CITY OF TEMPE

2020-2021

ANNUAL PHASE I MS4 REPORT

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

October 2021

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

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General Information

A. Name of Permittee

City of Tempe

B. Permit Number

AZPDES Permit No. AZS000005-2010

C. Reporting Period

July 1, 2020 – June 30, 2021

D. Stormwater Management Program Contact

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1. Annual Report Certification

Due to the expiration of the 2011 Municipal Separate Stormwater System Permit and the reissuance of a new permit in January 2021, an email dated July 2, 2021 from ADEQ stated, "Based on legal opinion, any requirements from the previous permit are no longer applicable or enforceable. You will not be required to submit an annual report this year. Your first annual report under the new permits will be due by September 30, 2022."

This 2020-2021 annual report was prepared for historical documentation of stormwater activities but it was not certified or submitted to ADEQ.

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.

Certifying Official Date

2. Narrative Summary of Stormwater Management Program Activities Report

This section provides a status summary addressing stormwater management program activities required by the Arizona Department of Environmental Quality (ADEQ) Arizona Pollutant Discharge Elimination System (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 language required by Appendix B of the Permit and additional information provided by the City of Tempe.

A. Public Awareness Activities Including Outreach

Tempe Activities

Tempe has surpassed minimum Permit requirements outlined in Appendix A, Sections I.A and I.B, by coordinating and participating in many public and business sector awareness and outreach activities. During the reporting year 2020-2021, Tempe reached nine target groups totalling approximately 910,995 people and/or business contacts, while covering a wide array of stormwater topics. Stormwater pollution prevention information was transmitted by Tempe Channel 11 Video Broadcasts, which currently has 26,191 subscribers. The numbers for Tempe Channel 11 were not included in the Summary of Public Awareness Activities and Outreach (Table 1) count, since viewership could not be measured. In some cases, the number reached includes the same audience, though the stormwater message varies (e.g. Tempe resident messages through *Tempe Today* articles and Tempe businesses through *E-Bulletin* distribution, Tempe virtual events, STORM messaging and other Tempe specific materials such as brochures and giveaways). 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)	People/ Businesses Reached	Type of Materials Distributed	Target Groups
Inspections	All Year	Stormwater best management practice (BMP) information for industrial, commercial facilities and restaurants	820	BMP and FOG Brochures given during inspections	Industrial, Commercial Businesses, Restaurants
Social Media	All Year	Pollution prevention videos (general, pets, pools, lawns, auto, carpet, paint, residential and park litter, illegal dumping)	482	YouTube BMP Video	General Public, Residents
Newsletter	July 2020	Monsoon Tips: pet waste, monsoon debris clean up; Waste Management: trash disposal tips; Water conservation: smart irrigation tips.	44,000	BMP Article via Tempe Today, water bills and posted on website	General Public, Residents, Industrial, Commercial Businesses
Social Media	August 2020	Pollution Prevention: pet waste	80	Facebook Post: Link to Tempe Program Webpages	General Public, Residents

Newsletter	August 2020	Water conservation: watering tips	44,000	BMP Article via Tempe Today, water bills and posted on website	General Public, Residents, Industrial, Commercial Businesses
Newsletter	September 2020	Water conservation: watering tips and watering schedules	44,000	Article in Tempe Today inserted into water bills and posted on website	General Public, Residents, Industrial, Commercial Businesses
E-Bulletin (3Q2020)	September 2020	Stormwater 101 for commercial and industrial facilities, best management practices for businesses, exterior washing, minimize pollutants, exposure reduction, waste disposal	342	Environmental Bulletins via E-mail and Posted to Website	Commercial Businesses, Restaurants, Industrial
Social Media	September 2020	Climate change, watershed, and forest health.	59	Facebook Post: Link to Tempe Program Webpages	General Public, Residents
Social Media	September 2020	Pollution Prevention: lawn fertilizing	105	Facebook Post: Link to Tempe Program Webpages	General Public, Residents

Newsletter	October 2020	IDDE: Report illegal dumping via 311 and Zero Waste Day	44,000	Article in Tempe Today inserted into water bills and posted on website	General Public, Residents, Industrial, Commercial Businesses
Newsletter	November 2020	FOG, recycle cooking grease, waste management and recycling	44,000	BMP Article via Tempe Today, water bills and posted on website	General Public, Residents, Industrial, Commercial Businesses
Social Media	November 2020	Pollution prevention: recycle cooking grease	3,993	Facebook and Twitter Post: Link to Tempe Program Webpages	General Public, Residents
Social Media	November 2020	Pollution Prevention Week	77	Facebook Post: Link to Tempe Program Webpages	General Public, Residents
Social Media	November 2020	Stormwater pollution prevention: proper pool disposal practices and pool maintenance video	2,459	Facebook and Twiiter Post: Link to Tempe Program Webpages	General Public, Residents

Social Media	November 2020	Stormwater pollution prevention: Tempe Town Lake pet waste pollution prevention	2,217	Facebook and Twitter Post: Link to Tempe Program Webpages	General Public, Residents
Social Media	November 2020	Pollution prevention: proper litter disposal	1,656	Facebook Post: Link to Tempe Program Webpages	General Public, Residents
Social Media	November 2020	Stormwater pollution prevention: Downtown Tempe	3,179	Facebook and Twitter Post: Link to Tempe Program Webpages	General Public, Residents
E-Bulletin (4Q2020)	December 2020	Stormwater pollution prevention plans for industrial facilities, industrial site inspection preparation, housekeeping tips and recommendations, and useful ADEQ MSGP links	373	Environmental Bulletins via E-mail and Posted to Website	Commercial Businesses, Restaurants, Industrial
Newsletter	December 2020	Holiday Tree disposal, waste management, Zero Waste Day, Air Quality: no burn day, Water conservation: reduce water use	44,000	Article in Tempe Today inserted into water bills and posted on website	General Public, Residents, Industrial, Commercial Businesses

E-Bulletin (4Q2020)	December 2020	Stormwater pollution prevention plans for industrial facilities, industrial site inspection preparation, housekeeping tips and recommendations, and useful ADEQ MSGP links	373	Environmental Bulletins via E-mail and Posted to Website	Commercial Businesses, Restaurants, Industrial
Social Media	December 2020	Stormwater Pollution Prevention: BMP, leaf and yard	1,477	Pollution Prevention Tips	HOA and Residential Community
Social Media	December 2020	Stormwater pollution prevention: Proper litter disposal	1,486	Facebook Post	General Public, Residents
Social Media	December 2020	Stormwater Management Plan public review and comment	3,253	Facebook: request for stormwater program comments	Homeowners Associations, Residents
Social Media	December 2020	Stormwater pollution prevention	1,677	Facebook Post	General Public, Residents

Social Media	January 2021	Stormwater Pollution Prevention: automotive fluids	2,552	Facebook Post: Link to Tempe Program Webpages	General Public and Residents
Social Media	January 2021	Stormwater Pollution Prevention: automotive fluids	45	Facebook Post: Link to Tempe Program Webpages	General Public and Residents
Social Media	January 2021	Stormwater Awareness Week Pollution Prevention: pet waste, engine fluid leaks, proper litter disposal, proper chemical disposal, proper fueling	8,654	Facebook and Twitter Posts: Link to Tempe Program Webpages	General Public and Residents
Newsletter	February 2021	Water conservation: reducing waste, Climate Action Plan (incorporates Low Impact Development)	44,000	BMP Article via Tempe Today, water bills and posted on website	General Public, Residents, Industrial, Commercial Businesses
Social Media	February 2021	Pollution Prevention: illegal disposal	1,450	Facebook and Twitter Posts: Link to Tempe Program Webpages	General Public and Residents

Social Media	February 2021	Pollution Prevention: pet waste	1,292	Facebook and Twitter Posts: Link to Tempe Program Webpages	General Public and Residents
Social Media	March 2021	Pollution Prevention: HPCC disposal of household items	1,259	Facebook and Twitter Posts: Link to Tempe Program Webpages	General Public and Residents
Downtown / Tempe Business Outreach	March 2021	Pollution Prevention: Downtown Tempe, Clean, Safe and Quality of Life	334	Merchant newsletter and permanent posting on the Merchant Resource webpage Downtown Tempe	Commercial Businesses, Restaurants, Downtown Tempe Businesses
Newsletter	March 2021	Earth Month, Zero Waste Day, Drug take back, Water Conservation: water tips, Climate Action Plan (incorporates Low Impact Development)	44,000	Article in Tempe Today inserted into water bills and posted on website	General Public, Residents, Industrial, Commercial Businesses
E-Bulletin (1Q2021)	March 2021	General Stormwater Information, stormwater runoff pollution, first annual stormwater workshop, industrial and commercial BMPs	367	Environmental Bulletins via E-mail and Posted to Website	Commercial Businesses, Restaurants, Industrial

Social Media	March 2021	Pollution Prevention: Downtown Tempe - keep Tempe beautiful	2,198	Facebook and Twitter Posts: Link to Tempe Program Webpages	Downtown Tempe Visitors
Downtown / Tempe Business Outreach	March 2021	Stormwater Best management practice (BMP) for restaurants	90	BMP and FOG Brochures given during inspections	Restaurants, Downtown Tempe Businesses
Downtown / Tempe Business Outreach	March 2021	Pollution Prevention: Downtown Tempe - keep Tempe beautiful	366,928	Downtown Kiosk Message Board	Downtown Visitors and Businesses
Social Media	April 2021	Pollution Prevention: Earth day tips to prevent stormwater pollution	1,233	Facebook and Twitter Posts: Link to Tempe Program Webpages	General Public and Residents
Downtown / Tempe Business Outreach	April 2021	Pollution Prevention: Downtown Tempe, Clean, Safe and Quality of Life	54	ViaWest Newsletter	Downtown Tempe Businesses via Property Management Company

Social Media	April 2021	Pollution Prevention: Proper disposal of Easter litter	1,446	Facebook and Twitter Posts: Link to Tempe Program Webpages	General Public and Residents
Social Media	April 2021	Pollution Prevention: Free educational activity book for students	1,349	Facebook and Twitter Posts: Link to Tempe Program Webpages	General Public and Residents
City of Tempe Earth Day Workshop	April 2021	Stormwater Management Program	50	Online Workshop link to Tempe program webpages	City of Tempe Staff
Stormwater Management Program Workshop	April 2021	Stormwater Regulations, Stormwater Pollution, Stormwater Management Program, Public Involvement	15	Online Workshop link to Tempe program webpages	General Public, Residents, Industrial, Commercial Businesses

Newsletter	April 2021	Earth Month, Climate Action Plan (incorporates Low Impact Development), Water conservation and tree planting, Solid waste program	44,000	Article in Tempe Today inserted into water bills and posted on website	General Public, Residents, Industrial, Commercial Businesses
Social Media	April 2021	Pollution Prevention: Arbor Day pollution runoff awareness	2,274	Facebook and Twitter Posts: Link to Tempe Program Webpages	General Public and Residents
Social Media	April 2021	Pollution Prevention: Pet waste	1,383	Facebook and Twitter Posts: Link to Tempe Program Webpages	General Public and Residents
Newsletter	May 2021	Climate Action Plan (incorporates Low Impact Development), Solid waste: June is Garbologist month - collecting solid waste and recycling	44,000	Article in Tempe Today inserted into water bills and posted on website	General Public, Residents, Industrial, Commercial Businesses
Social Media	May 2021	Pollution Prevention: lawn fertilizing	1,801	Facebook and Twitter Posts: Link to Tempe Program Webpages	General Public and Residents

Social Media	May 2021	Stormwater pollution prevention: proper pool disposal practices and pool maintenance video	1,231	Facebook Post: Link to Tempe Program Webpages	General Public and Residents
Social Media	June 2021	Pollution Prevention: Monsoon Stormwater Runoff	1,400	Facebook Post: Link to Tempe Program Webpages	General Public and Residents
E-Bulletin (2Q2020)	June 2021	Air Quality, AZPDES, CGP and construction site requirements and BMPs.	364	Environmental Bulletins via E-mail and Posted to Website	Commercial Businesses, Restaurants, Industrial
Newsletter	June 2021	Pollution Prevention: Monsoon Stormwater Runoff, Water conservation: smart irrigation tips.	44,000	Article in Tempe Today inserted into water bills and posted on website	General Public, Residents, Industrial, Commercial Businesses
Social Media	June 2021	Stormwater Pollution Prevention: feeding wildlife	2,083	Facebook Post: Link to Tempe Program Webpages	Tempe Town Lake Visitors

Social Media	June 2021	Stormwater Pollution Prevention: Proper yard waste disposal	1,401	Facebook Post: Link to Tempe Program Webpages	General Public and Residents
Social Media	June 2021	Stormwater Pollution Prevention: car washing	1,634	Facebook Post: Link to Tempe Program Webpages	General Public and Residents
Tempe Channel 11 Video Broadcast	All year est. 60/mo.	Stormwater Pollution Prevention Information (General, Pets, Pools Lawns)	26,161*	Stormwater Pollution Prevention information via Videos	General Public, Residents
			910,995	**Estimated annual total of people or businesses reached through 55 awareness and outreach activities**	

* Tempe Channel 11 viewership numbers were not included in the total numbers reached, since viewership could not be measured. Tempe Channel 11 has 26,191 subscribers, an unknown portion of whom were reached by the videos.

Regional Activities

Since the beginning of 2012, Tempe's Environmental Services has coordinated and hosted quarterly Arizona Phase I Municipal Separate Storm Sewer System (MS4) Coalition Meetings. These meetings 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.

Tempe is an active member of Stormwater Outreach for Regional Municipalities (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.

The purpose of STORM is to provide a platform for collaborative effort by which educational outreach may be provided to residents in the greater Phoenix area with a unified pollution prevention message to protect surface waters.

STORM is comprised of 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 the Arizona Department of Transportation (ADOT), with Phase II MS4s including Apache Junction, Avondale, Buckeye, Casa Grande, Chandler, El Mirage, Flood Control District of Maricopa County (FCDMC), Fountain Hills, Gilbert, Goodyear, Guadalupe, Maricopa County Environmental Services, Paradise Valley, Peoria, Pinal County, Queen Creek, Surprise and affiliate member Stormwater Pros. A Tempe representative regularly attends the monthly STORM meetings. Tempe participates on the STORM Board of Directors, allowing the City to directly shape the future of this regional organization.

Key STORM accomplishments for Fiscal Year 2020-2021 include:

- Events: Due to the unique challenges of the COVID-19 pandemic, STORM members were not able to attend in-person events. However, STORM sponsored the Arizona Water Festival in partnership with the University of Arizona and Project WET (Water Education for Teachers) as an outreach to elementary aged students throughout Arizona discussing the importance of water quality, problems caused by having water pollution, how to prevent pollution, stormwater quality, etc. STORM reached 386 classrooms/teachers and a total of 9,186 students.
- Social Media:
- ABC15 partnered with STORM to provide an increase in digital media coverage throughout Fiscal Year 2021. Three separate and targeted campaigns ran during Fiscal Year 2021. November's messaging was focused on proper car maintenance, January's messaging focused on *Stormwater Awareness Week* and May-June's messaging was centered around monsoon season. In total, 9,382,029 total impressions were made on citizens throughout the valley.
- STORM website: azstorm.org had 4,675 users and 8,093 page views in the fourth quarter. The uptick in viewership was a result of the ABC15 Monsoon Awareness social media campaign and an increase in STORM's Facebook page post boosting. Data for quarters one, two and three is not available.
- STORM members contributed time to post and interact with the public on STORM's Facebook page (https://www.facebook.com/StormWaterOutreach). STORM's posts reached 64,316 people (a 93.1 percent increase from Fiscal Year 2019-2020) which resulted in 8,197 engagements (a 72.2 percent increase from Fiscal Year 2019-2020).

- Videos: Due to the COVID-19 pandemic and social distancing requirements, plans to produce educational videos and marketing materials were put on hold until next fiscal year.

The Fiscal Year 2020-2021 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 50 bags of trash and debris that could have otherwise ended up in the MS4 system and/or subsequently a Water of the United States. There's a significant decrease of trash collected from Fiscal Year 2019-2020 due to the Covid-19 pandemic and the resitrictions on large gatherings. Information on Tempe's "Adopt-A" programs can be found at the websites listed below.
- http://www.tempe.gov/adopt
- https://www.tempe.gov/government/community-services/parks/adopt-a-park

Table 2 summarizes the number of events that occurred during the 2020-2021 reporting year, number of participants and amount of trash removed.

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	4	13	12
Tempe Adopt-A-Street	2	14	11
Tempe Adopt-A-Park	7	129	27
Totals	**13**	**156**	**50**

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." As a result of the COVID-19 pandemic, the Tempe Festival of the Arts, which is typically used as two "open meeting" events was cancelled. During 2020-2021, Tempe instead hosted a virual SWMP Workshop as an outreach event requesting feedback on the SWMP. See Table 1 for details on outreach activities.

Parks
Tempe's Parks and Recreation Division continues to maintain approximately 70 pet waste 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. To consolidate City service information and contacts, Tempe utilizes a 311 system, which allows residents to call the 311 number, visit the 311 website or use the mobile Tempe 311 app to report potential illicit discharges. A summary of public reporting 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 (complaint form)
- Tempe 311 mobile app (iPhone and Android)

In addition, Tempe regularly disseminates the general Environmental Services Section stormwater webpage for purposes of allowing public discussion of stormwater issues, providing copies of stormwater material and the most current SWMP. The program information with contact information is located online at:

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

Participation is encouraged during outreach events and public awareness activities and City contact information is provided with all outreach materials. See Table 1 of this report for a detailed listing of 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 various household products to prevent possible stormwater pollution. Materials commonly collected at the facility include electronic waste (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/hpcc

In reporting year 2020-2021, HPCC planned for Zero-Waste Events in November 2020, January and April 2021. The events had 559, 568 and 552 vehicles, respectively, pass through the center to dispose of household hazardous materials. . The total amount of waste collected at this event is included in the HPCC annual total below.

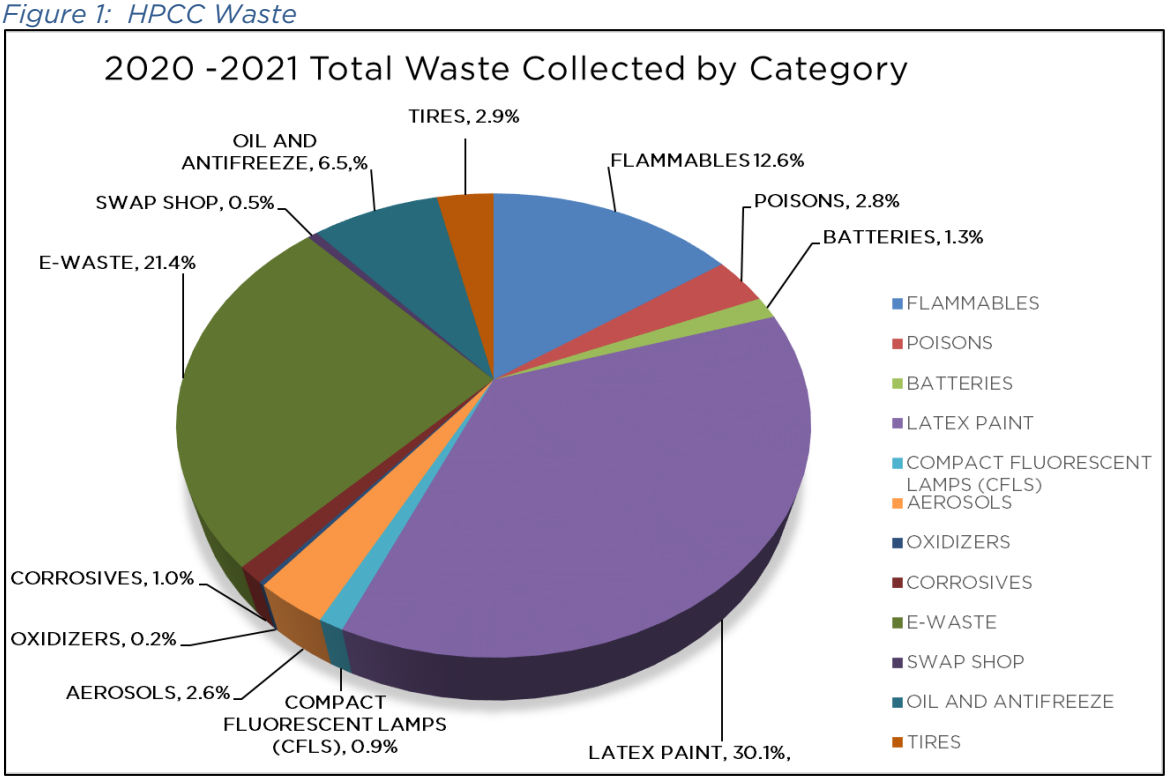
HPCC activities are summarized in Table 3 below.

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
149	9,252	431,345 pounds

Figure 1 provides a breakdown of all waste collected at HPCC during the reporting year 2020-2021.

Figure 1: HPCC Waste



Tempe Grease Cooperative

In 2014, Tempe launched the Tempe Grease Cooperative (TGC), an innovative voluntary partnership program, between the City of Tempe and its food service establishments to better manage fats, oils and grease (FOG). In the program, Tempe brokers both pricing and service quality for grease trap and interceptor maintenance on behalf of community restaurants and food service establishments. Proper cleaning and maintenance of grease traps and interceptors helps prevent backups and sanitary sewer overflows which could enter the MS4. The partnership is a gateway to open communications between businesses and Tempe's Environmental Services Section and fosters compliance with several environmental programs including stormwater. Since food service establishments have a potential to impact the MS4, restaurants are identified as a priority for commercial inspections. In this reporting year, the TGC had a total of 206 members.

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

Tempe's Illicit Discharge Detection and Elimination (IDDE) program consists of several components designed to educate, involve, 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 reporting year 2020-2021, Tempe maintained a staff of seven Environmental Compliance Inspectors (ECIs), one Environmental Compliance Supervisor (ECS), four Environmental Quality Specialists (EQSs) and one Environmental Program Supervisor (EPS) with direct stormwater responsibilities. All inspectors are cross-trained in pretreatment, cross-connection control and stormwater inspections. During the reporting year 2020-2021, stormwater training for this group consisted of three one hour long internal training events attended by 11 staff members (seven ECIs, two ECS, one EQS and

one EPS). Internal training focused on overall program management of the MS4, IDDE components, inspections, enforcement, housekeeping, spill prevention BMPs and new MS4 Permit requirements.

Of the 255[1] Tempe employees who received training during the reporting year 2020-2021, approximately 234 City field employees outside of Environmental Services received site specific 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 if 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.

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

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 four City workgroups: Environmental Services, Parks and Recreation, Streets and Water Utilities Operations. 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 drywells, bubbler boxes, inlet structures, outfalls, streets, conveyance pipes, retention basins, etc. Outfall inspections are covered further in this section.

- Environmental Compliance Inspectors continue to conduct Alternative Retention Criteria Area (ARCA) catch basin inspections after large downtown events such as Oktoberfest, Tempe Festival of the Arts and the Innings Festival. During the reporting year 2020-2021, and due to the Covid-19 pandemic all events where cancelled during Fiscal Year 2020-2021. The environmental services department conducted inspections to ensure the catch basin were maintained and cleaned from routine traffic in those areas. As a result, 18 catch basins were inspected, seven of which required referral for cleaning. These are included in Table 4 under Environmental Services ARCA infrastructure cleaned. A numeric summary of infrastructure inspection and cleaning events can be found in Table 4 of this section. Inspection forms, narratives and other related information are included as **Attachment D**. A summary of cleaning events is included as **Attachment E**.
- Tempe's Parks and Recreation Division 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 reporting year 2020-2021, Tempe's Parks and Recreation Division inspected 223 stormwater assets including catch basins, inlet structures, drywells, bubbler boxes and retention basins. Of the 223 stormwater assets inspected, 19 were referred for cleaning and four were referred for repairs. A numeric summary of inspections, cleaning events and contracted services can be found in Table 4. The inspection logs are included as **Attachment F**.
- Tempe's Street Maintenance Section is tasked with the maintenance and cleaning of Tempe streets including street sweeping and maintenance of right of ways. 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 reporting year 2020-2021, Tempe cleaned approximately 21,888 linear miles of streets, removing approximately 696 tons of debris. A numeric summary of these events can be found in Table 4. In addition to street sweeping outlined above, Streets staff visually scans catch basins during sweeping and right of way maintenance operations. On an as needed basis, Streets staff will notify the Water Utilities Operations Section of MS4 maintenance and/or cleaning needs. These visual scans are not specifically documented beyond noting the location for cleaning/maintenance referral.
- Tempe's Water Utilities Division, Water Utilities Operations Section is also responsible for the operation and maintenance of Tempe's water, wastewater, flood irrigation and stormwater infrastructure. Water Utilities Operations also maintains contracts for any additional infrastructure cleaning services needed. During the reporting year 2020-2021, Tempe inspected 549 structures and cleaned 436 structures. During inspections or cleaning events, staff assures that storm structures are properly labeled. Tempe

employees labeled or replaced worn labels on approximately 489 stormwater structures as part of routine inspections.

Table 4: Summary of MS4 Infrastructure Inspections and Cleaning

Location/ Description	Infrastructure Inspected		Infrastructure Cleaned		Amount of Debris Removed
	Number	Repaired	Number	Miles	Tons
Environmental Services - ARCA	18		7*		
Parks and Recreation	223	4	19		
Water Operations	549	2	436		63
Streets (including street sweeping)	-			21,888	696
Totals	**790**	**6**	**462**	**21,888**	**759**

Note: Infrastructure includes catch basins, drywells, bubbler boxes, inlet structures, streets, conveyance pipes, etc. Referral for cleaning and repair numbers may not match the number of structures cleaned due to verification process and service schedule.
* Included in Water Operations infrastructure cleaned 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 within three days of report. Of the 135 call-outs that Tempe's Environmental Services Section received, 135 were either directly or indirectly related to stormwater concerns. All calls were responded to and all calls were investigated. A summary of all call-outs pertaining to these reports can be found in **Attachment G**. 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
135	135	100 Percent	135	100 Percent

Inspections – Municipal, Industrial, Commercial, Outfall
Tempe's stormwater inspection program for municipal, industrial and commercial facilities is a critical component of the IDDE program. Aside from identifying and eliminating discharges, these inspections compel the use of stormwater 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 a vital 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 of the previously listed components (e.g., public notifications, field staff notifications, inspections, etc.). Tempe responds to all reported discharges, regardless of the source, to determine if 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 are otherwise exempt are not subject to further investigation. If a discharge is found to be illicit, corrective actions, including enforcement actions, are used to eliminate the illicit discharge. See **Attachment H** for Tempe's Enforcement Response Plan (ERP). Identified wastewater discharges, such as raw sewage or grease, are immediately investigated and eliminated as quickly as possible. Discharges found to not be a significant source of pollutants, are exempt from Clean Water Act (CWA) discharge provisions or are permitted under an ADEQ AZPDES permit are not necessarily investigated each time they are identified (e.g. irrigation water, tail-water, permitted DeMinimis 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 will be analyzed at an Arizona certified laboratory. During the reporting year 2020-2021, all discharges were investigated and/or identified through physical investigations, field screening and/or characterized through laboratory analysis.

Tempe ECIs modified inspection procedures to continue performing inspections while maintaining COVID-19 pandemic safety protocols. As a result, 393 industrial/commercial inspections, 428 restaurant inspections and 42 outfall inspections conducted. From the 135 call-outs, 14 field notices of violation were issued to residents for the discharge of pool water or filter backwash water into the right of way. 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	42	
Industrial/Commercial (non-restaurant)	393	
Restaurant	428	
Call-Out (stormwater)	135	14 Field Notices of Violation
Catch Basins and Other Infrastructure	18	
Total	**1016**	**14**

D. Municipal Facilities

Inventory

Tempe maintains a total of 154 Municipal Facilities. A list of all facilities and a map of general locations are 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. Haden House was added to the municipal inventory in the 2020-2021 reporting year. 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 in 2012, but no changes were made in facility classifications because impacted facilities were already classified at a higher level. 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	Total Number of Facilities
Municipal Utilities - Water	3	13	21	37
Fire Medical Rescue	1	9	1	11
Community Services - Parks and Recreation	5	5	55	65
Community Services - Other	0	5	11	16
Transportation	0	2	4	6
Police	0	4	1	5
Municipal Utilities - Other	0	0	0	0
Miscellaneous	3	2	9	14
Totals	**12**	**40**	**102**	**154**

All Priority 1 facilities are on a biennial (every other year) inspection schedule. Priority 2 facilities are inspected every three years and Priority 3 facilities are 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.

New to this year's report is the addition of Haden House. There were no deletions of facilities during the 2020-2021 reporting year.

Inspections
Consistent with Tempe's Municipal Facility Stormwater Inspection Program, Tempe prioritized all 154 sites over the previous reporting years. In the reporting year 2020-2021, 29 facilities were inspected. Table 8 summarizes all inspection activities from 2020-2021. Inspection reports can be found in **Attachment I**.

Table 8: Summary of Municipal Facility Inspections

Facility type/ inspection frequency	Total Number of Facilities	Number of Facilities Inspected	Number of Facility Inspections	Percent Inspected
Priority 1	12	4	4	33
Priority 2	40	24	24	60
Priority 3	102	1	1	1
Totals	**154**	**29**	**29**	**19**

Results
Results and/or activities and control measures implemented as a result of the 29 inspections conducted this reporting year are as follows:

- All inspected facilities storing a single container exceeding five gallons of a hazardous material maintained documentation of practices and procedures designed to prevent and respond to spills that have potential to come into contact with stormwater. See **Attachment J**. These practices are in addition to Tempe's Hazardous Waste Management Plan (HWMP), found in **Attachment K**, which requires the proper handling, storage, transport and disposal of hazardous wastes associated with municipal operations and facilities.
- During facility inspections, basic stormwater awareness and housekeeping practices were discussed with facility representatives. These discussions are separate and in addition to formalized stormwater training.
- Control measures implemented:
    - Harelson Park installed four tie-in drywells which were connected to the four existing drywells increasing capacity.
    - Hanger Park installed two tie-in drywells which were connected to the existing drywells increasing capacity. Hanger Park also an additional MaxWell® Plus Drainage System installed.
    - Papago Park North installed two MaxWell® Type IV drainage drywells.
    - Playa Del Norte Park installed one tie-in drywell which was connected to the existing drywell increasing capacity.
    - Haden House (new City facility) installed one MaxWell® Plus drywell.

Chemical Handling, Storage, Disposal Practices and Spills
Several Permit sections require various plans, documents or procedures to ensure the proper handling, storage and disposal of chemicals and effective response to chemical spills at municipal facilities. Tempe's efforts in this area involve several workgroups, 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 the various workgroups.

Environmental Services Section

Tempe's Environmental Services Section is responsible for all 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. This document was developed by representatives from Environmental Services, Risk Management and HPCC and is included as **Attachment J**.

During the reporting year, one municipal facility spill incident was reported to the Environmental Services Section. Three municipal sanitary sewer overflows (SSO) occurred in the reporting year. Notification of these events were reported to the appropriate regulatory agencies at the time of the occurrence.

- On December 21, 2020, a release of approximately 150 gallons of wastewater occurred in the public right of way at 949 S, McClintock Drive. The release happened in the street gutter and alleyway, originating from sanitary sewer manhole number NE24NMH0030 to NE23N4MH0029 Staff bermed the flow prior to it reaching a catch basin or drywell, and used a vactor truck with a high-pressure stream to break up blockage in the line and to collect the overflow. The area was disinfected with a chlorine solution. The SSO was determined to be caused by debris, toilet paper and rag accumulation the sanitary sewer pipe. Tempe will continue ongoing preventative maintenance, which has shown to be effective in the reduction of SSOs. Internal SSO response procedures were followed limiting public exposure and minimizing impact to the MS4.
- On December 24, 2020, a release of approximately 50 gallons of wastewater occurred in the public right of way at 1334 W. 10th Place. The release happened in the alleyway, originating from sanitary sewer manhole number NW21N4MH0045 to NW21N4MH0006. Staff bermed the flow prior to it reaching a catch basin or drywell, and used a vactor truck with a high-pressure stream to break up blockage in the line and to collect the overflow. The area was disinfected with shockwave disinfectant. The SSO was determined to be caused by debris in the sanitary sewer pipe. Tempe will continue ongoing preventative maintenance, which has shown to be effective in the reduction of SSOs. Internal SSO response procedures were followed limiting public exposure and minimizing impact to the MS4.
- On December 25, 2020, a release of approximately 75 gallons of wastewater occurred in the public right of way at 1413 E. Watson Drive. The release happened in the alleyway, originating from sanitary sewer manhole number SE02S4MH0016 to SE02S4CO0002 Staff bermed the flow prior to it reaching a catch basin or drywell, and used a vactor truck with a high-pressure stream to break up blockage in the line and to collect the overflow. The area was disinfected with shockwave disinfectant. The SSO was determined to be caused by debris in the sanitary sewer pipe. Tempe will continue ongoing preventative maintenance, which has shown to be effective in the reduction of SSOs. Internal SSO response procedures were followed limiting public exposure and minimizing impact to the MS4.

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 (Table 10) for a summary of training events.

Household Products Collection Center (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 staff also maintains Tempe's HWMP. The HWMP was updated in 2011 to include practices to minimize exposure of hazardous waste to precipitation. The plan is reviewed annually. It was most recently updated in June 2020, by Tempe's Health and Safety Supervisor and reviewed by an EQS. The HWMP is included as **Attachment K**. In addition to these responsibilities, HPCC staff provides assistance with various municipal facility stormwater BMP needs.

Risk Management
Risk Management provides support, guidance and training in areas related to chemical handling and storage. 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.

Fire Medical Rescue Department
Tempe's Fire Medical Rescue 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 Fire Medical Rescue Department's Hazardous Materials Policy addresses containments of hazardous materials as a critical component of spill response procedures.

Pesticides, Herbicides and Fertilizers
Tempe is committed to reducing the amount of pesticides and herbicides used by employing integrated pest management (IPM) practices. However, when pesticide and/or herbicide use is needed, established application of BMPs are implemented. These practices were developed by Tempe-certified applicators and Tempe's Environmental Services Section in 2011 and updated in 2020. Additionally, a multi-disciplinary, multi-departmental team has developed a formal IPM Program document updated in 2021. A copy of the updated Stormwater BMP for the Application of Pesticides and Herbicides at City Facilities is included as **Attachment L**. The plan is reviewed annually by a Parks and Recreation representative, who also serves as Tempe's IPM Program Coordinator.

- Tempe's Parks and Recreation Division 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. Tissue analyses are periodically used to confirm or modify application rates. Currently, some parks and the City golf courses have the ability to 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, aerification methods are used which allow for better infiltration of water, fertilizers, chemicals and soil amendments. In addition, all City 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 stormwater BMPs. As part of Tempe's IPM Program, certified applicators and supervisors are required to review the formal IPM Program document annually.
- 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, Priest Maintenance Yard and East Valley Bus Operations and Maintenance, maintain coverage under the Multi-Sector General Permit (MSGP). Two additional facilities, HPCC and Kyrene Wastewater Treatment Facility, 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. East Valley Bus Operations and Maintenance updated its MSGP Notice of Intent (NOI) on February 27, 2020. Priest Maintenance Yard updated its MSGP NOI on February 21, 2020. Complete records for MSGP regulatory requirements are maintained onsite at each permitted facility. Reminders and compliance tracking of MSGP and other ADEQ and EPA 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 2017-2018, the Water Utilities Operations Section performed field verification of over 288 stormwater appurtenances at 39 parks. During 2019-2020, geoprahic information system (GIS) inventory and maps were updated and aligned so the history of the asset's maintenance can be recorded in a work order tracking database. This effort will allow for work orders to be generated and will ensure the correct maintenance is performed at the correct time on the correct structure. All maps are maintained in GIS and 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	2016-2017	Map 1: 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.	2016-2017	Map 2: 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)	2018	SWMP ATTACHMENT H: 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	2016-2017	Map 3: 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.	2016-2017	Map 4: Tempe MS4 Municipal Facilities
An up-to-date drainage system map	2016-2017	Map 5: Tempe MS4 Drainage System
Drainage Basins	2019-2020	Map 6: Tempe MS4 Stormwater Basins
ARCA	2015-2016	Map 7: ARCA Map 2016

A summary of Tempe's mapping capabilities and evaluation of future potential mapping requirements, as outlined in Appendix A, Section IV.E, were included in the 2013-2014 annual report.

E. Industrial Facilities

Status of Identification and Inventory of Industrial/Commercial Facilities

In 2020-2021, the Environmental Services Section continued to update the inventory of all industrial and commercial facilities within the City that are subject to inspection under Tempe's MS4 Permit. This inventory was developed in 2018-2019 using the following Permit-required criteria:

- Industrial facilities identified in 40 Code of Federal Regulations (CFR) 122.26(b)(14)(xi);

- Industrial facilities subject to MSGP requirements, including those facilities that have submitted a NEC 40 CFR 122.26(b)(14)(i-ix) except (iii);
- Facilities subject to 313 Title III Superfund Amendments and Reauthorization Act (SARA);
- Other industrial and/or commercial sources (or categories of sources) Tempe determines are contributing a substantial pollutant load to the MS4. These include automotive facilities for auto body (SIC 7532), auto repair (including dealership service) (SIC 5511, 753-7, -8, -9) and car washes (SIC 7542).

The inventory list was developed by acquiring information from InfoGroup, Government Division – ReferenceUSAGov Data Base. The prioritized list of 1,620 facilities is in Attachment M.

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;
- Arizona State Emergency Response Commission – (facilities subject to Superfund Amendments and Reauthorization Act (SARA) Title III);
- EPA Enforcement and Compliance Online (ECHO);
- Multi-media inspections conducted by ECIs;
- ADEQ lists of facilities in Tempe with MSGP or NECs;
- Internet research based on visual field observation.

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. A separate inventory list for restaurants and other food service establishments is maintained by the FOG program.

These lists will be reviewed annually to appropriately include or remove businesses with Standard Industrial Codes (SIC) that have been noted, during the term of the permit, to demonstrate a potential to contribute pollution to the MS4.

Overview of Inspection Findings and Significant Findings

Tempe ECIs conducted stormwater inspections at 393 industrial/commercial facilities subject to SARA Title III, MSGP or Industrial Pretreatment requirements and 428 restaurants. Restaurants were inspected for compliance with stormwater requirements along with other regulatory program requirements. As a result of these inspections, findings range 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. Industrial/commercial inspection documentation and restaurant inspection documentation are included as Attachment N and O, respectively.

Corrective and Enforcement Actions Needed and Taken in Response to Inspections

During inspections, Tempe ECIs 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.

In addition to addressing deficiencies, ECIs regularly provide information to facilities whom may require coverage with ADEQ. In 2020-2021, Tempe identified 70 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 15, 2021, and July 17, 2020. See **Attachment P** for copies of non-filer notifications.

F. Construction Program Activities

Status
Tempe's stormwater construction program is managed by the Engineering and Transportation Department/Engineering Division and Community Development Department/Building Safety/Private Development Engineering. The program encompasses plan review, inventory, prioritization, inspection and enforcement of Capital Improvement Projects (CIP) and private construction projects that will result in a land disturbance of one acre or more and projects that disturb less than one acre but are part of a larger common plan of development. For the reporting year 2020-2021, Tempe reviewed grading plans and inventoried 100 percent of all 19 new construction projects meeting the land disturbance criteria, which were then added to the appropriate existing inventory. Of the projects requiring review, inventory, prioritization and inspection, two were CIP and 17 were private development projects. The CIP group currently maintains an inventory of five construction sites; three active construction sites and two sites which received final inspection. Development Services maintains an inventory of 32 construction sites; 25 are active construction sites, seven are finalized sites and two of which are pending final inspection.

Inspection Findings
Stormwater BMPs are checked as part of other inspections on active construction sites. During the reporting year, 12 active construction site stormwater inspections occurred. The Engineering workgroup inspected three active CIP projects at three separate locations in the reporting year. Development Services conducted nine inspections at active qualifying private development construction sites in the reporting period.

Post-construction inspection is part of the final inspection completed within the twelve-month warranty period. A total of seven post construction site inspections occurred this reporting period. Engineering conducted two CIP project post construction inspections. Development Services conducted five inspections at finalized private development construction sites.

Each active site will have at least one annual inspection during the next reporting period and post construction controls will be inspected within 12 months of project completion per permit requirements. All inspection reports are included as **Attachment Q**.

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.

Corrective Action and Enforcement
Compliance escalation processes have been defined and are inclusive in the civil citation processes

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

Training

CIP conducted training for nineteen construction employees with storm water responsibilities on May 11, 2021, for stormwater requirements at construction sites. Development Services had no new hires during this reporting period. The last employee training was conducted on May 11, 2021. The biennial training requirement has been met at this time and the next training will be scheduled for early in 2022. In the event of a new hire, that person(s) will be trained within one calendar year.

G. Post-Construction Controls

Summary of Controls

Consistent with EPA's Low Impact Development (LID) recommendations and urban stormwater BMPs, Tempe's most effective post-construction control is on-site retention as implemented by Tempe's Stormwater Retention Ordinance - Chapter 12, Article IV, of the Tempe City Code (see **Attachment R**). 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 denser development in and around downtown Tempe and the Rio Salado corridor(the 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 Tempe Engineering and Transportation Director if equivalent BMPs for on-site pollutant removal are implemented.

Overview of 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 actions 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 CGP NOI is required.

Corrective Action and Enforcement

See section 3.F. for a summary of post construction inspection activities. No corrective or enforcement actions were needed or taken during this reporting period for post construction activities. Post-construction inspection documents are included in **Attachment Q**.

New or Revised Post-Construction Requirements

Since Tempe's last annual report, there have been no new or revised post-construction requirements related to city-issued permits. 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 Engineering and Transportation Director has approved alternative on-site pollutant removal BMPs. Sections 12-71 and 12-73 of Tempe's on-site retention ordinance contains 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 United States, 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.

H. Outfall Inspection Program

Staff training
Tempe reviewed and updated the IDDE Program Guidance Manual this reporting year to provide clarity to procedures involved during outfall inspections and investigations. During the reporting year, Tempe conducted one detailed IDDE training event that covered conducting dry weather screening events and source investigations. A total of five ECIs and one ECS were trained.

Outfall inventory
Tempe has identified 42 major outfalls as defined by 40 CFR 122.26. A map and inventory of outfalls are 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.

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 regulatory determinations 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. After evaluation of criterion, nine sites remain identified as priority outfalls.

Inspection Tracking System
All major outfalls are inspected annually. If illicit discharges are identified, inspection frequencies may be increased to quarterly. Beginning in reporting year 2018-2019, ECIs resumed the responsibility from the Water Quality Specialists (WQS) for dry weather outfall screenings at the required frequencies. If field screening procedures trigger the need for investigation, an ECI 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 ECS for review, after which all forms are provided to an EQS for MS4 Permit tracking and reporting. The outfall inspection reports are included in **Attachment S**.

Inspection and Screening Procedures
Outfall inspections are conducted using 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. There were no changes in the detailed protocol for Outfall Inspection, Field Screening or Illicit Discharge Elimination procedures this year. A summary of the procedures for Inspections, Investigations and Illicit Discharge Elimination can be found in the SWMP Section 6.3, Section 6.4 and Section 6.5 respectively, see **Attachment Z**.

Findings
During 2020-2021, ECIs conducted 42 outfall inspections. Of these, 9 inspections were completed at priority outfalls and 33 were routine major outfall inspections. One site, SR-04 had dry weather flow that is under investigation and will be inspected quarterly or until non-pollutant discharges have been indentified. Three sites, GD-01, SR-18 and SR-25 had dry weather flow that has been identified as Salt River Project (SRP) canal water. An ECI conducted an investigation at outfall SR-25 investigation form and backup documentation is included in Attachment S. There was moisture identified at 20 of the inspection sites without the presence of flow for field screening. The remaining sites will continue to be monitored annually and will be field screened according to the procedures outlined in the SWMP if flow is detected.

I. New or Revised Ordinances, Rules or Policies

Revised Ordinances
No new rules were developed in 2020-2021. Revisions were made to existing stormwater Code during the 2018-2019 reporting year to reflect changes in Tempe's organizational structure.

Copies of Chapter 12, Articles IV and VI and Chapter 19, Article IV, 50) B) of the Tempe City Code can be found in **Attachment R**.

Policies and Stormwater Management Plan (SWMP)
Tempe has not developed new or revised existing policy. The SWMP was updated in 2021 to reflect role changes in the organization and document ADEQ approved control measure updates. The SWMP can be found in **Attachment Z**.

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 reflects how the community wants to grow and change over the next 30 years. During Fiscal Year 2012-2013, Tempe worked with the public to develop a new General Plan 2040. LID was added to the plan in the form of General Plan strategies and goals. Voters approved the General Plan in May 2014. General Plan 2040 information can be found on the following website:

- https://www.tempe.gov/government/community-development/general-plan-2040

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 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 Annual Report. Subsequently, the FCDMC conducted two studies; the Tempe Area Drainage Master Study (ADMS) and the Lower Indian Bend Wash Area Drainage Master Study and Plan (ADMS/P) which utilized FLO2D and Stormwater Management Model (SWMM) to determine areas of potential flooding across Tempe. Tempe then completed a Storm Drainage Management Study in June 2019, which took the results of those two studies and refined conceptual mitigation plans for the areas of potential flooding, provided cost estimates and ranked the potential projects. The Engineering Division has begun forwarding these projects for inclusion in the CIP. The 15 projects that resulted from the management study will reduce uncontrolled flooding, will reduce pollutants in discharges from its MS4 that receive discharges from older development areas and areas of significant redevelopment after construction is complete.

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 H** for a copy of the ERP.

J. Fiscal Expenditures

Tempe's estimated expenditures related to implementation of the stormwater program for Fiscal Year 2020-2021, stormwater expenditures were $1,750,034. A more detailed analysis of fiscal expenditures can be found in Section 12 of this report.

K. Training Summary[1]

Tempe coordinated 15 employee training events covering permit-required training topics over the reporting period. Fifteen training events were conducted internally by City staff. A total of 255[2] employees attended these trainings. Note that Municipal Facility training included the identification and reporting of illicit and non-stormwater discharges but is not specifically categorized as IDDE training because the training event primarily focused on pollution prevention and good housekeeping. See Table 10 for specific training details.

[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.

Table 10: Summary of Training Activities

Date(s)	Target Groups	Topic(s)	Permit Training Type	Attendees	Trainer
December 2020	*Parks - Direct Stormwater Responsibilities*	*Pollution Prevention; Spill Management; Handling, Storage of Used Oil & Other Toxic/Hazardous Materials; Permit Requirements Including Identifying and Reporting Illicit and Non-Stormwater Discharges and Field Practices.*	*Municipal Employee*	*49*	*Tempe Environmental Services Staff*
December 2020	*Utility Services - Direct Stormwater Responsibilities*	*Pollution Prevention; Spill Management; Handling, Storage of Used Oil & Other Toxic/Hazardous Materials; Permit Requirements Including Identifying and Reporting Illicit and Non-Stormwater Discharges and Field Practices, De Minimis discharges.*	*Municipal Facilities*	*3*	*Tempe Environmental Services Staff*
December 2020	*Environmental Services - Direct Stormwater Responsibilities*	*Pollution Prevention; Spill Management; Handling, Storage of Used Oil & Other Toxic/Hazardous Materials; Permit Requirements Including Identifying and Reporting Illicit and Non-Stormwater Discharges and Field Practices.*	*IDDE Municipal Employee Training*	*3*	*Tempe Environmental Services Staff*
December 2020	*Solid Waste - No Direct Stormwater Responsibilities*	*Pollution Prevention; Spill Management; Handling, Storage of Used Oil & Other Toxic/Hazardous Materials; Permit Requirements Including Identifying and Reporting Illicit and Non-Stormwater Discharges and Field Practices, De Minimis discharges.*	*Municipal Facilities*	*1*	*Tempe Environmental Services Staff*

January 2021	*Parks - Direct Stormwater Responsibilities*	*Pollution Prevention; Spill Management; Handling, Storage of Used Oil & Other Toxic/Hazardous Materials; Permit Requirements Including Identifying and Reporting Illicit and Non-Stormwater Discharges and Field Practices.*	*Municipal Employee*	*6*	*Tempe Environmental Services Staff*
January 2021	*Environmental Services - Direct Stormwater Responsibilities*	*Industrial and Commercial Inspections, inventory, MSGP/SARA codes, priotization, reporting non-filers and inspections*	*Industrial and Commercial Facilities*	*10*	*Tempe Environmental Services Staff*
February 2021	*Facility and Custodial Services - No Direct Stormwater Responsibilities*	*Pollution Prevention; Spill Management; Handling, Storage of Used Oil & Other Toxic/Hazardous Materials; Permit Requirements Including Identifying and Reporting Illicit and Non-Stormwater Discharges and Field Practices, De Minimis discharges.*	*Municipal Facilities*	*12*	*Tempe Environmental Services Staff*
March 2021	*Facilities - No Direct Stormwater Responsibilities*	*Pollution Prevention; Spill Management; Handling, Storage of Used Oil & Other Toxic/Hazardous Materials; Permit Requirements Including Identifying and Reporting Illicit and Non-Stormwater Discharges and Field Practices.*	*Municipal Employee*	*17*	*Tempe Environmental Services Staff*

March 2021	*Utilities - Direct Stormwater Responsibilities*	*Pollution Prevention; Spill Management; Handling, Storage of Used Oil & Other Toxic/Hazardous Materials; Permit Requirements Including Identifying and Reporting Illicit and Non-Stormwater Discharges and Field Practices, De Minimis discharges.*	*Municipal Facilities*	*20*	*Tempe Environmental Services Staff*
April 2021	*Fleet - No Direct Stormwater Responsibilities*	*Pollution Prevention; Spill Management; Handling, Storage of Used Oil & Other Toxic/Hazardous Materials; Permit Requirements Including Identifying and Reporting Illicit and Non-Stormwater Discharges and Field Practices.*	*Municipal Employee*	*9*	*Tempe Environmental Services Staff*
May 2021	*Community Development and Engineering Capital Improvement Projects(CIP) - Direct Stormwater Responsibilities*	*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*	*21*	*Tempe Community Development and Environmental Services Staff*

May 2021	*Solid Waste - No Direct Stormwater Responsibilities*	*Pollution Prevention; Spill Management; Handling, Storage of Used Oil & Other Toxic/Hazardous Materials; Permit Requirements Including Identifying and Reporting Illicit and Non-Stormwater Discharges and Field Practices.*	*Municipal Facilities*	*34*	*Tempe Environmental Services*
May 2021	*Transportation Maintenance and Traffic Operations - Direct and No Direct Stormwater Responsibilities*	*Pollution Prevention; Spill Management; Handling, Storage of Used Oil & Other Toxic/Hazardous Materials; Permit Requirements Including Identifying and Reporting Illicit and Non-Stormwater Discharges and Field Practices.*	*Municipal Facilities*	*32*	*Tempe Environmental Services*
May 2021	*Fleet - No Direct Stormwater Responsibilities*	*Pollution Prevention; Spill Management; Handling, Storage of Used Oil & Other Toxic/Hazardous Materials; Permit Requirements Including Identifying and Reporting Illicit and Non-Stormwater Discharges and Field Practices.*	*Municipal Employee*	*30*	*Tempe Environmental Services Staff*
Jun-20	*Environmental Services - Direct Stormwater Responsibilities*	*New MS4 permit requirements. IDDE: Mapping, outfall inspection procedures, investigations and recordkeeping. Industrial and Commercial facilities (non-municipally owned): inventory, prioritzations and non-filers.*	*IDDE Municipal Employee Training*	*8*	*Tempe Environmental Services*
			Total Number of Training Events:		**15**
			Total Number of Attendees:		**255**

4. Monitoring Locations

There have been no changes to the stormwater monitoring locations for the duration of the permit.

As discussed with ADEQ during permit negotiations, TD-01 and TD-03 monitoring station may be unavailable for a period of time in the future due to construction in the area. These lines and outfalls are near an ADOT right-of-way that will be undergoing construction at dates not yet determined. The monitoring stations may require minor relocations following to the construction but will still be collect stormwater representative of the same land uses once the construction is complete.

As discussed, and approved by ADEQ staff in August 2019, due to road improvements near SR-05, the monitoring location required relocation. The decommissioning of the current equipment occurred in September 2019. Due to construction the site was unavailable for monitoring for a period of the summer and winter wet weather seasons in 2019-2020.

In 2017-2018, ADEQ updates to the eMaps, the Tempe Drain is listed as the San Francisco Canal North Branch. Historically, the Tempe Drain has been identified as an unnamed tributary to the Salt River. The location is at the confluence of the segment of the Salt River between Tempe Town Lake dam and Interstate 10 bridge. It has designated uses are Aquatic and wildlife (ephemeral) (A&We) and Partial-body contact (PBC). If ADEQ determines that the receiving water, as listed in eMaps, is actually the San Francisco Canal North, data from TD-01 and TD-03 would be compared to the standards for the designated uses of Agricultural irrigation (AgI) and Agricultural livestock watering (AgL). Until notification is received to do otherwise from ADEQ, Tempe will continue to compare analytical data from the stormwater monitoring sites TD-01 and TD-03 to those consistent with designated uses for the above listed reach of the Salt River.

The designated use of the receiving water for SR-08 was changed and reported to ADEQ in the 2013-2014 Annual report. All outfall information is maintained on file with Tempe's Environmental Services Section and can be reviewed by ADEQ upon request.

5. Storm Event Records

Part 8 of the Permit states:

"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 this requested information in **Attachment T.** Tempe tracks all sampling events required by the Permit. **Attachment U** summarizes sampling status throughout the reporting year. All sampling and analytical monitoring requirements were met for this reporting year.

Tempe's annual rainfall is calculated using a precipitation group on the MCFCD website, http://alert.fcd.maricopa.gov/showrpts_mc.html. The group is named G055: CITY OF TEMPE, and is comprised of four storm gauges in and bordering Tempe.

6. Summary of Monitoring Data (By Location)

A summary of all monitoring data for each site is provided in **Attachment V**. The table for SR-08 includes the most recent data. This site had a change in designated use for the receiving water in the 2013-2014 reporting year. All Laboratory Reports are included as **Attachment W**.

From 2011 through September 2014, Tempe collected orthophosphate samples without field filtration, 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. Tempe has modified procedures per EPA and ADHS guidance to include filtration of the sample within 15 minutes of collection.

7. Assessment of Monitoring Data

A. Stormwater Quality

Tempe has reviewed all sampling event results collected from November 2011 through March 2021. A full trending of data is included as **Attachment X**. The trending was done by a comparison of the previous year's data maximum and average to this reporting year's (2020-2021) maximum and average by site location.

Below is a summary of the findings:

- In the 2020-2021 reporting year there were 11 sampling events; from which 1025 analytical results were produced. From those results a total of 72 parameters were detected (conventional parameters, microbiological, metals, nutrients), 953 of the parameters were detected at levels <SWQS. There were only 13 SWQS exceedances (8 for *E. coli and* 5 Copper) which will be discussed more in this section. Overall, there was little significant difference in the results of 2020-2021 compared to previous year's data.

- For the entire dataset 2011-2021, 83 sampling events were conducted during the winter wet season (November through May during 2011-2021), and 75 sampling events were conducted during the summer wet season (June through October 2012-2020).

- Averages for rate, volume, duration, pH, and temperature for all sites from 2011-2021 sites are as follows:

    - Average Rate (GPM): 2,240
    - Total Volume (gallons): 204,386
    - Duration (mins): 87
    - pH (S.U.): 7.5

- Temperature (C°): 22.0

Conventional Parameters

- All sites were sampled for conventional laboratory parameters (i.e., Hardness, TDS, TSS, BOD, COD); the relative levels of parameters observed from site to site varied. Analytical results for all five sites were below historic maximum concentrations for these parameters. However, this year's Hardness TDS, TSS, BOD and COD result averages increased at all five sites. The Hardness and TDS averages increased at SR05 and SR08, TSS average increased at TD01, TD03 and SR08, the BOD average increased at TD03 and SR08, finally COD averages increased at TD01, TD03 and SR08.

- 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. The results for at least one parameter at each site was higher than the permit term average result. There were no results exceeding historical results for the conventional laboratory parameters.

- Metals and nutrients comprised the largest groups of components detected, with results observed for all nutrients and in these groups, for all sites, and at every event. Thirty-eight percent of the analytes monitored for metals had detections (37 of 97), all results were within the range of what has been detected throughout the permit term.

Microbiological

- *E. coli* was above the SWQS at each sampling location in eight of the ten sampling events it was measured. Two events were less than 575 MPN, SR-05 during the summer and winter 2020 event.

- *E. coli* concentrations were observed to have an increase from the permit term average 2011-2020 result (1,654 MPN) to 2020-2021 result (1,661 MPN), for all sites and all events during the respective periods. There is no indication of degradation of stormwater quality discharges due to *E. coli* from Tempe's MS4. As stated in the permit, "*E. coli* values above the SWQS are prevalent in Arizona in high flow precipitation events." There is no indication of the *E. coli* source being linked to wastewater or sanitary sewer overflows. Tempe continues to provide educational material to the public about picking up pet waste. It is difficult to determine if this outreach effort is directly related to the decrease in E. coli.

Metals

- Copper was observed to be above the SWQS during five of the seven sampling events at three of the five sampling locations, SR-08 had one events <SWQS, and KP-01 had one events <SWQS.
- Although average copper levels have been observed to decrease to 14.7 ug/L in this years sampling period when compared to previous wet seasons during the permit term average of 19.8 ug/L, no discernible trends have been identified.

Copper is abundant in the environment, both naturally occurring and in forms associated with industrial and residential uses. Tempe will continue to monitor copper trends and determine best practices for the reduction of copper concentrations in runoff. There is no indication of degradation of stormwater quality due to copper discharges from Tempe's MS4.

- There was little variability between summer and winter samples this year. Comparing this year's data with 2011-2020 data, the following trends were observed: KP-01 – metals average decreased by more than 50 percent, TD-01 – metals average had a slight increase, TD-03 – metals average had a slight increase, SR-05 – metals average had a slight decrease and SR-08 – metals average had a slight increase.

- Trends for the most common parameter hits has not changed. Barium and copper were found in all samples, zinc was detected in six samples, lead was non-detected in all samples, and arsenic was detected in seven out of the seven total samples events. Minor items still occasionally show up par with the trends – antimony and thallium were found in three samples.

Nutrients

- Average nutrients observed at each site in 2020-2021 demonstrate relative consistency with the results throughout the permit term. TD-01, SR-05 and SR-08 had results greater than the historic average, but none of the analytes exceeded standards and were lower than historical maximum values. Nutrients, although 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.

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

- Organic Pollutants monitoring only SR-05 had a hit for Dimethylphthalate the other four sites had non-detect for all organic pollutants in 2020-2021 reporting period.

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

B. Surface Water Quality Standards (SWQS)

Stormwater monitoring sample results conducted consistent with Permit sampling conditions have been compared to SWQS for the applicable receiving water. Summary of Monitoring Data sheets in **Attachment V** 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. Since the 2012-2013 reporting year, Tempe's approach to collecting ambient Hardness data for a perennial water body, for the purposes of SWQS comparison, has been to monitor hardness in the waterbody during times that stormwater discharges are not occurring. As explained in the 2016-2017 annual report, an evaluation to compare storm event and lake water quality over time demonstrated stormwater as significantly lower in hardness than the ambient water body (Kiwanis Park Lake). The trend showed hardness in the stormwater decreasing over time as the lake hardness continued to increase. The data demonstrates that stormwater does not significantly alter the water quality of the lake ambient conditions. Continuing to use the hardness value of ambient lake conditions to calculate the SWQS of hardness-dependent analytes is the most conservative method for protecting the aquatic habitat.

C. Exceeding a SWQS

In 2020-2021, thallium concentrations were detected in samples collected at TD-03 and TD-01 with the results of 2.4 ug/L and 1.4 ug/L respectively. Although thallium was detected at these sites, the results were 3 times lower than water quality standards. Tempe will keep an eye on thallium trends in the future. Approximately 60–70 percent of thallium production is used in the electronics industry. According to the United States Environmental Protection Agency (EPA), man-made sources of thallium pollution include gaseous emission of cement factories, coal-burning power plants, and metal sewers. The main source of elevated thallium concentrations in water is the leaching of thallium from ore processing operations

Tempe has been experiencing concentrations greater than SWQS for *E. coli* and copper since the 2011-2012 reporting period. Tempe identified only these two parameters as having concentrations greater than the applicable SWQS during the 2020-2021 reporting period. *E. coli* was found to be higher than the SWQS at four of the five sites and eight of the ten sampling events. Site SR-05 was below the E. coli SWQS in the 2020-2021 reporting period. Dissolved copper was found to be higher than the applicable hardness-dependent standard at three sites and five of the seven sampling events. TD-03 and TD-01 exceeded the standard for both the summer and winter sampling events, and SR-05 exceeded the standard for the winter sample.

During the 2011-2012 reporting period, Tempe began the implementation of provisions outlined in Permit Section 4.0, relating to the recurrence of discharges higher than SWQS for *E. coli* and copper. After a full review of all sample results during the 2012-2020 reporting periods, there does not appear to be an immediate or obvious correlation between implemented control measures and *E. coli* and copper concentrations. The concentrations of these pollutants appear to correspond more directly to when the sample was taken (time of year and season). Tempe will continue to evaluate existing and future analytical data to better understand impacts on pollutant concentrations in addition to following the control measures identified in Table 11 and Table 12.

Potential pollutant sources and applicable control measures are summarized in Tables 11 and 12 below.

Table 111: 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	SSOs
Pesticides, algaecides, root killers, and fungicides	Cooling towers
Industrial use of copper	Discharges to the POTW
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 122: 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.	

8. Annual Expenditures

Tempe's stormwater program expenditures for the July 1, 2020-June 30, 2021 reporting period is conservatively estimated to be $1,750,034. Funding for the program comes from Tempe's Capital Improvement Program (CIP) fund and various departmental general funds (GF) and enterprise funds (EF). Further explanation of these expenditures and funding sources can be found in this section.

The following factors were considered when developing this fiscal analysis:

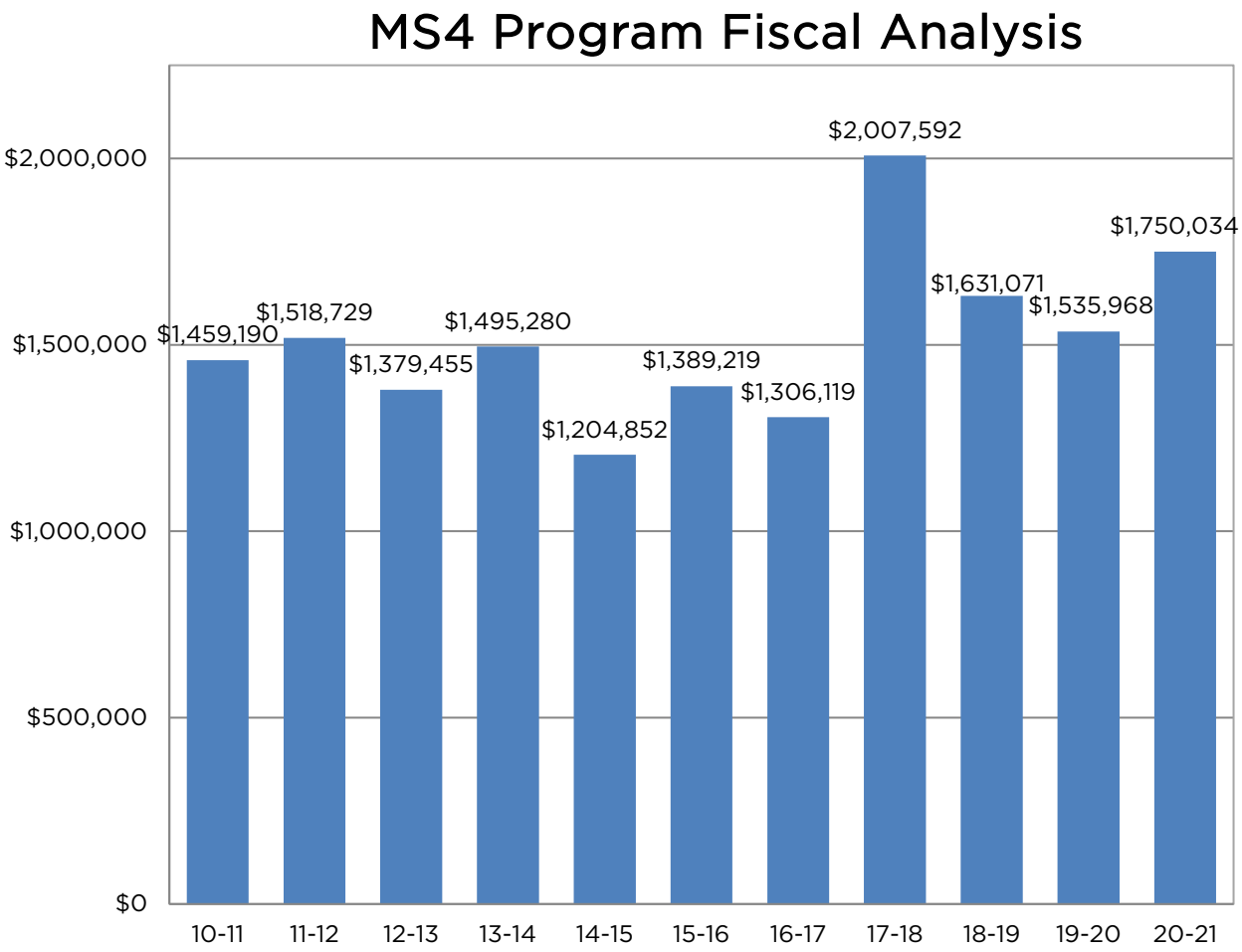
- Public involvement and participation programs are not exclusively related to the stormwater program. Accordingly, stormwater expenditures in these areas were either estimated to be one-half of the total operational budget, or the time and materials specific to stormwater activities;
- Most of the operational 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's stormwater expenditures reflect an increase from the 2019-2020 reporting year. The following considerations help explain the overall and specific increase in expenditures:

- One significant increase in stormwater costs this reporting period was in the Industrial and Commercial Inspection and enforcement program. There was a increase of $85,051

- There was a increase from the previous year of ($2,000) for legal counsel due to the new MS4 permit issued by ADEQ.
- There was an increase from the previous year ($8,781) in expenditures for contracted infrastructure cleaning costs;
- The full costs for the HPCC facilty were included this year since the facility is a permit requirement.
- Other incremental expenditure increases were seen in, private construction stormwater program, and program administration.

Figure 2: Fiscal Analysis



Tempe cannot accurately estimate the scope of budget changes and cost allocations for the 2020-2021 reporting year; however, the city does anticipate some expenditures to continue to be higher than previous years due to the assumption of the in-house maintenance program and increase in analyses. 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 13.

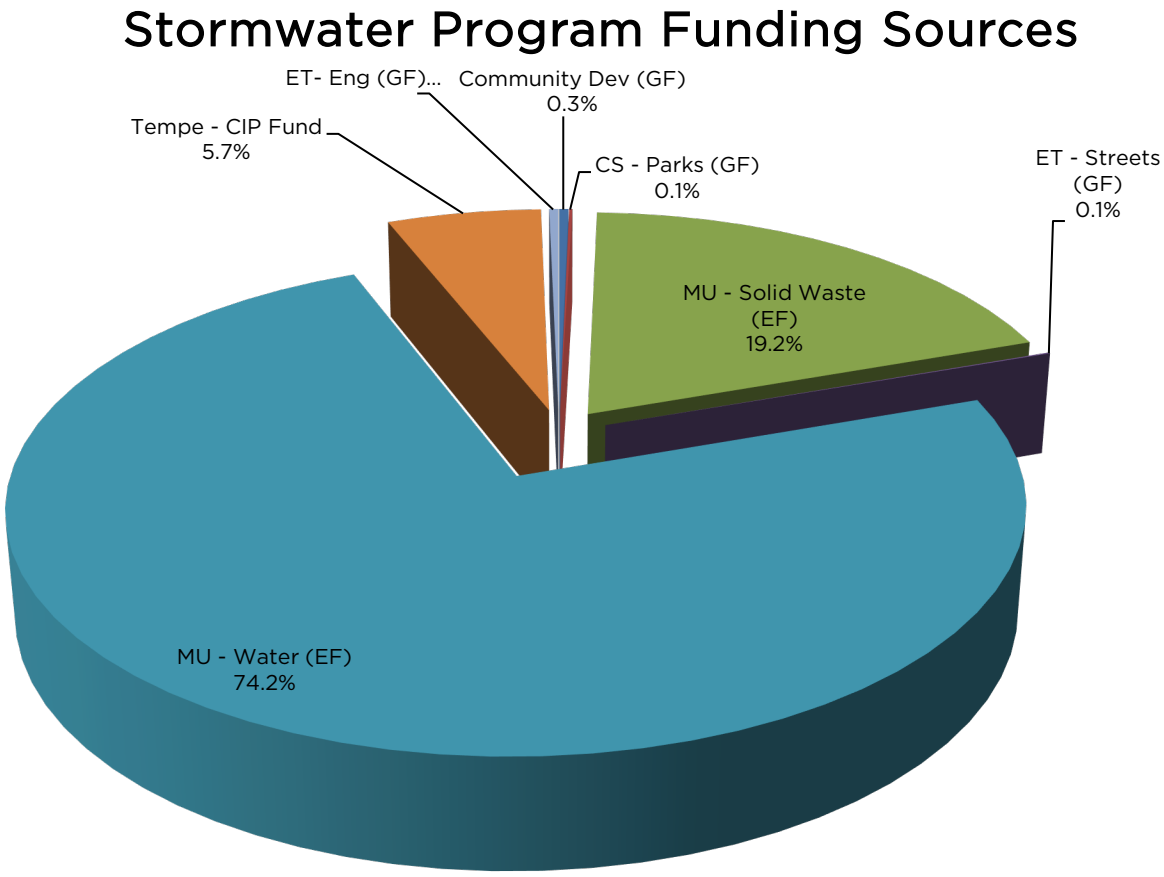
Table 13: Tempe MS4 Annual Expenditures and Fiscal Analysis

Activity	Amount in U.S. Dollars	Funding Source(s)	Notes
Program Administration (annual reporting, SWMP development and implementation, training, etc.)	**$391,482**	PW - Water (EF)	1.75 EQS 0.5 EPS
Legal Counsel	**$4,000**	PW - Water (EF)	Legal counsel - time
Public Education and Outreach			
Materials	**$500**	PW- Water (EF)	BMP Brochure Printing / Promo Material / Labels
Memberships	**$4,000**	PW-Water (EF)	STORM Dues
Other		PW-Water (EF)	Outreach Booth for Festival of Arts
Public Involvement and Participation			
Hazdarous Mat Safety/HPCC	**$335,959**	PW - Solid Waste (EF)	(Full HPCC operational expenses)
Adopt-A-Park	$0	PW - Parks (GF)	Operated by volunteers no City staff costs
Adopt-A-Path/Street	**$1,200**	PW - Streets (GF)	Full Program Expense
Training (External)	**$100**	PW - Water (EF)	CISEC
Capital expenses for new, replaced, or repaired stormwater sewers, capital for facility replacement.	**$100,000**	Tempe - CIP Fund	Repair and replacement of catch basins
Operational expenses for cleaning and/or repairing stormwater sewers.			
Cleaning / Repair (Internal)	**$280,172**	PW - Water (EF)	Staff Time
Cleaning / Repair (Contract)	**$12,574**	PW - Water (EF)	Spoils handling / contracted cleaning services
Other expenses/equipment		PW - Water (EF)	

Engineering Capital Construction Stormwater Program	**$5,921.44**	PW- Eng. (GF)	Staff Time
Private Construction Stormwater Program	**$5,953**	CD - DS (GF) Developer Fees	Staff Time
Stormwater GIS development, maintenance, and operations, staff time, etc..	**$25,728**	PW - Water (EF)	Staff Time
Inspection / Enforcement (IDDE, Industrial / Commercial, etc.)	**$242,390**	PW- Water (EF)	Staff Time & Equipment
Outfall Inspections / Wet weather Sampling	**$79,032**	PW- Water (EF)	Staff Time & Equipment
Analytical			
Analytical	**$15,700**	PW - Water (EF)	
Staff Time - Chemists	**$13,030**	PW - Water (EF)	
CCTV	$0	PW - Water (EF)	Staff Time & Equipment
Parks & Recreation	**$2,100**	PW-Parks (GF)	Staff Time & Equipment - Kona Training
Streets			
Street sweeping	**$220,193**	PW - Water (EF)	4 FTEs - Stormwater Expenditures / Crash truck
Permit Fee	**$10,000**	PW - Water (EF)	Permit Fee
Total	**$1,750,034**		

Table Notes: Funding sources are:
Municipal Utilities Department (MU)
Community Services (CS)
Engineering and Transportation Department (ET)
Community Development Department (CD)
Development Services (DS)

Figure 3: Funding Sources



9. Attachments

To save resources and paper, Tempe is providing all attachments in electronic format. In the event ADEQ feels there is missing information or would like paper copies of any attachment, please feel free to contact Tempe's stormwater representative. Table 14 summarizes the attachments.

Table 144: Summary of Report Attachments

Attachment	Description	Attachment	Description
A	Outreach, Education, Awareness	N	Industrial Commercial Inspections
B	STORM Annual Report	O	Restaurant Inspections
C	Training Sign-In Sheets	P	Non-Filer Notifications
D	ESS ARCA Infrastructure Inspections	Q	Construction Inspections
E	MS4 Cleaning Summary	R	Tempe City Code
F	Parks and Open Spaces Infrastructure	S	Outfall Inspections
G	Call-out Summary	T	Sampling Event Parameters
H	City of Tempe ERP	U	MS4 Sample Event Tracking
I	Municipal Facility Inspections	V	Summary of Monitoring Data
J	Municipal Facility Chemical Handling and Spill Procedures	W	Laboratory Reports
K	Hazardous Waste Management Plan	X	Data Trending
L	COT MS4 Pesticide Herbicide Plan	Y	SWQS Comparison
M	MSGP- SARA Inventory	Z	COT SWMP (Minus Attachments)