ENGINEERING REVIEW
NOTICE OF INTENT TO DISCHARGE
SEWAGE COLLECTION SYSTEM (4.01 GP)

GENERAL INFORMATION

APPLICATION PROCESS

1. Submit this Notice of Intent to Discharge (NOI) application and appropriate supplemental information and forms, which are identified in rule and/or in this form. Submit the application electronically to GWP_ERU@azdeq.gov.

2. ADEQ recommends a pre-application meeting prior to submitting your application. You can request a pre-application meeting by emailing the Engineering Review Unit at GWP_ERU@azdeq.gov prior to submitting the application. To facilitate scheduling the meeting in a timely manner, include "Pre-Application Meeting" in the subject line. Please bring all final application components to the meeting.
3. Ensure that email addresses are provided in the NOI application, as all permits are sent to applicants via email.
4. Review fees established by delegated counties or cities may differ. Applicable ADEQ review fees are listed on website: azdeq.gov/SepticSewerFees

   Notes:
   a. The fee is based on Table 1 unit design flows and not the peak weather flows.
   b. Design flow for fee calculations are based on Table 1. The design flow calculation for fees must be based on the capacity that the sewage collection system is ultimately designed to carry upon full build out, including potential future up stream connections.
   c. Each realignment is a separate project and a separate NOI application and fee is required for each contiguous project.
   d. An applicant should receive approval from the Department prior to submitting an NOI for a courtesy review. The Department reserves the right to refuse a courtesy review request. The courtesy review fee is 1/3 of the applicable fee for the NOI application for the final project. In some cases, more than one courtesy review application may be required for a project. The balance (2/3) of the applicable fee will be due when submitting an NOI for the final project. Fees for the final NOI will be based on the components of that submittal and they may not reflect the fee charged in the courtesy review. An NOI application submitted 6 months or more after the Department issues comments on the courtesy review will have to pay 100% of the fee for the project.
   e. An applicant should receive approval from the Department prior to submitting an NOI for a priority review. The Department reserves the right to refuse a priority review request. The fee for a priority review is double the applicable and maximum fees.

5. Satisfy any deficiency requests arising from the Department's pre-construction review of the submitted information.
6. Receive a "Construction Authorization" from the Department authorizing construction of the sewage collection system. The construction of the project cannot begin until the Construction Authorization has been issued.
7. Construct the sewage collection system within two years from the date of the signed Construction Authorization.
8. Submit the Request for Discharge Authorization and required information to the Department to initiate the post-construction review and inspection. **A new NOI and applicable fee shall be required if the Request for Discharge Authorization (RDA) is not received within 2 years from the date of the signed Construction Authorization.**
9. Satisfy any deficiency request arising from the Department's post-construction review of the facility.
10. Receive a "Discharge Authorization" from the Department, which authorizes operation of the sewage collection system in accordance with the terms of the Type 4.01 General Aquifer Protection Permit and applicable requirements of statute and rule.

LICENSING TIME FRAMES

Licensing Time Frames (LTFs) are specified by the Arizona Department of Environmental Quality in AAC R18-1-525. The Following LTFs limit the number of business days ADEQ can review your project without a penalty:

License Type	Administrative Completeness Review	Substantive Review	Overall Time Frame
300 Services or less	42	53*	95
More than 300 Services	42	94*	136

*: Each request for an alternative design, installation, or operational feature under A.A.C. R18-9-A312(G) to a Type 4 General Permit adds eight business days to the substantive review time-frame.

INSTRUCTIONS FOR THE COMPLETION OF THE NOTICE OF INTENT TO DISCHARGE

Please fill out and submit this NOI to obtain authorization to construct a sewage collection system under a Type 4.01 General Aquifer Protection Permit in accordance with A.A.C. R18-9-E301.

NAMING THE PROJECT (SECTION 1)

Indicate which review type ADEQ will use for this project.

Name the sewage collection system according to one of the following guidelines. If the project:

1. Serves a specific subdivision, assign the same name "XXX Subdivision;"
2. Serves a specific facility, use "XXX RV Park" or "...XXX Campground" or "....XXX Shopping Center;"
3. Does not directly service any source but will enable sewers to connect to a wastewater system, such as an infrastructure project, use, "XXX Street Sewer Line Extension" or "XXX Improvement District Extension."

APPLICANT INFORMATION (SECTION 2)

The Applicant is the person seeking the Construction Authorization and is the responsible party for the facility. The applicant is the person to whom the permit will be issued. In addition, the Applicant must:

1 Meet the definition of a "person" in accordance with R18-9-101(29) and A.R.S. 49-201 (26);

2 Be the owner and/or the operator of the facility or the property owner where the system is to be installed.
   a. The facility owner is a person holding legal, equitable or possessory interest in the facility.
   b. The facility operator is a person in control or having responsibility for the facility seeking the Construction Authorization.

3 Corporations, Limited Liability Companies and Partnerships must be registered with the Arizona Corporation Commission;

4 Sign the NOI (Section 6) certifying that the applicant agrees to comply with the requirements of the rule (A.A.C.) and the terms of the permit.

CONTACT PERSON/AGENT (SECTION 3)

The Contact Person/Agent is the entity who acts on the behalf of the applicant to resolve permit related issues and receives correspondence during the application process. The Applicant is responsible to execute the necessary legal arrangements for the Contact Person/Agent to act on the Applicant's behalf.

EXISTING PERMITS (SECTION 4)

Please include any of the following permits that may be required as part of this application:

1. Individual permits;
2. CMOM;
3. Any approvals for floodplain requirements from FEMA, ADWR, or the county (attach copies);
4. Any legal actions affecting the project including Notice of Violations and Consent Orders (attach copies).

CERTIFICATION STATEMENT (SECTION 5)

The certification statement is to be completed by the applicant. **The Contact Person/Agent is not to sign the certification statement unless other legal means are included in the application package.**

SITE INFORMATION (SECTION 6)

The site information shall be supplied as indicated in the application. If the proposed project is not within a city, please indicate the nearest city. **The project location description shall provide enough information to reach the site given the instructions**. You may reference a publication and page number that gives this description (such as Sewer Design Report Page 2 Section 1 Project Description).

DOWNSTREAM PERMIT INFORMATION (SECTION 7)

The downstream permit information is required. The Department also requires that the receiving sewage collection system be at least authorized for construction prior to the proposed system being issued a Construction Authorization, so provide the ADEQ file number for the downstream system. The Department will not issue a Discharge Authorization until the downstream system has been issued a Discharge Authorization. In the case the downstream system was in existence prior to Jan 1, 2001, the application may need to submit a statement from the utility about the history, maintenance, and compliance status of the receiving system.

INSTRUCTIONS FOR THE COMPLETION OF THE PROJECT DESIGN INFORMATION SECTION

This part of the application is to provide the applicant and their engineer a quality check to ensure that the required data, design, and analysis is performed prior to submittal to ADEQ. The engineer or applicant should complete all relevant information and certification statement.

PROJECT DESIGN SUMMARY (SECTION 8)

The applicant shall provide an overall design summary for this project.

WASTEWATER TREATMENT PLANT INFORMATION (SECTION 9)

This section should include the information related to the WWTP that will serve this project. Please attach any relevant information associated with the WWTP (such as APP permit application status, construction schedules, etc) that may impact the approval of the proposed project.

CAPACITY ASSURANCES (SECTION 10 - 11)

Check the appropriate box relevant for the proposed project. The WWTP Capacity Assurance shall be included with the application package and shall include the commitment list issued from the WWTP.

SITE PLAN AND FEES (SECTION 12)

Please indicate if the items are included in the application package.

STANDARD DETAILS (SECTION 13)

Please indicate which standard details are used on the project. You may select more than one. If a project uses standard details and specifications other than those required in the Arizona Administrative Code (i.e. MAG or Pima County) the plans or the design report must contain a note that all the standard details and specifications have been reviewed and they meet minimum design requirements of the equivalent MAG or Pima County standard details and specifications.

SYSTEM COMPONENT DETAILS (SECTION 14)

Please select each of the components to be installed for the proposed project (Gravity Sewer Lines, Manholes, Force Main, Lift Stations, and/or Depressed Sewers). Complete the information requested for each component. Refer to the referenced rule(s) for the design and operational requirements. Supplying the requested information on this application does not alleviate the design engineer of including the information in the design report that is sealed by an Arizona-registered Professional Engineer.

GRAVITY SEWER LINES [R18-9-E301(D)(2)]

If the proposed project is incorporating gravity sewer lines, please check and supply the requested information. Submit a separate NOI for any force main and lift stations associated with the overall plan of sale or development.

MANHOLES [R18-9-E301(D)(3)]

If the project will include manholes, please check and supply the requested information.

FORCE MAINS [R18-9-E301(D)(4)]

If the proposed project is incorporating force mains, please check and supply the requested information. Submit a separate NOI for any gravity components associated with the overall plan of sale or development.

LIFT STATIONS [R18-9-E301(D)(5)]

If the proposed project is incorporating lift stations, please check and supply the requested information

DEPRESSED SEWERS [R18-9-E301(D)(6)]

If the proposed project is incorporating depressed sewers, please check and supply the requested information.

CONSTRUCTION QUALITY DRAWINGS (SECTION 15)

This section provides a brief check of what, at a minimum, shall be included in construction drawings submitted to ADEQ for review.

SEWAGE COLLECTION SYSTEM DESIGN FLOWS (SECTION 16)

This section is presented as a check item to ensure Table 1 Unit Design flows are used for the proposed project. The Table 1 design flow is used for the wastewater treatment plant capacity assurance form. The design flow incorporating the appropriate peaking factor as outlined in rule is the design flow to be used for the Sewage Collection System Capacity Assurance form and the design of the sewage collection system.

OPERATION AND MAINTENANCE PLAN (SECTION 17)

Please indicate the status of the O&M or approved CMOM plan for the proposed project.

DESIGN DOCUMENTS (SECTION 18)

This section provides a quality check to ensure that all design documents are signed and sealed by an Arizona Registered Professional Engineer as required in R18-9-E301(C)(7).

INSTRUCTIONS FOR THE COMPLETION OF THE ATTACHMENT 1

Attachment one is a comprehensive checklist to assist the applicant and their design engineer to prepare components for submittal. The use of this attachment is not required but it is included for the benefit of the applicant in preparing the application package components for submittal to ADEQ.

ENGINEERING REVIEW
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GENERAL INFORMATION

1 Project Name ☐ Standard review ☐ Priority review ☐ Courtesy review ☐ Realignment

Project Name

2 Applicant [R18-9-A301(B)(2)(a)]

(Check One) ☐ Owner ☐ Operator **[R18-9-A301(B)(2)(c)]**

Name _____ Phone _____ Fax _____

Title _____ Firm Name _____

Mailing Address _____

City, State, Zip _____ Email Address* _____

3 Contact Person/Agent (Please fill out if different than the Applicant) [R18-9-A301 (B)(2)(b)]

(Check all that apply) ☐ Engineer ☐ Consultant ☐ Contractor ☐ Attorney ☐ Other

Name _____ Phone _____ Fax _____

Title _____ BTR Number _____

Firm Name _____

Mailing Address _____

City, State, Zip _____ Email Address* _____

4 Existing Environmental Permits [R18-9-A301 (B)(2)(g)]

List any other federal or state environmental permits issued for or needed by the facility including any notice of violations or consent orders that includes this project (attach copies).

5 Certification Statement (To be completed/signed by the Applicant in Section 2) [R18-9-A301 (B)(2)(h)]

I, _____, certify that this Notice of Intent to Discharge and all attachments were prepared under my direction or authorization and all information is, to the best of my knowledge, true, accurate, and complete. I also certify that the sewage collection system described in this form is or will be designed, constructed, and operated in accordance with terms and conditions of the Type 4.01 General Aquifer Protection Permit (A.A.C. R18-9-E301) and applicable requirements of Arizona Revised Statutes Title 49, Chapter 2, and Arizona Administrative Code Title 18, Chapter 9 regarding Aquifer Protection Permits. I am aware that there are significant penalties for submitting false information including permit revocation as well as the possibility of fine and imprisonment for knowing violations.

_____ _____

Signature Date

Pursuant to A.R.S. § 41-1030:

(1) ADEQ shall not base a licensing decision, in whole or in part, on a requirement or condition not *specifically* authorized by statute or rule. General authority in a statute does not authorize a requirement or condition *unless* a rule is made pursuant to it that specifically authorizes the requirement or condition.

(2) Prohibited licensing decisions may be challenged in a private civil action. Relief may be awarded to the prevailing party against ADEQ, including reasonable attorney fees, damages, and all fees associated with the license application.

(3) ADEQ employees may not intentionally or knowingly violate the requirement for specific licensing authority. Violation is cause for disciplinary action or dismissal, pursuant to ADEQ's adopted personnel policy. ADEQ employees are still afforded the immunity in A.R.S. §§ 12-821.01 and 12-820.02.

*Email addresses are required as all permits will be sent to the applicant via e-mail.

DEPARTMENT USE ONLY		DATE STAMP
File and LTF Number		
Fee Paid for this Project		
Check Total		

6 Site Information [R18-9-A301 (B)(2)(d)]

County _____ City* _____

Location of downstream end of system proposed herein

Township _____ Range _____ Section _____ , _____

Latitude _____ º ‘ “ N Longitude º ‘ “ W

Project Location Description: _____

7 Downstream Permit Information (Required for Aquifer Protection Permit, Notice of Intent to Discharge)

☐ The downstream sewage collection system file number (ADEQ or delegated agency): _____

☐ The downstream sewage collection system file number is not available. A letter on city/utility letterhead signed by the downstream sewage collection systems owner or operator has been provided certifying the following:

1. A statement that the system has been functioning satisfactorily for the last five years and meets the performance requirements of R18-9-E301 (B).
2. An explanation as to why there is no permit available (example: the system is 50 years old) and what effort was made to research the issue.
3. Lastly, the letter should clearly state the location of the SCS being discussed in the letter (or attach a map depicting the location).

PROJECT DESIGN INFORMATION (TO BE COMPLETED BY THE ENGINEER)

8 Project Design Summary ☐ Infrastructure, and/or ☐ Includes connections

Population to be served by proposed system _____

Please indicate the number of connections to ultimately be served by this project at upstream build out:

☐ Residential _____ ☐ Commercial _____ ☐ Industrial _____

Table 1, Unit Design at downstream point _____ Gallons per day per R18-9-E301(D)(1)(a)

Peak Flow of system at downstream point Gallons per day per R18-9-E301(D)(1)(b)

9 Waste Water Treatment Plant APP and Contact Information [R18-9-A304 (B)] ☐ Additional Information Attached

Treatment Plant Name _____ APP Permit Number _____

Name _____ Phone _____ Fax _____

Title _____ Firm Name _____

Mailing Address _____

City, State, Zip E-mail Address

10 Sewage Treatment Facility Capacity Assurance (Check Box if Complete) [R18-9-E301(C)(1)]

☐ I have attached a completed Sewage Treatment Facility Capacity Assurance form.

☐ I have attached a copy of the capacity tracking list supplied from the Sewage Treatment Facility.

11 Capacity Assurance for a Sewage Collection System (Check One) [R18-9-E301 (C)(2)]

☐ I have attached a completed Sewage Collection System Capacity Assurance form.

☐ The proposed sewage collection system is under the same ownership as the downstream collection system.

12 Site Plan and Fees (Check Box if Complete) [R18-9-E301 (C)(3)]

☐ I have provided a general site plan showing the boundaries and key aspects of the project.

☐ I have provided the appropriate fee (see instructions).

13 Standard Details used for this project (Check One) [R18-9-E301(D)(1)(c)]

☐ MAG ☐ PAG ☐ Other (please describe):

14 Selected Components Included (Check All Components that Are being Applied for)

☐ Gravity Sewer Lines [R18-9-E301(D)(2)]

A) Please indicate the Design Flow (at full build out) for the project:

Base design flow without peaking factor in gallons per day

Design flow including peaking factor in gallons per day

B) Please summarize the gravity segments: ☐ Material Summary on page _____ of construction drawings and/or complete the required table below.

Diameter (in)	Material of Construction	Length (feet)	Standard
	Total length of gravity lines:		feet

C) Please select all testing requirements included in the specifications/standards for this project:

☐ Uniform Slope – Lamp Lighting	☐ ASTM C828	☐
☐ Uniform Slope – Camera	☐ ASTM C1091	☐
☐ Deflection Test	☐ ASTM C969	☐
☐ ASTM F1417	☐ ASTM D2321	☐
☐ ASTM C924	☐ Trenching/Bedding Std. Detail	☐

D) Please indicate the minimum (when flowing full) and maximum velocity within the proposed project:

☐ Minimum _____ (feet per second) ☐ Maximum _____ (feet per second)

☐ Ductile iron pipe or similar erosion resistant material is used for segments with velocities greater than 10 feet per second.

☐ Manholes [R18-9-E301(D)(3)]

A) ☐ Please indicate the number of manholes proposed for this project: _____

B) Please indicate which standard detail the proposed manhole design is consistent with (select all that apply):

☐ MAG 420-1 ☐ MAG 420-2 ☐ MAG 422 ☐ WWM 201 ☐ WWM 202 ☐ WWM 203

☐ WWM 207 ☐ WWM 208 ☐ WWM 209 ☐ WWM 210 ☐ WWM 211

C) Please select which integrity testing is included in the specifications for the proposed project:

☐ Water loss not exceeding 0.0034 of total manhole volume per hour.	☐ ASTM C1244 – Negative air pressure testing.	☐ NACE RP0274 0 High-Voltage Electrical Inspection

☐ Force Mains [R18-9-E301(D)(4)]

A) Please indicate the design flow for the force main:

☐ _____ Gallons per day

B) Please summarize the force main: ☐ Material summary on page _____ of construction drawings and/or complete the required table below.

Diameter (in)	Material of Construction	Length (feet)	Standard (SDR-35, etc)	Lift Station # (supplying flow)
	Total length of force mains:		feet	

C) Please indicate the integrity testing requirements that are included in the specifications:

☐ Hold Time _____ (hours) ☐ Pressure _____ (psi)

D) Please indicate the design velocity under the following conditions:

☐ One Pump: _____ (feet per second)

☐ Two Pumps: _____ (feet per second)

E) Please indicate the use of air relief valves for the proposed project:

☐ # of Air Relief Valves _____ are to be installed as indicated on the construction drawings

Or, ☐ the system high point is at the point of discharge.

F) Please describe how the odor is controlled at the point of discharge:

_____

_____

G) Please describe how drain back is prevented at the lift station:

_____

H) Please indicate how surge and water hammer is controlled:

☐ Restrained Joints and ☐ standard details are included ☐ Thrust blocks and ☐ standard details are included

☐ Lift Stations [R18-9-E301(D)(5)]

A) Please indicate how many lift stations are included for this project:

☐ Number of Lift Station ____

B) Please indicate the pump details for all the proposed project lift station(s):

Lift Station #	Number of Pumps	Rated Capacity	Design Flow	Peak Flow*	Horsepower	Manufacturer	Model #	Pump Type (grinder or 2.5 inch sphere)

* Design flow plus peaking factor for dry and wet weather flow (see R18-9-E301(D)(1)(b))

☐ The pump curves and system curves are included in the design report.

C) Please indicate the following wet well design information:

Lift Station #	Retention Time (minutes)	Volume (WWV**) (gallons)	Pump Cycle Time (minutes)	Calculated Results (CR)*	Manufacturer WWV is Greater than CR (yes or no)	Wet Well Horizontal Cross-Sectional Area

* Minimum volume 0.25 x Pump Capacity x Cycle Time

** Wet Well Volume = the volume between the "pump on" and "pump off" switches

D) Please indicate standby power source:

Lift Station #	Not Required*	Generator fueled by	rated at	Kwh.

* Not required as the lift station design flow is less than 10,000 gallons per day.

☐ Depressed Sewers [R18-9-E301(D)(6)]

☐ Number of barrels _____

☐ Barrel diameter _____ inches

☐ Velocity _____ feet per second at peak dry weather flow

☐ 100-year scour depth _____ feet

☐ Pipe material for the depressed sewer _____

☐ Indicate how the odors will be controlled (Please reference which document and page numbers)

15 Construction Quality Drawings (Check Boxes if Complete) [R18-9-E301 (C)(4)]

- ☐ A summary of materials table is included in the drawings.
- ☐ The plans and profiles for all sewer lines, manholes, force mains, depressed sewers, and lift stations with sufficient detail to allow Department verification of design and performance characteristics;
- ☐ Relevant cross sections showing construction details and elevations of key components of the sewage collection system to allow Department verification of design and performance characteristics, including the slope of each gravity sewer segment stated as a percentage;
- ☐ Drainage features and controls, and erosion protection as applicable, for the components of the project; and
- ☐ Horizontal and vertical location of utilities within the area affected by the sewer line construction.

16 Sewage Collection System Design Flows (Check Box if Complete) [R18-9-E301 (D)]

- ☐ I have attached documentation of design flows for significant components of the sewage collection system and the basis for calculating the design flows.

17 Operation and Maintenance Plan (Check One) [R18-9-E301 (F)]

- ☐ I have attached an operation and maintenance (O & M) manual. The manual shall contain the 24-hour emergency number of the owner and operator of the sewage collection system.
- ☐ The utility has a CMOM issued by ADEQ on _____ as ADEQ File Number _____.
- ☐ A current O & M plan is on file with the Department. The ADEQ File Number for this project is _____

18 Design Documents (Check Box if Complete) [R18-9-E301 (C) and (D)]

- ☐ I have included design documents, including plans, specifications, drawings, reports, and calculations that are signed, dated, and sealed by an Arizona-registered professional engineer. The designer shall use good engineering judgment following engineering standards of practice, and rely on appropriate engineering methods, calculations, and guidance.

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SEWAGE COLLECTION SYSTEM (4.01 GP)

ATTACHMENT 1: Plan submittal Checklist – This checklist is not required but it is provided to assist the applicant and their engineer in preparing required components for submittal for a sewage collection system (4.01 General Permit). Please be advised this attachment is intended as guidance and does not supersede the Arizona Revise Statutes or the Arizona Administrative Code.

Project Name:_____

A. Introduction

Use of this document in conjunction with the minimum design standards and specifications set forth in Arizona Administrative Code (A.A.C.) R18-9 will minimize review time and elimination of requests for additional information for a majority of projects. The use of this checklist is completely voluntary but will give guidance on self review of projects to be submitted to ADEQ for engineering review for Sewage Collection System General Permit 4.01. This check list does not supersede the requirements in A.A.C. R18-9.

B. Instructions

Prior to submittal of the Notice of Intent, please review this checklist against the supporting documents for the project.

Most common requests for additional information are shown in Red.

C. Construction Plans/Specifications

C.1. General

1. ☐ The plans are readable, reproducible, 2'x3', and are folded.
2. ☐ One (1) copy of the plan (preferably folded with project name visible) and specifications is submitted.
3. ☐ All sheets are signed, sealed and dated (including expiration date) by an Arizona registered P.E.
4. ☐ None of the sheets are marked "Preliminary", "Not for Construction" or similar language.
5. Construction Plan Cover sheet (check all that apply):
    a. ☐ Contains owner/developer name and contact information.
    b. ☐ Contains engineer name and contact information.
    c. ☐ Contains a Site map with sufficient detail to give directions to reach the site from a major road or intersection.
    d. ☐ Contains a legend of all symbols used throughout the plans.
    e. ☐ Contains a list of all abbreviations used throughout the plans.
    f. ☐ Contains latitude and longitude coordinates.
    g. ☐ Contains a material quantity summary.
    h. ☐ Contains a sheet index.
6. ☐ All utilities (Water, Storm Water, Re-use Water, Electrical, Gas, etc) are shown with horizontal and vertical locations given.
7. ☐ Profiles showing elevations, pipe material, pipe diameter, slopes, and demonstration of all sewer crossings meeting minimum separation requirements.
8. ☐ FEMA Flood Map is provided (even if none of the project is within a flood zone).
9. ☐ Water and sanitary sewer separation/protection notes included.
10. ☐ Invert elevations of both water and sewer pipes are given at all water lines and sewer lines crossings.
11. ☐ Sewer line is placed 2 feet below the 100-year storm scour depth and constructed using D.I.P. (if applicable).

C.2. Standard Plan Notes, Specifications, and Details

1. Standard details are either: ☐ M.A.G or ☐ Pima County
2. Standard details include at least:
    a. ☐ Trenching and bedding details for each pipe material and size.
    b. ☐ Manhole detail for each size and type.
    c. ☐ Detail for water tight lid, if needed.

DOWNLOAD UPDATED VERSIONS OF THIS FORM FROM
http://www.azdeq.gov/node/2739

d. ☐ Thrust block standard details.

3. Standard notes that include:
   a. ☐ Uniform slope test that will be performed on 100% of the sewer segments (see R18-9-E301(D)(2)(k)).
   b. ☐ Mandrel test that will be performed on 100% of the sewer segments (see R18-9-E301(D)(2)(i)).
   c. ☐ The low pressure air test that will be performed for each pipe material (see R18-9-E301(D)(2)(j)):
      ☐ ASTM F1417-92 (1998)
      ☐ ASTM C924-02 (2002)
      ☐ ASTM C828-03 (2003)
      ☐ ASTM C1091-03a (2003)
      ☐ ASTM C969-02 (2002)
      ☐ ASTM D2321-00 (2000)
   d. ☐ The manhole integrity test that will be performed (see R18-9-E301(D)(3)(e)).
   e. ☐ Force main pressure test that will be performed including duration, pressure, and acceptable pressure loss (see R18-9-E301(D)(4)(f)).
4. ☐ Annotation of pipe material and diameter to be used for each segment.

C.2. Gravity Sewer

1. ☐ Distance between manholes, pipe size, material, and slope shown on each line segment.
2. ☐ Sewer lines are straight or have a radius of curvature not less than 200 ft.
3. ☐ Each sewer line is covered by at least 3 ft of earth cover. Std Detail and note included.
4. ☐ Each sewer line is 8 inches in diameter or greater (or 6 inches for last 400 feet of a dead end segment).
5. ☐ Minimum and maximum slope of each sewer line meets 2 fps $\leq s \leq$ 10 fps (1.99 fps is less than 2 fps).
6. ☐ For segments with sewage velocity greater than 10 fps the line is constructed using ductile iron pipe, and the receiving manhole is structurally reinforced.
7. ☐ Manholes are located at all grade changes, size changes, alignment changes, sewer intersections, and meet the maximum spacing criteria and are consistent with either:
   ☐ Maricopa Association of Governments (M.A.G.) Standards.
   ☐ Pima County Wastewater Management Standards.

Pipe Diameter (in)	Minimum Slope (ft/ft)	Maximum Slope (ft/ft)
6	0.011	0.1218
8	0.0033	0.0830
10	0.0025	0.0616
12	0.0019	0.0483
14	0.0016	0.0394
15	0.0014	0.0359
18	0.0011	0.0281
24	0.0008	0.0192
30	0.0006	0.0142
36	0.0004	0.0112
48	0.0003	0.0076

Sewer Pipe Diameter (in)	Maximum Manhole Spacing (ft)
Less than 8	400
8 to less than 18	500
18 to less than 36	600
36 to less than 60	800
60 or greater	1300

8. ☐ Manholes are not located in areas subject to more than incidental runoff from rain falling in the immediate vicinity.
9. ☐ Manholes are located to provide adequate visibility and vehicular maintenance accessibility following construction.

C.2. Force Main

1. ☐ All force mains have the appropriate valves and controls required to prevent drainback.
2. ☐ Air release valves are incorporated at all high points. Locations are shown on the plan and profile.
3. ☐ Thrust blocks locations and standard details are shown and the plan and profile.
4. ☐ Velocity is between 3 and 7 fps for one pump and two pump operations.

C.3. Lift Station

1. ☐ Lift station is secured.
2. ☐ Location and content of the warning sign shown with 24-hour contact number.
3. ☐ Alarm system:
   ☐ Audible and/or visible alarm.
   ☐ Elevations of low and high levels of sewage are shown.
   ☐ Pump Cycle Height (The change in elevation between the "pump on" and "pump off" switches)

4. ☐ Active odor control system details provided.
5. ☐ Lift station is equipped with at least two pumps.
6. ☐ Piping, valves, and controls are shown and allow independent operation of each pump.
7. ☐ Sewage retention time does not exceed 30 minutes, or
8. ☐ Sewage is aerated, chemicals are added to prevent or eliminate hydrogen sulfide formation, or adequate ventilation is provided.
9. ☐ If the flow is greater than 5000 GPD, the cross-sectional area of the wet-well is at least 20 sq. ft.
10. ☐ Pumps are of grinder type, or
11. ☐ Pumps can pass a 2.5 in sphere.
12. ☐ The lift station is capable of operating at design flow with any one pump out of service (calculations provided).
13. ☐ If the sewage lift is more than 15 feet, suction pumps have not been used.
14. ☐ Pumps are self priming and pump water brake horsepower is at least 0.00025 times the product of the required discharge, in GPM, and the required TDH, in ft.
15. ☐ If a stand-by generator is required (the flow is greater than 10,000 GPD), location and specifications given.

D. Design Report

A standardized Design Report is recommended to reduce review time and to ensure the required information is initially submitted to the Department. The use of the report format is completely voluntary.

D.1. General

1. ☐ Design Report is signed, sealed, dated (with expiration date included) by an Arizona registered P.E.
2. ☐ One (1) copy of the Design Report is submitted.
3. ☐ Design Report flows are consistent with submitted capacity assurance forms and the Notice of Intent.
4. ☐ Master plan is included (if applicable).

Chapter 1 - Introduction

This section includes the following information:

1. ☐ Project location, including a discussion on how to access the project site.
2. ☐ Project description including master plan.
3. ☐ Elements served by the system.
4. ☐ Downstream point of discharge description (existing sewer line, wastewater treatment plant).
5. ☐ ADEQ file number for downstream point of discharge.

Chapter 2 – Basis of Design - Sewage Collection System

- *Section 2.1* – This section should include detailed description of the elements served by collection system must be specified, following Table 1 (R18-9-E301) and include table 2.1 Unit Design Flows for Proposed Project. Table 2.1 should include a summary of what flows were selected in the sizing of the system.
- *Section 2.2* – This section will summarize velocity min/max standards. Table 2.2 Performance Standards should be include the minimum and maximum slopes for each pipe size in order for meet the 2 fps and 10 fps min/max standards.
- *Section 2.3* – This section should include, when applicable, the scour depth analysis must be performed, with identification of the sewer line segments that must be placed below the scour depth. Table 2.3 Scour Analysis

Chapter 3 – Basis of Design - Force Main and Lift Station

- *Section 3.1* – Description of the wet well corrosion protection method to achieve an operational life of at least 20 years.
- *Section 3.2* – Wet well sewage retention time calculations. When the retention time exceeds 30 minutes sewage must be aerated, chemicals are added to prevent or eliminate hydrogen sulfide formation, or adequate ventilation is provided.
- *Section 3.3* – Description of the wet well and force main odor control system. Where engineering justification is required, please include those calculations here.
- *Section 3.4* – Where a stand-by power generation is required (average flow of more than 10,000 GPD), details are provided.
- *Section 3.5* – Calculations showing that the wet well volume meets the following criteria: wet well volume in gallons is ¼ of the product of the minimum pump cycle time, in minutes, and the total pump capacity, in gallons per minute. Pump cycle time calculations are provided (data presented in appendix 2).
- *Section 3.6* – Engineering analysis of force mains for the proposed project (data in appendix 2).

Chapter 4 – Basis of Design – Water Distribution System

Information as required for submittals for drinking water systems which should include fire flow analysis.

Appendix 1 – Sewage Collection System Analysis

The appendix presents the hydraulic analysis of the system. An example of the format and information included in the appendix is given below.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1	Upstream MH	Downstream MH	Pipe Diameter (in)	Pipe Length (ft)	Pipe Material	Mannings n	Upstream Invert Elevation (ft)	Downstream Invert elevation (ft)	Slope (ft/ft)	Population Served	Upstream Flow (GPD)	Design Flow (GPD)	Total Flow (GPD)	Peaking Factor	Peak Flow (GPD)	Velocity Full (ft/s)	Capacity Full (MGD)	d/D (%)
2																		
3																		

Appendix 2 – Sewage Collection System Analysis

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	Population Served	Design Flow (GPD)	Peaking Factor	Peak Flow (GPD)	Force Main Length (ft)	Force Main Size (in)	Flow Velocity (fps)	Roughness Coefficient	Capacity Flowing Full (GPD)	Working Pressure (psi)	Pipe Pressure Rating (psi)	Total Head Loss	Pump Capacity (GPM)	Wet Well Diameter (ft)	Wet Well Depth (ft)	Wet Well Volume (GAL)	Wet Well Cross-Sectional Area (sq. ft.)
2																	