



ARIZONA POLLUTANT DISCHARGE ELIMINATION SYSTEM (AZPDES)

FACT SHEET

This document provides pertinent information concerning the reissuance of the individual stormwater permit listed below. The city of Glendale (hereafter, Glendale or the city) is the owner and operator of a medium Municipal Separate Storm Sewer System (MS4), and thus is regulated under the Arizona Pollutant Discharge Elimination System (AZPDES) permitting program. The conditions contained in this permit are intended to maintain the Water Quality Standards listed in Arizona Administrative Code (A.A.C.) R18-11-101 et seq. This permit is issued for a period of five (5) years.

Permittee:	City of Glendale
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AZPDES Permit No.:	AZS000019-2010

I. BACKGROUND HISTORY

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 published the final regulations on the first phase of the NPDES stormwater program on November 16, 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. As defined at 40 CFR 122.26(b)(8), the term "*municipal separate storm sewer system*" refers to a conveyance, or system of conveyances (including roads with drainage systems, municipal streams, catch basins, curbs, gutters, ditches, man-made channels, or storm drains) that are:

1. Owned or operated by a state, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to state law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under state law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized tribal organization, or a designated and approved management agency under Section 208 of the Clean Water Act (33 U.S.C. 1288) that discharges to waters of the United States;
2. Designed or used for collecting or conveying stormwater; and
3. Not combined sewers; or
4. Part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

The Phase I stormwater regulations require an operator of a medium or large MS4 to obtain a NPDES permit for stormwater discharges from their system. A "large MS4" is generally defined as a system serving a population of 250,000 or more, and a "medium MS4" refers to a system serving a population of 100,000 or more but less than 250,000. As specified in 40 CFR 122.26(b), these are based on the population data from the 1990 census by the U.S. Bureau of Census. EPA Region 9 issued the original Phase I permits for MS4s operating in Arizona in the late 1990s. Based on the 1990 census, Mesa, Phoenix, Tucson, and Pima County operate large MS4s; and the cities of Glendale, Scottsdale, and Tempe operate medium MS4s. The Arizona Department of Transportation (ADOT) was also permitted under Phase I due to the relationship (i.e., physical interconnection) of their stormwater system with the other MS4s.

On December 5, 2002, EPA granted permitting authority to the Arizona Department of Environmental Quality (ADEQ) to implement the NPDES program in Arizona, except for discharges on Indian Lands. In Arizona, the NPDES program is administered as the Arizona Pollutant Discharge Elimination System (AZPDES) program. This fact sheet provides information on the renewal of the Phase I MS4 stormwater permit being issued to Glendale. Both the permit and this fact sheet cite federal regulations where specific regulatory language can be found. Federal definitions and other NPDES regulations have been incorporated by reference into the State AZPDES rules in the Arizona Administrative Code (A.A.C.) R18-9-A905.

II. WATER QUALITY CONCERNS

In 1987 Congress amended the Clean Water Act (CWA) to require NPDES permitting for stormwater discharges. This decision was based on growing awareness of the environmental significance of polluted stormwater runoff. EPA's report entitled "*National Water Quality Inventory, 1998 Report to Congress*" (EPA, 2000) shows stormwater runoff is one of the leading causes of existing water quality impairments. Urban runoff can harm surface water resources by changing natural hydrologic patterns, accelerating stream flows, destroying aquatic habitat, and elevating pollutant concentrations and loadings. Stormwater runoff may contain or mobilize high levels of contaminants, such as sediment, suspended solids, nutrients (phosphorous and nitrogen), heavy metals and other toxic pollutants, pathogens, toxins, oxygen-demanding substances (organic material), and floatables (EPA, 1992). These pollutants are carried into nearby streams, rivers, and lakes in stormwater runoff. Individually and combined, these pollutants degrade or impair water quality, threaten designated beneficial uses and cause habitat alteration or destruction. Uncontrolled stormwater discharges from areas of urban development and construction activity negatively impact surface waters by changing the physical, biological, and chemical composition of the water, resulting in an unhealthy environment for aquatic organisms, wildlife, and humans.

A. Nationwide Urban Runoff Program

The first national assessment of urban runoff characteristics was completed for the "*Nationwide Urban Runoff Program*" (NURP) (EPA 1983). The NURP study showed that stormwater runoff is a significant source of pollutants. EPA conducted the NURP study to facilitate understanding of the nature of urban runoff from residential, commercial, and industrial areas. One objective of the study was to characterize the water quality of discharges from separate storm sewer systems that drain residential, commercial, and light industrial (industrial parks) sites. The study identified 77 priority toxic pollutants in stormwater runoff discharged from residential, commercial and light industrial areas. Of these toxic pollutants, heavy metals such as copper, lead and zinc were detected most frequently and at levels of greatest concern. More recent reports have confirmed the pollutant concentration data collected in the NURP study. The highest concentrations of contaminants in stormwater are often contained in "first flush" discharges, which occur during the first major storm after an extended dry period (Schueler, T.R., 1994).

In Arizona, the 2004 305(b) Water Quality Report (ADEQ, 2004) provided an assessment of the significance of stormwater discharges in Arizona. The report shows that urban runoff is a significant contributor of pollutants in Arizona.

B. Urbanization and Stormwater Runoff

Urbanization alters the natural infiltration capability of the land and generates pollutants associated with the activities of dense populations. Thus, urbanization causes an increase in the volume of stormwater runoff and the pollutant loadings in stormwater discharged to waters of the U.S. (EPA, 1992). Urban development increases the amount of impervious surface in a watershed as farmland and other undeveloped land with natural infiltration characteristics are converted into buildings with rooftops, driveways, sidewalks, roads, and parking lots with no ability to absorb stormwater. Stormwater washes over these impervious areas picking up pollutants along the way, and gains speed and volume because it is unable to disperse and filter into the ground. As a result, stormwater flows are higher in volume, pollutants, and temperature than the flows in less impervious areas which have more natural vegetation and soil to filter the runoff (EPA, 1997). Studies reveal that the level of imperviousness in an area strongly correlates with the quality of the nearby surface waters. In addition to increased impervious areas, urban development creates new pollution sources as population density increases and generates higher levels of car emissions, fertilizers and pesticides, litter, pet wastes, and household hazardous wastes. These pollutants can be washed into surface waters by stormwater runoff or may be dumped directly into storm drains that discharge to waters of the U.S. Therefore, higher population densities and increased impervious areas generally result in a greater concentration of pollutants in stormwater discharges from municipal separate storm sewer systems.

C. Construction and Stormwater Runoff

Stormwater discharges generated during construction activities can also cause physical, chemical, and biological water quality impacts and compromise the integrity of surface waters. A primary concern at most construction sites is the erosion and transport process related to fine sediment because rain splash, rills, and sheet wash encourage the detachment and transport of this material to waterbodies. Water quality impairments can result because a number of pollutants are absorbed onto fine sediment particles. The interconnected process of erosion (detachment of the soil particles), sediment transport, and delivery is the primary pathway for introducing pollutants, such as nutrients (particularly phosphorus), metals, and organic compounds into aquatic systems. Estimates indicate that 80 percent of the phosphorus and 73 percent of the Kjeldahl nitrogen in streams is associated with eroded sediment. Although streams and rivers naturally carry sediment loads, erosion from construction sites and runoff from developed areas can elevate these loads to levels well above those in undisturbed watersheds. It is generally acknowledged that erosion rates from construction sites are much greater than from almost any other land use.

In watersheds experiencing intensive construction activity, the localized impacts of water quality may be severe because of high pollutant loads, primarily sediments. Siltation is the largest cause of impaired water quality in rivers and the third largest cause of impaired water quality in lakes (EPA, 1998). Introduction of coarse sediment (coarse sand or larger) or a large amount of fine sediment is also a concern because of the potential of filling lakes and reservoirs (along with the associated remediation costs for dredging), as well as clogging stream channels. Excess sediment can cause a number of other problems for waterbodies. Sediment is associated with increased turbidity and reduced light penetration in the water column, as well as more long-term effects associated with habitat destruction and increased difficulty in filtering drinking water. Construction sites can also generate other pollutants associated with on-site wastes, such as sanitary wastes or concrete truck washout. Studies have determined that the most effective

construction runoff control programs rely on local plan review and field enforcement. Stormwater discharges from construction sites are subject to regulation under the AZPDES Construction General Permit (CGP). This permit does not require the city to enforce the state permit, but does require the city to have its own ordinances and tools to control discharges from construction sites that have the potential to enter the MS4 system.

D. Illicit Discharges

Discharges from municipal storm sewer systems (MS4) often include wastes and wastewater from non-stormwater sources. An "illicit discharge" is a discharge to a MS4 that is not composed entirely of stormwater (40 CFR 122.26(b) (2)), with some exceptions. Sources of illicit discharges include, but are not limited to: sanitary wastewater; effluent from septic tanks; car wash, laundry, and other industrial wastewaters; improper disposal of automobile and household wastes, such as used motor oil and pesticides; and spills from roadway and other accidents. Illicit discharges enter the system through either direct connections (i.e., wastewater piping either mistakenly or deliberately connected to the storm drains) or indirect connections (i.e., infiltration into the MS4 from cracked sanitary systems, spills collected by drain outlets, and paint or used oil dumped directly into a drain). Inflows from aging sanitary sewer collection systems are one of the most serious illicit discharge-related problems. Sanitary sewer systems frequently develop leaks and cracks, resulting in discharges of pollutants to waters of the U.S. through separate storm sewers. These pollutants include sanitary waste and materials from sewer main construction, such as asbestos cement, brick, cast iron, and vitrified clay. Municipalities have long recognized the reverse problem of stormwater infiltration into sanitary sewer collection systems. This type of infiltration often disrupts the operation of the municipal sewage treatment plant.

The improper disposal of materials is another illicit discharge-related problem that can result in contaminated discharges from separate storm sewer systems in two (2) ways. First, materials released on the ground may either drain directly to a storm sewer or be washed into a storm sewer during a storm event. The result is untreated discharges that contribute high levels of pollutants, including heavy metals, toxics, oil and grease, solvents, nutrients, viruses and bacteria into surface waters. Second, materials may be released directly to a catch basin or other stormwater conveyance. Improper disposal of materials to catch basins and other storm sewer inlets often occurs when people mistakenly assume that materials discharged to a catch basin will reach a municipal wastewater treatment plant. Materials that are commonly disposed improperly include used motor oil; household toxic materials; radiator fluids; and litter, such as disposable cups, cans, and fast food packages. The NURP study discussed earlier found that pollutant levels from illicit discharges were high enough to significantly degrade surface water quality and threaten aquatic life, wildlife, and human health. EPA believes that there has been increasing success in addressing these problems through initiatives, such as storm drain stenciling and recycling programs, including household hazardous waste special collection days.

III. STATUS OF THE PERMIT

EPA Region 9 issued the Phase I MS4 stormwater permit to Glendale on August 25, 1999. In September 2001, the city submitted information to EPA Region 9 for renewal of their MS4 permit. Glendale's 1999 stormwater permit expired on August 31, 2002. The permit has remained administratively continued until the new permit is issued, in accordance with A.A.C. R18-9-B904(C).

This permit replaces Glendale's MS4 Stormwater Permit issued by EPA Region 9 in August 1999. Development of this permit consisted of a review of the city's 1999 MS4 permit (AZS000019) and associated fact sheet, the city's Stormwater Management Program (SWMP) documents and annual reports, EPA's *Program Evaluation Report* (August 2008), and other reference materials as appropriate, such as other MS4 permits and EPA guidance documents. Maintaining compliance with the original MS4 permit required the city to control pollutants in stormwater discharges from the MS4,

primarily through the implementation of the practices described in the city's stormwater management program (SWMP). The city's stormwater program was first evaluated by EPA Region 9 at the time of permit application in the early 1990s. A revised version of the city's SWMP, dated October 15, 1999, was approved for implementation at the time of permit issuance in 1999.

EPA Program Evaluation Report (2008)

In August 2008, PG Environmental and EPA Region 9 conducted an audit of the city's stormwater program to evaluate program effectiveness, assess permit compliance, and gather information for permit renewal. The findings of the audit were documented in EPA's *Program Evaluation Report*, dated October 2008. The evaluation report identified stormwater program deficiencies and specific areas of concern to be addressed for successful program implementation. The following program deficiencies were identified:

1. Lacks method for prioritizing industrial and commercial source inventory to guide the city's inspections based on past inspection results rather than prioritizing based on threat to water quality;
2. Lacking well-defined inspection plan for conducting the industrial and commercial facilities component over the length of the permit term;
3. Significantly understaffed stormwater program, particularly for carrying out inspection activities;
4. Lacking in fully-unified overall MS4 program with organizational control;
5. No stormwater ordinance. The city relies on separate sections of city code to address stormwater quality issues;
6. Lack of direct enforcement authority hinders adequate enforcement of stormwater violations;
7. Measurable goals for the city's industrial and commercial facilities component of their MS4 program not identified; and
8. Lacking evaluation of the effectiveness of the stormwater program.

In December 2008, the city submitted additional information (*Re: Report of Industrial and Commercial Program Interview for City of Glendale Stormwater Management Program, NPDES Permit No. AZS000019, dated December 15, 2008*) to EPA to address the concerns identified in the compliance interviews report. ADEQ referred to both EPA's compliance interviews report and the city's response to the compliance interviews report while developing permit conditions. While the city has since implemented practices or is working to address many of the stated concerns, this permit was written to specifically address each of the identified deficiencies to promote the city's stormwater program.

For inventory of industrial and/or commercial facilities, the permit requires the city to develop and maintain an inventory, list, or database of known industrial and/or commercial facilities identified in 40 CFR 122.26(d)(2)(iv)(C) which may be a significant source of pollutants and have the potential to discharge to the MS4. The city shall also develop a system of prioritization of inspections with focus on facilities with high potential to cause stormwater pollution.

Inspection plan requirements for this permit include identifying and eliminating potential discharges of pollutants to the system, verifying implementation and maintenance of stormwater management practices in compliance with municipal ordinances, and confirming ADEQ authorization to discharge stormwater associated with industrial activity, as applicable to specific industrial facilities. Inspection procedures include a description of standard procedures for inspecting industrial facilities, documenting facility conditions, and reporting potential sources of pollutants or illicit discharges. The permit includes information on the schedule for inspecting high risk facilities (i.e., frequency of inspections) throughout the permit term and a system to document and retain the inspection findings.

This permit includes requirements for maintaining unification of the MS4 programs through organizational control and interdepartmental coordination, including identification and inventory of municipal facilities, prioritizing these for inspection and determining if appropriate control measures and needed permits are in place, as applicable. It also requires standard procedures and practices be in place to properly handle hazardous materials and used oils. Site-specific materials handling and spill response procedures shall be readily available at all city facilities that handle, store, or use hazardous materials where any single container exceeds five (5) gallons and has the potential to come into contact with stormwater. A committee is to review the site-specific materials handling and spill response procedures every two (2) years, and/or revise as necessary. The permit requires this review committee include a person with stormwater knowledge to provide feedback on stormwater concerns.

This permit requires the implementation of a city ordinance(s) used to prohibit and eliminate illicit discharges to the storm sewer system which includes addressing stormwater and non-stormwater issues, including construction activity, development/planning, post-construction, illicit discharges, connections, and dumping, industrial activity, used oil and waste disposal, sanitary sewer use, etc. As per the provisions of Appendix C of this permit, the ordinance(s) may not be initially developed or fully developed at the time of submittal of the revised SWMP. In this case, the city is to attach (to Appendix C) those ordinances available and provide a status of those ordinances that are not yet developed.

The specific measurable goals of this permit for the city's industrial and commercial facilities are included in Appendix A of this permit. For example, there are specific provisions for municipal inspector training, site inspections and compliance and enforcement activities.

Low Impact Development Control of Pollutants from New Development & Significant Redevelopment

In April 2007, U.S. EPA entered into an agreement with several national organizations to promote green infrastructure Low Impact Development (LID) to improve stormwater quality management for MS4s. In January 2008, EPA published an action strategy for the new initiative (see *Reducing Stormwater Costs through Low Impact Development Strategies and Practices on the EPA website*). LID consists of approaches and practices designed to reduce runoff of water and pollutants from the site at which they are generated by principles such as preserving and recreating natural landscape, infiltration, evapotranspiration, and reuse of rainwater. LID techniques manage water and water pollutants at the source and thereby prevent or reduce the impact of development on rivers, streams, lakes, and ground water. LID concepts can be applied to new development, redevelopment, and retrofits to existing development.

EPA has found that in most cases implementing well-chosen LID practices saves money for developers, property owners, and communities while protecting and restoring water quality. It is also found that communities may experience amenities and associated economic benefits that go beyond cost savings. These include enhanced property values, improved habitat, aesthetic amenities, and improved quality of life. For more information about LID, see www.epa.gov/npdes/greeninfrastructure and www.epa.gov/npdes/lid. For these reasons, EPA is encouraging the increasing use of LID practices, including incorporating LID provisions in NPDES permits. ADEQ has responded by incorporating some LID provisions in this permit.

The city of Glendale actively supports features in the community such as parks and open space, riparian restoration projects (i.e., Thunderbird Conservation Park, the Viewing Blinds), onsite retention standards, and water conservation programs to promote use of native vegetation. In addition, the city of Glendale municipal code requires new development to provide on-site retention for a 100-year, 2-hour storm event. This practice is consistent with LID policies, and therefore has been cited as a permit provision in Appendix C. An additional LID condition requires the city to evaluate the potential for incorporating additional Low Impact Development (LID) practices into the city's site planning and development processes.

IV. SUMMARY OF PERMIT CHANGES

This permit differs from the 1999 permit, both in format and level of detail. The 1999 permit is relatively brief and very general in describing permit conditions. This permit has been written to include and expand on specific permit conditions and clarify reporting information. Specifically, this permit includes "measurable goals" or program standards for measuring the progress of the stormwater management program, one of the areas of concern identified in EPA's evaluation report in 2008. The city has been tracking the progress of program activities throughout the permit term and has been providing the status of these activities to ADEQ in annual reports. While tracking program activities is essential for reporting the accomplishments and progress of the city each year, it does not ensure successful program implementation. Instead, specific goals, objectives, or program standards have been established to identify the direction or target for the stormwater program. Such objectives are considered necessary to establish an effective level or degree of implementation of a specific stormwater practice, such as the frequency or amount of an activity. Measurable goals assist the city and ADEQ in evaluating the effectiveness of individual control measures and the stormwater management program as a whole. Therefore, program standards for successful program implementation have been included in the permit in Appendix A.

V. SUMMARY OF PERMIT CONDITIONS

A. Applicability

The 1990 census estimated Glendale's population at approximately 148,000, thus establishing the city as an operator of a medium municipal separate storm sewer system under the Phase I stormwater regulations. In 2000, Glendale's population was estimated at 218,000. This permit applies to discharges from the storm sewer system within the corporate boundaries of the city including any annexations to the city that occur during the life of the permit.

B. Surface Waters

This permit authorizes stormwater discharges from the city's MS4 to waters of the U.S. The city of Glendale discharges stormwater (and non-stormwater) to waters of the U.S., including but not limited to the New River, Skunk Creek, and the Agua Fria, which discharges to the Salt River approximately 9 miles south of Glendale.

The city also discharges to man-made distribution systems, which are owned and operated by other non-MS4 entities. These systems include the Arizona Canal Diversion Channel (ACDC), the Bethany Home Outfall Channel (BHOC), and an Arizona Department of Transportation (ADOT) channel. The ACDC receives stormwater from the central part of the city of Glendale, which combines with upstream stormwater flows from the city of Phoenix, and drains to Skunk Creek and ultimately the New River, both of which are tributaries to the Agua Fria River. The BHOC and the ADOT channel receive waters from the southern portion of the city of Glendale that combines with upstream stormwater flows from the southern portion of the city of Peoria and drains to the New River, which is a tributary of the Agua Fria. The Agua Fria River discharges to the Salt River approximately nine (9) miles south of Glendale. These man-made distribution systems are conveyances to a water of the U.S.

The Arizona Canal and Grand Canal are man-made distribution systems designed to transport water (raw and irrigation) to valley cities. While portions of these canals are located within the city of Glendale boundaries, stormwater from the city is not designed to discharge to these canals. In addition to these main canals, the SRP canal system has many miles of 'laterals', which are underground or aboveground ditches that take raw water from the large distribution canals to various delivery points in irrigated areas. In some of the older portions of the city of Glendale, stormwater is discharged to laterals. The connections are being terminated via policy during construction projects. The Phoenix Area Canals (Grand Canal and Arizona) have designated uses and Arizona water quality standards.

Arizona Water Quality Standards that apply to the waters of the U.S. receiving discharges from Glendale are specified in A.A.C. Title 18, Chapter 11, Article 1. None of the waters of the U. S. to which the city discharges are identified as "outstanding Arizona waters" (OAW) under A.A.C. R-18-11-112. As of the 2006/08 303(d) and other impaired water list(s), the waters of the U.S. receiving discharges from Glendale have not been identified as impaired.

C. Discharges

This permit authorizes stormwater discharges to waters of the U.S. from all outfalls within Glendale's MS4. The city's MS4 includes 61 major outfalls. The city discharges stormwater runoff from residential, commercial, industrial, and agricultural uses, as well as open space (undeveloped areas) to both natural waters of the U.S. and man-made canals and channels.

This permit does not authorize the city to discharge non-stormwater or stormwater associated with construction and/or industrial facilities. Such discharges shall be covered by a separate AZPDES permit (see Limitations of Coverage in Section 3.0 of the permit).

Consistent with Section 402(p)(3)(B)(ii) of the Clean Water Act, this permit requires the city to "...effectively prohibit non-stormwater discharges into the sewer system," except for those discharges that are otherwise covered under an AZPDES permit. Moreover, the city is not required to prohibit the following category of non-stormwater discharges or flows: water line flushing, landscape irrigation, diverted stream flows, rising ground waters, uncontaminated ground water infiltration to separate storm sewers, uncontaminated pumped ground water, discharges from potable water sources, foundation drains, air conditioning condensation, irrigation water, springs, water from crawl space pumps, footing drains, lawn watering, individual residential car washing, flows from riparian habitat and wetlands, dechlorinated swimming pool discharges, street wash water, and discharges associated with emergency fire fighting activities. However, the city shall address these discharges or flows in its SWMP when the city identifies the aforementioned discharges or flows as sources of pollutants to waters of the U.S.

Illicit discharges (i.e. all other non-stormwater discharges) are prohibited by this permit and must be investigated and eliminated upon detection. Specific permit conditions addressing non-stormwater discharges and illicit discharges are included in Appendix A of this permit.

All discharges must be controlled by the city through the implementation of control measures that will significantly reduce the discharge of pollutants.

D. Legal Authority (Section 2.0 of this Permit)

This permit requires the city to establish and maintain the legal authority to carry out the terms and conditions of this permit to control the discharge of pollutants to and from the MS4.

All ordinances demonstrating the city's legal authority to control pollutants in stormwater discharges and non-stormwater discharges are to be submitted to ADEQ with the revised SWMP due one (1) year from the effective date of the permit. Note: The city of Glendale does not have a stormwater ordinance in place at the time of issuance of this permit, but has historically enforced the components of the MS4 stormwater program through the use of separate sections of the city code to address stormwater quality issues.

E. Limitations of Coverage (Section 3.0 of this Permit)

Discharges that are not authorized by this permit include the following:

1. Stormwater discharges associated with industrial activities (40 CFR 122.26[b][14][i]-[ix] and [xi]), which are to be permitted under a AZPDES stormwater permit (Multi-Sector General Permit [MSGP]) for industrial activity;

Note: Facilities that are permitted are not necessarily prohibited from discharge through the MS4 system, however, those specific discharges are not authorized by THIS permit and coverage under the MSGP or another AZPDES permit must be obtained.

2. Stormwater discharges associated with construction activity (40 CFR 122.26[b][14][x] or 40 CFR 122.26[b][15]), which are to be permitted under the AZPDES Construction General Permit (CGP);

Note: Sites that are permitted are not necessarily prohibited from discharge through the MS4 system, however, such discharges are not authorized by THIS permit and coverage under the CGP must be obtained.

3. Non-stormwater discharges; including De Minimis discharges;

Note: De Minimis discharges are not necessarily prohibited from discharge through the MS4 system, however, such discharges are not authorized by this permit and coverage under the De Minimis permit must be obtained or another method of controlling discharges (such as approvals, permits, or discharge notifications, or establishing control measures) must be established by the city.

4. Stormwater discharges mixed with non-stormwater;

Note: Non-stormwater discharges are not necessarily prohibited from discharge through the MS4 system, however, such discharges are not authorized by this permit and coverage under a separate permit authorizing such discharges must be obtained. The city does not have to address those non-stormwater discharges identified in 40 CFR 122.26(d)(2)(iv)(B)(1) except when the city determines the discharge(s) are a source of pollutants.

5. Discharges to impaired surface waters identified on Arizona's 303(d) and other impaired water list(s), except as specified in the special conditions of the permit; and
6. Discharges to outstanding Arizona waters (OAW) identified in A.A.C. R18-11-112, except as specified in the special conditions of the permit.

F. Surface Water Quality Standards (Section 4.0 of this Permit)

The city is required to protect water quality by ensuring, to the maximum extent practicable, that no discharge causes or contributes to an exceedance of any water quality standard applicable to a water of the U.S. receiving discharges from the MS4. To do so, Glendale is to fully implement and maintain the provisions of their SWMP and all other requirements of this permit.

The city is also required to modify the SWMP during the life of the permit as necessary to improve the effectiveness of the program in attaining water quality standards and reducing the discharge of pollutants from the MS4. A discharge with pollutants higher than the applicable water quality standard is to be reported in the annual report, along with a description of the circumstances that may have caused or contributed to the exceedance. For exceedances reoccurring at an outfall, the permit requires Glendale take feasible actions to reduce the discharge of that pollutant.

Antidegradation

Antidegradation rules exist under A.A.C. R18-11-107 to ensure existing surface water quality is maintained and protected. The city is required to maintain stormwater and non-stormwater management practices that minimize the discharge of pollutants to the maximum extent practicable and ensure that no degradation of waters of the U.S. will occur from MS4 discharges.

The permit requires the city reduce the discharge of pollutants to the maximum extent practicable using control measures. Monitoring conditions are specified in this permit to characterize stormwater quality, assess impacts of stormwater on water quality, evaluate the effectiveness of specific control measures in minimizing the discharge of pollutants, and to estimate pollutant loads to waters of the U.S. As long as Glendale maintains consistent compliance with the provisions of this permit, the designated uses of the waters of the U.S. identified in the permit and this fact sheet will be presumed protected, and the city will be deemed to meet currently applicable antidegradation requirements under A.A.C. R18-11-107.C.

G. Stormwater Management Program (Section 5.0 and Appendix C of this Permit)

Requirements for developing and implementing a SWMP are specified in Section 5.0 and Appendix C of this permit. The goal of this permit and the SWMP is to minimize the pollutants in stormwater discharges to the MS4 system, and discharges from the MS4 to the maximum extent practicable (MEP). MEP is the technology-related level of control for pollutants in stormwater discharges from a MS4 as specified in the 1987 amendments to the Clean Water Act. The approach to managing stormwater discharges from a MS4 includes a SWMP. The SWMP is a comprehensive plan for controlling pollutants in stormwater runoff from the MS4, and the means, along with the other conditions in the permit, by which a municipality complies with the MEP standard.

1. Stormwater Management Program Components

The Phase I stormwater regulations (40 CFR 122.26[d][2][iv]) identified the following general components of a SWMP:

- A. Measures to reduce pollutants from commercial and residential areas;
- B. Measures to control illicit connections and illegal dumping to the storm sewer system;
- C. Measures to reduce pollutants from industrial facilities; and
- D. Measures to reduce pollutants from construction sites.

The Phase I regulations on SWMP requirements are specified in 40 CFR 122.26(d) and are incorporated by reference into the state rules.

Measures to reduce pollutants in municipal stormwater discharges and to control illicit non-stormwater discharges include a combination of structural and nonstructural control measures. Nonstructural control measures include, but are not limited to, practices such as public awareness programs, recycling programs, catch basin cleaning, street sweeping, and programs to control illegal dumping. Structural control measures include, but are not limited to, infiltration basins and other retention and detention structures.

2. City of Glendale Stormwater Program

Operators of large and medium MS4s in Arizona developed a SWMP in the early 1990s as part of their initial stormwater permit application. The SWMPs were submitted to EPA Region 9 for review in 1992 (large MS4s) and 1993 (medium MS4s). Glendale's Municipal Storm Water Permit went into effect on March 18, 1999. While the city's MS4 permit expired in 2002, the permit has been administratively continued and the city was required to implement and maintain the approved SWMP.

Similar to the 1999 permit, this permit requires the city to continue to implement and maintain a SWMP to reduce the discharge of pollutants to and from the MS4, to the maximum extent practicable. In this permit, specific activities or control measures have been written into the permit rather than referenced in the separate SWMP document. However, the SWMP is to be updated as necessary to conform to this permit, and is to be resubmitted on or before the first anniversary of the effective date of this permit.

3. Common Stormwater Practices

Phase I MS4s have gained nearly 15 years of experience in implementing stormwater management programs and now maintain many of the same types of activities or control measures. In particular, Phase I stormwater management programs have evolved over the last decade and generally consist of common types of stormwater control measures. While these control measures are based on Glendale's SWMP, they are consistent with and similar to, other MS4s both in Arizona and across the country.

This permit also establishes the goal or direction for many control measures to progress (i.e., measurable goals). This permit requires the city to implement or otherwise maintain the control measures listed in the permit and, as a minimum, meet the associated frequencies, amounts, time frames, and other specified program standards.

4. Stormwater Management Program Updates

The city is required to modify the SWMP as necessary to comply with the provisions of this permit. An updated program must be submitted to ADEQ for review within one (1) year of permit issuance. The updated program will replace the original 1996 SWMP and related documents. Appendix C of this permit describes the minimum required content and level of detail for the written SWMP. Appendix C was developed so that the SWMP includes at least these areas.

Part 8.1.2 also requires Glendale to provide a current and updated SWMP with the 4th year annual report, along with information about waters of the U.S receiving discharges from the MS4, drainage areas, mapping, discharge characterizations, and other information to allow a comprehensive review of the program.

5. Stormwater Management Program Modification

The city is required to modify the SWMP as necessary to improve the effectiveness of the program in reducing the discharge of pollutants to and from the MS4. This permit specifies conditions for modifying the SWMP during the life of the permit. The city can add new control measures and temporary or experimental control measures to the SWMP or increase the amount, frequency or other quantity of an existing control measures at any time; such changes are to be described in the subsequent annual report.

Modifications to replace an ineffective control measure(s) with an alternate control measure(s) may be implemented with prior ADEQ approval by demonstrating that the stormwater management program will continue to achieve an equivalent reduction in pollutants, and will not cause or contribute to a violation of any applicable water quality standard. Any modification to discontinue an existing control measure(s), or to decrease a measurable goal, including an amount, frequency, or time frame may not be implemented without modification of the permit. Such changes require a request for permit modification, accompanied with a demonstration of how the stormwater management program will continue to achieve at least an equivalent reduction in pollutants.

6. Summary of Changes to SWMP Conditions

- Added measurable goals for program implementation (Appendix A)
- Added requirements for program content and organization (Appendix C)
- Added program modification requirements

H. Special Conditions (Section 6.0 of this Permit)

1. Outstanding Arizona Waters

This permit is intended to protect outstanding waters within the State of Arizona. An "outstanding Arizona water" is a surface water that has been identified by ADEQ as an outstanding state resource water in accordance with A.A.C. R18-11-112.

At the time of permit issuance, none of the waters of the U.S receiving discharges from Glendale's MS4 have been classified as an outstanding Arizona water. Therefore, any conditions in this permit for discharging to an outstanding water are not applicable to the city at this time. However, if a water of the U.S to which Glendale discharges is classified as an outstanding Arizona water during the permit term, this permit may be reopened and modified to include additional conditions to ensure that no degradation of the outstanding Arizona water will occur.

2. Impaired Waters

This permit is also intended to protect impaired waters within the State of Arizona and includes specific conditions for discharging to these waters. An "impaired water" is a water of the U.S. that has been assessed as not attaining a water quality standard for at least one (1) designated use. Impaired waters are listed in Arizona's 303(d) and other impaired water list(s) available at www.azdeq.gov/environ/water/assessment/assess.html.

At the time of permit issuance, none of the waters of the U.S receiving discharges from Glendale's MS4 have been classified as an impaired water. Therefore, any conditions in this permit for discharging to a impaired water are not applicable to the city at this time. However, if a water of the U.S to which Glendale discharges is classified as an impaired water during the permit term, this permit may be reopened and modified to include additional conditions to ensure that no degradation of the impaired water will occur.

I. Monitoring Requirements (Section 7.0 of this Permit)

Monitoring conditions are specified in Section 7.0 of this permit and were developed to meet the following objectives:

- To characterize stormwater quality and identify stormwater pollutants;
- To detect and eliminate illicit discharges;
- To evaluate the effectiveness of specific control measures and the SWMP as a whole, in minimizing the discharge of pollutants; and
- To estimate pollutant loads to waters of the United States receiving discharges.

1. Dry Weather Monitoring

Monitoring requirements in this permit include both dry weather inspection of stormwater outfalls to detect illicit discharges and wet weather stormwater sampling of representative outfalls. The city has been performing dry weather inspections of outfalls since the original permit was issued in 1999. This permit requires Glendale to continue to inspect outfalls to detect illicit discharges. The city identified 61 major outfalls from the MS4. This permit requires the city to inspect at least 20% of these outfalls each year.

Dry weather monitoring of outfalls is a required practice of the Stormwater Management Program and conditions for maintaining this practice are addressed in Appendix A.

2. Wet Weather Monitoring

In addition to dry weather monitoring, this permit requires Glendale to conduct stormwater wet weather stormwater sampling of representative locations throughout the permit term.

Monitoring Locations: The city has been conducting stormwater sampling at designated outfalls since 1999. The monitoring locations in the 1999 permit were established based on land uses. The city identified five (5) outfalls that represented drainage areas from residential, commercial and industrial. These monitoring locations were re-evaluated for this permit to verify that each outfall discharges to a water of the U.S. As a result of this evaluation, ADEQ met with Glendale and evaluated alternative locations. The monitoring locations identified in Section 7.2, Table 1 are approved for the duration of the permit and cannot be eliminated or changed without a modification to the permit.

Monitoring Parameters: The monitoring parameters in Glendale's current monitoring program were based on stormwater sampling conducted in the 1990s at the time of permit application. The monitoring parameters in the 1999 program includes metals, nutrients, bacteria (fecal coliform and streptococcus), oil and grease, volatile organic compounds (VOCs), Semi-VOCs, and pesticides.

In 2002, EPA identified limited monitoring data as an area of concern in the city's stormwater program; however, the problem of limited data on stormwater quality extends to all Phase I MS4s in Arizona. Stormwater monitoring data has been limited for a variety of reasons, including drought, intensity and duration of storm events, seasonal variations in rainfall patterns, failed monitoring equipment, lack of staff, and safety concerns. Therefore, in a continuous effort to characterize stormwater quality in Arizona, ADEQ identified a specific list of stormwater monitoring parameters, including all priority pollutants, for inclusion in the renewal Phase I MS4 permits. The revised strategy is intended to provide an updated picture of pollutants currently being discharged, maintain consistency in monitoring requirements, and allow a standardized and comparable dataset of MS4 discharge data.

As such, this permit includes seasonal stormwater monitoring for conventional parameters, including Total Dissolved Solids (TDS) and Suspended Sediment Concentration (SSC), Biochemical Oxygen Demand (BOD) and Chemical Oxygen Demand (COD); nutrients, including nitrogen and phosphorus compounds; total metals, *Escherichia coli* (*E. coli*); and several organic compounds, including TPH, and oil and grease. In addition, this permit requires monitoring of other priority pollutants (VOCs, semi-VOCs, and pesticides) at least four (4) times in the permit term to assess the presence of these pollutants. Several studies have detected other gasoline-related VOCs in stormwater discharges, including trimethylbenzene and xylene. As such, these pollutants are included in the monitoring parameters in this permit. While trimethylbenzene and xylene are not certified analytes using U.S. EPA Method 624, these parameters may be included in the VOC analysis for the purpose of assessing their presence in stormwater discharges.

Sample Types: This permit requires collection of both discrete and flow-weighted composite samples of stormwater discharges. Discrete samples are required for pH, temperature, cyanide, oil and grease, TPH, *E. coli*, and VOCs. Flow-weighted composite samples are to be collected for all other parameters specified in Table 2 of the permit. Flow-weighted composite samples may be collected with a continuous sampler or as a combination of multiple discrete samples (aliquots). Sampling is to be conducted over the first six (6) hours of the discharge, or for the entire discharge period if the discharge lasts less than six (6) hours. Only one (1) analysis of the composite of aliquots is required. Regardless of the sample type, the city is to design sampling events to include the "first flush" (first 30 minutes of stormwater discharge) of a representative storm event whenever possible to do so.

Measurable Storm Event: This permit specifies the characteristics of a measurable storm event as an event that results in a minimum precipitation of 0.2 inches and produces adequate stormwater discharge from the monitoring locations identified in Table 1 to collect representative samples. Samples must be collected from the monitoring locations resulting

from a storm event that occurs at least 72 hours after the previous measurable storm event. The 72-hour period is included in attempt to eliminate monitoring discharges soon after a previous storm event washed away residual pollutants. This permit also specifies that wet weather samples must be representative of actual stormwater discharges and not contain quantities or concentrations of pollutants resulting from dry weather flow that would significantly alter the stormwater samples. The city may demonstrate this using data recorded by the automatic sampler (or other data logger device), such as dry weather flow prior to the stormwater discharge, by demonstrating each monitoring location does not routinely contain dry weather flow, or other appropriate means. The purpose of this requirement is to provide stormwater results that are representative of each storm event.

Wet Seasons: Each MS4 also varied slightly in the months identified as representative of the summer wet season and winter wet season, as used to assess variations in seasonal pollutant loads. For the purpose of simplifying monitoring conditions, maintaining a consistent approach across MS4s, and ensuring that all storm events fall into one (1) of the two (2) seasons for the purposes of monitoring, ADEQ has defined monitoring seasons in the permit as follows:

Summer wet season: June 1 – October 31
Winter wet season: November 1 – May 31

The frequency for stormwater sampling in this permit is once each wet season (summer and winter) from each of the designated monitoring locations. This is consistent with the monitoring frequency of twice a year in the city's monitoring program referenced in the initial permit.

First Flush: Another monitoring condition in this permit requires that stormwater samples include whenever possible the "first flush" (first 30 minutes of stormwater discharge) of a representative storm to identify initial pollutant loads, as well as assess the effectiveness of structural controls, such as retention basins, in managing the first flush of pollutants. The first flush may also be effective in detecting non-stormwater discharges to the stormwater system because such pollutants may be flushed out of the system during the initial portion of the discharge. This permit requires the city to maintain monitoring records, including the volume, duration, and flow rate of stormwater discharge.

Pollutant Loads: The requirement to assess pollutant loadings each year was retained from the initial permit and is included in Section 7.4. The city is required to estimate the loads of certain pollutants (BOD, COD, TSS, TDS, total N, ammonia, TKN, phosphorous and total metals) each year. Pollutant loadings will be estimated from sampling data collected at the representative monitoring locations and will consider land uses and drainage areas for the outfall. The pollutant loadings estimated each year will be compared to previous estimates of pollutant loadings throughout this permit term. Estimates of pollutant loadings will be reported in the annual report and will be accompanied by a description of the procedures for estimating pollutant loads and concentrations, including any modeling, data analysis, and calculation methods.

3. Other Monitoring Requirements

Additional monitoring conditions specified in the permit include monitoring protocols for quality assurance, sample collection, analytical methods, and laboratory selection; monitoring record retention; and conditions for modifying monitoring requirements. Monitoring conditions that are specified in 40 CFR 122.41 (Conditions Applicable to All NPDES Permits) and specified in the Standard Conditions of the 1999 permit, such as *Monitoring and Records*, have been relocated to the Monitoring Requirements section of this permit for convenience.

4. Summary of Changes to Monitoring Conditions

- Adds dry weather outfall inspections to monitoring requirements;
- Redefines the conditions of a representative storm event;
- Adds storm event record requirements;
- Clarifies stormwater monitoring frequency as once each wet season rather than twice a year;
- Defines wet seasons in the permit;
- Specifies monitoring locations, coordinates, and surface waters in the permit;
- Includes stormwater monitoring parameters in the permit rather than referencing a separate monitoring program document;
- Specifies "standard" stormwater monitoring parameters applicable to MS4s for the upcoming permit term;
- Adds monitoring for other priority pollutants in the permit;
- Includes sample types for monitoring parameters;
- Adds monitoring protocols to the permit (QA, sample collection, laboratory methods);
- Relocates standard conditions pertaining to monitoring to the monitoring section of the permit; and
- Adds requirements for modifying monitoring programs (including permit modification).

J. Reporting Requirements (Section 8.0 of this Permit)

1. Annual Reporting

The requirement for submitting an annual report on the status of stormwater program activities was retained from the 1999 permit. Similarly, this permit requires Glendale to prepare an annual report summarizing the progress of the SWMP and the findings of monitoring activities for each year of the permit term. The annual report must include an evaluation of the effectiveness of the SWMP in reducing the discharge of pollutants to and from the MS4, and a comparison of discharge quality with applicable water quality standards. The 1999 permit included general annual reporting requirements, resulting in reports from various MS4s that contain different types of information, in various levels of detail, and in multiple formats. This permit specifies information to be provided in the annual report in an effort to clarify the necessary content and the amount of detail.

In addition, ADEQ developed an Annual Report Form (ARF) to specify the required information and provide a consistent and standard format to expedite the annual review. The ARF contains a list of program measures for summarizing the progress of common control measures in a numeric format. In addition, the ARF is designed to track the progress of activities over the entire permit term rather than for a single year to allow comparison of the status of specific practices. Similarly, the ARF provides a format to track stormwater quality data over the permit term to allow review of water quality by discharge location. In addition to numeric measures, the city is to provide narrative assessments of control measure progress and water quality trends to describe program effectiveness and water quality improvements. The ARF is included in Appendix B of the permit.

2. Discharge Above a Surface Water Quality Standard

The city is required to report discharge of a pollutant in concentration that exceeds an applicable surface water quality standard, as measured at the outfall monitoring location. This permit describes the specific information to be reported to ADEQ in this event in Section 8.3. Part 4.0 provisions also describe follow-up actions to be taken by the MS4 in the event a discharge of a pollutant above applicable water quality standards occurs more than one (1) time at an outfall.

3. Reporting Non-filers

A condition is added to this permit for the MS4 to report any identified construction activities or industrial activities occurring without an AZPDES permit to discharge stormwater associated with those activities (e.g., CGP and MSGP non-filers). The determination that an operator is lacking AZPDES permit coverage will be based on inspection of the site or facility, or other information available to the city, such as public complaints, business licenses, building permits, and other city records. The city has no obligation to enforce the state requirement to obtain permit coverage, but general information about the construction project or industrial facility is to be collected and provided to ADEQ on a semi-annual basis. This reporting can be accomplished by e-mail, electronic filing, or by any reliable system that is convenient for the MS4.

4. Other Reporting Requirements

Additional reporting requirements are specified under the Standard Conditions of the permit (Section 9.0), such as 24-hour reporting, anticipated or other noncompliance, and signatory and certification requirements. These standard conditions are referenced in the Reporting Requirements section of this permit for convenience.

5. Summary of Changes to Reporting Conditions

- Clarifies the specific information to be provided in the annual report;
- Develops an Annual Report Form in the permit (Appendix B);
- Emphasizes on patterns of control measure implementation and review of stormwater discharge quality for the duration of the permit term;
- Adds requirements to report AZPDES permit non-filers;
- References the standard conditions pertaining to reporting are located in the reporting section of the permit; and
- Adds reporting location(s) and ADEQ contact information to the permit.

K. 4th Year Annual Report Requirements (Section 8.1.2 of this Permit)

This permit requires the 4th year annual report to be expanded to include specific information. This 4th year annual report will serve as the city's renewal application. In addition to the information required in an annual report (see Section 8.1.1 of the Permit), the 4th year annual report is to include the following additional information:

1. Waters of the United States: Identification and description of waters of the U.S. (including Glendale area canals) that receive discharges from the MS4, including the designated uses of each water of the U.S. and any known water quality impairments or total maximum daily loads (TMDLs) for those waters, or designation of any such water as a unique water resource.
2. Mapping: An updated map or maps extending one (1) mile beyond the service boundaries of the municipal storm sewer system including the following:
 - Locations of known municipal storm sewer outfalls discharging to waters of the U.S. including intermediate conveyances (e.g., ADOT channel);
 - Wet weather stormwater monitoring locations; and
 - Associated drainage basins.

3. Rain Gauges: Identification of the location of rain gauges in the vicinity of the wet weather monitoring locations with approximate longitude and latitude for each rain gauge.
 4. Discharge Characterization Data: Summary of stormwater quality monitoring data based on all sampling results collected in the permit term. Evaluation of the quality of stormwater discharges from the MS4, including a discussion on the detection and non-detection of specific pollutants. Include an assessment of any trends, improvements, or degradation of stormwater quality discharges from the MS4.
 5. Pollutant Loads: Summary of the annual (or seasonal) pollutant loadings for detected pollutants in stormwater discharges from the MS4.
 6. Updated SWMP: Provide a copy of the current updated SWMP and associated attachments in Section 5.3 and Appendix C of this permit.
 7. Proposed Modifications to the Monitoring Program: Description of any proposed changes to the stormwater monitoring program (such as changes to monitoring locations, parameters, or frequency), including a brief discussion on the reason(s) for modification.
 8. Modifications to the Stormwater Management Program: Summary of changes to the Stormwater Management Program that were made during the permit term, including any addition or replacement of control measures.
 9. Proposed Modifications to the Stormwater Management Program: A description of any proposed modifications to stormwater management program activities, practices, or controls for the next permit term.
 10. Fiscal Analysis: Brief description of the funding sources used to support MS4 Stormwater Management Program expenditures.
- L. Standard Conditions (Section 9.0 of this Permit)
In accordance with 40 CFR 122.41, conditions applicable to all NPDES permits are included in Section 9.0 of this permit. Other standard conditions are specified in this permit in accordance with 40 CFR 122.21, 122.22, 122.64, Arizona Revised Statutes, and the Clean Water Act.

VI. ADMINISTRATIVE INFORMATION

- A. Public Notice (A.A.C. R18-9-A907(A))
The public notice is the process for informing all interested parties and members of the general public of the contents of a draft AZPDES permit or other significant action with respect to an AZPDES permit or application. The basic intent of this requirement is to ensure that all interested parties have an opportunity to comment on significant actions of the permitting agency with respect to a permit application or permit. This permit will be public noticed in a local newspaper after a pre-notice review by the applicant and other affected agencies.
- B. Public Comment Period (A.A.C. R18-9-A908)
Rules require that individual AZPDES permits be public noticed in a newspaper of general circulation within the area affected by the facility or activity and provide a minimum of 30 calendar days for interested parties to respond in writing to ADEQ. After the closing of the public comment period, ADEQ is required to respond to all significant comments at the time a final permit decision is reached or at the same time a final permit is actually issued.

C. Public Hearing (A.A.C R18-9-A908(B))

A public hearing may be requested in writing by any interested party. The request should state the nature of the issues proposed to be raised during the hearing. A public hearing will be held if the director determines there is a significant amount of interest expressed during the 30-day public comment period, or if significant new issues arise that were not considered during the permitting process.

D. EPA Review (A.A.C. R18-9-A908(C))

A copy of the draft permit and any revisions made to the draft as a result of public comments received will be sent to EPA Region 9 for review. If EPA objects to a provision of the draft, ADEQ will not issue the permit until the objection is resolved.

VII. ADDITIONAL INFORMATION

Additional information relating to this proposed permit may be obtained from:

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Water Quality Division
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