POLLUTION PREVENTION PROGRAM FOR POTW ALBUQUERQUE BERNALILLO COUNTY WATER UTILITY AUTHORITY Effective Date: October 1, 2012 September 27, 2013

I. Introduction

The Albuquerque Bernalillo County Water Utility Authority ("Water Authority") operates a Publicly Owned Treatment Works (POTW) that discharges to the Rio Grande. This discharge is regulated by U.S. Environmental Protection Agency (EPA) National Pollutant Discharge Elimination System (NPDES) Permit #NM 0022250. This system's main elements are a 2,400-mile collection system that serves some 606,000 residents and businesses located within the City of Albuquerque and unincorporated Bernalillo County, and a single treatment facility known as the Southside Water Reclamation Plant (SWRP). The new NPDES Permit # NM0022250 became effective on October 1, 2012. In this permit, Part I, Section D stipulates that the Water Authority institute a Pollution Prevention Program for its POTW. This document provides an overview of the various elements and initiatives the Water Authority has in place and which together constitute the Pollution Prevention Program for the POTW. The Program described below follows the outline specified in Part I, Section D and is divided into the following topics:

- o Influent loadings, flow and design capacity
- Effluent quality and plant performance
- o Age and expected life of the wastewater treatment facility's equipment
- o Bypasses and overflows of the tributary sewerage system and treatment works
- o New developments at the facility
- o Operator certification and training plans and status
- o Financial status of the facility
- o Preventative maintenance programs and equipment conditions
- o Overall evaluation of conditions at the facility

In December 2009, the Water Authority completed an in-depth evaluation of all assets at the SWRP to determine what would be the best approach to renovating and rehabilitating this facility. This evaluation specifically considered social, environmental, and economic consequences of asset failure as well as the probability of asset failure. The final report from this evaluation is referred to as the Reclamation Rehabilitation and Asset Management Plan (RRAMP). The RRAMP report provides detailed information and analyses that are included in the Pollution Prevention Program for SWRP. Where appropriate, references are made to information already available and compiled in the RRAMP report.

The Water Authority's Pollution Prevention Program document is a "living document". As such, it will be updated annually to account for new facilities, improvements, and changes the Water Authority has implemented in the operation of its POTW.

POLLUTION PREVENTION PROGRAM FOR POTW ALBUQUERQUE BERNALILLO COUNTY WATER UTILITY AUTHORITY Effective Date: October 1, 2012 September 27, 2013 Page 2 of 14

II. Influent loadings, flow and design capacity

The effluent limitations specified in NPDES Permit #NM0022250 for the SWRP (<u>ftp://ftp.nmenv.state.nm.us/www/swqb/NPDES/Permits/NM0022250-Albuquerque.pdf</u>) are based on a facility design flow of 76 million gallons per day (MGD). This flow capacity assumes influent

wastewater characteristics as noted in the table on Page 2below. Actual influent wastewater strength for Calendar Year 2012 is also provided in the same table for comparative purposes.

Influent Parameter	Design Value	Average Value for Calendar Year 2012
Flow, MGD	76	54.1
Carbonaceous Biochemical Oxygen Demand (CBOD ₅), mg/L	235	293
Ammonia (NH3), mg/L	27	35
Total Suspended Solids (TSS), mg/L	290	552

For the period of October 1, 2012 through September 22, 2013, the SWRP has been operating at about 70% of its permitted flow capacity. The differences between design values for influent wastewater strength and those experienced during Calendar Year 2012 for CBOD₅, NH₃, and TSS are believed to reflect the impact of water conservation by the Water Authority's water service customers. The <u>July 2013Water Resources</u> <u>Management Strategy</u>, 2024 Water Conservation Plan Goal, and Program Update are available on the Water Authority's website and may be viewed at the following locations:

http://www.abcwua.org/Conservation_and_Rebates.aspx_and http://www.abcwua.org/Water_Resources_Management_Strategy.aspx.

In accordance with the NPDES Permit, the Water Authority administers an Industrial Pretreatment Program. The program issues wastewater discharge permits to 69 industrial users. Discharge limitations for these users are based on EPA pretreatment regulations and the Water Authority Sewer Use and Wastewater Control Ordinance (SUO). Technically Based Local Limits (TBLLs) are set based upon the characteristics of wastewater received and produced at the SWRP. The TBLLS are used to set permit

POLLUTION PREVENTION PROGRAM FOR POTW ALBUQUERQUE BERNALILLO COUNTY WATER UTILITY AUTHORITY Effective Date: October 1, 2012 September 27, 2013 Page 3 of 14

limits for industrial users and other extra strength dischargers. Water Authority staff monitor and inspect industrial users, dental clinics, and Food Service Establishments (FSEs) at various frequencies during the year. The Water Authority also monitors the SWRP influent and effluent for a full suite of priority pollutants. Industrial user discharge results and SWRP influent and effluent pollutant levels are monitored and reported to EPA every September. The annual reports may be viewed on the Water Authority website at:

http://www.abcwua.org/Industrial_Pretreatment.aspx.

As required by the current permit, the Water Authority is preparing proposed changes to the SUO, TBLLs, and Enforcement Response Plan, along with a Capacity, Management Operations and

Maintenance (CMOM) Plan with emphasis on Fats, Oils and Grease (FOG) Policy. The changes to these documents will have a positive impact on the SWRP by reducing pollutant loadings and by reducing FOG discharges into the collection system which may contribute to Sanitary Sewer Overflows (SSOs).

III. Effluent quality and plant performance

Effluent quality data for the period commencing October 1, 2012 when new permit limits went into effect are on the next page for CBOD₅, TSS, NH₃, Total Inorganic Nitrogen (TIN), Dissolved Oxygen (DO), and E. coli. These data are taken directly from Discharge Monitoring Reports that can be viewed at the following website: <u>http://www.epa-echo.gov/echo/compliance_report_water.html</u>.





September 27, 2013 POLLUTION PREVENTION PROGRAM FOR POTW ALBUQUERQUE BERNALILLO COUNTY WATER UTILITY AUTHORITY Effective Date: October 1, 2012



POLLUTION PREVENTION PROGRAM FOR POTW ALBUQUERQUE BERNALILLO COUNTY WATER UTILITY AUTHORITY Effective Date: October 1, 2012 September 27, 2013 Page 6 of 14





The data show that despite more stringent limits that became effective on October 1, 2012, SWRP effluent quality met all NPDES Permit limits for these six (6) parameters since the effective date of the new permit, with two (2) exceptions. There was a permit exceedance for effluent ammonia (NH₃)on May 6, 2013 and another permit exceedance for E. coli on June 21, 2013. Judging by the few exceedance events over the past year, the SWRP has performed well. In addition, the available data at http://www.epa-echo.gov/cgi-bin/effluents.cgi?permit=NM0022250 show that SWRP effluent passed all tests conducted for Whole Effluent Toxicity.

POLLUTION PREVENTION PROGRAM FOR POTW ALBUQUERQUE BERNALILLO COUNTY WATER UTILITY AUTHORITY Effective Date: October 1, 2012 September 27, 2013 Page 7 of 14

It is believed that the combination of strategic asset renewal / replacement (See discussion in Section VI below) coupled with new initiatives for SWRP operator training (See discussion in Section VII below), and a focus on preventive maintenance for existing assets (See discussion in Section IX below) below have worked synergistically to improve plant effluent quality during the first year that the new NPDES Permit has been effective.

Lastly, the DMR report for management of bio-solids from SWRP shows the plant was fully compliant with NPDES Permit requirements for bio-solids management. The annual DMR for bio-solids is also available at http://www.epa-echo.gov/cgi-bin/effluents.cgi?permit=NM0022250.

IV. Age and expected life of the wastewater treatment facility's equipment

The RRAMP report provides detailed age and useful life assessments of existing SWRP liquid treatment, bio-solids (sludge) treatment, and supporting facility assets. These are discussed by each unit process area in Chapters 2-12. The RRAMP report may be viewed at the Water Authority's web site at the following location:

http://www.abcwua.org/uploads/FileLinks/145d206bb1ee48bc9346bb61b177ceca/2010 05_SWRP_RRAMP_Brown_and_Caldwell_1.pdf

Section VII of this Program describes specific projects that have been completed or are in progress for renovating and rehabilitating SWRP assets.

V. Bypasses and overflows of the tributary sewerage system and treatment works

In accordance with the NPDES Permit, the Water Authority is developing a CMOM Plan with Emphasis on FOG Policy. The Water Authority will strive to meet a long term goal of zero Sanitary Sewer Overflows (SSOs). The first CMOM Annual Report will be available after October 1, 2013. The CMOM Program Annual Report provides summary descriptions of CMOM Plan activities (past and planned).

The Water Authority utilizes "10-Codes" to identify various sewer problems. Specific to SSOs, the following are pertinent:

- 1. 10-40: Sewer blockage
 - a. that did not result in an SSO.
- 2. 10-42: SSO
 - a. From 9/16/2011 through 9/30/2012, a special "10-42 Non-Reportable" classification was created to track overflows less than 50 gallons.

POLLUTION PREVENTION PROGRAM FOR POTW ALBUQUERQUE BERNALILLO COUNTY WATER UTILITY AUTHORITY Effective Date: October 1, 2012 September 27, 2013 Page 8 of 14

- b. Since 10/1/2012, all SSOs regardless of volume have been designated a 10-42.
- 3. 10-48. Overflow that is contained in a building and results in property damage.

The following graphic shows the three (3) types of sewer problems for July 1, 2012 through June 30, 2013 which covers the most recent complete fiscal year for the Water Authority.



As part of the CMOM Report, the Water Authority is performing a CMOM Program Self-Assessment (Self-Audit) based on guidance provided by the EPA.

In the fall of 2013, the Water Authority will begin a comprehensive advertising campaign to raise public awareness relating to FOG issues.

During the period from October 1, 2012 to September 22, 2013 and within the SWRP campus, there were four (4) separate SSO events corresponding to upset conditions at the plant e.g., power outages and / or by-pass pumping around various process units while repair / maintenance work was being performed. In each of these events, all spills were promptly contained and managed on-site. There were no offsite discharges of pollutants from these SSO events.

VI. New developments at the facility

Since the RRAMP report was completed, several capital improvement projects at the SWRP have been implemented to replace worn assets. The following table lists the status of major projects undertaken to date and their impact on SWRP operations:

Month/year completed	Project	Impact			
Scheduled completion dates for projects underway but not yet completed are listed in					
italic font					
Liquid treatment / other projects					
4/2011	UV Disinfection	Eliminated need to maintain hazardous chlorine, sulfur dioxide, and ammonia gases on site while providing for required effluent disinfection			
10/2011	FY2006 Improvements	Replaced aeration system in South Process Basins 5 & 6 and worn primary effluent pump equipment			
10/2011	Primary Clarifiers Design Analysis Report	Established design criteria for Primary Clarifier renovations; Implementation deferred until 2014			
1/2012	Final Clarifier Renovations	Replaced all 12 final clarifier mechanisms with new units that improve settling process			
6/2012	Non-potable Re-use Facilities	Replaced worn / outdated effluent filtration and pumping assets that supply on-site re- use;			
5/2013	Dissolved Air Flotation (DAF) Renovations	Pilot tested new technology (Rotary Drum Thickening (RDT)) to replace worn DAF equipment; Design and construction scheduled to start in 2014.			
6/2013	Fiber Optic Cable &	Installed new data highway to support			

POLLUTION PREVENTION PROGRAM FOR POTW ALBUQUERQUE BERNALILLO COUNTY WATER UTILITY AUTHORITY Effective Date: October 1, 2012 September 27, 2013 Page 10 of 14

Month/year completed	Project	Impact		
	Coax Cable Replacement	SCADA system and replaced worn twin-axial cable system		
10/2013	Interim Blower Capacity Improvements	Install 2 new air supply blowers to replace 2 irreparable units; Project will increase overall air supply capacity for treatment process		
10/2013	Field Isolation Switch Replacement	Replace worn incoming power switchgear assets to improve power system reliability		
1/2014	SCADA Upgrade	Upgrade Operator Interface Station hardware / software including provisions for data historian		
3/2015	Preliminary Treatment Facility	Replace worn screening and grit removal assets and pumping equipment at Lift Station 11; Contract for construction scheduled to be awarded in Sept 2013		
Solids treatm	ent projects	·		
11/2011	Centrifuge #2 replacement	Replaced worn sludge dewatering equipment		
3/2012	Digester Heat Exchanger Replacement	Improved performance in the anaerobic digestion process		
3/2012	FY2006 Improvements	Replaced worn gas compressors in digester gas (bio-gas) cogeneration system; Improved reliability of digester gas cleaning		
2/2013	Digester cleaning	Removed accumulated inorganic debris in all 14 anaerobic digesters to improve digester performance		
4/2013	Centrifuge #1 replacement	Replaced worn sludge dewatering equipment		

POLLUTION PREVENTION PROGRAM FOR POTW ALBUQUERQUE BERNALILLO COUNTY WATER UTILITY AUTHORITY Effective Date: October 1, 2012 September 27, 2013 Page 11 of 14

VII. Operator certification and training plans and status

The SWRP is operated under the direct responsible charge of the plant's Operations Superintendent who holds a Wastewater Systems Level 4 certification issued by the New Mexico Water Quality Control Commission (NMWQCC). Serving under his direction are 11 supervisory staff (Shift Supervisors, Control System Operators, and Water Quality Specialists) that in turn oversee the work of 27 additional staff members assigned to operate various treatment plant processes. The certification status of those individuals involved with treatment plant operations who have successfully earned State Level certifications is as follows:

State certification level achieved	# of field operators	# operations supervisory staff
Wastewater Systems Level 1	1	-
Wastewater Systems Level 2	12	-
Wastewater Systems Level 3	4	-
Wastewater Systems Level 4	2	11

The Water Authority has an in-house training program dedicated to furthering the qualifications and knowledge of the Plant Operations staff.

In the spring of 2012, the Water Authority embarked on a major training and management program that has been specifically developed to enhance the training and knowledge of Plant Operations staff. This program's focus is on developing a pro-active plan for monitoring and adjusting treatment plant performance to achieve compliance with NPDES Permit requirements while optimizing the labor, materials, and energy resources expended. Major elements of this program include:

- o Updating of Standard Operating Procedures for SWRP treatment processes
- Refresher training in treatment processes
- 0
- Development of Key Performance Indicators for measuring the efficiency with which individual areas of the plant are being operated
- Area Performance Expectations which detail the expected actions to be taken by Operations staff members under various operating conditions and scenarios

POLLUTION PREVENTION PROGRAM FOR POTW ALBUQUERQUE BERNALILLO COUNTY WATER UTILITY AUTHORITY Effective Date: October 1, 2012 September 27, 2013 Page 12 of 14

 Annual Operating Plan that details the overall goals and objectives for SWRP Operations beginning in each calendar year; This Plan establishes specific operational strategies for the different treatment unit processes

Besides working to expand the overall training and knowledge base of SWRP Operations staff, this initiative also focuses on raising the expectations and accountability of staff towards achieving the desired results.

In January 2013, the Water Authority received an award from the New Mexico Water and Wastewater Association, an association of certified water and wastewwater plant operators, for most improved Operations and Maintenance (O&M) performance during Calendar Year 2012.

VIII. Financial status of the facility

The Water Authority operates as an enterprise fund that is wholly funded through user rates. The Water Authority's Board of Directors is committed to funding utility operations in accordance with prudent financial management practices. Beginning on July 1, 2013, the Water Authority formally separated from the City of Albuquerque's financial management system and implemented its own Enterprise Resource Planning (ERP) system. The principal advantage of this new system is the ability to get more timely information on the financial status of the Water Authority's various operating units, including data that captures the cost for operating, maintaining, and expanding the POTW.

With its new ERP system, the Water Authority will now be able to submit Comprehensive Annual Financial Reports within five (5) months of the close of each Fiscal Year that runs from July 1st through June 30th.

The Water Authority currently has a credit rating of AA+ which allows it to readily sell debt offerings in the municipal bond market to finance a portion of its overall capital improvement program. The current policy adopted by the Water Authority's Board of Directors is to finance no more than 50 percent of the capital improvement program through debt. The remainder is financed through available cash flow.

IX. Preventative maintenance programs and equipment conditions

The Water Authority uses a Computerized Maintenance Management System (CMMS) called Maximo to track all preventive maintenance work performed on its POTW, as well as track corrective maintenance work. Maximo tracks the status of over 105,000 assets in the Water Authority's POTW. Of this total, there are over 96,000 assets in the collection system i.e., individual manholes and gravity sewer segments and another 9,000 mechanical equipment, electrical

POLLUTION PREVENTION PROGRAM FOR POTW ALBUQUERQUE BERNALILLO COUNTY WATER UTILITY AUTHORITY Effective Date: October 1, 2012 September 27, 2013 Page 13 of 14

equipment, and instrumentation assets at SWRP. Using Maximo, individual Work Orders for Preventive Maintenance (PM) on these assets are automatically generated and tracked through completion. Work Orders for PM range in complexity from periodic flushing of sewer lines to removal of sand and grit at collection system lift stations to calibrating process control instruments in the treatment system at SWRP to performing scheduled overhauls of gas-fired engine generators at the SWRP cogeneration facility. Maximo is also used to initiate and track Work Orders for Corrective Maintenance (CM) on POTW assets.

The data for labor hours, material costs, and contractual services costs to complete each Work Order are tallied in Maximo and used to make strategic decisions on whether to keep an asset in service or replace it.

The Water Authority's process of implementing capital improvements for its POTW includes updating the master asset database to include all new mechanical, electrical, and instrumentation assets installed during a construction project. The new assets are then linked to Maximo so that required preventive maintenance is scheduled and performed.

During the most recent Fiscal Year that ended on June 30, 2013, over 62,200 hours of Preventive Maintenance (PM) and Corrective Maintenance (CM) were performed on the Water Authority's POTW. Of this total, 69% was performed as preventive maintenance work. There were 35,700 hours of combined CM and PM spent in the collection system whereas 26,500 hours of combined CM and PM were performed on the SWRP and lift stations / vacuum stations.

X. Overall evaluation of conditions at the facility

The SWRP has some of the oldest assets still in service for any wastewater treatment facility in New Mexico. Despite its age, the SWRP consistently produces effluent of a quality that complies with the limits established in NPDES permit #NM0022250. As this document has demonstrated, the Water Authority's Pollution Prevention Program pestablishes that it has:

- A sound financial backing,
- An organized plan for renovating, rehabilitating, and or replacing aging assets,
- An effective maintenance management program that focuses on Preventive Maintenance rather than Corrective Maintenance, and;
- Effective programs for training its staff assigned to facility operation and maintenance.

POLLUTION PREVENTION PROGRAM FOR POTW ALBUQUERQUE BERNALILLO COUNTY WATER UTILITY AUTHORITY Effective Date: October 1, 2012 September 27, 2013 Page 14 of 14