



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 8**

1595 Wynkoop Street  
DENVER, CO 80202-1129  
Phone 800-227-8917

<http://www.epa.gov/region8/stormwater>

**STORMWATER ANNUAL REPORT FORM**

This form is for regulated small MS4s (Municipal Separate Storm Sewer Systems) and may be used to meet the annual reporting requirements for regulated small MS4s as outlined in 40 CFR§122.34g(3). While it is not required for MS4 operators to use this form to meet federal regulations, MS4s are encouraged to use this format to allow for more efficient recordkeeping and to minimize paper consumption.

**PLEASE NOTE: This form may not include all of the information required to be submitted in your annual report. Please review your MS4 permit to ensure all required information is reported. Include supplemental pages to this form, if needed.**

Completed forms should be mailed to:

Amy Clark  
EPA Region 8 Stormwater Coordinator  
Mailcode: 8WP-CWW  
1595 Wynkoop Street  
Denver, CO 80202-1129  
Email: [clark.amy@epa.gov](mailto:clark.amy@epa.gov)

**All sections of this form must be completed and Item I on Page 18 must be signed and certified.**

**Please print or type.**

**A. Permittee Information**

Permittee (Agency Name): Fort Carson

Mailing Address: 1626 Evans Street BLDG 1219

City, State and Zip Code: Fort Carson, Colorado 80913-4000

Contact Phone Number: 719-526-1697

Permit Certification Number: COR042001

Have any areas been added to the MS4 due to annexation or other legal means? NO

**B. Reporting Period:** January 1, 2017 to December. 31, 2017

### **C. Construction Program Contact:**

The following information will be provided on EPA's web site to assist construction site operators in determining municipality-specific requirements for their projects:

Have you assigned an appropriate contact person/work unit to address questions regarding your municipality's construction and post-construction requirements?

If Yes:

Contact name: Chip Hahn  
Position/work group title: Stormwater Program Manager, Environmental Compliance Branch  
Contact phone number: 719-526-1697  
Contact E-mail address: [chester.n.hahn.civ@mail.mil](mailto:chester.n.hahn.civ@mail.mil)

If a web site has been created with information on complying with your municipality's construction and/or post-construction requirements, list the address:

Fort Carson Stormwater Page

<http://www.carson.army.mil/DPW/environmental/stormwater/index.html>

Fort Carson Resident's Guide

<http://www.fortcarsonfamilyhomes.com/media/2107209/Carson-Resident-Guide-Updated--March-2017.pdf>

### **D. Implementation of EPA's Stormwater Management Program**

The purpose of the annual report is to report on the status of your implementation of the permit requirements, including compliance with the standard of reducing the discharge of pollutants from your MS4 to the Maximum Extent Practicable (MEP). Address each of the following items for **each** of the six program areas:

1. Public education and outreach on stormwater impacts;
2. Public participation/involvement;
3. Illicit discharge detection and elimination;
4. Construction site stormwater runoff control;
5. Post-construction stormwater management in new development and redevelopment; and
6. Pollution prevention/good housekeeping for municipal operations

As the permittee, you must collect and maintain adequate information to demonstrate implementation of the six program areas as per your stormwater management program. Note that although the annual report only requires the submittal of certain information as outlined below, additional information may be requested by EPA to audit the implementation of your stormwater management program. For example, construction site inspection reports, outreach materials, and records of maintenance activities performed may be requested by EPA in addition to the annual report.

If another entity does not have its own permit but is instead covered under your permit, the annual report information under Section D of this form must also be provided for each such entity.

## 1. Public Education and Outreach on Stormwater Impacts

Provide the status of any measurable goal scheduled for completion during the reporting period or for which activities have begun. For program elements started, but not completed, any milestones that have been met must be indicated. If a change will be proposed to a BMP or measurable goal as part of the annual report, this must be stated and the proposed changes discussed. For each change proposed, you must provide information on:

1. The BMP/measurable goal for which a change is proposed;
2. Any proposed changes to the BMP description;
3. Any proposed changes to the measurable goals (including specific dates and measures); and
4. The rationale for the proposed changes.

Describe any measurable goal(s) for public education and outreach on stormwater impacts for the reporting period; including dates and numeric measures:

<b>Measurable Goal(s)</b> Including dates and numeric measures, as previously submitted	<b>Status:</b> Including dates and numeric measures	<b>Changes proposed to BMP and/or Measurable Goal?</b> (Yes/No). If yes, provide information on proposed changes and rationale.
Implement an education and outreach program for Fort Carson that targets project managers, contractors, tenants, and environmental staff in an effort to provide education and outreach about the impacts of stormwater discharges on local water bodies and the steps that can be taken to reduce pollutants in stormwater runoff.	<p>Fort Carson’s main focus of education is through the Environmental Protection Officer (EPO) course, which is offered on a monthly basis to Soldiers and civilians who are responsible for compliance at the installation’s motorpool and maintenance facilities.</p> <p>Additionally, the stormwater program conducts training with contractors and Soldiers who are executing construction projects on the installation to educate them on protecting water quality during construction.</p> <p>Attachment 1 provides the training events for 2017.</p> <p>In 2017, the stormwater portion of the EPO course was updated to improve engagement with the students. Refer to Attachment 2 for a copy of the stormwater presentation.</p>	Yes. Revise and update training materials to reflect current stormwater topics and issues.

<p>Produce and disseminate informational material to inform the public (i.e., project managers, contractors, tenants, students, and environmental staff) of the effects of erosion and runoff on water quality. Informational materials shall be updated and distributed as necessary throughout the duration of this permit, and should provide a location where all annual reports and/or SWMP updates as required by this permit may be viewed.</p>	<p>Fort Carson uses three main ways to disseminate information for the public:</p> <ol style="list-style-type: none"> <li>1. The Fort Carson Stormwater Brochure is provided to EPO and Construction Stormwater class attendees as well as to attendees of outreach programs.</li> <li>2. The Fort Carson Resident’s guide provides polices for protection water quality in the installation housing areas.</li> <li>3. The Fort Carson Stormwater Homepage provides public information on the stormwater program. The URL is provided on Page 2.</li> </ol>	<p>No.</p>
<p>Provide and document training to appropriate planning staff, project managers, contracting officers and other parties as applicable to learn about LID practices, green infrastructure (GI) practices, and to communicate the specific requirements for post-construction control and the associated SCM laid out within the SWMP.</p>	<p>Low Impact Development training is accomplished during the EPO training, and provides general information on LID features installed on Fort Carson and the procedures for requesting maintenance. Maintenance training is provided on an as needed basis for the installation service contractor.</p>	<p>Yes. Improve maintenance training for the base operations contractor that aligns with the revised LID maintenance manual.</p>
<p>Provide a stormwater awareness brochure and track its distribution.</p>	<p>A copy of the Fort Carson Stormwater Brochure is provided in Attachment 3. Attachment 4 provides distribution of the brochure as part of the installation’s outreach programs. In 2017, 238 of brochures were handed out to trainees and residents.</p>	<p>No.</p>
<p>Ensure, to the extent feasible, that any new resident guides include terms for occupancy that relate to household waste management, pet policy, lawn watering, petroleum management, fertilizer/pesticide management, and car washing.</p>	<p>The Fort Carson Resident’s guide provides polices for protection water quality in the installation housing areas. The guide is available at the URL provided on page 2.</p>	<p>No.</p>

<p>At a minimum, produce and disseminate informational material to inform employees and contractors working onsite of proper hazardous waste collection processes. These materials should be updated and distributed as necessary throughout the duration of the permit.</p>	<p>The Fort Carson Stormwater website provides information on the proper collection and disposal of household hazardous waste.</p> <p>The Fort Carson Environmental Battlbook provides information to Soldiers and installation workforce on the proper hazardous waste collection processes.</p> <p>Fort Carson DPW also provides the 40-hour and 8-hour refresher employee training for the Hazardous Waste Operations and Emergency Response (HAZWOPER) training, which specially addresses proper hazardous waste collection processes</p>	<p>No.</p>
<p>Document education and outreach activities in the SWMP, including documents created for distribution and a training schedule which notes the dates that trainings occurred and the target audiences reached.</p>	<p>Attachment 4 provides a log of the installation's public activities programs. In 2017, Fort Carson conducted 18 training sessions, which educated 523 people on stormwater quality issues.</p>	<p>No.</p>

**Public participation/involvement (continued)**

Narrative description. Provide any descriptions which may further describe the implementation of this minimum measure. Such narrative may include descriptions of efforts which overlap several minimum measures or descriptions of documents or programs which have been created in an effort to implement this minimum measure:

The Fort Carson Stormwater Program updated the instruction materials for both the Environmental Protection Officer stormwater overview and the construction stormwater training course. The new materials provide updated information on current stormwater regulations (e.g. 2017 Construction General Permit) and incorporated more student interaction to increase the effectiveness of the instruction.

## 2. Public participation/involvement

Provide the status of any measurable goal scheduled for completion during the reporting period or for which activities have begun. For program elements started, but not completed, any milestones that have been met must be indicated. If a change will be proposed to the BMP or measurable goal as part of the annual report, this must be stated and the proposed changes discussed. For each change proposed, you must provide information on:

1. The BMP/Measurable goal for which a change is proposed;
2. Any proposed changes to the BMP description;
3. Any proposed changes to the measurable goals (including specific dates and measures); and
4. The rationale for the proposed changes.

Describe any measurable goal(s) for public participation and involvement on stormwater impacts for the reporting period; including dates and numeric measures:

<b>Measurable Goal(s)</b> Including dates and numeric measures, as previously submitted	<b>Status:</b> Including dates and numeric measures	<b>Changes proposed to BMP and/or Measurable Goal? (Yes/No).</b> If yes, provide information on proposed changes and rationale.
Comply with applicable state and local public notice requirements when implementing a public involvement/participation program.	Public notice for projects with stormwater management impacts are handled through the National Environmental Policy Act (NEPA) review process. During 2017, four public notices were posted for public involvement for Environmental Assessments (EAs) through the NEPA process.	No.
Make all relevant Annual Reports available on the permittee web site or on another platform that is available to the public in an electronic format.	Annual reports for MS4 and MSGP activities are posted to the Fort Carson Stormwater Homepage. The homepage can be accessed at the URL provided on Page 2.	No.
Provide volunteer activities (e.g., cleanup days) as practicable to help actively engage residents and personnel at Fort Carson in understanding water resources and how their activities can affect water quality.	Fort Carson conducts two community activities annually which engage residents on the importance of water resources – Earth Day and Make a Difference Day. Summaries of these activities are included in Attachments 5 and 6.	No.
Maintain a log of public participation and outreach activities performed in the permittee’s SWMP.	Attachment 4 provides a log of the installation’s public participation and involvement programs. In 2017, Fort Carson conducted two of outreach events, which involved 122 people in stormwater quality issues.	No.
Maintain a copy of the most recent version of the facility SWMP and permit in a publicly accessible format (e.g., available in electronic format, online or in a publicly accessible location).	The most recent copy of the installation’s Stormwater Management Plan (SWMP) is posted to the Fort Carson Stormwater Homepage. The homepage can be accessed at the URL provided on Page 2.	No.

## Public participation/involvement (continued)

Narrative description. Provide any descriptions which may further describe the implementation of this minimum measure. Such narrative may include descriptions of efforts which overlap several minimum measures or descriptions of documents or programs which have been created in an effort to implement this minimum measure:

1. Fort Carson Earth Day Celebration. This event is held annually in April and highlights the things residents can do to enhance and protect the environment. The community household hazardous waste collection day was held during the Earth Day celebration on April 22, 2017. More than 100 Fort Carson community members turned in used motor oil, batteries, electronics, cleaners, old televisions and assortments of other products which might have otherwise been taken to a landfill or disposed of in an improper manner.
2. Make a Difference Day (MADD). MADD is a nation-wide day of volunteer service where residents complete projects to enhance the community. In 2017, a group of four Soldiers, eight Scouts and five Scout leaders along with two dump trucks and six Soldiers from the 615<sup>th</sup> Engineer Company assisted in cleaning up a 1.5 mile reach of Infantry Creek from Iron Horse Park to Ellis Street. Over the course of three hours, the group collected 35 bags of trash, one bike, and one kiddie pool.

### 3. Illicit Discharge Detection and Elimination

Provide the status of any measurable goal scheduled for completion during the reporting period or for which activities have begun. For program elements started, but not completed, any milestones that have been met must be indicated. If a change will be proposed to the BMP or measurable goal as part of the annual report, this must be stated and the proposed changes discussed. For each change proposed, you must provide information on:

1. The BMP/Measurable goal for which a change is proposed;
2. Any proposed changes to the BMP description;
3. Any proposed changes to the measurable goals (including specific dates and measures); and
4. The rationale for the proposed changes.

Describe any measurable goal(s) for illicit discharge detection and elimination for the reporting period; including dates and numeric measures:

<b>Measurable Goal(s)</b> Including dates and numeric measures, as previously submitted	<b>Status:</b> Including dates and numeric measures	<b>Changes proposed to BMP and/or Measurable Goal? (Yes/No).</b> If yes, provide information on proposed changes and rationale.
Implement a program, policies, and/or procedures to detect and eliminate illicit discharges into its MS4. The program shall include procedures for detection, identification of sources, and removal of non-stormwater discharges from the storm sewer system. This program shall address illegal dumping into the storm sewer system, shall include inventories and investigations of interior floor drains in buildings for evidence of cross-connections between the storm and sanitary sewer systems, and shall include training for staff on how to respond to reports of illicit discharges.	Fort Carson’s illicit discharge program consists of education and training, spill response guidance and procedures, routine inspections, and illicit discharge surveys. Fort Carson’s spill response guidance is provided via the stormwater website. The homepage can be accessed at the URL provided on Page 2.  A copy of the Fort Carson spill response procedure is included in Attachment 7.	Yes. Develop SWMP Best Management Practices for potential pollutants (e.g. tent cleaning, abandoned vehicles, training area impacts).
Effectively prohibit, through ordinance or other regulatory mechanism available under the legal authorities of the MS4, non-stormwater discharges into the storm sewer system and implement appropriate enforcement procedures and actions.	Fort Carson’s spill response guidance is provided via the stormwater website. The homepage can be accessed at the URL provided on Page 2.  Fort Carson maintains an installation-wide Spill Prevention, Control and Countermeasure Plan as required by 40 CFR part 112, which addresses the storage and management of petroleum oil and lubricant (POL) products.  The installation’s Stormwater Pollution Prevention Plan (SWPPP) addresses spills and illicit discharges in Section 3.1.5.	No.

<p>Provide a mechanism for reporting of illicit discharges and provide this number on the Fort Carson stormwater website and any outreach materials as appropriate.</p>	<p>Fort Carson has a spill line (526-0973) for the reporting of spills and illicit discharges which occur on the installation. The phone number for the spill line is posted to the Fort Carson Stormwater Homepage. The homepage can be accessed at the URL provided on Page 2.</p> <p>A copy of the Fort Carson spill response procedure is included in Attachment 7.</p>	<p>No.</p>
<p>Investigate any illicit discharge within 15 days of its detection, and take action to eliminate the source of the discharge within 45 days of its detection (or obtain permission from USEPA for such longer periods as may be necessary in particular instances).</p>	<p>Upon notification of a spill or illicit discharge, an investigation of the situation is made within 24 hours to determine the source and cause of the discharge. If required, temporary control measures may be installed until a service order is executed to fix the problem.</p>	<p>No.</p>
<p>Maintain an updated storm sewer system map. At a minimum, the map or system of maps maintained within a Geographic Information System (GIS) shall show jurisdictional boundaries, the location of all inlets and outfalls, names and locations of all waters that receive discharges from those outfalls, locations of post-construction BMPs installed since the effective date of this permit, and locations of all facilities operated by the permittee, including any public or private snow disposal sites. The map shall be available in electronic or digital format as appropriate.</p>	<p>The Fort Carson Directorate of Public Works Geographic Information System (GIS) section maintains the installation's storm sewer system map. The map contains the pertinent data for the installation's storm sewer system and is updated as conditions change or new construction is completed.</p>	<p>No.</p>
<p>Develop and maintain an Illicit Discharge Detection and Elimination (IDDE) tracking mechanism which tracks dry weather screening efforts and the location of remediation efforts to address identified illicit discharges.</p>	<p>The annual dry-weather screening was completed in November 2017. The screening did not identify any illicit discharges, but did identify other conditions which require attention (e.g. debris, erosion, etc). The results of the screening are incorporated into the IDDE tracker, which tracks the problems and corrective action.</p>	<p>Yes. Improve the process for developing and submitting service orders for corrective action to the base operations contractor to address conditions identified during the dry weather screening.</p>
<p>Conduct dry weather screening annually at each of the major drainages within Fort Carson (B-Ditch, Clover Ditch, Infantry Creek, Rock Creek) for the presence of non-stormwater discharges.</p>	<p>The 2017 dry-weather screening was completed in November 2017. The screening did not identify any illicit discharges, but did identify other conditions which require attention (e.g. debris, erosion, etc).</p>	<p>No.</p>

Have a household hazardous waste collection day as needed or as practicable, either as a separate Fort Carson activity or in conjunction with nearby civilian jurisdictions.	The 2017 household hazardous waste collection day event was held on April 21, 2017. Attachment 5 provides information on the event.	No.
Stencil all storm drains (e.g., paint, placards, stenciling), as practicable, in all areas with industrial uses and residential uses by the end of year four of this permit.	In 2017, Fort Carson continued the marking of stormdrains throughout the installation. In the past calendar year, DPW installed 320 vinyl “Don’t Pollute – Flows to Waterways” markers on stormdrain in motorpools and residential areas.	No.

**Illicit Discharge Detection and Elimination (continued)**

Narrative description. Provide any descriptions which may further describe the implementation of this minimum measure. Such narrative may include descriptions of efforts which overlap several minimum measures or descriptions of documents or programs which have been created in an effort to implement this minimum measure:

<p>Spill reports are kept on the Stormwater Program SharePoint site. Spill Reports are analyzed based on size, location, and circumstances to determine trends and recommend improvements in procedures and best management practices. Prevention and best management practices from spill events are communicated to the Fort Carson community through the Environmental Compliance Assistance Team (CAT), Environmental Protection Officer (EPO) training, EPO refresher training, and the installation’s Environmental Quality Control Committee (EQCC).</p> <p>In 2017, Fort Carson responded to 52 spills of which two were reportable to the CDPHE Spill Line. None of the spills met the threshold for reporting to the National Response Center (NRC).</p> <p>The storm sewer map is managed electronically by the Fort Carson DPW Geographic Information System (GIS) team.</p>
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#### 4. Construction Site Stormwater Runoff Control

Provide the status of any measurable goal scheduled for completion during the reporting period or for which activities have begun. For program elements started, but not completed, any milestones that have been met must be indicated. If a change will be proposed to the BMP or measurable goal as part of the annual report, this must be stated and the proposed changes discussed. For each change proposed, you must provide information on:

1. The BMP/Measurable goal for which a change is proposed;
2. Any proposed changes to the BMP description;
3. Any proposed changes to the measurable goals (including specific dates and measures); and
4. The rationale for the proposed changes.

Describe any measurable goal(s) for construction site stormwater runoff control for the reporting period; including dates and numeric measures:

<b>Measurable Goal(s)</b> Including dates and numeric measures, as previously submitted	<b>Status:</b> Including dates and numeric measures	<b>Changes proposed to BMP and/or Measurable Goal? (Yes/No).</b> If yes, provide information on proposed changes and rationale.
Require all contractors having a potential of disturbing one or more acres of land within the exterior boundaries of Fort Carson to obtain NPDES permit coverage for their construction stormwater discharges under an applicable USEPA permit, and to comply with other applicable state or local construction stormwater requirements. For sites disturbing less than one acre, contractors shall comply with requirements as determined by the facility in its SWMP.	Fort Carson works closely with constructors operating on the installation to maintain compliance with the requirements for protecting water quality through the MS4 permit and the Construction General Permit (CGP). For projects over one acre, constructors are required to obtain a NPDES permit for their construction activity. Before a Notice of Intent (NOI) can be submitted, approval of the constructor's Stormwater Pollution Prevention Plan (SWPPP) is required. Small projects are managed under the MS4 permit. Compliance is verified through routine inspections and interaction with the project managers and construction representatives.  In 2017, Fort Carson reviewed and approved 10 projects which required NPDES permits.	No.

<p>Use an ordinance or other regulatory mechanism available under the legal authorities of Fort Carson to require erosion and sediment controls and sanctions to ensure compliance with the terms of the NPDES General Permit for Stormwater Discharges for Construction Activity in Colorado, COR12000F (Construction General Permit). This shall include working with contract officers to determine methods for stopping work or penalizing contractors who violate the terms of the aforementioned construction stormwater permit.</p>	<p>Fort Carson’s Garrison Commander’s Policy Letter #17 is the installation’s construction site stormwater program policy. It applies to all construction activities on post and provides potential sanctions for violations.</p> <p>In 2017, Policy Letter #17 was used to execute a stop work order on a contractor who was not complying with the provisions of the MS4 and CGP permits. The contractor was brought back into compliance within 72 hours.</p> <p>A copy of the policy letter is included in Attachment 8.</p>	<p>No.</p>
<p>Maintain a list of policies and procedures that can be used to enforce construction site compliance within Fort Carson independent of USEPA staff directly enforcing the CGP.</p>	<p>Fort Carson’s Garrison Commander’s Policy Letter #17 is the installation’s construction site stormwater program policy. It applies to all construction activities on post and provides potential sanctions for violations.</p> <p>The policy letter is posted to the Fort Carson Stormwater Homepage. The homepage can be accessed at the URL provided on Page 2</p>	<p>Yes. Fort Carson will have a new Garrison Commander in 2018. Policy Letter #17 will be reviewed and signed by the new commander.</p>
<p>Implement procedures for site plan review that incorporate consideration of potential water quality impacts.</p>	<p>The Fort Carson Stormwater Program is integrated in the design review process and provide inputs on water quality at the 30%, 60%, 90% and 100% design reviews. Specific erosion and sediment control plans are reviewed separately and must be approved prior to an NOI being submitted by the constructor. Design reviews for Low Impact Development and maintenance of hydrology are also included in the process.</p>	<p>No.</p>

<p>Implement procedures for receipt and consideration of information, including complaints of construction site non-compliance, submitted by the public.</p>	<p>The 2017 CGP requires all construction sites with a NPDES permit to post a sign indicating where the public can access or request a copy of the SWPPP. The sign used on Fort Carson includes contact information for the stormwater program manager along with USEPA Region 8. The public is encouraged to contact the Fort Carson stormwater program manager if they have concerns about operations at construction sites. Additionally, the Fort Carson spill line can also be used report complaints.</p>	<p>No.</p>
<p>Review the SOW for construction projects in order to ensure that the SWMP and SCMs for erosion and sediment control and construction dewatering can be determined to be effective given the regulations and environmental conditions at Fort Carson.</p>	<p>Erosion and Sediment Control Plans are included in the design review process and are required in the Stormwater Pollution Prevention Plan, which must be approved prior to and must be approved prior to an NOI being submitted by the constructor.</p> <p>In 2017, Fort Carson updated the SWPPP review materials to align with the 2017 CGP.</p> <p>A copy of the updated SWPPP review form along with a recommended SWPPP template is posted to the Fort Carson Stormwater Homepage. The homepage can be accessed at the URL provided on Page 2.</p>	<p>No.</p>
<p>Implement an inspection plan and keep a copy of that plan in the SWMP which provides inspection triggers and a required timeframe upon which construction sites must be inspected by Fort Carson staff. All sites within this plan must be inspected at a minimum quarterly.</p>	<p>Fort Carson executes inspections of construction sites on a quarterly basis to check compliance with the MS4 and CGP permits. Inspection reports are maintained on the program's internal SharePoint portal and findings are provided to the project's management team for action, if required. Follow up inspection are executed to verify corrective actions. Drive-by inspection are also conducted to check on project progress and to maintain situational awareness of construction activities.</p>	<p>No.</p>

<p>Maintain a site inspection form in the SWMP for use by Fort Carson construction management and oversight personnel when performing inspections required by Part 2.5.7.</p>	<p>Fort Carson uses a standard inspection form to inspect construction sites. Hard copies of the form are used to record notes in the field. The notes are then transferred to electronic inspection forms upon return to the office. Inspection forms are provided to the project's management team for action. A copy of the form is included in Attachment 9.</p>	<p>No.</p>
<p>Maintain and utilize a NOT form or alternative process for Fort Carson independent of the CGP NOT form and have Fort Carson stormwater staff inspect all construction sites prior to termination to ensure that 70% vegetative cover has been met at all areas of the site.</p>	<p>Fort Carson uses an NOT form to document compliance with the final stabilization requirements of the Construction General Permit. NOT inspections are scheduled with the constructor and the project management team. If all requirements are met, a letter is issued to the project manager along with NOT form, and the constructor is then authorized to terminate the NDPES construction permit.</p> <p>A copy of the inspection form is included in Attachment 10.</p> <p>In 2017, Fort Carson executed 18 of NOT inspections, which verified successful completion of final stabilization requirements.</p>	<p>No.</p>

**Construction Site Stormwater Runoff Control (continued)**

Narrative description. Provide any descriptions which may further describe the implementation of this minimum measure. Such narrative may include descriptions of efforts which overlap several minimum measures or descriptions of documents or programs which have been created in an effort to implement this minimum measure:

1. Transition to the 2017 Construction General Permit. The EPA implemented a new Construction General Permit (CGP) in 2017. The Fort Carson Stormwater Program implemented the changes in the CGP by updating the content of the construction stormwater training curriculum. Additionally, the program assisted constructors who were executing construction projects in the installation under the 2012 CGP transition to the 2017 CGP by reminding them of the requirement to submit new Notices of Intent and answering general and technical questions. As a result, 20 of 21 constructors had active NDPES construction permits by the implementation date of May 1, 2017. The program also updated the recommended SWPPP template and SWPPP review form to align with the requirements of 2017 CGP.

## 5. Post-construction Stormwater Management in New Development and Redevelopment

Provide the status of any measurable goal scheduled for completion during the reporting period or for which activities have begun. For program elements started, but not completed, any milestones that have been met must be indicated. If a change will be proposed to the BMP or measurable goal as part of the annual report, this must be stated and the proposed changes discussed. For each change proposed, you must provide information on:

1. The BMP/Measurable goal for which a change is proposed;
2. Any proposed changes to the BMP description;
3. Any proposed changes to the measurable goals (including specific dates and measures); and
4. The rationale for the proposed changes.

Describe any measurable goal(s) for post-construction stormwater management in new development and redevelopment for the reporting period; including dates and numeric measures:

<b>Measurable Goal(s)</b> Including dates and numeric measures, as previously submitted	<b>Status:</b> Including dates and numeric measures	<b>Changes proposed to BMP and/or Measurable Goal? (Yes/No).</b> If yes, provide information on proposed changes and rationale.
Establish and implement a process to ensure that all new and re-development projects that disturb equal to or greater than one acre and that discharge into permittee's small MS4, are designed and constructed with permanent post-construction stormwater control measures designed to prevent or minimize water quality impacts using structural or nonstructural BMPs appropriate for Fort Carson.	The Fort Carson Stormwater Program is integrated in the design review process and provide inputs on water quality at the 30%, 60%, 90% and 100% design reviews. If the project is over 5,000 square feet in size, the design engineer is required to complete the "Maintaining Hydrology on Army Construction Projects", which documents what control measures will be used to prevent or minimize water quality impacts resulting from the project.	No.
For purposes of this permit, such BMPs shall be selected based on their ability to maintain onsite predevelopment runoff conditions and be implemented onsite, except to the extent it is impracticable to do so.	As part of the design process, the design engineer submits the LID Design and Cost tool, which outlines the specific BMPs that will be used to maintain onsite predevelopment runoff conditions.	No.
To the extent the permittee determines it is impracticable to maintain predevelopment runoff conditions by implementing such BMPs at a new or redevelopment site, it shall install or utilize, and maintain, alternative stormwater control measures to prevent or minimize water quality impacts from the runoff from the new or redevelopment site.	If the design engineer cannot meet the requirements of maintaining onsite predevelopment runoff conditions, the reasons why are documented on the "Maintaining Hydrology on Army Projects", which is maintained in the project file.  In 2017, no projects were determined to be impracticable to maintain predevelopment runoff conditions.	No.

When updated, include hydrologic performance specifications and information related to the design and maintenance of permanent stormwater control measures in natural resource plans.	Hydrologic performance specifications and information is included in the project’s basis of design and is maintained by the project management team.	No.
Include post-construction BMP “as-builts” for all newly installed permanent stormwater control measures in a georeferenced data management system.	The collection of “as-built” drawings and associated cut sheets are part of the project close out process. There materials are collected by the project management team and are provided to the DPW GIS section for inclusion in the installation’s GIS database.	No.
Ensure that all newly installed post-construction stormwater control measures are working as designed prior to closing out contracts.	Stormwater control measures are included in the Notice of Termination (NOT) inspection process. Control measures which are not operating properly are addressed through the warranty process.	No.
Upon closeout of new construction projects, include maintenance requirements for newly installed permanent post-construction stormwater control measures into a long-term maintenance plan (e.g., the recurring work program).	Newly installed permanent post-construction stormwater control measures are added to the base operations contractor’s technical exhibit for long-term maintenance. The technical exhibit is updated annually.	Yes. Update and revise the Low Impact Development (LID) feature maintenance manual.  Yes. Improve the LID inspection and maintenance process.
Ensure that permanent post-construction stormwater control measures are included in any applicable warranty reviews.	Stormwater control measures are part of the NOT inspection process. Control measures which are not operating properly are addressed through the warranty process.	No.

**Post-construction Stormwater Management in New Development and Redevelopment (continued)**

Narrative description. Provide any descriptions which may further describe the implementation of this minimum measure. Such narrative may include descriptions of efforts which overlap several minimum measures or descriptions of documents or programs which have been created in an effort to implement this minimum measure:

Fort Carson conducted annual inspection of the 121 permanent stormwater controls and BMPs throughout the installation in May 2017. The inspections assessed the performance of the control measures and provide a basis for prioritization of maintenance activities. Controls that were not performing properly and required routine maintenance were identified, but the processes for scoping the work and handing it off to the base operations contractor was not efficient and not all of the maintenance issues were addressed. In 2018, the Fort Carson Stormwater program plans to revise the permanent stormwater controls maintenance manual and improve the process for generating service orders to address operations and maintenance deficiencies of Low Impact Development features.

## 6. Pollution Prevention/Good Housekeeping for Municipal Operations

Provide the status of any measurable goal scheduled for completion during the reporting period or for which activities have begun. For program elements started, but not completed, any milestones that have been met must be indicated. If a change will be proposed to the BMP or measurable goal as part of the annual report, this must be stated and the proposed changes discussed. For each change proposed, you must provide information on:

1. The BMP/Measurable goal for which a change is proposed;
2. Any proposed changes to the BMP description;
3. Any proposed changes to the measurable goals (including specific dates and measures); and
4. The rationale for the proposed changes.

Describe any measurable goal(s) for pollution prevention/good housekeeping for municipal operations for the reporting period; including dates and numeric measures:

<b>Measurable Goal(s)</b> Including dates and numeric measures, as previously submitted	<b>Status:</b> Including dates and numeric measures	<b>Changes proposed to BMP and/or Measurable Goal? (Yes/No).</b> If yes, provide information on proposed changes and rationale.
Provide annual training for facility maintenance contracted companies, environmental program managers, and other people identified as having fleet maintenance activities in line with the SWMP. Each of the categories of municipal activities referenced in the SWMP should receive stormwater training.	Annual pollution prevention training is provided for units, the base operations service contractor, and construction contractors. On the spot “opportunity training” is provided through stormwater and ECAT inspections and engagement with operators and constructors throughout the year.  Additionally, each facility is provided a pollution prevention poster, which is included in Attachment 11.	No.
Provide deicing training to minimize the use of and runoff from chemical deicers and traction aggregates.	Fort Carson does not conduct chemical deicing of aircraft at Butts Army Airfield. Fort Carson does employ chemical deicing of installation roads within the cantonment area to enable the safe operation of military and civilian traffic.  In 2017, Fort Carson conducted pollution prevention training for winter maintenance operations. A BMP cut sheet is included in Attachment 12.	No.
Implement a schedule for cleanout of storm sewer inlets in a manner that prevents significant deposition of sediment or other debris to receiving waters and provide data or a description of this schedule and its implementation in the SWMP for the facility.	Permanent stormwater controls were inspected in May 2017. Maintenance was prioritized based on the inspections, and the work list was provided to the base operations service contractor for execution.	No.

Implement a schedule for sweeping streets in a manner that prevents significant deposition of sediment or other debris to receiving waters and provide data or a description of this schedule and its implementation in the SWMP for the facility.	Primary streets are swept monthly; secondary streets are swept every two months. Parking lots are swept two times a year. If an area is identified that requires additional sweeping, a service order is generated to the base operations service contractor to address the condition.	No.
Consider the need for and application of cover to prevent airborne deposition of particulates from storage piles at the municipal materials storage yard.	Fort Carson employs water to moisten storage piles to reduce the incident of materials being transported in the air and depositing outside of the storage area.	Yes. The stormwater program will evaluate the performance BMPs at materials storage yards to improve compliance with MS4 requirements.

**Pollution Prevention/Good Housekeeping for Municipal Operations (continued)**

Narrative description. Provide any descriptions which may further describe the implementation of this minimum measure. Such narrative may include descriptions of efforts which overlap several minimum measures or descriptions of documents or programs which have been created in an effort to implement this minimum measure:

- |   |
|---|
| <ol style="list-style-type: none"> <li>1. Postwide Clean Up Activities. Fort Carson executes a spring and fall clean up event on the installation. Efforts focus on cleaning up trash in unit areas and housing areas which has accumulated over the past months. These efforts reduce the amount of debris and waste in the MS4 and assist in protecting water quality.</li> </ol> |
|---|

## E. Results of Information Collected and Analyzed.\*

If you have collected and/or analyzed information during the reporting period, including any monitoring data used to assess the success of the program at reducing the discharge of pollutants, submit a short summary of the information and any analysis completed.

Measurable Goal	Results of information collected and analyzed that must be reported for this item
MSGP Visual Assessments	One hundred and sixty (161) visual assessment were conducted at 51 locations within the cantonment area during 2017. A qualitative assessment of the samplers indicated that pollution prevention control measures appear to be working and that operators are complying with the installation's stormwater policies. Of the 161 samples observed, one presented with signs of petroleum odor and no free product was observed in the sampler.
MSGP Quarterly Analytical Sampling	<p>Analytical sampling was conducted at the following locations at Fort Carson in 2017: Sector N Facilities – Building 400 (Recycle Center); Building 343 (Defense Logistics Agency Disposition Services); Building 155 (Recycle Center); Building 9732 (Ammunition Residue Yard), and Sector K Facilities – Range 121 (Demolition Range) and Building 9248 (Hazardous Waste Storage Facility).</p> <p>The sampling showed challenges with concentration of metals and total suspended solids above the average benchmark monitoring levels. Fort Carson is addressing these issues through implementation of better material handling procedures, storage BMPs, stormwater controls and pollution prevention.</p> <p>The results of the sampling are included in the 2017 quarterly discharge monitoring reports in the NetDMR system.</p>
MSGP Impaired Waters Sampling	<p>In 2017 Fort Carson was authorized by USEPA to reduce its MSGP impaired waters sampling from 25 locations to 5 locations. The data from 2017 indicate the presence of <i>E. coli</i> at Building 155 (Recycle Center); Building 9732 (Ammunition Residue Yard), Butts Army Airfield, and two motorpools (Buildings 2792 and 9062)</p> <p>The presence of <i>E. coli</i> in attributable to natural background in the soil and the presence of wild life (e.g. birds, rabbits)</p>
MS4 Semi-Annual Water Sampling	Fort Carson conducted two surface water sampling events in 2017. The sampling evaluates the four major cantonment drainages (B-Ditch, Clover Ditch, Infantry Creek (formerly Central Un-Named Ditch), and Rock Creek). The sampling effort detected <i>E. coli</i> , chlorine, iron, sulfate, and selenium above background levels in some areas.

\*Data collected to audit the implementation status of a program element does not need to be reported in the annual report unless required by an established measurable goal or as a requirement or result of an inspection or enforcement action. For example, data such as street miles swept, visitors at an information booth, or visits to a web site do not need to be included in the annual report unless directly related to a measurable goal or committed to be reported and/or analyzed in a program description.

## F. Summary of Inspections and Enforcement Actions.

Provide a summary of the number and nature of inspections and formal enforcement actions performed. Site-specific information may also be included, but is not required.

<b>Program Area</b>	<b>Description of Enforcement Actions/ Inspections</b>
Construction General Permit – Quarterly Construction Stormwater Inspections	<p>The Fort Carson Stormwater Program conducted 142 construction inspections at 35 sites in 2017.</p> <p>The inspections were conducted quarterly with some sites being inspected again as part of follow up from previous inspections. The inspections were documented in the DPW SharePoint system and provided to the project manager and constructor for inclusion in the project SWPPP. While inspectors made findings based on the contractor’s non-conformance with the CGP, the findings tended to be minor in nature and were corrected within the timelines specified in the CGP.</p> <p>One stop work order was issued to a contractor under GC Policy #17 in 2017.</p>
Multisector General Permit – Quarterly Routine Facility Inspections	<p>The Fort Carson Stormwater Program conducted 330 routine inspections at 84 facilities on the Fort Carson Military Reservation in 2017.</p> <p>Some minor problems were identified during the routine inspections and were addressed on the spot by the inspector or through Environmental Compliance Assistance Team (ECAT) follow up with the facility operator.</p> <p>The inspections identified seven conditions which required corrective action in 2017, of which Fort Carson completed six corrective actions within the calendar year.</p>
Stormwater Control Measures – LID Feature Annual Inspections	<p>The Fort Carson Stormwater Program conducted performance inspections at 121 LID features in the cantonment area in 2017.</p> <p>The inspection identified 12 features which required maintenance to enable continued proper performance.</p>
U.S. Army Environmental Command Environmental Performance Assessment and Assistance System (EPAAS) Inspection	<p>The U.S. Army Environmental Command (USAEC) executed its three-year EPAAS inspection at Fort Carson on June 19-22, 2017. The EPAAS inspection assessed both the Environmental Management System (EMS) and compliance aspects of a garrison’s environmental program. The team spent a week visiting various locations on the installation to ensure that operations met the requirements of laws such as the Clean Air Act, Clean Water Act, and Hazardous Waste regulations (or corresponding Final Governing Standards (FGS) as well as Department of Defense (DoD) and Army requirements.</p> <p>The inspection had two findings:</p> <ol style="list-style-type: none"> <li>1. Failure to clean up an oil spill, about 18 inches in diameter at Building 9633 at Butts Army Airfield. Action: The spill was cleaned up the next day.</li> <li>2. Pollutants (specifically sediment) entering a storm drain due to improper design of stormwater drainage system at Building 1692. Action: The project was funded for repair and will be completed in 2018.</li> </ol>

## **G. Proposed Changes to the Stormwater Management Program.**

Provide a narrative description of any changes or additions to the stormwater management program.

1. Revise and update training materials to reflect current stormwater topics and issues. Training materials include the presentations for the Environmental Protection Officer's Course, Construction Stormwater Training, stormwater program brochure, and informational materials.
2. Update and revise the Low Impact Development (LID) feature maintenance manual. The Fort Carson maintenance manual for LID feature has not been updated in several years and does not align with the current maintenance program executed by the base operations contractor. To address this, the program will review and revise the maintenance manual and updates the document to reflect the current inventory of LID features on post and how they will be properly maintained. The manual will be shared with the base operations contractor to reestablish the maintenance baseline for the 121 LID features on the installation.
3. Improve the LID feature inspections and maintenance processes. The Fort Carson Stormwater Program executes inspections of the 121 LID features on the installation; however, there is not a good process for translating inspection results into service orders for the base operations contractor to execute. In 2018, the program will work more closely with the base operations contractor to review the inspection results and develop a maintenance plan to execute the required work. Additional training will be provided to the base operations contractor based on the revisions to the LID feature maintenance manual.
4. Develop SWMP Best Management Practices for potential pollutants (e.g. tent cleaning, abandoned vehicles, training area impacts). While the SWMP addresses pollution prevention and housekeeping in broad terms, the plan should be more specific on known activities which can threaten water quality. In 2018, the stormwater program will identify areas where BMPs are lacking and develop new control measures for inclusion in the SWMP, the Environmental Battle Book, other guidance documents.
5. Update to Garrison Commander's Policy Letter #17. Fort Carson will have a new Garrison Commander in 2018. Policy Letter #17 will be reviewed and signed by the new commander.
6. Stockpile Management. The stormwater program will evaluate the performance BMPs at materials storage yards to improve compliance with MS4 requirements.
7. Improve the IDDE corrective action process. Improve the process for developing and submitting service orders for corrective action to the base operations contractor to address conditions identified during the dry weather screening.

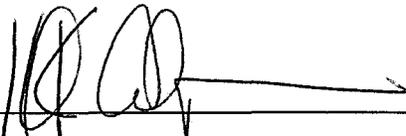
**H. Notice of Program Element Operation by a Second Party.**

Another government entity may be relied on to perform requirements of your MS4 permit. However, as the permittee, you remain liable for compliance with the terms of the permit if the requirements are not fulfilled. You must complete this annual report for the geographic areas covered under your permit, for all program areas, even if one or more program elements/areas is being performed by another entity. (However, if you are performing a program element for another permittee, you do not need to include that activity in this report.) If you are relying on another government entity to satisfy some of your permit obligations (and if the information has not been previously provided to the EPA in earlier reports or the application), the annual report must include a statement to that effect. If the BMP and/or measurable goal will be modified in addition to the change of operator to another government entity, the change must be included in Item G, above. Example statement: "As of September 15, 2003, Monroe County is performing the construction site plan reviews for the Nixon Air Force Base in accordance with the procedures in the Base's original application."

**I. Certification.**

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate 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 information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

---

 Signature of Permittee (legally responsible person)**	21 Feb 2018 Date Signed
Hal K. Alguire Name (printed)	Director, Public Works Title

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\*\*This report may be signed by a duly authorized representative of the permittee in conjunction with the signatory requirements for NPDES permitting provided at 40 CFR§1 22.22(b).

## **Attachments**

Attachment 1 – 2017 DPW-Environmental Division Training Events

Attachment 2 – Fort Carson Stormwater Brochure

Attachment 3 – EPO Course Stormwater Class Materials

Attachment 4 – 2017 MS4 Education and Outreach Tracker

Attachment 5 – 2017 Earth Day Celebration Information

Attachment 6 – Make A Difference Day Information

Attachment 7 – Fort Carson Spill Response Procedures

Attachment 8 – Garrison Commander’s Policy Letter #17

Attachment 9 – Construction General Permit Inspection Form

Attachment 10 – Construction General Notice of Termination Inspection Form

Attachment 11 – Pollution Prevention Poster

Attachment 12 – Winter Maintenance Best Management Practices

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**Attachment 1 – 2017 DPW-Environmental Division Training Events**

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***DPW-ENVIRONMENTAL DIVISION  
ENVIRONMENTAL EVENTS for 2017***

**ENVIRONMENTAL PROTECTION OFFICER (EPO) CERTIFICATION TRAINING**

40-hr EPO Course - 0800 – 1600 hrs, Monday – Thursday

Registration for Soldiers is through Troop Schools; Civilians contact DPW-ED POC

Location: DPW – Bldg # 1219 – Rm 325A

23 – 26 Jan 17; 06 – 09 Mar 17; 24 – 27 Apr 17;  
17 - 20 Jul 17; 18 - 22 Sep 17; 30 Oct – 03 Nov 17

POCs: Suzanne Rohrs, 526-8893; [suzanne.a.rohrs.civ@mail.mil](mailto:suzanne.a.rohrs.civ@mail.mil)  
Sam Saberniak, 524-3534; [samuel.i.saberniak.civ@mail.mil](mailto:samuel.i.saberniak.civ@mail.mil)

**Environmental Compliance Assistance Team (ECAT) POCs for  
General Environmental Awareness Training and Assessments**

Sam Saberniak – ECAT Program Manager – 524-3534  
David Nino – 526-9176 Kevin Lyons – 526-0979  
Nate Rutledge – 526-0755; James Conner – 526-8000

**ENVIRONMENTAL QUALITY CONTROL COMMITTEE (EQCC)**

Location: Garrison Headquarters – Bldg # 1118 Conference Room (or TBD) – 1400 – 1500

23 Feb 17; 18 May 17; 12 Sep 17; 16 Nov 17

POCs: James Lessard – 526-6838  
Suzanne Rohrs - 526-8893; [suzanne.a.rohrs.civ@mail.mil](mailto:suzanne.a.rohrs.civ@mail.mil)

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**Attachment 2 – Fort Carson Stormwater Brochure**

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## ***WHAT'S CAUSING OUR POLLUTION?***

### **Construction**

- Contractors disposing of concrete washout in storm drains or drainage ditches.
- Sediment washing into gutters and streets from job sites.

### **Around the House**

- Cleaning brushes or rinsing paint containers into the gutter.
- Homeowners over-fertilizing lawns or using pesticides and herbicides improperly.
- Car washing in the driveway or street.
- Pouring cooking grease and oils down stormdrains.

### **Motor Vehicles**

- Vehicles leaking oil and gas onto the streets.
- Spills of oil and fuel during maintenance and refueling.
- Cracked batteries.
- Improper disposal of antifreeze, old tires and batteries.
- Off-road vehicles tracking mud onto paved streets.



**Remember,  
ONLY rain and snow go  
into storm drains.**

**Working together, we  
can make a difference!**

**To report a spill  
CALL 911  
(Tell the operator you are  
on Fort Carson)**



December 2017 Revision

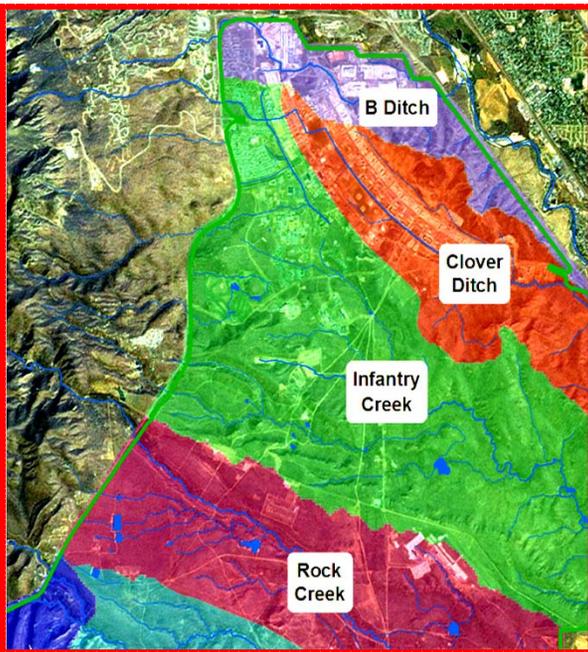
# **Keep OUR Streams Clean!**



**Fort Carson Stormwater  
Program 719-526-1697**

[http://www.carson.army.mil/DPW/  
environmental/stormwater/index2.html](http://www.carson.army.mil/DPW/environmental/stormwater/index2.html)

At Fort Carson, the sanitary sewer system (wastewater) and the storm drain system (stormwater) are two separate systems. Inlets to the storm drain system are typically located outside along the gutters and streets. Rainwater and snowmelt (stormwater) that enters a storm drain inlet flows directly to our creeks and ditches, and eventually discharges into Fountain Creek, east of Fort Carson.



To report the release of ANY contaminant into the environment, call, 526-1697

Mud, oil, soap and trash that is tracked, spilled, poured or dumped, onto our streets and parking lots gets picked up by stormwater and can enter the storm drain system. Natural areas also contribute sediment (mud) through the process of erosion. This pollution then flows untreated into our creeks and ditches, causing adverse impacts to water quality. Aquatic life struggles to survive, and drinking water for people downstream is harder to purify.



**Did you know – ONE quart of oil can contaminate over 250,000 gallons of water?**

\*\*\*\*\*

To keep our streams clean, it is important that **ONLY** stormwater goes into storm drains. Discharges of fuels, cooking oil, mud, debris and trash should be prevented!

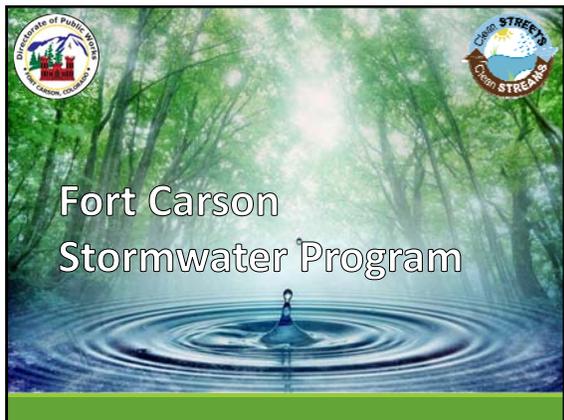
**HOW YOU CAN HELP** ???

- 👉 Wash your car at the car wash (the water is usually recycled). If you do wash the car at home, chose a non-toxic, phosphate-free or biodegradable soap. If possible, wash the car on a grassy area, so the soapy water will soak into the ground and not go into the storm drains.
- 👉 Avoid off-road vehicle use.
- 👉 Don't rinse oil spills with water. Apply cat litter or other dry absorbent material, sweep it up and dispose of it in the trash.
- 👉 Follow directions on pesticides, herbicides and fertilizers. Do not apply if rain is expected within 48 hours.
- 👉 Do not rake or blow leaves into the storm drains – bag them.
- 👉 Use water-based, biodegradable cleaning products.
- 👉 **DON'T LITTER – RECYCLE!** To dispose of old paint, pesticides and other household hazardous waste, contact the El Paso County Hazardous Household Waste Facility at 520-7879



**Attachment 3 – EPO Course Stormwater Class Materials**

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### Outline

- Stormwater and Why it Matters
- Water Quality
- Regulatory Background
- DPW Responsibilities
- EPO Responsibilities
- SWPPPs
- Stormwater: The Good, The Bad, and The Ugly
- Questions

### What is Stormwater?

Water runoff generated from rain and snowmelt events that flow over land or impervious surfaces, such as paved streets, parking lots, and building rooftops, and does not soak into the ground.

*Stormwater discharges are regulated by local, state and federal governments to protect general water quality*

### Why Does Stormwater Matter?

Flooding August 2013

### 2013 Flooding Effects at Fort Carson

**Tank Trail**

**Iron Horse Park**

### Why Does Stormwater Matter?

- Runoff accumulates debris, chemicals, sediment or other pollutants
- Adversely affects water quality if the runoff is not treated or controlled
- Eventually discharges to areas used for drinking water, commerce and recreation
- May cause damage to property and/or life due to flooding

*Costly penalties may be imposed if permit provisions are not followed*

### Why Does Stormwater Matter?

**Stormwater can affect readiness**

1000007 FORT CARSON DPW/COLLEGE 7

### Water Quality

**Cuyahoga River, Cleveland, Ohio, Late 1960s**

1000007 FORT CARSON DPW/COLLEGE 8

### The Clean Water Act of 1972

- Amended the 1948 Water Pollution Control Act and the 1956 Federal Water Pollution Control Act (FWPCA)
- Established a structure for regulating pollutant discharges into waters of the United States
- Made it unlawful to discharge any pollutant from a point source into navigable waters unless a permit was obtained
- Established the National Pollutant Discharge Elimination System (NPDES)
- Amended again in 1981 and 1987

**Goals: Swimmable and fishable waters; Protect human health**

1000007 FORT CARSON DPW/COLLEGE 9

### DPW Stormwater Program Responsibilities

- Implement the Stormwater Pollution Prevention Plan (SWPPP)
- Check compliance with permits through routine inspections
- Review development plans and engineering designs for stormwater impacts
- Recommend Low Impact Design (LID) features as part of the design process
- Maintain drainage structures and control measures
- Respond to spills
- Conduct training and community outreach

**Fort Carson DPW is a resource for you!**

1000007 FORT CARSON DPW/COLLEGE 10

### EPO Stormwater Management Responsibilities

- Educate others at your facility on SWPPP requirements
- Maintain good housekeeping
- Minimize exposure of hazardous materials (e.g. fuel, metals, waste) to precipitation
- Know your spill plan and report spills immediately
- Know the location of stormwater controls in your area, how they operate and where they drain to
- Report maintenance problems immediately
  - Routine maintenance = Service order
  - Construction/New work = Work order

**Be proactive and address deficiencies before they become problems.**

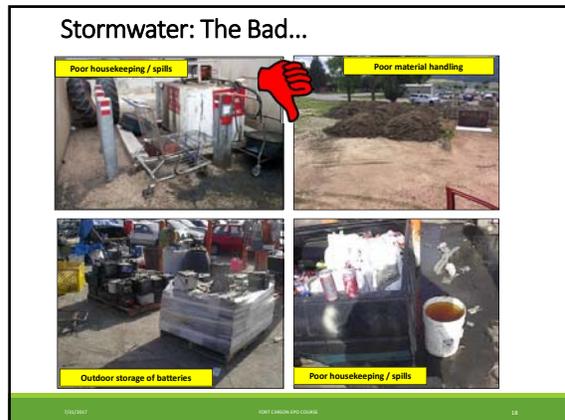
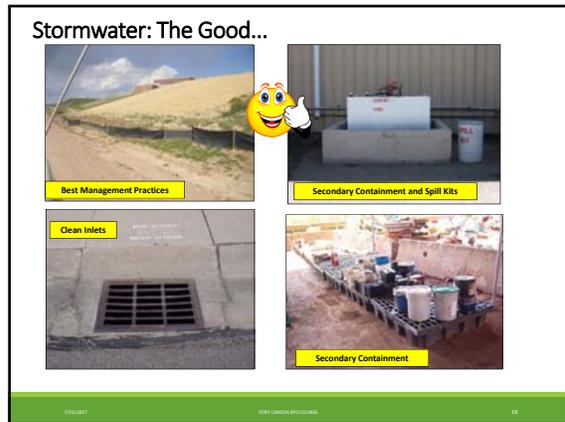
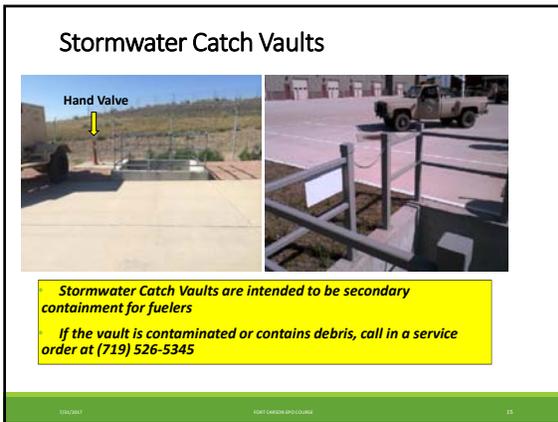
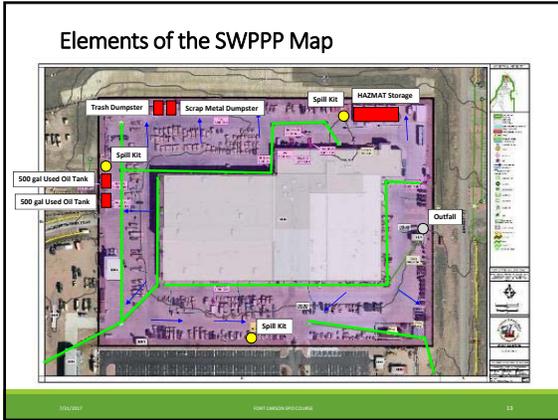
1000007 FORT CARSON DPW/COLLEGE 11

### Facility Stormwater Pollution Prevention Plan

- Required as part of the Fort Carson Multisector General Permit (MSGP)
- Units must maintain a copy of the applicable Stormwater Pollution Prevention Plan (SWPPP) map on-site as well as a stormwater poster
- Request a copy from your ECAT assessor or from the Stormwater Program Office

**Know your facility and the response plan.**

1000007 FORT CARSON DPW/COLLEGE 12



### Stormwater: The Ugly...



Use the MWR Auto Craft Center (Building 2427)

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### Questions?

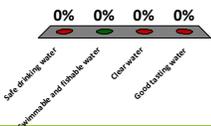
Chip Hahn – Stormwater Program Manager  
719-526-1697  
[chester.n.hahn.civ@mail.mil](mailto:chester.n.hahn.civ@mail.mil)



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### What is the goal of the Clean Water Act?

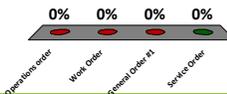
- A. Safe drinking water
- B. Swimmable and fishable water
- C. Clear water
- D. Good tasting water



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### Which type of order do you submit for routine stormwater maintenance?

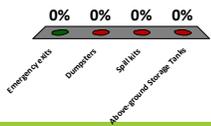
- A. Operations order
- B. Work Order
- C. General Order #1
- D. Service Order



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### Which is NOT an element of a SWPPP map?

- A. Emergency exits
- B. Dumpsters
- C. Spill kits
- D. Above-ground Storage Tanks



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### Catch vaults are found in all motorpools on Fort Carson.

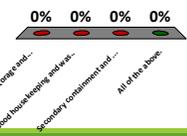
- A. True
- B. False



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Which are stormwater pollution prevention techniques?

- A. Proper material storage and handling
- B. Good housekeeping and waste management
- C. Secondary containment and spill kits
- D. All of the above.



Option	Percentage
Proper material storage and handling	0%
Good housekeeping and waste management	0%
Secondary containment and spill kits	0%
All of the above.	0%

1/10/2017 EORT 04/20/18 25

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**Attachment 4 – 2017 MS4 Education and Outreach Tracker**

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## 2017 FORT CARSON STORMWATER PROGRAM PUBLIC EDUCATION, OUTREACH, INVOLEMENT AND PARTICIPATION SUMMARY

### PUBLIC EDUCATION AND OUTREACH EVENTS

DATE	GROUP	ACTIVITY	# of ATTENDEES	# of BROCHURES
1/25/2017	Assigned Unit Environmental Protection Officers (EPOs)	Stormwater Program Overview	32	32
2/22/2017	Private Contractors and Army Engineers	Stormwater Management at Construction Sites	10	10
3/8/2017	Assigned Unit Environmental Protection Officers (EPOs)	Stormwater Program Overview	31	31
4/11/2017	Private Contractors and Stormwater Engineers	Stormwater Management at Construction Sites	7	7
4/19/2017	ECO Day at Abrams Elementary School	Stormwater and Watersheds in the Pikes Peak Region	200	0
4/25/2017	Assigned Unit Environmental Protection Officers (EPOs)	Stormwater Program Overview	15	15
4/26/2017	Fountain High School Environmental Science Class	Fort Carson Sustainability Tour (SW, LEED, PV, Energy)	60	0
5/16/2017	DPW Spill Response Team Members	Spill Awareness and Response Training	17	0
5/17/2017	4th Engineer Battalion Soldiers	Stormwater Management at Construction Sites	7	7
6/29/2017	Private Contractors and Stormwater Engineers	Stormwater Management at Construction Sites	7	7
7/19/2017	Assigned Unit Environmental Protection Officers (EPOs)	Stormwater Program Overview	22	22
8/23/2017	Private Contractors and Stormwater Engineers	Stormwater Management at Construction Sites	17	17
9/5/2017	10th Special Forces Building Managers	Urban Hydrology and Run Off Class	8	0
9/15/2017	Private Contractors and Army Engineers	Stormwater Management at Construction Sites	24	24
9/20/2017	Assigned Unit Environmental Protection Officers (EPOs)	Stormwater Program Overview	20	20
11/1/2017	Assigned Unit Environmental Protection Officers (EPOs)	Stormwater Program Overview	35	35
11/17/2017	Private Contractors and Stormwater Engineers	Stormwater Management at Construction Sites	6	6
12/20/2017	Private Contractors and Stormwater Engineers	Stormwater Management at Construction Sites	5	5
		<b>Total:</b>	523	238

### PUBLIC INVOLVEMENT AND PARTICIPATION EVENTS

DATE	GROUP	ACTIVITY	# of ATTENDEES	# of BROCHURES
4/21/2017	Active military, retirees, FTC residents	Household Hazardous Waste collection event	100	0
10/28/2017	Active military, FTC residents, DPW Employees	Make a Difference Day Creek Cleanup	22	0
		<b>Total:</b>	122	0

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**Attachment 5 – 2017 Earth Day Celebration Information**

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## Household hazardous waste

# Carson hosts collection event

By Susan C. Galentine

Directorate of Public Works Net Zero outreach/facility management coordinator

As part of Fort Carson's annual Earth Day observance, the Directorate of Public Works (DPW) Division is hosting a household hazardous waste collection event April 21.

The collection will be held from 8 a.m. to 2 p.m. in the parking lot west of the William "Bill" Reed Special Events Center, building 1829.

Community members with military identification cards (active duty, Family members, retirees, civil service employees, etc.) can drop off old/used household cleaners, paints, lawn care products, electronics and data media, and automotive products for proper disposal through the El Paso County Household Hazardous Waste Facility. The event is for collection of household hazardous waste only. Military unit hazardous waste needs to be taken to the DPW Hazardous Waste Storage Facility off of Butts Road for proper disposal; call 526-0980 for more information.

DPW hosts household hazardous waste collection events to encourage participation in reducing expensive landfill waste, preventing pollution and helping the installation get one step closer to its Net Zero waste goal.

Household hazardous waste dropped off must be in closed and labeled containers that can be left at the site. People can bring

the following items:

**Household products** — aerosols, ammonia, batteries, bleach, cleaners (carpet, drain, oven and toilet), cooking and lamp oils, cosmetics, degreasers, deodorizers, fire extinguishers, floor cleaners/waxes, furniture polish/wax, laundry products, mercury, mothballs, photographic chemicals, propane and butane tanks (one and 20 pounds), rust removers, silver cleaners, spot removers, etc.

**Paint, stains, solvents, etc.** — latex, oil-based, aerosol and hobby paints; and lacquers, solvents, stains, strippers, thinners, varnishes, etc.

**Lawn and garden products** — lawn and houseplant fertilizers, herbicides, insecticides, pesticides, rodent poisons, wood preservatives, etc.

**Automotive products** — antifreeze, batteries, brake and transmission fluids, cleaners (bug, tar, chrome, engine and vinyl), contaminated motor oil, self-service uncontaminated motor oil (five-gallon containers or smaller), fuels, wax, etc.

**Electronics and data media** — computers, printers, scanners, audio/video equipment, camcorders, cell phones, digital cameras, fax machines, microwave ovens, TVs, audio and video tapes, CDs, DVDs, Blue-ray discs, game cartridges, etc. (Only one television and one computer monitor per Family will be accepted.)

Call 526-4340 or 491-0218 for more information.

## Safer alternatives to common household products

Below are some safer, homemade substitutions to common household products provided by the U.S. Environmental Protection Agency Safer Choice Program.

When shopping for items such as multipurpose household cleaners, toilet

cleaners, laundry detergent, dish soap, dishwashing machine pods and gels, bug sprays and insect pest control, consider shopping for environmentally-friendly, natural products or search online for simple recipes that can be created.

- Instead of drain cleaner, use a plunger or plumber's snake.
  - For glass cleaning, mix a tablespoon of vinegar or lemon juice in a quart of water. Spray on and use newspaper to dry.
  - An alternative to furniture polish is using a mixture of a teaspoon of lemon juice in a pint of mineral or vegetable oil to wipe down furniture.
  - Instead of rug deodorizer, liberally sprinkle carpets with baking soda. Wait at least 15 minutes and vacuum. Repeat if necessary.
  - For a silver polish substitution, boil two-to-three inches of water in a shallow pan with a teaspoon of salt, a teaspoon of baking soda and a sheet of aluminum foil. Totally submerge silver and boil for two to three more minutes. Wipe away tarnish and repeat if necessary.
  - Instead of mothballs, use cedar chips, lavender flowers, rosemary, mints or white peppercorns.
- Visit the U.S. EPA at <https://www.epa.gov/hw/household-hazardous-waste-hhw#MGMT> for more information.



*Earth, Arbor days*

# DPW celebrates 30 years of activities

**By Susan C. Galentine**

Directorate of Public Works Net Zero outreach/facility management coordinator

Continuing its long history of teaching environmental stewardship to future leaders, the Fort Carson Directorate of Public Works (DPW) is hosting numerous activities for this year's celebration.

Earth and Arbor day-related events are scheduled for District 8 schools on post from Friday through May 4. Earth and Arbor Day activities are accomplished through partnering with various local, state and federal organizations that help provide a broad, multifaceted curriculum.

The DPW is hosting an Earth Day Eco Fair at Abrams Elementary School Tuesday at 9 a.m., which will consist of five 15-minute presentations. Topics include wildlife in Colorado, stormwater, watershed health, recycling and cultural resources.

Fort Carson is also holding an Earth Day-themed grocery bag art contest for kindergarten through sixth-grade students. This year's theme is "Protect our Health! Take Good Care of the Earth!" Awards will be presented at the Commissary April 21 to the winners and honorable mentions for each participating grade level. The decorated bags will be returned to the Commissary for use by customers on Earth Day, April 22.

Two tours of Fort Carson sustainability projects are scheduled for April 26 geared toward high school students in advanced science classes at Fountain-Fort Carson School District 8. A morning and afternoon tour is available to the students, covering topics including alternative energies, building designs, use of nonpotable water systems, managing training lands, conservation programs and the Net Zero recycling program.

Wrapping up this year's Earth Day programs is Fort Carson's Arbor Day Celebration May 4 at 10 a.m. in the Tree City Park behind Carson Middle School. The event supports the requirement for Tree City USA Certification and includes a command representative reading the Arbor Day Proclamation and leading the tree-planting effort.

There will also be a site cleanup after the ceremony. Fourth- and fifth-grade students from Patriot Elementary School will participate in the event.

Fort Carson is an Army leader in the Arbor Day Foundation program, earning the title of Tree City USA Community for 30 years and the Sterling Tree City USA designation in 2011. The Mountain Post, U.S. Military Academy at West Point and a few smaller Air Force installations are the only military communities to receive the Sterling Tree City USA designation, which recognizes achieving 10 Growth Awards.

Call the DPW Environmental Division at 526-1692 for more information about Earth and Arbor day activities. 🌱

## Outreach event at Exchange Thursday

The Directorate of Public Works Environmental Division staff is hosting an Earth Day table inside the main entrance of the Exchange Thursday from 11 a.m. until 1 p.m. Staff will provide information regarding some of the environmental programs available on the installation.

## Environmental stewardship

*Below:* Jerry Cordova, Colorado Springs stormwater/water resource engineering department, shows a fifth-grade class of Abrams Elementary students the potential effects of stormwater pollution during an Eco Fair Tuesday in celebration of Earth Day. *Left:* Cody Colvin, left, and Jaden Klesert, both 11, create a watershed out of aluminum foil during a class presented by Colorado Springs Utilities during the Abrams Elementary School Eco Fair. The Directorate of Public Works Environmental Division hosted the event that featured presentations on recycling, pollution of wastewater, eating habits of bears in the local area and archeology in celebration of Earth Day.



Photos by Alexandra Flodin

*Earth Day***Event builds awareness about yearlong efforts****Story and photo by Scott Prater**

Mountaineer staff

The William “Bill” Reed Special Events Center parking lot resembled an outdoor assembly line April 21. As community members pulled into the parking lot, they were greeted by inquisitive staff members, who asked a few questions, then directed drivers to the most convenient location in the lot for drop off.

More than 100 Fort Carson community members turned in used motor oil, batteries, electronics, cleaners, old televisions and assortments of other products they could have carelessly thrown into a garbage can.

In recognition of Earth Day, the Directorate of Public Works (DPW) hosted the Household Hazardous Waste Collection event, partly to help community members dispose of their hazardous materials in a convenient manner.

Rob Cavanaugh, DPW pollution prevention coordinator, said community members were thankful for the event’s location. They could load up their vehicle with unused items from their kitchens and garages and then drop them off on post, rather than take a trip to the county hazardous collection point east of town.

“We had some spouses show up who just wanted to clean out their garage while their sponsors were deployed,” he said.

But, the event served a higher purpose as well, according to Eric Bailey, DPW solid waste/recycle program manager. It was designed to build awareness about disposing of materials responsibly on a consistent basis.

“This is a great event that highlights the fact that people have options for disposing of materials other than the landfill,” Bailey said. “But, this is a one-day event. People need to know that Fort Carson has a household hazardous waste disposal site open every day next to the post’s exchange.”

Still, Fort Carson’s recycling efforts have come a long way in a decade. Bailey said when he first started working for DPW in 2005, the post had only 38 recycling dumpsters and 18 roll-off containers. Now, the post holds roughly 400 recycle dumpsters and 150 roll offs.

“Back in 2005, we were recycling about 20 percent of the trash on post, and now we’re up to about 50 percent,” Bailey said. “That’s all attributable to



**Jason Sullivan, left, Directorate of Public Works recycle technician, and Rob Cavanaugh, DPW pollution prevention coordinator, roll a barrel of used oil into position for pick up at the Household Hazardous Waste Collection event at the William “Bill” Reed Special Events Center April 21.**

providing (recycle) containers for people at different locations. I mean, people are going to use what they can find. If the only dumpster outside your building is for trash, that’s what’s going to be used.”

He estimated that 10 years ago, most recycle dumpsters on post were located in motor pools, used only by the folks who worked there.

Capturing items such as cardboard, metals and wooden pallets has helped improve the recycle percentage as well, but building awareness about the ease of recycling has provided the biggest boost.

“We have a lot of good NCOs who are in tune with recycling, but turnover often puts units back to square one,” Bailey said. “You get a unit that is doing well and then its leaders turnover and recycling kind of gets lost

in the shuffle. My advantage though is that the units know they need us. If your trash guy skips you for a couple of weeks, things start to come unglued.”

Though the post has made huge strides in raising its recycle rate, Bailey said there is plenty of room for improvement.

“We have to convince people that recycling is not hard and not complicated,” he said. “When people buy something at a store, 99 percent of the time it comes in a package that is recyclable. Mattresses, electronics, porcelain, furniture and clothing, whatever it is — it might not be recyclable, but with these hazardous waste drop off points and recycle locations, at least we know it’s going to the right place — let us decide that for you.”

**Attachment 6 – Make A Difference Day Information**

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# Commentary

## 'Make a difference' by volunteering

**By Col. Ronald P. Fitch Jr.**

Commander, U.S. Army Garrison Fort Carson

Our community is famously known as the "Best Hometown in the Army!" To maintain this title, we ask all members of the community to come to Iron Horse Park Saturday morning, Oct. 28, to help with Make a Difference Day on Fort Carson.

Every year, our Army Volunteer Corps coordinator, Joey Bautista, organizes this postwide cleanup effort focused on housing areas, Iron Horse Park and associated drainage/storm ditches. All participants will be treated to a free continental breakfast before the project and then lunch afterward.

This is a great way to earn some volunteer hours, whether for individuals or groups, while making a positive impact on the appearance of our community. In addition, it sets a great example for our kids on post, who can also come out to help, and displays the importance of volunteerism and public service.

Fort Carson is an incredibly busy place, and we ask that you volunteer a few hours of time to bring the Family out and help keep our post and community clean, while upholding the "Best Hometown in the Army." 🇺🇸



## Neighbors helping neighbors

**By Joey Bautista**

Fort Carson Army Volunteer Corps coordinator

Grab those boots, gloves and rakes. Volunteers are needed from 8 a.m. to 1 p.m. Oct. 28 to give Fort Carson's Iron Horse Park and its surrounding areas a facelift.

Make a Difference Day (MADD) is a national volunteer day dedicated to helping others — a celebration of neighbors helping neighbors. MADD is an annual event that takes place the fourth Saturday of October. Millions of people have participated. More than 3 million people cared enough about their communities to volunteer throughout the nation last year, accomplishing thousands of projects in hundreds of towns and communities.

Everyone is welcome to participate in the national day set aside for doing good works. It is the largest community service volunteer effort conducted on a national level. On this day, individuals and Families, school and church groups, businesses and other organizations draw upon their skills and resources to contribute where needs exist. MADD is one way to help our military community and make Fort Carson the "Best Hometown in the Army, Home of America's Best."

MADD volunteers will meet at the Iron Horse Park main pavilion at 7:30 am. Onsite registration will take place as each volunteer will receive a project assignment and a free continental breakfast. At noon, all volunteers will return to the pavilion for a free lunch, during which Garrison

Commander Col. Ronald P. Fitch Jr. and Garrison Command Sgt. Maj. David Burton will thank volunteers for their efforts.

There will be three main Fort Carson projects:

- ❑ **Iron Horse Park, sports complex and dog park** — A makeover and overall beautification of the Fort Carson Iron Horse Park to include general cleaning, raking and maintenance of the grounds of Iron Horse Park, the sports complex and the dog park.
- ❑ **Fort Carson stormwater drains** — General cleaning/maintenance of stormwater ditches to include clearing of debris of drains.
- ❑ **Fort Carson military Family housing** — General cleaning and maintenance of the military housing community to include a makeover and beautification of the parks, playgrounds and common areas as well as painting and repairing fences and landscape maintenance.

While supplies and some tools will be provided, volunteers are asked to bring rakes and wire cutters. Work boots or sturdy shoes and work gloves are required. Children are welcome with parent/guardian monitoring.

Help Fort Carson make a difference Oct. 28. Online registration and more information is available at <http://www.carson.army.mil/acs> by searching "MADD 2017." You can also visit the Fort Carson Army Volunteer Corps office inside Army Community Service, building 1526, or contact Joey Bautista, Fort Carson Army Volunteer coordinator, at [josesimo.r.bautista.civ@mail.mil](mailto:josesimo.r.bautista.civ@mail.mil) or 526-4590/1082. 🇺🇸



# Fort Carson Mountaineer



Published in the interest of the Fort Carson Community.  
Visit the Fort Carson Web Site at <http://www.carson.army.mil>.  
See the *Mountaineer* online at <http://www.fortcarsonmountaineer.com>.

Vol. 75, No. 44

Nov. 3, 2017

## Making a difference



Photo by Scott Prater

**1st Lts. Savneet Bajwa, left, and Kaitlyn Baerwaldt rake and collect leaves at Iron Horse Park during Make A Difference Day Saturday. Bajwa and Baerwaldt joined forces with more than 250 Fort Carson community members to take part in the national volunteer day celebrating neighbors helping neighbors. Projects included clearing debris from irrigation ditches, raking leaves from the park's common areas, painting structures at the post dog park, clearing trash and debris and painting curbs and parking lot stripes at the Iron Horse Sports Complex and in post housing areas. See story on pages 16-17.**

# Feature



Pack 264 Cub Scouts rake leaves and debris as part of a volunteer effort during Make A Difference Day at Fort Carson's Iron Horse Park Saturday.

Michael Erickson hauls debris near a drainage ditch at Iron Horse Park Saturday. More than 250 volunteers braved cold temperatures for the cleanup effort at the park in recognition of Make A Difference Day.



Story and photos by Scott Prater  
Mountaineer staff

More than 250 Fort Carson community members gathered at Iron Horse Park Saturday to make a difference in their community.

While thousands of Americans were busy volunteering their time at similar events around the country, Fort Carson volunteers enjoyed a quick breakfast before scattering to a number of locations on post to put in some hard labor.

Despite an overcast sky and chilly temperatures, the volunteers cleared debris from irrigation ditches, raked leaves from the park's common areas and painted structures at the dog park.

Others took a short bus ride to the Iron Horse Sports Complex and the post housing areas where they painted curbs and parking lot stripes and cleared trash and debris from the surrounding landscape.

"It was a good day, a solid effort from our volunteers," said Joey Bautista, Fort Carson Army Volunteer Corps coordinator. "This is our 21st year of recognizing 'Make A Difference Day' and my 16th as the event coordinator. Once again, people came out to enhance areas that everyone enjoys on post."

1st Lts. Savneet Bajwa and Kaitlyn Baerwaldt joined Cpl. Vanessa Torres at the sports complex first, but had some energy left following projects there. So, they quickly moved over to the park where they found plenty of work.

"This is a great chance to meet people and make friends with Soldiers from other brigades," Baerwaldt said. "We heard about the effort through the Community Information Exchange, and we wanted to do our part."

A multitude of local clubs and organizations provided volunteers and services for the event, including Cub Scout troops and church groups, and the Filipino American Community of Southern Colorado and the Knights of Columbus, who cooked and served a lunch for volunteers. Local businesses and foundations also donated pizzas for the event.

U.S. Army Garrison

Commander Col. Ronald P. Fitch Jr. welcomed volunteers in the morning and then kicked off the lunchtime activities after the effort was complete.

"This place looks completely different than it did this morning," Fitch said. "One of the best things about this community is that we can come together and keep Fort Carson the 'Best Hometown in the Army.'"

Learn more about the Community Information Exchange (CIE) at <http://www.carson.army.mil/CIE.html>.



Members of the Knights of Columbus and the Filipino American Community of Southern Colorado serve lunch to some 250 volunteers at Iron Horse Park Saturday. The volunteers were treated to a continental breakfast prior to their cleanup projects and then lunch following to thank them for their service.



Col. Ronald P. Fitch Jr., U.S. Army Garrison Fort Carson commander, thanks volunteers for their efforts Saturday during Make A Difference Day at Iron Horse Park.

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**Attachment 7 – Fort Carson Spill Response Procedures**

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# SPILL RESPONSE PROCEDURE



## Environmental Do's

Containers **MUST** be closed and labeled with their contents.

Spills **MUST** be cleaned and reported according to these Spill Response Procedures.

All containers 55 Gallons and above **MUST** be on secondary containment.

Flammable materials **MUST** be stored in flammable storage lockers.

## Environmental Do Not's

Don't wash tactical vehicles unless in an authorized wash area.

Don't pour/rinse products into drains.

Don't mix products or wastes.

## Environmental Phone Numbers

Environmental Compliance Assessment Team (ECAT)  
524-3534 or 526-0979/0755/8000/9176

AST Manager:	526-9411
Hazardous Waste Storage Facility:	526-8003
Pollution Prevention:	526-4340
Recycle Program:	526-5898
Stormwater Manager:	526-1697
Wastewater Manager:	526-1730
Service Orders:	526-5345

Fort Carson DPW Environmental Battle Book

<http://www.carson.army.mil/DPW/>



**YOUR EPO/EPNCO IS:**

---



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Is spilled material greater than 5 gallons?

NO

YES

Has spilled material entered a drain or storm ditch?

NO

YES

Is the spilled material a fire hazard?

NO

YES

Is the spilled material a health and safety hazard?

NO

YES

Is an SDS for the spilled material onsite?

YES

NO

Are the cleanup materials and equipment specified in the SDS readily available?

YES

NO

Clean up spilled material with onsite spill response equipment AND notify the ECAT or HWSF.

## Call 911 – ask for the Fort Carson Fire Department

-Without endangering personal health and safety, prevent further spillage and use onsite spill response materials to minimize the spill.

-CALL THE DPW ENVIRONMENTAL SPILL LINE: 526-0973.

-Complete FC Form 1200-E (Spill Report) and submit to ECAT or DPW Environmental personnel.



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**Attachment 8 – Garrison Commander’s Policy Letter #17**

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**DEPARTMENT OF THE ARMY**  
US ARMY INSTALLATION MANAGEMENT COMMAND  
HEADQUARTERS, UNITED STATES ARMY GARRISON, FORT CARSON  
1626 ELLIS STREET, SUITE 200  
FORT CARSON, CO 80913

REPLY TO  
ATTENTION OF

**GC Policy #17**

IMCR-ZA

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Enforcement of Construction Site Stormwater Management Program Policy

1. References:

a. U.S. Installation Management Command, U.S. Army Environmental Command memo, IMAW-BDC, subject: U.S. Army Environmental Command (USAEC) "Sample" Command Policy and Supplemental Guidance Document for Stormwater Compliance at Construction Sites, dated 31 Jan 07.

b. Fort Carson Municipal Separate Storm Sewer System (MS4) Permit (COR042001) as defined in Clean Water Act (40 CFR 122.26).

2. Purpose: Establish a policy for management of stormwater on Fort Carson, specifically at construction sites. The federal stormwater regulations and Fort Carson's MS4 permit require development, implementation and enforcement of a Stormwater Management Program designed to reduce the discharge of pollutants from the installation's stormwater system to the maximum extent practicable to protect water quality. The program must implement six minimum control measures, including construction site stormwater runoff control and post-construction stormwater management in new development and redevelopment. The construction control and management measures include requirements for erosion and sediment controls and best management practices.

3. Applicability:

a. Installation staff, tenants, activities, contracting offices, and contractors must comply with all the requirements outlined in the sections of Fort Carson's Stormwater Management Plan that address elimination of illicit discharges, construction site runoff control and post-construction site runoff control.

b. When coverage under the Environmental Protection Agency's Construction General Permit (CGP) is applicable, compliance with all CGP requirements is mandatory. Failure to comply with these requirements will result in appropriate disciplinary actions being taken against violator(s) as appropriate.

IMCR-ZA

SUBJECT: Enforcement of Construction Site Stormwater Management Program Policy

c. Copies of these documents are available on the Fort Carson Stormwater website at <http://www.carson.army.mil/DPW/environmental/stormwater/index2.html>.

4. Responsibilities:

a. Directorate of Public Works - Environmental Division (DPW-ED) will enforce this policy through contractor oversight and project planning. Projects with the Corps of Engineers and any other entity as the proponent are subject to these regulations and oversight.

b. Fort Carson Stormwater Program staff has the authority to conduct inspections of site activities as needed, to ensure compliance with the above cited plan and permit.

c. Mission and Installation Contracting Command (MICC) will enforce this policy by incorporating a reference to this policy in all applicable contract language.

d. Potential sanctions for contractor violations may include, but are not limited to:

(1) Contract payment withholding, liquidated damages, setoff, or equitable adjustment;

(2) Indemnification of Government costs due to administrative enforcement and litigation;

(3) Contract termination;

(4) Consideration of past performance evaluations in award of future contracts;

(5) Suspension or debarment from bidding or working on future contracts; and/or

(6) Stop-work orders may be issued for the entire project until violations have been rectified to the satisfaction of the U.S. Government.

5. Point of contact is the DPW-ED Stormwater Program Manager at 719-526-1697 or [usarmy.carson.imcom-central.list.dpw-ed-storm-water@mail.mil](mailto:usarmy.carson.imcom-central.list.dpw-ed-storm-water@mail.mil).



RONALD P. FITCH, JR.  
COL, SF  
Garrison Commander

DISTRIBUTION: A

**Attachment 9 – Construction General Permit Inspection Form**

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## CGP/MS4 Construction Inspection Form

Name Of Site:

Inspection Date/Time:

Inspector Name & Contact Information:

Select...

### Site Information

Nature Of Project:

- DPW:   
Industrial:   
Residential:   
Roadway:   
USACE:   
Utility Linear:

Construction Stage:

- Clearing:   
Construction:   
F.Grading:   
F.Stabilization:   
Infrastructure:   
Rough Grading:   
T.Stabilization:

Name Of Receiving Waters:

- B Ditch:   
Clover Ditch:   
Fountain Creek:   
Infantry Creek:   
Rock Creek:

Nature Of Project Other:

Construction Stage Other:

Receiving Waters Other:

Site Location:

Cross Streets:

Building Number:

Is the receiving water a tributary to waters of the US?

- Yes  
 No

Within the Fort Carson MS4 footprint?

- Yes  
 No

GPS Coordinates:

### Operator/Contact Information

Name and titles of person(s) meeting the definition of "operator": (CGP APP. A8):

Facility Contact:

Delegated Authority:

Is the Stormwater Team identified in the SWPPP (CGP part 7.2.1)

Yes

No

Notes:

### Basic Information

Is There Permit Coverage?:

- Yes  
 No

NOI visibly posted at entrance to site? (CGP section 1.6):

- Yes  
 No

What is the NOI date:

NOI Number:

Co-Permitee NOI Date:

Co-Permitee NOI Number:

SWPPP Location sign posted at entrance? (CGP section 1.6):

- Yes

Is there access to the 2017 CGP onsite (electronic or hard copy):

- Yes

Percent Complete:  %

No No

## 1. SWPPP Review

Item	Yes	No	NA	Notes
1.1 Is the SWPPP on site or electronically available <b>(CGP part 7.3)</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.2 Has the SWPPP been reviewed and updated PRIOR to filing an NOI by the Fort Carson Stormwater Program and is the SWPPP review form included <b>(MS4 PERMIT &amp; CGP part 7.1.1)</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.3 Signature Certification Statement included in SWPPP <b>(CGP part 7.2.15 and App I subsections I.11, I.11.1.1 and I.11.4)</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.4 Is information on receiving waters, impaired waters, and TMDLs correctly listed? <b>(CGP part 3)</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.5 Is there a site description <b>(CGP part 7.2.2)</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.6 Total area of site and total area to be disturbed in acres <b>(CGP part 7.2.2)</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.7 Are all construction support activities described (materials, equipment staging areas, concrete or asphalt batch plants, stockpiles and borrow areas) <b>(CGP parts 7.2.2 and 1.3.c)</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.8 Is the sequence and timing of construction included <b>(CGP part 7.2.2)</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.9 Is there a list of allowable non-stormwater discharges <b>(CGP part 1.3.d and 7.2.8)</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.10 Is the Fort Carson NEPA Record of Environmental Consideration (REC) included in the SWPPP? (Operator evaluation of endangered species/historic properties) <b>(CGP part 7.2.14)</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.11 Does the SWPPP contain buffer documentation <b>(CGP part 7.2.9)</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.12 Does SWPPP include BMP descriptions and details <b>(CGP part 7.2.10.1)</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.13 Where the BMP is a sediment basin, are design maintenance requirements in the SWPPP <b>(CGP part 2.1.3.2)</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.14 Does SWPPP include a dewatering plan <b>(MS4 PERMIT)</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.15 Does SWPPP include <b>temporary</b> stabilization measures (descriptions and specs) <b>(CGP parts 2.2 and 7.2.10.3)</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.16 Does SWPPP include <b>permanent</b> stabilization measures (permanent BMPs and specs) <b>(CGP parts 2.2 and 7.2.10.3)</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.17 Are construction site pollutants and pollutant generating activities listed in the SWPPP <b>(CGP part 7.2.7)</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.18 Are waste management and spill prevention				

and response procedures in the SWPPP ( <b>CGP parts 2.3, 7.2.11.1 and 7.2.11.2</b> )	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.19 Is there documentation that the stormwater team or other responsible personnel have been trained on their requirements of the CGP prior to earth disturbing activities commencing ( <b>CGP part 6</b> )	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.20 Is the SWPPP amendment log current ( <b>CGP part 7.4</b> )	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1.21 Is the SWPPP current and complete ( <b>CGP part 7.3</b> )	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

## 2. Map Review

Item	Yes	No	NA	Notes
2.1 Is there an up-to-date general site map on site ( <b>CGP part 7.2.6</b> )	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2.2 Are drainage patterns (flow arrows) included on map Stormwater, Topography and existing vegetation ( <b>CGP parts 7.2.6.5 and 7.2.6.6 a.b.</b> )	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2.3 Does the site map show all required features ( <b>CGP part 7.2.6.1 a.</b> )	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2.4 Are pollutant generating activities, as described in the SWPPP on the map ( <b>CGP part 7.2.6.7</b> )	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2.5 Are the locations of BMPs, as described in the SWPPP, on the map ( <b>CGP part 7.2.6.8</b> )	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2.6 Does the SWPPP or site map identify stormwater management measures to address stormwater runoff once the construction is complete (culverts, ponds, inlets, etc.) ( <b>MS4 Permit</b> )	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

## 3. Inspections Review

Item	Yes	No	NA	Notes
3.1 Is the named inspector (or the inspector's position) a duly authorized representative of the operator ( <b>CGP APP I.11.2</b> )	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3.2 Is the delegation of authority signed by the operator in the SWPPP ( <b>CGP part APP I.11.2.3</b> )	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3.3 Are the inspectors qualifications in the SWPPP ( <b>CGP part 4.1.1</b> )	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3.4 Are inspections performed according to inspection schedule noted in the SWPPP ( <b>CGP parts 4.1.2, 4.1.4, 7.2.12.2</b> )	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3.5 Date of last inspection				
3.6 Does the inspection report cover all BMPs, pollution prevention practices, and all areas requiring inspection ( <b>CGP part 4.1.5</b> )	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3.7 If applicable, is weather information included in the inspection reports ( <b>CGP part 4.1.2.2</b> )	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3.8 Were findings from last inspection addressed within 7 days ( <b>CGP part 5.2.1</b> )	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

#### 4. Best Management Practices

Straw Wattle / Rock Socks: <input type="radio"/> Adequate <input type="radio"/> Deficient <input type="radio"/> N/A Notes: <input style="width: 95%;" type="text"/>	Silt Fences: <input type="radio"/> Adequate <input type="radio"/> Deficient <input type="radio"/> N/A Notes: <input style="width: 95%;" type="text"/>	Straw Bales: <input type="radio"/> Adequate <input type="radio"/> Deficient <input type="radio"/> N/A Notes: <input style="width: 95%;" type="text"/>
Storm Drain Inlet Protection: <input type="radio"/> Adequate <input type="radio"/> Deficient <input type="radio"/> N/A Notes: <input style="width: 95%;" type="text"/>	Rip Rap: <input type="radio"/> Adequate <input type="radio"/> Deficient <input type="radio"/> N/A Notes: <input style="width: 95%;" type="text"/>	Check Dam: <input type="radio"/> Adequate <input type="radio"/> Deficient <input type="radio"/> N/A Notes: <input style="width: 95%;" type="text"/>
Diversion Structure (berms, swales, etc.): <input type="radio"/> Adequate <input type="radio"/> Deficient <input type="radio"/> N/A Notes: <input style="width: 95%;" type="text"/>	Sediment Pond: <input type="radio"/> Adequate <input type="radio"/> Deficient <input type="radio"/> N/A Notes: <input style="width: 95%;" type="text"/>	Track Pad / Street Cleaning effective: <input type="radio"/> Adequate <input type="radio"/> Deficient <input type="radio"/> N/A Notes: <input style="width: 95%;" type="text"/>
Dumpsters / Waste Management Practices (Lids or Covers Required): <input type="radio"/> Adequate <input type="radio"/> Deficient <input type="radio"/> N/A Notes: <input style="width: 95%;" type="text"/>	Concrete Washout: <input type="radio"/> Adequate <input type="radio"/> Deficient <input type="radio"/> N/A Notes: <input style="width: 95%;" type="text"/>	Hazardous Materials Secondary Containment Devices: <input type="radio"/> Adequate <input type="radio"/> Deficient <input type="radio"/> N/A Notes: <input style="width: 95%;" type="text"/>
Spill Kit / Spill Response Info: <input type="radio"/> Adequate <input type="radio"/> Deficient <input type="radio"/> N/A Notes: <input style="width: 95%;" type="text"/>	Good Housekeeping Measures / Equipment and Maintenance Areas: <input type="radio"/> Adequate <input type="radio"/> Deficient <input type="radio"/> N/A Notes: <input style="width: 95%;" type="text"/>	Vegetative Buffer: <input type="radio"/> Adequate <input type="radio"/> Deficient <input type="radio"/> N/A Notes: <input style="width: 95%;" type="text"/>
Portable Toilets: <input type="radio"/> Adequate <input type="radio"/> Deficient <input type="radio"/> N/A Notes: <input style="width: 95%;" type="text"/>	Temporary Stabilization Practices: <input type="radio"/> Adequate <input type="radio"/> Deficient <input type="radio"/> N/A Notes: <input style="width: 95%;" type="text"/>	Dewatering: <input type="radio"/> Adequate <input type="radio"/> Deficient <input type="radio"/> N/A Notes: <input style="width: 95%;" type="text"/>

#### 5. Final Stabilization

Are stockpiles or areas observed that are unstabilized after 14 days: <input type="radio"/> Adequate <input type="radio"/> Deficient <input type="radio"/> N/A Notes: <input style="width: 95%;" type="text"/>	Seeding (bag tags checked?): <input type="radio"/> Adequate <input type="radio"/> Deficient <input type="radio"/> N/A Notes: <input style="width: 95%;" type="text"/>	Mulching or Other Stabilization Methods: <input type="radio"/> Adequate <input type="radio"/> Deficient <input type="radio"/> N/A Notes: <input style="width: 95%;" type="text"/>
Landscaped areas: <input type="radio"/> Adequate <input type="radio"/> Deficient <input type="radio"/> N/A Notes: <input style="width: 95%;" type="text"/>	Post Construction BMPs properly installed: <input type="radio"/> Adequate <input type="radio"/> Deficient <input type="radio"/> N/A Notes: <input style="width: 95%;" type="text"/>	Are these structures adequately maintained: <input type="radio"/> Adequate <input type="radio"/> Deficient <input type="radio"/> N/A Notes: <input style="width: 95%;" type="text"/>

## 6. Site Review

Site Description:

Discharge of Sediment:

Discharge of Pollutants:

Are BMPs maintained adequately to prevent discharge:

## Notes

## Attachments

 File Attachment

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**Attachment 10 – Construction General Notice of Termination Inspection Form**

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## Fort Carson Stormwater Program Notice of Termination (NOT) Inspection Form

Date: \_\_\_\_\_

Project Name: \_\_\_\_\_

Project Location: \_\_\_\_\_

Permittee #1 . \_\_\_\_\_

NOI # \_\_\_\_\_

Dates of CGP Coverage: \_\_\_\_\_

Permittee #2: \_\_\_\_\_

NOI # \_\_\_\_\_

Dates of CGP Coverage: \_\_\_\_\_

Target Date for NOT filing: \_\_\_\_\_

NOT Inspector & personnel: \_\_\_\_\_

\_\_\_\_\_

### Construction General Permit Conditions for filing NOT:

1. Final stabilization has been achieved on all exposed portions of the site for which you are responsible.

A. All soil disturbing activities at the site have been completed and either, or a combination of, the two following criteria have been met:

i. If you are vegetatively stabilizing any exposed portion of your site through the use of seed or planted vegetation, you must provide established uniform vegetation (*e.g., evenly distributed without large bare areas*), with the following criteria:

- 70 percent or more of the density of coverage that was provided by vegetation prior to commencing earth-disturbing activities
- No invasive species
- Vegetative cover must be perennial
- Immediately after seeding or planting the area to be vegetatively stabilized, to the extent necessary to prevent erosion on the seeded or planted area, you have selected, designed, and installed non-vegetative erosion controls that provide cover (*e.g., mulch, rolled erosion control products*) to the area while vegetation is becoming established.

ii. If you are using non-vegetative controls to stabilize exposed portions of your site, you must provide effective non-vegetative cover to stabilize any such exposed portions of your site, including, but not limited to, riprap, gabions, and geotextiles.

**OR**

B. In arid and semi-arid areas or drought-stricken areas only, all soil disturbing activities at the site have been completed and both of the following criteria have been met:

i. The area you have seeded or planted must, within 3 years, provide established vegetation that covers 70 percent or more of the density of vegetation prior to commencing earth-disturbing activities; and in addition to seeding or planting the area to be vegetatively stabilized, to the extent necessary to prevent erosion on the seeded or planted area, you must select, design, and install non-vegetative erosion controls that provide cover for at least 3 years without active maintenance by you.

**AND**

You have removed and properly disposed of all construction materials, waste and waste handling devices, and have removed all equipment and vehicles that were used during construction, unless intended for long-term use following your termination of permit coverage.

You have removed all stormwater controls that were installed and maintained during construction, except those that are intended for long-term use following your termination of permit coverage or those that are biodegradable.

You have removed all potential pollutants and pollutant-generating activities associated with construction, unless needed for long-term use following your termination of permit coverage.

**OR**

2. Another operator has assumed control according to Section 8.2.2 of the CGP over all areas of the site that have not been finally stabilized.  
If so, please provide POC information \_\_\_\_\_

**OR**

3. Coverage under an individual or alternative general NPDES permit has been obtained.  
If so, please provide Permit # and Date \_\_\_\_\_

---

**MS4 Program Conditions for filing NOT:**

- Received a copy of all post-construction stormwater BMP design drawings/as-builts (in both '.dgn' and hard copy format). Please note that this information will need to be verified by Fort Carson staff prior to filing for an NOT.
- Received a copy of all post-construction stormwater BMP O&M specifications, as applicable
- Received a copy of design grading and drainage plans (in both '.dgn' and hard copy format)
- Received a copy of final, general layout of project site (to include buildings, roads, etc.)
- Received a copy of the Maintaining Hydrology on Army Construction Projects form (as applicable).
- All post-construction BMPs have been cleaned out and are in optimum operating condition.
- Site conditions are stable and acceptable. If not, provide actions needed prior to filing NOT:

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**Once the Fort Carson Stormwater Program has signed this form and returned it to the project proponent(s), the NOT filing process can be initiated. The NOT must be submitted within 30 days of conditions 1, 2 or 3 above being adequately met. Authorization to discharge terminates at midnight of the day the NOT is signed.**

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<b>Name</b> Fort Carson Stormwater Program	<b>Signature</b>	<b>Date</b>
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**Attachment 11 – Pollution Prevention Poster**

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# Stormwater Pollution Prevention

## What causes stormwater pollution?

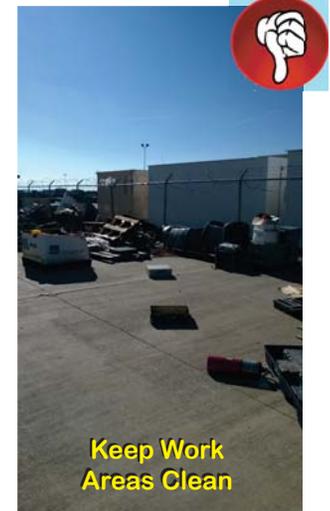
Routine activities have the potential to pollute stormwater if not conducted properly. These include:

- Vehicle/equipment fueling and fuel storage
- Improper vehicle/equipment washing
- Vehicle/equipment storage, and parking for those awaiting maintenance, and maintenance
- Spills or leaks from storage of parts, equipment, POL, scrap metals, scrap wood/wood chips/pallets, antifreeze and used antifreeze, used oil, solvents, tires, roll-offs, and recycling bins



## Stormwater Pollutants:

- POLs
- Antifreeze
- Metals
- Cleaning products
- Trash
- Paint/stain/finishing products
- Solvent
- Sediment



## Your site will be inspected:

Site inspections are a requirement of Fort Carson's Stormwater Permits. Your site will be inspected at least quarterly by ECAT and/or Fort Carson Stormwater Program staff. Inspectors will conduct a walk through looking at areas where industrial materials or activities are/could be in contact with stormwater, outfalls, and downstream areas to assess the potential for stormwater pollution and compliance with the SWPPP.

Penalties for knowingly violating stormwater regulations (e.g. dumping oil down the drain) can include fines and/or imprisonment.



## What You Can Do

### Minimize Exposure

- DO:
- o Store materials indoors or cover those stored outdoors when not in use
  - o Store materials and equipment in a place where spills or leaks would be easily contained
  - o Drain fluids from equipment/vehicles when they are expected to be unused for a period of time
  - o Wash equipment and vehicles on wash racks or designated wash areas
  - o Conduct work indoors when possible
  - o Use drip pans under parked vehicles/equipment



### Good Housekeeping

- DO:
- o Keep the work area clean and tidy
  - o Keep dumpster and other container lids closed
  - o Routinely conduct "Police Calls" (clean up site by picking up and throwing away trash, and sweeping dirt)
  - o Look out for erosion
  - o Sweep up tracked dirt

- DO NOT:
- o Do not sweep dirt or any other materials into outside drains



### Maintenance

- DO:
- o Conduct maintenance indoors when possible
  - o Use drip pans, portable containments, or other effective means of containing leaks spills if outdoor maintenance is necessary
  - o Use dry cleaning methods first

- DO NOT:
- o Do not power wash outside dirty surfaces to clean them



### Fueling

- DO:
- o Keep stormwater cutoff/diverter valves closed
  - o Utilize secondary containment for mobile fuel tankers or other portable fueling equipment whenever possible

- DO NOT:
- o Do not discharge collected rainwater from secondary containment without first properly inspecting for sheen and using absorbent pads to collect floating POL



### Spills and Leaks

Spills and leaks are a potential source of stormwater pollution. The Spill Prevention Control and Countermeasures Plan (SPCCP) and the spill guidance poster provide guidance for spill pollution prevention.

A list of ways to prevent stormwater pollution can be found in the Fort Carson SWPPP. The SWPPP is available at the Stormwater Program Manager's office, or online at: <http://www.carson.army.mil/DPW/environmental/stormwater/index2.html>

Contact the Fort Carson Stormwater Program Manager at [usarmy.carson.imcom-central.list.dpw-ed-storm-water@mail.mil](mailto:usarmy.carson.imcom-central.list.dpw-ed-storm-water@mail.mil) or 719-526-1697 for more information or guidance



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**Attachment 12 – Winter Maintenance Best Management Practices**

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## FORT CARSON STORMWATER PROGRAM

### BEST MANAGEMENT PRACTICES

#### WINTER MAINTENANCE



**Overview.** Snow and ice on roads, parking lots, drive-ways, and sidewalks can create hazardous conditions for people and property. Snow and ice removal is best done non-chemically with plows and shovels but, the results are not always adequate to ensure safety. Chemical ice melters (typically chloride salts) and/or sanding is often part of a comprehensive strategy to keep streets and parking lots clear.

**Impacts of Salt and Sand.** Salt and sand have traditionally been perceived as the cheapest and most effective materials for de-icing driving and walking surfaces; however, the use of salt and sand degrade water quality.

Effects from salt:

- Deplete the oxygen supply needed by aquatic animals and plants;
- Leach into the ground and change soil composition, making it hard for plants to survive;
- Contaminate groundwater and surface waters; and,
- Deteriorate paved surfaces, buildings, infrastructures, and the environment.

Affects from sand:

- Bury the aquatic floor life, fill in habitats, and cloud the water;
- Cause premature deterioration of floor surfaces as it is tracked into buildings;
- Lose its effectiveness after becoming embedded in snow and ice;
- Enter catch basins, storm drains, and surface waters if it is not swept up each spring; and,
- Contribute to clogged storm drains, which can cause flooding.

#### Best Management Practices

Snow & Ice Removal	
	<ul style="list-style-type: none"><li>• Use mechanical means before applying salt/sand, when-ever possible.</li></ul>

<p><b>Salt Application</b></p> 	<ul style="list-style-type: none"><li>• Follow manufacturer's instructions and use only enough to break the ice/pavement bond.</li><li>• Calibrate salt spreaders to ensure proper application.</li><li>• Do not apply on vegetation or near waterways.</li></ul>
<p><b>Sand Application</b></p> 	<ul style="list-style-type: none"><li>• Use only enough to provide traction on slippery areas.</li><li>• Sweep up excess sand after snowmelt.</li><li>• Sweep streets and curbs to remove excess material after storm events</li></ul>
<p><b>Snow &amp; Ice Disposal</b></p> 	<ul style="list-style-type: none"><li>• Do not dispose of snow and ice in wetlands, creeks, or other waterways or directly on top of storm drains.</li><li>• Do not place snow on top of Low Impact Development (LID) features (like rain gardens)</li></ul>
<p><b>Pollution Prevention</b></p> 	<ul style="list-style-type: none"><li>• Inspect salt storage structures and make necessary repairs</li><li>• Store all deicing materials under cover.</li></ul>



Photo courtesy T&H Services

**By Susan C. Galentine**

Directorate of Public Works Net Zero outreach and public relations

Colorado winter weather is unpredictable and can come on swiftly, often bringing snow and ice on the heels of warmer temperatures from one day to the next, challenging road crews and commuters alike.

The Directorate of Public Works (DPW) operations and maintenance contractor, T&H Services, is tasked with keeping Fort Carson roads safe for drivers. The contractor monitors forecasts for winter storms from the National Weather Service, local television station weather reports and from the Butts Army Airfield Weather Station, often planning and preparing days in advance of forecasted snowfall.

Winter storms in the Front Range vary in severity and moisture type. Trying to predict what the installation will contend with during each storm — snow or ice, or both, along with the wind effect — is difficult to impossible to determine.

As part of the planning process for a pending storm, the contractor sends situation reports to DPW and the Fort Carson Operations Center (FCOC) on its plan of action throughout a storm on road-clearing progress and until the final cleanup is accomplished. The purpose of the reports is to give FCOC staff insight

on the response so installation command can make the appropriate calls for Soldiers and civilians reporting for work.

The road crews begin plowing operations when the snow depth reaches 3 inches. If snowfall begins overnight, the contractor responds at about 4 a.m., preparing roads for the morning commute into Fort Carson. When roads require plowing, their operations continue until snow has stopped falling and the snow routes are safe for vehicle traffic.

After the snowfall stops, plowing occurs between the hours of 4 a.m. and 6 p.m. The contractor also checks the emergency snow routes in the morning to address any icing conditions. When plowing operations occur during the normal workday, contractor plows keep emergency snow route roads as safe as possible throughout the day.

“When it snows on post, it is impossible to take it down to black pavement,” said Don Phillips, DPW Operations and Maintenance Division snow control monitor.

Icy conditions pose a particular challenge to road crews, which focus primarily on deicing intersections, hills and curves where vehicle tires can spread the deicer along the road.

“Every snow event that occurs, we put from 50 to 75 tons of deicer on the roads,” said Phillips.

**A Directorate of Public Works operations and maintenance contractor removes snow and spreads sand on a Fort Carson road.**

Deicer cannot be applied to all roads, and as part of snowstorm management, the crews rely heavily on sunshine and temperatures rising during the day to melt the snow and ice.

Colorado storms at times wreak havoc with the start and end of the duty day on post, adding a twist to effective road-clearing efforts.

“Sometimes the timing of the storms hits right before or during peak traffic hours and we have a lot of cars on the road, which makes it very difficult for the contractor to clear the roads,” said Phillips. This scenario can create an issue where snowplows have to navigate around heavy traffic to deal with the snowpacked, slippery roads.

Ultimately, being prepared is key to winter driving success, including having good tires, driving safe speeds, ensuring extra distance between cars and allowing extra time for trips, he said.

Call 526-9271 for more information about DPW snow removal procedures.

Balfour Beatty Communities manages Fort Carson Family Housing snow removal. On post residents can call 579-1606, ext. 226, for more information. 🐾

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