

ATTACHMENT 7

TECHNICAL JUSTIFICATION OF PROJECT
PHYSICAL BENEFITS

PROJECT PHYSICAL BENEFITS

Project Description

The Project proposes to construct a 250 acre-foot flood control and aquifer recharge basin in the City of Victorville, west of Interstate 15 at the intersection of Amethyst Road and Sycamore Street. The system captures a watershed area of 6,590 acres and is capable of capturing 6,550 cubic feet per second and delivering 5,227 cubic feet per second of storm water during a 100 year storm event. Amethyst Basin is part of a three phase project that will help to eliminate any potential increase in flood hazard due to planned development in the area.

Project Need

Historically, the Oro Grande Wash has issues with flooding, erosion and sedimentation. This is especially true at the confluence of Oro Grande Wash and the Mojave River where the Corps of Engineers completed an improvement project in 1969 that was designed for 5,000 cfs. The 100-year peak flow rates calculated for the Victorville Master Plan of Drainage (MPD) in 1992 with ultimate build out was 10,900 cfs at the Mojave River. *(Ultimate build-out as defined for the purposes of this report is an overall flood control drainage system constructed to withstand a 100 year storm-event)*

Additionally, the population in the Project area increased more than threefold in 20 years, from about 90,000 in 1980 to more than 300,000 in 1999 (Ron Rector, High Desert Regional Economic Development Authority, oral commun. 2000). The overwhelming development that occurred has significantly increased the amount of impervious area and thereby increased the magnitude of flood peak flows and volumes. Based on the Victorville Master Plan of Drainage at ultimate build out, the Oro Grande Wash will be required to convey 6,550 cubic feet per second of storm water during a 100 year storm event at the Amethyst Basin site.

Amethyst basin is located within the Alto subarea boundary as defined in the Mojave Water Agencies IRWP has experienced a high percent of the high desert population increase. With additional people come additional water needs, both residential and commercial. The Alto subarea will need increased replenishment of the ground water via storm water and SWP recharge.

Goals and Objectives

SBCFCD's main goals and objectives of the Project are to reduce stormwater flood damage and enhance aquifer recharge. The objective will be to capture and detain approximately 20% or 1,323 cubic feet per second.

Physical Benefits

The Project will have the following physical benefits:

- Reduced flood hazard area
- Reduced number of structures flooded

- Reduced flooding duration
- Increased aquifer recharge
- Preserved open space
- Increased Mojave Squirrel Habitat

Reduced flood hazard area

This Project will function by itself and will reduce the 100-year peak flows from 6,550 cfs to 5,230 cfs in ultimate build out 100 year storm condition. Based upon our HEC-RAS modeling the amount of area shown in the flood hazard area without the basin is approximately 100.10 acres and with the basin is approximately 64.75 acres. This makes a difference of 34.35 acres. Further acreage protection will be realized when the full three basin system is in place.

Reduced number of structures flooded

A HEC-RAS analysis shows that approximately 81 residential structures and 6 commercial structures would be protected by the flood reduction realized from the Project. The area gaining increased protection from flooding includes existing tract homes, the regional shopping center and major traffic corridors including Interstate 15, Bear Valley Road. Further property protection will be realized when the full three basin system is in place.

Increased aquifer recharge

The Project has been identified as a "high priority" in the Mojave Water Agencies 2004 Integrated Regional Water Management Plan as a vital component to MWA Oro Grande Retention Pond project. The Amethyst basin will increase the recharge capability of the retention ponds at this location by up to 2,600 acre-feet per year for a total of 3,600 acre-feet per year of SWP water to the Alto Subarea of the Mojave Basin Area. Without the Amethyst Basin, the existing MWA facility is only able to deliver less 1,000 acre feet or less per year. The amount of recharge is estimate by MWA. Additional geotechnical data will be developed for the design and the number can then be refined.

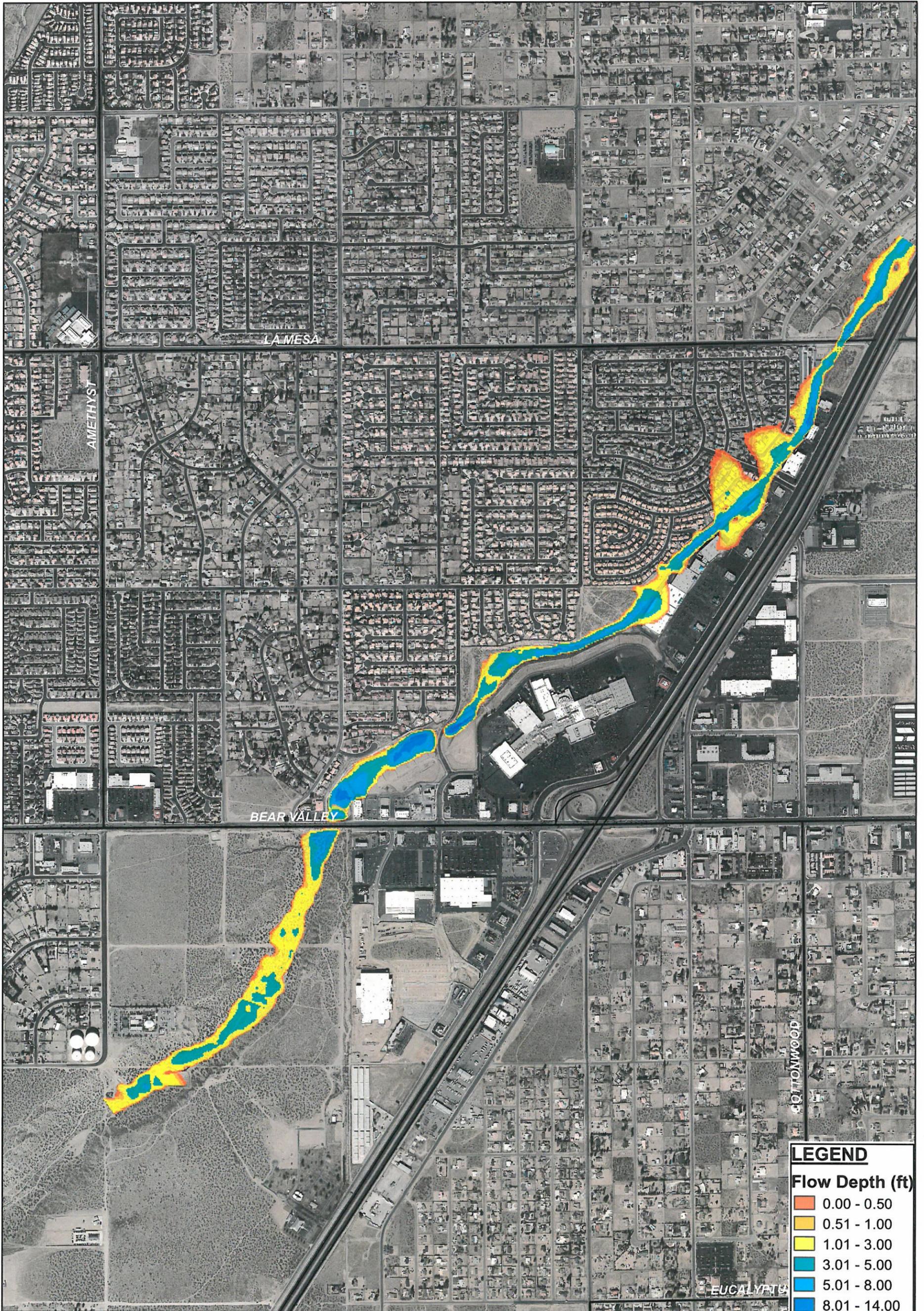
Preserved open space

SBCFCD currently owns 24.93 acres of open space at the Project site. The Amethyst Basin will cover approximately 30 acres once all the other parcels are purchased. This makes a difference of 5 acres. This acreage will never be developed due to the Project therefore providing habitat for native species.

Increased Mojave Squirrel Habitat

The Project will be on 8 acres of potential Mojave Squirrel habitat. A ratio of 2 to 1 is being used for the mitigation which means an additional 16 acres of Mojave Squirrel habitat will be set aside off-site for this Project. These numbers are based on discussions with the Lahontan RWQCB and Fish and Game regulatory agencies.

Table 7 – Annual Project Physical Benefits			
Project Name: <u>Amethyst Basin Stormwater Flood Reduction Project</u>			
Type of Benefit Claimed: Flood Damage reduction, aquifer recharge, habitat, erosion/sediment, open space			
Measure of Benefit Claimed (Name of Units): Multiple measures			
Additional Information About this Measure: for 100-Year storm event, beginning 2014			
(a)	(b)	(c)	(d)
	Physical Benefits		
Measure of Benefit Claimed :	Without Project	With Project	Change Resulting from Project (b) – (c)
Area flooded, acres	100.1	64.75	35.35
Total number Structures flooded	134	47	87
Residential	104	23	81
Commercial	30	24	6
Inundated Road, Feet	1917	1774	143
Recharge aquifer, Acre Feet	1,000	3,600	2,600
Mojave Squirrel Habitat, Acres	8	16	8
Comments:			

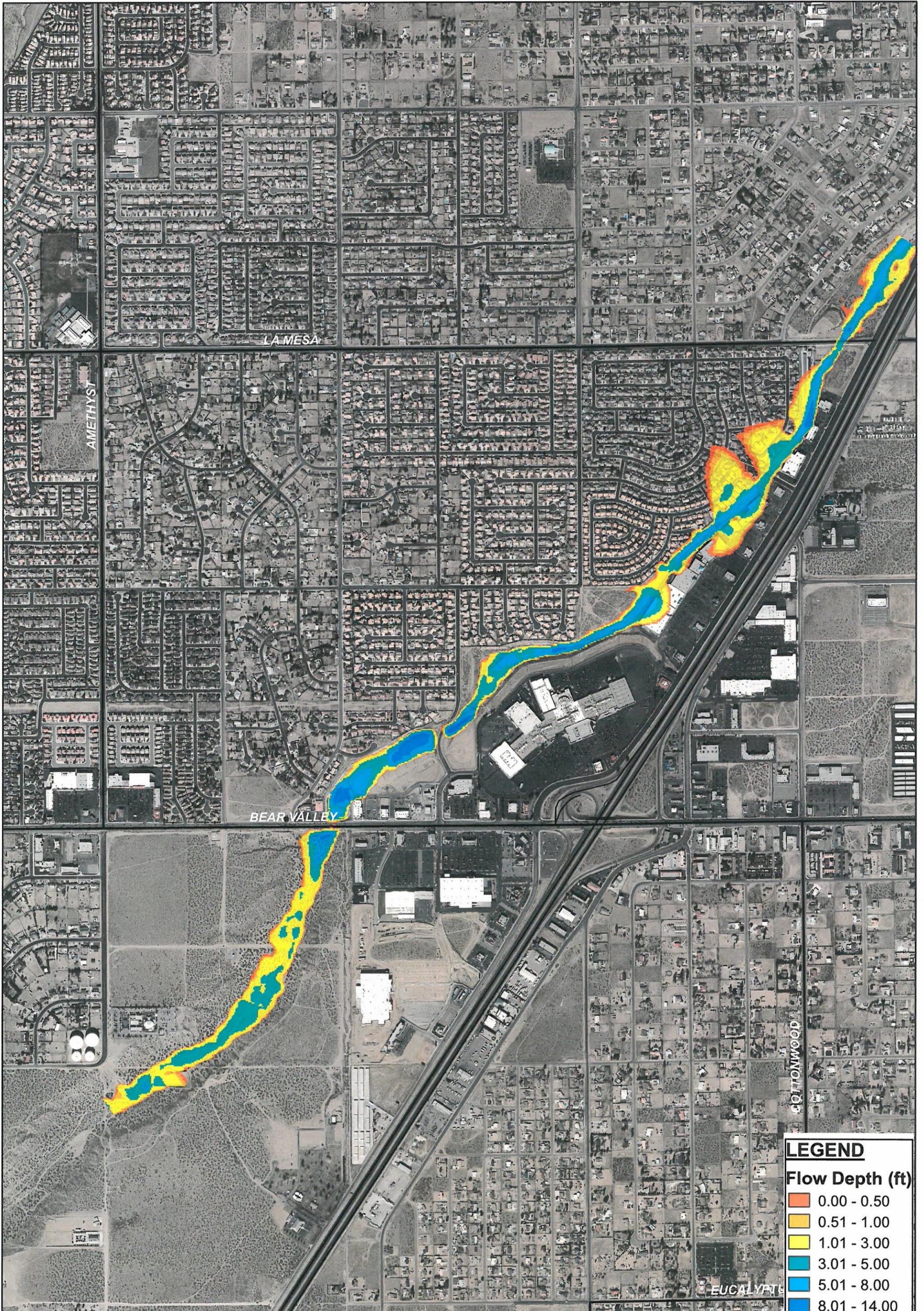


**Amethyst Basin Stormwater Flood Reduction
Existing Condition Q10 Floodplain Map (No Basin)
Exhibit 1**

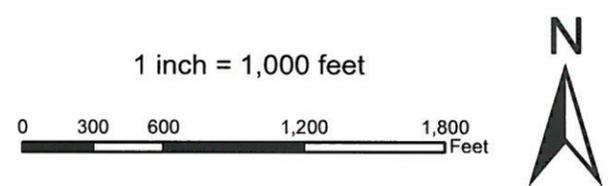
1 inch = 1,000 feet

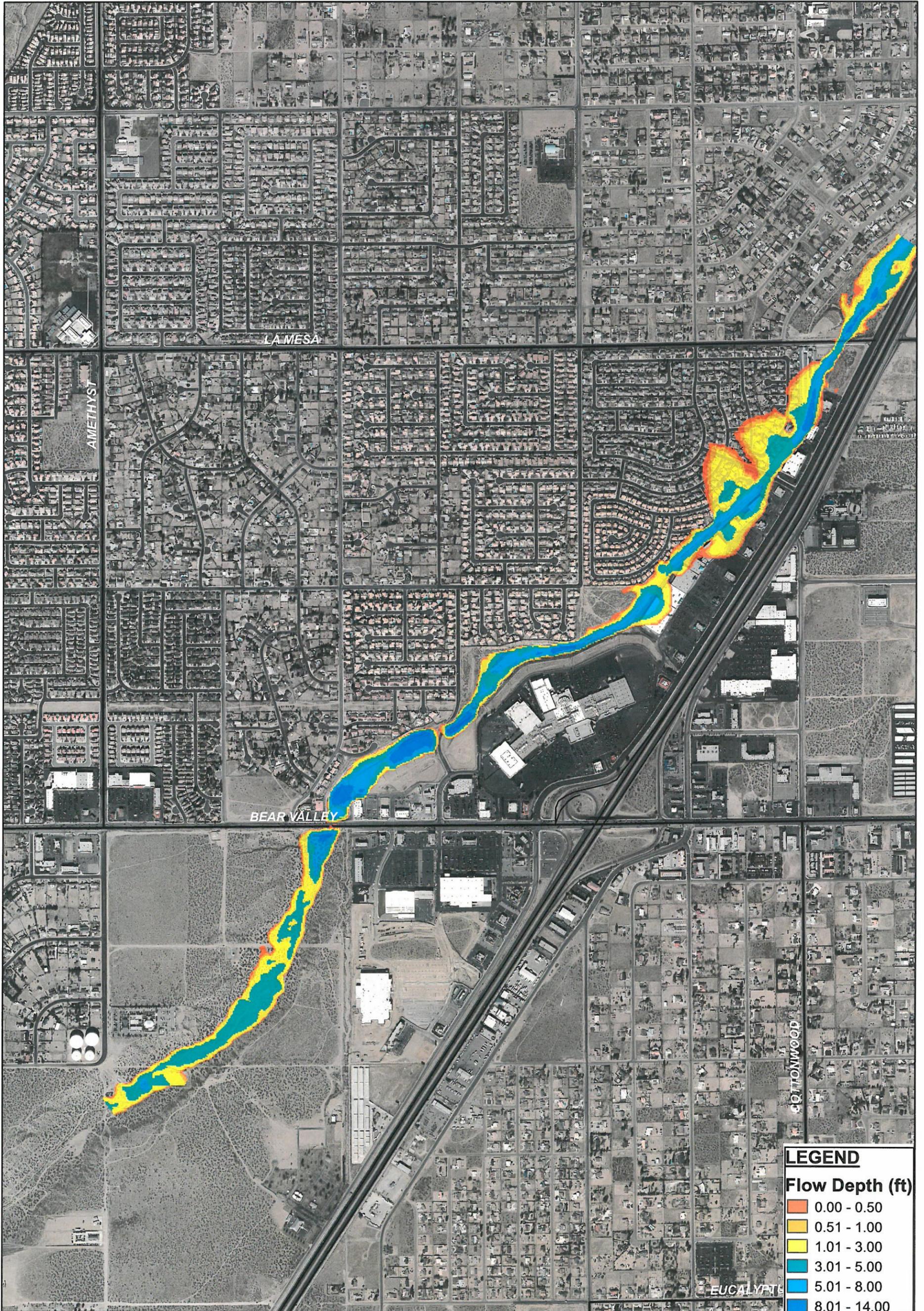
0 300 600 1,200 1,800 Feet



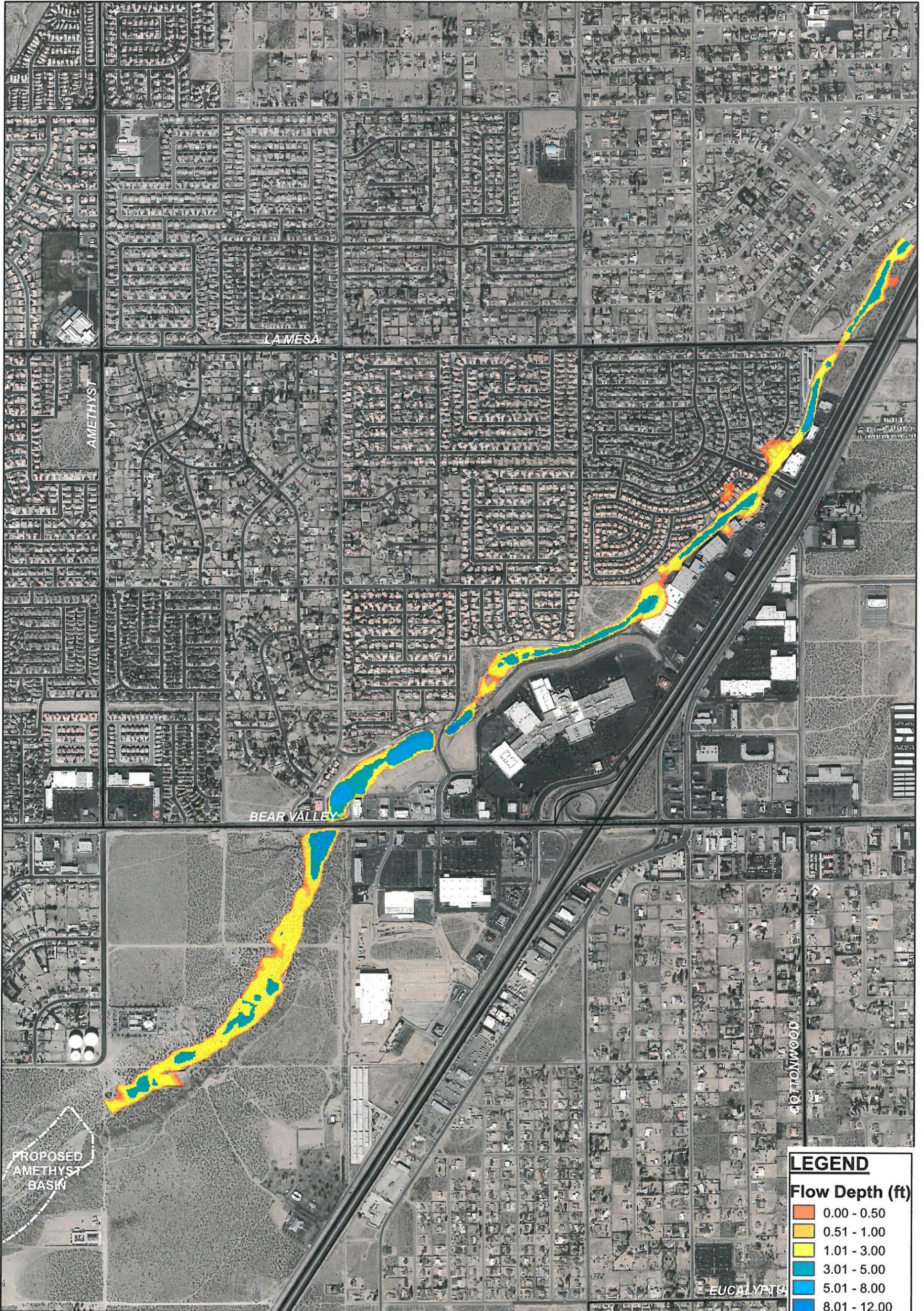


**Amethyst Basin Stormwater Flood Reduction
Existing Condition Q25 Floodplain Map (No Basin)
Exhibit 2**





**Amethyst Basin Stormwater Flood Reduction
Existing Condition Q100 Floodplain Map (No Basin)
Exhibit 3**

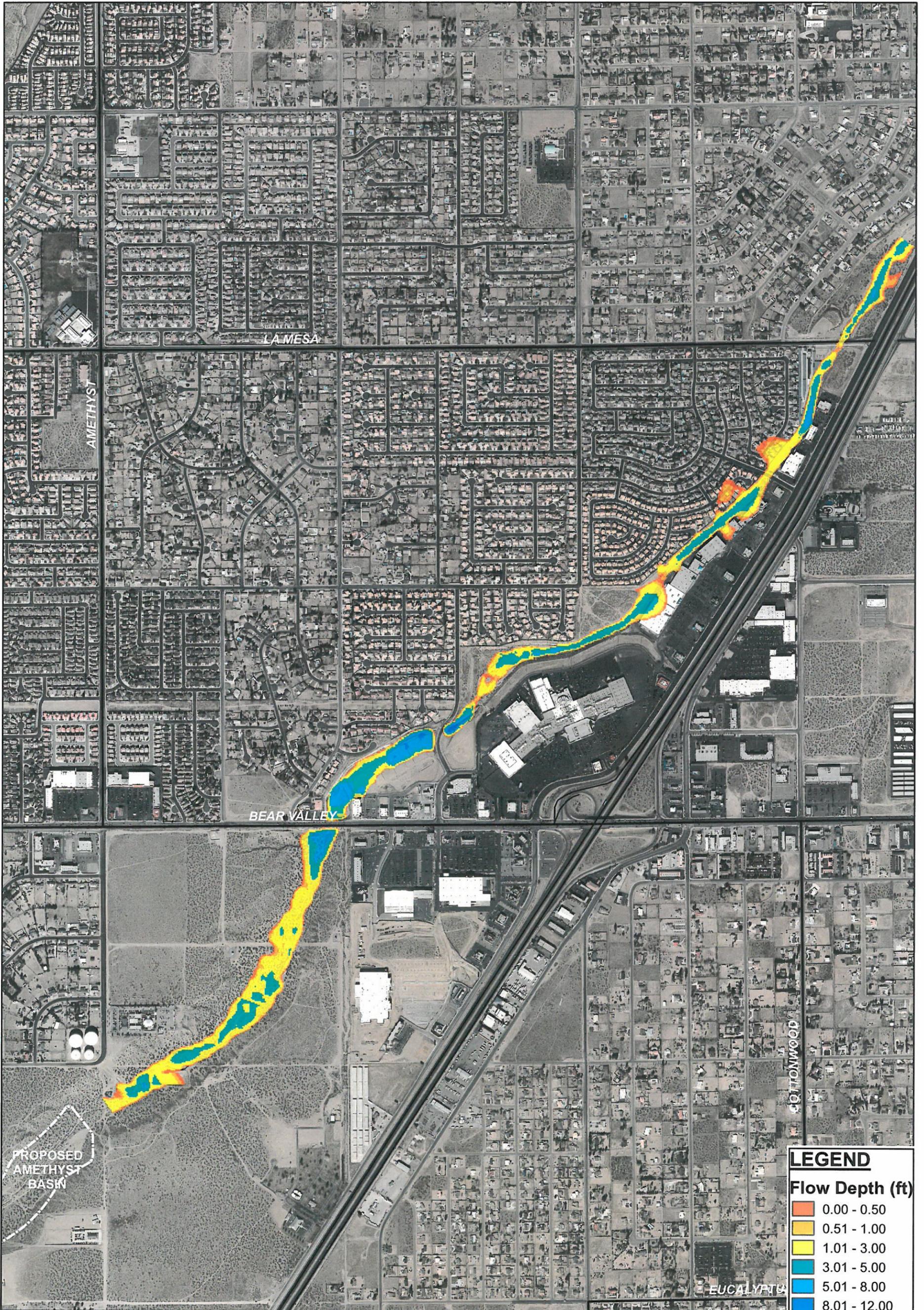


**Amethyst Basin Stormwater Flood Reduction
Existing Condition Q10 Floodplain Map (Amethyst Basin)
Exhibit 4**

1 inch = 1,000 feet

0 300 600 1,200 1,800 Feet



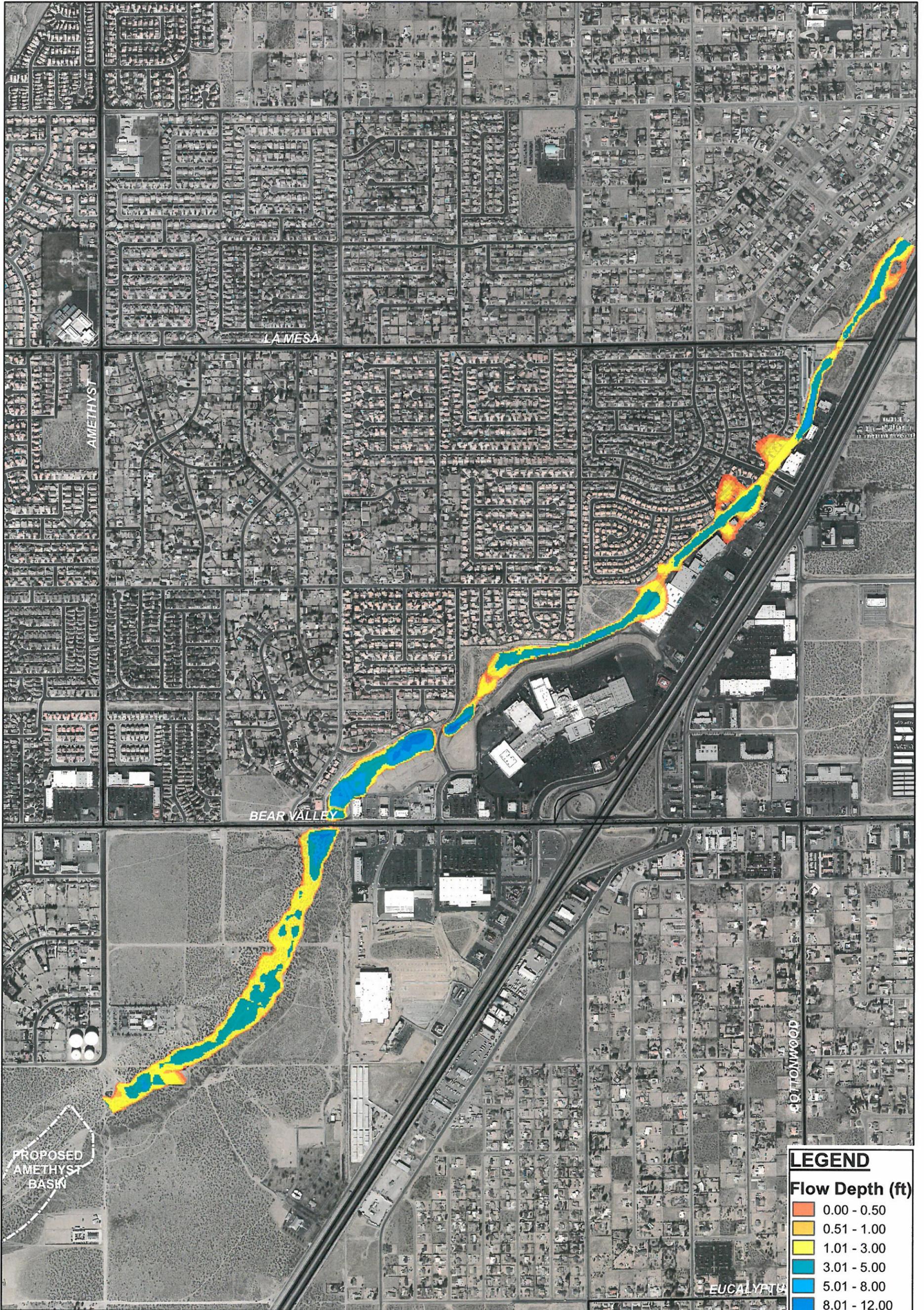


**Amethyst Basin Stormwater Flood Reduction
Existing Condition Q25 Floodplain Map (Amethyst Basin)
Exhibit 5**

1 inch = 1,000 feet

0 300 600 1,200 1,800 Feet





**Amethyst Basin Stormwater Flood Reduction
Existing Condition Q100 Floodplain Map (Amethyst Basin)
Exhibit 6**

1 inch = 1,000 feet

