ANNUAL REPORT

NPDES Stormwater Permit Annual Report for July 1, 2001 through June 30, 2002

Prepared by

Colorado Department of Transportation

Municipal Stormwater Permit No.: COS-000005

October 1, 2002

ANNUAL REPORT

NPDES Stormwater Permit Annual Report for July 1, 2001 through June 30, 2002

Prepared by

Colorado Department of Transportation

October 1, 2002

Contents

Appendices

Acronyms

BMPs	Best management practices
CDOT	Colorado Department of Transportation
CDPHE	Colorado Department of Public Health and Environment
CDPS	Colorado Discharge Permit System
ECAT	Erosion Control Advisory Team
ECS	Erosion control supervisor
FRCP	Facility Runoff Control Plans
MMS	Maintenance Management System
MSDS	Material safety data sheets
NPDES	National Pollutant Discharge Elimination System
RECAT	Regional ECAT
SWMP	Stormwater management plan
TMDL	Total maximum daily level

Introduction

This Annual Report is being submitted in compliance with Part I.F of National Pollutant Discharge Elimination System (NPDES) Permit No. COS-000005. This report covers the period from July 1, 2001 through June 30, 2002. The report is arranged to correspond to the Annual Report elements listed in Part I.F. of the permit. The report is divided into the following sections:

- Section 1 – Status of the Components of the Stormwater Management Program (Part I.F.1)
- Section 2 – Proposed Changes to the Stormwater Management Program (Part I.F.2)
- Section 3 – Revisions to Assessment of Controls and Fiscal Analysis (Part I.F.3)
- Section 4 – Summary of Monitoring Data (Part I.F.4)
- Section 5 – Summary of Educational Activities (Part I.F.5)
- Section 6 – Annual Expenditures and Budgets (Part I.F.6)
- Section 7 – Summary of Enforcement Actions and Inspections (Part I.F.7)
- Section 8 – Report on Wet Weather Monitoring Program (Part I.F.8)

Each section includes a reference to the permit language and an explanation of the program status.

SECTION 1

Status of the Components of the Stormwater Management Program (Part I.F.1)

Part I.F.1 states, "The implementation status of each [of] the components of the Stormwater Management Programs that are established as permit conditions (status of compliance with any schedules established under this permit shall be included in this section) and shall include specific quantitative measures where possible;"

The Stormwater Management Program for the Colorado Department of Transportation (CDOT), Part I.B.1 of CDOT's permit, consists of eight different programs, which will be discussed separately in this section. The eight programs that fall under the Stormwater Management Program are as follows:

- Maintenance of Structural Controls (Part I.B.1.a)
- New Development and Redevelopment Planning Program (Part I.B.1.b)
- Public Street Maintenance Program (Part I.B.1.c)
- Herbicide, Pesticide, and Fertilizer Program (Part I.B.1.d)
- Illicit Discharges Program (Part I.B.1.e)
- Industrial Facilities Program (Part I.B.1.f)
- Construction Sites Program (Part I.B.1.g)
- Facility Runoff Control Program (Part I.B.1.h)

Maintenance of Structural Controls (Part I.B.1.a)

CDOT's Maintenance of Structural Controls Program provides for the maintenance of detention facilities, open channels, and storm sewer inlets. These devices are maintained in a manner that allows them to function as designed without excess buildup of sediment, trash, or debris. Table A-1 is a summary of the activities that have taken place during the reporting period.

TABLE A-1
Maintenance of Structural Controls

Facility	Total Number of Units[a]	Maintenance Activity[b]	Quantity
Detention, retention, and water quality ponds	6	Trash removal	6 ponds
		Mowing	6 ponds
		Herbicide/Pesticide	4 ponds
		Ditch and streambed maintenance	4 ponds
Grass swales	3	Mowing	3

TABLE A-1
Maintenance of Structural Controls

Facility	Total Number of Units[a]	Maintenance Activity[b]	Quantity
		Trash removal	2
Constructed wetland	1	Trash removal, herbicide/ pesticide, ditch and streambed maintenance	1
Ditches	25 linear miles	Ditch and streambed maintenance and sand cleanup	25 linear miles
Open channel major drainage ways	0	NA	NA
Storm sewer inlets	32 locations	Clean drainage structure	28 drains cleaned
Other	1 location	Clean drain structure, trash removal, and mowing	1 spillway berm

Athe total number of ponds, length of channel, number of outlets, area, etc.
bThe type of maintenance activity performed. This could include mowing, cleaning, flushing, repairing, etc.
NA=not available

An initial inventory of permanent structural controls has been submitted to the Division. The following types of structural controls are included in this inventory:

a) Stormwater detention ponds
b) Stormwater retention ponds
c) Wet ponds
d) Constructed wetlands
e) Sand infiltration systems
f) Stormceptors or similar devices
g) Major open channels

An updated inventory can be found in Appendix A of this Annual Report.

New Development and Redevelopment Planning Program (Part I.B.1.b)

CDOT's New Development and Redevelopment Planning Program is divided into the following major elements:

- Review of new development/redevelopment for stormwater best management practices (BMPs)
- Update of the Draft 1995 Drainage Manual
- Update of the Erosion Control and Stormwater Quality Guidance Manual
- Identification of sensitive waters within the permitted municipalities
- Identification of special requirements for potential discharges to sensitive waters

The status of each of these programs will be discussed individually.

Review of New Development and Redevelopment for BMPs (Part I.B.1.b.1)

Plan Review

CDOT is in the process of developing a program for new highway projects and significant highway modifications. The program will include definition of significant highway modifications. The program's development schedule is shown in Table B-1. It is anticipated that the program will be submitted to the Colorado Department of Public Health and Environment (CDPHE) no later than January 2003 as required in the permit.

TABLE B-1
New Development and Redevelopment Review Schedule

Schedule Item	Status[a]	Anticipated Completion Date
Review existing CDOT policies and procedures	Completed	August 2001
Develop a Draft Program	Draft has been presented to Regions 2 and 6. Region 1 anticipated in October 2002	October 2002
Prepare Final Program	Under development	Mid-November 2002
Submit program to CDPHE	Under development	January 2003

[a]Status is the work done to date, if any.

Training

CDOT is in the process of instituting a training program for CDOT inspectors and personnel responsible for the review and inspection of new developments. The training program is going to be developed in conjunction to the new development and redevelopment program, which is planned to be submitted to the CDPHE in January 2003 and is going to serve as a basis for the necessary training.

CDOT did conduct a New Development Workshop for CDOT employees to introduce the proposed New Development Program and to solicit feedback from key CDOT employees.

Update of the Draft 1995 Drainage Manual (Part I.B.1.b.2)

CDOT is in the process of updating the 1995 Drainage Manual to require the evaluation and where feasible, the incorporation of stormwater quality elements into the design of drainage systems. The updated manual will include a checklist that will be used on all projects and a process to evaluate and select the appropriate BMPs for the project. The schedule for updating the manual is shown in Table B-2. It is anticipated that the manual update will be completed no later than January 2003, and a copy will be provided to the CDPHE. The completion date for the update of the Drainage Manual has been coordinated with the completion date for the New Development Program.

TABLE B-2
Update of 1995 Drainage Manual Schedule

Schedule Item	Status[a]	Anticipated Completion Date
Review existing CDOT Drainage Manual and evaluate other drainage manuals	Complete	July 2001
Develop a Draft Drainage Manual	Under development	October 2002
Prepare Final Drainage Manual	Under development	Mid-November 2002
Submit Drainage Manual to CDPHE	Under development	January 2003

[a]Status is the work done to date, if any.

Update of the Erosion Control and Stormwater Quality Guidance Manual (Part I.B.1.b.3)

CDOT has updated the sections of the Erosion Control and Stormwater Quality Guidance Manual addressing temporary BMPs for construction. These sections have gone to print and will be ready for distribution in October.

CDOT is still in the process of updating the Erosion Control and Stormwater Quality Guidance Manual to include design and maintenance criteria for permanent BMPs. The Erosion Control and Stormwater Quality Guidance Manual will also contain the requirements and procedures being developed for CDOT's New Development Program. The completion of the permanent BMP section of the Erosion Control and Stormwater Quality Guidance Manual is therefore contingent on the finalization of CDOT's New Development Program. Thus, the completion date for the update of the Erosion Control and Stormwater Quality Guidance Manual has been coordinated with the completion date for the New Development Program. The schedule for updating the manual is shown in Table B-3. It is anticipated that the manual update will be completed no later than January 2003, and a copy will be provided to the CDPHE.

TABLE B-3
Update of Erosion Control and Stormwater Quality Guidance Manual Schedule

Schedule Item	Status[a]	Anticipated Completion Date
Review existing CDOT Erosion Control and Stormwater Quality Manual; and evaluate other permanent erosion and stormwater quality control practices	Under development	October 2002
Develop a Draft Manual	Under development	October 2002
Prepare Final Manual	Under development	Mid-November 2002
Submit Manual to CDPHE	Under development	January 2003

[a]Status is the work done to date, if any.

Identification of Sensitive Waters Within the Permitted Municipalities (Part I.B.1.b.4)

CDOT has identified the sensitive waters within the permitted municipalities. The identification was completed in July 2001 and reported in the FY 2001 Annual Report.

Identification of Special Requirements for Potential Discharges to Sensitive Waters (Part I.B.1.b.5)

CDOT is in the process of evaluating the need for special requirements for those projects that have the potential to discharge stormwater into the sensitive waters. The schedule for this work is shown in Table B-5. It is anticipated that the work will be completed no later than January 2003, and a copy will be provided to the CDPHE.

TABLE B-5
Special Needs for Potential Discharges to Sensitive Waters Schedule

Schedule Item	Status[a]	Anticipated Completion Date
Review existing CDOT practices and review applicable practices	Under development	October 2002
Develop Draft Program	Under development	October 2002
Prepare Final Program	Under development	Mid-November 2002
Submit Program to CDPHE	Under development	January 2003

[a]Status is the work done to date, if any.

Public Street Maintenance Program (Part I.B.1.c)

The following elements of CDOT's Public Street Maintenance Program may impact stormwater quality:

- Snow and ice management
- Salt and sand storage
- Magnesium chloride application practices
- Sweeping leaf litter and debris
- Sweeping sanded streets
- Disposal of sweeper waste

CDOT's public street maintenance program is summarized in the following paragraphs. The current program effectively controls discharges into the stormwater system.

General Maintenance

As stated in CDOT's Erosion Control and Stormwater Quality Guide, the following BMPs are used for maintenance activities:

- Do not use herbicides unless unavoidable.
- Use low-release fertilizers.

- Follow manufacturer's instructions for insecticides.
- Do not perform sand blasting during high wind days.
- Use floating straw or boom type collectors when painting bridges.
- Minimize soil disturbances.
- Avoid accidental spill and improper disposal of solvents.
- Ensure proper disposal of cleaned material and waste products.
- Minimize the creation of dust by adding moisture.
- Avoid certain repairs such as bridge deck, paved ditches, etc., during high precipitation warnings.
- Ensure proper operation of wastewater treatment and sludge disposal systems.
- Provide adequate litter receptacles for rest areas.
- Perform periodic inspections of storage tanks for leaks.
- Perform street sweeping as soon as practicable after snow storms.
- Re-vegetate bare soil areas adjacent to highways.
- Implement litter control programs.

Street Sweeping

CDOT performs mechanical sweeping of sand, dirt, and debris from paved surfaces, shoulders, curbs and gutters, and median barriers to assure roadway drainage, to maintain the environmental and aesthetic quality of the roadway, and for air pollution concerns. CDOT uses a database to track information on how much sand, gravel, or magnesium chloride is applied per mile and what roads and highways are swept or sanded and how much material is removed from the streets. Sanding and deicing materials are tabulated within each transportation region. The information is contained in CDOT's Maintenance Management System (MMS) that tracks location, date, and quantity of application.

Snow and Ice Control

One of CDOT's high priorities is the removal of snow from state highways. CDOT applies deicing materials in accordance with the Department's Procedural Directive 1055.2 (Application of Abrasives and Deicers). Abrasives and deicers are applied in accordance with the following requirements of the directive:

- Do not cast abrasives into or against other vehicles on the road.
- Place stockpiles containing salt or melting agents in covered storage or containment pads to reduce leaching.
- Place CDOT property signs at unfenced stockpiles.

Additionally, CDOT follows the Colorado Air Quality Commission's Regulation 16 requiring specified sanding material that can be applied to roadways in winter. CDOT follows the Regional Air Quality Council Guidelines to Reduce Air Pollution from Street Sanding for the metropolitan Denver area. These guidelines include prescriptions for sand application rates, maximum salt concentrations, calibration of sand spreaders, and sweeping of sanded streets.

CDOT performs sweeping of sanded streets as soon as weather and road conditions allow. Sand and gravel from the highway and roadway surface is collected and disposed of in landfills or reused in the construction process. In accordance with the permit, streets are swept a minimum of twice per year, once in the fall and once in the spring.

TABLE C-1
Street Maintenance and Material Usage

Sweeping Miles	Region 1	Region 2	Region 3	Total Miles Swept
Sweeping Miles	9,310	10,100	36,729	56,139

Material Usage	Region 1	Region 2	Region 3	Total Material Used
Abrasive Material (ton)	13,778	0	12	13,790
Salt/Sand Mixture (ton)	91,871	50,086	21,275	164,032
Liquid Deicer (gal.)	1,532,046	751,229	688,947	2,972,222
Solid Deicer (ton)	7,821	0	11,654	19,475
Liquid Deicer Special (ton)	847,176	0	904,180	1,751,356

Rock Slide Maintenance

CDOT removes rock and other material accumulated along cut slope sections, shoulders, and other bench areas along the roadway on an as-needed basis. These areas are kept clean and the slope maintained to reduce future rock from falling onto the roadway.

Roadside Vegetation

CDOT performs the following maintenance activities on roadside vegetation within the right-of-way:

- Mowing
- Brush control
- Noxious weed control
- Bare ground treatment
- Tree pruning
- Planting
- Thinning
- Seeding
- Other activities

Before CDOT staff are allowed to start ditch blading, grubbing, cutting trees and shrubs, or spraying herbicides for weed control, the necessary clearances from regulatory agencies are obtained. The Regional Environmental Manager is contacted if a specific environmental clearance is required.

Bridges

Bridges are maintained, cleaned, and inspected for proper drainage. Appropriate safety measures are required for any work or maintenance that involves painting, cleaning, or removal of materials.

Roadside Facilities

Drainage facilities owned by CDOT within the right-of-way include cattle passes, collection ditches, shoulder drains, side ditches, underdrains, outlet ditches, contour ditches, and culverts. These facilities are maintained by a year-round work crew so that these facilities are able to handle spring runoff and summer rains.

Maintenance activities include removing trash, debris, and sediment. All drainage facilities are inspected once per year. Minor defects are repaired as necessary and major defects are reported for future repair.

Drainage facilities that have sump pumping systems are inspected to ensure the pumping system works properly and the sumps are clean. The sump pumps are tested and serviced frequently to maintain good operating condition.

Herbicide, Pesticide, and Fertilizer Program (Part I.B.1.d)

CDOT's Herbicide, Pesticide, and Fertilizer Program is summarized in the following paragraphs. The current program effectively controls discharges into the stormwater system. Key components of the program include the following:

- Herbicide use along roadways is minimized.
- Herbicide application is performed during dry-weather periods to the extent possible using methods to limit overspray.
- CDOT educates staff on the proper use, application, and disposal of herbicides, pesticides, and fertilizers.
- Applicators are certified as required by the Colorado Department of Agriculture.

Roadside vegetation is managed by mowing, pruning, thinning, or seeding to minimize or prevent unwanted plant growth. Cultural techniques encourage growth of desirable plants that eventually crowd out undesirable species. Biological control methods where living organisms destroy the unwanted host plant are also used.

Herbicides are applied according to the manufacturer's instructions. CDOT staff are instructed to not apply herbicides close to irrigation ditches, streams, stock watering ponds, or domestic water supplies. CDOT uses a selective approach, targeting specific plants for

application. Then, fertilizers are applied to promote growth of the desirable plants. Records are maintained to indicate the volume and location of herbicide, fertilizer, and pesticide applications. Material safety data sheets (MSDS) are maintained at the maintenance facility where the CDOT staff are located.

CDOT applicators are Certified State Applicators in accordance with Colorado Department of Agriculture requirements. The Colorado Department of Agriculture does not authorize CDOT employees for restricted use pesticides unless they are licensed. Over-the-counter products are used in accordance with the product's instructions but all other chemical applications are contracted out or performed by county weed control districts.

CDOT applicators are instructed to minimize weed spraying and to spray only at spot locations of weed infestations. Aquatic sites are spot sprayed with herbicides approved for such an application. Some maintenance sections do not spray herbicides in wetland areas, but those that do, specific chemicals are allowed only after notification and approval from the Regional Environmental Manager.

CDOT provides annual training for all maintenance staff. The course includes discussions on proper application of herbicides and pesticides. Nineteen CDOT staff participated in the training sessions during FY 2002.

Illicit Discharges Program (Part I.B.1.e)

CDOT's Illicit Discharges Program may be divided into the following elements that are discussed in the paragraphs below:

- Prevention of Illicit Discharges and Improper Disposal
- Ongoing Field Screening
- Investigation of Suspected Illicit Discharges
- Procedures to Prevent, Contain, and Respond to Spills
- Educational Activities to Promote Public Reporting of Illicit Discharges and Improper Disposal
- Educational Activities to Promote Proper Management and Disposal of Toxic Materials

Prevention of Illicit Discharges and Improper Disposal (Part I.B.1.e.1)

CDOT is in the process of developing an ongoing program to detect and remove illicit discharges and improperly disposed materials to their storm sewer system. As part of this program, CDOT has reviewed its program for issuance of utility permits and has drafted modifications necessary to ensure that there are not connections into the CDOT storm sewer system of non-stormwater discharges. The development of this program is being done in connection with the development of the Industrial Facilities Program, and thus completion of the program is contingent on final approval of both programs. It is anticipated that the program will be submitted to CDPHE no later than January 2003, as required in the permit.

Non-stormwater discharges, such as street wash water associated with construction activities, is not prohibited from entering the MS4 provided appropriate control measures are developed to minimize impacts of such sources. CDOT has recently updated the Erosion Control and Stormwater Quality Guidance Manual to address a wider variety of temporary BMPs used during construction. These BMPs incorporate the control measures necessary to minimize the impacts of street wash water associated with construction activities.

Ongoing Field Screening (Part I.B.1.e.2)

CDOT is developing an ongoing system of field screening of the MS4 outfalls to find illicit discharges, illegal dumping, and illicit connections. CDOT is in the process of developing a draft program identifying criteria used to evaluate outfalls for potential screening and screening frequency. A final draft of this program will be submitted to CDPHE before January 2003.

Inventory of Outfall System

No additional outfalls have been included in the inventory during the 2001 – 2002 reporting year.

Ongoing Outfall Screening

CDOT is in the process of developing an ongoing program to dry weather screen their priority outfalls for illicit discharges, illegal dumping, and illicit connections.

Priority Dry Screening Outfalls

CDOT has identified the priority areas to receive ongoing screening based on their high potential for illicit discharges due to industrial or dense commercial location or whether the receiving waters are considered to be a sensitive water. In the Fall of 2001, CDOT verified the locations of the outfalls that discharge in these priority areas. The finalized list of priority outfalls is shown in Table E-1.

TABLE E-1
Priority Field Screening Outfalls

Receiving Waters	Location	City	Number of Outfalls
South Platte River	SH 85 mp 209 to 210	Denver	15
South Platte River	I-25 mp 207 to 210	Denver	10
South Platte River	Denargo Street and Arkins Court	Denver	2
Tollgate Creek	SH 40 mp 306	Aurora	2
Fountain Creek	I-25 mp 140 to 142	Colorado Springs	14
Cherry Creek	I-225 mp 2.15 to mp 3.0	Denver	2
Cherry Creek	Havana Street and Parker Road	Aurora	1
Cherry Creek	SH 30 mp 2.40	Aurora	2
Cherry Creek	SH 2 mp 3.60	Denver	2
Total Screening Outfalls			50

Dry Weather Protocols

CDOT is in the process of finalizing the documentation of the protocols and chemical parameters that will be used for dry weather screening. Test runs of the dry weather screening protocols have been performed in the field. Modifications are being made to the protocols based on these test runs. These protocols will be submitted to CDPHE as required by the permit by January 2003.

Dry Weather Sampling

No dry weather sampling was completed during the Annual Report period.

Investigation of Suspected Illicit Discharges (Part I.B.1.e.3)

CDOT is in the process of finalizing the development of its program to investigate suspected illicit discharges. The program has been developed within CDOT's existing authorities. The program identifies standard investigation procedures to identify, report, and follow up on the source of the illicit connection to CDOT's storm sewer system. Unresolved illicit discharges will be forwarded to the Water Quality Control Division for further action. The schedule for the development of these control measures is shown in Table E-2.

TABLE E-2
Development of Suspected Illicit Discharges Investigation Program Schedule

Schedule Item	Status[a]	Anticipated Completion Date
Review any existing procedures and tools that can be used to identify illicit connections and/or discharges.	Draft Completed	January 15, 2003
Develop procedures and tools to be used to identify illicit connections and/or discharges.	Draft Completed	January 15, 2003
Develop procedures for reporting identified illicit connections and/or discharges.	Draft Completed	January 15, 2003
Develop procedures for following up on reported illicit connections and/or discharges.	Draft Completed	January 15, 2003
Develop procedures for referring unresolved illicit connections and/or discharges.	Draft Completed	January 15, 2003
Submit program to CDPHE.		January 15, 2003

[a]Status is the work done to date, if any.

Procedures to Prevent, Contain, and Respond to Spills (Part I.B.1.e.4)

CDOT is implementing its ongoing program to prevent, contain, and respond to spills caused by CDOT. Spills caused by other parties are handled if no responsible party has been identified. Procedures to prevent, contain, and respond to spills are provided in CDOT's Guide to Hazardous Spill Response on State Highways and include the following items:

- Avoid contact with and breathing vapors of the spilled material.
- No smoking is allowed in the spill area.

- If a state waterway is involved, contact the Region Planning Environmental Manager and CDPHE.
- Obtain facts and information on the spill for the emergency team and maintenance supervisor.
- Call the Colorado State Patrol for help and notify the Maintenance Supervisor.
- Coordinate with emergency response personnel.
- "Incident commander" shall coordinate with other agencies and handle direct reporting of the spill.

CDOT is in the process of developing their Illicit Discharge Program and their tracking process for spills. During the period of July 1, 2001 through June 30, 2002, CDOT has relied on CDPHE to keep records of their spills. During this period, there were 20 spills (Form 4c) identified on CDOT property based on the information provided by CDPHE. None of the spills were caused by CDOT. The Illicit Discharge Program that is being developed will have an organized method for allowing CDOT to accurately and efficiently track all their spills.

Educational Activities to Promote Public Reporting of Illicit Discharges and Improper Disposal (Part I.B.1.e.5)

In 2002, CDOT produced a poster and a bulletin/newsletter distributed within CDOT to promote the reporting of illicit discharges by CDOT employees and to advertise the Illicit Discharge Hotline. Approximately 3,000 bulletins were distributed to CDOT employees, and 40 posters were distributed to CDOT maintenance facilities and some executive and headquarter offices. The bulletin was also put on CDOT's website along with other information regarding stormwater quality. Additional education activities are listed in Section 5 of this report. A program summary will be submitted to CDPHE in January 2003 as required in the permit.

Educational Activities to Promote Proper Management and Disposal of Toxic Materials (Part I.B.1.e.6)

The Illicit Discharge bulletin and poster mentioned above included information on the types of materials that should not be discharged into an MS4. A program summary will be submitted to the CDPHE in January 2003 as required in the permit.

Industrial Facilities Program (Part I.B.1.f)

CDOT is in the process of developing and implementing a program to track industries discharging stormwater into the CDOT storm sewer system. As part of this program, CDOT will establish priorities and procedures for inspections and establish and implement control measures.

CDOT has also started development of an inventory of new facilities and procedures so all industrial facilities witnessed to be connected to CDOT's system will be reported to CDPHE.

Finally, the form used for facilities to connect to CDOT's storm sewer system is being updated. This program is required to be submitted to the CDPHE by January 2003.

Construction Sites Program (Part I.B.1.g)

CDOT is implementing its ongoing program to reduce the discharge of pollutants from its construction sites. Program elements include the following items:

- Site planning procedures
- Structural and non-structural BMPs
- Site inspection and enforcement procedures
- Training for construction site operators

CDOT's Standard Specification for Road and Bridge Construction include two specification sections that address water quality and erosion control. Both sections are required to be included in the contract documents and stormwater management plan checklist for the three types of CDOT projects:

- Type 1—Overlays, signings, stripping, signalizations, etc. (no earth disturbances)
- Type 2—Earth disturbances but no NPDES permit required (area less than 5 acres)
- Type 3—Earth disturbances and NPDES permit required (area greater than 5 acres)

Section 107.25, Water Quality, requires the contractor to take measures to protect water quality and use practices that minimize water pollution during construction. All practices listed in the specification must be taken to minimize pollution and all procedures listed in the specification must be used to complete a stormwater management plan (SWMP).

Section 208, Erosion Control, requires the contractor to comply with CDOT's mandatory erosion control measures. The specification addresses constructing, installing, maintaining, and removing erosion control measures during the course of the project. The contractor is required to coordinate any temporary control measures with permanent features to ensure continuous erosion control through the construction period.

Section 208, Erosion Control requires the contractor to assign an employee to serve as the project's erosion control supervisor. The erosion control supervisor is responsible for ensuring project compliance by obtaining water quality permits, supervising installation, construction and maintaining temporary and permanent BMPs, inspecting the site with the engineer, attending project scheduling meetings, implementing action to remedy problems, and making site and BMP information available.

Site Planning Procedures

CDOT's construction program requires that a permit application be submitted for construction projects and an SWMP be implemented during construction. CDOT's Erosion Control and Stormwater Quality Guide sets forth procedures to be followed and includes standard specifications for water quality control (Section 107.25) and erosion control (Section 208).

A SWMP must be prepared for all sites that require a Colorado Discharge Permit System (CDPS) stormwater permit. Sites that do not require a CDPS permit but will have earth

disturbances that may be subject to erosion are also required to have an SWMP. Preparation of an SWMP ensures that erosion and sediment control and stormwater quality are addressed during and after construction. The SWMP includes a description of the site and BMPs that will be used during and after construction. The SWMP must be prepared during the project's design phase and it is included on the erosion and sediment control measures and the stormwater quality control measures plan sheets, which are a part of the construction drawings.

BMPs required during construction must include erosion control measures and material handling and spill prevention measures. All construction projects include specifications for water quality control (Section 107.25) and erosion control (Section 208). These sections address measures for material handling and spill prevention or management.

CDOT has developed the following guidelines for the designer to prepare an SWMP:

- Study and inspect future construction plans to determine areas with potential erosion hazards.
- Determine limits of clearing and grading.
- Divide the site into drainage areas.
- Direct clean runoff around the construction area.
- Use erosion and sediment controls whenever possible to reduce site erosion and prevent offsite impacts.
- Use stormwater quality measures to reduce pollutants from highway runoff.

The SWMP includes the following measures the contractor must take during construction activities:

- Install perimeter erosion control measures before grading.
- Sequence and stage construction so no area remains exposed for unnecessarily long periods.
- Stabilize disturbed areas before other areas are disturbed.
- Implement stabilization BMPs immediately after grading.
- Develop and perform a regular maintenance schedule for erosion and sediment control measures.
- Use spill prevention and containment measures at storage sites.
- Develop and perform a schedule for regular collection and disposal of waste material.
- Designate a site for material disposal.
- Designate one person to be responsible for implementing the SWMP.

Components of the SWMP should be inspected during the project. Any items of concern should be brought to the contractor's attention. The Erosion Control Supervisor records

observations and data using CDOT's form number 1176, which is kept in the project files at the project site.

Structural and Non-structural BMPs

Best management practices are measures used to prevent or reduce pollution of waterways. BMPs are required in the SWMPs prepared for construction projects. CDOT's Erosion Control and Stormwater Quality Guide provides details on BMPs that may be used. These BMPs are divided into three categories as shown in Table G-1. Periodically, CDOT updates the guide to reflect new information concerning BMP effectiveness. The guide was last updated in 1995.

TABLE G-1
Summary of BMPs

Category	BMPs
Soil Stabilization Practices	Seeding, mulching, sodding, erosion control blankets, surface roughing
Structural Practices	Erosion bale, silt fence, berm/diversion, slope drain, storm drain inlet protection, check drain, outlet protection, channel stabilization or lining, sediment trap, sediment basin, dewatering structure, temporary stream crossing, stabilized construction entrance, level spreader, brush barrier, sandbag barrier
Other Practices	Spill prevention, waste disposal, protection of trees, curb roll/shoulder gutter

Site Inspection and Enforcement Procedures

Construction projects that required a NPDES permit and an SWMP are required to have an Erosion and Sediment Control Field Inspection Report (Form 1176a) completed every 14 days and after any precipitation or snowmelt that causes runoff. Information required on the form includes the following:

- Project number and code
- Name of contractor whose work is being inspected
- Name of CDOT inspector (either project engineer or authorized representative)
- Reason for inspection (routine, complaint, or other)
- For each BMP listed, indication of whether the BMP is used or not
- Indication if a BMP requires maintenance or sediment removal
- Course of action required
- Signature and date of contractor and CDOT inspector

CDOT encourages the contractor and CDOT inspector to perform the inspections together. If this is not possible, the CDOT inspector may complete the inspection and the form independently. Originals of the completed forms are maintained at the project site.

CDOT formed an Erosion Control Advisory Team (ECAT) in 1994 to provide support in erosion control and water quality to construction personnel, improve consistency in CDOT's erosion control program on a statewide basis, identify deficiencies in CDOT's erosion control program, and develop strategies to correct the deficiencies. The team reviews a

sampling of projects from the state's six regions and published the results of the review in an annual report.

CDOT has been performing Regional ECAT (RECAT) inspections since July 1, 2001, using contractor assistance. Since that time, some of the regions have begun to perform these inspections without assistance. CDOT has formed RECAT teams for Regions 1, 2, and 6 as of July 1, 2002. CDOT headquarters is still supplying RECAT assistance to Regions 3, 4, and 5 through contractor support. CDOT is also in the process of preparing a RECAT Handbook that will provide information, procedures, and tools (forms) for performing RECAT inspections.

TABLE G-2
Summary of RECAT Inspections Performed

Region	Number of Inspections
Region 1	8
Region 2	10
Region 3	2
Region 4	6
Region 5	1
Region 6	14
Total Inspections	41

Training for Construction Site Operators

CDOT provides education and training associated with stormwater discharges for CDOT design, construction, maintenance, and environmental staff on an annual basis. Approximately 150 CDOT staff participated in CDOT internal training sessions in 2002. These training sessions include two training sessions specifically on CDOT's RECAT program. Other training sessions were not specific for RECAT, but included detailed information regarding CDOT's Stormwater Management program including the Construction program.

Additionally, CDOT has produced two bulletins/newsletters that have been distributed internally to CDOT employees involved with construction. The topics of these bulletins were the RECAT program and construction dewatering.

CDOT has co-sponsored an erosion control course entitled "Stormwater Management During Construction," which is offered at Red Rocks Community College. Thirty-seven CDOT employees attended this course during FY 2002.

CDOT requires that an employee for the contractor serve as the site erosion control supervisor (ECS). This person must have satisfactorily completed a training program authorized by CDOT, such as the Stormwater Management During Construction course. After completion of the program, an ECS certification card is provided to the individual.

Table G-3 summarizes the activities performed under this program during 2002.

TABLE G-3
Summary of Construction Program Activities

Activity	Number/Description[a]
RECAT Newsletter	~150 Distributed
Construction Dewatering Newsletter	in draft form, not yet distributed
Staff Training	7 attendees/RECAT program
RECAT training session – July 2001	15 attendees/RECAT program
RECAT training session – August 2001	45 attendees/MS4 programs including RECAT
Environmental Workshop – October 2001	12 attendees/ MS4 programs including RECAT
RPEM Workshop – January 2002	70 attendees/ MS4 programs including RECAT
Water Quality Conference – February 2002	200 contractors/CDOT Construction Program
CCA Convention – May 2002	

[a]Include number of attendees at each training session.

Facility Runoff Control Program (Part I.B.1.h)

CDOT is in the process of developing Facility Runoff Control Plans (FRCP) for its facilities that fall under the requirements of the permit. FRCPs are being developed for the following facilities that do not have independent CDPS stormwater permits:

- Vehicle maintenance facilities
- Asphalt and concrete batch plants
- Solid-waste transfer stations
- Exposed stockpiles of materials
- Sites used for snow dumps and/or temporary storage of sweeper tailings or other waste piles

Lists of the facilities including designation of which facilities are considered "major" and which are considered "minor" were provided to CDPHE in January 2002. The final list of facilities required to have FRCPs is shown in Table H-1. FRCPs are being developed for each major facility. The plans will be maintained at the facilities and on file at the regional office. Minor facilities are being grouped together, and FRCPs are being developed for each group type. The FRCPs for minor facilities will be kept at the regional office. After the runoff control plans are completed, each facility will be inspected at least once per year. Table H-2 lists the facilities with plans and their conformity to their respective plan.

TABLE H-1
List of Major and Minor Facilities

Facility Name	CDOT Region	Address	Designation
Region 1 – Aurora	1	18500 E. Colfax, Aurora	Major
Colorado Springs	2	2025 Commercial Blvd., Colorado Springs	Major*
Cherry Creek	6	3320 S. Parker Road, Aurora	Major
Region 6 – Aurora	6	18800 E. Colfax, Aurora	Major
Denver-Atlantic	6	5640 E. Atlantic Place, Denver	Major
Denver-Havana	6	4375 Havana St, Denver	Major
Denver-Park	6	3601 Park Ave. West, Denver	Minor
Denver-West 11th	6	2300 West 11th Ave., Denver	Minor

*The Colorado Springs facility should actually be designated as a Minor facility but because it is the only facility in Region 2, at this time it will be designated as a Major facility. This designation is subject to change when Region 2 acquires other facilities located within either the Phase I or Phase II permit areas.

CDOT has developed FRCPs for 10 percent of the facilities that fall under the requirements of CDOT's permit as in accordance to compliance schedule. As required by the permit, CDOT will submit FRCPs for three more facilities (50 percent of the Phase I facilities) by January 15, 2003. Table H-2 lists the facilities and the status of their plans, conformity to completed plans, and the anticipated completion date for plans not yet completed.

TABLE H-2
Annual Report on Overall Conformity with Runoff Control Plans

Facility Name	Status of Plan	Date of Inspection	Conformity to Plan?[a]	Anticipated Completion Date
Cherry Creek	Complete	August 27, 2002	Yes	January 15, 2002
Region 1 – Aurora	Draft Complete	NA	NA	January 15, 2003
Colorado Springs	Draft Complete	NA	NA	January 15, 2004
Region 6 – Aurora	Draft Complete	NA	NA	January 15, 2003
Denver-Atlantic	Draft Complete	NA	NA	January 15, 2003
Denver-Havana	Draft Complete	NA	NA	January 15, 2004
Denver-Park	In-progress	NA	NA	January 15, 2004
Denver-West 11th	In-progress	NA	NA	January 15, 2004

[a]Conformity to plan could be "yes" or "no." If "no," then an explanation should be added under "comments."

SECTION 2

Proposed Changes to the Stormwater Management Program (Part I.F.2)

Part I.F.2 states, "Proposed changes to the Stormwater Management Programs that are established as permit conditions, including an update on areas added to the MS4 due to annexation or other legal means;"

CDOT's Stormwater Management Program consists of eight different programs as follows:

- Maintenance of Structural Controls (Part I.B.1.a)
- New Development and Redevelopment Planning Program (Part I.B.1.b)
- Public Street Maintenance Program (Part I.B.1.c)
- Herbicide, Pesticide, and Fertilizer Program (Part I.B.1.d)
- Illicit Discharges Program (Part I.B.1.e)
- Industrial Facilities Program (Part I.B.1.f)
- Construction Sites Program (Part I.B.1.g)
- Facility Runoff Control Program (Part I.B.1.h)

Changes to the Stormwater Management Program

Changes in the Stormwater Management Program that have been established as permit conditions are discussed in the following paragraphs.

Maintenance of Structural Controls

No revisions have been made to this program.

New Development and Redevelopment Planning Program

No revisions have been made to this program. The only change is the completion of the Erosion Control and Stormwater Quality Guidance Manual, which will not be completed until January 2003 in conjunction with the New Development Program.

Public Street Maintenance Program

No revisions have been made to this program.

Herbicide, Pesticide, and Fertilizer Program

No revisions have been made to this program.

Illicit Discharges Program

No revisions have been made to this program.

Industrial Facilities Program

No revisions have been made to this program.

Construction Sites Program

No revisions have been made to this program.

Facility Runoff Control Program

No revisions have been made to this program.

Update on Areas Added to the MS4

No areas have been added to the MS4 due to annexation or other legal means.

SECTION 3

Revisions to Assessment of Controls and Fiscal Analysis (Part I.F.3)

Part I.F.3 states, "Revisions, if necessary, to the assessments of controls and the fiscal analysis reported in the permit application under 6.5.3(3)(b)(v) and (vi)"

Part 6.5.3(3)(b)(v) states, "Assessment of Controls Estimated. Reductions in loadings of pollutants from discharges of municipal storm sewer constituents from municipal storm sewer systems expected as the result of the municipal stormwater quality management program. The assessment shall also identify known impacts of stormwater controls on groundwater."

Part 6.5.3(3)(b)(vi) states, "Fiscal Analysis. For each fiscal year to be covered by the permit, fiscal analysis of the necessary capital and operation and maintenance expenditures necessary to accomplish the activities of the programs under 6.5.3(3)(b)(iii) and (iv). Such analysis shall include a description of the source of funds that are proposed to meet the necessary expenditures, including legal restrictions on the use of such funds."

No revision to the "Assessment of Controls" or the "Fiscal Analysis" are needed at this time due to lack of sufficient monitoring data. The budget for compliance with the permit is included in Section 7 of this report.

SECTION 4

Summary of Monitoring Data (Part I.F.4)

Part I.F.4 states, "A summary of the data, including actual monitoring data, that is accumulated throughout the reporting year;"

Several monitoring and reporting requirements are included with the permit. Dry weather screening and results from wet weather sampling are provided in this section. Additional data may be found in the completed Forms attached to this report.

Dry Weather Screening

As part of the Stormwater Management Program, CDOT is developing and will implement a program to detect illicit connection and improper discharges to the MS4. Part I.B.1.e of the permit discusses requirements of the Illicit Discharges Program. The permit requires ongoing screening for illicit discharges, illegal dumping, and illicit connections. This program is in the process of being developed and is expected to be completed by January 2003.

Wet Weather Sampling

As part of the Stormwater Management Program, CDOT has developed a wet weather monitoring program for the MS4. The purpose of the program as outlined by the CDOT MS4 Permit is to "evaluate wet weather conditions particularly stormwater effects on State waters." CDOT has an interest in independent in-stream wet weather monitoring that is more extensive than what is required by the Denver Metropolitan total maximum daily level (TMDL) study. The primary rationale for this decision is the desire on the part of CDOT to have control over all sampling routines, data collection, parameters to be monitored, and future evolution to the monitoring program such that it is in the best interest of CDOT. CDOT will actively share monitoring data from all components of its Wet Weather Monitoring Program. As part of the CDOT Wet Weather Monitoring Program, CDOT plans to conduct site-specific evaluations of temporary and permanent BMPs, and develop and conduct a deicing study, which includes performing a literature review, establishing a deicing partnership, developing monitoring plan, and field sampling. CDOT is currently working on updating the implementation schedule of the wet weather monitoring program, which is discussed in more detail in Section 8.

SECTION 5

Summary of Educational Activities (Part I.F.5)

Part I.F.5 states, "Summary of educational activities;"

CDOT's educational activities are listed under the respective Stormwater Management Programs. Please see Section 2 for this information.

SECTION 6

Annual Expenditures and Budgets (Part I.F.6)

Part I.F.6 states, "Annual expenditures for the past reporting year, and budget for the next reporting year;"

Table 6-1 lists the cost of complying with the NPDES stormwater permit for the year 2002, and provides budgeted cost for compliance with the NPDES stormwater permit for 2003.

TABLE 6-1
Actual and Planned Expenditures

Program	2002 Actual Expenditures	2003 Planned Expenditures
Task Management and Program Development	**$ 103,607**	**$ 257,826**
Compliance with NPDES Permit	$ 92,832	$ 110,000
Preparation of Phase II Permit	$10,775	$ 147,826
Construction Sites Program	**$ 132,746**	**$ 56,690**
RECAT and Non-RECAT	$ 104,444	$ 56,690
Stormwater Training For Construction Sites	$ 27,882	NA
Other Training	$ 420	NA
Facility Runoff Control Program	**$ 132,475**	**$ 58,813**
Herbicide, Pesticide and Fertilizer Program	**$ 16,000**	**$ 30,859**
Training (Region 1)	$ 7,400	$ 22,259
Training (Region 2)	$0	$0
Training (Region 6)	$ 8,600	$8,600
Illicit Discharges Program	**$ 140,457**	**$ 93,331**
Industrial Facilities Program	**$ 43,646**	**$ 10,000**
Maintenance of Structural Controls Program		
Maintenance costs (Region 1)	$ 35,386	$ 37,155
Maintenance costs (Region 2)	$ 360	$ 360
Maintenance costs (Region 6)	$ 23,818	$ 30,035
New Development and Redevelopment Planning Program	**$ 169,314**	**$ 97,041**
Program	$ 152,305	$ 97,041
Training	$ 17,009	NA
Public Street Maintenance Program	**$ 1,465,911**	
Street Sweeping*	$ 321,300	$ 260,212

TABLE 6-1
Actual and Planned Expenditures

Program	2002 Actual Expenditures	2003 Planned Expenditures
Material Usage*	$1,144,600	$ 1,716,900
Wet-Weather Monitoring	**$ 46,625**	**$ 100,976**
General Education and Information Management	**$ 357,795**	**$ 175,422**
General Education	$ 244,036	$ 67,710
Information Management	$ 113,759	$ 107,712
Total Program Costs		

*Assumes 15% of total street sweeping and material usage costs are attributable to NPDES/ Stormwater Quality activities.

SECTION 7

Summary of Enforcement Actions and Inspections (Part I.F.7)

Part I.F.7 states, "A summary of the number and nature of enforcement actions and inspections;"

Enforcement Actions

The permit does not require enforcement actions be listed as part of the annual report.

Inspections

Section 1, Status of the Components of the Stormwater Management Program, lists the number of inspections performed under each program. CDOT performed a total of **X** RECAT inspections under the Construction Sites Program. A total of inspections for all programs combined and enforcement actions taken are unavailable at this time because the majority of the programs are still in developing stages.

SECTION 8

Report on Wet Weather Monitoring Program (Part I.F.8)

Part I.F.8 states, "The wet-weather reporting requirements as listed in Part I.D."

Part I.D.4 requires the Annual Report to include 1) a summary of any cooperative efforts; 2) tabulated data generated from the monitoring program and interpretation of the data; and 3) a summary of the monitoring program work to date, any problems with the protocol or selected sampling locations, and recommendations for any changes to the monitoring program.

As part of the Stormwater Management Program, CDOT developed and implement a wet weather monitoring program for the MS4. The purpose of the program is to evaluate wet weather conditions, particularly stormwater effects on State waters.

The plan was submitted to CDPHE for review and approval, and must meet the following minimum requirements:

- Address wet weather conditions, particularly urban stormwater effects on state waters
- Provide a clear statement of program goals
- Include components that address the monitoring program goals
- Commit resources to the level appropriate for the proposed monitoring plan

CDOT is currently working on the wet weather monitoring program, and the schedule is provided in Table 8-1.

TABLE 8-1
Wet Weather Monitoring Program Schedule

Schedule Item	Status	Anticipated Completion Date
StormFilter™ – Installation	In Progress	Fall 2002
StormFilter™ – Site-Specific Monitoring Plan	In Progress	Fall 2002
StormFilter™ – Site Background Grab Sampling		Fall 2002
StormFilter™ – Automatic Sampling Equipment Installation	Purchased and Received Sampling Equipment	Early Spring 2003
StormFilter™ – Monitoring		*Early Spring 2003 – Fall 2004
StormFilter™ – Final Report		*December 2004
Deicing Study – Literature Review	In Progress	December 2002
Deicing Study – Survey Results	In Progress	December 2002
Deicing Study – Partnership Workshop Agenda		May 2003

TABLE 8-1
Wet Weather Monitoring Program Schedule

Schedule Item	Status	Anticipated Completion Date
Deicing Study – Meet with Potential Partner Entities		June 2003
Deicing Study – Prepare Scope and Monitoring Plan, and Select Monitoring Sites		*July 2002 – December 2003
Deicing Study – Monitoring		*January 2002 – March 2005
Deicing Study – Final Report		*Summer of 2005
Permanent BMP – Site Selection		*February – April 2003
Permanent BMP – Site-Specific Monitoring Plan		*May – June 2003
Permanent BMP – Purchase Sampling Equipment		*July 2003
Permanent BMP – Monitoring		*July 2003 – September 2004
Permanent BMP – Final Report		*November 2004
Temporary BMP – Site Selection and Monitoring		*FY 2004

*Completion date is an estimate due to actual funding availability for FY 2004 and progress of tasks.

As part of the Stormwater Management Program, CDOT has developed and implemented a wet weather monitoring program for the MS4. The purpose of the program is to evaluate wet weather conditions, particularly stormwater effects on State waters. *Discuss the following as required in I.D.5.a:*

1) Summary of any cooperative efforts;

CDOT is cooperatively working with the City of Lakewood and Stormwater Management, Inc., to install the StormFilter™ BMP in Lakewood at the City's maintenance facility where equipment is serviced and stored. Partnerships have been established to provide financial and/or in-kind service contributions for the unit and design of the BMP site, installation of the BMP, development of the Memorandum of Understanding, development of the Statement of Work, development of a site-specific monitoring plan, and field sampling. Additional cooperative efforts will be established for the deicing study during FY 2003. Information from the literature review, agency survey, and phone interviews will be used to identify potential stakeholders and establish a deicing study partnership. Potential stakeholders may include, but are not limited to, CDOT regions, federal and state agencies, and Phase I and II municipalities. Future cooperative BMP evaluation efforts are anticipated for other permanent BMP monitoring sites such as a swale or a detention pond.

2) Tabulated data generated from the monitoring program and interpretation of the data; and

Monitoring data are not available at this time. The wet weather monitoring program is in an early development stage. It is anticipated that monitoring of the StormFilter BMP will begin in the Spring of 2003.

3) Summary of the monitoring program work to date, any problems with the protocol or selected sampling locations, and recommendations for any changes to the monitoring program.

From July 2001 to January 2002, work on refining the Weather Monitoring Plan continued. A revised Plan was submitted to CDPHE for comments. CDOT staff met with CDPHE to discuss the revised Plan in November 2001 and a final Plan was submitted to CDPHE on January 22, 2002. Comments were received on the Plan from CDPHE on April 4, 2002, and CDOT submitted a response letter to address the comments on April 30, 2002. During February 2002 a contract freeze was in place due to the State-wide funding freeze. Coordination of CDOT's wet weather monitoring efforts were started again in May 2002. During May and June 2002, coordination efforts focused among CDOT, Stormwater Management, Inc., and the City of Lakewood in organizing a kick-off meeting, BMP monitoring locations, a site visit, developing the memorandum of understanding, pre-selection of the sampling team, installation, and funding contributions. Most of the efforts involved modifying the monitoring Program to account for the State-wide funding freeze that impacted the project. Development of the StormFilter™ site-specific monitoring project plan was started. The comprehensive literature review for the proposed deicing study in the Wet Weather Monitoring Program was also initiated.

Since the Weather Monitoring Program is in its early infancy stages, there are no significant changes to the Program at this time. Although, the availability of State funds and contract scheduling will continually impact the schedule of the Program and shift the completion dates by as much as a few months.

APPENDIX A

Maintenance of Structural Controls

APPENDIX B

Herbicide, Pesticide, and Fertilizer Program

APPENDIX C

Illicit Discharge Program

APPENDIX D

Construction Sites Program

APPENDIX E

Facility Runoff Control Program

APPENDIX F

Educational Activities