

# NPDES Stormwater Permit Application

## Cherry Creek State Park

December 31, 2007



# **Table of Contents**

**NPDES Stormwater Permit Application for Cherry Creek State Park**

| <b><u>Section</u></b>  | <b><u>Page</u></b> |
|--|--------------------|
| I    General Permit Application  | 1 - 3              |
| II    Introduction   | 4 - 6              |
| IV    Program Areas  |                    |
| Public Education and Outreach  | 7 - 9              |
| Public Participation and Involvement                                   | 10                 |
| Illicit Discharge Detection and Elimination                            | 11 - 13            |
| Construction Site Stormwater Runoff Control                            | 14 - 16            |
| Post-Construction Stormwater Management                                | 17 - 18            |
| Pollution Prevention and Good Housekeeping<br>for Municipal Operations | 19 - 21            |
| V    Acknowledgments and References                                    | 22                 |
| VI    Exhibits   |                    |
| A    Location Maps and Information (A-1 through A-4)                   |                    |
| B.    Stormwater Reference Map   |                    |
| C.    GIS Data   |                    |
| D.    Constructing BMP's Effectively                                   |                    |

GENERAL PERMIT APPLICATION

STORMWATER DISCHARGES  
ASSOCIATED WITH

MUNICIPAL SEPARATE STORM SEWER  
SYSTEMS (MS4s)

(Permit No. COR-080000 or COR-090000)

For Agency Use Only

C O R - 0 7 0 2 2 0

Date Received  
Year Month Day

Billing Code: 20 21 22 23

**Please print or type.** All items must be completed accurately and in their entirety or the application will be deemed incomplete and processing of the permit will not begin until all information is received. Please refer to the instructions for information about the required items. An original signature of the applicant is **required**.

1. **Name and address of the permit applicant:**

Agency Name Cherry Creek State Park

Mailing Address 4201 S. Parker Road

City, State and Zip Code Aurora, CO 80014

County Arapahoe

Phone Number ( 303 ) 699-3860 Who is applying? Owner  Operator

Federal Employer ID#: 84 - 0644739

Entity Type: State  County  City/Town  Other: Colorado State Park

Local Contact (responsible for program implementation) Tim Metzger

Title: Park Manager Phone Number: ( 303 ) 699-3860

Email address (local contact) tim.metzger@state.co.us Email address (legally responsible person)  
cherry.creek.park@state.co.us

2. **Location of the MS4:**

Location Description (narrative) Located within unincorporated Arapahoe County. The cities of Aurora, Greenwood Village and Centennial border the park to the east, west and south respectively.

3. **Location Map/Boundaries:**

a. All entities except counties

Location map must be attached showing city, town, or district boundaries, and urbanized area (UA) boundaries, if part(s) of the MS4 is within a UA.

b. Counties only

Location map must be attached showing county boundaries, unincorporated area boundaries within the county, and urbanized area (UA) boundaries.

4. **All named receiving waters (state waters) within the permitted area, including other MS4s:**

Cherry Creek Reservoir, Cottonwood Creek, Lone Tree Creek, Windmill Creek, Quincy, Cherry Creek, Piney Creek, Cherry Creek Spillway, Lewis Cemetery Creek, Shop Creek.

5. **Will another entity perform some portion or all of the six program areas for your MS4?**  
 No  Yes  If Yes, include attachment 9.e. *Agreement in process. Will send upon completion.*
6. **Is this part of a Joint Application?** No  Yes  If Yes, complete and attach Appendix A.
7. **Resident population within the permitted area (districts use max. daily user population):** 5,000
8. **Approximate number of square miles in the permitted area:** 6.72 square miles
9. **Attachments.** For each of the six stormwater program areas (Public Education and Outreach, Public Participation and Involvement, Illicit Discharge Detection and Elimination, Construction Site Stormwater Runoff Control, Post-Construction Stormwater Management, and Pollution Prevention and Good Housekeeping for Municipal Operation), the following attachments must be included with this application. (See Appendix A for additional requirements for Joint Applicants.)
- Program perspective
  - General description of the program area elements
  - Measurable goals for each of the program area components
  - The area of the MS4 in which each program area will be implemented (i.e., within the urbanized area only or within the entire jurisdiction)
  - Legal agreement, in cases where another entity will perform one or more program area components on behalf of the permittee

10. **Stormwater Management Program Certification**

"I certify under penalty of law that a complete Stormwater Management Program, as described in the attachments to this application, has been prepared for my agency. The program areas were prepared with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the Stormwater Management Program is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for falsely certifying the completion of said Program, including the possibility of fine and imprisonment for knowing violations."

|  |              |
|--|--------------|
| Signature of Applicant or Authorized Agent | Date Signed  |
| Tim Metzger                                | Park Manager |
| Name (printed)                             | Title        |

11. **Signature of Applicant (legally responsible person)**

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment."

|                        |              |
|------------------------|--------------|
| Signature of Applicant | Date Signed  |
| Tim Metzger            | Park Manager |
| Name (printed)         | Title        |

**APPENDIX A - JOINT APPLICATIONS**

**A. Joint Application - Applicants**

List all applicants (use additional pages as needed):

1. (applicant in Item 1, page 1) \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_

**B. Responsible Entity – Table 1**

|  | Responsible Entity (use numbers from Item A, above) |   |   |   |   |   |   |   |
|--|---|---|---|---|---|---|---|---|
|  | 1   | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| <b>Stormwater Program Areas for Applicant's MS4</b>                    |   |   |   |   |   |   |   |   |
| a. Public Education and Outreach                                       |   |   |   |   |   |   |   |   |
| b. Public Participation and Involvement                                |   |   |   |   |   |   |   |   |
| c. Illicit Discharge Detection and Elimination                         |   |   |   |   |   |   |   |   |
| d. Construction Site Stormwater Runoff Control                         |   |   |   |   |   |   |   |   |
| e. Post-Construction Stormwater Management                             |   |   |   |   |   |   |   |   |
| f. Pollution Prevention and Good Housekeeping for Municipal Operations |   |   |   |   |   |   |   |   |
| g. Other _____   |   |   |   |   |   |   |   |   |

## Introduction

Colorado State Parks manages Cherry Creek State Park for park values. The Park is Colorado's first and busiest State Park.

Management challenges at this park are many and varied. However, the legislative declaration is clear for all State Parks and can be found in CRS 33-10-101 (1). It is the policy of the State of Colorado that the natural, scenic and outdoor recreation areas of this state are to be protected, preserved, enhanced and managed for the use, benefit and enjoyment of the people and visitors of this state. The mission of State Parks further supports this declaration as stated:

*“ To provide a spectrum of safe, quality outdoor recreation experiences while effectively managing the natural resources under our authority.”*

It is in the Park’s best interest to comply with the legal requirement for "developing, implementing and enforcing a stormwater management program designed to reduce the discharge of pollutants from the MS4 to the MEP, to protect water quality and to satisfy the appropriate water quality requirements of the CWCA" it only makes sense to do so. Various levels of water quantity in a natural environment dictate a variety of ecosystems and ecotones. Water quality then, has a dramatic effect on biological diversity that correspondingly has a direct effect on park values. It is therefore critical that the park be cognizant and protective of water quality issues in all planning and practices.

While staff is keenly aware of Best Management Practices (BMP's) is it important that we convey those practices to our concessions (private businesses providing extra services to park visitors). Equally important is to convey a stewardship ethic to all of our visitors to protect park values.

The park drains some 380 square miles and hence the park is, to a degree, at the mercy of local governments and land uses upstream of the park. That is why it critical to maintain working relationships and partnerships to address a topic as important to the park as water quality. The park has an existing and comprehensive approach to water quality that will continue to be enhanced through education and refinement of practices.

### Partners

A variety of partnerships have assisted in the maintenance and enhancement of park values.

*Cherry Creek Basin Water Quality Authority*

The Authority has a legislative mandate to protect water quality for the Park. The Park is an active participant of the Authority and one staff member sits on the Technical Advisory Committee (TAC). The Authority is mandated by law to meet standards for water quality to support beneficial uses in the entire upper watershed, but their primary focus is the reservoir and surrounding land uses near the Park boundary. Through extensive monitoring activities the Authority is able to document and plan for short and long term changes to water quality.

The Authority is a special district with dedicated funding. The Park and Authority have collaborated on a number of highly successful capital projects on the Park that support multiple values including water quality. The projects address stormwater runoff from a variety of sources, wetland planting, and stream and shoreline bank stabilization. Development added values include aesthetics, improving public access for all visitors, and education.

The projects to date include:

- Quincy outfall 1989
- Shop Creek 1990
- Quincy extended detention 1995
- East Shade Shelter 1996
- Cottonwood Creek 1996
- East Boat Ramp 1999
- Tower Loop 2000
- Dixon Grove 2000
- Phase I Cottonwood Creek 2006

Projects in the construction stage for 2008 include Cottonwood Creek Reclamation Phase II. Planning for Phase II is in the preconstruction stage with construction slated for late 2008 and early 2009. The Cherry Creek Wetlands Project is in a feasibility assessment phase.

*Urban Drainage and Flood Control District*

The District (UDFCD) has participated in stream stabilization projects in the Park. Staff applies for funding annually based on priority needs driven by a drainage assessment.

- Cherry Creek Trail Bridge 1997
- Cherry Creek Vista outfall 1999
- Cherry Creek 2002
- Quincy Outfall 2007
- Shop Creek Drainage 2007

*Arapahoe County Water and Wastewater Authority*

Stream stabilization on Lone Tree Creek was accomplished by a Supplemental Environmental Project in concert with Colorado Department of Public Health and Environment (CDPHE) and Arapahoe County Waste Water Authority (ACWWA).



### *Other Local Governments*

The park hosts a number of different easements from local governments for stormwater drainage. Generally, the extent of the easement is an outfall into the park. The park has worked closely with local governments on any proposed volume changes or road construction to require these governments to upgrade water quality features as well. While the Park has no legal authority to force local government to retrofit for water quality, it is part of the negotiations for permitting. The Park works closely with the Authority, Colorado Department of Transportation (CDOT) and local governments to determine the best solutions. Examples of outfall retrofits with proprietary BMP's are:

- I-225 / Parker (Vaughn Way) - CDOT 2001
- I-225 / Parker (Hampden) - CDOT 2002
- Belleview drainage - City of Greenwood Village 2003
- Dayton Street drainages - City of Greenwood Village 2003
- Quincy / Parker - City of Aurora 2003
- East side developments - City of Aurora 2003
- Cherry Creek Drive - Arapahoe County 2003

The park will continue to work with local governments on their needs for stormwater. However, water quality along with water quantity as it relates to the parks erosive soils will be a key element of the discussions.

Policy does not allow for detention ponds. It is typical in developing sub drainage for a developer or local government to install a detention pond near the park boundary and to provide for preventive stabilization work downstream in the park. Maintenance responsibilities fall to local government.

### *Cherry Creek Stewardship Partners*

This is an informal association of a broad range of stakeholders in the upper and lower watershed that began in 1999. The Partners have some 20 plus member agencies, individuals and organizations. The Partners' mission is to provide a forum for effective stewardship of the Cherry Creek watershed. The Partners are the only organization representing the upper and lower watershed. The Park is actively involved in the group. Members of the Park are involved in education, open space and the executive committees.

The Partners regularly engages the community through its annual conferences (6th annual). In addition, the Partners work through committees (water quality, open space and education). Some of the recent projects the partners have been involved in include:

- Smart Growth for Clean Water (nationwide project)
- Cherry Creek Basin Open Space Legacy Project
- Project Wet Workshop for community educators

In addition, the Partners sponsor quarterly meetings and special forums. Objectives for the future include continuing an active role with the Partners and the Park evaluating participation in a watershed working group on NPDES permitting issues.

## Public Education and Outreach

### Perspective

With a high level of visitation and a large urban population in close proximity, there is potential for Cherry Creek State Park to reach millions of people with educational messages. Because of the Park's location and historical significance, Cherry Creek State Park is an ideal place for raising awareness of watershed and non-point source pollution issues. Since so many of the Park's visitors come from the surrounding cities and neighborhoods, the Park's educational programs aim to make connections about the watershed, water quality, the value of open space, and the role individuals play in the health of the watershed, as it relates to supporting park values.

Cherry Creek State Park's Interpretive Master Plan is based on these concepts. The central theme stated in the master plan is:

*"For hundreds of years, runoff from the Cherry Creek watershed has influenced people, wildlife, and habitats associated with Cherry Creek. Today, the quality and quantity of water flowing into Cherry Creek State Park depend on the actions of many different people living nearby and/or visiting the park."*

### Elements

Although educational program subjects vary, each program given by park staff and volunteers includes this Interpretive Master Plan theme. Park staff and volunteers are trained on water quality issues to give these specific programs. Over 4,500 people attended educational programs at Cherry Creek State Park in 2002.

In addition to guided educational programs, the Park has a number of educational signs that explain the value of various completed water quality projects. These educational signs explain the significance of the projects. An example includes the Shop Creek interpretive signs. The signs were a collaboration with the Cherry Creek Basin Water Quality Authority. The signs address non-point pollution and storm run-off. They explain to visitors why Shop Creek was rebuilt to include wetlands and stair step drop ponds. In addition, many wayside signs in the park address the value of wetlands for habitat and clean water. Along the main park road, there is a group of signs explaining the Cottonwood Creek restoration project that teaches visitors about the stream bank stabilization along the creek. This group of signs also addresses the concepts of non-point pollution and gives visitors information on how they can help the Cherry Creek Basin within their own neighborhood.



In the future, Cherry Creek State Park will continue to educate visitors about the watershed and quality of water coming into and at the reservoir. Guided programs will continue to follow the Interpretive Master Plan theme. Park staff will also try to reach visitors in other ways including the Internet and through homeowner's association newsletters. Currently, Cherry Creek State Park staff is working with the Cherry Creek Basin Water Quality Authority to create another educational sign along Cottonwood Creek. The Authority was awarded a grant from the Environmental Protection Agency (EPA). These signs will coordinate with the construction of the Cottonwood Stream Restoration project and will again explain the value of protecting the water quality in the Cherry Creek Basin.

Part of the elements of this Program Area includes compliance with Part 1.B.1.a.3 of the Permit for portions of the Park's jurisdiction within the Cherry Creek Reservoir Watershed. This compliance will include public outreach focusing on residential, industrial, agricultural, and/or commercial sources within the jurisdiction that are determined to have significant potential to contribute phosphorus and nitrogen loads to State waters at a rate that could result in or threaten to result in exceeding the chlorophyll a standard in Cherry Creek Reservoir. This outreach will be accomplished in many ways including, but not limited to, distribution of educational information and multi-agency tours of the area to focus on water quality education.

### Measurable Goals

The personal interpretation program is evaluated on a yearly basis. It is evaluated to ensure interpretive goals and themes are being addressed. This includes water quality issues. The activities of the year and continuing goals of the interpretive program are included in the Annual Interpretive Work Plan, which is submitted to the Division of Parks and Outdoor Recreation at the beginning of each calendar year.

Non-personal interpretation (interpretive signs) is evaluated on an annual basis and is scheduled on a timeline. Additions to the interpretive signs are based on future water quality projects and need to educate the public. These projects are evaluated throughout the year. The existing interpretive signs are based on a ten-year life span. Near the end of the life span of the sign (8-10 years), park staff will evaluate the relevancy of the existing sign. In years 1-7, staff documents input from the public and park staff.

| Target Date | Activity                                     | Goal   |
|-------------|--|--|
| Annually    | Public Outreach                              | Educate the public & other agencies about water quality issues in the Cherry Creek Reservoir Watershed |
| Annually    | Evaluate personal interpretation program     | Ensure correct goals & themes are being addressed.   |
| Annually    | Evaluate non-personal interpretation program | Addition of interpretive signs to address future water projects  |
| Annually    | Evaluate interpretive signs 8 - 10 years old | Ensure relevancy of existing signs   |



## Public Participation and Involvement

### Perspective

The Park will comply with any legal noticing requirements. However, it is expected that the MS4 is one of a series of Park plans that will fall under the purview of the General Management Plan. The public will not be directly involved in program development but rather in implementation as it relates to sustaining park values.

The General Management Plan is a document that is updated every 10 years at minimum. The planning process involves advisory groups, public officials, agency reviews and public meetings. The Plan gives direction on services, proposed construction, resource management, drainage, transportation issues etc. Other Plan elements include use zones that include preserves, limited development areas and high development areas that balance recreational needs and resource protection goals.

Public involvement, however, will be sought through a variety of means during programs and events that the public is interested in. Many of these are already listed in the Public Education and Outreach section. However, a few examples from 2008 help illustrate one day events to engage the public in a variety of resource management issues:

- Colorado Cares Day: citizens, media and public officials were the target audiences for noxious weed control efforts in drainage ways
- National Public Lands Day: Multiple activities focus on building relationships with projects involving tree plantings, trails maintenance and weed control.

In summary, park staff will continue to convey appropriate messages to a variety of audiences through our ongoing public programs and through posting the plan on the internet and in the Park Office, inviting public review and comments.

| Target Date    | Activity  | Goal   |
|----------------|---|--|
| July 2008      | Trails restoration North Wetlands                     | Establish interpretive area to gather and share information on effects of flooding on wetlands |
| September 2008 | Repair Damage to wetland areas due to Spring Flooding | Employ Volunteer groups in participation to reestablish trails                                 |

## Illicit Discharge Detection and Elimination

### Perspective

Cherry Creek State Park encompasses approximately 3,500 acres of land and 880 acres of water. This property is available for recreational use and is managed to protect its natural resources for the enjoyment of the public. Drainage into the reservoir comes through the Park from outside the Park boundaries from various creeks such as Cottonwood Creek and Shop Creek as well as seasonal drainages during heavy rainfall from surrounding neighborhoods. Discharge within Park boundaries can be monitored and controlled by park management. Park management minimizes discharges that are a result of recreational activities and park staff quickly handles the occasional accidental discharge. External discharge that affects the Park is diligently monitored in order to detect and eliminate the pollutants. If a criminal violation is observed, follow up prosecution occurs.

### Elements

The goal of this program is to detect and eliminate illicit discharges in all portions of Cherry Creek State Park. The program elements necessary to support the Park's Illicit Detection and Elimination Program Area consist of Drainage Inspection and Patrol.

For the drainage inspection program, the inventory of drainages into the park will be verified to ensure it is complete. This data will be entered into the GIS database for future management use. This data will be evaluated to determine priority areas where illicit discharge would cause the most damage to park resources or water quality or where it is most likely. A plan will be formalized to deal with illicit discharges into the park from outside entities.

The elements necessary to support the Illicit Discharge Detection and Elimination Program Area are:

- *Notification*
- *Investigation*
- *Enforcement*
- *Education and Training*

*Notification* of potential improper disposal or illicit discharges may be routed to the Park directly from concerned citizens or from park staff conducting inspection during or routine activities. After notification, park staff investigates the complaint through a visual inspection and observation of activities. Using stormwater maps and information from the complainant, park staff can trace the problem to a specific property owner. If there is an illicit discharge or improper disposal activity, the staff notifies the property owner to inform them of the regulations, discusses the implications and works with them to resolve the problem, and requests action to stop improper disposals or illicit discharges.

In addition, the Tri-County Health Department is also contacted by citizens, agency personnel, or other concerned entities. After an illicit discharge or improper disposal is recognized, the Tri-County Health Department staff identifies the source and plans the appropriate response. The Tri-County Health Department works under the Clean Water Act and enforces the required responses through the CDPHE. CDPHE routinely notifies Tri-County Health Department of complaints and reports of illicit discharges and allows them the opportunity to take the necessary follow-up actions.

*Investigations* would be initiated by the Park Rangers. The ranger staff includes eight full time employees that are fully commissioned and able to enforce all Colorado Revised Statutes as well as Colorado State Park Regulations. During the summer, additional seasonal and temporary rangers are hired to increase patrols as needed during the busy time of year. Patrols are carried out within Cherry Creek State Park 365 days a year several times a day. Patrols include observations of illegal dumping and discharge into the Park or any activity that affects the resources. This may include any dumping directly into the reservoir from boats or other vessels. The ranger staff also keeps track of the encroachment of park neighbors and monitors their actions through regular patrol.

The primary reasons for prompting an investigation of a potential illicit discharge or improper disposal include either a citizen complaint registered with the Park or Tri-County Health Department or observations made by the park staff during routine operations.

If a problem is identified, the following procedures will be used:

- The drainage system upstream from the reported/discovered discharge point will be investigated to locate the potential resident, business, or other source of pollutant.
- If a precise source cannot be identified and located, all potential sources will be evaluated.
- Educational material will be provided to the identified or suspected potential source(s).
- If criminal violation, rangers will take action and work with Arapahoe County Sheriff's Office and/or other law enforcement agencies to ensure that proper and thorough law enforcement is carried out.



*Enforcement* is carried out by Park Rangers. Violators are contacted and asked to return the park property to its original state. Follow up enforcement is carried out if the violators do not comply. The Arapahoe County Sheriff's Environmental Crime Unit, the Tri-County Health Department and other agencies that have specific authorities granted by local, state, or federal regulations, also currently handle enforcement situations.

*Education and Training* would be utilized in order to prevent illicit discharges, where the discharges are assumed to be caused by carelessness or not realizing the impact of their actions. The Park will utilize portions of the Public Education and Outreach Program, and Public Participation and Involvement Program, including the Stormwater Notification telephone number, the Park web-site, and educational brochures.

A staff education and training program will be developed to inform park staff to recognize illicit discharges and provide proper procedures for handling them.

Measurable Goals

Previous sections have detailed what Cherry Creek State Park is doing presently to meet the requirement of the Illicit Detection and Elimination Program Area. During the term of this permit, Cherry Creek State Park will accomplish the following activities in order to provide for an effective program that will trace, investigate and eliminate illicit discharges to the Park.

| <b>Target Date</b> | <b>Activity</b>  | <b>Goal</b>  |
|--------------------|--|--|
| Ongoing            | Conduct staff training   | Increase awareness of problem areas and proper procedures                |
|                    | Continue daily patrol by Park Rangers  | Locate, deter and educate violators                                      |
|                    | Establish training session and regular updates with Cherry Creek Marina management | Understand Marina's procedures and capabilities for spill containment    |
| May 2008           | Complete annual survey for encroachment  | Detect encroachment and correct violations                               |
| May 2008           | Complete external stormwater mapping   | Identify outfalls entering the Park                                      |
| May 2009           | Inventory stormwater maps  | Identify mapping needs   |
| July 2009          | Review GIS database  | Update as needed based on inventory                                      |
| January 2008       | Continue staff training  | Improve detection of illicit discharges and potential problem areas      |
| January 2008       | Utilize visual observation program   | Identify areas for mapping   |
|                    | Prioritize drainage areas  | Focus on high impact areas   |
| May 2008           | Complete internal stormwater mapping   | Identify and monitor Park outfalls                                       |
| June 2009          | Establish Hazardous Materials procedures   | Response for spills containment  |
| January 2009       | Formalize Hazardous Materials Training for spills in the reservoir                 | Integrate Park, Marina and HazMat staff training and staging             |
|                    | Formalize a plan to halt external illicit discharge                                | Identification and notification of responsible authority for containment |



## Construction Site Stormwater Runoff Control

### Perspective

The ultimate goal of the Construction Site Stormwater Runoff Control Program is to minimize the transport of pollutants in stormwater at land disturbance sites through controls on sediment leaving a construction site on the Park. The Park will consider Douglas County's BMP's, when completed, as a guide for updating applicable practices.

### Elements

The primary mechanisms for phosphorous transport through the Cherry Creek watershed are stormwater runoff and erosion. The program elements to support the Construction Site Stormwater Runoff Control Program consist of the following:

- *Erosion, sediment and waste control BMP's*
- *Site development procedures, including public education, inspection and enforcement procedures, and training*

The Park's criteria for *Erosion, Sediment and Waste Control BMP's* includes a discussion of the use of some structural and non-structural BMP's for the purpose of reducing the quantities of sediment eroding and washing into the MS4 from construction sites. Examples of structural controls include sediment traps, silt fences, and gravel filters. Examples of non-structural controls include setbacks, buffer zones, vegetation, plan review procedures, education, and other controls that do not rely on a structure.

The Park requires all new construction with land disturbances, to have an Erosion and Sedimentation Control Plan listing site BMP's. Erosion and sediment control BMP's may include silt fences, hay bales, inlet protection, temporary or permanent re-vegetation, construction screening/wash racks and construction of washout sites, depending on the type of project.

Minimum erosion and sediment control BMP's include the following:

- Stabilization of disturbed areas and soil stockpiles
- Minimization of erosion with terraces, diversion ditch, seeding and mulching, slope drains, surface roughening, and temporary stream crossings
- Protection of adjacent properties with silt fencing and/or construction fencing
- Reduction of sediment transport off site, including silt fences, check dams, sediment basins, and inlet protection
- Stabilization of construction access routes, including vehicle tracking controls

In addition to the Erosion and Sediment Control Plan, the contractor will be responsible for containment of pollutants from the site in addition to other wastes, such as construction materials and concrete wash out. Minimum waste control BMP requirements include the following:

- Concrete wash out area
- Stockpile or discarded materials coverings and containment mechanisms (i.e. berms), as appropriate
- Appropriate siting of chemical toilets of water-tight construction
- Provision of containers for collection and disposal of debris and litter

*Land Development Procedures* include preparing an Erosion and Sediment Control Plan for each Park project at the beginning of any development construction activity. The Park reviews and approves the plan before any land disturbance. Site inspections are conducted at the initial BMP installation and routinely after construction begins. If the contractor's site planning provisions are not adequate, no work can begin. If routine inspections indicate inadequate BMP operations, verbal and written warnings are provided and any non-compliance may lead to enforcement actions, with monetary damages charged to the contractor.

*Inspection and Enforcement* will include routine, periodic maintenance inspections of erosion control BMP's in the field. The inspector will use the Erosion and Sediment Control Plan to ensure BMP controls are installed and maintained properly.

The inspection process includes an informal discussion of deficiencies and corrective actions, if needed, as well as more formal punch lists and inspection reports. This program is in place but is in need of updating and instituting more formal requirements. Revisions to this program are needed to ensure that the inspections program is well understood by park staff, consistently applied, documented, and treated with the appropriate emphasis that is necessary. The park staff will review this program and develop and implement a more structured inspection and enforcement program. A program for training park staff responsible for inspections and enforcement will be developed.

*Training and Education for Park Staff* will be provided as needed or requested.

### Measurable Goals

Previous sections have detailed what the Park is doing presently to meet the requirements of the Construction Site Stormwater Runoff Control Program. During the term of this permit, the Park will accomplish the following activities in order to provide for an effective program that will reduce pollutants in any stormwater runoff from construction activities:

| Target Date  | Activity  | Goal   |
|--------------|---|--|
| January 2009 | Update the manual for construction BMP's and construction documents                             | A reference for accurate and consistent BMP's  |
| July 2008    | Develop an Education and Training Program for Park staff  | Ensure staff understanding and compliance  |
| January 2006 | Continue updates to the manual for construction BMP's as they become available                  | To reflect the requirements of the Cherry Creek Reservoir Control Regulations and guidance on site review procedures |
| July 2008    | Establish an approved GESC Permit   | To establish a permit to be submitted to agencies requiring permitting of construction activities                    |
| January 2008 | Employ SEMSWA Inspectors to enforce rules related to GESC permitting on Cherry Creek State Park | Comply with rules and regulations as they apply to stormwater  |



## Post-Construction Site Stormwater Runoff Control

### Perspective

Standards for all post-construction done within Park boundaries are subject to all BMP's identified in the UDFCD Manual for stormwater management (Volume 3). The ultimate goal of the Post-Construction Site Stormwater Runoff Control Program is to minimize the transport of pollutants in stormwater by use of short and long term controls. The Park will refer to Douglas County's BMP's, or other documents as a guide to help update applicable practices.

### Elements

The primary mechanisms for pollutant transport through the Cherry Creek watershed are stormwater runoff and erosion. The program elements to support the Post Construction Site Stormwater Runoff Control Program consist of the following:

- *Compliance Monitoring for Post-Construction BMP's*
- *Long Term Compliance for Post-Construction BMP's*

*Compliance Monitoring for Post-Construction BMP's* will be the primary responsibility of park staff. A Drainage Plan prepared for each development and redevelopment project is referred to when inspecting BMP installation during construction. The installation specifications will be specified in the UDFCD Manual (Volume 3). Inspections staff within the Park will inspect and enforce permanent BMP installations, if any, on the Park.

*Long Term Compliance for Post-Construction Site Controls.* As a part of this program requirement, the Park will develop and implement a formal program to ensure long term compliance with post-construction BMP requirements for facilities. The program will include mechanisms to identify and guarantee the parties responsible for the maintenance and long term compliance at the time of development. (Note: The majority are off the Park.) The appropriate mechanisms; i.e. plat notes, license agreements, Intergovernmental Agreements (IGA's) will be reviewed and enhanced to ensure an enforcement mechanism. Inspections programs will be developed to provide periodic inspections of post-construction BMP's to review their performance.

### Measurable Goals

Previous sections have detailed what the Park is doing presently to meet the requirements of the Post-Construction Site Stormwater Runoff Control Program. During the term of this permit, the Park will accomplish the following activities in

order to provide for an effective program that will reduce pollutants in any stormwater runoff from post-construction activities:

| Target Date  | Activity  | Goal   |
|--------------|---|--|
| January 2009 | Create a Park Manual for permanent BMP's  | A reference for accurate and consistent BMP's  |
| January 2010 | Continue updates to the Park Manual for permanent BMP's                                 | To reflect the requirements of the Cherry Creek Reservoir Control Regulations, guidance on plan review procedures and requirements for O & M documents |
|              | Formalize an Inspection Program for permanent BMP's                                     | A reference for accurate and consistent inspection procedures including enforcement procedures   |
|              | Develop an inspection and enforcement tracking Database through participation in SEMSWA | Conduct inspections and apply corrections to activities  |



## Pollution Prevention and Good Housekeeping

### Perspective

Cherry Creek State Park has a staff that runs the operations of the park as well as several concessionaires that run their businesses to provide services for park visitors. Our staff works to ensure that the activities of operating the park do not adversely affect water quality. Cherry Creek State Park has management control over the actions of park concessionaires as well. Concessionaires are used as partners in the efforts to maintain and enhance natural resources.

### Elements

The Park has specific management plans in place that are necessary elements to implement the Pollution Prevention and Good Housekeeping Program Area. They are:

- *Cherry Creek State Park General Management Plan*
- *Park Capacity Plan*
- *Swimbeach Plan*
- *Trail Management*
- *Campground Operations*
- *Park management control over concession operations*

The *Cherry Creek State Park General Management Plan* is used to guide operations of the park. All aspects of management include maintaining the quality of the natural resources, including water, within the Park. The goals include minimizing the transport of pollutants in stormwater at Park operation sites at their source. Activities that may affect water quality are monitored and carefully maintained. Part of maintaining the high quality of our resources involves managing the use of the park by our visitors. With well over one million visitors a year, the impacts of the use by these visitors could be significant. Stormwater runoff from Park facilities is via sheet flow (or natural drainage). Curbing is used only as a visitor control mechanism. Melting and traction control agents are not regularly used for road maintenance. Hard surfacing of roads and trails is kept to a minimum.

The *Cherry Creek State Park Capacity Plan* ensures that we only allow entrance to as many visitors as we have facilities. This ensures that waste and traffic do not overwhelm the park's resources. Resources include both natural resources, and developed resources such as waste management, roadways and trails. Water Capacity ensures that the number of boats on the water does not affect water quality and that boat accidents do not leak pollutants into the water. Patrol boats utilize four stroke engines, which produce less pollution than other types. Regular boat patrols ensure

boater compliance of waste management and use of lift stations verses discharging waste into the lake.

*A Swimbeach Plan* is in place to ensure the maintenance of the area. Regular water testing is completed in order to ensure safe conditions for swimmers. There is regular staff presence to ensure proper waste management and patrol for violations or problems. Management measures are also taken to ensure that waterfowl do not congregate due to artificially created conditions and create unsanitary conditions in these areas.

*Trail management* includes maintaining current trails and proper planning for new trails. Practices for trail placement always take water quality into consideration. This includes minimizing waste in direct contact with the water, ensuring erosion prevention and considering compaction of soils on run-off. Current trails are maintained to ensure proper drainage. Clean up days are scheduled to pick up pet waste and other trash to make certain that it does not find its way into the water system. Trailhead signs are used to provide park visitors with information on various issues including proper disposal of waste. Colorado State Parks follow the Leave No Trace program and provide their suggestions for natural area use to park visitors.

*Campground operations* include a recycling program within our waste management. Campsites currently do not have sewage hookup, but there is a dump station provided to campers directly adjacent to the campground. Campground renovations to begin in 2004 will include installation of full sewer hookup for campers. The campground is heavily patrolled and maintained to ensure proper waste management by the campground users.

The Park has *management control over all the concessions in the park*. Waste management for the concessions is carefully managed and maintained to ensure optimal resource protection. Marina operations are directly responsible for maintaining good water quality conditions. Steps are taken to prevent water pollution such as making sure marina patrons comply with good housekeeping regulations and do not contribute to water problems such as washing boats on the property. Marine sanitation disposal facilities are in place and maintained by the Marina. The horse stable fields were designed to provide proper drainage and grass buffers so that the stable operation does not cause water pollution. All other concessions are provided with sufficient waste management for the size and type of business.

### Measurable Goals

Previous sections have detailed what Cherry Creek State Park is doing presently to meet the requirement of the Pollution Prevention and Good Housekeeping Area. During the term of this permit, Cherry Creek State Park will accomplish the following activities in order to provide for an effective program that will reduce pollutants in any stormwater runoff from the Park.

| Target Date  | Activity  | Goal   |
|--------------|---|--|
| January 2009 | Cleanout Shop Creek drainage and Quincy Outfall                     | To remove debris and improve drainage                                      |
| January 2008 | Swim beach erosion control, berm and swale.                         | To establish effective methods of controlling erosion of beach sand        |
|              | Evaluate measures along dam structure for debris control            | Lower discarded accumulation of materials                                  |
| June 2008    | Clean up Shop Compound  | To regrade and restructure drainages and erosion controls                  |
|              |   |  |
| June 2008    | Prevent illicit debris placement by park neighbors on park property | Educate and ticket violators of park policy on litter and trash placement. |





## Acknowledgements

*We would like to thank everyone who helped with the preparation of this document including:*

|                |               |                |               |
|----------------|---------------|----------------|---------------|
| Joe Marquez    | Greg Galvez   | Kevin Becker   | Brian Bertsch |
| Rob Billerbeck | Patti Caudell | Andrea Santoro | Ron Reeves    |

Arapahoe County Waste Water Authority

Douglas County Department of Public Works

## References

State of Colorado Department of Natural Resources, Division of Parks and Outdoor Recreation, Board Policies and Administrative Directives

Colorado Revised Statutes

Colorado State Park Regulations

Colorado State Parks Concession Services Manual

Cherry Creek State Park Operational Procedures Manual

Cherry Creek State Park Swimbeach Operational Procedures Manual

Cherry Creek State Park General Management Plan

Cherry Creek State Park Interpretive Master Plan

Cherry Creek State Park Campground Manual

Cherry Creek State Park Brochure

Facts for Contractors, Constructing BMP's Effectively, Douglas County Department of Public Works, Engineering Division