

AGENDA

3:00 P.M.

CITY OF SEDONA, SPECIAL CITY COUNCIL MEETING

WEDNESDAY, NOVEMBER 29, 2017

NOTES:

- Meeting room is wheelchair accessible. American Disabilities Act (ADA) accommodations are available upon request. Please phone 928-282-3113 at least two (2) business days in advance.
- City Council Meeting Agenda Packets are available on the City's website at:

www.SedonaAZ.gov

GUIDELINES FOR PUBLIC COMMENT

PURPOSE:

- To allow the public to provide input to the City Council on a particular subject scheduled on the agenda.
- This is not a question/answer session.
- The decision to receive Public Comment during Work Sessions/Special City Council meetings is at the discretion of the Mayor.

PROCEDURES:


- Fill out a "Comment Card" and deliver it to the City Clerk.
- When recognized, use the podium/microphone.
- State your:
 1. Name and
 2. City of Residence
- Limit comments to **3 MINUTES.**
- Submit written comments to the City Clerk.

1. CALL TO ORDER/PLEDGE OF ALLEGIANCE/MOMENT OF SILENCE

2. ROLL CALL

3. SPECIAL BUSINESS

LINK TO DOCUMENT = 

- a. AB 2315 Discussion/possible direction regarding the Wastewater Master Plan Update and possible funding and policy changes for collection system expansions and/or repairs. 
- b. Discussion/possible action on future meeting/agenda items.

4. EXECUTIVE SESSION

If an Executive Session is necessary, it will be held in the Vultee Conference Room at 106 Roadrunner Drive. Upon a public majority vote of the members constituting a quorum, the Council may hold an Executive Session that is not open to the public for the following purposes:

- a. To consult with legal counsel for advice on matters listed on this agenda per A.R.S. § 38-431.03(A)(3).
- b. Return to open session. Discussion/possible action on executive session items.

5. ADJOURNMENT

Posted: _____

By: _____

Susan L. Irvine, CMC
City Clerk

Note: Pursuant to A.R.S. § 38-431.02(B) notice is hereby given to the members of the City Council and to the general public that the Council will hold the above open meeting. Members of the City Council will attend either in person or by telephone, video, or internet communications. The Council may vote to go into executive session on any agenda item, pursuant to A.R.S. § 38-431.03(A)(3) and (4) for discussion and consultation for legal advice with the City Attorney. Because various other commissions, committees and/or boards may speak at Council meetings, notice is also given that four or more members of these other City commissions, boards, or committees may be in attendance.

A copy of the packet with material relating to the agenda items is typically available for review by the public in the Clerk's office after 1:00 p.m. the Thursday prior to the Council meeting and on the City's website at www.SedonaAZ.gov. The Council Chambers is accessible to people with disabilities, in compliance with the Federal 504 and ADA laws. Those with needs for special typeface print, may request these at the Clerk's Office. All requests should be made **forty-eight hours** prior to the meeting.

CITY COUNCIL CHAMBERS
102 ROADRUNNER DRIVE, SEDONA, AZ

The mission of the City of Sedona government is to provide exemplary municipal services that are consistent with our values, history, culture and unique beauty.

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**CITY COUNCIL
AGENDA BILL**

**AB 2315
November 29, 2017
Special Business**

Agenda Item: 3a
Proposed Action & Subject: Discussion/possible direction regarding the Wastewater Master Plan Update and possible funding and policy changes for collection system expansions and/or repairs.

Department	Wastewater
Time to Present	30 minutes
Total Time for Item	2 hours
Other Council Meetings	April 12, 2016 – AB 2069 January 10, 2017 – AB 2190
Exhibits	A. 2017 Wastewater Master Plan Update – Executive Summary

City Attorney Approval	Reviewed 11/21/17 RLP	Expenditure Required	\$ N/A
City Manager's Recommendation	Discuss and give direction on funding and policy changes presented in the Wastewater Master Plan	Amount Budgeted	\$ N/A
		Account No. (Description)	N/A
		Finance Approval	<input checked="" type="checkbox"/>

SUMMARY STATEMENT

The 2017 Wastewater Master Plan Update (WWMP) is the first update in over 15 years. Staff will provide an overview of the contents of the WWMP and facilitate a discussion about policy on collection system expansions and funding for recommended projects identified through the WWMP.

Background: The City's wastewater collection system consists of 85 miles of gravity sewer lines, 1,950 manholes, and 17 lift stations. It covers approximately 19 square miles with 6,800 connections. The previous Wastewater Master Plan Update was completed over 15 years ago, in 2000. Since then, there have been significant collection system changes and reconsideration of plans to expand the system to various locations in the city.

WWMP Objectives Included:

- Development of wastewater flow projections based on land uses in the City's 2014 Community Plan.
- Determination of sewer service area boundaries.

- Hydraulic modeling to determine deficiencies within the collection system (i.e. undersized sewer mains, connections, etc.).
- Analysis of possible efficiencies (elimination of lift stations, overflow emergency strategies for major lift stations, feasibility of removing old cluster systems).
- Development of capital improvement projects for upgrades/major repairs
- Public outreach (mailings, fliers, website, public meetings).

Capacity Analysis and Flow Projections:

- Planning periods included current flows, 5-year, 10-year, and buildout flow projections

Year	Total Flow (mgd)
2017	1.13
2022	1.33
2027	1.39
Buildout	1.59

The buildout flow projection above represents the most likely scenario for total buildout flow. However, if connections are made in areas currently thought to be infeasible or there are significant increases in housing, could increase the buildout flow up to 1.8 million gallons per day (mgd).

Existing System Evaluation:

- An evaluation of the existing wastewater system included a capacity analysis and condition assessment of pipes and lift stations, and a review of Operation and Maintenance (O&M) practices.
- The capacity analysis identified four (4) capital improvement projects that are needed in the near term (0-5 years):
 - The 8-inch sewer main on Highway 179, upstream of the pedestrian bridge near Tlaquepaque, needs to be upsized to a 12-inch main (this is a new project and is not budgeted in the 10-year CIP).
 - Hydraulic modeling predicts that existing flows are capable of exhausting the current capacity of the line.
 - Total length = 1,500 linear feet
 - Estimated Project Cost = \$303,000
 - The 12-inch Brewer Road force main needs to be upsized to a 16-inch force main (project is budgeted in FY19)
 - Hydraulic modeling predicted minor surcharging during wet weather conditions and the 12-inch force main does not allow capacity equal to the pumping capacity of the Brewer Lift Station.
 - Total length = 5,700 linear feet
 - Estimated project cost = \$1,428,800
 - The Mystic Hills Lift Station needs to be upsized (project is budgeted in FY18 and FY19).
 - Peak flows in 2017 exceed pumping capacity.
 - Wet well overflow will occur in 9 minutes at peak flows.
 - Estimated project cost = \$910,000
 - The Chapel Lift Station needs to be upsized (project is budgeted in FY18 and FY19).

- Peak flows in 2017 exceed firm pumping capacity.
 - Wet well overflow will occur in 15 minutes at peak flows.
 - Estimated project cost = \$910,000
- Recommendations at the WWRP include:
 - Repair or replace the tertiary filters.
 - This is budgeted as a capital project in FY18 and FY19, and is currently underway.
 - Repair the aeration basin diffusers.
 - This is planned through wastewater operations and is budgeted in FY18.
 - Conduct a study to evaluate the need to equalize influent flow coming to the WWRP from the El Camino and Carrol Canyon Lift Stations. This is a new project and has not been programmed in the 10-year CIP.
 - Repair the influent screens.
 - This is budgeted as a capital project in FY18 and is currently underway.
- Pipeline and manhole recommendations include:
 - Conducting an inspection and condition assessment of the WWRP interceptor, which carries wastewater from City limits to the WWRP.
 - An initial inspection of the WWRP interceptor is budgeted in the WW Operations budget in FY18.
 - Incorporate closed-circuit television (CCTV) data with the City's GIS.
 - Implement a manhole inspection program to complement the pipeline CCTV inspection program that the City has developed.
- Operational recommendations for the lift stations include.
 - Correct deficiencies at the three major lift stations.
 - Deficiencies include faulting VFD's during power outages, improperly seated check valves, and floats and transducers that do not always work properly.
 - Many of the deficiencies have already been addressed, as they were identified early on in the master planning process.
 - Maintain a database of equipment with maintenance history.
 - Wastewater operations has computer software that will do this. Use of the program is anticipated to be implemented this fiscal year.

Future System Planning:

- The WWMP assumed existing city limits as the maximum service area.
 - Excludes several areas where expansion is less feasible due to long distance to existing sewer mains, low density, or the area is already serviced by a private system.
- Eleven areas where connection was deemed feasible were evaluated and ranked for possible expansion.
- Ranking criteria included:
 - Cost per connection:
 - Costs of construction ranged from \$7,700 to over \$50,000 per customer
 - Environmental benefit:
 - Areas in close proximity to Oak Creek were ranked as a high environmental benefit for future connection.
 - Neighborhood desire to connect:

- Some neighborhoods have pre-paid capacity fees but have not received sewer service.
 - Ease of construction:
 - The requirement for easements and running sewer lines between homes increases the complexity of construction.
 - Requirements for lift stations:
 - Some areas would require construction of a lift station and therefore scored lower in ranking than areas that could be serviced through gravity sewer lines.
 - Number of connections requiring pumps:
 - Some areas have homes that sit lower in elevation than the depth of the sewer and would therefore require a pump and scored lower in ranking.
- Current City Code provides options for extensions:
 - Developer or property owner request.
 - Property owner bears entire cost for extensions.
 - Mandatory connection for all property owners adjacent to the extension.
 - City funded extensions.
 - Feasibility and economic analysis is required prior to recommendation for extension to Council.
 - Mandatory connection for all property owners adjacent to the extension.

Staff Recommendation for Improvements and Extensions

- The finance department presented a long-range forecast for the Wastewater Fund to Council in April 2017. At that time, it was recommended that the rate increases continue, as outlined in the 2014 Fee Study.
 - Three of the four recommended near term capital projects have already been programmed into the 10-year CIP. The exception being \$303,000 for upsizing the sewer main on Hwy 179 at the pedestrian bridge.
 - Based on the long-range forecast, there is available funding to complete these four capital projects.
- Primary focus should be on necessary improvements to maintain the existing system.
- Secondary focus should be on providing sewer in areas where a large number of parcels have pre-paid capacity fees and providing direct connections in areas where cluster systems exist.
- Funding for extensions could require an increase to tap fees, monthly fees or some kind of special assessment. Policies on how those costs are recovered should be evaluated through a more in-depth study
- Changes to the City Code regarding new connections and extensions are not recommended at this time.

Staff would like to discuss and gauge Council’s support on prioritizing areas for extension, and seek direction on funding strategies for future extensions.

Community Plan Consistent: Yes - No - Not Applicable

The Sedona Community Plan identifies Oak Creek’s water quality as a key issue. The Wastewater Master Plan addresses this issue by looking at areas that are on septic systems

to determine if those areas can be connected to the sewer collection system, thus potentially reducing one of the threats to Oak Creek's water quality.

Board/Commission Recommendation: Applicable - Not Applicable

Alternative(s): N/A

MOTION

I move to: for discussion and direction only

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DRAFT

2017

Wastewater Master Plan Update

Executive Summary

November 2017

carollo
Engineers...Working Wonders with Water®

Sedona Wastewater Master Plan

Provides Tools to Maintain Existing Infrastructure and
Recommends Improvements to Accommodate Future Expansion



Sedona is a resort community to nearly 10,000 full time residents and has a thriving tourist economy that attracts between 2 and 4 million visitors each year. The City provides wastewater service to most of its residents and businesses. The majority of the collection system was constructed in the early 1990s.

The 2017 Wastewater Master Plan Update (2017 WWMP) provides tools and guidance to help the City ensure existing infrastructure is maintained. In addition, the WWMP identifies needed improvements to the wastewater collection and treatment systems for future anticipated flows.

The objectives of the 2017 WWMP include:

- Developing updated flow projections
- Creating a hydraulic model to analyze collection system capacity
- Performing an analysis of the wastewater reclamation plant treatment capacity
- Performing a desktop condition assessment of the City's gravity sewers
- Reviewing the City's collection system operations and maintenance practices
- Developing a capital improvement plan (CIP) for the collection system
- Gathering public input on expansion of the wastewater system into unsewered areas
- Identifying areas that could potentially connect to the wastewater system at build out

Description of Existing Wastewater System

The majority of the City's collection system and wastewater reclamation plant were constructed in the early 1990s. Homes and businesses that are not currently connected to the City's wastewater collection system are served by individual septic systems or private treatment systems. The City's system serves 80% of Sedona residents.

The City's wastewater system has approximately 5,600 connections, 110 miles of gravity sewers, 1,950 manholes, 17 lift stations, and one wastewater reclamation plant.

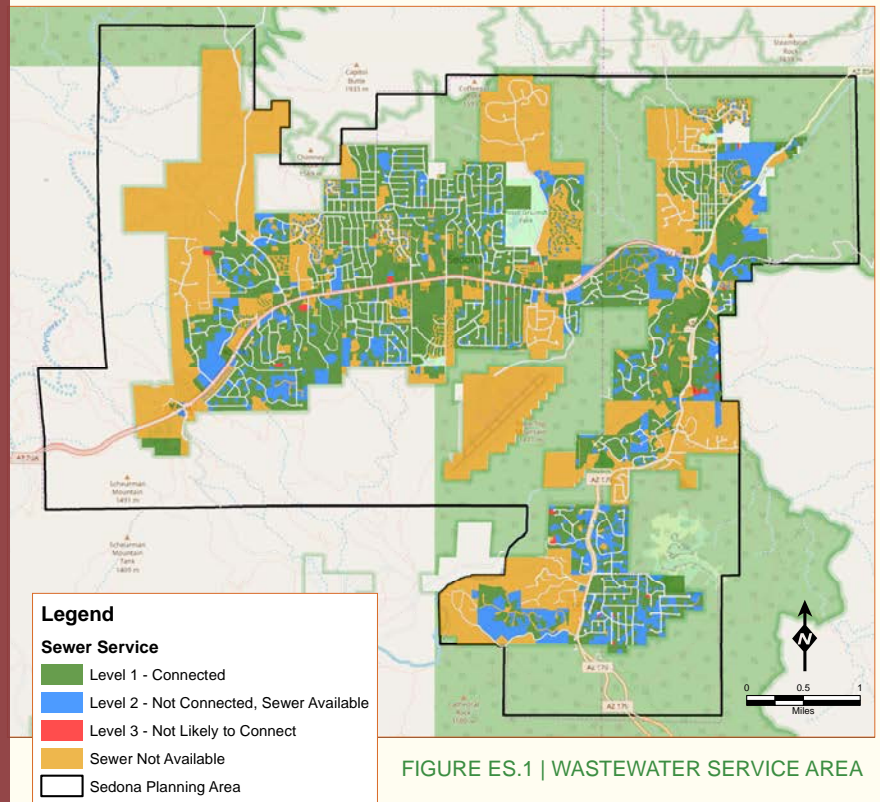


FIGURE ES.1 | WASTEWATER SERVICE AREA

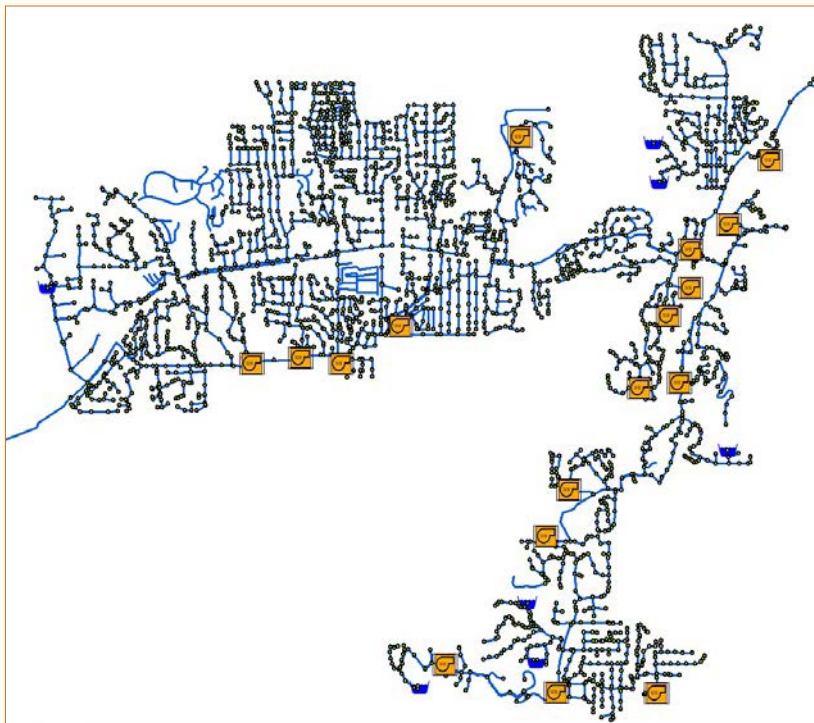


FIGURE ES.2 | HYDRAULIC MODEL OF WASTEWATER SYSTEM

Hydraulic Model of Wastewater System Evaluates Hydraulic Capacity

A hydraulic model of the wastewater collection system was created to evaluate the capacity of the pipelines and lift stations. The model was constructed using data from the City's Geographical Information System (GIS) and survey data. The model was calibrated for existing conditions and applied to identify capacity bottlenecks based on a range of flow projections.

Specifically, the hydraulic model was used to evaluate the capacity of existing and future collection system facilities for extreme conditions, such as peak flow and wet-weather events.

Condition Assessment

of Existing System Identifies Effective O&M Practices

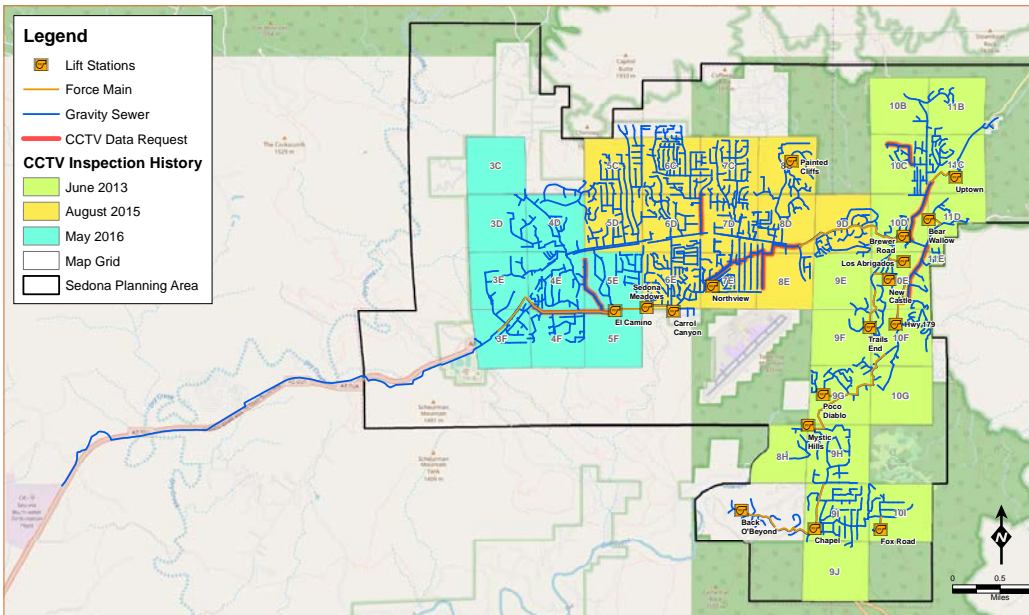


FIGURE ES.3 | GRAVITY MAIN CCTV INSPECTION HISTORY MAP

For many years, the City has methodically conducted closed-circuit television (CCTV) inspections of its sewer pipelines to identify the condition of the pipes. Pipelines are prioritized based on diameter, age, and location. This practice has helped to pro-actively identify needed repairs before catastrophic damage occurs. Figure ES.3 shows the City’s alphanumeric grid system and the areas identified for pipeline inspections since 2013.

The Master Plan identified areas where operations and maintenance (O&M) practices can be further enhanced.

- Incorporate the Pipeline Assessment Certification Program (PACP) rating scores with the City’s GIS and CCTV data to assign a condition to each pipe to determine future actions (repair, replace, or re-inspect), and adopting a risk-based approach to prioritize future inspections and maintenance activities.
- Developing and enacting a program to inspect manholes to complement the pipeline CCTV inspection program.
- Implementing an initial inspection of the WWRP Interceptor in areas that can be accessed today without constructing access points.
- Completing a comprehensive study to develop a long-term plan to maintain and inspect the WWRP Interceptor, which likely will require constructing new access points.



CCTV SEWER PIPE INSPECTION

Wastewater System Expansion Areas

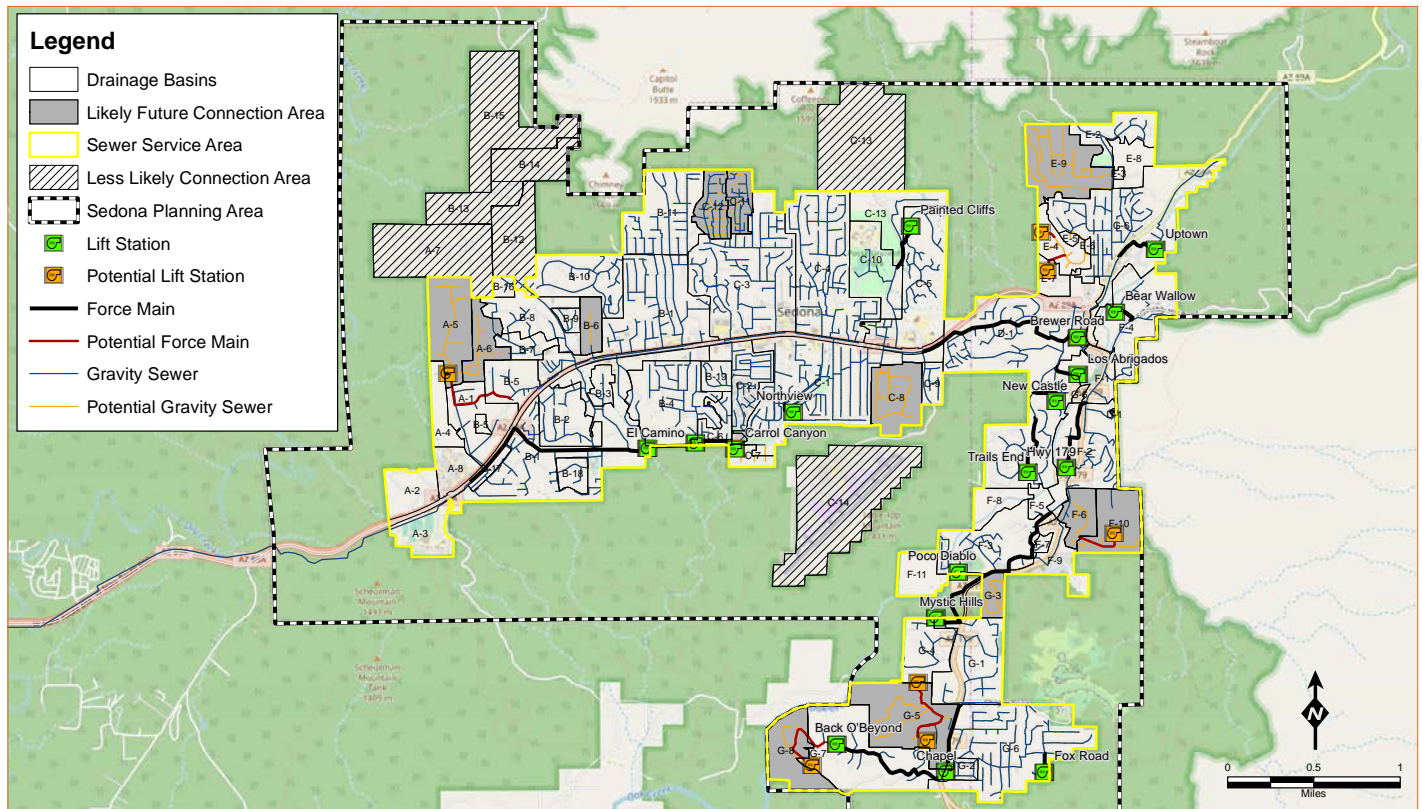


FIGURE ES.4 | LIKELY FUTURE CONNECTION AREA

Defining the City’s sewer planning area at build-out is critical for planning future expansions of the City’s WWRP and reclaimed water management infrastructure. The location of future connections establishes the expansion of the City’s collection system and impacts the City’s lift stations, which need to be sized to accommodate all future flows.

An evaluation was conducted to identify areas currently unconnected to the City’s wastewater system that may likely connect to the system in the future. These were identified primarily based on:

- Proximity to existing sewer pipes
- Ability to flow by gravity to existing collection system (i.e., pumping not required)
- Environmentally sensitive areas (e.g., adjacent to Oak Creek)

Some unconnected areas were identified as less-likely to connect in the future based on:

- Challenging topography which would require pumping to convey wastewater to the existing collection system
- Areas currently being served by a private collection and treatment system

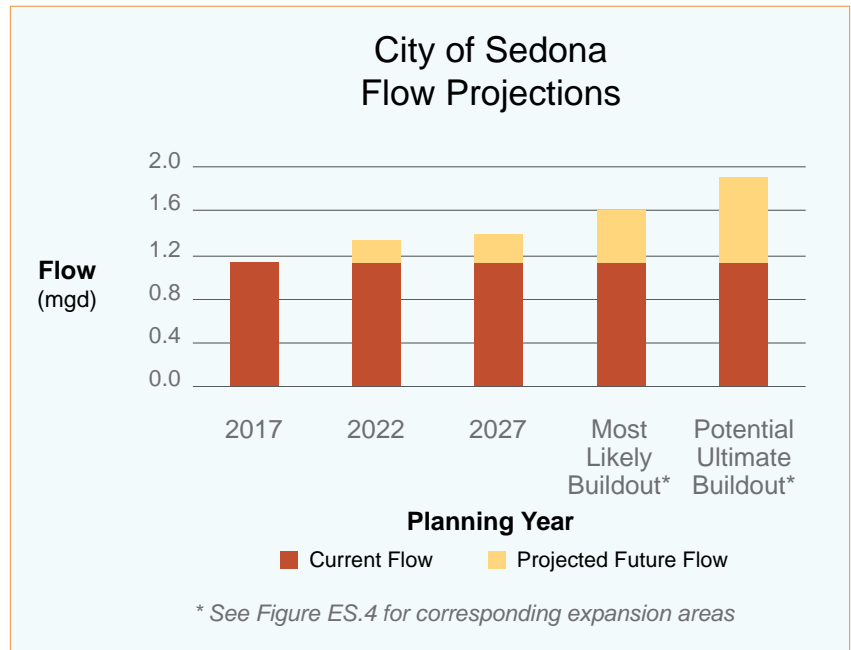
Figure ES.4 shows the “likely” and “less-likely” areas to connect to the system. Potential flows from these areas are used to develop build-out projections.

Flow Projections

Are the Basis for Future Wastewater System Improvements and Expansions

In conjunction with the City's Wastewater Reclamation Plant (WWRP) flow records and wastewater billing data, flow monitoring instruments were installed in several sewer mains to estimate average sewer flow contributions from existing businesses and residents. Results of this evaluation indicate that the average connection to the City's sewer collection system contributes approximately 202 gallons of wastewater per day. Future flow projections were then developed based on estimated growth in the 2014 Sedona Community Plan assuming existing average flows (202 gallons per day) with an additional 10% safety factor.

Wastewater flow projections were developed for 5 year, 10 year, most-likely build-out condition, and ultimate potential build-out condition based on expansion areas identified in Figure ES.4. The "most-likely" build-out projections were then used to estimate future collection and treatment capacity requirements and are the basis for recommending upgraded sewer pipe sizes, and sewage lift station and treatment process capacities.



The average connection to the sewer system in Sedona contributes approximately 202 gallons of wastewater per day.



Wastewater Master Plan Recommendations

Provide a Road Map for
Future Improvements

The recommendations from the WWMP are designed to protect human health, enhance the high level of service already provided by the City, and meet infrastructure needs for future growth. Where improvements are adequately defined, a range of planning-level costs are provided. The high-end of the cost range reflects the potential for large amounts of rock excavation and/or by-pass pumping, the extent of which is currently unknown.



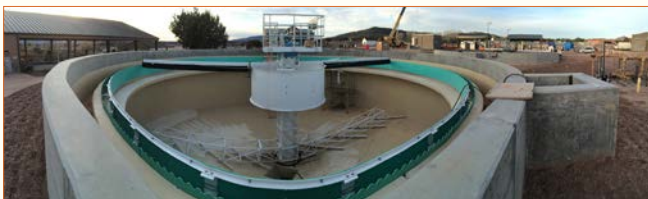
Pipelines/Manholes:

- Up-size 1,500 ft of 8-in main to 12-inch on Highway 179 upstream of the pedestrian bridge (\$303,000-\$450,000).
- Up-size 5,700 ft of 12-in Brewer Road Force Main to 16-inch (\$1.4M-\$2.0M).
- Implement an inspection program of the WWRP Interceptor.



Lift Stations:

- Up-size the Mystic Hills Lift Station to 1.0 million gallons per day (mgd) (\$910,000-\$1.1M).
- Up-size the Chapel Lift Station to 0.75 mgd (\$910,000-1.1M).



Wastewater Reclamation Plant:

The Class A+ Improvements Project (2016) at the WWRP added needed capacity for projected (“most-likely”) build-out flows.

The following O&M-related projects have been identified. An evaluation should be completed to identify cost-effective solutions and associated costs.

- Upgrade tertiary filters
- Repair aeration basin diffusers
- Influent flow equalization
- Influent screens



Reclaimed Water Management:

Reclaimed water management was not included in the WWMP, but was the focus of previous studies and planning work.

The Effluent Management Optimization Plan (2014) developed a long-term strategy for managing Class A+ effluent treated by the WWRP, including, but not limited to, a combination of wetlands, injection wells, and alternative land uses in Area 4.



Acknowledgments

The project team thanks all who provided input and participation toward the development of the Sedona Wastewater Master Plan, especially the following:

- City of Sedona Wastewater Department
- City of Sedona Public Works Department
- Sedona citizens who attended public meetings and provided feedback on preliminary information.