UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE
DALLAS, TEXAS 75202-2733

NPDES PERMIT NO. NMS000101
FACT SHEET

FOR THE DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT FOR THE ALBUQUERQUE MUNICIPAL SEPARATE STORM SEWER SYSTEM TO DISCHARGE TO WATERS OF THE UNITED STATES

1. NOTICE OF INTENT TO ISSUE A PERMIT. The Environmental Protection Agency (EPA) has made a tentative determination to re-issue a permit for the discharge of stormwater from the Municipal Separate Storm Sewer System (MS4) described in the application. Permit requirements are based on the Clean Water Act (33 U.S.C. 1251 *et seq.),* hereafter referred to as the Act, and NPDES regulations (40 CFR Parts 122 and 124 and 126 and 134).

2. PERMITTING AUTHORITY. The NPDES permitting authority is: U.S. Environmental Protection Agency, Region 6, Permits Branch, 1445 Ross Avenue, Dallas, Texas 75202-2733.

3. APPLICANTS. The Applicants are:

City of Albuquerque
P.O. Box 1293
Public Works Department
Albuquerque, NM 87103

Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA)
2600 Prospect NE
Albuquerque, NM 87107

New Mexico Department of Transportation (NMDOT)
District III
P.O. Box 91750
Albuquerque, NM 87199-1750

University of New Mexico
Department of Safety, Health and Environmental Affairs
1801 Tucker Street N.E.
Albuquerque, NM 87131

Municipal entities other than the applicants may own or operate portions of the Albuquerque Municipal Separate Sewer System. The Agency proposes to include such owner operators as co-permittees in the final permit provided (1) the applicants identified above agree to accept the owner/operator as a co-permittee and provide an agreement in principle to be co-permittees; (2) the affected parties commit to expeditious schedules to complete inter-jurisdictional agreements;

and (3) the owner/operators to be added as co-permittees commit to providing Stormwater Management Programs (SWMPs) for their portions of the MS4 (subject to appropriate schedules for program implementation and augmentation) within one year of the issuance of the Agency's final permit decision.

4. PERMIT WRITER. The permit writer is: Suzanna M. Perea, NPDES Permits and Technical Section (6WQ-PP).

5. PUBLIC NOTICE AND COMMENT PERIOD. Upon publication of the public notice, a sixty (60) day public comment period shall begin. During this period, any interested persons may submit written comments on the draft permit to the EPA point of contact listed below. During this time, a public hearing may also be requested in accordance with the provisions of 40 CFR 124.11 and a decision on whether to grant the request will be made in accordance with 40 CFR 124.12. As provided by 40 CFR 124.13, all persons wishing to raise issues and provide information on the appropriateness of the permit must do so during the public comment period.

Comments on the proposed permit should reference Permit No. NMS000101 and be sent to EPA Region 6, Water Quality Protection Division, Attn: Ms. Diane Smith, (6WQ-NP), 1445 Ross Avenue, Suite 1200, Dallas, Texas 75202-2733. Comments may also be submitted in electronic format (MS Word or ASCII Text formats only, avoiding use of special characters) to: the above address or via e-mail to smith.diane@epa.gov .

6. PUBLIC MEETING ON PROPOSED PERMIT. EPA Region 6 will be holding an informal public meeting which will include a presentation on the proposed general permits and a question and answer session. Informal public meetings accommodate group discussion and question and answer sessions and appear to be more valuable than formalized public hearings in helping the public understand a proposed permit and in identifying the issues of concern. Written, but not oral, comments for the administrative record will be accepted at the public meeting. Written comments generated from what was learned at a public meeting (or from discussion with someone who did attend) can be submitted any time up to the end of the comment period. Notice of this public meeting was originally made in the Albuquerque Journal on May 8, 2010.

Albuquerque, NM – **June 21, 2010 at 7:00 pm**
Central New Mexico Community College (CNM) Workforce Training Center
Conference Rooms 101 & 103
5600 Eagle Rock Ave, NE
Albuquerque, NM 87113

7. REQUESTS FOR A PUBLIC HEARING. Interested persons may also request a public hearing pursuant to 40 CFR 124.11 concerning the proposed permit. Requests for a public hearing must be sent or delivered in writing to the same address for comments prior to the close of the comment period. Requests for a public hearing must state the nature of the issues proposed to be raised in the hearing. Pursuant to 40 CFR 124.12, the Regional Administrator will hold a public hearing if he finds, on the basis of requests, a significant degree of public

interest in the proposed permit(s). If the Regional Administrator decides to hold a public hearing, a public notice of the date, time and place of the hearing will be made at least 30 days prior to the hearing. Any person may provide written or oral statements and data pertaining to the proposed permit at the public hearing.

8. EPA POINT OF CONTACT. For additional information about the permit, please contact Ms. Diane Smith as provided in Section 5 above.

9. DESCRIPTION OF THE MUNICIPAL SEPARATE STORM SEWER SYSTEM. As authorized by Section 402(p) of the Act, this permit is being proposed on a system basis. This permit covers all areas within the corporate boundary of the City of Albuquerque served by, or otherwise contributing to discharges from MS4s owned or operated by the applicants listed above. The City of Albuquerque storm drainage system consists of underground storm sewers and inlets, lined and unlined open channels, natural arroyos, detention basins and flood control dams. Several of the open channels also intercept and reroute natural drainage features originating outside the city of Albuquerque. The system is operated primarily by the City of Albuquerque and Albuquerque Metropolitan Control District (AMAFCA). This system is comprised of several large basins, briefly described below:

- The North Diversion and South Diversion Channels are two of the main conveyances of stormwater that enter the Middle Rio Grande. These channels intercept runoff from the mountains, municipal Albuquerque, areas east of the city, and the East Mesa and convey it to the Rio Grande.

- The North Diversion Channel is the largest of the urban basins in the stormwater conveyance system, with a drainage area of approximately 92 square miles, with 55 square miles in the MS4. The basin extends on the east side of the City, from the Sandia Pueblo on the north, to Gibson Boulevard on the south, and from Interstate 25 on the west to the Sandia Mountain foothills on the east. The channel is concrete lined, except for approximately one-half mile of the outfall where there is a wide, unlined area with a combination of upland and riparian wetland vegetation. This channel drains to the Rio Grande near the north city limits, into the Pueblo of Sandia waters.

- The South Diversion Channel has a drainage area of approximately 11 square miles; the channel is mostly unlined, with rip-rap sides. The South Diversion Channel drains to the Tijeras Arroyo and then to the Rio Grande. The drainage is on the east side of Albuquerque and is south of Central Avenue and mostly east of Interstate 25.

- San Jose drain is in the southeastern area of the MS4 and is approximately 2 square miles in size. The area drains via pipes to the San Jose Drain, then continues south in the unlined San Jose drain channel approximately 2.5 miles to the Rio Grande.

- Albuquerque Lift Stations at Alcalde and Barelas are located on the east side of the City and drain a combined area of approximately 3.8 square miles. This drainage basin is entirely drained by pumping. The pumps discharge directly to the Rio Grande.

- Mariposa Diversion of San Antonio Arroyo basin is on the west side of Albuquerque. It drains approximately 18 square miles, with 15 square miles within the City. Most of the channel system is unlined with rip-rap sides.

Eight additional drainages contribute stormwater runoff to the Rio Grande: Southwest Area; North Valley Area; South Tramway Area; Northwest Area; North Floodway Area; San Jose Area; and South Diversion Area. They drain an additional 150 square miles, of which 52 square miles are within city limits.

New Mexico Department of Transportation (NMDOT) owns, operates and maintains the storm sewer system that conveys runoff from NMDOT right-of way within the City of Albuquerque. The drainage system is typically composed of culverts, bridges, storm sewers, open ditches, and detention ponds.

The University of New Mexico (UNM) operates storm sewer systems for three campuses: Main Campus, North Campus and South Campus.

- The Main Campus is bounded on the north by Lomas Boulevard; on the east by Girard Avenue N.E; on the south by Central Avenue N.E; and on the west by University Boulevard N.E.

- The North Campus is bounded on the north by Indian School Road, N.E; on the east by Stanford Drive N.E; on the south by Lomas Boulevard N.E; and on the west by University Boulevard, N.E.

- The South Campus is bounded on the north by the Albuquerque Public Schools and Albuquerque TVI; on the east by Buena Vista Drive N.E.; on the south by private properties; and on the west by Interstate 25, a state highway.

- The storm sewer systems from all three campuses discharge to Albuquerque's storm drain system, the North Diversion Channel and the South Diversion Channel.

10. EFFECTIVE DATES. The permit and the authorization to discharge will be effective on a date to be set in the final permit decision and will expire the earlier of (a) ninety (90) days following the effective date of a watershed-based permit for the regulated Middle Rio Grande MS4s in the Albuquerque area or (b) five (5) years from the effective date of the permit. EPA Region 6 currently plans to develop a watershed-based permit for both the Phase I and Phase II MS4s in the Albuquerque area over the next three to five years. Once this future permit has gone through the public review and comment process and then been issued, permittees under today's proposed permit would need to transfer coverage to that permit. Compliance with permit conditions of today's proposed permit would be required thirty (30) days from the issuance of the permit, except as specified in the Part VI schedules; and SWMP conditions in Part I.C. To minimize disruption of SWMP implementation by the permittees of today's proposed permit, EPA anticipates accommodating, to the extent practicable, schedules established in this permit in the anticipated watershed-based permit and would not expect acceleration of schedules should transfer to a watershed permit be required in less than five years.

11. DISCHARGES AUTHORIZED BY THIS PERMIT.

a. Discharges Authorized. This permit authorizes all existing or new stormwater point source discharges to waters of the United States from the MS4 except as described in 11b below. The permit also authorizes certain non-stormwater discharges that are not treated as illicit discharges. The list of allowable non-stormwater discharges and permit conditions to minimize the discharge of pollutants associated with these sources are found in Parts I.A.3 and I.C.2 of the permit.

b. Discharges Not Authorized. The discharges listed below are not authorized by this permit. A point source operator discharging pollutants without an NPDES permit is liable for violating Section 301 of the Act. Federal regulation 40 CFR 122.21 requires any facility operator who discharges pollutants to apply for and obtain NPDES permit coverage. This permit does not preempt the statute and regulations, nor transfer these responsibilities and liabilities to the MS4 permittees.

i. Non-storm water. Non-stormwater discharges are not authorized by this permit. The applicants are responsible for development and implementation of a Stormwater Management Program (SWMP) that effectively prohibits non-stormwater into the storm sewer system, and controls pollutants being discharged from the system. Categories of non-stormwater discharges listed in 40 CFR 122.26(d)(2)(iv)(B)(1) and identified in Part I.A.3 of the permit, need not be addressed as illicit discharges unless they are determined to be significant contributors of pollutants to the MS4 or cause a violation of water quality standards. For a discharge determined by the Permittee, EPA or NMED as a significant contributor of pollutants or causing a water quality standards violation, the permittee is required to use its legal authorities to prohibit any individual discharge that contributes significant amounts of pollutants to the MS4, regardless of the discharge's exempt category status.

ii. Discharges requiring separate NPDES permits. This permit does not authorize the discharge of process wastewater, non-process wastewater, or stormwater associated with industrial activity unless such discharges are authorized under separate NPDES permits. This includes individual or general NPDES permits.

There are differences between the statutory requirements for MS4 and Stormwater Associated with Industrial Activity discharge permits. Section 402(p)(3)(B)(ii) of the Clean Water Act (Act) requires an effective prohibition on non-stormwater discharges to a MS4. In contrast, Section 301(b) of the Act requires stormwater associated with industrial activity to meet compliance with treatment technology (BPT – Best Practical Control Technology Currently Available, BAT – Best Available Technology Economically Achievable for non-conventional and toxic pollutants and BCT – Best Conventional Control Technology for conventional pollutants). Because of this difference, stormwater discharges associated with industrial activity are not authorized by this permit and require a separate NPDES permit.

iii. Spills. This permit does not authorize discharges of material resulting from a spill. Part I.C.2 of the permit requires the permittee to maintain the necessary legal authority to control the discharge of spills to the MS4. If discharges from a spill are necessary to prevent imminent threat to human life, personal injury, or severe property damage, the applicants have the responsibility to take (or insure the party responsible for the spill takes) reasonable and prudent measures to minimize the impact of discharges on human health and the environment.

Section 107 of the Comprehensive Environmental Response, Compensation, and Liability Act states that owner/operators, disposer/treater, and transporters of hazardous substances are liable for all costs and damages (including destruction of natural resources) resulting from a release of the substance. A point source operator discharging pollutants without an NPDES permit is liable for violating Section 301 of the Clean Water Act. Federal regulation 40 CFR 122.21 requires any facility operator who discharges pollutants to apply for and obtain NPDES permit coverage. Permittees who discharge pollutants in violation of their individual permit are subject to enforcement. Region 6 does not intend the subject MS4 permit to preempt these statutes and regulations, nor transfer these responsibilities and liabilities to the MS4 permittees. The permittees are responsible for implementation of a comprehensive Stormwater Management Program that effectively prohibits non-stormwater into the storm sewer system, and controls pollutants being discharged from the system.

12. BASIS FOR PERMIT CONDITIONS AND GOALS.

a. Statutory basis for permit conditions. As authorized by the Clean Water Act (Act) §402(p)(3)(B)(i), this permit is being proposed on a system-wide basis. This permit covers all areas within the City of Albuquerque owned and operated by the permittees that are designed to collect and convey stormwater, and that are not part of a publicly owned treatment works (POTW). The discharge control conditions established by this permit are based on Section 402(p)(3)(B) of the Act which mandates that a permit for discharges from MS4s must effectively prohibit the discharge of non-stormwater to the MS4; and require controls to reduce pollutants in discharges from the MS4 to the maximum extent practicable (MEP) including best management practices (BMPs), control techniques, and system, design and engineering methods, and such other provisions as the Administrator deems appropriate for the control of pollutants. MEP is the statutory standard that established the level of pollutant reductions that MS4 operators must achieve. The overall intent of the permit conditions is to support the statutory goals of Section 101 of the Act to restore and maintain the chemical, physical and biological integrity for the Nation's waters.

As authorized by 40 CFR 122.44(k), the permit utilizes controls in the form of a comprehensive SWMP, as the mechanism to implement the statutory requirements. Section 402(p)(3)(B)(iii) of the Act clearly includes structural controls as a component of the MEP requirement. EPA encourages permittees to explore opportunities for pollution prevention measures, while reserving the more costly structural controls for higher priority watersheds, or where pollution prevention measures are unfeasible or ineffective. The proposed permit is consistent with EPA's memorandum titled "Interim Permitting Approach for Water Quality Based Effluent Limitations

in Storm Water Permits," (EPA, 8/1/96). The memorandum explains the rationale being implemented for the draft permit. As described in the memorandum, the Clean Water Act (Act) does not always require numeric effluent limitations to meet technology and water quality requirements. Section 502 defines "effluent limitations" to mean any restriction on quantities, rates and concentrations of constituents discharged from point sources. EPA has through regulation, interpreted the statute to allow non-numerical limitations to supplement or replace numeric limitations in specific instances that meet the criteria at 40 CFR §122.44(k). This is consistent with the court's decision in NRDC v. Costle, 568 F.2d 1369 (D.C. Cir. 1977), in which the court held that EPA need not establish numeric effluent limitations where such limitations were infeasible.

b. Regulatory basis for permit conditions. As a result of the statutory requirements of the Act, the EPA promulgated the MS4 Permit application regulations, 40 CFR 122.26(d) and 40 CFR 122.34. These regulations describe the permit application requirements for operators of MS4s.

In 1990, EPA promulgated regulations at 40 CFR §122.26(d), that established permit application requirements for so-called Large and Medium MS4s that served populations of over 100,000. The Permittee submitted a two-part application as was required. Part 1 of the application required information regarding existing stormwater management programs, the means available to the municipality to control pollutants, and field screening analysis of major outfalls to detect illicit connections. Part 2 of the application required collection of a limited amount of representative quantitative data and a description of the applicant's proposed SWMP. The conditions included in the previous permit were based on the SWMP described in the Part 2 application, along with new program elements required by the NPDES regulations.

EPA published an *Interpretive Policy Memorandum on Reapplication Requirements for Municipal Separate Storm Sewer Systems* (the Policy) (Federal Register/Vol.61, No. 155/Friday, August 9, 1996, page 41698). The Policy states initial applications provided comprehensive information, which was used to create the first term MS4 permits and laid the foundation for the long term implementation of MS4 SWMPs. The Policy states reapplications should "focus on maintenance and improvement of these programs" and therefore, "first-term permit application requirements are unnecessary for purposes of the second round MS4 permit application."

Program areas incorporated into the initial Albuquerque MS4 permit were based on the 1990 Phase I permit application requirements at 40 CFR 122.26(d). Since both Phase I and Phase II MS4s are subject to the same MEP standard of the Act, EPA Region 6 also took into consideration the 1999 Phase II MS4 permit requirements at 40 CFR 122.34, which set a floor for MEP for small MS4s, which include municipalities much smaller than the permittees of today's permit. For the most part, the Six Minimum Measures at 40 CFR 122.34 correspond to existing program elements in the initial Albuquerque MS4 permit, with additional details on minimum requirements and the addition of a specific requirement for pollution prevention/good housekeeping at municipal operations. Phase II minimum permit requirements have been incorporated into today's permit to ensure that the MEP level of effort expected of Albuquerque, a Phase I large municipal separate storm sewer system, is no less than that required of small Phase II MS4s.

c. Discharge goals. The goal of the permit is for implementation of the SWMP and other permit conditions to provide a reasonable assurance that the permitted activity will be conducted in a manner which will not violate applicable Water Quality Management Plan and Water Quality Standards, including but not limited to the following:

No discharge of toxics in toxic amounts. It is the National Policy that the discharge of toxics in toxic amounts be prohibited (Section 101(a)(3) of the Act). The State of New Mexico Standards for Interstate and Intrastate Surface Waters (20.6.4.13 F.) state that "Surface waters of the State shall be free of toxic pollutants from other than natural causes in amounts, concentrations or combinations that affect the propagation of fish or that are toxic to humans, livestock or other animals, fish or other aquatic organisms, wildlife using aquatic environments for habitation or aquatic organisms for food, or that will or can be reasonably expected to bio-accumulate in tissues of fish, shellfish, and other aquatic organisms to levels that will impair the health of aquatic organisms or wildlife or result in unacceptable tastes, odor or health risks to human consumers of aquatic organisms." The Pueblo of Sandia Water Quality Standards (Section III.O) state that "Toxic substances shall not be present in receiving waters in quantities that are toxic to human, animal, plant, or aquatic life, or in quantities that interfere with the normal propagation, growth, and survival of the sensitive indigenous aquatic biota." Similarly, the Pueblo of Isleta Water Quality Standards (Section III.N) state that "Toxic substances shall not be present in surface waters in quantities that are toxic to human, animal, plant, or aquatic life, or in quantities that interfere with the normal propagation, growth, and survival of the sensitive indigenous aquatic biota."

No discharge of pollutants in quantities that would cause a violation of State or Tribal water quality standards. Section 301(b)(1)(C) of the Act and 40 CFR 122.44(d) require that NPDES permits include "...any more stringent limitations, including those necessary to meet water quality standards, treatment standards, or schedule of compliance, established pursuant to State law or regulations..." .

No discharge of floatable debris, oils, scum, foam, or grease in other than trace amounts. The State of New Mexico Standards for Interstate and Intrastate Surface Waters (20.6.4.13 B) states that "Surface waters of the State shall be free of oils, scum, grease and other floating materials resulting from other than natural causes that would cause the formation of a visible sheen or visible deposits on the bottom or shoreline, or would damage or impair the normal growth, function or reproduction of human, animal, plant or aquatic life." The Pueblo of Sandia Water Quality Standards (proposed January 2008), Section III.B, state that "Surface waters shall be free from objectionable oils, scum, foam, grease, and other floating materials and suspended substances resulting from other than natural causes (including visible films of oil, globules of oil, grease, or solids in or on the water, stream bottom or coatings on stream banks or that would damage or impair the normal growth, function or reproduction of wildlife, plant or aquatic life)." Similarly, the Pueblo of Isleta Water Quality Standards (Section III.B) state that "Surface waters shall be free from objectionable oils, scum, foam, grease, and other floating materials and suspended substances of a persistent nature resulting from other than natural causes (including visible films of oil, globules of oil, grease, or solids in or on the water, or coatings on stream or lake banks)."

No discharge of non-stormwater from the municipal separate storm sewer system, except in accordance with Part I.A.3. Permits issued to MS4s are specifically required by Section 402(p)(3)(B) of the Act to "...include a requirement to effectively prohibit non-stormwater discharges into the storm sewers..." The regulation (40 CFR 122.26(d)(2)(iv)(B)(1)) allows the permittee to accept certain non-stormwater discharges where they have not been identified as significant sources of pollutants. Any discharge subject to its own NPDES permit is not subject to the prohibition on non-stormwater.

No degradation or loss of State or Tribal -designated uses of receiving waters as a result of stormwater discharges from the municipal separate storm sewer (unless authorized in accordance with the State or Tribal Antidegradation Policy). The State of New Mexico and the Pueblos of Isleta and Sandia have adopted Antidegradation Policies and Implementation Plans as part of their Water Quality Standards which provide for maintenance of existing in-stream water uses; existing water quality levels where existing water quality exceeds the levels necessary to support propagation of fish, shellfish, and wildlife, and recreation in and on the water (except where the State or Tribe has determined that lowering water quality is necessary to accommodate important economic or social development in the area where the waters are located); existing water quality where high quality waters constitute an outstanding national or tribal resource (e.g. waters of National and State parks and wildlife refuges or exceptional recreational or ecological significance); and compliance with Section 316 of the Act where potential water quality impairment is associated with a thermal discharge.

13. SYSTEM DISCHARGE MONITORING DATA AND RECEIVING WATER ISSUES.

a. General. Albuquerque is located in Bernalillo County, New Mexico. Historical (1914 - July, 2000) monthly mean precipitation during the annual monsoon rain season from May to September ranges from 0.64 inches in June to 1.5 inches in August. Annual mean precipitation in the area is 8.62 inches.

b. **Receiving Water Quality**.

i. Stormwater discharges from the Albuquerque MS4 are made to Segment No. 20.6.4.105 and 20.6.4.106 in the Middle Rio Grande Basin. These segments are described in the State of New Mexico Standards for Interstate and Intrastate Surface Waters as follows:

Segment 20.6.4.105: The main stem of the Rio Grande from the headwaters of Elephant Butte Reservoir upstream to Alameda Bridge (Corrales Bridge), and intermittent flow below the perennial reaches of the Rio Puerco that enters the main stem of the Rio Grande.

Segment 20.6.4.106: The main stem of the Rio Grande from Alameda Bridge (Corrales Bridge) upstream to the Angostura Diversion Works and intermittent water in the Jemez River below the Jemez Pueblo boundary that enters the main stem of the Rio Grande.

Designated uses of these segments, according to State of New Mexico, Pueblo of Sandia, and Pueblo of Isleta water quality standards are provided in Table 1.

Table 1: Designated Uses of Receiving Waters

State of New Mexico designated uses	**Pueblo of Sandia designated uses**	**Pueblo of Isleta designated uses**
Irrigation Marginal Warmwater Aquatic Life Livestock Watering Wildlife Habitat Secondary Contact	Warmwater Aquatic Life/ Fishery Use Coolwater Aquatic Life/Fishery Use Primary Contact Ceremonial Use Primary Contact Recreational Use Secondary Contact Recreational Use Agricultural Water Supply Use Industrial Water Supply Use Domestic Water Supply Use Wildlife Habitat Use	Warmwater Fishery Primary Contact Ceremonial Primary Contact Recreational Agricultural Water Supply Industrial Water Supply

i. **Clean Water Act § 303 (d) List**. Section 303(d) of the federal Clean Water Act requires each state to identify surface waters within its boundaries that are not meeting, or expected to meet, water quality standards. Section 303 further requires the states to prioritize their listed waters for development of a Total Maximum Daily Load (TMDL). A TMDL can be best described as a water body, watershed or basin-wide budget for pollutant influx to a watercourse.

The 2008-2010 *"State of New Mexico § 303(d)/ § 305(b) Integrated Report"* (the Integrated Report), lists the Rio Grande Segment No. 20.6.4.105 (the Isleta Pueblo boundary to the Alameda Bridge) as impaired for the designated uses of marginal warmwater aquatic life and secondary contact with probable causes of impairment from *E. coli*. The impairment for fecal coliform changes to an impairment for *E. coli* based on changes in the 2005 triennial review of the NMWQS.

The Rio Grande Segment No. 20.6.4.106, including non-pueblo waters from the Alameda Bridge upstream to the Angostura Diversion, is listed in the 2008-2010 Integrated Report as impaired for the designated uses of marginal warmwater aquatic life and secondary contact with probable causes of impairment from *E. coli*, and toxicity. The impairment for fecal coliform changes to an impairment for *E. coli* based on changes in the 2005 triennial review of the NMWQS.

The New Mexico Surface Water Bureau proposed listing portions of the MS4 receiving waters with Segments 20.46.4.105 and 106 for dissolved oxygen impairment. EPA denied listing via its February 13, 2009 Record of Decision.

ii. **Fish Kill**. In June 2004, the North Diversion Channel, approximately 700 meters west of the 4th Street Bridge, experienced a fish kill. USGS-BRD-Yankton Field Research Station personnel were engaged in toxicity testing when the fish kill was encountered. Dissolved oxygen, measured previously by the USGS-BRD along an identical transect, vertically as well a longitudinally, at levels averaging 4 to 5 mg/L, was found at levels <1 mg/L (personal communication) concurrent to the fish kill. Measurements of dissolved oxygen in the middle Rio Grande at this time reportedly were above 6 mg/L. The fish kill is the second in known history in this vicinity, with the prior occurrence in 1989. It should be noted that no endangered silvery minnows were found in association with the 2004 incident. An investigation by AMAFCA regarding the oxygen levels in the North Diversion Channel and ways to address the problem is ongoing and results will be reported under the permit as a permit condition. The dissolved oxygen investigation and responses required by the proposed permit supports efforts to address municipal storm water discharge contributions to low in-stream dissolved oxygen levels.

A 2009 study of dissolved oxygen in the North Diversion Channel by the permittees indicated the stormwater itself was generally high in Dissolved Oxygen, typically greater than 5.5 mg/l. One theory regarding the dissolved oxygen sags in the Rio Grande was that stagnation was occurring during periods of low flow in one or more pools near the confluence with the Rio Grande, and subsequent storms pushed this stagnant water into the River. Following the 2004 fish kill, the permittees added structural controls to improve circulation and route low (<50cfs) flows to the Alameda Drain to help avoid the conditions than may have been responsible for the 2004 fish kill.

iii. **Fish Consumption Advisory**. In February 2009, the New Mexico Department of Game and Fish, the New Mexico Department of Health, and the New Mexico Environment Department jointly issued a fish consumption advisory limiting the consumption of channel catfish and white bass taken from the Rio Grande between Interstate 25 and US Highway 550 due to PCB levels in fish tissue. More information on the Advisory is available at: http://www.nmenv.state.nm.us/swqb/advisories/ .

c. Monitoring Data. The discharges from the MS4 consist of surface runoff (non-stormwater and stormwater) and groundwater from various land uses in drainage basins within the Albuquerque area. The quality and quantity of these discharges vary considerably and are affected by the hydrology, geology, land use characteristics of the watersheds, seasonal weather patterns, and frequency and duration of storm events.

The City of Albuquerque collected extensive monitoring data before and during the prior permit term. The five discharge points monitored for the prior permit were intended to provide representative data on the quality of discharges from the Albuquerque MS4 as a whole. Parameters sampled are EPA's priority pollutants; including conventional, non-conventional, organic toxics, and other pollutants. Conventional pollutants and metals are reported annually while monitoring the remainder is performed biannually. Monitoring data is intended to assist the permittees in determining appropriate stormwater management practices. Table 2 below

describes the stations and the drainage areas monitored. Table 3 summarizes monitoring data submitted under the previous permit term.

EPA has compared the monitoring data submitted on discharge monitoring reports by the Albuquerque MS4 permittees during the permit term to the national stormwater databases as shown in Table 6. The table reflects an average concentration of a subset of the pollutant monitored by the permittees during the permit term at the five designated monitoring sites and compares discharge concentrations to the NURP, CDM, and NSQD datasets. Note that comparison to national databases provides a basis for comparison, but is not always easy due to variations in climate and geography. Data from the NSQD for Maricopa County (Phoenix, AZ area) was also included for comparison of information more representative of an arid area.

Table 2: Stormwater Monitoring Sites - City of Albuquerque

LOCATION	DESCRIPTION
North Floodway Channel near Alameda (USGS Station No. 08329900) – North Diversion Channel (NDC)	Station located on concrete lined channel. Drains approx. 92 sq.mi. Approx. 60% of the drainage area is within Albuquerque's city limits. Land use is: 41% residential; 36% agricultural; 15% commercial; 4% industrial; 4% open space
South Diversion Channel (SDC) above Tijeras Arroyo near Albuquerque (USGS Station No. 08330775)	Station located on natural unlined channel. Drains approx. 11 sq.mi. Approx. 73% of the drainage area is within Albuquerque's city limits. Land use is: 30% agricultural; 28% commercial; 21% industrial; 13% residential; 8% open space
San Jose Drain at Woodward Road at Albuquerque (USGS Station No. 08330200)	Station located on concrete lined channel. Drains approx. 2 sq.mi. 100% of the drainage area is within Albuquerque's city limits. Land use is: 41% residential; 30% commercial; 18% agricultural; 9% industrial; 2% open space
City of Albuquerque Lift Station #32 (Barelas) at Albuquerque (USGS Station No. 08330075)	Stations located at stormwater pumping stations. Combined drainage of 4 sq.mi. 100% of the drainage area is within Albuquerque's city limits. Land use is: 35% residential; 34% commercial; 12% open space; 10% industrial; 9% agricultural
Mariposa Diversion of San Antonio Arroyo at Albuquerque (USGS Station No. 083299375)	Station located on natural unlined channel. Drains approx. 31 sq.mi. Approximately 55% of the drainage area is within Albuquerque's city limits. Land use is: 73% agricultural; 4% industrial; 11% residential; 1% commercial; 1% open space

Table 3 reflects the maximum annual average concentration and the maximum concentration of a subset of the pollutant monitored by the permittees during the 2004-2009 permit term. This would reflect the "worst" results and not the long term average. The monitored sites include the North Diversion Channel (NDC), the South Diversion Channel (SDC), the San Antonio, the San Jose, and the Barelas sites.

The data was evaluated against water quality standards to determine if the pollutant concentrations in the stormwater are elevated relative to applicable water quality standards (Table 4). Monitoring data exceeding a water quality criterion provides reason to be concerned about that parameter, but does not mean that the discharge has caused or contributed to an exceedance of the in-stream water quality standard nor impaired the designated use. Since stormwater discharges are episodic, application of chronic criterion is particularly problematic since aquatic organisms would not be likely to be exposed to the same stormwater discharge for the seven (7) day period of a chronic toxicity test. Even though application of chronic standards to even averages of episodic stormwater discharge values is not a particularly good indicator of whether the in-stream standard was actually being exceeded, it is encouraging to note that only lead had an average value above the New Mexico chronic toxicity water quality standard.

For initial screening purposes to calculate the water quality criteria for hardness-dependent metals, a representative hardness value of 162 mg/l of CaCO3 for the receiving waters, the Rio Middle Grande, was utilized. Ambient hardness data was drawn from EPA's STORET (STOrage and RETrieval computerized data system) and represents the average value during the last five (5) years term of the permit for the reach of the Middle Rio Grande extending south of Angostura Diversion to Isleta Pueblo (Assessment Units 2105.50 and 2105.1_00).

Table 3. National Pollutant Discharge Elimination System (NPDES) Phase I MS4 Permit Stormwater Data

Constituent	001 (NDC)		002 (SDC)		003 San Jose		004 Barelas		005 San Antonio	
	Conc. (mg/L)		Conc. (mg/L)		Conc. (mg/L)		Conc. (mg/L)		Conc. (mg/L)	
	Avg. Conc.	Max. Conc.	Avg. Conc.	Max. Conc.	Avg. Conc.	Max. Conc.	Avg. Conc.	Max. Conc.	Avg. Conc.	Max. Conc.
Biochemical Oxygen Demand, 5-day	28	32	22	25	40	80	25.7	40.5	18.8	23
Chemical Oxygen Demand	560	640	300	560	330.5	480	2200	2200	134	190
Total Suspended Solids	3690	5580	1032	1928	2502	3484	571	728	528	892
Total Dissolved Solids	171	202	161	180	184.7	362	184	272	576.5	997
Total Nitrogen	5.63	5.99	2.48	3.88	6.47	7.9	4.43	5.91	2.44	2.78
Total Kjeldahl Nitrogen	4.23	4.46	3.1	4	7	11	3.28	4.18	1.59	1.84
Total Phosphorus as P	2.2	2.91	0.74	1.17	1.83	2.29	0.85	0.93	0.42	0.66
Dissolved Phosphorus as P	0.21	0.27	0.1	0.2	0.6	0.7	0.13	0.18	0.26	0.42
Cadmium/Total	1 (1)	1.15 (1)	0.67 (1)	0.97 (1)	2.37 (1)	3.24 (1)	1.09 (1)	1.83 (1)	0.26 (1)	0.42 (1)
Cadmium/Dissolved	0.95 (1)	1.89 (1)	0.08 (1)	0.15 (1)	0.1 (1)	0.1 (1)	0.15 (1)	0.46 (1)	0.13 (1)	0.17 (1)
Copper/Total	76.6 (1)	81.5 (1)	48 (1)	80.7 (1)	52.4 (1)	63.9 (1)	65.1 (1)	103 (1)	21.1 (1)	34.5 (1)
Copper/Dissolved	6.75 (1)	13.5 (1)	7.1 (1)	9 (1)	10.5 (1)	12 (1)	6.2 (1)	10.9 (1)	5.07 (1)	5.14 (1)
Lead/Total	99.3 (1)	104 (1)	44.54 (1)	77.1 (1)	178 (1)	228 (1)	89.9 (1)	102 (1)	13.4 (1)	24.9 (1)
Lead/Dissolved	0.87 (1)	1.73 (1)	51.96 (1)	64.7 (1)	<2 (1)	<2 (1)	<2 (1)	<2 (1)	3.03 (1)	6.17 (1,9)
Zinc/Total	394 (1)	474 (1)	155.7 (1)	242 (1)	1228 (1)	1940 (1)	465(1)	643 (1)	48.3 (1)	170 (1)
Zinc/Dissolved	<6.8 (1)	11.3 (1)	142 (1)	171 (1)	30.2 (1)	60.4 (1)	130 (1)	229 (1)	22.7 (1)	22.7 (1)
Mercury/Total	<0.5 (1)	<0.5 (1)	<0.5 (1)	<0.5 (1)	<0.5 (1)	<0.5 (1)	<0.5 (1)	<0.5 (1)	<0.5 (1)	<0.5 (1)
Tri-Valent Chromium	19.8 (1)	20.1 (1)	19.8 (1)	35.5 (1)	25.2 (1)	30.2 (1)	12.6 (1)	12.7 (1)	2.01 (1)	2.24 (1)
Hexa-Valent Chromium	45 (1)	90 (1)	5 (1)	10 (1)	40 (1)	60.1 (1)	40 (1)	70 (1)	20 (1)	20 (1)

Constituent	001 (NDC)		002 (SDC)		003 San Jose		004 Barelas		005 San Antonio	
	Conc. (mg/L)		Conc. (mg/L)		Conc. (mg/L)		Conc. (mg/L)		Conc. (mg/L)	
	Avg. Conc.	Max. Conc.	Avg. Conc.	Max. Conc.	Avg. Conc.	Max. Conc.	Avg. Conc.	Max. Conc.	Avg. Conc.	Max. Conc.
Arsenic/Total	7.06 (1)	9.11 (1)	8.92 (1)	14.4 (1)	14 (1)	17.6 (1)	5.9 (1)	8.4 (1)	2.5 (1)	8.3 (1)
Thallium	0.73 (1)	1.21 (1)	<2 (1)	< 2 (1)	<2 (1)	< 2 (1)	<2 (1)	< 2 (1)	<2 (1)	< 2 (1)
Chloride (as Cl)	8.09	9.53	14.4	17.3	15.7	33.1	9.5	14.3	7.5	7.9
Nitrate Total	2.02	2.02	1.07	1.19	0.77	1.55	1.22	1.51	1.33	1.44
pH	7.3 (3)	8.9 (4)	7.2 (3)	8.9 (4)	7.6 (3)	8.1 (4)	7.1 (3)	8 (4)	7.7 (3)	8.6 (4)
Sulfate	4.33	8.66	19.8	21.5	32.9	54	15.6	28.2	9.39	13.1
Grab Specific Conductivity	138 (2)	151 (2)	226 (2)	242 (2)	524 (2)	524 (2)	194 (2)	301 (2)	143 (2)	215 (2)
Fecal Coliform	28848 (7)	43840 (7)	28261 (7)	43840 (7)	17340 (7)	43840 (7)	8000 (7)	8000 (7)	12588 (7)	27124 (7)
Oil and Grease	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Total Recoverable Phenolics	386 (1)	773 (1)	219 (1)	331 (1)	129 (1)	259 (1)	135 (1)	171 (1)	116.5 (1)	133 (1)
Hardness, Total CACO3	135.5	153	111	122	124.3	159	78	111	84.8	98
Grab Temperature	9 (5)	25 (6)	24 (5)	36.2 (6)	23 (5)	25.5 (6)	24 (5)	24 (6)	7 (5)	190 (6,8)
PCBs	<1 (1)	<1 (1)	<1 (1)	<1 (1)	<1 (1)	<1 (1)	<1 (1)	<1 (1)	<1 (1)	<1 (1)

Source www.epa-otis.gov. Bold values are elevated as compared to NM Ambient Acute Quality Criteria and/or NM Ambient Chronic Quality Criteria.

1 µg/L
2 UMHO/CM
3 Minimum value, Standard Units
4 Maximum value, Standard Units
5 Minimum value, °C
6 Maximum value, °C
7 cfu/100 ML
8 The value needs to be revised to meet QA/QC requirements.
9 Possible QA/QC problem. Dissolved lead should not be greater than total lead.

Table 4. NM Aquatic Water Quality Criteria

	UNITS	ACUTE AQUATIC CRITERIA	CHRONIC AQUATIC CRITERIA
		NM WQS	NM WQS [1]
Total Suspended Solids	mg/L	n/a	n/a
Biochemical Oxygen Demand	mg/L	n/a	n/a
Chemical Oxygen Demand	mg/L	n/a	n/a
Total Phosphorus	mg/L	n/a	
Dissolved Phosphorus	mg/L	n/a	n/a
Total Kjeldahl Nitrogen	mg/L	n/a	n/a
Nitrite and Nitrate	mg/L	n/a	n/a
Arsenic	µg/l	340[2]	150[2]
Cadmium	µg/l	3.22[2]	
Copper	µg/l	21.17[2]	13.52 [2]
Chromium	µg/l	845.84[2]	110.03[2]
Lead	µg/l	108.74[2]	4.24 [2]
Mercury	µg/l	100	100
Thallium	µg/l	100[2]	100[2]
Zinc	µg/l	176.35[2]	177.79 [2]
PCBs	µg/l	100	0.014

1 Calculated from New Mexico Water Quality Standards for Interstate and Intrastate Surface Waters, 20.6.4 NMAC dtd 11/2009, hardness of 162 mg/l as CaCO3, pH of 8.3 s.u.

2 Dissolved fraction

i. Phthalates. Phthalates account for the majority of detections of monitored organics in Albuquerque stormwater. Bis (2-Ethylhexyl) Phthalate is the most commonly detected parameters, and is not toxic to aquatic organisms. Di-N-Butyl Phthalate is the second most commonly detected organic with 20 detections in Albuquerque stormwater. Di-N-Octyl Phthalate accounts for 17 detections; butyl benzyl phthalate accounts for 14 additional; and diethyl phthalate account for other 14 detections. Although di-n-butyl phthalate, butyl benzyl phthalate and diethyl phthalate are aquatically toxic, the levels detected in the stormwater typically are below the No Observable effects Concentrations (NOEC) for microorganisms, algae, invertebrates and fish.

ii. Polycyclic Aromatic Hydrocarbons (PAHs). Fluoranthene and pyrene are the most detected PAHs in Albuquerque stormwater. The maximum detected level of fluoranthene was 39.3 µg/l, with sampling performed since 1994 averaging levels of 3.8 µg/l. The maximum detected level of pyrene was 28.2 µg/l, with sampling done since 1994 averaging levels of 2.7 µg/l. Naphthalene was detected only once at a concentration of

1.1 µg/l. PAHs toxicity studies (*Schirmer et. al*) indicate that fluoranthene and pyrene appear to have the most potential to impact fish through phytotoxicity when water solubility is taken into account. Literature also shows EC_{50}s of 55 (11.12 µg/l) and 93 nM (18.81 µg/L) for pyrene and fluoranthene (each has a molecular weight of 202.26 g/mol). The detected average concentrations in Albuquerque stormwater for pyrene and fluoranthene are below these EC_{50} values.

iii. Bacteria. Site 300A (Mariposa Diversion of San Antonio Arroyo) showed high levels of fecal coliform at 59,939 cols/100 ml. Although EPA observed that the levels of fecal coliform are greater than the applicable water quality criterion of 200-cfu/100 ml for all five sampling locations, water quality standards apply in-stream, not at end of pipe. Table 5 shows the TMDL results in terms of load estimates and TMDL target values for fecal coliform over six years. Because the fecal coliform contamination appears to be a watershed-wide concern, the MS4 co-permittees continue to work with other stormwater partners, including the County of Bernalillo, Southern Sandoval County Arroyo Flood Control Authority, and the Ciudad and Water Conservation District to implement a watershed-wide public information program, targeted at the control of dog feces and other pollutant sources in the Middle Rio Grande watershed. It should also be noted that a microbial source tracking assessment study funded by the NMED, Bernalillo County, and AMAFCA was carried out in the Middle Rio Grande. The study indicated that agricultural sources and septic tank malfunctions may not be major sources of fecal coliform in runoff. The largest fraction of bacteria matched those found in avian sources, followed by canine, human/sewage, rodents, bovines, and equines.

Monitoring parameters and frequencies required for the permit term are included in Table IX.A of the permit and remain unchanged from the previous permit. As indicated above in Section 13.b.i, *Clean Water Act §303 (d) List*, bacteria has been identified as contributing to the impairment of the Rio Grande, the receiving stream of Albuquerque MS4 stormwater. The Middle Rio Grande has been 303(d) listed as impaired for bacteria and a TMDL, established in 2002, for fecal coliform addresses the bacteria impairment. The MS4 has been assigned target levels of loadings for fecal coliform. Monitoring performed by the permittees and submitted to EPA on discharge monitoring reports (see Table 5a) demonstrate that fecal discharges from the MS4 at the five monitoring points are below the TMDL targets.

A new bacteria TMDL for the Middle Rio Grande was approved by the New Mexico Environment Department on April 13, 2010. The new TMDL modifies: 1) the indicator parameter for bacteria from fecal coliform to *E. coli*, and 2) the way the waste load allocations (WLAs) are assigned (see Table 5b). Note that the terms and content of the TMDL itself are outside the scope of this permit and comments on the TMDL (as opposed to implementation of the TMDL by the permit) cannot be considered as part of this permitting action. Information on the *E. coli* TMDL is available online at: http://www.nmenv.state.nm.us/swqb/Rio_Grande/Middle/index.html .

Until final EPA approval of the new *E. coli* TMDL for Middle Rio Grande River Segments **20.6.4.105** and **20.6.4.106**, the permittees shall continue to report compliance

with the current TMDL in terms of fecal coliform, and also begin tracking compliance with the new TMDL, since it is approved by the State and constitutes a more stringent requirement under State law. An additional requirement for monitoring of *E. coli* is included in Table II.A and II.C of the permit to comply with changes to New Mexico water quality standards for bacteria. The permittees are required to modify the bacteria control plan required under the previous permit as necessary to comply and be consistent with the assumptions of the new TMDL.

Should EPA grant final approval of the new TMDL prior to final issuance of today's permit, this permit will be revised for consistency with the allocations and assumptions in the final TMDL. Note: The new TMDL includes a more system-based vs. drainage channel-based allocation method and includes an implementation section on translating the TMDL and associated monitoring needs to stormwater permits. It is anticipated that while the currently proposed bacteria reduction program elements would be similar, if not unchanged, a revised monitoring plan would have to be submitted as a requirement of the final permit. EPA welcomes comment on how the *E. coli* TMDL could best be implemented in the final permit. Note that under 40 CFR 122.44(d)(1)(vii)(B) NPDES permits are required to be consistent with the allocations and assumptions of applicable TMDLs.

Table 5a. Total Maximum Daily Loading (TMDL) for *Fecal Coliform*

	Maximum 30-day Geometric mean, *fecal coliform* forming units (cfu)/day						
Conveyance	**Target From TMDL**	**2003-2004**	**2004-2005**	**2005-2006**	**2006-2007**	**2007-2008**	**2008-2009**
North Diversion Channel	6.438×10^{11}	1.05×10^{11}	1.24×10^{10}	3.21×10^{11}	3.05×10^{10}	1.67×10^{11}	1.13×10^{11}
South Diversion Channel	1.444×10^{11}	3.69×10^{7}	3.9×10^{7}	4.85×10^{8}	1.67×10^{7}	8.49×10^{9}	1.23×10^{7}
San Jose	1.068×10^{10}	5.12×10^{9}	1.54×10^{9}	2.10×10^{9}	2.71×10^{8}	3.21×10^{9}	4.23×10^{8}
Tijeras Arroyo	1.199×10^{11}	2.43×10^{5}	3.4×10^{6}	4.74×10^{9}	9.23×10^{6}	1.77×10^{10}	2.19×10^{7}

Source: November 24, 2009 Albuquerque Municipal Separate Storm Sewer System (MS4) Permit No NMS000101 TMDL Progress Report

Table 5b. 2010 TMDL Waste Load Allocations (WLAs)[2] for *E. coli*: Rio Grande[1]

Rio Grande Assessment Unit	FLOW CONDITIONS & ASSOCIATED WLA (cfu/day)[3]				
	High	**Moist**	**Mid-Range**	**Dry**	**Low**
Isleta Pueblo boundary to Alameda Street Bridge (based on flow at USGS Station NM08330000)	3.36×10^{11}	8.41×10^{10}	5.66×10^{10}	2.09×10^{10}	4.67×10^{9}
	>3360 cfs	929-3360 cfs	664-929 cfs	319-664 cfs	<319 cfs
non-Pueblo Alameda Bridge to Angostura Diversion (based on flow at USGS Station NM08329928)	5.25×10^{10}	1.52×10^{10}	-	5.43×10^{9}	2.80×10^{9}
	>3670 cfs	922-3670 cfs	647-922 cfs	359-647 cfs	<359 cfs

Formula to Compare Actual Loadings to Target Values

The resultant formula for Bacteria TMDL should be used to address *E. coli* loadings:

C as cfu/100 ml * 1000 ml/1 L /0.264 gallons * Q = cfu/day

Where: C = water quality standard criterion for bacteria
Q = stream flow in million gallons per day (mgd)

[1] Total Maximum Daily Load for the Middle Rio Grande Watershed, NMED, 2010.

[2] The WLAs for the stormwater MS4 permit are based on the percent jurisdiction area approach. Thus, the MS4 WLAs are a percentage of the available allocation for each hydrologic zone, where the available allocation = TMDL – WLA – MOS.

[3] Flow Conditions relate to percent of days the flow in the Rio Grande at a USGS Gauge exceeds a particular level: High 0-10%; Moist 10-40%; Mid-Range 40-60%; Dry 60-90%; and Low 90-100%. (Source: Figures 4.3 and 4.4 in 2010 Middle Rio Grande TMDL)

iv. Temperature. Two values for temperature exceeded the State of New Mexico's water quality standard of 32.2°C at the North Diversion Channel and San Antonio monitoring sites. The value at San Antonio needs to be revised to meet QA/QC requirements as it exceeds considerably the 100°C boiling point of water. The new State impaired waters listing identifies a 2013 temperature schedule for a probable temperature impairment for Middle Rio Grande River Segment **20.6.4.105**. Although NMED has several approved temperature TMDLs, these are typically in small coldwater streams. Approaches recommended in these small coldwater streams may not be practicable for the Middle Rio Grande in the Albuquerque area. Therefore, the Middle Rio Grande may need an alternate approach. Approaches recommended in NMED approved temperature TMDLs may be found at http://www.nmenv.state.nm.us/swqb/TMDL/list.html .

v. Metals. Only two monitoring sites, the South Diversion Channel and the San Antonio Channel, demonstrated levels of lead greater than one of the criterion. Three values for dissolved lead were greater than the chronic aquatic criteria of 4.24 µg/l. None of the concentrations observed for dissolved lead exceeded the acute aquatic criterion of 108.74 µg/l. Since chronic toxicity reflects exposure to a particular concentration over a longer period of time (e.g., seven days for the chronic toxicity test) exceedance of a chronic criterion in an episodic short term stormwater discharge does not necessarily mean that the in-stream concentration in the receiving water would have exceeded the chronic toxicity standard for sufficient time to actually violate the chronic toxicity standard. EPA notes that the Rio Grande has not been listed as impaired due to lead.

Only one maximum sample for zinc exceeded both the acute aquatic criterion of 176.35 µg/l and chronic criterion of 177.79 µg/l. The average values of zinc did not exceed either the acute aquatic criterion or the chronic aquatic criterion.

Many toxicity studies have demonstrated that bioavailibity of metals are affected by pH. For example, Mary K. Schubauer and Joseph R. Dierkes tested the acute of lead to *Ceriodaphnia dubia*, *Pimephales promelas*, *Hyalella azteca* and *Lumbriculus variegates* at three pH values (6.3 s.u., 7.3 s.u., and 8.3 s.u.) in very hard reconstituted water. Toxicity of lead was greatest at pH 6.3 s.u. and least at pH 8.3 s.u. to most of the species. Stormwater data in the City of Albuquerque for pH shows a minimum average value of pH of 7.1 s.u. therefore it is suspected that that lead toxicity to epibenthic and benthic organisms might be reduced by the levels of pH encountered in the stormwater and the levels of pH of approximately 8 s.u.[1] encountered in the receiving waters. Various studies (EPA Ambient Water Quality Criteria document for zinc, EPA 440/5-80-079) have also shown that the chronic toxicity of zinc to daphnids appears to increase with increasing hardness, a phenomenon which may be attributable to ingestion of precipitated zinc by Dahnia magna in hard water tests. The average hardness of 162 mg/l of CaCO3 for the receiving waters was calculated for the MRG. After comparing this value with the average values of harness encountered in the stormwater, it appears that the chronic toxicity of zinc could be reduced by the low levels (e.g. maximum annual average concentration of 84 mg/l of CaCO3 for hardness at the San Antonio outfall) of hardness encountered in the stormwater.

vi. **Fish Tissue and Sediment**. Because zinc and lead may attach to the soil and bioaccumulation of these metals from sediment and ingestion of aquatic organisms may occur, EPA evaluated sediment data and fish tissue collected in the area. Sediments samples were collected by the NMED in October 2006 – September 2007 as part of the 2007 water quality survey in the middle Rio Grande. Many metals were detected in sediment samples during the fist year of the survey at each station. Arsenic at the Bosque del Apache site was the only metal to exceed the SQuiRT lowest screening level. The SQuiRT levels were developed by the Coastal Protection and Restoration Division (CPR) of the National Oceanic and Atmospheric Administration (NOAA) and serve as a useful screening level tool to determine potential chemicals of concern in sediments. Fish tissue samples were also collected with the assistance of the New Mexico Department of Game and Fish (DGF) on May 8-9, 2007 at three longitudinal reaches: Highway 550 Bridge to North AMAFCA; North AMAFCA to Alameda Bridge; and Rio Bravo Bridge to Los Padillas. Fish collected in this survey contained chemicals above the method detection limits. The only contaminants not detected were lead and selenium for all samples and cadmium at two of the four sites. NMED found that most of the chemicals, except zinc, were detected at concentrations below limits that could impact fish health. Continued monitoring will be necessary to determine sources of zinc in the Albuquerque UA MS4s.

Although several pollutants exceed both the New Mexico aquatic life criteria and the MSGP industrial benchmark values, several toxicity studies completed in the area have

[1] pH of 8 was extracted from the Cynthia Abeyta's presentation at http://www.fws.gov/southwest/bhg/Water_Quality.htm

indicated no toxicity to both *Ceriodaphnia dubia* and fathead minnow. A toxicity test was performed by the USGS in 1999 where stormwater runoff collected from the NDC on August 10, 1999[2] was used to determine if the stormwater would produce toxic effects to aquatic life using *Ceriodaphnia dubia* and fathead minnow. In October 2009, a toxicity test was also performed by the Phase I MS4 permittees at the NDC and it also indicates no toxicity effects on the fathead minnow and *Ceriodaphnia dubia.*

It is well documented that the urbanization of an area contributes to changes in the quantity and quality of stormwater discharges and has negative impact on waters of the US. Information presented in Tables 3 through 8 illustrates the variable nature of stormwater but also highlights the potential for Water Quality Standards to be exceeded. A conclusion can be drawn that if pollutant concentration data presented is representative of the municipal stormwater runoff from the Albuquerque Urbanized Area, there is potential for chronic and even acute toxicity. High velocity channelized stormwater flows can also cause habitat modification, exacerbating negative effects. EPA's recognition of the potential for municipal stormwater discharges to degrade receiving water quality is the basis for development of municipal stormwater regulations and permits. However, while water quality effects from municipal stormwater discharges can be anticipated, assessing the degree to which receiving waters are affected is a complex process. Assessing the degree to which municipal stormwater discharges affect species that occupy those receiving waters or whose habitat is supported is even more complex.

The ubiquitous nature of stormwater runoff does not allow for the cessation of municipal stormwater discharges regardless of EPA's action on a permit. Instead, the program uses the National Pollutant Discharge Elimination System (NPDES) permitting mechanism to require the implementation of controls designed to prevent harmful pollutants from being washed by stormwater runoff into local water bodies. The Albuquerque UA municipal stormwater program is also required to reduce the discharge of pollutants to the "maximum extent practicable" and to satisfy the water quality goals of the Clean Water Act. Specifically, implementation of the SWMP and monitoring requirements of the permit will reduce pollutants in MS4 discharges, help guide adaptive management changes by the permittees, and provide information necessary to require more stringent permit requirements through the permit modification process if necessary.

[2] November 2009 Draft Biological Evaluation for NPDES Permit No NMS000101, City of Albuquerque Municipal Separate Sewer System

Table 6: MS4 DMR Data vs. National Storm Water Quality Databases

CONSTITUENT	UNITS	SOURCE	MEAN	MEDIAN	NO. OF EVENTS
Total Suspended Solids	mg/L	NURP[1]	174	113	2000
		CDM[2]	78.4	54.5	3047
		NSQD[3]	79.1	49.8	3404
		MC[4]	129.11	59.13	3493
		ABQ[5] PH1 Site 1	1119.9	940.0	7
		ABQ PH1 Site 2	1577.8	570.0	6
		ABQ PH1 Site 3	380.4	424.4	6
		ABQ PH1 Site 4	345.2	304.0	6
		ABQ PH1 Site 5	244.8	250.5	4
Biochemical Oxygen Demand	mg/L	NURP	10.4	8.4	474
		CDMa	14.1	11.5	1035
		NSQD	10.9	8.6	2973
		MC[4]	17.3	8.6	3105
		ABQ PH1 Site 1	14.9	12.5	7
		ABQ PH1 Site 2	26.6	20.5	6
		ABQ PH1 Site 3	26.1	24.1	6
		ABQ PH1 Site 4	23.5	21.8	6
		ABQ PH1 Site 5	9.5	9.0	7
Chemical Oxygen Demand	mg/L	NURP	66.1	55	1538
		CDM	52.8	44.7	2639
		NSQD	71.2	55.6	2699
		MC[4]	79.14	53.0	2750
		ABQ PH1 Site 1	308.2	220.5	7
		ABQ PH1 Site 2	206.4	204.7	6
		ABQ PH1 Site 3	208.2	233.5	6
		ABQ PH1 Site 4	224.8	213.0	6
		ABQ PH1 Site 5	67.3	70.0	7
Total Phosphorus	mg/ L	NURP	0.337	0.266	1902
		CDM	0.315	0.259	3094
		NSQD	0.373	0.289	3162
		MC[4]	0.41	0.27	3285
		ABQ PH1 Site 1	1.9	2.1	7
		ABQ PH1	0.7	0.7	6

CONSTITUENT	UNITS	SOURCE	MEAN	MEDIAN	NO. OF EVENTS
		Site 2			
		ABQ PH1 Site 3	1.1	1.1	6
		ABQ PH1 Site 4	0.8	0.6	6
		ABQ PH1 Site 5	0.3	0.2	7
Dissolved Phosphorus	mg/L	NURP	0.1	0.078	767
		CDMb	0.129	0.103	1091
		NSQD	0.107	0.078	2093
		MC[4]	0.20	0.13	2477
		ABQ PH1 Site 1	0.2	0.2	7
		ABQ PH1 Site 2	0.1	0.1	6
		ABQ PH1 Site 3	0.5	0.6	6
		ABQ PH1 Site 4	0.2	0.2	6
		ABQ PH1 Site 5	0.2	0.2	6
Total Kjeldahl Nitrogen	mg/L	NURP	1.67	1.41	1601
		CDM	1.73	1.47	2693
		NSQD	1.74	1.37	3034
		MC[4]	2.04	1.40	3191
		ABQ PH1 Site 1	2.3	2.9	7
		ABQ PH1 Site 2	2.0	2.2	6
		ABQ PH1 Site 3	4.1	4.3	6
		ABQ PH1 Site 4	2.3	2.7	6
		ABQ PH1 Site 5	1.2	1.0	7
Copper	µg/L	NURP	66.6	54.8	849
		CDM	13.5	11.1	1657
		NSQD	17.8	14.2	2356
		MC[4]	30.65	16.0	2722
		ABQ PH1 Site 1	38.9	44.2	7
		ABQ PH1 Site 2	31.0	30.6	6
		ABQ PH1 Site 3	17.7	10.5	5
		ABQ PH1 Site 4	46.3	52.29	6
		ABQ PH1 Site 5	8.5	10.1	7
Lead	µg/L	NURP	175	131	1579
		CDM	67.5	50.7	2713
		NSQD	24.4	16.5	2250

CONSTITUENT	UNITS	SOURCE	MEAN	MEDIAN	NO. OF EVENTS
		MC[4]	39.15	17.0	2949
		ABQ PH1 Site 1	62.2	70.1	7
		ABQ PH1 Site 2	34.3	43.9	6
		ABQ PH1 Site 3	61.8	60	4
		ABQ PH1 Site 4	63.9	71.76	6
		ABQ PH1 Site 5	3.0	1.85	6
Zinc	µg/L	NURP	176	140	1281
		CDM	162	129	2234
		NSQD	110	88	2888
		MC[4]	226.80	116.0	3007
		ABQ PH1 Site 1	245.2	288.5	7
		ABQ PH1 Site 2	116.3	112	6
		ABQ PH1 Site 3	457.7	250.15	4
		ABQ PH1 Site 4	366.1	399.5	6
		ABQ PH1 Site 5	46.7	48.3	7

1 Nationwide Urban Runoff Program (NURP 1983)
2 Camp, Dresser, and McGee National Stormwater Database (CDM) (Smullen and Cave 2002)
3 National Stormwater Quality Database (NSQD), (Pitt 2005)
4 Maricopa County New Mexico data from National Stormwater Quality Database (NSQD), (Pitt 2005)
5 Albuquerque monitoring sites

vii. Gross Pollutants. Litter, vegetative debris, floatable material, and coarse sediments (1.75" nominal or larger) found in Albuquerque stormwater may be contributing pollutants to the environment. The permit includes control and monitoring requirements for gross pollutants (including floatables) present in the MS4.

viii. Dissolved Oxygen. Along with observation of a fish kill in the North Diversion Channel in 2004, the State of New Mexico has received data describing a series of low dissolved oxygen in the Rio Grande between the Isleta Pueblo boundary to the Angostura Diversion. New Mexico proposed Category 5B and 5C listing of a portion of the segments; however, dissolved oxygen is delisted for the 2008-2010 303(d)-305(b) consolidated list due to EPA's conclusion that New Mexico had not met the administrative requirements to include dissolved oxygen on the 2008-2010 list. The new State impaired waters listing for the Middle Rio Grande identifies a 2013 schedule for dissolved oxygen as a probable impairment in Segments 20.6.4.105 and 20.6.4.106. It is stated in the assessment unit comments that the dissolved oxygen impairment may indicate excessive nutrients. Protocols for nutrients in large rivers are under development.

Stormwater from the Albuquerque MS4 has been measured and reported to EPA each year on discharge monitoring reports. Average values shown in Table 3 above indicate BOD levels above national stormwater database averages. EPA's Multi-Sector Stormwater General Permit for Industrial Activities benchmark value for COD is 120 mg/L (BOD times 4). The averages of COD measured at Albuquerque MS4 monitoring locations are well above the 120 mg/L benchmark.

Nitrogen and phosphorus generally are present at background levels below 0.3 mg/L and 0.05 mg/L, respectively. Although average nutrients levels calculated indicate levels above these, nutrients in Albuquerque stormwater have not been noted to cause nuisance algal growth in the Rio Grande.

ix. **PCBs in the San Jose Drain and North Diversion Channel**. The San Jose Drain and the North Diversion Channel are one of many sites in central New Mexico, along the middle Rio Grade where elevated levels of PCBs have been found in the water column at levels near to or exceeding New Mexico water quality standards for protection of wildlife habitat/livestock watering and human health. The Department of Energy (DOE) Oversight Bureau of the New Mexico Environment Department (NMED) has compiled and blank-corrected PCB data generated during the 2002-2003 Los Alamos National Lab (LANL) and NMED cooperative study of the Upper Rio Grande Watershed (NMED DOE Oversight Bureau Correspondence and Transmittal Letter, signed S. Yanicak, to G. Turner, DOE, Dated June 6, 2006). The data was analyzed using EPA Method 1668A, for its high sensitivity to quantify the PCBs at reportable levels in laboratory blanks. Elevated levels of PCBs were found in stormwater in the San Jose Drain, along with elevated sediment levels. A fish advisory has been issued in March 2009 to limit consumption of channel catfish and white bass taken from this reach of the Rio Grande because of high levels of PCBs found in fish tissue. PCB studies continue in the Rio Grande and the results of these studies could drive changes to the SWMP and/or permit in the future.

On April 15, 2010, NMED released results of a study conducted in 2009 of Rio Grande water quality near the Santa Fe Buckman Direct Diversion and in Albuquerque during storm flow conditions. The study indicates that stormwater events in the Albuquerque area have the potential to carry concentrations of PCBs into the Rio Grande that can harm wildlife and humans consuming PCB contaminated fish. While it is possible that the PCBs are entering the Rio Grande from the North Diversion Channel, which drains stormwater from 89.7 square miles in the northeastern part of Albuquerque, further investigation is needed to confirm whether the source of the contamination is in the North Diversion Channel watershed or further upstream in the Rio Grande (NMED Press Release Dated April 19, 2010).

In a letter dated April 20, 2010, the New Mexico Environment Department notified EPA that pursuant to Section 401 of the Clean Water Act, the use of EPA Method 1668: Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by HRGC/HRMS (Congener Method) for PCB monitoring under the permit will be a condition for

certification of the permit. Although EPA Method 1668 has been proposed, it has not been approved under 40 CFR 136 for use in compliance monitoring for NPDES permits. However, use of this more sensitive EPA method will provide lower detection levels necessary to determine if PCBs are in discharges to or from the MS4 at levels that have reasonable potential to cause or contribute to an exceedance of State or Tribal water quality standards.

14. DISCHARGE LIMITATIONS. No numeric limitations are proposed at this time. In accordance with 40 CFR 122.44(k), the EPA has required a series of storm water control measures, in the form of a comprehensive SWMP, in lieu of numeric limitations. Additional controls or numeric limitations may be included in the final permit, if necessary, to implement conditions of certification under Section 401 of the Act.

15. PERMIT TERMS AND CONDITIONS.

a. Stormwater Management Program. A comprehensive SWMP serves as the primary mechanism for the permittees' implementation and fulfillment of the permit provisions. The draft permit requires the permittees to update their existing SWMP so that it satisfies the water quality-based and MEP-based requirements of the permit and to submit the updated documents to EPA and NMED within 180 days of the effective date of the permit, while also making it available for public review and comment. EPA and NMED will review the updated SWMPs and may, after consideration of public comment received, require modifications consistent with the terms of the permit. The draft permit requires that the permittees maintain adequate finances, staff, equipment, and support capabilities to implement all activities required by the permit and the updated SWMP. Compliance with this requirement shall be demonstrated by the permittees' ability to fully implement the SWMP, monitoring programs, and other permit requirements to be documented in the required annual reports.

b. Control Measures. MS4 owners/operators must control pollutants in stormwater and prohibit illicit discharges to the MS4. One component of the stormwater management program is to select measurable goals to evaluate the effectiveness of individual control measures and the stormwater management program as a whole. The draft permit includes requirements for: Construction Site Stormwater Runoff Control; Post-Construction Stormwater Management in New Development and Redevelopment; Pollution Prevention/Good Housekeeping for Municipal Operations; Industrial and High Risk Runoff Identification and Control; Illicit Discharges and Improper Disposal Detection and Elimination; Public Education and Outreach on Stormwater Impacts; and, Public Involvement/Participation, all of which must be reflected in the SWMP.

i. MEP Consistency. EPA considers MEP to be an iterative process in which an initial SWMP is proposed and then periodically upgraded as new BMPs are developed or new information becomes available concerning the effectiveness of existing BMPs (64 Fed. Reg. 68754). To ensure the permit contains conditions to reduce the discharge of pollutants to the MEP, SWMP elements are being upgraded to include the same minimum standards expected of small MS4s under the Six Minimum Measures at 40 CFR 122.34. The permit also requires adoption of measurable goals consistent with the requirement applicable to small MS4s.

The Phase II regulations at 40 CFR 122.34 set forth the following six minimum pollution control measures to be included in SWMPs. These elements largely overlap program elements in the current SWMP, with the primary differences being the detail of minimum requirements and the addition of specific requirements for Pollution Prevention/Good Housekeeping at municipal operations. The six minimum control measures for SWMPs are listed below, broken down into the required components and the guidance from the Phase II regulations (40 CFR 122.34). Additional guidance and information on municipal storm water programs, Best Management Practices (BMPs), model ordinances, and measurable goals is available online via the Municipal Information link at http://www.epa.gov/npdes/stormwater.

1. Public Education and Outreach on Stormwater Impacts.

a. SWMP Must Include:

(1) implement a public education program to distribute educational materials to the community or conduct equivalent outreach activities about the impacts of storm water discharges on water bodies and the steps that the public can take to reduce pollutants in storm water runoff.

b. EPA Guidance on Public Education and Outreach:

(1) use storm water educational materials provided by your State, Tribe, EPA, environmental, public interest or trade organizations, or other MS4s;
(2) inform individuals and households about the steps they can take to reduce storm water pollution, such as ensuring proper septic system maintenance, ensuring the proper use and disposal of landscape and garden chemicals including fertilizers and pesticides, protecting and restoring riparian vegetation, and properly disposing of used motor oil or household hazardous wastes;
(3) inform individuals and groups how to become involved in local stream and beach restoration activities as well as activities that are coordinated by youth service and conservation corps or other citizen groups;
(4) tailor the program, using a mix of locally appropriate strategies, to target specific audiences and communities. Program should target some of the materials or outreach programs to be directed toward targeted groups of commercial, industrial, and institutional entities likely to have significant storm water impacts. For example, providing information to restaurants on the impact of grease clogging storm drains and to garages on the impact of oil discharges;
(5) tailor the outreach program to address the viewpoints and concerns of all communities, particularly minority and disadvantaged communities, as well as any special concerns relating to children.

2. Public Involvement/Participation.

a. SWMP Must Include:

(1) at a minimum, comply with State, Tribal and local public notice requirements when implementing a public involvement/participation program.

b. EPA Guidance:

(1) include the public in developing, implementing, and reviewing your storm water management program and should make efforts to reach out and engage all economic and ethnic groups. Opportunities for members of the public to participate in program development and implementation include serving as citizen representatives on a local storm water management panel, attending public hearings, working as citizen volunteers to educate other individuals about the program, assisting in program coordination with other pre-existing programs, or participating in volunteer monitoring efforts. (Citizens should obtain approval where necessary for lawful access to monitoring sites.)

3. Illicit discharge detection and elimination.

a. SWMP Must Include:

(1) develop, implement and enforce a program to detect and eliminate illicit discharges (as defined at 40 CFR 122.26(b)(2)) into the small MS4;
(2) develop, if not already completed, a storm sewer system map, showing the location of all outfalls and the names and location of all waters of the United States that receive discharges from those outfalls;
(3) to the extent allowable under State, Tribal or local law, effectively prohibit, through ordinance, or other regulatory mechanism, non-storm water discharges into the storm sewer system and implement appropriate enforcement procedures and actions;
(4) develop and implement a plan to detect and address non-storm water discharges, including illegal dumping, to the system;
(5) inform public employees, businesses, and the general public of hazards associated with illegal discharges and improper disposal of waste; and
(6) address the following categories of non-storm water discharges or flows (i.e., illicit discharges) only if they are identified by the MS4 as significant contributors of pollutants to the small MS4: water line flushing, landscape irrigation, diverted stream flows, rising ground waters, uncontaminated ground water infiltration (as defined at 40 CFR 35.2005(20)), uncontaminated pumped ground water, discharges from potable water sources, foundation drains, air conditioning condensation, irrigation water, springs, water from crawl space pumps, footing drains, lawn watering, individual residential car washing, flows from riparian habitats and wetlands, dechlorinated swimming pool discharges, and street wash water (discharges or flows from fire fighting activities are excluded from the effective prohibition against non-storm water and need only be addressed where they are identified as significant sources of pollutants to waters of the United States).

NOTE: fire fighting activities referred to above, from which discharges need not necessarily be prohibited, are emergency situations only and do not include non-emergency situations such as fire fighting training activities.

b. EPA Guidance:

(1) ensure that the plan to detect and address illicit discharges include the following four components: procedures for locating priority areas likely to have illicit discharges;

procedures for tracing the source of an illicit discharge; procedures for removing the source of the discharge; and procedures for program evaluation and assessment.
(2) conduct visual screening of the outfalls during dry weather and conduct field tests of selected pollutants as part of the procedures for locating priority areas.

4. Construction Site Storm Water Runoff Control.

a. SWMP Must Include:

(1) develop, implement, and enforce a program to reduce pollutants in any storm water runoff to the small MS4 from construction activities that result in a land disturbance of greater than or equal to one acre. Reduction of storm water discharges from construction activity disturbing less than one acre must be included in the program if that construction activity is part of a larger common plan of development or sale that would disturb one acre or more. If the NPDES permitting authority waives requirements for storm water discharges associated with small construction activity in accordance with 40 CFR 122.26(b)(15)(i), the MS4 is not required to develop, implement, and/or enforce a program to reduce pollutant discharges from such sites.

The program must include the development and implementation of, at a minimum:

(a) an ordinance or other regulatory mechanism to require erosion and sediment controls, as well as sanctions to ensure compliance, to the extent allowable under State, Tribal, or local law;
(b) requirements for construction site operators to implement appropriate erosion and sediment control best management practices;
(c) requirements for construction site operators to control waste such as discarded building materials, concrete truck washout, chemicals, litter, and sanitary waste at the construction site that may cause adverse impacts to water quality;
(d) procedures for site plan review which incorporate consideration of potential water quality impacts;
(e) procedures for receipt and consideration of information submitted by the public; and,
(f) procedures for site inspection and enforcement of control measures.

b. EPA Guidance:

(1) consider as examples ensure compliance - non-monetary penalties, fines, bonding requirements and/or permit denials for non-compliance;
(2) include procedures for site plan review including the review of individual pre-construction site plans to ensure consistency with local sediment and erosion control requirements;
(3) include procedures for site inspections and enforcement of control measures including steps to identify priority sites for inspection and enforcement based on the nature of the construction activity, topography, and the characteristics of soils and receiving water quality; and
(4) provide educational and training measures for construction site operators, including requiring a storm water pollution prevention plan for construction sites within the jurisdiction that discharge into the system.

5. Post-Construction Storm Water Management in New Development and Redevelopment.

a. SWMP Must Include:

(1) develop, implement, and enforce a program to address storm water runoff from new development and redevelopment projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale, that discharge into the small MS4. The program must ensure that controls are in place that would prevent or minimize water quality impacts;
(2) develop and implement strategies which include a combination of structural and/or non-structural best management practices (BMPs) appropriate for the community; and
(3) use an ordinance or other regulatory mechanism to address post-construction runoff from new development and redevelopment projects to the extent allowable under State, Tribal or local law; and
(4) ensure adequate long-term operation and maintenance of BMPs.

b. EPA Guidance:

(1) ensure that the BMPs chosen are appropriate for the local community; minimize water quality impacts; and attempt to maintain pre-development runoff conditions;
(2) in choosing appropriate BMPs, participate in locally-based watershed planning efforts which attempt to involve a diverse group of stakeholders including interested citizens. When developing a program that is consistent with this measure's intent, EPA recommends that the MS4 adopt a planning process that identifies the municipality's program goals (e.g., minimize water quality impacts resulting from post-construction runoff from new development and redevelopment), implementation strategies (e.g., adopt a combination of structural and/or non-structural BMPs), operation and maintenance policies and procedures, and enforcement procedures;
(3) in developing your program, consider assessing existing ordinances, policies, programs and studies that address storm water runoff quality. In addition to assessing these existing documents and programs, the MS4 should provide opportunities to the public to participate in the development of the program;
(4) ensure the appropriate implementation of the structural BMPs by considering some or all of the following: pre-construction review of BMP designs; inspections during construction to verify BMPs are built as designed; post-construction inspection and maintenance of BMPs; and penalty provisions for the noncompliance with design, construction or operation and maintenance; and
(5) ensure that the requirements be responsive to the constantly changing storm water technologies, developments or improvements in control technologies.

6. Pollution Prevention/Good Housekeeping for Municipal Operations.

a. SWMP Must Include:

(1) develop and implement an operation and maintenance program that includes a training component and has the ultimate goal of preventing or reducing pollutant runoff from municipal operations; and

(2) using training materials that are available from EPA, your State, Tribe, or other organizations, the program must include employee training to prevent and reduce storm water pollution from activities such as park and open space maintenance, fleet and building maintenance, new construction and land disturbances, and storm water system maintenance.

b. EPA Guidance:

(1) at a minimum, consider the following in developing the program:

(a) maintenance activities, maintenance schedules, and long-term inspection procedures for structural and non-structural storm water controls to reduce floatables and other pollutants discharged from the separate storm sewers;
(b) controls for reducing or eliminating the discharge of pollutants from streets, roads, highways, municipal parking lots, maintenance and storage yards, fleet or maintenance shops with outdoor storage areas, salt/sand storage locations and snow disposal areas operated by the MS4, and waste transfer stations;
(c) procedures for properly disposing of waste removed from the separate storm sewers and areas listed above (such as dredge spoil, accumulated sediments, floatables, and other debris); and
(d) ways to ensure that new flood management projects assess the impacts on water quality and examine existing projects for incorporating additional water quality protection devices or practices; and

(2) include operation and maintenance as an integral component of all storm water management programs. This measure is intended to improve the efficiency of these programs and require new programs where necessary.

Recognizing that traditional MS4s such as cities and counties, non-traditional MS4s such as flood control districts and military bases, and transportation department MS4s have inherently different scopes of authority, the SWMP requirements are modified as necessary to accommodate these different kinds of MS4s. For example, the audience for public education programs by a city would be the general public, while the audience at a military base would be base personnel (including dependents), contractors, and visitors. Where appropriate, Region 6 has included language clarifying expectations for different types of MS4 operators under the six minimum measure sections in Part 5.2 of the permit. EPA welcomes comments on ways the permit conditions can better accommodate the differences between the various types of MS4 operators.

EPA has also developed a menu of BMPs for small MS4s which is available on EPA's website at http://www.epa.gov/npdes/menuofbmps/menu.htm to assist in the development of SWMPs. The menu provides detailed descriptions of BMPs which may be included in SWMPs to satisfy the requirements of the six minimum measures. In addition, Addendum B to this fact sheet provides descriptions of program elements which have been developed by Phase I MS4s. Phase I MS4s have been under permit for up to ten years now, and have acquired considerable experience in storm water quality management. As noted earlier, the permit requirements for Phase I MS4s are

quite similar to those for Phase II MS4s. As such, Phase II MS4s may wish to contact Phase I MS4s (in their area or elsewhere) to gain additional insights from the experiences of Phase I MS4s.

ii. Measurable Goals. A requirement to adopt measurable goals for the SWMP was included in the Phase II regulations at 40 CFR 122.34(d)(1) to ensure that the public can better evaluate the level of effort used by MS4s in controlling pollutants in the discharges and to ensure accountability of the MS4s. EPA Region 6 believes this requirement of smaller MS4s is appropriate for tracking the success of large MS4 programs, including the Albuquerque MS4.

Measurable goals are quantifiable measures of progress in implementing the various BMPs which comprise a SWMP. Measurable goals may consist of specific one-time only objectives such the development of a storm water ordinance by a certain date, or they may consist of numeric objectives for the frequency of implementation of a given BMP (such as the frequency of street sweeping or catch basin cleaning). Measurable goals may also consist of specific objectives for water quality improvement over a given time period.

Measurable goals must be included for each specific BMP which is included in the SWMP. EPA has developed a measurable goals guidance which is available on EPA's website at http://www.epa.gov/npdes/stormwater/measurablegoals/index.htm. Example measurable goals are provided for each of the six minimum measures to assist MS4s in the development of their own measurable goals. Region 6 recommends that this guidance be reviewed by MS4s in developing their measurable goals.

iii. Controlling Runoff from New Development and Redevelopment requires that the permittees develop a program to incorporate long-term stormwater controls into new development and redevelopment projects. EPA specifically requests comments for alternate approaches by which permittees may meet these objectives.

1. Long-term Stormwater Controls. Land development directly affects watershed functions, and water quality in receiving waters. When development occurs in previously undeveloped areas, the resulting alterations to the land can dramatically change how water is transported and stored. Development creates impervious surfaces and compacted soils that increase surface runoff and decrease ground water infiltration. These changes can increase the volume and velocity of runoff, the frequency and severity of flooding, peak storm flows as well as the type, concentration, and quantity of pollutants in discharges.

Phase II MS4 regulations found at 40 CFR 122.23(b)(5) state that a Phase II MS4 must "develop, implement, and enforce a program to address storm water runoff from new development and redevelopment projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale, that discharge into [the] small MS4. [The] program must ensure

that controls are in place that would *prevent or minimize water quality impacts.*" To that end, the regulations require that a MS4 develop and implement a program to address post-construction runoff from newly developed and redeveloped areas, and ensure the long-term operation and maintenance of these management practices.

Because the creation of impervious surfaces and the generation of runoff pollutants are created by activities and decisions at the site scale, neighborhood scale, and watershed or regional scale, this permit sets up a framework to consider pivotal activities at multiple scales. A program to implement site level controls for new and redevelopment are an evolution of activities required under the prior MS4 permit, and implementation of the necessary components of this programs are achievable within the time frame of this 5 year permit term. Implementation of some pivotal controls for activities at the watershed or regional scale may be, in some cases, longer-term propositions. Therefore, this permit sets up the framework for initial steps, with the understanding that some institutional controls may not be fully implemented until the next permit term. However, even though all of these activities may be on different schedules, the permittee should consider all of them in the context of an integrated stormwater management program to ensure that they complement each other.

2. Site and Neighborhood Design provisions require the permittees to adopt and implement stormwater performance standards for new and redevelopment projects, and a program to implement those standards.

A variety of water quality standards continue to be exceeded in most urban and urbanizing streams, and stormwater discharges are commonly identified as the causes; currently there are thousands of waters nation-wide with impairments attributable to stormwater.[3]

As urbanization occurs, a corresponding increase in impervious surface area also occurs. These changes to the landscape cause the volumes, rates and durations of runoff-related discharges to increase, along with a corresponding increase in pollutant loadings. In addition, stream channels are destabilized due to the increased energy of the runoff that results in bank cutting, stream channel widening, channel incision and detrimental sediment mobilization and deposition. Because of these changes in runoff volumes and rates, the stream systems and waterbodies within and downstream of urbanization are commonly impaired due to sediment and nutrient loadings, increased total suspended solids, poor biotic communities, and increased stream temperatures.

Stormwater management standards are most commonly written with provisions that promote or require extended detention controls, such as extended detention wet ponds, dry detention basins or constructed wetlands. There are multiple problems with extended detention as a water quality management practice. Primary to this is that receiving

[3] Total Maximum Daily Loads with Stormwater Sources: A Summary of 17 TMDLs. July 2007. EPA 841-R-07-002.

stream dynamics are based on balances of much more than just discharge rates.[4] Extended detention practices are first and foremost designed to prevent downstream flooding and not to protect downstream channel stability and water quality. For decades, water quality protection has been a secondary goal, or one omitted entirely during the design of these facilities. Over time it has become apparent through research and monitoring that these practices do not effectively protect the physical, chemical or biological integrity of our receiving waters[5]. Furthermore, operation and maintenance of these systems to ensure they perform as designed requires a level of managerial and financial commitment that is often not provided. A number of researchers have documented that detention ponds fail to meet their design goals in terms of maintaining water quality, downstream habitat and biotic integrity of the receiving waters.[6,7,8,9]

There is now a large body of research demonstrating that practices that mimic the natural water cycle – processes that result in the infiltration, evapotranspiration and capture and use of stormwater – are simultaneously advantageous for protecting the physical, chemical and biological characteristics of receiving waters. Why? Because these practices are designed to mimic the way natural vegetated landscapes respond to precipitation events. When it rains or when snow melts, vegetated areas (forests, prairies and grasslands, gardens and trees) intercept, evaporate and absorb much of the rainfall. Some of the precipitation is also absorbed or infiltrated into the soil. Ideally, site designs and plans should make use of these natural systems and processes as much as possible to mimic or preserve the site hydrology, i.e., the balance of plant uptake of water, infiltration of runoff into the soil and groundwater table, and the natural runoff patterns into natural drainage ways and streams.

Most bioinfiltration measures are designed to not discharge at all during small storm events, which means that pollutants do not reach the receiving water. There are good performance data for practices that infiltrate and/or evapotranspire stormwater. Research studies on bioretention practices and permeable pavements can be found at the following links:

Dr. Allen Davis, University of Maryland
http://www.ence.umd.edu/~apdavis/LID-Publications.htm

Dr. William Hunt, North Caroline State University
http://www.bae.ncsu.edu/topic/bioretention/publications.html,

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[4] A Review of Low Impact Development Policies: Removing Institutional Barriers to Adoption. Low Impact Development Center, December 2007.
[5] U.S. EPA, *Protecting Water Quality from Urban Runoff*, Nonpoint Source Control Branch, EPA-841-F-03-003, February 2003.
[6] MaCrae, C.R. Experience from Morphological Research on Canadian Streams: Is Control of the Two Year Frequency Runoff Event the Best Basis for Stream Channel Protection? Kingston, Ontario, Canada.
[7] May, C, Livingston, E. Blaha, D, Scoggins, M. & Tims, J. Structural and Nonstructural BMPs for Protecting Streams. Watershed Management Institute, Crawfordville, Florida.
[8] Booth, D.B. & Jackson, C.R. 1997. Urbanization of Aquatic Systems – Degradation Thresholds, Stormwater Detention and the Limits of Mitigation. Journal of the American Water Resources Association 22(5).
[9] Fundamentals of Urban Runoff Management, Chapter 10, North American Lake Management Society. http://www.nalms/org/Resources/PDF/Fundamentals/Fundamentals_Chapter_10.pdf

Dr. Michael E. Dietz, Utah State University
"Low Impact Development Practices: A Review of Current Research and Recommendations for Future Directions"
http://www.springerlink.com/content/nq44j610685n4112/

Dr. Jack Clausen, University of Connecticut
http://www.bae.ncsu.edu/programs/extension/wqg/319/319index_files/Ct-98.1.pdf

Under natural conditions approximately 10% of the volume of precipitation falling to earth runs off to surface waters via surface/overland flow.[10] Nearly all of the remaining amount of stormwater infiltrates, or is intercepted or taken up by plants. This natural system can be successfully adapted in developed and developing watersheds to protect receiving waters from both pollutants and altered hydrology. This permit proposes a simple performance standard to ensure the hydrology associated with new development and redevelopment sites mirror the pre-development hydrology of the previously undeveloped site. Analysis of precipitation data indicates that 90% of the 24 hour (or less) rainfall events are 1 inch or less. Therefore stormwater systems designed to mirror the pre-development hydrology will reasonably mimic the natural hydrologic process. All new and redevelopment projects must design, implement and maintain a system of controls that will prevent an increase in the one-hundred-year, two-hour peak runoff, a change in the time of the peak, or an increase in the total runoff from its pre-development values and manage pre-development runoff values on site.

Because implementing this performance standard will require changes to local codes and ordinances, as well as development of a municipal review and approval process, a compliance deadline of 2 years from the effective date of this permit has been proposed. EPA specifically requests comment on the proposed schedule. This performance standard must be implemented and enforced via an ordinance and/or other enforceable mechanism(s).

The permit also includes several additional water quality requirements, as applicable, that the permittee should implement via enforceable requirements within their jurisdiction. For activities/operations with demonstrable potential for pollutant loadings that may contaminate groundwater, water quality treatment for pollutants of concern must be provided if infiltration measures are to be used, e.g., areas handling chemicals, automobile service stations and lawn care operations/greenhouses/nurseries that handle fertilizers and pesticides. If an operation cannot implement adequate preventive or treatment measures to ensure compliance with groundwater and/or surface water quality standards, then stormwater must be properly treated via an NPDES-permitted facility or licensed waste hauler.

State water quality standards include priority protections for certain waters of the state. As applicable measures to prevent addition of pollutants to the water body, including thermal pollutants, must be implemented.

[10] Federal Interagency Stream Restoration Working Group (FISRWG). 1998. Stream Corridor Restoration: Principles, Processes and Practices. PB98-158348LUW.

When considered at the watershed scale, certain types of development can either reduce existing impervious surfaces, or at least create less associated imperviousness. At this scale, development can be used as one approach to improving water resources.

3. Plan Review, Approval and Enforcement provisions require that the permittees incorporate the standards outlined in Part I.D.5.b into site plan review, approval and enforcement procedures to ensure accountability for their implementation. Plan review procedures include pre-application procedures, site plan review and approval procedures, submittal of as-built certification within 90 days of project completion, post-construction verification procedures, and an education program for municipal staff and those subject to these requirements.

4. Maintenance Agreements provisions require that the permittees obligate the owner of long-term management practices to properly operate and maintain them for their accepted life span. This obligation can take the form of a maintenance agreement between the land owner and/or the developer, which would be transferred to subsequent owners, between the permittee and a homeowner's association, covenants and restrictions on the property deed itself, or other type of contract requiring all owners of the property to properly maintain and operate management practices. The maintenance agreement shall allow the permittee or its designee to perform maintenance or corrective actions neglected by the property owner/operator, and bill or recoup costs from that owner/operator.

5. Assessments provisions require the permittees to conduct assessments to provide a foundation for program improvements to be implemented during the next permit term.

c. Special Conditions and Targeted Monitoring Programs.

i. Compliance with Water Quality Standards. Pursuant to Clean Water Act 402(p)(3)(B)(iii) and 40 CFR §122.44(d)(1), this permit includes provisions to ensure that discharges from the permittee's MS4 do not cause or contribute to exceedances of State and Tribal surface water quality standards. In the event that EPA determines that a discharge from the MS4 causes or contributes to an exceedance of applicable surface water quality standards, EPA may notify the permittee and the permittee will be required to provide, within sixty (60) days, a report on measures taken and that are proposed be taken to ensure that the discharge will no longer cause or contribute to an exceedance of applicable surface water quality standards. Following notification by EPA, such additional controls must be incorporated into the SWMP. NMED or an affected Tribe may present evidence of water quality impacts and request EPA take action under this provision.

ii. Dissolved Oxygen. To help understand and address MS4 discharge contributions to periodic low oxygen problems at the mouth of the North Diversion Channel and in the Rio Grande, the permittees will be required to develop and implement a strategy to eliminate the discharge of pollutants at levels that cause or contribute to exceedances of State and Tribal dissolved oxygen water quality standards in waters of the United States.

Permittees shall identify potential for dissolved oxygen and pollutants contributing to reduced dissolved oxygen in North Diversion Channel and its discharge to receiving waters by assessing dry and wet weather data. Controls shall be developed and implemented, as necessary, to eliminate the stormwater discharge as a source of pollutants at levels that cause or contribute to exceedances of State or Tribal water quality standards for dissolved oxygen in waters of the United States. An initial progress report shall be made to EPA within six months of permit effective date and subsequent progress reports shall be included in each Annual Report.

This strategy must:

1. Identify the potential for dissolved oxygen and pollutants contributing to reduced dissolved oxygen in the North Diversion Channel and its discharge to receiving waters. Both dry and wet weather discharges shall be addressed. Assessment may be made using available data or collecting additional data;

2. Develop and implement controls, as necessary, to eliminate the discharge of pollutants at levels that cause or contribute to exceedances of State or Tribal water quality standards for dissolved oxygen in waters of the United States; and

3. Provide an initial progress report to EPA within six months of the permit effective date. Subsequent progress reports shall be included in the Annual Report. Each progress report shall include the information in Part VI, Table III.

iii. PCBs in San Jose Drain and North Diversion Channel. To help understand and address concerns regarding PCBs in the San Jose Drain and North Diversion Channel drainage areas, the permittees will be required to perform activities to identify and eliminate controllable sources of PCBs that cause or contribute to exceedances of water quality standards in waters of the United States. Permittees must provide an initial progress report to EPA within one (1) year of the permit effective date. Subsequent progress reports shall be included in the Annual Report. It is possible that the source of PCBs are related to past industrial activities in the drainage areas. The proposed permit requires permittees to perform duties as prescribed by the Industrial and High Risk Runoff and Illicit Discharges and Improper Disposal MEP elements, to identify, mitigate and control the source of these pollutants.

iv. Discharges to Impaired Waters. Impaired waters are those that have been identified by NMED or a Tribe pursuant to Section 303(d) of the Clean Water Act as not meeting applicable State or Tribal surface water quality standards. This may include both waters with EPA-approved Total Maximum Daily Loads (TMDLs) and those for which a TMDL has not yet been approved. For the purposes of this permit, the conditions for discharges to impaired waters also extend to controlling pollutants in MS4 discharges to tributaries to the listed impaired waters. Pollutants discharged via such tributaries may be contributing to the impairment of the listed water, especially in situations where the MS4 stormwater would reach the listed water via the tributaries in a short period of time.

To help protect and restore the quality of these waters, the permit would require additional emphasis on stormwater management programs targeting the pollutant(s) of concern. The conditions described below would not only address new listings during the

permit term, but also the transition to the new *E. coli* TMDL once approved (if not done so prior to finalization of the permit). EPA believes it is appropriate to include interim requirements for impaired water prior to final approval of a TMDL because NPDES permits are generally prohibited from authorizing discharges that would cause or contribute to the exceedance of a water quality standard and delays in implementing more aggressive measures to reduce pollutants (which would likely be needed to implement the TMDL anyway) would only allow conditions to worsen where municipal stormwater discharges contributed the pollutant(s) of concern. The MS4 permitting program has long embraced the concept of adaptive management and an iterative approach to improving the effectiveness of meeting the statutory and regulatory permit requirements and supporting the goals of the Act. The annual report requirements at 40 CFR 122.42(c) requires reassessment of controls and proposal of revisions to the stormwater management program. Interim efforts to further reduce the discharge of pollutants of concern while a TMDL (and accompanying implementation plan if the State or Tribe chooses to create one) is consistent with the overall approach to MS4 permitting.

v. Existing Discharges to an Impaired Water without an Approved TMDL. If the permittee's MS4 discharges to an impaired water without an approved TMDL, the permittee must address in its SWMP and annual reports how the discharge of the pollutant(s) identified as causing the impairment will be controlled such that they do not cause or contribute to the impairment. Within one (1) year of the later of issuance of this permit or approval of a CWA 303(d) listing, the permittee(s) must submit a monitoring plan for assessing the effectiveness of the SWMP at reducing levels of the pollutant of concern in MS4 discharges

vi. Bacteria TMDL. 40 CFR 122.44 (d)(1)(vii) requires that NPDES permit conditions be consistent with State and Tribal water quality standards and available waste load allocations (WLAs) in an approved Total Maximum Daily Load (TMDL). Inclusion of conditions to protect the quality of receiving waters are based on the authority of Section 402(p)(3)(B)(iii) of the Act. The requirements in the permit are designed to implement the requirements of the TMDL. The TMDL requires the use of controls to meet water quality standards in stormwater through a combination of source reductions and structural controls. The TMDL further states:

"Stormwater discharges are highly variable both in terms of flow and pollutant concentration, and the relationship between discharges and water quality can be complex (EPA 1998). EPA's interim permitting approach for NPDES stormwater permits establishes the use of best management practices to provide for the attainment of water quality standards through a combination of source reductions and structural controls."

The permittees have demonstrated compliance during the past permit term with the fecal coliform targets established by the 2002 TMDL through the bacteria reduction programs required to be incorporated into the SWMP by the previous permit. Monitoring and reporting requirements found at Tables II.A and II.C of the permit are continued at current levels until the new TMDL is approved by EPA.

The current fecal coliform bacteria TMDL has being replaced with a new TMDL based on *E. coli* approved by the New Mexico Water Quality Control Commission on April 13, 2010. Final approval of the new TMDL is expected prior to final issuance or during the term of this permit. Inclusion of provisions to switch compliance from the existing TMDL to compliance with the allocations and assumptions of the new TMDL is included. The biggest changes following approval of the new TMDL will be: 1) replacement of the fecal coliform WLAs in the permit with Measurable Goals implementing the *E. coli* WLAs of the new TMDL, 2) modification of the SWMP with any applicable requirements of the new TMDL, and 3) a requirement to propose modifications to the bacteria monitoring program. The target *E. coli* loads for stormwater entering the Rio Grande in a specified reach are shown at Table 5b are from the new *E. coli* TMDL. Table II.C in Part VI contains elements that must be addressed in the conversion to the new TMDL. EPA anticipates making an approval decision on the *E. coli* TMDL prior to the date this permit is finalized, so changes to consolidate conditions related to bacteria TMDL compliance and monitoring will likely be included in the final permit decision.

The new TMDL provides WLAs on an area discharging to a specified reach of the Rio Grande rather than on individual drain-based allocations. EPA is open to consideration of monitoring program elements that could include in-stream monitoring in addition to system-based monitoring in order to assess success in compliance with the TMDL. EPA requests input on appropriate monitoring program elements and expectations.

vii. Toxicity to Rio Grande Silvery Minnow. Informal consultation with the US Fish and Wildlife Service resulted in a permit requirement for permittees to perform toxicity testing on North Diversion Channel stormwater to ensure that discharges would not be toxic to the federally listed endangered Rio Grande silvery minnow. Testing was incomplete during the initial permit. Requirement for testing North Diversion Channel stormwater to determine its toxic effects on the fathead minnow (*Pimephales promalas*) and *Daphnia pulex, as indicator species,* is included in the proposed permit. Permittees shall:

1. include monitoring of one storm event per year, at a minimum, for the NPDES permit term,
2. comply with EPA 24-hour LC_{50} acute toxicity monitoring and testing described in Part III.D of the permit,
3. provide EPA with monitoring data, in accordance with annual reporting requirements,
4. notify the EPA immediately upon the detection of any toxicity, and
5. compile a final report to be submitted to EPA four (4) years and six (6) months from the effective date of the permit.

16. MONITORING AND REPORTING.

a. Reports Required. Permittees are required (40 CFR 122.42(c)(1)) to contribute to the preparation of an annual system-wide report including status of implementing the Stormwater Management Program; proposed changes to the Stormwater Management Programs; revisions, if necessary, to the assessments of controls and the fiscal analysis reported in the permit

application; a summary of the data, including monitoring data, that is accumulated throughout the reporting year; annual expenditures and the budget for the year following each annual report; a summary describing the number and nature of enforcement actions, inspections, and public education programs; and identification of water quality improvements or degradation. The permittees are required to do annual evaluations on the effectiveness of the Stormwater Management Program, and institute or propose modifications necessary to meet the overall permit standard of controlling the discharge of pollutants. The monitoring year ends **September 20th**, the "permit" year ends **December 31st**, and the annual report is due **April 1st.** Copies of these reports shall be provided by the permittees to the New Mexico Environment Department and to the Pueblo of Sandia. As part of the permit conditions, the permittees shall make these reports publicly available.

b. Monitoring. The permittees are required (40 CFR 122.26(d)((2)(iii)(C) and (D)) to monitor the MS4 to provide data necessary to assess the effectiveness and adequacy of SWMP control measures; estimate annual cumulative pollutant loadings from the MS4; estimate event mean concentrations and seasonal pollutants in discharges from major outfalls or sub-watersheds; identify and prioritize portions of the MS4 requiring additional controls; and, identify water quality improvements or degradation. The permittees are responsible for conducting any additional monitoring necessary to accurately characterize the quality and quantity of pollutants discharged from the MS4.

The permit also requires monitoring to support prioritization of storm water control efforts and protection of water quality. Six types of monitoring are required by the permit. Due to the variability of stormwater discharges and limited resources available to municipalities, the cost of the monitoring program needs to be balanced with the monitoring objectives and the more important goal of actually implementing controls that directly affect the quality of the stormwater discharged. While separated for clarity in the permit, the monitoring requirements do overlap to an extent and to avoid duplication and added expense, the permit specifically allows coordination between monitoring programs to use monitoring data collected for one purpose to be used to satisfy part or all of another's data collection requirement.

i. Representative monitoring. The monitoring of the discharge from representative locations identified in Part III of the permit during actual storm events is intended to provide information on the quality of runoff from the MS4, a basis for estimating annual pollutant loads, and a mechanism to evaluate control of pollutants discharged from the MS4. Results from the monitoring program shall be submitted annually on Discharge Monitoring Reports. The permittees shall monitor from locations identified in Table VI.C of the permit.

1. Requirements. The permittees are required to monitor for the parameters listed in Tables VI.A and VI.B of the permit throughout the permit term. Monitoring shall be conducted at the five monitoring locations found in Table VI.C of the permit. The monitoring locations, parameters and frequencies included in the permit for have been proposed by the City of Albuquerque.

The draft permit requires, within six months, the addition of at least three sites within the MS4 system to supplement the stations that monitor combined flows near the point they reach the Rio Grande. These new sites will provide information on the quality of MS4 runoff entering of from more sensitive or problematic portions of the MS4.

2. Parameters. The monitoring program, included in the current Stormwater Management Plan satisfies the regulatory requirement [40 CFR 122.26(d)(2)(iii)] to provide estimates of pollutant loadings for each major outfall. The permittee proposes to conduct monitoring for the parameters included in Table VI.A annually, and for the parameters included in Table VI.B biannually.

EPA notes that the City's comprehensive monitoring program was developed in 1997. Albuquerque, with assistance from co-permittees, has continued its stormwater runoff monitoring efforts since 1992. The permittee's are evaluating the current monitoring program and may propose a revised monitoring program that satisfies the regulatory requirements of [40 CFR 122.26(d)(2)(iii)] plus additional pollutants of concern.

3. Frequency. Parameters listed in Tables VI.A and VI.B continue to be monitored as follows: three storm events during the wet season and one storm event during the dry season. A total of 4 storm events shall be monitored at each monitoring station, annually or biannually as specified in each Table. The monitoring seasons in Albuquerque are as follows: **Wet season - June 1st to September 30th**; **Dry season - Oct. 1st to May 31st**. Reporting of monitoring data is based on the monitoring year from **Oct. 1st to Sep. 30th.**

ii. Representative Monitoring - Rapid Bio-assessment Option. Biological monitoring techniques offer the ability to indirectly assess the quality of stormwater discharges from the MS4 by assessing the "health" of the receiving water. Rapid bio-assessment protocols evaluate the number, diversity, and relative "pollution tolerance" of aquatic species in the receiving water bodies (e.g. streams, rivers, lakes, estuaries, etc.). Either fish or benthic organisms (bottom-dwelling insects, etc. that serve as food supply for higher organisms) can be studied. Comparing the types and numbers of organisms collected from water bodies receiving discharges from the MS4 to those collected from a "reference site" relatively un-impacted by urban runoff, provides an indication of how degraded the water body is. For example, a healthy stream would typically have greater species diversification and a higher number of species that require clean water to survive and reproduce. A degraded stream would have relatively fewer species and a larger proportion of species that are tolerant of pollution.

While rapid bio-assessments do not directly measure the quality of stormwater discharges, they can be an important (and cost effective) tool in tracking trends in water quality. The permittee(s) will be given the option of replacing a portion of the "chemical" monitoring required by the permit with a rapid bio-assessment monitoring program. Upon approval by the Director, the permittee may replace/reduce frequency of "chemical" monitoring with rapid bio-assessment of at least two receiving waters plus a reference site. Should the permittee(s) elect to use the rapid bioassessment option, "chemical" monitoring of actual stormwater discharges is required during years 1 and 4.

iii. Gross Pollutant Monitoring. Gross pollutant monitoring, including floatables, shall be accomplished to investigate trends in water quality issues related to man made debris and floatables. The comparison of yearly survey results allows the permittees and the EPA to assess the impact of the SWMP elements as they relate to the control and elimination of floatables discharged from the MS4. Gross pollutants (including floatable material) removal from each control facility shall be estimated and reported annually. The amount of material collected shall be estimated in cubic yards.

iv. Toxicity Monitoring. Toxicity monitoring requirements are discussed in Section 16 above.

v. Industrial and High Risk Monitoring. Requirements to monitor runoff from certain classes of industrial activity and higher risk sources have been continued from the previous permit.

vi. Wet Weather Screening. To help identify areas contributing higher levels of pollutants so the permittees can target more effective SWMP strategies for these areas of the MS4, wet weather screening of the entire MS4 will be required over five years, with at least 1/3 of the system to be screened within the first three years of the permit.

1. Requirements. The permittees must include sufficient screening points to adequately assess pollutant levels from all areas of the MS4 and at least five (5) screening points along each major drainage channel that drains 20% or more of the land area within the City of Albuquerque. Multiple locations within larger drainages will avoid one area being masked by the contributions of other areas. At the time of sampling, the permittee shall record any observed erosion of stream banks, scouring or sedimentation in streams, such as sand bars or deltas.

2. Parameters. The parameters to be screened would indicate a potential problem that could be followed up on by the permittees must include, at a minimum, at a minimum, BOD5, sediment or a parameter addressing sediment (e.g., TSS or turbidity), *E. coli*, Oil and Grease, nutrients, and any pollutant that has been identified as a cause of impairment of a waterbody receiving discharges from that portion of the MS4. The parameters selected was adapted from the pollutants of concern list at 40 CFR 123.35(d)(2)(iii) used for a similar purpose in evaluating small MS4s for potential problems, plus any pollutant of concern for impaired waters.

vii. Wet Weather Water Quality Impact Assessment. To help identify particular areas contributing higher levels of a pollutant of concern tied to a known water quality impairment, the permittees will be required to so the permittees can target more effective SWMP strategies for these areas of the MS4, wet weather screening of the entire MS4 will be required over five years, with at least 1/3 of the system to be screened within the first three years of the permit. This monitoring program should be coordinated with monitoring efforts to demonstrate compliance with any approved TMDL addressing discharges from the MS4.

1. Requirements. The permittees must include sufficient screening points to adequately assess pollutant levels from all areas of the MS4 and at least five (5) screening points along each major drainage channel that drains 20% or more of the land area within the City of Albuquerque. Multiple locations within larger drainages will avoid one area being masked by the contributions of other areas.

2. Parameters. The parameters to be screened would indicate a potential problem that could be followed up on by the permittees. The parameters selected was adapted from the pollutants of concern list at 40 CFR 123.35(d)(2)(iii) used for a similar purpose in evaluating small MS4s for potential problems.

viii. Dry Weather Discharge Screening. To ensure the SWMP is proving effective as controlling pollutants in discharges from the MS4 that occur during dry weather ("allowable" non-stormwater that is not treated as illicit), the permittees will be required to investigate address such sources. Screening of the system during dry weather conditions where flows would not be stormwater related will be required over five years, with at least 1/3 of the system to be screened within the first three years of the permit. This effort would compliment, but should be coordinated with the Illicit Discharge Detection and Elimination Program (IDDE) that is aimed at illegal non-stormwater discharges and dumping. Based on the results of this monitoring, the IDDE list of non-stormwater discharges could be modified or conditions for allowing such discharges added.

1. Requirements. The permittees must include sufficient screening points to adequately assess pollutant levels from all areas of the MS4 and at least five (5) screening points along each major drainage channel that drains 20% or more of the land area within the City of Albuquerque. Multiple locations within larger drainages will avoid one area being masked by the contributions of other areas.

2. Parameters. The parameters to be screened would indicate a potential problem that could be followed up on by the permittees must include, at a minimum, at a minimum, BOD5, sediment or a parameter addressing sediment (e.g., TSS or turbidity), *E. coli*, Oil and Grease, nutrients, and any pollutant that has been identified as a cause of impairment of a waterbody receiving discharges from that portion of the MS4. The parameters selected was adapted from the pollutants of concern list at 40 CFR 123.35(d)(2)(iii) used for a similar purpose in evaluating small MS4s for potential problems, plus any pollutant of concern for impaired waters.

ix. Request for Comment on Alternative Monitoring Requirements. Under the Phase I permit application and the previous permit, representative storm event monitoring was focused on chemical analysis of discharges of five points close to where stormwater from the MS4 would enter the Rio Grande. Today's permit retains much of this approach and adds more specific monitoring aimed at gathering more information on the quality of both wet and dry weather discharges occurring within the MS4. EPA specifically requests comment on alternative monitoring approaches that could free up some of the resources expended in monitoring these points, allowing more intense monitoring, perhaps on a

rotational basis, of discharges from areas draining to the major drainageways rather than the Rio Grande. Switching efforts to monitoring further up inside the MS4 system could provide valuable information on areas of the MS4 needing targeted efforts to reduce pollutants. EPA is open to the possibility of a monitoring program that combines outfall based monitoring with monitoring within waters of the United States as indicators of program success and a tool for targeting SWMP resources and requirements

17. PERMIT MODIFICATIONS.

a. Reopener Clause. The EPA may reopen and require modifications to the permit (including the SWMP) based on the following factors: changes in the State's Water Quality Management Plan and State or Federal requirements; adding permittees; SWMP changes impacting compliance with permit requirements; changes in permit conditions based on completion of Endangered Species Act consultation; other modifications deemed necessary by the EPA to adhere to the requirements of the Act. Implementation of the SWMP is expected to result in the protection of water quality standards. The permit does, however, contain a reopener clause should new information indicate the discharges from the MS4 are causing, or significantly contributing to, a violation of the State's water quality standards.

b. Other changes. The EPA has attempted to develop permit language to clarify the permit requirements concerning possible changes to the SWMP, permittees status, and other changes.

i. Terminated Permittees. The process for terminating coverage for an existing permittee shall adhere to the regulations 40 CFR 122.64. A notice of intent to terminate shall be issued in accordance with draft permit procedures.

ii. SWMP Changes. The SWMP is intended as a functioning mechanism for the permittees' use. Therefore, minor changes and adjustments to the various SWMP elements are expected. Incorporating this form of document into an NPDES permit has some inherent conflicts. The regulatory rules concerning permit changes and modifications do not easily translate to the minor changes that will be necessary for various elements during the permit term. The changes may be necessary to more successfully adhere to the goals of the permit. The EPA has determined that these minor changes that are specifically described in the permit shall not be considered permit modifications as defined in the regulations. Part I.D.6. of the permit describes the allowable procedure for the permittees to perform additions and minor changes to the SWMP. This section in no way implies that the permittees are allowed to impact or change elements that directly relate to permit conditions for the SWMP. Any changes requested by the permittees shall be reviewed by the EPA. The EPA has 60 days to respond to the permittees and inform them if the suggested changes impact or change the SWMP's compliance with a permit requirement and therefore are either disallowed or requires a formal permit modification procedure.

iii. Additions. The EPA's intent is to allow the permittees to annex lands and accept the transfer of operational authority over portions of the MS4 without mandating a permit modification. Implementation of appropriate SWMP elements for these additions

(annexed land or transferred authority) is required. Upon notification of the additions in the Annual Report, the EPA may require a modification to the permit based on the new information.

iv. Monitoring sites. The permit is issued on a system-wide basis in accordance with Section 402(p)(3)(I) of the Act and authorizes discharges from all portions of the MS4 owned or operated by the permittees. Since all outfalls are authorized, changes in monitoring locations, other than those with specific numeric effluent limitations, shall be considered minor modifications to the permit and shall be made in accordance with the procedures at 40 CFR 122.63.

18. CONSIDERATIONS UNDER FEDERAL LAW.

a. National Historic Preservation Act. Based on the information provided to date, no site listed or eligible for listing in the National Historic Register will be affected by proposed activities to control pollutants in the permittees' runoff. EPA has included in Part V.U, of the draft permit a condition requiring the permittees to provide specific information to the State and/or Tribal Historic Preservation Officer (SHPO) 30 days prior to commencing earth disturbing activities. Only activities meeting all of the following criteria are subject to this permit condition:

i. a permittee is conducting activity for implementation of permit requirements;
ii. the earth disturbing activity is an excavation and/or construction; and
iii. the activity is a disturbance of previously undisturbed land.

Examples of activities implementing permit conditions, (assuming the above criteria is met) include, but are not limited to: retention/detention basin construction; storm drain line construction; infiltration basin construction; dredging; and stabilization projects (e.g., retaining walls, gabions). The requirement to submit information on plans for future earth disturbing activities is not intended for activities such as: maintenance; and private development construction projects.

b. Endangered Species Act. Concurrent with the public notice of this permit, EPA is in consultation with the United States Fish and Wildlife Service, (FWS) under Section 7(a)(2) of the Endangered Species Act on the impacts of this federal action on threatened and endangered species and critical habitat. Section 7(a)(2) requires Federal agencies, in consultation with the Services, to ensure that their actions are not likely to jeopardize the existence of federally listed species or result in the destruction or adverse modification of designated critical habitat. After initiation of consultation, Section 7(d) of the Endangered Species Act prohibits irreversible or irretrievable commitments of resources that have the effect of foreclosing the formulation or implementation of reasonable and prudent alternatives which would not violate Section 7(a)(2) of the Endangered Species Act. The final permit may include conditions necessary to meet obligations under the Endangered Species Act.

19. CWA §401 CERTIFICATION OF THE DRAFT PERMIT.

EPA has already begun consultations with the State of New Mexico, the Pueblo of Sandia, and Pueblo of Isleta regarding the proposed permit reissuance. Concurrently with Public Notice of today's draft permit, the EPA is formally requesting certification of and/or comment on the draft permit under Sections 401(a)(1) and 401(a)(2) of the Act by the State of New Mexico, the Pueblo of Sandia, and the Pueblo of Isleta for all discharges to waters under their jurisdiction or to proximate waters upstream of waters under their jurisdiction. EPA will meet its obligation under CWA §401 prior to finalizing this permit. The final permit may include conditions required in accordance with Section 401 of the Act.

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