

# *Public Education and Outreach*



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## INTRODUCTION

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The Phase II Municipal Separate Storm Sewer System (MS4) Permit requires the city of Thornton to develop a program for Public Education and Outreach. The purpose of this Education and Outreach Plan is to effectively strategize and roadmap the implementation of the Education and Outreach Program requirements as described in Part I.E.1 of the Permit. The program describes the impact of stormwater discharges on water bodies, the pollutants of concern and their sources, and steps the public can take in helping to reduce the pollutants entering the MS4.

## SECTION 1: GOALS AND OBJECTIVES

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The goal of this Education and Outreach (E&O) Program is to reduce pollutant discharges in storm water discharges and to measurably increase the knowledge and awareness of the targeted audiences concerning specific and relevant topics. Developing measurable goals to help gauge permit compliance and the effectiveness of the program. The measurable goals reflect the needs and characteristics of the area being served.

### Reduce Pollutants in Stormwater

The E&O Program is designed to address specific types of pollutants such as phosphorous, nitrogen, pathogens, trash and other non-stormwater discharges. Additionally, the program addresses specific sources of pollutants such as septic systems, construction sites, fertilizer use, grass clippings and animal or pet waste.

The program increases targeted audience's knowledge about the steps that can be taken to reduce stormwater pollution. Knowledge of hazards associated with illegal discharges and improper disposal of waste, including pertinent legal implications. Audiences may include but are not necessarily limited to: municipal staff, homeowners and small businesses, schools and other educational venues, homeowner associations and non-profit groups, the construction community, and entities with a greater than average potential to generate stormwater pollution such as vehicle oil change facilities and fueling stations.

## SECTION 2: Targeted Pollutants

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The following targeted pollutants have been identified as potential sources. The sources for these potential pollutants may be from residential, commercial, and municipal operations source. The following table describes the targeted pollutant source and the priority for providing educational outreach to possibly obtain a reduction in discharges from these pollutants.

### Nutrients:

Nutrients are inorganic substances, such as **nitrogen** and **phosphorous**. They commonly exist in the form of mineral salts that are either dissolved or suspended in water. The primary source of nutrients in urban runoff has been identified as fertilizer products. Excessive use of fertilizer can result in the discharge of nutrients to water bodies and streams, resulting in excessive aquatic algae and plant growth. Overgrowth of aquatic algae and plants can lead to a state of eutrophication in the water body. Eutrophication occurs when overgrowth leads to excessive decay of organic matter in the water body, loss of oxygen in the water, and the eventual death of water body organisms. In addition to fertilizer, other common sources of nutrients in the city include yard waste (grass clippings/leaves) and pet waste.

Target Pollutant	Target Audiences	Format	Distribution	Documentation	Location of Documentation
<b>Priority 1: Fertilizers</b>					
	City Staff	Classes/Information on proper application	Video training and classes	Dates/Time of training and number of attendees	Engineering Services Quarterly Report
	General Public	Awareness Posters: Don't Feed the Drain and Brochures: Lawn Care	Special events/Trash Truck and Bus Shelter Ads	Number of brochures distributed and frequency for ad displays	Engineering Services Quarterly Report
	Website Users	Informational Materials	City website	Number of hits on the website	Engineering Services Quarterly Report
<b>Priority 2: Pet Waste</b>					
	Dog Owners	Dog waste bag dispensers w/signs	At all city parks/trails	Maintain bag dispensers and adding new ones as needed.	Engineering Services Quarterly Report
	Website Users	Informational Materials	City website	Number of hits on the website	Engineering Services Quarterly Report
	General Public	Awareness Posters: Don't Feed the Drain and dispenser signs	Website, Trash Trucks, Bus Shelter Ads Website,	Number of hits on the website and frequency for ad displays	Engineering Services Quarterly Report
<b>Priority 3: Grass/Leaves</b>					
	City Staff	Classes/Information on proper application	Video training and classes	Dates/Time of training and number of attendees	Engineering Services Quarterly Report
	General Public	Awareness Posters: Don't Feed the Drain and Lawn Care brochures	Trash Trucks, Bus Shelter Ads and Special Events	Number of brochures distributed and frequency for ad displays	Engineering Services Quarterly Report

## Sediments:

Sediments are soils or other surficial materials transported or deposited by the action of wind, water, ice, snow or gravity, as a product of erosion. For example, sediments can erode from land when disturbed by a construction activity or heavy rainfall. Sediments can increase turbidity, clog the gills of fish, reduce spawning, lower the ability of young aquatic organisms to survive, smother bottom dwelling organisms, and suppress the growth of aquatic vegetation.

Target Pollutant	Target Audiences	Format	Distribution	Documentation	Location of Documentation
Sediment	Landscaping	Informational material on proper control measures.	Direct Mail	List of company's material is distributed to; what material was mailed.	Engineering Services Quarterly Report

Target Pollutant	Target Audiences	Format	Distribution	Documentation	Location of Documentation
Sediment (cont.)	Website Users	Informational materials, contact information	City website	Number of hits on the website	Engineering Services Quarterly Report
	Construction contractors	Construction control measure information on city requirements.	Pre-construction meetings; city website	Number of hits on the website; number of pre-construction meetings.	Engineering Services Quarterly Report

### Floatable Materials - Trash:

Floatable materials to consider are non-biodegradable (e.g., paper, plastic, polystyrene packing foam, aluminum materials, etc.) and biodegradable organic matter (e.g., leaves, grass cuttings, food waste, etc.). The presence of floatable materials has a significant impact on the recreational value of a water body and can potentially impact aquatic species habitat. Excess organic matter can create a high biochemical oxygen demand in a stream and thereby, lower the water quality of the stream. Also, in areas where stagnant water exists, the presence of excess organic matter can promote septic conditions resulting in the growth of undesirable organisms and the release of odorous and hazardous compounds such as hydrogen sulfide.

Target Pollutant	Target Audiences	Format	Distribution	Documentation	Location of Documentation
Trash	General Public	Informational material on proper waste disposal.	Bus Shelter Ads; Trash Truck Ads; Brochures	List of company's material is distributed to; what material was mailed.	Engineering Services Quarterly Report
	Website Users	Informational materials, contact information	City website	Number of hits on the website	Engineering Services Quarterly Report
	Construction contractors	Construction control measure information on city requirements.	Pre-construction meetings; city website	Number of hits on the website; number of pre-construction meetings.	Engineering Services Quarterly Report

### Oil and Grease:

Oil and grease are characterized as high-molecular weight organic compounds. Primary sources of oil and grease are petroleum hydrocarbon products, motor products, esters, oils, fats, waxes, and high molecular-weight fatty acids. Migration of these pollutants to the water bodies are very possible due to the wide uses and applications of some of these products in either municipal, residential, commercial, industrial, or construction areas. Elevated oil and grease content can decrease the aesthetic value of the water body, as well as the water quality.

Target Pollutant	Target Audiences	Format	Distribution	Documentation	Location of Documentation
Oil and Grease	General Public and food vendors	Information on proper storage, disposal and cleanup	Bus Shelter Ads; Trash Truck Ads; Brochures	Schedule for posting ads; brochures distributed.	Engineering Services Quarterly Report
	Website Users	Information on proper storage, disposal and clean up	City website	Number of hits on the website	Engineering Services Quarterly Report

## SECTION 3: Activities

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The program outlines a process for communicating the objectives to improve water quality through reduced pollutant volumes making their way into water bodies via the city's MS4.

A number of public information and education activities are currently being implemented by the city as a result of permit requirements that exist outside of public education and public outreach minimum control measures. The total of these activities comprise the E&O Program. Each activity is associated with one or more message delivery methods or activity types. The chosen activities correspond with permit requirements in compliance with the MS4 Permit, the program promotes behavior change by providing the public with information to reduce pollutants from the MS4.

### Stormwater Quality Website

The city maintains a web site dedicated to water quality and stormwater management. The site promotes awareness on the water quality impacts from general housekeeping and maintenance practices, serves as a forum to distribute educational materials, and includes information on how to report suspected illegal discharges and construction issues.

#### **Objectives and Expected Results:**

The website is a tool to provide water quality and pollution prevention information to the general public in an easily accessible format. It provides a way to make documents accessible to the public for review and comment.

The website provides valuable information and standards:

- Provides information on how to identify and report suspected illicit discharges.
- Provides notice to the public for meetings.
- Awareness of long-term impacts of development and construction ordinances, policies and guidance materials related to daily activities.
- Public awareness on stormwater runoff and its impact on surface water bodies, explaining the lack of treatment for stormwater in relation to sanitary sewer discharges.
- Information and directions on how the public can direct their comments, questions or complaints.
- Public awareness on requirements pertaining to control measures for construction activities and how to report inadequate construction control measures.

#### **Responsible Party:**

Engineering Services is responsible for maintaining the website contents up-to-date and for assessing options for increasing site traffic.

#### **Implementation:**

Engineering Services will continue to host the website and update it with new information. Conducting a comprehensive re-assessment of the website, including design, content, ease of navigation, and actual usage and update the site and content accordingly.

## **Recordkeeping:**

Engineering Services will maintain a record of the changes made to the site and number of hits made on the website. A quarterly report is generated, providing a description of the assessment process and describing the changes, if any, made to the web site.

## **Illicit Discharges**

The city provides information to businesses and the general public regarding prohibited discharges to the MS4, and the water quality impacts associated with illicit discharges.

## **Objectives and Expected Results:**

The goal is to provide water quality and pollution prevention information to businesses and the general public the legal ramifications for illegal discharges and to encourage behavioral changes to reduce pollutant discharges.

Develop and implement educational and outreach material to educate the general public on steps to take to reduce stormwater pollution.

- Implementing a program with strategies to target audiences most likely to have a significant stormwater impact.
- Increasing the general public awareness and knowledge of hazards associated with illegal discharges and improper disposal of waste.

Develop and implement one education and outreach activity to identified businesses that are likely to cause an illicit discharge or improperly dispose of waste.

- Educational materials and activities are to describe water quality impacts associated with illicit discharges most likely to occur from identified businesses.
- Encourage the proper disposal of waste and behavioral concerns and actions the business can take to reduce the likelihood of illicit discharges and the improper disposal of waste.

## **Responsible Party:**

- Engineering Services is responsible for developing and distributing the information and message.
- The city's Communications Department will provide assistance with the technical development of the brochures or publications.
- Code Compliance is responsible for enforcement on illicit discharges.

## **Implementation and Targeted Businesses:**

Engineering Services will develop the necessary information and distribute to the targeted businesses. A comprehensive re-assessment of the targeted businesses will be conducted to determine the effectiveness of the material distributed.

- Targeted businesses
  - Restaurants/food vendors
- Engineering Services will periodically send letters and/or brochures to targeted businesses.

## **Recordkeeping:**

Illicit Discharges: Engineering Services will maintain a list and copies of the written procedures used to determine the targeted businesses, the outreach activities conducted, and the outreach distribution mechanisms.

Illicit Discharges: Engineering Services will maintain a list of the targeted businesses that are likely to cause an illicit discharge or improperly dispose of waste as well as the education and outreach activity for the targeted businesses. This will include the dates the activities were implemented, and the dates and locations the events and the materials were made available.

## **Brochures and Publications**

The city distributes two general education brochures entitled “Caring for Your Lawn & Garden”, “Managing Your Household Wastes”, and “Keeping our Water Clean”. These materials are distributed by city staff at events and meetings throughout the community, including ice cream socials and ward meetings. In addition, the brochures are placed at municipal facilities for public access, including City Hall and the Infrastructure Maintenance Center. Additional articles, as appropriate, may be provided with utility billings, and in Thornton publications such as the City Voice Newspaper.

## **Objective and Expected Results:**

Distributing general education brochures increases individual and household knowledge about the steps they can take to reduce stormwater pollution and increases an understanding of the legal implications of the improper disposal of waste.

## **Responsible Party:**

- Engineering Services is responsible for developing and distributing the information and message.
- The Communications Department will provide assistance with the technical development of the brochure or publication.

## **Implementation:**

- Engineering Services will continue to distribute brochures at appropriate community events and post the brochures at its municipal facilities.
- Engineering Services will continue to publish articles in the City Voice Newspaper.

## **Recordkeeping:**

Engineering Services will document efforts to engage and educate citizens and will report on these efforts in the quarterly reports. This will include the number of events attended and an estimated number of brochures distributed and publications published.

## **Bus Shelter and Trash Truck Ads**

Advertisements on bus shelters and trash trucks provide general information to the public on items related to storm water quality. The bus shelter ads are posted at 17 locations throughout the city and on city trash trucks



promoting awareness of the impacts from pet waste, lawn fertilizers, vehicle fluids, household chemicals, and grass clippings/leaves.

**Objective and Expected Results:**

The bus shelter and trash truck ads increase public awareness for disposal of stormwater pollutants. The ads focus on controlling pet waste, lawn fertilizers, vehicle fluids and household chemicals, and grass clippings/leaves from entering the storm sewer system.

**Responsible Party:**

- Engineering Services is responsible for developing the information and message.
- Environmental Services will post ads on trash trucks.
- Communications will provide assistance with the technical development of the bus shelter ads.

**Implementation:**

- Continue to post the ads at designated bus shelter locations and on trash trucks to promote awareness.
- Engineering Services will update the ads accordingly, approximately every four years.

**Recordkeeping:**

Engineering Services will document efforts for posting the ads to educate the public and report the number of bus shelter locations posted and frequency posting for the trash truck ads.

**Storm Drain Marking Program**

The Storm Drain Marking Program is designed to raise public awareness of the connection from the storm drains to local waters. These markers are small plastic disks with information such as, “No Dumping – Drains to River” printed on them and are placed on storm drain inlets by volunteer organizations and city staff. The city also distributes door hangers with material that explains the program and provides information on alternatives to dumping.

**Objective and Expected Results:**

The goal of the storm drain inlet marking is to reduce dumping by providing a visual way of alerting the public that storm drains empty directly into local streams and eventually into the South Platte River. The city will work with volunteer organizations to install a minimum of 30 storm drain markers per year. Storm drains marked by the program are tracked on the city’s GIS.

**Responsible Party:**

- Engineering Services is responsible for coordinating volunteers and city staff for the installation of the storm drain markers and information distribution.
- Community Services – Arts & Culture for providing volunteers as they become available.

**Implementation:**

- Engineering Services will continue to coordinate the installation of at least 30 storm drain markers each year.
- Continue to promote the storm drain marking program at community events and on the city website to engage volunteers.

**Recordkeeping:**

Engineering Services will document the number and location of the storm drain markers installed on the city's GIS mapping. In addition, the city will include the number of markers installed and the groups involved in the quarterly status reports.

**Storm Sewer Manhole Covers**

The city has implemented a requirement and standard for all new and redevelopment projects and capital improvement projects to install storm sewer manhole covers labeled with "City of Thornton", "No Dumping! Drains to River".

**Objective and Expected Results:**

The manhole covers are designed to educate the public on stormwater and where the stormwater goes. New developments, redevelopments and capital improvement projects are required to install these manhole covers as part of the city standard for storm sewer manhole covers.

**Responsible Party:**

- Engineering Services is responsible for assuring the storm sewer manhole covers are used for all capital improvement projects.
- Development Engineering is responsible for assuring the storm sewer manhole covers are used for all development and redevelopment projects.

**Implementation:**

- Continue to require the installation of the storm sewer manhole covers to promote public awareness.

**Recordkeeping:**

All final plans will show details and specify the city standard for storm sewer manhole covers for all projects.

**Channel 8 Stormwater Programming**

The city is fortunate to have access to channel 8 that can be used to broadcast this pollution prevention message to the general public. Two videos are shown on the city of Thornton's cable channel, "After the Storm" and "Illicit Discharge Detection and Elimination", these videos can also be viewed over the internet.

**Objective and Expected Results:**

The intent of this educational program is to provide a basic understanding of storm water and an explanation of where storm water goes. It also describes how pollution impacts storm water quality, the lack of treatment, and how it impacts our streams and waterways and drinking water.

**Responsible Party:**

- Engineering Services will provide video updates as they become available.
- Communications will broadcast the videos on the local channel 8.

**Implementation:**

- The videos will run on channel 8 throughout the year.

**Recordkeeping:**

Engineering Services will provide documentation of the video showings in the quarterly status reports.

**Nutrients**

The goal is to prioritize targeted sources that are likely to result in a reduction of nutrient discharges, and provide outreach material that describes the stormwater quality impact associated with nitrogen and phosphorus.

As a member of the Colorado Stormwater Council, participate in a collaborative effort to develop and implement a public education program to reduce water quality impacts associated with nitrogen and phosphorus in discharges to the MS4.

**Objective and Expected Results:**

The program is to evaluate, identify, target and provide outreach for targeting sources describing stormwater quality impacts associated with nitrogen and phosphorus in stormwater runoff and illicit discharges.

**Responsible Party:**

- Engineering Services

**Implementation:**

- Provide educational and outreach material to the general public.
- As a collaborative effort with other MS4s, distribute information describing the impacts associated with nitrogen and phosphorus discharges.

**Recordkeeping:**

Engineering Services will maintain a written list of the targeted sources that are contributing to, or have the potential to contribute nutrients to stormwater and the education and outreach activity for the targeted sources.

**Partnership**

*Adams County Household Chemical Roundup* – This program provides a convenient and safe manner in which various leftover hazardous household chemicals can be safely disposed of by county and city of Thornton citizens.

*Adopt-a-Street Program* – This program provides opportunities for volunteer groups and individuals to get involved in adopting portions of streets and collectively get involved in collecting litter and debris from streets and adjacent areas.

*Free Landfill Days* – This program allows city of Thornton residents to take items to the landfill that may not be able to be disposed of through their regular trash service.

*Fall Leaf Collection* – This program in October and November allows city of Thornton residents to place their bagged leaves at curbside for free collection on their regular trash collection day.

*Click and Haul* – This program provides a means for disposing large items; remodeling debris, yard waste, and more. For a fee the city of Thornton will pick up and haul these items.

*Trash and Recycle Program* – The city also provides services for trash pickup and recycling at curbside.

*Oil and Automotive Fluids* – The city provide locations where citizens can bring automotive fluids and cooking oil for recycling.

### **Objective and Expected Results:**

All these partnership programs allow citizens an opportunity for disposal of pollutants that might otherwise end up in our streams, lakes and rivers.

### **Responsible Party:**

- Engineering Services
- Environmental Services

### **Implementation:**

These programs are provided year-around or on an annual basis.

### **Recordkeeping:**

Engineering Services will document the collection quantities and participation in the quarterly status report.

## **SECTION 4: Evaluation**

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The program is evaluated through observations and evaluations, recording strengths and weaknesses encountered during the implementation of the program. Significant changes identified during this process should be made as soon as possible or at the end of each permit cycle. Minor issues that surface during the year should be considered and addressed immediately when appropriate.

### **Objective and Expected Results:**

There will be an organized formal effort to determine what percentage of the target audience was reached in any given year and how effective that communication was in changing behavior. Observations of changes (e.g., absence of pet waste and reduced illicit discharges) will be recorded and evaluated. The evaluation process should identify strengths and weaknesses identified in the program.

- Planning and Development – the time during which the various activities and educational tools are identified, developed and scheduled. During the planning and development period, interim feedback may indicate that some additional “audiences” should be added, or that some aspect of gathering information

for the targeted audience may need to be altered. The location and impact of activities may be changed to better address the needs of the city or, of the targeted audience.

- Execution of Actions – the time during which the planned activities and educational tools are conducted and introduced to the community or targeted audiences, respectively.
- Target Audience Feedback – the time during which the members of a targeted audience are asked to provide feedback regarding their understanding of the need to change their behavior. Feedback from targeted audiences should be formally sought. A short survey seeking input may be conducted.
- Behavior Change and Evaluation Period – the time during which the city observes improved conditions within a targeted audience related to stormwater pollution.

**Responsible Party:**

- Engineering Services will conduct education and outreach activities on stormwater pollution reduction, established for each business and the general public.

**Implementation:**

The city, through the evaluation process will identify strengths and weaknesses within program and make changes as soon as possible or at the end of the permit cycle. Minor issues that surface during the year may be considered and addressed when appropriate.

**Recordkeeping:**

Engineering Services will document changes to the program.

**SECTION 5: Additional Opportunities for Education and Outreach**

The city of Thornton is fully committed to maintaining compliance with its MS4 Permit requirements. This program is designed to guide the city through the steps it must take to increase target audience knowledge about stormwater pollution reduction. There are numerous other education and outreach steps that can be taken to supplement other aspects of permit compliance and to improve water quality. To achieve the city’s goals and objectives, the city will revise and adapt the program throughout the permit term to address observed weaknesses or shortcomings.