VI.A.

EASTERN MUNICIPAL WATER DISTRICT
SINCE 1950

March 21, 2012

TO: Board of Directors

FROM: General Manager

SUBJECT: Approve and Authorize a Water Supply Assessment for the World Logistics Center Specific Plan in Moreno Valley

RECOMMENDATION

It is recommended that the Board, by Minute Order, approve and authorize the attached Water Supply Assessment for the World Logistics Center Specific Plan in Moreno Valley, in accordance with the provisions of Senate Bill 221 (SB 221) and Senate Bill 610 (SB 610). The following Water Supply Assessment Proposal was presented to the Board Planning Committee on February 21, 2012, and received its full concurrence.

Coneur:

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BACKGROUND

Senate Bills 221 and 610 require the District respond to requests for a statement that adequate water supplies are or will be available to meet the water demands associated with proposed land development. Senate Bill 610 focuses on the content of a water supply agency's Urban Water Management Plan and stipulates that, when an Environmental Impact Report is required in connection with a project, the appropriate water supply agency must provide an assessment of whether its total projected water supplies will meet the projected water demands associated with the proposed project. Senate Bill 221 also requires water supply verification when a tentative map, parcel map or development agreement for a project is submitted to a land-use agency for approval. Senate Bill 221 applies to proposed residential development of more than 500 dwelling units with some exceptions. Senate Bill 610 applies to a proposed residential development of more than 500 dwelling units, or large commercial, industrial or mixed-use development.

This assessment is prepared for the World Logistics Center Specific Plan in Moreno Valley proposed by Highland Fairview. The project proposes 41.6 million square-feet of logistics facilities on 2,655 acres of light industrial development. The project is located in the eastern part of the City of Moreno Valley and is generally bounded by Gilman Spring Road, Redlands Boulevard and the Moreno Valley freeway. The projected demand for the project is estimated to be 1,991.25 AFY. Exhibit "A" shows the location of this project.

Providing an accurate and timely response to a request for a water supply assessment supports the Strategic Plan Objective I (Community Relations) to, "Promote and sustain effective communication between the District and its stakeholders."

Attachments: Exhibit "A" Vicinity Map
Exhibit "B" WSA
Available upon request:
Appendix A – EMWD 2010 Urban Water Management Plan
Appendix B – MWD 2010 Regional Urban Water Management Plan

Finance n/a

Purchasing/Contracts n/a

Author: Elizabeth Lovsted

EL:tm

World Logistics Ctr_WSA Brd Ltr_032112

Exhibit "A"
World Logistics Center Specific Plan Location

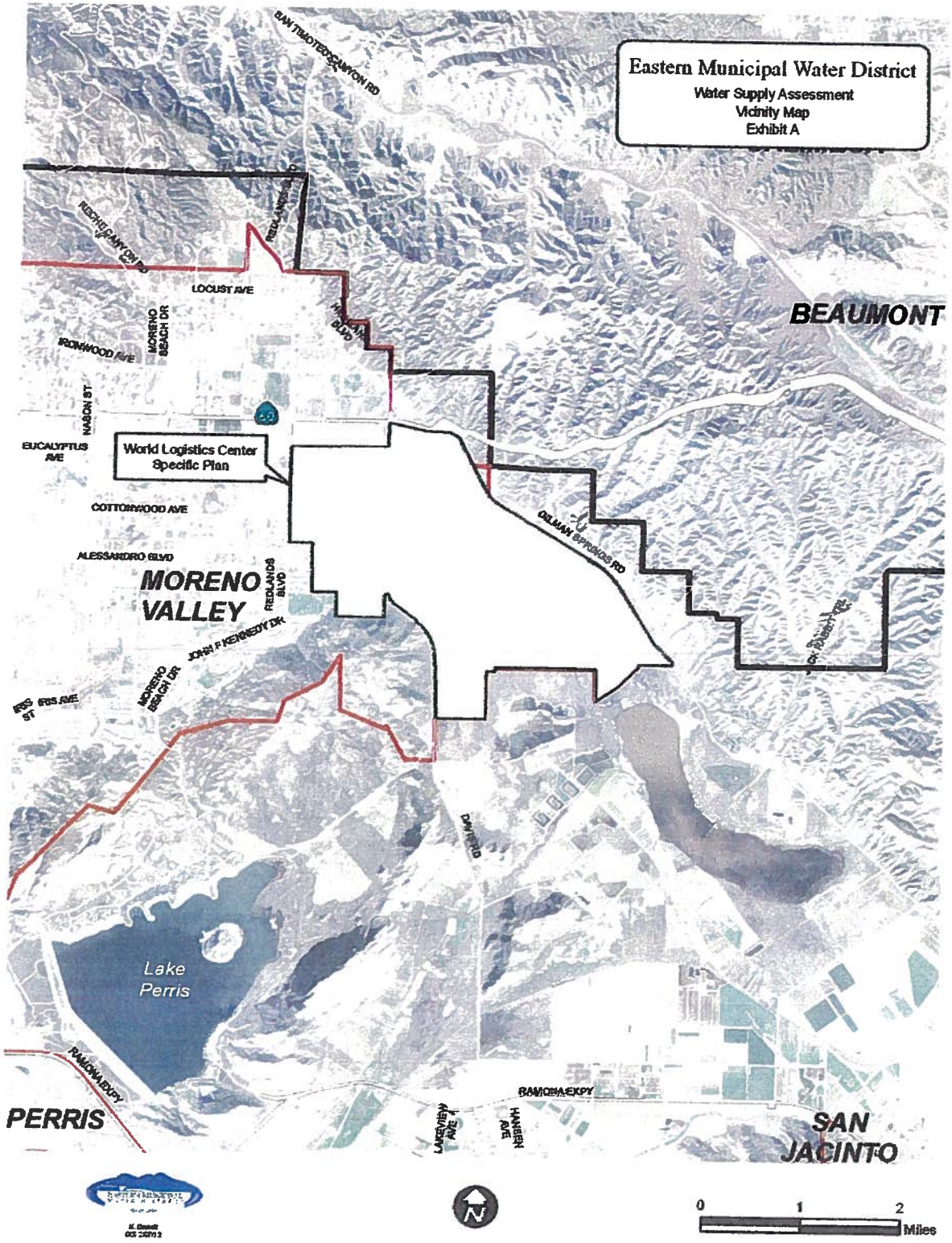


Exhibit "B"

EASTERN MUNICIPAL
WATER DISTRICT
SINCE 1950

Water Supply Assessment Report for the World Logistics Center Specific Plan in Moreno Valley

March 21, 2012

Section I - Introduction

1.1 Purpose

Water Code 10910 (a)(b)(c)

The purpose of the "Water Supply Assessment Report" is to satisfy the requirements under Senate Bill 610 (SB 610), Water Code Section 10910 et seq., and Senate Bill 221 (SB 221), Government Code Section 66473.7, that adequate water supplies are or will be available to meet the water demand associated with the proposed development. SB 610 focuses on the content of a water supply agency's Urban Water Management Plan (UWMP). It also stipulates that, when an environmental impact report is required in connection with a project, the appropriate water supply agency must provide an assessment of whether its total projected water supplies will meet the projected water demand associated with the proposed project. SB 221 requires water supply verification when a tentative map, parcel map, or development agreement for a project is submitted to a land use agency for approval. Senate Bill 221 applies to proposed residential development of more than 500 dwelling units with some exceptions. Senate Bill 610 applies to a proposed residential development of more than 500 dwelling units, or large commercial, industrial, or mixed-use development. The need for an assessment or verification is determined by the lead agency for the project.

1.2 Project Description

This assessment is prepared for the World Logistics Center Specific Plan in Moreno Valley proposed by Highland Fairview. The project proposes 41.6 million square-feet of logistics facilities on 2,655 acres of light industrial development. The project is located in the eastern part of the City of Moreno Valley and is generally bounded by Gilman Spring Road, Redlands Boulevard and the Moreno Valley freeway. The projected demand for the project is estimated to be 1,991.25 AFY. Exhibit "A" shows the location of this project.

1.3 Requirements

The City of Moreno Valley requested that Eastern Municipal Water District (EMWD) prepare this Water Supply Assessment Report. EMWD has confirmed that the demand from the proposed project is within the limits of demand accounted for in the EMWD 2010 UWMP adopted in June of 2011. Accordingly, the District has elected to incorporate information from the 2010 UWMP in the preparation of this Water Supply Assessment Report as authorized by Water Code Section 10910 (c)(2). The 2010 UWMP is attached as Appendix A.

In accordance with Water Code Section 10910(d) – (f), the Water Supply Assessment shall:

1. Identify any existing water supply entitlements, water rights, or water service contracts relevant to the identified water supply for the proposed project, and provide a description of the quantities of water received in prior years by the public water system, under existing water supply entitlements, water rights, or water service contracts;

2. If no water has been received in prior years by the public water system, identify other public water systems or water service contract holders that receive a water supply or have existing water supply entitlements, water rights, or water service contracts to the same source of water as the public water system.

3. If groundwater is included in the proposed supply, identify the groundwater basin or basins from which the proposed project will be supplied; and include any applicable documentation of adjudicated rights to pump. If the basin is not adjudicated, regardless of whether the basin has been identified as over-drafted; provide a detailed description and analysis of the amount and location of groundwater pumped by the public water system for the past five (5) years from any groundwater basin from which the proposed project will be supplied; and provide a detailed description and analysis of the amount and location of groundwater from the basin or basins from which the proposed project will be supplied to meet the projected water demand associated with the proposed project.

If the proposed project includes a "subdivision" of more than 500 residential dwelling units as defined by Government Code Section 66473.7(a)(1), the public water system shall also provide verification as to whether the public water system is able or unable to provide a sufficient water supply based upon an analysis of whether water supplies available during normal, single-dry, and multiple-dry years within a 20-year projection, will meet the projected demand associated with the proposed subdivision which considers:

1. The historical record for at least 20 years;
2. The applicability of any urban water shortage contingency analysis;
3. The reduction in water supply for "specific water use sector" per an adopted resolution, ordinance or contract; and
4. The amount of water that can be reasonably relied upon from specified supply projects.

This assessment is a technical, informational, advisory opinion only. It is a supporting document for an environmental impact report and is not a commitment by EMWD to supply water for the proposed project. The information included is based on information available at the time of the report and changing circumstances could affect EMWD's water supply evaluation presented in this document.

This assessment does not specifically address funding of new or existing supplies. The cost of water supplies will increase over time. The developer of this project will be required to fund the acquisition of new supplemental supplies, treatment or recycled water facilities and water efficiency measures for existing customers. The extent of additional funding will be determined by EMWD and may take the form of a new component of connection fees or a separate charge. New customers may also be required to pay a higher commodity rate for water used than existing customers. This would offset the rising costs of new supplies.

Prior to project construction, the developer of this project is required to meet with EMWD staff to develop a plan of service. The plan of service will detail water, wastewater and recycled water requirements to serve the projects. If there is a change in the circumstances detailed in this assessment, EMWD will address the changes in the plan of service for the project. Modifications at the plan of service stage could reduce the amount of water available to serve this project.

1.4 *Background*

Eastern Municipal Water District was formed in 1950 and annexed into The Metropolitan Water District of Southern California (MWD) in 1951 to deliver imported water. With the acquisition of the Fruitvale Mutual Water Company in 1971, EMWD assumed the role of a groundwater producer. Presently, EMWD's supply portfolio includes desalted groundwater and recycled water in addition to imported water and potable groundwater.

EMWD's service area encompasses 540 square miles with an estimated population of over 755,000. The service area includes areas where EMWD provides retail water directly or indirectly through the following agencies:

City of Hemet Water Department
City of Perris Water System
City of San Jacinto Water Department
Lake Hemet Municipal Water District (LHMWD)
North Perris Water System
Nuevo Water Company
Rancho California Water District (RCWD)

1.5 *Urban Water Management Plan*

Water Code 10910 (c) (1)

In June of 2011, the EMWD Board of Directors adopted the 2010 UWMP. This plan details EMWD's demand projections and provides information regarding EMWD's supply. The majority of EMWD's existing and future planned demand is met through imported water delivered by MWD. EMWD's 2010 UWMP relies heavily on information and assurances included in the 2010 MWD Regional Urban Water Management Plan (2010 RUWMP) when determining supply reliability. Demand for EMWD included in the 2010 UWMP is calculated across the District and is not project-specific. The 2010 RUWMP is attached as Appendix B.

1.6 *Population Projection*

EMWD used the Riverside County Center for Demographic Research (RCCDR) 2010 Projection to estimate the future population. RCCDR considers land use and land agency information to develop projections. The RCCDR projection has been adopted by the Western Riverside Council of Governments.

As evidenced by the population projection, EMWD is located in a developing area. Approximately 40 percent of EMWD's service area remains undeveloped. As population and the associated water demand increase, EMWD will increase the amount of water imported through MWD to meet demands.

Table 1 - Projected Population – 2015 – 2035

	2015	2020	2025	2030	2035
EMWD Retail Service Area	548,718	628,918	709,729	785,810	849,059
City Of Perris Water Department	9,151	9,464	9,906	10,312	10,699
North Perris Water Company	4,977	4,977	4,977	4,977	4,977
Nuevo Water Company	7,781	8,580	6,903	5,902	5,346
City of San Jacinto Water Department	19,706	21,467	22,738	23,635	24,341
City of Hemet Water Department	27,474	29,363	31,273	33,181	35,217
Lake Hemet Municipal Water District	47,446	50,865	54,296	57,742	59,167
Rancho California Water District	114,604	116,969	120,231	122,259	122,923
Total	779,857	870,603	960,053	1,043,818	1,111,729

Source: Riverside County Center for Demographic Research

Section 2 - Identification of Supply and Quantity

Water Code 10910 (d) (1)

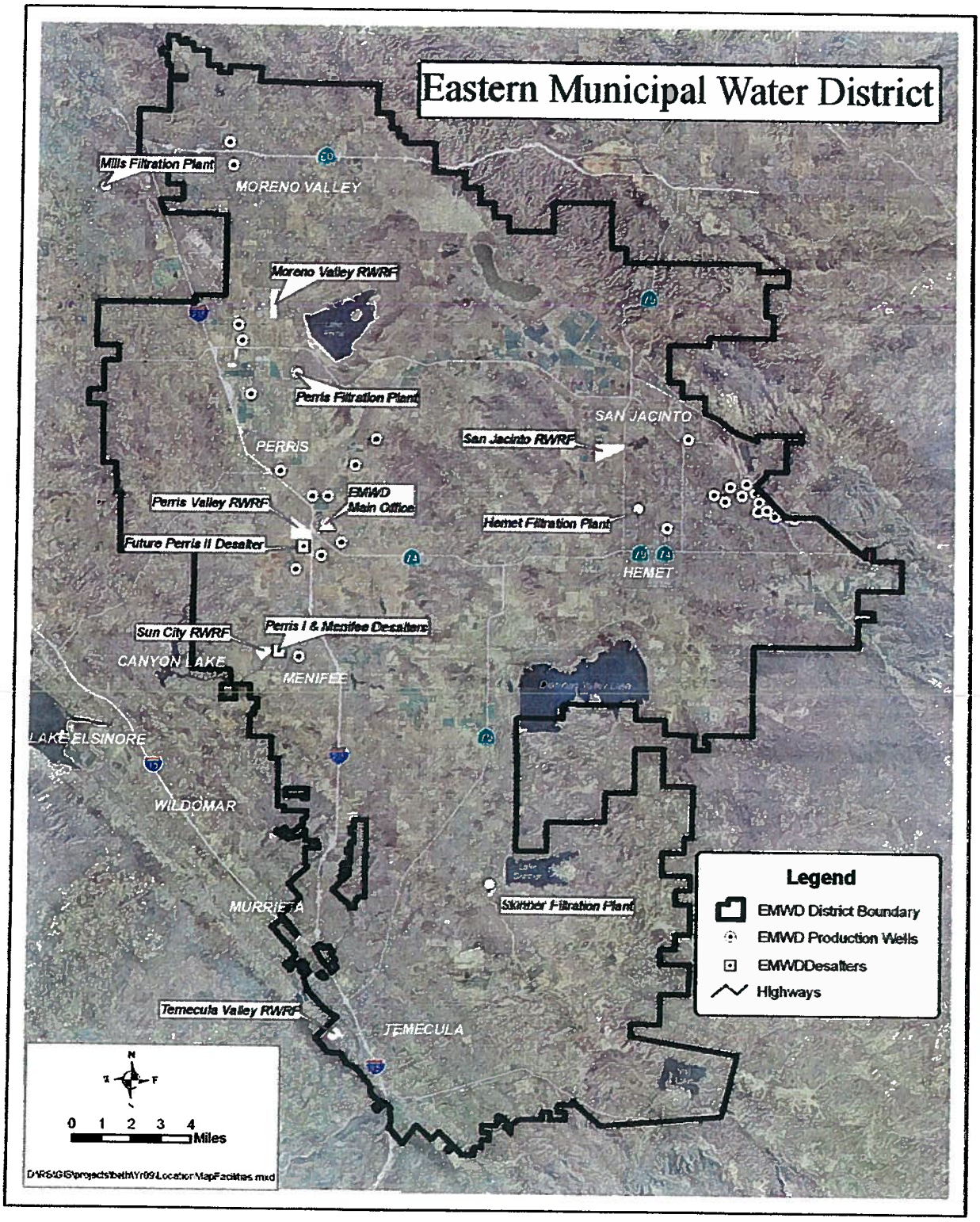
2.1 Overview of Supplies

EMWD has four (4) sources of water supply: imported water purchased from MWD, local potable groundwater, local desalted groundwater and recycled water. Imported water accounts for approximately 65 percent, local potable groundwater is approximately 11 percent, desalted groundwater is 3 percent, and recycled water is 21 percent of supply. Table 2, with information taken from the 2010 UWMP, lists the past supply quantities by source. Figure 1 shows the location of EMWD supplies.

Table 2 - Water Supply (AFY) – 2006 – 2010

Type	Source	2006	2007	2008	2009	2010
Imported	Metropolitan Water District	110,400	109,900	94,400	84,200	75,000
Imported – Locally Treated	Metropolitan Water District	8,400	17,300	16,600	17,000	16,600
Groundwater	West San Jacinto Management Area	19,600	19,500	20,000	18,100	15,800
Desalination	West San Jacinto Management Area	4,800	4,800	3,000	4,800	5,800
Recycled Water	EMWD Regional Water Reclamation Facilities	28,800	38,600	35,100	39,200	41,500
Total		**172,000**	**190,100**	**169,100**	**163,300**	**154,700**

Figure 1 - Location of Supply Sources



It is anticipated that the majority of the water demands within EMWD's jurisdiction caused by future development will be met through additional water imports from MWD recognizing the conditions described in this document. Imported sources will be supplemented by an increase in desalination of brackish groundwater, recycled water use and water use efficiency. In the 2010 RUWMP, MWD analyzed the reliability of water delivery through the State Water Project (SWP) and the Colorado River Aqueduct (CRA) and concluded that with the storage and transfer programs developed by MWD, MWD will have a reliable source of water to serve its member agencies' needs through 2030 during normal, historic single-dry and historic multiple-dry years within a 20-year projection. Unprecedented shortage will be addressed through the principles of the Water Surplus and Drought Management Plan as described in the MWD RUWMP.

Table 3 - Existing Water Supply Resources – Average Year Hydrology – 2015 – 2035

	2015	2020	2025	2030	2035
Metropolitan Water District	149,300	170,700	190,700	210,000	226,200
Recycled Water	43,900	50,000	53,900	54,900	55,300
Groundwater	13,200	13,200	13,200	13,200	13,200
Existing Desalter	7,500	7,500	7,500	7,500	7,500
Total Existing Supplies	**213,900**	**241,400**	**265,300**	**285,600**	**302,200**

Based on a average of 2004- 2009 conditions

To supplement existing water supplies, EMWD has identified several projects that would supplement imported supplies, retrofit of potable water landscape customers, indirect potable recharge and additional water use efficiency. These projects will offset the demand of existing water and free up resources for new development. Table 4 provides a summary of additional potential local supplies.

Table 4 - Potential Water Supply – 2015 - 2035

	2015	2020	2025	2030	2035
Additional Recycled Water	6,100	13,500	16,400	22,200	28,200
Desalination	4,500	4,500	4,500	4,500	4,500
Planned Additional Conservation	0	0	1,300	4,300	6,400
Water Transfers/Exchanges	0	0	0	0	0
Total	**10,600**	**18,000**	**22,200**	**31,000**	**39,100**

These projects are in the planning stage of development and costs and implementation timelines are subject to change. New development will be required to help fund new water supply sources. The extent of additional funding will be determined by the EMWD and may take the form of a new component of connection fees or a separate charge. Details about funding will be developed with the plan of service

2.2 *Wholesale Water Supplies*

2.2a *Written Contracts or Other Proof of Entitlement*
Water Code Section 10910 (d) (2) (A)

EMWD is one of the 26 member agencies that make up MWD. The statutory relationship between MWD and its member agencies establishes the scope of EMWD's entitlements from MWD. Typically there are no set limits on supply quantities to member agencies and MWD has provided evidence in the 2010 RUWMP that its supplies will meet member agency demands during normal, historic single-dry and historic multiple-dry years within a 20-year projection.

During unprecedented shortage events, the MWD Water Supply Plan (WSAP) is implemented, requiring a reduction in demand by member agencies. The allocation plan takes into account member agency population growth and investments in local resources. Member agencies are allocated a portion of their anticipated demand with the assurance that a member agency will not see a retail shortage greater than the regional shortage. Water supply is not limited under the allocation plan but water use above a member agency's allocation is charged at a much higher rate. Several years of dry conditions and limitations on State Water Project operations required MWD to implement the allocation plan at a 10 percent regional shortage level from July of 2009 through April of 2011. This action follows the principles in the Water Surplus and Drought Management Plan as described in the 2010 RUWMP. During the allocation from MWD, EMWD implemented demand reduction strategies as outlined in its Water Shortage Contingency Plan and reduced imported demand below the allocation level.

2.2b *Metropolitan Water District of Southern California Supply*

EMWD relies on MWD to provide the majority of its potable water supply and a small percent of its non-potable water supply. The majority of EMWD's potable water is supplied in the northern part of EMWD by the Mills MWD Water Treatment Facility and in the southeastern portion of EMWD by the MWD Lake Skinner Water Treatment Facility. Untreated water from MWD is treated at EMWD's Perris and Hemet Microfiltration Plants for use as a potable source of water.

It is anticipated that the majority of the water demands within EMWD's jurisdiction caused by future development, will be met through additional water imports from MWD recognizing the conditions described in this document. Imported sources will be supplemented by an increase in desalination of brackish groundwater, recycled water use and water use efficiency. In the 2010 RUWMP, MWD analyzed the reliability of water delivery through the State Water Project (SWP) and the Colorado River Aqueduct. The RUWMP concluded that with programs developed, MWD will have a reliable source of water to serve its member agencies' needs through 2035. The analysis included in the UWMP included reliability data for historic single-dry and historic multiple-dry years. Unprecedented shortage will be addressed through the Water Supply Allocation Plan as described in the MWD RUWMP.

2.2c *MWD Regional Urban Water Management Plan*

The 2010 RUWMP provides information about MWD supply reliability and demand. MWD does not provide supply projections for each member agency; instead MWD uses a regional approach to developing projections. MWD calculates the demand for the entire region, as discussed in Appendix A.1 of the 2010 RUWMP, and then, using information about existing and proposed local projects, determines the amount of imported water that will be needed in the future. EMWD staff worked with MWD on the 2010 RUWMP, exchanging information about demand, local supply and projects, and clarification on boundary information and population

projections. Based on this information and additional data provided by other member agencies, MWD states it is able to meet the projected demands of all member agencies through 2035. The information supplied in the 2010 RUWMP provides assurance that MWD will have a reliable water supply available to deliver the demand required by all the member agencies including EMWD through 2035, even during dry periods. Under extreme conditions, water supply could be allocated to member agencies using the WSAP to preserve storage. The 2010 RUWMP is included as Attachment B of this assessment.

2.3 Local Resources

Water Code 10910 (d) (1)

In an effort to reduce dependency on imported water from MWD, EMWD has developed several programs designed to take advantage of local resources. High-quality groundwater is a source of water for local customers in the Hemet/San Jacinto Area. In the West San Jacinto Basin, groundwater is blended with imported water for use in the western portion of EMWD. EMWD has also constructed two (2) desalination facilities to recover poor quality groundwater with high total dissolved solids (TDS) levels in the West San Jacinto groundwater basin areas. The product water from the desalters enters EMWD's potable distribution system. A third desalter is now in the final stages of design.

2.4 Groundwater

Water Code Section 10910 (f)

Groundwater information is included in this assessment to assist the lead agency in determining the adequacy of EMWD's total supply. Groundwater is not being proposed to serve this project. New developments, including this project, will be supplied with imported water – (1) treated imported water directly from The Metropolitan Water District of Southern California (MWD); (2) untreated imported water from MWD subsequently treated by EMWD; or (3) untreated imported water treated by EMWD and recharged into the basin for later withdrawal.

2.4a Urban Water Management Plan Review

Water Code Section 10910 (f) (1)

The 2010 UWMP discusses projected groundwater use in EMWD and explains assumptions made about groundwater. In the following sections, portions of the 2010 UWMP are included with information about groundwater resources. The water supply for the proposed project will not include groundwater. The following information regarding EMWD's groundwater supply is for informational purposes only.

2.4b San Jacinto Watershed - Groundwater Management Zones in EMWD's Service *Area*

Water Code Section 10910 (f) (2)

The San Jacinto Watershed covers an area of approximately 728 square miles, measured above a point just downstream from Railroad Canyon Dam. The groundwater management zones of the San Jacinto Watershed lie within alluvium-filled valleys carved into the elevated bedrock plateau of the Perris Block. Collectively, the groundwater management zones are nearly surrounded by impermeable bedrock mountains and hills. Internally, island-like masses of granite and metamorphic bedrock rise above the valley floor.

The San Jacinto Fault Zone, which contains the Claremont and Casa Loma faults, is the major geologic feature that bounds and/or crosscuts many of the groundwater management zones, and

typically provides effective barriers to groundwater flow. The area between the Claremont and Casa Loma faults is a deep, alluvium-filled graben of tectonic origin, commonly referred to as the San Jacinto Graben. The effective base of freshwater in the graben is known to be quite deep but has not been precisely determined. The San Jacinto Graben consists of a forebay area in the southeast where surface water recharge primarily occurs, and a pressure area in the northwest where deep aquifers exist under confined conditions. To the east, the San Jacinto mountain range is the dominant geographic feature of the region, rising to a height of 10,805 feet.

Groundwater management zones were delineated based on major impermeable boundaries, constrictions in impermeable bedrock, groundwater divides, and internal flow systems. The eight groundwater management zones in the San Jacinto Watershed within EMWD's service area include the Canyon, San Jacinto Upper Pressure, San Jacinto Lower Pressure, Lakeview/Hemet North, Hemet South, Perris South, Perris North, and Menifee Management Zones.

Detailed descriptions of each Management Zone are included in the 2010 UWMP under Section 3 attached as Appendix A of this report.

2.4c Groundwater Management

Water Code 10910 (f) (2)

In the Hemet/San Jacinto Water Management Plan area, EMWD's groundwater production is currently constrained by the 1954 Fruitvale Judgment and Decree. Under that Judgment and Decree, EMWD, as successor-in-interest to the Fruitvale Mutual Water Company, may extract the subsurface waters of the Canyon Basin for use over or outside the entire basin without restriction, as long as the static water level in a specific well is not over 25 feet below a specific elevation. If the water level in the well is more than 25 feet below the specified elevation, EMWD's extraction is limited to 4,500 AFY. The District may extract from the Entire Basin, a total of not more than 12,000 AFY from the Entire Basin for use outside the basin, subject to the 4,500 AFY Canyon Basin extraction limit. The perimeters of the Canyon Basin and Entire Basin are defined in the Judgment and Decree. The Hemet/San Jacinto area contains good quality water and is a major source of municipal as well as private production, although water levels are in serious decline.

Since 2001, the Cities of Hemet and San Jacinto, Lake Hemet Municipal Water District (LHMWD), EMWD, and representatives of the private groundwater producers, with DWR acting as an impartial mediator, have been working on a groundwater management plan for the Hemet/San Jacinto Water Management Plan area. Over the past several years, the group has discussed and resolved several controversial issues, including San Jacinto Tunnel seepage water, the Fruitvale Judgment and Decree, export of groundwater from the basins, and how to maximize the use of recycled water. As a result of their efforts, a final Hemet/San Jacinto Water Management Plan (HSJWMP) was completed in 2007 and a Stipulated Judgment is scheduled to be final in 2012. Once the Stipulated Judgment for the Hemet/San Jacinto Water Management Plan is in effect, it will supersede the Fruitvale Judgment and Decree.

The Hemet/San Jacinto Water Management Plan:

- Limits the amount of water being extracted from the basin to a sustainable yield.
- Implements continued recharge of the basin using imported water through the Integrated Recharge and Recovery Project (IRRP).
- Insures settlement claims by the Soboba Band of Luiseño Indians are facilitated and accommodated.

- Expands existing water production and water services system to meet future urban growth through the use of imported water recharged into the basin.
- Protects and/or enhances water quality in the management plan area.
- Supports cost-effective water supplies and treatment by the public agencies.
- Eliminates groundwater overdraft and enhances basin yield.
- Continues the monitoring program to promote and provide for best management and engineering principles to protect water resources.

Long term groundwater management includes plans for artificial recharge using MWD replenishment water via permanent facilities through the IRRP. An agreement with the Soboba Band of Luiseño Indians requires that, on average, an annual delivery of 7,500 acre-feet of water from MWD for the next 30 years to EMWD, LHMWD, and the Cities of Hemet and San Jacinto as part of an effort to recharge groundwater in the Hemet/San Jacinto area, fulfilling the Soboba Tribe's water rights and addressing chronic groundwater overdrafts.

EMWD's rights under the Hemet/San Jacinto Water Management Plan will be a base groundwater production right of 10,869 AFY. Any pumping above that amount is subject to replenishment fees.

In the West San Jacinto area, a cooperative groundwater management plan is already in place to insure the reliability and quality of the water supply. In June 1995, EMWD adopted the West San Jacinto Groundwater Basin Management Plan (WSJGBMP) in accordance with the statutes in the State Water Code Sections 10750 through 10755 resulting from the passage of Assembly Bill 3030 (AB 3030). The plan was adopted after extensive public outreach and meetings with interested individuals and agencies.

Implementation of the WSJGBMP began directly after its adoption. Initial efforts to implement the WSJGBMP included establishing an advisory committee; prioritizing the management zones; evaluating groundwater resources including establishing groundwater quality, level, and extraction monitoring programs; and conducting hydro-geophysical investigations. The West San Jacinto Groundwater Basin Management Plan Annual Report, documenting the implementation of the plan and activities in the groundwater management zones, has been published annually since 1996.

2.4d Groundwater Recharge

Through pilot programs and using temporary facilities, EMWD has recharged groundwater in the Hemet/San Jacinto area with imported surplus water from MWD since 1990. In April of 2004, EMWD, LHMWD, and the Cities of Hemet and San Jacinto executed a Memorandum of Understanding (MOU) for an Interim Water Supply Plan. The purpose of the plan was to address the deteriorating situation in the Hemet/San Jacinto area by providing recharge of imported water from the SWP into the aquifer at two sites – the Conjunctive Use Ponds in the Intake portion of the San Jacinto Upper Pressure Management Zone, and the Grant Avenue Ponds in the Canyon Management Zone. From 2004 through 2007, 20,819 AF of imported water from the SWP was recharged into the aquifer. Due to dry conditions, environmental restriction, and the level of demands in its service area, MWD curtailed Replenishment Service effective as of May 1, 2007. Since then, permits to recharge water at the two sites have expired. To replace the temporary recharge facilities, long term facilities are being designed and built as part of the IRRP, an integral piece of the water management plan and the Soboba settlement. The IRRP initially consists of 35 acres of basins or ponds for recharging State Project Water; three extraction wells; three monitoring wells; modification to two existing pump stations; and pipelines within, and adjacent to, the San Jacinto River.

EMWD is also contributing to the replenishment of the basin by providing recycled water in lieu of groundwater production. The Recycled In-Lieu Program supplies recycled water for agricultural irrigation in-lieu of pumping native groundwater. The project can deliver up to 8,540 acre-feet per year to local agricultural water producers. The project costs are jointly funded by EMWD, LHMWD, and the Cities of Hemet and San Jacinto. Agreements that set limits on groundwater production, and provide for a payment of a portion of the operation and maintenance costs have been in place since 2008.

2.4e Groundwater Pumping Rights
Water Code 10910 (f)

In the eastern portion of EMWD's service area or Hemet/San Jacinto area, EMWD's groundwater production is currently constrained by the 1954 Fruitvale Judgment and Decree. Under that Judgment and Decree, EMWD, as successor-in-interest to the Fruitvale Mutual Water Company, may extract the subsurface waters of the Canyon Basin for use over or outside the Entire Basin without restriction as long as the static groundwater level in a specific well is not over 25 feet below a specific elevation. If the groundwater level in the well is more than 25 feet below the specified elevation, EMWD's extraction is limited to 4,500 AFY. EMWD may extract a total of not more than 12,000 AFY from the Entire Basin for use outside the basin, subject to the 4,500 AFY Canyon Basin extraction limit. The perimeters of the Canyon Basin and Entire Basin are defined in the Judgment and Decree but they basically cover the east side of the Hemet/San Jacinto Valley, from Bridge Street on the northwest to the Park Hill area on the southeast. The Hemet/San Jacinto area contains good quality groundwater and is a major source of municipal as well as private production, although groundwater levels are in serious decline. Once the Stipulated Judgment for the HSJWMP is in effect, it will supersede the Fruitvale Judgment and Decree. EMWD's rights under the HSJWMP will be a base groundwater production right of 10,869 AFY. Any pumping above that amount is subject to replenishment fees.

2.4f Surface Water Diversion Rights
License No. 10667

EMWD holds a right to divert up to 5,760 AFY of San Jacinto River flows for recharge and subsequent use from November 1 through June 30 each year. EMWD's diversion and recharge of San Jacinto River surface water to the Canyon Management Zone takes place at EMWD's Grant Avenue Ponds in the Valle Vista area. EMWD's diverted water is recharged into the groundwater aquifer of the Canyon Management Zone and is not used for direct use or sale. The San Jacinto River is an ephemeral river and, consequently, river flows may be insufficient for any diversion at all. In 2010, river flows were sufficient to divert 4,423 AF of surface water. Additional information about surface water diversion is available in Chapter 3 of the Annual Report.

2.4g Past Groundwater Extraction
Water Code 10910 (f) (3)

Table 2 depicts the total potable groundwater extracted by EMWD from 2006 through 2010. The majority of EMWD's groundwater is extracted from the Hemet/San Jacinto area. The remaining groundwater is extracted from the area covered by the WSJGBMP, including brackish groundwater extraction for the desalters. The location of wells used to pump groundwater and the desalters can be seen on Map 1.

2.4h Projected Groundwater Extraction
Water Code 10910 (f) (4)

Table 3 lists the amount of potable groundwater that EMWD is projecting will be supplied. Groundwater extraction in the Hemet/San Jacinto area, currently covered by the Fruitvale Agreement, will decrease as the HSJWMP is implemented. The Perris/Moreno Valley wells in the WSJGBMP area are projected to continue to produce 6,000 AFY. The desalters are part of managing the WSJGBMP area and will reduce salinity in the groundwater management zones with the added benefit of providing a source of potable water. The well locations shown on Map 1 should remain consistent in the future.

2.4i Analysis of the Sufficiency of Groundwater
Water Code 10910 (f) (5)

Protecting the available groundwater supply is an important part of EMWD's planning efforts. EMWD is actively working with other agencies and groups to insure that groundwater will be a reliable resource far into the future. Part of managing groundwater responsibly requires the replacement of groundwater extracted beyond the safe yield. Groundwater extraction in Hemet/San Jacinto area will be replaced with imported water as the HSJWMP is implemented, and groundwater extraction in the WSJGBMP area will remain static. Although the desalters will provide an additional supply of water, the amount of water produced is not sufficient to accommodate the proposed growth within EMWD. The majority of the increased water demand caused by this project will be met by increasing the use of imported water from MWD recognizing the conditions of approval outlined in this document.

2.5 Recycled Water
Water Code 10910 (d) (1)

Recycled water is extensively used in EMWD's service area in place of potable water. To offset municipal demand, recycled water is used to irrigate landscape and for industrial purposes. The majority of EMWD's agricultural customers also use recycled water. In some cases, recycled water is used by agricultural customers in lieu of groundwater production, increasing the amount of groundwater available for municipal use without increased recharge.

The supply of recycled water will continue to grow with EMWD's population growth. The four (4) regional water reclamation facilities that EMWD is currently operating are all either in the process of expansion or have an expansion planned in the near future. Recycled water is currently used for both municipal and agricultural purposes. Municipal customers use recycled water for landscape irrigation and industrial process water. Agricultural customers use recycled water for irrigation of crops. A portion of agricultural demand of recycled water is in lieu of using groundwater. Currently, the use of recycled water is limited by the amount available to serve during peak demands and with livestream discharge occurring in off peak periods. EMWD has developed plans to eliminate discharge and use all of the recycled water available within the District, and to offset demand of existing potable customers, including retrofit of potable water landscape customers and indirect potable recharge.

2.6 Water Use Efficiency Measures

The Water Conservation Act of 2009, Senate Bill 7x-7, set a requirement for water agencies to reduce their per capita water use by the year 2020. The overall goal is to reach a state wide reduction of per capita urban water use of 20 percent by December 31, 2020, with an intermediate 10 percent reduction by December 31, 2015. Demand reduction can be achieved

through both conservation and the use of recycled water as a potable demand offset. EMWD will reduce potable water demand to meet the goals of SB7x-7 two ways; using recycled water to offset potable water demand and reducing demand for water through conservation. Three methods have been identified for conserving water: 1) a budget based tiered rate, 2) requirements for water efficiency in new construction, and 3) an active conservation program. Water use reduction will be focused on outdoor demand reduction by all customer types. Table 5 summarizes water savings by type.

Table 5 - Water Efficiency Savings (AFY) – 2005 - 2035

Saving Type	2005	2010	2015	2020	2025	2030	2035
Recycled Water Potable Offset	3,601	4,041	5,000	6,300	11,500	13,900	14,300
Tiered Rate	0	8,700	8,700	8,700	8,700	8,700	8,700
New Construction	0	200	2,000	4,100	6,100	8,000	9,600
Active Conservation	1,500	3,400	6,500	9,500	10,700	11,700	12,600
Total	**5,101**	**16,341**	**22,200**	**28,600**	**37,000**	**42,300**	**45,200**

Recycled water will be used to offset potable demand through the expansion of the existing recycled water system.

Tiered Rate savings are an estimate of water saved by customers, after the implementation of a budget based tiered rate. In April 2009, EMWD implemented a tiered rate billing structure for its residential and landscape customers. Customers are provided an allocation for reasonable water use and are required to pay a higher rate for water use over their allocated limit. Water savings by existing customers has been estimated. Actual water demand since the implementation of the tiered rate has been lower than the estimated amounts, likely as a result of several factors and not the tiered rate implementation alone.

Water Use Efficiency Requirements in New Development includes installing lower water use landscape and interior fixtures. Water use efficiency is mandated statewide through existing ordinances, plumbing codes and legislation. To enforce water use efficiency in new development EMWD has lowered the water budget allocations for new development. Any residential or dedicated landscape account installed after January 1, 2011 has an outdoor budget allocation based on only 70 percent of ET, compared to up to 100 percent of ET for older accounts. Water use savings shown in Table 5 are calculated assuming lower budgets allocation will result in a reduction in a proportionate reduction in water use. Actual savings will be measured based on average use by new meters.

Active Conservation savings are the result of water use efficiency programs implemented by EMWD. EMWD encourages the replacement of inefficient devices and includes monetary rebate, distribution and direct installation programs. Water savings are based on estimated water savings for each device and takes into account the lifetime of each device.

Through the above three methods of reducing water use, and recycled water use, EMWD anticipates the reduction of potable water demand to meet the requirements of SB7x-7.

2.7 *Local Resources Documentation*

2.7a *Written Contracts or Other Proof*
Water Code 10910 (d) (2) (A)

Below is a list of documents related to EMWD's local water supply:

- **EMWD 2010 Urban Water Management Plan (June 2010)** - EMWD's 2010 Urban Water Management Plan is attached as Appendix A. This plan supplies additional information on EMWD, its service area, and water management and supply capabilities.
- **West San Jacinto Groundwater Basin Management Plan 2010 Annual Report on the Status of the Groundwater Subbasins (June 2011)** - Detailed information on the history and progress of groundwater basin management and the Groundwater Monitoring Program can be found in the 2008 Annual Report on the Status of the Groundwater Subbasins, located on EMWD's Website (www.emwd.org).
- **The Fruitvale Agreement (June 1954)** – A Judgment and Decree (No. 54546) filed in Riverside County which quantifies EMWD's groundwater extraction in the Hemet/San Jacinto area.
- **Hemet/San Jacinto Water Management Area 2010 Annual Report (June 2011)** - Detailed information on the history and progress of the Water Management Plan and Groundwater Monitoring Program can be found in the 2008 Annual Report on the Status of the Groundwater Subbasins, located on EMWD's Website (www.emwd.org).
- **Hemet/San Jacinto Groundwater Management Area Water Management Plan** – This plan was developed by the stakeholders in the Hemet/San Jacinto area to provide a foundation to guide and support responsible water management into the future. The plan was finalized in 2007 and an EIR was approved for the project on November 21, 2007 by EMWD's Board of Directors.

With regard to EMWD's ownership and use of reclaimed/recycled water, California Water Code Section 1210 states:

The owner of a waste water treatment plant operated for the purpose of treating wastes from a sanitary sewer system shall hold the exclusive right to the treated waste water as against anyone who has supplied the water discharged into the waste water collection and treatment system, including a person using water under a water service contract, unless otherwise provided by agreement.

With regard to the Water Use Efficiency Ordinance that will result in additional supplies through conservation:

The County of Riverside Board of Supervisors approved an update to Ordinance No. 859 on October 20, 2009, requiring water efficient landscaping in any new development requiring a permit.

EMWD's Board of Directors approved Ordinance 72.25 for implementation on January 1, 2011, requiring water efficient landscaping in new developments and requiring water efficiency enforced through tiered rates. Ordinance 72.25 can be found on EMWD's website www.emwd.org.

2.7b EMWD's Capital Improvement Plan
Water Code 10910 (d) (2) (B)

EMWD maintains and periodically updates a comprehensive Water Facilities Master Plan (WFMP). This working plan defines water supply, transmission mains, and storage facilities required for the accommodation of projected growth within EMWD. On a yearly basis, a five-year Capital Improvement Plan (CIP) is prepared, which is based on a further refinement of the WFMP. The CIP outlines specific projects and their funding source. Each project is also submitted individually to the Board for authorization and approval. This allows EMWD to accurately match facilities' needs with development trends. Financing information for the desalter plant construction, regional water reclamation facilities expansion, and well replacement can also be found in the CIP.

2.7c Federal, State and Local Permits Needed for Construction
Water Code 10910 (d) (2) (C)

As part of EMWD's CIP, an Environmental Review Committee has been established. This Committee, made up of representatives from the Engineering, Planning, and Environmental and Regulatory Compliance Departments, discuss each project and the steps needed to comply with regulatory requirements. EMWD works with various government agencies, including the U.S. Department of Fish and Wildlife, the U.S. Army Corps of Engineers, the California Department of Public Health, the California State Water Resources Board, the California Air Quality Management District, and the California Department of Fish & Game to obtain permits when necessary. The Engineering Department procures additional construction permits on a case-by-case basis. EMWD has already, or is in the process of, obtaining Environmental Impact Reports or other environmental documents necessary for desalter construction, regional water reclamation facilities expansion, and well replacements. Any necessary permits secured by EMWD are kept on file at the District office.

2.7d Regulatory Approvals
Water Code 10910 (d) (2) (D)

The Department of Public Health (DPH) has issued a system-wide permit for EMWD's water supply system. EMWD's Environmental and Regulatory Compliance Department conforms to specific regulations and obtains any additional necessary approvals. As new facilities are constructed by EMWD, they are subject to inspection and testing by regulatory agencies and the DPH permit is amended.

Section 3 - Demand

3.1 Demand Projections
Water Code 10910 (c) (2), 10631 (e) (1)

EMWD's primary retail customers can be divided into residential, commercial, industrial, institutional and landscape sectors. Although the residential section is by far EMWD's largest customer segment, each market segment plays a role in the growth and development of EMWD's service area. See Table 6 for water use by various customer types.

Table 6 - Retail Water Deliveries by Customer Type – 2005 - 2035

Year /Type	Units	Single family Res.	Multi-family Res.	Comm-ercial	Indus-trial	Inst/ gov.	Land-scape	Agri-culture	Total
2005	No. of accounts	114,100	1,000	1,500	100	40	1,500	200	**118,440**
Actual	Volume (AF)	62,300	5,500	3,900	400	2,900	7,500	2,400	**84,900**
2010	No. of accounts	129,400	4,300	2,100	100	500	2,200	100	**138,700**
Actual	Volume (AF)	54,000	6,100	4,200	400	2,300	8,900	1,800	**77,700**
2015	No. of accounts	140,600	5,700	2,300	1,200	100	3,300	100	**153,300**
Projected	Volume (AF)	74,400	8,300	5,600	600	3,600	18,500	2,800	**113,800**
2020	No. of accounts	150,200	6,100	2,400	1,300	100	3,500	85	**163,685**
Projected	Volume (AF)	79,600	8,800	5,900	600	3,800	19,600	2,400	**120,700**
2025	No. of accounts	169,600	6,900	2,700	1,400	100	4,000	85	**184,785**
Projected	Volume (AF)	89,800	10,000	6,700	700	4,300	22,200	2,400	**136,100**
2030	No. of accounts	187,700	7,700	3,000	1,500	100	4,400	85	**204,485**
Projected	Volume (AF)	99,400	11,000	7,400	800	4,800	24,500	2,400	**150,300**
2035	No. of accounts	202,800	8,200	3,300	1,700	100	4,700	85	**220,885**
Projected	Volume (AF)	107,400	11,900	8,000	800	5,200	26,500	2,400	**162,200**

Note: Water Quantities include raw water to agricultural customers but does not include recycled water deliveries.

Table 7 shows sub-agency water use and Table 8 shows other water uses. Total water use is shown in Table 9.

Table 7 - Wholesale to Other Agencies – 2005 - 2035

	Actual Sales (AF)		Projected Sales (AF)				
Water distributed	2005	2010	2015	2020	2025	2030	2035
City of Hemet	100	0	0	0	0	0	0
City of Perris	1,900	1,700	1,700	1,800	1,900	2,000	2,100
City of San Jacinto	0	0	0	0	0	0	0
Lake Hemet MWD[1].	100	1,300	1,100	1,100	1,000	1,100	1,100
North Perris Water Company	0	0	0	0	0	0	0
Nuevo Water Company	800	600	800	1,600	1,700	1,700	1,700
Murrieta Water Company	100	1,600	0	0	0	0	0
Rancho California Water District	26,300	21,900	36,500	48,600	50,800	53,000	55,200
Hemet/San Jacinto Basin Plan Water Master	0	0	7,500	8,500	9,600	11,200	12,300
Total	29,300	27,100	47,600	61,600	65,000	69,000	72,400

1. Sales of water to Lake Hemet are for non-potable supplies used to meet agricultural demand.

Table 8 - Other Water Uses – 2005 – 2035

	Actual Use (AF)		Projected Use (AF)				
	2005	2010	2015	2020	2025	2030	2035
Recycled Water	32,600	41,500	43,900	50,000	53,900	54,900	55,300
Recharge Water [1]	7,000	0	0	0	0	0	0
Distribution System Water Loses	7,600	8,200	8,400	8,900	10,100	11,200	12,100
Treatment Water Losses	100	200	200	200	200	200	200
Total	47,300	49,900	52,500	59,100	64,200	66,300	67,600

1. Future recharge will be through the Hemet/San Jacinto Basin Plan Water Master as seen in Table 8.

Table 9 - Water Demand (AFY) – 2005 - 2035

	Actual		Projected				
	2005	2010	2015	2020	2025	2030	2035
Retail Potable Water Sales	84,900	77,700	113,800	120,700	136,100	150,300	162,200
Water Sales to Other Agencies	29,400	27,100	47,600	61,600	65,000	69,000	72,400
Other Water Uses/Losses	47,300	49,900	52,500	59,100	64,200	66,300	67,600
Total	161,600	154,700	213,900	241,400	265,300	285,600	302,200

3.2 Project Demand

This assessment is prepared for the World Logistics Center Specific Plan in Moreno Valley proposed by Highland Fairview. The project proposes 41.6 million square-feet of logistics facilities on 2,655 acres of light industrial development. The project is located in the eastern part of the City of Moreno Valley and is generally bounded by Gilman Spring Road, Redlands Boulevard and the Moreno Valley freeway. The projected demand for the project is estimated to be 1,991.25 AFY. Exhibit "A" shows the location of this project.

Table 10 – Project Demand

Type	Acres	AF Demand per Acre	AFY
Light Industrial [1]	2,655	0.75	1,991.25

(1) Per project description

The demand for this project is estimated based demand from similar landuse. A majority of the estimated demand would be for landscape irrigation. The developers of this project are proposing very low water use landscaping which would reduce the projected project demand significantly. The demand for this project is within the limits of projected demand accounted for in the 2010 UWMP and would be included in the projected demand shown in Table 9 of this water supply assessment report.

3.3 Database of Proposed Projects

Water Code 10910 (c) (3)

To develop the projections used in this Water Supply Assessment, EMWD uses a development-tracking database that assesses future water demands for specific projects. EMWD uses this database to help plan for future water supply and infrastructure needs by monitoring new projects through various stages of development. Subject to the Board of Director's approval of this assessment, information associated with this project will be included in the supply and demand projections EMWD uses for planning. Changes in density and land use are also tracked in this database for planning purposes. The developer is required to notify EMWD if any changes to project density or land use occur.

Section 4 Evaluation of Supply and Demand

Water Code 10910 (c) (2)

4.1 Supply and Demand Evaluation under Historic Conditions

Tables 11, 12 and 13, taken from the 2010 UWMP, are an estimate of EMWD's demand during average, single and multiple dry years.

Table 11 - Existing Water Supply Resources – Average Year Hydrology – 2015 - 2035

	2015	2020	2025	2030	2035
Metropolitan Water District	149,300	170,700	190,700	210,000	226,200
Recycled	43,900	50,000	53,900	54,900	55,300
Groundwater	13,200	13,200	13,200	13,200	13,200
Existing Desalter	7,500	7,500	7,500	7,500	7,500
Total Existing Supplies	**213,900**	**241,400**	**265,300**	**285,600**	**302,200**
Total Projected Demands	**213,900**	**241,400**	**265,300**	**285,600**	**302,200**
Shortfall/Surplus	**0**	**0**	**0**	**0**	**0**

Based on a repeat of 2004- 2009 conditions

Table 12 - Existing Water Supply Resources – Dry Year Hydrology – 2015 – 2035

	2015	2020	2025	2030	2035
Metropolitan Water District	155,300	177,600	198,300	218,300	235,100
Recycled	45,500	51,800	55,800	56,900	57,300
Groundwater	13,200	13,200	13,200	13,200	13,200
Existing Desalter	7,500	7,500	7,500	7,500	7,500
Total Existing Supplies	**221,500**	**250,100**	**274,800**	**295,900**	**313,100**
Total Projected Demands	**221,500**	**250,100**	**274,800**	**295,900**	**313,100**
Shortfall/Surplus	**0**	**0**	**0**	**0**	**0**

Note: Based on a repeat of 1977 conditions

Table 13 - Existing Water Supply Resources – Multi - Dry Year – 2015 - 2035

	2015	2020	2025	2030	2035
Metropolitan Water District	156,600	179,000	199,800	219,900	236,900
Recycled	45,800	52,200	56,200	57,300	57,700
Groundwater	13,200	13,200	13,200	13,200	13,200
Existing Desalter	7,500	7,500	7,500	7,500	7,500
Total Existing Supplies	**223,100**	**251,900**	**276,700**	**297,900**	**315,300**
Total Projected Demands	**223,100**	**251,900**	**276,700**	**297,900**	**315,300**
Shortfall/Surplus	**0**	**0**	**0**	**0**	**0**

Note: Based on a repeat of 1990-1992 conditions

EMWD's 2010 UWMP discusses the supply reliability for EMWD during dry years. It is anticipated that the majority of water for future development will be supplied by imported water from MWD during single dry years. Typically, MWD does not place imported water limits on a member agency, but predicts the future water demand based on regional growth information. MWD stated in its 2010 RUWMP that with the addition of all water supplies, existing and planned, MWD would have the ability to meet all of its member agencies' projected supplemental demand through 2035, even under a repeat of historic drought scenarios.

4.2 Contingency Planning

Included in the 2010 UWMP is a copy of EMWD's Water Shortage Contingency Plan (WSCP). In the case of unprecedented shortage EMWD will reduce demand using significant penalties for wasteful water use. EMWD's WSCP details the plan for demand reduction for several stages of shortage up to 50 percent. Additional information about contingency planning is included in Section 5 of EMWD's 2010 UWMP.

Section 5 - Water Supply Assessment

5.1 Potable Water

From a facilities perspective, the proposed project would be conditioned to construct off-site and on-site water facilities needed to distribute water throughout the project area. A plan of service for the proposed project should be created, and after approval by EMWD, be consulted for specific improvements. See Exhibit "B" for existing water facilities in relation to the project.

With respect to water supply, as discussed above, the project will be served using imported water from MWD supplemented with new local supply projects during multi-dry years, if needed. However, if the City of Perris succeeds in obtaining a permit from the State Water Resources Control Board to develop the available local resources, EMWD may be unable to supplement MWD supplies in times of shortage. Allocation from MWD may result in water supplies being made available at a significantly higher cost depending on circumstances.

5.2 Recycled Water

EMWD policy recognizes recycled water as the preferred source of supply for all non-potable water demands, including irrigation of recreation areas, green-belts, open space common areas, commercial landscaping, and supply for aesthetic impoundment or other water features. The proposed project is near an existing recycled water line and in the future recycled water may be available for the project.

According to EMWD policy, the project may be conditioned to construct a recycled water system physically separated from the potable water system. The system will need to be constructed to recycled water standards. The project may also be conditioned to construct off-site recycled water facilities. EMWD will make a final determination on requirements for recycled water use and facilities during the plan of service phase of the project.

5.3 Duration of Approval – 3 Year Maximum

This assessment will be reviewed every three years until the project begins construction. The project applicant shall notify EMWD when construction has begun. The review will insure that the information included in this assessment remains accurate and no significant changes to either the project or EMWD's water supply have occurred. If neither the project applicant nor the lead agency contacts EMWD within three years of approval of this WSA, it will be assumed that the proposed project no longer requires the estimated water demand calculated, the demand for this project will not be considered in assessments for future projects, and the assessment provided by this document will become invalid.

5.4 Conclusion

EMWD relies on MWD to meet the needs of its growing population. MWD stated in its 2010 RUWMP that with the addition of all water supplies, existing and planned, MWD would have the ability to meet all of its member agencies' projected supplemental demand through 2035, even under a repeat of historic multi-year drought scenarios.

Based on present information and the assurance that MWD is engaged in identifying solutions that, when combined with the rest of its supply portfolio, will ensure a reliable long-term water supply for its member agencies, EMWD has determined that it will be able to provide adequate water supply to meet the potable water demand for this project as part of its existing and future demands.

In the event the lead agency determines adequate water supply exists for this project, the developer of this project is required to meet with EMWD staff to develop a plan of service. The plan of service will detail water, wastewater and recycled water requirements to serve the projects. An agreement developed prior to construction will determine additional funding required to reduce existing customer demand on imported supplies through the expansion of local resources. The reduction of existing customer demand on imported water supplies will free up allocated imported water to be used to serve this project under multiple dry year conditions. The amount of funding will be determined by the EMWD and may take the form of a new component of connection fees or a separate charge. The estimated cost of desalinated water is between $1,400 and $1,700 per AF. These costs are expected to increase over time.

If there is a change in the circumstances detailed in this assessment, EMWD will address the changes in the plan of service for the project. Modifications at the plan of service stage could reduce the amount of water available to serve this project.

Section 6 - Conditions of Approval

This assessment is not a commitment to serve the project, but a review of EMWD supplies based on present information available. This assessment is conditioned on MWD's ability to continue to supply imported water to meet EMWD's requirements, including the requirements for this project. This project is subject to any special or additional requirements imposed by MWD or EMWD on such deliveries, including increased pricing or a different pricing structure.

The lead agency for the project is responsible to evaluate the adequacy of the water supply assessment and make the ultimate decision of the sufficiency of the water supply. The developer for the project is responsible for keeping EMWD informed about progress in the planning and development of the project so that a review can be completed. If the lead agency determines adequate water supply exists for this project, the project applicant shall notify EMWD on the status of this project, and the lead agency shall request a review and update of this WSA every three (3) years until the project starts construction.

If the lead agency determines adequate water supply exists for this project, to the greatest extent possible, recycled water shall be used on the proposed project. Details about the feasibility of recycled water use shall be included in the plan of service for the project.

Exhibit "A" Project Location

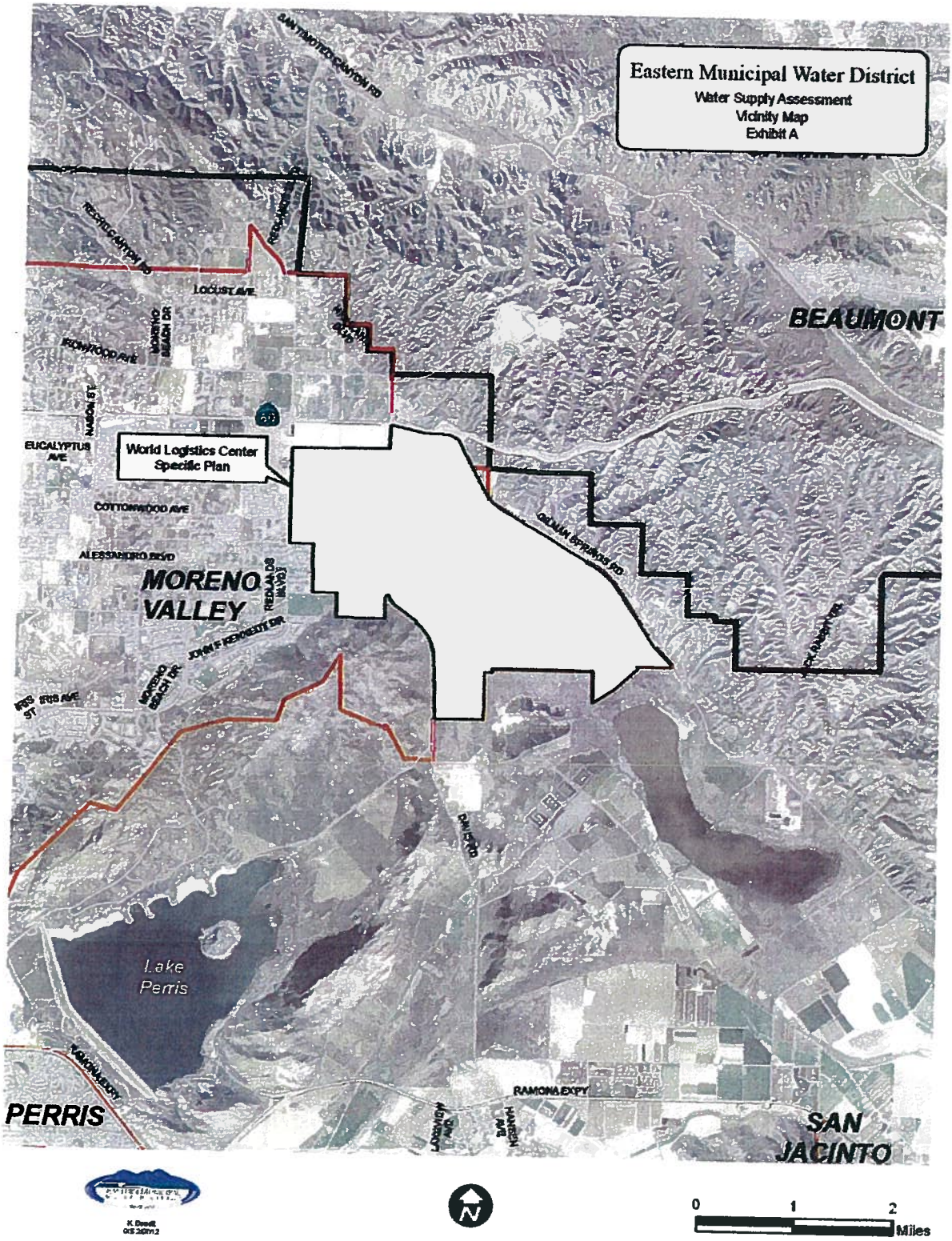
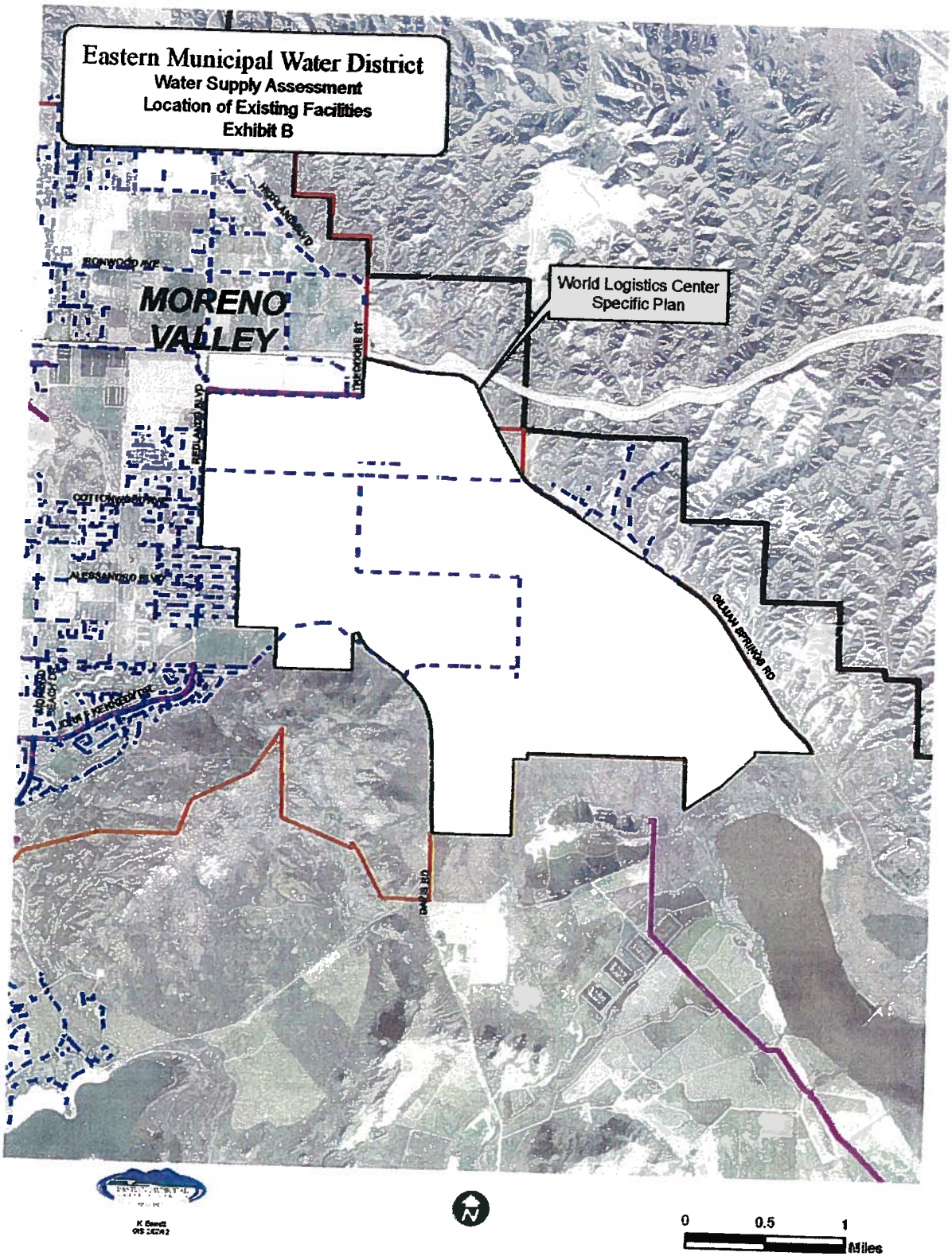


Exhibit "B" Project Location in Relation to Existing Waterlines



WATER SUPPLY ASSESSMENT REPORT

Supplemental Information

Appendix A
2010 Urban Water Management Plan

Appendix B
2010 MWD's RUWMP

Appendix C
EMWD's CIP Budget

World Logistics Center Specific Plan Water System Analysis

PREPARED FOR: Highland Fairview

PREPARED BY: CH2M HILL

DATE: December 17, 2012

Introduction

The proposed World Logistics Center Specific Plan (WLC) is a master plan for the development of logistics warehouse distribution facilities on approximately 2,710 acres of land in the Rancho Belago area of eastern Moreno Valley. The Specific Plan proposes the development of approximately 41.4 million square feet of high-cube logistics facilities on 2,606 acres, 200,000 square feet of general warehousing facilities on 29 acres, an in-project fueling station, and 75 acres of permanent open space.

The Specific Plan area is situated southerly of State Route 60, generally between Redlands Boulevard and Gilman Springs Road (the easterly City limit). The Specific Plan extends to, but does not include, the San Jacinto Wildlife Area (SJWA). The General Plan Amendment and Zone Change which accompany the Specific Plan do include the SJWA property in order to designate the SJWA land for open space use.

The World Logistics Center is located within the water service area of Eastern Municipal Water District (EMWD). The purpose of this analysis is to determine the hydraulic infrastructure necessary to provide water supply to the development.

Analysis Criteria

The criterion used to evaluate system performance was adopted from EMWD Water Facilities Master Plan (WFMP) document (CH2M Hill, 2009). The criterion is summarized below.

Pressure Requirements

System pressure is an indication of system performance. Minimum and maximum pressure requirements help determine if the system is functioning optimally. Table 1 details the pressure requirements used for hydraulic analysis.

TABLE 1
Pressure Requirements
Adopted from EMWD WFMP Appendix A - Water Facilities Master Plan Design Criteria Evaluation

Condition	Pressure Required (psi)
Minimum Dynamic Pressure at downstream of RPDA[a]	40
Minimum Dynamic Pressure from tank low water level to upstream of meter	50
Minimum Static Pressure from tank low water level to upstream of meter[b]	60
Minimum Static Pressure from tank high water level to upstream of meter	75
Maximum Static Pressure from tank high water level to upstream of meter[c]	110
Minimum Pressure anywhere in the system during MDD+FF	20

psi = pounds per square inch
[a] If no Reduced-Pressure Principle Detector Assembly (RPDA), then downstream of meter.
[b] Tank low water level is based on 5 feet above tank bottom.
[c] Assumes a full tank and a pressure limit that accounts for pressure surging that may occur to prevent pressures exceeding 125 psi.

Piping Requirements

Excessive velocities and head losses are indicators of inefficient operations. The head loss requirements presented in Table 2 and the velocity requirements presented in Table 3 were used as guidelines for analysis of the World Logistics Center.

TABLE 2
Head-Loss Requirements
Adopted from EMWD WFMP Appendix A - Water Facilities Master Plan Design Criteria Evaluation

Design Criteria	Allowable Head Loss
Flows less than 20 cfs	3.0 feet/1,000 feet
Flows 20 to 50 cfs	2.0 feet/1,000 feet
Flows greater than 50 cfs	1.0 foot/1,000 feet

cfs = cubic feet per second

TABLE 3
Velocity Requirements
Adopted from EMWD WFMP Appendix A - Water Facilities Master Plan Design Criteria Evaluation

Design Criteria	Allowable Velocity (fps)
MDD	<5
PHD	<10
FF	<15

MDD = Maximum-Day Demand
PHD = Peak-Hour Demand
FF = fire flow
fps – feet per second

Source Capacity

Source capacity is considered to be any source of water supply to a pressure zone via direct connections, pump stations, regulators, or wells. Source capacity for the World Logistics Center was measured against the criteria presented in Table 4.

TABLE 4
Source Capacity Requirements
Adopted from EMWD WFMP Appendix A - Water Facilities Master Plan Design Criteria Evaluation

Design Criteria	Required Capacity
Minimum Capacity	MDD + maximum fire flow in each pressure zone

MDD = Maximum-Day Demand

Pumping Capacity

The pump stations involved in the World Logistics Center analysis were analyzed against the criteria presented in Table 5.

TABLE 5
Pumping Capacity Requirements
Adopted from EMWD WFMP Appendix A - Water Facilities Master Plan Design Criteria Evaluation

Pump Station/Zone Type	Required Capacity
All pump stations	1 Stand-by pump
No time of use	MDD
Time of use	1.33 x MDD
No equalization storage available	Peak-hour demands
No fire storage available	FF capacity

MDD = Maximum-Day Demand
FF = fire flow

Storage Capacity

Distribution system storage provides adequate water supply for customers as well as helping to equalize fluctuations between supply and demand, providing water for firefighting and meeting demands during emergencies or unplanned outages of major supply sources. Three types of storage were considered in the World Logistics Center analysis; operational storage, fire storage, and emergency storage.

Operational storage consists of equalization storage, time-of-use, and pump-through storage. The criterion for each operation storage category is presented in Table 6.

TABLE 6
Operational Storage Requirements
Adopted from EMWD WFMP Appendix A - Water Facilities Master Plan Design Criteria Evaluation

Storage Type	Design Criteria
Equalization	0.25 x MDD
Time of Use	0.25 x MDD
Pump Through	0.10 x flow pumped to higher pressure zone

MDD = Maximum-Day Demand

Fire Storage is dependent on the instantaneous flow rate required to fight the fire, the duration of the fire flow, and the number of fire flows that occur before the volume can be replenished. The World Logistic Center analysis required a fire flow of 4,000 gpm for 4 hours. The required storage volumes are listed in Table 7.

TABLE 7
Fire Storage Requirements
Adopted from EMWD WFMP Appendix A - Water Facilities Master Plan Design Criteria Evaluation

Land Use Category	Minimum Fire Flow Required (gpm)	Duration (Hours)	Number of Fire Hydrants	Required Fire Storage Volume (MG)
Single Family (Residential)	1,500	2	1	0.18
Multifamily – five or more units per acre (Residential)	3,000	3	3	0.36
Light Commercial/Industrial (including schools)	3,000	3	3	0.54
World Logistics Center	4,000	4	3	.96
Heavy Commercial/Industrial	5,000	4	4	1.20

gpm = gallons per minute
MG = million gallons

Emergency storage is a dedicated source of water that can be used as backup supply in the event a major supply source is interrupted. The emergency storage criteria are presented in Table 8.

TABLE 8
Emergency Storage Requirements
Adopted from EMWD WFMP Appendix A - Water Facilities Master Plan Design Criteria Evaluation

Zone Type	Storage Volume Requirement
Zone with multiple pump stations	0.5 x (MDD minus flow from remaining pump stations)
Minimum volume for zone with multiple pump stations	0.25 x MDD
Zone with single pump station	0.50 x MDD

MDD = Maximum-Day Demand

For the hydraulic analysis portion of this study, an extended-period simulation of max-day-demand was used.

Water Demand Factors

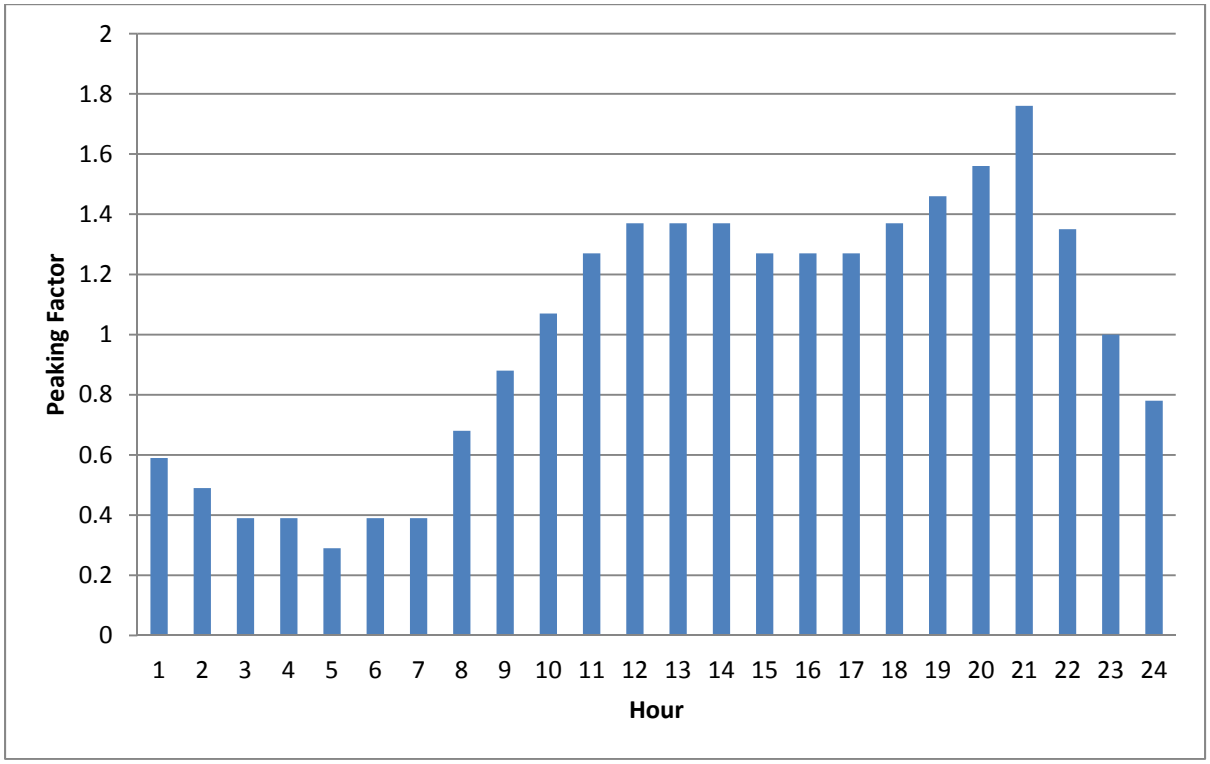
A Water Supply Assessment was prepared by EMWD that evaluated metered data from similar logistics facilities within the District. The water supply assessment includes the entire water use for these facilities including building and irrigation demand. Based on this analysis, EMWD concluded that 670 gallons per day per acre is an appropriate water demand for these types of logistics facilities.

The WLC is proposing a plant palette that relies on native landscaping and virtually zero irrigation. Because of this a building water demand analysis and benchmarking Study was conducted as outlined in the Technical Memorandum entitled *World Logistics Center Water Demands and Waste Water Generation for Buildings* dated March 13, 2012. Based on this analysis, it was determined that an appropriate water demand factor for Logistics Developments is equivalent to 0.01 gpd/sf of building. Since this study is at a preliminary stage and is for specific plan purposes and because there is a potential that building and/or irrigation demands could change in the future, it was decided to use the 670 gpd/acre for this analysis. At the time of plan of service the water demand factors will be refined and developed for the specific buildings being built and will be based on the 0.01 gpd/sf of building or other appropriate factors, including irrigation, if any.

Extended Period Simulation Diurnal Curve

In an extended period model simulation run, a diurnal curve is applied to the demand to simulate water usage over a 24 hour period. The peaking factor dictated in the diurnal curve is multiplied by the demand at each node in the model to generate the estimated demand for each hour during the extended period simulation model run. The diurnal curve used in the EMWD WFMP has been used for the World Logistics Center Analysis. This diurnal curve is presented below in Figure 1.

FIGURE 1
Model Diurnal Curve



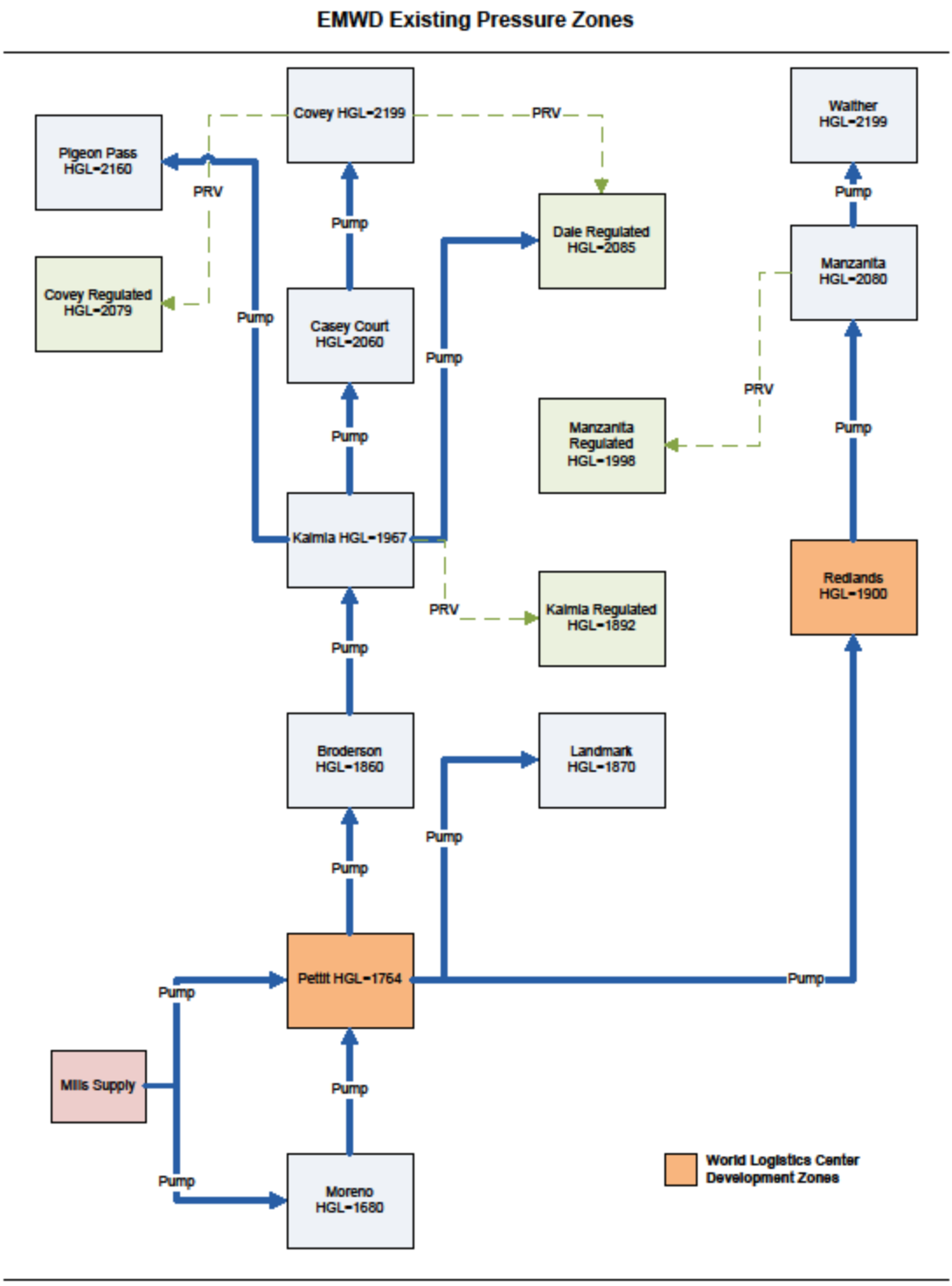
Existing Water System

The existing water system in Moreno Valley consists of an intricate network of pipe, pumps, valves, wells, and storage tanks. There are approximately 625 miles of pipeline ranging in diameter from 6 to 54 inches. Water is provided to the Moreno Valley area through the 54-inch Mills pipeline and 48-inch Cactus Transmission Main. A total of 25 pumping stations, 20 regulating stations, and 25 in-zone storage tanks work together to facilitate movement of water throughout the system.

The topography of the area varies greatly with the lowest service elevation at approximately 1,465 feet above mean sea level (msl) and the highest service elevation at approximately 2,138 feet msl. To handle varying elevations and maintain adequate pressures throughout the distribution system, the Moreno Valley area is divided into 15 hydraulic regions or pressure zones. Figure 2 is a schematic diagram of the existing system pressure zones.

The proposed location of the World Logistics Center falls within the existing Pettit (1,764) and Redlands (1,900) Zones. Water supply provided from the Moreno (1680) Zone and Pettit (1,764) Zone travels through the existing pipeline infrastructure to supply the Redlands (1,900) area.

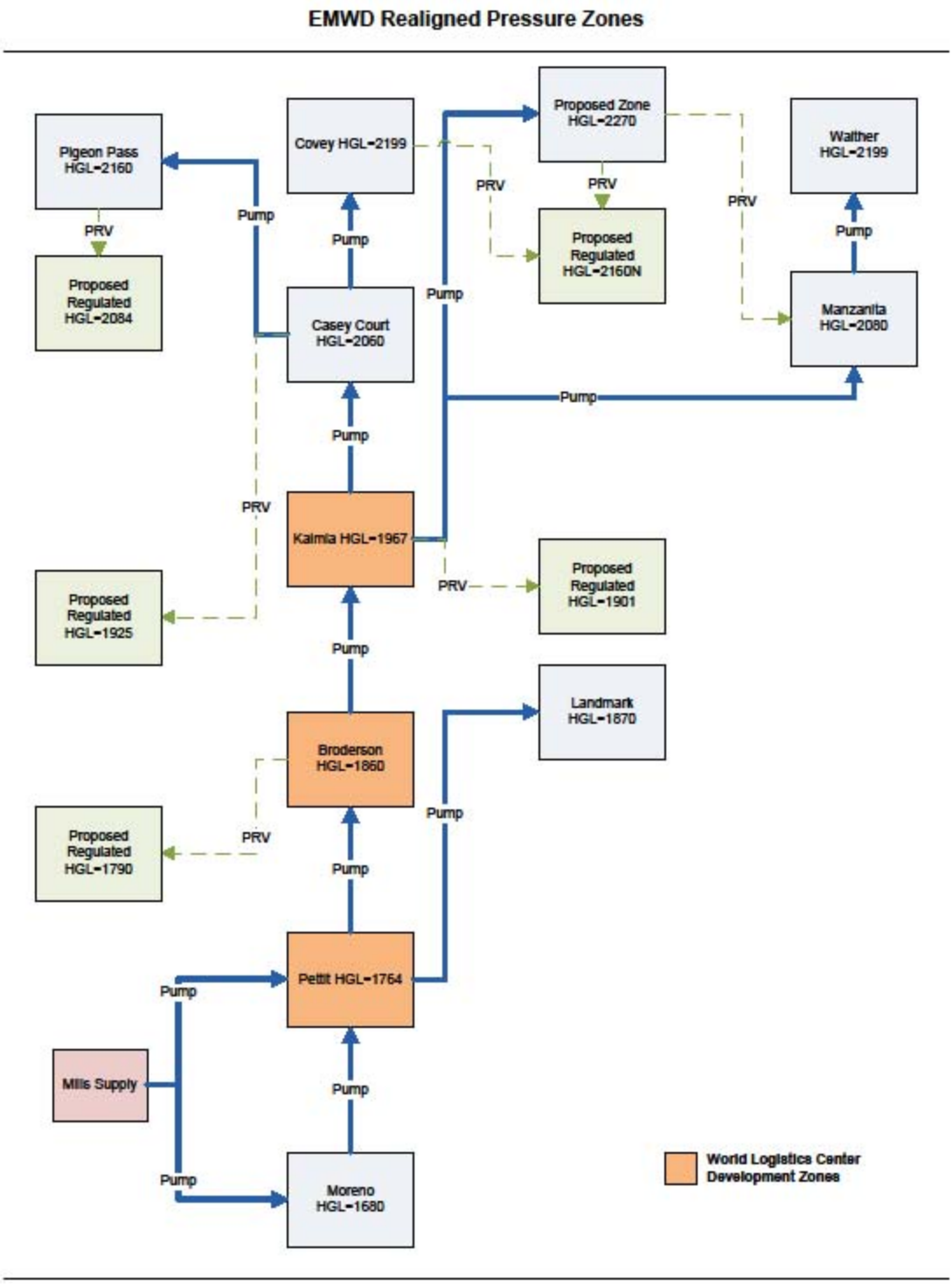
Figure 2
Existing System Diagram



The current pressure zone configuration in the Moreno Valley System creates low static pressures ranging from approximately 26 pounds per square inch (psi) to 57 psi and high static pressures ranging from approximately 68 psi to 154 psi. These pressures do not reflect EMWD pressure design criteria of 40 psi to 110 psi. This is due to high and low elevation areas at zone boundaries. EMWD is aware of this issue and has explored options to remedy the situation. One of EMWD's options is documented in The Moreno Valley Zone Realignment (MVZR) (CH2M HILL, 2009). This document explores options for improving pressures in low and high elevation areas by realigning zone boundaries.

The World Logistics Center is located within the area planned for zone boundary realignment. The realigned zone boundaries recommended in the MVZR were used for the build out scenario of the World Logistics Center analysis. When the zones are realigned, the proposed location of the World Logistics Center will fall in the Pettit (1,764), Broderson (1,860), and Kalmia (1,967) Pressure Zones. Due to the variability of implementation of the zone boundary realignment, the facilities recommended for the World Logistics Center in this report are structured to work with either zone configuration. Figure 3 presents EMWD's realigned pressure zone schematic diagram.

Figure 3
Realigned System Diagram



Analysis

In order to analyze the impact of the World Logistics Center Development on the existing Moreno Valley System, the existing system hydraulic model utilized was obtained from EMWD. The 2008 scenario within the model was considered existing and was the scenario used for hydraulic analysis. The storage analysis was completed by utilizing EMWD's supply and storage spreadsheets, which were developed as part of the WFMP.

Existing Hydraulic Analysis

The first step in the World Logistics Center Hydraulic Analysis was to determine the pipeline network which would connect the proposed system to the existing Moreno Valley distribution system. Estimated World Logistic Center demands were distributed to junction nodes within the model using a demand factor of 670 gallons per day (gpd) per acre. Table 9 provides the summary of demand by pressure zone (existing and re-aligned).

Table 9
Demands by Pressure Zone
Existing

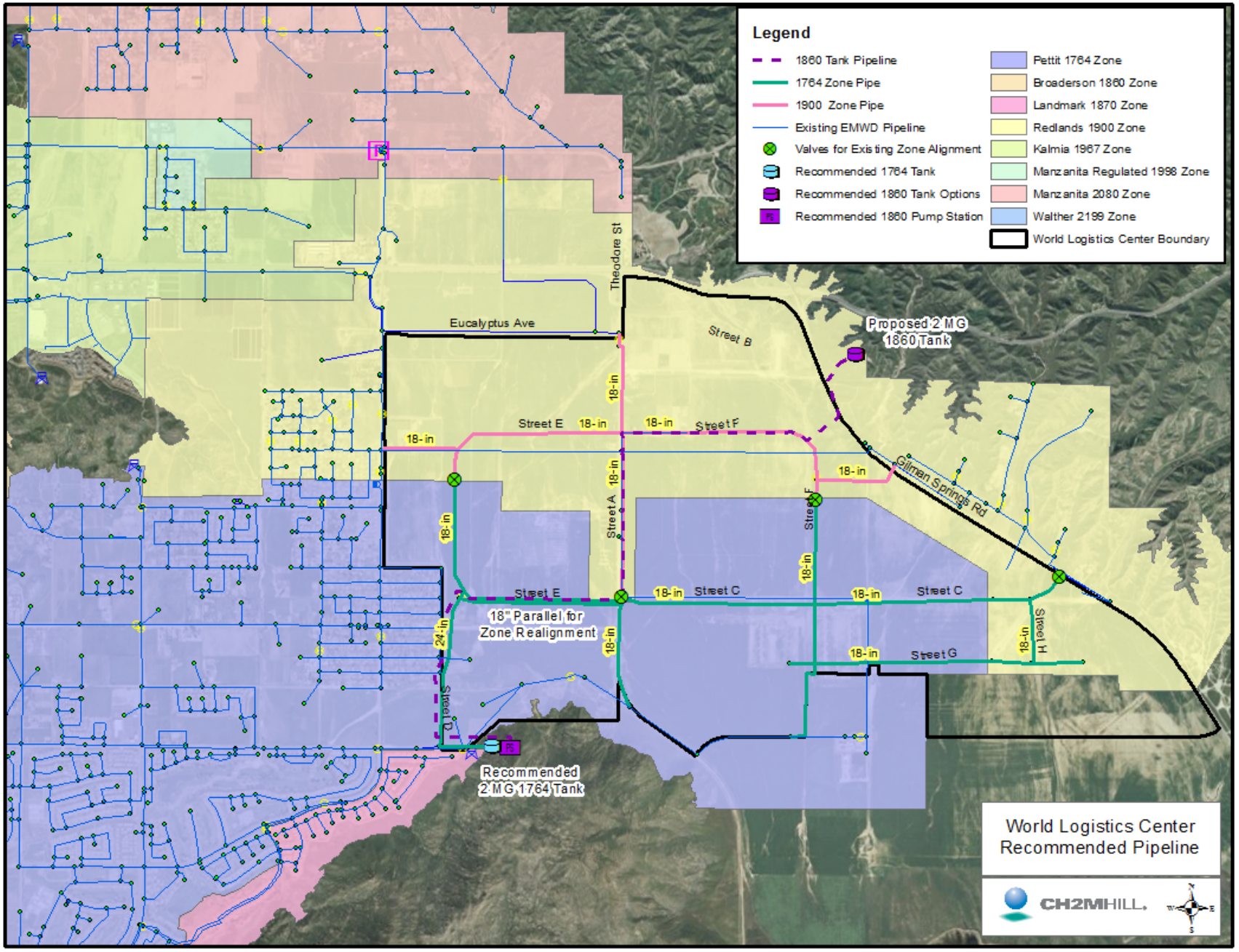
Pressure Zone (Existing)	Average Day Demand (gpm)	Maximum Day Demand (gpm)
1764	372	744
1900	778	1,555
Totals	**1,150**	**2,299**

Realigned

Pressure Zone (Realigned Zones after Grading)	ADD (gpm)	MDD (gpm)
1764 (60%)	633	1,264
1860 (40%)	460	920
1967 (5%)	57	115
Totals	**1,150**	**2,299**

Utilizing the proposed street layout and the existing pressure zone alignment, pipelines were added to connect the junction demand nodes. The pipeline was sized to meet EMWD criteria, during a fire flow situation of 4,000 gpm at max day demand, peak hour. Valves were inserted where needed to keep the existing Pettit (1,764) and existing Redlands (1,900) zones separated. The need to maintain the Redlands (1,900) zone within the WLC development area depends on the construction timeline of the future 1,860 tank; details are provided in the Specific Plan Phasing section of this memo. Figure 4 shows the recommended pipeline by diameter along with closed valve locations for the existing pressure zone configuration (1,764 and 1,900).

Figure 4
World Logistics Center Recommended Pipeline

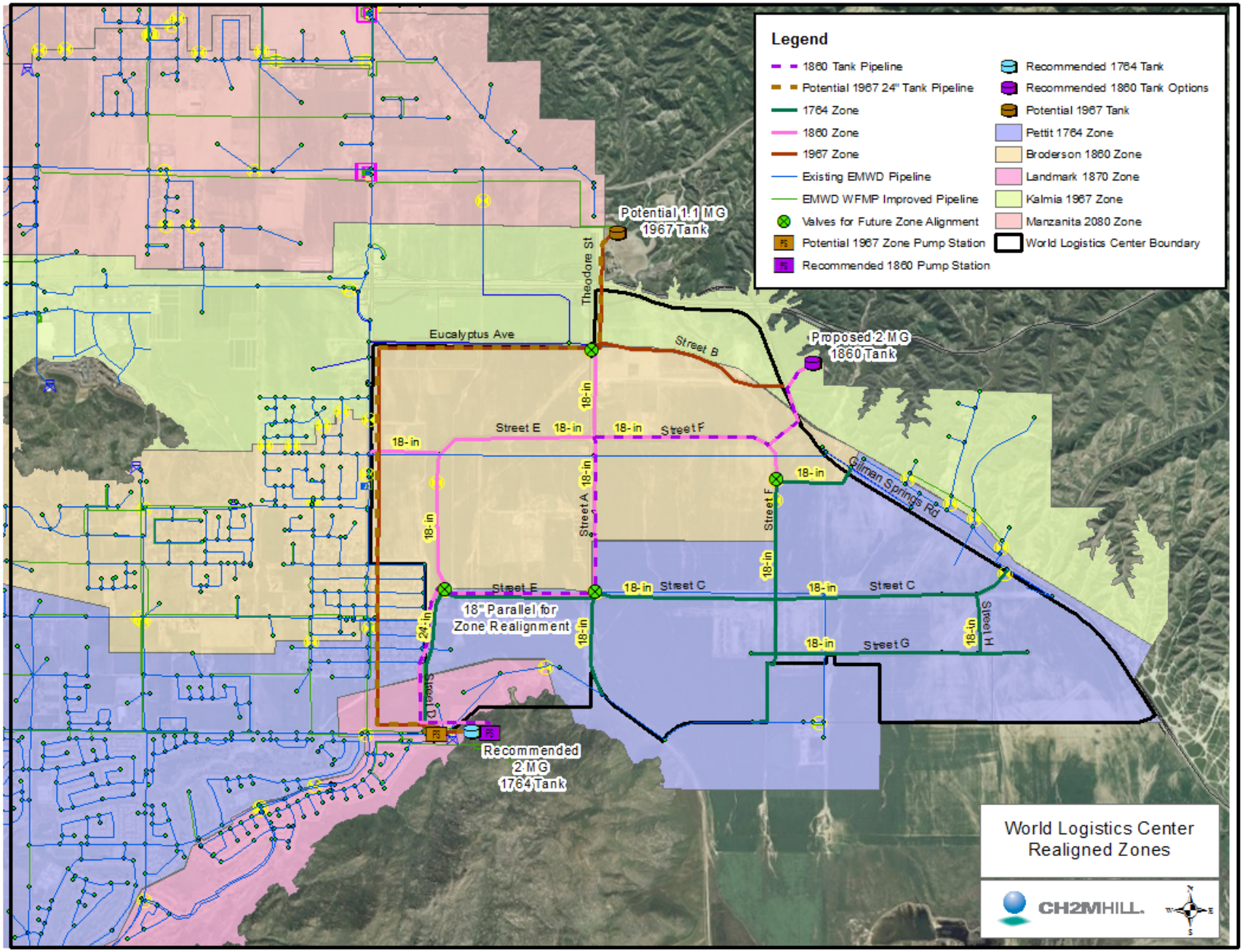


The minimum fire flow available to the World Logistics Center, with the recommended pipe alignment, is approximately 6,050 gpm with a residual system pressure of 20 psi. Within the Specific Plan area pressures in the Pettit (1,764) Zone range from a low of 49 psi to a high of 85 psi and pressures in the Redlands (1,900) Zone range from a low of 107 psi to a high of 129 psi. The high system pressure of 129 psi is not unexpected, Moreno Valley's existing system pressures in the Redlands (1,900) Zone range from a low of 31 psi to a high of 137 psi. As part of EMWD's zone realignment, the Redlands (1,900) Zone will become part of the lower Broderson (1,860) Zone and the high pressures will be alleviated.

Future Hydraulic Analysis

In the future, when EMWD realigns the Moreno Valley Zones, the pipeline recommended above will still serve the World Logistics Center Development. The valves which are currently closed, separating the existing system zones, will be opened and the valves in place for the future zones will be closed. Figure 5 shows future closed valve locations and pipeline by future zone. Also shown on Figure 5 are the WFMP recommended improvements. These improvements are in place in the future system model and were assumed to be in place for the zone realignment analysis of the World Logistics Center Development.

Figure 5
Future Pipeline by Zone

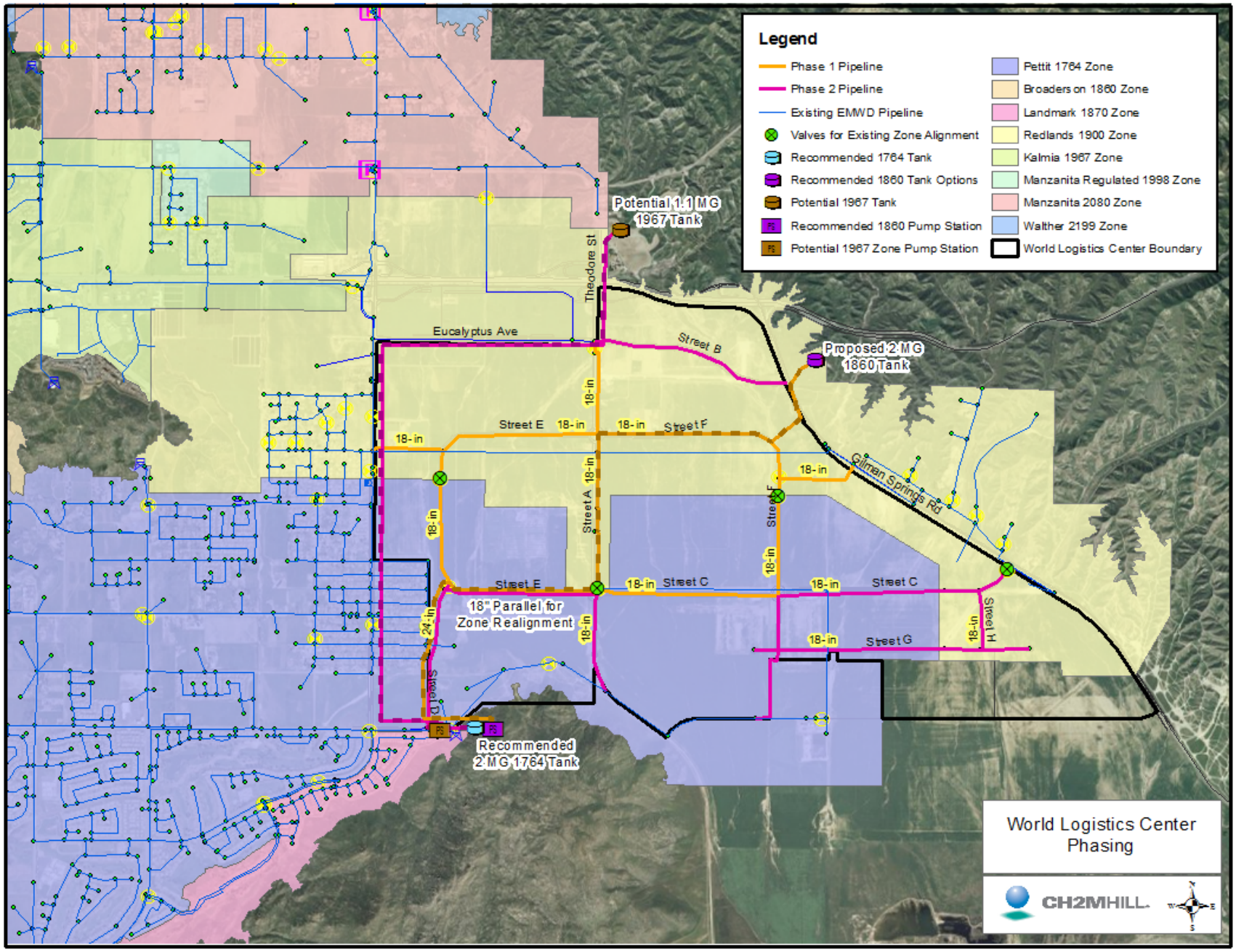


The minimum fire flow available to the World Logistics Center, with the recommended pipe alignment and MVZR improvements, is approximately 6,200 gpm with a residual system pressure of 20 psi. Within the Specific Plan area pressures in the Pettit (1,764) Zone range from a low of 55 psi to a high of 102 psi and pressures in the Broderson (1,860) Zone range from a low of 42 psi to a high of 105 psi.

Specific Plan Phasing

The World Logistics Center is being proposed in two phases. Phase 1 is proposed to be the area north of Streets E and C, and generally west of Street F (North/South alignment). Phase 2 will be the remaining area. Figure 6 shows the proposed pipeline by phase. The phase 1 area will remain in the Redlands (1,900) Zone, until the proposed 1,860 Tank on the Northeast side of the system is built. At that time, the portion of the World Logistics Center in the Redlands (1,900) Zone would be converted to the Broderson (1,860) Zone. If the proposed 1,860 tank is constructed before any WLC development, there will be no need for the two valves associated with the 1,900 zone separation and the system can be constructed with the future zone separation shown in Figure 5.

Figure 6
World Logistics Center Recommended Phasing



Throughout construction, service to the customers on Gilman Springs Road must be maintained. Service must be provided from the existing Redlands (1,900) zone or existing Kalmia (1967) zone to maintain acceptable pressure to the area. There are a couple of options to consider depending on when the 1860 tank is constructed and what zone alignment is implemented for the northern portion of the WLC development (1860 zone or 1900 zone). The options are as follows:

Option 1 – If the 1860 zone tank is constructed early in the development of the project and the 1764/1860 zone configuration is implemented; the 12" connection pipe along Street B to Gilman Spring Road should be constructed. This pipeline is shown in Figure 6 as future Phase 2 (1967 Zone) pipeline. This pipeline would provide the Gilman Springs area with service from the Redlands (1,900) Zone. At the time of realignment, the pipeline coverts to the Kalmia (1,967) Zone.

Option 2 – If the 1860 zone tank is constructed later and the 1764/1900 zone configuration is initially implemented, the existing pipeline on Dracaea Ave could be kept in service during construction of the World Logistics Center. When the recommended World Logistics Center pipeline is constructed and functioning, service to the Gilman Springs area could be transferred to the new pipe and the old pipe could be abandoned. If construction does not permit the existing pipeline to Gilman Springs to remain active, an alternative option would be to install a 12" connection pipe along Street B to Gilman Spring Road.

Storage Analysis

The storage analysis was completed using a spreadsheet model based on EMWD's storage criteria, presented above. The total storage requirements for the World Logistics Center were determined based on a demand of 670 gpd per acre as discussed previously. Because the World Logistics Center spans over three zones when the zones are realigned (1764, 1860, and 1967) storage analysis was performed for each zone. For each zone analysis, storage was calculated as follows:

- Operational storage (equalization) = 25% of MDD
- Fire flow storage = 0.96 MG (4,000 gpm for 4 hours)
- Emergency storage = Time of Use (25% of MDD)[a] + Emergency (25% of MDD)

[a] Per EMWD, Time of Use is not included in the Pettit (1764) zone

From this analysis the storage requirements for the World Logistics Center will be about 2 MG in the Pettit (1764) and Broderson (1860) Zones. Kalmia (1967) Zone has a storage requirement of 1.1 MG, which is mainly for fire flow purposes. The results from the storage analysis for each zone are presented in Table 10.

TABLE 10
Storage Analysis by Zone

Description	Unit	Zone		
		1764	1860	1967
ADD	gpm	633	460	57
MDD	gpm	1264	920	115
Total Storage Required	MG	1.9	2.0	1.1

gpm = gallons per minute
MG = million gallons

Storage Tank Locations

The recommended Pettit (1764) Zone tank is currently being proposed for construction near the intersection of Cactus Ave and Sinclair St. Service to the tank is provided by the existing 24-inch pipeline in Cactus Ave.

The proposed Broderson (1,860) Zone storage tank is located on the east side of the World Logistics Center development. A pump station near the location of the future 1764 Tank is needed to fill the proposed tank. A 24-inch pipeline along Street D is recommended to connect the pump station to the World Logistics Center pipe network. When the tank is put in to service the pipeline in the Redlands (1,900) Zone would need to be converted to the Broderson (1,860) Zone.

Storage for the Kalmia (1,967) Zone would be planned after the EMWD zone realignment takes place. This potential tank would be 1.1 MG. Water would be pumped from the Pettit (1764) Zone to fill this tank. The existing 18-inch pipeline along Eucalyptus may be used as a portion of the transmission main for the potential 1.1 MG 1967 tank.

Table 11 summarizes the recommended tanks.

Table 11
Storage Tank Summary

Tank Description	Tank Size	Pump Station Required	Estimated Pipeline (ft)	Location
1764 Zone	1.9 MG	No	1,050	Intersection of Cactus Ave and Sinclair St
1860 Zone	2.0 MG	Yes	7,900[(1)]	East of WLC Development, North of Gilman Springs Rd
1967 Zone	1.1 MG	Yes	12,600[(2)]	Intersection of Hemlock Ave and Theodore St, North of State Hwy 60

(1) Estimated pipeline assumes the recommended pipelines along Street E, Street A, and Street F are used as part of the transmission main.

(2) Estimated pipeline assumes the existing 18-inch pipeline on Eucalyptus is utilized as part of the transmission main.

Pumping Analysis

Two pump stations will be required for the World Logistics Center Development. One for the 1860 Zone and one for the 1967 Zone to both fill the proposed tanks and supply demands. The results below are based on initial analysis and may need to be updated if the pump station location or tank size is changed.

For this analysis, the 1860 Zone Pump Station was placed near the planned 1764 Tank at the intersection of Cactus Ave and Sinclair St. The flow requirement is based on the criteria outlined in Table 5 for a "time of use" pump station. The recommended 2.0 MG 1860 Zone Tank will require one active pump with a flow of 1,224 gpm with a head gain of 105 feet. An additional pump with the same flow and head is recommended to be placed at the station as a backup pump.

The 1.1 MG potential 1967 Zone Tank will require one active pump with a flow of 230 gpm and a head gain of 210 feet. Due to the small size of this zone, using peak hour (2 x MDD) as the flow criteria from Table 5 was more appropriate for this station to fill the tank in a timely manner. An additional pump with the same flow and head is recommended to be placed at the station as a backup pump. For purposes of this study, the 1967 Zone Pump Station was located near the planned 1764 Tank at the intersection of Cactus Ave and Sinclair St. This station would lift water across two pressures zones (a double lift) from the 1764 Zone to the 1967 Zone.

The planned 1764 Tank receives flow from the existing Cactus Pump Station, therefore no additional pump station was recommended for this tank.

Analysis Summary

Table 12 details the approximate length of the recommended pipeline along with the diameter and location within the system. The existing and future zone boundaries align with the planned phasing of the World Logistics Center, where the existing 1900 pressure zone serves the first phase of development and the existing 1764 zone serves the second phase.

Table 12
Proposed Specific Plan Pipeline

Length (ft)	Diameter (inch)	World Logistics Center Phase	Existing Pressure Zone/ Future Pressure Zone	Location
3705	18	1	1900/1860	Street A between the intersections of Street E
1720	18	1	1900/1860	Connection between Redlands and Street E
4470	18	1	1900/1860	Street E from Redlands Connection to Street A
2510	18	1	1900/1860	Street E from Street D intersection to Redlands Connection
3610	24	1	1900/1860	Street E from intersection of Street D and Street E to Street A (parallel)
2000	18	1	1900/1860	Street A north of intersection of Street E and Street F
5040	18	1	1900/1860	Street F north of Gilman Springs Connection

Length (ft)	Diameter (inch)	World Logistics Center Phase	Existing Pressure Zone/ Future Pressure Zone	Location
1960	18	1	1900/1860	Gilman Springs connection, from Street F to Gilman Springs
1050	24	1	None/1764	West along Cactus Ave (1764 Tank Pipeline)
7900[(1)]	24	1	None/1860	West along Cactus Ave, North along Street D to intersection with Street E. Then from the corner of Street F to the proposed 1860 Tank. (1860 Tank Pipeline)
3610	18	2	1764/1764	Street E from intersection of Street D and Street E to Street A (parallel)
2500	18	2	1764/1764	Street A south of intersection of Street E and Street C
4260	18	2	1764/1764	Street C from Street A to Street F
2760	18	2	1764/1764	Street F south of Gilman Springs Connection
3,340	24	2	1764/1764	Street D south of Street E
5620	18	2	1764/1764	Street C form Street F to Gilman Springs
5950	18	2	1764/1764	Street G from Street F to Street H
1290	18	2	1764/1764	Street F from Street C to Street G
2120	18	2	1764/1764	Street F south of Street G
1440	18	2	1764/1764	Street H
4780	12	2	None/1967	Street B future connection to Gilman Springs
9850[(1)]	24	2	None/1967	West along Cactus Ave, North on Redlands Blvd to Eucalyptus then North on Theodore St (1967 Tank Pipeline)

(1) Estimated pipeline assumes the recommended pipelines along Street E, Street A, and Street F are used as part of the transmission main.

(2) Estimated pipeline assumes the existing 18-inch pipeline on Eucalyptus is utilized as part of the transmission main.

World Logistics Center Recycled Water Analysis

PREPARED FOR: Highland Fairview

PREPARED BY: CH2M HILL

DATE: November 9, 2012

Introduction

The proposed World Logistics Center Specific Plan (WLC) is a master plan for the development of logistics warehouse distribution facilities on approximately 2,710 acres of land in the Rancho Belago area of eastern Moreno Valley. The Specific Plan proposes the development of approximately 41.4 million square feet of high-cube logistics facilities on 2,606 acres, 200,000 square feet of general warehousing facilities on 29 acres, an in-project fueling station, and 75 acres of permanent open space.

The Specific Plan area is situated southerly of State Route 60, generally between Redlands Boulevard and Gilman Springs Road (the easterly City limit). The Specific Plan extends to, but does not include, the San Jacinto Wildlife Area (SJWA). The General Plan Amendment and Zone Change which accompany the Specific Plan do include the SJWA property in order to designate the SJWA land for open space use.

The World Logistics Center is located within the recycled water service area of Eastern Municipal Water District (EMWD). The purpose of this technical memorandum is to identify recycled water system requirements for the WLC. Recycled water will be used for site irrigation.

Analysis Criteria

Assumptions

The recycled water distribution system for the WLC was performed using the available InfoWater model provided by the Eastern Municipal Water District (EMWD). Recycled water distribution piping, a booster pump station, and a recycled water storage tank were included for the WLC and the WLC with Highland Fairview Corporate Park scenarios with the 2012 distribution system.

The standard EMWD demand used for industrial land uses is 2,000 gpd/gross acre (2.2 acre-ft/year (afy) per gross acre). The developable project area (excluding open space) is 2,635 acres which equates to a water demand of 5,900 afy. The WLC has a land use generally consisting of light logistics which has a lower water use than typical industrial uses. In addition, the project is programmed to utilize native and drought tolerant plants along with sustainable methods to direct rainfall runoff to landscaped areas, potentially reducing the total irrigation demand. Recognizing the potential reduction in water demand, EMWD issued a Water Supply Assessment (WSA) with an estimated total water demand of 1,991 afy. The estimated potable water demand for building use is 470 afy. The balance remaining for potential irrigation use is 1,521 afy. For purposes of sizing facilities this analysis assumes the full potential irrigation demand of 1,521 afy or 1,358,000 gallons per day (gpd) for the average day demand (ADD). Irrigation demands are distributed throughout the WLC site based on the piping layout, spread evenly over the WLC project site, which includes some of the open space that will not be irrigated.

Peaking factors were applied to ADD to obtain maximum day demands (MDD) and peak hour demands (PHD). For irrigation demands, the peaking factor to MDD from ADD is 2.5 and to PHD from MDD is 3 based on the Final Environmental Report for the Highland Fairview Corporate Park (Michael Brandman Assoc., 2008) irrigation peaking factor.

The Highland Fairview Corporate Park (HFCP), which includes the existing Skechers building and adjacent parcels, has an associated irrigation demand as shown in Exhibit 1 from the 2008 EIR. There is an existing pipe that provides potable water to the existing and future buildings that is assumed will be converted to recycled water service in the future.

EXHIBIT 1
Highland Fairview Corporate Park Irrigation Demands
WLC Recycled Water Analysis

Site	ADD (gpd)[a]	MDD (gpd)[a]	PHD (gpd)[a]
Skechers	41,811	104,527	313581
Parcel 2	11,288	28,220	84660
Parcel 3	6,682	16,704	50112
Parcel 4	3,645	9,111	27333
Total	**63,000**	**159,000**	**476,000**

[a] Reference: Final Environmental Impact Report for Highland Fairview Corporate Park, Appendix K, Attachment D (Michael Brandman Assoc., 2008).

The total demands for WLC and HFCP are tabulated in Exhibit 2. The storage tank for the WLC site is sized for 75 percent of MDD storage. The placement of the recycled water storage tank is adjacent to the potential new drinking water tank on the east side of Gilman Springs Road and provides sufficient pressure within the WLC and HFCP sites to require no additional operational storage.

EXHIBIT 2
Total Demands for WLC and Highland Fairview Corporate Park
WLC Recycled Water Analysis

Site	ADD (gpd)	MDD (gpd)	PHD (gpd)
WLC irrigation	1,358,000	3,395,000	10,185,000
HFCP irrigation	63,000	159,000	476,000
Total	**1,421,000**	**3,554,000**	**10,661,000**

Design Criteria

The criteria used to evaluate system performance were adopted from the 2010 EMWD Recycled Water Facilities Master Plan. The criteria are summarized below.

- Operating pressure range at MDD = 40 to 110 psi
- Maximum MDD flow velocity of 5 feet per second (fps)

- Maximum PHD flow velocity of 10 fps
- Maximum headloss:

Flow Condition [a]		Headloss
< 20 cfs	< 9000 gpm	3.0 feet/1000 feet
20 – 50 cfs	9000 – 22,500 gpm	2.0 feet/1000 feet
> 50 cfs	> 22,500 gpm	1.0 feet/1000 feet

[a] cubic feet per second (cfs), gallons per minute (gpm)

- The generation of recycled water is assumed to be able to match MDD for the system with the largest Regional Water Reclamation Facility out of service.
- Service level storage capacity is based on the service level storage criterion from the 2010 Master Plan of 75 percent of MDD for 100 percent of landscape demand:

Percent of Non-Landscape Demand	Percent of Landscape Demand	Recommended Service-Level Percent of Storage (Percent of MDD)
100	0	20
75	25	30
50	50	50
25	75	60
0	**100**	**75**

[a] cubic feet per second (cfs), gallons per minute (gpm)

Existing System

The existing distribution system consists of:

- Four Regional Water Reclamation Facilities (RWRFs) and associated Effluent Pump Stations
- Seventeen RWRF Onsite Distribution Storage Ponds
- Four RWRF Onsite Storage Pond Recycled Water Pump Stations (RWPSs)
- Six Offsite Distribution Storage Ponds
- Five Offsite Storage Pond RWPSs
- Six Recycled Water Booster Stations (RWBSs)
- Two Service Level Storage Tanks and One Service Level Reservoir
- Reach 4 Energy Dissipator
- Eight Pressure Zones
- Transmission and Distribution Piping

The Landmark Reservoir currently serves the 1710 Pressure Zone of the existing distribution system and is located nearest to the WLC site. A pump station will be required to provide recycled water from the Landmark Reservoir to the WLC site and the new recycled water storage tank.

The 2010 EMWD Recycled Water Facilities Master Plan determined the existing recycled water and supply demands and projected for future system requirements. The 2010 recycled water supply exceeded the 2010 ADD, and additional supply will be required to meet projected future demands as shown in Exhibit 3. For the 2012 condition, the supply slightly exceeds the demand based on the extrapolated demand information in the InfoWater model supplied by EMWD and the additional recycled water demands for the WLC and HFCP sites for ADD.

EXHIBIT 3
Existing and Projected Recycled Water Supply and Demand per 2010 EMWD Recycled Water Facilities Mater Plan
WLC Recycled Water Analysis

Year	Supply		Demand	
	(afy)	(MGD)[a]	(afy)	(MGD)[a]
Existing (2010)	47,700	42.6	39,600	35.3
2015	57,100	50.9	57,100	50.9
2020	65,000	58.0	65,000	58.0
2025	73,900	65.9	73,900	65.9
2030	82,900	74.0	82,900	74.0

[a] MGD = million gallons per day

The existing recycled water distribution model was obtained from EMWD which included information for the existing facilities described in the 2010 EMWD Recycled Water Facilities Master Plan; the InfoWater model is assumed to accurately represent the existing system. To determine the impacts WLC and HFCP demands to the existing system, the Landmark Reservoir and associated piping for 1710 Pressure Zone, which supplies recycled water to the WLC site via the WLC booster pump station, are included in the WLC site analysis. Potential impacts to the existing system are discussed on page 7. This analysis assumes that the existing recycled water system has sufficient pump capacity at the various pump stations to provide the additional volume required to the Landmark Reservoir under MDD conditions.

An existing 12-inch recycled water pipe was installed in 2010 along Eucalyptus Ave. between Redlands Blvd. and Theodore St. It is currently connected to the drinking water system. It is assumed that the 12-inch pipe will be connected to the recycled water system from the WLC site and disconnected from the drinking water distribution system in the future to provide irrigation water to the HFCP.

Analysis

Two scenarios were developed from the EMWD existing model for the WLC project area:

- Full WLC project area and demands from the EMWD existing system
- Full WLC and HFCP project area and demands from the EMWD existing system

For each scenario, the average day, maximum day and peak hour demands developed above were distributed to nodes in the recycled water model. WLC irrigation demands are distributed to all nodes within the WLC site, except for the discharge node to the WLC booster pump station. The scenarios and results are described below.

1. **Full WLC project area and demands from the EMWD existing system**. Pipe sizing for this scenario assumes that the entire site will be constructed without adjustments to demands from phased development. Pipe size was determined based on the pipe velocity and headloss criteria under PHD flows. On-site pipe sizes range from 8 to 18 inches as shown in Exhibit 6. Because there are some long reaches of pipe dead ending on streets with cul-de-sacs, there potentially could be some stagnation issues with the piping in the 1730 Pressure Zone. This will be evaluated further during final design. Potential solutions include routine pipe maintenance to clean out debris in the pipe. A pump station will be located at the boundary of the 1710 Pressure Zone to pump to the WLC site. The WLC booster pump station is rated at approximately 2,500 gpm and 230 feet of total dynamic head (TDH).

   An 18-inch pipeline from the WLC booster pump station conveys water approximately 20,000 lineal feet (LF) through the 1860 Pressure Zone and to the 2.7 million gallon recycled water storage tank, which will be located east of Gilman Springs Road and adjacent to the new potable water tank for the WLC site. Recycled water is supplied from the 1710 Pressure Zone; flow return to the 1710 Pressure Zone from HFCP will be limited by an emergency pressure reducing valve to eliminate unnecessary pumping of recycled water to HFCP. There will also be a backup supply from the drinking water system into the recycled water storage tank to provide an added level of redundancy to the system. The backup supply will include an air gap to prevent contamination of the drinking water system.

   Due to the head required to fill the storage tank at Zone 1850, pressures in the 18-inch transmission pipeline exceed the maximum operating pressure criterion of 110 psi in Zone 1790. The transmission pipeline has a maximum pressure of approximately 131 psi through the 1790 Pressure Zone of the WLC during MDD, which will require pressure reducing valves to service connections. In the 1860 Pressure Zone, pressure ranges between 69 and 90 psi during MDD fall within the acceptable pressure criteria. Operating pressures are influenced by piping headlosses and static pressure between the tank and pump. To decrease operating pressures in the 1790 Pressure Zone, the transmission pipe size would need to be increased; however, this is not possible since the minimum static pressure due to elevation difference between the pump and the recycled water storage tank is 110 psi in the 1790 Pressure Zone.

   Grade and building elevation across the WLC and HFCP sites range from 1540 to 1770. To accommodate the operating pressures associated with the WLC and HFCP sites, three pressure zones are identified to minimize excursions from the design criterion: 1860, 1790, and 1730. Pressure reducing valves are located to reduce pressure from the 1860 Pressure Zone to the 1790 Pressure Zone and from the 1790 Pressure Zone to the 1730 Pressure Zone. Pressure reducing valves to the 1790 Pressure Zone are set to 50 and 65 psi. Pressure reducing valves to the 1730 Pressure Zone are set at 60 and 45 psi to allow flow through the looped sections of piping. Exhibit 4 shows the pressure range for each

pressure zone of the WLC site; Exhibit 7 shows the map of the WLC site with the pressures displayed for MDD.

EXHIBIT 4
Pressure Range Results of WLC Scenarios
WLC Recycled Water Analysis

Pressure Zone	Pressure Range		
	ADD	MDD	PHD
1730	53 – 81	50 – 80	43 – 76
1790 (not including transmission pipe)	48 – 96	48 – 94	48 – 86
1790 (transmission pipe)	98 – 134	95 – 131	83 – 120
1860	70 – 93	69 – 90	67 – 78

The WLC booster pump station is sized for 2,500 gpm at 230 feet of total dynamic discharge head (TDH). The recycled water storage tank is sized at 2.7 million gallons, with an operational depth of 40 feet. The WLC booster pump station is slightly oversized for the WLC MDD condition of 2360 gpm.

The estimated pipe lengths required to supply the WLC site from the 1710 Pressure Zone are:

- 8-inch PVC: 14,000 LF
- 10-inch PVC: 14,000 LF
- 12-inch PVC: 5,000 LF
- 14-inch PVC: 11,000 LF
- 18-inch PVC: 20,000 LF

EMWD's standard water pipe sizes are 8, 12, and 18 inches. Therefore, the 10- and 14-inch pipes will need to be upsized to 12-inch and 18-inch, respectively. The WLC site may be developed in two phases. Phase 1 development is approximately 55 percent of the entire WLC site and is mainly developing the west side of the site. The 18-inch transmission pipe and the 2.7MG Tank will need to be built as part of Phase 1 and the Phase 1 demands will also require the booster pumps for 1400 gpm at 230 feet TDH to be constructed.

2. **Full WLC and HFCP project area and demands from the EMWD existing system.** The impacts of the adding the HFCP demands to the WLC distribution system do not significantly impact pressures and pipe velocities in the WLC system since the allocation for HFCP is approximately 3, 4, and 4 percent of the total WLC system demand for ADD, MDD, and PHD, respectively, and the branch to the HFCP site is located off of the 18-inch transmission pipe between the WLC booster pump station and the recycled water storage tank as shown in Exhibit 8, with the connection to the existing 12-inch recycled

water pipe. The estimated pipe length required to connect the WLC distribution system to the HFCP site is approximately 100 LF of 8-inch PVC piping. Resultant pressures in the system for the WLC and HFCP sites during MDD are displayed in Exhibit 9.

EXHIBIT 5
Pressure Range Results of WLC and HFCP Scenarios
WLC Recycled Water Analysis

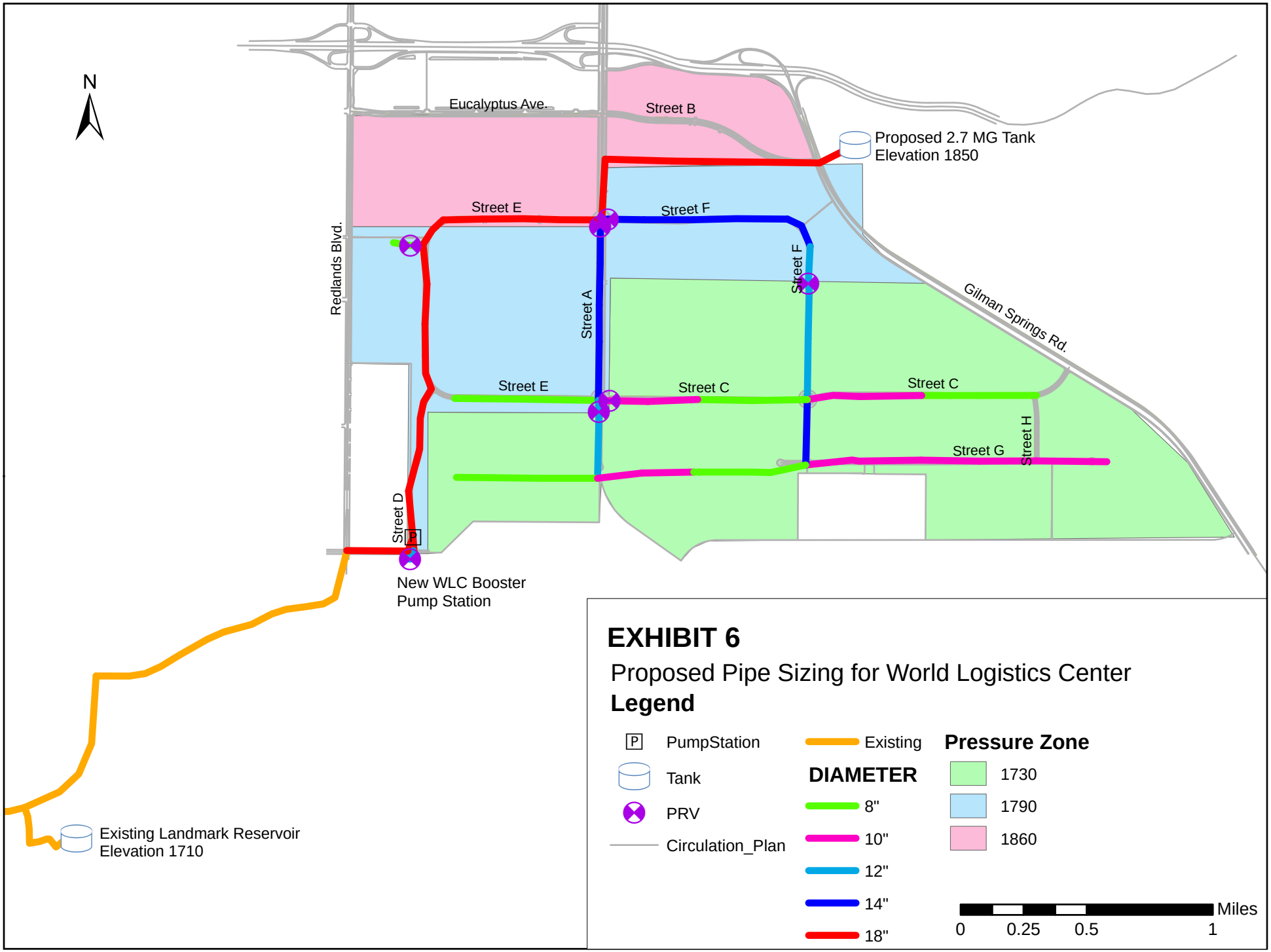
Pressure Zone	Pressure Range		
	ADD	MDD	PHD
1730	46 – 81	45 – 80	43 – 76
1790 (not including transmission pipe)	66 – 96	47 – 94	48 – 82
1790 (transmission pipe)	98 – 133	95 – 131	82 – 118
1860	70 – 93	69 – 90	67 – 77
HFCP site	64 – 65	62 – 63	50 – 52

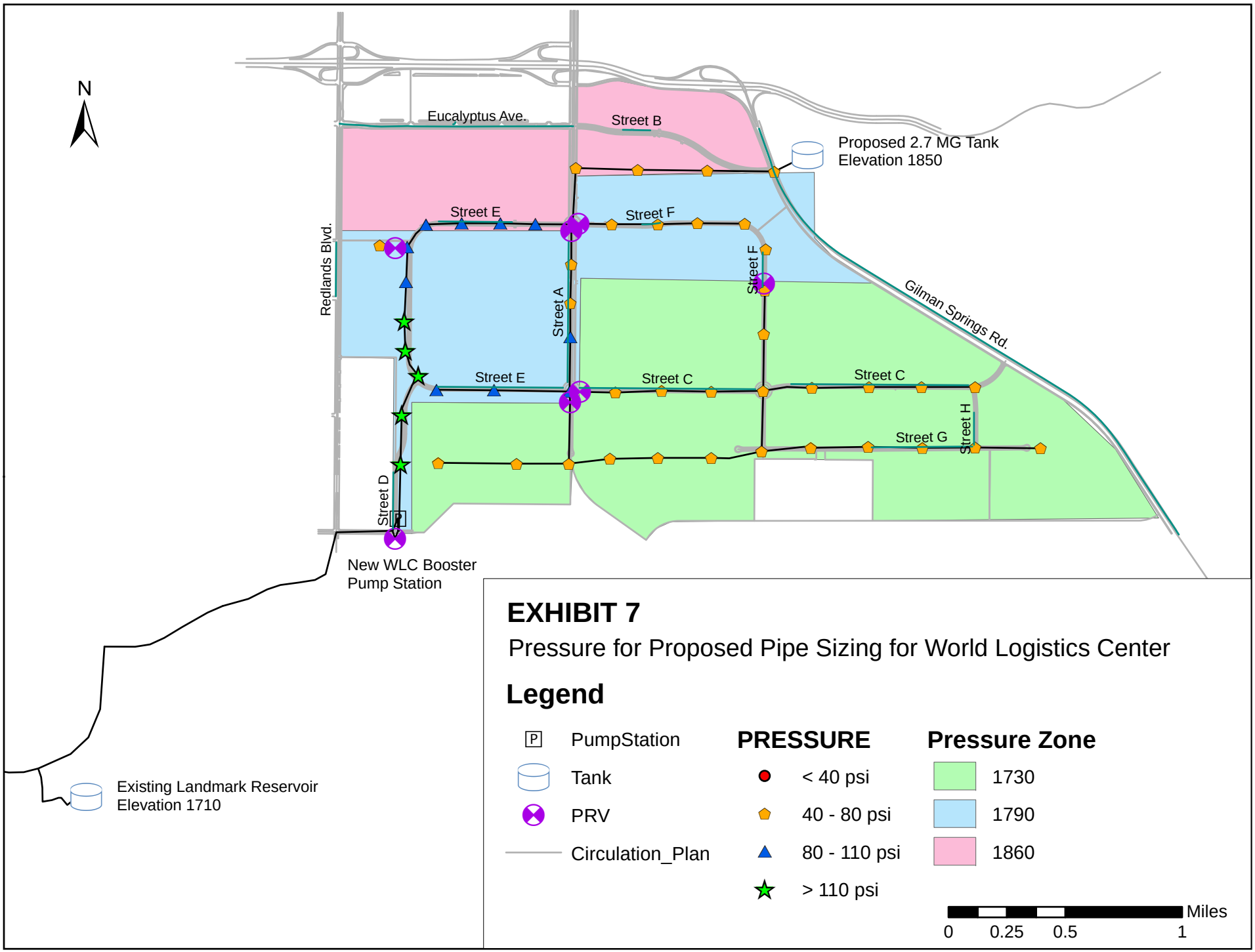
The WLC booster pump station and recycled water storage tank are sized to provide sufficient capacity at the full WLC and HFCP demands due to the minimal increase in pump station capacity and tank size. The HFCP demands increase the required pump station capacity by only 110 gpm and the required tank storage capacity by 200,000 gallons.

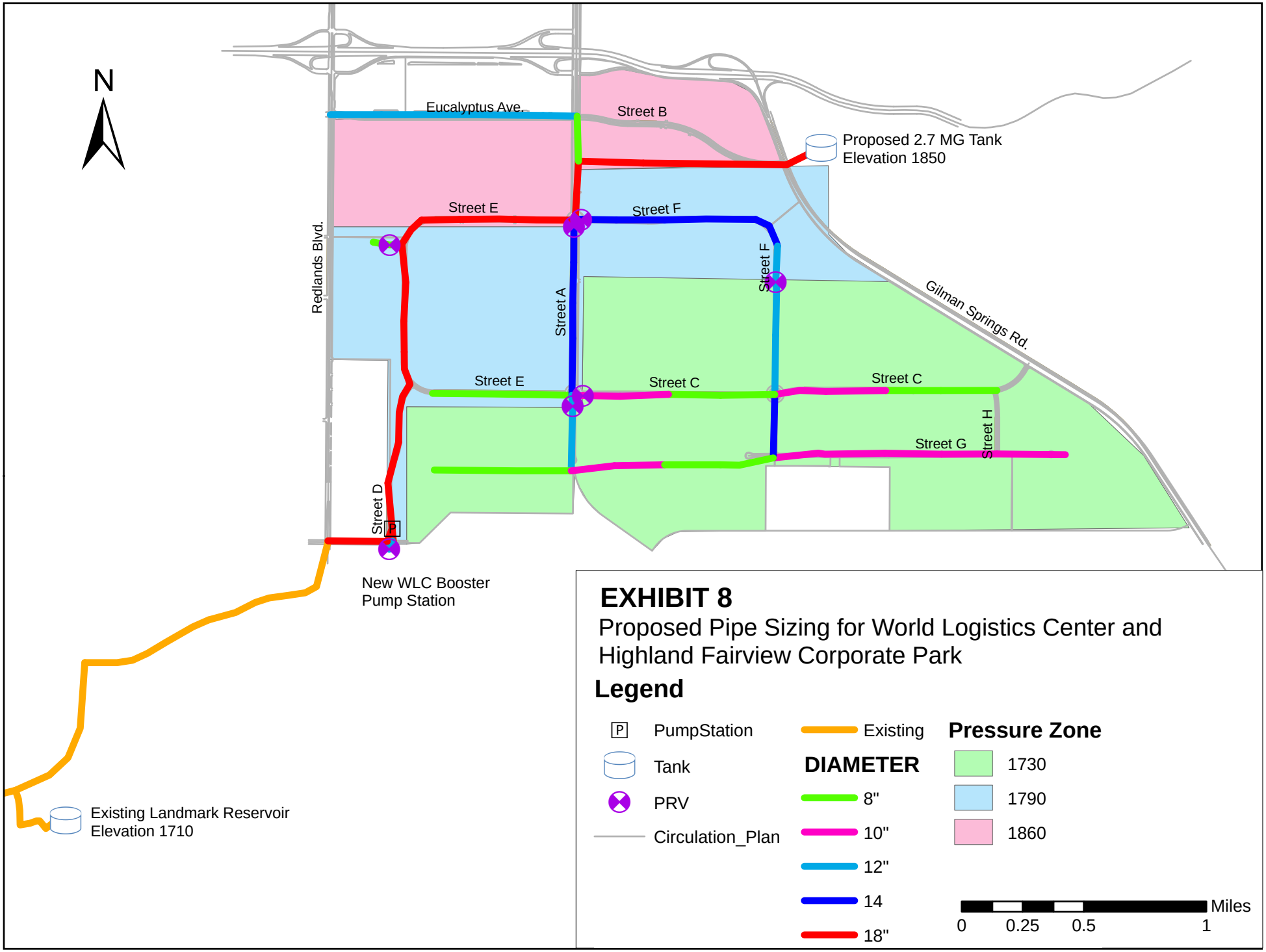
Potential Existing System Impacts

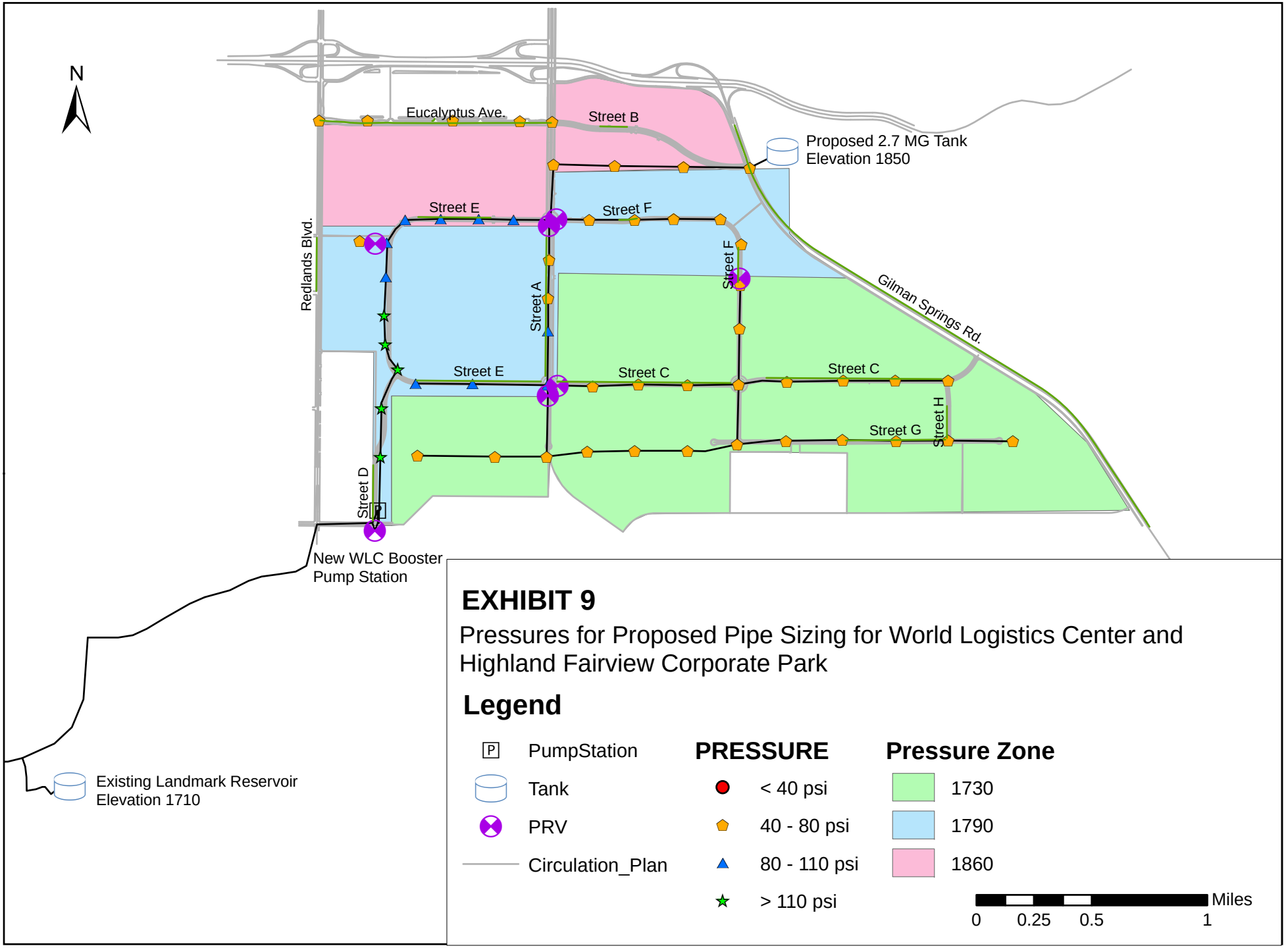
Based on the projected demands and the existing supply capacity of the RWRFs, the existing system is capable of producing sufficient recycled water to the existing distribution system and meeting the demands of the WLC and HFCP sites for the near-term. The supply capacity may require augmentation depending on increasing demands through the existing system as well as phasing of the WLC and HFCP development.

The existing system will need to provide an additional 3100 gpm through the system and up to the Landmark Reservoir. The existing system will need to be analyzed at a later date to determine if 1) the existing capacity of the pump stations will be able to provide sufficient flow to the Landmark Reservoir to maintain existing operating levels to prevent lowering operating pressures in the 1710 Pressure Zone below the 40 psi criteria and 2) if operations for filling and draining of the Landmark Reservoir can be modified to provide sufficient pumping capacity to maintain existing reservoir operating levels.


N
Eucalyptus Ave.
Street B
Proposed 2.7 MG Tank
Elevation 1850
Street E
Street F
Redlands Blvd.
Street A
Street F
Gilman Springs Rd.
Street E
Street C
Street C
Street H
Street G
Street D
P
New WLC Booster
Pump Station
Existing Landmark Reservoir
Elevation 1710
EXHIBIT 6
Proposed Pipe Sizing for World Logistics Center
Legend
PumpStation
Tank
PRV
Circulation_Plan
Existing
DIAMETER
8"
10"
12"
14"
18"
Pressure Zone
1730
1790
1860
Miles
0
0.25
0.5
1


N
Eucalyptus Ave.
Street B
Proposed 2.7 MG Tank
Elevation 1850
Street E
Street F
Redlands Blvd.
Street A
Street F
Gilman Springs Rd.
Street E
Street C
Street C
Street H
Street G
Street D
P
New WLC Booster
Pump Station
Existing Landmark Reservoir
Elevation 1710
EXHIBIT 7
Pressure for Proposed Pipe Sizing for World Logistics Center
Legend
PumpStation
Tank
PRV
Circulation_Plan
PRESSURE
< 40 psi
40 - 80 psi
80 - 110 psi
> 110 psi
Pressure Zone
1730
1790
1860
Miles
0
0.25
0.5
1


N
Eucalyptus Ave.
Street B
Proposed 2.7 MG Tank
Elevation 1850
Street E
Street F
Redlands Blvd.
Street A
Street F
Gilman Springs Rd.
Street E
Street C
Street C
Street H
Street G
Street D
P
New WLC Booster
Pump Station
Existing Landmark Reservoir
Elevation 1710
EXHIBIT 8
Proposed Pipe Sizing for World Logistics Center and
Highland Fairview Corporate Park
Legend
PumpStation
Tank
PRV
Circulation_Plan
Existing
DIAMETER
8"
10"
12"
14
18"
Pressure Zone
1730
1790
1860
Miles
0
0.25
0.5
1


N
Eucalyptus Ave.
Street B
Proposed 2.7 MG Tank
Elevation 1850
Street E
Street F
Redlands Blvd.
Street A
Street F
Gilman Springs Rd.
Street E
Street C
Street C
Street H
Street G
Street D
P
New WLC Booster
Pump Station
Existing Landmark Reservoir
Elevation 1710
EXHIBIT 9
Pressures for Proposed Pipe Sizing for World Logistics Center and Highland Fairview Corporate Park
Legend
PumpStation
Tank
PRV
Circulation_Plan
PRESSURE
< 40 psi
40 - 80 psi
80 - 110 psi
> 110 psi
Pressure Zone
1730
1790
1860
Miles
0
0.25
0.5
1