

Statement of Basis

FACILITY: Denver Federal Center
PERMIT NO.: CO-0034878

PERMITTEE: General Services Administration

RESPONSIBLE OFFICIAL: Stephanie Downs, Director
Denver Federal Center

CONTACT PERSON: John Kleinschmidt, PG, RG

PHONE: 303-236-2858

PERMIT TYPE: Minor Industrial

Background Information:

This permit authorizes intermittent discharges associated with construction dewatering activities at the Denver Federal Center (DFC) in Lakewood, CO. Ongoing construction, operation, and maintenance at the DFC campus will necessitate the discharge of construction dewatering effluent on an intermittent basis. This permit is intended to authorize dewatering discharges from multiple projects in areas where there is potentially contaminated groundwater. Wastewater discharged from the 8 (eight) outfalls described in this permit will enter the DFC storm sewer system prior to entering McIntyre Gulch.

Groundwater Contamination at the Denver Federal Center

Most of the buildings on the DFC were constructed in 1941 for the Denver Ordnance Plant that produced ammunition in support of World War II. The DFC has since been used by more than 27 different Federal Agencies in the intervening 68 years. Agencies have used the property for many purposes including but not limited to: pesticide and herbicide testing, animal testing, landfills (disposal of waste and construction debris), storage of hazardous materials, firing ranges, burn pits, underground storage tanks that have leaked, a waste water treatment plant, and disposal of asbestos containing material.

The General Services Administration (GSA) has been conducting remediation at multiple sites located at the DFC. Under the Resource Conservation and Recovery Act, GSA is required by the State of Colorado to complete this remediation in order to satisfy the three state consent orders. This remediation will ensure that future land development will be unrestricted and that future tenants and visitors of the DFC are safe from exposure to contaminated soil and water.

The DFC has three main solvent plumes in groundwater on the east half of the facility which have been sourced from known locations such as the Federal Highway Administration's leaking waste solvent tank and other unknown sources such as facilities

that were run during the WWII era. In the southwest portion of the DFC there are several more plumes with petroleum and solvents that are also affecting the groundwater.

The EPA has authorized a pump and treat system for groundwater cleanup activity at Building 52A. This permit (CO-0034860) operates consistent with the effluent limitations defined through the RCRA consent orders. The treatment system operating through Building 52A continuously pumps groundwater. It has historically utilized the treatment train of filtration, air stripping, UV oxidation, and granular activated carbon treatment. The contamination can largely be attributed to releases from a former underground storage tank which contained waste solvent. The affected groundwater contains 1,1,1-trichloroethane, trichloroethene, 1,1-dichloroethylene, and 1,1-dichloroethane.

The DFC campus is bordered by Kipling Street on the east, Union Boulevard on the west, 6th Avenue on the north and W. Alameda Parkway on the south.

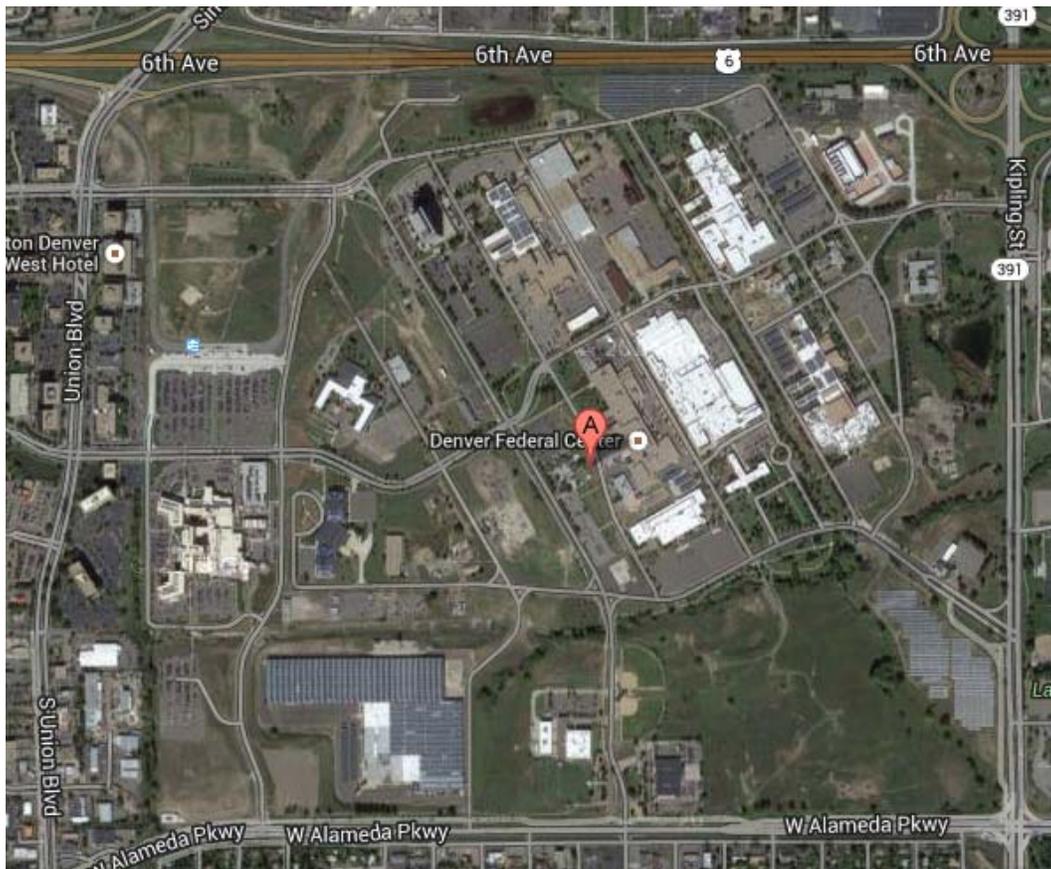


FIGURE 1 – DENVER FEDERAL CENTER LOCATION

Numerous wells have been sunk to monitor the fate and transport of groundwater contamination plumes at the DFC property. The locations of groundwater contamination plumes within the DFC property have been mapped by the General Services Administration per the terms of the RCRA Consent Decree. The Denver Federal Center

Municipal Separate Storm Sewer System (MS4) permit (Permit Number – COR042004) also required monitoring to determine the extent of groundwater infiltration into the storm sewer system and to determine areas where groundwater was contaminated. Analytes monitored under permit COR042004 are provided in Table 1.

	Sample Type	Frequency
Flow, Estimate	Instantaneous	Annual
40 CFR 122 Appendix D, Table II	Grab	Annual
Xylene	Grab	Annual
1,1 - Dichloroethylene	Grab	Annual
1,1,1 – Trichloroethane	Grab	Annual
1,4-Dioxane	Grab	Annual
Antimony, Total	Grab	Annual
Arsenic, Total	Grab	Annual
Beryllium, Total	Grab	Annual
Cadmium, Total	Grab	Annual
Chromium, Total	Grab	Annual
Copper, Total	Grab	Annual
Lead, Total	Grab	Annual
Mercury, Total	Grab	Annual
Nickel, Total	Grab	Annual
Selenium, Total	Grab	Annual
Silver, Total	Grab	Annual
Thallium, Total	Grab	Annual
Zinc, Total	Grab	Annual
Asbestos	Grab	Annual
Hardness	Grab	Annual
Total Suspended Solids	Grab	Annual
(a) Oil and Grease	Visual	Annual
Temperature	Grab	Annual
pH	Grab	Annual

(a) Visual observation is required. If a visible sheen is detected, a grab sample shall be taken and analyzed immediately.

TABLE 1 – ANALYTES MONITORED PER SECTION 3.1, PERMIT COR042004

Results of the aforementioned monitoring efforts resulted in a conservative assessment of areas where there are “known potential impacts.” Areas where sub-surface investigations and/or soil characterization for disposal have revealed no hazardous pollutants and are presumed to be uncontaminated, for the purposes of this permit, are defined as areas with “no known contamination.” These areas are mapped out in Figure 2 – Areas of Groundwater Contamination.

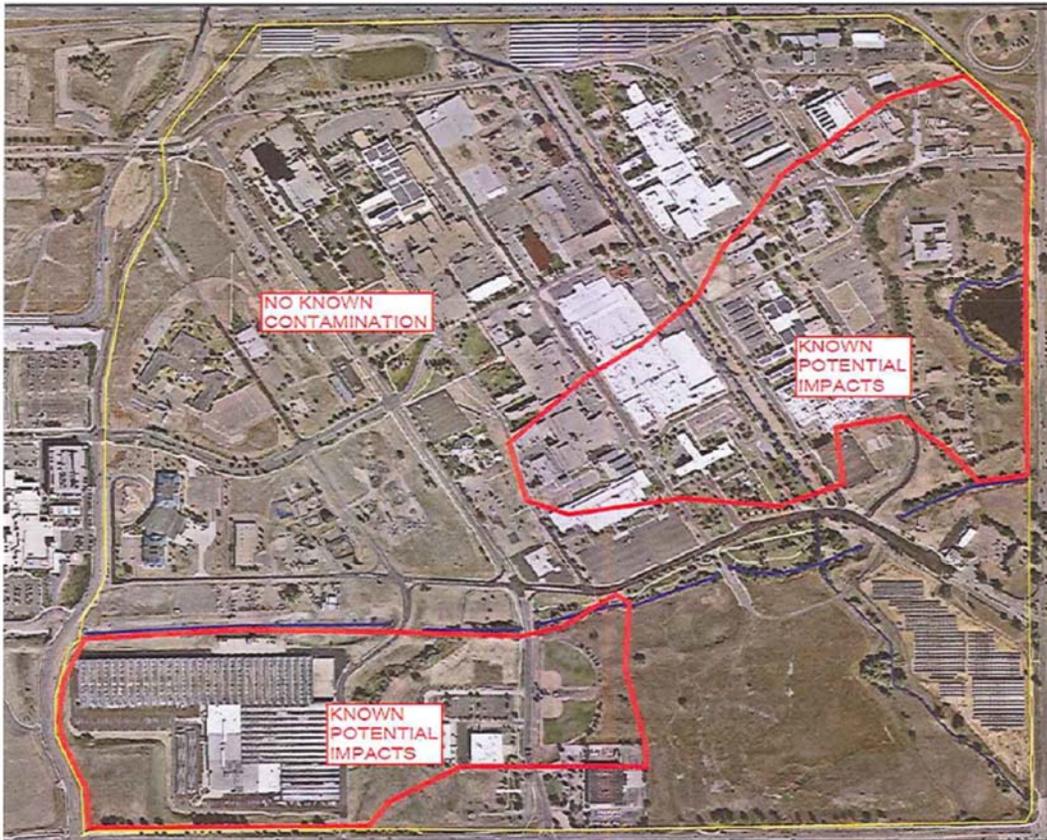


FIGURE 2 – AREAS OF GROUNDWATER CONTAMINATION

Permits for “Contaminated” and “Uncontaminated” Construction Dewatering:

Construction dewatering is a common term used to describe removal or draining groundwater or surface water by pumping. This practice is often necessary prior to excavation for foundations or to remove accumulated water from precipitation events which has been in contact with construction activities.

This permit authorizes the discharge of construction dewatering from all areas of the DFC property where there are “known potential impacts” to groundwater resources. For the purposes of this permit action, dewatering from these areas represents “contaminated” construction dewatering. It is anticipated that dewatering from numerous construction and/or restoration activities occurring within the areas of “known potential impacts” will be authorized under this permit. While these discharges will be intermittent in nature, the use of a single permit will expedite the process for maintaining permit coverage for several projects while maintaining effluent limits which are protective of water quality.

This permit does not authorize discharges of construction dewatering from areas with “no known contamination” where the 2012 EPA Construction General Permit can be deemed an appropriate permitting mechanism to authorize “uncontaminated excavation dewatering” (See Part 1.3.4.11 in EPA’s 2012 Construction General Permit).

Outfall Locations:

This permit does not authorize a continuous discharge of wastewater. The number of dewatering discharges authorized under this permit will be directly dependent on the number of excavations occurring on the DFC property. The exact location of dewatering activities and influent water quality will be dependent on where construction sites are being dewatered and how significant the contamination is in a specific area. This permit authorizes the discharge of wastewater to 8 (eight) outfalls. These 8 outfalls are all storm sewer outfalls where wastewater can be discharged prior to entering McIntyre Gulch. It is anticipated that the treatment technologies required for different dewatering activities will vary from site-to-site depending on the level of contamination encountered in the water being discharged. The level of contamination in groundwater plumes at the DFC property have been decreasing over time (see NPDES permit (CO-0034860)). Therefore, some excavations in the areas where there are “known potential impacts”, may have effluent concentrations near or below the effluent limitations in this permit. Where this is the case, this permit offers the flexibility to either directly discharge or modify treatment technologies (e.g., portable treatment systems) to allow for a direct discharge to the storm sewer system provided that the effluent limitations in this permit are met at the outfall locations herein.

Dewatering activities are authorized to the following eight (8) outfall locations:

<u>Outfall</u> <u>Serial Number(s)</u>	<u>Location</u>
001	Latitude: 39°43'1.91"N, Longitude: 105°6'37.72"W
002	Latitude: 39°43'1.17"N, Longitude: 105°6'40.97"W
003	Latitude: 39°42'56.55"N, Longitude: 105°6'51.20"W
004	Latitude: 39°42'56.24"N, Longitude: 105°6'57.34"W
005	Latitude: 39°42'55.91"N, Longitude: 105°6'56.15"W
006	Latitude: 39°42'53.88"N, Longitude: 105°7'5.19"W
007	Latitude: 39°42'52.64"N, Longitude: 105°7'26.85"W
008	Latitude: 39°42'52.67"N, Longitude: 105°7'24.93"W

The authorization to discharge under this permit is limited to these specific outfalls. However, field conditions or changes to the municipal separate storm sewer conveyance system may dictate that outfall locations be moved, deleted, or combined. The permit allows for this type of flexibility by allowing outfalls to be moved, deleted, or combined without reopening the permit provided that:

1. The new outfall location is within 1,320 feet (1/4 mile) of the established outfall location;
2. The new outfall location is within the same drainage or immediate permitted receiving waterbody;

3. There is no change to affected landowners; and
4. Notification of the change in outfall location is provided to the Planning and Targeting Program at the address provided in Part 2.4 **prior** to any discharges to the new outfall location.

Receiving Waters:

Each of the aforementioned 8 outfalls enter the DFC storm sewer system prior to entering McIntyre Gulch, a tributary to the South Platte River. The water quality standards for McIntyre Gulch, identified as segment “COSPUS16c” by the Colorado Department of Public Health and Environment, are as follows:

COSPUS16c, described as: “All tributaries to the South Platte River, including all lakes, reservoirs and wetlands, from the outlet of Chatfield Reservoir, to a point immediately below the confluence with Big Dry Creek, except for specific listings in the subbasins of the South Platte River, and in Segments 16a, 16b, 16d, 16e, 16f, 16g, 17a, 17b, and 17c.”

Uses: Aquatic Life Warm 2, Recreation E, Agriculture

Standards for which there are effluent limits in this permit: pH (6.5-9.0)

Further downstream, it is important to consider water quality standards for Lakewood Pond, which is 2.5 miles downstream of the outfall, as this is considered a drinking water source per the designated water quality standards. Lakewood Pond is a small impoundment on McIntyre Gulch that is located within the Lakewood Country Club. Lakewood pond, which is defined by the segment ID, COSPUS22, has the following water quality standards:

COSPUS22, described as: “Lakes and reservoirs in watersheds tributary to the South Platte River from the outlet of Chatfield Reservoir to a point immediately below the confluence with Big Dry Creek, except for specific listings in the sub-basins of the South Platte River, and in Segments 16b, 17a, 17b, 17c, and 23.

Uses: Aquatic Life Warm 2, Recreation E, **Water Supply**, Agriculture, Fish Ingestion

Standards for which there are effluent limits in this permit: These are based on the State of Colorado’s Water Plus Fish Standards since Segment COSPUS22 has both a Class 2 Aquatic Life and a Water Supply classification:

Benzene: 2.2 ug/L; 1,1- Dichloroethylene: 7 ug/L; Trichloroethylene (TCE): 5.0ug/L; 1,1,1- Trichloroethane: 200 ug/L; Vinyl Chloride: 0.023 ug/L

Water Quality Based Effluent Limits:

The determination of water quality based effluent limits for this permit is based on an analysis of pollutants known to be present in the discharge and the reasonable potential of these pollutants to cause or contribute to a water quality standards violation. A reasonable potential analysis was conducted for another NPDES permit, CO-0034860, which authorizes the discharge of treated effluent from the same set of pollutant plumes as they are treated through a pump-and-treat system located in Building 52A of the Federal Center. This permit authorizes discharges from the same set of contaminant plumes. Subsequently, the application for this permit denoted the same set of contaminants anticipated to be in the effluent as being 1,1-Dichloroethane, 1,1-Dichloroethylene (DCE), Trichloroethylene (TCE), 1,1,1-Trichloroethane (1,1,1-TCA), Benzene, and Vinyl Chloride. Water quality based effluent limits have been included in this permit for each of these parameters. It should be noted that the RCRA consent order for the Denver Federal Center also requires compliance with the same numeric water quality based effluent limits as those included in this permit.

Water quality based effluent limits are based on the applicable water quality standards. Each of the water quality standards needs to be met at the point at which the discharge enters McIntyre Gulch with the exception of the standards based on the “water supply” use. The point of compliance for meeting water quality standards for water supply (which are equivalent to drinking water Maximum Contaminant Levels (MCLs)), is approximately 2.5 miles downstream from the DFC boundary where the discharge enters Lakewood Pond. However, in evaluating effluent limits to meet MCLs, one approach could be to have these water quality based limits for water supply apply at the facility boundary, which is the compliance point for a RCRA consent which requires compliance with these same MCLs. The rationale for this is that plumes, although estimated to be decreasing in contaminant concentration, still exist at the Federal Center and contribute to contaminant loading through seeps into McIntyre Gulch. Since a RCRA order requires meeting these MCLs at the facility boundary, it would not be prudent for EPA to issue an NPDES permit which could cause or contribute to a violation of that order, effectively providing the discharger with a shield from complying with an order administered through another agency. Further, the intermittent nature of the discharges authorized in the permit and the variability of contaminant concentrations in both the effluent and in-stream is variable due to the migration of plumes and variable concentrations of seeps. It is not possible to determine an appropriate mixing zone such that the permit limits can be met such that water quality based effluent limits will be met at the facility boundary. Therefore, each of the water quality based effluent limits in this permit are applied as end-of-pipe limits (without the allotment of instream dilution) and are equivalent to the applicable water quality standards.

Technology Based Effluent Limits

This permit does not prescribe the specific technologies or method for treatment of construction dewatering discharges. Depending on the quantity and/or quality of the effluent being discharged, the facility may choose to treat contaminated groundwater through several methods such as:

1. Containerizing or pumping excavated water for treatment on-site in the Building 52A treatment facility;
2. On-site treatment using portable treatment unit (e.g., air stripping, granular activated carbon (GAC)); and
3. Ponding and evaporation of small quantities of water such that there are no discharges of excavated water to a Water of the United States; and
4. Monitoring and direct discharge of uncontaminated effluent.

EPA permit CO-0034860 authorizes the discharge of pumped groundwater from the treatment system in Building 52A at the Denver Federal Center. For the purpose of evaluating the feasibility of technology based effluent limits, this permit relies on the Best Professional Judgment (BPJ) analysis provided in permit CO-0034860. This BPJ analysis, which is available in the administrative record for this permit, evaluated the following technologies and their performance as recognized in EPA's Treatability Database:

1. Granular activated carbon (GAC);
2. Air stripping via hydrophilized and non-hydrophilized packing;
3. Hydrogen peroxide addition; and
4. UV irradiation

EPA's Treatability Database noted a wide projection of removal efficiencies as part of the analysis. These fluctuations were related to on-site factors such as varying influent concentrations and pollutant fractionation. Since factors such as influent concentration and plume dynamics will change over time for this system, it is reasonable to expect that pollutant removal efficiencies will change over time as well. Regardless, from the BPJ analysis coupled with the performance data from the existing treatment system, two assumptions are provided related to the feasibility of technology to meet effluent limits:

1. The existing system at Building 52A can effectively meet the water quality based effluent limitations provided in the permit when considering economic impacts to the facility, the age of equipment and facilities, processes employed, engineering aspects of various types of control technologies, process changes, and non-water quality environmental impacts; and
2. The use of portable on-site treatment systems such as GAC and air stripping, especially when utilized in a sequence, can effectively be used to meet the effluent limits in this permit, depending on factors such as the quality and quantity of influent water and operational controls such as retention time.

Should building 52A be utilized to treat wastewater discharges covered under this permit, notification will be required to EPA per Part 4.1 of permit CO-0034860.

4.1. *Planned Changes.* The permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility.

Notice shall be provided to:

U.S. EPA, Region 8
 Policy, Information Management & Environmental Justice Program (8ENF-PJ)
 Attention: Director
 1595 Wynkoop Street
 Denver, Colorado 80202-1129

Effluent Limitations - Outfalls 001, 002, 003, 004, 005, 006, 007, 008. Effective immediately and lasting through the life of this permit, the quality of effluent discharged by the facility shall, at a minimum, meet the limitations as set forth below:

Effluent Characteristic	30-Day Average	7-Day Average	Daily Maximum
Flow, mgd	n/a	n/a	Monitor only
Total Suspended Solids, mg/L	n/a	n/a	45
Oil and Grease, mg/L	n/a	n/a	10
BTEX, ug/L	n/a	n/a	100
Benzene, ug/L	n/a	n/a	5.0
1,1- Dichloroethane, ug/L	n/a	n/a	700
1,1 – Dichloroethylene (DCE), ug/L	n/a	n/a	7.0
Trichloroethylene (TCE), ug/L	n/a	n/a	5.0
1,1,1 – Trichloroethane (1,1,1-TCA), ug/L	n/a	n/a	200
Vinyl Chloride, ug/L	n/a	n/a	2.0
The pH of the discharge shall not be less than 6.5 and shall not be greater than 9.0 at any time			

(a) Daily maximum limits are included in the permit for all chemical constituents to account for variability in the discharge related to subsurface plume dynamics. The daily limits reduce the effect of averaging peak pollutant concentrations recognized at a specific time (e.g., beginning or end) during the discharge.

(b) pH limits are based on the water quality standards for segment COSPUS16c.

(c) TSS and Oil and Grease limits are based on requirements for all dischargers as stated in Colorado Regulation No. 62, Regulations for Effluent Limitations. The daily max TSS limit of 45 mg/L correlates with the 7-day average limitation as provided in Colorado

Regulation No. 62. 7-day and 30-day average limits were not provided as the frequency of sampling is not sufficient to provide for averaging of multiple samples.

(c) Limits for organics are based on Best Professional Judgment (BPJ) using estimated pollutant concentrations for the air stripping technology and as presented in EPA's Model NPDES Permit for Discharges Resulting From The Cleanup of Gasoline Released From Underground Storage Tanks, USEPA, 1989.

(d) Limits for the chlorinated volatile organic compounds, TCE, 1,1,1-trichloroethane, and 1,1-dichloroethylene are based on human health criteria or drinking water criteria under Colorado Regulation No. 31. The limitation for 1,1-dichloroethane is based on a State of Colorado Groundwater Equivalent Standard for human health risk.

(e) An effluent limitation was not included for temperature as the treatment technologies for removal of solvents and organics do not generally add heat during their processes.

Monitoring Requirements:

The monitoring requirements for Outfall 001, 002, 003, 004, 005, 006, 007, 008 are to be completed by the permittee and are presented below. Monitoring frequency is weekly for all constituents with the exception of flow and oil and grease. Monitoring is only required when the permittee discharges to one of the outfalls listed in the permit. It is anticipated that during most reporting periods, there will be no discharge, as discharges are directly correlated to the number of excavation dewatering activities occurring during the five year permit cycle. If no discharge occurs during the entire monitoring period, it shall be stated on the Discharge Monitoring Report Form (EPA No. 3320-1) that no discharge or overflow occurred. Effluent monitoring results obtained during the previous quarter are required to be summarized and reported on **one** Discharge Monitoring Report Form (EPA No. 3320-1), postmarked no later than the 28th day of the month following the completed reporting period.

Effluent Characteristic	Frequency	Sample Type
(a) Total Flow, mgd	Daily	Instantaneous
Total Suspended Solids, mg/L	Weekly	Grab
Benzene, ug/L	Weekly	Grab
BTEX, ug/L	Weekly	Grab
1,1-Dichloroethane, ug/L	Weekly	Grab
1,1-Dichloroethylene, ug/L	Weekly	Grab
Trichloroethylene (TCE), ug/L	Weekly	Grab
1,1,1-Trichloroethane, ug/L	Weekly	Grab
Vinyl Chloride, ug/L	Weekly	Grab
pH, s.u.	Weekly	Grab
(b) Oil and Grease, visual	Weekly	Visual

Flow measurements of effluent volume shall be made in such a manner that the permittee can affirmatively demonstrate that representative values are being obtained. The average flow rate (in million gallons per day) during the reporting period and the maximum flow rate observed (in mgd) shall be reported. For oil and grease, a visual observation is required weekly to determine whether there is a visible sheen in the effluent any time the facility discharges from one of the defined outfalls. If a visible sheen is detected, a grab sample shall be taken immediately and analyzed in accordance with the requirements of 40 CFR Part 136. The concentration of oil and grease shall not exceed 10 mg/L in any sample.

Endangered Species

No species that are federally-listed as endangered or threatened (“listed”) under the Endangered Species Act (ESA) have been found or are expected to be present at the Denver Federal Center. According to the U.S. Fish & Wildlife Service there is no critical habitat designated on or near DFC. Therefore, EPA finds that this permit is not likely to adversely affect any of the species listed by the US Fish and Wildlife Service under the Endangered Species Act.

Historic Properties

Discharges and discharge-related activities would not affect a property that is listed or is eligible for listing on the National Register of Historic Places as maintained by the Secretary of the Interior. The U.S. Government purchased what is the DFC property in the early 1940s, and developed it into the Denver Ordnance Plant. Other buildings were built after the war was over. Currently, most of the buildings constructed on the DFC have been renovated, thus making them potentially ineligible for National Historic designation. Only two buildings have currently maintained enough structural and physical integrity to meet the criteria for consideration for National Register designation: the original Office of Civil Defense Building adjacent to Building 50, and Building 710. Both of these buildings are underground. EPA does not anticipate any impacts on historic properties or cultural resources because this permit discharges to existing outfalls.

Public Notice and Response to Comments

This permit was public noticed on Thursday, October 16, 2014 in the Denver Post. No comments were received during the public notice period.

Miscellaneous

The effective date and the expiration date of the permit will be determined at the time of permit issuance. The intention is to renew the permit for a period of approximately five years, but not to exceed 5 years.

Permit drafted by Greg Davis, 8P-W-WW, September 3, 2014, Revised September 18, 2014.

Permit reviewed by Robert Shankland, SEE, 8P-W-WW.