Appendix K: Utilities

K.1 - Water Supply Assessment, October 18, 2011

File

CITY OF SAN BERNARDINO
MUNICIPAL WATER DEPARTMENT

BOARD OF WATER COMMISSIONERS

TONI CALLICOTT
President

Commissioners
B. WARREN COCKE
NORINE I. MILLER
LOUIS A. FERNANDEZ
WAYNE HENDRIX

RECEIVED
ENGINEERING
OCT 21 2011
CITY OF SAN BERNARDINO
MUNICIPAL WATER DEPARTMENT

STACEY R. ALDSTADT
General Manager
ROBIN L. OHAMA
Deputy General Manager
MATTHEW H. LITCHFIELD, P.E.
Director, Water Utility
JOHN A. CLAUS
Director, Water Reclamation
DON SHACKELFORD
Director, Finance
VALERIE K. HOUSEL
Director, Environmental
and Regulatory Compliance

"Trusted, Quality Service since 1905"

TRANSMITTAL FORM

ADDRESS: LEWIS RETAIL CENTERS
1156 NORTH MOUNTAIN AVENUE
UPLAND, CA 91786

DATE: OCTOBER 20, 2011

ATTENTION: MR. TIMOTHY REEVES

CC: T. RAHHAL, DEVELOPMENT SERVICES
M. LITCHFIELD

SUBJECT: WATER SUPPLY ASSESSMENT

THE FOLLOWING ITEMS ARE:

☐ REQUESTED ☒ ENCLOSED ☐ DRAFT ☐ OTHER

VIA: ☒ MAIL ☐ FAX

NO. OF COPIES	DESCRIPTION
1	RESOLUTION NO. 792
1	WATER SUPPLY ASSESSMENT – NATIONAL ORANGE SHOW INDUSTRIAL PROJECT

THESE DATA ARE:

☐ REQUESTED ☐ FOR APPROVAL ☒ FOR FILE

☐ FOR REVIEW ☐ FOR ACTION ☐ FOR INFORMATION

☐ FOR SIGNATURE

Sincerely,

Sydney Morrison
Senior Administrative Coordinator

300 North "D" Street, San Bernardino, California 92418 P.O. Box 710, 92402 Phone: (909) 384-5141
FACSIMILE NUMBERS: Administration: (909) 384-5215 Engineering: (909) 384-5532 Customer Service: (909) 384-7211
Corporate Yards: (909) 384-5260 Water Reclamation Plant: (909) 384-5258

San Bernardino Municipal Water Department
Water Supply Assessment
Water Code §10910 *et seq.*

To: (Lead Agency)
Ms. Terri Rahhal
City of San Bernardino
Community Development Department
300 North "D" Street
San Bernardino, CA 92418

(Applicant)
Mr. Timothy Reeves
Lewis Retail Centers
1156 North Mountain Avenue
Upland, CA 91786

Project Information

Project Title: National Orange Show Industrial Project
Development Type: Warehouse/Industrial

Water Supply Assessment

On 10/18/11, the Board of Water Commissioners of the San Bernardino Municipal Water Department approved the within assessment and made the following determination regarding the above-described Project:

[X] The projected water demand for this Project **was** included in San Bernardino Municipal Water Department's recently adopted 2010 Regional Urban Water Management Plan.

[ ] The projected water demand for this Project **was not** included in San Bernardino Municipal Water Department's recently adopted 2010 Regional Urban Water Management Plan.

[X] A sufficient water supply **is** available for the Project's water demand, as well as existing and other projected water demands for the service area during normal, single-dry and multiple-dry years for the next 20 years.

[ ] A sufficient water supply **is not** available for the Project's water demand. [Plan for acquiring and developing sufficient water supply attached. Water Code § 10911 (a)]

The foregoing determination is based on the following Water Supply Assessment Information.

Robin Ohama
Robin L. Ohama
Deputy City Clerk & Ex-Officio Secretary

10-18-11
Date

Water Supply Assessment:
National Orange Show Industrial Project

Background

Senate Bills 610 and 221 amended state law, effective January 1, 2002, to improve the linkage between certain land use decisions made by cities and counties and water supply availability. Both statutes require detailed information regarding supply availability and reliability with respect to certain developments to be included in the administrative record to serve as evidentiary basis for an approval action by the city or county on such projects.

Under SB 610, water supply assessments must be furnished to local governments for inclusion in any environmental documentation for certain types of projects, as defined in Water Code § 10912[a] and subject to the California Environmental Quality Act (CEQA).

A fundamental source document for compliance with SB 610 is the Urban Water Management Plan (UWMP). If the UWMP is properly prepared, it can be used by the water supplier to meet the standards set forth in SB 610.

The San Bernardino Municipal Water Department (SBMWD) is the water supplier that is responsible for preparing water supply assessments for the City of San Bernardino (City). The SBMWD Board of Water Commissioners approved the 2010 Regional Urban Water Management Plan (RUWMP) in June 2011 and is the primary source document for this water supply assessment.

On July 22, 2011, a letter was received by the SBMWD requesting that the Department prepare a water supply assessment pursuant to the provisions of the Water Code § 10910 et seq. for the National Orange Show Industrial Project (see Appendix A). The project's applicant, Lewis Commercial (Lewis), submitted the project for proposed development to the City of San Bernardino's Development Services Department.

Information provided by Lewis indicates that the overall average demand for the National Orange Show Industrial Project is 81,520 gallons per day or 57 gpm. The average daily demand represents an annual demand of approximately 91.3 ac-ft/yr.

Project Description

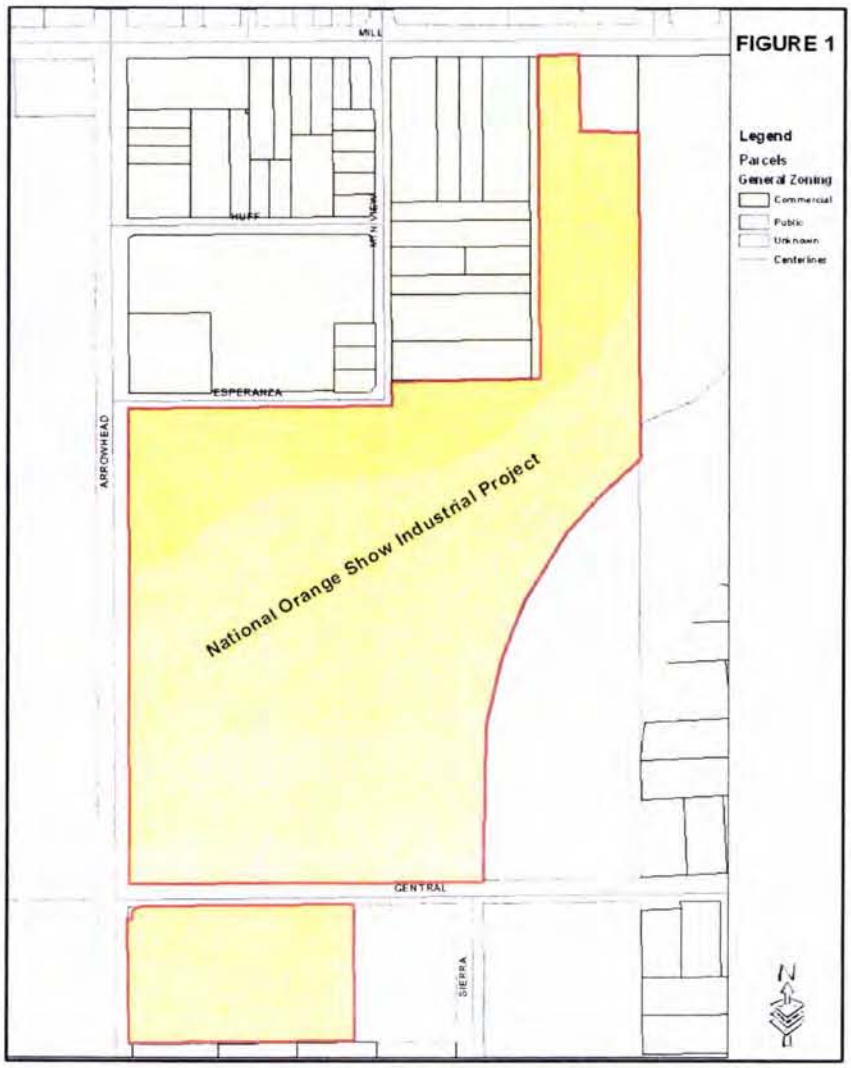
The National Orange Show Industrial Project is a mixed use industrial and warehouse project being developed on approximately 38 acres of land, located on the northeast corner of Arrowhead and Central Avenues. The project consists of one large warehouse distribution facility and three smaller industrial buildings, for a total of 727,710 square feet of industrial development, with required on-site detention areas. A conceptual site plan is included in Appendix B.

Water Demand Projections

The project development is not consistent with the City's General Plan land uses as this area has been zoned for Public Commercial Recreation land use. The applicant has applied for a General Plan Amendment to revise the land use designation for the proposed project site. However, the City of San Bernardino has not granted approval of the requested General Plan Amendment. As discussed, the water demand was estimated at 57 gpm of which 53 gpm were for indoor consumption and 4 gpm for outdoor use. These demands are consistent with the 2010 RUWMP.

The water demand projections developed for SBMWD's 2010 RUWMP were based on ultimate build-out conditions reflected in the City's 2005 General Plan. The demand projections were based on residential, commercial, industrial, and public land uses and representative water use factors developed from existing billing data.

The National Orange Show Industrial Project's parcels of land are shown in Figure 1, which also shows the land use districts for the City.



The project's parcels all fall within the major land use districts in the City's General Plan referred to as:

- PCR (Public Commercial Recreation) – This land use district is intended to permit intensive recreational uses, such as golf courses, sports complexes, and fair grounds as approved through the public review process.

- CH (Commercial Heavy) – This land use district is intended for large scale, regional serving retail and service uses, could include industrial uses, that are characterized by an extensive use of outdoor or indoor space for their sales, service, or storage.

Appendix C summarizes the water demand estimates for the National Orange Show Industrial Project.

According to Water Code § 10910 (c)(2), if the projected water demand associated with the proposed project was not accounted for in the most recently adopted UWMP, the water supply assessment for the project shall include a discussion with regard to whether the public water system's total projected water supplies available during normal, single dry year, and multiple dry years during a 20-year projection will meet the projected water demand associated with the proposed project, in addition to the public water system's existing and planned future uses.

Climate Conditions

Table 1 summarizes the climate for the City of San Bernardino. The climate of the City is considered arid west.

Table 1
Average Climate Data for SBMWD Service Area

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Standard Monthly Average ETo (inches) [1]	2.49	2.91	4.16	5.27	5.94	6.56	7.22	6.92	5.35	4.05	2.94	2.56	56.37
Average Rainfall (inches) [2]	3.22	3.25	2.86	1.29	0.47	0.09	0.04	0.15	0.33	0.71	1.32	2.38	16.10
Average Temperature (F) [2]	52.4	54.5	56.7	61.0	65.5	71.5	77.7	77.8	74.0	66.4	58.5	53.2	63.9

1. Obtained from CIMIS Station 44 at UCR as of 17 December 2010.
2. Weather Station San Bernardino F S 226, Station Number 047723, 1 Jan 1893 to 22 Oct 2010.

Population Projections within SBMWD's Service Area

Table 2 presents the population projection for the SBMWD service area. A population growth rate for the area served by SBMWD was defined based on SCAG projected populations for years 2008, 2020, and 2035, as contained in their 2012 Integrated Growth Forecast. It should be noted that the service area is different than that of the City's boundary. Based on GIS data, SBMWD serves 90 percent of the City of San Bernardino. The population growth rate provided by SCAG was applied to existing population in the City of San Bernardino to project population through year 2035.

Because SBMWD serves 90 percent of the City, it is assumed that the population served by SBMWD will be 90 percent of the City's population projection.

Table 2
Population Projections for SBMWD Service Area

	2010	2015	2020	2025	2030	2035
Population	187,690	196,453	207,715	213,366	221,400	234,937

Customer Accounts

Table 3 summarizes the projection of customer accounts for SBMWD. These accounts were projected based on land use categories from the City's General Plan and the historical correlation between land use and service accounts.

Table 3
Projection of SBMWD Customer Accounts

Customer Class	Year				
	2009	2015	2020	2025	2030
Residential	37,932	41,079	42,997	44,616	46,296
Commercial/ Industrial	4,704	4,464	4,672	4,848	5,030
Institutional/ governmental	11	87	91	95	98
Other	1,162	1,170	1,225	1,271	1,319
Total	43,809	46,800	48,985	50,830	52,743

Source: SBMWD Urban Water Management Plan, 2010.

Water Demand Projections

The Water Conservation Bill of 2009 (also referred to as SBX7-7) was enacted as part of the November 2009 Comprehensive Water Package. The Water Conservation Bill of 2009 provides the regulatory framework to support a statewide reduction in urban per capita water use. Each retail water supplier must demonstrate compliance with SBX7-7 by determining its existing baseline water consumption and then establish a future water use target in gallons per capita per day and report that information in its 2010 UWMP.

In order to meet the water use targets prescribed by SBX7-7, SBMWD will have to reduce current water use by approximately 10 percent by the year 2015 and by approximately 20 percent by year 2020. Should SBMWD's recycled water program develop prior to 2015, SBMWD would achieve its interim and compliance water use SBX7-7 targets without any additional conservation actions. However, because the recycled water program is in the planning stages, as described below, SBMWD is still planning to undertake additional conservation actions to ensure compliance with SBX7-7.

Table 4 summarizes the total water demand projections for SBMWD, as depicted in the 2010 RUWMP. As discussed previously, water demand projections in the 2010 RUWMP were based on ultimate build-out conditions presented in the City's General Plan. It should be mentioned that the projections totals are without Conservation.

Table 4
Average Annual SBMWD Water Demands (ac-ft/yr)

Customer Class	Year				
	2009	2015	2020	2025	2030
Residential	28,148	35,009	36,644	38,023	39,455
Commercial/ Industrial	7,143	8,717	9,124	9,468	9,824
Institutional/ governmental	1,554	2,328	2,437	2,529	2,624
Landscape	5,432	6,178	6,466	6,710	6,962
Other	7,391	1,029	629	629	629
Future Known Developments		625	2,083	2,083	2,083
Unaccounted / system loss	2,959	3,811	3,666	3,797	3,934
Total	52,627	57,697	61,049	63,239	65,511

(1) Source: SBMWD Regional Urban Water Management Plan, 2010.

Existing Water Supply

SBMWD's current water supply consists solely of water extracted from the underlying underground aquifer, Bunker Hill Groundwater Basin (BHG Basin). SBMWD produces its water supply from 57 groundwater wells located throughout its service area. The wells range from 50 to 1,300 feet in depth and have production capacities ranging from 50 to 3,500 gallons per minute (gpm). Table 5 presents historical groundwater pumping for SBMWD.

Table 5
SBMWD Groundwater Pumped (Acre-Feet/Year)

	2003	2004	2005	2006	2007	2008	2009	2010
Groundwater Pumped	46,850	49,469	48,069	57,141	59,157	56,310	52,357	47,654
% of Total Water Supply	100%	100%	100%	100%	100%	100%	100%	100%

Source: SBMWD Well Production Data 2003-2010

Groundwater Management

Management of the BHG Basin is coordinated through the San Bernardino Valley Municipal Water District (Valley District or District), which was formed in 1954 to plan long-range water supply for the San Bernardino Valley including the BHG Basin. Valley District is a State Water Project (SWP) contractor that was incorporated under the Municipal Water District Act of 1911 (California Water Code Section 7100 et. seq., as amended). The District's responsibility for long-range water supply planning includes importing supplemental water and management of the groundwater basins within its boundaries. It has specific responsibilities for monitoring groundwater supplies in the San Bernardino and Colton-Rialto basins and maintaining flows at Riverside Narrows on the Santa Ana River.

The BHG Basin contains in excess of 5 million acre feet (ac-ft) of high-quality water of which approximately 1.5 million ac-ft of water is extractable. The BHG Basin is replenished naturally by local precipitation and by stream flow from rain and snow melt in the San Bernardino Mountains watershed. Water can also be artificially recharged by rerouting stream flows to recharge percolation basins.

Prior to 1963 the lack of native surface water and imported water for many years led to groundwater overdraft within the District's boundaries. In more recent years, increased groundwater recharge has led to high groundwater levels in the lower (southern) portion of the BHG Basin, also known as the pressure zone, where the aquifer is confined and artesian. While groundwater levels in the pressure zone are being managed through increased pumping, they may cause artesian flow in local wells, infrastructure infiltration, and the potential for liquefaction during seismic events. Within the past 70 years, a high groundwater condition has occurred in the area south and east of the intersection of "Mill & D Street" at least three times. A high groundwater condition occurs when the groundwater elevation exceeds the ground surface elevation. SBMWD participates with other local water agencies in a dewatering program to lower the water levels in the confined pressure zone. Valley District has sold extracted high groundwater water to downstream water agencies and will likely do so again if high groundwater conditions reoccur.

Since 1970, Valley District has been calculating the change in groundwater storage within the Bunker Hill Groundwater Basin using a specific yield model. This model calculates both the cumulative change in groundwater storage and the annual change in storage. The cumulative change in groundwater storage is a measurement of groundwater lost or gained in the BHG Basin compared to the base year of 1934. The year 1934 was selected by the District as the base year to correspond with the California Department of Water Resources (DWR) base period of 1934-35 through 1959-60. The cumulative change in storage since 1934 for the BHG Basin was approximately a negative 319,437 ac-ft as illustrated in Figure 2. This figure indicates a decline in storage of approximately 106,872 ac-ft over the last three years. However, conditions have been worse in the past, close to 600,000 ac-ft in the mid 1960s. The decrease in cumulative change in storage since 1998 has resulted from an increased reliance on groundwater production combined with below average precipitation. Drier winter months have led to a heavier reliance on pumping during the winter than in the past.

The annual change in storage is the change in storage from the prior year. For 2007 the amount of storage in the basin decline by approximately 88,767 ac-ft as illustrated in Figure 3. Approximately 58 percent of the total decrease in annual storage is thought to be a result of increased well production and a reduction of natural recharge caused by below average precipitation throughout the BHG Basin.

In 2008, the most current year of verified extractions for the BHG Basin, extractions by other than plaintiffs agencies within the District's jurisdiction were 192,113 ac-ft. This exceeds the adjusted annual right of 167,238 ac-ft by 24,875 ac-ft, but does not exceed available credits Valley District has resulting primarily from previous years where production was less than the District's adjusted right.

Water quality extracted from the BHG Basin by SBMWD is of excellent mineral quality with total dissolved solids (TDS) averaging less than 350 milligrams per liter (mg/L).

Groundwater Judgments

Groundwater management issues (mainly export) in the Bunker Hill Groundwater Basin are primarily governed by the judgment in Western Municipal Water District et al. v. East San Bernardino County Water District et al., entered on April 17, 1969 (Western Judgment). Other adjudications affecting the management of this basin include: City of San Bernardino v. City of Riverside, County of San Bernardino Case No. 13754; Orange County Water District v. City of Chino, County of Orange Case No 117628 (the Orange County Judgment); and a Consent Decree (Decree) entered in City of San Bernardino v. United States of America, United States District Court Central District, CV 96-8867 and CV 96-5205 (consolidated) among the US Environmental Protection Agency, the US Department of the Army, the City of San Bernardino, and the California Department of Toxic Substances. More recently, an Integrated Regional Water Management Plan of the Upper Santa Ana River Watershed was completed in November 2007.

Under the Western Judgment, the District has the responsibility to ensure that adequate quantities of water are available for extractions above the basin safe yield of 232,100 ac-ft/yr. As defined, this includes both the BHG Basin and the Lytle Creek Basin. Within Valley District's boundaries, the adjusted right is 167,238 ac-ft/yr, with the remainder of the water rights assigned to plaintiff agencies outside of its service area. If pumping by water agencies within Valley District's service area exceeds their overall groundwater production, the District is required to augment the supply sources by spreading imported water from the SWP or water obtained from other sources. Under the Western Judgment, the production rights of individual agencies within the District's service area are not allocated. The Western Judgment also sets the maximum amount of water that can be exported from the Basin. A copy of the Western Judgment can be found in SBMWD's 2010 RUWMP.

The City of San Bernardino v. the City of Riverside Judgment (1922) and subsequent amendments set the maximum amount of water that can be pumped by both cities from the Antil region and, to some extent, limits the geographic areas in which both parties may pump.

The 1969 Orange County Judgment was a physical solution adopted by the court to resolve claims of inter-basin allocation of obligations and rights in the Santa Ana Watershed. Essentially, the Lower Area (below Prado Dam) is ensured annual delivery of a base flow at Prado Dam of 42,000 ac-ft plus all storm flow reaching Prado Dam. Valley District, Chino Basin Municipal Water District (now IEUA), and Western Municipal Water District guarantee that those flows are met, with the District responsible for delivery of approximately 16,000 ac-ft/yr to the Riverside Narrows. Valley District contracts with SBMWD to discharge 16,000 ac-ft/yr from its wastewater treatment facility (now the RIX facility) to meet this obligation.

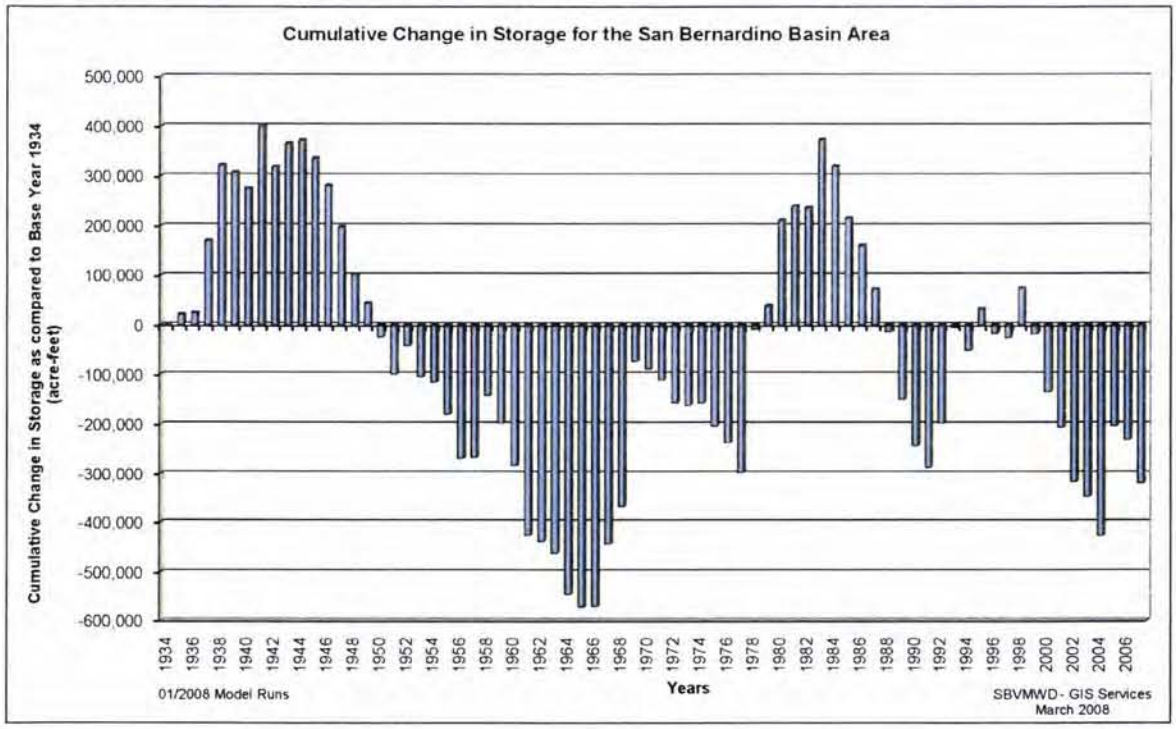
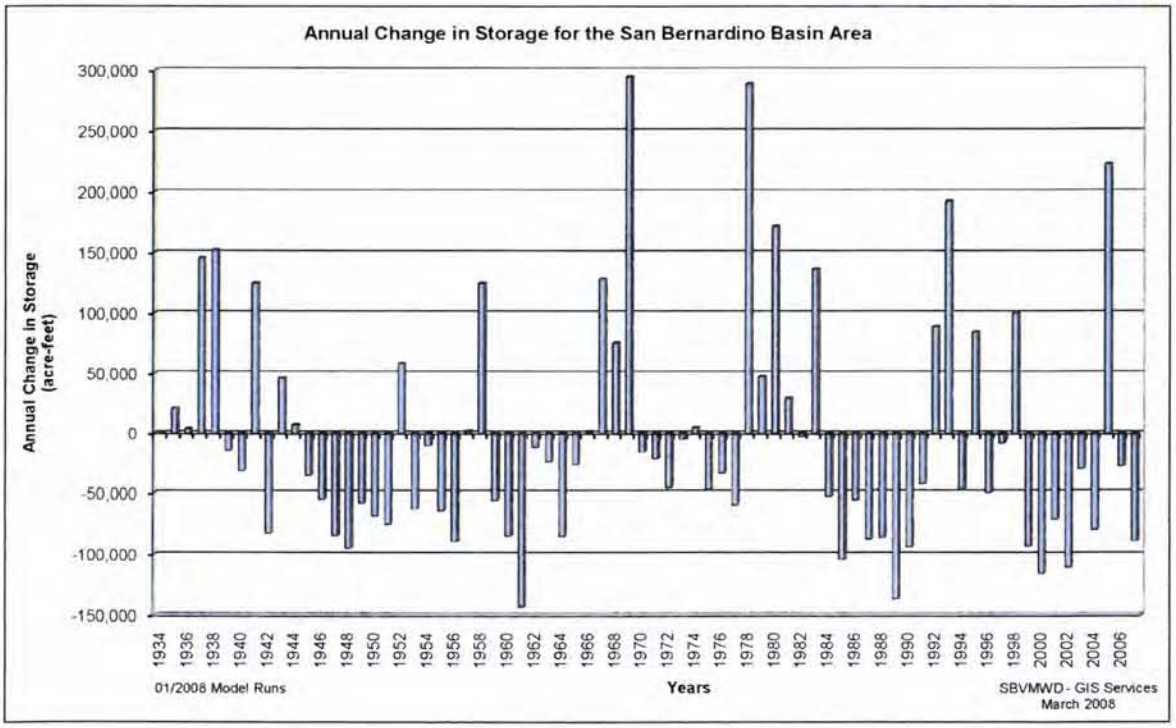


Figure 2
Cumulative Change in Basin Storage



The Consent Decree (Decree) among the US Environmental Protection Agency, the US Department of the Army, the City of San Bernardino, and the California Department of Toxic Substances Control settles a lawsuit filed by the City of San Bernardino against Federal defendants. The Decree requires the City of San Bernardino to develop a groundwater management plan for a management zone that is a subset of the city limits to ensure the integrity and effectiveness of the interim remedial action implemented in the Newmark Groundwater Contamination Superfund Site. The groundwater management plan must regulate the amount of new pumping in the management zone, as well as spreading activities. As a result, the City of San Bernardino has developed a groundwater management program that regulates new wells within the management area and spreading such that these activities would not adversely affect the Newmark remedy.

In 2005, the Upper Santa Ana Water Resources Association agreed to develop an Integrated Regional Water Management Plan (IRWMP) to address major water management issues for the communities of the Upper Santa Ana River Watershed. Valley District, as the regional water agency, led the planning effort and received a grant from DWR to prepare the plan. The main benefit of the plan was the development of a process for managing the local and imported water sources in the San Bernardino Basin Area. A secondary benefit is to identify regional projects and to receive grant funding for these projects. The plan was carefully developed through the participation of water managers and stakeholders and has two main objectives. The first management objective is to improve water reliability during drought periods and reduce liquefaction. The second management objective is to protect water quality and maximize conjunctive use opportunities. The IRWMP was completed in November 2007 and serves as the guide for long-term water resources planning in the San Bernardino Valley.

Recycled Water

Wastewater in the region is coordinated with several neighboring communities, with the SBMWD treating wastewater for City of San Bernardino, City of Loma Linda, East Valley Water District, and portions of unincorporated San Bernardino County. Wastewater is collected and treated at the San Bernardino Water Reclamation Plant using secondary treatment. After secondary treatment, non-disinfected effluent from the plant is sent to the Rapid Infiltration Extraction Tertiary Treatment Facility (RIX) for further treatment. RIX is jointly owned by the SBMWD and the City of Colton. Currently all effluent, which meets California Title 22 standards, is discharged into the Santa Ana River. The SBMWD is not using any of the RIX effluent for landscape irrigation in its service area because of the location of the RIX facility and cost of distribution. However, it should be noted that the use of recycled water is an integral component in the overall management of the BHG Basin through the implementation of the IRWMP.

SBMWD currently does not use recycled water to offset potable demand. The 2010 UWMP anticipated up to 800 AFY of recycled water use by year 2015. However, has not yet implemented a recycled water program and SBMWD is actively undertaking design and feasibility studies for the use of recycled water.

Planned Water Supply

Both the SBMWD and Valley District are planning to develop a number of water supply projects in order to meet the region's growing water demands. These include new wells, recycled water, and groundwater recharge.

SBMWD's Planned Supplies

The 2007 Water Master Plan documents projected water demands within the existing service and identifies supply sources to meet them. The Water Master Plan develops a long-range water supply plan and capital improvement plan to reliably meet the needs of SBMWD's service area to build out conditions.

Based on SBMWD's current capital improvement plan, SBMWD will be constructing three additional groundwater wells within the next five years; the location of these planned supplies is depicted in Figure 4. These wells will have adequate capacity to handle projected near-term demands within SBMWD's service area.

In addition to groundwater wells, the SBMWD has plans to use approximately 800 ac-ft from the RIX water reclamation facility for landscape irrigation.

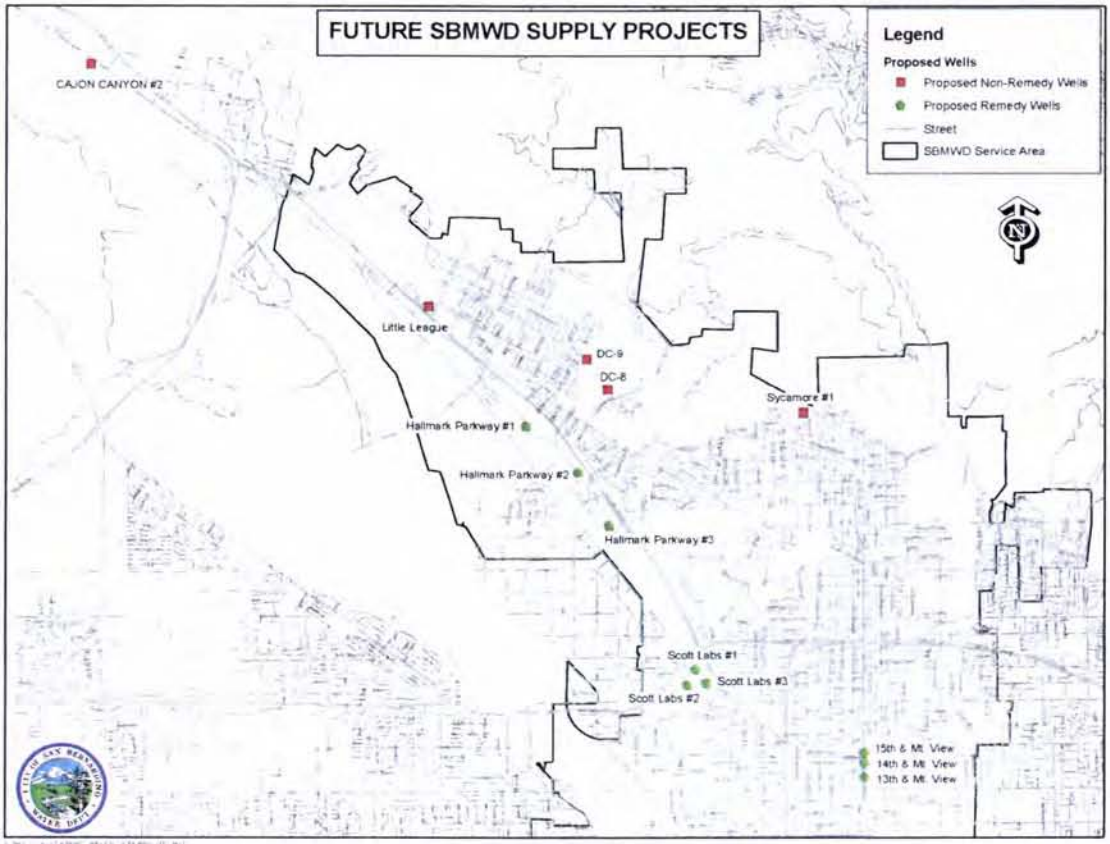


Figure 4
Location of SBMWD's Proposed New Wells

Table 6 summarizes the planned water supplies for SBMWD through 2030. SBMWD will continue to rely on the BHG Basin to fulfill the majority of its future supply needs. The SBMWD will continue to evaluate recycled water opportunities, based on potential demands and cost.

Table 6
Planned Water Supply (Acre-Feet/Year)

Water Supply Sources	2010	2015	2020	2025	2030
Groundwater	54,000	61,100	66,900	72,700	72,700
Recycled Water	800	800	800	800	800
Total	54,800	61,900	67,700	73,500	73,500

Source: SBMWD Urban Water Management Plan, 2010 and IRWMP, 2007

SBVMWD Water Supplies

In the Mid 1990s, Valley District completed a Regional Water Facilities Master Plan (Master Plan) for the BHG Basin that identified a number of transmission facilities to move groundwater from the pressure zone to various locations in the valley. The recently completed IRWMP builds on the previous study and includes an analysis of local water retailers' current and projected build-out water demands. The study identified over 100 local and regional capital projects to conjunctively manage water resources in the San Bernardino Basin. Projects identified include new surface water treatment facilities, groundwater storage and extraction facilities, water conservation, flood control utilization, water conveyance facilities including regional and local transmission facilities, pump station, and reservoir facilities. Some of the main projects that will increase the long-term reliability of water resources in the area include:

- Enhanced Groundwater Recharge Project. The objective of this project is to construct more basins along the Santa Ana River to maximize capture of this water before it is naturally conveyed downstream. Project is currently being designed.

- Central Feeder Pipeline. This project consists on the construction of approximately 56,000 ft of pipeline ranging in size from 54 to 78 inches. The project will tie the existing Baseline Feeder south extension to the proposed Citrus reservoir in the Mentone area. This pipeline will be used to convey water from the pressure zone to the east end of the valley. Phase 1 is complete and Phase II has not yet begun.

- New Wells for the Baseline Feeder. This project will construct two (2) new wells along 9th street and retrofit an existing SBVMWD well on Perris street, both in the City of San Bernardino. These wells will support SBMWD's Lower pressure zone and aid in water than can be delivered to West Valley Water District and the City of Rialto.

- Recycled Water Use. The construction of a number of satellite wastewater treatment plants are being considered to have the recycled water source closer to its end use.

Reliability of Water Supply

The reliability of the SBMWD water supply is a function of two aspects, the adequacy of system capacity (wells, pipelines, pump stations, etc.) and the availability of water supply from the BHG Basin, where groundwater is produced. Water supply assessments must demonstrate supply reliability under normal, single-dry year, and multiple-dry year weather scenarios. The availability of water supply from the BHG Basin is highly dependent of the regional management of water sources in the area by Valley District.

Under the Western Judgment, the SBMWD can extract as much water as needed from the BHG Basin to meet its current and projected demands as Valley District has the responsibility to ensure that adequate quantities of water are available for extractions above the basin safe yield of 232,100 ac-ft/yr. Therefore, the reliability of supply sources to the SBMWD is highly dependent on the reliability of imported water sources and Valley District's ability to meet its obligation under the Judgment.

The Western Judgment fixes the maximum amount of groundwater that can be exported from the basin by the plaintiffs at 64,862 ac-ft/yr. Within Valley District's boundaries, the adjusted right is 167,238 ac-ft/yr; this is the amount that the non-plaintiff agencies can extract from the BHG Basin and the Lytle Creek Basin before Valley District has to obtain additional water sources to maintain the long-term safe yield of the basin. Figure 5 illustrates projected water demands from the San Bernardino Basin area by both plaintiffs and non-plaintiffs to the Judgment extracted from the IRWMP. This figure illustrates water demands by non-plaintiffs increasing from 283,100 ac-ft/yr in 2005 to an estimated 364,100 ac-ft/yr by the year 2030. Projected water demands for 2027 were interpolated and estimated at 354,560 ac-ft/yr.

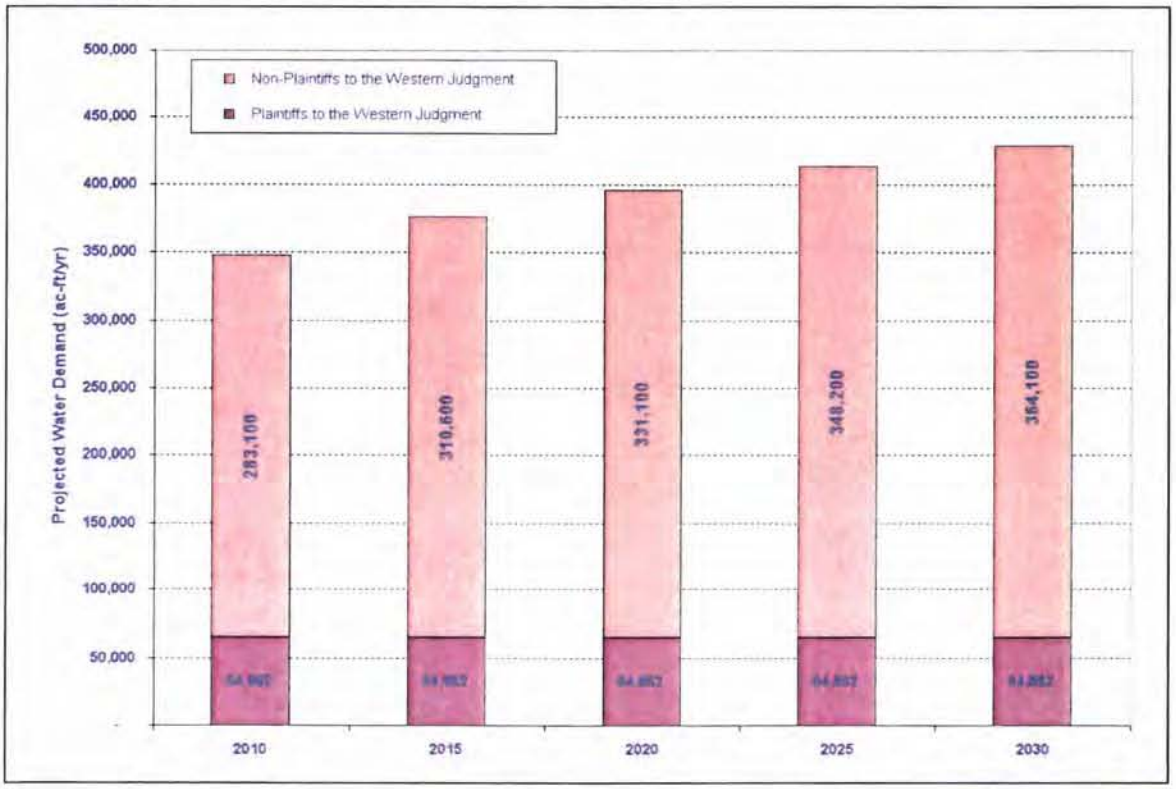


Figure 5
Projected Water Demand in the San Bernardino Valley Area

Valley District's Local Water Supply Sources

The IRWMP identifies three main sources of local water available to Valley District; groundwater, surface supply, and new/reclaimed supply. Table 7 presents a summary of local water supply sources available to meet projected water demands through 2030. A brief description of each source follows.

Table 7
SBVMWD's Local Water Supply Sources (ac-ft/yr)

	2010	2015	2020	2025	2030
Surface Water Sources					
SBBA Surface Water	39,000	39,000	39,000	39,000	39,000
Seven Oaks Supply	0	10,800	10,800	10,800	10,800
Groundwater					
SBBA Groundwater	193,100	193,100	193,100	193,100	193,100
SBBA Return Flows	14,500	21,700	27,200	31,500	32,800
Rialto-Colton Basin	17,300	17,300	17,300	17,300	17,300
Riverside North Basin	9,000	9,000	9,000	9,000	9,000
Yucaipa Basin	10,000	10,000	10,000	10,000	10,000
Other Groundwater	8,800	8,300	8,700	9,000	9,300
Recycled Water	12,100	18,100	20,500	21,500	22,500
Total Supplies	303,800	310,000	315,900	320,500	322,100

Source: IRWMP, 2007

- San Bernardino Basin Area Surface Water refers to surface water from local mountain streams available for potable use. Surface water is currently used by the East Valley Water District, West Valley Water District, and the City of Redlands.

- Seven Oaks Supply refers to additional surface water that could be available from the Seven Oaks Dam to spread in the basin for groundwater recharge. Water rights applications are pending for this project. Supplies from this project depend on conditions placed on the applications by the State Water Resources Control Board.

- San Bernardino Basin Area Groundwater refers to groundwater pumped from the Bunker Hill and Lytle Creek basins.

- San Bernardino Basin Area Return Flows refers to return flows from extractions above the safe yield of the SBBA and from direct deliveries of imported water. The Watermaster estimates a 36 percent return flow from these sources to recharge the groundwater basin.

- Rialto-Colton, Riverside North, and Yucaipa basins include extractions from these basins to be used within Valley District's service area.

- Other Groundwater refers to groundwater extractions from an area between the Chino and Lytle Creek basin commonly refer to "No Man's Land".

- Recycled Water includes direct delivery of recycled water for irrigation and/or industrial use and for groundwater recharge.

The reliability of local supply sources on a long-term basis is considered very high in the SBBA because of the relatively large amount of storage in this basin that allows local water purveyors to meet their demands obligations during extended droughts. Therefore, it is assumed that the total local supplies shown in Table 7 will be available during average, single dry-year, and multiple dry-year scenarios.

Valley District's Imported Water Supply

The amount of SWP water delivered to State Water Contractors in a given year depends on a number of factors, including the demand for the supply, amount of rainfall, snowpack, runoff, water in storage, pumping capacity from the Delta, and legal/regulatory constraints on SWP operation. Water delivery reliability depends on three general factors: the availability of water, the ability to convey water to the desired point of delivery, and the magnitude of demand for the water. Urban SWP contractors' requests for SWP water, which were low in the early years of the SWP, have been steadily increasing over time. Regulatory constraints have changed over time, becoming more restrictive.

Since the last round of UWMPs were prepared in 2005, the California Department of Water Resources has twice updated its State Water Project Delivery Reliability Report. The biennial Report assists SWP contractors in assessing the reliability of the SWP component of their overall supplies. The 2009 SWP Reliability Report updates DWR's estimate of the current (2009) and future (2029) water delivery reliability of the SWP. The updated analysis shows that the primary component of the annual SWP deliveries (referred to as Table A deliveries) will be less under current and future conditions, when compared to the preceding report (State Water Project Delivery Reliability Report 2007). The report discusses factors having the potential to affect SWP delivery reliability:

- Restrictions on SWP and Central Valley Project (CVP) operations due to State regulation and federal biological opinions to protect endangered fish such as Delta smelt and spring-run salmon;
- Climate change and sea level rise, which is altering the hydrologic conditions in the State;
- The vulnerability of Delta levees to failure due to floods and earthquakes.

"Water delivery reliability" is defined as the annual amount of water that can be expected to be delivered with a certain frequency. SWP delivery reliability is calculated using computer simulations based on 82 years of historical data.

The 2009 SWP Reliability Report recognizes continuing challenges to the ability of the SWP to deliver full contractual allotments of SWP water. For current conditions, the dominant factor for these reductions is the restrictive operational requirements contained in the federal biological opinions. Deliveries estimated for the 2009 Report

expressly account for the operational restrictions of the biological opinions issued by the U.S. Fish and Wildlife Service in December 2008 and the National Marine Fisheries Service in June 2009 governing the SWP and Central Valley Project operations.

For future conditions, the 2009 SWP Reliability Report conservatively assumes that the restrictions imposed by the biological opinions will still be in place, and includes the potential effects of climate change to estimate future deliveries. The changes in run-off patterns and amounts are included along with a potential rise in sea level. Sea level rise has the potential to require more water to be released to repel salinity from entering the Delta in order to meet the water quality objectives established for the Delta. The 2005 SWP Reliability Report did not include any of these potential effects. For the 2007 SWP Reliability Report, the changes in runoff patterns and amounts were incorporated into the analyses, but the potential rise in sea level was not.

These updated analyses in the 2009 SWP Reliability Report indicate that the SWP, using existing facilities operated under current regulatory and operational constraints and future anticipated conditions, and with all contractors requesting delivery of their full Table A amounts in most years, could deliver 60 percent of Table A amounts on a long-term average basis. A more detailed analysis of the factors affecting SWP reliability is provided in Appendix B.

An ongoing planning effort to increase long-term supply reliability for both the SWP and CVP is taking place through the Bay Delta Conservation Plan (BDCP). The co-equal goals of the BDCP are to improve water supply and restore habitat in the Delta. The BDCP is being prepared through a collaboration of state, federal, and local water agencies, state and federal fish agencies, environmental organizations, and other interested parties. Several "isolated conveyance system" alternatives are being considered in the BDCP which would divert water from North of the Delta and convey it "around" the Delta to a point where water is pumped for the SWP and CVP. The new conveyance facilities would allow for greater flexibility in balancing the needs of the estuary with reliable water supplies. In December 2010, DWR released a "Highlights of the BDCP" document which summarizes the activities and expected outcomes of the BDCP. The results of preliminary analysis included in the document indicate the proposed conveyance facilities may increase the combined average long-term water supply to the SWP and CVP from 4.7 million acre-feet (MAF) per year to 5.9 MAF/year. This would represent an increase in reliability for State Water Project contractors from 60 percent to 75 percent. Planned completion of the BDCP and corresponding environmental analysis is early 2013. However, for planning purposes, this RUWMP has assumed the more conservative supply reliability as described in the 2009 SWP Reliability Report.

In addition to the overall long-term average presented in the 2009 SWP Reliability Report, it also includes Delivery Reliability Reports (DRRs) for each of the individual SWP contractors based upon the unique conditions that impact each contractor. The DRR for Valley District indicated average reliability would be 62 percent in 2009 and will decrease slightly to 60 percent in 2029. Table 2-2 provides the projected SWP water available to Valley District over the next 25 years, based on the Valley District's

maximum Table A amounts from 2010 to 2035 and the supply reliability analyses provided in the 2009 SWP Report and associated DRR.

TABLE 2-2
CURRENT AND PLANNED WHOLESALE WATER SUPPLIES AVAILABLE (LONG-TERM AVERAGE)

Wholesaler (Supply Source)	**2010**	**2015**	**2020**	**2025**	**2030**	**2035[a]**
California State Water Project						
% of Table A Amount Available	62%	62%	62%	62%	60%	60%
Anticipated Deliveries (AFY)	63,612	63,612	63,612	63,612	61,560	61,560

Note:
(a) The 2009 Reliability Report projects SWP supplies to 2029. This 2010 UWMP covers the period from 2010 to 2035. Therefore, the available supplies from 2030 to 2035 are projected to be the same as in 2029 particularly as DWR has not published any information of analyses to show that SWP deliveries will be lower at that time.

Table 2-3 summarizes estimated SWP supply availability to Valley District in a single-dry year (based on a repeat of the worst-case historic hydrologic conditions of 1977) and over a multiple- dry year period (based on a repeat of the worst-case historic four-year drought of 1931 to 1934). During a dry or critical year as defined by the Sacramento River Index, the SWP will be able to supply an average of 13,338 AF (year 2009) to 12,312 AF (year 2029) to Valley District. During a multiple dry year period (1931 to 1934), Valley District's SWP supply is estimated to be about 33,858 AFY (current year) to 35,910 AFY (year 2029).

The values shown in Tables 2-2 and 2-3 cover the period 2009 – 2029 based on the DWR estimates at the 2009 level for the current conditions and at the 2029 level for future conditions. They are the best information and best estimates available for use in developing water management plans for the period 2010 to 2035 for this Plan.

TABLE 2-3
WHOLESALE SUPPLY RELIABILITY:
SINGLE-DRY YEAR AND MULTIPLE-DRY YEAR CONDITIONS[a]

Wholesaler	Single-Dry Year[b]	Multiple-Dry Year[c]
California State Water Project (SWP)		
2009		
% of Table A Amount Available	13%	33%
Anticipated Deliveries (AFY)	13,338	33,858
2029		
% of Table A Amount Available	12%	35%
Anticipated Deliveries (AFY)	12,312	35,910

Notes:
(a) The percentages of Table A amount projected to be available are taken from Delivery Reliability Reports prepared for Valley District by DWR as part of the "The State Water Project Delivery Reliability Report
2009" (August 2010). Supplies are calculated by multiplying Valley District's Table A amount by these percentages.
(b) Based on the worst case historic single dry year of 1977.
(c) Supplies shown are annual averages over four consecutive dry years, based on the worst case historic four-year dry period of 1931-1924.

While the primary supply of water available from the SWP is allocated Table A supply, SWP supplies in addition to Table A water are periodically available, including "Article 56C" carryover water, "Article 21" water, "Turnback Pool" water, and DWR "Dry Year Purchase Programs". Pursuant to the long-term water supply contracts, SWP contractors have the opportunity to carry over a portion of their allocated water approved for delivery in the current year for delivery during the next year. Valley District has exercised this option in the past. Contractors can also "carry over" water under Article 56C of the SWP long-term water supply contract with advance notice when they submit their initial request for Table A water, or within the last three months of the delivery year. The carryover program was designed to encourage the most efficient and beneficial use of water and to avoid obligating the contractors to "use or lose" the water by December 31 of each year. The water supply contracts state the criteria of carrying over Table A water from one year to the next. Normally, carryover water is water that has been exported during the year, has not been delivered to the contractor during that year, and has remained stored in the SWP share of San Luis Reservoir to be delivered during the following year. Storage for carryover water no longer becomes available to the contractors if it interferes with storage of SWP water for project needs (DWR 2010). In 2009, Valley District received 9,348 AF of "carryover" water.

Article 21 water (which refers to the SWP contract provision defining this supply) is water that may be made available by DWR when excess flows are available in the Delta (i.e., when Delta outflow requirements have been met, SWP storage south of the Delta is full, and conveyance capacity is available beyond that being used for SWP operations and delivery of allocated and scheduled Table A supplies). Article 21 water is made available on an unscheduled and interruptible basis and is typically available only in average to wet years, generally only for a limited time in the late winter. Since 1999, Valley District has taken 256 AF of Article 21 water.

The Turnback Pool is a program available to State Water Contractors who signed the "Monterey Amendment". The program helps facilitate the sale of excess Table A supplies and establishes a sale price for the water. Valley District did not sign the Monterey Amendment. However, Valley District is able to sell any excess water to other SWP contractors. Currently, Valley District has an agreement with the Metropolitan Water District of Southern California (MWDSC) which gives MWDSC "first right of refusal" to purchase Table A supplies deemed "excess" to Valley District's needs.

As urban contractor demands increase in the future, the amount of water turned back and available for purchase will likely diminish. In critical dry years, DWR has formed Dry Year Water Purchase Programs for contractors needing additional supplies. Through these programs, water is purchased by DWR from willing sellers in areas that have available supplies and is then sold by DWR to contractors willing to purchase those supplies.

Because the availability of these supplies is somewhat uncertain, they are not included as supplies to Valley District in this Plan. However, Valley District's access to these supplies when they are available may enable it to improve the reliability of its SWP supplies beyond the values used throughout this report.

Impacts of National Orange Show Industrial Project Demands

As discussed, incremental water demands from the National Orange Show Industrial Project are estimated at 91.3 ac-ft/yr.; this amount represents an estimated 0.03 percent increase in the total water demand in Valley District's service area. The additional demand would result in an average deficit that can be easily addressed through water conservation. The cumulative storage impact under a six-year extended drought resulting from this project is estimated at 548 ac-ft and would increase the overall storage deficit to an estimated 235,548 ac-ft from 235,000 ac-ft.

Conclusion

Based on the supply reliability of Valley District and SBMWD supply sources, as presented in this water supply assessment, and coupled with the projected low water demands the proposed project will impose on the SBMWD, it is concluded that SBMWD has sufficient water supplies to meet the water demands of the National Orange Show Industrial Project, along with the other projected municipal water demands.

However, it should be noted the SBMWD reserves the right to revisit the Water Supply Assessment if any changes occur to the project, the Department reserves the right to review any changes. The purpose of the review is to determine if the Department has a sufficient water supply to accommodate the project changes and revise the Water Supply Assessment accordingly in accordance with the provisions of the Water Code §10910 et seq.

This review is only an assessment of the water supply availability and does not address the water infrastructure needs.

Primary Source Documents

California Department of Water Resources, Guidebook for Implementation of Senate Bill 610 and Senate Bill 221 of 2001, 2003.

SBMWD Regional Urban Water Management Plan, 2010.

City of San Bernardino General Plan (November 2005)

Upper Santa Ana River Watershed Integrated Regional Water Management Plan, November 2007, San Bernardino Valley Municipal Water District

The State Water Project Delivery Reliability Report – 2009 Final Report, August 2010

SBMWD Water Master Plan, 2007 Final Report

Appendix A

Letter Requesting Water Supply Assessment

CITY OF SAN BERNARDINO
Community Development Department – Planning Division
Interoffice Memorandum

TO: Stacey Aldstadt, General Manager, Water Department

FROM: Terri Rahhal, City Planner

SUBJECT: Water Supply Assessment for National Orange Show Industrial Project

DATE: July 22, 2011

COPIES: M. Margo Wheeler, Community Development Director, Matt Litchfield, P.E., Water Utility Director, Ted Brunson, Water Utility Engineering Technician, Aron Liang, Senior Planner, Project file DP2 11-04

Lewis Commercial has proposed development of an industrial project on property owned by the National Orange Show, on the east side of Arrowhead Avenue. The 38-acre site is comprised of multiple parcels, the largest being located at the northeast corner of Arrowhead and Central Avenues. A total of 727,710 sq. ft. of warehouse/distribution/light industrial floor area is proposed. The project will require a General Plan amendment to change the land use designation from Public Commercial Recreation (PCR) to Industrial Light (IL). An Environmental Impact Report (EIR) is being prepared.

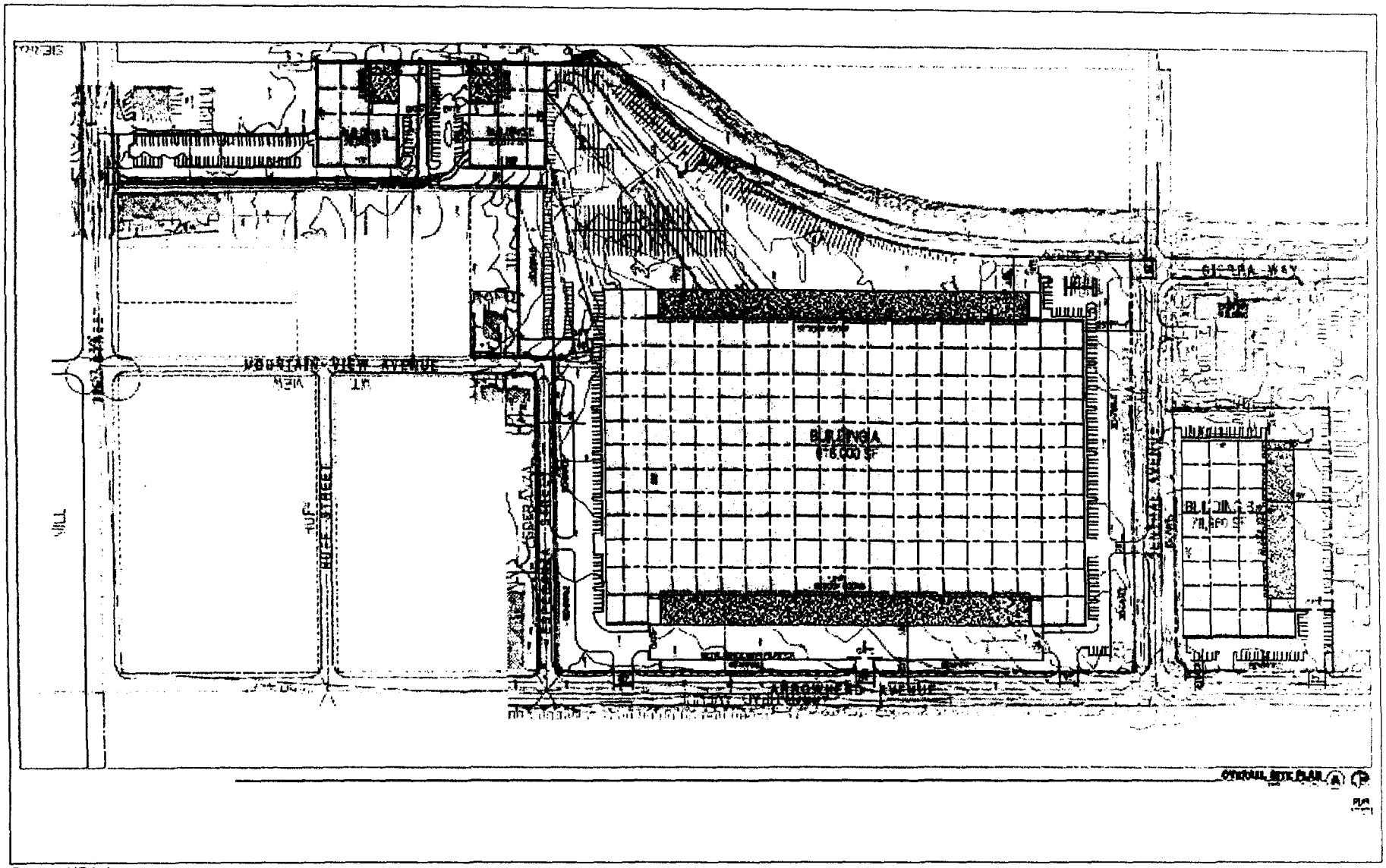
This project exceeds the threshold of 650,000 sq. ft. to be defined as a "project" pursuant to section 10912(5) of the Water Code. Therefore, a Water Supply Assessment (WSA) is required pursuant to Public Resources Code section 21151.9 and Water Code section 10910, et seq. The applicant would appreciate expedited preparation of the WSA, and has submitted project information and water demand estimates transmitted with this memo by e-mail.

The applicant will be responsible for the costs associated with the WSA. Please contact Aron Liang, Senior Planner, with cost information. He will process a transfer of funds on deposit for this project, or will arrange for direct payment by the applicant.

Attachments: Building and landscaping water use estimates

Appendix B

Conceptual Site Plan Layout



Source: HPA, Inc.

Michael Brandman Associates

00130156 • 05/2011 | 3_site_plan

Exhibit 3
Conceptual Site Plan

LEWIS RETAIL CENTERS • NATIONAL ORANGE SHOW
NOTICE OF PREPARATION

Appendix C

Water Demands for National Orange Show Industrial Project

(SBMWD) WATER DEMAND ESTIMATES

10/11/11

PROJECT:
NATIONAL ORANGE SHOW
ARROWHEAD AVE.
SAN BERNANDINO, CA.

	BUILDING A	BUILDING B	BUILDING C	BUILDING D
SITE AREA AC	29.26	4.32	1.48	2.54
CITY EXHIBIT III CALCULATIONS				
INDUSTRIAL LIGHT GPM/ACRE	1.42	1.42	1.42	1.42
SITE AVERAGE DEMAND GPM	41.55	6.13	2.10	3.16
MAX. DAY DEMAND GPM x 1.69	70.22	10.36	3.55	6.10
PEAK HOUR DEMAND GPM x 1.2	49.86	7.36	2.52	4.33
AVERAGE GALLONS PER DAY	59,832	8,827	3,024	5,198

LANDSCAPE DEMAND
(FOR ENTIRE SITE)
AVERAGE GALLONS PER DAY = 4,639

REGISTERED PROFESSIONAL ENGINEER
MAURICE E. YEE
No. 30485
Exp. 12-31-11
MECHANICAL
STATE OF CALIFORNIA

RESOLUTION NO. 792

A RESOLUTION OF THE BOARD OF WATER COMMISSIONERS, CITY OF SAN BERNARDINO ADOPTING THE WATER SUPPLY ASSESSMENT FOR THE NATIONAL ORANGE SHOW INDUSTRIAL PROJECT DATED OCTOBER 10, 2011 FOR THE CITY OF SAN BERNARDINO MUNICIPAL WATER DEPARTMENT

WHEREAS, the City of San Bernardino Municipal Water Department (SBMWD) is the water supplier that is responsible for preparing Water Supply Assessments (WSA) for the City of San Bernardino (City).

WHEREAS, the 2010 Regional Urban Water Management Plan (RUWMP), approved in June 2011 by the SBMWD Board of Water Commissioners, and the 2007 Water Master Plan, published August 2007, are the primary source documents for this water supply assessment; and

WHEREAS, the National Orange Show Industrial Project development is consistent with the City's General Plan land uses. The projected total water demands for the project were determined based on water demands calculations provided by Lewis Commercial for the entire development, which was estimated to be 57 gallons per minute or 91.3 acre-feet per year; and

WHEREAS, it is concluded that the projected water demands of the National Orange Show Industrial Project are included in the total water demand projections of the 2010 RUWMP; and

WHEREAS, the SBMWD reserves the right to revisit the Water Supply Assessment. If any changes occur to the project, the Department reserves the right to review any changes. The purpose of the review is to determine if the Department has a sufficient water supply to accommodate the project changes and revise the Water Supply Assessment accordingly in accordance with the provisions of the Water Code §10910 et seq.

WHEREAS, staff has reviewed the National Orange Show Industrial Project WSA prepared in-house by the SBMWD Water Utility Engineering Section and concludes that the projected water demand for the National Orange Show Industrial Project was included in SBMWD's 2010 RUWMP adopted in June 2011 and the 2007 Water Master Plan; sufficient water supply is available for the National Orange Show Industrial Project's water demand, as well as

existing and other projected water demands for the service area during the normal, single-dry, and multiple-dry years for the next 20 years.

NOW, THEREFORE, BE IT RESOLVED that the SBMWD Board of Water Commissioners hereby adopts the Water Supply Assessment for the National Orange Show Industrial Project dated October 10, 2011, a copy of which is attached hereto, marked Exhibit "A", and incorporated herein as though fully set forth at length.

I HEREBY CERTIFY that the foregoing resolution was duly adopted by the SBMWD Board of Water Commissioners at a regular meeting thereof held on the 18th of October, 2011 by the following vote, to-wit:

AYES: Commissioners Callicott, Cocke, Fernández

NAYS: None

ABSENT: Commissioners Miller, Hendrix

Robin Ohama

Robin L. Ohama
Clerk & Ex-Officio Secretary

(SEAL)

RECEIVED
OCT 12 2011
S.B.M.W.D.
GENERAL MANAGER

CITY OF SAN BERNARDINO
MUNICIPAL WATER DEPARTMENT

BOARD OF WATER COMMISSIONERS
STAFF REPORT

TO: Stacey R. Aldstadt, General Manager

FROM: Matthew H. Litchfield

SUBJECT: **WATER SUPPLY ASSESSMENT – NATIONAL ORANGE SHOW INDUSTRIAL PROJECT (EPN 2011-004)**

DATE: October 10, 2011

CC: Greg Gage (w/attach), Sydney Morrison (w/attach), Sally Duran (w/attach)

BACKGROUND:

Senate Bills 610 and 221 amended state law, effective January 1, 2002, to improve the linkage between certain land use decisions made by cities and counties and water supply availability. Both statutes require detailed information regarding supply availability and reliability for specified developments to serve as evidentiary basis for an approval action by the city or county for such projects. SB 610 and 221 have been codified in Water Code §10910 et seq.

Water Supply Assessments (WSA) must be furnished to local governments for inclusion in any environmental documentation for specified projects, pursuant to Water Code §10912(a) and subject to the California Environmental Quality Act (CEQA). The National Orange Show Industrial Project meets the criteria for a WSA established by Water Code §10912(a).

In June 2011, the Board of Water Commissioners (BOWC) approved the 2010 Regional Urban Water Management Plan (RUWMP). This plan serves as the primary source document for the National Orange Show Industrial Project WSA.

On July 22, 2011, a letter was received by the SBMWD requesting that the Department prepare a WSA pursuant to the provisions of the Water Code §10910 (h)(1) et. seq. for the National Orange Show Project (see Appendix A of the attached National Orange Show Industrial Project WSA). The project applicant, Lewis Commercial, submitted the request to the City's Development Services Department in conjunction with the pending Development Permit 2 No. 11-04 and General Plan Amendment No. 11-04.

Agenda Item _____

SUBJECT: WATER SUPPLY ASSESSMENT – NATIONAL ORANGE SHOW INDUSTRIAL PROJECT (EPN 2011-004)

Project Description

The National Orange Show Industrial Project is a proposed project with combined building area totaling 727,710 square feet to be developed on approximately 38 acres of land. The project area is located along the east side of Arrowhead Avenue, both north and south Central Avenue.

Specifically, the National Orange Show Industrial Project will consist of: (1) a single warehouse/distribution facility totaling 616,000 square feet on a 29.3 acre parcel and (2) a 78,960 square foot industrial building on a 4.3 acre parcel, both of which are located in the Public Commercial Recreation (PCR) land use district. The National Orange Show Industrial Project will also consist of: (3) two small industrial buildings totaling 57,750 square feet on two adjacent parcels totaling 4.02 acres located in the Commercial Heavy (CH) land use district. A location map and a conceptual site plan are included in Appendix B of the National Orange Show Industrial Project WSA.

The project is consistent with the City of San Bernardino General Plan. The indoor water demand for the project was projected by the applicant, which resulted in an estimated demand of 53 gallons per minute (or 86.1 acre-feet per year). Outdoor landscape demand was also projected, which resulted in an estimated demand of 4 gallons per minute (or 5.2 acre-feet per year). Total estimated water demand is therefore 57 gallons per minute (or 91.3 acre-feet per year). Appendix C of the National Orange Show Industrial Project WSA summarizes the water demand estimate for the project.

Water Demand Projections

According to Water Code §10910(c)(2), if the projected water demand associated with the proposed project was accounted for in the most recently adopted Urban Water Management Plan (UWMP), the water supplier may use the demand projections from the UWMP in preparing the WSA. The water demand projections developed for SBMWD's 2010 RUWMP were based on ultimate build-out conditions reflected in the City's 2005 General Plan. The demand projections were based on residential, commercial, industrial and public land uses and representative water use factors. The SBMWD used ultimate build-out conditions from the City's General Plan as the basis for water demand projections for the RUWMP. Subsequently, the water demands of any proposed project that is consistent with the General Plan (and more specifically the land use districts or zoning) would be included in the total water demand projections of the RUWMP. The National Orange Show Industrial Project's parcels of land are shown in Figure 1 of the attached National Orange Show Industrial Project WSA, which also shows the surrounding land use districts for the City.

Therefore, it is concluded that the projected water demands of the National Orange Show Industrial Project are included in the total water demand projections of the 2010 RUWMP and the 2007 Water Master Plan.

SUBJECT: WATER SUPPLY ASSESSMENT – NATIONAL ORANGE SHOW INDUSTRIAL PROJECT (EPN 2011-004)

RECOMMENDATION:

Staff has reviewed the National Orange Show Industrial Project WSA and concluded that the projected water demand for the project was included in the SBMWD's 2010 RUWMP and the 2007 Water Master Plan, and that sufficient water supply is available for the project's water demand, as well as existing and other projected water demands for the service area during the normal, single-dry and multiple-dry years for the next 20 years.

This review is only an assessment of the water supply availability and does not address the water infrastructure needs.

Water Code §10910 (g)(1) requires that "Subject to paragraph (2), the governing body of each public water system shall submit the assessment to the city or county not later than 90 days from the date on which the request was received. The governing body of each public water system, or the city or county if either is required to comply with this act pursuant to subdivision (b), shall approve the assessment prepared pursuant to this section at a regular or special meeting."

Staff recommends that the Board of Water Commissioners make the following motion:

> **Adopt a resolution approving the Water Supply Assessment for the National Orange Show Industrial Project.**

Respectfully submitted,

Matthew H. Litchfield, P.E.
Director, Water Utility

MHL:TRB:swd
Attach.

K.2 - Internal Water Usage Calculations, May 12, 2011

Raymond K. Phua, P.E., Principal
Maurice Yee, P.E., Senior Associates
Lan V Nguyen, P.E., Senior Associates

RPM *ENGINEERS, INC.*

May 12, 2011

ARON LIANG
SENIOR PLANNER, COMMUNITY DEVELOPMENT DEPT.
CITY OF SAN BERNARDINO
300 N. D ST.
SAN BERNARDINO, CA 92418

Dear Mr. Liang,

This letter is to verify the estimated water usage for the proposed future office space for the Lewis Operation Corporation project along Arrowhead Ave in San Bernardino, CA.

The estimated water use is as follows:

- Building A: 192,400 gal/yr
- Building B: 72,540 gal/yr
- Building C: 38,480 gal/yr
- Building D: 38,480 gal/yr

Please refer to the attached calculations for more details.

Sincerely,

Maurice E Yee, P.E.

102 Discovery, Irvine, CA, 92618 • Tel: 949-450-1229 Fax: 949-450-1454

PROJECT: **NATIONAL ORANGE SHOW, ARROWHEAD AVE., SAN BERNANDINO CA**

BUILDING A

OCCUPANCY USE TYPE: **BUSINESS AREAS**

OCCUPANT LOAD FACTOR 100 SQ.FT. /PERSON (CBC 2010 Table 1004.1.1)

OFFICE AREA: **15,000 SQ. FT.**

OCCUPANT LOAD : 150

WATER USAGE CALCULATION

FIXTURE TYPE	FLOW RATE (GPM)	DURATION		DAILY USES		OCCUPANTS	GALLONS/ DAY
LAVATORY	0.5	0.25	min	3		150	56.25
KITCHEN SINK	0.5	4	min	1		150	300
WATER CLOSET (FLUSH VALVE)	1.28	1	flush	1	Male	75	96
				3	Female	75	288
URINAL (WATERLESS)	0	0	flush	2	Male	75	0
TOTAL							**740.25**

(740 gal/ day) x (5 days) x (52weeks) = 192,400 gal/ year **GALLONS/ YEAR = 192,400**

PROJECT: **NATIONAL ORANGE SHOW, ARROWHEAD AVE., SAN BERNANDINO CA**
BUILDING B
OCCUPANCY USE TYPE: **BUSINESS AREAS**
OCCUPANT LOAD FACTOR 100 SQ.FT. /PERSON (CBC 2010 Table 1004.1.1)
OFFICE AREA: 5,**000 SQ. FT.**
OCCUPANT LOAD : 50

WATER USAGE CALCULATION

FIXTURE TYPE	**FLOW RATE (GPM)**	**DURATION**		**DAILY USES**		**OCCUPANTS**	**GALLONS/ DAY**
LAVATORY	0.5	0.25	min	3		50	18.75
KITCHEN SINK	0.5	4	min	1		50	100
WATER CLOSET (FLUSH VALVE)	1.28	1	flush	1	Male	50	64
				3	Female	25	96
URINAL (WATERLESS)	0	0	flush	2	Male	25	0
TOTAL							**278.75**

(279 gal/ day) x (5 days) x (52weeks) = 72,540 gal/ year **GALLONS/ YEAR = 72,540**

PROJECT: **NATIONAL ORANGE SHOW, ARROWHEAD AVE., SAN BERNANDINO CA**
BUILDING C
OCCUPANCY USE TYPE: **BUSINESS AREAS**
OCCUPANT LOAD FACTOR 100 SQ.FT. /PERSON (CBC 2010 Table 1004.1.1)
OFFICE AREA: **3,000 SQ. FT.**
OCCUPANT LOAD : **30**

WATER USAGE CALCULATION

FIXTURE TYPE	**FLOW RATE (GPM)**	**DURATION**		**DAILY USES**		**OCCUPANTS**	**GALLONS/ DAY**
LAVATORY	0.5	0.25	min	3		30	11.25
KITCHEN SINK	0.5	4	min	1		30	60
WATER CLOSET (FLUSH VALVE)	1.28	1	flush	1	Male	15	19.2
				3	Female	15	57.6
URINAL (WATERLESS)	0	0	flush	2	Male	15	0
TOTAL							**148.05**

(148 gal/ day) x (5 days) x (52weeks) = 38,480 gal/ year **GALLONS/ YEAR = 38,480**

PROJECT: **NATIONAL ORANGE SHOW, ARROWHEAD AVE., SAN BERNANDINO CA**
BUILDING D
OCCUPANCY USE TYPE: **BUSINESS AREAS**
OCCUPANT LOAD FACTOR 100 SQ.FT. /PERSON (CBC 2010 Table 1004.1.1)
OFFICE AREA: **3,000 SQ. FT.**
OCCUPANT LOAD : **30**

WATER USAGE CALCULATION

FIXTURE TYPE	FLOW RATE (GPM)	DURATION		DAILY USES		OCCUPANTS	GALLONS/ DAY
LAVATORY	0.5	0.25	min	3		30	11.25
KITCHEN SINK	0.5	4	min	1		30	60
WATER CLOSET (FLUSH VALVE)	1.28	1	flush	1	Male	15	19.2
				3	Female	15	57.6
URINAL (WATERLESS)	0	0	flush	2	Male	15	0
TOTAL							**148.05**

(148 gal/ day) x (5 days) x (52weeks) = 38,480 gal/ year **GALLONS/ YEAR = 38,480**

K.3 - External Water Usage Calculations, May 12, 2011

conceptual design & planning company

May 10, 2011

Aron Liang
Senior Planner, Community Development Department
City of San Bernardino
300 N. D St.
San Bernardino, CA 92418

Dear Mr. Liang,

This letter is to verify the estimated water usage for landscape irrigation for the Lewis Operation Corp. project along Arrowhead Ave in San Bernardino, CA. The estimated water use is 1,693,323 gallons per year. All calculations used are based on the standards set by the Water Efficient Landscape Ordinance AB 1881. The aforementioned calculations are based on the attached site plan.

Sincerely,

Jim Baldovin
Landscape Architect
Principal

9950 Research Drive ▪ Irvine, CA 92618 ▪ T: 949.399.0870 ▪ F: 949.399.0882 ▪ www.cdpcinc.com
6659 Morro Road ▪ Atascadero, CA 93422 ▪ T: 805.466.3385 ▪ F: 805.466.3204

ESTIMATED TOTAL WATER USE

ETWU = (Eto x 0.62 x KIx LA / IE) + (Eto x 0.62 x 1.0 x SLA / IE)

ETWU =	Estimted water use per year (gallon per year)
Eto =	Reference Evapotranspiration (inches per year)
0.62 =	Conversion Facctor (to gallon per square foot)
KI =	Landscape Coefficient
LA =	Hydrozone Area (High, medium and low water use are in square feet)
IE =	Irrigation Efficiency
1.0 =	Landscape Coefficient for Special Landscape Area
SLA =	Special Landscape Area (square feet)

There is no special landscape area.

HYDROZONE	ETWU	=	Eto	x	Conversion Factor	x	KI	x	LA	/	IE	Distribution type	
HZ 1	***1,693,323***	**=**	***56.37***	***x***	***0.62***	***x***	***0.16***	***x***	***215,000***	***/***	***0.710***	***LVS***	shade
Total	***1,693,323***		***gallon per year***										

Irrigation Efficiency

Subsurface Irrigation	***T***	90%
Drip Emitters	***D***	85%
Bubbler	***B***	80%
Microspray	***MS***	75%
Rotor, Stream Rotor, Impact Rotor	***R***	75%
Conventional Spray	***S***	62%

Hydrozone Information Table

Landscape Coefficent (Kl)

Kl = Ks x Kd x Kmc

Ks Species factor

Kd Density factor

Kmc Microclimate factor

Hydrozone	Controller Valve #	Plant Water Use*	Species Factor(Ks)	Density Factor (Kd)	Microclimate Factor (Kmc)	Landscape Coefficient (Kl)	Irrigation Method**	Landscape Area w/ slope factor (LA) square feet	% of total landscape area	Kl x LA (Sq. Ft.)
HZ 1		*L*	*0.2*	*1.0*	*0.8*	***0.16***	*LVS*	***215,000***	***100.0%***	***34400***
								215,000	100.0%	

Ground Plane Gradient	Gradient Mulpiplier	Landscape Area in plan (sq.ft.)
Flat	*1*	*215,000*

* Plant Water Use

H = High Water Use Plants

M = Moderate Water Use Plants

L = Low Water Use Plants

**Irrigation Method

LVS Low Volume Spray

B = Bubbler

S = Conventional S

R = Rotor

RN = Rotator Nozzle

Maxinum Applied Water Allowance (MAWA)

MAWA = (Eto x 0.62 x 0.7 x LA) + (Eto x 0.62 x 0.3 x SLA)

MAWA =	Maximum Applied Water Allowance (gallon per year)		
Eto =	Reference Evapotranspiration (inches per year)	=	56.37
0.62 =	Conversion factor (to gallon per square foot)	=	0.62
0.7 =	ET Adjustment Factor (ETAF)	=	0.7
LA =	Landscape Area (square foot)	=	215,000
0.3 =	The additional ET Adjustment Factor for Special Landscape Area (1.0 - 0.7 = 0.3)	=	0.3
SLA =	Portion of the landscape area identified as Special Landscape Area (square foot)	=	0

MAWA = **(56.37 x 0.62 x 0.7 x 215,000) + (56.37 x 0.62 x 0.3 x 0) = 5,259,885** ***gallon per year***

Note:
Effective Precipitaioin was not considered in this calculation
There is no special Landscape Area in this project

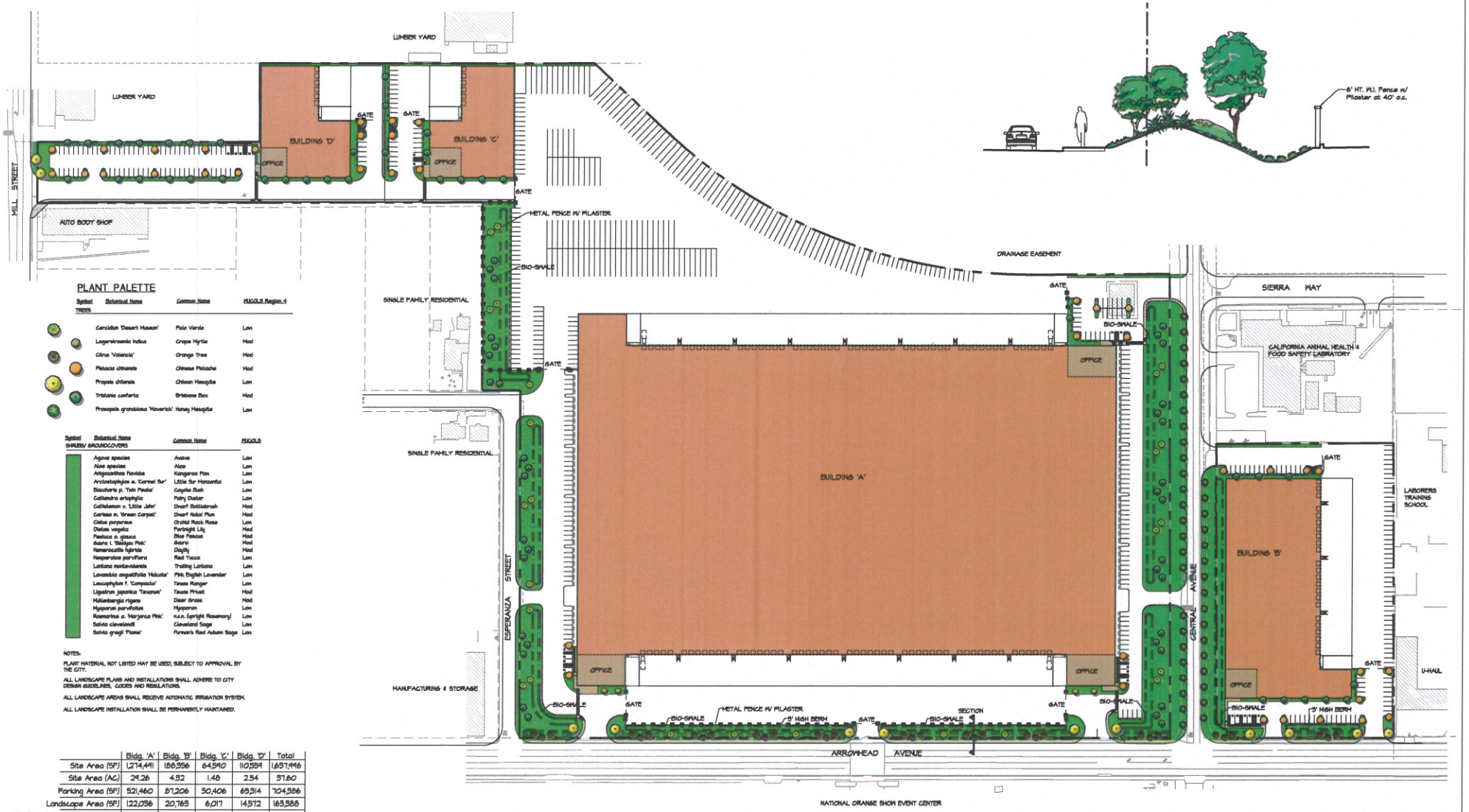
Local Eto - CIMIS Station #44 U.C. Riverside

Month Year	Tot ETo (in)
Jan	2.49
Feb	2.91
Mar	4.16
Apr	5.27
May	5.94
Jun	6.56
Jul	7.22
Aug	6.92
Sep	5.35
Oct	4.05
Nov	2.94
Dec	2.56
Annual Total	56.37

LANDSCAPE WATER CONSERVATION STATEMENT

Water conservation is achieved in this landscape construction document as described below.

1. All plant materials selected for this site were appropriate for the geographical location and local climate, their adaptability to drought. Data from WULCOLS III has been used for determining species' plant factor for the water use calculations.
2. Plants with similar water use requirements were grouped together.
3. More than 90% of landscape areas are planted with low water use plants, the balance with moderate use plants. No high water use plants are used.
4. Irrigation sections/hydrozones are separated by considering plant species factor, plant density and microclimate. If low water use plants are mixed with moderate water use plants in the same hydrozone, the moderate water use factor is used for water use calculations. See Hydrozone exhibit and table.
5. The irrigation system utilizes low-volume distribution system with a master valve, flow sensor, check valves, ET based automatic controllers with Cycle+Soak and water budgeting capability, weather station, rain shut-off.
6. The use of turf is elimiated. All tree, shrub and groundcover areas will be dressed with 2" layer of mulch moisture retention and to discourage weeds.
7. There is no Special Landscape Area in this project.



PLANT PALETTE

Symbol	Botanical Name	Common Name	HUCOLS Region 4
TREES			
	Cercidium 'Desert Museum'	Palo Verde	Low
	Lagerstroemia indica	Crape Myrtle	Mod
	Citrus 'Valencia'	Orange Tree	Mod
	Pistacia chinensis	Chinese Pistache	Mod
	Prosopis chilensis	Chilean Mesquite	Low
	Tristania conferta	Brisbane Box	Mod
	Prosopsis grandulosa 'Maverick'	Honey Mesquite	Low

Symbol	Botanical Name	Common Name	HUCOLS
SHRUBS/ GROUNDCOVERS			
	Agave species	Agave	Low
	Aloe species	Aloe	Low
	Anigozanthos flavidus	Kangaroo Paw	Low
	Arctostaphylos e. 'Carmel Sur'	Little Sur Manzanita	Low
	Baccharis p. 'Twin Peaks'	Coyote Bush	Low
	Calliandra eriophylla	Fairy Duster	Low
	Callistemon v. 'Little John'	Dwarf Bottlebrush	Mod
	Carissa m. 'Green Carpet'	Dwarf Natal Plum	Mod
	Cistus purpureus	Orchid Rock Rose	Low
	Dietes vegeta	Fortnight Lily	Mod
	Festuca o. glauca	Blue Fescue	Mod
	Gaura l. 'Siskiyou Pink'	Gaura	Mod
	Hemerocallis hybrids	Daylily	Mod
	Hesperaloe parviflora	Red Yucca	Low
	Lantana montevidensis	Trailing Lantana	Low
	Lavandula angustifolia 'Hidcote'	Pink English Lavender	Low
	Leucophyllum f. 'Compacta'	Texas Ranger	Low
	Ligustrum japonicus 'Texanum'	Texas Privet	Mod
	Muhlenbergia rigens	Deer Grass	Mod
	Myoporum parvifolium	Myoporum	Low
	Rosmarinus o. 'Marjorca Pink'	n.c.n. (upright Rosemary)	Low
	Salvia clevelandii	Cleveland Sage	Low
	Salvia greggi 'Flame'	Furman's Red Autumn Sage	Low

NOTES:

PLANT MATERIAL NOT LISTED MAY BE USED, SUBJECT TO APPROVAL BY THE CITY.

ALL LANDSCAPE PLANS AND INSTALLATIONS SHALL ADHERE TO CITY DESIGN GUIDELINES, CODES AND REGULATIONS.

ALL LANDSCAPE AREAS SHALL RECEIVE AUTOMATIC IRRIGATION SYSTEM.

ALL LANDSCAPE INSTALLATION SHALL BE PERMANENTLY MAINTAINED.

	Bldg. 'A'	Bldg. 'B'	Bldg. 'C'	Bldg. 'D'	Total
Site Area (SF)	1,274,441	188,356	64,540	110,554	1,637,996
Site Area (AC)	29.26	4.32	1.48	2.54	37.60
Parking Area (SF)	521,460	87,206	30,406	65,314	704,386
Landscape Area (SF)	122,036	20,165	6,017	14,572	163,388
% of Parking Area Landscape 15% Required	22%	24%	20%	22%	23%

CONCEPTUAL LANDSCAPE PLAN

NATIONAL ORANGE SHOW

SAN BERNARDINO, CA

SHEET 1 OF 1

DATE: 05-10-11

SCALE: 1" = 80'-0"

north

conceptual design & planning company

9980 Research Drive, Irvine, CA 92618
T: 949.399.0870 F: 949.399.0892 www.cdpcinc.com

4689 Mono Road, Atascadero, CA 93422
T: 805.466.3386 F: 805.466.3204

cdpc

K.4 - Conceptual Utility Plan

MATCHLINE: SEE SHEET 2

SIERRA WAY

ESPERANZA STREET

CENTRAL AVENUE

ARROWHEAD AVENUE

ARROWHEAD AVENUE

BUILDING A
616,000 SF

BUILDING A
616,000 SF

BUILDING B
78,960 SF

GRAPHIC SCALE

(IN FEET)
1 inch = 50 ft.

CONCEPTUAL UTILITY NOTES:

1. 8" PRIVATE FIRE WATER SUPPLY
2. DOMESTIC WATER SERVICE – SIZE TO BE DETERMINED
3. 8" SEWER LATERAL
4. 8" DOUBLE DETECTOR CHECK
5. FIRE HYDRANT
6. DOMESTIC WATER METER – SIZE TO BE DETERMINED
7. SEWER CLEANOUT

Underground Service Alert

Call: TOLL FREE
1-800
422-4133

TWO WORKING DAYS BEFORE YOU DIG

RECOMMENDED FOR APPROVAL BY PLAN CHECKER

PLAN CHECK FIRM: XXX
XXX
XXX
TEL: XXX
FAX: XXX

PLAN CHECKER NAME:
PLAN CHECKER SIGNATURE:
PLAN CHECKER RCE No.: EXP. DATE:

ORC Engineering, Inc.
Civil Engineering/Land Surveying/Land Planning

160 S. Old Springs Road
Suite 210
Anaheim Hills, CA 92808
714-685-6860

MARK	REVISIONS	BY	APPR.	DATE

BENCH MARK:
XXX

APPROVED _____ 2011

SENIOR CIVIL ENGINEER XXX
REGISTERED CIVIL ENGINEER NO. XXX

DRAWN BY:
CHECKED BY:
RECOMMENDED BY:

CITY OF SAN BERNARDINO

DEVELOPMENT SERVICES–PUBLIC WORKS/ENGINEERING

CONCEPTUAL UTILITY PLAN FOR NATIONAL ORANGE SHOW

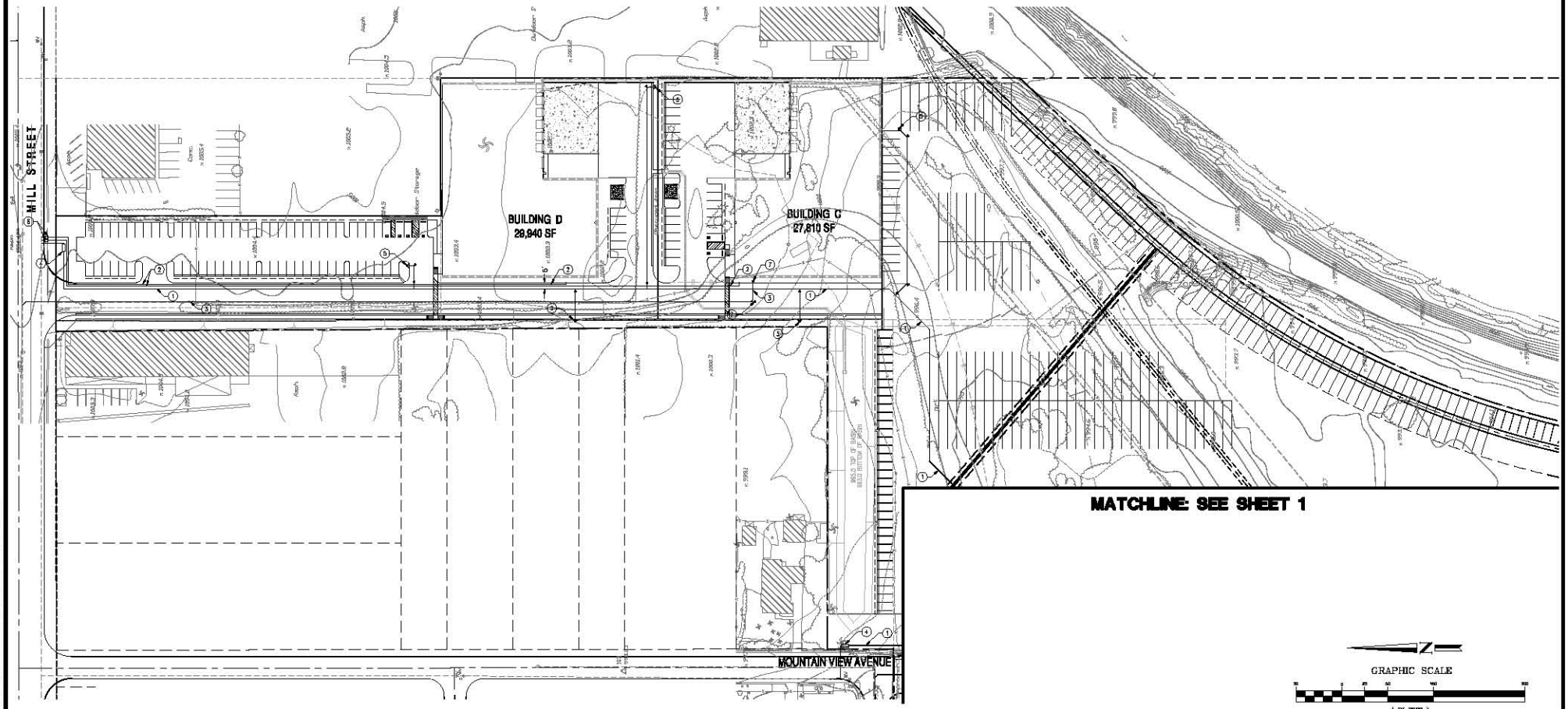
ARROWHEAD AVENUE

FOR CITY USE ONLY: FILE NO. W.O. NO.

DRAWING NO. XXXXX

SHEET 1 OF 2 SHEETS

EXTERNAL REFERENCES: 11420 MA 11420 CONA 11-420 BTOT 11-420bn-p01 GRC_cp.dwg 11420 CUMA 11420cu01
FILENAME: M:\2011\11-420 Lewis Foothill Orange Show SB\CD\11420 CUD1.dwg LAST SAVED ON: Jun 09 2011 1:42pm PLOTTED BY: LARRUE, DR: Jun 10 2011 8:37am, CPG



GRAPHIC SCALE

(IN FEET)
1 inch = 60 ft.

CONCEPTUAL UTILITY NOTES:

1. 8" PRIVATE FIRE WATER SUPPLY
2. DOMESTIC WATER SERVICE – SIZE TO BE DETERMINED
3. 6" SEWER LATERAL
4. 8" DOUBLE DETECTOR CHECK
5. FIRE HYDRANT
6. DOMESTIC WATER METER – SIZE TO BE DETERMINED
7. SEWER CLEANOUT

Underground Service Alert
Call: TOLL FREE
1-800
422-4133
TWO WORKING DAYS BEFORE YOU DIG

RECOMMENDED FOR APPROVAL BY PLAN CHECKER
PLAN CHECK FIRM: XXX
XXX
XXX
TEL: XXX
FAX: XXX
PLAN CHECKER NAME:
PLAN CHECKER SIGNATURE:
PLAN CHECKER RCE No.: EXP. DATE:

ORC Engineering, Inc.
Civil Engineering/Land Surveying/Land Planning
160 S. Old Springs Road
Suite 210
Anaheim Hills, CA 92808
714-685-6860

MARK	REVISIONS	BY	APPR.	DATE

BENCH MARK:
XXX

APPROVED _____ 2011
SENIOR CIVIL ENGINEER XXX
REGISTERED CIVIL ENGINEER NO. XXX
DRAWN BY:
CHECKED BY:
RECOMMENDED BY:

CITY OF SAN BERNARDINO
DEVELOPMENT SERVICES–PUBLIC WORKS/ENGINEERING
CONCEPTUAL UTILITY PLAN
FOR
NATIONAL ORANGE SHOW
ARROWHEAD AVENUE

FOR CITY USE ONLY: FILE NO. W.O. NO.

DRAWING NO.
XXXXX

SHEET 2 OF 2 SHEETS

EXTERNAL REFERENCES: 11420 MA 11420 CONA 11-420 BTDT 11-420bn-p01 GRC_cp_plbmp 11420 CUNA 11420cu01
FILENAME: M:\2011\11-420 Lewis Foothill Orange Show SB\CD\11420 CU01.dwg LAST SAVED ON: Jun 09 2011 1:42pm PLOTTED BY: LARRUE, DR: Jun 10 2011 8:56am, CP3