CITY OF TEMPE

2014-2015

ANNUAL PHASE I MS4 REPORT

As Prescribed by AZPDES Permit No. AZS000005-2010 Appendix B

September 2015

Prepared by the City of Tempe
Public Works Department
Water Utilities Division
Environmental Services Section
Regulatory Compliance Group

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1. General Information

A. Name of Permittee

City of Tempe

B. Permit Number

AZPDES Permit No. AZS000005-2010

C. Reporting Period

July 1, 2014 – June 30, 2015

D. Stormwater Management Program Contact

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2. Annual Report Certification

The Annual Report Form (ARF) must be signed and certified by either a principal executive officer or ranking elected official; or by a "duly authorized representative" of that person in accordance with Sections 9.2 and 9.12 of the Permit.

I certify under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Donald Bessler

Signature of Certifying Official

9/23/15

Date

3. Narrative Summary of Stormwater Management Program Activities Report

This section provides a status summary addressing stormwater management program activities required by AZPDES Permit No. AZS000005-2010 (Permit). Included is a brief description of program or activity implementation and progress or challenges, where applicable, in each area during the reporting year. If applicable, any significant developments or changes to the number or type of activities, frequency or schedule of activities, or the priorities or procedures for specific management practices are explained. This section includes wording required by Appendix B of the Permit and additional information provided by Tempe.

A. Public Awareness Activities Including Outreach

Tempe Activities

Tempe has met and surpassed Permit requirements outlined in Appendix A, Sections I.A and I.B, by coordinating and participating in several public and business sector awareness and outreach activities. During the 2014-2015 reporting year, Tempe reached seven target groups totalling approximately 194,668 people and/or businesses while covering a wide array of stormwater topics. In some cases this number includes the same audience, though the stormwater message varies (e.g., *Tempe Today* articles reach both Tempe residents and businesses. Tempe businesses are also reached through *E-Bulletin* distributions). Table 1 summarizes events, topics, estimated numbers of people reached (where possible), numbers and types of materials distributed, and target groups. Examples of outreach materials, brochures, articles, and E-Bulletins are included as **Attachment A**.

Table 1: Summary of Public Awareness Activities and Outreach

Outreach Events	Date	Topic(s)	Number of People or Businesses Reached	Number and Type of Materials Distributed	Target Groups
Industrial Facilities	All Year	Stormwater Information for Industrial Facilities	129	BMP Brochures Given to Industrial Facilities During Inspections	Industrial and Commercial Businesses
Municipal Facilities	All Year	Stormwater Information for Residents	890	400 bookmarks and 200 NPS puzzles; 25 each Home Repair; Yard & Garden; Pool, Pet and Auto BMPs + Storm Drain BMP 100 @ Library; 10 Each-FOG, Pet, Pool, Storm Drain & Yard to 14 other COT facilities.	General Public
Tempe Today Article	Jul-14	Monsoon Pollution Prevention	44,000	Article in *Tempe Today* Newsletter Inserted Into Water Bills and on Website	General Public, Residential Community, Industrial, Commercial Businesses

E-Bulletin (3Q2014)	Sep-14	Backflow Program Changes & Stormwater Program Reminder	114	Environmental Bulletins via E-mail and Posted to Website	Commercial, Industrial Businesses
Connecting Tempe Article	Sep-14	Zero Waste Challenge in November	12,000	Article in Connecting Tempe about Zero Waste Challenge Event in November	General Public, Residential
Tempe Tardeada	Oct 5-14	Stormwater Information for Home Owners	200	Home Repair; Yard& Garden; Pet Waste; FOG; Auto and Pool BMPs Distributed	General Public, Residential
ASU Homecoming Block Party	Nov 20-2014	Stormwater Information for Homeowners	150	Home Repair; Yard& Garden; Pet Waste; FOG; Auto and Pool BMPs Distributed	General Public, School, Residential
GAIN Night	Oct 25-2014	Stormwater Information for Home Owners	250	Home Repair; Yard& Garden; Pet Waste; FOG; Auto and Pool BMPs Distributed	Home Owner Associations; Residential Community
Tempe Today Article	Oct-14	Keep Stormwater Cleaner & Recycle Fryer Grease & Adopt Programs	44,000	Article in *Tempe Today* Newsletter Inserted Into Water Bills and On Website	General Public, Residential Community, Industrial, Commercial Businesses
Zero Waste Challenge	Nov 11-2014	Stormwater Information for Homeowners	400	BMP Packets: Home Repair; Pet Waste; FOG; Auto; Pool; and Yard & Garden included	Stormwater Information for Home Owners & Stormwater Management Plan Available for Feedback
Connecting Tempe Article	Nov 1-2014	Recycle Fryer Oil	12,000	Stormwater Information for Home Owners	Stormwater Information for Home Owners
E-Bulletin(4Q2014)	Nov-14	Backflow Prevention Program Changes & Tempe Stormwater Program Information	114	Environmental Bulletins Via E-mail and Posted to Website	Commercial, Industrial Businesses
Tempe Festival of the Arts	Dec 5-7-2014	Stormwater Information for Home Owners & Stormwater Management Plan Available for Feedback	1021	Stormwater Information for Home Owners & Stormwater Management Plan Available for Feedback	General Public, Residential Community, Public Participation
Connecting Tempe Article	Jan-15	Adopt Programs	12,000	Article in Connecting Tempe about Adopt Programs & Project LoPiano	General Public, Residential Community, Industrial, Commercial Businesses
E-Bulletin (Q1 2015)	Feb-15	SARA Chemical Reporting Program & Tempe Stormwater Program Information	114	Environmental Bulletins Via E-mail and Posted to Website	Commercial, Industrial Businesses
Dutch Brothers	Mar-15	Stormwater Program Education	75	Pollution Prevention-BMP for FOG; Downtown and Storm Drains	Commercial Business
Twitter, Facebook, News-e-list & Channel 11	Mar 27-2015	SWMP Available for Review	5,386	Promoting Availability of SWMP at Tempe Festival of the Arts	General Public, Residential Community, Public Participation

Tempe Festival of the Arts	Mar 28-30-2015	Stormwater Information for Home Owners & Stormwater Management Plan Available for Feedback	897	Stormwater Information for Home Owners & Stormwater Management Plan Available for Feedback	Stormwater Information for Home Owners & Stormwater Management Plan Available for Feedback
Kyrene Elementary De Los Niños School	Feb-15	Pollution Prevention	27	Pollution Prevention Outreach	School
Tempe Today Article	Mar-15	*Tempe Today* article - Zero Waste event and Earth Day Green Expo	44,000	Article in *Tempe Today* Newsletter Inserted Into Water Bills and On Website	General Public, Residential Community, Industrial, Commercial Businesses
Twitter, Facebook, News-e-list & Channel 11	Apr 22 - 2015	SWMP Available for Review	16,500	Promoting Availability of SWMP at Tempe Earth Day Green Expo	General Public, Residential Community, Public Participation
Tempe Earth Day Expo	Apr 22-2015	Outreach for Stormwater Program	152	Promoting Green Initiatives in Tempe	General Public, Residential Community, Public Participation
E-Bulletin (Q2 2015)	May-15	OSHA Program Changes & Tempe Stormwater Program Information	114	Environmental Bulletins via E-mail and Posted to Website	Commercial, Industrial Businesses
Stroud HOA	May 21-2015	Stormwater Pollution Prevention	60	Stormwater Information for Homeowners	HOA
Downtown Business Outreach	Jun-15	Tempe Town Lake Brochure & FOG Information	75	Brochures to DTC and Downtown Restaurants	Commercial, Business
			194,668	**Estimated annual total of people or businesses reached through 25 awareness and outreach activities**	

Regional Activities

- Since the beginning of 2012, Tempe Environmental Services has coordinated and hosted quarterly Arizona Phase I MS4 Coalition Meetings. These meeting are an opportunity for Arizona Phase I municipalities to discuss program challenges, successes, innovations, and experiences. These meetings also allow for a more consistent understanding and implementation of the MS4 program statewide.

- The City of Tempe is an active member of Stormwater Outreach for Regional Municipalities, known as STORM. STORM is a regional organization promoting stormwater quality education within the greater Phoenix metropolitan area. STORM was founded in 2002 in response to regulations requiring municipalities to implement measures to educate the public on ways to protect the quality of stormwater runoff. Benefits for the region include increased public awareness of the impacts of stormwater pollution, shared experience and knowledge, pooled financial resources to address concerns common to all communities, protected environments, and improved quality of life.

  In December 2005, STORM filed for not-for-profit status with the Arizona Corporation Commission. The trade names "STormwater Outreach for Regional Municipalities

(STORM)" and "STORM" were filed with the Secretary of State. STORM officially became a not-for-profit charitable organization in February 2006 and developed a set of bylaws to guide the organization. This status allows STORM to operate as a charitable organization and enables tax deductible contributions to promote stormwater pollution prevention.

The STORM organization is composed of 28 members and benefits small, medium and large municipalities throughout the greater Phoenix metropolitan area. It has brought together the experience and resources of Phase I MS4s, including Phoenix, Mesa, Tempe, Glendale, Scottsdale and Arizona Department of Transportation (ADOT) with Phase II MS4s of Apache Junction, Avondale, Buckeye, Casa Grande, Chandler, El Mirage, Flood Control District of Maricopa County (FCDMC), Fountain Hills, Gilbert, Goodyear, Guadalupe, Litchfield Park, Luke Air Force Base, Maricopa County, Paradise Valley, Peoria, Pinal County, Queen Creek, Salt River Pima-Maricopa Indian Community (SRPMIC), Surprise, Tolleson and Youngtown. All members are encouraged to participate at meetings that are held on the fourth Tuesday of each month.

Key STORM accomplishments for fiscal year 2014-2015 include the following:

- Continued to use "Only Rain in the Storm Drain" motto, to express a common regional theme that is easily understood and clearly communicate the essential message of keeping pollutants out of the storm drain system.

- Maintained the web site located at http://www.azstorm.org, to relay the STORM message in both English and Spanish. Details of web site activity are included in the FY 2015 STORM annual report. There were a total of 4,080 hits on the STORM website from July 2014 through June 2015. The website was redesigned and updated in FY 2014-2015.

- Movie Theater Campaign – This campaign ran from November 7, 2014, to March 5, 2015 to correspond to the winter "wet season". Prior to movies at nine theaters in the metropolitan Phoenix area, digital slides were shown on 158 movie screens. Total estimated as 156,000 movie goers at these theaters to provide an impact to approximately 2,145,000 viewers.

- STORM developed a Facebook page. https://www.facebook.com/StormWaterOutreach

- Display boards continued to be used at community outreach events to convey the difference between the sanitary and storm sewer systems to the public, including suggestions for avoiding adding pollutants to the stormwater system. The display boards were utilized by STORM members at events listed in

Attachment B of the FY2015 STORM annual report. Table banners continue to be used during the fiscal year to depict the STORM name, logo and website.

- Promotional Items purchased in 2015 include: $10,918 for "Bags-on-Board".
- Printed Materials - STORM continues to distribute for member use brochures about storm drains and construction BMP's.

The Fiscal Year 2015 STORM annual report is included as **Attachment B**.

B. Public Involvement Activities Including Outreach

"Adopt-A" and Other Volunteer Programs

Tempe implements various City "Adopt-A" (street, path, park) and other volunteer programs as components of the public involvement and participation portion of the City's stormwater program. In addition to the aesthetic value of keeping roads and rights-of-way clean, the public and community service workers have helped Tempe to remove an estimated 448 bags of trash and debris that could have otherwise ended up in the MS4 system and/or subsequently a Water of the U.S. Information on Tempe's "Adopt-A" programs can be found at the website listed below.

- http://www.tempe.gov/adopt

During the 2012-2013 reporting year, Tempe reintroduced a storm drain catch basin labeling program. Tempe continued this program during the 2014-2015 reporting year which resulted in the application of 77 labels during one event.

Table 2 summarizes the number of events that occurred during the 2014-2015 reporting year, number of participants, amount of trash removed, and number of labels applied.

Table 2: Summary of "Adopt-A" and Volunteer Involvement and Participation

Adopt Events	Number of Events	Volunteers or Community Service Workers Involved	Bags of Trash Removed
Tempe Adopt-A-Path	0	0	0
Tempe Adopt-A-Street	15	176	74
Tempe Adopt-A-Park	20	495	374
Totals	**35**	**671**	**448**
Other Volunteer Events	**Number of Events**	**Number of Volunteers**	**Labels Applied**
Storm Drain Labeling	1	4	77

Open Meeting Events

Tempe must, at least biannually, incorporate "open meeting events" into community activities or other public events. These open forums are used for public education, input, and feedback on the City's stormwater management program and review of the Stormwater Management Plan (SWMP). Since many of Tempe's stormwater awareness and outreach activities/events occur during community activities and/or public events and are hosted by City staff who are experienced with Tempe's program, these venues are utilized as "open meeting events." During the 2014-2015 reporting year, Tempe advertised and conducted two events. See Table 1 for details.

Parks

Tempe's Parks Maintenance Section continues to maintain 65 "doggy bag" dispensers at various Tempe parks. This activity specifically involves the public in the reduction of pet waste that has a potential to reach the MS4.

Communication and Public Reporting

Tempe continues to provide the public with the opportunity to participate in the City's stormwater program by providing avenues for the reporting of spills, discharges, or illicit dumping within the community. Tempe continues to operate its stormwater hotline and web-reporting for public reporting of illegal discharges to the City's storm drain system. In an effort to consolidate City service information and contacts, Tempe utilizes a 311 system, which allows residents to call the 311 number, visit the 311 website and mobile Tempe311 app to report potential illicit discharges. A summary of public reporting events can be found in Section 3.C of this report. Means of reporting are as follows:

- 480-350-2811 Stormwater Hotline
- 480-350-4311 City Hall Call Center
- http://www.tempe.gov/311
- http://www.tempe.gov/stormwater
- Tempe311 mobile app (iPhone and Android)

In addition, Tempe regularly disseminates the general Environmental Services Section phone number and stormwater webpage for purposes of allowing public discussion of stormwater issues and providing copies of stormwater material and the most current SWMP. The general contact number and program information location are as follows:

- 480-350-2678
- http://www.tempe.gov/stormwater

Participation is encouraged during outreach events and public awareness activities, and contact information is provided with all outreach materials. See Section 3.A of this report for detailed outreach events.

Household Products Collection Center

Tempe continues to operate its Household Products Collection Center (HPCC), which opened in 1999. The HPCC provides Tempe residents with an outlet for disposing of and recycling potentially hazardous household products. Materials commonly collected at the facility include e-waste, batteries, used motor oil, paint, antifreeze, pesticides, herbicides, and solvents. Materials are either recycled or disposed of in accordance with local, state, and federal regulations. Usable materials, such as paint, are processed, packaged, and made available to Tempe residents free of charge. Information on the HPCC, and on the proper handling and disposal of household waste, is available at:

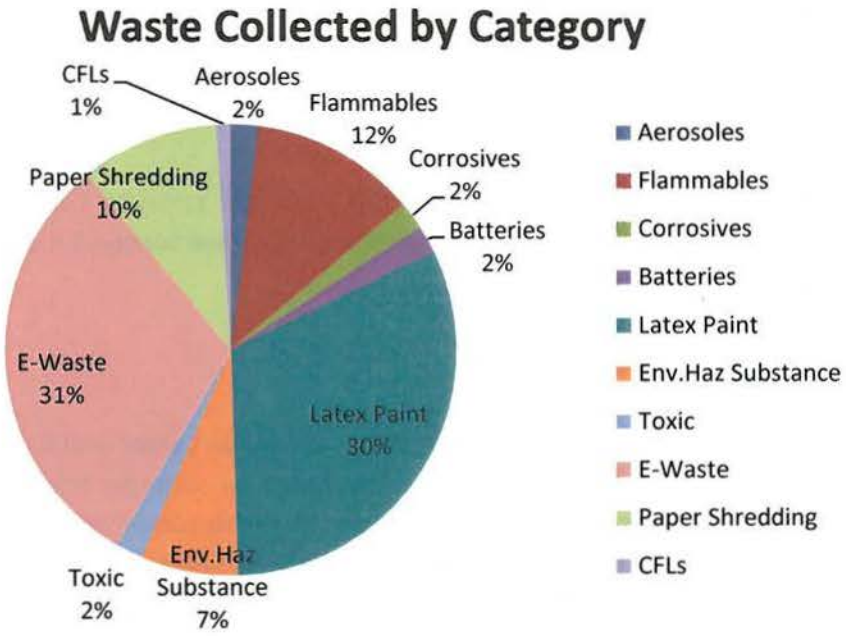
- http://www.tempe.gov/householdproducts

Table 3 summarizes HPCC events during the 2014-2015 reporting year.

Table 3: Summary of HPCC Activities

Number of Days Open to the Public	Number of People that Utilized HPCC Services	Amount of Household Hazardous Waste Collected
104	9,040	368,948 pounds

Below is a breakdown of waste collected, of which 89% was recycled.



C. Illicit Discharge Detection and Elimination (IDDE) Program Activities

Tempe's IDDE program consists of several components designed to educate, involve, and solicit participation from City employees and the public; proactively prevent illicit discharges; and detect and eliminate illicit discharges. Below is a summary of these IDDE program components:

Training

During the 2014-2015 reporting year, Tempe maintained a staff of seven Environmental Compliance Inspectors. All inspectors are cross trained in pretreatment, cross connection control, and stormwater inspections. During the 2014-2015 reporting year, stormwater training for this group consisted of one training event attended by eight employees (seven Environmental Compliance Inspectors and one Environmental Quality Specialist), one training event for a new inspector and one event for Certified Stormwater Inspector Recertification update attended by four employees (three Environmental Compliance Inspectors and one Environmental Quality Specialist). Training focused on pollution prevention, Tempe Code, spill management, handling, storage, and transportation of used oil & other toxic/hazardous materials. Training also included permit requirements such as identifying and reporting illicit, non-stormwater discharges and field practices, commercial inspections and various Certified Stormwater Inspector training topics.

As an efficiency measure, Tempe's Water Quality Specialists were assigned to conduct outfall screening beginning in the 2013-2014 reporting year. Accordingly, all four Water Quality Specialists and their supervisor also received IDDE training during the 2014-2015 reporting year.

Of the 249[1] Tempe employees who received training during the 2014-2015 reporting year, approximately 230 non-Environmental Services field employees received Municipal Facility training that included the identification and reporting of illicit and non-stormwater discharges. IDDE topics were discussed during these Municipal Facility training events, though are not specifically categorized as IDDE training for purposes of this report. See Section 3.K of this report for a summary of training events, number of employees trained, and topics discussed. See **Attachment C** for copies of training sign-in sheets.

These Tempe employees, many of whom work in the field, have been specifically trained to contact Tempe's Environmental Services Section in the event that a potentially illicit discharge is identified.

Outreach – Pollution Prevention

Tempe continues to implement a comprehensive outreach program that conveys a message of pollution prevention and encourages the reporting of illicit discharges or other potential sources of stormwater pollution. For details about this program, please see Sections 3.A and 3.B of this report.

Infrastructure Inspection and Maintenance

One of Tempe's most proactive IDDE measures is the inspection and cleaning of municipal stormwater infrastructure. These activities are divided between five City workgroups: Environmental Services, Parks Maintenance, Streets, Water Engineering, and Utility Services. Each section maintains responsibilities for various aspects of stormwater infrastructure inspection and cleaning. Note that infrastructure is not limited to catch basins, but includes all aspects of the MS4 such as catch basins, drywells, bubbler boxes, inlet structures, outfalls, streets, conveyance pipes, retention basins, etc. Outfall inspections are covered further in this section. Environmental Services maintains a contract for infrastructure cleaning services.

- Environmental Compliance Inspectors continue to conduct Alternative Retention Criteria Area (ARCA) catch basin inspections after large downtown events such as 4th of July festivities and the New Year's Eve Block Party. See Section 3.G of this

[1] Number includes employees that may have attended more than one training event.

report for a description of the ARCA. During the 2014-2015 reporting year, two ARCA area catch basin inspection events occurred. As a result, 45 catch basins were inspected, of which 13 were referred for cleaning these are included in Table 4 under Environmental Services infrastructure cleaned.

Environmental Compliance Inspectors also conducted 123 additional infrastructure inspections in various other sections of the city. Many of these inspections resulted in the deployment of cleaning measures.

As mentioned in Section 3.B, during the 2014-2015 reporting year, Tempe continued the storm drain catch basin labeling program. Each catch basin that was labeled during the 2014-2015 reporting year was also inspected and scheduled for cleaning if needed. This effort resulted in the inspection of 77 catch basins and numerous cleaning events included in Table 4 under Environmental Services.

A numeric summary of these inspection events can be found in Table 4 of this section. Inspection forms, narratives, and other inspection related information are included as **Attachment D**. A summary of contracted cleaning events and reports are included as **Attachment E**.

- Tempe's Parks Maintenance Section provides routine maintenance for various parks, retention areas, public common areas, public open areas, and recreational areas throughout the city. During routine visits to each of these facilities, cursory inspections are conducted of stormwater infrastructure. Detailed inspections are conducted annually. During the 2014-2015 reporting year, the Tempe Parks Maintenance Section inspected 290 pieces of City stormwater infrastructure including catch basins, inlet structures, drywells, bubbler boxes, and retention basins. Fifty-nine of the 290 inspected stormwater assets were referred for cleaning. A numeric summary of inspections and cleaning events can be found in Table 4. Inspection forms are included as **Attachment F**. A summary of contracted cleaning events is included as **Attachment E**.

- Tempe's Street Maintenance Section is tasked with the maintenance and cleaning of Tempe streets and various other MS4 components, including street sweeping and routine infrastructure inspections. To reduce the amount of debris entering the MS4, Tempe continues to implement an effective street sweeping program using the following schedule (adherence to this schedule varies occasionally due to unforeseen events that require staff and/or equipment reprioritization):

    - Arterial streets are swept once every two weeks.
    - Residential, Collector, and Industrial streets are swept once every month.

- City-owned parking lots and large City facility schedules vary upon condition.
- Upon request (e.g., water main breaks, emergency road repairs, trackout, special events, etc.).

During the 2014-2015 reporting year Tempe cleaned approximately 21,888 linear miles of streets, effectively removing approximately 1,176 tons of debris. A numeric summary of these events can be found in Table 4.

Streets Maintenance also conducts visual inspections of catch basins and other similar infrastructure. During the 2014-2015 reporting year, this section completed inspections of 100 catch basins along 100 miles of Tempe owned and maintained roadway. Of the 100 catch basins inspected, none were referred for cleaning. A numeric summary of these events can be found in Table 4. Inspection forms are included as **Attachment G**.

In addition to the inspections and cleaning outlined above, two additional street programs are used to conduct infrastructure inspections. Structures located on arterial roadways are inspected as part of the City's right-of-way weed control program and structures located on streets other than arterials are inspected as part of the City's street sweeping program. These inspections are not specifically documented unless further detailed inspection or cleaning is deemed necessary.

- Tempe's Water Utilities Division, Water Engineering Section, currently operates one sanitary sewer closed-circuit television (CCTV) crew. As a component of the MS4 program, this crew is available to conduct underground infrastructure inspections for any of the above-listed Tempe work groups. When available, this crew also conducts MS4 CCTV inspections. During the 2014-2015 reporting year, Tempe inspected 8618.9 feet (1.63 miles) of underground MS4 conveyance. Inspection records are included as **Attachment H**. Areas of debris identified as a result of these inspections were referred for cleaning. Linear mileage cleaned, removed debris, and CCTV activities are summarized in Table 4.

- Tempe's Water Utilities Division, Utility Services Section, is responsible for the operation and maintenance of Tempe's water and wastewater infrastructure. On occasion, this section is also requested to perform unique stormwater-related cleaning or maintenance activities. During the 2014-2015 reporting year, this section was called upon to inspect, clean, and locate stormwater infrastructure and haul stormwater material for disposal.

Table 4: Summary of MS4 Infrastructure Inspections and Cleaning

Location/Description	Infrastructure Inspected		Infrastructure Cleaned		Amount of Debris Removed
	Number	Miles	Number	Miles	Tons
ARCA	45	-		-	
Environmental Services (other)	123	-	175	1.83	21
Parks/Common and Rec. Areas	290	-		-	
Streets (excluding street sweeping)	100	100	-	-	
Pipe (CCTV)	-	1.63	-	-	
Utility Services	0	-	-	-	
Streets (including street sweeping)	-	-	-	21,888	1,176
Totals	**558**	**102**	**175**	**21,889**	**1197**

Note: Infrastructure includes catch basins, drywells, bubbler boxes, inlet structures, streets, conveyance pipes, etc. All previously mentioned cleanings are included in the Environmental Services count.

Call-Outs

Tempe's Stormwater Permit requires that the City respond to at least 90 percent of all reported illicit discharges and investigate at least 80 percent of potential illicit discharges reported by the public. Of the 105 call-outs that Tempe's Environmental Services Section received, 90 were either directly or indirectly related to stormwater concerns. All calls were responded to and investigated. Note that some of the "call outs" were preventative inspections. A summary of all call-outs pertaining to these reports can be found in **Attachment I**. Table 5 summarizes the response and investigation percentages.

Table 5: Summary of Potential Illicit Discharge Reports

Reports (hotline, web form, other calls)	Reports Responded To	Percent Responded To	Reports Investigated	Percent Investigated
90	90	100	90	100

Inspections – Municipal, Industrial, Commercial, Outfall

Tempe's stormwater inspection program for municipal, industrial, and commercial facilities is an important component of the IDDE program. Aside from identifying and eliminating discharges, these inspections compel the use of stormwater Best Management Practices (BMPs), bring awareness to stormwater pollution issues, and ultimately prevent the occurrence of illicit discharges that could impact the MS4 or receiving waters. These specific programs are further summarized in Sections 3.D and 3.E of this report. Tempe's outfall

inspection program also serves as an important component of this program. This program is further summarized in Section 3.H of this report.

IDDE Screening Program, Investigations, Identified Sources, and Corrective or Enforcement Actions

Tempe's IDDE screening program can be initiated by notifications from persons participating in any previously listed components (e.g., public notifications, field staff notifications, inspections, etc.). Tempe responds to all reported discharges, regardless of the source, to determine whether they are illicit discharges, and initiates investigation of these discharges within three business days of detection or report. Discharges known to not be a significant source of pollutants or otherwise exempt are not subject to further investigation. If the discharge is found to be illicit, corrective actions, including enforcement mechanisms, are used to eliminate the illicit discharge. Identified wastewater discharges, such as raw sewage or grease, are immediately investigated and eliminated as soon as possible. Discharges found to not be a significant source of pollutants, exempt from CWA discharge provisions, or permitted under an ADEQ AZPDES permit are not necessarily investigated each time they are identified (e.g., irrigation water, tail-water, permitted De Minimis discharges).

If the source of an illicit discharge cannot be identified through physical investigations and field screening, grab samples will be collected at the outfall or field location where the prohibited discharge occurred and analyzed at a state certified lab. During the 2014-2015 reporting year, all discharges were identified through physical investigations and/or field screening, or characterized through laboratory analysis.

Tempe Environmental Compliance Inspectors identified the following as a result of 64 outfall inspections, 122 industrial/commercial inspections, 105restaurant inspections, and 90 call-outs:

- Seven outfall discharges from four outfalls were determined to not be sources of pollutants. Four outfall discharges from one outfall are under investigation. Further information can be found in Section 3.H of this report.

- Two potential or actual illicit discharges to the MS4 resulted in the issuance of two official violation/warning letters. Of the two violation warning letters, both were issued to restaurants. Note that violation/warnings are issued in accordance with Tempe's Enforcement Response Plan and points are assessed to the discharger. See **Attachment J**.

Table 6 summarizes the Environmental Services Section's non-municipal inspections and findings.

Table 6: Environmental Services Non-Municipal Facility Inspection Summary

Inspection Type	Number of Inspections	Official Findings/Enforcement
Outfalls	64	7 dry weather flows from 4 outfalls (determined to not be a significant source of pollutants.) 4 dry weather flows from 1 outfall are under investigation
Industrial/Commercial (non-restaurant)	122	2 Violation/Warning Letters
Restaurant	105	
Call-Out	105	
Catch Basins and Other Infrastructure	123	175 Infrastructure Cleaning Events
Total	**519**	

D. Municipal Facilities

Inventory

The total number of Municipal Facilities is 149. A list of facilities and a map of general facility locations is maintained and kept on file with Tempe's Environmental Services Section and can be reviewed by ADEQ upon request. This inventory is subject to change based upon internal annual reviews.

As a result of the 2012 audit described in the 2011-2012 annual report, all facilities were reviewed for potential reclassification to allow for a stronger emphasis on sediment control, storage practices, site activities, and general housekeeping. Ranking criteria was modified to accommodate this focus, but no changes were made in facility classifications because impacted facilities were already classified at a higher level. During 2014-2015 four facilities were added to the inventory three Park-n-Ride sites for Transportation and Well 016 for PW-Water (all priority 3). This will be the last reporting year for the Clark Pool facility as it has been demolished to construct a new community garden that will become part of the Clark Park facility. Table 7 summarizes the Municipal Facility inventory prioritization.

Table 7: Summary of Priority Municipal Facilities

Department/ Division	Priority #1 Facilities	Priority #2 Facilities	Priority #3 Facilities	Number of Facilities
PW-Water	3	11	18	32
Fire	1	8	1	10
Parks	4	3	57	64
Community Services	0	6	11	17
Transportation	1	2	3	6
Police	0	4	1	5
PW-Other	3	0	0	3
Miscellaneous	0	3	9	12
Totals	**12**	**37**	**100**	**149**

All Priority #1 facilities are on a biannual inspection schedule. Priority #2 facilities will be inspected every three years and Priority #3 facilities will be inspected every five years. New facilities and those with significant changes in purpose and/or inventory will be inspected as they come on line or change.

Inspections

Consistent with Tempe's Municipal Facility Stormwater Inspection Program, Tempe inspected and prioritized all 149 sites over the previous reporting years. In the 2014-2015 reporting year, 95 inspections were conducted at 83 facilities.

Table 8 summarizes all 2014-2015 inspection activities. Inspection reports can be found in **Attachment K**.

Table 8: Summary of Municipal Facility Inspections

Facility type/ inspection frequency	Number of Facilities	Number of Facilities Inspected	Number of Facility Inspections	Percent Inspected
Priority 1	12	11	18	92
Priority 2	37	29	34	78
Priority 3	100	43	43	43
Totals	**149**	**83**	**95**	**56**

Results

Results and/or activities and control measures implemented as a result of the 95 inspections conducted in the 2014-2015 reporting year are as follows:

- All inspected facilities that store any single container exceeding five (5) gallons of a hazardous material post or maintain documentation of practices and procedures designed to prevent and respond to spills that have potential to come into contact with stormwater. See **Attachment L**. These practices are in addition to Tempe's Hazardous Waste Management Plan (HWMP) which requires the proper handling, storage, transport and disposal of hazardous wastes associated with municipal operations and facilities.

- During facility inspections, basic stormwater awareness practices are discussed with facility representatives. These discussions are separate and in addition to formalized stormwater training.

- Parks staff requested more frequent inspection of facilities as a follow up to ensure that BMP implementations were being maintained at Priority 1 and 2 facilities.

- The Kyrene Utilities Facility continued to have issues with the site's equipment wash area being overwhelmed with sediment from field operations. Short term measures were put into place until an expanded facility can be designed and constructed. Plans and engineering drawings have been made to move the bulk of the sediment producing operations to the South Tempe Water Treatment Plant. It is expected that the City Council will approve the final construction plans in late Fall of 2015. Construction of the new facility is anticipated to begin in April 2016 and be completed in June 2016.

Chemical Handling, Storage, Disposal Practices, and Spills

Several Permit sections require various plans, documents, or procedures ensuring the proper handling, storage, and disposal of chemicals and effective response to chemical spills. Tempe's efforts in this area involve several City sections, all of which serve an important role related to the protection of human life and the environment. Below is a summary of activities performed by various City sections.

- **Environmental Services**

Tempe's Environmental Services Section is responsible for all initial facility stormwater inspections required by the Permit. In part, the purpose of these inspections is to ensure proper housekeeping and the implementation of stormwater BMPs. During these inspections, facility chemical storage practices are reviewed from an environmental protection perspective. Facilities at which any single container exceeding five gallons of a hazardous material is stored are required to post or maintain documentation of practices and procedures designed to prevent and respond to spills that may come into contact with stormwater. This document was designed to provide a simple, easy-to-read message of proper chemical handling, storage, disposal, and spill response practices. It was developed by representatives from Environmental Services, Risk Management, and HPCC. This document is included as **Attachment L**.

One municipal facility spill incident was reported to the Environmental Services Section during the 2014-2015 reporting year. On September 9, 2014, a small diesel fuel spill occurred at the East Valley Bus Operation and Maintenance (EVBOM) facility at 4:30 pm. The spill occurred on a concrete surface during the fueling of a municipal bus. The spill occurred when a contracted employee decided to "top-off" the fuel tank after the automated shut-off had activated. Total volume of the spill was estimated to be approximately five gallons. The spilled material was recaptured and the recovered material was sent off to be disposed of at a Waste Management facility. Measures have been taken to prevent further spills, specifically training to enforce the no topping-off rule. All internal spill reporting procedures were followed, which allowed for quick response and mitigation.

Tempe's Environmental Services Section is also responsible for most City-wide MS4 stormwater training. This training includes proper chemical handling, storage, disposal, and spill response practices. See Section 3.K for a summary of training events.

- **HPCC**

HPCC staff provides various levels of support for all aspects of chemical handling, storage, disposal, and spill response practices. The HPCC is a City-wide liaison for the acquisition of necessary spill prevention and response equipment and Tempe's in-house facility for the disposal of chemical wastes. The HPCC also maintains Tempe's Hazardous Waste Management Plan (HWMP). The HWMP was updated in 2011 to include practices to minimize exposure of hazardous waste to precipitation. The Plan was most recently updated in 2014. This review was conducted by Tempe's Environmental Health and Safety Supervisor and an Environmental Quality Specialist (EQS) from Environmental Services. The HWMP is included as **Attachment M**.

In addition to these responsibilities, HPCC staff provided assistance with various municipal facility stormwater BMP needs during the 2014-2015 reporting year.

- **Risk Management**

  Risk Management provides support, guidance, and training in areas related to chemical handling, storage, and spill response. All City-wide safety programs are managed by this section and include the City of Tempe Hazard Communication Program, which was developed to inform employees of their "right to know" about all physical and health hazards associated with handling materials that contain hazardous substances. Risk Management provides annual 8-hour HazWoper training to Water Quality Specialists and Environmental Compliance Inspectors.

- **Fire Department**

  The Tempe Fire Department provides emergency response services for incidents involving hazardous materials. Stormwater protection is a critical part of emergency response procedures and is included as part of the City's emergency response training. The Tempe Fire Department's Hazardous Materials Policy addresses containment of hazardous materials as a critical component of spill response procedures.

Pesticides, Herbicides, and Fertilizers

- Tempe has significantly reduced the amount of pesticides and herbicides used by employing integrated pest management practices. However, when pesticide and/or herbicide use is needed, established application best management practices are implemented. These practices were developed by Tempe-certified applicators and Tempe's Environmental Services Section in 2011. A copy of this plan is included as **Attachment N**. The plan is reviewed annually by a Parks Maintenance Section representative.

- Tempe's Parks Maintenance Section applies fertilizer to City parks during the growing season using calibrated broadcast spreaders. Application rates are based on recommendations from the University of Arizona Cooperative Extension Turf Grass Research Facility. Soil and tissue analyses are periodically used to confirm or modify application rates. Currently, some parks and the City golf courses can inject liquid fertilizers through programmable irrigation controllers. When fertilizer is applied in this manner, it is done in small applications over several days to reduce or eliminate chemical run-off. In some turf areas, aeration methods are used which allow for better infiltration of water, fertilizers, chemicals, and soil amendments. In addition, all City of Tempe pesticide applicators are licensed through the Arizona

Office of Pest Management, and are required to complete continuing education units (CEUs) every year, which include training on best management practices.

- Tempe maintains Area-wide AZPDES Pesticide General Permit (PGP) coverage for the application of pesticides and herbicides to City-owned and operated urban lakes. Tempe does not conduct the actual application of pesticides to these water bodies; rather, applications are conducted by contracted pesticide applicators licensed through the Arizona Office of Pest Management. All contracted applicators are required to comply with PGP conditions and Tempe-specific BMPs.

Multi-Sector General Permit (MSGP) and other AZPDES Tracking

Two Tempe-owned and/or operated facilities currently maintain coverage under the MSGP, and two additional facilities maintain No Exposure Certifications (NECs). No other facilities to which the MSGP is applicable have been identified. Tempe identifies facility environmental regulatory requirements when operations at an existing facility change or new facilities are constructed. Tracking of MSGP and all other ADEQ and EPA regulatory requirements occurs electronically through a compliance management solution known as Intelex (http://www.intelex.com/).

Inventories and Mapping

Tempe's Permit contains a series of inventory and mapping requirements with various completion dates ranging from the submittal of the first annual report to the fourth year annual report. Table 9 summarizes Permit mapping requirements that have been met, the reporting year in which they were completed or updated, and the map title. These maps will be updated to reflect changes and Permit requirements as needed. During the 2013-2014 reporting year, the drainage basin map was updated to reflect changes at Tempe Town Lake. The Tempe Town Lake eastern dam was deflated in Q2-2013 resulting in an expanded lake that now directly accepts flow from an outfall that previously discharged east of the lake. Additionally, construction on the western dam will involve stormwater infrastructure modifications. As a result of these changes many of the maps listed below will be updated over the next couple of years, once the construction is completed. All maps are maintained on file with Tempe's Environmental Services Section and can be reviewed by ADEQ upon request. Note that all other inventories are addressed in their respective reporting sections.

Table 9: Summary of Mapping Status

Map Description	Reporting Year Map Completed or Updated	Map Name
Identification and mapping of Waters of the U.S. (including Tempe area canals) that may receive discharges from the MS4	2010-2011	Tempe MS4 Surface Waters
An up-to-date map or map(s) showing MS4 boundaries.	2010-2011	All Maps
An up-to-date map or map(s) showing locations where Tempe's storm sewer discharges to Waters of the U.S.	2010-2011	Tempe MS4 Monitoring and Discharge Locations, Tempe MS4 Drainage System
An up-to-date map or map(s) showing wet weather stormwater monitoring location(s) and the associated drainage basins. (Including acreage and land uses).	2010-2011	KP-01, SR-05, SR-08, TD-01, TD-03 Stormwater Monitoring Location Fact Sheets
Map of all major outfalls and other field screening points.	2011-2012	Tempe MS4 Major Outfalls
Map of facilities owned or operated by the MS4 that have the potential to discharge pollutants to Waters of the U.S.	2010-2011	Tempe MS4 Municipal Facilities
An up-to-date drainage system map.	2010-2011	Tempe MS4 Drainage System
Drainage Basins	2013-2014	Tempe MS4 Stormwater Basins
ARCA	2007-2008	Tempe ARCA

Below is a summary of mapping capabilities required by the fourth year annual report as outlined in Appendix A, Section IV.E (first measurable goal).

- **Linear Drainage Structures**

  Line layer showing the location of all stormwater system pipes and the direction of stormwater flow.

  Status: Tempe's mapping system currently maintains this capability.

- **Storm Drain Inlets and Catch Basins**

  Point layer showing the location of all storm drain inlets and catch basins.

  Status: Tempe's mapping system currently maintains this capability.

- **Outfalls**

  a) Point layer showing the location of all outfalls.

b) Polygon layer showing the drainage area associated with each of the monitored outfalls identified in Table 1 of the Permit.

Status: Tempe's mapping system currently maintains this capability.

- **Detention/Retention Basins**

Point or polygon layer showing the locations of all identified City-owned retention and detention basins that are connected to the municipal stormwater conveyance system (i.e., that receive drainage from or discharge to a stormwater conveyance).

Status: Tempe's mapping system currently maintains this capability.

- **Jurisdictional MS4 Boundary**

Line or polygon layer showing the jurisdictional boundaries of the MS4, including any new land annexations during the Permit term.

Status: Tempe's mapping system currently maintains this capability.

E. Industrial Facilities

Status of Identification and Inventory of Industrial/Commercial Facilities

The City of Tempe Environmental Services Section has developed an inventory of all industrial and commercial facilities within the City that are subject to inspection under Tempe's MS4 Permit. This inventory was developed using the following Permit-required criteria:

- Industrial facilities identified in 40 CFR 122.26(d)(2)(iv)(C);
- Industrial facilities subject to MSGP requirements, including those facilities that have submitted a no exposure certification; and
- Other industrial and/or commercial sources (or categories of sources) Tempe determines are contributing a substantial pollutant load to the MS4.

The inventory for SARA Title III and MSGP Facilities was developed by acquiring information from the following sources (See **Attachment O** for listing of these facilities):

- Arizona State Emergency Response Commission – (Tempe facilities subject to SARA Title III) – 159 Facilities
- InfoGroup, Government Division – ReferenceUSAGov Data Base (Tempe facilities subject to MSGP as identified in 40 CFR 122.26[b][14][i,ii,iv-ix, xi]) – 798 Facilities

Other sources used by the City to identify industrial and/or commercial sources (or categories of sources) that may be contributing a substantial pollutant loading to the MS4 are:

- Utility billing records
- Multi-media inspections conducted by Environmental Compliance Inspectors

The inventory of SARA Title III and MSGP facilities is duplicative in many respects and is inclusive of facilities within Tempe that are subject to industrial pretreatment permitting requirements. Industrial pretreatment facilities are prioritized for annual stormwater inspections. In addition to the above-listed facilities, Tempe has added restaurants as a "category of sources" with a potential to impact the MS4. Accordingly, all inspected restaurants are evaluated for stormwater compliance.

Overview of Inspection Findings and Significant Findings

Tempe Environmental Compliance Inspectors conducted stormwater inspections at 122 industrial/commercial facilities subject to SARA Title III, MSGP, and Industrial Pretreatment requirements; and 105 restaurants. Restaurants were inspected for compliance with stormwater requirements along with other regulatory program requirements. As a result of these inspections, findings ranged from minor to significant. Minor findings, such as inadequate use or lack of BMPs, or inadequate material/chemical storage, did not result in enforcement escalation and were quickly addressed by the inspected entity. As a result of call out inspections two significant findings resulted in corrective and enforcement actions. Industrial/commercial inspection documentation and restaurant inspection documentation are included as **Attachment P** and **Q**, respectively.

Corrective and Enforcement Actions Needed & Taken in Response to Inspections

During inspections, Tempe inspectors routinely identify minor corrective needs that do not escalate to formal enforcement action. These corrections are usually addressed during or shortly after the inspections occur and are verified by the inspector. These findings are generally documented on inspection forms or addressed verbally.

There were two findings requiring formal enforcement related to an illicit discharge to the MS4. Both enforcement actions taken were at restaurant facilities. One restaurant was washing equipment outside which resulted in a discharge to the MS4. The other restaurant had a discharge from their clean out into the MS4. See **Attachment J** for violation/warning letters and NOVs.

In addition to addressing minor and major deficiencies, Tempe inspectors regularly provide facilities that may require coverage with ADEQ information. During the 2014-2015 inspection year, Tempe identified 58 facilities to which the MSGP may be applicable but for

which a demonstration of coverage was not provided. Tempe provided ADEQ with information for these potential non-filers on January 8, 2015, and July 15, 2015. See **Attachment R** for copies of non-filer notifications.

F. Construction Program Activities

Status

Tempe's stormwater construction program is managed by the Public Works Engineering and Community Development/Development Services Divisions. The Program encompasses plan review, inventory, prioritization, inspection, and enforcement of private and Capital Improvement Project (CIP) construction projects that will result in a land disturbance of one acre or more, and those that disturb less than one acre but are part of a larger common plan of development. For the 2014-2015 reporting period, Tempe has reviewed and inventoried 100 percent of all construction projects meeting the land disturbance criteria. During the 2014-2015 reporting year Tempe identified 51 private development projects and six CIP projects requiring review inventory, prioritization, and/or inspection. The numeric table summary was updated to include inspections previously mentioned in the in FY2013-2014 Annual report. Twenty four inspections reported in the 2013-2014 Annual report were conducted in July of 2014. Nineteen were active construction sites inspections and six were post construction site inspections. The inspection reports were included in **Attachment S** the 2013-2014 Annual Report.

Inspection Findings

During the 2014-2015 reporting year, 57 construction stormwater inspections occurred. For private construction there were 51 qualifying sites in the reporting period. 46 sites were identified as active construction sites and were prioritized for a higher frequency of inspection. Stormwater BMP's are checked as a part of other inspections on site. All inspection reports are included as **Attachment S**.

Six active CIP sites were inspected during this reporting period. Each site will have at least one annual inspection during the next reporting period per permit requirements.

Note that the number of inspected sites does not necessarily reflect the number of sites inventoried or prioritized since the annual inspection requirement is a "rolling" target based upon the project's grading and drainage permit issuance. As a result of Development Services inspections two corrective actions were required. These actions are described below. Inspection documents are included as **Attachment S**.

Corrective Action and Enforcement

Two corrective actions were issued to private development construction sites as a result of the sites not maintaining their stormwater pollution prevention devices properly. Each site was issued an Engineering Correction Notice and subsequently corrected the problems. Escalated enforcement was not required.

No non-filers were identified. The Tempe Engineering and Development Services Divisions require proof of ADEQ's CGP AZPDES NOI Authorization from the project's owner or developer prior to issuance of a grading and drainage permit, and, therefore, do not anticipate the identification of non-filers.

Training

Stormwater training events for employees directly involved with construction activities occurred on January 14, 2015, for Community Development staff and April 14, 2015, for Engineering staff. See Section 3.K of this report for a summary of training events, the number of employees trained, and topics discussed.

G. Post-Construction Controls

Summary of Controls

Consistent with EPA's Low Impact Development (LID) recommendations and urban stormwater Best Management Practices (BMPs), Tempe's most effective post-construction control remains on-site retention as implemented by Tempe's Stormwater Retention Ordinance - Chapter 12, Article IV, of the Tempe City Code. See **Attachment T**. This ordinance is an effective control measure by providing containment for approximately 50 percent of the rainfall in Tempe, and consequently limiting discharges of pollutants to Waters of the United States. Tempe's Stormwater Retention Ordinance has been in effect since 1967 and has undergone modifications to accommodate more dense development in and around downtown Tempe and the Rio Salado corridor, an area designated as the Alternative Retention Criteria Area (ARCA). Outside the ARCA, all new development or substantial improvements to existing developments that may impact Tempe's MS4 must provide storage of sufficient volume (i.e., on-site retention) to hold the runoff from the 100-year design storm. Inside the ARCA, new development or substantial improvements to existing developments must provide on-site retention for the two-year design storm. The two-year requirement may be waived within the ARCA subject to approval by the City of Tempe Public Works Director if equivalent BMP's for on-site pollutant removal are implemented.

Overview of Post Construction Inspections Program

Post-construction inspections are conducted on 100 percent of all permitted residential, commercial, and CIP projects that result in a land disturbance of one acre or more, and those that disturb less than one acre but are part of a larger common plan of development. These post-construction inspections are part of the warranty period inspections and occur within 12 months after completion of construction. The inspections provide an opportunity to identify corrective action to be implemented by the developer or responsible contractor for a variety of items, including stormwater and/or drainage controls. Stormwater control measures can utilize one feature or a combination of several features. These control measures will be examined during post-construction site inspections for which an ADEQ NOI is required.

Post Construction Inspections and Corrective Action and Enforcement

Two qualifying Engineering CIP construction sites completed construction and received post-construction inspections in the reporting year. Fifteen qualifying private construction sites completed construction and received post-construction inspections.

No corrective or enforcement actions were needed or taken during this reporting period for post construction activities. Post-construction inspection documents are included as **Attachment S**.

New or Revised Post-Construction Requirements

Since Tempe's last annual report, there have been no new or revised post-construction requirements related to permits the City issues. Tempe will not issue a grading permit, building permit, or a certificate of occupancy to an owner/developer until notification from the City Engineer is received indicating that a drainage plan and on-site grading and drainage improvements are in compliance with Chapter 12, Article IV, of the Tempe City Code. In addition, the City Engineer will not issue this notification unless a project provides the required retention or unless the project is in the ARCA and the Public Works Deputy Director has approved alternative on-site pollutant removal BMPs. Sections 12-71 and 12-73 of Tempe's on-site retention ordinances contain the administrative requirements that ensure implementation of this program. The ordinance provides some flexibility to developments outside the ARCA that discharge directly to Waters of the U.S., as long as: drainage does not enter the MS4, BMPs for pollutant removal are included in the design, and stormwater is discharged consistent with AZPDES and all other regulatory requirements.

Tempe's low impact development activities evaluation can be found in Section 5 and **Attachment FF** of this report.

H. Outfall Inspection Program

Staff training

As a result of the 2012 MS4 Audit, Tempe developed an IDDE Program Guidance Manual to bring consistency and clarity to procedures involved during outfall inspections and investigations. During the 2014-2015 reporting year, Tempe conducted one detailed IDDE training event that focused on conducting dry weather screening events and source investigations. A total of five Water Quality Specialists were trained. Refresher training was also provided to Environmental Compliance Inspectors.

Outfall inventory

Tempe has identified 42 major outfalls as defined by 40 CFR 122.26. A map and inventory of outfalls is maintained on file with Tempe's Environmental Services Section and can be reviewed by ADEQ upon request. The number of major outfalls is subject to change based upon system changes or the identification of previously unidentified outfalls.

Of these 42 major outfalls, 19 are identified as priority outfalls. The priority designation is based upon receiving water, history of illicit discharges or non-stormwater flow over the last five years, or any cause for prioritization identified by the City. The number of priority outfalls is subject to change based upon changes in receiving water designation, detection of illicit discharges that have not been eliminated, elimination of illicit discharges, confirmation that non-stormwater flows do not contain a significant source of pollutants, or other factors.

Inspection Tracking System

All major outfalls are inspected annually, and all priority outfalls are inspected semi-annually. If prohibited discharges are identified, inspection frequencies may be increased to quarterly. Water Quality Specialists and Environmental Compliance Inspectors are assigned to designated outfalls. Beginning in the 2014-2015 reporting year, Water Quality Specialists are responsible for dry weather screenings at assigned outfalls at the required frequencies. If field screening procedures trigger the need for investigation, an Environmental Compliance Inspector will conduct an inspection or make a source determination and follow-up as needed. Once screenings and inspections are completed, field data forms and investigation forms are provided to the Environmental Compliance Supervisor for review, after which all forms are scanned, entered into Tempe's document tracking system, and separately provided to an Environmental Quality Specialist for MS4 Permit tracking and reporting.

Inspection and Screening Procedures

Outfall inspections are conducted utilizing standard field screening procedures and are typically completed when rainfall, temperature, and moisture are lowest, but may be conducted at any time in dry weather conditions as long as the inspection occurs at least 72 hours after the latest rain event. Below is a summary of procedures:

- *Initial*

  For each outfall or field screening point location, the following information is recorded on an individual outfall inspection form:

  1. General Information:
     a. Date and Time of Inspection
     b. Name of Inspector
     c. Outfall Location/Description
        i. Outfall ID and description (MH, channel, outfall, etc.)
        ii. Location description if not an outfall (GPS Coordinates)
        iii. Diameter
     d. Time since last measurable rain event and approximate amount (> or < 72 Hours)
     e. Watershed Use (industrial, commercial, residential, etc.)
  2. Estimated Flow Rate (if flow exists)
  3. If flow does not exist, as many visual and olfactory observations are completed as possible.
  4. If flow exists,:
     a. All visual and olfactory observations are completed

b. Field Analysis is conducted
c. Determination if flow is illicit or a significant source of pollutants
   i. If illicit or a significant source of pollutants, outfall inspection form is completed and investigation is initiated.
   ii. If not illicit or a significant source of pollutants, findings are documented (i.e. tail water, TTL bypass, dechlorinated pool backwash, etc.)
5. Outfall inspection form is completed and determination is made whether follow-up or increased inspections are needed (quarterly or semi-annual).

When flow is present during an outfall inspection, an estimation of flow rate and physical/chemical observations and field analysis are required. The parameters in Table 10 will be observed or field tested and documented:

Table 10: Field Screening Parameters

Parameter/ Analyte	Method*	Trigger*
Color	Visual	"Off-Color"
Odor	Olfactory	Chemical, gas, sulfur, etc.
Clarity	Visual or Field	Highly Turbid
Floatables/Oil	Visual	Presence of solid or liquid floatables or sheen
Stains/Deposits	Visual	Presence
Biological Growth	Visual	Excessive growth, death, etc.
Temperature	Field	Hot or cold compared to ambient
pH	Field	< 6.5 or >9 S.U.
Total Chlorine	Field	>0.02 ppm, >4 ppm, depending on SWQS
Copper	Field	Presence
Phenol	Field	Presence
Detergents	Field	Presence

*Methods and Triggers are detailed in Tempe program guidance documents.

- *Follow-up Action*

Any flow for which the discharge is not known or at least one analytical trigger is exceeded is assumed to be illicit or containing a significant source of pollutants and is screened again for verification.

If, upon the second screening, the flow remains or the analytical trigger is still exceeded, a source identification investigation is initiated. A discharge source investigation form is used to document findings.

If, upon the second screening, the flow is absent and/or the analytical trigger is no longer exceeded, a screening follow-up will occur at the same location within three months. If the three-month follow-up screening does not detect flow or a trigger exceedance, routine screenings at this location will resume. If the three-month follow-up indicates flow or an analytical trigger exceedance, a source identification investigation will be initiated.

Findings

During the 2014-2015 reporting year, Tempe Water Quality Specialists conducted 64 outfall inspections. Of these, 40 inspections were completed at priority outfalls, and seven of these inspections identified flow from four outfalls. All seven events were screened in the field. One site continues to be inspected quarterly. A report about the ongoing investigation of this site is included in **Attachment U**.

Laboratory analysis results in each case confirmed that no parameters were above the applicable Surface Water Quality Standards. Flow from four outfalls were determined to not be significant sources of pollutants and were identified as either irrigation tail water, irrigation flow, already permitted AZPDES discharges, or runoff coming from the Papago Park Ponds outside of Tempe's jurisdiction.

Completed outfall inspection forms are included as **Attachment U**.

I. New or Revised Ordinances, Rules, or Policies

Revised Ordinances

Tempe has not developed new or revised existing stormwater code during the 2014-2015 reporting year.

Copies of Chapter 12, Articles IV and VI; and Chapter 19, Article IV, of the Tempe City Code can be found in **Attachment T**.

Policies and Stormwater Management Plan (SWMP)

Tempe has not developed new or revised existing policy. The SWMP was updated in 2015. It can be found in **Attachment EE**. In 2013, Tempe completed a low impact development evaluation which may result in future policy and SWMP changes. This evaluation can be found in **Attachment FF**.

City of Tempe General Plan

The General Plan is the overarching planning document for the City of Tempe. It holds the community's vision for the future and is a reflection of how the community wants to grow and change over the next 30 years. During the 2012-2013 fiscal year, Tempe worked with the public to develop a new General Plan 2040. The concept of Low Impact Development was added to the plan in the form of General Plan strategies and goals. Voters approved the plan in May 2014. General Plan 2040 information can be found on the following website:

- http://www.tempe.gov/GP2040

City of Tempe Stormwater Master Plan

Appendix A, Section VII (A), of the Permit required Tempe to review the city's stormwater master plan in the second year of the permit term and report findings of the evaluation, including recommendations, in the third annual report. A team consisting of representatives from the Environmental Services Section, Water Engineering Section, and PW Engineering Division met for several months to evaluate the existing stormwater master plan. Findings and needed improvements were consolidated in August 2012 and reported in the 2012-2013 MS4 Annual Report. As of the writing of this report, work on two Area Drainage Master Studies (ADMS) projects being conducted by the Flood Control District of Maricopa County (FCDMC) continues. The Tempe ADMS encompasses most of Tempe south of the Salt River while the Lower Indian Bend ADMS includes a large portion of Tempe north of the Salt River. It is anticipated that the County models will be available FY 2016-2017.

Both of the ADMS covering Tempe will utilize FLO2D and SWMM modeling that will meet most of Tempe's Master Plan update needs. Once the projects are completed, Tempe will utilize the products to update the city's stormwater master plan.

Enforcement Response Plan

Appendix A, Section III (G), of the Permit required Tempe to create a stormwater specific Enforcement Response Plan (ERP) within two years of permit issuance. In December 2012, Tempe City Council approved Tempe's new ERP. The ERP consolidates Tempe's pretreatment and stormwater program enforcement elements, and was received and approved by ADEQ. See **Attachment V** for a copy of the plan.

J. Fiscal Expenditures

Tempe's estimated 2014-2015 reporting year expenditures related to implementation of the storm water program are $1,204,852. A more detailed analysis of fiscal expenditures can be found in Section 12 of this report.

K. Training Summary[1]

Tempe coordinated 14 employee training events covering Permit-required training topics over the course of the 2014-2015 reporting period. A total of 249[2] employees attended these events. Note that Municipal Facility training includes the identification and reporting of illicit and non-stormwater discharges but is not specifically categorized as IDDE training because the training event primarily focuses on pollution prevention and good housekeeping. See training summary in Table 11 for specific training details.

Table 11: Summary of Training Activities

Date(s)	Target Groups	Topic(s)	Permit Training Type	Attendees	Trainer
2-Oct-14	*Environmental Compliance Inspectors, Environmental Quality Specialist, Environmental Compliance Supervisor*	MS4 Workshop - Pollutants of Concern: Bacteria	Inspector Training Program update	9	National Stormwater Center
14-Jan-15	*Community Development/Development Services*	Municipal Construction, Erosion and Sediment Controls, Maintenance Requirements for BMPs, Municipal Ordinances Related to Stormwater and Construction, Plan Review Procedures, Grading and Drainage Design Standards, Requirements for Structural and Non-structural BMPs on Construction Sites, Inspection Procedures, Enforcement Procedures, Post-Construction Stormwater Controls, Post-Construction Inspection Procedures.	Construction/Post-Construction	9	Tempe Public Works Engineering
23-24 Feb-15	*Environmental Compliance Inspector - Direct Stormwater Responsibilities*	The Law- NPDES; Industry Permits, Municipal Permits; Inspector Protocol, Construction Permits; National Standard and Post-Construction	Inspector Training Program	1	National Stormwater Center
11-Mar-15	*Fleet Services - No Direct Stormwater Responsibilities*	Pollution Prevention; Tempe Code; Spill Management; Handling, Storage, and Transportation of Used Oil & Other Toxic/Hazardous Materials; Permit Requirements Including Identifying and Reporting Illicit and Non-Stormwater Discharges and Field Practices.	Municipal Facilities	24	Tempe Environmental Services
25-Mar-15	*Facilities Maintenance - No Direct Stormwater Responsibilities*	Pollution Prevention; Tempe Code; Spill Management; Handling, Storage, and Transportation of Used Oil & Other Toxic/Hazardous Materials; Permit Requirements Including Identifying and Reporting Illicit and Non-Stormwater Discharges and Field Practices.	Municipal Facilities	44	Tempe Environmental Services

[1] Section added by Tempe to provide a more detailed and centralized summary of training events.
[2] Number includes employees that may have attended more than one training event.

01-Apr-15	*Parks Ken McDonald Golf Course - No Direct Stormwater Responsibilities*	Pollution Prevention; Tempe Code; Spill Management; Handling, Storage, and Transportation of Used Oil & Other Toxic/Hazardous Materials; Permit Requirements Including Identifying and Reporting Illicit and Non-Stormwater Discharges and Field Practices.	Municipal Facilities	15	Tempe Environmental Services
02-Apr-15	*Parks North - No Direct Stormwater Responsibilities*	Pollution Prevention; Tempe Code; Spill Management; Handling, Storage, and Transportation of Used Oil & Other Toxic/Hazardous Materials; Permit Requirements Including Identifying and Reporting Illicit and Non-Stormwater Discharges and Field Practices.	Municipal Facilities	13	Tempe Environmental Services
14-Apr-15	*Engineering - CIP*	Municipal Construction, Erosion and Sediment Controls, Maintenance Requirements for BMPs, Municipal Ordinances Related to Stormwater and Construction, Plan Review Procedures, Grading and Drainage Design Standards, Requirements for Structural and Non-structural BMPs on Construction Sites, Inspection Procedures, Enforcement Procedures, Post-Construction Stormwater Controls, Post-Construction Inspection Procedures.	Construction/Post-Construction	15	Tempe Public Works Engineering
14-Apr-15	*Water Quality Specialists & Environmental Compliance Supervisor*	Training IDDE Program	Illicit Discharge Detection & Elimination Training	5	Tempe Environmental Services
15-Apr-15	*Utilities Services -No Direct Stormwater Responsibilities*	Pollution Prevention; Tempe Code; Spill Management; Handling, Storage, and Transportation of Used Oil & Other Toxic/Hazardous Materials; & Permit Requirements Including Identifying and Reporting Illicit and Non-stormwater Discharges and Field Practices.	Inspector Training Program Update	22	Tempe Environmental Services
16-Apr-15	*Parks South- No Direct Stormwater Responsibilities*	Pollution Prevention; Tempe Code; Spill Management; Handling, Storage, and Transportation of Used Oil & Other Toxic/Hazardous Materials; & Permit Requirements Including Identifying and Reporting Illicit and Non-stormwater Discharges and Field Practices.	Municipal Facilities	12	Tempe Environmental Services
30-Apr-15	*Solid Waste Personnel- No Direct Stormwater Responsibilities*	Pollution Prevention; Tempe Code; Spill Management; Handling, Storage, and Transportation of Used Oil & Other Toxic/Hazardous Materials; & Permit Requirements Including Identifying and Reporting Illicit and Non-stormwater Discharges and Field Practices.	Municipal Facilities	53	Tempe Environmental Services
21-May-15	*Transit -No Direct Stormwater Responsibilities*	Pollution Prevention; Tempe Code; Spill Management; Handling, Storage, and Transportation of Used Oil & Other Toxic/Hazardous Materials; & Permit Requirements Including Identifying and Reporting Illicit and Non-stormwater Discharges and Field Practices.	Municipal Facilities	23	Tempe Environmental Services
09-Jun-15	*Environmental Compliance Inspector - Direct Stormwater Responsibilities*	The Law- NPDES; Industry Permits, Municipal Permits; Inspector Protocol, Construction Permits; National Standard and Post-Construction	Inspector Training Program update	4	National Stormwater Center
			Total Number of Training Events:		**14**
			Total Number of Attendees:		**249**

4. Numeric Summary of Stormwater Management Program Activities

The table below provides a numeric summary of stormwater management practices and activities performed each year.

	Annual Reporting Year (July 1 – June 30)				
Stormwater Management Practice or Activity:	**2010 - 2011**	**2011 - 2012**	**2012 - 2013**	**2013 - 2014**	**2014 - 2015**
Illicit Discharge Detection & Elimination Program					
1. Municipal Employee Training					
Number of training sessions (on non-stormwater discharges and the IDDE program)	**1**	**0**	**4**	**3**	**3**
Number of employees attending training	**7**	**0**	**14**	**15**	**10**
2. Spill Prevention					
Number of Municipal Facilities identified with hazardous materials	**10**	**53**	**53**	**53**	**49**
Number of spills at Municipal Facilities with hazardous materials that occurred in outside areas	**0**	**1**	**1**	**1**	**1**
Number of facility assessments completed *(identify any issues found requiring follow-up in narrative and summarize new practices to minimize exposure)*	**29**	**114**	**59**	**98**	**95**
Date of last review of HWMP (*identify committee participant with stormwater expertise in narrative*)	**5/11/2011**	**5/11/2011**	**12/19/12** **6/25/13**	**2/19/2014**	**2/19/14**
3. Outfall Inspections					

Total number inspected *(attach or forward electronic copy of inventory or map of major outfalls and priority outfalls)*[1]	**77**	**57**	**66**	**62**	**64**
Number of 'priority outfalls' identified to date *(summarize findings and follow-up actions in narrative)*	**15**	**19**	**19**	**19**	**19**
Number of 'priority outfalls' inspected[2] *(summarize findings and follow-up actions in narrative)*	**27**	**30**	**41**	**39**	**40**
Number of dry weather flows detected	**4**	**11**	**12**	**11**	**7**
Number of dry weather flows investigated	**0**	**10**	**3**	**1**	**7**
Number of major outfalls sampled[3]	**3**	**11**	**17**	**11**	**7**
Number of illicit discharges identified	**0**	**0**	**0**	**0**	**0**
Number of illicit discharges eliminated	**0**	**0**	**0**	**0**	**0**
Amount (percentage, linear miles, etc.) of storm drain inspected[4]	**2,349.5 feet**	**9,057.5 feet**	**9,330.9 feet**	**10,222.8 feet**	**8,618.9 feet**
Number of storm drain cross connection investigations	**0**	**0**	**0**	**0**	**0**
Number of illicit connections detected	**0**	**0**	**0**	**0**	**0**
Number of illicit connections eliminated	**0**	**0**	**0**	**0**	**0**
Number of corrective or enforcement actions initiated within 60 days of identification[5]	**8**	**10**	**36**	**12**	**0**

[1] All maps and inventories are maintained on file with Tempe's Environmental Services Section and can be reviewed by ADEQ upon request.
[2] Number reflects the number of priority outfall inspections.
[3] Includes field screening and analysis.
[4] CCTV inspections only.
[5] Total number of corrective and enforcement action for the FY excluding minor construction and post-construction.

Percent of cases resolved within one calendar year of original enforcement action	100	100	100	100	100
Number of illicit discharge reports received from public	36	60	37	59	90
Percent of illicit discharge reports responded to	100	100	100	100	100
Percent of responses initiated within three business days	100	100	100	100	100
Municipal Facilities					
1. Employee Training					
Number of training events *(dates and topics to be included in narrative)*	6	4	6	5	9
Number of staff trained	180	136	123	157	214
2. Inventory, Map, or Database of MS4 Owned & Operated Facilities					
Total number of facilities on inventory	140	143	143	143	149
Date identification of 'higher risk' facilities completed	In process	6/20/2012	12/26/2012	12/26/2012	12/26/12
Date prioritization of municipal facilities completed	In process	6/20/2012	12/26/2012	12/26/2012	12/26/12
3. Inspections					
Miles of MS4 drainage system prioritized for inspection	In process	101.5	101.5	101.5	101.5
Miles visually inspected[1]	6.44	247.72	127	122.1	101.6
Number of municipal facilities inspected[2]	29	114	48	76	95
Number of 'higher risk' municipal facilities inspected	0	12	8	10	11

[1] Includes CCTV and above-ground linear inspections of the drainage system. Does not include cursory street inspections.
[2] This numeric parameter was added by Tempe to provide a more detailed explanation of the municipal inspection program.

Number of 'higher risk' municipal facilities found needing improved stormwater controls	0	5	2	0	0
4. Infrastructure Maintenance					
Linear miles of drainage system cleaned each year (*City to maintain records documenting specific street cleaning events*)	13,440	21,890	21,890	22,499[4]	21,891.5
Record amount of waste collected from street and lot sweeping (reported in pounds, gallons, etc.)	714.70 Tons	828.81 Tons	937.4 Tons	1,148 Tons	1,175.7 Tons
Total number of catch basins[1]	367	645	1047	814	558
Number of catch basins cleaned	90	172	197	218[4]	175
Amount of waste collected from catch basin cleaning (tons)	67	50.41	27.8	31.3	20.92
Industrial and Commercial Sites Not Owned by the MS4					
Number of training events for MS4 staff	1	3	11	3	3
Number of municipal staff trained	7	9	9	11	14
Number of industrial facilities inspected[2] (see Appendix A, Part V.B)	76	122	122	124	122
Number of corrective or enforcement actions initiated on industrial facilities[2]	0	7	22	2	2
Percentage of cases resolved under the ERP within one (1) calendar year of original enforcement action	N/A	N/A	100	100	100
Construction Program Activities[3]					

[1] Inspected, includes other stormwater infrastructure such as drywells, bubbler boxes, inlets, etc.
[2] Number excludes restaurant inspections.
[3] Includes private and CIP activities.
[4] Numbers amended after FY2013-2014 report was submitted. See Attachment E.

Number of training events for MS4 staff *(include topics in narrative summary)*	3	3	2	1	2
Number of municipal staff trained	13[1]	14	16	5	24
Number of construction/grading plans submitted for review	9	15	13	24	40
Number of construction/grading plans reviewed	9	15	13	24	40
Number of construction sites inspected[2]	9	14	24	0[3]	57[3]
Number of corrective or enforcement actions initiated on construction facilities *(identify the type of actions in narrative summary)*	0	3	9	1	2
Post Construction Program Activities					
Number of post-construction inspections completed	0	4	3	1	17
Number of corrective or enforcement actions initiated for post-construction activities *(identify the type of actions in narrative summary)*	0	0	0	0	0

[1] Number updated from the 2011-2012 Annual Report. Redundant counting of staff was removed.
[2] Number may not match review and prioritization number based upon date of grading and drainage permit issuance.
[3] See narrative in Section 3.F

5. Evaluation of the Stormwater Management Program

In accordance with Section 5.4 of the Permit, this section provides an evaluation of the progress and success of the stormwater management program, including an assessment of the effectiveness of stormwater management practices in reducing the discharge of pollutants to and from the municipal storm sewer system.

Much of Tempe's stormwater program progress during the 2014-2015 reporting period consisted of continued fine tuning of existing programs and the completion of permit required tasks. Quantifiable program successes include the following:

- LID activities (**Attachment FF**):
  - Website reference to regional LID toolkit
  - Toolkit adopted for usage with the Tempe Engineering Design Criteria Manual
  - LID tools for the Right-of -Way evaluation incorporated into Tempe Engineering design Criteria Manual
  - Development of Tempe Urban Forestry program with LID components
  - Continued participation in various Green Infrastructure / Sustainable Development programs
- Continued catch basin labeling through public participation
- Baseline Stormwater Awareness Survey **(Attachment DD)**
- Updates to the Stormwater Management Plan (**Attachment EE**) include:
  - Addition of one Major Outfall
  - Change in the number of Priority Outfalls
  - Change in the number of Municipal Facilities
  - LID Evaluation update
  - Organizational changes related to the construction and post-construction program and outfall inspections
  - Change in internal record keeping/reporting practices for construction site inventory and prioritization
  - Website link updates
  - Minor wording changes

While implementation of many of these stormwater management practices is assumed to have effectively reduced the discharge of pollutants to and from the MS4, this reduction is not always quantifiable. For example, due in large part to Tempe's on-site retention policy, it cannot be assumed that all debris removed from the system or all waste collected by HPCC would have ended up in a discharge to a Water of the U.S. Tempe will continue to review analytical data in the effort to identify correlations between pollutant concentration and stormwater management practices.

6. Stormwater Management Program Modifications

In accordance with Section 5.5 of the Permit, this section provides a description of modifications, if applicable, to the stormwater management program each year as follows:

A. Addition of New Control Measures

Tempe did not implement new control measures in the 2014-2015 reporting year. The most recently implemented control measures were accepted by ADEQ in January 2013, as a result of the stormwater audit findings.

B. Addition of Temporary Control Measures

Tempe continues temporary control measures related to discharge concentrations of E. coli and copper that were higher than applicable Surface Water Quality Standards (SWQS). The temporary measures are related to outreach/education messages. The topics and frequency focus mostly on industrial/commercial inspections. See Section 10.C of this report for details.

At the request of Parks staff, as described in Section 3.D of this report, increased facilities inspections were implemented temporarily to ensure that BMP were maintained at a few Priority 1 and 2 sites. Inspection frequency is anticipated to decrease as temporary BMPs are replaced with permanent infrastructure and/or practices.

C. Increase of Existing Control Measures

As a result of Tempe's storm drain labeling program, Tempe had an increased number of catch basin inspections during the 2012-2015 reporting years. The increase is a direct result of this public involvement activity and is subject to variation in the future.

D. Replacement of Existing Control Measures

Tempe proposes the following updates to existing control measures.

- Sections 9.4 Inventory and 9.5 Prioritization of the Stormwater Management Plan were amended to reflect an annual reporting frequency of construction site inventory and prioritization records. Tempe's routine business practices keep the qualifying construction project inventory and prioritization lists current; therefore, quarterly reporting is an unnecessary added effort. Because construction projects are routinely added to the inventory, as projects are initiated, Tempe considers an annual "review" and inclusion of the construction site inventory list with the annual report an appropriate frequency for this

control measure. The actual frequency in which construction projects will be reviewed and prioritized for potential to discharge pollutants will not change. As the prioritization frequency will not change, this update to the Stormwater Management Plan will continue to reduce the discharge of pollutants to the maximum extent practical.

- Tempe had increased priority outfall inspections to semi-annual, but has seen no significant benefit to the increased inspection frequency; therefore, Tempe proposes to reduce priority outfalls to annual as required by Permit Appendix A (III)(D). Tempe proposes to inspect all major and priority outfalls once per year and conduct follow-up inspections as required by the Permit. This update to the Stormwater Management Program will continue to reduce the discharge of pollutants to the maximum extent practical.

- Tempe proposes to modify Streets linear mileage inspection criteria from linear mileage of streets inspected to number of catch basins inspected. Street "curb and gutter" inspections have not resulted in significant findings; however, catch basin inspections have resulted in numerous cleaning and maintenance events. In lieu of 100 miles inspected Tempe proposes inspection of at least 80 catch basin inspections per year. This update to the Stormwater Management Program will continue to reduce the discharge of pollutants to the maximum extent practical.

7. Monitoring Locations

This section requires a brief description of each stormwater monitoring location, including the following information, which was provided to ADEQ in the 2010-2011 Annual Report:

- Name and description of receiving water
- Outfall identification number
- Address or physical location of the site
- Latitude and longitude
- Size (acres) of the drainage area
- Land uses within the drainage area with an estimated percentage of each use
- Type of monitoring equipment

As briefly explained in Section 3.D, the Tempe Town Lake eastern dam was deflated in Q2-2013 resulting in an expanded lake that that reaches to the grade control structure east of the deflated dam. As a result of this change the discharge from SR-08 now enters Tempe Town Lake. While there has been no change to the outfall or drainage area, the receiving water has changed from the Salt River (A&Wedw, PBC) to Tempe Town Lake (A&Ww, FBC, FC). The SR-08 Fact Sheet outlining this change has not been updated since mapping of expanded Tempe Town Lake has not yet occurred. Note that new maps will not be completed immediately due to additional modifications to the lake as a result of construction of the new western dam.

All other outfall information is maintained on file with Tempe's Environmental Services Section and can be reviewed by ADEQ upon request.

Note: Modifications to monitoring locations will not be implemented without a Permit modification.

8. Storm Event Records

This section addresses the requirements of the permit listed in Appendix B Part 8:

For each monitoring location identified in Section 7.0, Table 1.0 of the Permit, summarize all measurable storm events (0.1 inch or greater) occurring in the drainage area of each monitoring location within the winter and summer wet seasons, respectively, until samples have been collected for the monitoring location. Include the date of each event, the amount of precipitation (inches) for each event, and whether a sample was collected, or if not collected, information on the conditions that prevented sampling. (Note: If unable to collect stormwater samples due to adverse climatic conditions, provide, in lieu of sampling data, a description of the conditions that prevented sampling. Adverse climatic conditions which may prevent the collection of samples include weather conditions that create dangerous conditions for personnel, such as local flooding, high winds, electrical storms, etc.)

Tempe has consolidated the permit requested information which is included as **Attachment W.**

Tempe tracks all sampling events required by the Permit. **Attachment X** summarizes sampling status throughout the 2014-2015 reporting year.

9. Summary of Monitoring Data (By Location)

Attachment Y provides a summary of all monitoring data for each site. As a result of changes to the SR-08 receiving water, a new sheet titled "SR-08 PER" has been added to the attachment. All Laboratory Reports are included as **Attachment Z**.

From 2011 through September 2014, Tempe collected orthophosphate samples without filtering the sample in the field, based on its MS4 permit requirement to sample total orthophosphate. However, based upon Arizona Department of Health Services (ADHS) guidance from the EPA, filtration of samples in the field is a valid component of EPA criteria for orthophosphate sampling, and provides a more valid and defensible result for bioavailable orthophosphate. Tempe subsequently modified procedures per EPA and ADHS guidance to include filtration of the sample within 15 minutes of collection.

10. Assessment of Monitoring Data

A. Stormwater Quality

Tempe has reviewed all sampling event results collected from November 2011 through December 2014. A full trending of data is included as **Attachment AA**. The trending was done by a comparison of the previous year's data maximum and average to this reporting year's (2014-2015) maximum and average by site location.

Below is a brief summary of findings:

- In 2014 there were 16 sampling events; from those events 1,433 compounds were analyzed. A total of 209 compounds were detected (conventional parameters, microbiological, metals, nutrients and 2 Semi-Volatile Acid Compounds), 190 of the compounds detected were detected <SWQS. Nineteen samples exhibited contaminants above SWQS (for E. coli, Copper and pH), which will be discussed more in this section. Overall there was little significant difference in the results of 2014-2015 compared to previous year's data. There were nine instances where results increased (greater than three times the standard deviation of the average result) when this year's data was compared to previous site averages during the permit term. The increases included: site KP-01 for pH and 4-nitrophenol, sites SR-05 and TD-01, for 4-nitrophenol, TD-03 for 4-nitrophenol, and antimony, SR-05 and TD-01 for 2,4-dinitrophenol and, SR-08 for Nickel. Except for pH at KP-01 all increased values were below SWQS and there was no indication of degradation to stormwater quality from Tempe's MS4.

- Historically, the majority of data collected indicates a trend toward higher levels of contaminates during the initial precipitation event(s) at the start of a "season." This observation largely stems from data collected during the 2011-2012 period, much of which included make-up sampling events. The observed trend was formulated by the collection of multiple sampling events collected from each station during each season. As stormwater sampling has become more efficient and required monitoring has been completed for each station during the initial event of the season, this trend has become increasingly difficult to verify. However, if this trend has continued – and there is no reason to assume it has not - the collected results will bias data observed toward the higher concentration and loading results typically collected during first flush events. Therefore, recent data can be observed to be "worst case" examples with regard to concentrations and loading at each site, for each season.

- For the entire dataset 2011 - 2014, 35 sampling events were conducted during the winter wet season (November through May during 2011-2014), and 35 sampling events were conducted during the summer wet season (June through October 2012-14).

- Metals and nutrients comprised the largest groups of components detected, with results observed for nearly all components in these groups, for nearly all sites, and at nearly every event.

- Average rate, volume, duration, pH, and Temperature for all 2011-2014 data at all sites are as follows:

    - Average Rate (GPM): 2119
    - Total Volume (gallons): 208,273
    - Duration (mins): 80
    - pH (S.U.): 7.5
    - Temperature (C°): 21.3

Conventional Parameters

- Although all sites were observed to have similar ratios of conventional laboratory parameters (i.e., Hardness, TSS, TDS, BOD, COD), the relative levels of parameters observed from site to site varied. SR-08 was observed to have the highest values for TDS, Hardness and COD; while TD-01 had the highest values for TSS.

- Based upon the assessment of conventional parameter results there does not appear to be any specific trends indicating the degradation of stormwater quality from Tempe's MS4.

Nutrients

- Average nutrients observed at each site in 2014-2015 are relatively consistent despite differing land uses. Nutrients, though a common stormwater pollutant in many areas in the country, do not appear to be a significant contributor to stormwater pollution in the City of Tempe. Nitrogen and phosphorous species show no specific trends and there is no indication of degradation of stormwater quality discharges from Tempe's MS4.

Microbiological

- In the 2014-2015 dataset, E. coli was above the SWQS at each sampling location for each of the 10 sampling events it was measured.

- Increasing E. coli concentrations were observed from 2011-2013 (1585 MPN) to 2014-2015 (2305 MPN), for all sites and all events during the periods. Although an increase in observed E. coli was observed at all outfalls in the most recent sampling period over the previous period; the data does not present an overall trend. This increase is likely the result of no inter-seasonal (non-first flush) monitoring. For this reason there is no indication of degradation of stormwater quality discharges from Tempe's MS4.

Metals

- In the 2014-2015 dataset, Copper was observed to be above the SWQS during 8 of the 11 sampling events at 4 of the 5 sampling locations, KP-01 had two 2 events <SWQS, SR-05 had one winter event <SWQS.

- Copper concentrations were observed to be inconsistent from event to event in both the summer and winter wet seasons. When the 2011-2013 results (average all sites, all events 19.8mg/L) and 2014-2015 results (average all sites, all events 18.8 mg/L) were compared there appears to be an insignificant yet slight decrease in overall copper level discharged.

- Although average copper levels have been observed to decrease in the recent sampling period when compared to previous wet seasons, no discernible trends have been identified and there is no indication of degradation of stormwater quality discharges from Tempe's MS4.

Organic Toxic Pollutants (TPH and O&G) VOCs, SVOCs, and Pesticides

- Of all Organics analyzed (i.e., Organic Toxic Pollutants – consisting of two components; Volatile Organic Components (VOCs) – consisting of 33 components; Semi-Volatile Organic Components (SVOCs) –consisting of 45 components; and Pesticides – consisting of 25 components), only 12 detects have been observed throughout the entire dataset (2011-2015)– each consisted of detection near the Practical Quantitation Level (PQL) and well below the SWQS.

- Between 2011-2013 six detected Organics were comprised of: Three Total Oil and Grease detects (observed during the winter wet season and from three different sites there are no associated SWQS for this analysis), two phenol (SVOC) detects, (observed in the summer wet season; both from the same site, in July and September and below SWQS), and a diethyl phthalate (SVOC) detect (observed in the winter wet season and below the SWQS).

- During the 2014-2015 reporting year, two detects were observed for 2,4-dinitrophenol (SVOC) from two sites, and four detects for 4-nitrophenol (SVOC) were observed at the same two sites as well as two others (all during the winter season). Due to the low levels and the lack additional data points, conclusions cannot be drawn as to trending of Organics related data.

- Neither pesticides nor Volatile Organic Components (VOCs) have been detected. There is no indication of degradation of stormwater quality discharges from Tempe's MS4 by organics.

Conclusions

Based on the data collected during this permit term, no obvious discernible and consistent trends, improvements or degradation of stormwater quality from the MS4 were observed.

During the 2012-2013 Annual Report, Tempe suspected that TD-01 sampling was being impacted by "Tempe Ditch" flow. During large rain events the flow in the "Tempe Ditch" has the potential to back-up into the TD-01 outfall, possibly comingling other sources of stormwater and/or non-stormwater. Further evaluation of the data collected (2011-2013) has led to the conclusion that TD-01 is not impacted by "Tempe Ditch" flow. This conclusion was reached by evaluating the data for TD-01, and comparing the collected data to the remaining four sites. If standing water is observed to be "backed up" into the outfall prior to storm sampling events, it is suspected that the volume of the storm flush is sufficient to ensure that samples collected from TD-01 are primarily related to storm runoff.

B. Water Quality Standards (WQS)

Stormwater monitoring sampling results conducted consistent with Permit sampling conditions have been compared to SWQS for the applicable receiving water. Summary of Monitoring Data sheets **in Attachment Y** allow for this comparison. Note that any result found to be above a SWQS is shaded in red.

The Permit allows for the testing of dissolved metals and collection of hardness data used to calculate corresponding SWQS; however, guidance on how the collection of hardness samples is conducted is not provided. Beginning with the 2012-2013 reporting year, Tempe changed its approach to collecting ambient hardness data for a perennial water body, for the purposes of SWQS comparison. During the 2011-2012 reporting year, Tempe collected this information by sampling the applicable water body (Kiwanis Park Lake) at the time of the stormwater event. After evaluation of the hardness data, Tempe concluded that the water body was under the direct influence of the stormwater discharge at the time of sampling, and data collected was not representative of ambient conditions. In an effort to compare hardness dependent parameters to ambient conditions, Tempe now samples this water body during times that stormwater discharges are not occurring. The same practice has been implemented for Tempe Town Lake.

C. Exceeding a WQS

Tempe has been experiencing concentrations greater than SWQS for E. coli and copper since the 2011-2012 reporting period. During the 2014-2015 reporting period, Tempe identified three constituents with concentrations greater than the applicable SWQS. E. coli was found to be higher than the SWQS at five sites and dissolved copper was found to be higher than the applicable hardness dependent standard at four sites. KP-01 has not experienced an event with

parameters observed to be greater than the SWQS since July 2013. SR-08 had a single event where copper was observed to be greater than the SWQS in this reporting period.

KP-01 experienced a single pH event of 9.1, greater than the SWQS. This result was an excursion from typical pH values at this outfall location. Throughout 2011-2013 the site average pH was 7.3 pH units with the previous highest pH result at the site being of 7.6. There is no known cause for the atypical result. An investigation of the area around KP-01 could not pin point a specific source in the residentially zoned area that may have contributed to the higher pH level. Tempe will continue to monitor this site for pH values greater than SWQS on subsequent sampling events. Please see **Attachment BB** for details pertaining to sampling date, location, impacted receiving water, SWQS and results.

During the 2011-2012 reporting period, Tempe began the implementation of provisions outlined in Permit Section 4.0, related to the recurrence of discharges higher than SWQS for E. coli and copper. As a result of sampling during the 2012-2015 reporting periods, Tempe continues this effort. Potential pollutant sources and applicable control measures are summarized in the tables below.

After a full review of all sampling results, there does not appear to be an immediate or obvious correlation between implemented control measures and E. coli and copper concentrations. As discussed in Section 10.A above, the concentrations of these pollutants appear to correspond more directly to when the sample was taken (time of year and season) and likely a result of capturing the first flush as opposed to the entire event. Tempe will continue to evaluate existing and future analytical data in an effort to better understand impacts on pollutant concentrations.

Table 12: Copper Investigation, Evaluation, and Action

Potential Sources of Copper	
Vehicle brake pads	CCA pressure treated wood
Mobile cleaning	Air emissions
Vehicle washing and service	Soil erosion
Architectural copper	Irrigation water
Pool/spa/fountain algaecides	SSO
Pesticides, algaecides, root killers, and fungicides	Cooling towers
Industrial use of copper	Discharges to POTWs
Evaluated Control Measures	
Industrial Inspections - Focus on copper sources and applicable BMPs.	
Evaluate service facilities for automotive waste disposal practices.	
Outreach/Education - Pools, spa, fountain use of copper treatment and discharge practices.	
Outreach/Education - Alternatives for copper bearing pesticides, algaecides, & fungicides.	
Outreach/Education - Proper use of copper bearing pesticides, algaecides, & fungicides.	
Newly Developed/Implemented or Continued Control Measures	
Industrial Inspections - Inspection focus on potential sources of copper. BMPs discussed if applicable.	
Industrial Outreach/Education – Copper focused education and Prevention BMPs directed to industrial users.	
Public Outreach/Education – Copper focused education and Prevention BMPs directed to the general public.	
General - Continued implementation of IDDE program.	

Table 13: E. coli Investigation, Evaluation, and Action

Potential Sources of E-Coli	
Animal feces (domesticated, wild, farm)	Wastewater treatment plants
Manure	On-site septic systems
Wastewater discharges	Illicit connections
Evaluated Control Measures	
Review of SSO Control Practices	
Maintenance and cleaning of sewers	
Septic tank policies	
Outreach/Education - Clean up after your pet	
Outreach/Education - Feeding wild animals at waterside locations.	
Newly Developed/Implemented or Continued Control Measures	
Review of SSO Control Practices - Continued review of practices related to response and reporting of SSO events.	
Maintenance and cleaning of sewers - Continued implementation of comprehensive sanitary sewer cleaning program.	
Septic tank policies - Continued non-allowance of septic tank use.	
Public Outreach/Education - E. coli focused education and prevention BMPs directed to the general public.	
Public Outreach/Education - BMP focused education and prevention BMPs directed to the general public.	
Public Outreach/Education - Continued BMP focused on pet waste pick-up in public places.	

11. Estimate of Annual Pollutant Loadings

This section addresses the requirements of the permit listed in Appendix B Part 11:

An estimate of the pollutant loadings each year from the municipal storm sewer system to waters of the U.S. for each constituent listed in Section 7.4 of the Permit detected by stormwater monitoring within the Permit term. Pollutant loadings and event mean concentrations may be estimated from sampling data collected at the representative monitoring locations, taking into consideration land uses and drainage areas for the outfall. Include a description of the procedures for estimating pollutant loads and concentrations, including any modeling, data analysis, and calculation methods. Compare the pollutant loadings estimated each year to previous estimates of pollutant loadings.

Comparing 2014-2015 pollutant loading data with the previous year's data there was no significant change in pollutant loads except for two compounds at two sites. The pollutant load for Chromium increased at Tempe Town Lake from a historic average of 0.0002 tons (2011-2014) to 0.0006 tons in 2014-2015. Conversely, the pollutant load for Barium decreased to the Salt River below Tempe Town Lake. The 2014-2015 load was 0.057 tons compared to the 2011-2014 average load of 0.080 tons. Table 14 provides a summary of 2014-2015 pollutant loading estimates and **Attachment CC** contains detailed analysis information.

Table 14: 2014-2015 Annual Pollutant Loading Estimate* (tons)

	Gila River	Kiwanis Park Lake	Salt River (above TTL EDW)	Indian Bend Wash	Tempe Town Lake	Salt River (Below TTL)	Papago Park South Pond
BOD	17.6	1.44	10.7	3.26	25.5	89.1	0.071
COD	72.7	5.94	44	13.4	105	367	0.294
TSS	106	8.68	64.3	19.6	154	536	0.429
TDS	77.8	6.36	47.1	14.4	113	393	0.315
Total Nitrogen	2.34	0.19	1.42	0.43	3.4	11.9	0.0095
TKN	1.82	0.149	1.1	0.337	2.64	9.22	0.0074
TP	0.313	0.026	0.16	0.058	0.454	1.58	0.0013
Arsenic	0	0	0	0	0.0005	0.0018	0
Barium	0.011	0.001	0.007	0.002	0.016	0.057	0
Chromium	0	0	0	0	0.0006	0.002	0
Copper	0.0084	0.0007	0.0051	0.0016	0.012	0.043	0
Lead	0.0006	0	0	0	0.0008	0.0029	0
Nickel	0.0011	0	0.0006	0	0.0016	0.0055	0
Silver	0	0	0	0	0	0	0
Zinc	0.022	0.0018	0.014	0.0041	0.032	0.113	0

Note metals with non-detects are not listed in the table.

12. Annual Expenditures

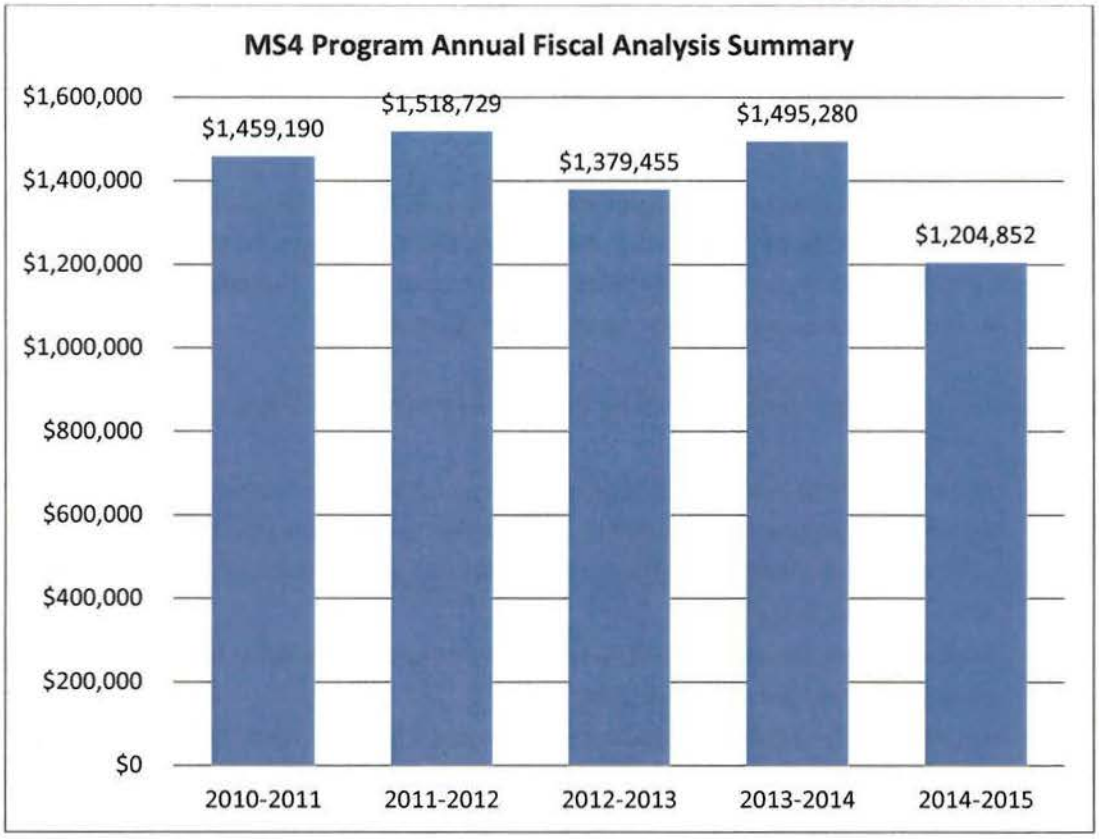
Tempe's stormwater program expenditures for the July 1, 2014-June 30, 2015 reporting period is conservatively estimated to be $1,204,852. Funding for the program comes from Tempe's CIP fund and various Public Works Department general and enterprise funds. Explanation of these expenditures and funding sources can be found in this section.

The following factors were considered when developing this fiscal analysis:

- Public involvement and participation programs are not exclusively related to the stormwater program. Accordingly, stormwater expenditures in these areas were either estimated to be one-half of the total operational budget or time and material specific to stormwater activities.
- Most of the operational street sweeping activities are funded as a stormwater program component and are reflected as such.
- Employee attendance at training events hosted internally is not incorporated as a stormwater expenditure, though cost to develop and conduct training is considered.
- Adopt-A-Park programs are volunteer events that have been restructured to run solely on a volunteer basis, Tempe expenses are negligible.
- Tempe Water Quality Laboratory expenses decreased due to few sampling events.
- Sampling staff expenses decreased due to fewer sampling events.

Tempe's stormwater expenditures reflect a decrease over the 2013-2014 reporting year. The following considerations help to explain the overall and specific decreased expenditures:

- CIP stormwater project expenditures deceased significantly from last year.
- Municipal facility BMP projects enacted as a result of the 2012 audit ended resulting in no large BMP projects.
- Fewer outreach handout items were purchased during the 2014-2015 reporting year.
- Adopt-A-Park volunteer events run solely on a volunteer basis, Tempe expenses are negligible.
- Inspections/Enforcement expenses decreased due to outfall inspections being transferred to a different workgroup with a lower hourly cost rate.



Tempe cannot accurately estimate the scope of budget changes and cost allocations for the 2015-2016 reporting year. However, the City does anticipate expenditures similar to previous years. Tempe will continue to streamline various City processes and increase operational efficiencies to ensure that all stormwater regulatory mandates are met in an economically and environmentally responsible manner. A full summary of this Fiscal Analysis can be found in Table 15.

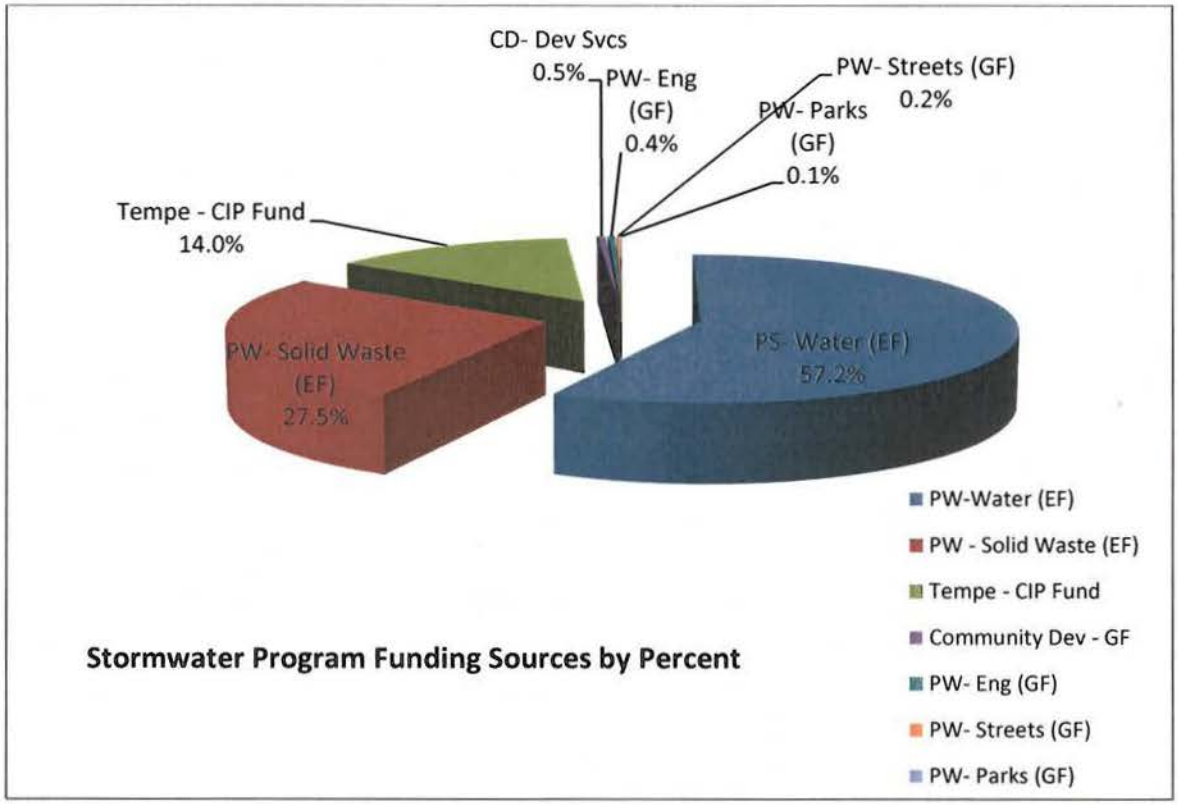
Table 15: Tempe MS4 Annual Expenditures and Fiscal Analysis Fiscal Year 2014-2015

Activity	Amount in U.S. Dollars	Funding Source(s)	Notes
Program Administration (annual reporting, SWMP development, implementation, training, etc.)	$339,040	PW - Water (EF)	Cost for 1.75 EQS, 0.25 EPS
Legal Counsel	$2,000	PW - Water (EF)	Legal counsel - time
Municipal Facility Stormwater Upgrades and Infrastructure Repair	$0	PW - Water (EF)	Cost for facility BMPs and minor infrastructure repair
Public Education and Outreach		PW - Water (EF)	
Materials	$153		BMP brochure printing and Translation
Memberships (i.e. STORM)	$2,500		STORM Membership
Other	$11,800		Baseline Stormwater Awareness

			Survey
Public Involvement and Participation			
Hazardous Mat Safety/HPCC	$192,196	PW - Solid Waste (EF)	1/2 Full Operational Expenditures
"Adopt-A-" and Volunteer Prgms	$ 0*	PW - Parks (GF)	Supplies-Equipment-Time
Adopt-A-Street	$1,400	PW - Streets (GF)	Time
Training (external)	$2,256	PW - Water (EF)	Training by National Stormwater Center
Capital Expenses for new, replaced, or repaired stormwater sewers, capital for facility replacement.	$ 196,150	Tempe - CIP Fund	Repair/Replace storm sewer
Operational Expenses for cleaning and/or repairing stormwater sewers.		PW - Water (EF)	
Cleaning (internal)	$ 0		Internal cleaning/inspection labor
Cleaning (contract)	$37,612		Contract cleaning
Engineering Capital Construction Stormwater Programs	$ 5,666	PW - Eng (GF)	Staff Time
Private Construction Stormwater Programs	$7,255	CD - DS (GF)	Staff Time
Stormwater GIS development, maintenance, and operations, staff time, etc.	$2,400	PW - Water (EF)	Stormwater GIS development, maintenance, operations, and staff time
Inspections/Enforcement (IDDE, industrial/commercial, etc.) and Sampling Assistance.	$91,498	PW - Water (EF)	Inspections - time and equipment
Monitoring/Screening/Analytical		PW - Water (EF)	
Analytical	$20,985		External Lab Fees Only
Staff Time - Chemists	$17,342		Staff analytical
Staff Time - Sampling and screening + outfall inspections	$40,133		Staff sampling and outfall screening
Equipment	$ 11,309		Sampling Equipment
CCTV	$11,400	PW - Water (EF)	Inspection - time and equipment
Parks	$ 1,400	PW - Parks (GF)	Inspection - time and equipment
Streets			
Inspections	$2,070	PW - Streets (GF)	Time
Street sweeping	$198,287	PW - Water (EF)	4 FTEs - Stormwater Expenditures
Permit Fee	$10,000	PW - Water (EF)	Permit Fee
Total	**$1,204,852**		

*Adopt-A-Park Program is now run entirely by volunteers and no City staff are involved.

A summary of funding sources can be found below.



Stormwater Program Funding Sources by Percent

13. Attachments

In an effort to save resources and paper, Tempe is providing all attachments in electronic format. In the event ADEQ feels that there is missing information or would like paper copies of any attachment, please feel free to contact Tempe's stormwater representative. Table 16 summarizes the attachments.

Table 16: Summary of Report Attachments

Attachment Letter Designation	Attachment Name	Attachment Letter Designation	Attachment Name
A	OUTREACH, EDUCATION, AWARENESS	Q	RESTAURANT INSPECTIONS
B	STORM ANNUAL REPORT	R	NON-FILER NOTIFICATIONS
C	TRAINING SIGN IN SHEETS	S	CONSTRUCTION INSPECTIONS
D	ESS ARCA AND OTHER INFRASTRUCTURE INSPECTIONS	T	TEMPE CITY CODE
E	MS4 CLEANING SUMMARY AND REPORTS	U	OUTFALL INSPECTIONS
F	PARKS AND OPEN SPACE INFRASTRUCTURE INSPECTIONS	V	CITY OF TEMPE ERP
G	STREETS INFRASTRUCTURE INSPECTIONS	W	SAMPLING EVENT PARAMATERS
H	WUD ENG CCTV REPORTS	X	MS4 SAMPLE EVENT TRACKING
I	CALL-OUT SUMMARY	Y	SUMMARY OF MONITORING DATA SHEETS
J	ENFORCEMENT DOCUMENTS	Z	LABORATORY REPORTS
K	MUNICIPAL FACILITY INSPECTIONS	AA	DATA TRENDING
L	MUNICIPAL FACILITY CHEMICAL HANDLING AND SPILL PROCEDURES	BB	SWQS COMPARISON
M	HAZARDOUS WASTE MANAGEMENT PLAN	CC	POLLUNTANT LOADING REPORT
N	COT MS4 PESTICIDE HERBICIDE PLAN	DD	BASELINE STORMWATER AWARENESS SURVEY
O	MSGP-SARA INVENTORY	EE	COT SWMP (MINUS ATTACHMENTS)
P	INDUSTRIAL COMMERCIAL INSPECTIONS	FF	LID EVALUATION