



# **STORMWATER MANAGEMENT PROGRAM (SWMP)**

**AZPDES Permit No. AZS000002**

**Revised  
September, 2015**

# Stormwater Management Program

---

Pima County  
Department of Environmental Quality  
33 N. Stone Avenue, Suite 700  
Tucson, Arizona 85701-1429  
Phone 520-243-7400  
FAX 520-838-7432  
September, 2015

## Table of Contents

<b>INTRODUCTION</b>	1
A. Overview	1
B. Regulatory Framework	2
C. Description of Permit Area	5
<b>Part I. PUBLIC EDUCATION AND OUTREACH</b>	9
A. Permit Requirements	9
B. Implementation	10
C. Five Year Education and Outreach Plan	12
<b>Part II. PUBLIC INVOLVEMENT AND PARTICIPATION</b>	13
A. Permit Requirements	13
B. Implementation	13
<b>Part III. ILLICIT DISCHARGE DETECTION AND ELIMINATION (IDDE)</b>	15
A. Practices to prevent illicit discharges	15
B. Procedures for Field Screening	16
C. Proper Management of Used Oils and Hazardous Toxic Substances	17
D. Staff training in Field Screening	17
E. Investigating Potential Illicit Discharges	18
<b>Part IV. COUNTY FACILITIES POLLUTION PREVENTION AND GOOD HOUSEKEEPING PRACTICES</b>	19
A. Controls for Pesticides, Herbicides, and Fertilizers	19
B. Spill Prevention and Response	20
C. Training	20
<b>Part V. RESIDENTIAL AND COMMERCIAL CONTROL MEASURES</b>	21
A. Drainage system maintenance	21
B. Controls for New Development and Significant Redevelopment	21
C. Roadway Maintenance	21
D. Additional Practices to Reduce Pollutants from Residential/Commercial areas	22
<b>Part VI. INDUSTRIAL FACILITIES</b>	23
A. Identification of Priorities and Implementing Controls	23
B. Inspection and Monitoring	23
C. Compliance Activities/Enforcement	24
D. Control Measures from Landfills, Waste Facilities, and Industrial Facilities	24
E. County Employee Training	24
<b>Part VII. CONSTRUCTION SITES</b>	25
A. Review Construction Site Plans	25
B. Structural and Non-structural Control Measures	26

C. Site Inspections and Enforcement	26
D. Other Practices to Control Pollutants from Construction Sites	27
<b>Part VIII. WATERSHED MONITORING</b>	<b>29</b>
A. Wet Weather Monitoring	29
B. Discharge Characterization	29
<b>Part IX. PROGRAM ASSESSMENT, REPORTS AND REVISIONS</b>	<b>31</b>
A. Annual Program Assessment and Update	31
B. Reporting Requirements	31
C. SWMP Revisions	31
<b>Part X. REFERENCES</b>	<b>33</b>

#### **LIST OF FIGURES**

Figure 1. 2011 Pima County Stormwater Permit Area	1
Figure 2. Designated Water Uses within Stormwater Permit Area	6
Figure 3. Watersheds within Pima County	7
Figure 4. Wet and Dry Weather Monitor Points in Permit Area	16

#### **LIST OF TABLES**

Table 1. Grouped Designated Water Uses within Pima County Stormwater Permit Area	6
Table 2. Five Year Public Education and Outreach Plan	12

#### **APPENDICES**

Appendix A. Surface Water Quality in Pima County	
Appendix B. Pima County Ordinances and Policies	
Appendix C. Major Outfalls	
Appendix D. County Facility Inventory	
Appendix E. GIS Map Inventory	
Appendix F. Open Space Conservation Land Inventory	
Appendix G. Non-county Industrial and Commercial Facility Inventory	
Appendix H. Inventory of Facilities with Potential for Hazardous Substances	
Appendix I. Sample and Analysis Plan for Stormwater Management Program	
Appendix J. Certification Statement	
Appendix K. Standard Operating Procedures	

## INTRODUCTION

### A. Scope

Pima County manages stormwater in accordance with the Arizona Pollutant Discharge Elimination System (AZPDES) Permit AZS000002 that authorizes the discharge of stormwater from the municipal separate storm sewer system (MS4) to receiving waters. The MS4 consists of 2,087 miles of roads, 39 miles of storm drains, and infrastructure carrying runoff into drainage ways or ephemeral stream channels (Figure 1). All of the water bodies within the permit area meet Surface Water Quality Standards. This Stormwater Management Program (SWMP) describes the control measures Pima County uses to protect surface water quality.

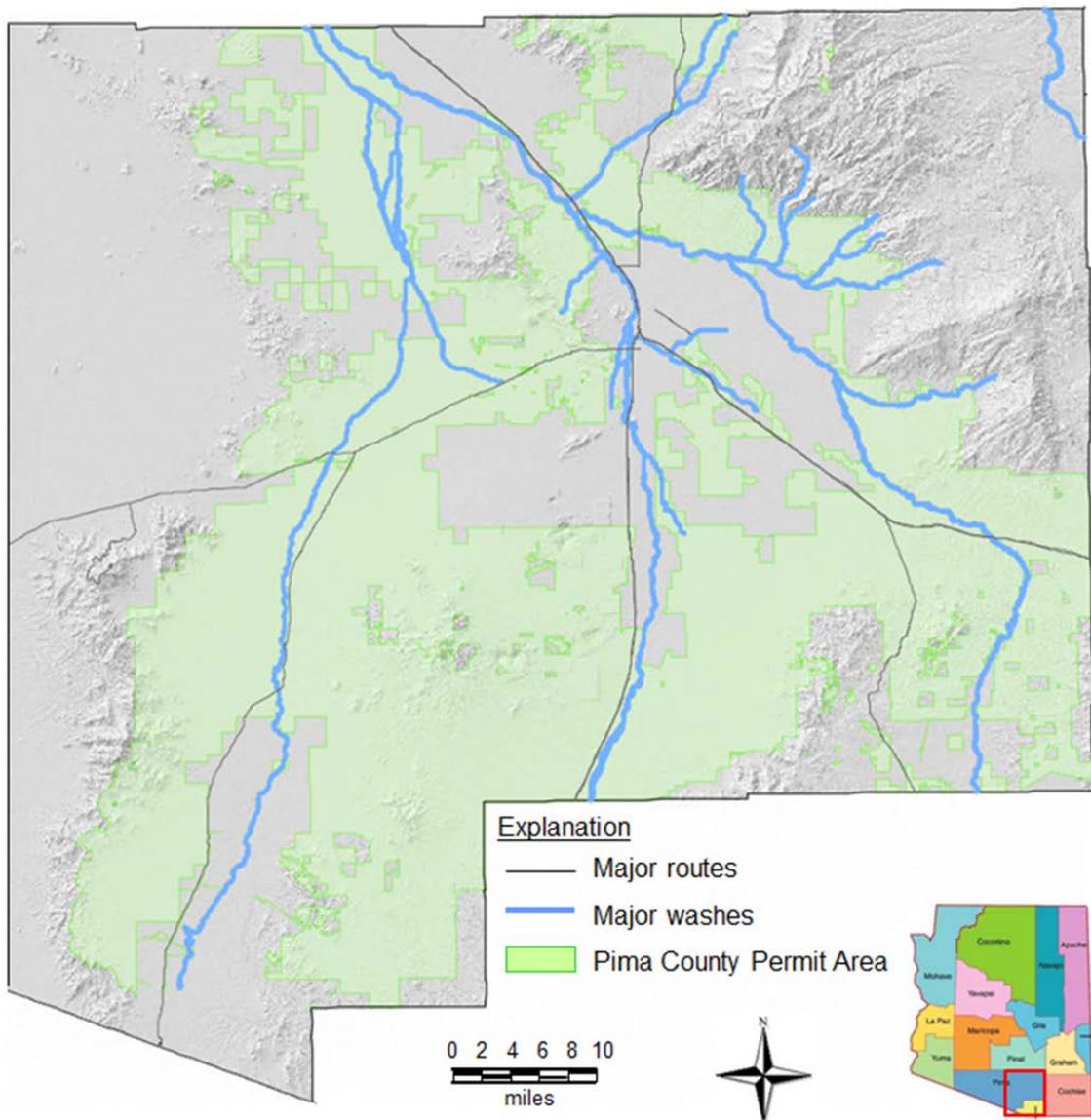


Figure 1. 2011 Pima County Stormwater Permit Area

The initial SWMP was prepared in conformance with the first MS4 permit issued by the United States Environmental Agency (USEPA) in 1997. This program was revised as required by the second MS4 permit issued by the Arizona Department of Environmental Quality (ADEQ) in 2011. The revised SWMP describes the implementation of public education and outreach, public involvement and participation, illicit discharge detection and elimination (IDDE), pollution prevention and good housekeeping practices at Pima County facilities, and pollutant reduction measures in residential areas, commercial areas, industrial facilities and construction sites. The control measures are designed to restore and maintain the chemical, physical, and biological integrity of the receiving waters (33 U.S.C. §1251(a)). Restoring and maintaining the integrity of surface water is essential for protecting public health and the environment (Pima County, 2012a).

## **B. Regulatory Framework**

Stormwater regulations originated with the federal Clean Water Act, which includes the delegation of the program to qualified states. In Arizona, the state issues MS4 permits. Local jurisdictions have also written ordinances and policies impacting stormwater management. A description of the different regulations applicable to the management of stormwater within Pima County's permit area is provided below.

### Clean Water Act

The Water Quality Act of 1987 added Section 402(p) of the Clean Water Act (CWA) which required the Environmental Protection Agency (EPA) to develop a phased approach to regulate stormwater discharges under the National Pollutant Discharge Elimination System (NPDES) program. EPA then published the final regulations on the first phase of the NPDES stormwater program for point discharges from Public-owned Treatment Work (POTW) and non-point discharges from large and medium sized MS4s (EPA, 1990). These regulations, commonly known as the Phase I stormwater regulations, established permit application requirements for discharges from municipal separate storm sewer systems (MS4s) serving a population of 100,000 or more. Based on the 1990 census when Pima County's population was larger than 250,000, EPA identified Pima County operated a large MS4. As defined in 40 CFR 122.26(b)(8), the term "*municipal separate storm sewer*" means a conveyance, or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains) owned or operated by a municipality. MS4s are differentiated from combined sewer and stormwater systems and POTWs. The requirements of the Section 402(p) applicable to MS4 NPDES include:

- A requirement to effectively prohibit non-stormwater discharges into the MS4 and
- A mandate to implement controls to reduce the pollutants in stormwater discharges to the maximum extent practicable (MEP). Controls may include management practices, control techniques and systems, design and engineering methods and other provisions deemed appropriate by the administering authority for the control of such pollutants.

On December 5, 2002, EPA granted permitting authority to the ADEQ to implement the NPDES program in Arizona, except for discharges on Indian Lands. In Arizona, the NPDES program is administered as the AZPDES program.

The AZPDES permit issued to Phase I MS4s requires control measures for public education and outreach, public participation, illicit discharge detection and elimination, good housekeeping and spill prevention at municipal facilities, industrial and commercial facilities, and construction sites. In addition, monitoring and annual reporting are required.

#### AZPDES Program

In 2001, the AZPDES program was defined in statute (A.R.S. §§49-255.01, 49-263.01) and code (A.A.C. R18-9-A901 - D905). Arizona gained the authority to implement the national program at the state level in 2002. Individual and general permits were promulgated for discharges to receiving waters that are required to meet Arizona surface water quality standards (SWQS) (A.A.C. R18-11-101 *et seq.*). Water quality protection fees fund state activities (A.A.C. R18-14-101 *et seq.*).

ADEQ monitors the ambient surface water quality of watersheds by collecting samples from streams and rivers (ADEQ, 2011) and assesses the data to describe how surface waters meet state surface water quality standards (ADEQ, 2012). SWQS are established for designated uses of water, namely aquatic and wildlife, human health, and agricultural. The 2010 assessment modified the current USEPA approved 2006/3008 303(d) Impaired Water List with the Draft 2010 Impaired Waters List (Appendix A). A second category of surface waters, Outstanding Arizona Waters (OAWs) receive additional protections (A.A.C. R18-11-112). The AZPDES permits require specific actions if Impaired Waters or OAWs are downstream from a discharging facility.

Individual and General permits are issued by ADEQ in the AZPDES program. The general permits applicable to stormwater are the Construction General Permit (CGP) issued to owners or operators of construction projects and the Multi-sector General Permit (MSGP) issued to industrial or commercial facilities. An AZPDES De Minimis General Permit has also been issued allowing discharges of water unlikely to contain pollutants, such as line breaks from potable water systems.

#### Aquifer Protection Program

Pollutants in surface water also have the potential to contaminate groundwater. As such ADEQ identifies several Aquifer Protection Program (APP) general permits that must be followed in the Construction General permit (CGP) and Multi-section General Permit (MSGP). As the MS4 permit requires inspections of locations permitted under the CGP and MSGP, a reference to these regulations is necessary. The CGP requires a permittee follow Type 1 General permit for concrete washouts (A.A.C. R18-9-B301(L)). The MSGP requires a permittee follow the general permits for drywells (A.A.C. R18-9-C301, R18-9-C304), if a drywell is present on the property.

#### Local Regulations

Ordinances related to stormwater have been developed over the years by different departments to address specific public health and environmental issues. Environmental quality ordinances reduce the discharge of pollutants by prohibiting the discharge of sewage or industrial waste to flow into waters of the county or upon or under any lands within the county (P.C.C. 7.21.025), removal of rubbish, trash, weeds, filth and debris (P.C.C. 7.33), and protection from environmental nuisances such as vector breeding conditions, unsanitary conditions, exposure to anthropogenically-derived wastes, pollution of domestic waters, mismanagement of sewage or septic waters, mismanagement of manure or other objectionable wastes and unwholesome, poisonous or fouled water (P.C.C.

7.45.020). Floodplain management ordinances reduce erosion in hazardous areas through building setbacks (P.C.C. 16.28), watercourse and riparian habitat protection and mitigation requirements (P.C.C. 16.30), sediment and erosion control (P.C.C. 16.42), and runoff detention systems (P.C.C. 16.48). Zoning reduces erosion through the hillside development overlay Zone (P.C.C. 18.61), the buffer overlay zone (P.C.C. 18.67), landscape buffering and screening standards (P.C.C. 18.73), gateway overlay zone (P.C.C. 18.78), and grading standards (P.C.C. 18.81). In addition, the Pima County Board of Supervisors passed the Pima County Environmental Policy emphasizing the commitment to environmental protection and to the mitigation of any negative effects of Pima County's operations on the environment (Appendix B).

Pima County and City of Tucson jointly assessed the water and wastewater resources (City of Tucson and Pima County, 2009a). Stormwater and rainwater were identified as good supplemental water sources and concluded additional practices were needed to maximize the use of these waters. Specific practices identified were capturing rainwater and stormwater at the lot scale and neighborhood scale, limiting floodplain encroachment with impervious surfaces and buildings, maintaining water courses for recharge, and developing the economic and legal framework to implement the practices (City of Tucson and Pima County, 2009b). Additionally, stormwater was identified as a water source for environmental projects (City of Tucson and Pima County, 2009c).

The six-pronged plan of the Sonoran Desert Conservation Plan (SDCP) applies green infrastructure principles to sustainable growth and strategic conservation planning that includes the Multi-species Conservation Plan (MSCP), riparian protection, riparian land acquisition and management, riparian restoration, water conservation and management, and ecological monitoring. The county ordinances pertinent to these include native plant preservation (P.C.C. 18.72), buffer overlay zone (P.C.C. 18.67), cluster development option (P.C.C. 18.09.040), conservation subdivision requirements (P.C.C. 18.09.100), hillside development zone (P.C.C. 18.61), modification of development standards in riparian areas (P.C.C. 18.07.080), landscaping, buffering and screening standards (P.C.C. 18.73), and roadway frontage standards (P.C.C. 18.75). The regulated riparian habitat mitigation standards are implemented according to RFCD's technical policy (Tech-026). These land management practices maintain natural infiltration characteristics, which reduce the volume of runoff, peak flow and flood hazards, all of which support stormwater management goals of reducing the discharge of pollutants into receiving waters.

ADEQ and PDEQ have executed a Delegation Agreement whereby ADEQ delegates to PDEQ selected functions, powers and duties relating to water quality management and solid waste management. The County has authority from the U.S. Environmental Protection Agency for air quality management. The Delegation Agreement delegates investigation and enforcement responsibilities to eliminate the disposal of used oil on land (A.R.S §§ 49-801, 803, 811, 812; Title CFR § 279.1)

#### MS4 Permit

EPA issued the Phase I MS4 permit to Pima County on February 14, 1997 with an effective date of March 19, 1997. ADEQ issued the AZPDES MS4 permit on June 16, 2011 with an effective date of July 18, 2011. Changes in the new permit include measurable goals quantifying effective stormwater practices, an increase in the size of the permit area from 252 square miles (mi<sup>2</sup>) to 1,960 mi<sup>2</sup>, an increase in the number of parameters analyzed at the monitor points from 5 to 143, an increase in the

number of parameters with pollutant load estimates from 4 to 22 and comparison of water quality results to surface water quality standards. With the exception of the increase in size, all the other changes are similar to permit conditions in the other Phase I MS4s in the state of Arizona. The permit area has had a complex boundary with other jurisdictions and is anticipated to change with time as additional lands are incorporated or change use designations.

Surface waters within the permit area that have been assessed by ADEQ meet surface water quality standards. The surface water quality standards range from aquatic and wildlife, human health and agricultural designated uses (Table 1, Figure 2).

### **C. Description of Permitted Area**

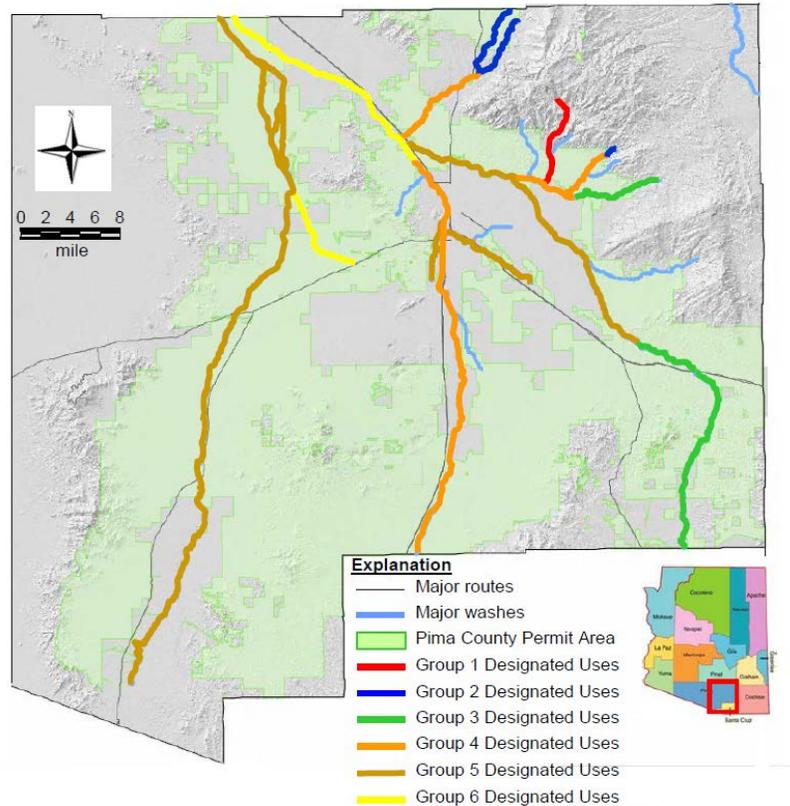
Pima County is located within the Basin and Range physiographic province characterized by north-south trending mountain ranges, alluvial fans, and alluvial valleys consisting of unconsolidated to semiconsolidated sediments. The relief between the mountains and the valleys is about 6,000 to 7,000 feet. Soils in the desert are dominantly aridisols and entisols and the mountain ranges have aridisols, inceptisols, mollisols and alfisols (Commission for Environmental Cooperation 2010).

The headwaters typically begin in the mountains and flow into perennial or intermittent streams. A few springs in the mountains supply water to intermittent streams. Stream channels in the alluvial valleys are ephemeral. Watersheds in eastern Pima County include the Upper Santa Cruz River, Rillito Creek, Lower Santa Cruz River and Brawley Wash watersheds (Figure 3). The aquifers are typically unconfined and are recharged along the mountain fronts and from stream beds. Recharge rates are lowest in the Brawley watershed (450 – 2400 acre-feet annually (AF/Y)) and highest in Santa Cruz watershed (210 – 9030 AF/Y) (Osterkamp, 1973). The functions of these ephemeral streams are to move water, sediment, nutrients, and debris through the stream network and provide connectivity within the watershed (Levick, et al., 2008), as well as to recharge stormwater.

The climate ranges from dry subtropical desert to mid-latitude steppe. Runoff occurs in response to rainfall events in the summer monsoon between July and October and rainfall events in the winter between December and February. The monsoonal rains are short bursts of heavy downpours accompanied by strong winds and blowing dust (Webb, 1992), whereas the winter rains are less intense and longer duration. Runoff is initially turbid due to suspended solids and clears with time. Stream channels run dry within a few hours after a rainfall event, unless the flow is supplied by snowmelt or an extreme rainfall event has occurred. The average number of rainfall events per year for the 105 years of record of University of Arizona data is 42 events (City of Tucson and Pima County 2009b). The average annual rainfall in Tucson is 11.6 inches while the average annual evapotranspiration is 103.5 inches (ADWR, 2010). Mountainous regions receive early 25 inches of rain annually. The summers are very hot and the winters are mild resulting in annual normal temperatures ranging from a low of 39.1°F in December to a high of 100.3°F in June (NOAA, 2012).

Pima County contains two ecoregions, namely the Sonoran Desert and the Madrean Archipelago (Commission for Environmental Cooperation, 2006). The Sonoran Desert vegetation is typically palo verdes, cactus shrubs, and giant saguaros while the Madrean Archipelago vegetation is semi-desert grasslands and shrub steppe. A wide range of mammals, birds and reptiles live these

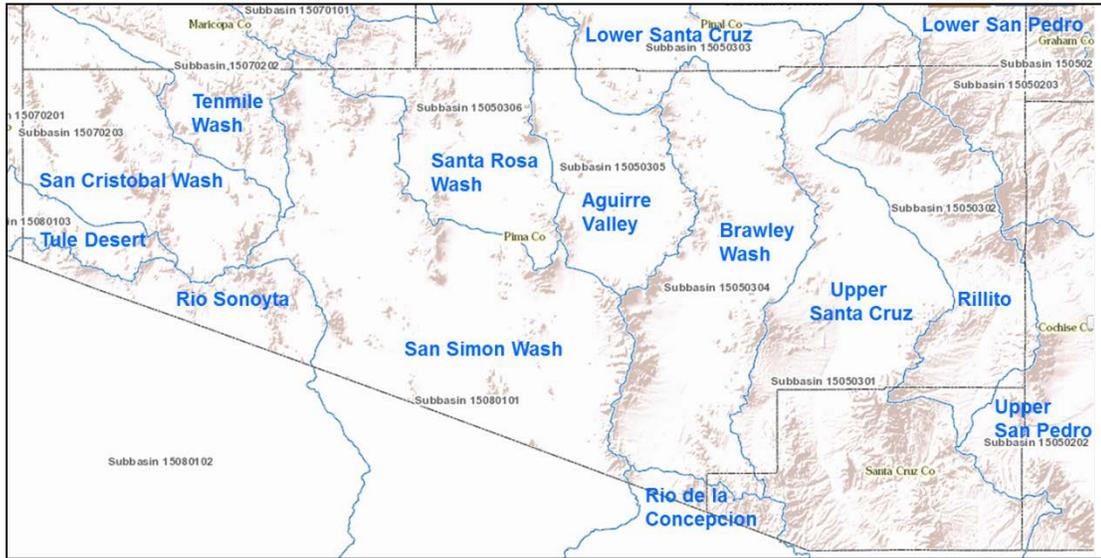
ecosystems. Additionally, there is a dense corridor of vegetation flanking ephemeral streams that is contrasted with the sparsely vegetated uplands. The dense vegetation serves to moderate soil and air temperatures, stabilize channel banks and interfluves, bank seeds and trap fine-grained sediments favorable to the establishing a diversity of floral and faunal species, and dissipate stream energy thereby aiding both flood control and stormwater management (Levick et al, 2008).



**Figure 2. Designated Water Uses within Pima County Stormwater Permit Area**

Group	Aquatic & Wildlife	Fish Consumption	Body Contact	Domestic Water Source	Agricultural
1	Warm water	√	Full	√	Livestock watering
2	Warm water	√	Full		Irrigation & Livestock watering
3	Warm water	√	Full		Livestock watering
4	Ephemeral		Partial		Livestock watering
5	Ephemeral		Partial		
6	Effluent dependent water		Partial		Livestock watering

**Table 1. Grouped Designated Water Uses within Pima County Stormwater Permit Area**



**Figure 3. Watersheds within Pima County**

Land use ranges from undeveloped in the mountainous and rural areas to developed in the metropolitan area. Development includes agriculture, mining, residential, commercial and industrial land uses. Data from the 2010 census indicates 346,747 people live in unincorporated Pima County. The majority of the population lives within the permit area.

The largest segment of Pima County’s MS4 is the roadways with 1,784 miles of paved road, 285.2 miles of dirt road, and an additional 17.7 miles of road maintained by Pima County through intergovernmental agreements (IGAs). The second largest segment of the MS4 is 39 miles of storm drains. The conveyance of sewage is separate from the storm drains. The 3,441 miles of gravity pipelines in the separate sewer system transports about 63 million gallons per day of sewage from about 264,000 customers within a 420 square mile area (Pima County, 2012b).

(This page intentionally blank.)

## **PART I. PUBLIC EDUCATION AND OUTREACH**

### **A. Permit Requirements**

The county shall provide education and outreach to the general public and business community on the stormwater management program issues and requirements. The following details the outreach strategy employed within the permit area.

Public education and outreach on one topic will be provided to one target group each year. The target groups include the general public, residential communities, home owners, HOAs and schools. The topics include the following:

- Post-construction ordinances and long-term maintenance requirements for permanent stormwater controls
- Stormwater runoff issues and residential stormwater best management practices
- Potential water quality impacts of application of pesticides, herbicides and fertilizer and control measures to reduce runoff of pollutants in stormwater
- Potential impacts of animal waste on water quality and the need to clean up and properly dispose of pet waste to reduce runoff of pollutants in stormwater
- Illicit discharges and illegal dumping, proper management of non-stormwater discharges, and to provide information on reporting spills, illegal dumping, and illicit discharges
- Spill prevention, proper handling and disposal of toxic and hazardous materials, and measures to contain and reduce discharges to the MS4
- Installation of catch basin markers or stenciling of storm sewer inlets to reduce illicit discharges and illegal dumping to the MS4
- Proper management and disposal of used oil

The public outreach approach, topic, target group and estimated number of participants reached will be reported in the annual report.

The county shall provide business sector education and outreach to one target group on one topic each year. The target groups include the development industry, construction site operators, targeted sources and selected businesses, such as industrial or commercial businesses. The topics include the following:

- Planning ordinances and grading and drainage design standards for stormwater management in new developments and significant redevelopments
- Municipal stormwater requirements and stormwater best management practices for construction sites
- Illicit discharges and proper management of non-stormwater discharges
- Spill prevention, proper handling of toxic and hazardous materials, and measures to contain and reduce discharges to the MS4
- Proper management and disposal of used oil and other hazardous or toxic materials, including practices to reduce exposure of materials/wastes to rainfall and reduce contamination of stormwater runoff

- Stormwater best management practices, pollution prevention plans, and facility maintenance procedures

The business outreach approach, topic, target group and estimated number of participants reached will be reported in the annual report.

## **B. Implementation**

The approach to public education and outreach includes strengthening the community's ability to minimize pollutant discharges into desert washes and tributaries as well as preventing illicit discharges to the MS4 thereby protecting the physical, biological and chemical integrity of water quality. PDEQ coordinates with federal, state, and local governmental agencies, educational institutions, non-governmental organizations and other local entities to pool resources and reach a more diverse segment of the population. Program performance measures are observed in the number of contacts from the Business Assistance Program, number of people reached in the conferences, seminars, and presentations; the amount of literature collected from the EcoNook and EcoKids program, and number of visits at Pima County's stormwater website. These measures directly increase the knowledge and skills of stormwater stewardship.

### Business Assistance Program

Activities in the Business Assistance Programs help local businesses comply with applicable environmental requirements. Pima County DEQ staff assists businesses in the completion of permit applications, clarifies the complex regulations, identifies potential violations, informs businesses about pollution prevention methods and offers suggestions to reducing stormwater discharges and staying in compliance. Free literature is provided.

### Conferences, Seminars and Presentations

Pima County coordinates conferences, seminars and presentations to educate the community about stormwater management. Conferences are developed to provide in-depth education and share cutting-edge information with individuals ready to implement the new concepts. Seminars are hosted for select groups interested in a particular topic and presentations usually highlight the selected topic of the year. PDEQ staff exhibits at multiple public events including Earth Day, Green Living Fair, the Green Fest, Tucson Meet Yourself, private and public sector employee health fairs, University of Arizona and Pima Community College events, fire safety fairs, WaterFest, Cyclovia and other events promoting alternate modes of transportation.

Pima County participates in a multi-jurisdictional regional Stormwater Construction Seminar each year. Seminar topics are based on observations of the MS4 managers of needs in the community as well as topics requested by the previous seminar attendees. The seminar is developed and sponsored by the Pima Association of Governments (PAG), Pima County DEQ staff, City of Tucson, Town of Marana, Town of Oro Valley, Town of Sahuarita, ADEQ, Arizona Department of Transportation and consulting firms from the construction industry and advocates for the public.

Each fall semester, Pima Community College requests a three hour presentation on stormwater management for the lecture *Building/Construction Technology 265 Sustainability*. Class sizes range

between 5 to 30 people, depending upon the number of people registered in a semester. Topics address application for a Construction General Permit NOI, stormwater regulations, and control measures effective in semi-arid climates.

Pima County DEQ also participates in numerous storm water-related meetings of the Storm Water Management Working Group hosted by the Pima Association of Governments (PAG). This group develops a multi-media outreach campaign designed to educate residents about stormwater pollution. The slogan “Clean Water Starts with Me” is used consistently to increase familiarity with the successful message. Artwork and style matches the imagery used by the local jurisdictions in school programs. Public Service Announcements (PSAs), radio ads, billboards, magazine ads and social media ads are run through the monsoon season from July through September and are screened on different television stations to reach additional audiences, including Spanish-speaking populations.

#### EcoNook for Desert Dwellers and Eco Kids Corner

The public awareness program involves on-going education in locations where people are most receptive. In coordination with PDEQ staff, librarians from 27 libraries maintain special areas within each library where free environmental literature is available for patrons. “EcoNook for Desert Dwellers” targets teenagers and adults while “Eco Kids Corner” serves children 12 years and under. Educational materials include stormwater quality topics such as stormwater pollution prevention, water harvesting, desert gardening and Green Infrastructure and Low Impact Development (GI/LID).

#### Recycling at Pima County Landfills

The public is educated to buy only what they need, read and follow label instructions, store properly in labeled containers, drop leftover quantities to any of the County drop-off sites at landfills and/or transfer stations. Recycling hazardous waste deters hazardous waste from potentially being illegally dumped into the MS4, improperly disposed of into solid waste receptacles, or spilled onto County streets.

#### Tucson Clean and Beautiful

This non-profit organization facilitates recycling activities in the metropolitan area of Tucson with a Recycling Info Line, a recycling directory, and recycling information appealing to kindergartners through adults. The recycling education helps people remove pollutants that could enter stormwater. Education about other forms of citizen participation includes how to make Tucson a cleaner place by planting trees useful to increasing water infiltration, reducing stormwater runoff, trapping pollutants to improve water quality, and stabilizing soil to prevent erosion.

#### Website Access

Pima County’s stormwater website provides educational information for the general public, construction industry, and industrial facilities. Details of the County’s stormwater program are provided including the SWMP, annual reports, stormwater rules & regulations, publications, and permits for construction sites and industrial facilities. Instructions are included in using Pima County’s GIS software MapGuide containing layers useful to understanding the flow of stormwater on a selected parcel and neighboring properties. Links to EPA’s stormwater website and ADEQ’s Smart NOI are also provided.

**C. Five-year Education and Outreach Plan**

Each year, a topic is selected for outreach and education based on local significance and the 2011 MS4 permit criteria (Table 1). For example, surface water sampling in Arizona shows *E. coli* contributes to about 25% of the 2010 Impaired Waters of the state (ADEQ, 2012). Since *E. coli* is one of the most frequently detected pollutants in desert washes, pet waste management was selected as the 2011 educational theme. The next three topics were selected in cooperation with City of Tucson so the regional message prepared by the Stormwater Working Group hosted by Pima Association of Governments would be coordinated and focused. The fifth topic was changed from Pesticide/Herbicide to LID/GI as Pima County has not detected pesticides or herbicides in over 15 years. With the Low Impact Development and Green Infrastructure Guidance Manual published in March 2015, additional time has been added to disseminate the outstanding information contained within. Each topic will be presented to the selected audience with a brochure and PowerPoint presentation. Coordination with the Stormwater Working Group results in additional outreach throughout the county

Table 2. Five Year Public Education and Outreach Plan				
Fiscal Year	Public Topic	Public Audience	Business Topic	Business Audience
11/12	<i>E. Coli</i>	Residential	Construction BMPs	Construction Industry
12/13	Oil & Grease	General Public	Oil & Grease	Transportation
13/14	Illicit discharges	Residential	Illicit discharges	Private Waste Haulers
14/15	LID/GI	General Public, Residential	LID/GI	Development community, landscaping industry
15/16	LID/GI	General Public Residential	LID/GI	Development community, landscaping industry

## **PART II. PUBLIC INVOLVEMENT AND PARTICIPATION**

### **A. Permit Requirements**

Pima County shall engage the public and spread the message to prevent stormwater pollution through neighborhood activities and community actions that restore and protect local water resources. The following details the strategies to be applied.

The County shall implement one of the following activities to provide fundamental support to the county's SWMP:

- Provide the opportunity to involve the public in the County's stormwater management program and to encourage public participation in monitoring and reporting spills, illicit discharges, or illegal dumping within their communities (such as facilitation of neighborhood watch groups) once per year.
- Provide the public an opportunity to participate in the County's stormwater management program, such as voluntary litter control measures (e.g. facilitation of Adopt-A-Wash, Adopt-A-Park, and Adopt-A-Street litter control measures) or voluntary erosion control projects. Maintain and support program as a regular ongoing activity.
- Provide the public with household hazardous waste program to facilitate proper disposal of used oil, antifreeze, pesticides, herbicides, paints, and other hazardous and toxic materials by County residents (such as scheduled household hazardous waste collection events or operation of full-time disposal facilities) a minimum of two times per year for the first two years of this permit, three times per year for the years three and four of this permit, and every year thereafter.

The county shall provide and publicize a reporting system to facilitate and track public reporting of illicit spills, illicit discharges or illegal dumping to the MS4 (i.e. stormwater hotline, webpage, etc.) on a continuous basis. The current SWMP and the latest annual report shall be posted on the county's web site immediately after completion.

### **B. Implementation**

The MS4 stormwater education programs are designed to invite public engagement. The public's substantive actions are observed in the amount of trash collected in the Adopt-A-Roadway program, the number of environmental complaints reported, amount of recycled material from Household Hazardous Waste Program, number of services implemented by Tucson Clean & Beautiful, and amount of trash collected in the Wash Up Program. All programs reduce the amount of materials that could potentially add pollutants to stormwater.

#### Adopt-a-Roadway Program

Volunteers in Pima County's Adopt-a-Roadway program clean up roadways and public lands. The program has 240 adopted roads with a total length of 380 miles. Non-profit organizations make a two-year commitment to pick up litter at least twice a year along a two-mile stretch of county roadway. In turn, Pima County posts signs where roads have been adopted and provides safety education, safety vests, and trash bags to the participants. After the bags are filled, Pima County

collects the bags and properly disposes them in a landfill. Pima County tracks the amount of material cleaned up from each adopted road that would have otherwise been transported into the washes.

#### Environmental Complaints

The county operates an environmental hotline during normal business hours for trained personnel to receive calls regarding environmental concerns, including potential stormwater pollution like illegal dumping, hazardous material disposal, inappropriately draining pools and other environmental nuisances. Each complaint is initially evaluated to see if it is located within unincorporated Pima County. Those complaints outside the county's jurisdiction are referred to the responsible jurisdiction. Inspections are performed to determine the source of the complaint as well as to mitigate complaints. PDEQ widely distributes the hotline number in brochures and on strategically-placed signs that inform the public how to identify environmental concerns and invites the public to report their observations of illicit discharge and other complaints to Pima County.

#### Recycling at Pima County Landfills

Recycling at Pima County landfills provides a means for small businesses and the public to properly dispose of common household and automotive products. The public is encouraged to bring automotive fluids, batteries, oil and paint. Items that cannot be recycled are disposed in accordance with environmental regulations.

#### Tucson Clean & Beautiful

Tucson Clean & Beautiful Inc. is a non-profit organization funded in part by City of Tucson, Pima County, private grants and program sponsorships, annual memberships, in-kind donations and volunteer services. They facilitate litter pick up through Adopt-A-Park & Public Areas, recycling and waste reduction education, and planting trees to increase shade and stormwater interception. Their on-line services and monthly newsletters identify controlling stormwater runoff and blocking soil erosion as program goals.

### **PART III. ILLICT DISCHARGE DETECTION AND ELIMINATION (IDDE)**

Five county departments provide services to detect or eliminate illicit discharges. Prevention activities occur during the design phase of construction projects. Reviews of design plans by Pima County Department of Environmental Quality (PDEQ) verify there are no cross-connections between sewer and stormwater systems. Field inspections performed by Development Services Department (DSD) verify the construction project is built according to approved plans. PDEQ also inspects septic systems for proper function prior to being put into operation. Regional Flood Control District (RFCD) and PDEQ perform inspections at outfalls to verify there are no illicit discharges. Restoration activities occur throughout the year as reports of illicit discharges come from the public and other county departments such as Regional Wastewater Reclamation Department (RWRD) and Pima County Department of Transportation (PDOT). PDEQ inspects reports of illicit discharges and pursues compliance with stormwater regulations.

#### **A. Practices to Prevent Illicit Discharges**

Pima County applies two sets of regulations to prevent illicit discharges, namely Pima County Ordinance Title 7 Environmental Quality and the state delegated authority for managing used oil (A.R.S. §§ 49-801, 803, 811, and 812 and Title 40 CFR § 279.1). The sections of Title 7 applicable to stormwater management include P.C.C § 7.21.025 (General Prohibitions), P.C.C § 7.33 (Removal of Rubbish, Weeds, filth and Debris) and P.P.C § 7.45 (Environmental Nuisances).

De Minimis discharges are allowed to the MS4 in accordance with General Permit for De Minimis Discharges to Waters of the U.S. Permit No. AZG2010-001. The discharges include potable water systems, subterranean dewatering, well development and maintenance and/or aquifer testing, hydrostatic testing, and post-repair flushing of reclaimed water lines with Class A+ or B+ water to ephemeral or effluent-dependent water.

Pima County's non-stormwater discharge records document spills, environmental complaints and Notices of Violation (NOV). This information is reported annually to ADEQ. The other potential source of illicit discharges is tracked through two types of permits, namely an ADEQ Type 2.05 General Aquifer Protection Permit for capacity, management, operation, and maintenance of a sewage collection system (Pima County, 2012b) and AZPDES permits held by the water reclamation facilities. Sanitary system overflows are reported to ADEQ in accordance with one or the other of these permits. The MS4 permit specifically excluded implementation of IDDE practices for county facilities permitted under the Multi-Section General Permit (MSGP) or other AZPDES permits (Permit Appendix A, Part III.B.1) to avoid duplication of effort. Nonetheless, all county industrial facilities are listed in Appendix D.

Other potential non-stormwater discharges include discharges of process water, air-conditioner condensate, non-contact cooling water, and vehicle wash water. Visual inspections have been performed in all months of the year, except September, at all outfalls and observations have not resulted in the detection of flowing water or other indicators of illicit discharges. Indications of illicit discharges are stains, odors, and dead plants. Three physical constraints make the discharge of non-stormwater flows rare within Pima County. Water flows in the drainage system only in response to

rainfall events. Storm drains are short, typically less than 2,000 feet, and are few in number (39 miles) relative to the gravity sewer system (3,441 miles) thereby limiting the opportunity for illicit connections (Pima County, 2012b). Water conservation is a regional ethic within the desert which reduces discharges carried in water. If an illicit discharge of a liquid occurs, the discharge appears as a fluid running in an otherwise dry road or streambed making the illicit discharge obvious. The public reports these types of discharges as environmental complaints, which are tracked as noted in Section F on investigating potential illicit discharges. In the rare event that an illicit discharge of a liquid would occur, Pima County performs outfall inspections and is prepared to collect water samples.

## B. Procedures for Field Screening

### Major Outfalls and Field Screening Points

The drainageways system currently has 39 miles of storm drains and 39 identified outfalls (Figure 4, Appendix C). Additional outfalls are being identified within the permit area. All outfalls are non-priority. During 17 years of inspection, which have occurred in every month except September, illicit discharges have not been detected while inspecting outfalls nor have there been indications of illicit discharges, such as unusual discoloration, odors or dead plants. Due to the open nature of the conveyance system, a release of water with pollutants would be easily tracked to its source. The ability to easily identify a source is a deterrent to illicit discharges of liquids.

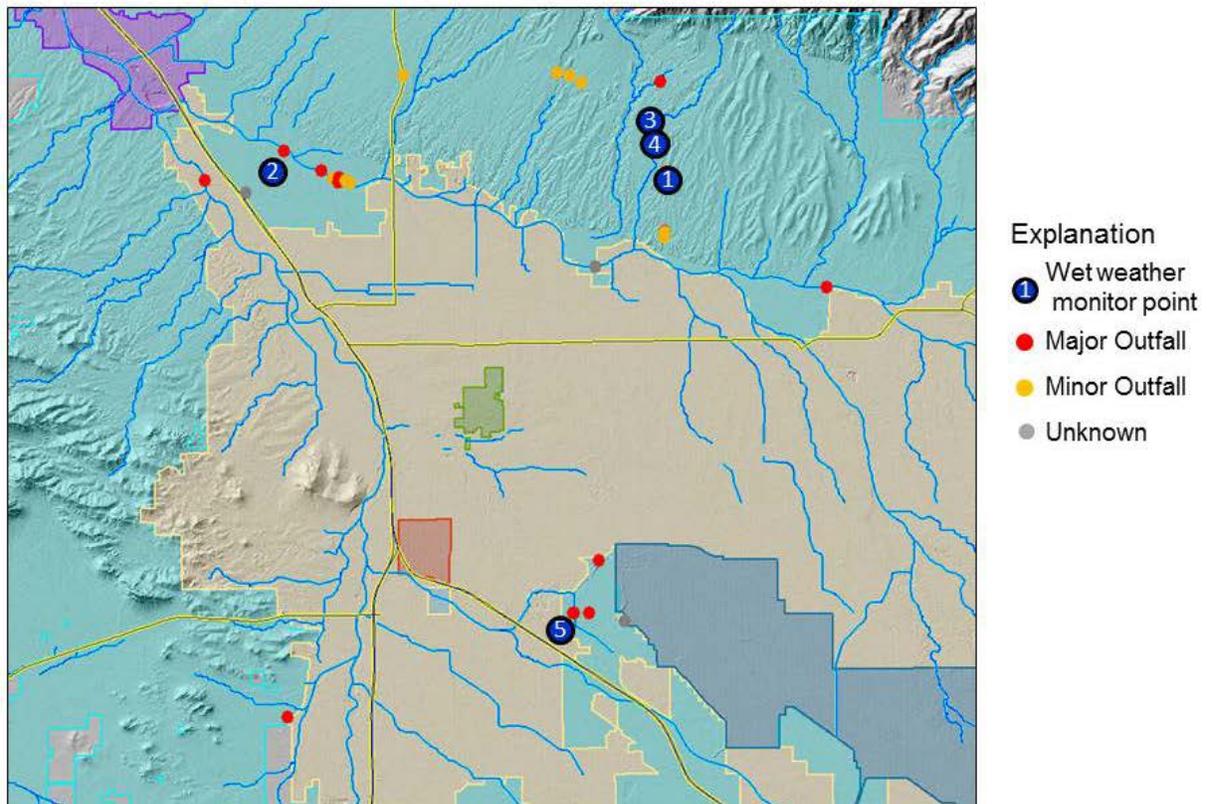


Figure 4. Wet and Dry Weather Monitor Points

The most frequent form of pollutants within unincorporated Pima County is people dumping solid wastes into dry washes. The public observes the trash in the washes and reports it to PDEQ. These reports are managed as described in Sections C of this chapter.

The method of land development within Pima County results in pockets of land with paved roads and storm drains. Water draining from these developed areas flows downstream into natural washes in undeveloped desert or washes with bank protection in developed areas. When surface flows can be transported through natural washes and bank-protected washes, the distinction between the boundaries of the MS4 and receiving waters is not clear; this also complicates the identification of outfalls.

#### Inspections of Major Outfalls

Observations during dry weather screening at outfalls include weather conditions, the presence of a discharge and, if there is a discharge, its characteristics in terms of color, odor, turbidity, nature of the water surface, and presence of floatables. The condition of the outfall is assessed to determine if there is damage or if there are deposits or stains and whether vegetation is present. If a discharge is present, a water sample will be collected and analyzed for pH, temperature, chlorine, copper, phenol and surfactants.

### **C. Proper Management of Used Oils and Hazardous and Toxic Substances**

The ADEQ delegated the authority of inspection and enforcement to eliminate used oil disposal on land on April 21, 2013. The regulatory vehicle comprises A.R.S. §§ 49-801, 803, 811, and 812 and Title 40 CFR § 279.1. PDEQ incorporated these activities into the Site Inspection Reports recording observations during Illicit Discharge Detection and Elimination inspections, construction site inspections, industrial facility inspections and post-construction inspections.

### **D. County Employee Training**

New stormwater inspectors are trained once each year for two years in the methods of detecting, inspecting and mitigating illicit discharges, De Minimis discharges, and other sources of non-stormwater discharges. Specific information to be provided will include field screening procedures and measurements, sampling methods and use of chain-of-custody protocols, if a water quality sample is collected for analytical analysis. Existing employees will receive refresher training every other year.

County employees in Department of Environmental Quality, Development Services Department, Department of Transportation, Regional Wastewater Reclamation Department, Facilities Management and Regional Flood Control District will be trained annually in the methods of detecting and reporting illicit discharges to PDEQ. Additionally, the employees involved in mitigating the illicit discharge will receive training in proper methods of removal and disposal.

## **E. Investigating Potential Illicit Discharges**

### Dry weather flows

All outfalls have been dry during field screening. The majority of stream channels are designated ephemeral. Consequently, any dry weather flows would easily be tracked to the source. Easy identification of a source is a strong deterrent to individuals making dry weather discharges. Nonetheless, Pima County continues to inspect all major outfalls every year to assess if there has been an illicit discharge. In addition, Pima County inspects at least 20% of the remaining outfalls each year and will complete the inspection of all outfalls within the five-year period of the permit.

### Investigation of Potential Illicit Discharges

Pima County DEQ receives complaints from the general public, elected officials, regulators, and local governments identifying potential sources of pollutants that could endanger public health or the environment. Each complaint within Pima County's jurisdiction is inspected to determine if a pollutant has entered the environment and if so, the severity of the problem. When a discharge is identified, PDEQ issues a Notice of Violation (NOV) to the source of the discharge. The complaints and NOVs are tracked in a database. A file is also created for each property with identified pollutants to store observations, reports and communication with the property owner. PDEQ may also send informational literature, such as how to properly backwash a swimming pool, to assist the public in proper stormwater management.

### Compliance Activities/Enforcement

The NOV identifies the pertinent regulation(s) being violated and the specific correction actions to be taken within a specified time period. NOVs are closed when the pollutant has been abated. If the source of the pollutant does not implement the corrective actions of the NOV, Pima County escalates the enforcement in accordance with the ordinance being violated. The enforcement process is geared to resolve at least 80% of all cases within one calendar year of the original enforcement action.

### Illicit Discharge Elimination

NOVs are tracked to verify the discharge has been properly remediated. Additionally, if a property has been abandoned or disposal of materials cannot be traced to a source, the materials are removed by PDOT or PDEQ.

### Illicit Discharge Public Awareness

A number of programs have been in place since at least the late 1990s to educate the public and promote public reporting as described in Part I.B. The public can report illicit discharges by phone or on-line. The environmental hotline is included on PDEQ's website, brochures and News Releases.

Additional inspections will be performed at Pima County industrial facilities to assess the potential for cross-connections to storm drains. The process is described in Part VI.B.

#### **PART IV. COUNTY FACILITIES POLLUTION PREVENTION & GOOD HOUSEKEEPING PRACTICES**

Good housekeeping at County facilities includes proper management of used oil, hazardous and toxic substances, and a Spill Prevention and Response Plan. Training in this area is a preventive measure to keep stormwater clean.

The County Facility Inventory (Appendix D) includes the facility name and address, type of facility, latitude and longitude, facility contact, operational status, description of activities with potential to discharge a pollutant, and level of risk. Included in the inventory are Publicly-Owned Treatment Works that are operated and maintained to prevent exfiltration and overflows of sewage. These facilities operate in compliance with Arizona Department of Environmental Quality (ADEQ) water permits such as Capacity, Management, Operation, and Maintenance (CMOM), Aquifer Protection Permits (APP) and Arizona Pollutant Discharge Elimination System (AZPDES) permits. Additional facilities to be included are airports, parks, fleet services, golf courses, recreational facilities, and waste storage and processing facilities, such as landfills. The assessment of risk level was based on exposure of potential pollutant(s) to rainfall or stormwater and transport to an MS4 or Water of the United States as well as the level of toxicity or mutagenicity of the potential pollutant(s). Proximity to receiving waters is also an additional criteria; however, none of the industrial facilities are upstream to an impaired water or Arizona Outstanding Water as of the publication date of the document.

The next step will be inspection of each facility to assess the potential for pollutants to be exposed to rainfall or runoff. Facilities with minimal exposure of pollutants and minimization of erosion will be found compliant with local stormwater regulations.

##### **A. Controls for Pesticides, Herbicides, and Fertilizers**

Pima County DOT developed a procedure to apply herbicides controlling weeds and noxious or invasive vegetation in the vicinity of Waters of the U.S. in a manner consistent with the ADEQ Pesticide General Permit No. AZG2011-001 (Pima County, 2011c). The procedures apply to right-of-ways and easements that are along the edges of washes, roadway dip crossings and conveyances to Waters of the U.S. Both Pima County and their contractors apply these procedures to their spraying activities.

Pima County Regional Flood Control District (RFCD) confirmed their application of herbicides and pesticides did not occur within designated waters of Arizona and therefore did not require an application for a NOI for the ADEQ Pesticide General Permit No. AZG2011-001. When this type of application is needed, RFCD hires a contractor to apply the herbicide for vegetation control and herbicide for mosquito control.

## **B. Spill Prevention and Response Plan**

Spill prevention and response are implemented according to the Procedure for Emergency Spill Response (Pima County, 1995). County staff are annually trained either in the Emergency Response Plan written for the building they work in or if they work around hazardous materials, they receive training in evacuation procedures, general hazard awareness, procedures for first person on the scene, spill procedures and procedures for the Response Coordinator/ Environmental Officer (RC/EO). Each department has an RC/EO specifically trained to handle emergency situations and what actions to take in the event of a spill.

Pima County established a protocol to timely and effectively respond to, control and abate the accidental or intentional release of a hazardous substance outside its scope or intended purpose (Pima County, 2010a). The Pima County Hazardous Materials Teams respond when there is a release of a hazardous substance. The team includes four fire districts and two fire departments. The primary considerations are life safety, property conservation and environmental protection. After assessing the hazards and securing the site for safety, spill containment and clean-up begin. First responders coordinate with the facility managers to clean-up and properly dispose of the hazardous materials.

In addition to the protocol, a number of facilities with hazardous materials have developed a Spill Prevention Plan. During the third year of the permit, PDEQ will inspect each facility to verify each facility has been permitted with an AZPDES permit, if appropriate, or has a current Spill Prevention Plan actively implemented.

## **C. Training**

PDEQ will train new inspectors within the first year, the next year and every other year after that. Training topics will include proper street repair; spill prevention and response; proper handling, storage, transportation and disposal of use oil and other toxic hazardous materials and wastes to prevent spills; maintenance and repair of water and sanitary sewer systems to reduce discharges; and stormwater best management practices (BMPs) that include application of provisions in Title 7 of Pima County Code and other stormwater related regulations and permit requirements. PDEQ will arrange for training for PDOT in street repair practices that protect stormwater and storm drains.

## **PART V. RESIDENTIAL AND COMMERCIAL CONTROL MEASURES**

### **A. Drainage System Maintenance**

#### Drainageway Maps

Pima County has developed GIS layers for all stormdrain structures (Appendix E). The direction of flow is inferred by turning on the layer with topography and knowing water flows downhill. The infrastructure, such as storm drain inlets, catch basins, detention/retention basins (county-owned) and outfalls are shown on the map as well. The drainage areas for the outfalls will be prepared by the 4<sup>th</sup> year of the permit. The jurisdictional boundary from 2011 and is being updated to reflect the additional 8.1 sections of land removed from Pima County MS4 jurisdiction through annexations by City of Tucson, Town of Marana, Town of Oro Valley and Town of Sahuarita.

#### Drainageway Inspections

RFCDD regularly inspects outfalls, detention/retention basins and segments of the conveyance system they are responsible for maintaining. Outfalls and detention/retention basins are inspected and repaired every year. Inspections of the conveyance system are performed on a three to four year cycle. Repairs and maintenance are directed based on the results of these inspections as well as reports of illicit discharges or complaints. Areas with known vegetation maintenance are inspected and maintained every six to twelve months, depending upon the requirements of the location.

#### Drainageway maintenance

Pima County RFCDD maintains 450 miles of drainage, excluding the major water courses of the Santa Cruz River, Rillito River, Pantano Wash and Cañada Del Oro Wash. RFCDD prioritizes 150 miles for inspection each year, and inspects the identified outfalls (Appendix C) and drainage reaches. Inspections are followed up with cleaning, grading and mowing where needed. Additionally, RFCDD maintains groundwater recharge and replenishment projects, riparian habitat protection projects, riparian habitat restoration, and riparian land acquisitions. Active riparian habitat and ecosystem restoration projects are maintained until the restoration activities are completed.

### **B. Controls for New Development and Significant Redevelopment**

Controls for new development and significant redevelopment are described in Part VII.A.

### **C. Roadway Maintenance**

Pima County Department of Transportation (PDOT) maintains 2,087 miles of roads and the drainageways in the road right-of-ways. Maintenance priorities are based on routine cycles, visual inspections, and service requests from the public. All information is prioritized and scheduled based upon available resources. The types of roadway maintenance include sweeping, shoulder repairs, pothole repairs, grading and blading, sidewalk and curb repair, street surface repairs and litter and debris removal. Major roads are routinely swept four times per year and subdivisions are swept two times per year. Additional sweeping may be contracted on an as needed basis. These activities

reduce the accumulation and transport of sediment and litter to the MS4. The county will prepare a Control Measure Field Program for Road Maintenance early in the third permit year. The program will be incorporated within PDOT standard operating procedures within the third year of the permit.

#### **D. Additional Practices to Reduce Pollutants from Residential and Commercial Areas**

##### Post-construction Controls

PDEQ tracks how well construction contractors clean up the construction sites after construction is complete. Additional post-construction activities include open-space preservation, on-site stormwater retention, maintenance of pre-construction runoff rates and street sweeping.

##### Environmental Projects

Restoration of riparian habitat and ecosystems achieves Pima County's goal to protect the full range of plants and animals native to the region (Pima County, 2007), as well as stormwater management. Lands acquired through FLAP, the Open Space Conservation Program, and other properties have been identified to capture stormwater in multi-purpose restoration projects. Some projects convert existing detention basins into wildlife habitat while others have been designed to collect stormwater and use it as irrigation water in public ball fields and park areas with wildlife and riparian habitat (City of Tucson and Pima County, 2009b).

##### Open Space Conservation Program

Land has been purchased under the 1997 Open Space Bond Program (OSBP), the 2004 Conservation Acquisition Bond Program (CABP) and the FLAP to conserve land (Appendix F). The 1997 OSBP and 2004 CABP protect the region's most prized natural and cultural resources (Pima County, 2011d). The FLAP preserves land in floodways. These open spaces also support of the Multi-Species Conservation Plan (MSCP) and the Stormwater Management Plan. These lands can be used for the MSCP if the lands have not been acquired with federal funds, are managed and monitored for biological protection, and have a legal status ensuring conservation (Huckelberry, 2009).

##### Pima County Air Quality Activity Permits

PDEQ requires air quality activity permits, called fugitive dust activity permits, for trenching operations, road construction, and land stripping or earthmoving activities that disturb one acre or more. Each permit requires the construction site operator to take reasonable precautions to control fugitive dust emissions from the site. Proper dust suppression techniques prevent the deposition of windblown dust that may later become entrained in stormwater and reduces tracking from construction sites.

## **PART VI. INDUSTRIAL FACILITIES**

### **A. Identification of Priorities and Implementing Controls**

#### Industrial Facility Inventories

Two inventories are used to track industrial and commercial activities, one for non-county industrial facilities (Appendix G) and another for the facilities that treat, store or dispose of hazardous waste and facilities subject to Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (Appendix H). The non-county Industrial Facilities Inventory is updated monthly based on ADEQ's list of facilities filing for the 2010 Multi-Sector General Permit (2010 MSGP) and observations of non-permitted facilities, if they are discovered. Facilities located within the permit area and which have the potential to discharge to a Pima County roadway or drainageway are added to the non-county industrial inventory. Additionally, inspectors maintain an awareness of facilities which need to file a Notice of Intent for the 2010 MSGP and have not filed as yet. PDEQ notifies ADEQ in writing when a potentially qualifying industrial or commercial facility is missing an NOI.

The non-county industrial facility inventory contains an assessment of the level of risk based on exposure of potential pollutants to rainfall or stormwater and transport to an MS4 or Water of the United States as well as the level of toxicity or mutagenicity of the potential pollutants. Proximity to receiving waters is also an additional criterion; however, all the industrial facilities are downstream to an impaired water or Arizona Outstanding Water as of the publication date of the document.

The County Facility Inventory (Appendix D) contains similar types of information and a determination of the level of risk. Additional information is in Part IV.

### **B. Inspections and Monitoring**

Inspections are performed for both county and non-county industrial facilities. Stormwater inspections for non-county industrial facilities are designed to evaluate consistency with the ADEQ's 2010 MSGP and compliance with Pima County ordinances. Annual inspections are scheduled for at least 20% of the industrial facilities. The facilities with the greatest potential for a discharge, namely scrap metal recyclers and auto recycling businesses, were inspected first. For consistency with the 2010 MSGP, inspectors review the SWPPP for completeness and accuracy, verify monitoring is performed and documented within the SWPPP and then inspect the facility. The facility inspection evaluates the level of implementation and maintenance of both structural and non-structural control measures, as well as the presence and indications of discharges. For compliance with Pima County ordinances, inspectors determine if stormwater pollutants are exposed to the environment and whether erosion is minimized. The results of the inspection are sent to the facility contact with a notice of the status of compliance and a list of activities that need to be taken to return to compliance, if the facility is out of compliance.

After each inspection, PDEQ sends the owner or operator an electronic version of the Site Inspection Report indicating whether they are consistent with the 2010 MSGP or are in compliance with Pima County ordinances. If there are inconsistent or out of compliance, the owner or operator are given a

specified time frame to correct the inconsistency or non-compliance. Correction actions for updates to a SWPPP may be demonstrated by sending information electronically. Correction actions for control measures are inspected when the owner or operator notify PDEQ the actions are complete. If the follow-up inspection shows the industrial activity remains inconsistent with the 2010 MSGP, PDEQ refers the facility to ADEQ. Pima County will write a Notice of Violation (NOV) for unresolved industrial activities violating Pima County code.

The outcome of each inspection is logged in the non-county industrial facility inventory. The date and the inspection outcome with respect to ADEQ consistency and Pima County ordinance are logged as either in compliance (IC) or out of compliance (OC). Facilities that are out of compliance are tracked until they are brought into compliance or are referred to the agency issuing the permit, namely ADEQ. The goal is to bring facilities into compliance within a one year period from the initial inspection identifying a non-compliance issue exists.

Results of each year's inspections are reviewed to determine how well the facilities are maintaining compliance with state and local stormwater regulations. Where patterns are identified, alternate actions are developed. Alternate actions include education of specific businesses or regional organizations representing the businesses on more effective BMPs and updates in regulations.

Industrial facilities that have not filed for the AZPDES Multi-sector General Permit are reported to the Southern Regional office of ADEQ when discovered. PDEQ becomes aware of facilities being non-filers through observation of facility activities and through complaints submitted by the public.

### **C. Compliance Activities/Enforcement**

NOVs issued to facilities remaining out of compliance with Pima County code include the ordinances being violated, the required corrective actions and the time frame the actions are to be completed. Corrective actions at this stage will close an NOV case. If corrective actions are not taken, Pima County escalates the enforcement in accordance with the ordinance.

### **D. Control Measures for Landfills, Waste Facilities and Industrial Facilities**

Additional control measures for county landfills, waste facilities and industrial facilities are not needed as each facility is permitted with ADEQ with a CMOM, APP, or general AZPDES permit for Multi-sector General permits (MSGP), as described in Part IV.

### **E. County Employee Training**

Pima County will train inspectors on effective stormwater best management practices (BMPs) in industrial and commercial facilities. Training includes a review of the ADEQ's Multi-sector General Permit, Pima County's applicable ordinances, methods of reducing or removing industrial and commercial pollutants from exposure to stormwater and how to minimize erosion. New inspectors will be trained upon entry to the job, the following year and every other year thereafter.

## **PART VII. CONSTRUCTION SITES**

### **A. Review Construction Site Plans**

#### Construction site inventory

Pima County DEQ prepares a construction site inventory based on ADEQ's list of operators filing for the 2008 Construction General Permit (CGP). Projects filing an NOI with ADEQ that are located within unincorporated Pima County and which can discharge to Pima County's MS4 are added to the inventory. If PDEQ identifies construction activities are taking place without an NOI for the CGP, PDEQ notifies ADEQ.

#### MS4 plan review of construction sites (type, approvals, process summary)

Pima County coordinates with project managers for private developments to ensure development plans are designed in accordance with International Building Codes (IBC) and Pima County ordinances. Responses from departments and coordination with the project manager result in approved plans with grading plans. Approved plans receive a grading permit, and possibly a building permit if there are vertical structures being built. All plans are reviewed by Development Services Department (DSD) as well as Environmental Quality (EQ), and Regional Flood Control District (RFCD), when needed. If a building is constructed, an Occupancy Permit is issued when complete.

DSD verifies the development plans meet a number of requirements including plumbing and building codes standards and stormwater ordinances. The stormwater ordinances include the Buffer Overlay Zone (BOZO), grading standards (GS), setback requirements for BOZO and GS, hydro seeding and revegetation, Hillside Development Overlay Zone and surface stabilization. During the pre-construction meeting arranged for every construction project, Pima County DOT will verify the contractor has obtained the Arizona NOI Authorization and the contractor has prepared a site specific SWPPP. Their inspectors verify construction proceeds according to approved plans.

For septic systems, PDEQ reviews development plans and percolation tests then performs a post-construction installation inspection prior to plan approval. The site is also inspected by DSD inspectors to verify construction is proceeding according to the design plans. Septic system failure or exfiltration of water from these systems into the Pima County MS4 rarely occurs. If surface discharged from septic systems occur, the discharge is regulated under the ordinance prohibiting liquid waste flowing to waters or land (P.C.C. §7.21.025.A).

RFCD reviews the development plans to verify subdivision plates, commercial properties, and industrial properties have detention/retention basins with sufficient capacity (Pima County, 1989; Pima County, 2007). Additionally, buildings must be setback from flood hazards. RFCD issues Flood Plain Use Permits (FPUPs) for specific improvements within the regulatory floodplain or erosion hazard area. These permits are required prior to beginning construction in areas where flows exceed 100 cubic feet per second or where sheet flooding occurs. They also verify if there is a right on the property to use it in accordance with the development plan. Hydrologic studies are performed at points of interest to assess compliance with these floodplain and flood hazard requirements (Pima County, 1984; City of Tucson, 1987).

RFCD implements green infrastructure programs, specifically riparian habitat mitigation, flood prone land acquisition program (FLAP), and riparian habitat and ecosystem restoration. Riparian habitat evaluations are performed for development plans within mapped riparian habitats. RFCD works with the project manager or designer to reduce the acreage of riparian habitat used. The land with riparian habitat designed for development must have a riparian mitigation plan, such as another parcel of riparian habitat set aside in its natural state (Pima County, 2010b; Pima County, 2011a). Inspections are performed to verify the developed area matches that identified on the approved plan.

#### Staff training

Pima County will provide training to PDEQ inspectors for county stormwater-related ordinances, plan review procedures, grading and drainage design standards, structural and non-structural control measures to be applied at construction sites and post-construction sites. The employees shall also be trained in inspection and enforcement procedures. Pima County will provide the same training noted above to staff involved in the review process, namely with staff from DSD and RFCD. New inspectors will be trained upon entry to the job, the following year and every other year thereafter.

### **B. Structural/non-structural Stormwater Control Measures**

#### Standard procedures and practices for post-construction stormwater controls

Pima County will develop a comprehensive description of structural and non-structural control measures to reduce pollutants in stormwater runoff from construction sites as well as when construction is complete. The comprehensive description shall be available within three years of the permit issuance and will be posted on the stormwater website.

#### Low Impact Development

Pima County evaluated the benefit of Low Impact Development (LID) to stormwater management in semi-arid environments. Three conferences were hosted by Pima County to identify LID practices and paths to implementation. Pima County began implementing LID in 2015 with the publication of the *Low Impact Development and Green Infrastructure Guidance Manual* (City of Tucson and Pima County, 2015) and the *Design Standards for Stormwater Detention and Retention Basins* (Pima County Regional Flood Control District, 2015). The Board of Supervisors also unanimously passed a zoning code amendment for *Stormwater Harvesting Systems* in Title 18 defining stormwater harvesting, green infrastructure, and Low Impact Development, as well as defining new regulations incentivizing these practices (Pima County, 2015a). LID is incorporated in *Pima Prospers*, the 2015 update to Pima County Comprehensive Plan, in land management and water resource management to reduce public and private losses due to erosion and flooding as well as utilizing stormwater as a renewable water resource, which ultimately improves water quality (Pima County, 2015b).

### **C. Site inspections and enforcement**

#### Construction Site Prioritization

PDEQ prioritizes the construction sites in the inventory. Low priority active sites are inspected twice each year. High priority sites include road construction projects, projects that are 50 acres or larger,

and projects with more than two stormwater-related complaints. Once a priority is established, construction sites are grouped by quadrant and inspected to increase efficiency.

The permit specifies at least 90% of plans are to be reviewed. Pima County reviews all construction design plans for stormwater ordinances prior to issuance of a building permit or grading permit.

### Inspections

Pima County implements three types of inspections. The inspections by DSD on private property ensure compliance with the IBC and Pima County ordinances. The inspections by RFCDD verify the riparian mitigation plan is being implemented. The third type of inspection addresses AZPDES stormwater requirements. For consistency with the ADEQ CGP, AZPDES inspectors look for posted NOIs at the construction site, the presence of a complete SWPPP, implementation of surface stabilization control measures, and proper management of pollutant controls. For compliance with Pima County ordinances, AZPDES inspectors verify sources of pollutants are not exposed or have been removed from the environment, erosion prevention measures are effective and construction right-of-ways convey stormwater and are clean.

AZPDES inspections are performed at least twice a year for low priority construction sites and at least quarterly for the high priority. For Pima County construction projects, Pima County staff attends the pre-construction meeting and present the Stormwater Pollution Prevention Plan (SWPPP) to the contractor. The contents of the SWPPP are reviewed and both Pima County and the contractor walk the site to discuss the stormwater controls being implemented. For roadway construction projects, PDOT staff regularly inspects the sites to verify the contractor is abiding by the SWPPP. PDEQ will inspect the site at PDOTs request.

After each inspection, PDEQ sends the contractors an electronic version of the Inspection Report indicating whether they are consistent with the ADEQ CGP or are in compliance with Pima County Ordinances. If they are inconsistent or out of compliance, the operator is given 30 days to complete corrective actions; shorter time frames may be specified when the inconsistency or non-compliance is likely to result in pollutant discharges or flooding and a rainfall event is imminent. Corrective actions for updates to a SWPPP may be demonstrated by sending information electronically. Corrective actions for control measures are inspected when the operator notifies PDEQ the actions are complete. If the follow-up inspection shows the construction activity is inconsistent with the ADEQ CGP, PDEQ refers the site to ADEQ. Pima County will write a Notice of Violation (NOV) for unresolved construction activities violating Pima County Code.

### Compliance Activities/Enforcement

The Construction Site Inspection SOP includes inspections, compliance and enforcement.

## **D. Other Practices to Control Pollutants from Construction Sites**

### Flood Prone Land Acquisition Plan

The FLAP provides the funds and the mechanism for volunteers to offer their flood prone and erosion prone land for purchase (Pima County, 2011b). RFCDD ranks the lands according to land use, flood potential, quality of the habitat, and watercourse hierarchy. These purchases keep

undeveloped land in the natural floodplain condition while developed land can be returned to natural conditions. Both reduce the downstream flooding peaks and erosive potential of the water, which improves surface water quality.

## **PART VIII. WATERSHED MONITORING**

### **A. Wet Weather Monitoring**

Rainfall measurements are logged using the Automated Local Evaluation in Real Time (ALERT) system. The ALERT system is composed of weather stations equipped with real-time sensors and a radio telemetry system transmitting the data to base station computers at RFCD. The weather station is equipped with a tipping bucket rain gage accurate to 0.04 inches of rainfall. The data is stored on-line and can be easily downloaded. Each time a tipping bucket registers 0.04 inches of rainfall, a notice is sent to the stormwater monitoring team who mobilize to the monitor sites and collect first-flush samples within the first half hour of rainfall, or as soon as is feasible, in accordance with the Sample and Analysis Plan (Appendix I).

Sampling is scheduled for the first rain event in the winter season in November and the summer monsoon in late June at each wet weather monitor point (Figure 4). The summer season sampling begins in June and ends in October, which means the summer season sampling spans two fiscal years. The summer season sampling is reported for the later fiscal year.

The water samples are analyzed for conventional parameters, nutrients, oil & grease, metals, volatile organic compounds and semi volatile organic compounds to characterize the presence of pollutants. Samples are transported on ice and delivered to the Pima County laboratory that performs the analysis or contracts with another lab certified to perform the analysis. The data is initially reviewed to verify it passes quality assurance and quality control requirements.

### **B. Discharge Characterization**

The water quality data is compared to surface water quality standards (SWQS). If a sample indicates concentrations are higher than the SWQS, the watershed draining to the monitor point is evaluated to determine the source of the pollutant. Additionally pollutant load estimates are calculated for 14 metals and 4 conventional parameters. The estimated pollutant load is based on the area of the watershed, the rate of flow and the concentration of the parameter.

(This page is intentionally blank.)

## **PART IX. PROGRAM ASSESSMENT, REPORTS AND REVISIONS**

### **A. Annual Program Assessment and Update**

At the end of each fiscal year when all the data arrives from each department, PDEQ evaluates the results to see how well the program is performing. Changes will be made based on completeness of work, water quality results, and observed control measures performance.

### **B. Reporting Requirements**

Pima County reports the results of the Stormwater Management Plan in each Annual Report due on September 30<sup>th</sup>. PDEQ assembles information provided by RFCD, DSD, RWRD and PDOT on a semi-annual basis. The annual report is reviewed by each division prior to signature by the Deputy Administrator John Bernal. The Annual Report is posted on PDEQ Stormwater website. In addition, when Pima County becomes aware of construction sites or industrial facilities that are operating without the appropriate permit, a notice is sent to ADEQ Southern Regional Office informing them of the address, owner and type of activities potentially qualifying the site or facility as an AZPDES non-filer. Pima County's 2011 AZPDES permit also requires notification when there is prior knowledge of a pollutant concentration that will be discharged that is larger than Arizona SWQS.

### **C. SWMP Revisions**

The 2013 SWMP was modified by adding Figure 4 to show the location of the wet and dry weather monitor points, differentiating between new and existing employees for frequency of training, addition of timeframes for resolving Notices of Violation and construction projects which are either inconsistent with the CGP or in violation of Pima County Code, clarified that the Southern Regional Office of ADEQ is notified when PDEQ become aware of potential non-filers and minor grammatical corrections. The Household Hazardous Waste Program that was jointly funded by Pima County and City of Tucson has been replaced by recycling at Pima County landfills.

Revisions are expected in the future as the program develops to provide additional protection to the chemical, physical, and biological integrity of the surface waters in Pima County. Each new revision is certified (Appendix J).

(This page is intentionally blank)

## **PART X. REFERENCES**

- ADEQ, 2011. Arizona's Comprehensive Water Quality Monitoring Strategy for Fiscal Years 2007 to 2017. June 2011.
- ADEQ, 2012. 2010 Status of Water Quality, Arizona's Integrated 305(b) Assessment and 303(d) Listing Report, June 2012.
- ADWR, 2010 Water Atlas, Volume 8, Active Management Areas, p 363.
- Board of Supervisors, 2010. Pima County Administrator Chuck Huckleberry to Pima County Board of Supervisors, Ecological Impacts of Climate Change on Natural Resources in Pima County.
- City of Tucson, 1989. Standards Manual for Drainage Design and Floodplain Management in Tucson, Arizona, prepared for City of Tucson Department of Transportation Engineering Division by Simons, Li & Associates, Inc., revised July 1998, 432p.
- City of Tucson and Pima County, 2009a. Water and wastewater: Infrastructure, Supply and Planning Study, Phase I Executive Summary Report, 34p.
- City of Tucson and Pima County, 2009b. Stormwater Harvesting and Management as a Supplemental Water Resource Technical Paper, 31p.
- City of Tucson and Pima County, 2009c. Water for the Environment Technical Paper, City/County Water and Wastewater Study, Phase II, 81p.
- City of Tucson and Pima County, 2015. Low Impact Development and Green Infrastructure Guidance Manual, March 2015, 296p.
- Commission for Environmental Cooperation, 2006. Ecological Regions of North America Level I-III, produced in partnership with cec.org, Canada, nationalatlas.gov, and INEGI.
- Commission for Environmental Cooperation, 2010. Level III North American Terrestrial Ecoregions: Unites States Descriptions, 64p.
- EPA, 1990. Federal Register, Vol. 55, No. 222, Friday, November 16, 1990, Rules and Regulations, Environmental Protection Agency, 40 CFR Part 122, 123, and 124 [FRL-3834-7], RIN 2040-AA79, National Pollutant Discharge Elimination System for Permit Application Regulations for Storm Water Discharges, pp. 47990 -48091.
- EPA, 2006. Program Evaluation Report, Tucson Area Stormwater Programs: City of Tucson, Pima County, and the Town of Marana.

- Huckelberry, C.H., 2009. Difference Between Open Space and Mitigation Land for MSCP Credit, Memorandum from C.H. Huckelberry to Pima County Board of Supervisors, 13p.
- Levick, L., J. Fonseca, D. Goodrich, M. Hernandez, D. Semmens, J. Stromberg, R. Leidy, M. Scianni, D.P. Guertin, M. Tluczek, and W. Kepner. 2008. The Ecological and Hydrological Significance of Ephemeral and Intermittent Streams in the Arid and Semi-Arid American Southwest. U.S. Environmental Protection Agency and USDA/ARS Southwest Watershed Research Center, EPA/600/R-08/134, ARS/233046, 116p.
- NOAA, 2012. Monthly and Daily Normals (1981-2010) Plus Daily Extremes (1895 – 2012) for Tucson, Arizona, downloaded from the National Oceanic and Atmospheric Administration website on November 17, 2012 at <http://www.wrh.noaa.gov/twc/climate/tus.php>.
- Pima County, 1987. Stormwater Detention/Retention Manual.
- Pima County 1995. Procedure for Emergency Spill Response, Administrative Procedure 30-10.
- Pima County, 1984. Drainage and Channel Design Standards for Local Drainage For Flood Plain Management Within Pima County, Arizona, prepared by Pima County Department of Transportation and Flood Control, Tucson, Arizona, Adopted by the Board of Supervisors May 15, 1984 and effective June 1, 1984.
- Pima County, 2007. Critical Basins within Unincorporated Pima County, map prepared by Pima County Regional Flood Control District, Department of Transportation, and Technical Services.
- Pima County, 2007. Riparian Projects, Sonoran Desert Conservation Plan, Pima County, Arizona.
- Pima County, 2010a. Local Emergency Planning committee Hazardous Materials Emergency Response Plan, Functional Annex to the Pima County Emergency Operations Plan. 74p.
- Pima County 2010b. Regulated Riparian Habitat Mitigation Standards and Implementation Guidelines, Supplement to Title 16 Chapter 16.30 of the Watercourse and Riparian Habitat Protection and Mitigation Requirements Ordinance No. 2005-PC2. Prepared by Pima County Regional Flood Control District, 215p.
- Pima County, 2011a. Regulated Riparian Habitat Offsite Mitigation Guidelines for unincorporated Pima County, prepared by Pima County Regional Flood Control District and SWCA Environmental Consultants.
- Pima County, 2011b. Flood prone Land Acquisition Program, prepared by Pima county Regional Flood Control District, 2p.
- Pima County, 2011c. Pima County Department of Transportation Herbicide Application Procedure, prepared by Pima County Department of Transportation Environmental Compliance, 7p.

Pima County, 2012a. Department description, downloaded from Pima County Department of Environmental Quality website on November 17, 2012 at <http://www.deq.pima.gov/AboutDEQ.html>.

Pima County, 2012b. Conveyance Division Capacity, Management, Operations, and Maintenance (CMOM) Plan, prepared by Pima County Regional Wastewater Reclamation Department, June 2012.

Pima County, 2015a. Ordinance 2015-7, Co8-14-01 Stormwater Harvesting System Zoning Code Amendment, passed on March 17, 2015 and effective April 16, 2015.

Pima County, 2015b. Pima Prospers, Comprehensive Plan Initiative, prepared for Pima County, Arizona by The Planning Center with assistance from Kaneen Advertising and Public Relations, Inc., ESI Corporation and PSOMAS, 349p.

Pima County Regional Flood Control District, 2014. Design Standards for Stormwater Detention and Retention, revised February 2015.

Webb, R.H, J. L. Betancourt, 1992. Climatic Variability and Flood Frequency of the Santa Cruz River, Pima County, Arizona. U.S. Geological Survey Water-Supply Paper 2379, 40p.