

CEEn-2017CPST-002

Environmental Study for Arrowhead Project

MWM Engineering

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Introduction

Scope of Work

- Environmental Impact on protected species
- Water Resources
 - Sanitary Sewer
 - Storm Water Drainage
 - Culinary Water



Design, Analysis & Results

Environmental

Wetland analysis by U.S. Army Corps of Engineers

Flood Plain analysis by FEMA

Study for existence of endangered species including those shown below



Threatened flower –
Ute ladies-tresses



Endangered fish –
June Sucker

Design, Analysis & Results

Environmental Continued

Some of the possible migratory birds on site



Design, Analysis & Results

Water Resource Sanitary Sewer

Proposed Location for 8" Sanitary
Sewer Mains



Design, Analysis & Results

Water Resources – Storm Sewer

LEI Storm Drainage Calculations

	Storm Type	Sump Storage (cf)	Runoff Volume (cf)	Detention Storage Required (cf)
Parcel 1	25-Year	0	3732	3732
	100-Year	0	5080	5080
Parcel 2	25-Year	3144	3022	-122
Parcel 3	25-Year	14148	13978	-173
Parcels 2&3	100-Year	17292	13967	-3325

MWM Storm Drainage Calculations

	Storm Type	Sump Storage (cf)	Runoff Volume (cf)	Detention Storage Required (cf)
Parcel 2	100-Year	3144	7246	798
Parcel 3	100-Year	14148	18129	3981
Parcel 4	25-Year	7074	6507	-567
	100-Year	7074	8358	1284

Assumptions

- Parcel 4 has same land type as Parcel 3
- Parcel 4 has same ratio of sumps / land area
- Sumps have same infiltration rate
- Zero runoff enters city system

Design, Analysis & Results

Water Resources – Culinary Water

Fritzi Realty Culinary Water Requirements

	Use Type	Connections	Unit Volume (gpd/conn)	Total Volume (gpd)
Parcels 1&2	Residential	157	800	125,600
	Commercial	0	500	0
Parcel 3&4	Residential	83	800	66,400
	Commercial	0	500	0
			Total	192,000

Overall Capstone Culinary Water Requirements

	Use Type	Connections	Unit Volume (gpd/conn)	Total Volume (gpd)
Parcels 1&2	Residential	0	800	0
	Commercial	20	500	10,000
Parcel 3&4	Residential	70	800	56,000
	Commercial	4	500	2,000
			Total	68,000

Conclusions & Recommendations

According to our findings, environmental and water resource limitations should not hinder future development of the Arrowhead Project as long as the proper care is taken moving forward.

