# ATTACHMENT 9

PROGRAM PREFERENCES

The Amethyst Basin project meets the following Program Preferences described in Guidelines, Section II.F:

**A. REGIONAL PROJECTS OR PROGRAMS (CWC §10544):**

The Amethyst Basin project is part of a regional flood control program in the San Bernardino County Flood Control District Zone 4 which covers the "High Desert" area of San Bernardino County. Amethyst Basin is a proposed facility in the Victorville Master Plan of Drainage and is also part of the Oro Grande Wash plan which is a main regional wash within the Mojave Basin. This Basin is part of an overall system for the Oro Grande Wash. Below is a map (figure 1) showing the Oro Grande line in the Victorville Master Plan of Drainage and a map (figure 2) showing the various basins including Amethyst which is designated as Basin #9 within the Oro Grande Wash plan.
Additionally, the Amethyst Basin project is also part of the Mojave Water Agency's 2004 Regional Water Management Plan working in conjunction with MWA's Oro Grande Wash recharge project.

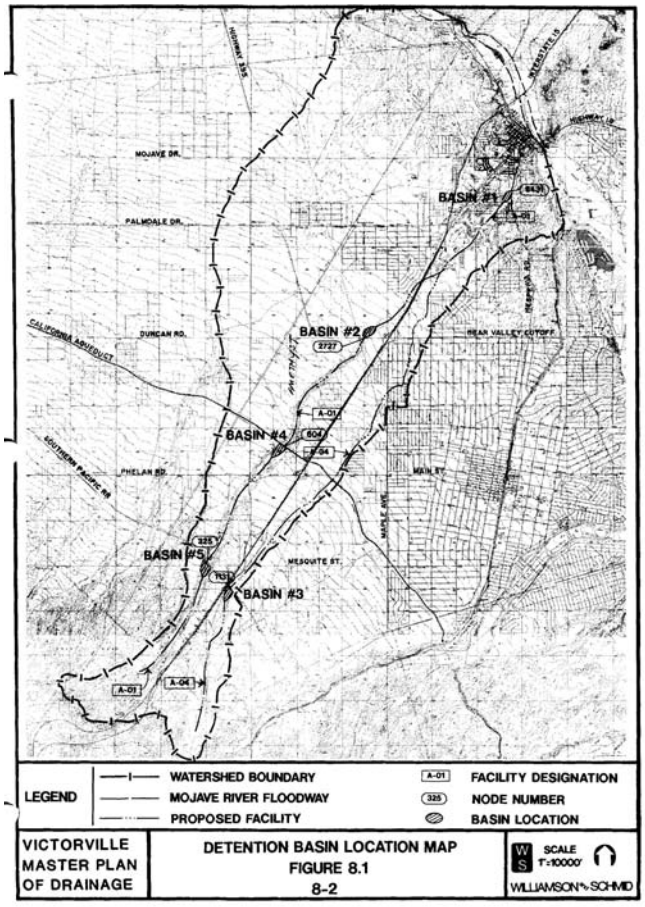



Figure 9-1

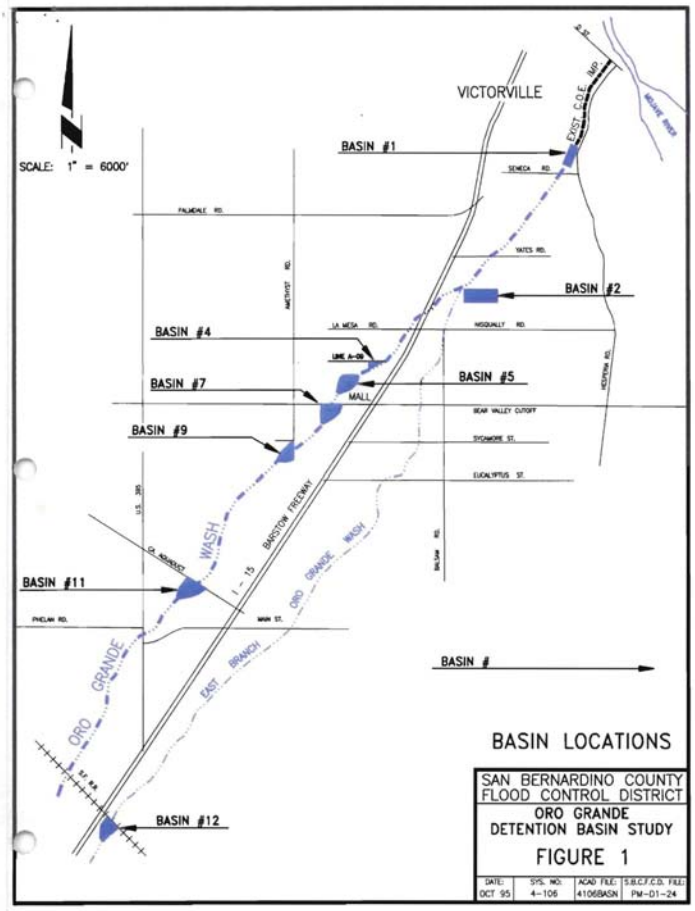
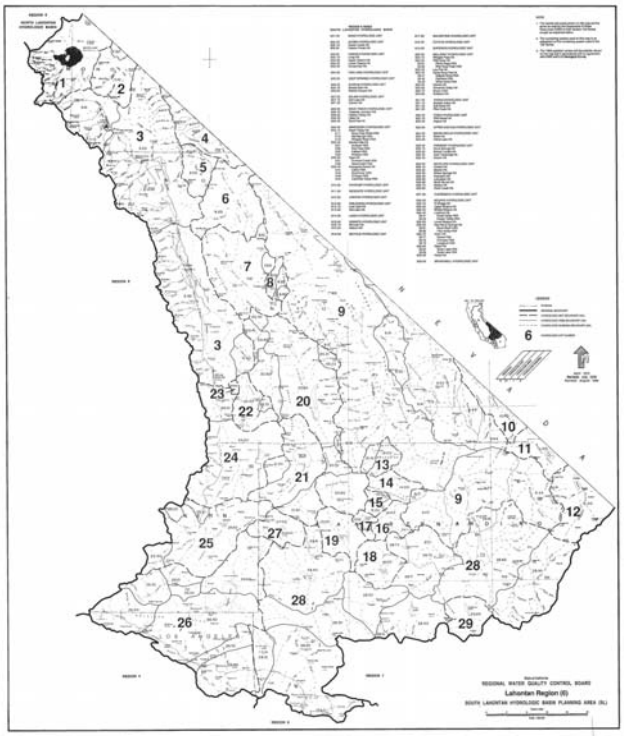
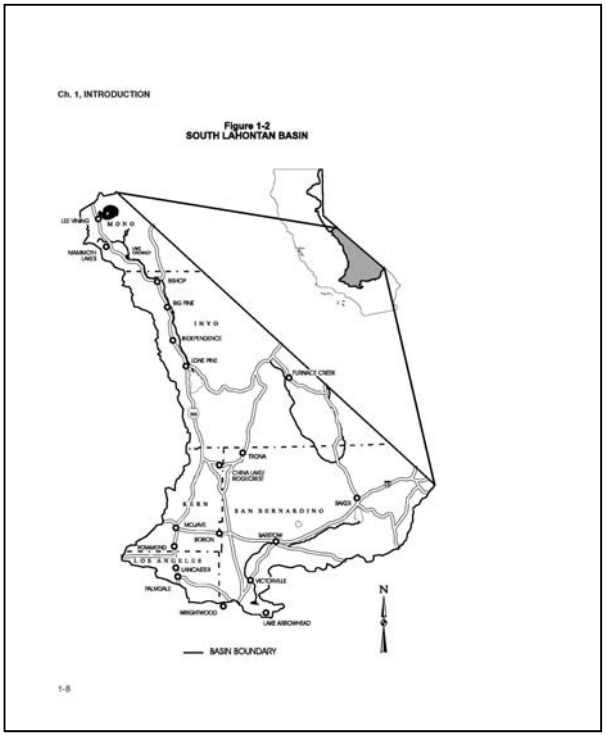



Figure 9-2

**B. EFFECTIVELY INTEGRATE WATER MANAGEMENT PROGRAMS AND PROJECTS WITHIN A HYDROLOGIC REGION IDENTIFIED IN THE CALIFORNIA WATER PLAN; THE REGIONAL WATER QUALITY CONTROL BOARD (RWQCB) REGION OR SUBDIVISION; OR OTHER REGION OR SUB-REGION SPECIFICALLY IDENTIFIED BY DWR**

The Amethyst Basin is located within the South Lahontan Basin hydrologic region as identified in the California Water Plan and the Lahontan RWQCR Basin Plan (See Map).






Amethyst Basin effectively integrates water management programs and projects in the California Water Plan; Regional Water Quality Control Board (Lahontan) and the Mojave Water Agency 2004 Integrated Regional Water Plan. Amethyst Basin addresses statewide priorities as outlined on Table 1 which establishes the specific Statewide Priorities.

The Amethyst Basin project will address drought preparedness by placing more storm water into the ground water basin increasing local water supply and self-reliance. Consequently, the threat of over drafting the Mojave Basin is reduced by the increased recharge capability. Water Quality will improve from erosion reduction and slowing the flows to allow pollutants to drop out within the basin system. And lastly, the resource stewardship is addressed by the Amethyst Basin being built within the floodplain and thereby eliminating the potential for development of the floodplain within that reach. It is also a change from the original concept of a channel through the area which would have allowed encroaching development.

The Lahontan Regional Water Quality Control Board states the following regarding the Amethyst Basin Project:
The Amethyst Basin project deeply relates to Sections 4.3 "Stormwater runoff, erosion and sedimentation" and 4.6 "Ground Water Protection and Management" of the Lahontan Basin Plan as stated in the Lahontan Basin Plan (page 4.3-6):

> *"Water quality problems related to stormwater discharges, erosion and sedimentation are among the most frequent and widespread water quality problems in portions of the Lahontan Region which receive significant amounts of precipitation."*

The Amethyst Basin project will help address this by reducing the peak flow within Oro Grande Wash, thereby slowing flows and reducing erosion and allowing pollutants to drop out as stated in the Lahontan Basin Plan (page 4.6-1):

> *"The Lahontan Region includes over 1,581 square miles of ground water basins. Ground waters in the Region supply high quality drinking water and irrigation water, as well as industrial service supply, wildlife habitat supply, and aquaculture supply waters. Ground waters in the Region also provide a source of freshwater for the replenishment of inland lakes and streams of varying salinity."*

The Amethyst Basin is by far the most crucial to the effective integration between the San Bernardino Flood Control District and the Mojave Water Agency. The Mojave Basin is highly dependent on their ground water basin for consumptive use. The Amethyst Basin project would allow the Mojave Water Agency to gain more out of their Oro Grande Wash Recharge project and capture storm water for infiltration otherwise lost in the Oro Grande system.

The Mojave Water Agency IRWMP states the following importance of the Amethyst Basin project:

The Amethyst Basin project is consistent with the goals and objectives of the Mojave Water Agency's IRWP for the Mojave Water Agency jurisdiction. The project is within the Alto subarea as designated by the adjudication of the Mojave Basin and brief excerpts of the importance of the project found in the Mojave Water Agency IRWMP are included:

*Per the Mojave Water Agency IRWMP (Page 4-34)*
*" The following projects have been identified as having the highest priority:*
*…• recharge in the Alto Floodplain and Regional and Warren Valley aquifers*
*…Each of these projects will begin implementation within the next 3-5 years."*

**Table 8-3: Alto Subarea Water Management Issues**

| Issue | Specification | Location | Aquifer(s) |
|---|---|---|---|
| Demand Exceeds Supply | 2020 deficit: 46,000 to 48,500 af/yr | Overall subarea | Floodplain & Regional |
| Water Quality | Arsenic > 10 ppb | • Various locations.<br>• 58% of Victor Valley WD well capacity > 10 ppb Arsenic. | Mostly Regional, but also some in Floodplain |
| | High TDS | Adelanto | Regional |
| | | Silver Lakes | Floodplain |
| | Fluoride | Adelanto, Silver Lakes, and isolated areas | Regional |
| | Nitrates (low priority, below MCLs) | Victorville | Floodplain & Regional |
| | Manganese, Iron | North of SCLA, Oro Grande, and isolated areas | Floodplain & Regional |
| | Chromium VI, Iron, Manganese, Arsenic, others | Upper Part of Mojave Watershed | Regional |
| | Organics | SCLA | Regional |
| | High Temperature | Victorville | Regional |
| Overdraft | Causing wells to run dry | Apple Valley | Regional |
| | Potentially causing degradation in water quality | Victorville | Floodplain & Regional |
| | | Adelanto | Floodplain & Regional |
| | | Baldy Mesa | Regional |
| | | Hesperia | Floodplain & Regional |
| Riparian Ecosystem Maintenance | • Habitat health based on groundwater level and Mojave River flows<br>• Water level needs to be raised to return to and maintain habitat | Along Mojave River – 24-mile corridor from Spring Valley Lakes to the Helendale fault area | Floodplain |
| Wastewater Infrastructure | • Return flow policy<br>• Need for additional infrastructure<br>• Satellite treatment and recycle | Overall subarea | Floodplain & Regional |
| Subarea Interaction | • Judgment requiring minimum subsurface flow from Este and Oeste and subsurface and surface flow to Centro<br>• Tied to VVWRA wastewater point of discharge issue | Overall subarea | Floodplain & Regional |

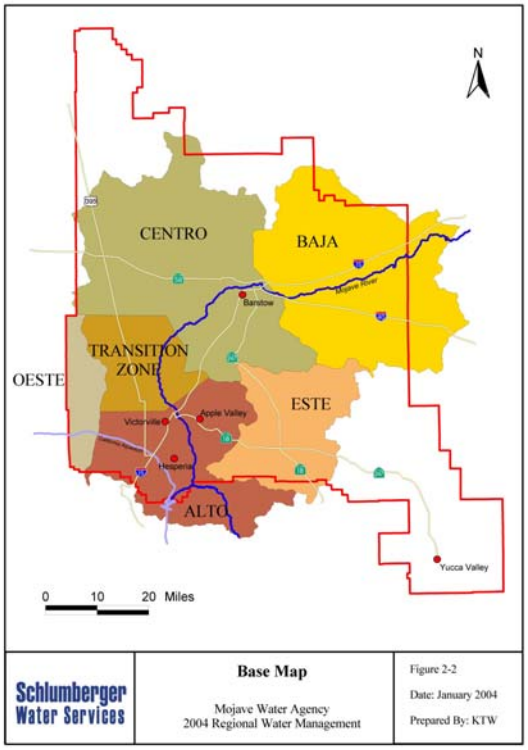
*Mojave Water Agency* *2004 Regional Water management Plan* *8 - 16*

The Amethyst Basin project will help to recharge the Alto floodplain.

*Per the Mojave Water Agency IRWMP (Page 9-2)*
*The objectives established for the Mojave Water Agency Regional Water Management Plan (MWA RWMP) through 2020 are to:*
*Balance future water demands with available supplies recognizing the need to:*
*• stabilize the groundwater basin storage balance over long-term hydrologic cycles*
*• protect and restore riparian habitat areas as identified in Exhibit H of the Mojave Basin Area Judgment and the Department of Fish & Game management plan required by Exhibit H*
*• limit the potential for well dewatering, land subsidence, and migration of poor quality water*
*• maintain a sustainable water supply through extended drought periods; and*
*• select projects with the highest likelihood of being implemented."*

he Amethyst Basin project will help to increase water supply and quality and reduce overdraft risk in the Alto floodplain. Table 8-3 from the Mojave Water Agency IRWMP shows the Alto Subarea Water Management Issues.

## C. EFFECTIVELY RESOLVE SIGNIFICANT WATER-RELATED CONFLICTS WITHIN OR BETWEEN REGIONS




The Amethyst Basin project will effectively resolve significant water related conflicts within regions. The adjudicated boundary of the Mojave Basin Area encompasses about 3,400 square miles of San Bernardino County, California. In general the adjudicated area is bounded by the San Bernardino and San Gabriel Mountains to the south, Afton Canyon to the northeast, just beyond Lucerne Valley in the east and the Antelope Valley to the west at the San Bernardino Los Angeles County line. For purposes of administration of the Judgment, the Basin is divided into five separate hydrologic Subareas. The five Subareas are named: Este (East Basin), Oeste (West Basin), Alto (Upper Basin), Centro (Middle Basin) and Baja (Lower Basin)."

As mentioned previously and shown in the map to the left, the Amethyst Basin is located within the Alto Subarea. The project will allow more recharge in the Alto Basin where a large amount of consumption is experienced. This will assist in reducing the tension and water rights issue resolved by the adjudication by placing new water in the ground in the area where it is needed and lessen the potential for the downstream recipients to question the use of water upstream. The District is also working closely with the Mojave Water Agency who is currently the court-appointed Watermaster for the adjudication.

## D. CONTRIBUTE TO ATTAINMENT OF ONE OR MORE OF THE OBJECTIVES OF THE CALFED BAY-DELTA PROGRAM

The Amethyst Basin contributes to the attainment of CALFED's Water Supply Reliability Program. The Basin and the Mojave Water Agency's Pond Retention project provide for Conveyance, Storage, Environmental Water Account, Water Use Efficiency and Water Transfers. The Amethyst Basin through a partnerships with the Mojave Water Agency seek to increase water supplies, ensure efficient use of water resources and add flexibility to California's water system.

A brief excerpt from the Mojave Water Agency's website provides a perspective of the importance of the project:

> *"MWA is entitled to 75,800 acre-feet of State Water Project (SWP) water per year. This includes the addition of 25,000 acre-feet of entitlement that was purchased from the Berrenda-Mesa Water District in 1998. Imported SWP water has historically been supplied to the MWA through the Mojave Basin and Morongo Basin pipelines and releases from Silverwood Lake. The State Water Project has delivered approximately 150,000 acre-feet of water to MWA from 1972 through 2001 (DWR 2001, and MWA)."*

The Amethyst Basin project will reduce the region's dependence on imported water supply by increasing the potential for water infiltration thereby increasing water supply reliability in the Mojave Basin. As seen below in the Figure 4-12 from the Mojave Water Agency's 2004 IRWMP, historically large portion of the SWP allocation were requested from Mojave Water Agency. With increased ground water in the highest developing area (Alto subarea) the need for SWP will reduce.

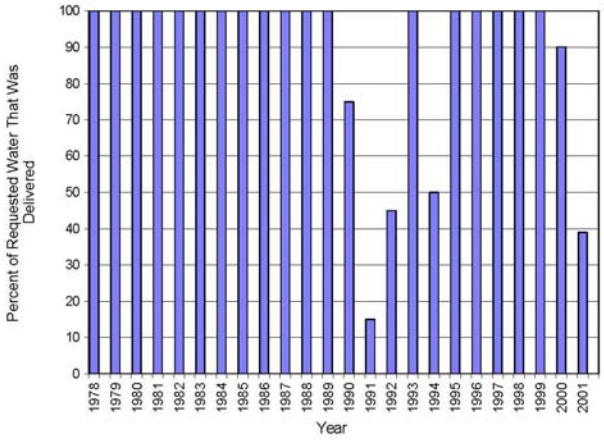
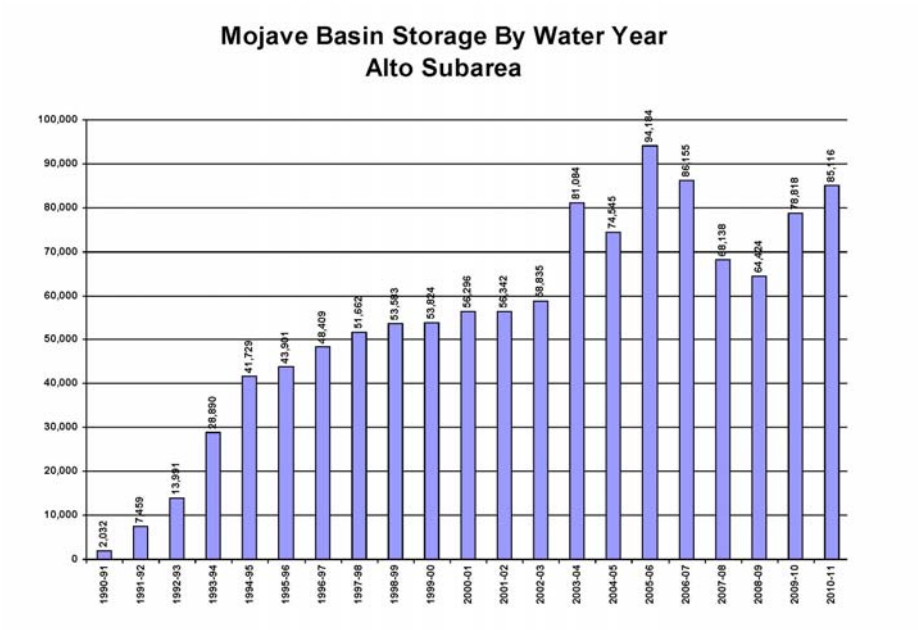



**Figure 4-12: Historical SWP Percent of Deliveries Requested by Contractors**

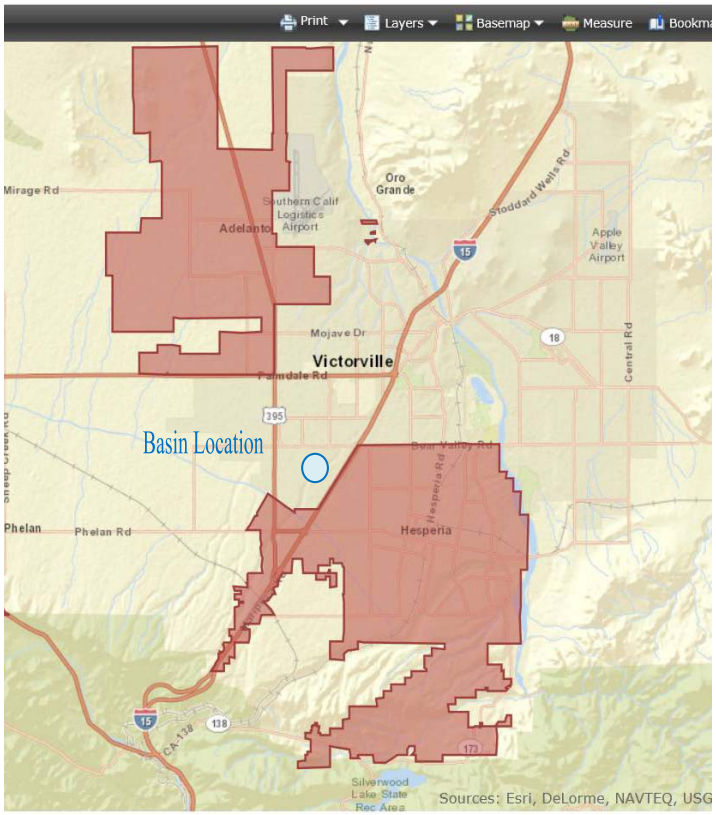
*Mojave Water Agency* *2004 Regional Water management Plan* *4 - 26*

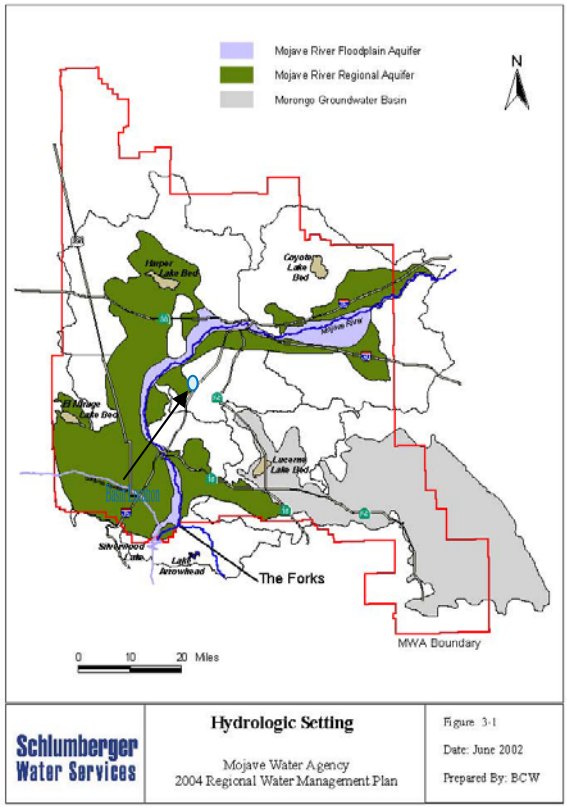
Furthermore, The lack of a reliable water supply that results in shortages of water in the southern portion of the State affect the health and welfare of its citizens, as well as the ecosystem of the Delta. California's precipitation and its population are at odds the majority of precipitation falls in the north and east while the majority of people live in the south and west. The Amethyst Basin project will provide a viable water supply in the area that can be stored readily in the ground water basin for future drought years as shown in the chart below.




**E. ADDRESS CRITICAL WATER SUPPLY OR WATER QUALITY NEEDS OF DISADVANTAGED COMMUNITIES WITHIN THE REGION**

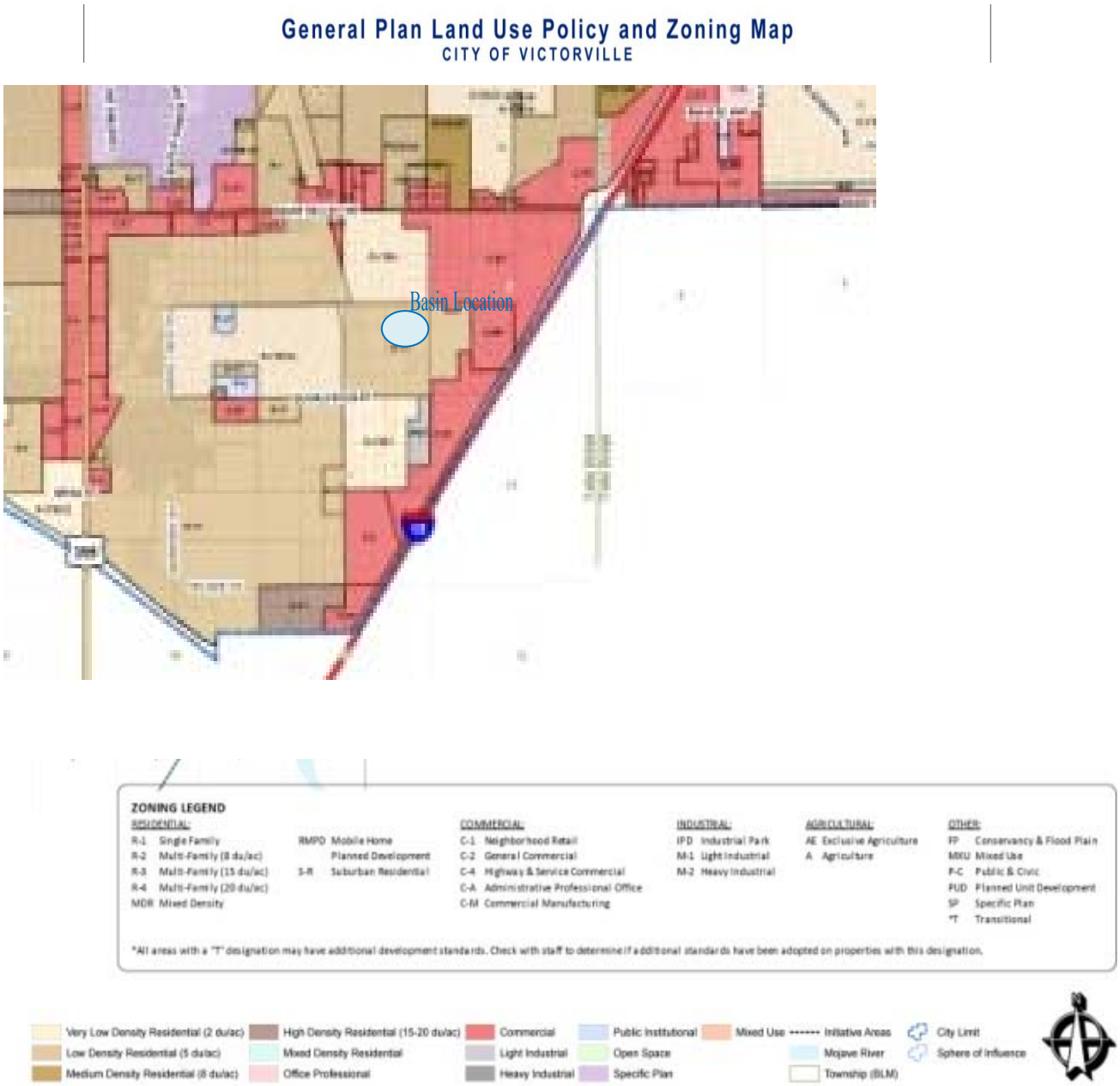
Though the Amethyst Basin project is not directly in a disadvantaged community as seen in the ESRI map below, the infiltration of storm water into the Alto subarea ground water basin will provide benefit to disadvantages communities within the Alto Basin as shown by figure 3-1 from the Mojave Water Agency IRWMP.


Print
Layers
Basemap
Measure
Mirage Rd
Southern Calif Logistics Airport
Adelanto
Oro Grande
Stoddard Wells Rd
Apple Valley Airport
Mojave Dr
Victorville
Palmdale Rd
Central Rd
Basin Location
Phelan
Phelan Rd
Hesperia
Hesperia Rd
Silverwood Lake State Rec Area
Sources: Esri, DeLorme, NAVTEQ, USG

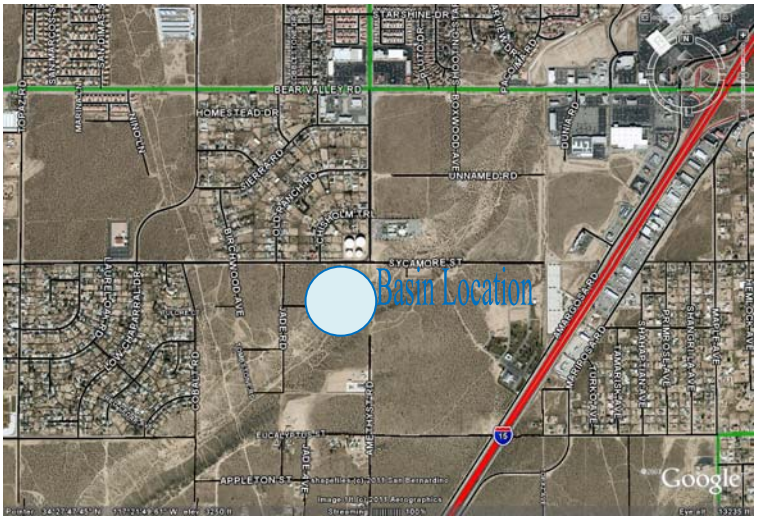

Mojave River Floodplain Aquifer
Mojave River Regional Aquifer
Morongo Groundwater Basin
N
Harper Lake Bed
Coyote Lake Bed
Mojave River
Lucerne Lake Bed
Silverwood Lake
Lake Arrowhead
The Forks
MWA Boundary
0 10 20 Miles
Schlumberger Water Services
Hydrologic Setting
Mojave Water Agency
2004 Regional Water Management Plan
Figure 3-1
Date: June 2002
Prepared By: BCW

## F. EFFECTIVELY INTEGRATE WATER MANAGEMENT WITH LAND USE PLANNING

The Amethyst Basin project is located within the land use zoning designation R-1T per the Victorville General plan Land Use Policy and Zoning Map as shown below. R-1T means single family zoning.



As you can tell by the aerial view of the project site, there are already tracts to the north and west of the basin location. By placing the basin in this location the District prevents developments from occurring it what should be floodplain. As you can further see from the tilted aerial view, downstream of the proposed basin location is even more developed.



As you can tell by the photos of the project site, the land is quite suitable for a basin due to the natural topography of the land. The topography also is NOT conducive to development mainly due to the floodplain issue.

**G. For eligible SWFM funding, projects which: a) are not receiving State funding for flood control or flood prevention projects pursuant to PRC §5096.824 or §75034 or b) provide multiple benefits, including, but not limited to, water quality improvements, ecosystem benefits, reduction of instream erosion and sedimentation, and groundwater recharge.**

The Amethyst Basin project will help to increase water supply and quality and reduce overdraft risk in the Alto floodplain. There will also be opportunities for on-site mitigation and environmental enhancement.

Per Mojave Water Agency's website:

> *"The Oro Grande Wash Recharge Project will deliver State Water Project water to recharge basins in the Oro Grande Wash, west of I-15 and south of Bear Valley Road in Victorville. When complete, the project will recharge up to 8,000 acre-feet per year to support groundwater in the western part of the Alto Subarea. Construction of the project consists of connecting to an existing turnout on the California Aqueduct, moss screen and metering facilities at the turnout, and a conveyance pipeline and outlet in the wash. The recharge basins will be constructed by the County of San Bernardino as part of a dual-purpose recharge and flood control detention basin."*

**G. ADDRESS STATEWIDE PRIORITIES (TABLE 1 ESTABLISHES THE SPECIFIC STATEWIDE PRIORITIES FOR THE IRWM GRANT PROGRAM.)**

Drought Preparedness –

Per Mojave Water Agency's IRWMP (page 6-1)

"Cities and water agencies within MWA rely on large groundwater reserves to meet potable water supply needs. During previous drought periods, municipal water suppliers continued to draft from these reserves to meet customer needs without imposing restrictions on water use, but at rates exceeding natural replenishment in most areas. The large groundwater basin in the area serves as a reservoir and buffers the impacts of seasonal and year-to-year variations in precipitation and surface water deliveries. By 2020 when this Plan is fully implemented, the area aquifers are expected to be in balance due to the combination of water imports and/or production rampdown. During multiple-year droughts or State Water Project outages, the basin will continue to be pumped to meet demands. Actions of the MWA to address water shortages are summarized below."

The Amethyst Basin project will help Mojave Water Agency reach this goal. The project will give the Mojave Water Agency another location to manage infiltration and recharge thereby increasing efficient groundwater basin management.

Use and Reuse Water More Efficiently –

Per Mojave Water Agency's IRWMP (page 6-1)

"Groundwater is recharged into the basin predominantly by (1) infiltration of water from the Mojave River, accounting for 80% of the total basin natural recharge12 (2) infiltration of storm runoff from the mountains, and (3) manmade recharge (from irrigation, wastewater, fish hatcheries, and imported water)."

The Amethyst Basin project will capture urban stormwater runoff and percolate it into usable aquifers. This aspect is important to the Mojave Basin as shown by Mojave Water Agency's statement.

Climate Change Response Actions –

The SBCFCD and the City of Victorville have had consultants look at the hydrology for the desert region. This study led to an update in the hydrology manual and methods. It was found that the updated rainfall data showed an increase. The consultant determined with this rainfall increase some of the antecedent moisture conditions could be changed in various desert areas. New maps were developed showing these changes.

Expand Environmental Stewardship –

The Project reserves the floodplain in this portion of the Oro Grande Wash. Also, the reduction is peak flow will allow ecosystems to increase with the reduced frequency of storm erosion.

Practice Integrated Flood Management –

The Project's main objective is increased flood protection which will allow a more sustainable flood system. Also, the reduction is peak flow will allow ecosystems to increase with the reduced frequency of storm erosion.

Protect Surface Water and Groundwater Quality –

The Project will reduce the peak flow thereby allowing some contaminates to settle out of the flow. The infiltration of the storm water will also dilute the salt content from the SWP by mixing the flows within the groundwater.

Improve Tribal Water and Natural Resources –

The Project is not on Tribal land nor does in benefit any Tribal lands.

Ensure Equitable Distribution of Benefits –

Though the Amethyst Basin project is not directly in a disadvantaged community as seen in the ESRI map below, the infiltration of storm water into the Alto subarea ground water basin will provide benefit to disadvantages communities within the Alto Basin as shown by figure 3-1 from the Mojave Water Agency IRWMP.