RESOLUTION 2020-15

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE BEAUMONT-CHERRY VALLEY WATER DISTRICT TO APPROVE THE WATER SUPPLY ASSESSMENT (WSA) FOR THE LEGACY HIGHLANDS DEVELOPMENT PROJECT

WHEREAS, the Legacy Highlands Development Project (Tentative Tract Map 31570) is a proposed mixed use development consisting of commercial-industrial development, single family residential, and a gated active adult residential community, occupying approximately 1,600 acres of land, having more than 2,800 dwelling units, and therefore qualifies as a "Project" under the Water Code, requiring the preparation of a Water Supply Assessment; and

WHEREAS, the Water Supply Assessment (WSA) has been prepared in accordance with Water Code §10910 (c)(1) and SB 610; and

WHEREAS, the Beaumont-Cherry Valley Water District Board of Directors has the authority and responsibility for approving the WSA; and

WHEREAS, Beaumont-Cherry Valley Water District staff prepared the WSA, which includes any and all WSA addendums; and

WHEREAS, the WSA relied on existing information in the Urban Water Management Plan and more recent District water planning analysis and sets forth the existing and planned water supplies necessary to provide the existing and planned developments within the District's Sphere of Influence; and

NOW THEREFORE, BE IT RESOLVED that the Board of Directors of the Beaumont-Cherry Valley Water District finds and determines as follows:

1. The above recitals are true and correct and reflect the independent judgment of the Board
2. The WSA was prepared in accordance with the California Water Code
3. The conclusions set forth in the WSA are supported by substantial evidence and reasonable analysis, and are consistent with District policies, plans, documents and operations; and
4. The WSA accurately sets forth the existing and planned water supplies necessary to provide the existing and planned developments within the District's Sphere of Influence.

NOW THEREFORE, BE IT FURTHER RESOLVED that, in the exercise of independent judgment, and taking onto consideration the WSA and engaging in due deliberations, the Board does hereby adopt the TTM 31570 – The Legacy Highlands Development Project Water Supply Assessment.

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Signatures on next page

ADOPTED this 10th day of June, 2020, by the following vote:

AYES: Covington, Hoffman, Ramirez, Slawson, Williams
NOES:
ABSTAIN:
ABSENT:

ATTEST:

Director John Covington, President of the Board of Directors of the Beaumont-Cherry Valley Water District

Director Lona Williams, Secretary to the Board of Directors of the Beaumont-Cherry Valley Water District

Attachment: Water Supply Assessment (Revised June 2020) for TTM 31570 – The Legacy Highlands

BEAUMONT-CHERRY VALLEY WATER DISTRICT
560 MAGNOLIA AVENUE
BEAUMONT, CALIFORNIA 92223
www.bcvwd.org

WATER SUPPLY ASSESSMENT
(REVISED)

for

TTM 31570 - THE LEGACY HIGHLANDS

City of Beaumont, CA

APRIL 2019, REVISED JUNE 2020

Prepared by

BEAUMONT-CHERRY VALLEY WATER DISTRICT
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1. INTRODUCTION

The Legacy Highlands development (Legacy Highlands or "Project") is proposed to be constructed in the City of Beaumont (City), CA on an approximately 1,600 gross acre site, south of Highway 60 and west of Beaumont Ave (Highway 79). The project is a mixed use development consisting of commercial-industrial development, single family residential, and a gated, active adult residential community. A total of 2,868 dwelling units are proposed, consisting of 1,107 single family residential, 1.2 million sq. ft. of commercial/industrial, and 1,761 active adult, low density residential. A 20-acre school site, several neighborhood parks, and open space are planned. The project is anticipated to be constructed in six phases:

- Phase 1 – 897 single family residential lots with 16.9 acres of "active" parks and 3.5 acres of "passive" parks.
- Phase 2 – 1.2 million sq. ft. of commercial/industrial which is anticipated to consist of warehouse space.
- Phase 3 – 424 Equivalent Dwelling Units (EDUs), active adult residences, in a gated community.
- Phase 4 – 343 EDUs, active adult residences, and 4.4 acres of "active" parks in a gated community.
- Phase 5 – 994 EDUs, active adult residences, in a gated community with 638.9 acres of natural open space
- Phase 6 – 20 acre school, 210 single family residential lots with 111.2 acres of natural open space

In the above phasing, "active" parks are assumed to be turfed and irrigated with non-potable water; "passive" parks are assumed to have low water using planting irrigated with non-potable water. The "open" space will not be irrigated. The developer anticipates constructing about 200 dwelling units per year and projects a 15-year build-out period.

Fourth St., west of Beaumont Ave., extends through the Project on the north side and connects to Potrero Blvd. Potrero Blvd. extends north to Oak Valley Parkway. The commercial/industrial portion of the Project will be between 4th St. and State Route 60 – an extension of the existing commercial-industrial area westerly along 4th St. The Project site is within the Beaumont Cherry Valley Water District (BCVWD) sphere of influence but not within BCVWD's service boundary.

The original project, proposed as Willow Springs with the name changed later to Legacy Highlands, started in 2003 with 3,000 proposed single family residential lots, 40 acres of commercial, two school sites totaling 60 acres, and 50 acres of parks and open space. The project site requested to be annexed to the City and BCVWD. **Currently, the Project has not been annexed to the City or BCVWD.** An EIR, to comply with the California Environmental Quality Act (CEQA) was completed in March 2008. A plan of service was prepared by BCVWD. The economic downturn

that began in 2007 along with EIR litigation stalled the project. The project was subsequently modified to the current plan.

2. WATER SUPPLY ASSESSMENT (WSA) LEGISLATIVE REQUIREMENTS

There were two Senate Bills, passed in 2001, to advance water supply planning efforts in California and provide the foundation for developing comprehensive water policies to meet future water needs by integrating water supply and land use planning. These were Senate Bill 221 and Senate Bill 610, (SB 221 and SB 610, respectively). The intent was to provide additional assurance that new projects could have a reliable water supply and the impact of the new developments on existing water users, i.e., those relying on common water sources, and decision makers, were adequately informed of the proposed project's water use, the impacts, and plans to maintain supplies.

2.1 Senate Bill 221 (SB 221)

SB 221 applies to residential subdivisions and is chaptered in Government Code §65867.5 *et seq.* which states:

> *(c) A development agreement that includes a subdivision, as defined in Government Code §666473.7, shall not be approved unless the agreement provides that any tentative map prepared for the subdivision will comply with the provisions of §666473.7.*

Government Code §666473.7 states:

> *(a)(1) For purposes of this section, the following definitions apply:*
> *"Subdivision" means a proposed residential development of more than 500 dwelling units, except that for a public water agency that has fewer than 5,000 service connections, "subdivision" means any proposed residential development that would account for an increase of 10 percent or more in the number of the public water system's existing service connections.*
>
> *(b)(1) The legislative body of a city or county or the advisory agency, to the extent that it is authorized by local ordinance to approve, conditionally approve, or disapprove the tentative map, shall include as a condition in any tentative map that includes a subdivision, a requirement that a sufficient water supply shall be available. Proof of the availability of a sufficient water supply shall be requested by the subdivision applicant or local agency, and shall be based on written verification from the applicable water supply system within 90 days of a request.*
>
> *(i) Government Code §666473.7 shall not apply to any residential project proposed for a site that is within an urbanized area and has previously been developed for urban uses, or where the immediate contiguous properties surrounding the residential project site area, or previously have been, developed for urban uses, or housing projects that are exclusively for very low and low-income households.*
>
> *(a)(2) "Sufficient water supply" means the total water supplies available during normal, single-dry, and multiple-dry years within a 20-year projection that will meet the*

projected demand associated with the proposed subdivision, in addition to existing and planned future uses, including but not limited to agricultural and industrial uses.

This does not mean that 100 percent of the development's unrestricted water demand must be met 100 percent of the time, nor does it mean the new development may not have an impact on the service level of existing customers. A "sufficient water supply" may be found to exist for a proposed subdivision and for existing customers, even where a drought-induced shortage will be known to occur, as long as a minimum water supply can be estimated and planned for during a record drought.

2.2 Senate Bill (SB 610)

SB 610, chaptered in Water Code §10910 *et seq.*, requires a city or county that determines a "Project," as defined in Water Code §10912, is subject to the California Environmental Quality Act (CEQA), the city or county must identify any public water system that may supply water for the project and to request those public water systems to prepare a specified water supply assessment (WSA), except as otherwise specified. Water Code §10912 defines a "Project" as any of the following:

(1) A proposed residential development of more than 500 dwelling units.

(2) A proposed shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet (sq. ft.) of floor space.

(3) A proposed commercial office building employing more than 1,000 persons or having more than 250,000 sq. ft. of floor space.

(4) A proposed hotel or motel, or both having more than 500 rooms.

(5) A proposed industrial, manufacturing, or processing plant, or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 sq. ft. of floor area.

(6) A mixed-use project that includes one or more of the projects specified in this subdivision.

(7) A project that would demand an amount of water equivalent to, or greater than, the amount of water required by a 500 dwelling unit project.[1]

The basic question to be answered in the WSA is:

Will the water supplier's total projected water supplies during normal, dry, and multiple dry years during a 20-year projection meet the projected water demand of the proposed project, in addition to the water supplier's existing and planned future uses, including agricultural and manufacturing uses?

The WSA, under SB 610, is to include the following, if applicable to the supply conditions:

[1] The water use for one dwelling unit depends on regional climate and varies from agency to agency

1. Discussion regarding whether the public water system's total projected water supplies available during normal, single dry, and multiple dry water years during a 20-year projection will meet the projected water demand associated with the proposed project, in addition to the public water system's existing and planned future uses.
2. Identification of existing water supply entitlements, water rights, or water service contracts secured by the purveying agency and water received in prior years pursuant to those entitlements, rights, and contracts.
3. Description of the quantities of water received in prior years by the public water system under the existing water supply entitlements, water rights or water service contracts.
4. Water supply entitlements, water rights or water service contracts shall be demonstrated by supporting documentation such as the following:
    a. Written contracts or other proof of entitlement to an identified water supply.
    b. Copies of capital outlay program for financing the delivery of a water supply that has been adopted by the public water system.
    c. Federal, state, and local permits for construction of necessary infrastructure associated with delivering the water supply.
    d. Any necessary regulatory approvals that are required to be able to convey or deliver the water supply.
5. Identification of 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.
6. If groundwater is included for the supply of a proposed project, the following additional information is required:

    a. Description of groundwater basin(s) from which the proposed project will be supplied. Adjudicated basins must have a copy of the court order or decree adopted and a description of the amount of groundwater the public water system has the legal right to pump. For non-adjudicated basins, information on whether the California Department of Water Resources has identified the basin as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current bulletin of the Department of Water Resources that characterizes the condition of the basin, and a detailed description of the efforts being undertaken in the basin to eliminate the long-term overdraft.
    b. 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. Analysis should be based on information that is reasonably available, including, but not limited to, historic use records.
    c. Description and analysis of the amount and location of groundwater projected to be pumped by the public water system from any groundwater basin from which the proposed project will be supplied. Analysis should be based on information that is reasonably available, including, but not limited to, historic use records.

d. Analysis of sufficiency of the groundwater from the basin(s) from which the proposed project will be supplied.

7. The water supply assessment shall be included in any environmental document prepared for the project.

SB 610 prescribes a timeframe within which a public water system is required to submit the assessment to the city or county and authorizes the city or county to seek a writ of mandamus to compel the public water system to comply with requirements relating to the submission of the assessment.

SB 610 requires the public water system, or the city or county, as applicable, if that entity concludes that water supplies are, or will be, insufficient, to submit the plans for acquiring additional water supplies.

SB 610 requires the city or county to include the water supply assessment and certain other information in any environmental document prepared for the project pursuant to the act.

2.3 Summary

The Senate bills are quite similar; SB 221 applies to proposed residential subdivisions over 500 dwelling units or a subdivision project that proposes 10 percent of the number of existing agency water connections whichever is smaller; SB 610 to other types of large projects or mixed use projects. Both require documentation of water supply and demand under normal, dry and multiple dry year scenarios to accommodate the project plus existing and known planned projects. Both rely on the agency's Urban Water Management Plan (UWMP) for support.

Based on the description in the introduction, the proposed Legacy Highlands Project **requires a water supply assessment pursuant to both SB 221 under Government Code §65867.5 *et seq.* and SB 610 under Section 10912 (a) (2)**. The Project includes a residential subdivision greater than 500 dwelling units and a proposed business establishment having more than 500,000 square feet of floor space. For the Project, the water purveyor is the Beaumont-Cherry Valley Water District (BCVWD).

3. URBAN WATER MANAGEMENT PLANNING ACT

3.1 Background

The California Water Code requires that all urban water suppliers within the state, serving over 3,000 acre-feet (AF) of water annually (1 AF = 325,829 gallons) or having at least 3,000 service connections, to prepare Urban Water Management plans (UWMPs) on a five-year, ongoing basis demonstrating their continued ability to provide water supplies for current and future expected development under normal, single dry, and multiple dry year scenarios. The Urban Water Management Planning Act was enacted in 1983 and amendments were made periodically since then. The Act also requires imported water suppliers to prepare UWMPs. Water Code sections §10610 through §10656 detail the information that must be included in the plans. These plans also require the assessment of urban water conservation measures and wastewater recycling. They also require, pursuant to §10632, a water shortage contingency plan, outlining how the

municipal water provider will manage water shortages of up to 50 percent of their normal supplies in a given year.

An UWMP is a planning tool that provides general guidance to water management agencies. It provides managers and the public with high altitude overview on a number of water supply issues facing the agency. It is not a substitute for project-specific planning documents, nor was it intended to be when mandated by the State Legislature. When specific projects are chosen to be implemented, detailed project plans are prepared, environmental analysis, if required, is prepared, and financial and operational plans are developed.

"A plan is intended to function as a planning tool to guide broad-perspective decision making" by water agency managers and directors.[2] It should not be viewed as an exact blueprint for supply and demand management. Water management in California is not a matter of certainty and planning projections may change in response to a number of factors. "Long-term water planning involves expectations and not certainties. The State Supreme Court has recognized the uncertainties inherent in long-term land use and water planning and observed that the generalized information required …in the early stages of the planning process are replaced by firm assurances of water supplies at later stages."[3] It is appropriate to look at the UWMP as a general planning framework, not a specific action plan. It is an effort to generally answer a series of planning questions including:

- What are the potential sources of supply and what is the reasonable probable yield from them?
- What is the probable demand, given a reasonable set of assumptions about growth and implementation of good water management practices?
- How well do supply and demand figures match up, assuming that the various probable supplies will be pursued by the implementing agency?

Based on the answers to these questions, the implementing agency will pursue feasible and cost-effective options and opportunities to meet demands.

Overall, the demands for the Project have been refined herein based upon a specific water demand projection based upon the most recent proposed land uses of the development.

The Urban Water Management Planning Act requires the supplier to document water supplies available during normal, single dry, and multiple dry water years over a 20-year projection and the existing and projected future water demand during a 20-year projection. The Act requires that the projected supplies and demands be presented in 5-year increments for the 20-year projection period.

Like SB 221 and SB 610, specific levels of supply reliability are not mandated (i.e., whether a specific level of demand can be met over a designated frequency); rather, the law provides that it

[2] Sonoma County Water *Coalition v. Sonoma County Water Agency* (2010) 189 Cal. App. 4th 33, 39, taken from SGPWA 2015 UWMP.
[3] Ibid.

is a local policy decision of the water provider as part of the planning process. As provided for in the law, this WSA can rely on the data in the latest UWMP in assessing the water demand of the proposed project relative to the overall increase in demands expected by BCVWD. The Legacy Highlands Project, (at 3,412 housing units at the time), was included in Table 3-6 of BCVWD's 2015 UWMP as well as the 2013 UWMP. (The Project has since been reduced to 2,868 residential units as part of this WSA.) In late 2017 and 2018, BCVWD prepared a set of "White Papers" that evaluated the growth in demand within the San Gorgonio Pass Water Agency (SGPWA) and the current and future water supply from the SGPWA on a regional basis. The result of this evaluation is a reduction in the rate of growth and a refinement in the imported water supply. This is discussed later in this WSA.

3.2 San Gorgonio Pass Water Agency 2015 UWMP

The Legacy Highlands Project is located within the service area of the SGPWA service area. BCVWD provided data to SGPWA on BCVWD's projected demands so the SGPWA could prepare their UWMP. Because the California Department of Water Resources (DWR) required the imported water suppliers to submit their UWMPs earlier than the retail agencies, BCVWD made some preliminary estimates of their demand over the 20-year projection period and provided the projections to SGPWA. These preliminary estimates deviated slightly from the actual demands in BCVWD's 2015 UWMP. Table 2-4, extracted from SGPWA's 2015 UWMP, is shown below. SGPWA's 2015 UWMP states the "retail purveyor demands that reflect reasonably anticipated demands on SGPWA through the planning periods" and take into account non-SGPWA supplies available to the retail purveyors, such as local groundwater, recycled water, etc.

TABLE 2-4
PROJECTED WATER DEMANDS ON SGPWA (AF)

Agency Name	2020	2025	2030	2035	2040
BCVWD[a]	10,860	12,476	14,087	15,886	17,334
City of Banning[b]	-	501	1,344	2,237	2,718
YVWD[c]	1,809	1,967	2,162	2,391	2,644
Other[d]	500	1,600	2,800	3,900	5,000
Total Water Demands	**13,169**	**16,544**	**20,393**	**24,414**	**27,696**

The "other" demands in Table 2-4 reflect the demand from other agencies in SGPWA service area not currently receiving imported water from SGPWA.

Since the Legacy Highlands development project was included in the demands in BCVWD's 2015 UWMP and supplied to SGPWA for their UWMP, it is considered included in the 2015 SGPWA UWMP, adopted by SGPWA Board of Directors as Resolution No. 2017-03, on March 20, 2017.

In the introductory section of the SGPWA's 2015 UWMP, the SGPWA reviewed the water supply and demand requirements on a regional basis and did not focus on specific conditions within the service area of the retail water agencies.

"It is the stated goal of SGPWA to import supplemental water and to protect and enhance local water supplies for use by present and future water users and to sell imported water at wholesale to local retail water purveyors within its service area. Based on conservative water supply and

demand assumptions over the next 25 years in combination with conservation of non-essential demand during certain dry years, the [Urban Water Management] Plan successfully achieves this goal. It is important to note that this document has been completed to address regional resource management and does not address the particular conditions of any specific retail water agency or entity within the SGPWA service area. The retail urban water suppliers within SGPWA service area are preparing their own separate UWMPs, but SGPWA has coordinated with the retailers during development of this Plan to ensure a level of consistency with the retailers to the extent possible.[4] [Emphasis added]

BCVWD recognizes and acknowledges the disclaimer statement within the 2015 Urban Water Management Plan prepared by the SGPWA related to regional planning. While the UWMP prepared by the SGPWA "…does not address the particular conditions of any specific retail water agency…," BCVWD relies upon the policies and practices of the SGPWA as a foundation for regional water supply solutions. In other words, while the SGPWA's regional planning document does not address local water conditions, BCVWD does rely upon the policies of the SGPWA to provide comprehensive regional solutions related to the use of imported water in the Pass area. An example of the policies and practices adopted by the SGPWA and relied upon by BCVWD include, but are not limited to the following:

- San Gorgonio Pass Water Agency, Ordinance No. 8, An Ordinance Establishing Rules and Regulations for SGPWA Water Service, February 7, 2005;
- San Gorgonio Pass Water Agency Strategic Plan, May 2012;
- San Gorgonio Pass Water Agency, Resolution No. 2014-02, A Resolution of the San Gorgonio Pass Water Agency Establishing a Policy for Meeting Future Water Demands, February 18, 2014;
- San Gorgonio Pass Water Agency, Ordinance No. 10, Ordinance Establishing Water Shortage Plan, July 21, 2014;
- San Gorgonio Pass Water Agency, Resolution No. 2015-05, Resolution of the Board of Directors of the San Gorgonio Pass Water Agency to Adopt Facility Capacity Fees for Facilities and Water, July 27, 2015;
- San Gorgonio Pass Water Agency, State of the Supply PowerPoint Presentation, September 30, 2016;
- San Gorgonio Pass Water Agency, Ordinance No. 13, An Ordinance Amending Rules and Regulations Regarding Authorization for Service, June 5, 2017.
- San Gorgonio Pass Water Agency Resolution 2019-03, A Resolution of the San Gorgonio Pass Water Agency Establishing a Policy for the Sale of Water which Agency may have in Groundwater Storage, May 6, 2019.

[4] SGPWA 2015 UWMP

3.3 BCVWD's 2015 UWMP

There were some minor differences between the projections in BCVWD's 2015 UWMP and the projections provided to SGPWA for their 2015 UWMP. These differences stemmed from the need for BCVWD to provide preliminary demand projections early-on so the SGPWA could meet their prescribed deadline.

BCVWD's demands for imported water are presented in Table 6-26 of BCVWD's 2015 UWMP and are repeated in Table 1 below. Table 1 shows the actual imported water demand to meet the potable water demand plus the banking water demand to ensure drought-proofing of future development. If imported water is not available in a given year, no banking will occur. But when imported water is available, any deficiencies from previous years would be "carried over" and "made up." As can be seen, there is a slight difference between the demands in Table 1 versus those shown above (Table 2-4) from SGPWA's 2015 UWMP.

Table 1
BCVWD Imported Water Needs from BCVWD 2015 UWMP (Table 6-26)*

	2020	2025	2030	2035	2040
BCVWD Drinking Water Demand, AFY	10,313**	11,407**	12,503	13,843	15.362
Banking Demands, AFY	1,000	1,500	2,000	2,500	2,500
Total BCVWD Imported Water Demand, AFY	11,313	12,907	14,503	16,343	17,862

*Taken from BCVWD 2015 UWMP, Table 6-26 and is equal to purchased imported water for recharge plus make-up to not-potable system plus water for banking

** included imported water to non-potable water system since non-potable water system supplied with potable groundwater.

4. LEGACY HIGHLANDS DEVELOPMENT PROJECT DESCRIPTION

The Legacy Highlands development is a mixed use single family and active adult residential and commercial/industrial project located in the City of Beaumont on approximately 1,600 gross acres, south of Highway 60 and west of Beaumont Ave (Highway 79). The project is primarily in Sections 8, 16, 17, 20 and 21, T3S, R1W, SBB&M.

4.1 Project Description

A total of 2,868 dwelling units are proposed, consisting of 1,107 single family residential, 1.2 million sq. ft. of commercial/industrial, and 1,761 active adult, low density residential. A 20-acre school site, several neighborhood parks, and open space are planned. The Legacy Highlands will be accessed from 4th Street, Potrero Blvd., and State Route 60 on the north and a connector road to Highway 79 (Lamb Canyon Rd./Beaumont Ave.) on the east.

Figure 1 shows the general location of the Legacy Highlands development; Figure 2 is a preliminary layout showing main streets and development plan.

The project is required to adhere to the landscaping standards in "Guide to California Friendly Landscaping" and the City Landscaping Ordinance (Chapter 17.06 Landscaping Standards, latest edition) which requires water efficient landscaping. Landscaping in non-turf areas shall be drought tolerant and irrigated with drip or bubbler type heads (BCVWD requirement).

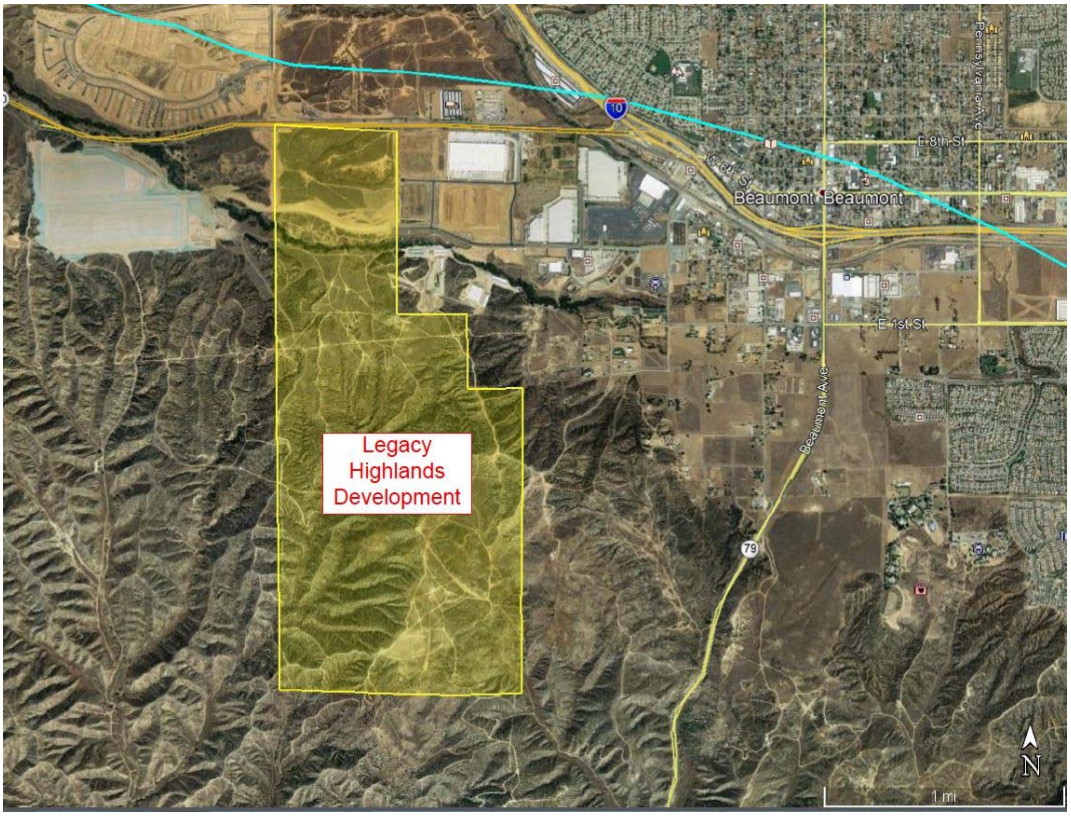


Figure 1
Legacy Highlands Development General Location

4.1.1 Existing On-site Wells

The Project Site has five existing shallow wells, (Wells 1 thorugh 5), constructed along Cooper's Creek in the northerly portion of the site; three of wells have been pump tested and sampled (Wells 1 through 3). The wells were used by the land owner to irrigate crops and trees on the Project Site. The wells are not located in the Adjudicated Beaumont Groundwater Basin but rather the unadjudicated San Timoteo Subbasin. The San Timoteo Sustainable Groundwater Management Agency (San Timoteo SGMA) was been formed in 2017 in response to the 2014 Sustainable Groundwater Management Act.

The Project land is riparian to Cooper's Creek and overlies groundwater which can be pumped regardless of whether the groundwater is part of, or separate from the subsurface flow beneath Cooper's Creek. The groundwater is not adjudicated and the landowner has an overlying right to

produce groundwater to be used for reasonable and beneficial uses on the riparian/overlying land. The key is use on the "overlying land." The "rights" go with the land. These rights are equal in priority among other riparian or overlying owners regardless of date of first use. Overlying and riparian rights are superior to appropriative rights. (BCVWD is an "appropriator" and could not pump and use the water elsewhere.)[5] In summary,the existing wells could be used to supply water to the Project, but with limititations.

Pump tests and water quality analyses were presented in a report prepared by a consultant for Legacy Highlands[6] for Well Nos. 1, 2, and 3. The wells were test pumped for 24 hours at 300, 275, and 80 gallons per minute (gpm), respectively. These production rates are 484, 444, and 129 AFY, respectively. Well drawdown levels stabilized at 45, 160, and 126 ft below ground surface based on the pump data included in the report. Long term water levels from a well about a mile away (State Well No. 03S01W05Q001S) showed a relatively stable water level from the mid 1980s to 2010. It should be noted the area of the wells has numerous faults, so water levels in nearby wells may fluccuate.

Water quality analysis for the wells indicates elevated Total Dissolved Solids (430 to 560 mg/L); very high hardness, some nitrates (but well below the primary Maximum Contaminant Level (MCL), pH about 8, and concentrations of iron and manganese significantly above the secondary MCL. Detailed Title 22 drinking water analysis has not been performed, so it is not known if there are other substances in the water exceeding potable drinking water standards. The iron and manganese are aesthetic concerns. Iron and manganese will form slimes in pipes, potentially clogging irrigation systems and staining sidewalks with a rust color. Iron and manganese will need to be removed prior to even non-potable uses.

Another concern of BCVWD is the blending of potable or recycled water with the well water and the potential for scaling or corrosion since the chemical makeup of the well water and the recycled or potable water is so different. As such, BCVWD does not recommend supplementing the well water with its potable supply or the City's recycled water. The well water could be used on the Project Site by the Home Owners' Association (HOA) or the developer to meet non-potable water needs and construction water, if treated for iron and manganese removal.

4.1.2 Proposed Stormwater Capture and Detention Basins

The Project will have two detention/infiltration basins for stormwater capture, treatment, and infiltration. The basins will be located on the north and south sides of Cooper's Creek to capture, treat, and infiltrate the runoff from the developed areas of the Project. Data on the two basins are:

[5] Personal Communication, Kidman to Golkar (2020). Letter from A. Kidman of Kidman, Gagan Law LLP, to D. Golkar, March 31.
[6] Stetson Engineers, Inc. (2020). Potential Groundwater Production, The Legacy Highlands Development, May 21.

Basin No	Developed Watershed Area, ac	Basin Volume, AF	2-yr Storm Runoff, AF	100-yr Storm Runoff, AF
1	232.9	124	24.2	95.5
2	107.4	58.9	11.2	49.8

The total watershed area is 340 acres; the average annual rainfall in Beaumont is about 18.5 inches, so the rainfall volume is 510 AFY. Typically about 30% or so is runoff on an annual basis, so the amount of stormwater capture is 150 AFY. The developer claims an infiltration rate of 3.48 ft/day, with a factor of safety of 3. Specifics on how the infiltration rates were tested were not provided. BCVWD does not believe that infiltration rate can be maintained without frequent maintenance.

BCVWD cannot get credit for any captured storm runoff since the basins do not overly the adjudicated portion of the Beaumont Groundwater Basin. Since the groundwater basin where the basins are located (San Timoteo Basin), is not adjudicated, the percolated runoff is owned by no one and becomes part of the common pool for the benefit of the overlying parties and cannot be considered to offset any project demands.[7]

4.2 Estimated Water Demand

BCVWD has historically used a water demand of 580 gal/day/EDU, equivalent to 0.65 AFY/EDU, in its "Regulations for Water Service." Recently, BCVWD has analyzed the potable water demand in thirty-two residential tracts constructed in the District from late 2006 through early 2018. The study reviewed the potable water demands, by customer meter, for all of 2016 and 2017 and through summer 2018. The total demand for all of 2018 was projected based on historic consumption. The study encompassed 3,116 services. Tracts which were included in the analysis included Tournament Hills, Fairway Canyon, K-Hov Four- Seasons, Pardee Sundance, and Seneca Springs. The draft analysis included a very preliminary evaluation of potable water demand (AF/EDU) versus pad or lot size (sq ft) and potable water demand (AF/EDU) versus residential density (EDU/Acre) in Pardee Sundance. The analysis indicated that larger lot or pad sizes had greater water demand than smaller lots and, as density increased, the potable water use (AF/EDU) decreased. This was not unexpected. However, the draft data and analysis is limited and more data is needed before any firm correlations can be developed. District staff hopes to improve the draft analysis as part of the District's ongoing 2020 UWMP activities.

[7] Personal Communication, Kidman to Golkar (2020). Letter from A. Kidman of Kidman, Gagan Law LLP, to D. Golkar, March 31.

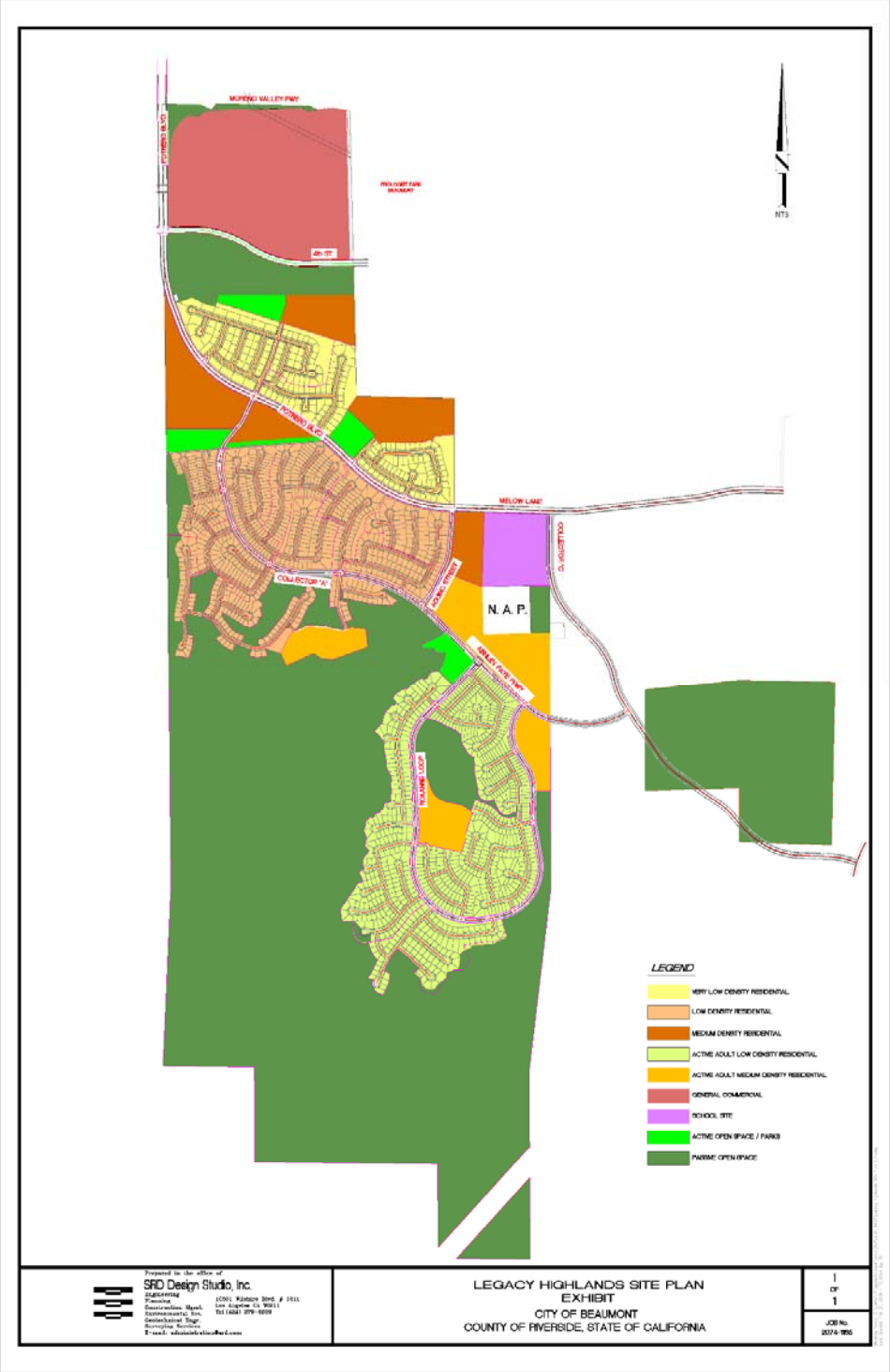


Figure 2
Legacy Highlands Development Plan

For the purposes of this WSA, and until more definitive data can be developed, the following EDU potable water demands will be used. It is important to understand that these unit potable water

demands are for water demand planning and forecasting and not for determination of connection, impact, or other fees.

The potable and non-potable water demands for Legacy Highlands development are based on the following criteria:

- Single Family Residential Equivalent Dwelling Unit (EDU) on lots or pads 10,000 sq. ft. or larger, potable water demand equal to 0.65 acre-ft/year/EDU (AFY/EDU), same as used in the District's Regulations for Water Service. The unit water demand includes the outdoor demand and incidental demand of the associated commercial and institutional facilities which support the development.
- Single Family Residential Equivalent Dwelling Unit (EDU) on lots less than 10,000 sq. ft., potable water demand equal to 0.546 acre-ft/year/EDU (AFY/EDU). The unit water demand includes the outdoor demand and incidental demand of the associated commercial and institutional facilities which support the development. The commercial, industrial, and institutional (CII) demand is about 13.6% of the daily demand based on the amount of BCVWD reports to the Department of Water Resources, annually. The 0.546 AFY is based on ongoing BCVWD analysis of new residences, as discussed above.
- Active Adult Residential EDU potable water demand equal to 0.470 AFY/EDU. This reduced demand is identical to that used for active adult residential EDUs in other District developments. The unit water demand includes the outdoor demand and incidental demand of the associated commercial and institutional facilities which support the development as stated above.
- Commercial/Industrial demand is based on the total floor area of the building(s) using 1,500 sq. ft of building area per employee and 15 gal/day/employee typical of the types of distribution center, warehousing projects being developed in the City and other Inland Empire areas[8]. The annual demand is based on 260 operating days per year. Data provided by the developer indicated a total of 1 million sq. ft. of industrial buildings and 150,000 sq. ft commercial on the 100 acre site, about or about 26% of the site area. This is lower than similar industrial warehousing buildings in Beaumont on nearby property where the total building area occupies about 38% of the total site area. The landscaped area represented about 23% of the total building area and 9.2% of the total site area. For purposes of calculation water demands, an occupied area of 40% is believed to be more appropriate than the 26% stated by Legacy Highlands
- School potable water demands are included with the residential planning demands. Separate determination of the non-potable water demands is provided.

[8] NAIOP Research Foundation (2010). Logistics Trends and Specific Industries that Will Drive Warehouse and Distribution Growth and Demand for Space, L. Nicolas Ronderos, Director, Urban Development Programs Regional Plan Association, March

- Active Open Space Parks potable water demands are included with the residential planning demands. Separate determination of the non-potable water demands is provided.
- Passive Open Space areas are anticipated to remain natural and will not be irrigated with either potable or non-potable water.

For comparison, the SGPWA, in their Revised Capacity Fee Nexus Study, used a water demand factor of 0.548 AFY/Single Family Home; multi-family was 0.267 AFY/EDU. Slightly larger water use factors were used by SGPWA for the unincorporated County portion of their service area. Commercial and industrial water use equivalents were determined separately.[9]

Table 2 presents a summary of the Legacy Highlands Residential Potable Water Demand. Total Residential Potable Water Demand is projected to be 1,436 AFY at build-out. It is noted that this demand includes the commercial and institutional demands associated with residential development, i.e., schools, shops, malls, etc.

Commercial/Industrial development is proposed for Legacy Highlands Phase 2 and consists of 100 acres of commercial/industrial area and 34.2 acres of passive open space. Water demand calculations for the Commercial/Industrial Area are presented in Table 3.

Table 4 presents a summary of the Non-potable water demands for the industrial/commercial site, active open spaces, the school site, and major street medians and parkways. The landscape demand estimates were developed following the City's, Landscaping Standard, Chapter 17.06 of the City Ordinance. The procedure follows the Riverside County Landscape Ordinance. The analysis uses a CIMIS[10] Zone 9 reference evapotranspiration of 55.1 in/year and recommended irrigation efficiency of 0.71 per the City's Ordinance. The non-potable water use is the Maximum Applied Water Allowance (MAWA) which represents the upper limit of annual applied water allowed for established landscaped area. No data is available relative to the actual landscaping plant mix to develop a more accurate estimate.

For the commercial/industrial area two approaches were used to determine the landscaped areas: 1) City of Beaumont Landscape Ordinance for landscape buffers around the periphery of industrial sites and the requirement for 15% of the parking area to be landscaped. For the site, the landscaped area was determined to be just over 300,000 sq. ft. This was compared to the analysis performed on a neighboring industrial warehousing site, where the total landscaped area was 9.2% of the total site area. Using this percentage, an area of 400,800 sq. ft was determined. For calculation purposes, a landscaped area or 350,000 sq. ft was used. The landscaping was assumed to be all low water using, with no turf. The total non-potable water demand was 36.2 AFY.

[9] SGPWA 2015. Capacity Fee Study for San Gorgonio Pass Water Agency, prepared by David Taussig and Associates, Inc., July 15.
[10] CIMIS (2012). Reference Evapotranspiration Zones, California Irrigation Management Information System, California Department of Water Resources, January.

Table 2
Legacy Highlands Development Projected Residential Potable Water Demand

Planning Area/Neighborhood	Land Use Designation	Zoning	Gross Acres	Minimum Lot sizes, Sq Ft	Number of Lots	Max Density EDU/Acre	Home Sizes	Unit Water Demand, AF/EDU	Projected Water Demand, AFY
Planning Area I									
Neighborhood 1.1	Low Density Residential	R-SF	25.1	10,000	30	1.2	3000-3400	0.65	19.49
Neighborhood 1.2	Low Density Residential	R-SF	31.2	8,000	76	2.4	2250-2800	0.546	41.50
Neighborhood 1.3	Low Density Residential	R-SF	30.5	7,000	64	2.1	2050-2400	0.546	34.94
Neighborhood 1.4	Medium Density Residential	PUD	12.5	PUD	136	10.9	900-1250	0.546	74.26
Neighborhood 1.6	Medium Density Residential	PUD	16.1	PUD	202	12.5	1000-1250	0.546	110.29
Neighborhood 1.8	Medium Density Residential	PUD	19.1	PUD	254	13.3	1000-1300	0.546	138.68
Neighborhood 1.9	High Density Residential	PUD	8.9	PUD	118	13.3	850-1250	0.546	64.43
Neighborhood 1.12	Low Density Residential	R-SF	12	20,000	17	1.4	3200-4000	0.65	11.05
Subtotal Planning Area 1 Residential			155.4		897				494.64
Planning Area 6									
Neighborhood 6.3	Medium Density Residential	PUD	14.8	PUD	210	14.2	1000-1250	0.546	114.66
Subtotal Planning Area 6 Residential			14.8		210				114.66
Subtotal Conventional Housing			170.2		1107				609.3
Planning Area 3									
Neighborhood 3.1	Low Density Residential	R-SF	39	4,000	196	5.0	1850-2200	0.470	92.03
Neighborhood 3.2	Low Density Residential	R-SF	28.3	5,000	112	4.0	1300-2000	0.470	52.59
Neighborhood 3.3	Medium Density Residential	PUD	32.7	6,000	116	3.5	1850-2200	0.470	54.47
Subtotal Planning Area 3 Residential			100		424				199.09
Planning Area 4									
Neighborhood 4.1	Low Density Residential	R-SF	29.9	4,000	82	2.7	900-1200	0.47	38.50
Neighborhood 4.2	Low Density Residential	R-SF	37.5	5,000	147	3.9	1650-2200	0.47	69.03
Neighborhood 4.3	Low Density Residential	R-SF	22	6,000	52	2.4	1850-2200	0.47	24.42
Neighborhood 4.4	High Density Residential	PUD	9.7	PUD	62	6.4	850-1200	0.47	29.11
Subtotal Planning Area 4 Residential			99		343				161.06
Planning Area 5									
Neighborhood 5.1	Low Density Residential	R-SF	31.8	4,000	195	6.1	1100-2200	0.47	91.56
Neighborhood 5.2	Low Density Residential	R-SF	33.8	5,000	197	5.8	1300-2000	0.47	92.50
Neighborhood 5.3	Low Density Residential	R-SF	51.7	7,000	84	1.6	3600-4200	0.47	39.44
Neighborhood 5.4	Low Density Residential	R-SF	72.7	6,000	205	2.8	1850-2200	0.47	96.26
Neighborhood 5.5	High Density Residential	PUD	29	PUD	107	3.7	850-1200	0.47	50.24
Neighborhood 5.6	Open Space	OS	638.9	Natural		9		0.47	0.00
Neighborhood 5.7	Low Density Residential	PUD	8.9	PUD	54	6.1	900-1300	0.47	25.36
Neighborhood 5.8	Low Density Residential	PUD	28.5	PUD	152	5.3	1900-1300	0.47	71.37
Subtotal Planning Area 5 Residential			895		994				466.74
Subtotal Active Adult Housing			1,094		1,761				826.90
Total Residential			1,265		2,868				1,436

Table 3
Legacy Highlands Commercial Industrial Potable Water Demand

Commercial/Industrial Area (Planning Area 2), acres	100
Building Area per Legacy Highlands, sq ft	1,150,000
Building Area/Site Area	0.26
Building Area/Site Area for Planning Purposes	0.40
Total Building Area for Planning Purposes, sq ft	1,742,400
Employees/sq ft of Building Area	1,500
Gal/day/employee for warehouse type facility	15
Operating days/year	260
Projected number of employees	1,162, Round to 1,200
Indoor water demand, gal/day	18,000
Indoor water demand, AFY	14.4

Table 4
Summary of Water Demands at Build-out,
Legacy Highlands Development

	Acre-ft/yr (AFY)
Potable Water Demand	
Residential Conventional Housing	609
Residential Active Adults	827
Commercial/Industrial	14.4
Total Potable Water Demand (rounded)	1,450
Non-potable Water Demand	
Commercial/Industrial	36.2
School Site	21.9
Active Open Space	63.8
Street Medians	56.3
Total Non-potable Water Demand (rounded)	178

The school site was estimated to have a landscaped area of 50% based on an analysis of four recently constructed schools in the City, of which 90% was turf and 10% low water using plantings. The non-potable water demand for the school site was estimated to be 21.9 AFY.

There are five active open spaces (parks) proposed for the Legacy Highlands development, totaling 24.8 acres. These active open spaces are assumed to be 75% turf and 25% low water using landscaping which have a total annual non-potable demand of 63.8 AFY. Other open space is not irrigated and has no recycled or potable water demand.

Low water using landscaping for medians and parkways is assumed to be in place with major streets (Potrero, Collector “A”, Collector “C”, Ashley Faye Parkway shown on Figure 2 presented previously). For purposes of estimating the non-potable water demands, an irrigated width of 24 ft is assumed based on the City’s General Plan Circulation Element street cross-sections. The total estimated length of streets with irrigated parkways and medians is 4.3 miles; the estimated annual non-potable water use is 56.3 AFY

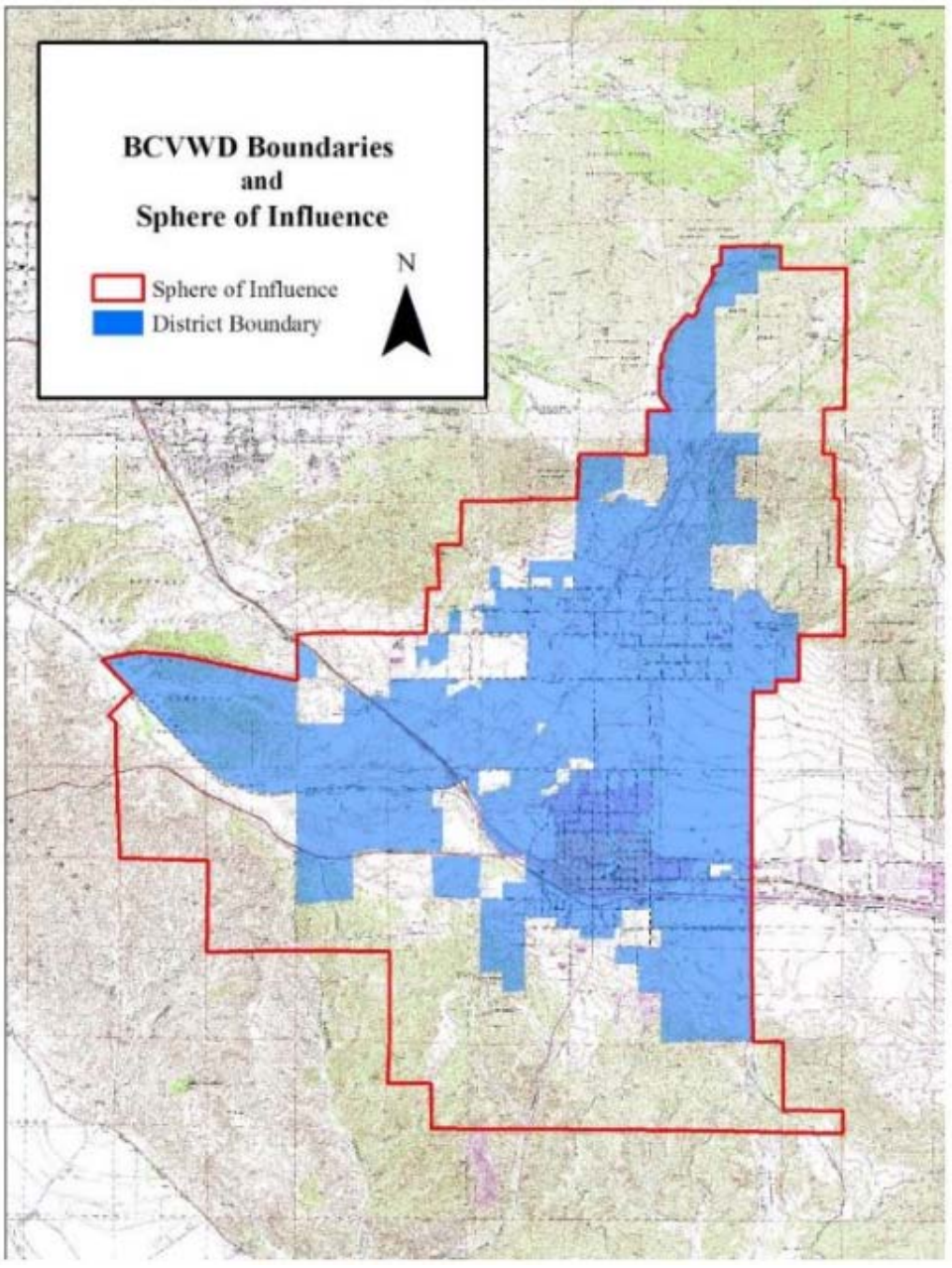
5. BCVWD WATER SYSTEM

BCVWD owns and operates the potable and non-potable water system which would serve the Legacy Highlands Development. BCVWD was first formed in April 1919, to provide domestic and irrigation water to the developing community of Beaumont and the surrounding area. BCVWD was originally named the Beaumont Irrigation District. In 1973, the name was changed to the Beaumont-Cherry Valley Water District. Sometime after that the hyphen was dropped from the name. However, even though the name has changed, the BCVWD’s authority comes from the Irrigation District Law of the State of California.

BCVWD owns approximately 1,524 acres of watershed land north of Cherry Valley along the Little San Gorgonio Creek, (also known as Edgar Canyon), and Noble Creek. There are two stream diversion locations within Little San Gorgonio Creek that are in the Department of Water Resources, Division of Water Rights, database. The diversions have pre-1914 recorded water rights amounting to 3,000 miners inch hours (MIH) or approximately 45,000 acre-feet per year (AFY) of right for diversion of water for domestic and irrigation uses. However, BCVWD has never had a demand that requires such large quantities of water supply; and the watersheds may not be capable of supplying such quantities during an average year. The creeks/canyons have been used for water development via diversions for irrigation and domestic service since the latter part of the 1800’s. Currently, BCVWD diverts water from Little San Gorgonio Canyon Creek into a series of ponds adjacent to the creek where it percolates and recharges the shallow aquifers in the Canyon. BCVWD’s wells located in Edgar Canyon provide about 10.5 percent of BCVWD’s water supply.

Figure 3 shows BCVWD's present Service Boundary and Sphere of Influence (SOI). BCVWD's present service area covers approximately 28 square miles, virtually all of which is in Riverside County and includes the City of Beaumont and the community of Cherry Valley. BCVWD-owned watershed land extends across Riverside County line into San Bernardino County where BCVWD operates a number of wells and several reservoirs.

BCVWD's SOI, or ultimate service planning area, encompasses an area of approximately 37.5 square miles (14.3 sq. mi. are in the City of Beaumont). This SOI was established by the Riverside and San Bernardino County Local Agency Formation Commissions (LAFCOs). SOIs are established as a planning tool and help establish agency boundaries and avoid gaps in service, unnecessary duplication of costs, and inefficiencies associated with overlapping service.



Source: modified from USGS 1:24 000 topographic maps of Beaumont, Forest Falls, Yucaipa, and El Casco, CA

0 8000
Approximate Scale in Feet

NORTH

Figure 3
BCVWD Boundary and Sphere of Influence

Beaumont Cherry Valley Water District
Beaumont, California

Figure 3
BCVWD Boundary and Sphere Of Influence

BCVWD's SOI is bounded on the west and north by the Yucaipa Valley Water District (YVWD) and on the east by the City of Banning. The northerly boundary of Eastern Municipal Water District (EMWD) is one-mile south of the BCVWD's southerly SOI boundary. The area between EMWD and the BCVWD's SOI is not within any SOI and could be annexed to either BCVWD or EMWD. BCVWD's SOI in Little San Gorgonio Canyon follows Oak Glen Road. The area west of Oak Glen Road is generally within YVWD's SOI; east of Oak Glen Road is generally within BCVWD's SOI.

The service area ranges in elevation from 2,300 feet above mean sea level in Fairway Canyon area of Beaumont on the southwestern boundary, to 2,900 feet in Cherry Valley, and to over 4,000 feet in the upper reaches of the SOI.

The area serves primarily as a "bedroom" community for the Riverside/San Bernardino Area and the communities east of Los Angeles County along the I-10 / State Highway 60 corridor.

5.1 Overview of BCVWD's Water System and Operation

BCVWD owns and operates both a potable and a non-potable water distribution system. BCVWD provides potable water and scheduled irrigation water to users through the potable water system. BCVWD provides non-potable water for landscape irrigation of parks, playgrounds, school yards, street medians and common areas through its non-potable (recycled) water system.

Table 5 presents BCVWD's 2019 potable and non-potable water connections and pumping amounts. The number of connections increased from 5,600 in the year 2000, before the housing boom that encompassed Western Riverside County and particularly, Beaumont.

Table 5
BCVWD Potable and Non-potable Water Connections and Deliveries 2019

	Potable Water	Non-potable Water (Landscape)	Total
Number of Connections	19,339[(a)]	309	19,648
Water Pumped, AFY	11,447 [(b)]	1,547	12,994
Average Annual, mgd	10.2	1.4	11.6
Maximum Day, mgd	19.2[(c)]	4.3	NA

a) 45 of these connections are agricultural water connections on potable water system.
b) 260AF was transferred into Non-potable System for make-up.
c) Historic maximum day demand was 22.1 mgd in 2009.

5.2 Potable Water System

BCVWD's potable water system is supplied by wells in Little San Gorgonio Creek (Edgar Canyon) and the Beaumont Groundwater Basin (sometimes called the Beaumont Storage Unit or the Beaumont Management Zone). BCVWD has a total of 24 wells; 1 well is a standby. Only 20 of the wells are used to any great extent. Twelve of the wells have auxiliary engine drives, a portable generator connection, or an in-place standby generator. BCVWD has 3 portable generators capable of operating 50, 350 and 500 horsepower (HP) motors. The Beaumont Groundwater

Basin is adjudicated and managed by the Beaumont Basin Watermaster[11]. BCVWD augments its groundwater supply with imported State Project Water (SPW) from the SGPWA which is recharged at BCVWD's recharge facility at the northeast intersection of Brookside Ave. and Beaumont Ave. Overall, the water quality from BCVWD's wells is excellent. Total Dissolved Solids (TDS) is usually below 250 mg/L. Nitrates are only a sporadic problem in a few wells at present. BCVWD continues to monitor these wells per State Water Resources Control Board, (SWRCB) Division of Drinking Water (CDDW) requirements. No wells have had to be taken out of service because of water quality concerns.

Wells in Edgar Canyon have limited yield, particularly in dry years, and take water from shallow alluvial and bedrock aquifers; wells in the Beaumont Basin are large capacity and pump from deep aquifers – some as deep as 1,500 ft. below the ground surface. The Edgar Canyon wells are very inexpensive to operate and are the preferred source; however, those wells are not able to meet the average day demand and need to be supplemented with the Beaumont Basin wells. The Edgar Canyon wells pump to a gravity transmission main that extends the full length of the BCVWD-owned properties in Edgar Canyon. The transmission main connects to the distribution system in Cherry Valley. Water from the Edgar Canyon Wells, which is not used in the developed areas adjacent to Edgar Canyon or Cherry Valley, can be released to lower pressure zones, if needed.

During 2019, the Edgar Canyon Wells provided about 10.5 percent of BCVWD's total annual potable water supply; the rest is pumped from wells in the Beaumont Basin. BCVWD's total well capacity (Edgar Canyon and Beaumont Basin) is about 33 million gallons per day (mgd). BCVWD is easily able to meet the maximum day demand (historic maximum about 22 mgd) with the largest well out of service. Wells with auxiliary power can supply up to 21.4 mgd.

Because of the range of topographic elevations in the BCVWD's service area, 11 pressure zones are needed to provide reasonable operating pressures for customers.

BCVWD has 14 reservoirs ranging in size from 0.5 million gallons (MG) to 5 MG. Total storage is approximately 22 MG, slightly more than 2 average days or 1 maximum day. The reservoirs provide gravity supply to their respective pressure zones. BCVWD's system is constructed such that any higher zone reservoir can supply water on an emergency basis to any lower zone reservoir. There are booster pumps in the system that allow water to be pumped up from a lower pressure zone to a higher pressure zone also. This provides great flexibility in system operations. Sufficient reservoir redundancy exists permitting reservoirs to be taken out of service for maintenance.

The backbone transmission system in the main pressure zones is primarily 24-in diameter though there are some 30-in diameter pipelines leading from some reservoirs. The bulk of the backbone transmission and distribution pipe is ductile iron, with cement mortar lining, that was installed in the last 10 to 15 years. There are a number of small, older, distribution lines in the system that

[11] San Timoteo Watershed Management Authority vs. City of Banning et al, Superior Court of the State of California, for the County of Riverside, Riverside Court, Stipulation for Entry of Judgement Adjudicating Groundwater Rights in the Beaumont Basin, RIC 389197, February 4, 2004.

are gradually being replaced with minimum 8-in diameter ductile iron pipe. The BCVWD potable water distribution system is capable of providing over 4,000 gpm fire flow in the industrial/commercial areas of the service area.

5.3 Imported Water and Recharge Facilities

BCVWD imported and storm water recharge facility consists of a 78-acre site on the east side of Beaumont Ave., between Brookside Ave. and Cherry Valley Blvd., where only imported water and incidental storm runoff is currently recharged. The recharge project site was selected after extensive hydrogeologic studies and pilot testing over a multi-year period. Phase 1 of the recharge facility, on the westerly half of the site, went on-line in late summer 2006. Phase 2 of the recharge facility was completed in 2014. This site has excellent recharge capability. Since its operation in 2006 through the end of 2018, BCVWD has recharged a total of 84,242 acre-ft (27.4 billion gallons) of imported water. The capacity of the recharge site is conservatively estimated at 25,000 to 30,000 AFY, based on short term studies. With more aggressive maintenance, the capacity may be as much as 35,000 AFY.

BCVWD and Riverside County Flood Control and Water Conservation District (RCFC&WCD) are jointly in design of Beaumont MDP-Line16, a large diameter storm drain in Grand Ave., which drains a watershed area of 505 acres to BCVWD's recharge site. This project should be operational by 2022 and storm water from the project will be recharged. BCVWD also envisions recharging recycled water, not needed for irrigation, at the recharge site in the future, with appropriate treatment and permits.

The SGPWA imports State Project Water (SPW) through the East Branch Extension (EBX) of the California State Water Project (Governor Edmund G. Brown California Aqueduct). EBX Phase I was completed in 2003; EBX Phase II was completed in 2018. The completion of EBX Phase II improvements brings SGPWA's imported water delivery capacity to the Pass Area to 48 cubic feet per second (cfs) or 34,750 AFY if it was operational continuously all year.

BCVWD takes water from a 20-in diameter turnout and metering station at the current end of the EBX at Orchard Ave. and Noble Creek in Cherry Valley. The turnout was expanded to 34 cfs, (24,600 AFY if operated continuously), which became operational in 2019. Water from the turnout is metered by the Department of Water Resources (DWR) and then enters a 3,500-ft long, 24-in diameter gravity pipeline, constructed by BCVWD, which conveys the water to BCVWD's groundwater recharge site.

The 24-in diameter pipeline was constructed in 2006 and at 34 cfs would have a velocity of 10.8 ft/second – a reasonable velocity for a mortar-lined pipeline. If operated eleven months out of the year at that rate, the pipeline could convey 22,500 acre-ft per year. Higher velocities could be tolerated for short periods of time which would result in increased short-term delivery capacity.

5.4 Non-potable (Recycled) Water System

Currently, BCVWD has over 44 miles of non-potable water transmission and distribution system in place. The backbone transmission system forms a loop around the City and is comprised of

primarily 24-in diameter cement mortar lined, ductile iron pipe, all installed after year 2000. The system includes a 2 million gallon recycled (non-potable) water reservoir which provides gravity storage and pressurization for the system. As shown in Table 5, presented previously, at the end of 2019, there were approximately 309 connections delivering 1,547 AFY of non-potable water. There are three major non-potable water pressure zones (2800 Zone, 2600 Zone and 2520 Zone); potentially there could be two additional pressure zones (3040 Zone, 2370 Zone).

A 2 MG non-potable reservoir, (2800 Zone Non-potable Water Tank), was constructed at the BCVWD Groundwater Recharge Site and is piped to receive potable water or untreated SPW through air gap connections. The non-potable water system can have a blend of recycled water, filtered imported and otherwise untreated SPW, and potable water.

The 2800 Non-potable Water Zone is currently separated from the 2600 and lower pressure zones. The 2800 Non-potable Water Zone is currently supplied with water from Well 26, supplemented by potable groundwater introduced into the system through an air gap at the 2800 Zone Non-potable water tank. The 2600 and lower non-potable water pressure zones are supplied with potable water through interconnections between the potable and non-potable water system. BCVWD has a capital project approved to provide fine screening of SPW prior to entering the 2800 Zone Non-potable Water Reservoir. This project will be implemented when demands increase and/or the non-potable water system is tested and approved for recycled water use.

BCVWD is working with the City to secure recycled water for use in the non-potable water system. The City is under construction with expansion and upgrade of their existing wastewater treatment facility to bring it to 6 mgd capacity and will be installing a new membrane bioreactor (MBR) treatment units followed by reverse osmosis membrane treatment. A brine line from the treatment plant to the Inland Empire Brine Line (IEBL) in San Bernardino is also under construction. A memorandum of understanding (MOU) between BCVWD and the City for recycled water purchase and use was signed in July 2019 and the City and BCVWD are in the process of finalizing an agreement for purchase of recycled water through an ad-hoc committee of City Council members and BCVWD Board Members.

The Regional Water Quality Control Board (RWQCB)[12] has ordered the City to be in compliance with the maximum benefit provisions, which include providing recycled water for beneficial use, by March 1, 2020. Construction completion has been delayed due to wet weather and the Covid-19 virus shutdown.

When the demand for recycled water for landscape irrigation is less than the supply available (winter months), BCVWD may ultimately recharge the surplus recycled water at BCVWD's groundwater recharge facility or some alternative facility with appropriate treatment and permits. Recycled water use and recharge is permitted by the Adjudication.

[12] RWQCB (2015). Waste Discharge Requirements and Master Reclamation Permit for the City of Beaumont, Beaumont Wastewater Treatment Plant, Riverside County, Order No. R8-2015-0026, NPDES No. CA0105376, July 24.

6. UPDATED WATER DEMANDS IN SAN GORGONIO PASS AREA

In 2018, BCVWD developed a series of White Papers (White Papers No. 1 through 7) that evaluated water supply, water demands, current and future water supply costs, funding requirements and funding strategies considering both BCVWD's service area and the SGPWA as a whole. These White Papers were presented at BCVWD Board Meetings and elsewhere. The purpose of the White Papers was to assess the water supply situation vis-à-vis the growth in demand both regionally and within BCVWD's service area. The results of this series of White Papers indicated that the regional imported water demands in BCVWD's 2015 UWMP and the SGPWA 2015 UWMP may be overstated, primarily because of over-aggressive growth in demand, limited consideration of recent state-mandated conservation and indoor water use requirements, etc.

6.1 Regional Water Supply and Demand Spreadsheet Models

BCVWD, in cooperation with the other major retailers, developed a Regional Water Demand Spreadsheet or Workbook which included a separate worksheet for each of the three major retailers in the SGPWA service area: BCVWD, City of Banning, and Yucaipa Valley Water District (YVWD)/City of Calimesa. The other water supply agencies, e.g., Cabazon Water District, High Valleys Water District, etc. that are not currently receiving imported water from SGPWA were also included in the current spreadsheet modeling, based on their demand data in SGPWA's 2015 UWMP.

The spreadsheet model allows the water agency/city to input (and adjust):

- New EDU Water Demand, AFY/EDU
- Existing EDU Water Demand, AFY/EDU
- Infill EDUs/year
- Commercial & Institutional EDUs/yr, as a % of Residential EDUs
- Commercial & Institutional EDUs, Minimum EDUs/yr
- Water Conservation, % Reduction on Existing Demands
- Water Conservation, % Reduction on New Demands going forward
- 2017 Year Ending Potable Water Demand, AF
- Beaumont Basin Groundwater Storage Account Maximum, AF
- Beaumont Basin Groundwater Storage Account 2017 Ending Balance, AF

The demand worksheets included the major development projects in each of the retailer's service area, based on data in specific plans, water supply assessments, regional water resource planning studies, and other sources. The spreadsheets allow the water supply agencies to input their own development rates, on a year by year basis, to adjust anticipated housing startups, build-out years for large developments, and the amount of in-fill development and commercial/institutional

development; adjust unit water demands for new and existing housing, and account for any anticipated conservation for new and existing demands, among other items. Each water supplier could adjust their imported water banking requirements, and evaluate the impact of their strategies on their own Beaumont Basin storage accounts over time.

The spreadsheet provides a graph of the agency's annual groundwater storage account balance which is automatically updated with any input change. The purpose is to allow the agencies to model, on a year by year basis, various imported water purchase and banking strategies vis-à-vis available imported water from SGPWA. Adjustments can be made to water demands using conservation factors on new and existing (older) housing units; water supply sources can include groundwater, recharged recycled water (indirect potable reuse), and captured storm water. Beaumont Basin Watermaster's redistribution of unused overlier rights and forbearance water are included in the model.

The worksheets were reviewed by the retail water agency managers for reasonableness of growth taking into account the housing market and absorption capacity of the Pass Area. These spreadsheets, and the criteria are summarized below but are described in detail in White Paper No. 6.

Separate spreadsheet models have been developed for:

- BCVWD
- City of Banning, including Banning Heights Mutual Water Company, High Valleys Water District
- YVWD (Summerwind Ranch and Mesa Verde Area)
- All combined

6.1.1 City of Banning

Major development projects in the City of Banning which are included in the Regional Spreadsheet Model are shown in Table 6.

Table 6
Major Development Projects in City of Banning

Project Name	Projected EDUs	Estimated Start-up Year	Build-out Years
Butterfield Ranch (Atwell)	4,862	2020	30
Rancho San Gorgonio	3,385	2019	17
Diversified Pacific	98	2021	5
St. Boniface	171	2023	10

The data in Table 6 is taken from the water supply spreadsheets; these and other projects have been delayed. As a result the water supply spreadsheets most likely overestimate the near term water demands.

Butterfield Ranch (now Atwell by Pardee) was projected to start in 2015 and extend for 30 years to buildout in 2045 per the Project's Water Supply Assessment (WSA). The project recently started grading operations and currently is selling homes to be occupied sometime in 2020. There are 4,862 EDUs proposed, or an average of 160 EDUs per year over the 30 year build-out period. Rancho San Gorgonio is planned for 3,385 EDUs and initially projected to start in 2017 and be fully built out by 2034 (17 years) per the Project's WSA (about 200 EDUs per year average over the build-out period). This project has not yet started and probably will not start until sometime in after 2022 or later.

The spreadsheet for Banning included two other projects:

- Diversified Pacific (98 EDUs)
- St. Boniface (171 EDUs)

Specific years when these projects are to begin were not stated, nor were the buildout years. The spreadsheet assumes 2021 and 2023, respectively, for starting and build out years of 5 and 10 years, respectively. This may be optimistic.

In the development of the spreadsheet model for the City of Banning, the San Gorgonio Integrated Regional Water Management Plan (SGIRWMP), May 2, 2018 (Revised August 1, 2018) was analyzed in addition to the City's 2015 UWMP. The SGIRWMP covered the SGPWA service area generally east of Highland Springs Avenue. The SGIRWMP integrated three separate studies:

- Water Supply Reliability Study
- San Gorgonio Region Recycled Water Study
- San Gorgonio Integrated Watershed and Groundwater Model Technical Memorandum

The City of Banning has firm groundwater supplies from the Banning Storage Unit, Banning Bench Storage Unit, Cabazon Storage Unit, and Banning Canyon Storage Unit totaling 9,675 AFY.[13]

[13] Extracted from Table 5-4 in Banning 2015 UWMP.

In addition, in accordance with the Adjudication, the City of Banning is entitled to 31.43% of the unused overlier pumping rights in the Beaumont Storage Unit. Watermaster developed estimates of unused overlier rights for years 2018 through 2022 that are included in the spreadsheet. The amount of unused pumping rights varies from year to year, depending on hydrologic conditions and other factors, and is evaluated by Watermaster, annually. The 2017 Annual Watermaster Report (Final) indicates that Banning's reallocated unused overlier pumping amount for 2020 is 1,450 AFY, slightly more than that reported in the City of Banning's 2015 UWMP. As some of the overlying parties develop their properties, the overlier rights will be used by the potable water and recycled water supplying agency and will no longer be available for reallocation. As a result the total amount subject to reallocation will decrease over time. BCVWD made an estimate of the unused overlier pumping rights under a "developed" or "build-out" condition and estimated the total unused overlier amount would be 1,800 AFY under full buildout. The City of Banning's share (31.43%) would be 560 AFY (rounded) at buildout. The spreadsheet allows for the gradual reduction of the unused overlier pumping rights over time. It is projected by BCVWD to decrease to 560 AFY by 2030 or so as the overlying properties develop.

The City of Banning has 51,961 AF banked in their Beaumont Basin Storage account at the end of 2017 per Watermaster. At year-end 2018, the amount in storage had increased to 52,320 AF. For the period 2008 through 2017, the City of Banning has recharged an average of 1,294 AFY of SPW in BCVWD's recharge facility. The City can store up to 80,000 AF.

Table 7 presents a summary on the Supply-Demand Spreadsheet Model for the City of Banning. The year 2040 data was projected from previous years since the model currently only extends to 2035.

Table 7 was based on the following criteria:

- 2017 Ending Potable Water Demand: 7,500 AFY
- New EDU water demand: 0.52 AFY/EDU
- Existing EDU water demand: 0.62 AFY/EDU
- No demand reduction due to conservation on either existing or new EDUs

This was reviewed by the City of Banning. Table 7 indicates that the City of Banning has adequate local supply until 2035. Note that Banning's Beaumont Basin Groundwater Storage Account is full in 2030. (Per the spreadsheet model it actually fills in 2027). This indicates that the City of Banning has minimal imported water needs from SGPWA until 2040.

Table 7
Summary of Spreadsheet Supply-Demand Model for City of Banning

Demand or Supply	Year					
	2018	2020	2025	2030	2035	2040
Total New EDUs/year		218	388	706	220	220
Potable Water Demand, AFY	7,504	7,678	8,406	9,902	10,832	11,400
Banning/Cabazon Groundwater, AFY	9,675	9,675	9,675	9,675	9,675	9,675
Beaumont Reallocated Overlier Rights, AFY	2,001	1,450	1,100	600	560	560
Total Local Supply, AFY	11,676	11,125	10,775	10,275	10,235	10,235
Surplus/(Deficiency)	4,172	3,447	2,369	373	(597)	(1,165)
Imported Water, AFY						1,000
Groundwater Storage Account, AF	56,133	63,100	77,573	80,000	78,415	76,510

6.1.2 YVWD/City of Calimesa

Major development projects in the YVWD service area within SGPWA (principally the City of Calimesa) which are included in the Regional Spreadsheet Model are shown in Table 8.

Table 8
Major Development Projects in YVWD in SGPWA (City of Calimesa)

Project Name	Projected EDUs	Estimated Start-up Year	Build-out Years
Summerwind Ranch	3,841	2019	20
Mesa Verde	3,650	2022	20
JP Ranch [(a)]	500	2025	10

(a) Per discussions with J. Zoba, General Manager, YVWD.

To develop the spreadsheet for YVWD, several references were reviewed for YVWD's water supply and projected demands within their service area lying within the SGPWA boundaries:

- 2015 SGPWA UWMP
- 2015 San Bernardino Valley Regional UWMP
- Mesa Verde Water Supply Assessment (WSA) – Draft August 11, 2017
- YVWD Strategic Plan For Sustainable Future (Adopted August 20, 2008)

The EDUs for Summerwind Ranch and Mesa Verde were taken from the Specific Plans for these projects. Grading for street and utility work and model construction is underway for Summerwind Ranch, with first homes coming "on-line" sometime in 2019. Mesa Verde is estimated to start in

2022. An estimated 20 year build-out time for Summerwind Ranch and Mesa Verde was assumed, resulting in an average of 192 and 183 EDUs per year, respectively. Per YVWD, future phases of JP Ranch will likely not start until 2025 with a 10-year build-out period (about 50 EDUs per year). It should be noted there will be additional EDUs associated with the developments for related commercial and retail developments, schools, parks, restaurants, etc.

Water supply sources for these projects are:

- Reallocated unused overlier pumping rights in the Beaumont Basin
- Oak Valley Partners' earmarked transfer right
- Banked groundwater from storage
- Imported Water from SGPWA
- Treated potable water from the YVWD's Regional Water Treatment Plant

In accordance with the Adjudication, YVWD's share (13.58%) of the reallocated unused overlier pumping right was determined by Watermaster for 2018 through 2022 and reported in the 2017 Watermaster annual report. To project the amount available under more long term conditions, BCVWD made an evaluation of a fully developed condition of the developable overlier parcels as shown on the worksheet in the spreadsheet. BCVWD believes the total unused overlier right at build-out will be about 1,800 AFY; YVWD's share will be about 240 AFY (rounded).

Both Mesa Verde and Summerwind Ranch are part of the original Oak Valley Development that started with the Landmark Land Company of California in the 1980s. The original Landmark Project was a master planned golf/recreational development. Oak Valley Partners (OVP) took over the project and were involved in the Beaumont Basin Adjudication. OVP has overlying groundwater rights in the Beaumont Basin [originally 1,806 AFY but reduced to 1,398.9 AFY, (round to 1,399 AFY), after the safe yield was reduced in 2014]. These overlier groundwater rights will be transferred to YVWD to serve the Summerwind Ranch development only per YVWD.

YVWD uses 700 gal/day/EDU (0.78 AFY/EDU) for total water demand for existing EDUs; but requires all new development to be dual-plumbed and requires the use of recycled water outside. Potable water demands are estimated by YVWD to be 40% of the total water demand, i.e. 280 gal/day/EDU (0.37 AFY/EDU) with the remainder, i.e., 420 gal/day/EDU to be recycled water. It is BCVWD's opinion that the Adjudication requires OVP to forebear the pumping of their 1,399 AFY overlier pumping right, on an acre-ft by acre-ft basis, for both potable and recycled water received for a project development.

YVWD has groundwater banked in the Beaumont Basin; at the end of 2017, per Watermaster, the amount in storage was 15,776 AF. This had grown to 16,633 AF by the end of 2018. YVWD has a 50,000 AF storage account.

The following Table (Table 9) was extracted from the Mesa Verde WSA. The Mesa Verde WSA indicates 1,200 AFY is proposed to be recharged (banked) by YVWD from 2020 through 2040. YVWD developed a Strategic Plan for a Sustainable Future, The Integration and Preservation of Resources for a Sustainable Future (adopted August 2008) identified a groundwater banking program for future reliability for droughts and disruption in the SPW supply as shown in Table 9.

The Plan indicates a Board Policy of banking of 15 percent of the total water supply used by the YVWD's customers. Data was not available to confirm the 1,200 AFY in Table 9; but 1,200 AFY is used in the spreadsheet model.

The total of the drinking water demands for the Water Filtration Facility plus the Conjunctive Use Demands match with the projected imported water demands in the SGPWA 2015 UWMP as shown in Table 2-4 presented previously.

Table 9
YVWD SGPWA Imported Water Demands

Imported Water Demands from the San Gorgonio Pass Water Agency (Acre-feet)	2015	2020	2025	2030	2035	2040
Drinking Water Demands: Yucaipa Valley Water Filtration Facility	454	609	767	962	1,191	1,444
Conjunctive Use Demands -Local Water Banking	0	1,200	1,200	1,200	1,200	1,200
New Development Long-Term Supply - Sustainability Program	0	2,504	3,040	3,596	4,344	3,407
Purchase from SGPWA	**454**	**4,313**	**5,007**	**5,758**	**6,735**	**6,051**

Source: Mesa Verde Project WSA Draft August 11, 2017, page 25

Table 9 also identified "New Development Long-Term Supply—Sustainability Program which relates to YVWD's Strategic Plan for a Sustainable Future, mentioned above. YVWD requires all new developments to provide funding to secure 7.0 AF of supplemental imported water per EDU. This amount of water is sufficient to meet the drinking water demands generated by each new EDU for a period of 20 years. YVWD also offers a Crystal Status Development Program whereby the developer provides funding for 15.68 AF of supplemental imported water per EDU which is sufficient to meet the potable and non-potable (recycled) water demands of the new EDU for 20 years. The difference between the two programs is that under the standard (7.0 AF/EDU) program, development will be restricted, (i.e., no grading or building permits will be issued), when a Stage 2 water shortage is declared (10% cutback). However, Crystal Status Development can continue through a Stage 4 Shortage (35% cutback). The 7.0 AF/EDU will not need to be replenished for 20 years. For this spreadsheet, the Standard 7.0 AF/EDU imported water purchase and storage was used, since it is difficult to determine how many new developments will purchase Crystal status. This is conservative.

The spreadsheet assumes that 7.0 AF/EDU will be applied to all new developments (Mesa Verde and JP Ranch) in YVWD, except for Summerwind Ranch, which has overlier pumping rights available to meet its projected demands.

Table 10 presents a summary on the Supply-Demand Spreadsheet Model for YVWD in the SGPWA service area, i.e., principally the City of Calimesa. Year 2040 data was projected from previous years since the model currently only extends to 2035.

Table 10 was based on the following criteria:

- 2017 Ending Potable Water Demand: 500 AFY

- New EDU potable water demand: 0.37 AFY/EDU
- Existing EDU water demand: 0.78 AFY/EDU
- Water demand reduction from conservation on new EDUs: 10%
- Water demand reduction from conservation on existing EDUs: none

Table 10 indicates that YVWD, in SGPWA service area, has sufficient local supply to meet demands until 2025, at which time imported water will be needed unless YVWD plans on withdrawing water from their storage account. The YVWD Beaumont Basin Groundwater Storage Account is full in 2030 primarily because of the "Sustainability Water" which is banked. YVWD's total imported water demands reported in the Mesa Verde WSA differs from YVWD's imported water demands in the SGPWA 2015 UWMP presented earlier.

Table 10

Summary of Spreadsheet Supply-Demand Model for YVWD (City of Calimesa)

Demand or Supply	Year					
	2018	2020	2025	2030	2035	2040
Total New EDUs/year		83	464	551	551	500
Potable Water Demand, AFY	503	544	1,065	2,054	3,058	4,062
Oak Valley Partners Earmark Transfer, AFY	3	50	586	1,399	1,399	1,399
Beaumont Reallocated Overlier Rights, AFY	864	627	400	240	240	240
Total Local Supply, AFY	867	677	986	1,639	1,639	1,639
Surplus/(Deficiency)	364	133	(79)	(415)	(1,419)	(2,423)
Imported Water for Regional Filtration Facility, AFY (a)	500	609	767	962	1,191	1,444
Imported Water for Banking, AFY (a)		1,200	1,200	1,200	1,200	1,200
Imported Water for Sustainability, AFY	49	51	1,655	2,260	2,260	2,260
Total Imported Water, AFY	549	1,860	3,622	4,422	4,651	4,880
To (From) Storage, AFY	913	1,993	3,542	4,007	3,232	2,457
Groundwater Storage Account, AF	16,689	19,397	32,825	50,000	50,000	50,000

(a) Source: YVWD's Mesa Verde WSA, pg. 25, SGPWA SPW or equivalent used at Filtration Plant

6.1.3 BCVWD

6.1.3.1 City of Beaumont Development

Major development projects in the BCVWD service area, which are included in the Regional Spreadsheet Model, are shown in Table 11. The projected EDUs planned, or yet to be built, are estimated and may vary slightly from City of Beaumont Project Status Report estimates.

Figure 4 shows the number of single family home building permits issued in the City of Beaumont for the years 2000 through 2019. Although not shown in the Figure, the permit applications started to increase in 1999-2000 and reached their peak in 2005 with 2,300 new home permits issued for that year. The number of permits for new homes declined to a low of 169 in 2011. Over the last 10 years, permits averaged 455 per year, and 577 over the last 5 years. The 19-year average was 684 per year. Future growth will likely be in the range of 450 to 650 permits per year, although some developers have projected slightly higher amounts in their build-out forecasts. It should be noted that not all Single Family Permits in a given year turn in to "occupancy" during that year.

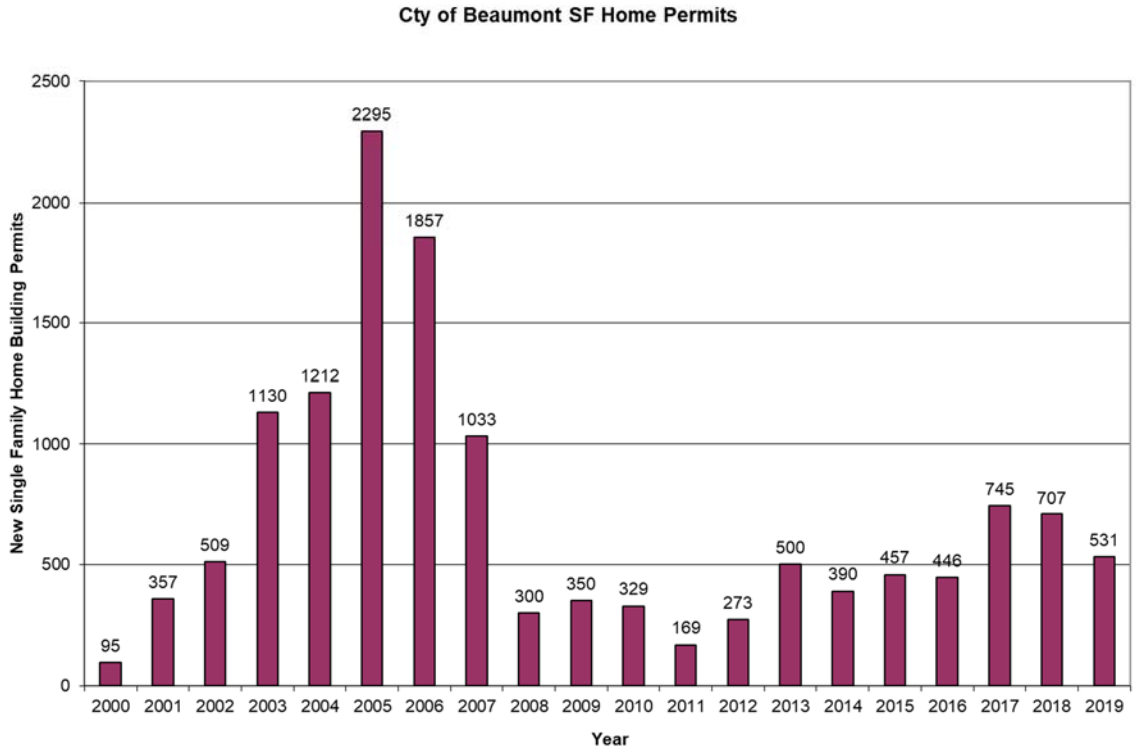


Figure 4
City of Beaumont Single Family Home Permits

The EDUs in Table 11 total 12,545; at the rate of 480 to 500 EDUs/year, it would take about 25 years to construct these units or about 2040 or slightly beyond.

Table 11
Major Development Projects in Planning or Construction Stages
(from BCVWD 2015 UWMP)

Project Name	Projected EDUs (Planned or Yet to be Built End 2017)	Estimated Start-up Year	Build-out Years
Tournament Hills Ph 4	281	2020	4
Sundance[a]	1,262	2018	5
Fairway Canyon[a]	1,810	2019	20
Heartland Olivewood[a]	1,081	2018	20
Four Seasons[b]	203	2018	3
Kirkwood Ranch	391	2022	12
Potrero Creek Estates	700	2025	10
Noble Creek Meadows	648	2021	15
Hidden Canyon Industrial[a]	82	2019	5
Sunny Cal Egg Ranch	529	2019	10
Jack Rabbit Trail	2,000	2030	25
The Preserve/Legacy Highlands	3,218	2025	25
Taurek	244	2022	20
TR 32950 Manzanita	95	2022	10
Other Projects on City of Beaumont's Project Status List (10/18/2018)			
Sundance Corporate Center[a]	---	2018	2019
Rolling Hills Ranch Industrial Ph 2 [b]	---	2020	2021
Centerpointe Commercial[b]	---	2018	2019
San Gorgonio Village Ph 2 [a]	---	2020	2021
Total EDUs	12,545		

(a) Under construction;

(b) Recently completed.

6.1.3.2 Cherry Valley Growth and Development

The ultimate build-out population for that portion of Cherry Valley served by BCVWD, based on the Pass Area Land Use Plan[14] [15] densities, was estimated to be 21,700 people or about 7,750 EDUs. This was BCVWD's estimate in 2009, developed by BCVWD, using GIS land use data from Riverside County and typical development densities for the various land uses in the General Plan. The 21,700 people included 6,736 people in the City of Calimesa. BCVWD will not be serving the City of Calimesa as this is within YVWD's service area. As a result, the 21,700 population estimate, to be served by BCVWD, may be overestimated. BCVWD now believes it to be closer to 15,000 people at build-out, or about 5,350 EDUs. The build-out population is based on an increase from 2.43 persons per EDU, currently, to 2.8 persons per EDU projected at build-out.

There were 2,874 housing units in Cherry Valley in 2010 per the census data, but 26.6% of those are mobile homes. Adjusting for the reduced water use in mobile homes, the 2,874 housing units are equivalent to about 2,485 EDUs. The Sunny Cal Egg Ranch Development, (529 EDUs from Table 11 below), is included with the City of Beaumont's development projects, but is actually within the current Cherry Valley census area. The 529 Sunny Cal EDUs and would have been included in the projected 2,865 EDU increase for Cherry Valley, (5,350 EDUs – 2,485 EDUs). To avoid "double counting EDUs," the Sunny Cal Egg Ranch EDUs were deducted from the 2,865 EDUs, resulting in a net projected 2,336 EDU increase for Cherry Valley to build-out. The buildout population and EDUs will be revised in future updates of the BCVWD Potable Water Master Plan and UWMPs.

BCVWD believes Cherry Valley will be growing at a low rate keeping with its character of residential rural community; growth rate is estimated to be less than 10 EDUs/year until the City of Beaumont's currently planned projects are developed. Once the City of Beaumont has developed, Cherry Valley will likely begin to be developed at a gradually increasing rate, perhaps increasing to 30 to 50 EDUs/year; but this is not expected to occur until after 2040.

Table 11 shows Jack Rabbit Trail as 2,000 EDUs; the current proposed development concept by a developer is to construct major commercial/industrial buildings with a resulting reduction in EDUs. However, this is uncertain and plans could change. For planning purposes for water supply, Jack Rabbit Trail is assumed to be 2000 EDUs until firmed up by the City of Beaumont.

6.1.3.3 Supply Demand Model for BCVWD

Table 12 presents a summary of the spreadsheet model for BCVWD's demand which was based on the following criteria:

- 2017 Ending Potable and Non-potable Water Demand: 12,981AFY
- New EDU water demand: 0.546 AFY/EDU
- Existing EDU water demand: 0.62 AFY/EDU
- Water demand reduction from conservation on new EDUs: 5%

[14] Pass Area Land Use Plan, October 7, 2003, Part of Riverside County General Plan.
[15] The Pass Area Plan, County of Riverside General Plan Amendment 960, Draft March 2014.

- Water demand reduction from conservation on existing EDUs: 5%

BCVWD's source of supply consists of:

- **Edgar Canyon (Little San Gorgonio Creek) Groundwater**. The annual yield for Edgar Canyon is based on 37 years of pumping records. The average annual production for the period 1983 – 2019 was 2,094 AFY, which was rounded to 2,100 AFY in the spreadsheet. However, for 2018, the production was reduced to 1,700 AFY to account for the reduced production in some wells due to reduced pump efficiency. These pumps have been refurbished and are fully operational. They will be refurbished on a regular basis from now on.
- **Beaumont Basin**
    - Reallocated Unused Overlier Pumping Rights – Watermaster provided the amount of reallocated overlier rights in the 2017 Draft Annual Report for each year up to 2022. BCVWD was allocated 2,706 AF in 2018 and 1,962 AF in 2020. Thereafter, BCVWD made an estimate based on production and development of the overliers' property. BCVWD estimated the long-term, fully developed, unused overlying party pumping rights would be about 1,800 AFY. BCVWD gets 42.51% of the unused overlier pool each year. At full development, BCVWD estimates its share is 760 AFY.

Table 12
Summary of Spreadsheet Supply-Demand Model for BCVWD

Demand or Supply	Year					
	2018	2020	2025	2030	2035	2040
Total New EDUs/year	381	580	460	552	458	297
Potable and Non-potable Water Demand, AFY	13,129	13,668	14,841	16,032	17,192	18,100
Edgar Canyon, AFY	1,700	2,100	2,100	2,100	2,100	2,100
Beaumont Reallocated Overlier Rights, AFY	2,706	1,962	1,200	760	760	760
Forbearance Water (Sunny Cal Egg Ranch), AFY	0	50	200	340	340	340
Recycled Water City of Beaumont, AFY (to be realized in 2021)	0	1,556	2,188	2,840	3,487	3,930
Stormwater Capture, AFY	0	0	250	250	250	250
Other Local Water Resource Projects, AFY	0	0	250	250	250	250
Total Local Supply, AFY	4,406	5,668	6,188	6,540	7,187	7,630
Surplus/(Deficiency), AFY	(8,723)	(8,000)	(8,653)	(9,492)	(10,005)	(10,470)
Imported Water for Replenishment, AFY	8,723	8,000	8,653	9,492	10,005	10,470
Imported Water for Drought proofing, AFY	1,000	1,000	2,000	2,500	2,500	2,500
Total Imported Water, AFY	9,723	9,000	10,653	11,992	12,506	12,970
To (From) Storage, AFY	1,000	1,000	2,000	2,500	2,500	2,500
Groundwater Storage Account, AF	33,296*	35,296	41,296	51,796	64,296	76,796

*2018 Groundwater Storage Account Volume in Table 12 is estimated. The actual is 34,794 AF.

- **Forbearance Water** is credited to a water supplier by Watermaster for any potable and/or recycled water provided to an overlier when the overlier's property develops. The overlier forbears pumping the equivalent amount of water supplied. BCVWD will be supplying the Sunny Cal Egg Ranch Development with both potable and recycled water at some point. Sunny Cal Egg Ranch and associated partners are overlying parties and have pumping rights. BCVWD estimates that fully developed demand from recycled and potable water is about 340 AFY. The amount of forbearance water will increase over time from zero AFY to 340 AFY as the project develops to anticipated buildout in 2030.
- **Water from Groundwater Storage** – BCVWD has an 80,000 AF storage account in the Beaumont Basin. As of the end of 2017, there were 32,296 AF in storage per Watermaster's 2017 Annual Report. The amount in storage increased to 34,794

AF at the end of 2018. BCVWD's plan, which is shown in BCVWD's 2015 UWMP, envisions banking from 1,000 AFY to 2,500 AFY to drought proof BCVWD. This is accounted for in the spreadsheet each year. Should there be a year when the projected amount cannot be delivered by SGPWA, any deficiency will be made up in successive years when adequate supply is available. Table 12 shows that for average water supply conditions, banking is anticipated every year and no water will be withdrawn from storage.

- **Recycled Water from the City of Beaumont** – The City is required by Regional Water Quality Control Board (RWQCB) Order No. R8 -2015-0026 to have recycled water put to beneficial reuse by March 1, 2020. The City started the construction of the new wastewater treatment plant, reverse osmosis desalting unit, and the required brine line from the wastewater treatment plant to the Inland Empire Brine Line (IEBL), in San Bernardino. The City has completed Title 22 Engineering Report for the new Treatment Facilities which is under review by the RWQCB and CDDW. BCVWD's water supply is premised on the basis that 1.8 mgd habitat mitigation, previously negotiated with U. S. Fish and Wildlife in 2008 will not change. The City and BCVWD signed a Memorandum of Understanding (MOU) in July 2019 which will form the basis for an agreement on the sale and reuse of recycled water from the new treatment plant. The City and BCVWD are in the process of developing a recycled water purchase agreement. BCVWD and the City are working jointly on coordinating the pumping and storage requirements at the treatment plant. The City will be the recycled water producer; BCVWD the distributor. BCVWD is in process of completing their Title 22 Engineering Report for the Distribution and Reuse Applications. BCVWD has developed draft rules and regulation for recycled water use and developed a cross-connection testing and control plan which has been previously approved by the CDDW. However, that was some time ago and BCVWD will be submitting the draft rules and regulations again, in the event there have been some changes in the requirements. At this time, recycled water is assumed to only be used for non-potable uses and to be available in 2021. In the future, as more recycled water becomes available during the late fall, winter, and early spring, BCVWD anticipates developing, with the City, an advanced treatment facility and secure permits for groundwater recharge of the surplus effluent. BCVWD and City anticipate providing recycled water to the Oak Valley Greens and/or Tukwet Canyon Golf Courses in exchange for forbearance water which would then increase BCVWD's potable water supply.

  The BCVWD spreadsheet model is based on 0.25 AFY wastewater/EDU (225 gallons/day/EDU) connected to the City's wastewater system. The City is obligated to maintain a 1.8 mgd discharge to Cooper's Creek for habitat maintenance; the available recycled water accounts for this 1.8 mgd "loss." A capacity factor 75% is applied to the available wastewater to account for brine discharge, recycled water used on the plant site for maintenance, and water contained in the biosolids which is hauled off-site. This results in a net of 0.20 AFY of recycled water generated per EDU.
- **Storm Water Capture** – BCVWD and Riverside County Flood Control and Water Conservation District (RCFC&WCD) are jointly working on a Santa Ana Watershed Project

Authority (SAWPA) Grant Project to design and construct Beaumont MDP-Line 16 storm water capture project, also known as the Grand Avenue Storm Drain in Cherry Valley. The project is partially funded under the Integrated Regional Water Management Implementation Grant Program under Proposition 84. A detailed analysis of the runoff potential was performed using 77 years of daily rainfall records from the Beaumont Rain Gage with the runoff determined for each storm using the Natural Resources Conservation Service (NRCS) curve number method. An estimated 200 to 230 AFY can be captured with MDP-Line 16 project. Other projects, in and around the BCVWD recharge facility, will capture excess flow in both Brookside Ave and Beaumont Ave to increase the annual capture (long term average) to 250 AFY, perhaps more. The MDP-Line 16 is in the final stages of design with construction to start in 2021.

- **Other Local Water Resource Projects** – BCVWD has several other local water resource projects which can be implemented including:
    - High nitrate groundwater at the mouth of Edgar Canyon. This groundwater can supplement the recycled water/non-potable water system flow in the summer, high demand months, making well water available for potable water use. BCVWD believes as much as 300 AFY can be captured and reused.
    - San Timoteo Canyon Extraction Wells to capture groundwater from the Beaumont Basin flowing into San Timoteo Canyon and also to capture City's wastewater flow discharged to Cooper's Creek once the water has percolated and is no longer available for habitat maintenance. It is estimated that 400 to 800 AFY can be captured and put into the recycled water/non-potable water system to help meet summertime demands. High groundwater has been observed along Oak Valley Parkway in the vicinity of Palmer Drive and was encountered in the construction of the City's brine line. This water can be captured and used to supplement the recycled water during the high demand summer time.
    - For purposes of this WSA, 250 AFY are assumed to be available with the initial phases of these projects.
- **Imported Water from SGPWA** -- The amount of imported water which BCVWD is able to purchase and recharge is the amount left over after YVWD, the City of Banning, and others have purchased the amount each needs to meet their demands and banking. The amount available from the SGPWA collectively is discussed later in this WSA. BCVWD has entered into an agreement, and participated financially, with the SGPWA for a share of the yield from the Sites Reservoir Project. This is discussed later in this WSA.

6.2 Summary of Member Agency Imported Water Demands on SGPWA

Table 13 presents a consolidated summary of the spreadsheet model demands for the City of Banning, YVWD/Calimesa, and BCVWD from Tables 7, 10, and 12 presented previously. The imported water demands include from 4,792 to 7,912 AFY for banking and drought proofing. Table 13 also includes a projected amount of imported water for member agencies in SGPWA that are not currently taking SPW. These amounts were taken from SGPWA's 2015 UWMP. BCVWD believes these amounts are very conservative considering the growth rates in the Pass Area.

Table 13
Regional Summary of Spreadsheet Supply-Demand Model for SGPWA

Demand or Supply	Year					
	2018	2020	2025	2030	2035	2040
Potable Water Demand, Banning YVWD/Calimesa, BCVWD (Potable and Non-potable), AFY	21,135	21,890	24,312	27,987	31,083	33,562
Local Supply, Banning YVWD/Calimesa, BCVWD, AFY	16,949	17,470	17,949	18,454	19,061	19,404
Imported Water Demand, incl. drought proofing, etc., AFY	10,272	10,860	14,274	16,414	17,157	18,950
Total Imported and Local Supply, AFY	27,221	28,330	32,223	34,868	36,218	38,354
Total to (from) Regional Groundwater Storage, AF	6,085	6,440	7,912	6,881	5,135	4,792
Regional Groundwater Storage, not incl. SGPWA, AF	106,118	117,793	151,694	181,796	192,711	217,529
SGPWA Imported Water Demands for those agencies not currently taking imported water, from SGPWA 2015 UWMP, AFY		500	1,600	2,800	3,900	5,000
Total Imported Water Demand, AFY	10,272	11,360	15,874	19,214	21,057	23,950
Total Imported Water Demand, without banking or drought proofing, AFY	9,223	9,109	11,019	13,254	15,097	17,914

7. SGPWA AVAILABLE IMPORTED WATER

At the present time (2019) the “firm” supplies of imported water available to SGPWA, (or in the final stages of being finalized), between now (2019) and 2040 are:

- Table A
- Yuba Accord Water
- SBVMWD Surplus Water
- AVEK (Nickel Water)
- Ventura/Casitas Water Lease/Purchase (exchange agreements currently being executed on a year by year basis)

Other sources which are in various stages of implementation are:

- Delta Conveyance Project (DCP) [formerly California Water Fix (CWF)]
- Sites Reservoir (Sites)
- Purchase of State Water Project Contractors Incremental Delta Conveyance Facility Reliability Benefits

- Purchase or Leasing of Metropolitan's Delta Conveyance Project Phase 2 Water, if available.
- Other Sources Available through SWP such as Article 21 Water and Turn-back Pool Water

These are discussed in White Paper No. 6, but reiterated here.

7.1 State Water Project (SWP) Table A

SGPWA's contract with the Department of Water Resources (DWR) states a Table A amount of 17,300 AFY. Table A is the maximum amount of water the SGPWA can convey through the SWP facilities. This amount of water is not available consistently every year. In fall of each year, DWR provides an initial delivery allocation as a percent of Table A depending on amount of water in reservoir storage and anticipated hydrologic conditions. The allocation can be increased or decreased depending on the precipitation during the winter; a final allocation is usually issued in spring and sets the amount of water available, as a percentage of Table A, from the SWP. Since 1992, the allocation has averaged about 65%. DWR has prepared a reliability study[16] which indicated the SWP can deliver only about 62% of Table A (10,726 AF to SGPWA) in any one year. Table B-5B, in DWR's Bulletin 132-17, forecasts the amount of SPW delivered to SGPWA in future years at 10,380 AFY (60% reliability). For consistency purposes 10,380 AFY is the amount which SGPWA can rely on at the present time.

In the discussions over the Delta Conveyance Project (DCP) [formerly California Water Fix (CWF)], experts believe the current SWP reliability of about 62% will decrease over time to 48%, or possibly even lower, due to anticipated additional regulatory constraints to protect threatened and endangered fish within the Delta. The length of time over which this decline in reliability will occur is not certain, but to be conservative, it is assumed that by 2035, the SWP reliability will decrease to 48%. Implementation of DCP by 2030 to 2035 will restore reliability to the current 60% to 62% reliability.

For planning purposes in this WSA, the SWP delivery reliability is assumed to decline at rate of linearly from 2018 to 2035. So by the year 2035, with a delivery reliability of 48%, the SGPWA can expect only about 8,300 AFY from the SWP. Once the CWF is in place, the reliability will be restored.

7.2 Yuba Accord Water

Through the Yuba Dry Year Transfer Program, the official name for Yuba Accord Water, SGPWA can purchase additional supplemental water from Yuba County Water District under an agreement.[17] The amount of water available from the Yuba Accord varies year to year depending on hydrologic conditions. Yuba Accord Water has only been available, for purchase by State Water

[16] DWR (2012). State Water Project Delivery Reliability Report 2011. State of California Dept. of Water Resources, June.
[17] DWR (2008). Agreement for the Supply and Conveyance of Water by the Department of Water Resources for the state of California to the Participating State Water Contractors under the Dry Year Water Purchase Program, March 31.

Contractors (SWCs) since about 2009. There are delivery "losses," (termed "carriage cost" in DWR's Bulletin 132 series), in the Delta. The amount is typically assumed by DWR to be 20% of the delivered amount, adjusted as needed based on water quality considerations, plus another 2 to 3% Delta Conveyance "loss." Records in the Bulletin 132 series indicate that SGPWA purchased Yuba Accord Water in four years since 2009 although Yuba Accord Water was available every year from 2009 through 2015 except 2011. Purchases by SGPWA averaged 374 AFY, with deliveries averaging 280 AFY (factoring in the 25% loss).

The amount of Yuba Accord Water available depends on the calculated Sacramento Valley Water Year Index. Between 75,000 AFY (Dry Years) and 140,000 AFY may be available depending on the Water Year Index. If all 22 SWCs who elected to participate, decide to participate in a given year, SGPWA's share of the Accord Water is 0.21%, based on the proportion of SGPWA's Table A and the Total Table A of all 22 participants. If some SWCs do not want to participate in a given year, the allocation to each SWC is adjusted upward. SGPWA would normally get 158 AFY during a dry year and a maximum of about 294 AFY

The SGPWA estimates that about 300 AFY, on the average, of Yuba Accord Water can be obtained.[18] For purposes of this WSA, a conservative 30% total loss is assumed, which will reduce the amount than can be actually delivered to the Pass Area to 200 AFY. This is reasonable considering the past experience.

7.3 San Bernardino Valley Municipal Water District (SBVMWD Water)

The SGPWA Board of Directors authorized the General Manager to sign the Surplus Water Sale agreement with SBVMWD to purchase up to 5,000 AFY of SBVMWD's Table A water in years that SBVMWD's Board of Directors declares a surplus[19]. The availability of SBVMWD surplus water depends on hydrologic and groundwater conditions within SBVMWD's service area per SBVMWD Ordinance 79. SGPWA has the right of first refusal on the first 5,000 AFY of surplus water. Assuming SGPWA exercises the right, the agreement states that SBVMWD must first offer 50% of the available supply to one or both agencies that are in both SBVMWD and SGPWA, i.e., YVWD and South Mesa Water Company. Fifty percent of the water and any additional water "left over," can be offered to other SGPWA retailers. The agreement is for a term of 15 years from the date of execution (terminates in 2033), but SGPWA intends to renegotiate the terms and extend to some point in the future.

SGPWA estimates, based on past hydrologic conditions, this is likely to occur about two years out of every five, or 40% of the time. This is equivalent to 2,000 AFY in any one year. The term of this agreement will be at least 15 years from now or until about 2032.[20] For purposes of this WSA, the amount of water available from SBVMWD is 2,000 AFY until 2032.

[18] Refer to Table 3-1 of SGPWA 2015 UWMP
[19] SGPWA Regular Board Meeting Minutes, October 16, 2017, page 4.
[20] SGPWA 2015 UWMP

7.4 AVEK-Nickel Water

In June 2017, SGPWA Board of Directors approved an agreement with the Antelope Valley-East Kern Water Agency (AVEK) for 1,700 AFY for 20 years (to 2037) with the right of first refusal to extend it for a second 20 years. The water rights on the Kern River originally belonged to the Nickel Family, LLC that were sold to Kern County Water Agency (KCWA) and subsequently leased to other parties in various amounts. One portion (1,700 AFY) is under the control of AVEK, which offered the water to SGPWA. This water is not subject to the reliability issues of the SWP. Per the agreement, SGPWA must take all of the 1,700 AF each year or pay for 1,700 AF if the SGPWA does not take all of it in any one year.

7.5 City of Ventura and Casitas Municipal Water District (Ventura Water) and Other Exchanges

The Ventura County Watershed Protection District is one of 29 State Water Contractors, but the agency lacks the infrastructure at present to be able to take its 20,000 AFY of Table A water. The County's Table A is allocated to three entities: City of Ventura (10,000 AFY), United Water Conservation District (5,000 AFY), and Casitas Municipal Water District (5,000 AFY). Up until 2018, these agencies sold their Table A water back to the "Turn-back Pool" (discussed later in this WSA). In 2018, the City of Ventura (Ventura) and Casitas Municipal Water District (Casitas MWD) entered into an agreement to exchanging Table A water with SGPWA. BCVWD understands the SGPWA is also negotiating to enact an exchange of Table A water with the City of Ventura (and Possibly Casitas MWD) for 2020, also.

The SGPWA appears to be considering extending it to a more long-term arrangement. The SGPWA Board of Directors, at the May 4, 2020 meeting, authorized the General Manager to sign the draft agreement presented at the board meeting authorized staff to complete any and all action required to document the CEQA exemption, including the filing of the Notice of Exemption, develop and execute any agreements or documentation with DWR for the one year deal.

Under the terms of the 2018 agreement, SGPWA received all of Ventura's and Casitas MWD's Table A water allocation for 2018, or 5,250 AF considering the Department of Water Resources' year 2018, final 35% allocation, (up from the original 30% in the draft agreement). SGPWA paid all of the Transportation Capital, Transportation Minimum, Conservation Capital and Conservation minimum charges. Finally, each party to the agreement would be responsible for paying the variable costs for pumping the water to their respective service areas.

The SGPWA is obligated to return 40 percent of the Table A water taken from Ventura and Casitas MWD within 10-years, no later than the end of calendar year 2028. This amount would be from SGPWA's future Table A allocation, presumably during a "wet year." Ventura and Casitas MWD must initiate the request for return of the 40%, except they may not request return in any year that DWR has a Table A allocation of 30% or less. If the Table A allocation is between 30 and 50%, the two agencies will negotiate the delivery amount for that year. If there is any "balance" remaining after the 10-year period, the two agencies and SGPWA will negotiate alternative delivery methods which could include extension of the 10-year period by five years, rolling the balance into a long-term exchange, should that develop.

The SGPWA is also considering a more long-term water transfer with a State Water Contractor for a portion of their unused SWP Table A as identified in the SGPWA's September 2018 Board discussion related to imported water demands. Based upon information published by SGPWA, it appears that supply would potentially start at approximately 6,000 AF on an average year in 2020 and might decline to 3,500 AF in 2040 as that partner Agency utilizes more of their Table A supplies.

There is a one-year "deal" in process at present, and it is believed that the SGPWA is still pursuing a longer term arrangement, but for purposes of this WSA, a conservative approach will be taken and no long term arrangement will be in place.

7.6 Delta Conveyance [formerly California Water Fix (CWF)]

The SWP was authorized in the Burns-Porter Act, also known as the California Water Resources Development Bond Act, passed by vote of the people in November, 1960 (Proposition 1). Construction on most of the basic facilities of the SWP was completed by 1975. Due to cost considerations, and the fact that initial project water demands lower than design capacity, a number of the originally planned facilities were "scaled down" or deferred. Many have not been constructed to date for various reasons. One of those projects was the Cross-delta Facility known as the Peripheral Canal. As a result of the scaling down and facility deferments/cancelations, the SWP is not able to live up to its original delivery capacity. A number of other facilities were scaled down, deferred, or not constructed.

The Sacramento-San Joaquin Delta levees are vulnerable to seismic shaking; the Delta ecosystem continues to decline; flooding and saline water intrusion into the Delta impacts the water quality delivered to municipal and agricultural users during dry years; climate change, whether short-term (50 or 100 years) or long term (500 or more years), will cause increased water levels in the Delta further stressing vulnerable levees. The SWP dams and reservoirs were designed about 50 years ago with the hydrology of the times. Climate change will impact the operation of the SWP. Precipitation, which used to fall as snow and be stored in snowpack and slowly released into streams and reservoirs, will be in the form of rain which the reservoirs were not designed to accommodate. More water will be lost to the ocean in future years because of increased runoff and less storage.

The Delta Conveyance Project (DCP), intended to address some of these issues, proposed a dual, gravity tunnel conveyance system from north of the Delta extending south to the Clifton Court Forebay. This project has been scaled back by the current governor to a single tunnel. At the southerly end of the tunnel, a new Clifton Court Pumping Facility would lift water from the tunnels into Clifton Court Forebay. The water would be pumped from Clifton Court Forebay by the State and Federal Central Valley Project pumps as they now do. Water, ranging from 3,500 to 7,500 cfs, would be diverted from the Sacramento River into the tunnel and around (below) the Delta improving water supply reliability and export water quality TDS. The cost for the DCP was anticipated to be shared 55% by the State Water Contractors and 45% by federal Central Valley Project Contractors. This allocation share may change depending on the number of State and Central Valley Project Contractor participants.

Governor Newsom has stated his support for a "one-tunnel" (DCP) in his "State of the State" address, February 12, 2019, originally planned as Phase I of CWF.

The Delta Conveyance Project (DCP) is moving forward; on January 15, 2020 DWR issued a Notice of Preparation (NOP) for the environmental work on the reduced-size project which started the scoping comment phase. The scoping comment period ended on April 17, 2020; DWR will be considering the comments when the Environmental Impact Report (EIR) is prepared. The draft EIR is expected to be out for review and comment in early 2021.

A Delta Conveyance Project Authority has been established for the design and construction of the DCP; a Delta Conveyance Financing Authority has been established to develop the financing. The DCP is anticipated to be funded by revenue bonds issued by the State or a Joint Powers Financing Agency with payment by State Water Contractors south of the Delta through their existing contracts with the DWR – extended as needed into the future. In addition to other federal, State, and local permits, DCP requires changes to the water rights permits for the SWP and Federal Central Valley Project to authorize the proposed new points of diversion and their recombination. The DCP would most likely be funded by SGPWA through their State Water Project (SWP) Debt Service taxes. White Papers No. 3 and 6 provide more details on the funding etc. The DCP is not expected to be operational until about 2035. From now till 2035, the reliability of the SWP would gradually degrade over time to 48% without the Delta Conveyance Project due to a variety of reasons as described previously in this WSA.

The original CWF with its two tunnel approach was projected to increase the future reliability of the SWP by 14% (DWR study) to 17.62% (Metropolitan study) resulting in an increase of the overall reliability to 62% or, in the best case, 65.62%. This is about or slightly above the current reliability. It is not known to what amount of reliability increase will result from the new DCP but to be conservative, it is assumed the reliability will be restored to the current 60 to 62%.

Without CWF, SGPWA's reliable Table A would be 8,300 AFY (rounded, based on 48% of 17,300 AFY). The reliable Table A supply for SGPWA would increase to 10,380 AFY to 10,726 AFY at 60% and 62% reliability, respectively.

7.7 Sites Reservoir

Sites Reservoir is a proposed reservoir that would be located at the site of a cattle ranch in the eastern foothills of the Central Valley about 78 miles northwest of Sacramento and north of the Sacramento-San Joaquin Delta near the town of Maxwell, CA. Sites Reservoir is not on any major stream; all water must be pumped into the reservoir. Sites Reservoir was part of the original California Water Project, but was deferred. The reservoir in the original project proposal would have a surface area of about 14,000 acres and store between 1.27 and 1.81 million acre-feet. The estimated water yield would be between 470,000 to 640,000 acre-feet per year, depending on yearly rainfall and environmental regulations, according to DWR. The original project cost was over $5 billion.

The Sites Project Authority, a Joint Powers Agency, was formed in 2010 to be a proponent and facilitator, to design and potentially acquire, construct, manage, govern, and operate Sites

Reservoir and related facilities. Flood flows in the Sacramento River, over and above that needed to meet the demands of existing water rights holders, would be captured and pumped into Sites Reservoir. The Authority undertook a "Value Planning Study in October 2019 to identify alternatives which would make the project more affordable to the project participants. The Value Planning Report was completed in April 2020 and the original project was scaled down.

A very preliminary analysis indicated that reservoir sizes of 1.3 to 1.5 million acre-ft (MAF) with assumed diversion criteria would be able to provide enough water to meet current participant demands. The Tehama-Colusa Canal and the Colusa Basin Drain would be used as the conveyance systems. A recommended project with 1.5 MAF of storage, with 1,000 cfs of release into the Sacramento River or to the Colusa Basin Drain at Dunnigan. The cost in 2019 dollars is estimated to be $3.0 billion and 243,000 AFY long term yield.

The Project Authority stated that 21 agencies put up $27 million for planning and studies with another $19 million due this October to continue the process. Sites Reservoir was approved by the California Water Commission (CWC) for $816 million of Proposition 1 funding on July 24, 2018; the CWC also agreed to provide $40.8 million in early funding to assist in completing the needed environmental analyses and to obtain permits.

SGPWA has made a financial commitment of 10,000 AF and BCVWD committed to 4,000 AF (total 14,000 AF) to the Sites Project Authority to fund Phase 1 of the Sites Reservoir Study. Reliability is between 65% (worst case) to 100%[21]. The result is, 9,100 AFY at 65% reliability as a worst case.

Sites Reservoir will not produce water until about 2030 or so; however, there will be costs incurred by project participants moving forward. For purposes of this analysis it is assumed that water would not be available until 2035. The Sites Project Authority's current plan will finance Phase 2 costs on a year-by-year basis.

The Sites Authority is working closely with the federal Bureau of Reclamation to secure Bureau participation and funding which will reduce the cost to the current participants. It is believed the Sites Project Authority would be responsible for 60% of the project cost with the rest from the State and federal agencies. This may change since the Sites Authority anticipated slightly more Proposition 1 funding than the $816 million.

It is important to understand that although Sites Reservoir will not be delivering water for another 15 years, at this time the project is moving forward and is named in the Governors Water Resiliency Plan. The project has been awarded a substantial CWC Proposition 1 grant. The Sites Project Authority is continuing to refine its financing plan to fund the follow-on phases. The reservoir is an "off-stream" reservoir and so has a reduced environmental footprint. Although there is some risk in the implementation, with each step forward, the risk becomes less and the project is more certain.

[21] See White Paper No.1, Table 3

7.8 Sale of State Water Project Contractors Restoration of DCP Reliability Benefits

All south of the Delta, SWP Contractors pay their proportionate share of the DCP costs. With the implementation of the DCP, there will be restoration of SWP reliability. Although all of the "South of the Delta" SWP Contractors will be paying their proportionate share of the DCP, for various reasons, a few SWP Contractors may not need the benefits of the increased yield and may be interested in transferring (selling) their incremental yield to other interested SWP Contractors, such as SGPWA. At this point in time, not enough is known about the sale of incremental reliability yield and this will not be considered further until it is better defined.

7.9 Purchase or Leasing of Metropolitan's Original CWF Phase 2 Water

With original CWF 2-tunnel, 2-phase concept, the Metropolitan Water District of Southern California (Metropolitan) Board of Directors voted to fund their share of the original CWF plus agreeing to fund the second phase of the CWF (second tunnel), i.e., the Central Valley Project share. This would have made water available for Metropolitan to sell/lease to other interested parties, e.g., SGPWA. With the DCP scaled down to one tunnel, this does not appear to be an option any longer.

7.10 Other Sources of Imported Water

There are other sources of water available through the SWP which include:

7.10.1 Article 21 Water

Article 21 Water is water that is offered for purchase by DWR resulting from reservoir releases needed to accommodate impending storm or snowmelt runoff when water is still available after operational requirements for SWP water deliveries, water quality and Sacramento-San Joaquin Delta requirements are met. This water is available only on short notice and must be taken immediately. The cost for Article 21 Water is the variable transportation cost. BCVWD has capacity in its groundwater recharge facility to accommodate Article 21 Water. SGPWA constructed their own Fiesta Recharge Facility which can be used for Article 21 Water. Article 21 Water is in addition to the State Water Contractor's Table A amount.

An analysis of Article 21 Water availability indicated the amount available is highly variable and there is competition for the water. If the requests for purchase are greater than the available amount, it is typically allocated proportional to the requestors' Table A. A review of recent purchases from 2002 to 2015, with up to 17 "buyers," indicated that if SGPWA were a purchaser, their share would be about 0.5% of the total available. (The large agencies tend to dominate the purchases.) Table 14 presents an analysis of Article 21 Water availability to SGPWA based on DWR records from 1967 – 2015. Two periods of time were analyzed: total record and recent record.

The results in Table 14 indicate that 800 AFY, on the average of Article 21 could be obtained by SGPWA.

Table 14
Estimated Amount of Article 21 Water Available to SGPWA
Based on 0.5% of Total Available AF

	1969-2015	2001- 2015
Average, AFY	939	824
Median, AFY	362	216
Maximum, AFY	4,542	3,655
75th Percentile, AFY	1,544	1,550

Article 21 water was available during the heavy snowfall year, 2018-19 although the SGPWA was not able to take advantage of this since the BCVWD connection was out of service due to construction of the expanded turnout and the SGPWA's Fiesta Recharge Facility was not operational.

7.10.2 Turn-back Pool Water

Turn-back Pool Water is water that other State Water Contractors have ordered from DWR as part of their Table A, but decided they did not need the water that particular year and sold it back to DWR. DWR in-turn offers it for purchase at a set price, (quite inexpensive), to other State Water Contractors. Turn-back Pool Water has only been available since 1996 or so – after the Monterey Amendments to the State Water Contracts. Analysis of the data from 1997 through 2015, shows SWCs sold an average of 59,000 AFY of water back to the "pool" for purchase by other interested SWCs. (The median value was 29,770 AFY). Purchase of Turn-back pool water is also competitive, depending on hydrologic conditions. Assuming SGPWA's share is 0.5% based on the analysis of Article 21 Water, 295 AFY on the average could be purchased, (149 AFY median). It would be reasonable that SGPWA could rely on about 200 AFY of Turn-back pool water.

7.10.3 Short-term or Long-term Water Transfers or Exchanges

Short-term or Long-term Water Transfers or Exchanges is water that can be obtained through exchanges and transfers from other State Water Contractors who do not need all of their Table A water in a given year or years. There are opportunities almost every year. The City of Ventura/Casitas MWD exchange described previously is an example of such an exchange.

7.10.4 Recommendations for SGPWA

There is considerable competition for the Turn-back Pool and Article 21 Water and its availability is uncertain from year to year. SGPWA should take advantage of this water whenever it is available, and should be looking at short term transfers whenever water is available. It must be pointed out that transfers of SWC Table A is subject to the delivery SWP reliability.

7.11 Summary of Available Imported Water Supplies

Table 15 summarizes the range of available imported water supplies available to SGPWA based on the current and potential sources presented above. Agreements are in place for Ventura-Casitas (for 2018, 2019 and possibly 2020), AVEK-Nickel Water, and SBVMWD Surplus Water.

Per Staff reports presented to the Board of Directors of the SGPWA, SGPWA appears to be in discussions with Ventura-Casitas and other agencies for future exchanges. SGPWA is one of the 22 SWCs that has signed on to the Yuba Accord. Their share of the Yuba Accord Water is 0.21% of the available water. In addition, through their State Water Contract, SGPWA can purchase Article 21 Water and Turn-back Pool Water.

The Agency Board has agreed to support and participate in the original CWF; it is assumed the Agency will support the DCP. BCVWD and SGPWA have made financial commitments to Sites Reservoir, and currently planning to contribute to future phases of the Sites Project.

Table 16 presents a summary of current and projected SGPWA imported water supplies through 2040 in 5-year increments based on the yields in Table 15.

Table 15
SGPWA Current and Projected Available Imported Water Supply through 2040

Source	Low Yield Case, Annual Amount, AFY	High Yield Case, Annual Amount, AFY	Comment
Existing Table A	8,300	10,380	17,300 AFY but only 60% reliable (10,380 AFY) per Bulletin 132; to degrade to approximately 48% (8,300 AFY) without Delta Conveyance Project by 2035
Yuba Accord	200	200	When available, represents average per year
San Bernardino Valley MWD Surplus Table A Water (SBVMWD Water)	2,000	2,000	Up to 5,000 AFY available estimated 2 out of every 5 years (40%) of time = 2,000 AFY; agreement terminates in 2032, but can be extended.
Antelope Valley East Kern Water Agency (AVEK) Nickel Water, (AVEK Nickel Water)	1,700	1,700	20 year agreement terminates in 2037 with option for a 20 year extension
Additional Table A SGPWA Partner Agency	500	3,000	Looking at extended exchange agreement with Additional Table A SGPWA Partner Agency to utilize unused Table A. Estimated to be net 3,000 AFY initially to 500 AFY by 2040.
Article 21 Water Purchase	800	800	Variable, represents average per year
Turn-back Pool Purchases	200	200	Variable, represents average per year
Delta Conveyance Project (DCP)	0	0	Will increase reliability of State Water Project (SWP) back to 60 to 62%
Sites Reservoir	9,100	14,000	Worst case with 65% assumed reliability. (BCVWD has committed to 4,000 AFY of the 14,000 AFY)
Total Imported Water Potentially Available	22,800	32,280	

Table 16
Regional Summary of SGPWA Imported Water Supply, AFY

Source	Year					
	2018	2020	2025	2030	2035	2040
Imported Water Demand Table 13	10,272	11,360	15,874	19,214	21,057	23,950
Imported Water Demand, Table 13, without banking or drought proofing	9,223	9,109	11,019	13,254	15,097	17,914
Table A	10,380	10,135	9,524	8,912	8,300	8,300
Yuba Accord	200	200	200	200	200	200
AVEK Nickel	1,700	1,700	1,700	1,700	1,700	
SBVMWD	2,000	2,000	2,000	2,000		
Ventura-Casitas	5,250		(2,100)			
Subtotal	19,530	14,035	11,324	12,812	10,200	8,500
Extension of SBVMWD Agreement (Potential Extension)					2,000	2,000
Extension of AVEK Nickel Agreement						1,700
Article 21 Water Purchases		800	800	800	800	800
Turn-back Pool Water Purchases		200	200	200	200	200
Additional Table A SGPWA Partner Agency Side Deal (Potential Water Supply)		3,000	2,500	2,000	1,500	500
Subtotal	19,530	18,035	14,824	15,812	14,700	13,700
Delta Conveyance Project Reliability Recovery to 60% (worst case)					2,080	2,080
Sites Reservoir (worst case)					9,100	9,100
Total Potential Imported Water Supply	19,530	18,035	14,824	15,812	25,880	24,880

In Table 16, it was assumed the agreement with SBVMWD and AVEK Nickel would be extended due to the uncertainties in the yield of the Sites Reservoir and the Delta Conveyance Project. It was further assumed that there would continue to be Table A transfers and exchanges among SWCs; however, the potential amount is assumed to decrease over time as more of the SWCs require more of their Table A for their own use. Table 16 includes an amount for Article 21 and Turnback Pool purchases by SGPWA. It is also possible that a longer term arrangement can be worked out with Ventura-Casitas which would make more imported water available in the critical 2025 to 2035 period.

Figure 5 shows the SGPWA imported water demands, with and without banking, along with the amount of imported water potentially available taken from Table 16.

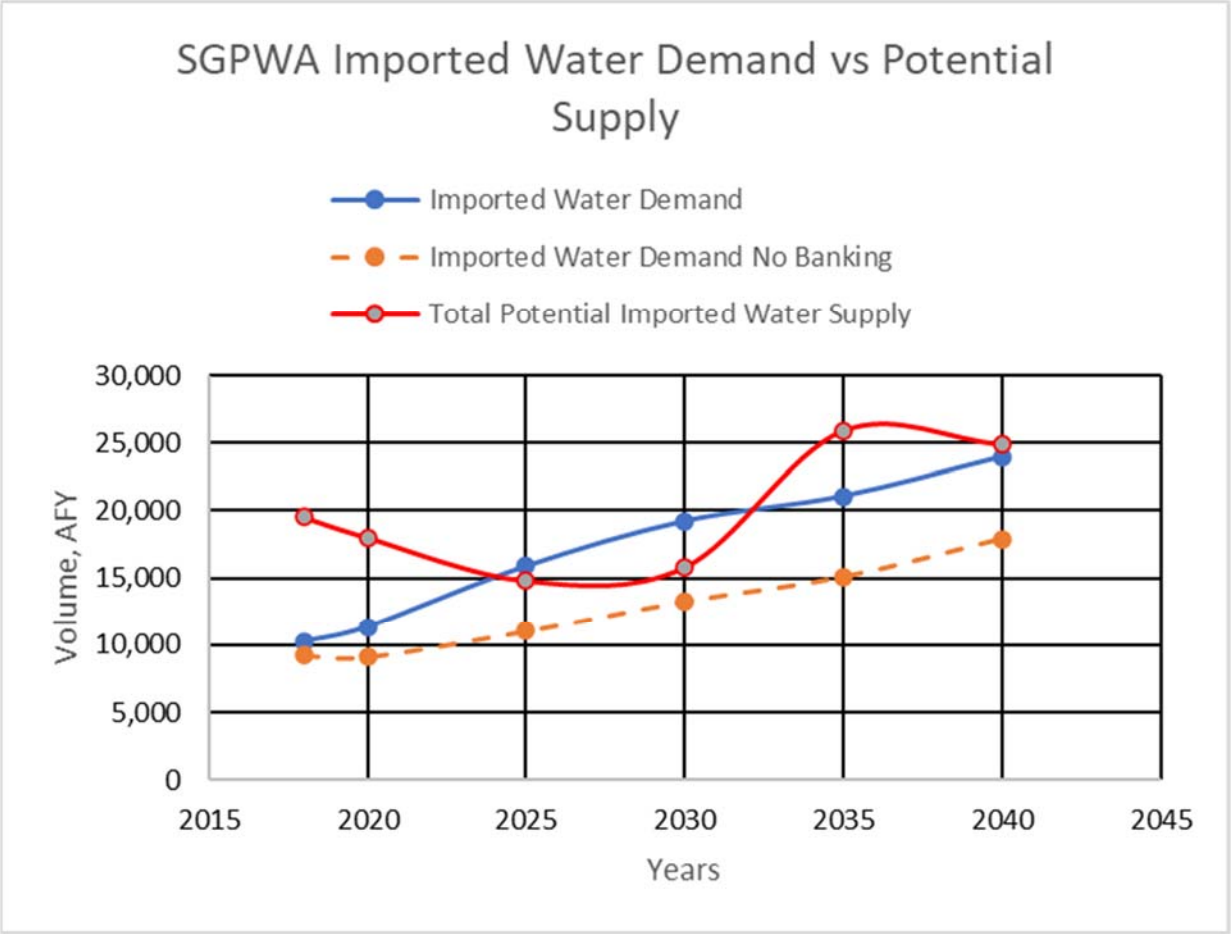


Figure 5
SGPWA Imported Water Demand vs Potential Imported Water Supply

Looking at Table 16, until 2025, SGPWA has sufficient imported water to meet the demands of the City of Banning, BCVWD, YVWD/Calimesa as well as the demands from those SGPWA members currently not taking imported water (called "other agencies"). BCVWD believes these other agency demands are very conservative and believes it is unlikely these areas will be developing to require those demands within the timeframe shown. It would be reasonable to believe that the Yucaipa/Calimesa to Banning area will develop more fully before development moves into these outlying areas. Beyond 2025 to about 2032 or so, when Sites Reservoir and the Delta Conveyance Project come on-line, there is sufficient imported water supply available except that not all of the banking demands will be met. BCVWD believes the increase in imported water demand shown in Figure 5 is aggressive and likely will not occur at the pace shown.

One of the uncertainties in Table 16 and Figure 5 is the yield from Sites Reservoir. BCVWD and the SGPWA have participated to 14,000 AFY; but only 65% of that was used in Table 16 and Figure 5 to account for reliability and uncertainty. If the full 14,000 AFY can be realized, the total imported water supply. Another 3,900 AFY can be realized. At the growth rate in imported water demand shown in Figure 5, this would provide imported water supply to beyond 2045 with banking and drought proofing.

Beyond 2025, the SGPWA will have to aggressively secure additional Table A from partner SWP agencies or other agencies on a short term basis until Sites Reservoir and the DCP are on line. With Sites Reservoir and DCP on line, the SGPWA will have more than ample imported water supply to 2040. As the Sites Reservoir and DCP become more firm in terms of the estimated yield, it may be necessary for SGPWA to plan on securing more water supply. This could consist of:

- Temporary or permanent transfers of other SWCs' Table A.
- Participating in other local/regional water supply projects with transfers and exchanges to ensure water supply well beyond 2040

Nevertheless, Table 13, presented previously, shows that about 6,000 AFY will be banked regionally by the water suppliers, including BCVWD, between now and 2025, i.e. about 45,000 AF of additional water is projected to be in storage than the current 106,000 AF. (See Table 13 presented previously). This would result in over 151,000 AF banked in regional storage. This storage could possibly be used to meet short term demands.

7.12 Contingency Plan

Once DCP and Sites Reservoir are operational there will be adequate water supply to meet the SGPWA imported water demands beyond 2040; just how long will depend on the rate of growth. It is recognized that there is some risk that DCP and Sites will be delayed or perhaps further reduced in size and capacity, but as these projects go through the design and permitting process over the next 5 years or so, there will be time to assess the risk. SGPWA can take action to supplement their existing supply with short-term exchanges and transfers from other agencies. If it is evident that DCP and/or Sites Reservoir will not move forward, the short-term exchanges and transfers can be converted to long-term transfers. Table 16 and Figure 5 assume the AVEK-Nickel Water Agreement will be extended for another 20 years to 2057 as allowed in the existing agreement. Another option is participating with other local agencies in other water resource projects such as groundwater, brackish water, or ever sea water desalination projects with water exchanges.

8. WATER SUPPLY AND DEMAND FOR BCVWD

Section 6.1.3 presented the water demand and water supply requirements, including imported water, under average hydrologic conditions for BCVWD. Section 7 quantified the imported water demands on the SGPWA from BCVWD and the other member agencies of the SGPWA. It is clear from the discussion at the end of Section 7, and Figure 5, presented above, that SGPWA will have enough imported water or has made commitments for, or taken steps to acquire additional imported water supply to meet its needs to year 2040 and beyond. However, there is risk that Sites Reservoir and the DCP may be delayed or may not be implemented. The projects are moving forward through the design and permitting process, but there is always a chance that the projects could be stalled.

Since BCVWD's demands and imported water requirements are included in SGPWA's imported water demands, it can be concluded that BCVWD has firm supply including imported water to meet demands to 2025 under average demand and supply conditions based on the growth rates and water consumption rates presented previously in this WSA, so long as Recycled Water is implemented and planned SGPWA water supply projects are finalized. Beyond 2025 BCVWD will rely on the SGPWA to secure short term water transfers, purchase of Turn-back Pool Water, and Article 21 Water to the time when DCP and Sites Reservoir are on line.

It should be noted that 28.6%, (4000 AF/14,000 AF), of the Sites Reservoir Project Yield, indicated in Table 15 for SGPWA, is committed to BCVWD by virtue of BCVWD's financial commitment to the Sites Reservoir Project Phase 1 and Phase 2 - 2019.

Figure 6 shows BCVWD's total potable and non-potable water supply and demand. Figure 6 shows BCVWD is able to meet its demands, providing recycled water and imported water supplies are available. Of note is the significant contribution from recycled water, shown in magenta in Figure 6. Without recycled water, BCVWD would not be able to meet future demands. The imported water demands in Figure 6 include the banking demands for drought proofing.

Figure 6 shows BCVWD's demand is less than the available supply. Figure 6 is based on the data from Table 12, presented previously, and assumes that all of BCVWD's needed imported water is available. Availability depends on the development and imported water needs of those agencies in SGPWA service area that are now not taking imported water.

Figure 7 shows the accumulated volume in BCVWD's Beaumont Basin groundwater storage account, and by 2040, the storage account is almost full (76,796 AF in storage). Table 12, presented previously, indicated that BCVWD's imported water demand was 10,470 AFY in 2040; this means that BCVWD is projected to have 7.3 years of imported water demand in storage which can be used to supply water during drought periods even if no SPW is available.

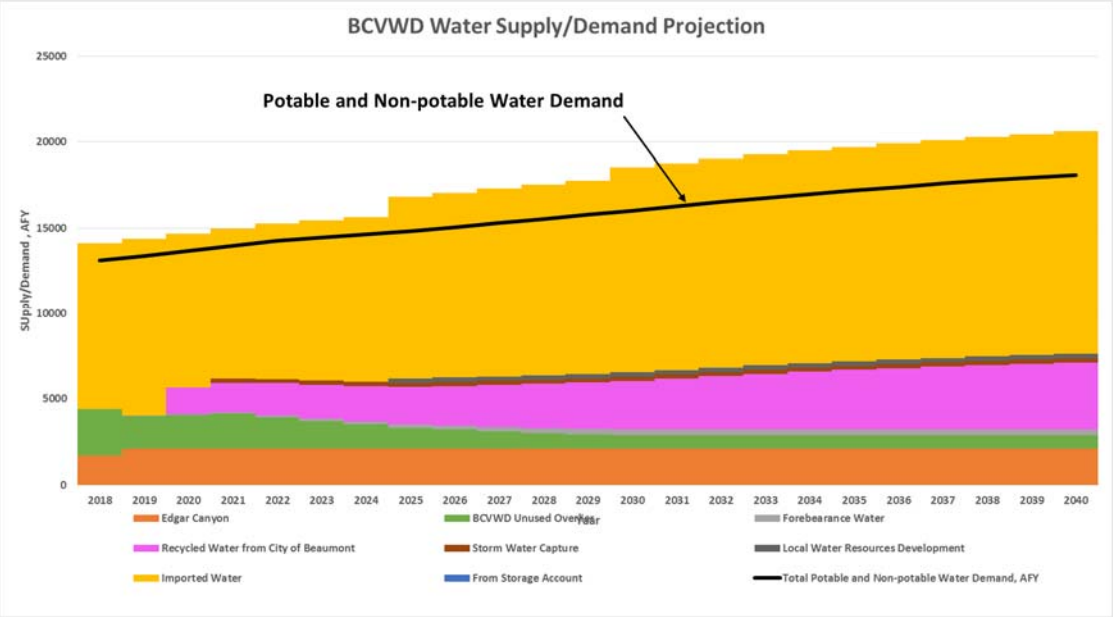


Figure 6
BCVWD's Water Supply and Demand Projection to 2040

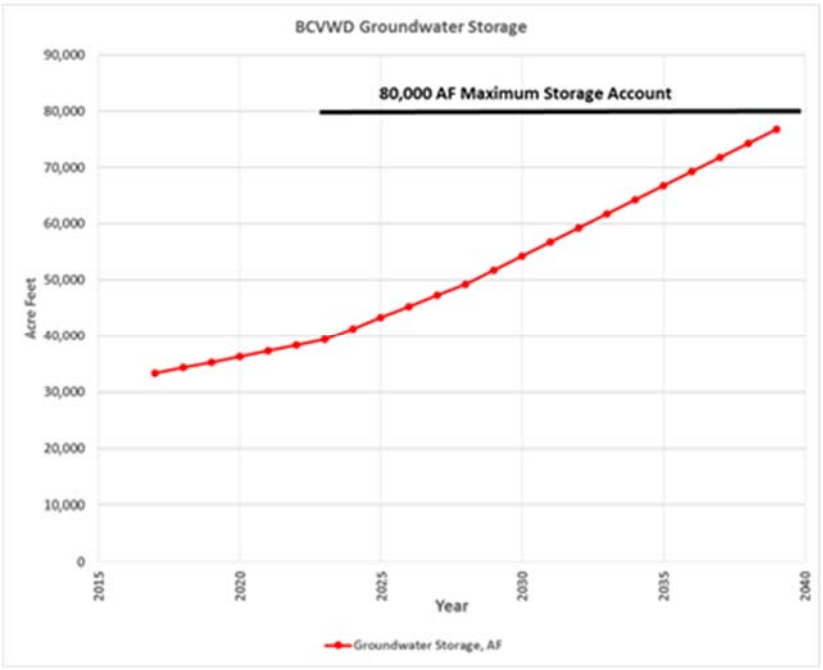


Figure 7
BCVWD's Groundwater Storage Balance to 2040

9. WATER SUPPLY SINGLE AND MULTIPLE DRY PERIOD ANALYSIS

The previous sections in this WSA analyzed a typical, normal or average, water supply year. The previous sections demonstrated there is adequate water supply both regionally and for BCVWD to meet the needs provided that the projects and agreements identified are implemented. But, in addition to a "normal" year, the WSA requires a supply sufficiency analysis for critical dry year and multiple dry year conditions. The water supply conditions for these periods are presented in BCVWD's 2015 UWMP, Section 7, Water Supply Reliability Assessment. Key tables and information are extracted from the 2015 UWMP to support the analysis presented herein and updated. The scenarios evaluated in this section include:

- Single Critical Dry Year -- the lowest water supply available to BCVWD, a worst case condition
- 2 Consecutive Dry Years -- the lowest average available water supply over a continuous 2-year period
- 3 Consecutive Dry Years-- the lowest average available water supply over a continuous 3-year period
- 6 Consecutive Dry Years-- the lowest average available water supply over a continuous 6-year period

BCVWD will be relying on banked water to provide the major portion of the supply during these periods.

BCVWD enjoys the benefits of a groundwater basin, (Beaumont Basin), with very large storage capacity. BCVWD and its neighboring agencies in the San Gorgonio Pass Area take advantage of this by banking imported water during wet years for use during extended droughts. Complementing the large storage capacity is the fact that percolation and recharge occur at relatively high rates. It is very easy to "bank" water in the Beaumont Basin. It is retained in the Basin due to well-managed groundwater levels, and the ample storage capacity. Figure 8 shows the amount of water BCVWD has accumulated in its storage account since 2003. Imported water began to be spread in 2006. As of the end of 2018, there were 34,794 AF in storage. BCVWD's current maximum storage capacity is 80,000 AF. Figure 8 shows the drop in storage in response to the drought in 2015 when there was very little imported water available for recharge and banking.

9.1 Water Source Availability

The amount of water available during the dry periods from BCVWD's water sources are presented below.

9.1.1 Groundwater

9.1.1.1 Beaumont Basin

The Beaumont Basin is managed by the Beaumont Basin Watermaster under the principles of the Adjudication.

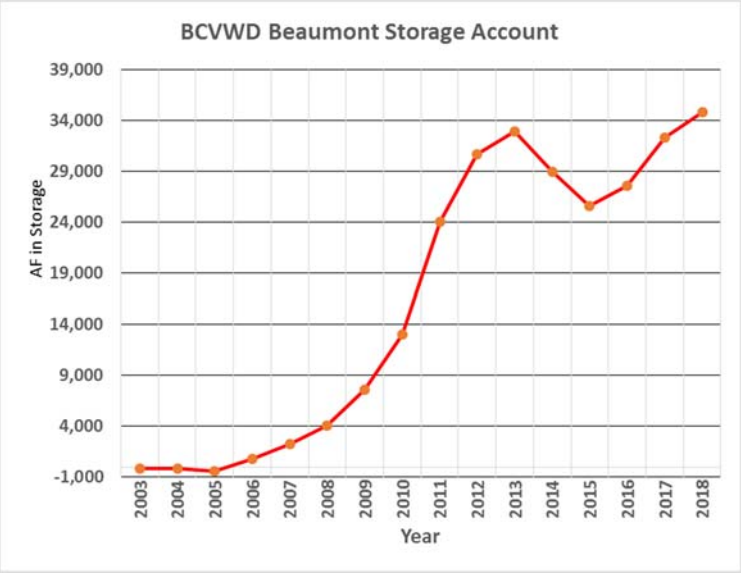


Figure 8
BCVWD Historic Beaumont Basin Groundwater Storage Account

In any year, BCVWD can pump out its stored (banked) water. The storage is replenished, at least partially, every year by forbearance water, reallocated unused Overlying Party pumping rights, and imported water when available. Recharge, using advanced treated recycled water from the City, is proposed to occur in the future. The amount of imported water that can be recharged in any year depends on DWR's SWP allocation. This varies from year to year depending on the weather.

The amount of unused Overlying Party rights is determined by the Watermaster and is based on a 5-year moving average and could decrease slightly during drought periods as the Overlying Parties use more groundwater to compensate for the lack of rainfall. The forbearance water will also decrease during dry periods as users reduce water consumption.

Table 17 shows the estimated amount of water credited to BCVWD by Watermaster for a single or multiple dry year analysis. For the dry year analysis, it was estimated that there would be a 15% conservation effect; in other words, for dry year analysis, only 85% of average annual forbearance, reallocated Overlying Party rights, etc. would be available. In Table 17, the 15% reduction factor is also applied to the recycled forbearance water to account for a potential reduction in treated wastewater due to water conservation effects.

9.1.1.2 Edgar Canyon

Groundwater from Edgar Canyon is affected to some degree by climate. The average annual extraction from Edgar Canyon is 2,094 AFY, (rounded to 2,100 AFY), based on records from 1983-2019. During that period of time the minimum extracted was 1,117 AFY, which occurred in 1991. This can be considered the "Single Dry Year Water Available." The 2-year, 3-year, and 6-year moving averages for the extractions from 1983 -2019 were determined and are presented in Table 18 along with the Base Period for moving averages.

Table 17
Summary of BCVWD's Forbearance and Reallocated Overlier Pumping Rights

Item	2018	2020	2025	2030	2035	2040
Total Allocated Overlying Party Rights, and Forbearance Water from Table 12, AFY	2,706	2,012	1,400	800	800	800
Expected to be Available for Single and Multiple Dry Year Analysis, AFY	2,300	1,710	1,190	680	680	680

Table 18
Groundwater Available from Edgar Canyon for Single and Multiple Dry Year Analysis

Drought Condition (Base Years)	Average Available over the Drought Period, AFY
Single Dry Year (1991)	1,117
2 Consecutive Dry Years (1990 – 91)	1,173
3 Consecutive Dry Years (1989 – 91)	1,230
6 Consecutive Dry Years (1987 – 92)	1,367

9.1.2 Imported Water

The amount of imported water available from the SGPWA via the State Water Project is climate dependent. A spreadsheet was developed using the 2015 DWR Delivery Capability Report simulation data (1922 to 2003) for SGPWA to develop an estimate of the delivery capability for the single dry year and multiple dry year reliability analysis. The 2-, 3-, and 6-year moving averages of annual estimated delivery allocations were determined for the period 1922-2003. A summary of the Table A delivery percentages is shown in Table 19.

The percentages in Table 19 were compared to actual SWP delivery allocations for the period 1992 to 2020, a 28-year period:

Minimum year	5% (2014)
Minimum 2 consecutive years	12.5% (2014-15)
Minimum 3 consecutive years	20% (2013 – 15)
Minimum 6 consecutive years	40% (2013 – 18)

As can be seen, the actual minimum year and minimum 2- and 3-consecutive year allocation percentages are less than those reported in the 2015 DWR SWP Delivery Capability Report. So,

for the reliability analysis in this WSA, the allocation percentages shown in Table 20 below will be used, except for the 6-year dry period where 28% will be used, to be conservative.

Table 19
SGPWA SWP Delivery Capability as Percent of Table A
(Based on 2015 DWR SWP Delivery Capability Report)

Dry Year(s)	Single	2-year	3-year	6-year
Table A Annual Delivery Average Over the Drought Period, %	8	19	22	28

Table 20
SGPWA SWP Delivery Capability as Percent of Table A
(Used for WSA Reliability Analysis)

Dry Year(s)	Single	2-year	3-year	6-year
Table A Annual Delivery Average Over the Drought Period, %	5	12.5	20	40

Previously, in this WSA, a number of imported water sources available to SGPWA were presented. Not all of these will be available during extended dry periods, however.

Yuba Accord Water is a dry year program and SGPWA can expect 200 AFY even during dry years. AVEK-Nickel Water is “south of the Delta” water and is not affected by DWR’s SWP reliability issues and is available every year until termination of the existing agreement in 2037. The DCP reliability recovery water would be available during extended dry periods but is subject to the average Table A delivery percentages as SPW in Table 20, above.

During dry periods, San Bernardino Valley MWD Surplus Water, Article 21 water, and Turnback Pool Water would likely not be available and should not be counted on for supply. Similarly, the availability of water during short and long term exchanges is unlikely, which would also include any additional Table A Water should SGPWA be able to secure a long-term exchange contract with a Partner Agency.

The Sites Reservoir Project was designed to be a dry period flow augmentation project. Excess storm flows in the Sacramento River are diverted and pumped into Sites Reservoir, stored, and released back into the Sacramento River during dry periods. Data from the Sites Project Authority submitted with their application to the California Water Commission for Proposition 1 Funding was used to determine the amount of water which could be depended on during dry periods. Figure 9 below, extracted from the Sites Reservoir Project Authority’s Proposition 1 Application Executive

Summary shows the dry year benefits based on 82 years of hydrologic simulation using the CalSim II Model.[22].

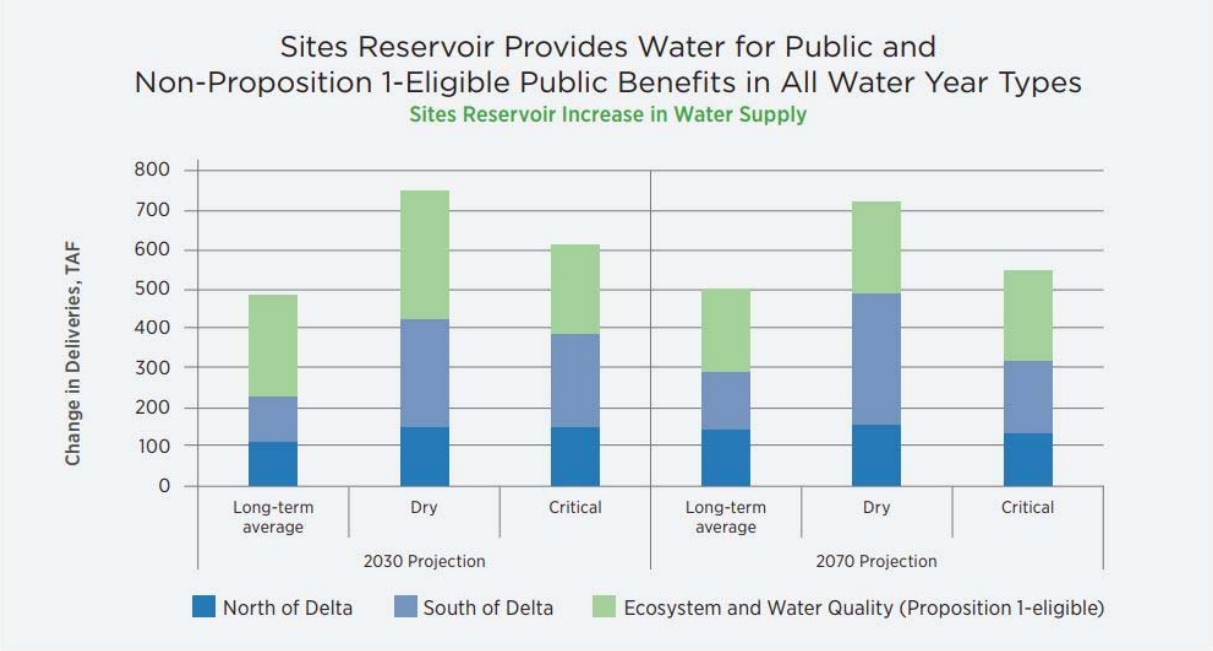


Figure 9
Sites Reservoir Available Water 2030 and 2070

Attachment D9, prepared by the Sites Project Authority, in response to questions from the California Water Commission, February 23, 2018, provided a breakdown of the estimated amounts of Sites Project Water which would be delivered to the project participants. Table 21 presents a summary of the preliminary estimates of Sites Reservoir Water available to SGPWA. It is important to note this is a preliminary estimate developed prior to the "Value Planning Analysis described previously. No new information is available at this time and this WSA will rely on the data in Sites Attachment D9

The modeling that was performed for the application was prescribed by the California Water Commission and includes the effects of climate change. For the analysis in this WSA, the year 2030 values will be used for 2030 through 2040. The "critical" volume will be used for all of the dry period analyses to be conservative.

[22] Sites Project Authority (2017). Sites Project Executive Summary for California's Water Storage Investment Program, August 14.

Table 21
SGPWA Preliminary Amount of Sites Reservoir Water Available, AFY

Development Condition	82-year Simulation (Average)	Water Year Type				
		Wet	Above Normal	Below Normal	Dry	Critical
Current	8,400	2,700	2,900	5,600	19,000	13,800
2030	9,500	3,000	7,700	7,400	18,000	16,400
2070	11,400	5,400	7,300	11,500	17,900	17,200

Source: Attachment D9 of Sites Project Authority response to California Water Commission comments on Proposition 1 Application February 23, 2018.

Tables 22 through 25 present a summary of the imported water supply to the SGPWA for the single dry year, and 2-, 3- and 6- consecutive year dry periods.

Table 22
Regional Summary of SGPWA Imported Water Supply Single Dry Year, AFY

Source	Year				
	2020	2025	2030	2035	2040
Table A	17,300	17,300	17,300	17,300	17,300
Allocation (5%)	865	865	865	865	865
Yuba Accord (Dry Year Program)	200	200	200	200	200
AVEK Nickel (Not Affected and extended)	1,700	1,700	1,700	1,700	1,700
Subtotal	2,765	2,765	2,765	2,765	2,765
DCP (worst case)					
DCP Allocation (5% of reliability recovery, 2,080 AFY)				104	104
Sites Reservoir Critical Dry Period (From Table 21)				16,400	16,400
Total Imported Water Supply	2,765	2,765	2,765	19,269	19,269

Table 23
Regional Summary of SGPWA Imported Water Supply
Two Consecutive Dry Years, AFY

Source	Year				
	2020	2025	2030	2035	2040
Table A	17,300	17,300	17,300	17,300	17,300
Allocation (12.5%)	2,163	2,163	2,163	2,163	2,163
Yuba Accord (Dry Year Program)	200	200	200	200	200
AVEK Nickel (Not Affected and extended)	1,700	1,700	1,700	1,700	1,700
Subtotal	4,063	4,063	4,063	4,063	4,063
DCP Allocation (12.5% of reliability recovery, 2,080 AFY)				260	260
Sites Reservoir Critical Dry Period (From Table 21)				16,400	16,400
Total Imported Water Supply	4,063	4,063	4,063	20,723	20,723

Table 24
Regional Summary of SGPWA Imported Water Supply
Three Consecutive Dry Years, AFY

Source	Year				
	2020	2025	2030	2035	2040
Table A	17,300	17,300	17,300	17,300	17,300
Allocation (20%)	3,460	3,460	3,460	3,460	3,460
Yuba Accord (Dry Year Program)	200	200	200	200	200
AVEK Nickel (Not Affected and extended)	1,700	1,700	1,700	1,700	1,700
Subtotal	5,360	5,360	5,360	5,360	5,360
DCP Allocation (20% of reliability recovery, 2,080 AFY)				416	416
Sites Reservoir Critical Dry Period (From Table 21)				16,400	16,400
Total Imported Water Supply	5,360	5,360	5,360	22,176	22,176

Table 25
Regional Summary of SGPWA Imported Water Supply
Six Consecutive Dry Years, AFY

Source	Year				
	2020	2025	2030	2035	2040
Table A	17,300	17,300	17,300	17,300	17,300
Allocation (28%)	4,844	4,844	4,844	4,844	4,844
Yuba Accord (Dry Year Program)	200	200	200	200	200
AVEK Nickel (Not Affected and extended)	1,700	1,700	1,700	1,700	1,700
Subtotal	6,744	6,744	6,744	6,744	6,744
DCP Allocation (28% of reliability recovery, 2,080 AFY)				582	582
Sites Reservoir Critical Dry Period (From Table 21)				16,400	16,400
Total Imported Water Supply	6,744	6,744	6,744	23,726	23,726

Table 26 presents a summary of total SGPWA regional imported water demand and the imported water supply available during the single and multiple dry years. The demand does not include the "banking" demand, since "banking" would not be occurring during years when imported water supply is reduced. Table 26 shows the conditions when the imported water demand exceeds the supply which will require SGPWA's member agencies, like BCVWD to withdraw water from their storage account. The supply of imported water is less than the demand until Sites Reservoir comes on line about year 2035.

Table 26
Summary of SGPWA Regional Imported Water Supply and Demand
Single and Multiple Dry Years

Source	Year				
	2020	2025	2030	2035	2040
Demand without Banking or drought proofing (Table 13, 16), AFY	9,109	11,019	13,254	15,097	17,924
Total Supply					
Single Dry Year (Table 22), AFY	2,765	2,765	2,765	19,269	19,269
2 Consecutive Dry Years (Table 23), AFY	4,063	4,063	4,063	20,723	20,723
3 Consecutive Dry Years (Table 24), AFY	5,360	5,360	5,360	22,176	22,176
6 Consecutive Dry Years (Table 25), AFY	6,744	6,744	6,744	23,726	23,726

When the demand for imported water exceeds the supply, it is reasonable to assume the imported water will be allocated in proportion to the member agency's fraction of the total imported water demand without banking. Table 27 shows the allocation percentages.

Table 27
Member Agency's Percent of Available Imported Water
When Demand Exceeds Supply

Agency	Year				
	2020	2025	2030	2035	2040
City of Banning	0	0	0	0	5.6%
YVWD/Calimesa	6.7%	7.0%	7.3%	7.9%	8.1%
BCVWD	87.8%	78.5%	71.6%	66.3%	58.4%
Other Member Agencies	5.5%	14.5%	21.1%	25.8%	27.9%
Total	100%	100%	100%	100%	100%

Water demand quantities for each agency are from Table 7 (Banning), Table 9 (YVWD), Table 12 (BCVWD), and SGPWA UWMP Table 2-4 (Other Member Agencies)

Table 28 shows the estimated amount of imported water BCVWD can expect during single and multiple dry year periods based on the amount of imported water presented in Table 28 and the allocation percentages in Table 27.

Table 28
BCVWD Available Imported Water
Single and Multiple Dry Year Periods*

Agency	Year				
	2020	2025	2030	2035	2040
Single Dry Year, AFY	2,400	2,100	2,000	12,800	11,300
2 Consecutive Dry Years, AFY	3,500	3,200	2,900	13,700	12,100
3 Consecutive Dry Years, AFY	4,700	4,200	3,800	14,700	13,000
6 Consecutive Dry Years, AFY	5,900	5,300	4,800	15,700	13,800
* *Values are Rounded*					

9.1.3 Recycled Water

Recycled water from the City is considered to be consistently available; although during droughts, consumers are more aware of water conservation and reduce their indoor water consumption somewhat. They are more aware of the need to do only full loads of laundry, full loads for the dishwasher, etc. Agencies, including the City of Beaumont, have observed a reduction in wastewater flows during the most recent drought.

The average year amount of recycled water from the City is taken from Table 12 presented previously. As stated in the discussion for Table 12, the total wastewater produced by the City is reduced by 1.8 mgd for habitat maintenance, and a capacity factor of 75% was applied to the

remaining water to account for brine and other losses. For a single dry year, an estimate of 90% of the normal, average recycled water will be available. As the drought becomes more pervasive, the amount of recycled water is estimated to reduce further to 85% of normal. Table 29 provides an estimate of the available recycled water during extended dry periods from the City.

Table 29
BCVWD Available Recycled Water
During Single and Multiple Dry Year Periods

Agency	Year				
	2020	2025	2030	2035	2040
Average Year (Table 12), AFY	1,556	2,188	2,840	3,487	3,930
Single Dry Year (90%), AFY	1,400	1,970	2,555	3,135	3,535
2-, 3-, and 6- Consecutive Dry Years (85%), AFY	1,320	1,860	2,415	2,960	3,340

9.1.4 Storm Water and Other Local Water Resources

Storm water and Urban Runoff quantities are dependent on rainfall. Review of the rainfall record at Beaumont for the period 1888 – 2006 resulted in the data shown in Table 30. To determine the multiple dry year rainfall as a percent of the average rainfall, the 2-, 3-, and 6-year moving averages of the annual rainfall was determined.

Table 30
Ratio of Dry Period Precipitation to Average Precipitation at Beaumont
and Estimated New Water from Storm Water Capture
and Local Water Resource Projects

Dry Year(s)	Single	2-year	3-year	6-year
% of Annual Average	36%	45%	45%	65%
Total Storm water Capture, beginning 2021, 250 AFY	90	110	110	160
Total Local Water Resource Projects, beginning 2025, 250 AFY	90	110	110	160

9.2 Water Demands During Critical and Multi-year Dry Periods

Table 12, presented previously, showed the average BCVWD water demands (potable and non-potable). These demands are used in the Dry Period Reliability Analysis below for the 1-, 2-, and 3- consecutive year dry periods, primarily because there may not be enough time to implement water demand restrictions and see the effect of these restrictions on demand. However, for the 6-consecutive year dry period, it is assumed the water shortage contingency planning actions set forth in Section 8 of BCVWD's 2015 UWMP would be in effect and at least a 15% reduction in

demand would be obtained. This is over and above the nominal water conservation efforts envisioned in the development of the average demands in Table 12 presented previously.

Water supply for single dry year, 2- consecutive dry years, 3- consecutive dry years, and 6 consecutive dry years are presented in Tables 31 through 34 respectively.

Tables 31 through 34 demonstrate BCVWD can provide water to the planned developments listed in Table 11 (presented previously) which included the Legacy Highlands Development during critical dry year and multiple dry year periods by relying on BCVWD's Beaumont Basin Groundwater Storage assuming DCP and Sites are on-line as planned. BCVWD will need to maintain 25,111 AF of water banked in storage to meet the 6-year dry period by the time Sites Reservoir and the DCF are "on-line." This is not an unreasonable amount of storage considering BCVWD has an 80,000 AF storage account and as of the end of 2018, 34,794 AF in storage.

Table 12, presented previously, provided BCVWD's Beaumont Basin storage account balance under the basis of average water supply conditions assuming the development projects listed in Table 11 (presented previously) were constructed. Table 12 shows a steady increase in projected groundwater storage from 35,296 AF in 2020 to almost 76,800 AF in the year 2040. To achieve this level of storage, BCVWD will be banking additional water for drought proofing to able to supply water during critical and multiple dry year period.

Table 31
BCVWD Water Supply Summary – Critical Dry Year

Single Dry Year					
	YEAR				
	2020	2025	2030	2035	2040
DEMAND					
Total Water Demand	13,668	14,841	16,032	19,192	18,100
SUPPLY					
Groundwater					
Edgar Canyon, AFY	1,117	1,117	1,117	1,117	1,117
Beaumont Basin,Allocated Overlier Pumping Rights and Forbearance Water, AFY AFY	1,710	1,190	680	680	680
Storm Water, AFY	90	90	90	90	90
Other Local Water Resource Projects, AFY	90	90	90	90	90
Recycled Water, AFY	1,400	1,970	2,555	3,135	3,535
Imported SPW,AFY	2,400	2,100	2,000	12,800	11,300
Subtotal Supply, AFY	6,807	6,557	6,532	17,912	16,812
From Banked Beaumont Basin Storage, AF	6,861	8,284	9,500	1,280	1,288

Table 32
BCVWD Water Supply Summary – 2 Consecutive Dry Years

2 Consecutive Dry Years					
	YEAR				
	2020	2025	2030	2035	2040
DEMAND					
Total Water Demand	13,668	14,841	16,032	19,192	18,100
SUPPLY					
Groundwater					
Edgar Canyon, AFY	1,173	1,173	1,173	1,173	1,173
Pumping Rights and Forbearance Water, AFY AFY	1,710	1,190	680	680	680
Storm Water, AFY	90	90	90	90	90
Other Local Water Resource Projects, AFY	90	90	90	90	90
Recycled Water, AFY	1,320	1,860	2,415	2,960	3,340
Imported SPW,AFY	3,500	3,200	2,900	13,700	12,100
Subtotal Supply, AFY	7,883	7,603	7,348	18,693	17,473
From Banked Beaumont Basin Storage, AFY	5,785	7,238	8,684	499	627
Total Volume Withdrawn from Storage, AF	11,570	14,476	17,368	998	1,254

Table 33
BCVWD Water Supply Summary – 3 Consecutive Dry Years

3 Consecutive Dry Years					
	YEAR				
	2020	2025	2030	2035	2040
DEMAND					
Total Water Demand	13,668	14,841	16,032	19,192	18,100
SUPPLY					
Groundwater					
Edgar Canyon, AFY	1,230	1,230	1,230	1,230	1,230
Beaumont Basin,Allocated Overlier Pumping Rights and Forbearance Water, AFY AFY	1,710	1,190	680	680	680
Storm Water, AFY	90	90	90	90	90
Other Local Water Resource Projects, AFY	90	90	90	90	90
Recycled Water, AFY	1,320	1,860	2,415	2,960	3,340
Imported SPW,AFY	4,700	4,200	3,800	14,700	13,000
Subtotal Supply, AFY	9,140	8,660	8,305	19,750	18,430
From Banked Beaumont Basin Storage, AFY	4,528	6,181	7,727	-558	-330
Total Volume Withdrawn from Storage, AF	13,584	18,543	23,181	-1,674	-990

Table 34
BCVWD Water Supply Summary – 6 Consecutive Dry Years

6 Consecutive Dry Years					
	YEAR				
	2020	2025	2030	2035	2040
DEMAND					
Total Water Demand	11,618	12,615	13,627	16,313	15,385
SUPPLY					
Groundwater					
Edgar Canyon, AFY	1,367	1,367	1,367	1,367	1,367
Beaumont Basin,Allocated Overlier Pumping Rights and Forbearance Water, AFY AFY	1,710	1,190	680	680	680
Storm Water, AFY	90	90	90	90	90
Other Local Water Resource Projects, AFY	90	90	90	90	90
Recycled Water, AFY	1,320	1,860	2,415	2,960	3,340
Imported SPW,AFY	5,900	5,300	4,800	15,700	13,800
Subtotal Supply, AFY	10,477	9,897	9,442	20,887	19,367
From Banked Beaumont Basin Storage, AFY	1,141	2,718	4,185	-4,574	-3,982
Total Volume Withdrawn from Storage, AF (6 Year Period)	6,845	16,307	25,111	-27,443	-23,892

The water banking is clearly stated in BCVWD's 2015 UWMP:

> *BCVWD's plan, which is shown in BCVWD's 2015 UWMP envisions banking anywhere from 1,000 AFY to 2,500 AFY to drought proof new development. This is accounted for in the spreadsheet each year. Should there be a year when the projected amount cannot be delivered by SGPWA, any deficiency will be made up in successive years when adequate supply is available. As stated in BCVWD's 2105 UWMP*[23]

In addition to BCVWD, YVWD/Calimesa and the City of Banning have storage accounts which when combined with BCVWD's have 103,748 AF in storage as of the end of 2018. Previous Tables 7 and 10 presented previously, show that the storage accounts for YVWD/Calimesa and the City of Banning are projected to have 50,000 and nearly 76,510 AF in storage by 2040. When combined with BCVWD's projected storage account balance, on a regional basis there will be over 200,000 AF in banked storage – more than ample to meet the needs during short-term droughts.

10. CONCLUSIONS

1. BCVWD has complied with §10910 of the California Water Code (SB 610) and California Government Code Section 66473.7, (SB 221) requirements to prepare a Water Supply Assessment. This WSA was prepared for Legacy Highlands Development based on information provided by the Developer supplemented with analyses by BCVWD.

[23] BCVWD (2015). UWMP, pg 7-4

2. BCVWD prepared a series of White Papers which analyzed the regional (SGPWA) imported water supply requirements and funding requirements. These White Papers provided a starting point for the preparation of this WSA. The basis for the White Papers was a regional spreadsheet demand model, developed by BCVWD, which was reviewed by the City of Banning and YVWD.
3. The projected potable water demand from the Legacy Highlands Development is approximately 1,450 AFY; non-potable water demand is estimated to be 178 AFY. This is about 11% of BCVWD's current demand of 13,129 AFY.
4. The Legacy Highlands Development was included in the list of planned development projects in BCVWD's 2015 UWMP. In the 2015 UWMP, Legacy Highlands was anticipated to have 3,218 EDUs at 0.65 AFY/EDU for a total demand of 2,092 AFY. This is more than the current 2,868 residential EDUs requiring 1,628 AFY (potable plus non-potable) total water demand.
5. Legacy Highlands Development, when fully developed at 2,868 residential EDUs will generate an estimated 524 AFY of recycled water, (which includes a 25% loss for brine and in-plant losses), which could be recycled and which could supply all of the estimated 178 AFY of Legacy Highlands Development's non-potable demand and provide 346 AFY available to meet the non-potable demands in other areas of BCVWD's system or be advance treated and recharged to augment BCVWD's potable water supply. Thus the net increase in water demand for Legacy Highlands Development is approximately 1,104 AFY.
6. Based on comparison of the SGPWA Imported Water Demands in Table 13 and the Imported Water Supply in Table 16, and summarized below, the SGPWA has sufficient imported water to meet the regional demands, including the demands of those member agencies currently not taking imported water, until 2040.

	Year					
	2018	2020	2025	2030	2035	2040
Total Potential Imported Water Supply (Table 16), AFY	19,530	18,035	14,824	15,812	25,880	24,880
Total Firm Imported Water Supply, no Partner Agency Side Deals, Article 21 Water, Turn-back Pool Water, etc. (derived from Table 16), AFY	19,530	14,035	11,324	12,812	10,200	8,500*
Total Imported Water Demand (Table 13 and 16), AFY	10,272	11,360	15,874	19,214	21,057	23,950
Total Imported Water Demand, No Banking or Drought proofing, (Table 13 and 16), AFY	9,223	9,109	11,019	13,254	15,097	17,924

*10,200 AFY with Nickel Extension

However, not all of those supplies are firm with agreements in place. Beyond 2025, SGPWA and BCVWD will be relying on the reliability of Table A, the availability of Article 21 and Turnback Pool Water, short term water transfers which are not yet agreed to, and the DCP and Sites Reservoir. Both DCP and Sites Reservoir are moving forward, and there is more than reasonable probability these projects will come to fruition. But there is always some risk. This risk will decrease over time as design and permitting progress, but nevertheless, there is risk, which BCVWD believes is low.

7. Figure 6 shows the importance of recycled water from the City of Beaumont for BCVWD to be able to meet future demands. The BCVWD 2015 UWMP as well as previous UWMPs and water master plans since 2000 identified recycled water from the City for non-potable water irrigation with a plan for the recharge of surplus recycled water with appropriate treatment and permits. A Memorandum of Understanding (MOU was executed in July 2019) by the City and BCVWD. The City and BCVWD are working on a recycled water purchase agreement and have been coordinating on the location of pumping and storage facilities on or adjacent to the City's wastewater treatment plant. Construction on the new treatment facility is nearing completion. Although there is some risk, that recycled water may not be available to BCVWD, that risk is small.

8. In light of the importance of recycled water in BCVWD's ability to meet projected demands and the delays in securing recycled water for BCVWD's non-potable water supply, as a condition for approval, Legacy Highlands will be required to use their on-site wells to supply the required non-potable water distribution system until such time as recycled water is available from the City to BCVWD and facilities have been installed to deliver BCVWD non-potable water to Legacy Highlands. BCVWD shall inspect the installation of the non-potable water distribution system. Legacy Highlands shall be required to provide treatment of all of the well water for iron and manganese removal. Sequestration is not an acceptable treatment technology. Prior to dedicating the non-potable water system to BCVWD, the system, including all irrigation laterals and piping, shall be thoroughly flushed and shock chlorinated. Upon dedication of the non-potable water system, Legacy Highlands shall transfer and/or convey all wells and related facilities to BCVWD for its full ownership and control as per the conditions set forth by the City of Beaumont.

9. BCVWD prepared and adopted a Potable Water Master Plan in January 2016 which identified water supply needs, facility needs and funding requirements to build-out. The Master Plan included consideration of Legacy Highlands Development.

10. Storm water capture and other local water resource projects were identified in BCVWD's 2015 UWMP and Water Master Plan and in this WSA. One of these projects, MDP-Line 16, (Grand Avenue Storm Drain) is currently nearing design completion by the Riverside County Flood and Water Conservation District and BCVWD. The storm drain will be partially funded through a grant from the Santa Ana Watershed Project Authority.

11. SGPWA and BCVWD have made financial commitments to the Sites Reservoir project Phase 1 studies and Phase 2-2019 and anticipates committing funds for the continuation of Phase 2 and future phases.
12. Pursuant to §10910 of the California Water Code (SB 610) and information provided in this WSA, BCVWD has determined that sufficient currently available and planned supplies exist to meet the water demands of the proposed Legacy Highlands Development in addition to the existing and other projected demands during normal, single dry and multiple dry years over the next 20 years, providing imported water and recycled water projects and agreements move forward. BCVWD will supplement their existing supply sources during these dry periods with banked water in BCVWD's Beaumont Basin Groundwater Storage Account.
13. Pursuant to the California Government Code Section 66473.7, (SB 221), BCVWD has determined that it has sufficient and adequate water supply available to serve a long-term needs of the Legacy Highlands Development in addition to the existing and other projected demands during normal, single dry and multiple dry years over the next 20 years, provided imported water projects and imported water supply agreements move forward.

11. RECOMMENDATIONS

Because of the risk in the implementation of Sites Reservoir and DCF, extended dry periods occurring over the next 10 to 15 years reducing the imported water levels before these projects come on line, the uncertainty of executing short term water transfers and purchases, the Board may want to consider:

1. Condition the approval of Legacy Highlands for water service to a time when recycled water is actually delivered to, and received by BCVWD from the City.
2. Condition the approval of Legacy Highlands for water service on the basis of Legacy Highlands using their on-site wells, with full treatment for iron and manganese until recycled water is available as discussed in this WSA.
3. Conditionally approve the Legacy Highlands Development in Phases until the implementation Sites Reservoir, the DCP, and other necessary agreements are in place.
4. Hold off approval until critical water supply projects, such as Sites Reservoir and DCP, are more certain, additional water supply opportunities being considered by the SGPWA and formalized, and recycled water is actually being delivered to BCVWD.

12. ACKNOWLEDGEMENTS

This WSA was prepared by Senior Engineer, Joseph C. Reichenberger PE with support from Dan Jaggers, PE, General Manager, and Mark Swanson, PE, Senior Engineer. The WSA was based on White Papers prepared, in part, by Kaden Johnsen, Civil Engineering Assistant.

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