# Aura Flagstaff Public Water & Sewer Impact Analysis

**21.98+/- Acre Development Project**

***Analysis Completed June 1, 2018***

## Public Water & Sewer Impact Analysis

Prepared by Civil Design & Engineering, Inc. for The City of Flagstaff Utilities Department

***Mayor***

*Coral Evans*

***Council***

*Jamie Whelan*
*Celia Barotz*
*Jim McCarthy*
*Charlie Odegaard*
*Scott Overton*
*Eva Putzova*

***City Manager***

*Barbara Goodrich*

***Water Services Director***

*Brad Hill, R.G.*

***City Engineer***

*Rick Barrett, P.E.*

***Public Works Director***

*Andy Bertelsen*

Registered Professional Engineer (Civil)
CERTIFICATE NO.
29327
CHRISTINE A.
LAGUNA
Date Signed 6-1-18
ARIZONA, U.S.A.
Expires 09/30/19

Christine Laguna, P.E.
Arizona Registrant # 29327

Table of Contents
Public Water and Sewer Impact Analysis
Aura Flagstaff



## I. INTRODUCTION

The Aura Flagstaff is a proposed project consisting of 197 apartments consisting of single, double, and triple bedrooms for rent. The project would be located on Coconino County parcel 112-05-001W, 112-05-007B, 112-09-011E, and 112-05-011, which is in Sections 29 and 32, Township 21N, Range 7E, Gila and Salt River Base & Meridian. This parcel is southeast of the intersection of Lake Mary Road and High Country Trail (Figure 1)

The proposed development lies within the City of Flagstaff urban growth boundary and has the ability to be served by City water and sewer utilities.

The Aura Flagstaff project Site Plan (Exhibit 1) was provided to the City by LR Niemiec Architects and has been used as the basis for this preliminary analysis.

The criteria used herein to estimate the project's water demand and sewer flow are from the City of Flagstaff Engineering Design Standards (COF EDS), Chapter 13-09, effective October, 2017. This Water and Sewer Impact Analysis (WSIA) is considered valid for a period of two years from its completion date which is 6/1/2018.


Figure 1 – Vicinity Map. Not to scale.

## II. ANALYSIS SUMMARY

On-site modifications:

**Sewer:** currently there is no infrastructure in the ground to support this development, so all systems will have to be designed and built.
**Water:** Currently there is no infrastructure in the ground to support this development, so all systems will have to be designed and built.

Off-site modifications:

**Sewer:** Based on the city of Flagstaff sewer interceptor model and the following analysis, the developer will use an existing 8" sewer tap on the shared property line with APN:105-06-105A. This should be done to City of Flagstaff Standards
**Water:** Currently there is infrastructure in High Country Trail that will support this project. Tapping the waterline in the right-of-way should be done to City of Flagstaff Standards.

## III. WATER SYSTEM ANALYSIS

### A. EXISTING WATER SYSTEM

Currently, all public water infrastructure exists in the High Country Trail right-of-way. There is a 12" water main along the property frontage. All appropriate looping and second source requirements can be met. The property lies within the City of Flagstaff Zone "B" water pressure system limits, and meets the minimum pressure requirements stated in the City of Flagstaff Engineering Standards. High pressures have been noted on site which requires the developer to install pressure reducing valves (PRV) when necessary.

The proposed development falls within City of Flagstaff pressure Zone B with elevations as high as 6948'. The building on this development will have a height of 3 stories with water and sewer fixture heights of up to 40 feet above ground level. This analysis provides the water pressure at the ground level and the developer's Architect/Engineer (A/E) shall confirm adequate water pressure at the highest points of water demand.

## B. PROPOSED WATERLINE EXTENSIONS

The developer is proposing and will be required to provide a looped water system by extending an 8” diameter waterline from the existing 12” diameter main located in High Country Trail.

## C. WATER SYSTEM DEMANDS

The following quantifies the anticipated water demands for the project.

**Water System Demand**

Dwelling Units = 197
Fire Flow = 1500 GPM (Multi-family residential)

**Multi-family Market Rate Apartments with 10% Affordable**
Population = 2.5 ppl/unit X 197 units = 492.5 ppl

Average Daily Demand = 492.5 ppl X 75 gpcd = 36,937.5 gpd

Peak Daily Demand = 492.5 ppl X 250 gpcd = 123,125 gpd

## D. WATER SYSTEM ANALYSIS RESULTS

Bentley Watergems software was used for simulations of peak daily and fire flow.

The analysis area used was based on the area estimated to be impacted by the proposed Aura Flagstaff development, and includes both junction demand nodes possibly impacted by the additional demands, and locations that may need to supply fire flows. This area spans approximately 2500’ to the south to include higher elevations. See Exhibit 4.

Results (Appendix A) of the computer analysis for peak daily flow indicate a range in pressure off-site in the project vicinity from 52.05 psi (J-8744) to 94.29 psi (J-7688). The rest of the nodes are consistent given the elevations of the junction nodes within the

analyzed boundary. J-8744 is at an elevation of 7017.36' while, J-7688 is lower, at an elevation of 6919.43'. The peak daily flow condition yields a pressure on the project site ranging between 82.35 psi (J-71) to 96.66 psi (J-62). The lowest pressure, on-site, associated with peak domestic flows, 82.35 psi, occurs at J-71 and is above the City Engineering Standards' minimum pressure of 40 psi (COF EDS 13-9).

Based upon the computer simulation of fire flow, residual pressures in the project vicinity are projected to remain at 20 psi (COF EDS 13-9) or higher during fire flow scenarios of 1500 gpm or less. The onsite junctions at the project location satisfy these constraints.

It is the developer's responsibility to design, acquire adequate right-of-way, and construct all on-site and connecting water infrastructure in accordance with all applicable City, State and Federal rules and regulations.

## IV. SEWER SYSTEM ANALYSIS

### A. EXISTING SEWER SYSTEM

The sewer service for this project flows to an existing 8" stub out connected to manhole 6-273 which flows through the adjacent properties to manhole 6-313 before heading northeast to the Rio-de-Flag Wastewater Treatment Plant. This line is a 12-inch polyvinyl chloride (PVC) pipe that was installed in 1997. The site plan provided by LR Niemiec Architects illustrates the developer's plan to build an 8-inch line that flows east through the property to the manhole on APN:105-06-105A. This will require the developer to get the necessary utility access. See Exhibit 6.

For this analysis, using the City of Flagstaff SewerCAD model, we considered that the developer has proposed that the flow from this project will be collected in a pipe that flows to manhole 6-273. For the purposes of this analysis, the flows from the project will be added to manhole 6-313. See Exhibit 6. The Rio-de-Flag Wastewater Treatment Plant, which is currently operating below capacity, treats all sewage collected from this proposed project. The Rio de Flag facility currently processes 1.9 million gallons per day, MGD. This facility has a design capacity of 4.0 MGD.

## B. PROPOSED SEWER SYSTEM EXTENSIONS

Based upon the drawings provided by developer, one connection point to the City of Flagstaff sewer collection system is proposed. The developer proposes a gravity flow connection to the manhole 6-273, located along eastern property line.

The on-site sewer system was not analyzed as a part of this report and shall be addressed by the A/E as part of their design for their project. The A/E's engineering analysis and design shall be consistent with the requirements called out in the City of Flagstaff Engineering Standards.

## C. SEWER SYSTEM FLOWRATES

The following criteria were utilized in determining the anticipated wastewater generation for this project.

**Sewer System Design Flows**

**Residential Sewer Flow Criteria**

Dwelling Units= 197
197dwelling units x 2.5 people / dwelling unit = 492.5 people
People = 492.5
Load = 75 gpcd (COF EDS 13-9)
Peaking Factor = 2.63 (COF EDS 13-9)

**Residential Flows**

Average Daily Flow = 492.5 people x 75 gpcd = 36,937.5 gpd
Peak Flow = Average Daily Flow x Peak Factor (2.63)
Peak Flow = 63,937.5 X 2.63 = 97,145.63 gpd

## D. SEWER SYSTEM ANALYSIS RESULTS

In the Sewercad model prepared for this evaluation, the sewer design flows were applied to manhole 6-313. These total design flows from the Aura Flagstaff project will yield a peak day flow increase of 97,145.63 gallons per day (0.097 MGD).

The capacity of the existing collection system downstream of this project is adequate to convey the existing and proposed flow rates and maintain the City's required d/D pipe capacity ratio (expressed as a percentage) at less than 70%. See Appendix C.

## V. CONCLUSIONS & REQUIREMENTS

No off-site infrastructure improvements other than to serve the intent of the tentative plat are required of this development. All on-site infrastructure must be constructed to City of Flagstaff and ADEQ standards.

Sewer and water service to all adjacent homes and businesses must be maintained during construction and tapping for this project.

The findings of this analysis indicate that the completion of the project will comply with public water and sewer infrastructure requirements as outlined in the current City of Flagstaff Engineering Standards as long as all on-site infrastructure is designed and constructed per the Engineering Standards and as stipulated herein. Deviations from the intent shown on the developer's provided preliminary drawings, and/or further development beyond what was shown on the preliminary drawings will require additional review and must gain full Development Review Board Approval.

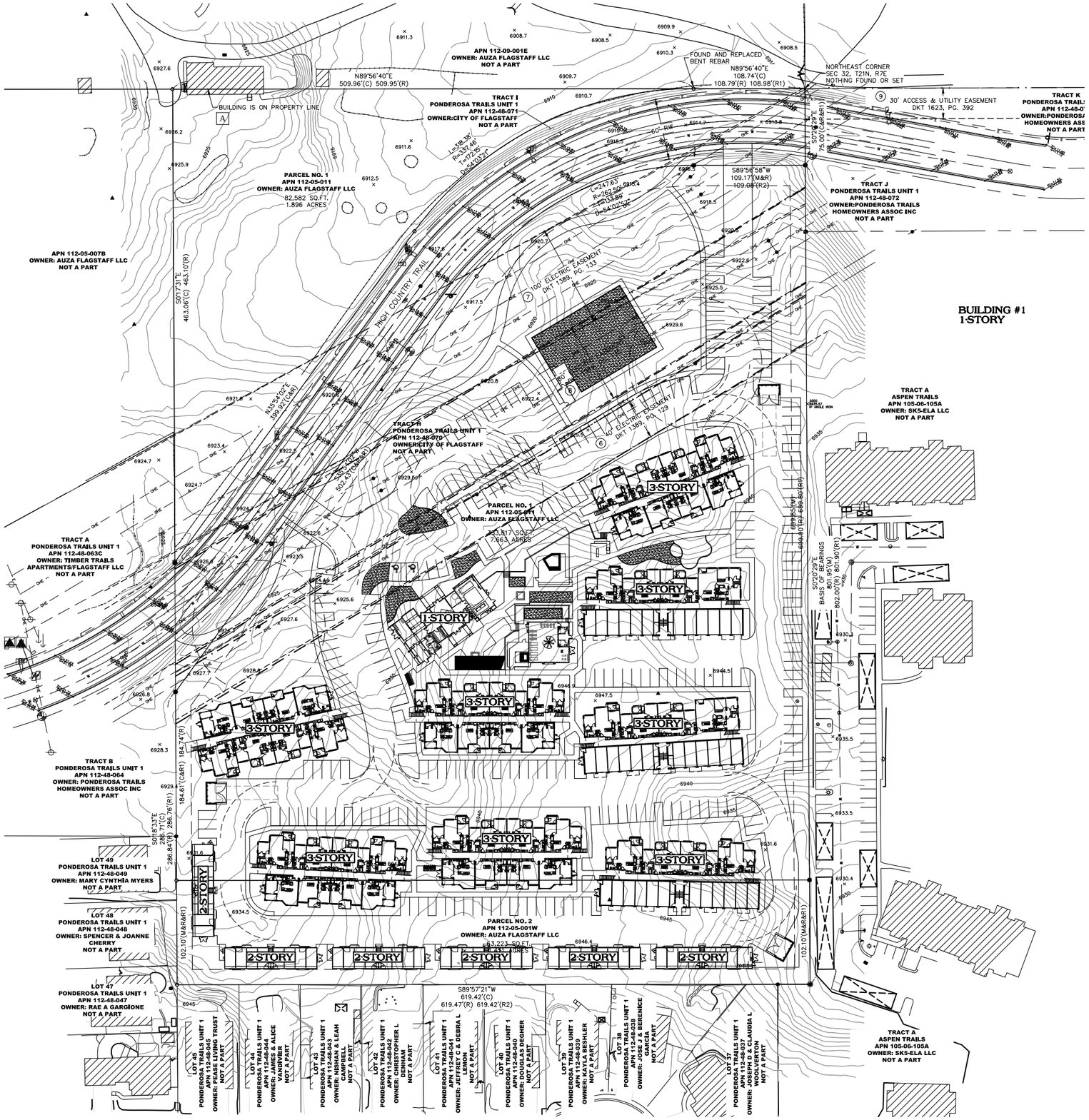
The location(s) of any required fire hydrants related to this project is(are) left to the discretion of the City of Flagstaff Fire Department in accordance with City of Flagstaff Engineering Standards and current Fire Codes. Approval by the City Engineer shall also be obtained.

Water and Sewer computer analyses were done with Bentley Systems Watergems and Sewercad software. The existing City of Flagstaff master water and sewer models were modified to incorporate the estimated infrastructure and flows that will be required by this development.

All existing utility information is based on City of Flagstaff GIS (Geographic Information System) data and other information contained within the Watergems & Sewercad master models, or provided by City of Flagstaff engineering staff. The developer's A/E should confirm City water system supply and wastewater collection system pipe sizes, materials and locations as part of their design for connection to the COF water and sewer systems.

If the developer changes their plans for development resulting in changes to development size, area of commercial space, number or type of residential units, population, etc., that could render invalid the assumptions made as a basis for the forecasts made in this Water and Sewer Impact Analysis, then the developer must apply for an updated analysis and provide the proposed changes to the City of Flagstaff for review and consideration.

This WSIA is considered valid for a period of two years from its completion date 6/1/2018 which is the date of the engineer's seal on the cover sheet and table of contents of this WSIA. All water and sewer utility line and treatment plant capacity reservations as a result of this study will expire at that time.




# SITE PLAN

SCALE: 1"=50'-0"

NORTH

## OWNER

AUZA FLAGSTAFF LLC.
C/O SHIRLEY AUZA
3378 SOUTH 16TH AVE
YUMA, AZ 85365
P. (928) 261-6675
SHIRLEYAUZA@AOL.COM

## ARCHITECT

L.R. NIEMIEC ARCHITECTS, INC.
8585 E. HARTFORD DR. SUITE #115
SCOTTSDALE, AZ. 85255
P. (480) 998-7576
SKIP@LRNARCHITECTS.COM

## DEVELOPER

TRINSIC RESIDENTIAL GROUP
4040 E CAMELBACK SUITE #160
PHOENIX, AZ 85018
TODD GOSSELINK
P. (602) 799-9960
TGOSSELINK@TRINSICRES.COM

## PROJECT DATA (THIS PROJECT WILL BE CONSTRUCTED IN ONE PHASE)

| |
|---|
| PARCEL SIZE: 21.98 ACRES |
| EXISTING ZONING: E.R. & R.R. - PROPOSED ZONING: M.R. |
| DENSITY: 9.0 DU./ACRE (198) TOTAL UNITS (INCLUDES AUZA RESIDENCE) |

| TOTAL UNIT MIX (ALL BUILDINGS 2-STORY & 3-STORY) | | | | | |
|---|---|---|---|---|---|
| TYPE | QUANTITY | % | GROSS | BALCONY S.F. | * GROSS S.F. |
| A2 (1 BED 1 BATH) | 48 | 24.5 | 762 | 86 | 36,576 |
| A3 (1 BED 1 BATH) | 42 | 21 | 795 | 72 | 33,390 |
| A4 (1 BED 1 BATH) | 11 | 6 | 874 | 35 | 9,614 |
| B1 (2 BED 2 BATH) | 42 | 21 | 978 | 76 | 41,076 |
| B2 (2 BED 2 BATH) | 48 | 24.5 | 1,182 | 74 | 56,736 |
| C1 (3 BED 2 BATH) | 6 | 3 | 1,117 | 66 | 6,702 |
| | | | | | |
| TOTALS | 197 | 100 | | | 184,094 |

* EXCLUDES BALCONY

ATTACHED GARAGE SPACES (36) IN 22-PLEX + (47) IN CARRIAGE BLDG.= 83 (42%)

ACCESSIBLE GARAGES ARE 2-CAR GARAGES WHEN NOT USED FOR ACCESSIBILITY

| CORRIDORS | GROSS S.F. |
|---|---|
| 1ST FLOOR | 3,395 |
| 2ND FLOOR | 2,368 |
| 3RD FLOOR | 2,368 |
| BALCONIES | 14,677 |
| | |
| TOTAL | 22,808 |

| COMMON AREAS | |
|---|---|
| TYPE | GROSS S.F. |
| CLUBHOUSE/OFFICE | 3,624 |
| FITNESS | 1,585 |
| CABANA | 500 |
| | |
| TOTAL COMMON AREAS | 5,709 |

APN 112-05-001W
APN 112-05-007B
APN 112-09-011E
APN 112-05-011

LOT COVERAGE: 11.2%
OPEN SPACE: 78.4%

| SUMMARY OF TOTAL BUILDINGS | |
|---|---|
| | GROSS S.F. |
| APARTMENTS | 184,094 |
| GARAGES | 23,017 |
| CORRIDORS/BALCONIES | 22,808 |
| COMMON AREAS | 5,709 |
| | |
| TOTALS | 235,628 |

### PARKING CALCULATIONS

MARKET RATE PARKING:
A2- (48)x1.5= 72
A3- (42)x1.5= 63
A4- (11)x1.5= 16.5
B1- (42)x2.25= 94.5
B2- (48)x2.25= 108
C1- (6)x2.25= 13.5
REQUIRED= 367.5 SPACES

TOTAL REQUIRED= 368 SPACES

TOTAL PARKING PROVIDED= 330 SPACES
(BUS SERVICE AREA ALLOWS UP TO 10% REDUCTION OF REQUIRED PARKING. ONLY (38) SPACES ARE USED FOR THE REDUCTION OR 10% OF THE ALLOWABLE REDUCTION.

PARKING PROVIDED:
83 GARAGE SPACES + 247 SURFACE= 330 SPACES/197 UNITS= 1.675 SPACES PER UNIT
(7 OF THE PARKING SPACES SHALL BE ACCESSIBLE)

NOTE:
AT LEAST 2% OF THE UNITS, BUT NO LESS THAN ONE SHALL BE A TYPE 'A' UNIT. THESE UNITS MUST BE DISPERSED AMONG THE VARIOUS CLASSES OF UNITS.

## LEGEND

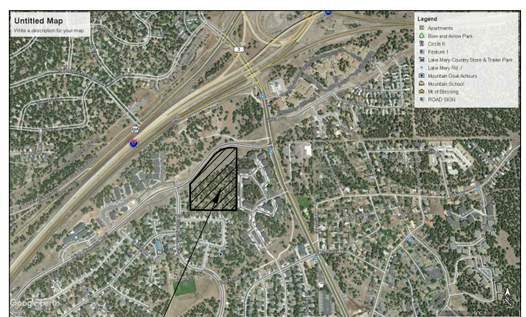
ACCESSIBLE ROUTE ACCESS

TREE TO REMAIN
SEE TREE RESOURCE PLAN

ACCESSIBLE SPACE

INDICATES BIKE RACK
EACH SPACE = 5'x2'

(BICYCLE PARKING REQ. 197x.05=9.85)
(12) PROVIDED ON SURFACE




SITE (AREA OF WORK)

# VICINITY MAP

N.T.S.

NORTH



AURA FLAGSTAFF
TRINSIC RESIDENTIAL GROUP
FLAGSTAFF, AZ.

## Site Plan

Scale: 1"=50'-0"

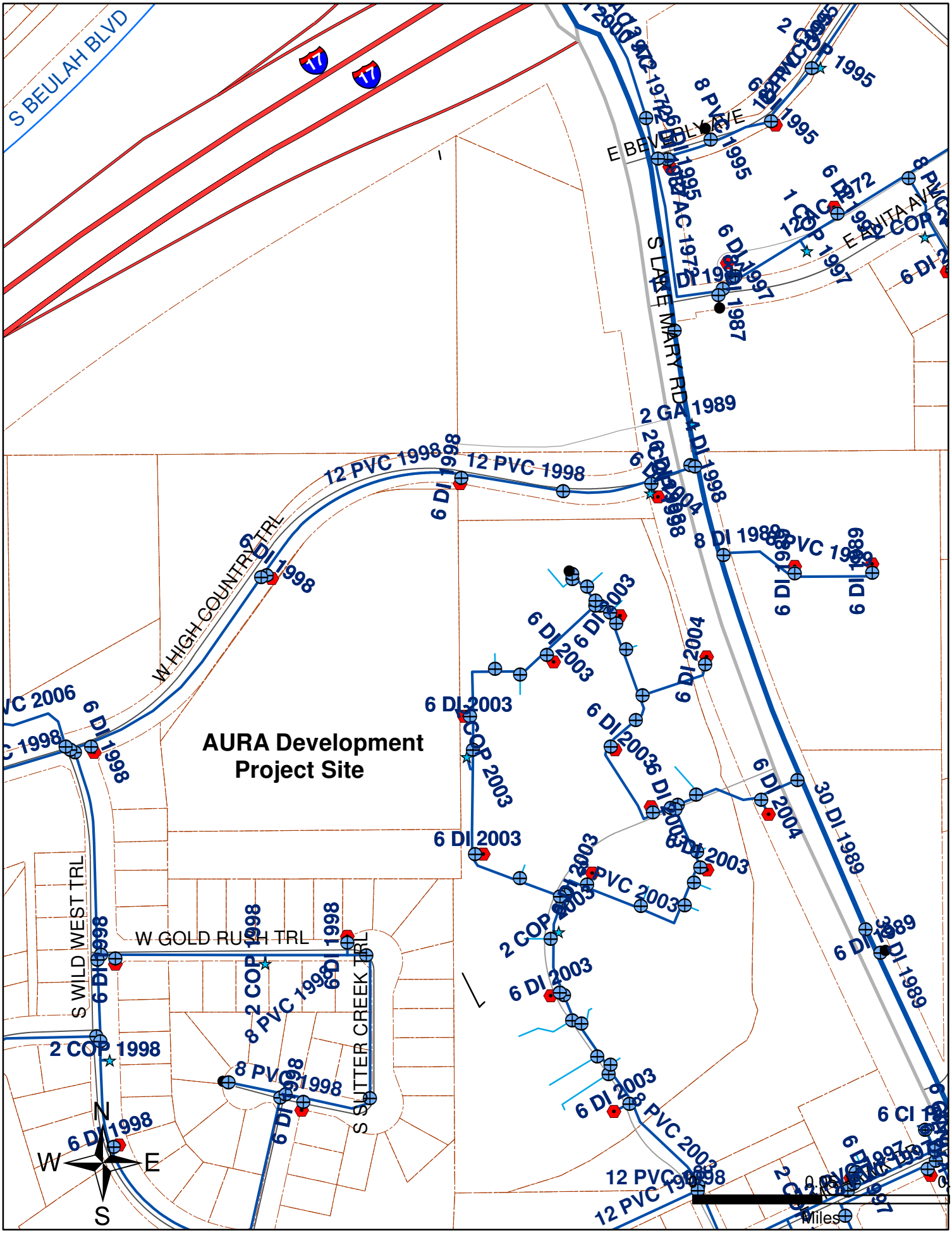
DRAWN BY: BG
CHECKED BY: SN
PROJECT NO.
DATE: 3-6-2018
SHEET NO.

AS1

L.R. Niemiec Architects

L.R. NIEMIEC ARCHITECTS/PLANNERS, INC. • 8585 EAST HARTFORD DRIVE, SUITE 115•SCOTTSDALE ARIZONA 85255 • (480) 998-7576

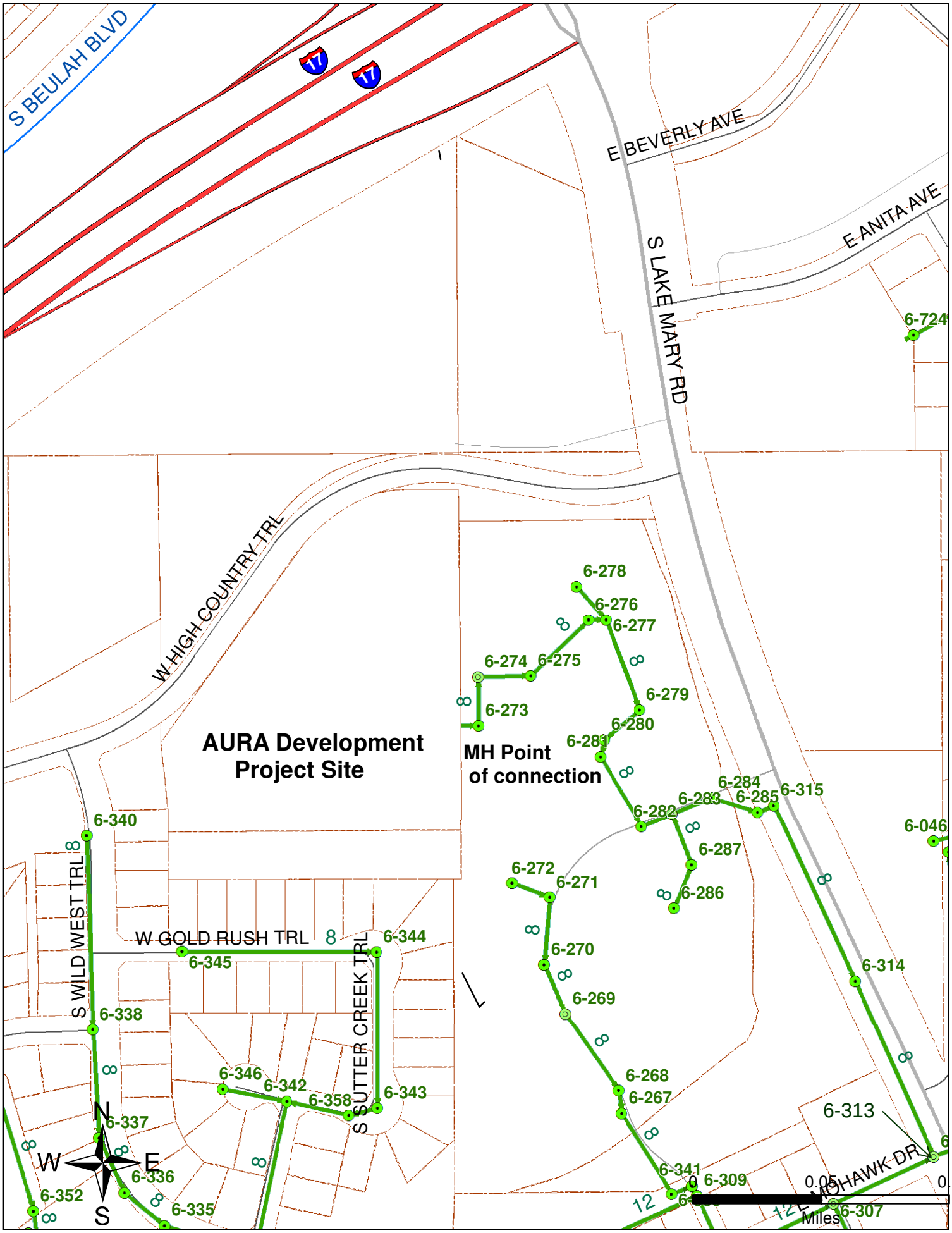
# City of Flagstaff - Utilities Department




# GIS Atlas Map of Water Infrastructure

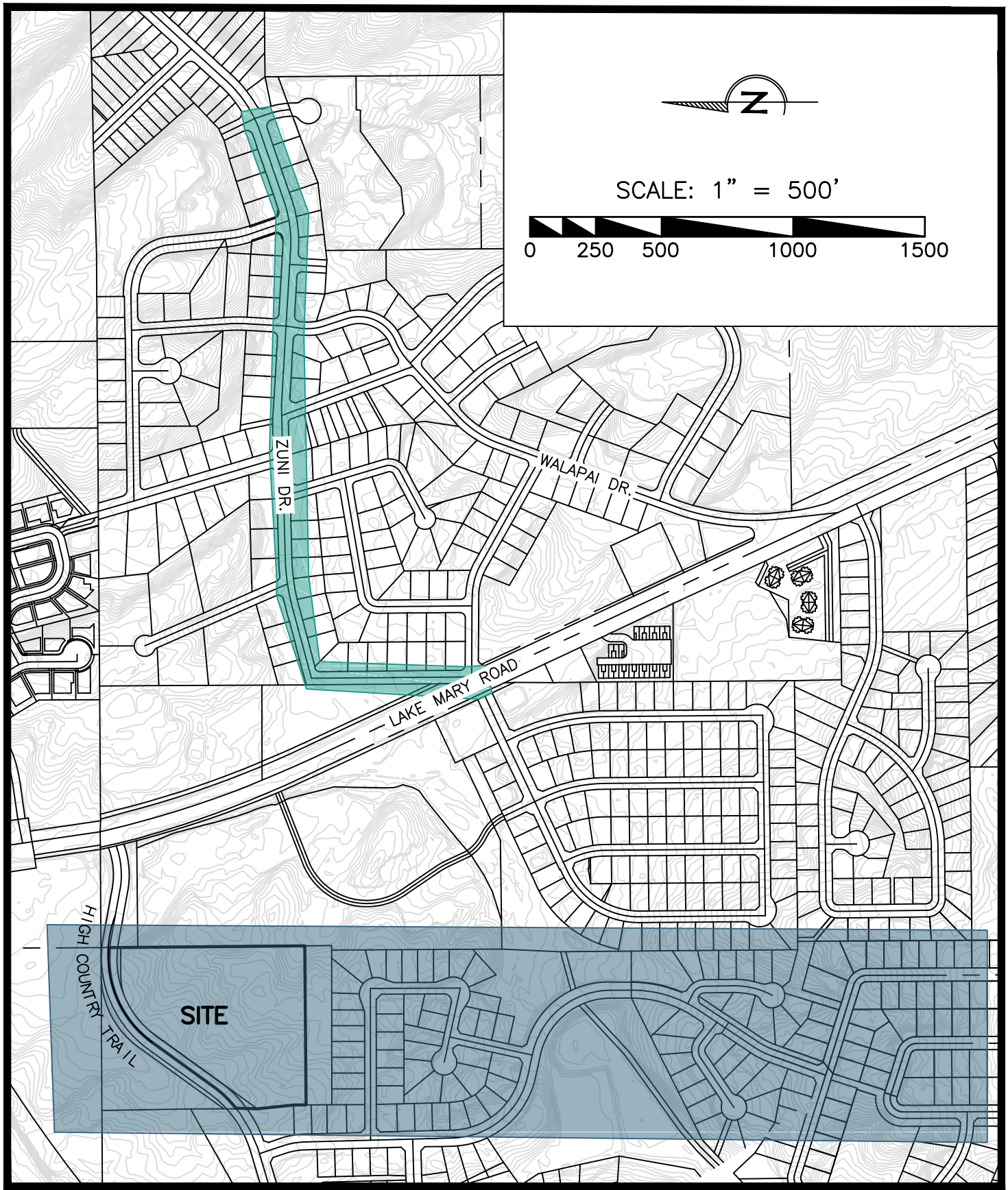
**Exhibit 2**

# City of Flagstaff - Utilities Department




# GIS Atlas Map of Sewer Infrastructure

**Exhibit 3**



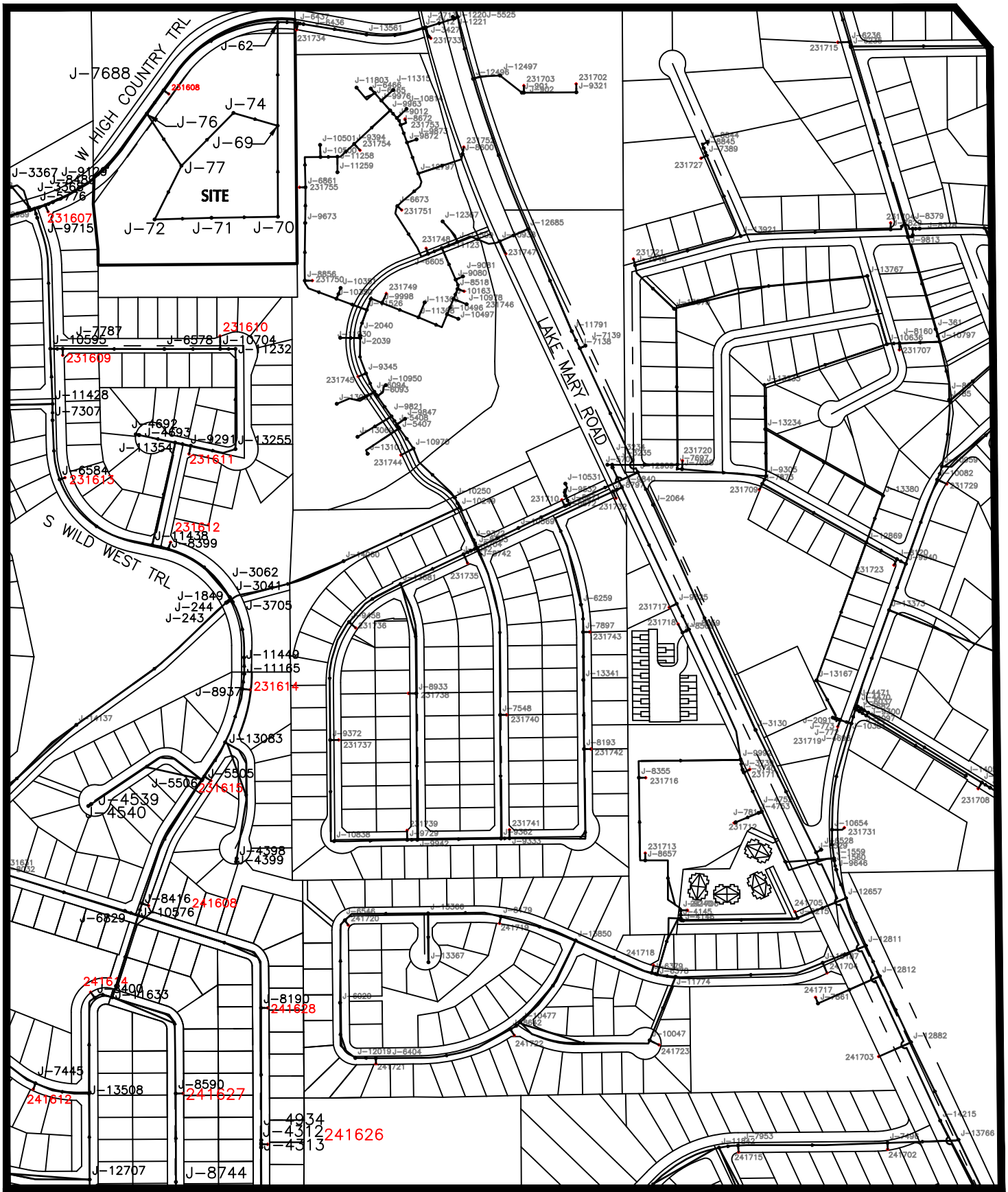

# EXHIBIT 4 – ANALYSIS AREAS

WATERGEMS ANALYSIS AREA

SEWERCAD ANALYSIS AREA

CD&E

ENGINEERING ▪ SURVEY




# EXHIBIT 5 – WaterGEMS Analysis

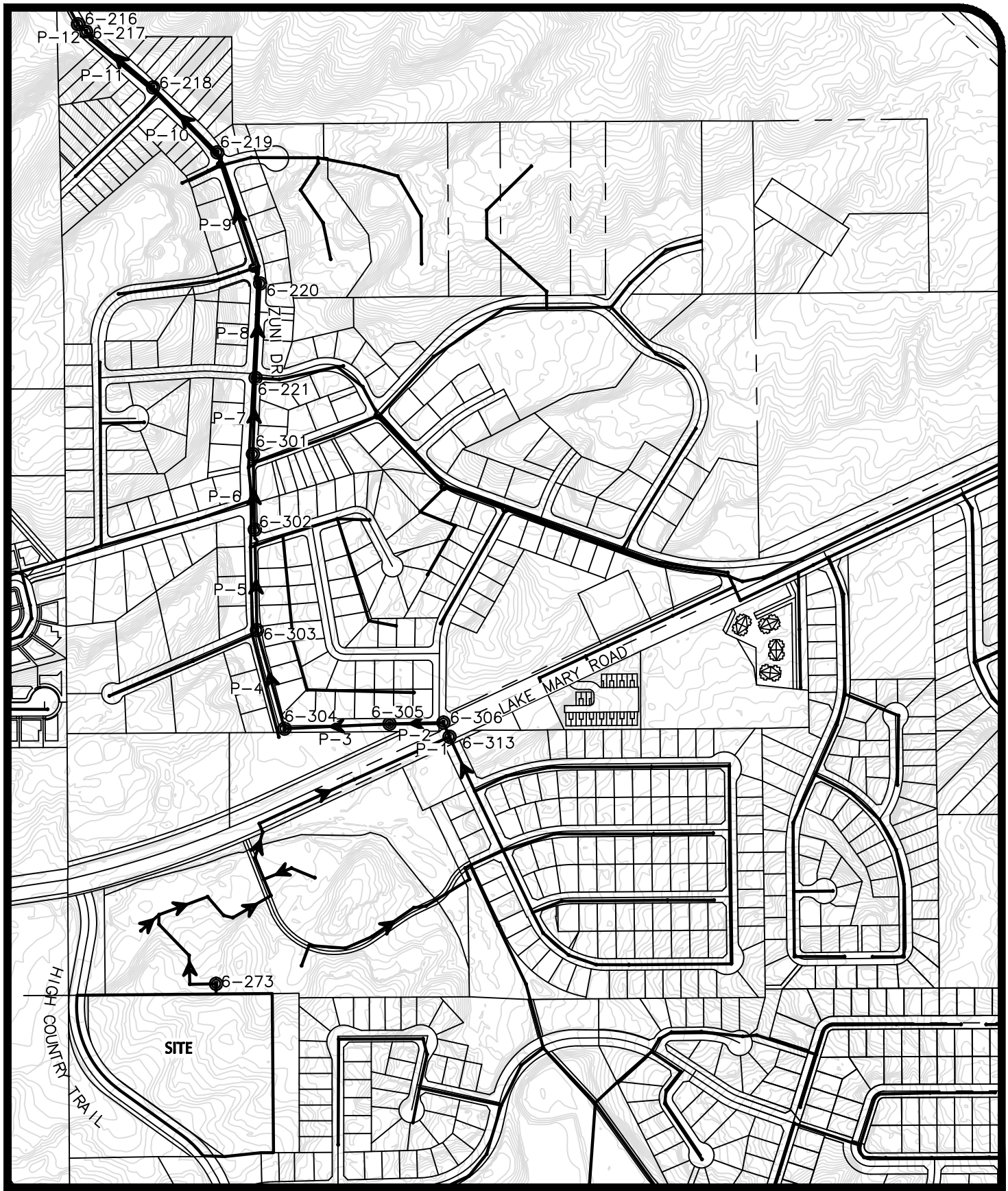
SCALE: 1" = 400'

0 200 400 800 1200

N

CD&E

ENGINEERING ▪ SURVEY




# EXHIBIT 6 - SEWERCAD MAP

SCALE: 1" = 500'

0 250 500 1000 1500

N

CD&E

ENGINEERING ▪ SURVEY

Aura Flagstaff
Peak Day Domestic Flows and Pressures

| Label | Elevation (ft) | Zone | Demand (gpm) | Pressure (psi) | Hydraulic Grade (ft) |
|---|---|---|---|---|---|
| J-8744 | 7017.36 | B | 0.42 | 52.05 | 7137.67 |
| J-8555 | 7011.13 | B | 1.35 | 54.75 | 7137.68 |
| J-4934 | 7010.00 | B | 0.14 | 55.23 | 7137.66 |
| J-4312 | 7009.92 | B | 0.00 | 55.27 | 7137.66 |
| J-339 | 7009.82 | B | 0.11 | 55.33 | 7137.71 |
| J-338 | 7009.78 | B | 0.00 | 55.35 | 7137.71 |
| J-4313 | 7009.74 | B | 0.91 | 55.35 | 7137.66 |
| J-12707 | 7009.63 | B | 1.24 | 55.41 | 7137.69 |
| J-8221 | 7009.61 | B | 1.55 | 55.42 | 7137.7 |
| J-7843 | 7007.26 | B | 0.56 | 56.44 | 7137.71 |
| J-9162 | 7007.20 | B | 0.24 | 56.47 | 7137.71 |
| J-9775 | 7007.02 | B | 0.13 | 56.54 | 7137.71 |
| J-8590 | 7005.86 | B | 3.54 | 57.03 | 7137.67 |
| J-7964 | 7003.05 | B | 1.75 | 58.25 | 7137.68 |
| J-13433 | 7001.15 | B | 0.61 | 59.07 | 7137.68 |
| J-11355 | 7000.00 | B | 0.17 | 59.58 | 7137.7 |
| J-13508 | 6996.10 | B | 1.29 | 61.25 | 7137.67 |
| J-7445 | 6990.03 | B | 1.92 | 63.88 | 7137.67 |
| J-8190 | 6987.08 | B | 1.87 | 65.15 | 7137.65 |
| J-11633 | 6982.00 | B | 1.51 | 67.35 | 7137.66 |
| J-8400 | 6981.52 | B | 0.00 | 67.56 | 7137.66 |
| J-6829 | 6977.45 | B | 0.68 | 69.31 | 7137.64 |
| J-10576 | 6977.23 | B | 0.59 | 69.40 | 7137.64 |
| J-8416 | 6976.43 | B | 0.38 | 69.75 | 7137.64 |
| J-13752 | 6970.59 | B | 0.81 | 72.28 | 7137.66 |
| J-7938 | 6954.66 | B | 1.90 | 79.17 | 7137.66 |
| J-4539 | 6954.00 | B | 1.92 | 79.43 | 7137.6 |
| J-4540 | 6954.00 | B | 2.19 | 79.43 | 7137.6 |
| J-8032 | 6952.55 | B | 0.94 | 80.08 | 7137.65 |
| J-5506 | 6952.47 | B | 1.95 | 80.10 | 7137.6 |
| J-4399 | 6951.58 | B | 1.74 | 80.47 | 7137.58 |
| J-5505 | 6951.46 | B | 0.17 | 80.53 | 7137.6 |
| J-4398 | 6951.14 | B | 0.48 | 80.67 | 7137.58 |
| J-6578 | 6949.64 | B | 1.06 | 81.28 | 7137.5 |
| J-71 | 6947.00 | B | 14.25 | 82.35 | 7137.33 |
| J-10704 | 6947.01 | B | 0.72 | 82.42 | 7137.5 |
| J-13684 | 6945.65 | B | 1.10 | 83.07 | 7137.66 |
| J-11232 | 6945.22 | B | 1.16 | 83.19 | 7137.5 |
| J-7307 | 6945.07 | B | 0.42 | 83.26 | 7137.51 |
| J-11428 | 6944.83 | B | 0.37 | 83.36 | 7137.5 |
| J-72 | 6944.20 | B | 14.25 | 83.56 | 7137.34 |
| J-7787 | 6942.66 | B | 1.24 | 84.29 | 7137.49 |
| J-13083 | 6942.64 | B | 1.52 | 84.34 | 7137.58 |
| J-10595 | 6942.37 | B | 0.72 | 84.42 | 7137.49 |

| | | | | | |
|---|---|---|---|---|---|
| J-6584 | 6942.27 | B | 0.46 | 84.47 | 7137.51 |
| J-69 | 6941.30 | B | 14.25 | 84.81 | 7137.33 |
| J-4692 | 6940.24 | B | 0.73 | 85.35 | 7137.52 |
| J-4693 | 6939.62 | B | 0.17 | 85.62 | 7137.52 |
| J-11354 | 6938.85 | B | 0.50 | 85.95 | 7137.52 |
| J-9291 | 6936.81 | B | 1.17 | 86.83 | 7137.51 |
| J-8937 | 6934.67 | B | 0.16 | 87.78 | 7137.57 |
| J-13255 | 6933.43 | B | 0.91 | 88.30 | 7137.51 |
| J-11165 | 6933.44 | B | 0.00 | 88.32 | 7137.56 |
| J-11449 | 6933.00 | B | 0.00 | 88.50 | 7137.56 |
| J-70 | 6932.50 | B | 14.25 | 88.62 | 7137.33 |
| J-8489 | 6932.00 | B | 0.00 | 88.89 | 7137.45 |
| J-5776 | 6932.00 | B | 0.00 | 88.89 | 7137.46 |
| J-9715 | 6932.00 | B | 0.19 | 88.89 | 7137.46 |
| J-9129 | 6931.49 | B | 0.00 | 89.11 | 7137.45 |
| J-77 | 6930.50 | B | 14.25 | 89.49 | 7137.34 |
| J-3041 | 6930.00 | B | 0.00 | 89.79 | 7137.54 |
| J-3705 | 6930.00 | B | 0.00 | 89.79 | 7137.54 |
| J-3062 | 6929.82 | B | 0.00 | 89.87 | 7137.54 |
| J-11438 | 6929.72 | B | 0.33 | 89.91 | 7137.53 |
| J-74 | 6929.00 | B | 14.25 | 90.14 | 7137.34 |
| J-8399 | 6929.12 | B | 0.32 | 90.17 | 7137.53 |
| J-76 | 6921.60 | B | 0.00 | 93.36 | 7137.37 |
| J-7688 | 6919.43 | B | 0.00 | 94.29 | 7137.36 |
| J-62 | 6913.93 | B | 0.00 | 96.66 | 7137.33 |

Aura Flagstaff
Fire Flow Report

| Label | Zone | Fire Flow Iterations | Is Fire Flow Run Balanced? | Satisfies Fire Flow Constraints? | Fire Flow (Needed) (gal/min) | Fire Flow (Available) | Pressure (Calculated Residual) (psi) | Pressure (Minimum) (psi) |
|---|---|---|---|---|---|---|---|---|
| 231607 | B | 2 | TRUE | TRUE | 1500 | 3500 | 67.22 | 88.83 |
| 231608 | B | 2 | TRUE | TRUE | 1500 | 3500 | 73.48 | 94.14 |
| 231609 | B | 2 | TRUE | TRUE | 1500 | 3500 | 59.13 | 83.45 |
| 231611 | B | 2 | TRUE | TRUE | 1500 | 3500 | 46.54 | 86.77 |
| 231613 | B | 2 | TRUE | TRUE | 1500 | 3500 | 63.33 | 84.03 |
| 231614 | B | 2 | TRUE | TRUE | 1500 | 3500 | 63.64 | 87.67 |
| 231615 | B | 2 | TRUE | TRUE | 1500 | 3500 | 54.73 | 80.30 |
| 231631 | B | 2 | TRUE | TRUE | 1500 | 3500 | 34.89 | 80.04 |
| 241612 | B | 2 | TRUE | TRUE | 1500 | 3500 | 27.37 | 63.62 |
| 241613 | B | 2 | TRUE | TRUE | 1500 | 3500 | 30.35 | 79.17 |
| 241615 | B | 2 | TRUE | TRUE | 1500 | 3500 | 28.92 | 55.69 |
| 241626 | B | 4 | TRUE | TRUE | 1500 | 2859.1 | 20.01 | 55.68 |
| 241627 | B | 3 | TRUE | TRUE | 1500 | 3248.6 | 20.00 | 57.17 |
| J-62 | B | 2 | TRUE | TRUE | 1500 | 3500 | 85.69 | 96.66 |
| J-69 | B | 2 | TRUE | TRUE | 1500 | 3500 | 68.28 | 84.81 |
| J-70 | B | 2 | TRUE | TRUE | 1500 | 3500 | 66.82 | 88.62 |
| J-71 | B | 2 | TRUE | TRUE | 1500 | 3500 | 60.10 | 82.35 |
| J-72 | B | 2 | TRUE | TRUE | 1500 | 3500 | 63.03 | 83.56 |
| J-74 | B | 2 | TRUE | TRUE | 1500 | 3500 | 71.92 | 90.14 |
| J-76 | B | 2 | TRUE | TRUE | 1500 | 3500 | 81.55 | 93.36 |
| J-77 | B | 2 | TRUE | TRUE | 1500 | 3500 | 73.62 | 89.49 |
| J-338 | B | 2 | TRUE | TRUE | 1500 | 3500 | 37.72 | 55.35 |
| J-339 | B | 2 | TRUE | TRUE | 1500 | 3500 | 37.51 | 55.33 |
| J-3041 | B | 2 | TRUE | TRUE | 1500 | 3500 | 78.38 | 89.79 |
| J-3062 | B | 2 | TRUE | TRUE | 1500 | 3500 | 78.44 | 89.87 |
| J-3705 | B | 2 | TRUE | TRUE | 1500 | 3500 | 78.30 | 89.79 |
| J-4312 | B | 6 | TRUE | TRUE | 1500 | 3151.4 | 20.01 | 55.27 |
| J-4313 | B | 3 | TRUE | TRUE | 1500 | 3156.7 | 20.00 | 55.35 |
| J-4398 | B | 2 | TRUE | TRUE | 1500 | 3500 | 23.78 | 80.67 |
| J-4399 | B | 3 | TRUE | TRUE | 1500 | 3500 | 22.41 | 80.47 |
| J-4539 | B | 3 | TRUE | TRUE | 1500 | 3500 | 20.07 | 79.43 |
| J-4540 | B | 3 | TRUE | TRUE | 1500 | 3463.2 | 20.01 | 79.43 |
| J-4692 | B | 2 | TRUE | TRUE | 1500 | 3500 | 44.24 | 85.35 |
| J-4693 | B | 2 | TRUE | TRUE | 1500 | 3500 | 45.75 | 85.62 |
| J-4934 | B | 7 | TRUE | TRUE | 1500 | 3147.9 | 20.02 | 55.23 |
| J-5505 | B | 2 | TRUE | TRUE | 1500 | 3500 | 65.33 | 80.53 |
| J-5506 | B | 2 | TRUE | TRUE | 1500 | 3500 | 64.84 | 80.10 |
| J-5776 | B | 2 | TRUE | TRUE | 1500 | 3500 | 76.69 | 88.89 |
| J-6578 | B | 2 | TRUE | TRUE | 1500 | 3500 | 52.79 | 81.28 |
| J-6584 | B | 2 | TRUE | TRUE | 1500 | 3500 | 71.56 | 84.47 |
| J-6829 | B | 2 | TRUE | TRUE | 1500 | 3500 | 49.37 | 69.31 |
| J-7307 | B | 2 | TRUE | TRUE | 1500 | 3500 | 70.69 | 83.26 |
| J-7445 | B | 2 | TRUE | TRUE | 1500 | 3500 | 36.17 | 63.88 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| J-7688 | B | 2 | TRUE | TRUE | 1500 | 3500 | 82.36 | 94.29 |
| J-7787 | B | 2 | TRUE | TRUE | 1500 | 3500 | 68.78 | 84.29 |
| J-7843 | B | 2 | TRUE | TRUE | 1500 | 3500 | 34.31 | 56.44 |
| J-7938 | B | 2 | TRUE | TRUE | 1500 | 3500 | 39.22 | 79.17 |
| J-7964 | B | 2 | TRUE | TRUE | 1500 | 3500 | 24.97 | 58.25 |
| J-8032 | B | 2 | TRUE | TRUE | 1500 | 3500 | 43.87 | 80.08 |
| J-8190 | B | 2 | TRUE | TRUE | 1500 | 3500 | 25.61 | 65.15 |
| J-8221 | B | 2 | TRUE | TRUE | 1500 | 3500 | 37.72 | 55.42 |
| J-8399 | B | 2 | TRUE | TRUE | 1500 | 3500 | 77.88 | 90.17 |
| J-8400 | B | 2 | TRUE | TRUE | 1500 | 3500 | 50.25 | 67.56 |
| J-8416 | B | 2 | TRUE | TRUE | 1500 | 3500 | 53.34 | 69.75 |
| J-8489 | B | 2 | TRUE | TRUE | 1500 | 3500 | 76.66 | 88.89 |
| J-8555 | B | 3 | TRUE | TRUE | 1500 | 3500 | 23.00 | 54.75 |
| J-8590 | B | 2 | TRUE | TRUE | 1500 | 3500 | 24.07 | 57.03 |
| J-8744 | B | 12 | TRUE | TRUE | 1500 | 3402.4 | 20.02 | 52.05 |
| J-8937 | B | 2 | TRUE | TRUE | 1500 | 3500 | 74.07 | 87.78 |
| J-9129 | B | 2 | TRUE | TRUE | 1500 | 3500 | 76.88 | 89.11 |
| J-9162 | B | 2 | TRUE | TRUE | 1500 | 3500 | 33.75 | 56.47 |
| J-9291 | B | 2 | TRUE | TRUE | 1500 | 3500 | 57.90 | 86.83 |
| J-9715 | B | 2 | TRUE | TRUE | 1500 | 3500 | 76.55 | 88.89 |
| J-9775 | B | 2 | TRUE | TRUE | 1500 | 3500 | 34.76 | 56.54 |
| J-10576 | B | 2 | TRUE | TRUE | 1500 | 3500 | 52.93 | 69.40 |
| J-10595 | B | 2 | TRUE | TRUE | 1500 | 3500 | 71.73 | 84.42 |
| J-10704 | B | 2 | TRUE | TRUE | 1500 | 3500 | 50.87 | 82.42 |
| J-11165 | B | 2 | TRUE | TRUE | 1500 | 3500 | 74.93 | 88.32 |
| J-11232 | B | 2 | TRUE | TRUE | 1500 | 3500 | 51.19 | 83.19 |
| J-11354 | B | 2 | TRUE | TRUE | 1500 | 3500 | 58.26 | 85.95 |
| J-11355 | B | 2 | TRUE | TRUE | 1500 | 3500 | 36.62 | 59.58 |
| J-11428 | B | 2 | TRUE | TRUE | 1500 | 3500 | 70.94 | 83.36 |
| J-11438 | B | 2 | TRUE | TRUE | 1500 | 3500 | 77.52 | 89.91 |
| J-11449 | B | 2 | TRUE | TRUE | 1500 | 3500 | 75.48 | 88.50 |
| J-11633 | B | 2 | TRUE | TRUE | 1500 | 3500 | 50.18 | 67.35 |
| J-12707 | B | 2 | TRUE | TRUE | 1500 | 3500 | 37.85 | 55.41 |
| J-13083 | B | 2 | TRUE | TRUE | 1500 | 3500 | 69.66 | 84.34 |
| J-13255 | B | 2 | TRUE | TRUE | 1500 | 3500 | 56.91 | 88.30 |
| J-13433 | B | 2 | TRUE | TRUE | 1500 | 3500 | 32.49 | 59.07 |
| J-13508 | B | 2 | TRUE | TRUE | 1500 | 3500 | 43.76 | 61.25 |
| J-13684 | B | 2 | TRUE | TRUE | 1500 | 3500 | 42.75 | 83.07 |
| J-13752 | B | 2 | TRUE | TRUE | 1500 | 3500 | 35.81 | 72.28 |

Aura Flagstaff
Gravity Sewer Pipe Report

| Label | Diameter (in) | Material | Start Node | Invert (Start) (ft) | Stop Node | Invert (Stop) (ft) | Depth (Average End) / Rise (%) | Flow (gpd) |
|---|---|---|---|---|---|---|---|---|
| P-1 | 12.00 | PVC | 6-313 | 6893.40 | 6-306 | 6893.10 | 37.20 | 492922.12 |
| P-2 | 12.00 | PVC | 6-306 | 6893.10 | 6-305 | 6892.50 | 37.20 | 492922.12 |
| P-3 | 12.00 | PVC | 6-305 | 6892.50 | 6-304 | 6891.00 | 35.90 | 492922.12 |
| P-4 | 12.00 | PVC | 6-304 | 6891.00 | 6-303 | 6889.60 | 36.10 | 492922.12 |
| P-5 | 12.00 | PVC | 6-303 | 6889.60 | 6-302 | 6888.20 | 36.00 | 492922.12 |
| P-6 | 12.00 | PVC | 6-302 | 6888.20 | 6-301 | 6886.30 | 37.20 | 492922.12 |
| P-7 | 12.00 | PVC | 6-301 | 6886.30 | 6-221 | 6885.45 | 37.20 | 492922.12 |
| P-8 | 21.00 | PVC | 6-221 | 6885.45 | 6-220 | 6883.25 | 16.70 | 518234.64 |
| P-9 | 21.00 | PVC | 6-220 | 6883.25 | 6-219 | 6881.05 | 17.40 | 518234.64 |
| P-10 | 21.00 | PVC | 6-219 | 6881.05 | 6-218 | 6880.05 | 18.20 | 518234.64 |
| P-11 | 21.00 | PVC | 6-218 | 6880.05 | 6-217 | 6878.05 | 24.10 | 518234.64 |
| P-12 | 21.00 | PVC | 6-217 | 6878.05 | 6-216 | 6877.78 | 27.10 | 1364783.15 |