

Statement of Basis

FACILITY: Department of Commerce, Boulder Laboratories Municipal Separate Storm Sewer System (MS4)

PERMIT NO.: CO-R042002

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LOCATION: 39°59'46.29"N 105°15'41.98"W

Facility Background Information:

The Department of Commerce Boulder Laboratories is located in the city of Boulder, Colorado adjacent to Highway 93 (Broadway Street). The northern edge is located near the intersection of Broadway St. and Bluebell Avenue and the southern edge is located near the intersection of Broadway St. and Dartmouth Avenue. The facility shares borders with the Highland Park neighborhood to the south and the Green Mountain Memorial Park Cemetery to the north and extends southwest towards the West Highland Park neighborhood and the foothills of Boulder Mountain Park.

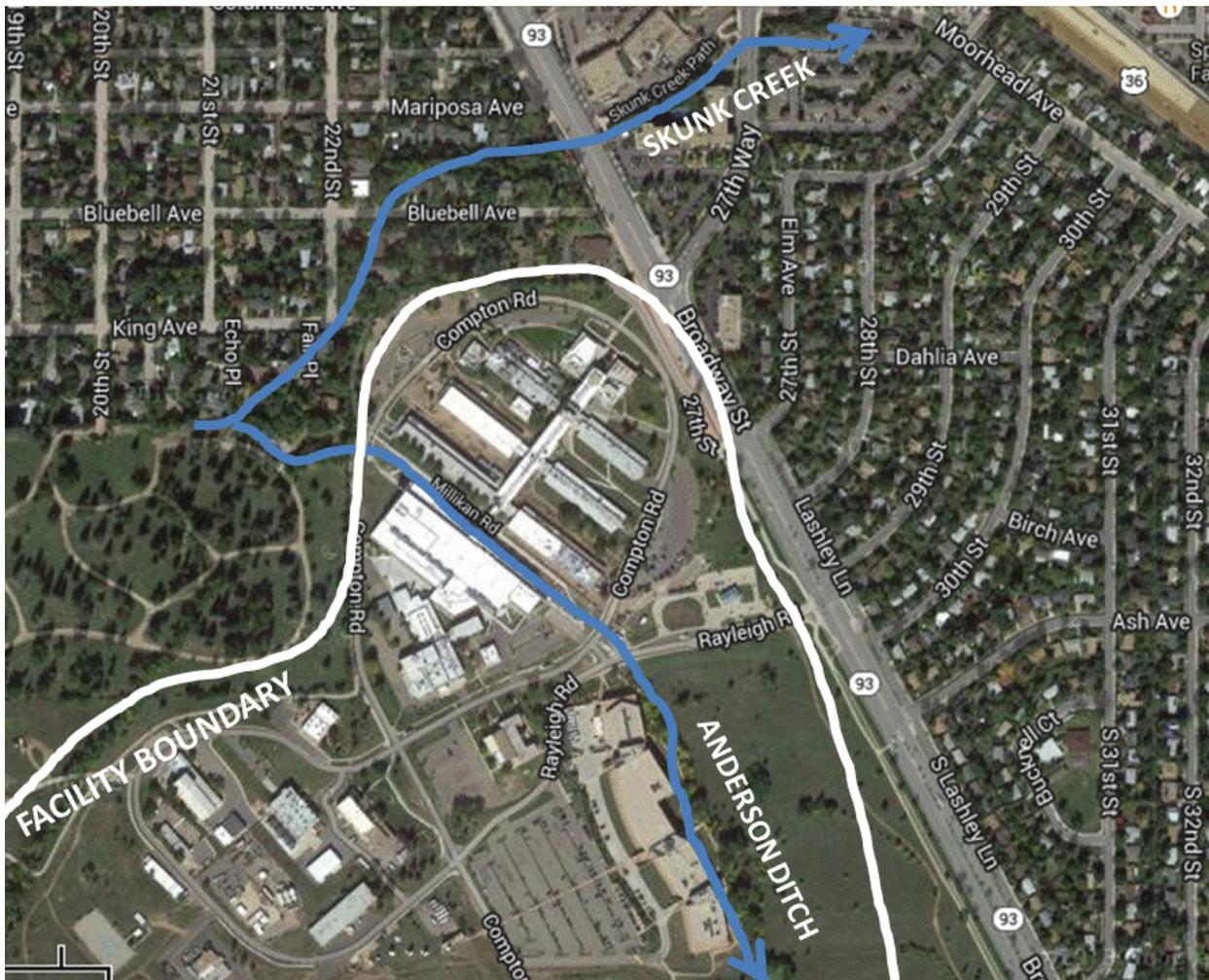
This campus houses the National Institute of Standards and Technology (NIST), the National Oceanic and Atmospheric Administration (NOAA), and the National Telecommunications and Information Administration (NTIA). Although three agencies occupy the property, it is managed by NIST, and the stormwater management plan and MS4 permit are administered by NIST personnel.

The primary purpose of the facility is research and development, including support for the standards for frequency and time interval, atmospheric conditions, and weather forecasting. Laboratories are available for research related to electrical engineering, physics, chemistry, materials science and engineering, information technology, and atmospheric research. The facility has approximately 2,000 employees and no residential housing. The majority of the facility is open space. This open space is relatively steep compared to the developed portion of the facility. Low-density housing is located upgradient between the facility boundary and the

rugged Flatirons formation. Development is clustered along the eastern edge of the property and is primarily composed of the NIST and NOAA laboratory complexes. A cluster of small maintenance facilities and a central utilities plant are located to the west and uphill of the laboratories.

Receiving Waters:

Stormwater runoff departs the property at two locations, Skunk Creek and Anderson Ditch, both of which are intermittent waterbodies. Skunk Creek bisects the northern portion of the property after flowing through Green Mountain Cemetery. Anderson Ditch is an irrigation canal which bisects the property immediately west of the NIST laboratories and continues to the south adjacent to the NOAA laboratories.



Stormwater runoff from Skunk Creek and Anderson Ditch both enter Bear Canyon Creek. Skunk Creek discharges into Bear Canyon Creek during precipitation events approximately ½ mile to the north of the property under US Highway 36. Anderson Ditch, which flows to the

south (opposite that of Skunk Creek) discharges into Bear Canyon Creek approximately ¾ mile southeast of the facility at Table Mesa Drive. Bear Canyon Creek drains into Boulder Creek approximately 2 miles downstream of the facility boundary.

Water Quality Standards

Anderson Ditch, Skunk Creek, and Bear Canyon Creek are all included in one waterbody segment as defined by the State of Colorado for the purposes of establishing water quality standards. This segment is defined as COSPBO08 and is described as “all tributaries to Boulder Creek, including all lakes, reservoirs, and wetlands from South Boulder Road to the confluence with Boulder Creek and all tributaries to Coal Creek, including all lakes, reservoirs, and wetlands from Highway 93 to the confluence with Boulder Creek.”

Stream Classification and Water Quality Standards

Stream Segment	Classifications	Physical and Biological	Inorganic (mg/L)	Metals (ug/L)
Boulder Creek Segment 8	Use Protected Aq Life Warm 2 Recreation 1a Agriculture	D.O. = 5.0 mg/l pH = 6.5-9.0 F. Coli=200/100ml E.Coli=126/100ml	NH3(ac/ch)=T VS CL2(ac)=0.019 CL2(ch)=0.011 CN=0.005 S=0.002 B=0.75 NO2=1.0 NO3=10 Cl=250 SO4=330	As(ac)=340 As(ch)=0.02-10(Trec) Cd(ac/ch)=TVS CrIII(ac)=50(Trec) CrVI(ac/ch)=TVS Cu(ac/ch)=TVS Fe(ch)=WS(dis) Fe(ch)= 1000(Trec) Pb(ac/ch)=TVS Mn(ac/ch)=TVS Mn(ch)=WS(dis)** Hg(ch)=0.01(tot) Ni(ac/ch)=TVS Se(ac)=TVS Se(ch)=8 Ag(ac/ch)=TVS Zn(ac/ch)=TVS

Water Quality Impairments

The Colorado Department of Public Health 303(d) list of impaired waters (5 CCR 1002-93, Regulation #93), defines segment COSPBO08 as impaired for E. coli and selenium on the Rock Creek portion of the segment. Within the facility and immediately downstream of the facility, there are no impaired waters. Bear Creek Canyon does drain into an impaired water at Boulder Creek approximately six miles downstream. Boulder Creek (segment COSPBO10) has a Total Maximum Daily Load (TMDL) with allocations applied to address high ammonia concentrations and reduced diversity of aquatic life. No load or wasteload allocations were provided for storm

sewer systems as a part of this TMDL. Boulder Creek (segment COSPBO10) is also on the State of Colorado's impaired waterbody list for an E. coli impairment and is also on the Colorado Monitoring and Evaluation list for the chemical parameter cadmium and the use classification of aquatic life use support.

Endangered Species

Coverage under this permit is available only if the stormwater discharges, allowable non-storm water discharges, and discharge-related activities are not likely to:

- Jeopardize the continued existence of any species that are listed as endangered or threatened ("listed") under the ESA or result in the adverse modification or destruction of habitat that is designated as critical under the ESA ("critical habitat"); or
- Cause a prohibited "take" of endangered or threatened species (as defined under Section 3 of the Endangered Species Act and 50 CFR 17.3), unless such takes are authorized under sections 7 or 10 of the Endangered Species Act.

"Discharge-related activities" include: activities which cause, contribute to, or result in stormwater point source pollutant discharges; and measures to control stormwater discharges, including the citing, construction, and operation of Best Management Practices (BMPs) to control, reduce, or prevent stormwater pollution.

Upon its initial certification for MS4 permit coverage in 2003, NIST, working with the U.S. Fish and Wild Life Service (FWS) and the State of Colorado, certified in its Notice of Intent (NOI) application, that stormwater discharges and discharge-related activities from the Department of Commerce, Boulder Laboratories, would not jeopardize the continued existence of any species that are listed as endangered or threatened ("listed") under the ESA or result in the adverse modification or destruction of habitat that is designated as critical under the ESA ("critical habitat"). NIST continues to work with FWS and the State to update its endangered species lists and is required to evaluate the potential effects of every new construction project through a formal impact analysis. These analyses require that all new projects are designed and maintained such that the existence of listed species cannot be jeopardized and critical habitat cannot be adversely modified or destroyed.

Historic Properties

Coverage under this permit is available only if the stormwater discharges, allowable non-stormwater discharges, and discharge-related activities are:

- Not likely to 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; or
- In compliance with a written agreement with the State Historic Preservation Officer (SHPO)

that outlines all measures the MS4 operator will undertake to mitigate or prevent adverse effect to the historic property.

Upon its initial certification for MS4 permit coverage in 2003, NIST, working with State Historic Preservation Officers (SHPOs), certified in its Notice of Intent (NOI) application, that stormwater discharges and discharge-related activities from the Department of Commerce Boulder Laboratories MS4 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. NIST continues to work with SHPOs to update its listing of historic properties and any other archeological areas of significance and is required to evaluate the potential affects of every new construction project through a formal impact analysis. These analyses require that all new projects are designed and maintained such that properties listed or eligible for listing on the National Register of Historic Places are not affected.

Limitations on Permit Coverage

In Part 1.3 of the permit, there are limitations on the types of discharges that are covered under this permit. Parts 1.3.3 and 1.3.4 are provided to note that stormwater discharges from regulated construction activities (i.e., those disturbing equal to or greater than one acre) and stormwater discharges from regulated industrial activities (i.e., those defined as regulated by their industrial classification) are not authorized under this permit. These types of activities need to be authorized under a separate permit. The language limiting the MS4 permit from covering these types of discharges is as follows:

Stormwater Discharges Associated with Industrial Activity. This permit does not authorize stormwater discharges associated with industrial activity as defined in 40 CFR § 122.26(b)(14)(i)-(ix) and (xi).

Stormwater Discharges Associated with Construction Activity. This permit does not authorize stormwater discharges associated with construction activity as defined in 40 CFR § 122.26(b)(14)(x) or 40 CFR § 122.26(b)(15).

Part 1.2 of the permit defines several types of non-stormwater discharges which are authorized under this permit unless the permittee determines they are significant contributors of pollutants. If the permittee identifies any of the following categories as a significant contributor of pollutants, the permittee must include the category as an illicit discharge. The non-stormwater discharges authorized under this permit include:

- Water line flushing;
- Landscape irrigation;
- Diverted stream flows;
- Rising ground waters;
- Uncontaminated ground water infiltration;
- Uncontaminated pumped ground water;

- Discharges from potable water sources;
- Foundation drains;
- Air conditioning condensate;
- Irrigation water;
- Springs;
- Water from crawl space pumps;
- Footing drains;
- Lawn watering;
- Flows from riparian habitats and wetlands;
- Dechlorinated swimming pool discharges;
- Street wash water;
- Power washing where no chemicals are used;
- Roof drains;
- Fire hydrant flushings;
- Emergency discharges required to prevent imminent threat to human health or severe property damage, provided that reasonable and prudent measures have been taken to minimize the impact of such discharges; and
- Discharges or flows from fire fighting activities occurring during emergency situations.

Two types of discharges which are not authorized as allowable non-stormwater discharges include:

- Discharges authorized by a separate NPDES permit; and
- Discharges in compliance with instructions of an On-Scene-Coordinator pursuant to 40 CFR Part 300 or 33 CFR 153.10(e);

In the past five years, there have been frequent questions from Colorado Federal Facilities about the applicability of the MS4 permit for covering these two types of discharges. These were not added to the list of allowable non-stormwater discharges as it is not necessary to independently address these in MS4 permits. If a discharge is already authorized by a separate NPDES permit (e.g., treatment plant discharges and groundwater remediation pump-and-treat discharges), then it is not necessary to separately authorize it through the MS4 permit. This is also true of the aforementioned discharges in compliance with the instructions of an On-Scene Coordinator, as these discharges are exempted from NPDES permitting consistent with regulations at 40 CFR 122.3(d).

This discussion is included in this permit fact sheet for clarity on frequently asked questions about permit applicability. During 2012 and 2013, wild fires encroached on several Federal Facility MS4s in Colorado, and there were frequent questions on how remediation associated with U.S. Forest Service Burned Area Emergency Response (BAER) integrated into the MS4 program. If those activities (i.e., those authorized under a BAER Plan) are exempted from NPDES permitting consistent with regulations at 40 CFR 122.3(d), then it is not necessary for

them to be specifically authorized in the Facility's MS4 permit.

Federal Facility MS4s are still encouraged to evaluate these types of discharges and their impact to the MS4. While not specifically required under this permit, a holistic MS4 program would include management practices and control measures specifically tailored to minimize impacts such as erosive potential and streambank degradation from permitted outfalls and remediation efforts authorized under a separate permit or authorized in compliance with the instructions of an On-Scene-Coordinator.

Effluent Limitations

Phase II stormwater regulations were promulgated by EPA on December 8, 1999 (64 FR 68722). These regulations designated two additional categories of stormwater discharges to be permitted and set forth the requirements of for permits. The additional stormwater discharges to be permitted include:

1. Certain Small MS4s, including storm sewer systems at military bases, large hospital or prison complexes, and other storm sewer systems similar to those in municipalities (see 40 CFR § 122.26(b)(16)(iii))
2. Small construction sites (i.e., sites which disturb one to five acres); and
3. Industrial facilities owned or operated by small municipalities which were temporarily exempted from the Phase I requirements in accordance with the provisions of the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991.

Section 402(p)(3) establishes permit requirements for industrial stormwater discharges and municipal stormwater discharges. Like other discharge permits issued under section 402 of the CWA, permits for industrial stormwater discharges must include technology-based effluent limitations and any more stringent water quality-based effluent limitations (WQBELs) as provided in section 301 of the CWA. However, MS4 permits are subject to a unique provision and must "require controls to reduce the discharge of pollutants to the maximum extent practicable" (MEP) and "such other provisions [determined] appropriate for the control of such pollutants." Section 402(p)(3)(B)(iii). At a minimum, the Phase II regulations require MS4 permits to require development and implementation of a stormwater management program (SWMP) that includes the six minimum control measures set forth in the regulations. 40 CFR §122.34. EPA considers MEP to be an iterative process in which an initial SWMP is proposed and then periodically upgraded as new best management practices (BMPs) are developed or new information becomes available concerning the effectiveness of existing BMPs (64 FR 68754). The permitting authority has discretion to require additional stormwater controls or pollutant reduction requirements to meet water quality standards. *See, Defenders of Wildlife v. Browner*, 191 F.2d 1159, 1166 (9th Cir. 1999).

The effluent limits in this permit establish the requirements for reducing pollutants in the MS4's discharges to the maximum extent practicable and for protecting water quality in the receiving

waters. The effluent limitations address the six minimum measures. The permit conditions defined within these six minimum measures and additional measures included in this permit are the means through which FCI Englewood complies with the CWA's requirement to control pollutants in the discharges to the maximum extent practicable (MEP) and comply with the water quality related provisions of the CWA. The permittee is required to comply with all terms of the permit as written.

The Phase II regulations at 40 CFR §122.34 require the following six minimum pollution control measures to be included in SWMP:

1. Public Education and Outreach on Storm Water Impacts;
2. Public Involvement/Participation;
3. Illicit discharge detection and elimination;
4. Construction Site Storm Water Runoff Control;
5. Post-Construction Storm Water Management in New Development and Redevelopment; and
6. Pollution Prevention/Good Housekeeping for Municipal Operations.

The regulations specify required elements for each minimum measure and also include guidance which provides additional information recommended for an adequate program. This permit contains conditions which are based on the program elements as specified in the Code of Federal Regulations but are more specifically tailored to the facility in an effort to reduce undue burden and to more specifically address the pollutant sources on-site.

EPA conducted an inspection of the Department of Commerce Boulder Laboratories on February 12, 2014. This inspection noted deficiencies in the current stormwater program, areas for improvement, and limitations applicable to the facility. This inspection report is kept as part of the administrative record for this permit, and it was critical in development of this permit. Several of the permit conditions are tailored for this facility based on the findings from that report.

A summary of effluent limits and of the rationale for these limits is as follows:

Permit Conditions – Stormwater Management Plan:

- The permittee must maintain a Stormwater Management Plan (SWMP). The SWMP must describe how the permittee will comply with each of the requirements in **Parts 2.2-2.7**. The SWMP can include citations of documents and electronic records (e.g., manuals, guidance, procedures, electronic management systems, intergovernmental agreements) used to comply with permit requirements. It is not required that the SWMP repeat information included in the cited documents or information systems, but the SWMP must include the names of the most recent versions of the cited documents or information systems and the locations where the supporting documentation is maintained.

- **SWMP Availability.** The SWMP must be immediately available to EPA in writing. It does not need to be stored or maintained in hardcopy format, but it must be available immediately for printout upon request.
- **Annual SWMP Review.** The permittee must conduct an annual review of the SWMP in conjunction with preparation of the annual report required under **Part 3.2** and update the document with the most current information.

Rationale: The Stormwater Management Plan provides the framework for the facility to comply with the permit conditions and meet the Clean Water Act goal of reducing pollutants to the Maximum Extent Practicable. The plan establishes roles and responsibilities and is tailored to the facility. This permit does require the use or creation of a written “Stormwater Management Plan”, however it does not require that the plan be a detailed description of activities needed to implement the permit conditions. The written plan is required as it can be used to guide facility managers, contractors, and inspectors regarding activities necessary to comply with the terms of the permit. Other tools, such as automated tracking systems and software may integrate better into the facility’s planning, budgeting, and day-to-day tasks. If it is possible to integrate the permit requirements directly into existing tracking and reporting systems, that approach may be more cost effective and reliable provided that the data from the reporting systems are sufficient to demonstrate compliance with the permit conditions. Therefore, this permit provides the flexibility to use such systems and to document them more generally in a Stormwater Management Plan.

Permit Conditions - Public Education and Outreach on Stormwater Impacts:

- Continue to implement an education and outreach program for the Department of Commerce, Boulder Laboratories, which targets project managers, contractors, tenants, the facility daycare center, 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;
- By no later than 18 months after the effective date of this permit, at a minimum, disseminate informational material to the defined target audiences on both the general water quality goals of the permit and provide education specific to the target audiences defined in **Part 2.2.1** that addresses their potential pollutant sources and any policies and/or procedures that should be implemented to minimize the discharge of the defined pollutants in stormwater runoff. 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;
- By no later than 12 months after the effective date of this permit, and biennially (every other year) thereafter, provide and document training to fleet maintenance staff, site maintenance staff, Engineering, Maintenance, and Support Services (EMSS) construction project managers, and Contracting Office Technical Representatives (COTRs) to learn about the

policies and procedures for maintaining construction site runoff controls, applicable industrial onsite Best Management Practices (BMPs), and management of stormwater runoff using post-construction stormwater controls;

- Provide the grounds contractors or other parties responsible for pesticide and herbicide application with training related to the requirements for NPDES permitting and in the area of chemical disposal and stormwater runoff at least once during the effective term of this permit or within one year of beginning a new contract, whichever is sooner;
- At a minimum, produce and disseminate informational material to inform the public and contractors working on site of proper hazardous waste collection processes. These materials should be updated and distributed as necessary throughout the duration of the permit and should be disseminated to laboratory staff;
- Distribute materials to employees which utilize information from the Keep It Clean Partnership; and
- 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;

Rationale: The Department of Commerce Boulder Laboratory's "public" primarily consists of the facility's staff workers and contractors. There is also a daycare facility on-site. The primary messages to be delivered to the facility's "public" are to be determined by the facility. Since the facility is within the city of Boulder, a logical source for outreach materials is the Boulder Keep-it-Clean-Partnership, which provides education and outreach to comply with the city of Boulder's MS4 permit. However, since much of this outreach is directed to homeowners, it may need to be supplemented appropriately. The best results will likely result from site-specific information that specifies specific practices that can be used to reduce potential pollutants in stormwater runoff directly from that site or activity. This facility encompasses a series of research laboratories. Therefore, proper management of chemicals, cleaning supplies, shipping and receiving areas, and laboratory equipment should be areas that are targeted to avoid the mobilization of pollutants generated from these activities into stormwater drainage systems.

One option for training workers and building managers is to define a facility point of contact for each site or each type of industrial activity. Establishing a point of contact who is on-site at each facility on a day-to-day basis may be a more effective way of providing training as it establishes a level of onsite accountability, and it empowers people on-site to proactively consider practices which can reduce potential pollutants from discharging to the storm drain system.

The type of training that must be provided is left open-ended. This allows the flexibility to incorporate stormwater training into other training or re-certification efforts within the facility.

Permit Conditions – Public Involvement and Participation

- Comply with applicable public notice requirements when implementing a public involvement and participation program.
- Distribute materials which discuss the stormwater management program and include the location of the annual reports and the stormwater management plan. These should be distributed to NIST/NOAA/NTIA staff and to the City of Boulder.

Rationale: It is important that the facility meet with neighboring jurisdictions to discuss concerns and/or determine areas for collaboration. Meetings with the City of Boulder are recommended for each of the minimum measures and are required as part of the planning process associated with the Post-Construction Stormwater Management in New Development and Redevelopment minimum measure. This communication is critical as the facility's stormwater infrastructure discharges directly into the Boulder MS4. For the City of Boulder to effectively manage runoff quantity and quality, it is important for them to understand the pollutant sources and anticipated quantities of runoff entering their system.

Permit Conditions – Illicit Discharge Detection and Elimination

- Continue an illicit discharge screening program, which includes an appropriate inspection schedule for Building #23, Building #21, the municipal operations yard and storm drain inlet, and Anderson Ditch as it bisects and exits the facility. This program shall address illegal dumping into the storm sewer system, and include training for staff on how to respond to reports of illicit discharges;
- Maintain an enforcement policy which effectively prohibits, 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. The enforcement policy should include a description of the range of actions to be taken by the Department of Commerce, Boulder Laboratories, in response to an illicit discharge;
- Provide a mechanism for reporting of illicit discharges and provide this number on any outreach materials as appropriate. For each of the illicit discharges identified, the permittee shall provide a brief description that outlines how that illicit discharge was identified and the procedures taken to characterize and/or eliminate the illicit discharge;
- Provide emergency spill contact information to all building managers, project managers, and tenants;
- Investigate any illicit discharge within fifteen (15) days of its detection, and take action to eliminate the source of the discharge within forty five (45) days of its detection (or obtain permission from EPA for such longer periods as may be necessary in particular instances). If illicit discharges can be determined through sampling and analysis to be allowable non-

stormwater discharges as defined in **Part 1.3.2** of the permit (e.g., groundwater, foundation drains), then elimination of the source of the discharge may not be appropriate;

- Maintain an information system which tracks dry weather screening efforts, illicit discharge reports, and the location and any remediation efforts to address identified illicit discharges;
- Conduct dry weather screening annually at each of the major outfalls for the presence of non-stormwater discharges and to determine if there are significant erosion issues which need to be addressed. If an illicit discharge is detected, an assessment of that discharge shall be made. The assessment should first be used to determine the source of the dry weather discharge and if it can be readily remedied (e.g., landscape watering). Field sampling should be used when it is not possible to eliminate a dry weather discharge. Sampling could include field tests of selected chemical parameters as indicators of discharge sources where dry weather flows are detected. Screening level tests may utilize less expensive “field test kits” using test methods not approved by EPA under 40 CFR Part 136, provided the manufacturer’s published detection ranges are adequate for the illicit discharge detection purposes; and
- Maintain a storm sewer map showing the location of all outfalls and the names and location of all surface waters that receive discharges from those outfalls, and within three years of the effective date of this permit, update the existing map of the stormwater drainage system to include all newly constructed and existing stormwater treatment structures and associated management practices within the Department of Commerce, Boulder Campus property

Rationale: With the significant number of research activities occurring at this facility, illicit discharges can be a concern. During the previous permit term, laboratory drains were evaluated for potential cross-connections between sanitary and storm sewer systems. This permit requires the continued management of an illicit discharge program focusing on public education and illicit discharge reporting and elimination. Relative to a corporate-based manufacturing environment, a research-based environment can involve less systems-based oversight. Independent researchers often have more independent authority to order supplies and equipment and retrofit and dispose of existing equipment. It is important that NIST, acting as a facility manager for several agency research facilities housed with the DoC Boulder Laboratories, can effectively communicate the importance of illicit discharge detection and elimination.

NIST completed a storm sewer map during the previous permit term. During EPA’s February 2014 inspection, it was noted that this storm sewer map did not include some newly constructed stormwater management features. It is important to note the storm sewer system as defined by this permit includes drainage swales, retention ponds, infiltration galleries, and other features designed to detain and treat stormwater runoff in addition to more traditional systems comprised of underground pipe. Therefore, this permit includes a requirement to update the existing map of the stormwater drainage system to include all newly constructed and existing stormwater treatment structures and associated management practices within the Department of Commerce, Boulder Campus property, within three years of the effective date of the permit. As part of the

permit conditions associated with the Post-Construction Stormwater Management for New Development and Redevelopment, NIST is required to retain as-built specifications which define how these feature should be managed.

Permit Conditions – Construction Site Runoff Control:

- Provide adequate direction to ensure that “representatives” of “regulated construction activities” obtain permit coverage under the NPDES General Permit for Stormwater Discharges for Construction Activity in Colorado, COR10000F (Construction General Permit). “Representatives” include entities contracted by the permittee and any staff engaging in “regulated construction activities.” For the purposes of this permit, “regulated construction activities” include development and re-development that results in a land disturbance of greater than or equal to one acre or disturbs less than one acre if the development or redevelopment is part of a larger common plan of development or sale that would disturb one acre or more. If EPA waives the permit requirements for storm water discharges associated with a specific small construction activity (i.e., a single project) in accordance with §122.26(b)(15)(i)(A) or (B), the permittee is not required to develop, implement, and/or enforce a program to reduce pollutant discharges from that particular site;
- Use an ordinance or other regulatory mechanism available under the legal authorities of the permittee 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, COR10000F (i.e., the Construction General Permit (CGP));
- Maintain a list of policies and procedures which can be used to enforce construction site compliance within the Department of Commerce, Boulder Laboratories independent of EPA staff directly enforcing the CGP;
- Review the scope of work for all construction projects to assess whether proposed Best Management Practices (e.g., sediment and erosion controls) are realistic and to ensure compliance with the stormwater construction permit requirements for developing a stormwater pollution prevention plan;
- Implement procedures for receipt and consideration of information, including complaints of construction site non-compliance, submitted by the public;
- Within one year of the effective date of this permit, define best management practices which are deemed appropriate for reducing pollutants (e.g., sediment) discharged from excavation dewatering and create procedures for the review and enforcement of the effective installation and operation of best management practices used for excavation dewatering;
- Address construction site dewatering with specific controls required and necessary testing and permits prior to awarding construction contracts;

- Maintain a site inspection form in the SWMP for use by NIST stormwater managers at sites which includes BMP maintenance specifications as required in the UDFCD Criteria Manual Volume 3;
- Inspect, at least monthly, all construction projects for compliance with the terms of the NPDES construction stormwater permit or other applicable State or local requirements. For use in inspecting individual projects, use a construction site inspection checklist or other appropriate documentation specific to the construction stormwater permit;
- For any construction projects which disturb equal to or greater than one acre of land, include compliance with stormwater regulations as part of the process for rating contract performance
- Provide herbicide/pesticide applicators with the opportunity to comment during the design review process for new construction projects to deal with returning vegetation to pre-construction conditions and eliminating weeds through intelligent design;
- Evaluate inspections performed by other EMSS staff, as applicable, and conduct oversight inspections to ensure that inspection criteria being used by these representatives are consistent with those noted in the inspection criteria provided in the inspection form in the SWMP and to ensure compliance with NIST's MS4 permit, which includes meeting the terms with the terms of EPA's Construction General Permit (CGP);
- Ensure that EMSS COTRs report all areas of significant non-compliance noted during inspections and utilize stop work orders where BMPs are not installed and maintained properly; and
- Maintain and utilize a closure process whereby environmental staff or contracting office representatives evaluate whether 70% vegetative cover has been met at all areas of the site prior to closing out construction stormwater permits;

Rationale: Construction at the DoC Boulder Laboratories is completed through contracts. It is important that contracting officers are provided adequate training to understand why construction stormwater permits are issued and how to recognize issues with structural controls prior to a storm event occurrence. As part of this process, contracting officers will understand how to document and submit findings to NIST staff. Enforcement response procedures are important to assure compliance with construction stormwater permit requirements, and the facility can likely determine the most effective mechanisms for enforcement response. These could include enforcement mechanisms such as stop-work orders and financial penalties taking into consideration the speed and cost-effectiveness of these measures within the context of the facilities administrative processes and day-to-day operations. Contracting officers are required to be trained since they have a consistent presence at construction sites and pre-defined procedures for auditing contract performance. As part of the contracting process, NIST should consider how compliance with construction stormwater regulations is recognized within the

context of federal facility contract rating systems, since most entities executing federal contracts are highly dependent on retaining quality ratings in order to secure repeat business.

During EPA's 2008 MS4 Facility Audit, construction dewatering was occurring without proper controls. Since then, several contractors have contacted the EPA Regional office to determine proper mechanisms for construction dewatering. EPA's Construction General Permit authorizes "uncontaminated excavation dewatering", but several questions arise as to what "uncontaminated" means and what are proper Best Management Practices (BMPs) for excavation dewatering. This permit reissuance includes a requirement for NIST to define BMPs and review and enforcement procedures for excavation dewatering within one year of the effective date of this permit. How these processes and procedures are defined are left to NIST to determine. Examples on how this requirement could be met include contract language, training, and facility-wide policies and procedures. Excavation dewatering BMPs should be designed with consideration of the predominant soil types and particle size distribution within the facility boundary as soils with a smaller particle size (e.g., clay soils) may not be properly settled from dewatering activities with a certain subset of BMPs (e.g., rock check dams and settling ponds). NIST may consider maintaining specific products or equipment on-site (e.g., sediment bags) to ensure that excavation dewatering activities are performed in an effective manner.

Permit Conditions – Post-Construction Stormwater Management for New Development and Redevelopment

- Include in contracts and requests for funding (e.g., a "prospective package") a requirement to design for and provide funding for the installation of permanent post construction stormwater control measures designed to retain, detain, infiltrate or treat stormwater discharge from newly developed and redeveloped sites that disturb greater than or equal to one acre of land in a manner consistent with Control Measure Design Standards. This must include a line item for costs associated with the installation and design of permanent stormwater control measures;
- As part of the design review process for newly developed and redeveloped sites disturbing equal to or greater than one acre, review contracts to ensure that they are consistent with the Control Measure Design Standards;
- For all newly developed and redeveloped sites that will disturb one acre or greater of land, meet with appropriate city, county, and/or drainage district staff to discuss recently constructed or proposed newly developed or redeveloped sites within the MS4 and how they may impact the water quality downstream;
- Within two years of the effective date of this permit, provide training to all planning staff and contracting officers to provide education on stormwater runoff, and to communicate the expectations for consistency with the Control Measure Design Standards;
- Implement a closeout procedure such that newly installed permanent post-construction

stormwater control measures can be cleaned and are in working order as designed prior to closing out contracts;

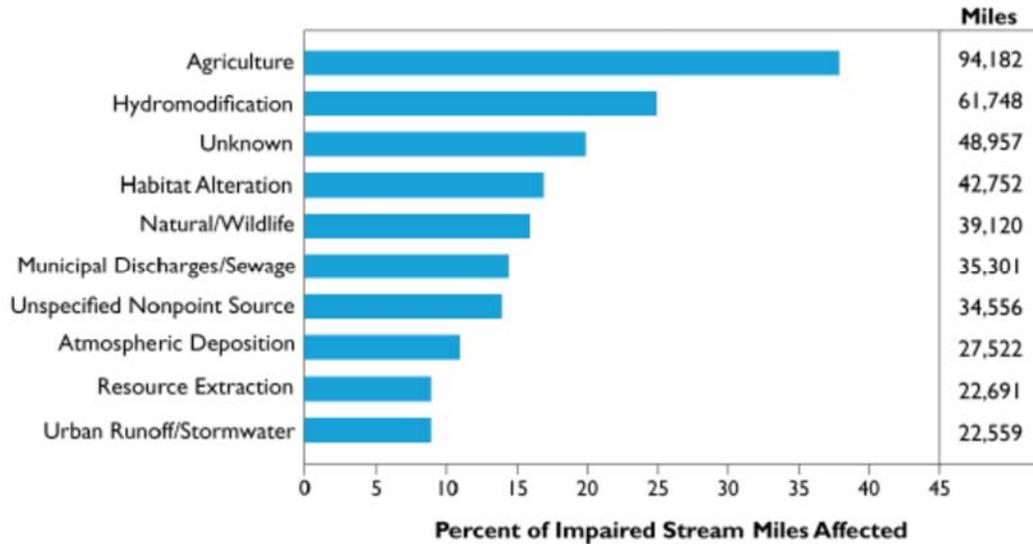
- Retain construction as-built designs and maintenance requirements for all installed Control Measures that were designed to meet the standards provided in Parts 2.6.9, 2.6.10, and 2.6.11 for the life of the Control Measures. This requirement applies to vegetative and soil management requirements, minimization of directly connected impervious areas, and other green infrastructure practices designed to meet the infiltration requirements in Part 2.6.9.2.
- Within three years of the effective date of this permit, obtain maintenance requirements and design specifications for all post-construction stormwater control measures (e.g., detention ponds, retention ponds, infiltration galleries) located) located within the exterior boundary of Department of Commerce, Boulder Laboratories. If it is not possible to obtain design specifications for a specific stormwater control measure, then presumptive specifications shall be created based on the specifications contained within the Urban Drainage and Flood Control District (UDFCD) Urban Storm Drainage Criteria Manual, Volume 3 - Best Management Practices;
- Inspect at a minimum, semi-annually, inspect all post-construction stormwater control measures (e.g., detention ponds, retention ponds, infiltration galleries) to ensure that they are being maintained in a manner which meets their intended design. This requirement applies to vegetative and soil management requirements, minimization of directly connected impervious areas, and other green infrastructure practices designed to meet the infiltration requirements.
- Control Measure Design Standards. The permittee's requirements and oversight must be implemented to address selection, installation, implementation, and maintenance of Control Measures using either the Water Quality Capture Volume Standard or the Infiltration Standard:
- Water Quality Capture Volume (WQCV) Standard: The Control Measure is designed to provide treatment and/or infiltration of 0.6" of runoff.
 - Control measures must be designed to treat or infiltrate 0.6" of runoff from all areas of the site, except the permittee may exclude the stormwater runoff from an area not to exceed the lesser of 1,000 square feet or 1% of the site when the permittee has determined that it is not practicable to capture runoff from portions of the site that will not drain towards Control Measures, and implementation of a separate Control Measure for that portion of the site is not practicable (e.g., driveway access that drains directly to the street).
 - Detention of the WQCV shall be a minimum of 12 hours, but shall be extended as needed to meet the Control Measure Design Standards of this permit. Evaluation of the minimum drain time shall be based on the pollutant removal mechanism

and functionality of the Control Measure implemented. Consideration of drain time shall include maintaining vegetation necessary for operation of the Control Measure (e.g., wetland vegetation).

or

- Infiltration Standard: The Control Measure is designed to infiltrate, through practices such as green infrastructure, 0.5” of runoff from all areas of the site, except the permittee may exclude the stormwater runoff from an area not to exceed the lesser of 1,000 square feet or 1% of the site when the permittee has determined that it is not practicable to capture runoff from portions of the site that will not drain towards Control Measures, and implementation of a separate Control Measure for that portion of the site is not practicable (e.g., driveway access that drains directly to the street).
- Additional Control Measure Requirements for Specific Industrial Activities. In addition to the Control Measure Design Standards, Control Measures such as oil and grease sand filters, secondary containment structures, and/or segregation of flows around pollutant hot spot areas shall be installed and maintained as practicable to reduce pollutants discharged from the following specific industrial activities:
 - Retail gasoline outlets and fueling areas;
 - Restaurants and food service preparation facilities;
 - Automotive service and supply stores; and
 - Vehicle maintenance facilities.
- Alternative Control Measure Design Standard. The permittee may address selection, installation, implementation, and maintenance using an Alternative Control Measure Design Standard provided that modeling or data analyses can be utilized to determine that the Alternative Control Measure Design Standard is at least as stringent in removing pollutants in stormwater runoff as the Control Measure Design Standard. The permittee retains the burden of proof in making a determination of equivalency.

Rationale: The discharges of post-construction discharges are recognized nationally as a significant source of pollutants to Waters of the U.S. This is quantified through EPA’s National Water Quality Inventory Report to Congress, which is publicly available through the EPA web site at www.epa.gov/305b. The latest version of this report summarizes water quality data collected through 2004 and was published in January, 2009 (EPA Document Reference Number 20460 EPA 841-R-08-001). In this latest assessment of water quality, stormwater runoff from can be specifically characterized as a source of impairment in nearly 10% of the rivers and streams assessed nationally.



Source: EPA's National Water Quality Inventory Report to Congress, January, 2009
 EPA Document Reference Number: 20460 EPA 841-R-08-001

This assessment that stormwater runoff is a cause of impairment of nearly 10% of the rivers and streams nationwide is likely an underestimate, however, as urban runoff causes impacts such as hydromodification and habitat alteration which are designated as a separate source of impairment and not specifically linked to urban runoff/stormwater.

The purpose of designing control measures based on the Water Quality Capture Volume (WQCV) is to improve discharge water quality and to reduce instream impacts such as hydromodification and streambank de-stabilization. Capturing and detaining the WQCV reduces these impacts through storage, infiltration, vegetative/soil sequestration, evapotranspiration or a combination of these processes. The Water Quality Capture Volume is not a static number as it is based on rainfall data on storm event frequency which is continually updated. However as a reference point, within the exterior boundary of the DoC Boulder Laboratories campus at the time of this permit issuance, the WQCV corresponds to 0.6 inches of precipitation.

The WQCV was selected as basis for a detention standard as it has been utilized widely as an effective management tool for the semi-arid Intermountain West. It is currently utilized as a detention standard in the neighboring cities of Denver and Boulder and has been proposed as the design standard in the 2014 reissuance of the Colorado Statewide Small Municipal Separate Storm Sewer permit (available as part of the Administrative Record for this permit).

Analysis of 36 years of data at the Denver Stapleton Rain Gauge conducted by the Urban Drainage and Flood Control District was utilized to develop this standard and is documented in *Sizing a Capture Volume for Stormwater Quality Enhancement* (available at www.udfcd.org) and as part of the Administrative Record for this permit.

(Urbonas, B., J. Guo, and L.S. Tucker. 1989 updated 1990. *Sizing Capture Volume for Storm Water Quality Enhancement*. Flood Hazard News. Urban Drainage and Flood Control District)

The WQCV is not meant to capture the runoff from all storm events. Urbonas et al. (1989) identified the runoff produced from a precipitation event of 0.6 inches as the target for the WQCV, corresponding to the 80th percentile storm event. Urbonas et al. (1989) concluded that if the volume of runoff produced from impervious areas from these storms can be effectively treated and detained, water quality can be significantly improved. This is consistent with the findings from “*Urban Stormwater Management in the United States, a Report of the National Research Council, 2008*”, which notes the following related to Stormwater Control Measures (SCMs):

“SCMs that harvest, infiltrate, and evapotranspire stormwater are critical to reducing the volume and pollutant loading of small storms. Urban municipal separate stormwater conveyance systems have been designed for flood control to protect life and property from extreme rainfall events, but they have generally failed to address the more frequent rain events (<2.5 cm) that are key to recharge and baseflow in most areas. These small storms may only generate runoff from paved areas and transport the “first flush” of contaminants. SCMs designed to remove this class of storms from surface runoff (runoff-volume-reduction SCMs— rainwater harvesting, vegetated, and subsurface) can also help address larger watershed flooding issues.”

An infiltration standard is provided as an alternative to treating the Water Quality Capture Volume. This standard could also be referred to as a “Green Infrastructure” standard. This standard requires that the control measures are designed to infiltrate, through practices such as green infrastructure, 0.5” of runoff from all areas of the site. This standard is less than the 0.6” WQCV in an effort to encourage the use of green infrastructure practices and to encourage as a whole, better site design, conservation of natural areas, and watershed land-use planning. This is consistent with the findings from “*Urban Stormwater Management in the United States, a Report of the National Research Council, 2008*”, which summarizes the following related to Stormwater Control Measures (SCMs):

“Nonstructural SCMs such as product substitution, better site design, downspout disconnection, conservation of natural areas, and watershed and land-use planning can dramatically reduce the volume of runoff and pollutant load from a new development. **Such SCMs should be considered first before structural practices.** For example, lead concentrations in stormwater have been reduced by at least a factor of 4 after the removal of lead from gasoline. **Not creating impervious surfaces or removing a contaminant from the runoff stream simplifies and reduces the reliance on structural SCMs.**”
[Emphasis added]

The Report, “Urban Stormwater Management in the United States, a Report of the National Research Council, 2008”, is available through the EPA web site (www.epa.gov), and can be requested by contacting the EPA Region 8 office. The summary of this report as referenced in this Statement of Basis is included in the Administrative Record for this permit.

Post-construction controls are required on all newly developed and redeveloped sites that disturb one acre or greater of land. There have been a considerable number of construction projects at

this facility since receiving MS4 permit coverage in 2003. These construction activities were largely focused on infrastructure upgrades and the construction of a new facility for the National Oceanic and Atmospheric Administration. It is possible that, outside of training requirements, there may be long periods of time where there will be no newly developed or redeveloped sites being planned. Therefore, staff at NIST are encouraged to work with EPA, Boulder, and local flood control districts (e.g., Urban Drainage & Flood Control District) when planning for new projects arises. These entities can provide further input related to how new proposals can be designed and what types of controls can be installed and how they can be more effectively maintained. NIST is encouraged to reach out to these entities for advice or to provide training on their behalf throughout the permit cycle.

This permit allows for the utilization of an Alternative Control Measure Design Standard. NIST may choose to incorporate more stringent modeling techniques (e.g., EPA's SWMM model) in an attempt to include pollutant control technologies more specifically tailored to unique site conditions. An Alternative Control Measure Design Standard may be utilized if it can be determined that it is as stringent in removing pollutants in stormwater runoff as the Control Measure Design Standard prescribed in the permit.

In addition to the Control Measure Design Standards, Control Measures such as oil and grease sand filters, secondary containment structures, and/or segregation of flows around pollutant hot spot areas are required to be installed and maintained as practicable to reduce pollutants discharged from retail gasoline outlets and fueling areas, restaurants and food service preparation facilities, automotive service supply stores, and vehicle maintenance facilities. These types of facilities are largely excluded from permitting requirements but have been recognized as contributors of pollutants in stormwater discharges. Waste or washwater generated by the food service industry often contains materials such as food wastes, oil, grease, detergents, and degreasers. Oil and gas spilled onto paved areas are easily washed away by water, either from hoses or rainfall. Sources of pollutants generated at retail gasoline outlets, vehicle service supply stores, and vehicle maintenance areas include leaked or spilled oil, grease, engine and brake residues, and antifreeze. Pollutants from these sources include copper and brass from engine degreasers; lead, oil, and grease from radiator flushing; oil, grease, and detergents from car washing; aluminum and iron from engine washing; and copper, lead, zinc, and cadmium from tires and brakes. Several strategies may be useful for reducing pollutants from these sources are required to be installed on newly developed or redeveloped sites as practicable. These may include non-structural control measures such as operational requirements to conduct certain activities indoors, under cover, or under specific controlled conditions. Non-structural control measures can be used to meet this requirement provided that they are incorporated into the facility's Stormwater Management Program.

Permit Conditions – Pollution Prevention and Good Housekeeping for Municipal Operations:

- Provide annual training for public education and outreach for 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;

- Develop and implement SOPs for the vehicle maintenance facility, municipal yard, and operations such as deicing which includes locations of potential pollutant sources and appropriate inspection locations and schedules;
- Provide outreach to laboratory employees on appropriate disposal practices for hazardous wastes, nonhazardous wastes, refrigerants, and large items such as laboratory equipment;
- Conduct an annual snow meeting each fall to discuss strategies to prevent the misuse and over-application of chemical deicers;
- Develop and implement a schedule for cleanout of storm sewer inlets in a manner which 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;
- Develop and implement a schedule for sweeping streets in a manner which 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; and
- Maintain an inspection protocol using new or existing tools for tracking inspections at municipal operations.

Rationale: Municipal operations can be a significant source of pollutants in stormwater runoff, especially when uncontrolled. Potential pollutant sources observed during EPA's 2008 MS4 Program Audit included sediment from construction activities and excavation dewatering, oil based contaminants from fueling and storage activities, salt from de-icing materials usage and storage, used chemicals and refrigerants from disposed equipment awaiting disposal, herbicides and pesticides from grounds maintenance, and temporary storage of hazardous wastes. The installation and maintenance of control measures for these areas and activities is a critical step to managing an effective stormwater program.

Public Notice

[INSERT INFORMATION ABOUT PUBLIC NOTICE AND COMMENTS RECEIVED]

Administrative Record

The administrative record for this permit may be obtained upon request by contacting Greg Davis at 303-312-6314 or by writing or E-mailing to the address listed below:

Greg Davis
Mailcode: 8P-W-WW
1595 Wynkoop Street
Denver, CO 80202-1129
303-312-6371
davis.gregory@epa.gov

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Wastewater Unit
EPA Region 8
Drafted: June 11, 2014