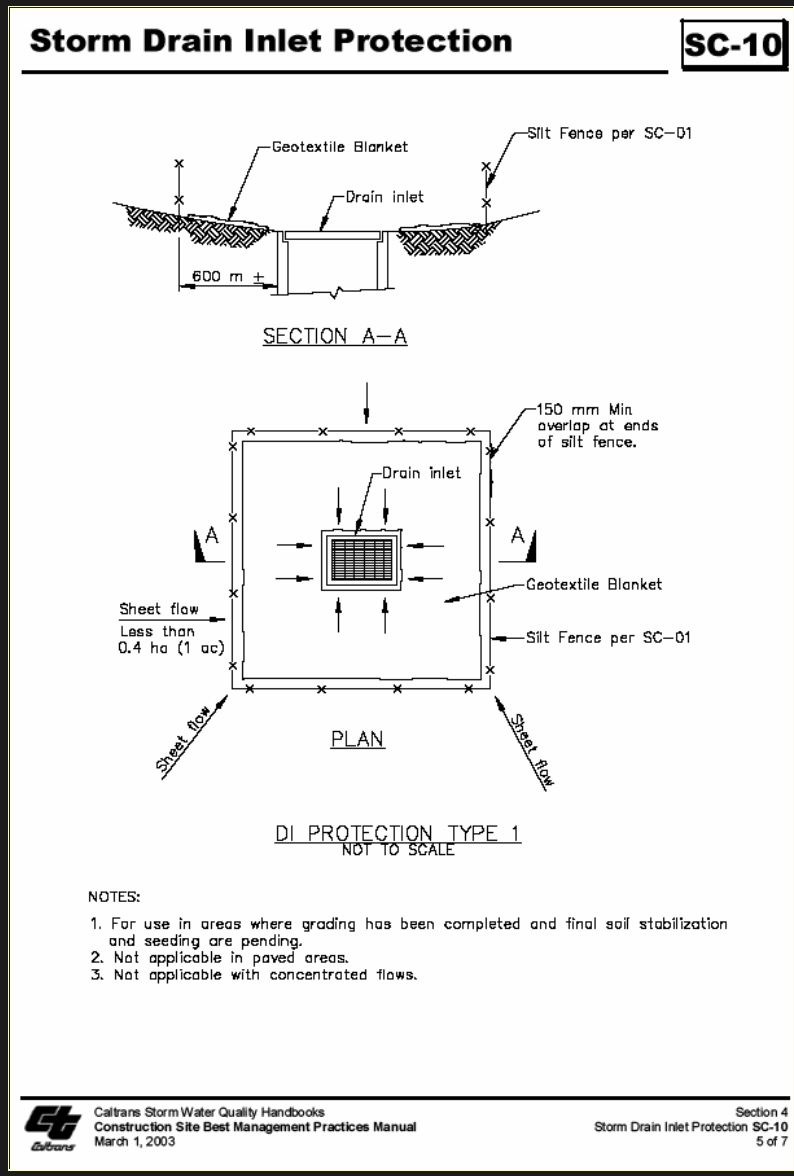
Caltrans Requirements

- Visible sediment tracking shall be swept and vacuumed daily
- Do not use kick brooms or sweeper attachments
- Dispose of sweeper waste at an approved dumpsite

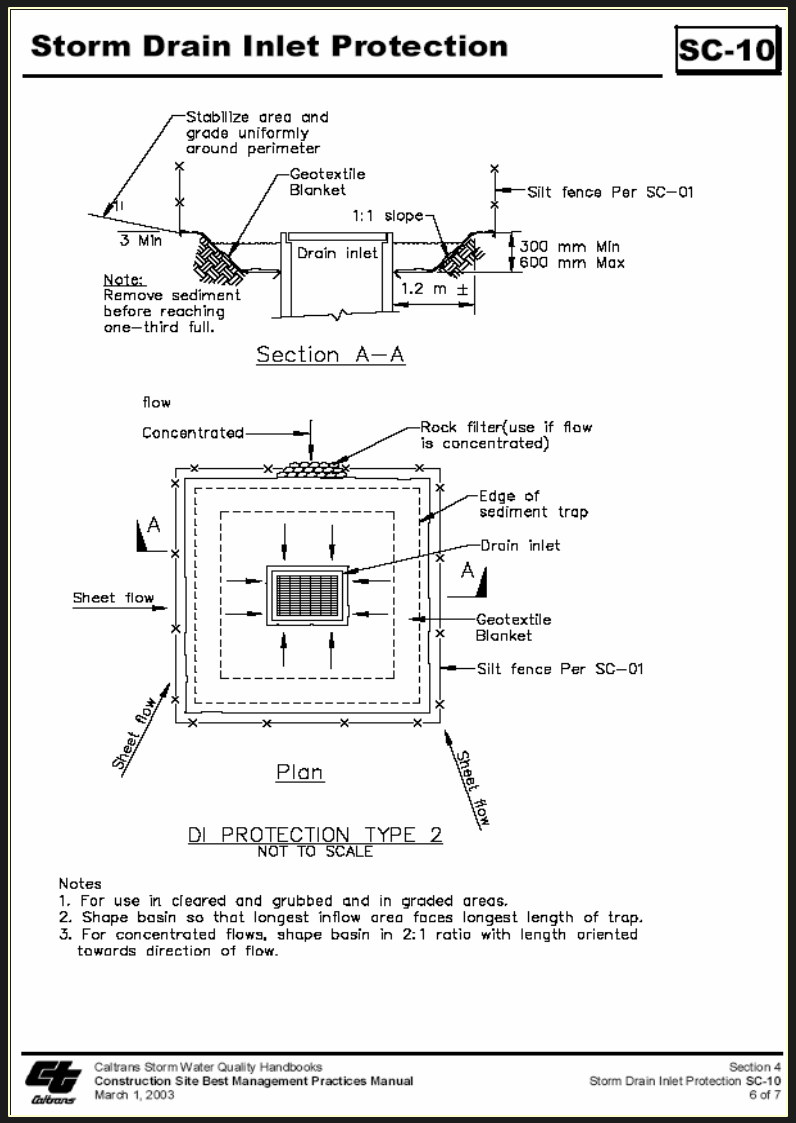
BMP Installation - Sediment Controls
SC-10 Storm Drain Inlet Protection

Caltrans Requirements

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



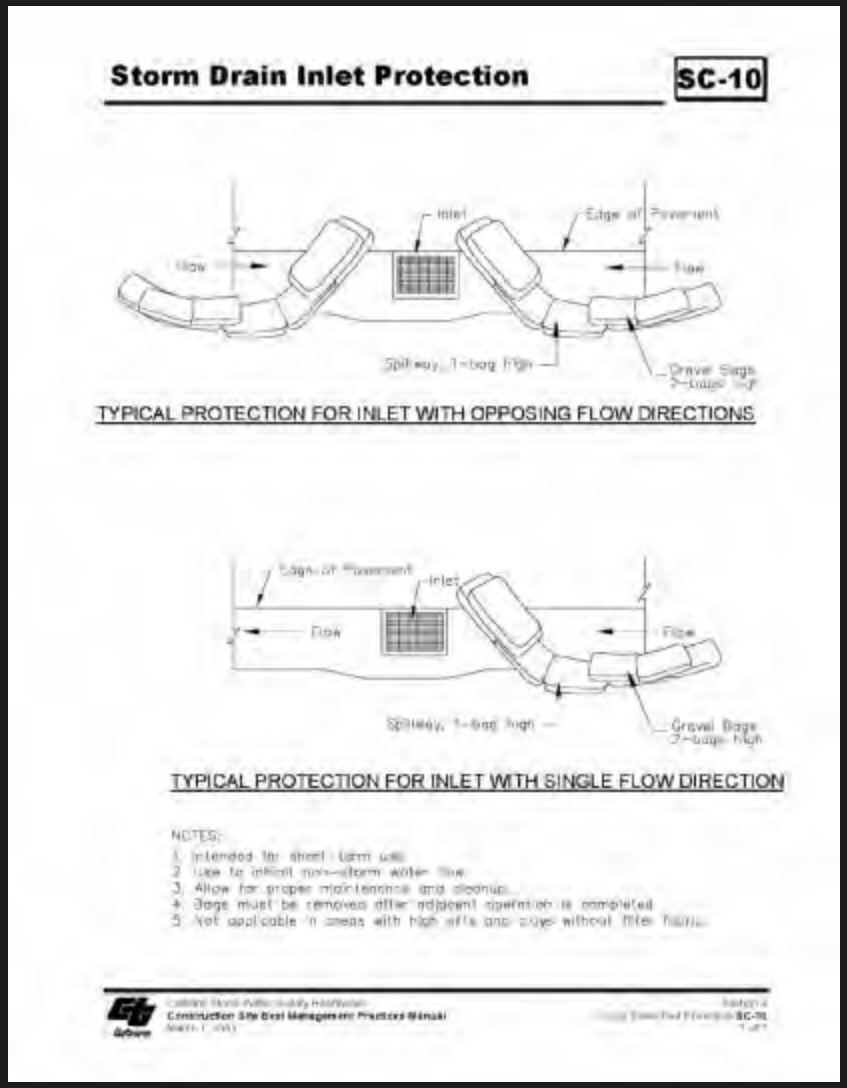
BMP Installation - Sediment Controls
SC-10 Storm Drain Inlet Protection



Caltrans Requirements

- Use where ponding will not encroach into highway traffic
- For use in cleared / grubbed and graded areas
- Frequent maintenance is required

BMP Installation - Sediment Controls
SC-10 Storm Drain Inlet Protection



Caltrans Requirements

- Use where ponding will not encroach into highway traffic
- Intended for short-term use
- Remove when adjacent operation is complete
- Use gravel bags not sand bags for paved areas

Wind Erosion Control

ID	BMP Name
WE-1	Wind Erosion Control

BMP Installation - Wind Erosion Control WE-1

Lack of wind erosion controls

BMP Installation - Wind Erosion Control WE-1

Soil binder applied via water truck

Caltrans Requirements

- Effectiveness depends on soil, temperature, humidity and wind velocity
- All equipment to ensure even distribution and have positive shutoff
- Temporary soil stabilizers and soil binders will also provide wind erosion control benefits

Tracking Control

ID	BMP Name
TC-1	Stabilized Construction Entrance/Exit
TC-2	Stabilized Construction Roadway
TC-3	Entrance/Outlet Tire Wash

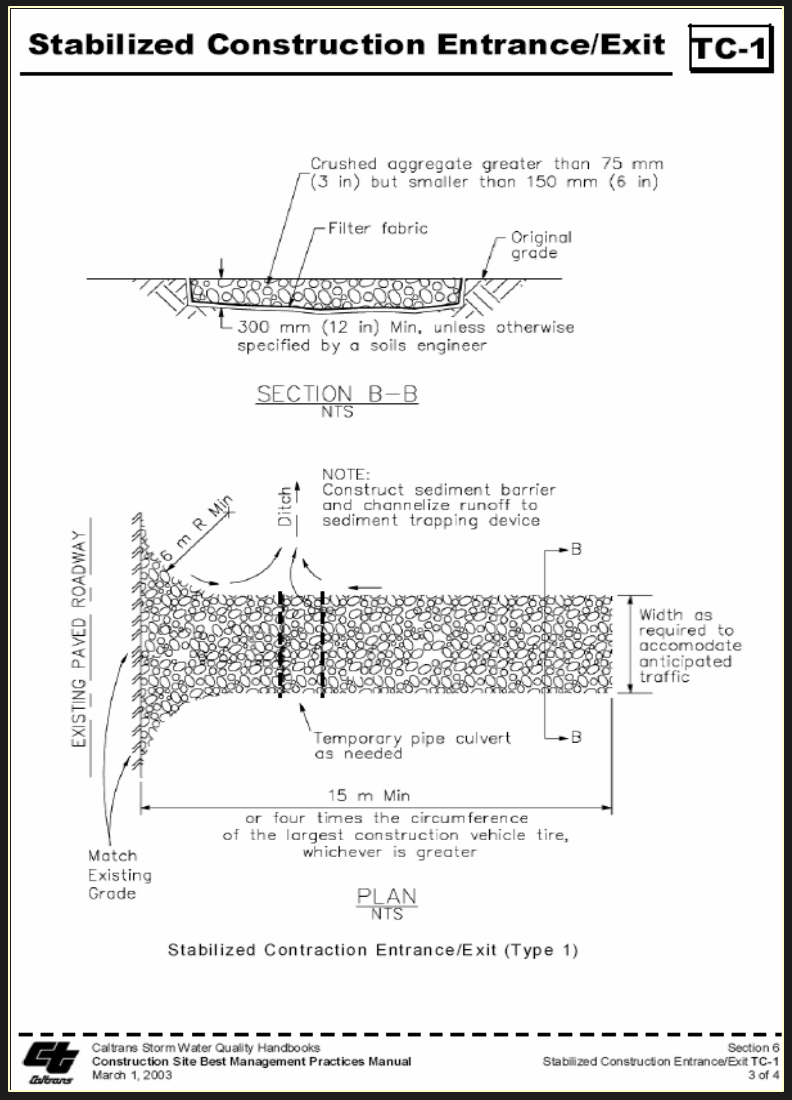
BMP Installation - Tracking Control TC-1 Stabilized Construction Entrance / Exit

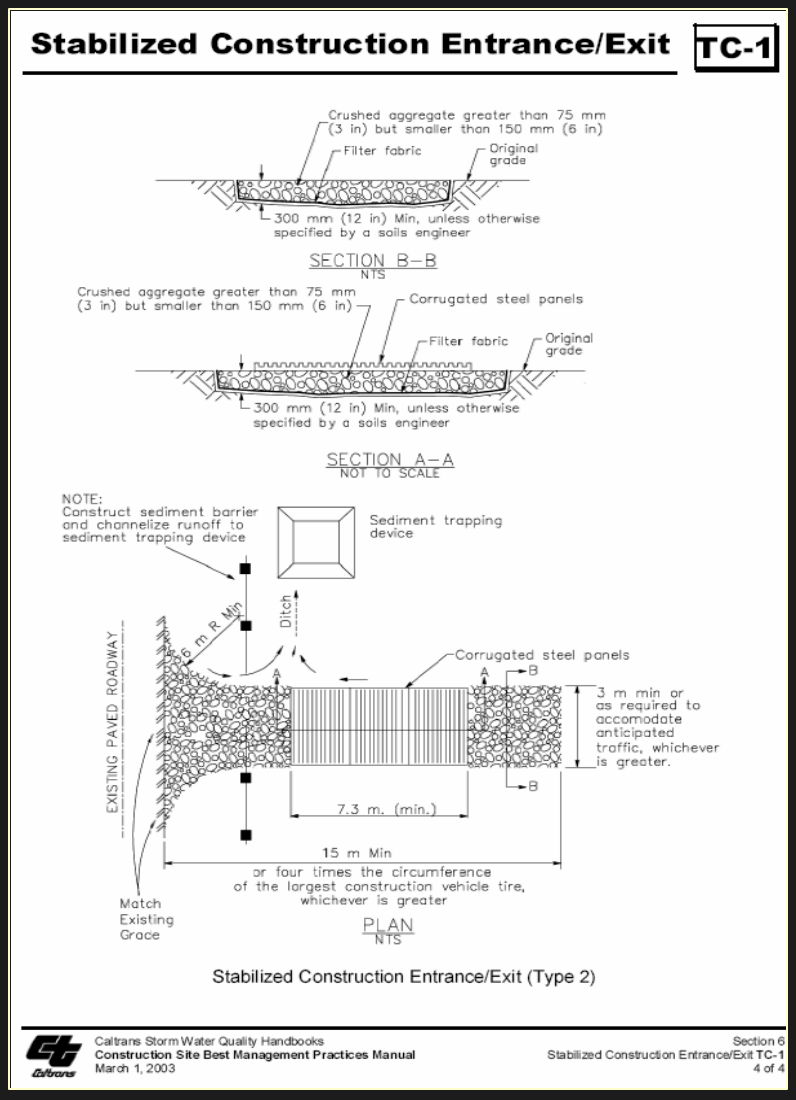
Lack of stabilized entrance / exit

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

Lack of stabilized entrance / exit

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





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

Large diameter rock used as a stabilized entrance / exit.

Caltrans Requirements

- If aggregate is used place over geotextile fabric 12” deep
- Use 3”-6” diameter rock
- Minimum of 15m (50ft) in length
- All exit locations to be used continuously for a period of time shall be stabilized
- Design for heaviest equipment
- Limit number of entrances and exits
- Require their use

Non-Storm Water Management BMPs

ID	BMP Name
NS-1	Water Conservation Practices
NS-2	Dewatering Operations
NS-3	Paving and Grinding Operations
NS-4	Temporary Stream Crossing
NS-5	Clear Water Diversion
NS-6	Illicit Connection / Illegal Discharge Detection and Reporting
NS-7	Potable Water / Irrigation
NS-8	Vehicle and Equipment Cleaning
NS-9	Vehicle and Equipment Fueling
NS-10	Vehicle and Equipment Maintenance
NS-11	Pile Driving Operations
NS-12	Concrete Curing
NS-13	Material and Equipment Use over Water
NS-14	Concrete Finishing
NS-15	Structure Demolition/Removal Over or Adjacent to Water

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-3 Paving and Grinding Operations

Caltrans Requirements

- Place plastic material under equipment when not in use to catch and/or contain drips and leaks
- Substances used to coat asphalt equipment shall not contain soap, will be non-foaming and non-toxic
- Paving equipment parked on site shall be parked over plastic to prevent soil contamination
- Clean equipment off-site whenever possible

BMP Installation – Non-Storm Water NS-4 Temporary Stream Crossing

Caltrans Requirements

- Use where construction equipment must frequently cross a waterway
- If improperly designed they may increase pollution load through washouts and scouring
- Stabilize construction roadways and use sediment control BMPs
- May require RWQCB, USACE, DFG permits / approval

Falsework Construction

BMP Installation – Non-Storm Water
NS-4 Temporary Stream Crossing

BMP Installation – Non-Storm Water NS-5 Clear Water Diversion

Caltrans Requirements

- May require RWQCB, USACE, DFG permits / approval
- If improperly designed they may increase pollution load through washouts and scouring
- Follow Caltrans Field Guide to Construction Site Dewatering
- Construct diversions with material free of potential pollutants
- Do not completely dam stream flow

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 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

BMP Installation - Non-Storm Water NS-11 Pile Driving Operations

Pile Driving Operations

Caltrans Requirements

- Use drip pans or absorbent pads during fueling, maintenance, cleaning and storage
- Park equipment over plastic sheeting or equivalent where possible. Plastic sheeting is not a substitute for drip pans or absorbent pads
- Use less hazardous products instead of hydraulic fluid when practicable

Waste Management and Material Pollution Control BMPs

ID	BMP Name
WM-1	Material Delivery and Storage
WM-2	Material Use
WM-3	Stockpile Management
WM-4	Spill Prevention and Control
WM-5	Solid Waste Management
WM-6	Hazardous Waste Management
WM-7	Contaminated Soil Management
WM-8	Concrete Waste Management
WM-9	Sanitary / Septic Waste Management
WM-10	Liquid Waste Management

BMP Installation - Waste Management
WM-1 Material Delivery and Storage

Well maintained temporary containment facility

Substances that require storage in a containment facility

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

BMP Installation - Waste Management
WM-1 Material Delivery and Storage

Temporary containment facility for fuel

Caltrans Requirements

- Liquids, petroleum products and substances listed in 40 CFR Parts 110, 117, and 302 require containment
- During rainy season each temporary containment facility shall have permanent cover and side wind protection or be covered during non-working days and prior to and during rain events
- Containment facility shall be maintained free of rainwater and spills

BMP Installation - Waste Management
WM-1 Material Delivery and Storage

- Cure requires proper storage

BMP Installation - Waste Management
WM-3 Stockpile Management

Caltrans Requirements

- Year-round requirement
- Locate a minimum of 15 m (50 ft) away from concentrated flows of storm water
- 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
- Watertight dumpsters of sufficient size and number shall be provided
- Segregate potentially hazardous waste from non-hazardous waste
- Debris and waste shall collected weekly and shall be remove from site every two weeks

BMP Installation - Waste Management

WM-8 Concrete Waste Management

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, water courses
- Disposal of PCC waste offsite

BMP Installation - Waste Management
WM-9 Sanitary / Septic Waste Management

Locate temporary sanitary facilities away from drainage facilities

Caltrans Requirements

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

BMP Installation - Waste Management
WM-10 Liquid Waste Management

Tie Back wall construction

Caltrans Requirements

- Liquid waste cannot enter storm drain, receiving water or waterway
- Disposal of certain liquid waste may be subject to specific laws or regulations

Who Wants To Be A Millionaire?

Millionaire Review Question #1

The letters BMP are also known as?

a) Best Materials Practical

b) Big Major Problem

c) Best Method Practice

d) Best Management Practice

Millionaire Review Question #5

"Keying in the bottom" is an installation requirement of which BMP?

a) Gravel Bag Berms

b) Grocery Bag Berms

c) Silt Fence

d) Geotextiles / Plastic Covers

Millionaire Review Question #2

Which one of the six BMP categories found in the BMP Manual, includes Scheduling?

a) Soil Stabilization

b) Non-Storm Water Management

c) Sediment Control

d) Tracking Control

Millionaire Review Question #3

Which one of the following is <u>not</u> a Soil Stabilization BMP?

a) Hydraulic Mulch

b) Slope Drains

c) Earth Dikes

d) Desilting Basin

Millionaire Review Question #4

What is the Caltrans minimum required application rate for straw mulch?

a) 3,570 kg per acre

b) 2 tons per hectare

c) 20 ton per acres

d) 2 tons per acre

Millionaire Review Question #6

What is a common way for construction sites to achieve/maintain the rainy season DSA requirement?

a) Apply temporary SC regularly

b) Apply temporary EC regularly

c) Install both silt fence and straw bales

d) Apply permanent SC ASAP

Construction Site Best Management Practices

- **Course Highlights**
  - Introduction
  - The Law
  - Recent Fines
  - Permits, Specs and Manuals
  - **Construction Site BMPs**
  - Introduction to Sampling and Analysis Plans
  - Inspection Procedures
  - Communication
  - Documentation

•Maintenance of BMPs

•Improperly Implemented BMPs

Maintenance of BMPs

Maintenance of BMPs is a critical requirement for an effective water pollution control program

Maintenance of BMPs

Silt fence maintenance

Improperly Implemented BMPs

- Construction Site Best Management Practice (BMP) Field Manual and Troubleshooting Guide
  - Applications
  - Key Points
    - Installation
    - Design
    - Maintenance / Inspection
  - Preventive Measures and Troubleshooting

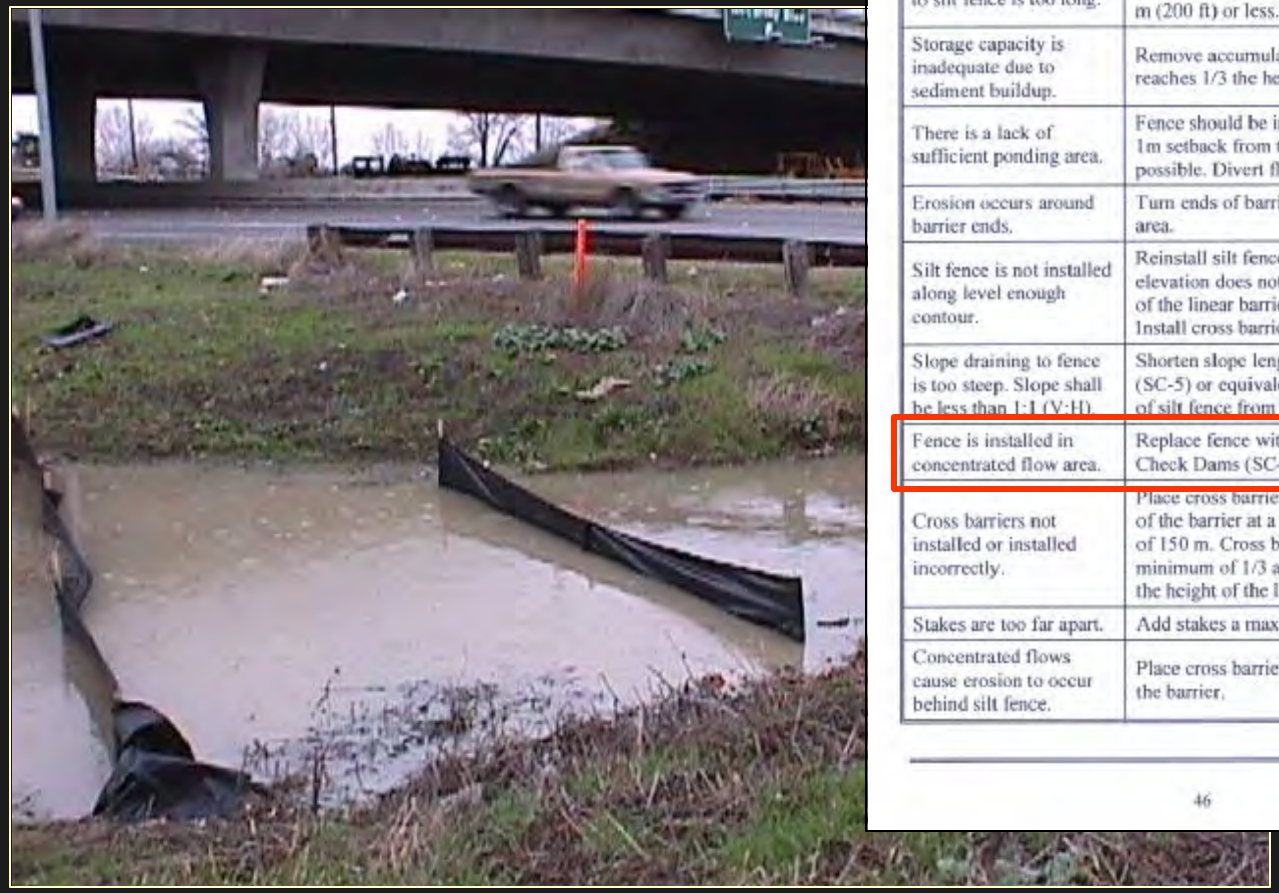
State of California
Department of Transportation

Construction Site
Best Management Practice
(BMP)
Field Manual
and
Troubleshooting Guide

CTSW-RT-02-007

January 2003

Improperly Implemented B

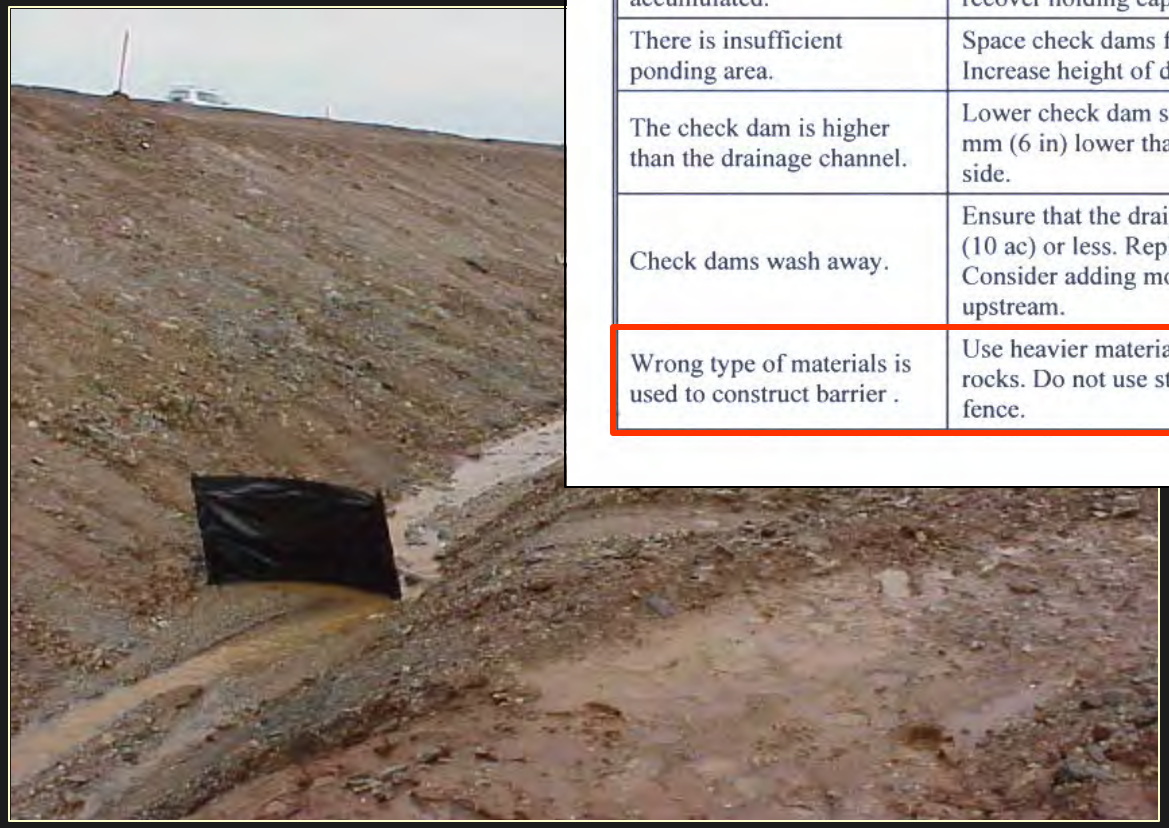


Preventive Measures and Troubleshooting Guide

Field Condition:	Common solutions are:
There is excessive sediment accumulation.	Remove sediment. Apply Hydraulic Mulch (SS-3) or Straw Mulch (SS-6) or other BMP upstream to reduce sediment in runoff.
Bottom of fence is not properly keyed in.	Trench, place fabric, and backfill.
Length of slope draining to silt fence is too long.	Shorten slope length using Fiber Rolls (SC-5) or equivalent. Slope shall be 61 m (200 ft) or less.
Storage capacity is inadequate due to sediment buildup.	Remove accumulated sediment when it reaches 1/3 the height of the barrier.
There is a lack of sufficient ponding area.	Fence should be installed with at least a 1m setback from the toe of slope where possible. Divert flow at top of slope.
Erosion occurs around barrier ends.	Turn ends of barriers into the up-slope area.
Silt fence is not installed along level enough contour.	Reinstall silt fence so that change in elevation does not exceed 1/3 the height of the linear barrier along the reach. Install cross barriers.
Slope draining to fence is too steep. Slope shall be less than 1:1 (V:H).	Shorten slope length using Fiber Rolls (SC-5) or equivalent. Increase setback of silt fence from the toe of slope.
Fence is installed in concentrated flow area.	Replace fence with proper BMP such as Check Dams (SC-4), if appropriate.
Cross barriers not installed or installed incorrectly.	Place cross barriers on the receiving side of the barrier at a maximum separation of 150 m. Cross barrier should be a minimum of 1/3 and a maximum of ½ the height of the linear barrier.
Stakes are too far apart.	Add stakes a maximum of 2.5 m apart.
Concentrated flows cause erosion to occur behind silt fence.	Place cross barrier check dams behind the barrier.

Silt fence installed incorrectly in a concentrated flow area

Improperly Impleme



Check Dam SC-4

Preventive Measures and Troubleshooting Guide

Field Condition:	Common solutions are:
Too much sediment has accumulated.	Remove accumulated sediment to recover holding capacity.
There is insufficient ponding area.	Space check dams farther apart. Increase height of dam.
The check dam is higher than the drainage channel.	Lower check dam so that it is 150 mm (6 in) lower than the channel side.
Check dams wash away.	Ensure that the drainage area is 4 ha (10 ac) or less. Replace check dams. Consider adding more dams upstream.
Wrong type of materials is used to construct barrier .	Use heavier materials such as larger rocks. Do not use straw bales or silt fence.

Silt fence installed incorrectly in a unstabilized concentrated flow area

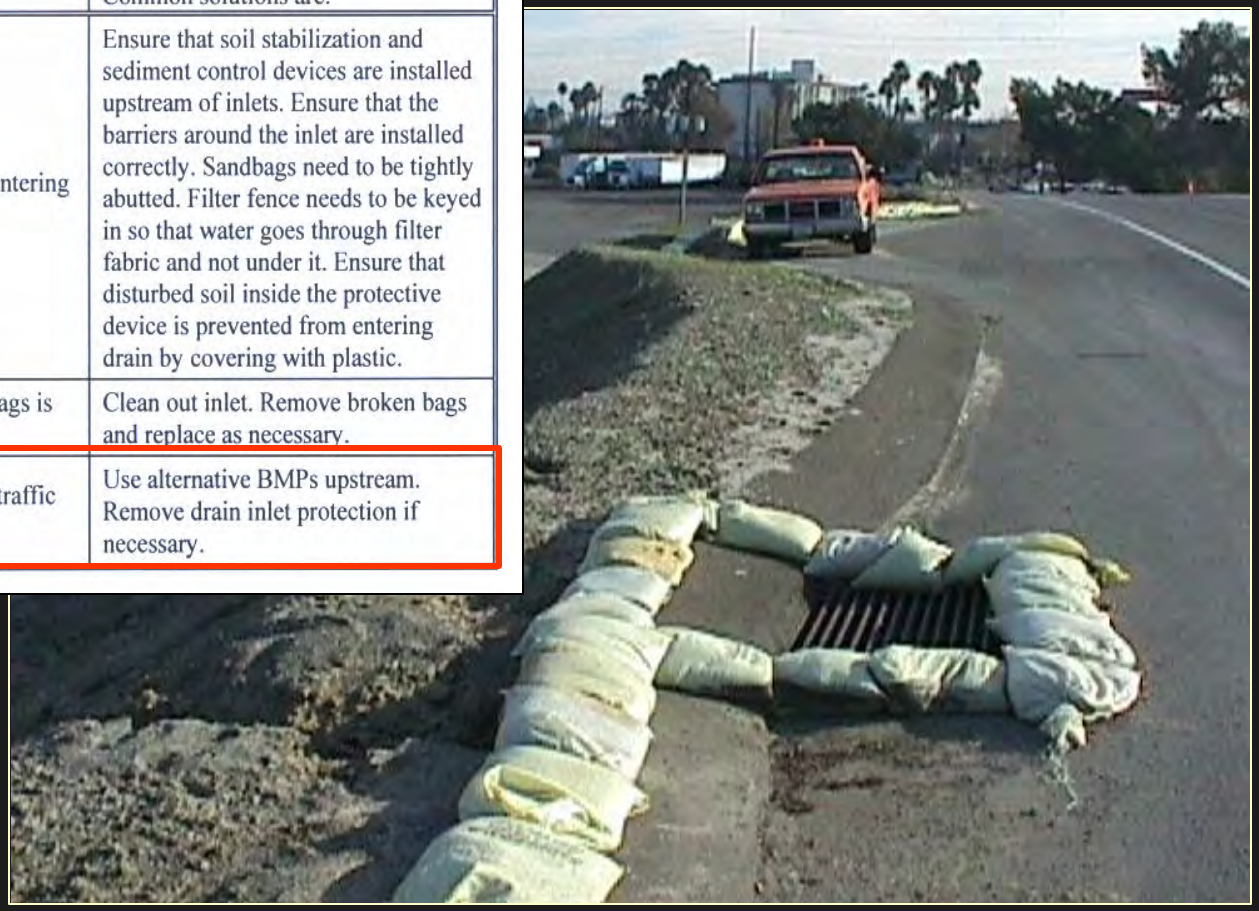
Improperly Implemented BMPs

Sandbags blocking a DI, and causing a safety hazard

Improperly Implemented BMPs

Preventive Measures and Troubleshooting Guide

Field Condition:	Common solutions are:
Excessive sediment is entering the inlet.	Ensure that soil stabilization and sediment control devices are installed upstream of inlets. Ensure that the barriers around the inlet are installed correctly. Sandbags need to be tightly abutted. Filter fence needs to be keyed in so that water goes through filter fabric and not under it. Ensure that disturbed soil inside the protective device is prevented from entering drain by covering with plastic.
Material from broken bags is entering inlet.	Clean out inlet. Remove broken bags and replace as necessary.
Ponded water causes a traffic concern.	Use alternative BMPs upstream. Remove drain inlet protection if necessary.



Sandbags blocking a DI, and causing a safety hazard

Improperly Implemented BMPs

Uncontrolled concrete washout near an active DI

Improperly Implemented BMPs

Improperly Implemented BMPs

Possible solution: Block other entrance / exit

Improperly Implemented BMPs

Incorrect use of silt fence

Improperly Implemented BMPs

Lack of soil stabilization has lead to failure of silt fence

Improperly Implemented BMPs

Preventive Measures and Troubleshooting Guide

Field Condition:	Common solutions are:
Soil stockpile erodes.	Cover stockpile with plastic sheeting or spray with a soil stabilizer. Protect with a temporary perimeter sediment barrier around the stockpile.
Stockpile is in flow line.	Remove stockpile from drainage path or protect with a berm, dike, or temporary diversion device.
Storm water run-on impacts the stockpile.	Protect the stockpile by using temporary perimeter sediment barriers such as berms, dikes, silt fencing, or sandbags.
Wind causes erosion and or blowing dust.	Cover stockpile or spray with a soil stabilizer. Use a water application to suppress dust.
Cold-mix stockpile is on the bare ground.	Remove stockpile and place on plastic or comparable material.
Cold-mix is stored in curb drainage way.	Remove stockpile from flow line.

Stockpile should be relocated, covered and protected from run-on

Water Quality Sampling and Analysis

- **Course Highlights**
  - Introduction
  - The Law
  - Regulatory Fines
  - Permits, Specs and Manuals
  - Construction Site BMPs
  - **Introduction to Water Quality Sampling and Analysis**
  - Inspection Procedures
  - Communication
  - Documentation

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 to SWPPP projects only – for now
  - A comprehensive course on this subject is now being given to Caltrans personnel

Water Quality Sampling and Analysis

- 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

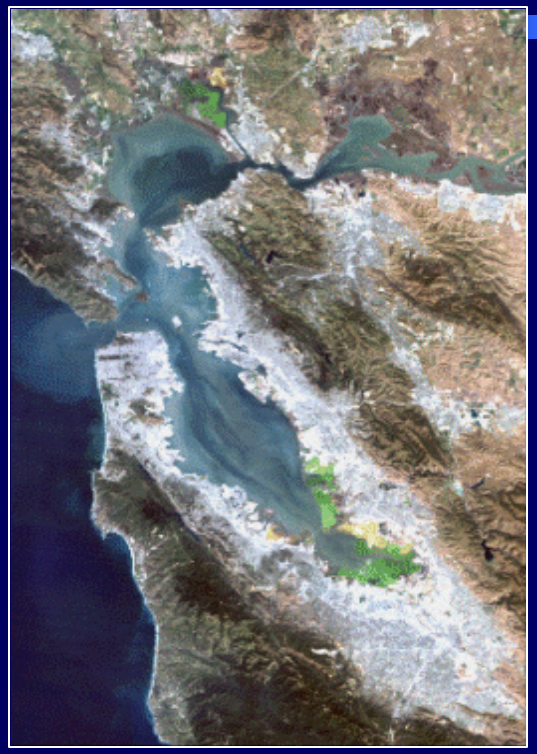
What are the Pollutants

Sediment

Construction Materials

Water Quality Sampling and Analysis

- 303(d) listed Water Bodies
  - In 2002, 685 water bodies where listed as impaired in the State of California, most of them for multiple pollutants.
  - 134 of the 685 water bodies are listed as impaired for sediment / siltation and turbidity



303d

Sediment / Silt / Turbidity

- Project Discharges Directly into 303(d) Water Body
  - Identify sampling locations for monitoring discharges
    - Upstream of the project
    - Immediately down stream from last discharge point of the project
    - Run-on that enters the Caltrans right-of-way
  - Sampling must occur during the first two hours of discharge
    - During daylight hours – sunrise to sunset
    - Year round / seven days a week – including holidays
  - Sample a maximum of four events per month
    - Minimum 72 hours of dry weather between events
  - Samples collected by personnel trained in water quality sampling procedures
    - Contractors staff or Laboratory personnel

Non-Visible Pollutants

- **SAP**
  - **Applies:**
    - To projects where construction activities result in .4 hectares (1 acres) or more of soil disturbance and when there will be a storm water discharge directly to a Water of the United States (e.g. USGS blue line) or to a storm sewer system that discharges into a Water of the United States
    - Water of the U.S. defined go to www.epa.gov/region6/6en/w/watersus.htm

Non-Visible Pollutants

- **What are they?**
  - Pollutants, other than sediment, that are known or should be known to occur on construction sites that can't be seen in storm water discharges

- **How do I know if I have to sample for them?**
  - Use the pollutant testing guidance table

Examples: Asphalt Products, Cleaning products, Pesticides, fertilizers or soil amendments

Pollutant Testing Guidance Tables

Cleaning Products	Acids	No	**pH** Acidity Anions (acetic acid, phosphoric acid, sulfuric acid, nitric acid, hydrogen chloride)	HACH pH Test Kit or pH Meter HACH Acidity Test Kit	EPA 150.1 (pH) SM 2310B (Acidity) EPA 300.0 (Anion)
	Bleaches	No	**Residual Chlorine**	HACH Chlorine Test Kit	SM 4500-CL G (Res. Chlorine)
	Detergents	Yes - Foam	Visually Observable - No Testing Required		
	TSP	No	**Phosphate**	HACH Phosphate Test Kit	EPA 365.3 (Phosphate)
	Solvents	No	**VOC**	None	EPA 601/602 or EPA 624 (VOC)
			SVOC	None	EPA 625 (SVOC)

Cleaning Products	Acids	No	Anions (acetic acid, phosphoric acid, sulfuric acid, nitric acid, hydrogen chloride)	Meter HACH Acidity Test Kit	SM 2310B (Acidity) EPA 300.0 (Anion)
	Bleaches	No	**Residual Chlorine**	HACH Chlorine Test Kit	SM 4500-CL G (Res. Chlorine)
	Detergents	Yes - Foam	Visually Observable - No Testing Required		
	TSP	No	**Phosphate**	HACH Phosphate Test Kit	EPA 365.3 (Phosphate)
	Solvents	No	**VOC**	None	EPA 601/602 or EPA 624 (VOC)
			SVOC	None	EPA 625 (SVOC)

Non-Visible Pollutants

- **Sampling and Analysis required…**
  - Within two hours after discharge occurs and once one of the following occurs:
    - Construction material, wastes, and activities are not stored under watertight conditions
    - Applicable BMPs are not properly implemented
    - The construction site historically was used as a site that may have had non-visible pollutants on it
    - Soil amendments or soil stabilizers have been previously applied

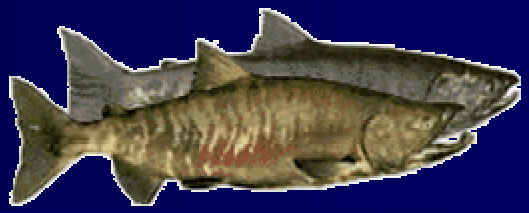
Non-Visible Pollutants

- **You don't have to sample if…..**
  - Spilled materials or waste are completely removed prior to a rain event
    - Including contaminated soil
  - Materials and wastes are properly stored (in a watertight condition), disposed of or incorporated into the work prior to a rain event

Water Quality Sampling and Analysis

Why should we care

- The effects of water pollution are not only devastating to people but also to animals, fish, and birds
- Polluted water is unsuitable for drinking, recreation, agriculture, and industry. It diminishes the aesthetic quality of lakes and rivers
- Contaminated water destroys aquatic life and reduces its reproductive ability
- Nobody can escape the effects of water pollution



Inspection Procedures

- **Course Highlights**
  - Introduction
  - The Law
  - Regulatory Fines
  - Permits, Specs and Manuals
  - Construction Site BMPs
  - Introduction to Water Quality Sampling and Analysis
  - **Inspection Procedures**
  - Communication
  - Documentation

Water Pollution Control Inspection

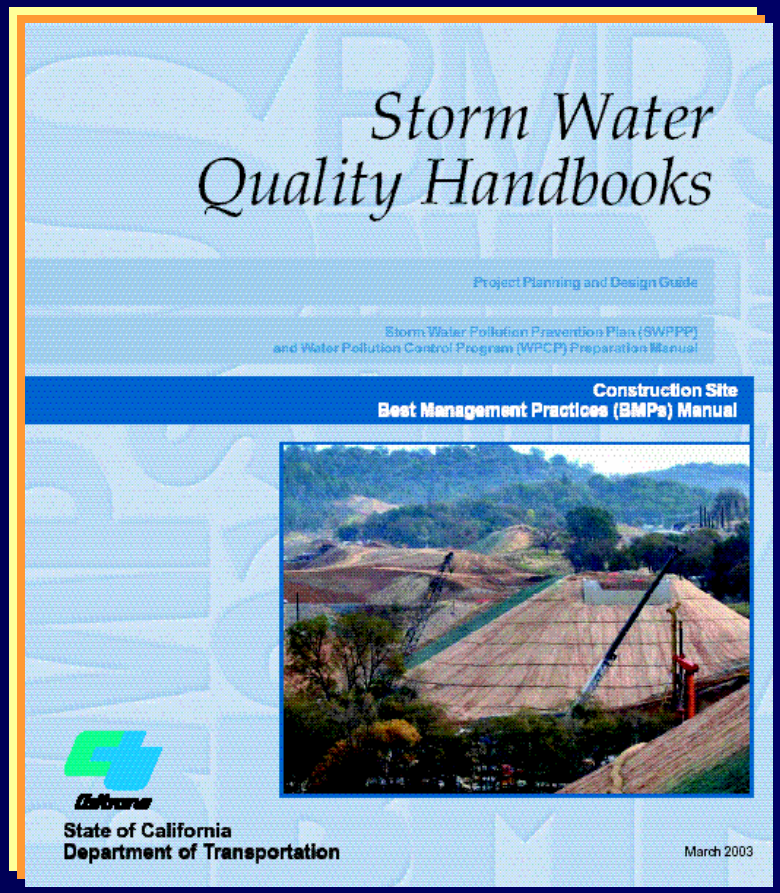
- **Section highlights**
  - **Pre-site inspection prep work**
  - **Using the Inspection Form**
  - **Inspection techniques**

Pre-Site Inspection Preparation Work

- **Review the Plans / Contract Documents**
  - **BMP Manual**
  - **Standard Specifications**
  - **Project Plans**
  - **Special Provisions**
  - **Storm Water Pollution Prevention Plans - SWPPP WPCP Prep Manual**
    - **Water Pollution Control Drawings**
    - **Project Schedule**
  - **Project File**

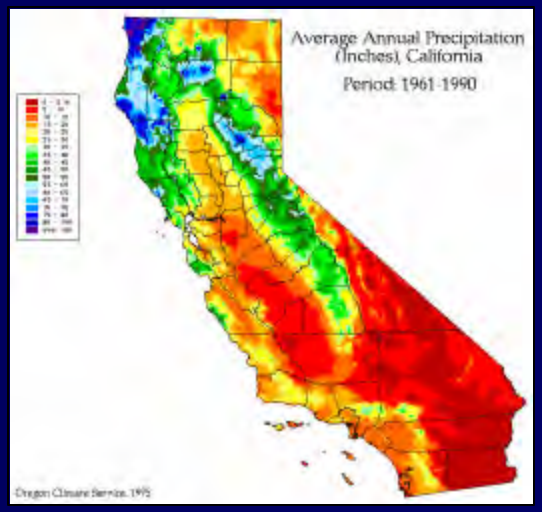
Pre-Site Inspection Preparation Work

- Caltrans Storm Water Quality Handbooks
  - Construction Site BMPs Manual, 2003 edition



Pre-Site Inspection Preparation Work

Know and Understand the Compliance Requirements



- **Definitions**
  - **Designation of Rainy Seasons**
  - **Area Definitions**
  - **DSA Protection by Temporary Soil Stabilization and Temporary Sediment Controls**
  - **Active Areas**
  - **Non-Active Areas**

Pre-Site Inspection Preparation Work

- **Implementation requirements**
  - **Figure 2-1**
  - **Tables 2-1, 2-2, and 2-3**

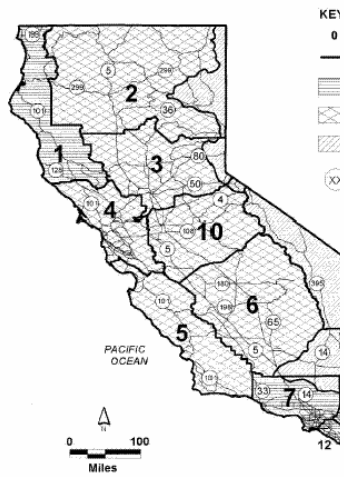


Figure 2-1
DESIGNATION OF RAINY SEASONS

Table 2-1

AREA	AREA DEFINITIONS Applicability
1	**District 1** in the following areas: all of Del Norte and Humboldt Counties within 20 miles of the coast in Mendocino County
2	**District 1** (except within Area 1) **District 2** within the North Coast, Lahontan, and Central Valley RWQCB ju **Districts 3, 4** and **5** **District 10** within the Lahontan RWQCB jurisdiction
3	**District 1** (except within Area 1) **District 2** within the North Coast, Lahontan, and Central Valley RWQCB ju **Districts 3, 4** and **5** **District 10** within the Lahontan RWQCB jurisdiction
4	**District 6** within the Central Valley RWQCB jurisdiction **District 7** within the Central Coast, Los Angeles, and Central Valley RWQ **District 8** within the Santa Ana and San Diego RWQCB jurisdictions **District 10** (except for the Lahontan RWCB jurisdiction) **District 11** within the San Diego RWQCB jurisdiction **District 12**
5	**District 6** within the Central Valley RWQCB jurisdiction **District 7** within the Central Coast, Los Angeles, and Central Valley RWQ **District 8** within the Santa Ana and San Diego RWQCB jurisdictions **District 10** (except for the Lahontan RWCB jurisdiction) **District 11** within the San Diego RWQCB jurisdiction **District 12**
6	**Statewide**
7	**District 6** within the Lahontan RWQCB jurisdiction **District 7** within the Lahontan RWQCB jurisdiction **District 8** within the Lahontan and Colorado River Basin RWQCB jurisdicti **District 9** **District 11** within the Colorado River Basin RWQCB jurisdiction

Table 2-2

REQUIRED COMBINATION OF TEMPORARY SOIL STABILIZATION AN TEMPORARY SEDIMENT CONTROLS AND BARRIERS (6) (7)

NON-ACTIVE DISTURBED SOIL AREAS

SEASON	AREA(S)	TEMPORARY BMP	SLOPE (V:H) ≤ 1:20	> 1:20 ≤ 1:4	> 1 ≤ 1
RAINY(2)	1 & 6	SOIL STABILIZATION (5)	X	X	X
		SEDIMENT BARRIER (5)	X	X	X
		DESILTING BASIN (3)		X	X
	2, 3, 4 & 5	SOIL STABILIZATION (5)	X	X	X
		SEDIMENT BARRIER		X	X
		DESILTING BASIN			
	7	SOIL STABILIZATION AND SEDIMENT CONTROL PRACTICES DETERMINED BY APPLICABLE RWQCB(8)			
NON-RAINY	1	SOIL STABILIZATION (5)	X(4)	X(4)	X
		SEDIMENT BARRIER		X(4)	X
		DESILTING BASIN			
	2 & 4	SOIL STABILIZATION			
		SEDIMENT BARRIER			
		DESILTING BASIN			
	3 & 5	SOIL STABILIZATION			
		SEDIMENT BARRIER			
		DESILTING BASIN			
	6	SOIL STABILIZATION (5)	X(4)	X(4)	X
		SEDIMENT BARRIER		X(4)	X
		DESILTING BASIN (5)			
	7	SOIL STABILIZATION AND SEDIMENT CONTROL PRACTICES DETERMINED BY APPLICABLE RWQCB(8)			

(1) Unless otherwise noted, the temporary BMP is required for the slope inclinations indicated on slope lengths grea meters.
(2) The maximum slope length is 30 meters for slope inclinations between 1:20 (V:H) and 1:2 (V:H) and 15 meters fo slopes.
(3) Required in addition to the temporary sediment barrier, where feasible. Feasibility will depend on site-specific fac available right-of-way within the project limits, topography, soil type, disturbed soil area within watershed, and climate conditions.
(4) Implementation of controls not required except at least 24 hours prior to all predicted rain events.
(5) The indicated temporary BMP is required on all slope lengths.
(6) Sediment controls and barriers include all temporary sediment control construction BMPs identified in the Statewide Storm Water Quality Practice Guidelines associated with the SWMP and Section 4 of these guidelines. Linear barrier systems are equivalent to what are referred to in the General Construction Permit as perimeter controls. The intent is prevent the transport of sediment at the downslope edge of disturbed soil areas.
(7) Permanent erosion control seeding shall be applied to all non-active areas deemed substantially complete during the project's defined seeding window.
(8) Refer to Section 2.2.6 for procedure.

Table 2-3

REQUIRED COMBINATION OF TEMPORARY SOIL STABILIZATION AND TEMPORARY SEDIMENT CONTROLS AND BARRIERS (6)

ACTIVE DISTURBED SOIL AREAS (3)

SEASON	AREA(S)	TEMPORARY BMP	SLOPE (V:H) (1) ≤ 1:20	> 1:20 ≤ 1:2	> 1:2
RAINY	1 & 6	SOIL STABILIZATION		X	X
		SEDIMENT BARRIER (4)	X	X	X
		DESILTING BASIN (2)		X	X
	2, 4 & 5	SOIL STABILIZATION			
		SEDIMENT BARRIER		X	X
		DESILTING BASIN (2)			X
	3	SOIL STABILIZATION			X(5)
		SEDIMENT BARRIER		X	X
		DESILTING BASIN (2)			X
	7	SOIL STABILIZATION AND SEDIMENT CONTROL PRACTICES TO BE DETERMINED BY APPLICABLE RWQCB(7)			
NON-RAINY	1	SOIL STABILIZATION			
		SEDIMENT BARRIER		X	X
		DESILTING BASIN(2)			X
	2, 3, 4 & 5	SOIL STABILIZATION			
		SEDIMENT BARRIER			
		DESILTING BASIN			
	6	SOIL STABILIZATION			
		SEDIMENT BARRIER		X	X
		DESILTING BASIN (2)			X
	7	SOIL STABILIZATION AND SEDIMENT CONTROL PRACTICES TO BE DETERMINED BY APPLICABLE RWQCB(7)			

(1) Unless otherwise noted, the BMP is required for the slope inclinations indicated on slope lengths greater than 3 meters.
(2) Required in addition to the temporary sediment barrier, where feasible. Feasibility will depend on site-specific factors such available right-of-way within the project limits, topography, soil type, disturbed soil area within watershed, and climate conditions.
(3) Implementation of soil stabilization controls are not required except prior to predicted rain.
(4) The indicated temporary BMP required on all slope lengths.
(5) The indicated temporary BMP required on slope lengths greater than 15 meters.
(6) Sediment controls and barriers include all temporary sediment control construction BMPs identified in the Statewide Storm Water Quality Practice Guidelines associated with the SWMP and Section 4 of these Guidelines. Linear barrier systems are equivalent to what are referred to in the General Construction Permit as perimeter controls. The intent is to provide a barrier to prevent the transport of sediment at the downslope edge of disturbed soil areas.
(7) Refer to Section 2.2.6 for procedures.

How the Tables Work

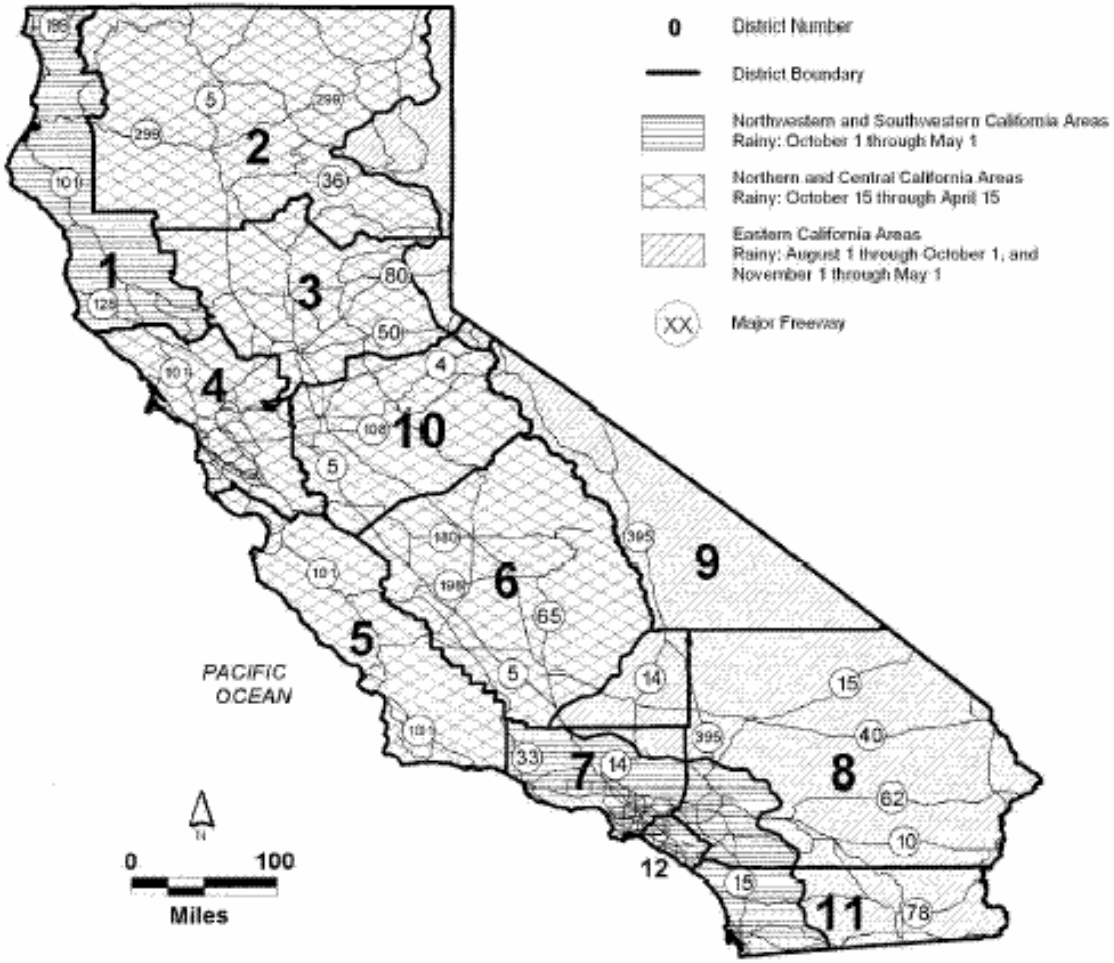


Figure 2-1
DESIGNATION OF RAINY SEASONS

How the Tables Work

Table 2-1

AREA DEFINITIONS		
AREA	**Applicability**	**Elevation**
1	**District 1** in the following areas: all of Del Norte and Humboldt Counties within 20 miles of the coast in Mendocino County	≤1200m = 3,950 ft
2	**District 1** (except within Area 1) **District 2** within the North Coast, Lahontan, and Central Valley RWQCB jurisdictions **Districts 3, 4** and **5** **District 10** within the Lahontan RWQCB jurisdiction	<250m <825 ft
3	**District 1** (except within Area 1) **District 2** within the North Coast, Lahontan, and Central Valley RWQCB jurisdictions **Districts 3, 4** and **5** **District 10** within the Lahontan RWQCB jurisdiction	250m – 1200m 825 ft – 3,950 ft
4	**District 6** within the Central Valley RWQCB jurisdiction **District 7** within the Central Coast, Los Angeles, and Central Valley RWQCB jurisdictions **District 8** within the Santa Ana and San Diego RWQCB jurisdictions **District 10** (except for the Lahontan RWCB jurisdiction) **District 11** within the San Diego RWQCB jurisdiction **District 12**	<500m <1,650 ft
5	**District 6** within the Central Valley RWQCB jurisdiction **District 7** within the Central Coast, Los Angeles, and Central Valley RWQCB jurisdictions **District 8** within the Santa Ana and San Diego RWQCB jurisdictions **District 10** (except for the Lahontan RWCB jurisdiction) **District 11** within the San Diego RWQCB jurisdiction **District 12**	500m – 1200m 1,650 ft – 3,950 ft
6	**Statewide** > 3,950 ft	>1200m
7	**District 6** within the Lahontan RWQCB jurisdiction **District 7** within the Lahontan RWQCB jurisdiction **District 8** within the Lahontan and Colorado River Basin RWQCB jurisdictions **District 9** **District 11** within the Colorado River Basin RWQCB jurisdiction	≤1200m = 3,950 ft

How the Tables Work

Table 2-2

REQUIRED COMBINATION OF TEMPORARY SOIL STABILIZATION AND TEMPORARY SEDIMENT CONTROLS AND BARRIERS [6] [7]

NON-ACTIVE DISTURBED SOIL AREAS

SEASON	AREA(S)	TEMPORARY BMP	SLOPE (V:H) [1]			
			≤ 1:20	> 1:20 ≤ 1:4	> 1:4 ≤ 1:2	> 1:2
RAINY[2]	1 & 6	SOIL STABILIZATION [5]	X	X	X	X
		SEDIMENT BARRIER [5]	X	X	X	X
		DESILTING BASIN [3]		X	X	X
	2, 3, 4 & 5	SOIL STABILIZATION [5]	X	X	X	X
		SEDIMENT BARRIER		X	X	X
		DESILTING BASIN				
	7	SOIL STABILIZATION AND SEDIMENT CONTROL PRACTICES TO BE DETERMINED BY APPLICABLE RWQCB[8]				
NON-RAINY	1	SOIL STABILIZATION [5]	X[4]	X[4]	X	X
		SEDIMENT BARRIER		X[4]	X	X
		DESILTING BASIN				
	2 & 4	SOIL STABILIZATION				
		SEDIMENT BARRIER				
		DESILTING BASIN				
	3 & 5	SOIL STABILIZATION				
		SEDIMENT BARRIER				X[4]
		DESILTING BASIN				
	6	SOIL STABILIZATION [5]	X[4]	X[4]	X	X
		SEDIMENT BARRIER		X[4]	X	X
		DESILTING BASIN [3]				X
	7	SOIL STABILIZATION AND SEDIMENT CONTROL PRACTICES TO BE DETERMINED BY APPLICABLE RWQCB[8]				

(1) Unless otherwise noted, the temporary BMP is required for the slope inclinations indicated on slope lengths greater than 3 meters.**(10 ft)**

(2) The maximum slope length is 30 meters for slope inclinations between 1:20 (V:H) and 1:2 (V:H) and 15 meters for steeper slopes. **(100 ft)** **(50 ft)**

(3) Required in addition to the temporary sediment barrier, where feasible. Feasibility will depend on site-specific factors such as available right-of-way within the project limits, topography, soil type, disturbed soil area within watershed, and climate conditions.

(4) Implementation of controls not required except at least 24 hours prior to all predicted rain events.

(5) The indicated temporary BMP is required on all slope lengths.

(6) Sediment controls and barriers include all temporary sediment control construction BMPs identified in the Statewide Storm Water Quality Practice Guidelines associated with the SWMP and Section 4 of these guidelines. Linear barrier systems are equivalent to what are referred to in the General Construction Permit as perimeter controls. The intent is prevent the transport of sediment at the downslope edge of disturbed soil areas.

(7) Permanent erosion control seeding shall be applied to all non-active areas deemed substantially complete during the project's defined seeding window.

(8) Refer to Section 2.2.6 for procedure.

How the Tables Work

Table 2-3

REQUIRED COMBINATION OF TEMPORARY SOIL STABILIZATION AND TEMPORARY SEDIMENT CONTROLS AND BARRIERS (6)

ACTIVE DISTURBED SOIL AREAS (3)

SEASON	AREA(S)	TEMPORARY BMP	SLOPE (V:H) (1)		
			≤ 1:20	> 1:20 ≤ 1:2	> 1:2
RAINY	1 & 6	SOIL STABILIZATION		X	X
		SEDIMENT BARRIER (4)	X	X	X
		DESILTING BASIN (2)		X	X
	2, 4 & 5	SOIL STABILIZATION			
		SEDIMENT BARRIER		X	X
		DESILTING BASIN (2)			X
	3	SOIL STABILIZATION			X(5)
		SEDIMENT BARRIER		X	X
		DESILTING BASIN (2)			X
	7	SOIL STABILIZATION AND SEDIMENT CONTROL PRACTICES TO BE DETERMINED BY APPLICABLE RWQCB (7)			
NON-RAINY	1	SOIL STABILIZATION			
		SEDIMENT BARRIER		X	X
		DESILTING BASIN(2)			X
	2, 3, 4 & 5	SOIL STABILIZATION			
		SEDIMENT BARRIER			
		DESILTING BASIN			
	6	SOIL STABILIZATION			
		SEDIMENT BARRIER		X	X
		DESILTING BASIN (2)			X
	7	SOIL STABILIZATION AND SEDIMENT CONTROL PRACTICES TO BE DETERMINED BY APPLICABLE RWQCB (7)			

(1) Unless otherwise noted, the BMP is required for the slope inclinations indicated on slope lengths greater than 3 meters. (10 ft)

(2) Required in addition to the temporary sediment barrier, where feasible. Feasibility will depend on site-specific factors such available right-of-way within the project limits, topography, soil type, disturbed soil area within watershed, and climate conditions.

(3) Implementation of soil stabilization controls are not required except prior to predicted rain.

(4) The indicated temporary BMP required on all slope lengths.

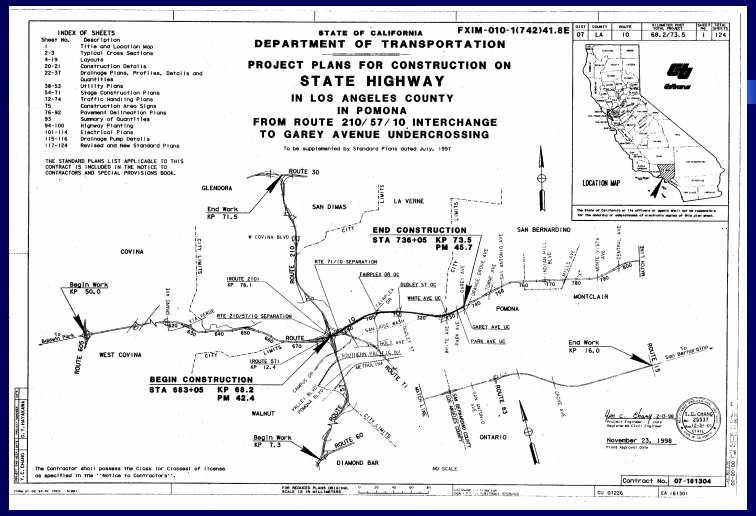
(5) The indicated temporary BMP required on slope lengths greater than 15 meters. (50 ft)

(6) Sediment controls and barriers include all temporary sediment control construction BMPs identified in the Statewide Storm Water Quality Practice Guidelines associated with the SWMP and Section 4 of these Guidelines. Linear barrier systems are equivalent to what are referred to in the General Construction Permit as perimeter controls. The intent is to provide a barrier to prevent the transport of sediment at the downslope edge of disturbed soil areas.

(7) Refer to Section 2.2.6 for procedures.

Pre-Site Inspection Preparation Work

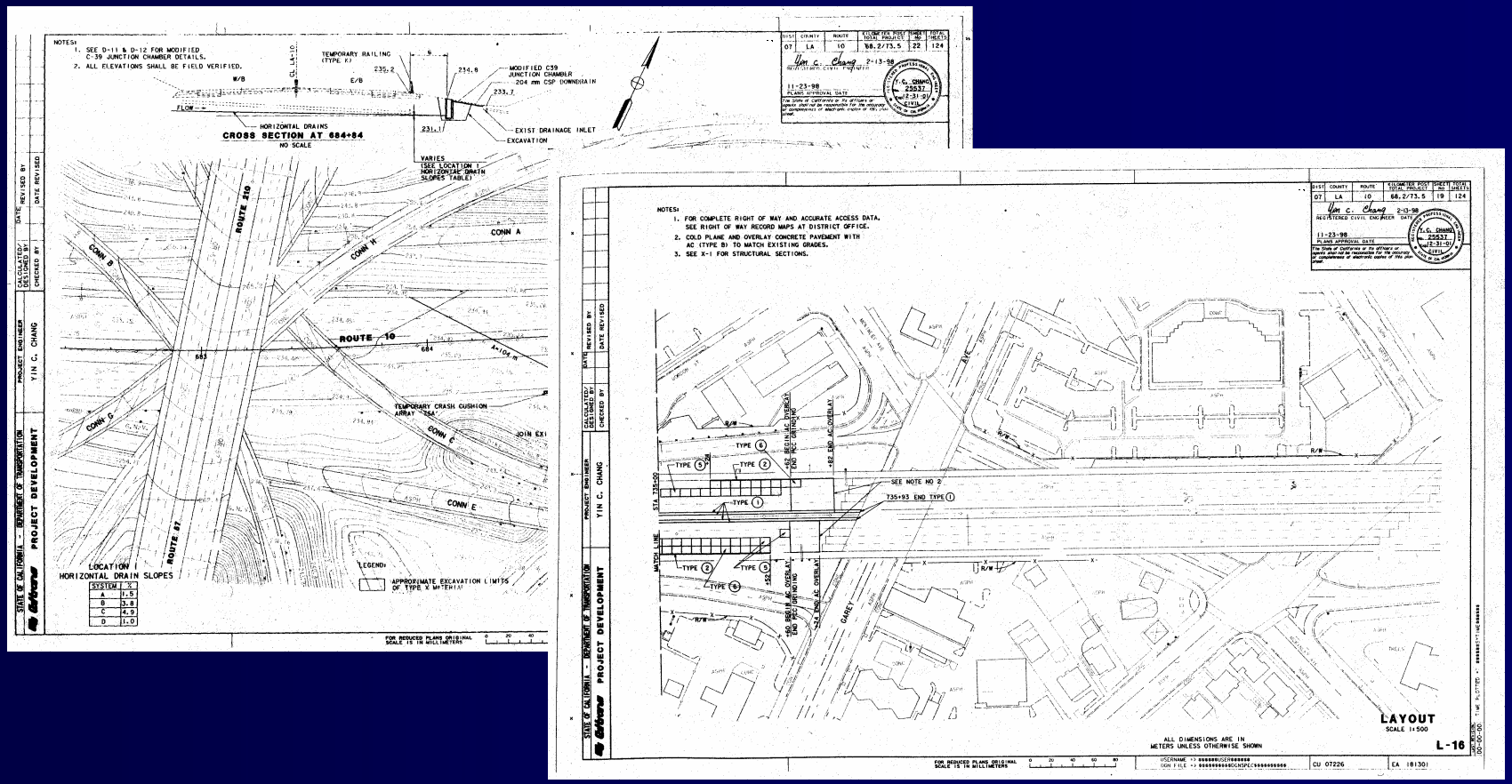
Review Project Plans



- Project plans should be reviewed in the context of water pollution control
- Prior to initial inspection or prior to rainy season inspection, review for
  - general layout
  - existing drainage courses
  - what is being constructed
  - R of W limits
- Review Current Stage as it relates to Water Pollution Control

Pre-Site Inspection Preparation Work

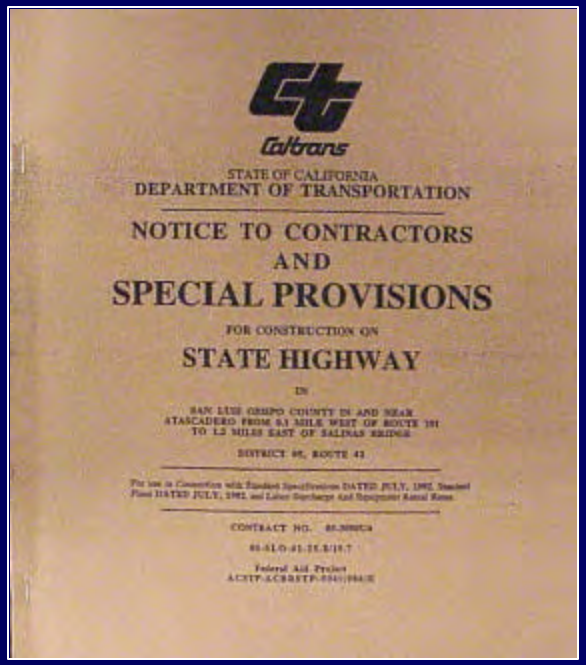
- Layout sheet / Drainage sheet



Pre-Site Inspection Preparation Work

Review the Special Provisions

- Table of Contents
- Section 10 - Water Pollution Control
- Temporary BMPs
- Section 10 - Erosion Control (Permanent)
- Relations with Other Agencies
- Bid Items
- Special requirements


Caltrans

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

NOTICE TO CONTRACTORS
AND
SPECIAL PROVISIONS

FOR CONSTRUCTION ON

STATE HIGHWAY

IN

SAN LUIS OBISPO COUNTY IN AND NEAR ATASCADERO FROM 0.1 MILE WEST OF ROUTE 101 TO 1.2 MILES EAST OF SALINAS BRIDGE

DISTRICT 05, ROUTE 41

CONTRACT NO.

Federal Aid Project

Pre-Site Inspection Preparation Work

Review the Special Provisions

- **Table of Contents**
  - **Quickly outlines scope of work**

ORDER OF WORK

CLEARING AND GRUBBING

EARTHWORK

TABLE OF CONTENTS

SECTION 8-3. WELDING....45
8-3.01 WELDING ELECTRODES....45
8-3.02 WELDING QUALITY CONTROL....45
SECTION 9. (BLANK)....49
SECTION 10. CONSTRUCTION DETAILS....49
SECTION 10-1. GENERAL....49
10-1.01 ORDER OF WORK....49
10-1.02 WATER POLLUTION CONTROL (STORM WATER POLLUTION PREVENTION PLAN)....49
STORM WATER POLLUTION PREVENTION PLAN PREPARATION, APPROVAL AND AMENDMENTS....50
COST BREAK-DOWN....51
SWPPP IMPLEMENTATION....54
MAINTENANCE....55
PAYMENT....55
10-1.03 PROGRESS SCHEDULE....56
10-1.04 MOBILIZATION....57
10-1.05 CONSTRUCTION AREA TRAFFIC CONTROL DEVICES....57
10-1.06 CONSTRUCTION AREA SIGNS....57
10-1.07 MAINTAINING TRAFFIC....58
10-1.08 CLOSURE REQUIREMENTS AND CONDITIONS....58
CLOSURE SCHEDULE....58
CONTINGENCY PLAN....59
LATE REOPENING OF CLOSURES....59
COMPENSATION....59
10-1.09 CONSTRUCTION ZONE ENHANCED ENFORCEMENT....59
10-1.10 TRAFFIC CONTROL SYSTEM FOR LANE CLOSURE....60
10-1.11 TEMPORARY PAVEMENT DELINEATION....61
GENERAL....61
TEMPORARY LANELINE AND CENTERLINE DELINEATION....61
10-1.12 PORTABLE CHANGEABLE MESSAGE SIGN....62
10-1.13 TEMPORARY CRASH CUSHION MODULE....62
GENERAL....62
MATERIALS....62
INSTALLATION....63
MEASUREMENT AND PAYMENT....63
10-1.14 EXISTING HIGHWAY FACILITIES....63
ABANDON CULVERT....63
REMOVE METAL BEAM GUARD RAILING....64
REMOVE FLARED END SECTION....64
REMOVE ASPHALT CONCRETE DIKE....64
REMOVE DRAINAGE FACILITY....64
COLD PLANE ASPHALT CONCRETE PAVEMENT....64
10-1.15 CLEARING AND GRUBBING....65
10-1.16 REMOVE TREE....65
10-1.17 EARTHWORK....65
10-1.18 IMPORTED ROCKY MATERIAL....66
10-1.19 CONTROLLED LOW STRENGTH MATERIAL....66
10-1.20 SHOULDER BACKING....67
10-1.21 SEAL RANDOM CRACKS IN EXISTING SURFACING....68
MATERIALS....68
PREPARATION....68
APPLICATION....69
MEASUREMENT AND PAYMENT....69
10-1.22 ASPHALT CONCRETE....69

Pre-Site Inspection Preparation Work

Review the Special Provisions

- **Section 10 - Water Pollution Control**
- **Due dates for SWPPP / WPCP submittal**
- **SWPPP Implementation**
  - **Rainy season dates**
  - **Active DSA size limits**
- **BMP Maintenance and Inspection Requirements**

WATER POLLUTION CONTROL

10-1.02 WATER POLLUTION CONTROL (STORM WATER POLLUTION PREVENTION PLAN)

Water pollution control work shall conform to the provisions in Section 7-1.01G, "Water Pollution," of the Standard Specifications and these special provisions.

This project lies within the boundaries of the North Coast Regional Water Quality Control Board and shall conform to the requirements of the National Pollutant Discharge Elimination System (NPDES) Permit for General Construction Activities No. CAS000002, Order No, 99-08-DWQ, and the NPDES Permit for the State of California Department of Transportation Properties, Facilities, and Activities, No. CAS000003, Order No, 99-06-DWQ issued by the State Water Resources Control Board. These permits, hereafter referred to as the "Permits," regulate storm water discharges associated with construction activities.

Water pollution control work shall conform to the requirements in the "Storm Water Pollution Prevention Plan (SWPPP) and Water Pollution Control Program (WPCP) Preparation Manual" and the "Construction Site Best Management Practices (BMPs) Manual," and addenda thereto issued up to, and including, the date of advertisement of the project, hereafter referred to respectively as the "Preparation Manual" and the "Construction Site BMP Manual" and collectively as the "Manuals." Copies of the Manuals and the Permits may be obtained from the Department of Transportation, Material Operations Branch, Publication Distribution Unit, 1900 Royal Oaks Drive, Sacramento, California 95815, Telephone: (916) 445-3520. Copies of the Manuals may also be obtained from the Department's Internet Web Site at: http://www.dot.ca.gov/hq/construc/stormwater.html.

The Contractor shall know and fully comply with the applicable provisions of the Manuals, Permits, and Federal, State, and local regulations that govern the Contractor's operations and storm water discharges from both the project site and areas of disturbance outside the project limits during construction. The Contractor shall maintain copies of the Permits at the project site and shall make the Permits available during construction.

Unless arrangements for disturbance or use of areas outside the project limits are made by the Department and made part of the contract, it is expressly agreed that the Department assumes no responsibility for the Contractor or property owner with respect to any arrangements made between the Contractor and property owner. The Contractor shall implement, inspect and maintain all necessary water pollution control practices to satisfy all applicable Federal, State, and Local laws and regulations that govern water quality for areas used outside of the highway right-of-way or areas arranged for the specific use of the Contractor for this project. Installing, inspecting, and maintaining water pollution control practices on areas outside the highway right-of-way not specifically arranged for and provided for by the Department for the execution of this contract will not be paid for.

The Contractor shall be responsible for the costs and for liabilities imposed by law as a result of the Contractor's failure to comply with the provisions set forth in this section "Water Pollution Control", including but not limited to, compliance with the applicable provisions of the Manuals, Permits and Federal, State and local regulations. Costs and liabilities include, but are not limited to, fines, penalties, and damages whether assessed against the State or the Contractor, including those levied under the Federal Clean Water Act and the State Porter Cologne Water Quality Act.

In addition to the remedies authorized by law, money due the Contractor under the contract, in an amount determined by the Department, may be retained by the State of California until disposition has been made of the costs and liabilities.

When a regulatory agency or other third party identifies a failure to comply with the permit or any other local, State, or federal requirement, the Engineer may retain money due the Contractor, subject to the following:

A. The Department will give the Contractor 30 days notice of the Department's intention to retain funds from partial payments which may become due to the Contractor prior to acceptance of the contract. Retention of funds from payments made after acceptance of the contract may be made without prior notice to the Contractor.
B. No retention of additional amounts out of partial payments will be made if the amount to be retained does not exceed the amount being withheld from partial payments pursuant to Section 9-1.06, "Partial Payments," of the Standard Specifications.
C. If the Department has retained funds and it is subsequently determined that the State is not subject to the costs and liabilities in connection with the matter for which the retention was made, the Department shall be liable for interest on the amount retained for the period of the retention, and the rate of interest payable shall be 6 percent per annum.

Conformance with the provisions of this section "Water Pollution Control" shall not relieve the Contractor from the Contractor's responsibilities, as provided in Section 7, "Legal Relations and Responsibilities," of the Standard Specifications.

The Contractor shall notify the Engineer immediately upon request from the regulatory agencies to enter, inspect, sample, monitor or otherwise access the project site or the Contractor's records pertaining to water pollution control work.

STORM WATER POLLUTION PREVENTION PLAN PREPARATION, APPROVAL AND AMENDMENTS

As part of the water pollution control work, a Storm Water Pollution Prevention Plan, hereafter referred to as the "SWPPP," is required for this contract. The SWPPP shall conform to the provisions in Section 7-1.01G, "Water Pollution,"

Pre-Site Inspection Preparation Work

Review the Special Provisions

- Temporary BMPs
- Minimum BMP requirements for all BMP categories
- Required BMPs identified in the plans
- BMPs identified in a conceptual SWPPP (some districts)

Pre-Site Inspection Preparation Work

Review the Special Provisions

- **Section 10 - Erosion Control (Permanent)**

EROSION CONTROL

10-1.22 EROSION CONTROL (TYPE C)

Erosion control (Type C) shall conform to the provisions in Section 20-3, "Erosion Control," of the Standard Specifications and these special provisions.

Erosion control (Type C) work shall consist of incorporating straw and applying seed and commercial fertilizer to embankment slopes 1:4 (vertical:horizontal) or steeper, and other areas designated by the Engineer. Erosion control (Type C) shall be applied during the period starting November 15 and ending March 15; or, if the slope on which the erosion control is to be placed is finished during the winter season as specified in "Water Pollution Control" elsewhere in these special provisions, the erosion control shall be applied immediately; or, if the slope on which the erosion control is [illegible]ished outside both specified periods and the contract work will be completed before November 15, the [illegible]plied as a last item of work.

[illegible]n control materials, soil surface preparation shall conform to the provisions in Section [illegible]ard Specifications, except that rills and gullies exceeding 50 mm in depth or width shall [illegible]h, temporary erosion control materials and other debris shall be removed from areas to

[illegible]ATERIALS.—Materials shall conform to the provisions in Section 20-2, "Materials," of the Standard Specifications and the following:

SEED.—Seed shall conform to the provisions in Section 20-2.10, "Seed," of the Standard Specifications. Individual seed species shall be measured and mixed in the presence of the Engineer.

Seed not required to be labeled under the California Food and Agricultural Code shall be tested for purity and germination by a seed laboratory certified by the Association of Official Seed Analysts, or a seed technologist certified by the Society of Commercial Seed Technologists.

Seed shall have been tested for purity and germination not more than one year prior to application of seed.

Results from testing seed for purity and germination shall be furnished to the Engineer prior to applying seed.

LEGUME SEED.—Legume seed shall be pellet-inoculated or industrial-inoculated.

Pellet-inoculated seed shall be inoculated in accordance with the provisions in Section 20-2.10, "Seed," of the Standard Specifications.

Inoculated seed shall have a calcium carbonate coating.

Pellet-inoculated seed shall be sown within 90 days after inoculation.

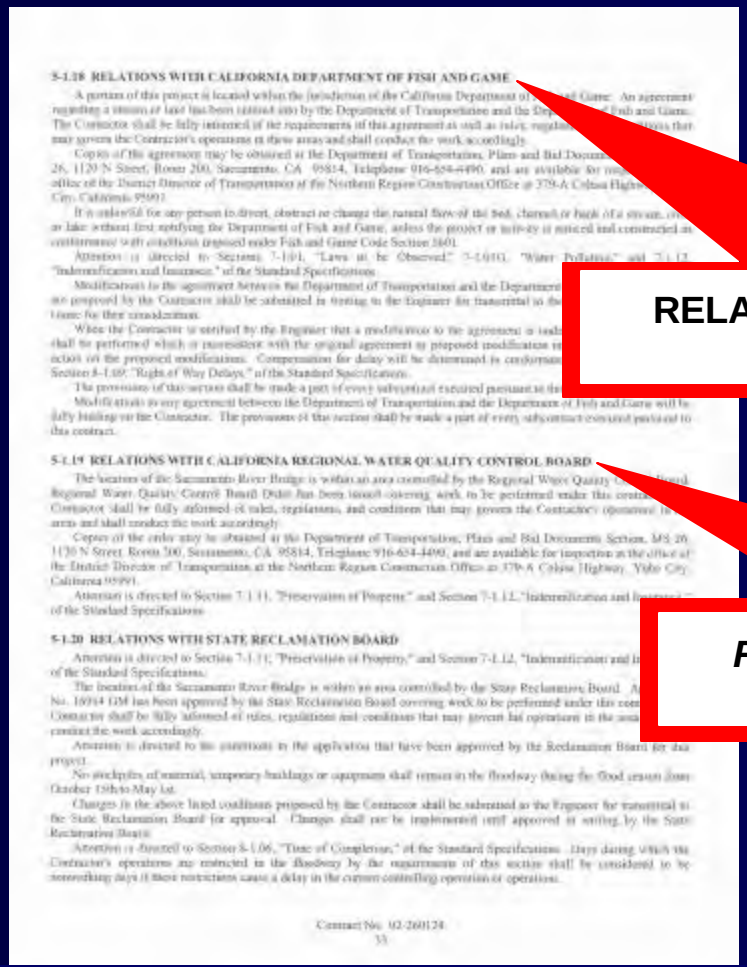
Industrial-inoculated seed shall be inoculated with Rhizobia and coated using an industrial process by a manufacturer whose principal business is seed coating and seed inoculation.

Industrial-inoculated seed shall be sown within 180 calendar days after inoculation.

Pre-Site Inspection Preparation Work

Review the Special Provisions

- **Relations with Other Agencies**



5-1.18 RELATIONS WITH CALIFORNIA DEPARTMENT OF FISH AND GAME

5-1.19 RELATIONS WITH CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

5-1.20 RELATIONS WITH STATE RECLAMATION BOARD

RELATIONS WITH CALIFORNIA DEPARTMENT OF FISH AND GAME

RELATIONS WITH CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

Pre-Site Inspection Preparation Work

Review the Special Provisions

- **Special requirements**

Maintenance

Reporting Requirements

MAINTENANCE

To ensure the proper implementation and functioning of water pollution control practices, the Contractor shall regularly inspect and maintain the construction site for the water pollution control practices identified in the SWPPP. The construction site shall be inspected by the Contractor as follows:

A. Prior to a forecast storm;
B. After a precipitation event which causes site runoff;
C. At 24 hour intervals during extended precipitation events;
D. Routinely, a minimum of once every two weeks outside of the defined rainy season;
E. Routinely, a minimum of once every week during the defined rainy season.

The Contractor shall use the Storm Water Quality Construction Site Inspection Checklist provided in the Preparation Manual or an alternative inspection checklist provided by the Engineer. One copy of each site inspection record shall be submitted to the Engineer within 24 hours of completing the inspection.

REPORTING REQUIREMENTS

Report of Discharges, Notices or Orders

If the Contractor identifies any discharge into receiving waters in a manner causing, or potentially causing, a condition of pollution, or if the project receives a written notice or order from any regulatory agency, the Contractor shall immediately inform the Engineer. The Contractor shall submit a written report to the Engineer within 7 days of the discharge event, notice, or order. The report shall include the following information:

A. The date, time, location, nature of the operation, and type of discharge, including the cause or nature of the notice or order.
B. The water pollution control practices deployed before the discharge event, or prior to receiving the notice or order.
C. The date of deployment and type of water pollution control practices deployed after the discharge event, or after receiving the notice, or order, including additional measures installed or planned to reduce or prevent reoccurrence.
D. An implementation and maintenance schedule for any affected water pollution control practices.

Report of First-Time Non-Storm Water Discharge

The Contractor shall notify the Engineer at least 3 days in advance of each first-time non-storm water discharge event, excluding exempted discharges. The Contractor shall notify the Engineer of each different operation causing a non-storm water discharge and shall obtain field approval for each first-time non-storm water discharge. Non-storm water discharges shall be monitored at each first-time occurrence and routinely thereafter.

Annual Certifications

By June 15 of each year, the Contractor shall complete and submit an Annual Construction Activity Certification as contained in the Preparation Manual to the Engineer.

PAYMENT

The contract lump sum price paid for prepare storm water pollution prevention plan shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals for doing all the work involved in developing, preparing, obtaining approval of, revising, and amending the SWPPP, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

Attention is directed to Section 9-1.06, "Partial Payments," and Section 9-1.07, "Payment After Acceptance," of the Standard Specifications. Payments for prepare storm water pollution prevention plan will be made as follows:

A. After the SWPPP has been approved by the Engineer, 75 percent of the contract item price for prepare storm water pollution prevention plan will be included in the monthly partial payment estimate; and
B. After acceptance of the contract in conformance with the provisions in Section 7-1.17, "Acceptance of Contract," of the Standard Specifications, payment for the remaining 25 percent of the contract item price for prepare storm water pollution prevention plan will be made in conformance with the provisions in Section 9-1.07.

Pre-Site Inspection Preparation Work

Review the Special Provisions

- **Bid Items**

COPY OF ENGINEER'S ESTIMATE
(NOT TO BE USED FOR BIDDING PURPOSES)
04-:245524

Item	Item Code	Item	Unit of Measure	Estimated Quantity
1	013513	TEMPORARY CREEK DIVERSION SYSTEM	LS	LUMP SUM
2	070010	PROGRESS SCHEDULE (CRITICAL PATH)	LS	LUMP SUM
3	070018	TIME-RELATED OVERHEAD	WDAY	870
4	074018	HEALTH AND SAFETY PLAN	LS	LUMP SUM
5	074019	PREPARE STORM WATER POLLUTION PREVENTION PLAN	LS	LUMP SUM
6	074020	WATER POLLUTION CONTROL	LS	LUMP SUM
7	020972	TEMPORARY COVER	LS	LUMP SUM
8	020973	TEMPORARY DRAINAGE INLET PROTECTION	EA	30
9	020974	TEMPORARY CONCRETE WASHOUT FACILITY	LS	LUMP SUM
10	020975	TEMPORARY ENTRANCE/EXIT	LS	LUMP SUM
		DRAINAGE INLET PROTECTION	EA	86
		PROTECTION	EA	13
			EA	6
			M	2500
			12	17 700
				12
				32
			M3	3
			M	230
		VE PIPE	M	16

Contract No. «Dist»-«Contract_No»
4

8	020973	TEMPORARY DRAINAGE INLET PROTECTION	EA	30
9	020974	TEMPORARY CONCRETE WASHOUT FACILITY	LS	LUMP SUM
10	020975	TEMPORARY ENTRANCE/EXIT	LS	LUMP SUM

Pre-Site Inspection Preparation Work

Review the Storm Water Pollution Prevention Plan

- **Important Sections**
- **Sections 100 and 200**
  - **Is plan certified by the contractor and approved by the RE ?**
  - **Are their any relevant amendments?**
- **Section 300**
  - **Unique Site Features**
  - **Project Schedule / Water Pollution Control Schedule**

Pre-Site Inspection Preparation Work

Review the Storm Water Pollution Prevention Plan

- **Important Sections**
- **Section 500**
  - **What are identified BMPs for erosion, sediment, and non-storm water controls?**
  - **Look at attachment "C" to determine what minimum BMPs will be used**
  - **Review vicinity map and WPCD's**
- **Section 600.4 (Sampling and Analysis)**
  - **Sediment**
- **Section 600.5 (Sampling and Analysis)**
  - **Non-Visible**

Pre-Site Inspection Preparation Work

Review the Water Pollution Control Program

- **Important Sections**
- **Section 10**
  - **Is plan certified by the contractor and approved by the RE ?**
- **Section 20**
  - **Unique Site Features**
  - **Project Schedule / Water Pollution Control Schedule**
- **Section 30**
  - **What are identified BMPs for erosion, sediment, and non-storm water controls?**
  - **Review vicinity map and WPCD's**
- **Section 40**
  - **Are their any relevant amendments?**

Inspection Form

Attachment H

- Instructions
- Checklist

Special Provisions or Conceptual SWPPP may require different form

Attachment H

Storm Water Quality Construction Site Inspection Checklist

GENERAL INFORMATION				
Project Name				
Caltrans Contract N°				
Contractor				
Inspector's Name				
Inspector's Title				
Signature				
Date of Inspection				
Inspection Type (Check Applicable)	❒ Prior to forecast rain ❒ 24-hr intervals during extended rain		❒ After a rain event ❒ Other _____	
Season (Check Applicable)	❒ Rainy		❒ Non-Rainy	
Storm Data	Storm Start Date & Time:		Storm Duration (hrs):	
	Time elapsed since last storm (Circle Applicable Units)	Min. Hr. Days	Approximate Rainfall Amount (mm)	

PROJECT AREA SUMMARY AND DISTURBED SOIL AREA (DSA) SIZE LIMITS FROM SPECIAL PROVISIONS				
Total Project Area	_____	Hectares	_____	Acres
Rainy Season DSA Limit	_____	Hectares	_____	Acres
Field Estimate of Non-Active DSAs	_____	Hectares	_____	Acres
Field Estimate of Active DSAs	_____	Hectares	_____	Acres

Field Inspection Techniques

Field Inspection Techniques

Storm Water Inspection Tips

- If possible take copy of approved plan on field inspection
- Use an inspection form
- Contractor should participate in inspection
- Inspect the entire site including the perimeter
- Start inspection from lowest point or from area where discharge possibility is the highest

Field Inspection Techniques

Storm Water Inspection Tips

- Walk interior and perimeter of Contractors yard
- Invite Structures Construction personnel
- Identify existing conditions
- Take photographs
- Identify changes in construction that may require amendments to the SWPPP or WPCP
- If Contractors yard is off the Right of Way check with RE before entry

Field Inspection Techniques

Rainy Season Inspections

- **Evaluate Active and Non-Active Construction Areas**

Field Inspection Techniques

Rainy Season Inspections

- **Frequency**
  - At least weekly
  - Prior to a forecast storm
  - After a rain event that causes runoff from the construction site and
  - At 24-hour intervals during extended rain events and
  - As specified in project Special Provisions

Field Inspection Techniques

Rainy Season Inspections

- **Implementation Requirements**
  - **Are the Recommended Combination of BMPs being implemented per Table 2-2, and 2-3**
  - **Are the appropriate Non-Storm Water Management BMPs being used**
  - **Are the appropriate Waste Management and Materials Pollution Control BMPs being used**

Field Inspection Techniques

Non-Rainy Season Inspections

- **Evaluate Active and Non-Active Construction Areas**

Field Inspection Techniques

Non-Rainy Season Inspections

- **Frequency**
  - **At least every 2 weeks**
  - **Prior to a forecast storm**
  - **After a rain event that causes runoff from the construction site and**
  - **At 24-hour intervals during extended rain events and**
  - **As specified in project Special Provisions or District requirements**

Field Inspection Techniques

Non-Rainy Season Inspections

- **Implementation Requirements**
  - **Are the Recommended Combination of BMPs being implemented per Table 2-2, and 2-3**
  - **Are the appropriate Non-Storm Water Management BMPs being used**
  - **Are the appropriate Waste Management and Materials Pollution Control BMPs being used**

Field Inspection Techniques

Sampling and Analysis

Sedimentation / Siltation or Turbidity

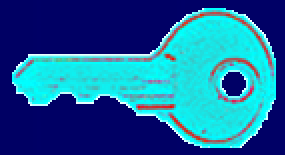
- Monitor weather reports
- Identify site conditions
- If applicable notify RE and contractor
- Sampling by contractor is mandatory

Field Inspection Techniques

Sampling and Analysis

Non-Visible Pollutants

- **Monitor weather reports**
- **When to Inspect**
  - Prior to a storm event
  - Every 24 hours during extended storm events
  - After storm events
- **Identify site conditions**
  - Spills, leaks, malfunction or breaches of BMPs



Field Inspection Techniques

Sampling and Analysis

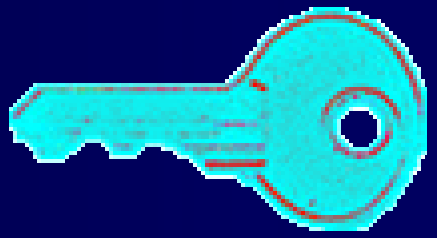
Non-Visible Pollutants continued

- **Contractor to institute correction procedures**
- **If applicable notify contractor and RE**
- **Contractor to sample if pollutants are not covered, contained or disposed of properly**

Field Inspection Techniques

Sampling and Analysis

- **Make sure potential non-visible pollutants are:**
  - **Cleaned-up**
  - **Covered**
  - **Contained**



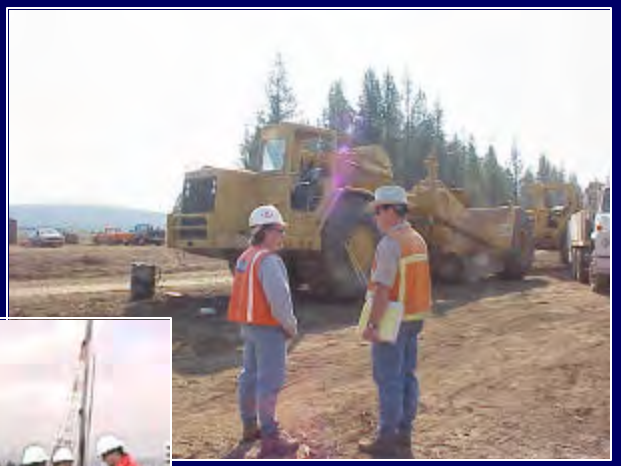
- **C^3**

Communication

- **Course Highlights**
  - Introduction
  - The Law
  - Regulatory Fines
  - Permits, Specs and Manuals
  - Construction Site BMPs
  - Introduction to Water Quality Sampling and Analysis
  - Inspection Procedures
  - **Communication**
  - Documentation

Communication

- **Section Highlights**
  - **Debriefing the Contractor and the RE**
  - **Regulatory Inspections**
  - **Additional Inspections**



Communication

Debriefing the Contractor

Check with the project RE prior to the inspection regarding communication protocol

Communicate during inspection

- **BMP requirements**
  - **Missing**
  - **Improper installation**
  - **Improper implementation**
  - **Deficiencies**

- **Maintenance requirements**
- **Non-compliance**

Communication

Debriefing the RE

Communicate inspection findings

- **BMP requirements**
  - **Missing**
  - **Improper installation**
  - **Improper implementation**
  - **Deficiencies**

- **Maintenance requirements**
- **Non-compliance**

Communication

Regulatory inspections

- **When to expect them**
- **How to act**
- **What to say**
- **What not to say**

Documentation

- **Course Highlights**
  - Introduction
  - The Law
  - Regulatory Fines
  - Permits, Specs and Manuals
  - Construction Site BMPs
  - Introduction to Water Quality Sampling and Analysis
  - Inspection Procedures
  - Communication
  - **Documentation**

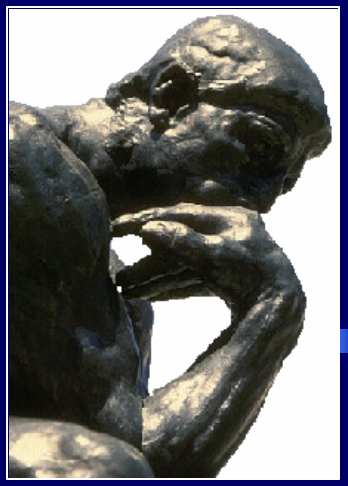
Documentation

File Organization

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

- **Workgroup Brainstorming**

Closing Comments



What we learned

- **Why water pollution should be prevented**
- **Monetary fines are real**
- **Which permits, specifications, and manuals govern on Caltrans construction sites**
- **Correct and incorrect BMP installations**
- **An Introduction to Sampling and Analysis Plans**
- **How to prepare for and conduct WPC inspections**
- **What to expect and do during regulatory inspections**
- **How to handle the paperwork**

Closing Comments

- **Please take these final thoughts with you**
  - **Read the Caltrans Manuals**
  - **Understand the requirements**
  - **Use an effective combination of erosion and sediment controls**
  - **Stabilize conveyances**

Closing Comments

- **Use resources available to you**
  - **DCSWC**
  - **Manuals - BMP / SWPPP-WPCP / Construction**
  - **Consultants**
- **Don’t be reactive be proactive**
- **Inspect / monitor**
- **Water pollution control on construction sites is here to stay**
- **Trend toward more environmental awareness**

Closing Comments

- **<u>You</u> can make a difference**
- **Water pollution control:**
  - **Helps preserve valuable habitat**
  - **Protect scenic resources and recreational water uses**
  - **Protects water resources for future generations to enjoy**