



# Cochise County Board of Supervisors

Public Programs...Personal Service  
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Clerk of the Board

## **AGENDA FOR FLOOD CONTROL DISTRICT MEETING**

**Tuesday, September 25, 2018 at 10:00 a.m.**

BOARD OF SUPERVISORS HEARING ROOM

1415 MELODY LANE, BUILDING G, BISBEE, AZ 85603

### **ANY ITEM ON THIS AGENDA IS OPEN FOR DISCUSSION AND POSSIBLE ACTION**

#### **ROLL CALL**

*Members of the Cochise County Board of Supervisors will attend either in person or by telephone, video or internet conferencing.*

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The Board may permit public comment during the discussion of any item on this agenda. If you wish to be heard on a specific item, please sign up to be heard using the 'Specific Item' on the speaker form provided, and please list the item about which you wish to be heard. Persons will be permitted three minutes to speak.

#### **CALL TO THE PUBLIC**

*This is the time for the public to comment. Members of the Board may not discuss items that are not specifically identified on the agenda.*

#### **CONSENT**

##### **Board of Supervisors**

1. Approve the Minutes of the Flood Control District meeting for August 14, 2018.

#### **PUBLIC HEARING**

##### **Community Development**

2. Adopt Ordinance 049-18 governing the discharge of stormwater in Cochise County as required by the Arizona Department of Environmental Control (ADEQ).

#### **ACTION**

##### **Community Development**

3. Approve Ephemeral Streamflow and Groundwater Monitoring Year 2 for Additional Services #1 (additional monitoring services and reporting) and #2 (Horseshoe Draw equipment installation and monitoring) Scopes of Work with JE Fuller Hydrology & Geomorphology, Inc., in the amount of \$80,618 for additional ephemeral stream flow and groundwater monitoring at Horseshoe, Palominas, Riverstone Ranch, and Bella Vista Ranch through March 31, 2019.

Pursuant to the Americans with Disabilities Act (ADA), Cochise County does not, by reason of a disability, exclude from participation in or deny benefits or services, programs or activities or discriminate against any qualified person with a disability. Inquiries regarding compliance with ADA provisions, accessibility or accommodations can be directed to Chris Mullinax, Safety/Loss Control Analyst at (520) 432-9720, FAX (520) 432-9716, TDD (520) 432-8360, 1415 Melody Lane, Building F, Bisbee, Arizona 85603.

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**Cochise County Board of Supervisors**  
1415 Melody Lane, Building G Bisbee, Arizona 85603  
520-432-9200 520-432-5016 fax [board@cochise.az.gov](mailto:board@cochise.az.gov)

**Flood Control District Meeting**

**Meeting Date:** 09/25/2018

Minutes

**Submitted By:** Melissa Belasco, Board of Supervisors

**Department:** Board of Supervisors

**Presentation:** No A/V Presentation

**Recommendation:**

**Document Signatures:**

**# of ORIGINALS  
Submitted for Signature:**

**NAME  
of PRESENTER:** n/a

**TITLE  
of PRESENTER:** n/a

**Mandated Function?:**

**Source of Mandate  
or Basis for Support?:**

**Information**

**Agenda Item Text:**

Approve the Minutes of the Flood Control District meeting for August 14, 2018.

**Background:**

n/a

**Department's Next Steps (if approved):**

n/a

**Impact of NOT Approving/Alternatives:**

n/a

**To BOS Staff: Document Disposition/Follow-Up:**

Scan approved minutes & file.

**Budget Information**

*Information about available funds*

**Budgeted:**   
**Unbudgeted:**

**Funds Available:**   
**Funds NOT Available:**

**Amount Available:**  
**Amendment:**

**Account Code(s) for Available Funds**

1:

**Fund Transfers**

**Attachments**

*No file(s) attached.*

**Flood Control District Meeting**

**Meeting Date:** 09/25/2018  
Small MS4 Stormwater Ordinance  
**Submitted By:** Teresa Vasquez, Community Development  
**Department:** Community Development  
**Presentation:** PowerPoint  
**Document Signatures:** BOS Signature Required  
  
**NAME of PRESENTER:** Jackie Watkins, P.E.  
**Mandated Function?:** Federal or State Mandate

**Division:** Highway  
**Recommendation:** Approve  
**# of ORIGINALS Submitted for Signature:** 2  
**TITLE of PRESENTER:** County Engineer  
**Source of Mandate or Basis for Support?:**

**Docket Number (If applicable):**

**Information**

**Agenda Item Text:**

Adopt Ordinance 049-18 governing the discharge of stormwater in Cochise County as required by the Arizona Department of Environmental Control (ADEQ).

**Background:**

The Arizona Department of Environmental Quality has determined three areas of unincorporated Cochise County meet the requirements of small Municipal Separate Storm Sewer System (MS4). In September 2016, County obtained permit for the MS4 and ADEQ issued AZPDES Permit No. AZG2016-002. This permit requires the County to adopt a Stormwater Ordinance that authorizes the discharge of stormwater.

**Department's Next Steps (if approved):**

If approved, staff will administer development within affected areas within the new MS4 boundaries.

**Impact of NOT Approving/Alternatives:**

Should the item not be approved; the County will be in violation of AZPDES Permit No. AZG2016-002. Subject to a \$25,000 per day fine.

**To BOS Staff: Document Disposition/Follow-Up:**

Signed & Recorded Ordinance to Teresa Garcia.

**Budget Information**

*Information about available funds*

**Budgeted:**       **Funds Available:**       **Amount Available:**  
**Unbudgeted:**       **Funds NOT Available:**       **Amendment:**

**Account Code(s) for Available Funds**

1:

**Fund Transfers**

**Fiscal Impact & Funding Sources (if known):**

If approved, there is a \$5,000/ year permit fee. Plus \$5,000 administrative cost for program review.

**Attachments**

- Stormwater Ordinance
- Stormwater Powerpoint
- Stormwater Executive Summary
- Stormwater Ordinance to be signed
- AZPDES Permit No AZG2016-002





*Public Programs...Personal Service*

**COCHISE COUNTY  
STORMWATER ORDINANCE**

ORDINANCE NO. \_\_\_\_\_

**Cochise County  
Highway & Floodplain Department  
Flood Control District  
September 2018**

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**COCHISE COUNTY**  
**STORMWATER ORDINANCE**  
ORDINANCE NO. \_\_\_\_\_

**SECTION 1 PURPOSE AND INTENT**

**1.01 Purpose**

1. The purpose of this ordinance is to provide for the health, safety, and general welfare of the citizens of Cochise County through the regulation of non-storm water discharges to the storm drainage system to the maximum extent practicable as required by federal law (Environmental Protection Agency Clean Water Act [1972]) and provisions of the Arizona Revised Statutes (A.R.S.) Title 49, Chapter 2, Article 3.1, the Arizona Administrative Code (A.A.C.) Title 18, Chapter 9, Article 9. This ordinance establishes methods for controlling the introduction of pollutants into the Municipal Separate Storm Sewer System (MS4) in order to comply with requirements of Arizona Pollutant Discharge Elimination System General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems to Water of the United States, Permit No. AZG2016-002.

**1.02 Intent**

1. To regulate the contribution of pollutants to the MS4 by stormwater discharges by any user or any activity.
2. To prohibit Illicit Connections and Discharges to the MS4.
3. To establish legal authority to carry out all inspection, surveillance, monitoring and enforcement procedures necessary to ensure compliance with this ordinance.

**SECTION 2 DEFINITIONS AND ACRONYMS**

1. Unless specifically defined below, words or phrases used in this ordinance shall be interpreted to give them the meaning they have in common usages and to give this ordinance it's most reasonable application.

For the purposes of this ordinance, the following shall mean:

**ADEQ:** The Arizona Department of Environmental Quality.

**AZPDES:** Arizona Pollution Discharge Elimination System.

**Best Management Practices (BMPs):** Schedules of activities, prohibitions of practices, general good housekeeping practices, pollution prevention and educational practices,

maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants directly or indirectly to stormwater, receiving waters, or stormwater conveyance systems. BMPs also include treatment practices, operating procedures, and practices to control erosion and sediment transport and site runoff, spillage or leaks, sludge or water disposal, or drainage from raw materials storage. BMPs are included in construction General Permits and Stormwater Pollution Prevention Plans.

**BOS:** The Cochise County Board of Supervisors.

**Clean Water Act (CWA):** (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972) Pub. L. 92-500, as amended Pub. L. 95 217, Pub. L. 95-576, Pub. L. 96-483 and Pub. L. 97-117, 33 U.S.C. 1251 et. seq., and any subsequent amendments thereto.

**Construction Activity:** Activities subject to AZPDES Construction Permits. Currently these include construction projects that will disturb one (1) or more acres within the permitted area, including those that are less than one (1) acre but are part of a larger common plan of development or sale if the larger common plan will ultimately disturb greater than one (1) acre. Such activities include but are not limited to clearing and grubbing, grading, excavating, building, and demolition.

**Common plan of development:** a contiguous area where multiple separate and distinct land disturbing activities may be taking place at different times, on different schedules, but under one plan. A 'plan' is broadly defined to include design, permit application, advertisement or physical demarcation indicating that land-disturbing activities may occur.

**Construction activity:** means earth-disturbing activities such as, clearing, grading, excavating, stockpiling of fill material and other similar activities. This definition encompasses both large construction activities defined in 40 CFR 122.26(b)(14)(x) and small construction activities in 40 CFR 122.26 (b)(15)(i) and includes construction support activities.

**County:** Cochise County, Arizona.

**Department:** Currently, the Highway and Floodplain Department. Should Cochise County rename or reorganize departments, "Department" shall refer to that department responsible for implementing and enforcing this Ordinance.

**Director:** County Engineer/Floodplain Engineer/Head of the Department of the Floodplain Division or Designee of Cochise County.

**Discharge point:** the location where stormwater flows exit the construction activity.

**Endangering Discharge:** Any discharge that include any substance, pollutants, waste, or combination thereof, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may cause, threaten to cause, or significantly contribute to, a substantial present or potential hazard to human health, safety, property, or the environment.

**EPA:** The United States Environmental Protection Agency.

**Ephemeral Stream/Water:** A surface water that has a channel that is at all times above the water table, and that flows only in direct response to precipitation. [ A.A.C. R18-11-101(22)].

**Erosion:** The wearing away of land surface by water or wind which occurs from weather or runoff but is often intensified by human activity.

**Erosion Control:** A measure or activity that prevents Erosion

**Hazardous Materials:** Any material, including any substance, waste, or combination thereof, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may cause, or significantly contribute to, a substantial present or potential hazard to human health, safety, property, or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

**Illegal Discharge:** Any direct or indirect non-storm water discharge into the MS4, except as exempted in Section 7.01 of this ordinance.

**Illicit Connections:** An illicit connection is defined as either of the following: Any drain or conveyance, whether on the surface or subsurface, which allows an illegal discharge to enter the storm drainage system including but not limited to any conveyances which allow any non-storm water discharge including sewage, process wastewater, and wash water to enter the storm drainage system and any connections to the storm drainage system from indoor drains and sinks, regardless of whether said drain or connection had been previously allowed, permitted, or approved by an authorized enforcement agency or, any drain or conveyance connected from a commercial or industrial land use to the storm drainage system which has not been documented in plans, maps, or equivalent records and approved by an authorized enforcement agency.

**Industrial Activity:** Activities subject to AZPDES Industrial Permits as defined in 40 CFR, Section 122.26 (b)(14).

**Intermittent Stream:** A stream or reach that flows continuously only at certain times of the year, as when it receives water from a spring or from another source, such as melting snow or rain.

**MS4 (Municipal Separate Storm Sewer System):** A conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, natural or man-made channels, or storm drains):

- a. 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 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;
- b. Designed or used for collecting or conveying stormwater;

- c. Which is not a combined sewer; and
- d. Which is not part of a Publicly Owned Treatment Works.

**National Pollutant Discharge Elimination System (NPDES) Stormwater Discharge Permit:** Stormwater Discharge Permit. means a permit issued by EPA (or by a State under authority delegated pursuant to 33 USC § 1342(b)) that authorizes the discharge of pollutants to waters of the United States, whether the permit is applicable on an individual, group, or general area-wide basis.

**NOI (Notice of Intent):** The application to operate under a permit such as Construction General Permit, Stormwater Pollution Prevention Plan.

**Non-Storm Water Discharge:** Any discharge to the storm drainage system that is not composed entirely of storm water.

**NOT (Notice of Termination):** The application to discontinue under a permit.

**Operation and Maintenance Plan:** A Plan prepared to identify the ownership, operation and maintenance responsibilities and as-built conditions.

**Perennial Stream:** A stream in which surface water flows continuously throughout the year.

**Person:** Any individual, association, organization, partnership, firm, corporation or other entity recognized by law and acting as either the owner or as the owner's agent.

**Pollutant:** Anything which causes or contributes to pollution. Pollutants may include, but are not limited to: paints, varnishes, and solvents; oil and other automotive fluids; non-hazardous liquid and solid wastes and yard wastes; refuse, rubbish, garbage, litter, or other discarded or abandoned objects, pesticides, herbicides, and fertilizers; hazardous substances and wastes; sewage, fecal coliform and pathogens; dissolved and particulate metals; animal wastes; wastes and residues that result from constructing a building or structure, sediment; and noxious or offensive matter of any kind which because of its quantity, concentration, or physical, chemical, or infectious characteristics may cause, or significantly contribute to, a substantial present or potential hazard to human health, safety, property, or the environment or that may degrade, impair or pollute ground or surface water.

**Post-construction Stormwater Management Plan:** A site-specific document which describes the BMP's and activities to be implemented by a person or business to control erosion, sediment transport and to eliminate or reduce pollutant discharges and wastes to Stormwater, Stormwater Conveyance Systems, and/or Receiving Waters to the Maximum Extent Practicable.

**Premises:** Any building, lot, parcel of land, or portion of land whether improved or unimproved including adjacent sidewalks and parking strips.

**Receiving Water:** as used in the permit means "Waters of the United States" as defined in 40 CFR 122.2.

**Stormwater Discharge Associated with Construction Activity:** A discharge of pollutants in stormwater runoff from areas where soil disturbing activities (e.g., fill piles, borrow areas, concrete truck washout, fueling), or other industrial stormwater directly related to the construction process (e.g., concrete or asphalt batch plants) are located. See 40 CFR 122.26(b)(14)(x) and 40 CFR 122.26(b) (15).

**Stormwater Discharge Associated with Industrial Activity:** The discharge from any conveyance which is used for collecting and conveying stormwater and which is directly related to manufacturing, processing, or raw materials storage areas at an industrial plant (See 40 CHF 122.26(b)(14) for specifics of this definition).

**Storm Drainage System:** Publicly-owned facilities by which stormwater is collected and/or conveyed, including but not limited to any roads with drainage systems, municipal streets, gutters, curbs, inlets, piped storm drains, pumping facilities, retention and detention basins, natural and human-made or altered drainage channels, reservoirs, roadside ditches, and other drainage structures.

**Stormwater:** Any surface flow, runoff, and drainage consisting entirely of water from any form of natural precipitation and resulting from such precipitation, also known as Ephemeral Streams.

**Stormwater Pollution Prevention Plan (SWPPP):** A site-specific, written document that, among other things: (1) identifies potential sources of stormwater pollution at the location of the construction activity; (2) describes control measures to reduce or eliminate pollutants in stormwater discharges from the construction activity; and (3) identifies procedures the operator will implement to comply with the terms and conditions of ADEQ Permit.

**Stormwater Site Plan:** The Stormwater Site Plan documents include the SWPPP and NOI.

**Wastewater:** A subset of non-stormwater defined by any water or other liquid, other than uncontaminated stormwater, discharged from a property, vehicle, facility, building, pipe, or other structure and intended to be a liquid waste not meant for disposal in the storm sewer system. Examples include: wastewater in the sanitary sewer network, industrial process water, and hauled liquid waste.

**Waters of the United States:** Surface watercourses and water bodies as defined in 40 CFR § 122.2, including all-natural waterways and definite channels and depressions in the earth that may carry water, even though such waterways may only carry water during rains and storms and may not carry stormwater at and during all times and seasons.

### **SECTION 3 APPLICABILITY**

1. This ordinance shall apply to all water entering the MS4 generated on any developed and undeveloped lands unless explicitly exempted by this ordinance. A website featuring the jurisdictions of MS4 mapping areas maintained by the County are shown on the Floodplain website.

**SECTION 4 RESPONSIBILITY FOR ADMINISTRATION**

1. The Department shall administer, implement, and enforce the provisions of this ordinance. Any powers granted, or duties imposed upon the Department may be delegated in writing by the Director to persons or entities acting in the beneficial interest of the County.

**SECTION 5 ULTIMATE RESPONSIBILITY**

1. The standards set forth herein and promulgated pursuant to this ordinance are minimum standards; therefore, this ordinance does not intend nor imply that compliance by any person will ensure that there will be no contamination, pollution, nor unauthorized discharge of pollutants.

**SECTION 6 SEVERABILITY**

1. The provisions of this ordinance are hereby declared to be severable. If any provision, clause, sentence, or paragraph of this Ordinance or the application thereof to any person, establishment, or circumstances shall be held invalid, such invalidity shall not affect the other provisions or application of this Ordinance.

**SECTION 7 NON-STORMWATER DISCHARGES,**

**7.01 Prohibition of Non-Stormwater Discharges**

1. Except as provided below, the Department shall prohibit non-stormwater discharges into its MS4 unless the discharges are authorized by a separate NPDES or AZPDES permit.
2. The following categories of non-stormwater discharges (occurring within the jurisdiction of the permittee) are prohibited if the discharges are identified by the Department as significant contributors of pollutants to the MS4. If any of the following categories of discharges are identified as a significant contributor, the Department must address the category as an illicit discharge:
  - a. Water line flushing
  - b. Landscape irrigation
  - c. Diverted stream flows
  - d. Rising ground waters
  - e. Uncontaminated ground water infiltration
  - f. Uncontaminated pumped groundwater

- g. Discharges from potable water sources
- h. Foundation drains
- i. Air conditioning condensate
- j. Irrigation water
- k. Springs
- l. Water from crawl space pumps
- m. Footing drains
- n. Lawn watering
- o. Individual residential car washing
- p. Discharges from riparian habitats and wetlands
- q. Dechlorinated swimming pool discharges
- r. Street wash water, and
- s. Discharges or flows from firefighting activities

3. Discharges specified in writing by the authorized enforcement agency as being necessary to protect public health and safety.
4. The prohibition shall not apply to any non-storm water discharge permitted under an AZPDES permit, waiver, or waste discharge order issued to the discharger and administered under the authority of the EPA, provided that the discharger is in full compliance with all requirements of the permit, waiver, or order and other applicable laws and regulations, and provided that written approval has been granted for any discharge to the storm drainage system.

**7.02 Prohibition of Illicit Connections**

1. The construction, use, maintenance or continued existence of illicit connections to the storm drainage system is prohibited.
2. This prohibition expressly includes, without limitation, illicit connections made in the past, regardless of whether the connection was permissible under law or practices applicable or prevailing at the time of connection.
3. A person is in violation of this ordinance if the person connects a line conveying sewage to the MS4 or allows such a connection to continue.

**SECTION 8 COMMERCIAL, INDUSTRIAL OR CONSTRUCTION ACTIVITY DISCHARGES**

**8.01. Commercial or Industrial Stormwater Discharges**

1. Any person subject to a commercial or industrial activity NPDES/AZPDES storm water discharge permit, shall comply with all provisions of such permit. Proof of compliance with

said permit may be required in a form acceptable to the County prior to the allowing of discharges to the MS4.

2. The operator of a facility required to have a NPDES/AZPDES permit to discharge stormwater associated with industrial activity shall submit a copy of the Notice of Intent (NOI) to the Department at the same time the operator submits the original Notice to ADEQ.

## **8.02 Construction Site Stormwater Runoff Pollution Control**

### **8.02.01 Introduction**

1. Runoff from construction sites may be a major source of pollution and erosion is subject to federal, state and local requirements to improve Stormwater quality. With few exceptions, these requirements will include the development and implementation of a Stormwater Pollution Prevention Plan (SWPPP) for every construction activity as defined herein within the urbanized unincorporated areas of the County. That SWPPP may be reviewed by the State. SWPPPs may be reviewed at the construction site by the Department. Stormwater treatment measures or BMPs may be required along with inspections by the County or State to determine compliance with the SWPPP and the installation and management of the BMPs. In accordance with its own permit requiring it to reduce construction site Stormwater pollution in its urbanized area, Cochise County has established a construction site or land disturbance approval process administered by the Department.

### **8.02.02 Construction Site Regulation**

1. An owner or operator who intends to disturb an area of land that is equal to or greater than one acre, or that is less than one acre but is part of a larger plan of development shall obtain permit coverage from ADEQ. A copy of the NOI shall be filed with the Department prior to the start of the land disturbance as required by ADEQ.
2. An owner or operator who intends to disturb an area of land that is equal to or greater than one acre, or that is less than one acre but is part of a larger plan of development that disturbs one or more acres of soil, must also obtain an approval letter of acceptance from the Department and pay applicable fees set by the Department as approved by the Board of Supervisors. This dual system of regulation is as required by 40 CFR 122.34(b)(4)(i), and by ADEQ general permit AZG2016-002 for Cochise County MS4, Section 6.4.4.
3. No Construction activity disturbance of the site is allowed until the Stormwater letter of acceptance along with the drainage analysis, the construction plans, the Stormwater Site

Plan (SWPPP and NOI) and Operations and Maintenance plans have been reviewed and accepted by the Department.

4. A copy of the approval and the SWPPP for construction must be kept on the site or be available on the site during all work times.
5. To obtain a Letter of Acceptance, the owner or operator shall complete the following:
  - a. Submit to the Department, a Stormwater Site Plan no later than thirty (30) working days prior to the actual start of construction for review and acceptance.
  - b. This Stormwater Site Plan must consider possible water quality impacts and explain in sufficient detail the construction BMP's to be followed by the owner and all who work on the site. The site plan defines the BMPs to ensure that erosion will be minimized, sediment transport managed and that controls for other wastes are in place during the construction process.
  - c. This Stormwater Site Plan will be reviewed by the Department and returned with any comments or Letter of Acceptance of the plans.
  - d. After changes have been made to the Stormwater Site Plan to address the Department's comments, the revised plan shall be resubmitted for review.
6. The SWPPP for the construction site is to remain at the site and made available to the Department. At the start of construction and during construction the Department may inspect any site to determine that the SWPPP being followed and that the indicated BMPs have been properly installed and satisfactorily maintained. If the SWPPP has not been implemented and/or if the BMPs on site have not been satisfactorily installed or maintained the Department will notify the owner or operator of the deficiencies. If the owner or operator has failed to address satisfactorily these issues within Seven (7) days of notification of deficiencies, a compliance order will be issued by the Department and a complaint shall be referred to the County Attorney as provided herein and in A.R.S. 49-261. The Department may also seek an injunction to stop the work as provided herein and civil penalties or criminal penalties.

### **8.02.03      Exemptions**

1. Coverage under a Department Stormwater Site Plan for construction is not required for sites over one acre for:
  - a. Regular maintenance activities performed within the original line, grade or capacity of a facility;
  - b. Construction projects where the operator can prove that there is no reasonable probability that Stormwater can leave the site;

- c. A site that qualifies for an erosivity waiver for activities in low risk soil conditions;
- d. A site already covered by an individual AZPDES/NPDES permit with Stormwater provisions;
- e. Emergency construction activities required to protect public health and safety;
- f. Sites not within the MS4 jurisdiction.

#### **8.02.04      Transfers of Approvals**

1. An approval may be transferred by the submittal of a Department transfer of coverage form that includes assurances by the new owner that the approved SWPPP and BMP requirements will be met.

#### **8.02.05      Termination of Coverage**

1. Coverage under the construction approval will end when a notice of termination (NOT) is filed with the Department and an inspection by the Department has confirmed that the entire site has been stabilized and landscaping and paving complete. The Owner of the site must continue to meet the requirements of any post-construction letter (Section 11.01.01 of this ordinance) issued by the Department.

### **SECTION 9      VIOLATIONS, ENFORCEMENT, PENALTIES AND AUTHORITY**

#### **9.01      Violations**

1. It is unlawful for any person to violate any provision or fail to comply with any of the requirements of this Ordinance. Any person who violates or continues to violate any provision of this Ordinance is subject to the enforcement actions provided herein.
2. If a violation is a nuisance, source of filth, or cause of sickness, the Director may order the owner or occupant to remove it within 24 hours at the expense of the owner or occupant. Notwithstanding any other provisions of this Ordinance, any condition caused or permitted to exist in violation of any of the provisions of this Ordinance is a threat to public health, safety, and welfare, and is declared and deemed a nuisance, and may be summarily abated or restored at the violator's expense, and/or a civil action to abate, enjoin, or otherwise compel the cessation of such nuisance may be taken.

#### **9.02      Letter of Violation**

1. When the Director finds that any person has violated, or continues to violate, any provision of this Ordinance, any order issued hereunder, any approval, or any condition of a permit, the Director may serve upon that person a written Letter of Violation, specifying the particular violation believed to have occurred and requesting the person to immediately investigate the matter and to seek a resolution whereby any unlawful acts will cease.

2. Investigation and/or resolution of the matter in response to a Letter of Violation shall in no way relieve the alleged violator of liability for any violations occurring before or after receipt of the Letter of Violation. Nothing in this subsection shall limit the authority of the Director to take any action, including emergency action or any other enforcement action, without first issuing a Letter of Violation.

### **9.03 Consent Order**

1. After a Letter of Violation, the Director may enter into an order settling the issuance of the Letter of Violation. The Director may agree to accept monetary payments as part of the negotiated terms of a consent order. The terms of a consent order shall be determined by the agreement of the parties.

### **9.04 Compliance Order**

1. If the Director determines that a person is in violation of a rule adopted or a condition of a permit issued pursuant to § 49-203 (Powers and Duties of the Director and Department) , subsection A, paragraph 6, any provision of article 2 (Water Quality Standards) or 3 (Aquifer Protection Permits), 3.1 (Arizona Pollution Discharge Elimination System Program), 3.2 (Dredge and Fill Permit Program) or 3.3 (Underground Injection Control Permit Program) of ARS Title 49, Chapter 2, a rule adopted pursuant to article 2, 3, 3.1 of Chapter 2, a discharge limitation or any other condition of a permit issued under article 2, 3, 3.1 or 3.2 or 3.3 of Chapter 2 or is creating an imminent and substantial endangerment to the public health or environment, the director may issue an order requiring compliance within a reasonable time period.
2. A compliance order shall state with reasonable specificity the nature of the violation, a time for compliance if applicable and the right to a hearing.
3. A compliance order shall be transmitted to the alleged violator by certified mail, return receipt requested, or by personal service.
4. A compliance order becomes final and enforceable in the superior court unless within thirty days after the receipt of the order the alleged violator requests a hearing before an administrative law judge. If a hearing is requested, the order does not become final until the administrative law judge has issued a final decision on the appeal. Appeals shall be conducted pursuant to § 49-321 (Appeals).
5. At the request of the Director the attorney general may commence an action in superior court to enforce orders issued under this section once an order becomes final.

### **9.05 Cease and Desist Orders**

1. When the Director finds that any person has violated, or continues to violate, any provision of this Ordinance, any order issued hereunder, the terms of an approval or permit, or that the person's past violations are likely to recur, and that the person's violation(s) has (have) caused or contributed to an actual or threatened introduction of pollutants to the County MS4 or any Storm Drainage System connected to the MS4 which reasonably appears to present an imminent or substantial endangerment to the health or welfare of persons or to the environment, the Director may order the violator to immediately cease and desist all such violations and direct the violator to:
  - a. Immediately comply with all Ordinance requirements; and,
  - b. Take such appropriate preventative action as may be needed to properly address a continuing or threatened violation, including immediately halting the violating activity.
  
2. Any person notified of a Cease and Desist Order directed to it under this Subsection shall immediately comply and stop or eliminate its endangering activity. In the event of a person's failure to immediately comply with the emergency order, the Director may take such steps as deemed necessary to prevent or minimize harm to the County MS4 or any Storm Drainage Systems connected to the MS4 and/or endangerment to persons or to the environment. The Director may allow the person to commence its activity when it has demonstrated, to the satisfaction of the Director, that the period of endangerment has passed, unless further proceedings are initiated against the discharger under this Ordinance. A person that is responsible, in whole or in part, for any activity presenting imminent endangerment shall submit a SWPPP modification describing the causes of the harmful activity and the measures taken to prevent any future occurrence, to the Director within 48 hours of receipt of the order. Issuance of a Cease and Desist Order shall not be a bar against, or a prerequisite for, taking any other action against the violator.
  
3. The cease and desist order shall be transmitted to the alleged violator by certified mail, return receipt requested, or by personal service. Service by certified mail shall be deemed complete upon mailing.

### **9.06 Injunctive Relief**

1. Whether or not a person has requested a hearing, the Director, through the County Attorney, may request a temporary restraining order, a preliminary injunction, a permanent injunction, or any other relief necessary to protect the public health if the Director has reason to believe of the following:
  - a. That a person is in violation of:

- i. Any provision of article 2, 3, 3.1 or 3.2 or 3.3 of Chapter 2
    - ii. A rule adopted pursuant to § 49-203, subsection A, paragraph 6.
    - iii. A rule adopted pursuant to article 2, 3, 3.1 or 3.2 or 3.3 of Chapter 2.
    - iv. A discharge limitation or any other condition of a permit issued under article 2, 3, 3.1 or 3.2 or 3.3 of Chapter 2.
  - b. That a person is creating an actual or potential endangerment to the public health or environment because of acts performed in violation of Chapter 2.
2. Notwithstanding any other provision of this Ordinance, if the Director through the County Attorney, has reason to believe that a person is creating an imminent and substantial endangerment to the public health or environment because of acts performed in violation of article 2, 3, 3.1 or 3.2 or 3.3 of Chapter 2 or a rule adopted or a condition of a permit issued pursuant to § 49-203, subsection A, paragraph 2, 6 or 7, the county attorney or attorney general may request a temporary restraining order, a preliminary injunction, a permanent injunction or any other relief necessary to protect the public health.
3. The court, in issuing any final order in any civil action brought under this section, may award costs of litigation, including reasonable attorney and expert witness fees, to any substantially prevailing party if the court determines such an award is appropriate. If a temporary restraining order is sought, the court may require the filing of a bond or equivalent security.
4. All civil penalties, except litigation costs, obtained under this section shall be deposited, in the County's general fund.
5. Except as applied to permits issued or authorized pursuant to article 3.1 or 3.2 or 3.3 of Chapter 2, it shall be an affirmative defense to civil liability under this section and § 49-261 for causing or contributing to a violation of a water quality standard established pursuant to Chapter 2, or a violation of a permit condition prohibiting a violation of an aquifer water quality standard or limitation at the point of compliance or a surface water quality standard if the release that caused or contributed to the violation came from a facility owned or operated by a party that has either:
  - a. Undertaken a remedial or response action approved by the director or the administrator under this title or CERCLA in response to the release of a hazardous substance, pollutant or contaminant that caused or contributed to the violation of article 2 of Chapter 2 and is in compliance with that remedial or response action.
  - b. Otherwise resolved its liability for the release of a hazardous substance that caused or contributed to the violation of article 2 of Chapter 2 in whole or in part by the execution of a settlement agreement or consent decree with the director or

administrator under this article, CERCLA or any other environmental law and is in compliance with that settlement agreement or consent decree.

6. Subsection 5 of this section does not prevent the director from taking an appropriate enforcement action to address the release of a hazardous substance, pollutant or contaminant or the violation of a permit condition before or as an element of an approved remedial or response action, settlement agreement or consent decree.
7. In determining the amount of a civil penalty for a violation under article 3, 3.1 or 3.2 or 3.3 of Chapter 2, the court shall consider the following factors:
  - a. The seriousness of the violation or violations.
  - b. The economic benefit, if any, that results from the violation.
  - c. Any history of similar violations.
  - d. Any good faith efforts to comply with the applicable requirements.
  - f. The economic impact of the penalty on the violator.
  - g. The extent to which the violation was caused by a third party.
  - h. Other matters as justice may require.
7. A single operational upset that leads to simultaneous violations of more than one pollutant limitation in a permit issued or authorized pursuant to § 49-255.01 constitutes a single violation for purposes of any penalty calculation.
9. If a permittee holds both a permit issued or authorized pursuant to article 3 of Chapter 2 and a permit issued or authorized pursuant to article 3.1 or 3.2 or 3.3 of Chapter 2 and the permittee violates a similar provision in both permits simultaneously, the department shall not recover penalties for violations of both permits based on the same act or omission.

## **9.07 Suspension and Revocation of Approvals or Permits**

### **9.07.01 Suspension of Approval or Permit**

1. When the Director finds that the holder of an approval or permit has failed to comply with a Letter of Violation of this Ordinance or that an actual or threatened activity presents or may present imminent and substantial danger to the environment, or to the health or welfare of persons, or to the County MS4 or any Storm Drainage System connected to the MS4, and incorporates a finding to that effect in the order, summary suspension of the approval or permit may be ordered pending proceedings for revocation or other action.
2. Upon suspension of the approval or permit, the holder of the approval or permit may immediately move to vacate the suspension order and the Director shall hear such motion

within five (5) working days. In no event may a summary suspension remain in effect for more than twenty-five (25) working days.

3. Upon suspension of the approval or permit, the premises will thereupon be posted to show the permit suspension and access to the County MS4 will be prohibited. A person commits an offense if the person reinstates County MS4 access to premises terminated pursuant to this Section, without the prior approval of the Director.

#### **9.07.02      Revocation of Approval or Permit**

1. The Director may, after providing opportunity for hearing, revoke an approval or permit for violation of this Ordinance or for interference with the regulatory authority in the performance of its duty.
2. Prior to revocation, the Director shall notify in writing the holder of the approval or permit, or the person in charge, of the specific reason(s) for which the approval or permit is to be revoked and that the approval or permit shall be revoked at the end of the twenty (20) working days following service of such notice unless a written request for hearing is filed with the regulatory authority by the holder of the permit within such twenty (20) working day period. If a request for hearing is timely filed, the hearing shall be held within twenty (20) working days of receipt of the request.
3. Upon delivery of notice of revocation of an approval or permit, the premises will thereupon be posted to show the revocation and access to the County MS4 will be prohibited. If the violator fails to comply with an order, the Director may take action as deemed necessary to prevent or minimize damage to the County MS4 or any Storm Drainage System connected to the MS4, or to minimize danger to the health and welfare of persons. An owner or operator commits a separate offense if the person reinstates County MS4 access to premises terminated pursuant to this Section, without the prior approval of the Director.
4. A notice of revocation is properly served when it is delivered to the holder of the approval or permit, or the person in charge, or when it is sent by registered or certified mail, return receipt requested, to the last known address of the holder. A copy of the notice shall be filed in the records of the Department. The notice shall comply with the provisions of A.R.S. 41-1061.B.
5. Hearings held pursuant to the provisions of this Ordinance shall be conducted in accordance with the requirements of A.R.S. 41-1061 et. seq.

### **9.08 Civil Penalties**

1. A Person who violates any provision of this Ordinance, an approval or permit issued hereunder, a Discharge limitation in a permit or approval, or a cease and desist or other order issued, is subject to a civil penalty of not to exceed two thousand five hundred dollars (\$2,500) per day per violation pursuant to A.R.S. § 49- 371(A)(5). Pursuant to A.R.S. § 49-371(A)(5), the Director may request that the County Attorney commence an action in Superior Court to recover the civil penalties.
2. The court, in issuing any final order in any civil action brought under this section, may award costs of litigation, including reasonable attorney and expert witness fees, to any substantially prevailing party if the court determines such an award is appropriate.

### **9.09 Criminal Violations**

1. It is unlawful to:
  - a. Discharge without an approval or permit or appropriate authority.
  - b. Fail to monitor, sample or report discharges as required by this Ordinance.
  - c. Violate a discharge limitation.
  - d. Violate a water quality standard.
2. A person who with criminal negligence performs an act prohibited under subsection 1 of this section is guilty of a class 6 felony.
3. A person who knowingly performs an act prohibited under subsection 1 of this section is guilty of a class 5 felony.
4. A person who knowingly or recklessly manifests an extreme indifference for human life in performing an act prohibited under subsection 1 of this section is guilty of a class 2 felony.
5. A violation of any provision of Chapter 2 for which a penalty is not otherwise prescribed is a class 2 misdemeanor.
6. The County Attorney may enforce this section at the request of the Director.

### **9.10 Abatement Assessment and Lien**

1. If abatement of the violation is ordered by the Superior Court or other court with jurisdiction, the Director may, at his discretion, take actions necessary to abate or remove the nuisance or the source of the violating activity. Within twenty (20) working days after abatement of the violation, the Director shall issue an Assessment Statement to the owner of the property on which such nuisance or violating activity was located.

2. The Assessment Statement shall include the following information:
  - a. A description of the assessed costs, which shall include the actual costs of the removal or abatement, incidental costs, and the costs of any additional inspections.
  - b. Notification that the property owner must pay the assessed costs within thirty days after receipt of the Assessment Statement or by such other date as may be specified for payment in the Assessment Statement unless an appeal is requested.
  - c. Notification that the property owner may appeal the assessment to the Director in writing within thirty working days after receipt of the Assessment Statement; and,
  - d. Notification that failure to pay the assessed costs may result in a lien being placed on the property on which the nuisance or source of filth was located.
  
3. The property owner may appeal the assessment to the Director for a hearing within thirty days after receipt of the Assessment Statement.
  - a. After a hearing, the Director may sustain, modify or revoke the Assessment Statement.
  - b. If the Director sustains or modifies a cost assessment following an appeal of an Assessment Statement, the assessed costs must be paid within thirty (30) working days of the Director's decision or by such other time as may be specifically provided by the Director.
  
4. If the property owner does not pay the assessed costs after the time provided in (2.) (b) or (3.) (b) above has expired, the Director may assess the lots or tracts of land on which the nuisance was abated or removed.
  - a. The assessment, for the date of its recording in the office of the Cochise County Recorder, is a lien on the lot or tract of land until paid.
  - b. Any assessment recorded under this Ordinance is prior and superior to all other liens, obligations or other encumbrances, except liens for general taxes and prior recorded mortgages.

**9.11 Remedies Not Exclusive**

1. The remedies listed in this Ordinance are not exclusive of any other remedies available under any applicable federal, state, county or local law and it is within the discretion of Cochise County to seek cumulative remedies.

## **SECTION 10 MONITORING OF DISCHARGES**

### **10.01 APPLICABILITY**

1. This section applies to all facilities that have storm water discharges associated with industrial activity, including construction activity.

### **10.02 RIGHT OF ENTRY AND INSPECTIONS**

1. The Department or its authorized agent shall be permitted to enter at all reasonable times and inspect and evaluate any facility, including construction and post-construction activity subject to regulation under this ordinance as often as may be necessary to determine compliance with this ordinance. If a discharger has security measures in force which require proper identification and clearance before entry into its premises, the discharger shall make the necessary arrangements to allow access to representatives of the Department.
2. Facility operators shall allow the Department ready access to all parts of the premises for the purposes of inspection, free samples for sampling, examination and copying of records and documents, at a reasonable cost that must be kept under the conditions of an AZPDES permit to discharge storm water, and the performance of any additional duties as defined by state and federal law.
3. The Department shall have the right to set up on any permitted facility such devices as are necessary, in the opinion of the Department, to conduct monitoring and/or sampling of the facility's storm water discharge.
4. The Department has the right to require the discharger to install monitoring equipment as necessary. The facility's sampling and monitoring equipment shall be maintained at all times in a safe and proper operating condition by the discharger at its own expense. All devices used to measure stormwater flow and quality shall be calibrated to ensure their accuracy.
5. Any temporary or permanent obstruction to safe and easy access to the facility to be inspected and/or sampled shall be promptly removed by the operator at the written or oral request of the Department and shall not be replaced. The costs of clearing such access shall be borne by the operator.
6. Unreasonable delays in allowing the Department access to a permitted facility is a violation of a stormwater discharge permit and of this ordinance. A person who is the operator of a facility with an AZPDES permit to discharge stormwater associated with industrial activity or, construction activity commits an offense if the person denies the Department

reasonable access to the permitted facility for the purpose of conducting any activity authorized or required by this ordinance.

7. If the Department has been refused access to any part of the premises from which stormwater is discharged, and he/she is able to demonstrate probable cause to believe that there may be a violation of this ordinance, or that there is a need to inspect and/or sample as part of a routine inspection and sampling program designed to verify compliance with this ordinance or any order issued hereunder, or to protect the overall public health, safety, and welfare of the community, then the authorized enforcement agency may seek issuance of a search warrant from any court of competent jurisdiction.
8. If the Department has been refused access to the premises, then the Director may seek issuance of a search warrant from any court of competent jurisdiction in addition to issuing a compliance order, seeking an injunction and assessing appropriate civil or criminal penalties under section 9.00 herein and Title 49, Arizona Revised Statutes.

## **SECTION 11 POST-CONSTRUCTION STORMWATER MANAGEMENT**

### **11.01 Introduction**

1. The goal of this post-construction stormwater management program is to protect public safety and public infrastructure, reduce erosion on private properties and stream channels, and protect the quality of Waters of the U.S. to the maximum extent practicable. The goals are achieved by maintaining and/or restoring natural drainage patterns, minimizing grading and disturbance, and minimizing the extent of impervious cover, as well as, encouraging the use of a variety of BMP's for reducing the pollutant loadings from newly developed and redeveloped sites. This will be accomplished by requirements to, among other things, reduce the magnitude and extent of impervious cover and site disturbance, remove pollutants from runoff prior to the introduction of Stormwater to the County MS4, and promote effective operation and maintenance of all Stormwater facilities.

#### **11.01.01 Applicability**

1. The post-construction requirements in this Section apply to permanent Stormwater management facilities, systems and/ or devices for new developments and re-developments for any owner or operator who intends to disturb an area of land that is equal to or greater than one acre, or that is less than one acre but is part of a larger plan of development that disturbs one or more acres of soil. The owner or operator must obtain an approval letter of acceptance from the Department and pay applicable fees set by the Department as approved by the Board of Supervisors. Stormwater management during construction activities is regulated separately pursuant to Section 8.00 of this Ordinance.

### **11.02 Objectives**

1. To protect the health, safety and general welfare of the residents of the County, as well as, to protect, sustain and enhance the quality of the Waters of the U.S. in and adjacent to the County, drainage and Stormwater management practices shall be utilized as directed herein to achieve the following objectives:
  - a Accommodate site development and redevelopment in a manner that protects public safety and that is consistent with federal and state water quality requirements and the requirements of the Phase II Stormwater permit for the County.
  - b Protect water quality to the maximum extent practicable by removing and/or treating (if necessary) pollutants prior to the introduction of Stormwater to the County MS4 or any Storm Drainage System connected to the MS4 throughout the County.
  - c Promote effective long-term operation and maintenance of all permanent Stormwater management facilities.
  - d Treat (if necessary) and release Stormwater as close to the source of runoff as possible using a minimum of structures and maximizing reliance on natural processes.
  - e Address certain requirements of the Municipal Separate Storm Sewer System (MS4), National Pollutant Discharge Elimination System (NPDES) Phase II Stormwater regulations.
  - f Reduce the environmental impacts of Stormwater pollution from existing developed sites undergoing redevelopment while encouraging development and redevelopment in areas designated for growth.

### **11.03 Post-construction Site Regulation**

1. A post-construction stormwater management plan along with an Operation and Maintenance Plan (Section 11.08 of this ordinance) must be submitted to the Department at the time the Stormwater Site Plan is submitted (see section 8.02.02, paragraph 3) that must include BMP's to control discharges of pollutants, erosion and sediment transport to the maximum extent practicable.
2. This post-construction stormwater management plan must consider possible water quality impacts and explain in sufficient detail the post-construction BMP's to be followed by the owner and all who work on the site. These BMPs must ensure that erosion will be minimized, sediment transport managed and that controls for other pollutants and wastes are in place to the maximum extent practicable during the post-construction operation phase.

3. This post-construction stormwater management plan will be reviewed by the Department and returned with any comments or Letter of Acceptance of the plans.
4. After changes have been made to the post-construction stormwater management plan to address the Department's comments, the revised plan shall be resubmitted for review.
5. No operations of the site is allowed until the post-construction stormwater management plan approval has been issued.
6. A copy of the approval and the post-construction stormwater management plan must be kept on the site or be available on the site during all work times.
7. If the post-construction stormwater management plan or the operations and maintenance plan has not been implemented and/or if the BMPs on site have not been satisfactorily installed or maintained, the Department will notify the owner or operator of the deficiencies. If the owner or operator has failed to address satisfactorily these issues within 7 calendar days of notification of deficiencies, a compliance order will be issued by the Department and a complaint shall be referred to the County Attorney as provided herein and in A.R.S. 49-261. The Department may also seek an injunction to stop the operations as provided herein and civil penalties or criminal penalties.

#### **11.04 General Requirements**

1. The management of Stormwater on site, both during and upon completion of the land disturbances described in Section 11.01, shall be accomplished in accordance with standards and criteria of this Ordinance and the requirements of the Floodplain Regulations for Cochise County. The design of any temporary or permanent facilities and structures and the utilization of any natural drainage systems shall be in full compliance with this Ordinance and any other applicable regulation.
2. The intent of these design standards is to encourage environmentally sound stormwater management practices that provide necessary drainage facilities while protecting the hydrologic and hydraulic characteristics and water quality of the site and watershed. Development shall be required to incorporate stormwater management control.
3. The stormwater management system shall not create an adverse impact on stormwater quality in either upstream or downstream areas. Offsite areas, which drain to or across a site proposed for development, shall be addressed in the Drainage Analysis and Construction Plans prepared for the development. No Analysis or Construction Plans shall be approved unless it provides information sufficient to assure that the runoff from the project shall not adversely impact water quality in downstream areas.

4. Where deemed necessary by the Director, the applicant shall construct storm drains to handle on-site runoff to not create any adverse impact due to the proposed development, to the maximum extent permitted under the Cochise County Floodplain Regulations, provide on-site/off-site easements, and provide for the conveyance of off-site runoff to an acceptable outlet in the same watershed.
5. Any Stormwater management facilities regulated by this Ordinance that would be located in or adjacent to Waters of the U.S. or wetlands shall continue to be subject to approval by the U.S. Army Corps of Engineers (USACOE) or other agencies through their permit processes. Proof of approval by the USACOE shall be provided by the applicant prior to the start of construction.
6. Any Stormwater management facility or part thereof regulated by this Ordinance that will be located in Cochise County Flood Control District, or other County-owned rights-of-way or that will drain across or onto any other Flood Control District or other County-owned rights-of-way shall be subject to written approval, licensing or permitting by the appropriate authority. Excluding the USACOE approval process detailed in paragraph 5 above, documentation of such aforementioned approval, licensing or permitting shall be provided by the applicant at the time of application.
7. Stormwater drainage to impaired waters or unique waters may be subject to additional performance criteria or may need to utilize or restrict certain Stormwater management practices.

#### **11.05 Construction and Operation Responsibilities**

##### **11.05.01 General Responsibilities**

1. The owner of permanent Stormwater management facilities shall be responsible for the proper operation and maintenance of those facilities during and after construction. All permanent on-site BMPs shall be operational prior to the use by any development or phase of development dependent on those BMPs.
2. The owner of permanent Stormwater management facilities for a tract shall be responsible for the proper installation and function of those facilities in accordance with the approved Stormwater Management Plan. All temporary soil erosion and sedimentation control measures shall be removed or converted to their permanent configuration in accordance with an approved erosion control plan. This requirement in no way precludes the authority of the Director to determine when sufficient stabilization has occurred on a site in order to convert to the permanent Stormwater management facilities.

**11.05.02 Report with Stormwater Management Plan Application**

1. For all post-construction activities governed by this Ordinance the Applicant shall submit with their Drainage Analysis, Construction Plans and Stormwater Site plan, a Stormwater Management Plan Report, which shall contain the information necessary to allow the Department to review the application. It may be necessary for some applications covering large areas to have the report prepared by a professional Civil Engineer licensed by the State of Arizona.

**11.06 Ownership and Maintenance**

**11.06.01 Ownership**

1. All Stormwater management facilities, systems and/ or devices identified within an approved Stormwater Management Plan shall be owned and maintained by one, or a combination of, the following entities:
  - a. An individual for his or her own on-lot Stormwater management facilities not constructed as part of a subdivision and/or land development plan.
  - b. Where individual on-lot Stormwater management facilities, system and/ or devices are proposed in a subdivision or other development greater than one acre, the subdivision and/or land development plan and plat shall contain a note in a form satisfactory to the Department designating the entity responsible for operation and maintenance of the on-lot facilities consistent with an approved Operation and Maintenance Plan.
  - c. An entity that owns or has a perpetual right to access the land on which the Stormwater management facilities, system and/ or devices are located. The operation and maintenance obligation runs with the land and is binding upon the initial grantees of each lot and his, her, or their heirs, administrators, successors or assigns. Stormwater management facilities, systems and/ or devices or the ownership of the land on which they are located may not be deeded or dedicated to the County or the Flood Control District.

**11.06.02 Requirements for Covenants, Codes and Restrictions**

1. The subdivision and/or land development plan and plat shall contain a note in a form satisfactory to the Department granting to the Department the right, but not the duty, to enter upon the premises to repair or restore Stormwater management facilities, system and/ or devices in the event that the responsible person or entity fails to do so, to charge and assess the costs thereof to the owner and to enforce said charges and assessments by lien upon the property. In addition, the deed for each lot shall contain a covenant binding on the grantee and all successors in interest designating the responsibility for operation and maintenance of the on-lot facilities.

2. In addition to the above, developers of parcels with more than one (1) dwelling unit that are intended for sale and will not be held by a single owner, shall record with the County Recorder a declaration of covenants and restrictions in a form satisfactory to the Department describing the responsibility for operation and maintenance of the on-lot Stormwater management facilities, systems and/ or devices, consistent with an approved Operation and Maintenance Plan, prior to the sale of any individual lots. The terms of this covenant and restriction shall run with the land and be binding upon the initial grantees of each lot within the subdivision and his, her or their heirs, administrators, successors or assigns.

**11.06.03 Homeowners or Condominium Association Ownership (If Applicable)**

1. Where a homeowners' association is created to own and manage common facilities, the subdivision and/or land development plan and plat shall contain a note in a form satisfactory to the Department designating the entity responsible for construction and/or maintenance of the Stormwater management facilities consistent with an approved Operation and Maintenance Plan and, in the event that the responsible entity fails to do so, granting to the Department the right, but not the duty, to enter upon the premises to repair or restore said facilities, to charge and assess the costs thereof to each owner of property within the development and to enforce said charges and assessments by lien upon each property within the development. In addition, the developer shall record with the Cochise County Recorder a declaration of covenants in a form satisfactory to the County setting forth the rights and responsibilities of the homeowners' association for operation and maintenance of the Stormwater management facilities, system and/ or devices, prior to the sale of individual lots. The terms of this covenant and restriction shall run with the land and be binding upon the initial grantees of each lot within the subdivision, his, her or their heirs, administrators, successors and assigns.

**11.07 Operation and Maintenance Plans**

1. An Operation and Maintenance Plan shall be prepared to identify the ownership, operation and maintenance responsibilities and as-built conditions for all Stormwater management facilities. At a minimum, the operation and maintenance plan shall include the following:
  - a. Any obligations concerning perpetuation and/or maintenance of natural drainage or infiltration facilities, and other facilities identified within the Stormwater permit.
  - b. A description of the permanent Stormwater management practices on the site, explaining how each practice is intended to function and operate over time.
  - c. All drainage and access easements shall be depicted and any site restrictions to be recorded against the property shall be identified on the plan. All such easements and restrictions shall be perfected to run with the land and be binding upon the landowner and any successors in interest.

- d. Ownership of and responsibility for operation and maintenance of Stormwater management facilities, including names and contact information, shall be required.
- e. A description of all Stormwater management facilities, written in a clear manner, consistent with the knowledge and understanding of the intended user.
- f. A general description of operation and maintenance activities and responsibilities for facilities held in common or on-lot, including but not limited to: lawn care, vegetation maintenance, clean out of accumulated debris and sediment (including from grates, trash racks, inlets, etc.), liability insurance, maintenance and repair of Stormwater management facilities, landscaping and planting, payment of taxes and construction of any kind associated with the use, benefit and enjoyment of the facilities by the owners.
- g. A description of routine maintenance actions and schedules necessary to ensure proper operation of Stormwater management facilities.
- h. Written statement by owner giving assurances that no action will be taken by any lot owner to disrupt or in any way impair the effectiveness of any Stormwater management facilities, setting forth in deed restrictions the ability but not the duty of the Department to take corrective measures if it is determined at any time that stipulated permanent Stormwater management facilities have been eliminated, altered, or improperly maintained, including the ability of the Department to cause the work to be done and lien all costs against the property should the required corrective measures not be taken by the lot owner, following written notification, within a period of time set by the Director.
- i. An explanation of how the parties responsible for the long-term operation and maintenance of Stormwater management facilities shall make records of the installation and of all maintenance and repairs and shall retain the records until the site use changes and new permits and operation and maintenance plans are requested and approved. These records shall be submitted to the Department as established by the Operation and Maintenance Plan or if otherwise required by the Department.

**11.07.01      Recording of Operation and Maintenance Plans**

1. The owner of any land upon which permanent Stormwater management facilities and/or BMPs will be placed, constructed or implemented as described in an approved Drainage Analysis, Construction Plan and the Operations and Maintenance Plan shall record the following documents with the Cochise County Recorder within 21 days of approval of the Operations and Maintenance Plan by the County.
  - a. Any necessary Operations and Maintenance Agreement(s); and,
  - b. Necessary access and/or drainage easements. Items and/or conditions may be required to be included in any Operation and Maintenance Agreement where

determined necessary by the Department to guarantee the satisfactory operation and maintenance of all permanent Stormwater facilities, system and/ or devices. The Agreement shall be subject to the review and approval of the Department.

#### **11.08 Drainage Provisions and Flood Control Regulations**

1. Provisions for on-site Stormwater retention/detention and off-site Stormwater drainage both entering and leaving the property may be required by the Cochise County Flood Control District. This Stormwater Ordinance and all amendments hereto shall be consistent with and subject to the regulations and provisions of the Floodplain Regulations adopted by the Cochise County Flood Control District.
2. Erosion Control measures should be in conformance with standards identified in the Cochise County Floodplain Regulations or other EPA, ADEQ or locally approved method.
3. Stormwater pollution prevention is to be addressed through the use of BMPs to the maximum extent practicable to comply with federal, state, county or local regulations or ordinances.

#### **SECTION 12 NOTIFICATION OF SPILLS**

1. Notwithstanding other requirements of law, as soon as any person responsible for a facility or operation, or responsible for emergency response for a facility or operation has information of any known or suspected release of materials which are resulting or may result in illegal discharges or pollutants discharging into the MS4, or waters of the U.S., said person shall take all necessary steps to ensure the discovery, containment, and cleanup of such release. In the event of such a release of hazardous materials said person shall immediately notify emergency response agencies, and ADEQ.
2. In the event of a release of non-hazardous materials, said person shall notify the County in person or by phone no later than the next business day. Contact Information is:  
Highway and Flood Plain Department  
1415 Melody Lane, Building F  
Bisbee, AZ 85603  
Phone: 520-432-9300  
Department Website:  
<https://www.cochise.az.gov/highway-and-floodplain/small-municipal-separate-storm-sewer-systems-ms4>
3. Notifications in person or by phone shall be confirmed by written notice addressed and mailed to the Department within three business days of the phone notice. If the discharge

of prohibited materials emanates from a commercial or industrial establishment, the owner or operator of such establishment shall also retain an on-site written record of the discharge and the actions taken to prevent its recurrence. Such records shall be retained for at least three years.

**SECTION 13 VIOLATIONS DEEMED A PUBLIC NUISANCE**

1. In addition to the enforcement processes and penalties provided, any condition caused or permitted to exist in violation of any of the provisions of this Ordinance is a threat to public health, safety, and welfare, and is declared and deemed a nuisance, and may be summarily abated or restored at the violator's expense, and/or a civil action to abate, enjoin, or otherwise compel the cessation of such nuisance may be taken.

**END**

# COCHISE COUNTY

## Small Municipal Separate Storm Sewer System (MS4) Ordinance

Presented by: Jackie Watkins, P.E.  
County Engineer



***Public Programs...Personal Service***

## COCHISE COUNTY

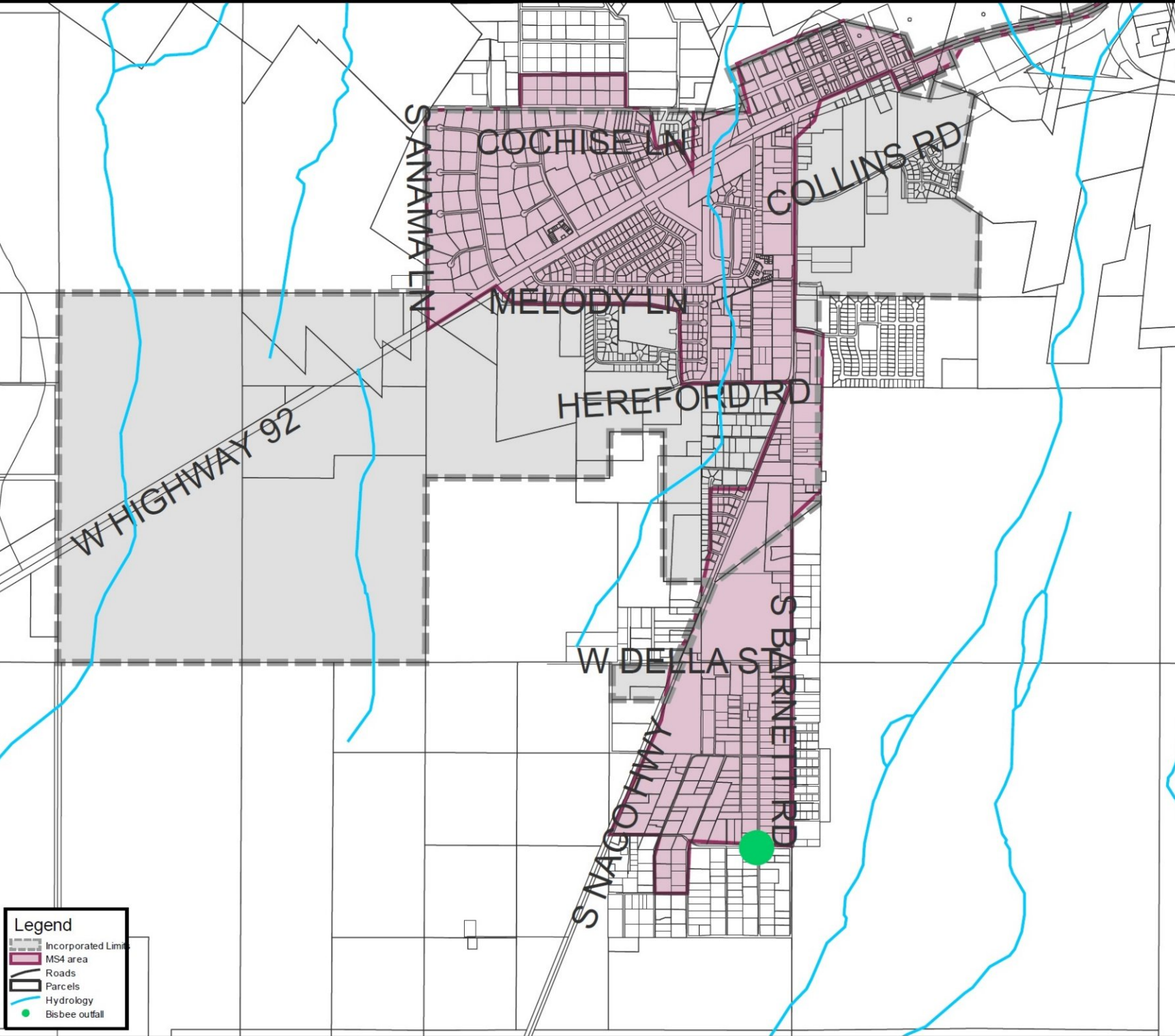
- 1972 Clean Water Act (CWA) required Environmental Protection Agency (EPA) to regulate discharge of pollutants to stormwater
- Arizona Department of Environmental Quality (ADEQ) administers the program for EPA
- Municipal Separate Storm Sewer System (MS4) includes roads with streets, catch basins, curbs, gutters, roadside ditches, man-made channels or storm drains.
- 2010 census 3 portions of un-incorporated urbanized area of the County ADEQ determined met the requirements of a small MS4, Bisbee, Douglas and Sierra Vista
- 2016 County obtained ADEQ Permit AZG2016-002





Bisbee

This map is a product of the Cochise County GIS Information Technology Dept.



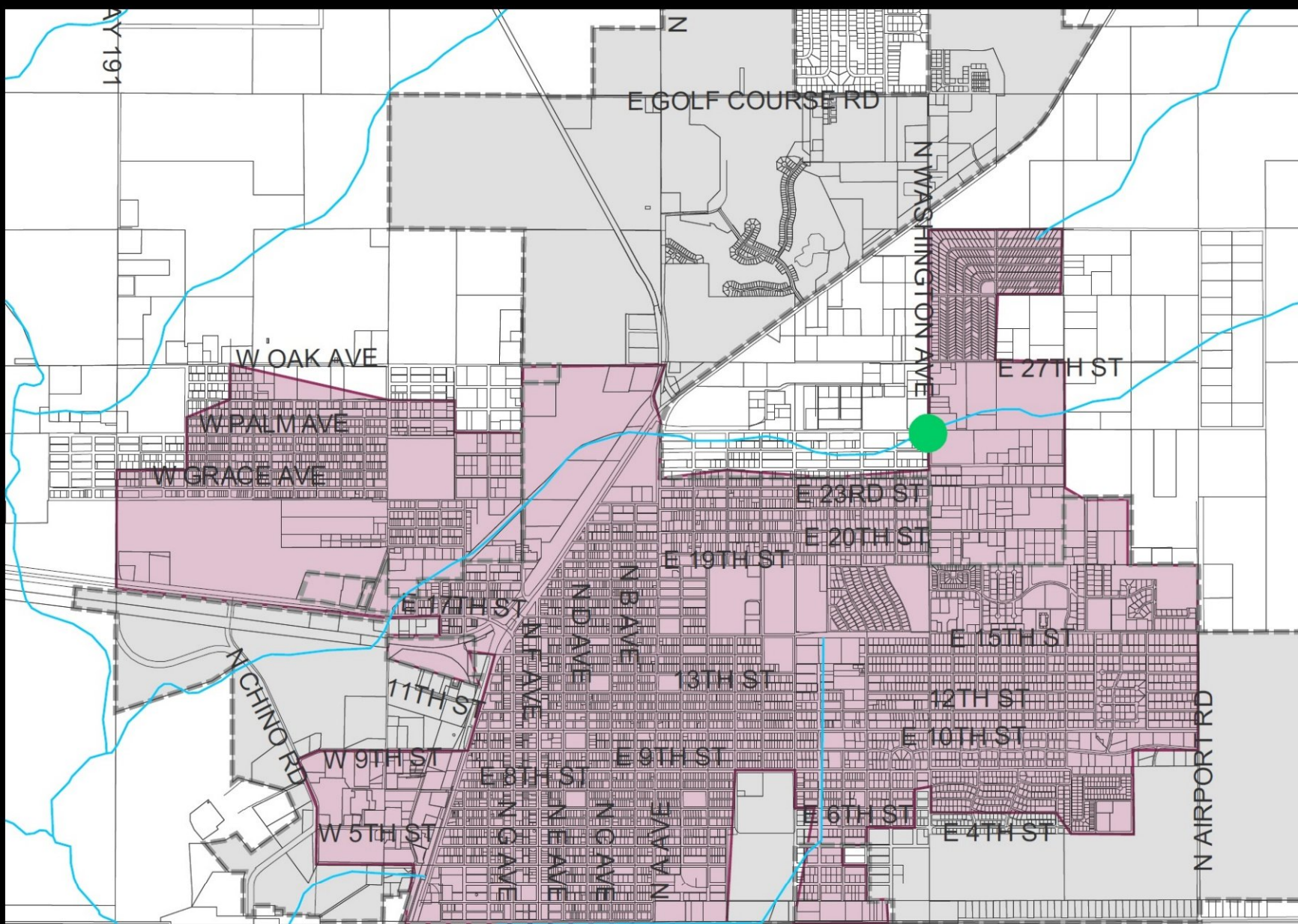
**Legend**

- Incorporated Limits
- MS4 area
- Roads
- Parcels
- Hydrology
- Bisbee outfall



# Douglas

This map is a product of the Cochise County GIS Information Technology Dept.



**Legend**

- Incorporated Limits
- MS4 area
- Roads
- Parcels
- Hydrology
- Douglas outfall



# COCHISE COUNTY

## Cochise County Stormwater Ordinance

- Non-Stormwater Discharges
- Commercial, Industrial or Construction Activity
- Violations, Enforcement, Penalties
- Monitoring of Discharges
- Post-Construction Stormwater Management





**Cochise County**  
**Community Development**  
**Highway and Floodplain Division**

*Public Programs...Personal Service*  
www.cochise.az.gov

**DATE:** September 14, 2018  
**TO:** Flood Control District Board  
**FROM:** Jackie Watkins, P.E., P.T.O.E., County Engineer Highway & Floodplain  
**SUBJECT: Approve the Stormwater Ordinance**

**Recommendation:** This department recommends to adopt the Stormwater Ordinance.

**Background (Brief):** The Arizona Department of Environmental Quality has determined three areas of unincorporated Cochise County meet the requirements of small Municipal Separate Storm Sewer System (MS4). In September 2016, County obtained permit for the MS4 and ADEQ issued AZPDES Permit No. AZG2016-002. This permit requires the County to adopt a Stormwater Ordinance that authorizes the discharge of stormwater.

**Fiscal Impact & Funding Sources:** If approved, there is a \$5,000/ year permit fee.

**Next Steps/Action Items/Follow-up:** If approved, staff will administer development within affected areas within the new MS4 boundaries.

**Impact of Not Approving:** Should the item not be approved; the County will be in violation of AZPDES Permit No. AZG2016-002. Subject to a \$25,000 per day fine.

**Highway and Floodplain**  
1415 Melody Lane, Building F  
Bisbee, Arizona 85603  
520-432-9300  
520-432-9337 fax  
1-800-752-3745  
highway@cochise.az.gov  
floodplain@cochise.az.gov

**Planning, Zoning and Building Safety**  
1415 Melody Lane, Building E  
Bisbee, Arizona 85603  
520-432-9300  
520-432-9278 fax  
1-877-777-7958  
planningandzoning@cochise.az.gov

**ORDINANCE 049-18**

**STORMWATER ORDINANCE**

**WHEREAS**, the State of Arizona, Department of Environmental Quality provides authorization to discharge stormwater under the Arizona Pollution Discharge Elimination System (AZPDES) General Permit AZG2016-002 to local governments and gives them the authority to adopt a Stormwater Ordinance pursuant Arizona Revised Statutes (A.R.S.) and Title 49, Chapter 2, Article 3.1, the Arizona Administrative Code (A.A.C.) and Title 18, Chapter 9, Article 9; and

**WHEREAS**, a public hearing has been properly noticed and held to consider the contents and merits of the ordinance.

**NOW THEREFORE, IT IS HEREBY RESOLVED**, that the Cochise County Flood Control Stormwater Ordinance, as shown in Attachment A, is hereby adopted and shall become effective on September 25, 2018.

\_\_\_\_\_  
Peggy Judd, Chairman  
Cochise County Flood Control District Board

ATTEST:

APPROVED AS TO FORM:

\_\_\_\_\_  
Arlethe G. Rios,  
Clerk of the Board

\_\_\_\_\_  
Elda E. Orduno,  
Chief Civil Deputy County Attorney

PERMIT NO. AZG2016-002

STATE OF ARIZONA  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
WATER QUALITY DIVISION  
PHOENIX, ARIZONA 85007

ARIZONA POLLUTANT DISCHARGE ELIMINATION SYSTEM  
GENERAL PERMIT FOR STORMWATER DISCHARGES  
FROM SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEMS  
TO WATERS OF THE UNITED STATES

This permit provides authorization to discharge under the Arizona Pollutant Discharge Elimination System (AZPDES) program, in compliance with the provisions of the Arizona Revised Statutes (A.R.S) and, Title 49, Chapter 2, Article 3.1, the Arizona Administrative Code (A.C.C.), and Title 18, Chapter 9, Article 9.

This general permit specifically authorizes stormwater discharges from small municipal separate storm sewer systems (MS4s) in Arizona to Waters of the United States, pursuant to 40 CFR § 122.34. All discharges authorized by this general permit shall be consistent with the terms and conditions of this general permit.

This general permit becomes effective on September 30, 2016.

This general permit and the authorization to discharge expires at midnight, September 29, 2021.

Signed this 29<sup>th</sup> day of September, 2016.

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

  
Trevor Baggione, Director  
Water Quality Division

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## 1.0 COVERAGE UNDER THIS GENERAL PERMIT

### 1.1 Permit Area

This permit covers and applies to traditional and non-traditional regulated, Small Municipal Separate Storm Sewer Systems (MS4s) in Arizona, except those located in Indian Country:

- a. City or Town – Urbanized area(s) determined by the most recent Decennial Census by the Bureau of Census, including areas annexed during the permit term;
- b. County – Un-incorporated urbanized area determined by the most recent Decennial Census by the Bureau of Census;
- c. State, federal, and other publicly-owned properties that the director determines contributes to a violation of a water quality standard or is a significant contributor of pollutants to Waters of the U.S. and
- d. Areas outside of an urbanized area as designated by the director pursuant to Arizona Administrative Code (A.A.C.) R18-9-A902(D).

### 1.2 Eligibility

This permit authorizes the discharge of stormwater from small municipal separate storm sewer systems (MS4s) provided the permittee complies with all the requirements of this general permit, and the MS4:

- a. Is located fully or partially within an urbanized area as determined by the latest Decennial Census by the Bureau of Census; or
- b. Is designated for permit authorization by the department under the A.A.C. R-18-9-A902(D)(1), R18-9-A902(D)(2), R-18-9-A902(E), and R18-9-A905(A)(1)(f) which incorporates 40 CFR §122.32.

### 1.3 Non-Stormwater Discharges

**1.3.1** Except as provided in Part 1.3.2, the permittee shall prohibit non-stormwater discharges into its MS4 unless the discharges are authorized by a separate NPDES or AZPDES permit.

**1.3.2** The following categories of non-stormwater discharges (occurring within the jurisdiction of the permittee) are prohibited if the discharges are identified by the permittee as significant contributors of pollutants to the MS4. If any of the following categories of discharges are identified as a significant contributor, the permittee must address the category as an illicit discharge as specified in Part 6.4.3.1:

- a. Water line flushing
- b. Landscape irrigation
- c. Diverted stream flows
- d. Rising ground waters
- e. Uncontaminated ground water infiltration
- f. Uncontaminated pumped groundwater
- g. Discharges from potable water sources
- h. Foundation drains
- i. Air conditioning condensate
- j. Irrigation water

- k. Springs
- l. Water from crawl space pumps
- m. Footing drains
- n. Lawn watering
- o. Individual residential car washing
- p. Discharges from riparian habitats and wetlands
- q. Dechlorinated swimming pool discharges
- r. Street wash water, and
- s. Discharges or flows from firefighting activities

#### **1.4 Limitations of Coverage**

Except as provided in Part 1.3.2, this general permit does not authorize:

- 1.4.1** Discharges mixed with sources of non-stormwater unless the non-stormwater discharges comply with an applicable NPDES or AZPDES permit, as addressed in Part 1.3.1;
- 1.4.2** Stormwater discharges associated with industrial activity as defined in 40 CFR §122.26(b)(14)(i)-(ix) and (xi);
- 1.4.3** Stormwater discharges associated with construction activity as defined in 40 CFR §122.26(b)(14)(x) or 40 CFR §122.26(b)(15);
- 1.4.4** Stormwater discharges currently covered under another permit;
- 1.4.5** Discharges to impaired waters listed (including not-attaining waters) if discharge(s) from the MS4 contain, or may contain, pollutant(s) for which the receiving water is listed except:
  - a. If a TMDL has been established and the stormwater management program (SWMP) is consistent with the requirements of the TMDL, including any wasteload allocation or load allocation in the TMDL. The SWMP must also identify Best Management Practices (BMPs) the permittee will use to meet wasteload allocations or load allocations and include monitoring for associated pollutant(s); and
  - b. If a TMDL has not been established and the SWMP includes a section describing how the program will control the discharge of 303(d) listed pollutants and ensure to the maximum extent practicable that discharges from the MS4 will not cause or contribute to exceedances of surface water quality standards. The SWMP must also identify BMPs the permittee will use to control discharges and include monitoring of their effectiveness.
- 1.4.6** Discharges that do not comply with Arizona's anti-degradation rule R18-11-107;
- 1.4.7** Stormwater discharges prohibited under 40 CFR §122.4.

#### **1.5 Permit Compliance**

Non-compliance with any requirement of this permit constitutes a violation of the permit and may result in an enforcement action, including injunctive relief and/or penalties under state and federal laws.

## 2.0 AUTHORIZATION UNDER THIS GENERAL PERMIT

Upon the effective date of this permit, existing and new permittees automatically have coverage under this permit for up to 180 days. Existing and new Small MS4 operators who wish to retain coverage under this permit must submit a complete and accurate Notice of Intent to ADEQ within 180 days of the effective date of this permit.

### 2.1 Obtaining Permit Coverage

**2.1.1** A person seeking authorization to discharge under this general permit shall submit to the department a complete and accurate Notice of Intent (NOI) on a form provided by the department and includes, at a minimum, the following information:

- a. Name of MS4
- b. Operator name and title
- c. Mailing address
- d. Annual fee billing information
- e. Contact person
- f. Contact information
- g. Estimated population (based on most recent Decennial Census by the Bureau of Census)
- h. Receiving water(s) – those listed in A.A.C., Title 18, Chapter 11, Article 1, Appendix B
- i. The number of outfalls that discharge to a receiving water listed in A.A.C. R18-11, Appendix B
- j. Outfall, name or identification of outfalls required in “i,” above
- k. Identification of a minimum of five (5) outfalls (or screening points) to be included in the visual stormwater discharge monitoring program (Part 6.4.3.8)
- l. Identification of impaired and not-attaining waters that receive discharges from the MS4, including the pollutant(s) causing the impairment, total maximum daily load, and waste load allocation(s), as applicable
- m. Identification of Outstanding Arizona Waters that receive discharges from the MS4
- n. BMPs and measurable goals for each of the six (6) minimum control measures (MCMs) identified in Part 6.4
- o. Outfall name or identification of those outfalls to be utilized for analytical monitoring of stormwater discharges to impaired, not-attaining waters and Outstanding Arizona Waters
- p. Schedule for developing and implementing BMPs and associated program elements specified in this permit
- q. Proposal for alternative to visual stormwater discharge monitoring, if applicable (Part 6.4.3.8)
- r. Additional information specified in the NOI for ADEQ to determine eligibility under this permit.

**2.1.2** Eligible persons wishing to retain coverage under this permit (existing and new MS4 operators) must submit a complete and accurate NOI to the department within 180 days of the effective date of this permit. Small MS4 operators notified after the effective date of this permit must submit a NOI within 180 days of receiving notification in writing by ADEQ that they are subject to permitting. Persons failing to submit a new NOI within the applicable timeframe will be considered discharging without a permit.

- 2.1.3** If the department notifies the applicant of deficiencies or inadequacies in any portion of the NOI, or requests additional information, the applicant must correct the deficient or inadequate portions and submit a revised NOI that addresses the deficiencies within seven (7) days of receiving notification.
- 2.1.4** The permittee must submit a revised NOI to the department within fifteen (15) days whenever there is a change of information (certifying official, mailing address, contact information, BMPs, measurable goals, etc.).
- 2.1.5** Notice of Intent forms submitted to ADEQ will be posted on the ADEQ website and made available for public comment. ADEQ may request additional information from the application based on public comments.

## **2.2 Permit Fees**

Permittees are subject to fees established in A.A.C. R18-14-109. The department will issue an invoice annually to the permittee at the address identified on the NOI.

New permittees must submit the applicable fee with their NOI.

Existing permittees are not required to include the annual fee when submitting an NOI to obtain coverage under this permit.

## **2.3 Terminating Coverage**

A permittee may terminate coverage under this general permit by submitting a notice of termination (NOT) on a form provided by the department. Authorization to discharge terminates at midnight on the day the NOT is received by the department.

If the operator does not obtain coverage under an alternate AZPDES permit that authorizes the discharge of stormwater prior to submitting the NOT, the operator will be considered discharging without a permit.

NOTs must be signed in accordance with Part 9.9 and must be submitted to the following address until such time as electronic submission is available:

Arizona Department of Environmental Quality  
Surface Water Section (5415A-1)  
1110 West Washington Street  
Phoenix, AZ 85007

## **2.4 Coverage under an Individual Permit**

Pursuant to A.A.C. R18-9-C902, a person may request, or be required by the director, to obtain coverage under an individual permit.

## **2.5 Continuation of this General Permit**

If this permit is not reissued prior to the expiration date, it will be administratively continued in accordance with A.A.C. R18-9-C903 and remain in force and effect for discharges that were authorized prior to expiration.

If the MS4 operator does not submit a timely, complete, and accurate NOI requesting authorization to discharge under a reissued permit or a timely request for authorization under an individual or alternative general permit, authorization under this permit will terminate on the due date for the NOI under the reissued permit unless otherwise specified in the reissued permit.

### **3.0 STORMWATER PROGRAM ENFORCEMENT**

#### **3.1 Establish Enforcement Procedures**

Within twenty-four (24) months from the effective date of this permit, existing and new permittees shall adopt and implement local ordinance(s) or other regulatory mechanism(s) that provide adequate enforcement procedures that satisfy the requirements of this permit to control pollutant discharges into its MS4.

#### **3.2 Enforcement Requirements**

If not already developed, the permittee must establish and exercise enforcement procedures to comply with this permit. To be considered adequate, enforcement procedures must, at a minimum, address the following:

- a. Prohibit and eliminate illicit connections and discharges to the MS4;
- b. Control the discharge of spills, and prohibit dumping or disposal of materials other than stormwater into the MS4;
- c. Require compliance with conditions in the permittee's ordinances, permits, contracts, or orders;
- d. Require owners/operators of construction activities, new or redeveloped land, and industrial and commercial facilities to minimize the discharge of pollutants to the MS4 through the installation, implementation, and maintenance of stormwater control measures;
- e. To the extent allowed under State law, the permittee must have methods to enter private property for the purpose of inspecting at reasonable times any facilities, equipment, practices, or operations related to stormwater discharges to determine whether there is compliance with local stormwater control ordinances/standards;
- f. The permittee must promptly require violators cease and desist illicit discharges or discharges of stormwater in violation of any ordinance or standard and/or cleanup and abate such discharges;
- g. To the extent allowable under State and federal law, the permittee must impose civil or criminal sanctions (including referral to a city or district attorney) and escalate corrective response, consistent with its enforcement response;
- h. Identify departments within the permittee's jurisdiction that conduct stormwater-related activities and their roles and responsibilities under this permit. Include an up-to-date organizational chart specifying these departments and key personnel positions;
- i. Identification of the local administrative and legal procedures and ordinances available to mandate compliance with stormwater-related ordinances and therefore with the conditions of this permit; and
- j. A description of how stormwater related-ordinances are implemented and appealed.

#### **3.3 Enforcement Response Plan(s)**

The permittee shall develop an enforcement response plan (ERP) that specifies how it will exercise its legal authority to comply with this permit. The ERP shall include a prioritization schedule that establishes escalated enforcement for non-compliance of illicit discharges and construction activities. In developing the ERP, the permittee shall include the following factors in prioritizing escalated enforcement: severity of non-compliance, repeated non-compliance, proximity to a receiving water or storm sewer system, and other appropriate factors. The ERP must be developed and implemented within twenty-four (24) months of obtaining permit coverage.

#### **4.0 STORM SEWER SYSTEM MAPPING**

The permittee must prepare and maintain an up-to-date map of the municipal separate storm sewer system. At a minimum, the map system must be sufficient in scope and detail to identify and isolate illicit discharges. The permittee is not required to submit storm sewer system mapping infrastructure to ADEQ unless specifically requested, and shall make mapping information available to ADEQ or EPA to assess permit compliance.

##### **4.1** Develop a map that includes, at a minimum, the following components:

- a. Storm sewer system (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains that are owned or operated by the permittee and convey stormwater to Waters of the U.S.),
- b. Location of all outfalls, and
- c. Name and location of all Waters of the U.S. that receive discharges from outfalls.

##### **4.2** Existing permittees shall update map(s) within twelve (12) months from the effective date of this permit to include areas added as a result of the most recent Decennial Census (including annexed areas) and annually thereafter. Updates shall include mapping components identified in Section 4.1 above.

##### **4.3** New permittees must include a mapping schedule in their NOI. The schedule must include how the permittee will conduct the mapping process, a timeline, measurable goals and estimated completion date(s). The permittee shall have its storm system mapped by the end of the fourth year of permit coverage.

##### **4.4** The permittee must include a narrative description of the status of storm sewer system mapping, outfall mapping, and waters of the U.S. that receive discharges from the outfalls (including percent complete) in each annual report (see Part 8.3).

## 5.0 STORMWATER MANAGEMENT PROGRAM

The permittee shall develop, implement, and enforce a SWMP that is designed to reduce the discharge of pollutants from the MS4 to the maximum extent practicable, to protect water quality, and to satisfy the appropriate water quality requirements of the Clean Water Act. The program shall be documented and available for review by ADEQ, U.S. EPA, and interested persons.

Existing permittees shall modify or update their existing SWMP to meet the terms and conditions of this permit within six (6) months of the effective date of this permit.

New permittees shall develop a SWMP that meets the conditions of this permit within one (1) year of the effective date of this permit.

At a minimum, all permittees must annually assess, evaluate, and update the BMPs and SWMP and incorporate any revisions necessary to maintain permit compliance. The annual SWMP review must occur in connection with preparing the annual report (see Parts 8.1 and 8.3).

### 5.1 Contents of the Stormwater Management Program

At a minimum, the SWMP shall contain the following:

- a. Listing of all receiving waters, their classification under the applicable state water quality standards, any impairment(s) and associated pollutant(s) of concern, applicable TMDLs and WLAs, and number of outfalls from the MS4 that discharge to each waterbody;
- b. The process and schedule for creating and maintaining an up-to-date map that includes, at a minimum, the storm sewer system, outfalls, and receiving waters;
- c. Listing of all discharges that cause or contribute to the exceedance of an applicable surface water quality standard;
- d. Description of any other practices to achieve compliance with Part 6.1 and 6.2;
- e. Description of practices to achieve compliance with Parts 6.3 and 6.4 (MEP and MCM requirements). For each permit condition identify:
  1. The personnel, position or department responsible for the measure,
  2. The BMPs for each control measure or permit requirement, and
  3. The measurable goal(s) for each BMP. Each measurable goal shall include milestones and timeframes for its implementation and have a quantity and/or quality associated with its endpoint. Each goal shall have a measure of assessment.
- f. Description of practices to achieve compliance with applicable TMDLs or waste load allocation, including measurable goal(s) for each BMP and corresponding milestones and timeframes. Each goal must have an associated measure of assessment;
- g. Analytical monitoring program for impaired or not-attaining waters, and for Outstanding Arizona Waters to ensure compliance with permit limitations, wasteload allocation(s), and surface water quality standards.

The analytical monitoring program shall include a Sampling and Analyses Plan (SAP) that includes the following minimum components: sample collection, equipment and containers, decontamination, calibration procedures, sample frequency (based on illicit discharge characteristics), document site conditions, field notes, sample preservation, tracking (chain-of-custody), and handling;

- h. Protocol for annual program evaluation (Part 8.1). Update annually and maintain copies; and
- i. Identification of personnel (department, position, etc.) responsible for program implementation.

## **5.2 Stormwater Management Plan Availability**

The permittee shall retain a copy of the current SWMP required by this permit at the office or facility identified on the NOI and shall be available upon request by ADEQ or U.S. EPA, or their authorized representatives.

A copy of the most up-to-date SWMP shall be made available to the public during normal business hours and posted on the permittee's website.

## **6.0 EFFLUENT LIMITATIONS**

The permittee shall develop, implement and enforce a program to reduce the discharge of pollutants from the MS4 to the maximum extent practicable, to protect water quality, and to satisfy the appropriate water quality requirements of the Clean Water Act and the Arizona Surface Water Quality Standards.

### **6.1 Water Quality Based Effluent Limitations**

Pursuant to Clean Water Act 402(p)(3)(B)(iii), this permit includes provisions to ensure that discharges from the permittee's small MS4 do not cause or contribute to an exceedance of surface water quality standards, in addition to requirements to reduce the discharge of pollutants to the maximum extent practicable.

### **6.2 Surface Water Quality Standards**

The permittee shall implement the six (6) minimum control measures specified in Part 6.4 to the maximum extent practicable to protect water quality, and to satisfy water quality requirements of the Clean Water Act, including attainment of surface water quality standards.

If the permittee discovers, or is otherwise notified by ADEQ or U.S. EPA, that a discharge from the MS4 is causing or contributing to an exceedance of an applicable surface water quality standard, the permittee shall expand or better tailor its BMPs within the scope of the six (6) minimum control measures in Part 6.4 to achieve progress toward attainment of surface water quality standards.

To assure compliance with permit limitation, ADEQ may require the permittee to conduct analytical monitoring and will provide notice to the permittee in writing (see also Part 7).

### **6.3 Requirements to Reduce the Discharge of Pollutants**

The permittee shall reduce the discharge of pollutants to the maximum extent practicable (MEP), to protect water quality, and to satisfy the appropriate requirements of the Clean Water Act by implementing the six (6) minimum control measures in part 6.4.

### **6.4 Minimum Control Measures**

- a. Existing permittees shall continue to implement their existing SWMPs while making updates pursuant to this permit. This permit does not extend the compliance deadlines set forth in Permit AZG2002-002.
- b. Implementation of one (1) or more of the minimum control measures described in Parts 6.4.1 - 6.4.6 or other permit requirements may be shared with another entity (including another interconnected MS4) or the other entity may fully implement the measure or requirement, if the following requirements are satisfied:
  - The other entity implements the control measure as specified in the SWMP;
  - The particular control measure or component thereof undertaken by the other entity is at least as stringent as the corresponding permit requirement;
  - The other entity agrees to implement the control measure on the permittee's behalf. The annual report must specify that the permittee is relying on another entity to satisfy some of its permit obligations and specify what those obligations are;
  - The permittee remains responsible for compliance with all permit obligations if the other entity fails to implement the control measures (or component thereof). The permittee may enter into a legally-binding agreement with the other entity regarding the other entity's

performance of control measures, but the permittee remains ultimately responsible for permit compliance.

#### **6.4.1 Public Education and Outreach**

Objective: The permittee shall implement an education program that includes educational goals based on stormwater issues of significance within the MS4 area. The program shall include a focus on pollutants of concern for impaired and TMDL waters, and priority waters that receive a discharge from the MS4. The ultimate objective of a public education program is to increase knowledge and change behavior of the public so that pollutants in stormwater are reduced.

**6.4.1.1** The permittee shall implement the public education program required by 40 CFR §122.34(b)(2) by distributing educational material to the MS4 community. The educational program shall define goals, express specific messages, define the targeted audience for each message, and identify responsible parties for program implementation. At a minimum, the program shall provide information concerning the impact of stormwater discharges on water bodies within the community, especially waters that are impaired, not-attaining, or identified as Outstanding Arizona Waters. The program shall identify steps and/or activities the public can take to reduce the pollutants in stormwater runoff and their impacts to the environment.

**6.4.1.2** The program shall focus on messages for specific audiences as well as show progress toward the defined educational goals of the program. The permittee shall identify methods that it will use to evaluate the effectiveness of the educational messages and the overall education program. Any methods used to evaluate the effectiveness of the program shall be tied to the defined goals of the program and the overall objective of changes in behavior and knowledge.

**6.4.1.3** The permittee shall modify any ineffective messages or distribution techniques.

**6.4.1.4** The permittee shall document in each annual report: the messages for each audience; the method of distribution; the measures/methods used to assess the effectiveness of the messages, and the method/measures used to assess the overall effectiveness of the education program.

#### **6.4.2 Public Involvement and Participation**

Objective: The permittee shall provide opportunities to engage the public to participate in the review and implementation of the permittee's SWMP.

**6.4.2.1** All public involvement activities shall comply with state and local public notice requirements. The SWMP and all annual reports shall be available to the public. The permittee is encouraged to satisfy this requirement by posting records online.

**6.4.2.2** The permittee shall annually provide the public an opportunity to participate in the review and implementation of the SWMP.

**6.4.2.3** The permittee shall report on the activities undertaken to provide public participation opportunities including compliance with Part 6.4.2.1. Public participation opportunities pursuant to Part 6.4.2.2 may include, but are not limited to, websites, hotlines, clean-up teams, monitoring teams, or an advisory committee.

### **6.4.3 Illicit Discharge Detection and Elimination (IDDE) Program**

The permittee shall implement an IDDE program to systematically find and eliminate sources of non-stormwater to its municipal separate storm sewer system and to implement procedures to prevent illicit connections and discharges.

The IDDE program shall be recorded in a written document. The IDDE program shall include each of the elements described in Part 6.4.3.8 (a through c), unless the permittee provides a written explanation within the IDDE program as to why a particular element is not applicable to the permittee. For existing permittees, the written IDDE program shall be completed within six (6) months of the effective date of this permit. For new permittees, the written IDDE program shall be completed within one (1) year of the effective date of the permit. The permittee shall implement the IDDE program in accordance with the goals and milestones set forth in Parts 5.0 and 6.4.3.

#### **6.4.3.1. Definitions and Prohibitions**

The permittee shall prohibit illicit discharges (including sanitary sewer overflows) to and from its MS4 and require removal of such discharges consistent with Part 6.4.3.5 of this permit. An illicit discharge is any discharge to a municipal separate storm sewer that is not composed entirely of stormwater *except*:

- a. Discharges authorized under a separate NPDES permit that authorize a discharge to the MS4;
- b. Non-stormwater discharges allowed by Part 1.3.2.

#### **6.4.1.5 Enforcement Procedures**

The IDDE program must ensure the permittee has adequate enforcement procedures to accomplish the following tasks: prohibit illicit discharges; investigate suspected illicit discharges; eliminate illicit discharges, including discharges from properties not owned or operated by the MS4 that discharge into the MS4 system; and implement appropriate enforcement procedures and actions. Adequate enforcement procedures consists of a current effective ordinance, by-law, or other regulatory mechanism. For existing permittees, the ordinance, by-law, or other regulatory mechanism was a requirement of AZG2002-002 and is required to be effective under that permit. The written IDDE program shall include a reference or citation of the authority the permittee will use to implement all aspects of the IDDE program as specified in Part 3.0.

#### **6.4.3.3 Statement of IDDE Program Responsibilities**

The permittee shall establish a written statement that clearly identifies responsibilities with regard to eliminating illicit discharges. The statement shall identify the lead municipal agency or department responsible for implementing the IDDE Program as well as any other agencies or departments that may have responsibilities for aspects of the program. Where multiple departments and agencies have responsibilities to the IDDE program, specific areas of responsibility shall be defined and processes for coordination and data sharing shall be established and documented.

#### **6.4.3.4 Illicit Discharge Prevention and Reporting**

The permittee shall develop and implement process(es) and procedures designed to prevent, identify, report, and mitigate illicit discharges to and from the MS4 (this may be a part of the education program required by Part 6.4.1; reporting (hotlines), and training of public employees involved in the IDDE program).

#### **6.4.3.5 Eliminating Illicit Discharges**

Illicit discharges to the MS4 are prohibited and constitutes a violation of this permit when the permittee is not fully implementing applicable permit requirements and the SWMP.

Upon detection of an illicit discharge, the permittee shall eliminate it as expeditiously as possible. The permittee shall identify and notify all responsible parties for any such discharge and require immediate cessation in accordance with its legal authorities. Where elimination of an illicit discharge is not immediately possible, the permittee shall establish an expeditious schedule for its elimination and report the dates of identification and schedules for removal in the permittee's annual reports. The permittee shall immediately commence actions necessary for elimination. In the interim, the permittee shall take all reasonable and prudent measures to minimize the discharge of pollutants to its MS4.

To the extent known, the permittee shall include in the annual report the following information: the location of the illicit discharge and its source(s); a description of the discharge; estimated illicit discharge duration; the method of discovery; date of discovery; date of elimination; mitigation or enforcement action; responsible person (if known); and estimated volume.

#### **6.4.3.6 Non-Stormwater Discharges**

The non-stormwater discharges identified in Part 1.3.2 do not need to be addressed as an illicit discharge unless it is determined by the permittee that any of these sources is a significant contributor of pollutants. Non-stormwater discharges from the MS4 that cause or contribute to a violation of a surface water quality standard where the permittee fails to take action to eliminate the discharge of pollutants constitutes a permit violation.

#### **6.4.3.7 Existing Permittees IDDE Programs**

During the development of the new components of the IDDE program required by this permit, existing permittees must continue to implement their current IDDE program required by the AZG2002-002 to detect and eliminate illicit discharges to its MS4.

#### **6.4.3.8 Visual Monitoring**

The permittee shall develop, implement, and maintain a visual monitoring program that includes both dry weather and stormwater discharges to identify, monitor, and eliminate illicit discharges; and to ensure compliance with effluent limitations in this permit.

The monitoring programs shall include written procedures for conducting visual monitoring of outfalls from the MS4.

Monitoring procedures shall include, at a minimum, the following information/observations: outfall identification, personnel, time, date, weather conditions at time of inspection, estimated flowrate, apparent odor, color, clarity, debris, floatables, and other necessary information to characterize the screening.

In the event an illicit discharge is discovered as a result of dry or wet weather outfall monitoring, the permittee shall implement measures to eliminate the illicit discharge (part 6.4.3.5).

For each confirmed illicit discharge, the permittee shall include in the annual report the following information: the location of the discharge and its source(s); a description of the discharge; estimated illicit discharge duration; the method of discovery; date of discovery; date of elimination; mitigation or enforcement action; responsible person (if known); and estimated volume.

**a) Visual Dry Weather Outfall Monitoring**

Within six (6) months of obtaining authorization to discharge, the permittee shall develop and implement a visual, dry weather outfall monitoring program. Dry weather monitoring must be conducted at least 72 hours after a storm event that resulted in a discharge from the storm sewer system.

The permittee shall document and include findings of dry weather monitoring in the annual report.

**b) Visual Stormwater Discharge Monitoring**

The permittee shall identify a minimum of five (5) outfalls that are representative of its stormwater discharges to conduct visual stormwater discharge monitoring. If the permittee has less than five (5) outfalls, then the permittee shall monitor all outfalls as part of the stormwater discharge monitoring program. In the event a Small MS4 does not have five (5) outfalls, a minimum of five (5) screening points, or combination of outfalls and screening points, shall utilized. Screening points shall be at locations where stormwater leaves the Small MS4's permitted area including locations where stormwater may discharge to another MS4 or other conveyance. The outfalls / screening points selected for visual stormwater discharge monitoring shall be identified in the NOI.

Within six (6) months of obtaining authorization to discharge, the permittee shall develop and implement a stormwater discharge visual monitoring program. The stormwater discharge monitoring program must be conducted in response to a storm event that results in a discharge from the storm sewer system and, to the extent practicable, should include the first flush.

The permittee shall conduct a minimum of two (2) stormwater discharge monitoring events during each wet season of the representative outfall(s) and shall document and include findings in the annual report.

Summer Wet Season: June 1 through October 31  
Winter Wet Season: November 1 through May 31

In the event a permittee cannot access any outfall(s) during a wet weather discharge, the permittee shall conduct wet weather screening as soon as practicable after the storm or discharge event.

Visual Stormwater Discharge Monitoring Alternative – the permittee may elect to submit in its NOI (see part 2.1.1) alternative practices to visual stormwater discharge monitoring. In doing so, the permittee shall include a written description as to how and why the proposed alternative is as effective, or more effective, than visual stormwater discharge monitoring.

**c) Follow-up Screening**

The permittee shall establish a follow-up screening schedule for identified or suspected illicit discharges to ensure they do not recur.

**6.4.3.9 Indicators of IDDE Program Progress**

The permittee shall define or describe indicators for tracking program success. At a minimum, indicators shall include measures that demonstrate efforts to locate illicit discharges identified and removed. Such measures may include response time to inspection, public awareness, time from discovery to elimination, and other appropriate factors.

The permittee shall evaluate and report the overall effectiveness of the program based on the tracking measures outlined in Part 6.4.3.8 in the annual program evaluation and in the annual report.

**6.4.3.10 Staff Training**

The permittee shall, at a minimum, provide annual training to employees involved in the IDDE program (e.g., street workers, inspectors, solid waste personnel, etc.). The training must include the IDDE program components and how to recognize illicit discharges. The permittee shall report on the frequency and type of employee training in the annual report.

**6.4.3.11 Unpermitted (Illicit) Discharges to the MS4**

The permittee shall develop, implement, and enforce a program to actively identify facilities and activities (e.g., industrial facilities, construction activities, etc.) that discharge to the MS4 without an AZPDES/NPDES permit.

The permittee shall include the number of facilities contacted each year in the annual report and shall include the facility name, type of activity conducted at the facility (including SIC code, to the extent known), and whether or not the facility has AZPDES permit coverage, if known or available.

A description of the permittee's illicit discharge program shall be included in the SWMP.

**6.4.4 Construction Activity Stormwater Runoff Control**

The permittee must develop, implement, maintain, and enforce a construction activity stormwater runoff control program to minimize or eliminate pollutant discharges to the MS4s from construction activities that will disturb one (1) or more acres of land, including sites less than one (1) acre that are part of a common plan of development or sale.

#### **6.4.4.1 Construction Activity Stormwater Runoff Implementation**

Existing and new permittees must assess existing legal authority, codes, and other relevant mechanisms and adopt, and implement measures to ensure compliance with construction activity runoff timeframe(s) specified in Part 3.1.

#### **6.4.4.2 Construction Activity Stormwater Runoff Program Components**

The construction activity stormwater runoff control program shall include, at a minimum, the elements in Paragraphs a. through h. of this part:

- a. An ordinance or other regulatory mechanism that requires the use of sediment and erosion control practices.
- b. An inventory of all construction activities that disturb or will disturb one (1) or more acres within the permitted area, including those that are less than one (1) acre but are part of a larger common plan of development or sale if the larger common plan will ultimately disturb greater than one (1) acre.
- c. Written procedures for site inspections and enforcement of sediment and erosion control measures. If not already existing, these procedures shall be completed within one (1) year from the date of submitting an NOI to ADEQ. The procedures shall clearly define who is responsible for site inspections as well as who has authority to implement enforcement procedures. The program must allow the permittee, to the extent authorized by law, to impose sanctions ensuring compliance with the local program. These procedures and regulatory authorities shall be documented in the SWMP.
- d. In developing construction activity inspection frequency, the permittee shall consider, at a minimum, the following:
  1. Phase of construction;
  2. Proximity to an impaired, not-attaining water or Outstanding Arizona Water;
  3. Size of the construction activity (acreage disturbed); and
  4. History of non-compliance (site or operator).
- e. Based on construction activity inspection findings, the permittee must take all necessary follow-up actions (i.e., re-inspection, enforcement) to ensure compliance in accordance with the permittee's enforcement response plan required under Part 3.3.
- f. Requirements for construction operators to implement sediment and erosion control BMPs appropriate for the conditions at the construction activity. Examples of appropriate sediment and erosion control measures for construction activities include local requirements to:
  1. Minimize the amount of disturbed area and protect natural resources;
  2. Stabilize sites when projects are complete or operations have temporarily ceased;
  3. Protect slopes on the site of the construction activity;
  4. Protect storm drain inlets and armor all newly-constructed outlets;
  5. Use perimeter controls at the site;

6. Stabilize entrance(s) and exit(s) at the location of the construction activity to prevent off-site tracking; and
  7. Inspect stormwater controls at consistent intervals.
- g. Requirements to control wastes, including but not limited to: discarded building materials; paints; fertilizers; concrete wash out; chemicals; litter; and sanitary wastes.
- h. Written procedures for site plan review. If not already existing, the procedures for site plan review which incorporate consideration of potential water quality impacts shall be completed within one (1) year from date the NOI is submitted to ADEQ. Site plan review shall include: a review by the permittee of the site design; the planned operations at the location of the construction activity; planned stormwater controls during the construction phase; and the planned controls to be used to manage runoff created after development (see 6.4.5).

#### **6.4.4.3 Personnel Qualifications**

The permittee shall ensure staff who conduct activities related to implementing the construction stormwater program (permitting, plan review, construction activity inspections, enforcement, etc.) have the knowledge, skills, and abilities to proficiently carryout their assigned duties.

#### **6.4.4.4 Construction Activity Operator Education and Public Involvement**

The permittee must develop and implement a program to provide education to construction activity operators on erosion and sediment control best management practices requirements and establish procedures for receipt of and consideration of information submitted by the public (see also Part 6.4.2).

#### **6.4.4.5 Tracking and Recordkeeping**

The permittee must track the number of inspections and re-inspections of construction activities to verify the sites are inspected at the frequency established under Part 6.4.4.2 (d) and (e) and include this information in the annual report.

### **6.4.5 Post-Construction Stormwater Management in New Development and Redevelopment**

Permittees shall develop, implement, and enforce a program to address post-construction stormwater runoff from new development and redevelopment projects that disturb one (1) or more acres of land (or less than one (1) acre if part of a common plan of development) that discharge into the permittee's MS4.

The post-construction stormwater management program must include a combination of structural and/or non-structural best management practices, as well as the components identified in this section.

Permittees shall maintain all records associated, including enforcement actions, in accordance with Part 8.2

#### **6.4.5.1 Regulatory Mechanism for Post-Construction Stormwater Controls**

The new development/redevelopment program shall include an ordinance or regulatory mechanism to address runoff from new development and redevelopment projects.

The regulatory mechanism must specify that owners or operators of new development and redevelopment sites discharging to the MS4, design, install, and maintain post-construction stormwater controls that reduce or eliminate the discharge of pollutants from the site after construction activities are completed.

Permittees must evaluate existing ordinance or other regulatory mechanism(s) to address post-construction stormwater runoff from new development and redevelopment projects. If it is determined existing ordinances or other regulatory mechanism(s) must be modified, the permittee must develop, adopt and implement a revised ordinance or other mechanism within the timeframes(s) specified in Part 3.1.

The permittee's new development/redevelopment program shall have procedures to ensure any stormwater controls or management practices for new development and redevelopment will prevent or minimize impacts to water quality from stormwater runoff.

#### **6.4.5.2 Site Plan Review**

The permittee shall design, implement, and maintain a site plan review process to evaluate and approve post-construction stormwater controls.

#### **6.4.5.3 Post-Construction Stormwater Control Inventory**

Within the first year of the effective date of this permit, the permittee shall implement and maintain an inventory system of all post-construction structural stormwater control measures installed and implemented at new development and redeveloped sites, including both public and private sector sites located within the permit area that discharge into the MS4. The inventory must be searchable by property location (either on paper or electronic) or other relevant criteria.

#### **6.4.5.4 Operation and Maintenance of Post-Construction BMPs**

The permittee shall establish processes, procedures, and other such provisions necessary to ensure the long-term operation and maintenance of post-construction stormwater BMPs.

#### **6.4.6 Pollution Prevention and Good Housekeeping for Municipal Operations**

The permittee must develop, implement, and maintain an operations and maintenance program that includes a training component with the ultimate goal of preventing or reducing pollutant runoff and protecting water quality from municipal facilities and activities. The provisions in this part apply to facilities and activities that are not subject to separate AZPDES permitting.

Existing permittees must continue to implement established operation and maintenance programs while updating those programs, as necessary, to comply with the requirements of this permit. Program updates must be developed and implemented within six (6) months of obtaining permit coverage.

New permittees must develop and implement the following program requirements within one (1) year of obtaining permit coverage.

At a minimum, the program must include:

- a. Develop an inventory of municipal operations that discharge;
- b. Prioritize municipal facilities based on their risk to discharge pollutants and develop and implement a site inspection schedule (example, more frequent inspections for higher risk facilities, less frequent inspections for lower risk facilities);
- c. Develop and implement an inspection schedule for municipally-owned and operated facilities and activities to ensure stormwater controls are effective and being properly maintained;
- d. Based on inspection findings, update municipally-owned or operated facilities priority status and modify inspection frequency, as appropriate;
- e. Develop and implement stormwater controls at municipally-owned or operated facilities and discharge activities to reduce or eliminate the discharge of pollutants;
- f. Develop and implement an employee training program to incorporate pollution prevention and good housekeeping techniques into everyday operations and maintenance activities; and
- g. Develop maintenance activities, maintenance schedules, and long-term inspections procedures for structural and non-structural stormwater controls to reduce floatables, trash, and other pollutants discharged from the MS4.

## 7.0 ANALYTICAL MONITORING

In addition to analytical monitoring of municipal stormwater discharges to impaired, not-attaining waters and Outstanding Arizona Waters (OAWs), ADEQ may notify the permittee in writing of additional monitoring requirements to ensure protection of receiving water quality or to ensure permit compliance. Additional monitoring will be required if there is evidence that a pollutant is being discharged by the permittee that may be causing or contributing to exceedances of a water quality standard. Any such notice will provide an explanation of the reasons for the monitoring, locations, and parameters to be monitored, frequency and period of monitoring, sample types, and reporting requirements.

Analytical monitoring shall be conducted in accordance with approved test methods in accordance with A.A.C. R18-9-A905(B).

### 7.1 General Monitoring Requirements

The monitoring provisions of this Part apply to permittees that must conduct analytical monitoring. The permittee shall collect and analyze stormwater samples and document monitoring activities consistent with the procedures described in Part 6.4.3.8 and Part 9.

- a. The purpose of the monitoring section of this permit is to:
  1. Assess the impacts to impaired, not-attaining, or Outstanding Arizona Waters (OAWs) resulting from stormwater discharges from Small MS4 outfalls;
  2. Characterize stormwater discharges;
  3. Identify sources of elevated pollutant loads and specific pollutants; and
  4. Assess the overall health and evaluate long-term trends in water quality of impaired, not attaining, or OAWs.
- b. The permittee shall identify in the SWMP and annual reports discharges that:
  1. Discharge to impaired waters listed on the Arizona's 303(d) list (Category 5) and those listed as not attaining (Category 4) on Arizona's Water Quality Assessment report;
  2. Discharges to OAWs listed in A.A.C. R18-11-112; and
  3. Additional monitoring required by ADEQ.
- c. Annual reporting requirements for outfall monitoring are included in Part 8.3.
- d. Analytical Monitoring Schedule:
  1. Existing Permittees – Impaired, not-attaining, and OAW monitoring must be fully implemented no later June 1, 2017.
  2. New Permittees – Impaired, not-attaining, and OAW monitoring must be fully implemented no later than November 1, 2017.
  3. Alternative schedule specified by ADEQ.

The required monitoring events may be distributed during seasons when precipitation occurs, or when snowmelt results in a measurable discharge from the site. Wet seasons apply statewide and are defined as follows:

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

The term 'wet season' includes areas of the state where freezing conditions exist that prevent runoff from occurring for extended periods. In areas where freezing conditions exist, the required monitoring and sample collection may be distributed during seasons when precipitation runoff, either as melting snow or rain mixed with melting snow, occurs.

## **7.2 Discharges to Impaired and Not-Attaining Waters**

If an outfall discharges to an impaired or not-attaining water, the permittee shall develop and implement a monitoring program for all pollutants for which the waterbody is listed.

If the waterbody is listed for suspended solids, turbidity or sediment/sedimentation and the discharge occurs for more than 48 hours after the storm event, the permittee shall monitor for suspended sediment concentration (SSC). If the pollutant causing the impairment is expressed in the form of an indicator or surrogate pollutant, the permittee shall monitor for that indicator or surrogate pollutant.

The permittee shall comply with all applicable waste load allocations established in approved TMDLs. In the event monitoring requirements (frequency, analytical parameters, etc.) are established in an approved TMDL, the permittee shall comply with the specifications in the approved TMDL.

## **7.3 Discharges to Outstanding Arizona Waters**

Analytical monitoring of outfalls that discharge to an OAW must be conducted twice per wet season for the entire permit term to assure discharges from the MS4 do not degrade existing water quality, or cause or contribute to an exceedance of an Arizona surface water quality standard. The permittee shall establish a list of analytical parameters to be included in the monitoring program and shall identify the analytical parameter and justification/rationale for selecting the key parameters in the SWMP.

## **7.4 Tracking**

Permittees with outfalls that discharge to impaired, not-attaining, or OAWs shall develop a system to track the information required in the permit and the information required to be reported in the annual report (see Part 8.3). The tracking system shall be developed and implemented within twelve (12) months of the effective date of this permit.

The permittee must implement, and revise as necessary, a comprehensive monitoring and assessment program. A description of this program must be included in the SWMP. The monitoring and assessment program must be designed to meet the following objectives:

- a. Assess compliance with this permit;
- b. Measure the effectiveness of the permittee's stormwater management program;
- c. Assess the chemical, physical, and biological impacts to receiving waters resulting from stormwater discharges;
- d. Characterize stormwater discharges;
- e. Identify sources of specific pollutants;
- f. Detect and eliminate illicit discharges and illegal connections to the MS4; and
- g. Assess the overall health and evaluate long-term trends in receiving water quality.

## **8.0 PROGRAM ASSESSMENT, RECORDKEEPING, AND REPORTING**

### **8.1 Program Evaluation**

**8.1.1** The permittee shall annually self-evaluate its compliance with the terms and conditions of this permit. The permittee shall maintain the annual evaluation documentation as part of the SWMP. The permittee shall include this information in the annual report.

**8.1.2** The permittee shall evaluate the appropriateness of the selected BMPs in achieving the objectives of each control measure and the defined measurable goals. The permittee may change BMPs in accordance with the following provisions:

- a. Adding (but not subtracting or replacing) components or controls may be made at any time;
- b. Changes replacing an ineffective or infeasible BMP specifically identified in the SWMP with an alternative BMP may be made if the proposed changes meet the criteria of this Part.

The permittee shall include this information in the annual report.

**8.1.3** BMP modification documentation shall include the following information and all documentation shall be kept in the SWMP:

- a. An analysis of why the BMP is ineffective or infeasible;
- b. Expectations on the effectiveness of the replacement BMP; and
- c. An analysis of why the replacement BMP is expected to achieve the defined goals of the BMP to be replaced.

The permittee shall indicate BMP modifications along with a brief explanation of the modification in the annual report.

**8.1.4** ADEQ may require the permittee to add, modify, repair, replace or change BMPs or other measures described in the annual reports to address the following:

- a. Impacts to receiving water quality caused or contributed to by discharges from the MS4;
- b. To satisfy conditions of this permit;
- c. To include more stringent requirements necessary to comply with new state or federal legal requirements; or
- d. Attainment of surface water quality standards.

Any changes requested by ADEQ will be in writing and will require the permittee to develop a schedule to implement the changes and will offer the permittee the opportunity to propose alternative program changes to meet the objective of the requested modification.

## **8.2 Recordkeeping**

- 8.2.1** The permittee shall keep all records required by this permit for a period of at least three (3) years. Records include information used in the development of any written program required by this permit, any monitoring results, copies of reports, records of screening, follow-up and elimination of illicit discharges; maintenance records; inspection records; enforcement actions; and data used in the development of the notice of intent, SWMP, plans, and annual reports. This list provides examples of records that should be maintained, but is not all inclusive.
- 8.2.2** Records other than those required to be included in the discharge monitoring report (Part 8.3) and annual report (Part 8.4), shall be submitted upon request by ADEQ, or U.S. EPA.
- 8.2.3** The permittee shall make the records relating to this permit, including the written stormwater management program, available to the public. The public may view the records during normal business hours. The permittee may charge a reasonable fee for copying requests. The permittee is encouraged to satisfy this requirement by posting records online.

## **8.3 Discharge Monitoring Report**

The permittee must submit all monitoring results (analytical and visual monitoring results) on a discharge monitoring report (DMR) in a manner prescribed by ADEQ (electronic, paper format, etc.). In the event electronic reporting becomes available, permittees must submit analytical and visual monitoring results using an online program or portal application prescribed by ADEQ (or U.S. EPA). DMRs must be submitted no later than September 30 of each year and shall include analytical and visual monitoring results for the period July 1 through June 30 of the preceding calendar year.

## **8.4 Annual Report**

The permittee shall submit an annual report each year of the permit term to ADEQ. The reporting period is from July 1 through June 30 each year. The annual report is due to ADEQ on or before September 30 each year for the reporting period. The annual reports shall contain the following information:

- a. The status of compliance with the permit terms and conditions;
- b. Updates regarding mapping requirements (see Part 4.1), including percent complete;
- c. An evaluation of the appropriateness and efficacy of the selected BMPs;
- d. An assessment of the progress towards achieving the measurable goals and objectives of each control measure in Part 6.4 including description of the targeted messages for each audience; method of distribution and dates of distribution; methods used to evaluate the program; and any changes to the program;
- e. Description of the activities used to promote public participation;
- f. Description of the activities related to implementation of the IDDE program including: status and results of the illicit discharge potential protocols described in Parts 6.4.3.4 (program responsibilities and systematic procedure); number and identifier of assets inspected or evaluated; number and identifier of outfalls screened; number of illicit discharges located; number of illicit discharges removed; and employee training;

- g. All outfall screening and monitoring data collected by or on behalf of the permittee during the reporting period and cumulative for the permit term, including but not limited to all data collected pursuant to Parts 6.4.3 and 7.0;
- h. The status of any plans or activities required by Part 6.4.3 and/or Part 7.1 (impaired and not-attaining waters), including:
  - 1. Identification of all discharges determined to be causing or contributing to an exceedance of water quality standards and description of response;
  - 2. For discharges subject to TMDLs, identification of specific BMPs used to address the pollutant identified as the cause of the impairment and assessment of the BMPs effectiveness at controlling the pollutant;
- i. Status of the construction runoff management including number of project plans reviewed, number of inspections, and number of enforcement actions;
- j. Status of stormwater management for new development and redevelopment including status of ordinance development and review;
- k. Status of the operation and maintenance programs required by Part 6.4.6.1;
- l. Description of any changes in identified BMPs or measurable goals;
- m. Any additional reporting requirements specified in Parts 1-7; and
- n. Description of activities to be conducted during the next reporting cycle.

Reports must be submitted to ADEQ at the following address:

Arizona Department of Environmental Quality  
1110 West Washington Street, Mail Code 5451A-1  
Phoenix, Arizona 85007

In the event electronic reporting becomes available, permittees must submit their annual reports using an online program or portal application prescribed by ADEQ (or U.S. EPA).

## 9.0 STANDARD PERMIT CONDITIONS

Standard permit conditions in Part 9 are consistent with the general permit provisions required under 40 CFR 122.41 and A.A.C. R-18-9-A905(A)(3).

1. **Duty to Comply:** [A.A.C. R18-9-A905(A)(3)(a), which incorporates 40 CFR 122.41(a)(1) and A.R.S. §§ 49-261, 262, 263.01, and 263.02.]
  - a. The operator shall comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act; A.R.S. Title 49, Chapter 2, Article 3.1; and A.A.C. Title 18, Chapter 9, Article 9, and is grounds for enforcement action, permit termination, revocation and reissuance, or modification, or denial of a permit renewal application.
  - b. The issuance of this permit does not waive any federal, state, county, or local regulations or permit requirements with which a person discharging under this permit is required to comply.
  - c. The operator shall comply with any effluent standards or prohibitions established under section 307(a) of the Clean Water Act for toxic pollutants within the time provided in the regulations that establish these standards or prohibitions, even if this permit has not yet been modified to incorporate the requirement.
  
2. **Duty to Reapply / Continuation of the Expired General Permit:** [A.A.C. R18-9-A905, which incorporates 40 CFR 122.41(b) and A.A.C. R18-9-C903]
  - a. Upon reissuance of the general permit, the permittee shall file an NOI, within the timeframe specified in the new general permit, and shall obtain new written authorization to discharge from the Director.
  - b. If the Director does not reissue the general permit before the expiration date, the current general permit will be administratively continued and remain in force and effect until the general permit is reissued.
  - c. Any operator granted authorization to discharge under the general permit before the expiration date automatically remains covered by the continued general permit until the earlier of:
    - i. Reissuance or replacement of the general permit, at which time the operator shall comply with the NOI conditions of the new general permit to maintain authorization to discharge; or
    - ii. The date the operator has submitted a Notice of Termination; or
    - iii. The date the Director has issued an individual permit for the discharge; or
    - iv. The date the Director has issued a formal permit decision not to reissue the general permit, at which time the operator shall seek coverage under an alternative general permit or an individual permit, or cease discharge.
  
3. **Need To Halt or Reduce Activity Not a Defense:** [A.A.C. R18-9-A905(A)(3)(a), which incorporates 40 CFR 122.41(c)]

It shall not be a defense for an operator in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.
  
4. **Duty to Mitigate:** [A.A.C. R18-9-A905(A)(3)(a), which incorporates 40 CFR 122.41(d)]

The operator shall take all reasonable steps to minimize or prevent any discharge in violation of this permit that has a reasonable likelihood of adversely affecting human health or the environment per A.R.S. § 49-255.01(E)(1)(d).

**5. Proper Operation and Maintenance:** [A.A.C. R18-9-A905(A)(3)(a), which incorporates 40 CFR 122.41(e)]

The operator shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the operator to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures.

**6. Permit Actions:** [A.A.C. R18-9-A905(A)(3)(a), which incorporates 40 CFR 122.41(f)]

This permit may be modified, revoked and reissued, or terminated for cause. Filing a request by the operator for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

**7. Property Rights:** [A.A.C. R18-9-A905(A)(3)(a), which incorporates 40 CFR 122.41(g)]

This permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or invasion of personal rights, nor any infringement of federal, state, Indian tribe, or local laws or regulations.

**8. Duty to Provide Information:** [A.A.C. R18-9-A905(A)(3)(a), which incorporates 40 CFR 122.41(h)]

The operator shall furnish to ADEQ, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The operator shall also furnish to ADEQ upon request, copies of records required to be kept by this permit.

**9. Signatory Requirements:** [A.A.C. R18-9-A905(A)(3)(a), which incorporates 40 CFR 122.41(k) and (l); A.A.C. R18-9-A905(A)(1)(c), which incorporates 40 CFR 122.22]

All Notices of Intent (NOI) and Notices of Termination (NOT) must be signed as follows:

- a. NOIs:
  - i. For a corporation: By a responsible corporate officer. For the purpose of this section, a responsible corporate officer means: a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;
  - ii. For a partnership or sole proprietorship: By a general partner or the proprietor, respectively; or
  - iii. For a municipality, state, federal, or other public agency: By either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a federal (or state) agency includes: (1) The chief executive officer (or director) of the agency, or (2) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency.

- b. All NOTs, reports, plans, inspection reports, monitoring reports, and other information required by this permit must be signed by a person described in Part 9.9(a), above or by a duly authorized representative of that person. A person is a duly authorized representative only if:
- The authorization is made in writing by a person described in Subsection 9(a) above;
  - The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of manager, operator, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may be either a named individual or any individual occupying a named position); and
  - The signed and dated written authorization is included in the SWMP. A copy must be submitted to ADEQ, upon request.
- c. Certification. Any person signing documents under the terms of this permit shall make the following certification:

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

**10. Inspection and Entry:** [A.A.C. R18-9-A905(A)(3)(a), which incorporates 40 CFR 122.41(i)]

The operator shall allow the Director or an authorized representative upon the presentation of credentials and such other documents as may be required by law to:

- Enter upon the operator's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this permit;
- Have access to and copy at reasonable times, any records that must be kept under the conditions of this general permit;
- Inspect at reasonable times any facility or equipment (including monitoring and control equipment), practices or operations regulated or required under this permit;
- Sample or monitor at reasonable times any substances or parameters at any location, for the purposes of assuring permit compliance or as otherwise authorized by A.R.S. Title 49, Chapter 2, Article 3.1, and 18 A.A.C. 9, Articles 9.

**11. Monitoring and Records:** [A.A.C. R18-9-A905(A)(3)(a), which incorporates 40 CFR 122.41(j)]

- Representative Samples/Measurements: Samples and measurements taken for the purpose of monitoring must be representative of the volume and nature of the monitored activity.
- Retention of Records: The operator shall retain records of all monitoring information, including all calibration and maintenance records, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three (3) years from the date permit coverage ends. Operators shall submit any such records to the Director upon request. The operator shall retain the SWPPP developed in accordance with Part 6 of this permit, for at least three (3) years after the last modification or amendment is made to the plan. The Director may extend this retention period upon request by notifying the operator in writing at any time prior to the end of the standard three year retention period.

- c. Records Contents: Records of monitoring information must include:
  - i. The date, exact location, and time of sampling or measurements;
  - ii. The initials or name(s) of the individual(s) who performed the sampling or measurements;
  - iii. The date(s) analyses were performed;
  - iv. The time(s) analyses were initiated;
  - v. The initials or name(s) of the individual(s) who performed the analyses;
  - vi. References and written procedures, when available, for the analytical techniques or methods used;
  - vii. The analytical techniques or methods used; and
  - viii. The results of such analyses.
- d. Any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained in this permit is subject to the enforcement actions established under A.R.S. Title 49, Chapter 2, Article 4, which includes the possibility of fines and/or imprisonment.

**12. Reporting Requirements:** [A.A.C. R18-9-A905(A)(3)(a), which incorporates 40 CFR 122.41(l)]

- a. Planned changes: The operator shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:
  - i. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR 122.29(b) (incorporated by reference at A.A.C. R18-9-A905(A)(1)(e)); or
  - ii. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under 40 CFR 122.42(a)(1) (incorporated by reference at A.A.C. R18-9-A905(A)(3)(b)).
- b. Monitoring reports: Monitoring results must be reported at the intervals specified elsewhere in this permit.
  - i. Monitoring results must be reported on a Discharge Monitoring Report (DMR) or forms (paper or electronic) provided or specified by ADEQ.
  - ii. If the operator monitors any pollutant more frequently than required by the permit using test procedures approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503, or as specified in the permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR.
  - iii. Calculations for all limitations which require averaging of measurements must use an arithmetic mean and non-detected results must be incorporated in calculations as the limit of quantitation for the analysis.
- c. Anticipated noncompliance: The operator shall give advance notice to the Director of any planned changes in the permitted facility or activity that may result in noncompliance with permit requirements.
- d. Twenty-four hour reporting:
  - i. The operator shall report to ADEQ any noncompliance with this permit which may endanger human health or the environment. The operator shall orally notify the office listed below within 24 hours:

Arizona Department of Environmental Quality – Water Quality Division  
1110 W. Washington Street  
Phoenix, AZ 85007  
Office: (602) 771 - 4508

- ii. A written submission shall also be provided to the office identified above within five (5) days of the time the operator becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.
- iii. The following shall be included as information which must be reported within 24 hours under this paragraph.
  - 1) Any upset which exceeds any effluent limitation in the permit.
  - 2) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Director in the permit to be reported within 24 hours. (See 40 CFR 122.44(g) which is incorporated by reference at A.A.C. R18-9-A905(A)(3)(d)).
- iv. ADEQ may waive the written report on a case-by-case basis for reports under this subsection if the oral report has been received within 24 hours.
- e. Other noncompliance: The operator shall report all instances of noncompliance not otherwise required to be reported under this subsection, at the time monitoring reports are submitted. The reports shall contain the information listed in subsection 12(d).
- f. Other information: When the operator becomes aware that it failed to submit any relevant facts or submitted incorrect information in the Notice of Intent or in any other report to the Department, the operator shall promptly submit the facts or information to ADEQ at the address listed in Part 8.2.

**13. Reopener Clause:** [A.A.C. R18-9-A905(A)(3)(d), which incorporates 40 CFR 122.44(c)]

The Department may elect to modify the permit prior to its expiration (rather than waiting for the new permit cycle) to comply with any new statutory or regulatory requirements, such as for effluent limitation guidelines, which may be promulgated in the course of the current permit cycle.

**14. Other Environmental Laws:**

No condition of this general permit releases the operator from any responsibility or requirements under other environmental statutes or regulations. For example, this permit does not authorize the "taking" of endangered or threatened species as prohibited by Section 9 of the Endangered Species Act, 16 U.S.C. 1538. Information regarding the location of endangered and threatened species and guidance on what activities constitute a "taking" are available from the U.S. Fish and Wildlife Service. The operator shall also comply with applicable State and Federal laws, including Spill Prevention Control and Countermeasures (SPCC).

**15. State or Tribal Law:** [Pursuant to A.A.C. R18-9-A904(C)]

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the operator from any responsibilities, liabilities, or penalties established pursuant to any applicable State or Tribal law or regulation under authority preserved by Section 510 of the Clean Water Act.

**16. Severability:**

The provisions of this general permit are severable, and if any provision of this general permit, or the application of any provision of this general permit to any circumstance, is held invalid, the application of the provision to other circumstances, and the remainder of this general permit shall not be affected.

**17. Requiring Coverage under an Individual Permit or an Alternative General Permit:** [Pursuant to A.A.C. R18-9-C902 and R18-9-A909]

- a. The Director may require a person authorized by this permit to apply for and/or obtain either an individual AZPDES permit or an alternative AZPDES general permit. Any interested person may petition the Department to take action under this section. The Department may require an operator authorized to discharge under this permit to apply for an individual permit in any of the following cases:
  - i. A change occurs in the availability of demonstrated technology or practices for the control or abatement of pollutants applicable to the point source;
  - ii. Effluent limitation guidelines are promulgated for point sources covered by the general permit;
  - iii. An Arizona Water Quality Management Plan containing requirements applicable to the point sources is approved;
  - iv. Circumstances change after the time of the request to be covered so that the discharger is no longer appropriately controlled under the general permit, or either a temporary or permanent reduction or elimination of the authorized discharge is necessary;
  - v. If the Director determines that the discharge is a significant contributor of pollutants. When making this determination, the Director shall consider:
    - 1) The location of the discharge with respect to waters of the United States,
    - 2) The size of the discharge,
    - 3) The quantity and nature of the pollutants discharged to waters of the U.S., and
    - 4) Any other relevant factor.
- b. If an individual permit is required, the Director shall notify the discharger in writing of the decision. The notice shall include:
  - i. A brief statement of the reasons for the decision;
  - ii. An application form;
  - iii. A statement setting a deadline to file the application;
  - iv. A statement that on the effective date of issuance or denial of the individual permit, coverage under the general permit will automatically terminate;
  - v. The applicant's right to appeal the individual permit requirement with the Water Quality Appeals Board under A.R.S. § 49-323, the number of days the applicant has to file a protest challenging the individual permit requirement, and the name and telephone number of the Department contact person who can answer questions regarding the appeals process; and
  - vi. The applicant's right to request an informal settlement conference under A.R.S. 41-1092.03(A) and 41-1092.06.
- c. The discharger shall apply for an individual permit within 90 days of receipt of the notice, unless the Director grants a later date. In no case shall the deadline be more than 180 days after the date of the notice.
- d. If the discharger fails to submit the individual permit application within the time period established in Part 9.17(c) the applicability of the general permit to the discharger is automatically terminated at the end of the day specified by the Director for application submittal.
- e. Coverage under the general permit shall continue until an individual permit is issued or denied unless the general permit coverage is terminated under Part 9.17(d).

**18. Request for an Individual Permit:** [Pursuant to A.A.C. R18-9-C902]

- a. An operator may request an exclusion from coverage of a general permit by applying for an individual permit.
  - i. The operator shall submit an individual permit application under R18-9-B901(B) and include the reasons supporting the request no later than 90 days after publication of the general permit.
  - ii. The Director shall grant the request if the reasons cited by the operator are adequate to support the request.
- b. If an individual permit is issued to a person otherwise subject to a general permit, the applicability of the general permit to the discharge is automatically terminated on the effective date of the individual permit.

**19. Change of Operator:** [A.A.C. R18-9-C904]

If a change of ownership or operator occurs for a facility operating under a general permit:

- a. Permitted owner or operator: The operator shall provide the Department with a Notice of Termination by certified mail within 30 days after the new owner or operator assumes responsibility for the facility.
  - i. The Notice of Termination shall include all requirements for termination specified in the general permit for which the Notice of Termination is submitted.
  - ii. An operator shall comply with the permit conditions specified in the general permit for which the Notice of Termination is submitted until the Notice of Termination is received by the Department.
- b. New owner or operator:
  - i. The new owner or operator shall complete and file a Notice of Intent with the Department within the time period specified in the general permit before taking over operational control of, or initiation of activities at, the facility.
  - ii. If the previous operator was required to implement a stormwater pollution prevention plan, the new owner shall develop a new stormwater pollution prevention plan, or may modify, certify, and implement the old stormwater pollution prevention plan if the old stormwater pollution prevention plan complies with the requirements of the current general permit.
  - iii. The operator shall provide the Department with a Notice of Termination if a permitted facility ceases operation, ceases to discharge, or changes operator status. In the case of a construction activity, the operator shall submit a Notice of Termination to the Department when:
    - 1) The facility ceases construction operations and the discharge is no longer associated with construction or construction-related activities,
    - 2) The construction is complete and final site stabilization is achieved, or
    - 3) The operator's status changes.

**20. Bypass:** [A.A.C. R18-9-A905(A)(3)(a), which incorporates 40 CFR 122.41(m)]

- a. Definitions:
  - i. Bypass means the intentional diversion of waste streams from any portion of a treatment facility;

- ii. Severe property damage means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.
  - b. Bypass not exceeding limitations: The operator may allow any bypass to occur that does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions Part 9.20(c) and 20(d).
  - c. Notice:
    - i. Anticipated bypass. If the operator knows in advance of the need for a bypass, if possible prior notice shall be submitted at least ten days before the date of the bypass.
    - ii. Unanticipated bypass. The operator shall submit notice of an unanticipated bypass as required in Part 9.12(d).
  - d. Prohibition of bypass:
    - i. Bypass is prohibited, and ADEQ may take enforcement action against the operator for bypass, unless:
      - 1) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
      - 2) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and
      - 3) The operator submitted notices as required under Part 9.20(c).
    - ii. ADEQ may approve an anticipated bypass, after considering its adverse effects, if the Department determines that it will meet the three conditions listed above in this Part 9.20(d).
- 21. Upset:** [A.R.S. §§ 49-255(8) and 255.01(E), A.A.C. R18-9-A905(A)(3)(a), which incorporates 40 CFR 122.41(n)]
- a. Definition: Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the operator. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.
  - b. Effect of an upset: An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of Part 9.21(c) are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.
  - c. Conditions necessary for a demonstration of upset: An operator who wishes to establish the affirmative defense of upset must demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
    - i. An upset occurred and that the operator can identify the cause(s) of the upset;
    - ii. The permitted facility was at the time being properly operated;

- iii. The operator submitted notice of the upset as required in Part 9.12(d)(iii); and
  - iv. The operator complied with any remedial measures required under Part 9.4.
- d. Burden of proof: In any enforcement proceeding, the operator, who is seeking to establish the occurrence of an upset, has the burden of proof.

## 22. Penalties for Violations of Permit Conditions

Any permit noncompliance constitutes a violation and is grounds for an enforcement action, permit termination, revocation and reissuance, modification, or denial of a permit renewal application.

- a. Civil Penalties: A.R.S. § 49-262 provides that any person who violates any provision of A.R.S. Title 49, Chapter 2, Article 2, 3 or 3.1 or a rule, permit, discharge limitation or order issued or adopted under A.R.S. Title 49, Chapter 2, Article 3.1 is subject to a civil penalty not to exceed \$25,000 per day per violation.
- b. Criminal Penalties: Any person who violates a condition of this general permit, or violates a provision under A.R.S. Title 49, Chapter 2, Article 3.1, or A.A.C. Title 18, Chapter 2, Article 9 is subject to the enforcement actions established under A.R.S. Title 49, Chapter 2, Article 4, which may include the possibility of fines and/or imprisonment.

## 10.0 DEFINITIONS

1. **Analytical monitoring** – means monitoring conducted to provide quantitative results in accordance with A.A.C. R18-9-A905(B).
2. **Best management practices (BMPs)** – means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of “waters of the United States.” BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.
3. **Common plan of development** – a contiguous area where multiple separate and distinct land disturbing activities may be taking place at different times, on different schedules, but under one plan. A ‘plan’ is broadly defined to include design, permit application, advertisement or physical demarcation indicating that land-disturbing activities may occur.
4. **Construction activity** – means earth-disturbing activities such as, clearing, grading, excavating, stockpiling of fill material and other similar activities. This definition encompasses both large construction activities defined in 40 CFR 122.26 (b)(14)(x) and small construction activities in 40 CFR 122.26 (b)(15)(i) and includes construction support activities.
5. **Controls or Control Measures or Measures** – means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or control the pollution of waters of the United States. Controls also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.
6. **CWA or The Act** means Clean Water Act (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972) Pub.L. 92-500, as amended Pub. L. 95 217, Pub. L. 95-576, Pub. L. 96-483 and Pub. L. 97-117, 33 U.S.C. 1251 et.seq.
7. **Department** – the Arizona Department of Environmental Quality.
8. **Discharge** – when used without qualification means the “discharge of a pollutant.”
9. **Discharge of a pollutant** – any addition of any “pollutant” or combination of pollutants to “waters of the United States” from any “point source,” or any addition of any pollutant or combination of pollutants to the waters of the “contiguous zone” or the ocean from any point source other than a vessel or other floating craft which is being used as a means of transportation. This includes additions of pollutants into waters of the United States from surface runoff which is collected or channeled by man. See 40 CFR 122.2.
10. **Discharge point** – the location where stormwater flows exit the construction activity.
11. **Effluent limitations** – means any limitation or condition on quantities, discharge rates, or concentration of pollutants which are discharged from a point source.
12. **Effluent Limitations Guideline (ELG)** – defined in 40 CFR § 122.2 as a regulation published by the Administrator under section 304(b) of CWA to adopt or revise effluent limitations.
13. **Ephemeral water** – a surface water that has a channel that is at all times above the water table, and that flows only in direct response to precipitation. [A.A.C. R18-11-101(22)]

14. **Existing Permittees** means Small MS4 operators who had coverage under ADEQ's 2002 Small MS4 General Permit.
15. **Facility** means any "point source" or any other facility (including land or appurtenances thereto) that is subject to regulation under the AZPDES/NPDES program.
16. **Field Screening Point** means location(s) where municipal stormwater leaves a Small MS4 operator's permitted area and goes to a Waters of the U.S. by way of a conveyance (such as another municipal storm sewer system).
17. **Illicit connection** means any man-made conveyance connecting an illicit discharge directly to a municipal separate storm sewer.
18. **Illicit discharge** means any discharge to a municipal separate storm sewer that is not composed entirely of stormwater except discharges pursuant to a AZPDES/NPDES permit (other than the AZPDES permit for discharges from the municipal separate storm sewer) and discharges resulting from firefighting activities.
19. **Impaired water** – waters that have been assessed by ADEQ, under the Clean Water Act, as not attaining a water quality standard for at least one (1) designated use, and are listed in Arizona's current 303(d) List or on the 305(b) Category 4 list.
20. **Intermittent water** or **Intermittent stream** – a stream or reach that flows continuously only at certain times of the year, as when it receives water from a spring or from another surface source, such as melting snow. [A.A.C. R18-11-101(25)]
21. **Maximum Extent Practicable (MEP)** – means maximum extent practicable, the technology-based discharge standard for municipal separate storm sewer systems to reduce pollutants in storm water discharges. A discussion of MEP as it applies to small MS4s is found at 40 CFR 122.34. CWA section 402(p)(3)(B)(iii) requires that a municipal permit "shall require controls to reduce the discharge of pollutants to the maximum extent practicable, including management practices, control techniques and system design, and engineering methods, and other provisions such as the Administrator or the State determines appropriate for the control of such pollutants.
22. **Measurable Goal** means a quantitative measure of progress in implementing a component of a storm water management program.
23. **Minimize** – to reduce and/or eliminate to the extent achievable using control measures that are technologically available and economically practicable and achievable in light of best industry practices.
24. **Municipal separate storm sewer** – a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains):
  - a. 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 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;
  - b. Designed or used for collecting or conveying stormwater;
  - c. Which is not a combined sewer; and
  - d. Which is not part of a Publicly Owned Treatment Works.

- 25. Municipal separate storm sewer system (MS4)** – all separate storm sewers defined as “large,” “medium,” or “small” municipal separate storm sewer systems or any municipal separate storm sewers on a system-wide or jurisdiction-wide basis as determined by the Director under A.A.C. R18-9-C902(A)(1)(g)(i) through (iv). [A.A.C. R18-9-A901(23)]. This also includes similar systems owned or operated by separate storm sewer municipal jurisdictions not required to obtain stormwater discharge authorization.
- 26. New Permittees** means Small MS4 operators who did not have permit coverage under ADEQ’s 2002 Small MS4 General Permit.
- 27. Not-Attaining** means a surface water is assessed as impaired, but is not placed on the 303(d) List because:
- A TMDL is prepared and implemented for the surface water;
  - An action, which meets the requirements of R18-11-604(D)(2)(h), is occurring and is expected to bring the surface water to attaining before the next 303(d) List submission; or
  - The impairment of the surface water is due to pollution but not a pollutant, for which a TMDL load allocation cannot be developed.
- 28. Non-traditional MS4** means systems similar to separate storm sewer systems in municipalities, such as systems at military bases, large hospital or prison complexes, and highways and other thoroughfares. The term does not include separate storm sewers in very discrete areas, such as individual buildings. 40 CFR 122.26(a)(16)(iii).
- 29. Notice of Intent (NOI)** – the application to operate under this general permit.
- 30. Notice of Termination (NOT)** – the application to terminate coverage under this general permit.
- 31. Outfall** – means a *point source* as defined by 40 CFR 122.2 at the point where a municipal separate storm sewer discharges to waters of the United States and does not include open conveyances connecting two (2) municipal separate storm sewers, or pipes, tunnels or other conveyances which connect segments of the same stream or other waters of the United States and are used to convey waters of the United States.
- 32. Outstanding Arizona Water (OAW)** – a surface water that has been designated by ADEQ as an outstanding state resource under A.A.C. R18-11-112.
- 33. Owner or operator** means the owner or operator of any “facility or activity” subject to regulation under the NPDES program.
- 34. Perennial water** – a surface water that flows continuously throughout the year (A.A.C. R18-11-101(30)).
- 35. Permittee** – refers to any person (defined below) authorized by this NPDES permit to discharge to Waters of the United States.
- 36. Person** – an individual, employee, officer, managing body, trust, firm, joint stock company, consortium, public or private corporation, including a government corporation, partnership, association or state, a political subdivision of this state, a commission, the United States government or any federal facility, interstate body, or other entity.
- 37. Point source** – any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural stormwater runoff.

- 38. Pollutant** – sediment, fluids, contaminants, toxic wastes, toxic pollutants, dredged spoil, solid waste, substances and chemicals, pesticides, herbicides, fertilizers and other agricultural chemicals, incinerator residue, sewage, garbage, sewage sludge, munitions, petroleum products, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt (e.g., overburden material), and mining, industrial, municipal and agricultural wastes or any other liquid, solid, gaseous or hazardous substances. [A.R.S. § 49-201(29)]
- 39. Receiving water** – as used in this permit means “Water of the United States” as defined in 40 CFR §122.2 that receives discharges from the MS4.
- 40. Satellite Installation** - means facilities that are not subject to separate AZPDES permitting, are non-contiguous with the primary facility, and meet the following criteria: a) located in an urbanized area, and b) have the potential to discharge pollutants. Examples include golf courses, parks and recreation areas, and vehicle and equipment maintenance facilities.
- 41. Stormwater** – stormwater runoff, snow melt runoff, and surface runoff and drainage. See 40 CFR 122.26(b)(13).
- 42. Stormwater Discharge Associated with Construction Activity** – a discharge of pollutants in stormwater runoff from areas where soil disturbing activities (e.g., clearing, grading, or excavating), construction materials, or equipment storage or maintenance (e.g., fill piles, borrow areas, concrete truck washout, fueling), or other industrial stormwater directly related to the construction process (e.g., concrete or asphalt batch plants) are located. See 40 CFR 122.26(b)(14)(x) and 40 CFR 122.26(b)(15).
- 43. Stormwater Discharge Associated with Industrial Activity** means the discharge from any conveyance which is used for collecting and conveying stormwater and which is directly related to manufacturing, processing, or raw materials storage areas at an industrial plant (See 40 CFR §122.26(b)(14) for specifics of this definition).
- 44. Stormwater Management Program (SWMP)** means a comprehensive program to manage the quality of stormwater discharged from the municipal separate storm sewer system. For the purposes of this permit, the Stormwater Management Program is considered a single document, but may actually consist of separate programs (e.g. "chapters") for each permittee.
- 45. Stormwater Pollution Prevention Plan (SWPPP)** – a site-specific, written document that, among other things: (1) identifies potential sources of stormwater pollution at the location of the construction activity; (2) describes control measures to reduce or eliminate pollutants in stormwater discharges from the construction activity; and (3) identifies procedures the operator will implement to comply with the terms and conditions of this general permit.
- 46. Surface Water** – as used in this permit means “Water of the United States” as defined in 40 CFR §122.2.
- 47. Total Maximum Daily Load (TMDL)** – an estimation of the total amount of a pollutant from all sources that may be added to a water while still allowing the water to achieve and maintain applicable surface water quality standards. Each total maximum daily load shall include allocations for sources that contribute the pollutant to the water, as required by section 303(d) of the clean water act (33 United States Code, Section 1313(d)) and regulations implementing that statute to achieve applicable surface water quality standards. [A.R.S. § 49-231(4)]
- 48. Turbidity** – a condition of water quality characterized by the presence of suspended solids and/or organic material; expressed as nephelometric turbidity units (NTU).

- 49. Waste Load Allocation (WLA)** – The maximum load of pollutants each discharger of waste is allowed to release into a particular waterway. Discharge limits are usually required for each specific water quality criterion being, or expected to be, violated. WLAs constitute a type of water quality-based effluent limitation. (See 40 C.F.R. § 130.2(h))
- 50. Waters of the United States (U.S.)** – defined in 40 CFR 122.2.
- 51. Wetland** – an area that is inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions. A wetland includes a swamp, marsh, bog, cienega, tinaja, and similar areas. [A.A.C. R18-11-101(49)]

**Action 3.**  
**Community Development**

**Flood Control District Meeting**

**Meeting Date:** 09/25/2018  
Ephemeral Streamflow and Groundwater Monitoring Year 2, Additional Services #1 and #2  
**Submitted By:** Teresa Vasquez, Community Development  
**Department:** Community Development  
**Presentation:** No A/V Presentation  
**Document Signatures:** BOS Signature Required  
  
**NAME of PRESENTER:** Joaquin Solis, P.E.  
**Mandated Function?:** Not Mandated

**Division:** Floodplain  
**Recommendation:** Approve  
**# of ORIGINALS Submitted for Signature:** 2  
**TITLE of PRESENTER:** Floodplain Engineer  
**Source of Mandate or Basis for Support?:**

**Docket Number (If applicable):**

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**Information**

**Agenda Item Text:**

Approve Ephemeral Streamflow and Groundwater Monitoring Year 2 for Additional Services #1 (additional monitoring services and reporting) and #2 (Horseshoe Draw equipment installation and monitoring) Scopes of Work with JE Fuller Hydrology & Geomorphology, Inc., in the amount of \$80,618 for additional ephemeral stream flow and groundwater monitoring at Horseshoe, Palominas, Riverstone Ranch, and Bella Vista Ranch through March 31, 2019.

**Background:**

A monitoring network using remote stilling well stations was proposed and put in place for several stream channels within the Sierra Vista Sub-watershed of the Upper San Pedro River. The network will monitor stream flow for a period of time prior to the design and construction of additional groundwater recharge facilities intended to capture stormwater runoff. This allows for better estimation of stream flow characteristics in response to precipitation and improves predictions of potential available groundwater recharge volumes. On June 27th, 2017, the FCD Board approved grant agreement number AZFO-170530 between The Nature Conservancy (TNC) and the Cochise County Flood Control District for additional recharge monitoring for the Ephemeral Stream Flow Monitoring and Palominas Recharge Projects in the amount of \$92,000 for the period of June 27, 2017 through June 15, 2019, plus matching funds from the FCD. The Walton Family Foundation (WFF) has also agreed to contribute for the Horseshoe Draw equipment and installation from grant 2011-1195.

**Department's Next Steps (if approved):**

Staff will coordinate with JE Fuller to start implementation of the Ephemeral Streamflow Monitoring Project.

**Impact of NOT Approving/Alternatives:**

If not approved, the FCD will not continue the Ephemeral Streamflow Monitoring Additional Services and grant monies will have to be returned.

**To BOS Staff: Document Disposition/Follow-Up:**

n/a

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**Budget Information**

*Information about available funds*

|  |   |  |
|--|---|--|
| <b>Budgeted:</b> <input checked="" type="checkbox"/> | <b>Funds Available:</b> <input checked="" type="checkbox"/> | <b>Amount Available:</b> \$80618           |
| <b>Unbudgeted:</b> <input type="checkbox"/>          | <b>Funds NOT Available:</b> <input type="checkbox"/>        | <b>Amendment:</b> <input type="checkbox"/> |

**Account Code(s) for Available Funds**

1:

**Fund Transfers**

**Fiscal Year:** 18/19

**One-time Fixed Costs? (\$\$\$):** 80618

**Ongoing Costs? (\$\$\$):**

**County Match Required? (\$\$\$):** 46369

**A-87 Overhead Amt? (Co. Cost Allocation \$\$\$):**

**Source of Funding?:** FCD TNC Walton Family

**Fiscal Impact & Funding Sources (if known):**

Additional Services #1 (additional monitoring and reporting services to December 2018) estimate is \$29,607 and Additional Services #2 (surface and groundwater equipment and monitoring at the Horseshoe Draw site estimate is \$51,011. The total estimate is \$80,618. \$34,249 for the Horseshoe monitoring equipment and installation will be covered by WFF and the remaining \$46,369 will be contributed by the TNC grant with matching contributions coming from Cochise County.

## Attachments

[Executive Summary](#)

[ESM Year 2 Add Service 1](#)

[ESM Year 2 Add Service 2](#)

[ESM Location Map](#)

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## COCHISE COUNTY

# COMMUNITY DEVELOPMENT

*"Public Programs...Personal Service"*

## MEMORANDUM

**Date:** September 14, 2018

**To:** Flood Control District Board of Directors (FCD Board)

**From:** Joaquin Solis, P.E., Highway & Floodplain Manager

**Subject:** Ephemeral Streamflow and Groundwater Monitoring Year 2, Additional Services #1 and #2

**Recommendation:** Approve Ephemeral Streamflow and Groundwater Monitoring Year 2, Additional Services #1 (additional monitoring services and reporting) and #2 (Horseshoe Draw equipment installation and monitoring) Scopes of Work with JE Fuller Hydrology & Geomorphology, Inc., in the amount of \$80,618.00 for additional ephemeral stream flow and groundwater monitoring at Horseshoe, Palominas, Riverstone Ranch, and Bella Vista Ranch through.

**Background:** A monitoring network using remote stilling well stations was proposed and put in place for several stream channels within the Sierra Vista Subwatershed of the Upper San Pedro River. The network will monitor stream flow for a period of time prior to the design and construction of additional groundwater recharge facilities intended to capture stormwater runoff. This allows for better estimation of stream flow characteristics in response to precipitation and improves predictions of potential available groundwater recharge volumes. On June 27<sup>th</sup>, 2017 the FCD Board approved grant agreement number AZFO-170530 between The Nature Conservancy (TNC) and the Cochise County Flood Control District for additional recharge monitoring for the Ephemeral Stream Flow Monitoring and Palominas Recharge Projects in the amount of \$92,000 for the period of June 27, 2017 through June 15, 2019 plus matching funds from the FCD. The Walton Family Foundation (WFF) has also agreed to contribute for the Horseshoe Draw equipment and installation from grant 2011-1195.

**Fiscal Impacts:** Additional Services #1 (additional monitoring and reporting services to December 2018) estimate is \$29,607 and Additional Services #2 (surface and groundwater equipment and monitoring at the Horseshoe Draw site estimate is \$51,011. The total estimate is \$80,618. \$34,249 for the Horseshoe monitoring equipment and installation will be covered by WFF and the remaining \$46,369 will be contributed by the TNC grant with matching contributions coming from Cochise County.

|                        |               |             |
|------------------------|---------------|-------------|
| <b>Funding Source:</b> | FCD/TNC       | \$46,369.00 |
|                        | Walton Family | \$34,249.00 |

**Next Steps/Action Items/Follow Up:** Staff will coordinate with JE Fuller to start implementation of the Ephemeral Streamflow Monitoring Project.

**Impact of Not Approving:** If not approved, the FCD will not continue the Ephemeral Streamflow Monitoring Additional Services and grant monies will have to be returned.



# JE FULLER

HYDROLOGY & GEOMORPHOLOGY, INC.

DEFINE | COMMUNICATE | SOLVE

August 6<sup>th</sup>, 2018

**TEMPE**  
Jon Fuller, PE, RG, PH, CFM, DWRE  
Jeff Despain, PE, CFM  
Annette Griffin, AAS  
Brian Iserman, PE, CFM  
Mike Kellogg, RG, CFM  
Ted Lehman, PE  
Robert Lyons, PE, CFM  
W. Scott Ogden, PE, CFM  
Jon Ahern, PE, CFM  
Patricia Quinn, PE, RLS, AVS  
Tyler Azeltine  
Peter Acton, PE  
Richard Waskowsky, PE

Joaquin Solis, PE  
Cochise County Highway & Floodplain  
1415 Melody Lane  
Bisbee, AZ 85603

RE: Proposal – Ephemeral Streamflow and Groundwater  
Monitoring Year 2  
Additional Service #1

Dear Joaquin:

Per your request, JE Fuller/Hydrology & Geomorphology (JE Fuller) is providing you with this proposal for the referenced services. This proposal pertains to Additional Service #1 of the current County contract for Ephemeral Streamflow and Groundwater Monitoring, PSA 18-12-HFP-03, to extend the monitoring period to the end of December 2018. This work pertains to surface water and groundwater monitoring stations at or near the following project sites: Palominas, Riverstone, Bella Vista, and Horseshoe Draw.

The following items are proposed modifications to the contract:

- A. Extend the contract duration to March 31, 2019, and establish the following milestone schedule:
  - a. Extend the monitoring period through December 31, 2018
  - b. Submit Draft Report (Deliverable 2) by January 31, 2019
  - c. Submit Final Report (Deliverable 3) by March 29, 2019
- B. Two additional data downloads will occur in October and December 2018 at all streamflow, precipitation, surface water imagery, and groundwater monitoring stations;
- C. One additional equipment maintenance visit will occur during the last half of 2018; and,
- D. The Draft and Final Reports will cover the period through December 2018.
- E. Extend the original contract amount by **\$29,607** to cover the listed additions.

JE Fuller appreciates the opportunity to provide you with this proposal. You may indicate your acceptance of this proposal and provide notice to proceed by forwarding the applicable Professional Services Agreement (PSA) Amendment for signature. As always, please feel free to contact me by email ([cyrus@jefuller.com](mailto:cyrus@jefuller.com)) or by phone at 520-623-3112 if you have any questions regarding this proposal.

Sincerely,

**JE Fuller/Hydrology & Geomorphology, Inc.**

Cyrus D. Miller, P.E., CFM  
Vice President

**TUCSON**  
John Wallace, PE, CFM  
Chris Rod, PE  
Cyrus Miller, PE, CFM  
Jon Elslager, PE  
Geoff Harris, PE

**FLAGSTAFF**  
Cory Helton, PE  
Joe Loverich, PE, CFM  
Ian Sharp, PE

**PRESCOTT**  
Nate Vaughan, PE

**SILVER CITY, NM**  
Mary Evans, PE, CFM

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Tempe Arizona 85284  
480.752.2124

**40 E Helen Street  
Tucson, Arizona 85705  
520.623.3112**

323 North San Francisco Street  
Suite 100  
Flagstaff, Arizona 86001  
928.214.0887

1042 Willow Creek Rd – A101  
#415  
Prescott, Arizona, 86301  
928.640.0778

2340 US Hwy East #130  
Silver City, New Mexico, 88061  
575.313.7650



**ATTACHMENT A**  
**Summary Cost Sheet for the**  
**Ephemeral Streamflow and Groundwater**  
**Monitoring SOW**  
**Including Additional Service #1**



PROJ: Cochise County/Ephemeral Streamflow and Groundwater Monitoring Year 2 Project  
 DETAIL: Total Project Cost Calculation  
 DATE: June 29, 2018  
 Prepared by: JE Fuller/Hydrology & Geomorphology (JE Fuller)

### ATTACHMENT A - Summary Cost Sheet for the Ephemeral Streamflow and Groundwater Monitoring SOW Including Additional Service #1

| Task          | Title  | Deliverable (see SOW for task details)  | Costs           |                 |                 |                 |                  |
|---------------|--|---|-----------------|-----------------|-----------------|-----------------|------------------|
|               |  |   | Original        |                 | Add. Service #1 |                 | TOTAL            |
|               |  |   | JE Fuller       | GSA             | JE Fuller       | GSA             |                  |
| 1             | Project Management                                 | Deliverable 1: Monthly Reports and Invoices and Monthly Meetings/Conference Calls   | \$12,970        | \$8,408         | \$4,832         | \$3,231         | <b>\$29,441</b>  |
| 2             | Monitoring Equipment Maintenance and Stabilization | -   | \$379           | \$7,578         | \$0             | \$0             | <b>\$7,957</b>   |
| 3             | Survey of Monitored Channel Reaches/Stations       | -   | \$6,170         | \$0             | \$0             | \$0             | <b>\$6,170</b>   |
| 4a            | Quarterly & Mid-Monsoon Data Downloads             | Deliverables 2, 3, and 4:<br>A Draft Annual Monitoring Report will be submitted to the project team at the end of the monitoring period. All project activities will be clearly documented, including data interpretation and analysis. All associated data will be provided in electronic format, as an appendix to the draft and final reports. (Deliverable 2)<br>A Final Annual Monitoring Report will be submitted within one month of receipt of comments from the project team. (Deliverable 3)<br>A memorandum summarizing the groundwater monitoring data will be submitted to the project team. (Deliverable 4) | \$564           | \$11,273        | \$226           | \$4,520         | <b>\$16,583</b>  |
| 4b            | Equipment Maintenance                              |   | \$1,182         | \$4,048         | \$137           | \$2,735         | <b>\$8,102</b>   |
| 4c            | Data Processing and Analysis                       |   | \$8,017         | \$8,734         | \$1,492         | \$3,439         | <b>\$21,682</b>  |
| 4d            | Reporting-Ephemeral Streamflow Monitoring          |   | \$3,286         | \$5,522         | \$1,081         | \$4,018         | <b>\$13,907</b>  |
| 4e            | Reporting-Groundwater Monitoring                   |   | \$375           | \$3,104         | \$119           | \$2,384         | <b>\$5,982</b>   |
| 4f            | Annual Results Presentation                        |   | \$946           | \$1,327         | \$66            | \$1,327         | <b>\$3,667</b>   |
| <b>TOTALS</b> |  |   | <b>\$33,890</b> | <b>\$49,994</b> | <b>\$7,953</b>  | <b>\$21,654</b> | <b>\$113,490</b> |

Notes:

5.00% Subconsultant markup included in JE Fuller Cost

All fee estimates are approximate.

The total fee is a not-to-exceed (NTE) amount and individual task fees may vary within the total NTE.

Where needed tasks may be performed concurrently or out of the sequence indicated above.



**ATTACHMENT B**  
**JE Fuller Cost Sheet for the**  
**Ephemeral Streamflow and Groundwater**  
**Monitoring SOW**  
**Including Additional Service #1**



PROJ: Cochise County/Ephemeral Streamflow and Groundwater Monitoring Year 2 Project  
 DETAIL: JEF Cost Calculation  
 DATE: June 29, 2018  
 Prepared by: JE Fuller/Hydrology & Geomorphology (JE Fuller)

**ATTACHMENT B - JE Fuller Cost Sheet for the Ephemeral Streamflow and Groundwater Monitoring SOW  
 Including Additional Service #1**

| Task          | Title  | Deliverable (see SOW for task details)   | Original        |          |                      |                        |                         | Additional Service #1 |          |                      |                        |                         | Total                |
|---------------|--|--|-----------------|----------|----------------------|------------------------|-------------------------|-----------------------|----------|----------------------|------------------------|-------------------------|----------------------|
|               |  |  | JE Fuller Hours |          | JE Fuller Labor Cost | JE Fuller Direct Costs | JE Fuller Cost Subtotal | JE Fuller Hours       |          | JE Fuller Labor Cost | JE Fuller Direct Costs | JE Fuller Cost Subtotal | JE Fuller Total Cost |
|               |  |  | PM II           | PE II    |                      |                        |                         | PM II                 | PE II    |                      |                        |                         |                      |
|               |  |  | \$135.00        | \$110.00 |                      |                        |                         | \$135.00              | \$110.00 |                      |                        |                         |                      |
| 1             | Project Management                                 | Deliverable 1: Monthly Reports and Invoices and Monthly Meetings/Conference Calls  | 6               | 104      | \$12,250             | \$300                  | \$12,550                | 2                     | 40       | \$4,670              | \$0                    | \$4,670                 | \$17,220             |
| 2             | Monitoring Equipment Maintenance and Stabilization | -  | 0               | 0        | \$0                  | \$0                    | \$0                     | 0                     | 0        | \$0                  | \$0                    | \$0                     | \$0                  |
| 3             | Survey of Monitored Channel Reaches/Stations       | -  | 0               | 52       | \$5,720              | \$450                  | \$6,170                 | 0                     | 0        | \$0                  | \$0                    | \$0                     | \$6,170              |
| 4a            | Quarterly & Mid-Monsoon Data Downloads             | <b>Deliverables 2, 3, and 4:</b><br>A Draft Annual Monitoring Report will be submitted to the project team at the end of the monitoring period. All project activities will be clearly documented, including data interpretation and analysis. All associated data will be provided in electronic format, as an appendix to the draft and final reports. (Deliverable 2)<br>A Final Annual Monitoring Report will be submitted within one month of receipt of comments from the project team. (Deliverable 3)<br>A memorandum summarizing the groundwater monitoring data will be submitted to the project team. (Deliverable 4) | 0               | 0        | \$0                  | \$0                    | \$0                     | 0                     | 0        | \$0                  | \$0                    | \$0                     | \$0                  |
| 4b            | Equipment Maintenance                              |  | 0               | 8        | \$880                | \$100                  | \$980                   | 0                     | 0        | \$0                  | \$0                    | \$0                     | \$980                |
| 4c            | Data Processing and Analysis                       |  | 4               | 64       | \$7,580              | \$0                    | \$7,580                 | 0                     | 12       | \$1,320              | \$0                    | \$1,320                 | \$8,900              |
| 4d            | Reporting-Ephemeral Streamflow Monitoring          |  | 2               | 24       | \$2,910              | \$100                  | \$3,010                 | 0                     | 8        | \$880                | \$0                    | \$880                   | \$3,890              |
| 4e            | Reporting-Groundwater Monitoring                   |  | 0               | 2        | \$220                | \$0                    | \$220                   | 0                     | 0        | \$0                  | \$0                    | \$0                     | \$220                |
| 4f            | Annual Results Presentation                        |  | 0               | 8        | \$880                | \$0                    | \$880                   | 0                     | 0        | \$0                  | \$0                    | \$0                     | \$880                |
| <b>TOTALS</b> |  |  | 12              | 262      | \$30,440             | \$950                  | \$31,390                | 2                     | 60       | \$6,870              | \$0                    | \$6,870                 | \$38,260             |

Notes:  
 All fee estimates are approximate.  
 The total fee is a not-to-exceed (NTE) amount and individual task fees may vary within the total NTE.  
 Where needed tasks may be performed concurrently or out of the sequence indicated above.



**ATTACHMENT C**  
**GSA Fee Estimate for**  
**Additional Service #1**



San Pedro Ephemeral Streamflow Monitoring - Year 2 Extension  
 (August - December 2018)  
 1815 - JE Fuller  
 June 19, 2018

**Table 1 - Cost Summary By Task**

|   | <b>Total Costs</b> |
|---|--------------------|
| <b>1 - Project Management</b>                       | <b>\$3,231</b>     |
| 1a - Project Coordination and Management            | \$1,423            |
| 1b - Monthly CCRN Technical Team Meetings           | \$1,808            |
| <b>3 - Monitoring and Reporting</b>                 | <b>\$18,424</b>    |
| 3a - Quarterly Data Downloads (October, December)   | \$4,520            |
| 3b - Equipment Maintenance                          | \$2,735            |
| 3c - ESM & Groundwater Data Processing and Analysis | \$3,439            |
| 3d - ESM 2018 Calendar Year Report                  | \$4,018            |
| 3e - Groundwater Monitoring Data Memo               | \$2,384            |
| 3f - Present Annual Results                         | \$1,327            |
| <b>Proposal Grand Total</b>                         | <b>\$21,655</b>    |



DEFINE | COMMUNICATE | SOLVE

August 6<sup>th</sup>, 2018

**TEMPE**

Jon Fuller, PE, RG, PH, CFM, DWRE  
Jeff Despain, PE, CFM  
Annette Griffin, AAS  
Brian Iserman, PE, CFM  
Mike Kellogg, RG, CFM  
Ted Lehman, PE  
Robert Lyons, PE, CFM  
W. Scott Ogden, PE, CFM  
Jon Ahern, PE, CFM  
Patricia Quinn, PE, RLS, AVS  
Tyler Azeltine  
Peter Acton, PE  
Richard Waskowsky, PE

Jackie Watkins, PE, PTOE  
Cochise County Highway & Floodplain  
1415 Melody Lane  
Bisbee, AZ 85603

RE: Proposal – Ephemeral Streamflow and Groundwater  
Monitoring Year 2  
Additional Service #2-Horseshoe Draw Monitoring

Dear Jackie:

**TUCSON**

John Wallace, PE, CFM  
Chris Rod, PE  
Cyrus Miller, PE, CFM  
Jon Elslager, PE  
Geoff Harris, PE

Per your request, JE Fuller/Hydrology & Geomorphology (JE Fuller) in conjunction with GeoSystems Analysis (GSA) is providing you with this proposal for the referenced services. This proposal pertains to Additional Service #2 of the current County contract for Ephemeral Streamflow and Groundwater Monitoring, PSA 18-12-HFP-03, to install surface water and groundwater monitoring equipment at the County-maintained Horseshoe Draw Flood and Erosion Control facility, collect monitoring data through the end of December 2018 and analyze/summarize the data collected in a Memo to the County.

**FLAGSTAFF**

Cory Helton, PE  
Joe Loverich, PE, CFM  
Ian Sharp, PE

The following items are attached to this proposal:

**PRESCOTT**

Nate Vaughan, PE

- A. Summary Cost Sheet for the Additional Service #2 Scope of Work (SOW)
- B. JE Fuller Scope of Work Narrative and Cost Estimate; and,
- C. GSA Scope of Work and Cost Estimate.

**SILVER CITY, NM**

Mary Evans, PE, CFM

8400 S Kyrene Road, Ste 201  
Tempe Arizona 85284  
480.752.2124

The expected cost for this work is **\$51,011**, according to the summary table provided as Attachment A. JE Fuller appreciates the opportunity to provide you with this proposal. You may indicate your acceptance of this proposal and provide notice to proceed by forwarding the applicable Professional Services Agreement (PSA) Amendment for signature. As always, please feel free to contact me by email ([cyrus@jefuller.com](mailto:cyrus@jefuller.com)) or by phone at 520-623-3112 if you have any questions regarding this proposal.

**40 E Helen Street**  
**Tucson, Arizona 85705**  
**520.623.3112**

323 North San Francisco Street  
Suite 100  
Flagstaff, Arizona 86001  
928.214.0887

Sincerely,  
**JE Fuller/Hydrology & Geomorphology, Inc.**

1042 Willow Creek Rd – A101  
#415  
Prescott, Arizona, 86301  
928.640.0778

Cyrus D. Miller, P.E., CFM  
Vice President

2340 US Hwy East #130  
Silver City, New Mexico, 88061  
575.313.7650



**ATTACHMENT A**  
**Summary Cost Sheet for the**  
**Additional Service #2 SOW**



PROJ: Cochise County/Ephemeral Streamflow and Groundwater Monitoring Year 2 Project  
 DETAIL: Total Project Cost Calculation  
 DATE: August 2, 2018  
 Prepared by: JE Fuller/Hydrology & Geomorphology (JE Fuller)

**Summary Cost Sheet for the Ephemeral Streamflow and Groundwater Monitoring SOW  
 Additional Service #2**

| Task          | Title  | Deliverable (see SOW for task details)     | Costs          |                 |                 |
|---------------|--|--|----------------|-----------------|-----------------|
|               |  |  | JE Fuller      | GSA             | TOTAL           |
| 1             | Project Management                               | -  | \$68           | \$1,351         | \$1,419         |
| 2a            | Develop Monitor Well Specificatoins              | Monitor Well Installation Memo             | \$29           | \$583           | \$612           |
| 2b            | Monitoring Well Installation and Instrumentation |  | \$1,257        | \$25,144        | \$26,401        |
| 2c            | Installation Memo                                |  | \$60           | \$1,192         | \$1,252         |
| 2d            | Data Downloads and Maintenance                   |  | \$63           | \$1,260         | \$1,323         |
| 2e            | Data Processing and Analysis                     |  | \$56           | \$1,110         | \$1,166         |
| 3a            | Equipment Procurement and Installation           | Surface Water Monitoring Installation Memo | \$206          | \$4,117         | \$4,323         |
| 3b            | Installation memo                                |  | \$45           | \$906           | \$951           |
| 3c            | Data Downloads and Equipment Maintenance         |  | \$82           | \$1,642         | \$1,724         |
| 3d            | Data Processing and Analysis                     |  | \$4,037        | \$2,237         | \$6,274         |
| 4             | Data Memo  | Data Memo                                  | \$2,070        | \$3,497         | \$5,567         |
| <b>TOTALS</b> |  |  | <b>\$7,972</b> | <b>\$43,039</b> | <b>\$51,011</b> |

Notes:  
 5.00% Subconsultant markup included in JE Fuller Cost  
 All fee estimates are approximate.  
 The total fee is a not-to-exceed (NTE) amount and individual task fees may vary within the total NTE.  
 Where needed tasks may be performed concurrently or out of the sequence indicated above.



**ATTACHMENT B**  
**JE Fuller Scope of Work Narrative  
and Cost Estimate**





## **JE Fuller Scope of Work Narrative and Cost Estimate** (Refer to Attachment C for additional details)

### Task 1 – Project Management

No additional work is proposed by JE Fuller for this task.  
Work proposed by GSA is detailed on Attachment C.

### Task 2 – Horseshoe Draw Groundwater Monitoring

No additional work is proposed by JE Fuller for this task.  
Work proposed by GSA is detailed on Attachment C.

### Task 3 – Horseshoe Draw Flood and Erosion Control Structure Monitoring

Unless described below, all work will be performed by GSA as detailed on Attachment C.

#### Subtask 3.d – Data Processing and Analysis

JE Fuller will develop a stage-discharge hydraulic rating curve and table for the inlet weir/spillway to calculate normal depths corresponding to facility design discharge ranges, using either standard weir equations or Manning's equation for uniform flow based on the location and configuration of the sensor installation relative to the weir/spillway.

JE Fuller will develop a stage-discharge hydraulic rating curve and table for the outlet pipes to calculate normal depths corresponding to facility design discharge ranges, using methods provided by the Federal Highway Administration (FHWA), namely the HY-8 computer program.

All elevations and dimensions will be based on facility as-built plans as provided by Cochise County.

Data collected from the inlet and outlet sensors will be analyzed by JE Fuller for the recorded time-stage relationships to derive estimated flow hydrographs based on the rating curves developed for each location, during each flow event classified for analysis. Hydrograph volumes will be calculated by integrating the inflow and outflow hydrographs over time.

### Task 4

JE Fuller will collaborate with GSA in formulating the Data Summary Memo that will summarize the estimated inlet and outlet flow volumes resulting from the recorded flow events, groundwater data trends, conclusions from the Surface Water Imagery (SWI) data, with groundwater and surface water monitoring equipment installation memos attached.

PROJ: Cochise County/Ephemeral Streamflow and Groundwater Monitoring Year 2 Project  
 DETAIL: JEF Cost Calculation  
 DATE: August 2, 2018  
 Prepared by: JE Fuller/Hydrology & Geomorphology (JE Fuller)

**JE Fuller Cost Estimate for the Ephemeral Streamflow and Groundwater Monitoring SOW  
 Additional Service #2**

| Task          | Title  | Deliverable (see SOW for task details) | JE Fuller Hours                            |           | JE Fuller Labor Cost | JE Fuller Direct Costs | JE Fuller Total Cost |
|---------------|--|--|--|-----------|----------------------|------------------------|----------------------|
|               |  |  | PM II                                      | PE II     |                      |                        |                      |
|               |  |  | \$135.00                                   | \$110.00  |                      |                        |                      |
| 1             | Project Management                               | -                                      | 0  | 0         | \$0                  | \$0                    | \$0                  |
| 2a            | Develop Monitor Well Specificatoins              | Monitor Well Installation Memo         | 0  | 0         | \$0                  | \$0                    | \$0                  |
| 2b            | Monitoring Well Installation and Instrumentation |  | 0  | 0         | \$0                  | \$0                    | \$0                  |
| 2c            | Installation Memo                                |  | 0  | 0         | \$0                  | \$0                    | \$0                  |
| 2d            | Data Downloads and Maintenance                   |  | 0  | 0         | \$0                  | \$0                    | \$0                  |
| 2e            | Data Processing and Analysis                     |  | 0  | 0         | \$0                  | \$0                    | \$0                  |
| 3a            | Equipment Procurement and Installation           |  | Surface Water Monitoring Installation Memo | 0         | 0                    | \$0                    | \$0                  |
| 3b            | Installation memo                                | 0                                      |  | 0         | \$0                  | \$0                    | \$0                  |
| 3c            | Data Downloads and Equipment Maintenance         | 0                                      |  | 0         | \$0                  | \$0                    | \$0                  |
| 3d            | Data Processing and Analysis                     | 3                                      |  | 32        | \$3,925              | \$0                    | \$3,925              |
| 4             | Data Memo  | Data Memo                              | 1  | 16        | \$1,895              | \$0                    | \$1,895              |
| <b>TOTALS</b> |  |  | <b>4</b>                                   | <b>48</b> | <b>\$5,820</b>       | <b>\$0</b>             | <b>\$5,820</b>       |

Notes:  
 All fee estimates are approximate.  
 The total fee is a not-to-exceed (NTE) amount and individual task fees may vary within the total NTE.  
 Where needed tasks may be performed concurrently or out of the sequence indicated above.



**ATTACHMENT C**  
**GSA Scope of Work and  
Cost Estimate**



## 1.0 INTRODUCTION

This proposal has been prepared for the Cochise County Recharge Network (CCRN) to provide additional monitoring instrumentation that will complement and improve existing CCRN surface water, recharge, and groundwater monitoring systems. The proposed project includes two monitoring goals:

- 1) Installation and instrumentation and monitoring of one monitoring well at the Horseshoe Draw structure to monitor groundwater elevation, and
- 2) Instrumentation and monitoring at the Horseshoe Draw structure to estimate facility stormwater runoff inflow and outflow.

The Horseshoe Draw Flood and Erosion Control Water Quality Improvement and Water Recharge Project structure was completed at the Ladd Ranch in June 2017 (Figure 1). Installation of one approximately 210 foot deep environmental monitoring well is proposed at the Horseshoe Draw flood and erosion control structure. The well will provide information on groundwater elevation and document any effects of recharge on groundwater levels. This data will also supplement the existing upper San Pedro groundwater monitoring network, which provides critical information on baseline groundwater conditions in the basin.

Additionally, GSA proposes installing monitoring equipment to determine inflow and outflow at the structure using two stilling wells and one SWI station. Stilling wells will collect data on water depth and duration which can then be used to estimate storage volumes, drainage rates, and groundwater recharge volumes. The SWI station will include a wildlife camera installed on the bankline and programmed to record images every fifteen minutes. The images will also provide valuable information on surface water flow dynamics (lateral extent, formation of preferential flow paths, flow relative to PT placement, etc.) and provide for quality assurance and quality control (QA/QC) of associated stilling well PT data. Because precipitation data for the watershed is limited to one gauge associated with the ESM project, GSA also proposes installing an additional precipitation gauge at the inlet to the Horseshoe Draw structure.

### **GeoSystems Analysis, Inc.**

Four tasks are proposed;

Task 1 – Project Management

Task 2 – Horseshoe Draw Groundwater Monitoring

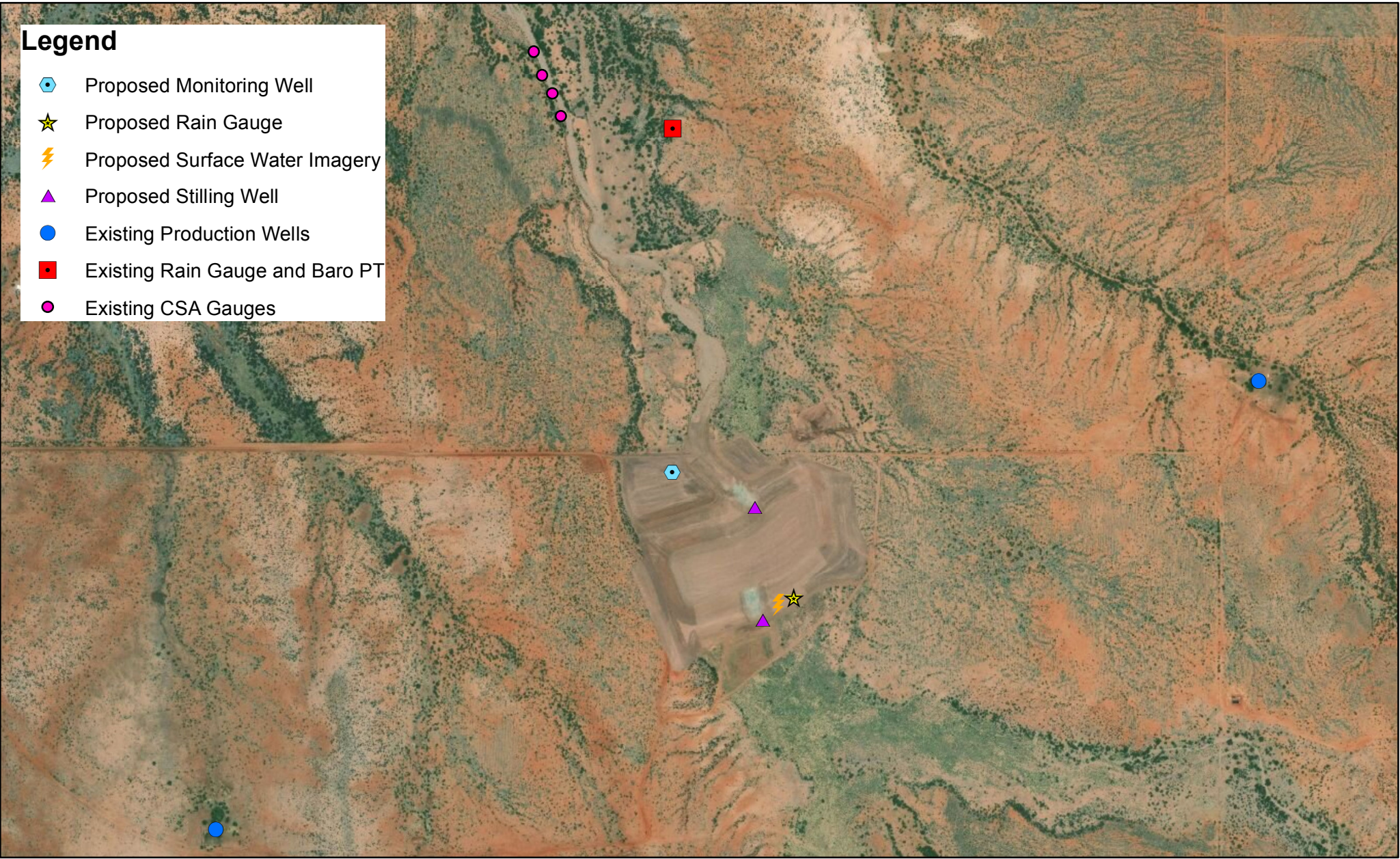
Task 3 – Horseshoe Draw Erosion Control Structure Monitoring

Task 4 – 2018 Data Memo

Descriptions of proposed work for each task are provided in the following sections.

**Legend**

- Proposed Monitoring Well
- Proposed Rain Gauge
- Proposed Surface Water Imagery
- Proposed Stilling Well
- Existing Production Wells
- Existing Rain Gauge and Baro PT
- Existing CSA Gauges



0 0.1 0.2 0.4 Miles



**Figure 1. Proposed and Existing Monitoring Equipment at Horseshoe Draw**

## **2.0 PROPOSED TASKS**

### **2.1 Task 1 – Project Management**

Project management activities will include correspondence with JEF and other Cochise County Recharge Network (CCRN) partners (Cochise County and TNC), driller coordination, project and field data download coordination, billing, and other administrative tasks. It will also include any necessary coordination of site use permission and access, and development of task-specific health and safety and quality assurance plans.

### **2.2 Task 2 – Horseshoe Draw Groundwater Monitoring**

#### **2.2.1 Subtask 2.a – Develop Monitor Well Specifications**

GSA will coordinate with the contracted well driller (Resilient Drilling, Mesa, AZ) to draft the monitoring well layout and provide specifications necessary for submission of the required ADWR well permit application. GSA will coordinate with the Ladd family and Cochise County to select a suitable monitoring well location, which is anticipated to be on the northwest side of the structure for ease of access and so that any groundwater mounding associated with recharge can be detected.

#### **2.2.2 Subtask 2.b – Monitoring Well Installation and Instrumentation**

An environmental monitoring well will be installed on the northwestern boundary of the Horseshoe Draw structure. According to nearby well data, groundwater is approximately 180 feet deep. An approximately 210 foot deep monitoring well will be drilled and completed by Resilient Drilling over the course of approximately four days. GSA will be present for the drilling, and will log drill cuttings and collect volumetric core samples to assess material properties and potential recharge rates of materials on the site. Following completion of well construction, GSA will install an automated data logging pressure transducer (Rugged TROLL 100, In-Situ, Inc., Ft. Collins, CO) to monitor depth to groundwater and groundwater elevation. The PT will be programmed to record data every four hours and will be suspended from the top of the well casing by a stainless steel cable. The casing height and PT hang length will be recorded at the well to allow for calculation of depth to groundwater from the monitoring data.

### **GeoSystems Analysis, Inc.**

### **2.2.3 Subtask 2.c – Installation Memo**

An installation memo will be provided to JE Fuller and Cochise County within 30 days of completion of well installation and instrumentation. A revised, final memo will be provided within 15 days of receiving comments from Cochise County and partners. The memo will include details on the groundwater monitoring location, installation, and material characteristics. This memo may be combined with installation details associated with Task 3.

### **2.2.4 Subtask 2.d – Data Downloads and Maintenance**

Data downloads will occur concurrently with data download site visits for the Ephemeral Streamflow Monitoring project (JEF 2017). Prior to removing the PT for download, the water level in the well will be manually measured using a water level meter (Model 101, Solinst Canada Ltd., Georgetown, Ontario). These values will be recorded and compared to the corresponding PT-measured water levels as a data quality assurance check. Preliminary PT data will be reviewed on-site for quality control, and maintenance or troubleshooting actions will be taken where possible. Maintenance and troubleshooting may include field calibration of the PT, verification of sensor hang length, well casing height, and replacement of failed PTs, if necessary.

### **2.2.5 Subtask 2.e – Data Processing and Analysis**

Data from the absolute pressure transducers used to monitor groundwater elevations will be barometrically corrected using In-Situ's BaroMerge software, and post-processed in Microsoft Excel to calculate depth to groundwater and groundwater elevation at each well from PT hang lengths, well casing heights, and surveyed ground surface elevations above mean sea level. Groundwater elevation averages for wet and dry periods will be analyzed and displayed graphically using GIS software (ArcGIS 10.3, ESRI, Redlands, CA) to estimate groundwater gradients if possible.

Analyzed data will be incorporated into the annual groundwater monitoring report for other San Pedro groundwater monitoring locations. A data appendix containing all raw and processed groundwater data will be provided as a Microsoft Excel document.

## **GeoSystems Analysis, Inc.**

## **2.3 Task 3 – Horseshoe Draw Flood and Erosion Control Structure Monitoring**

### **2.3.1 Subtask 3.a – Equipment Procurement and Installation**

Proposed monitoring equipment at the Horseshoe Draw structure includes two stilling wells, one SWI station, and one precipitation gauge (Figure 2). The stilling wells will be located at the graded inlet spillway and the central pipe of three 36” diameter outlet pipes (Figure 6, HilgartWilson 2017). Stilling wells will be constructed from sections of 2” schedule 40 steel pipe equipped with locking well caps. Stilling wells will be bolted to the concrete surfaces in locations anticipated to minimize disturbance during large flows and optimize data quality. Stilling wells will be instrumented with data logging pressure transducers (In-Situ, Inc. Rugged TROLL 100, Ft. Collins, CO) set to log data every five minutes. The SWI station will be located on the embankment above the inlet spillway to monitor ponding upstream of the structure and flow into the inlet (Figure 2). The station will include one wildlife camera and one staff gauge installed into the rip rap with reflective tape markings every 3 inches. The camera will be mounted adjacent to the spillway and oriented to have the best possible view of the facility inlet. The camera will be secured in a locked enclosure to minimize the potential for vandalism and damage. Images will be captured every 15 minutes. GSA also proposes installing a precipitation gauge (ECRN-100 and EM50 data logger, Decagon Devices, Pullman, WA) at the inlet to the Horseshoe Draw structure to improve monitoring of rainfall spatial variability in the watershed and provide redundancy of data. Currently, there is only one gauge located downstream and adjacent to the existing CSA station (Figure 1Figure 1).

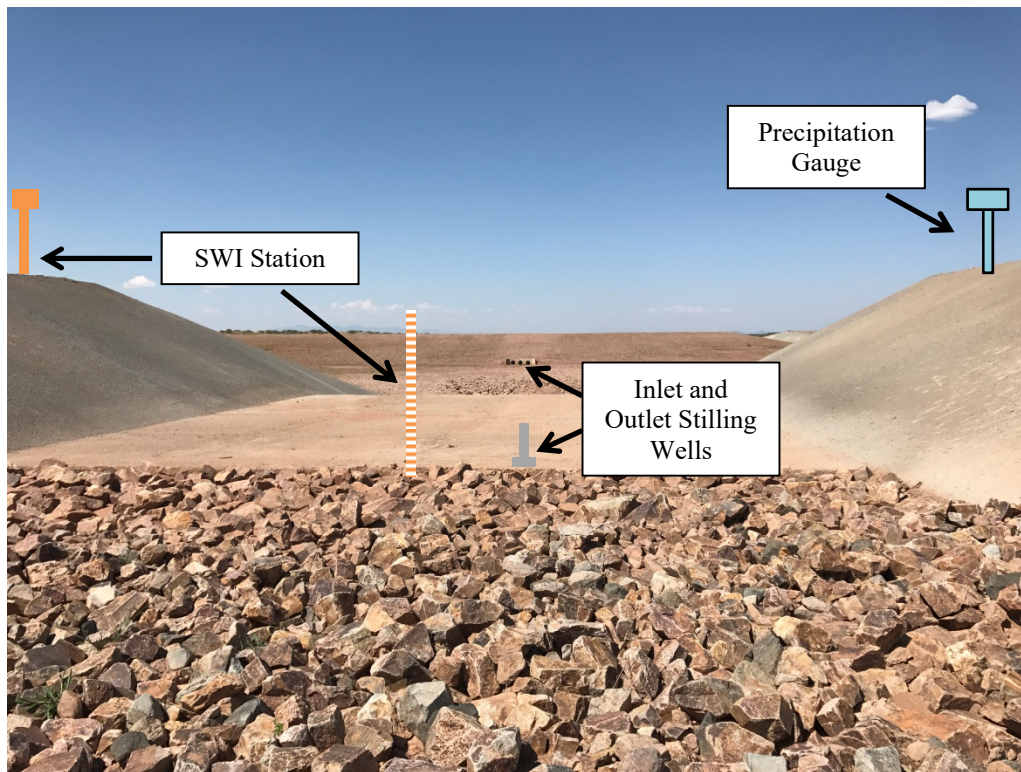


Figure 2. Proposed inlet and outlet monitoring equipment at the Horseshoe Draw structure.

### **2.3.2 Subtask 3.b – Installation Memo**

An installation memo will be provided to JE Fuller and Cochise County within 30 days of completion of installation activities. A revised, final memo will be provided within 15 days of receiving comments from Cochise County and partners. The memo will detail monitoring instrumentation locations and associated installation details.

### **2.3.3 Subtask 3.c – Data Downloads and Equipment Maintenance**

Data will be downloaded from the SWI camera, stilling wells, and precipitation gauge on a quarterly basis, and will occur concurrently with data download site visits for the Ephemeral Streamflow Monitoring project (JEF 2017). SWI images will be reviewed in the field to ensure proper camera placement, and batteries will be replaced as necessary. The camera SD card will be retrieved and replaced with a new one to minimize data transfer time while in the field. Stilling wells will be cleared of any accumulated sediment or debris. Data trends will be examined in the field to assure data quality, and any necessary adjustments will be made. All equipment will be assessed for functionality, battery life, and sensor and clock drift. Any additional maintenance needs will be addressed during each site visit.

### **GeoSystems Analysis, Inc.**

### **2.3.4 Subtask 3.d – Data Processing and Analysis**

Rating curves will be developed by a JE Fuller for the graded inlet spillway and the outlet pipe to calculate flow rates from water depth. Stilling well PT data will be barometrically corrected and processed to isolate runoff events and associated water ponding depths. Total facility inlet and outlet flow volumes will be estimated for each event and for the annual monitoring period. Estimated infiltration volumes will be calculated using reported percolation rates (6.1 cfs/acre, HilgartWilson 2015) and/or estimated rates associated with logged sediments during well construction (Task 2), and infiltration plus evaporation can be estimated using a mass balance approach (inlet minus outlet flow volumes).

### **2.3.5 Subtask 3.f – Data Memo**

A data memo will be provided to JE Fuller and Cochise County within 60 days of completion of the annual monitoring period. A revised, final memo will be provided within 15 days of receiving comments from Cochise County and partners. The memo will summarize estimated inlet and outlet flow volumes, SWI data, and infiltration volumes, as well as any maintenance activities conducted during the monitoring period.

## **2.4 Task 4 – 2018 Data Memo**

A data memo will be provided to JE Fuller and Cochise County within 60 days of completion of the annual monitoring period. A revised, final memo will be provided within 15 days of receiving comments from Cochise County and partners. The memo will summarize estimated groundwater data trends, inlet and outlet flow volumes, SWI data, and infiltration volumes, as well as any maintenance activities conducted during the monitoring period.

## **3.0 PROPOSED BUDGET AND SCHEDULE**

An estimated summary budget is provided in Table 1. Table 2 presents a detailed estimated task-by-task budget.

This proposal is currently budgeted to include monitoring through the end of the 2018 calendar year. As such, monitoring equipment and well installation is anticipated to be completed in August, 2018. Assuming this project start date, the monitoring period will run from August 2018 through December 2018 to correspond to CCRN calendar year monitoring for other projects in the region. The proposed budget assumes extension of Ephemeral Streamflow Monitoring to allow for concurrent data downloads through December 2018. An installation memo will be submitted within one month of installation of monitoring equipment. Groundwater monitoring (Task 2) results will be included in ESM annual

### **GeoSystems Analysis, Inc.**

reports. Horseshoe Draw structure monitoring results (Task 3) will be summarized in a data memo and provided to CCRN by February 2019.

#### **4.0 REFERENCES**

HilgartWilson 2015. Horseshoe Draw Flood Control, Restoration and Erosion Mitigation Study and Design Project, Volume 4, Existing Conditions Recharge Potential Analysis, Cochise County, Arizona. Prepared for Hereford Natural Resource Conservation District. December 2015.

HilgartWilson 2017. Horseshoe Draw Flood Control, Restoration and Erosion Mitigation Study and Design Project, Volume 6, Final Design Report, Cochise County, Arizona. Prepared for Hereford Natural Resource Conservation District. January 2017.

JEF 2017. Proposal for San Pedro Ephemeral Streamflow Monitoring, Year 2. Prepared for the Cochise County Highway & Floodplain Department, June 2017.

Horseshoe Draw Monitoring  
 1745 - Cochise County  
 July 30, 2018

**Table 1 - Cost Summary By Task**

|  | <b>Total Costs</b> |
|--|--------------------|
| <b>1 - Project Management</b>  | <b>\$1,351</b>     |
| No Subtask   | \$1,351            |
| <b>2 - Horseshoe Draw Groundwater Monitoring</b>                         | <b>\$29,288</b>    |
| 2a - Develop Monitor Well Specifications                                 | \$583              |
| 2b - Monitoring Well Installation and Instrumentation                    | \$25,144           |
| 2c - Installation Memo   | \$1,192            |
| 2d - Data Downloads and Maintenance                                      | \$1,260            |
| 2e - Data Processing and Analysis (Aug - Dec 2018)                       | \$1,110            |
| <b>3 - Horseshoe Draw Flood and Erosion Control Structure Monitoring</b> | <b>\$8,902</b>     |
| 3a - Equipment Procurement and Installation                              | \$4,117            |
| 3b - Installation Memo   | \$906              |
| 3c - Data Downloads and Equipment Maintenance (Aug - Dec 2018)           | \$1,642            |
| 3d - Data Processing and Analysis  | \$2,237            |
| <b>4 - 2018 Data Memo</b>  | <b>\$3,497</b>     |
| No Subtask   | \$3,497            |
| <b>Proposal Grand Total</b>  | <b>\$43,039</b>    |

## Horseshoe Draw Monitoring Table 2 - Detailed Costs

### Task: 1 - Project Management

|                            |           | Quantity | Unit Cost | Shipping | Total Cost     |
|----------------------------|-----------|----------|-----------|----------|----------------|
| <b>Personnel Costs</b>     |           |          |           |          |                |
| <i>Subtask: No Subtask</i> |           |          |           |          |                |
| Program Director           | Milczarek | 2        | \$145     | NA       | 290            |
| Staff Hydrologist          | Bunting   | 8        | \$90      | NA       | 720            |
| Clerical Staff             | Torres    | 4        | \$65      | NA       | 260            |
| <i>Subtask Total:</i>      |           |          |           |          | \$1,270        |
| <b>Other Direct Costs</b>  |           |          |           |          |                |
| <i>Subtask: No Subtask</i> |           |          |           |          |                |
| Reproduction               |           | 0.5      | \$50      | NA       | 25             |
| Communications             |           | 1        | \$50      | NA       | 50             |
| <i>Subtask Total:</i>      |           |          |           |          | \$81           |
| 8.00% Overhead: \$6.00     |           |          |           |          |                |
| <b>Task Total</b>          |           |          |           |          | <b>\$1,351</b> |

## Horseshoe Draw Monitoring Table 2 - Detailed Costs

### Task: 2 - Horseshoe Draw Groundwater Monitoring

|   | Quantity | Unit Cost | Shipping              | Total Cost |
|---|----------|-----------|-----------------------|------------|
| <b>Personnel Costs</b>  |          |           |                       |            |
| <i>Subtask: 2a - Develop Monitor Well Specifications</i>              |          |           |                       |            |
| Program Director Milczarek  | 0.5      | \$145     | NA                    | 72.5       |
| Staff Hydrologist Bunting   | 4        | \$90      | NA                    | 360        |
| AutoCAD/GIS Buchanan  | 2        | \$75      | NA                    | 150        |
|   |          |           | <i>Subtask Total:</i> | \$583      |
| <i>Subtask: 2b - Monitoring Well Installation and Instrumentation</i> |          |           |                       |            |
| Program Director Milczarek  | 1        | \$145     | NA                    | 145        |
| Staff Hydrologist Bunting   | 46       | \$90      | NA                    | 4140       |
|   |          |           | <i>Subtask Total:</i> | \$4,285    |
| <i>Subtask: 2c - Installation Memo</i>                                |          |           |                       |            |
| Program Director Milczarek  | 1        | \$145     | NA                    | 145        |
| Staff Hydrologist Bunting   | 8        | \$90      | NA                    | 720        |
| AutoCAD/GIS Buchanan  | 4        | \$75      | NA                    | 300        |
|   |          |           | <i>Subtask Total:</i> | \$1,165    |
| <i>Subtask: 2d - Data Downloads and Maintenance</i>                   |          |           |                       |            |
| Staff Hydrologist Bunting   | 2        | \$90      | NA                    | 180        |
| Hydrologist 1 Gonzales  | 4        | \$75      | NA                    | 300        |
|   |          |           | <i>Subtask Total:</i> | \$480      |
| <i>Subtask: 2e - Data Processing and Analysis (Aug - Dec 2018)</i>    |          |           |                       |            |
| Staff Hydrologist Bunting   | 4        | \$90      | NA                    | 360        |
| Hydrologist 1 Gonzales  | 8        | \$75      | NA                    | 600        |
| AutoCAD/GIS Buchanan  | 2        | \$75      | NA                    | 150        |
|   |          |           | <i>Subtask Total:</i> | \$1,110    |
| <b>Drilling Costs</b>   |          |           |                       |            |
| <i>Subtask: 2b - Monitoring Well Installation and Instrumentation</i> |          |           |                       |            |
| Resilient - Job Prep/Mob/Demob  | 1        | \$1,500   | NA                    | 1500       |
| Resilient - Additional Crewmember                                     | 3        | \$600     | NA                    | 1800       |
| Resilient - Support Trucks/Equipment                                  | 3        | \$575     | NA                    | 1725       |
| Resilient - Wellhead Completion                                       | 1        | \$325     | NA                    | 325        |
| Resilient - Crew Expenses (3 men)                                     | 3.5      | \$300     | NA                    | 1050       |
| Resilient - ADWR Permit   | 1        | \$200     | NA                    | 200        |
| Resilient - Daily Prep/Local Travel/Access                            | 4        | \$185     | NA                    | 740        |
| Resilient - Drive Sampling (est.)                                     | 21       | \$65      | NA                    | 1365       |
| Resilient - Install 2" monitor well                                   | 210      | \$28      | NA                    | 5880       |
| Resilient - Auger Drilling (1/210', est.)                             | 210      | \$16      | NA                    | 3360       |
|   |          |           | <i>Subtask Total:</i> | \$19,381   |

## Horseshoe Draw Monitoring Table 2 - Detailed Costs

### Instruments Costs

*Subtask: 2b - Monitoring Well Installation and Instrumentation*

|                          |   |       |                       |       |
|--------------------------|---|-------|-----------------------|-------|
| In Situ Rugged Troll 100 | 1 | \$400 | NA                    | 400   |
|                          |   |       | <i>Subtask Total:</i> | \$432 |

### Other Direct Costs

*Subtask: 2b - Monitoring Well Installation and Instrumentation*

|                       |     |      |                       |         |
|-----------------------|-----|------|-----------------------|---------|
| Lodging               | 3   | \$85 | NA                    | 255     |
| Installation Supplies | 1   | \$50 | NA                    | 50      |
| Miscellaneous         | 3   | \$50 | NA                    | 150     |
| Subsistence           | 4   | \$46 | NA                    | 184     |
| PT suspension cable   | 4   | \$15 | NA                    | 60      |
| Padlock               | 1   | \$10 | NA                    | 10      |
| 4WD Truck             | 400 | \$1  | NA                    | 260     |
|                       |     |      | <i>Subtask Total:</i> | \$1,047 |

*Subtask: 2c - Installation Memo*

|              |     |      |                       |      |
|--------------|-----|------|-----------------------|------|
| Reproduction | 0.5 | \$50 | NA                    | 25   |
|              |     |      | <i>Subtask Total:</i> | \$27 |

*Subtask: 2d - Data Downloads and Maintenance*

|                       |     |       |                       |       |
|-----------------------|-----|-------|-----------------------|-------|
| Equipment Replacement | 0.5 | \$800 | NA                    | 400   |
| Miscellaneous         | 2   | \$50  | NA                    | 100   |
| Subsistence           | 2   | \$46  | NA                    | 92    |
| 4WD Truck             | 200 | \$1   | NA                    | 130   |
|                       |     |       | <i>Subtask Total:</i> | \$780 |

|                           |
|---------------------------|
| 8.00% Overhead: \$1604.88 |
|---------------------------|

|                   |                 |
|-------------------|-----------------|
| <b>Task Total</b> | <b>\$29,288</b> |
|-------------------|-----------------|

## Horseshoe Draw Monitoring Table 2 - Detailed Costs

### Task: 3 - Horseshoe Draw Flood and Erosion Control Structure Monitoring

|  | Quantity | Unit Cost | Shipping              | Total Cost     |
|--|----------|-----------|-----------------------|----------------|
| <b>Personnel Costs</b>   |          |           |                       |                |
| <i>Subtask: 3a - Equipment Procurement and Installation</i>                    |          |           |                       |                |
| Staff Hydrologist Bunting  | 2        | \$90      | NA                    | 180            |
| Hydrologist 1 Gonzales   | 10       | \$75      | NA                    | 750            |
| Technician Heydorn   | 10       | \$65      | NA                    | 650            |
|  |          |           | <i>Subtask Total:</i> | <i>\$1,580</i> |
| <i>Subtask: 3b - Installation Memo</i>   |          |           |                       |                |
| Program Director Milczarek   | 0.5      | \$145     | NA                    | 72.5           |
| Staff Hydrologist Bunting  | 2        | \$90      | NA                    | 180            |
| AutoCAD/GIS Buchanan   | 2        | \$75      | NA                    | 150            |
| Hydrologist 1 Gonzales   | 6        | \$75      | NA                    | 450            |
|  |          |           | <i>Subtask Total:</i> | <i>\$853</i>   |
| <i>Subtask: 3c - Data Downloads and Equipment Maintenance (Aug - Dec 2018)</i> |          |           |                       |                |
| Staff Hydrologist Bunting  | 2        | \$90      | NA                    | 180            |
| Hydrologist 1 Gonzales   | 6        | \$75      | NA                    | 450            |
|  |          |           | <i>Subtask Total:</i> | <i>\$630</i>   |
| <i>Subtask: 3d - Data Processing and Analysis</i>                              |          |           |                       |                |
| Program Director Milczarek   | 2        | \$145     | NA                    | 290            |
| Staff Hydrologist Bunting  | 8        | \$90      | NA                    | 720            |
| Hydrologist 1 Gonzales   | 16       | \$75      | NA                    | 1200           |
|  |          |           | <i>Subtask Total:</i> | <i>\$2,210</i> |
| <b>Instruments Costs</b>   |          |           |                       |                |
| <i>Subtask: 3a - Equipment Procurement and Installation</i>                    |          |           |                       |                |
| METER EM50 Datalogger  | 1        | \$350     | NA                    | 350            |
| METER ECRN 100 Rain Gauge  | 1        | \$235     | NA                    | 235            |
| Surface Water Camera   | 1        | \$150     | NA                    | 150            |
|  |          |           | <i>Subtask Total:</i> | <i>\$794</i>   |
| <b>Other Direct Costs</b>  |          |           |                       |                |
| <i>Subtask: 3a - Equipment Procurement and Installation</i>                    |          |           |                       |                |
| In-Situ Rugged Troll 100   | 2        | \$380     | NA                    | 760            |
| Lodging  | 2        | \$85      | NA                    | 170            |
| Staff Gage   | 1        | \$50      | NA                    | 50             |
| 2" Steel Pipe  | 2        | \$50      | NA                    | 100            |
| Installation Supplies  | 2        | \$50      | NA                    | 100            |
| Shipping   | 2        | \$50      | NA                    | 100            |
| Subsistence  | 2        | \$46      | NA                    | 92             |
| Camera Mounting Bracket  | 1        | \$20      | NA                    | 20             |

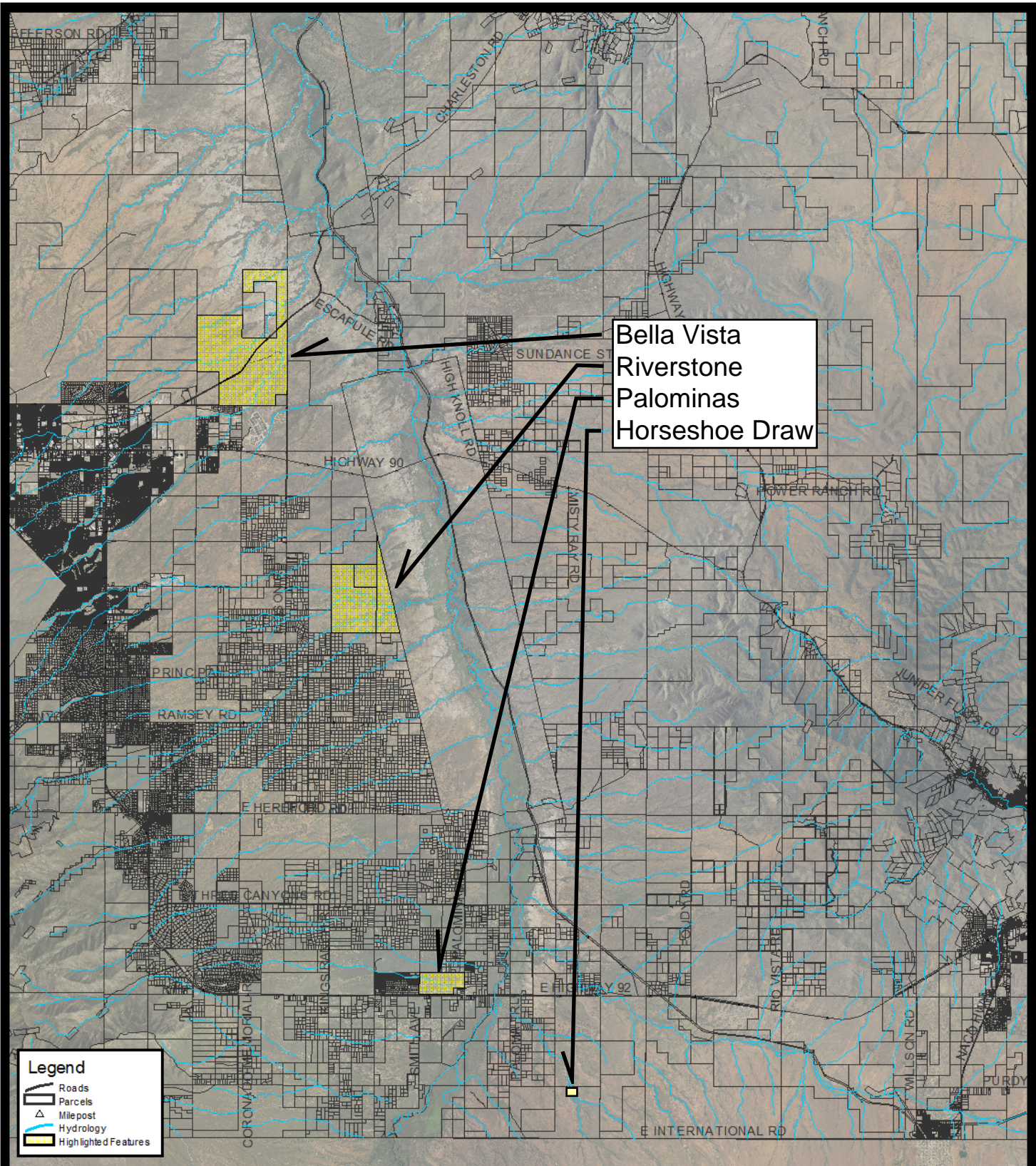
## Horseshoe Draw Monitoring Table 2 - Detailed Costs

|  |     |       |                       |                |
|--|-----|-------|-----------------------|----------------|
| PT suspension cable  | 2   | \$15  | NA                    | 30             |
| SD Card  | 2   | \$15  | NA                    | 30             |
| Lithium Batteries (qty 8)  | 1   | \$12  | NA                    | 12             |
| Padlock  | 2   | \$10  | NA                    | 20             |
| 4WD Truck  | 200 | \$1   | NA                    | 130            |
|  |     |       | <i>Subtask Total:</i> | <b>\$1,743</b> |
| <i>Subtask: 3b - Installation Memo</i>   |     |       |                       |                |
| Reproduction   | 0.5 | \$50  | NA                    | 25             |
| Communications   | 0.5 | \$50  | NA                    | 25             |
|  |     |       | <i>Subtask Total:</i> | <b>\$54</b>    |
| <i>Subtask: 3c - Data Downloads and Equipment Maintenance (Aug - Dec 2018)</i> |     |       |                       |                |
| Equipment Replacement  | 0.5 | \$800 | NA                    | 400            |
| Lodging  | 2   | \$85  | NA                    | 170            |
| Communications   | 0.5 | \$50  | NA                    | 25             |
| Miscellaneous  | 4   | \$50  | NA                    | 200            |
| Lithium Batteries (qty 8)  | 1   | \$12  | NA                    | 12             |
| 4WD Truck  | 200 | \$1   | NA                    | 130            |
|  |     |       | <i>Subtask Total:</i> | <b>\$1,012</b> |
| <i>Subtask: 3d - Data Processing and Analysis</i>                              |     |       |                       |                |
| Communications   | 0.5 | \$50  | NA                    | 25             |
|  |     |       | <i>Subtask Total:</i> | <b>\$27</b>    |
| 8.00% Overhead: \$268.88   |     |       |                       |                |
|  |     |       | <b>Task Total</b>     | <b>\$8,902</b> |

## Horseshoe Draw Monitoring Table 2 - Detailed Costs

### Task: 4 - 2018 Data Memo

|                               | Quantity | Unit Cost             | Shipping | Total Cost      |
|-------------------------------|----------|-----------------------|----------|-----------------|
| <b>Personnel Costs</b>        |          |                       |          |                 |
| <i>Subtask: No Subtask</i>    |          |                       |          |                 |
| Program Director    Milczarek | 2        | \$145                 | NA       | 290             |
| Staff Hydrologist    Bunting  | 12       | \$90                  | NA       | 1080            |
| AutoCAD/GIS    Buchanan       | 4        | \$75                  | NA       | 300             |
| Hydrologist 1    Gonzales     | 24       | \$75                  | NA       | 1800            |
|                               |          | <i>Subtask Total:</i> |          | <b>\$3,470</b>  |
| <b>Other Direct Costs</b>     |          |                       |          |                 |
| <i>Subtask: No Subtask</i>    |          |                       |          |                 |
| Reproduction                  | 0.5      | \$50                  | NA       | 25              |
|                               |          | <i>Subtask Total:</i> |          | <b>\$27</b>     |
| 8.00% Overhead: \$2.00        |          | <b>Task Total</b>     |          | <b>\$3,497</b>  |
| <b>PROPOSAL GRAND TOTAL:</b>  |          |                       |          | <b>\$43,039</b> |



Bella Vista  
 Riverstone  
 Palominas  
 Horseshoe Draw

**Legend**

- Roads
- Parcels
- Milepost
- Hydrology
- Highlighted Features



## Ephemeral Streamflow Monitoring Sites

This map is a product of the  
 Cochise County GIS  
 Information Technology Dept.

0" 1" = 16000'