

Appendix L3

Water Conservation Plan

DEXTER WILSON ENGINEERING, INC.

WATER • WASTEWATER • RECYCLED WATER
CONSULTING ENGINEERS

SUNBOW II, PHASE 3 SPA AMENDMENT WATER CONSERVATION PLAN

September 2020

**SUNBOW II, PHASE 3
SPA AMENDMENT
WATER CONSERVATION PLAN**

September 2020



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ABBREVIATIONS

ac -	acre
ac-ft -	acre-foot
cfcd -	community facilities district
cfs -	cubic feet per second
gpd -	gallons per day
gpf -	gallons per flush
gpm -	gallons per minute
HOA -	homeowner's association
mgd -	million gallons per day

USEFUL CONVERSIONS

1 acre-foot	=	325,829 gallons
1 mgd	=	1,000,000 gallons/day
1 cfs	=	448.8 gpm
1 cubic foot	=	7.48 gallons
1 mgd	=	694.4 gpm

EXECUTIVE SUMMARY

The City of Chula Vista's Growth Management Ordinance (CVMC 19.09.050C) requires that all development projects with 50 dwelling units or greater prepare a Water Conservation Plan at the time of the Sectional Planning Area plan preparation. A Water Conservation Plan was prepared for the Sunbow II, Phase 3. This plan presents a review of presently available technologies and practices which result in water conservation in primarily residential development. This report presents Water Conservation Plan with measures that will be incorporated into the planning and design of the Sunbow II, Phase 3 SPA Amendment, including the requirements outlined in the Chula Vista Landscape Water Conservation Ordinance (CVMC 20.12).

The Sunbow II, Phase 3 site has been planned as an industrial park, but a Specific Planning Area Plan Amendment is proposed to revise the land use to multi-family residential. Under the proposed plan, 718 multi-family residential units would be constructed with four different product types.

The Otay Water District is the local water agency that supplies potable water and recycled water to Sunbow II, Phase 3. The current total estimated average potable and recycled water use for the project is 0.12 mgd and 0.02 mgd, respectively.

The State and local government have mandated a number of water conservation measures. The focus of this study is on the implementation of non-mandated water conservation measures. The project will install hot water pipe insulation, pressure reducing valves, and water efficient dishwashers in all multi-family residential units. Additionally, the developer will install dual flush toilets and other water conserving irrigation equipment and techniques in compliance with the Landscape Water Conservation Ordinance. At buildout of the project, implementation of the above measures would reduce estimated potable water usage on the project by an estimated 17,411 gpd.

INTRODUCTION

In recent years, the subject of water conservation has been given increased attention. The growing awareness of the need and value of water conservation has been sparked by local and regional water purveyors concerned about meeting the future water demands of their customers, particularly during drought conditions. Water conservation provides an alternative approach to the problem of finding new water sources to meet the water

demand for a proposed community. The intent of water conservation is to manage water demand so that the customers receive adequate service but use less water.

Much has been done to educate consumers about limitations of water supply, the serious implications of a long-term drought and the need for water conservation, but there is a practical limit to the percentage reduction of water use in established communities. This limit is a result of the types of plumbing fixtures installed in existing homes as well as the difficulty in altering consumers' established patterns of water use. Any water conservation effort, voluntary or mandatory, requires the cooperation of the public. Public information should be utilized to inform and convince the consumer that a change in personal water use habits is in everyone's best interest.

In recent years, the private development sector has become more attuned to the concerns of water availability and has recognized the value of addressing water conservation issues throughout planned development projects. By incorporating low water use plumbing fixtures, promoting drought tolerant landscaping, and providing educational materials to homeowners within the development project, private developments can do much to cultivate an interest in water conservation and establish new patterns of water use. These efforts can have significant impacts with regard to reducing the need for securing and importing larger quantities of water for use in San Diego County. The City's Landscaping Water Conservation Ordinance (CVMC 20.12) went into effect on January 1, 2010 (and was updated on December 1, 2015) and requires homeowners to be efficient with the landscape systems and plant selection.

In 2006 the State repealed the Water Conservation in Landscaping Act and adopted a new Water Conservation in Landscaping Act, Government Code Sections 65591 et seq. The new Act requires the Department of Water Resources to update the previously adopted model efficient landscape ordinance that provides for greater efforts at water conservation and more efficient use of water in landscaping. Government Code Section 65595 requires that on or before January 1, 2010 a local agency shall adopt a water efficient landscape ordinance that is at least as effective in conserving water as the updated model ordinance or adopt the model ordinance. If a local agency does not adopt a water efficient landscape ordinance by the deadline, the updated model ordinance shall apply within the local agency's jurisdiction and shall be enforced by the local agency.

The City of Chula Vista City Council adopted an ordinance that complies with the findings and declarations of the State's Water Conservation in Landscaping Act and is as effective

as the State's updated model water efficient landscape ordinance. This water conservation plan incorporates the requirement of the City's ordinance.

PURPOSE

The State Legislature determined in the Water Conservation in Landscaping Act that the State's water resources are in limited supply. The Legislature also recognized that while landscaping is essential to the quality of life in California, landscape design and maintenance must be water efficient. The City of Chula Vista's Growth Management Ordinance requires that all major development projects (50 dwelling units or greater) prepare a Water Conservation Plan at the time of Sectional Planning Area Plan preparation. The City has adopted guidelines for the preparation and implementation of required Water Conservation Plans.

This report will present water conservation measures which will be incorporated into the planning and design of the project, including an estimate of the anticipated water savings. Approximately half of the water used by residences in California is used outdoors. For this reason, the City's Landscape Water Conservation Ordinance will be an important component of reduced water usage.

Although not covered in detail, there are several secondary benefits to conserving water that should be kept in mind when reviewing material in this report. These benefits include reduced sewage flows, reduced natural gas use, and reduced electricity use. Using less water in the shower, for example, reduces the amount of water input into the sewer system and reduces the amount of energy required to heat the water.

PROJECT DESCRIPTION

Proposed development within the Sunbow II, Phase 3 SPA Amendment includes 718 multi-family residential dwelling units, a 0.9 acre private open space CPF area, 5.9 acres of backbone circulation, 16.5 acres of disturbed open space, and 63.6 acres designated MSCP preserve open space. Appendix A provides a more detailed project description and the proposed land use plan for Sunbow II, Phase 3 and Table 1 provides a land use summary.

TABLE 1 SUNBOW II, PHASE 3 SPA AMENDMENT LAND USE SUMMARY		
Land Use	Area, Ac	Units
MF Residential	44.2	718
Private Open Space/CPF	0.9	---
Disturbed Open Space	16.5	---
Poggi Creek Easement	4.3	---
Backbone Circulation	5.9	---
MSCP Preserve	63.6	---
Wetland Avoidance Area	0.3	---
TOTAL	135.7	718

WATER SERVICE AND SUPPLY

The Otay Water District is the local water agency that supplies potable water and recycled water to Sunbow II, Phase 3. The Otay Water District relies solely on the San Diego County Water Authority (SDCWA) for its potable water supply. The SDCWA is the largest of 27 member agencies of the Metropolitan Water District of Southern California (MWD), which is the primary importer of domestic water in Southern California.

PROJECTED WATER USE

Potable Water Demand

Water use is affected by, among other things, climate and the type of development. In California, recent trends towards the construction of more multi-unit housing, the general reduction in residential lot size, and a number of local agency water conservation programs in effect are all tending to reduce per capita water consumption.

Potable water demands were projected by taking the total development for each land use and multiplying by water use factors. Table 2 provides the projected potable water demand for the Sunbow II, Phase 3 site based on the current SPA Amendment. The total estimated potable water use is 0.12 mgd. The estimated potable water usage in Table 2 is reduced as a result of the use of recycled water for irrigation of slopes, common areas, etc. Potable water use factors were taken from the 2015 Otay Water District Water Facilities Master Plan, latest amendment.

TABLE 2 PROJECTED POTABLE WATER DEMANDS FOR SUNBOW II, PHASE 3 SPA AMENDMENT			
Land Use	Quantity	Unit Demand	Average Day Demands, gpd
Multiple-Family Residential	718 units	170 gpd/unit	122,060
TOTAL			122,060

Recycled Water Demand

In accordance with Section 26 of the Otay Water District Code of Ordinances, Sunbow II, Phase 3 will utilize recycled water for the irrigation of open space slopes, and the common area of multi-family residential sites. Table 3 provides the estimated recycled water demand for the project. The total estimated recycled water demand is 0.02 mgd.

TABLE 3 SUNBOW II, PHASE 3 PROJECTED RECYCLED WATER DEMANDS					
Location (Land Use)	Quantity	Recycled Water Factor	Net Recycled Acreage	Unit Rate	Average Demand, gpd
Open Space Slope	12 ac	100%	12 ac	1,900 gpd/ac	22,800
Private OS/CPF	0.9 ac	100%	0.9	1,900 gpd/ac	1,710
TOTAL					24,510

MANDATED WATER CONSERVATION MEASURES

The State and many local Governments have mandated a number of water conservation measures. Table 4 summarizes the conservation measures that are currently mandated by the State of California and also provides the requirements of the 2019 California Green Building Standards Code.

TABLE 4 MANDATED WATER CONSERVATION DEVICES		
Device	Baseline Requirement	2019 Green Building Standards Code
Showerheads	2.5 gpm	1.8 gpm
Lavatory Faucets	2.2 gpm	1.2 gpm
Sink Faucets	2.2 gpm	1.8 gpm
Metering Faucets in Public Restrooms	0.25-0.75 gal/cycle	0.2 gal/cycle
Residential Water Closets	1.6 gpf	1.28 gpf
Flushometer Valves	1.6 gpf	1.28 gpf
Commercial Water Closets	1.6 gpf	1.28 gpf
Urinals	1.0 gpf	0.5 gpf

LOCAL WATER CONSERVATION REQUIREMENTS

There are a number of water conserving measures required by the Otay Water District and City of Chula Vista Landscape Manual. These include the use of recycled water for the irrigation of open space slopes, and common landscaped areas where feasible. The Landscape Manual also requires some drought tolerant plant selection in the landscaping plan and the use of evapotranspiration controllers for parks and common landscaped areas. Additionally, the Landscape Water Conservation Ordinance that went was updated on January 1, 2015 is expected to reduce outdoor water consumption due to the setting of strict water budgets on City approved landscape plans that must not be exceeded.

The City of Chula Vista Water Conservation Plan Guidelines requires the following three indoor water conservation measures for residential units and non-residential units. These measures are mandatory.

Residential Measures - Mandatory

1. Hot Water Pipe Insulation. This measure involves the insulation of hot water pipes with 1-inch walled pipe insulation and separation of hot and cold water piping. This measure is estimated to cost an additional \$50 during initial construction and result in annual savings of 2,400 gallons per residential unit.
2. Pressure Reducing Valves. Setting the maximum service pressure to 60 psi reduces any leakage present and prevents excessive flow of water from all appliances and fixtures. This measure is estimated to cost \$100 during initial construction and result in annual water savings of 1,800 gallons per residential unit.
3. Water Efficient Dishwashers. There are a number of water efficient dishwashers available that carry the Energy Star label. These units cost an additional \$500 on average and result in an estimated yearly water savings of 650 gallons per residential unit.

Non-Residential Measures - Mandatory

1. Hot water pipe insulation with 1-inch walled pipe insulation.
2. Compliance with Division 5.3 of the California Green Building Standards Code in effect at the time of plan submittal.
3. Pressure reducing valves.

Non-Mandatory Measures

In addition, to comply with the City's current water conservation requirements, the developer must select at least one outdoor measure and one additional indoor or outdoor water conservation measure for residential development and non-residential development. Water conservation measures not included on the City's Residential Water Conservation Measures list may be proposed by the developer. Since this project does not propose any single family residences, all outdoor irrigation water use is proposed to be met with recycled water. Thus, there are no outdoor water measures that would result in a direct reduction

in potable water use. The developer will implement, from the City's list of approved measures, the following indoor non-mandatory measure in multi-family residential units.

1. Dual Flush Toilets. The developer will install dual flush toilets within the project. This measure is estimated to cost \$200 per household and result in annual water savings of 4,000 gallons per year per residential unit.

WATER CONSERVATION ESTIMATED SAVINGS

The estimated water savings for water conservation measures are based on the estimates provided in the previous section of this report. The potential water savings varies widely based on land use types. Multi-family residential units, for example, have much less opportunity to implement additional water saving measures than low density single family residential units. This is primarily because the common landscaped areas of multi-family units are required to be irrigated with recycled water and, thus, there are no outdoor water conservation measures that can directly offset potable water usage in these areas.

Table 5 summarizes the total estimated water savings for the Sunbow II, Phase 3 SPA Amendment based on the proposed required measures and non-mandatory measure described above.

Measure	Location	Yearly Water Savings, gal/unit	Daily Water Savings, gpd/unit	Percentage of Total Usage¹	Project Total Water Savings², gpd
Hot Water Pipe Insulation	Indoor	2,400	6.58	3.9	4,724
Pressure Reducing Valves	Indoor	1,800	4.93	2.9	3,540
Water Efficient Dishwashers	Indoor	650	1.78	1.0	1,278
Dual Flush Toilets	Indoor	4,000	10.96	6.4	7,869
TOTAL		8,850	24.25	14.3	17,411

¹ Based on 170 gpd/unit average usage.

² Based on 718 Multi-Family Residential Units.

Water Conservation Summary

As detailed in this report, the Sunbow II, Phase 3 project is committed to being water efficient through the use of recycled water for irrigation and utilizing other water conservation devices and measures. Table 6 summarizes the baseline potable water use if recycled water and water conservation measures were not utilized and provides the anticipated water savings outlined in this report. As shown, the use of recycled water and other water conservation measures is expected to reduce potable water usage by 41,921 gpd, or 28.6 percent.

TABLE 6 SUNBOW II, PHASE 3 SPA AMENDMENT WATER CONSERVATION SUMMARY	
Description	Average Use, gpd
Total Water Use	
Potable Water Use (Table 2)	122,060
Recycled Water Use (Table 3)	24,510
Total Baseline Water Use	146,570
Water Conservation Savings	
Recycled Water (Table 3)	24,510
Multi Family Measures (Table 5)	17,411
Total Conservation Savings	41,921
Net Potable Water Usage ¹	104,649
Reduction from Baseline Usage	28.6

¹ Potable water use (Table 2) minus water conservation savings (Table 5).

IMPLEMENTATION AND MONITORING

For the water conservation measures proposed to be incorporated into the project, Table 7 summarizes the implementation timing for each measure, as well as the responsibility for monitoring the implementation of the measures.

TABLE 7 SUNBOW II, PHASE 3 SPA AMENDMENT IMPLEMENTATION AND MONITORING PROGRAM			
Water Conservation Measure	Responsibility for Implementation	Timing	Monitoring of the Implementation
Hot Water Pipe Insulation	Developer	Prior to Issuance of Building Permit	City Building Department
Pressure Reducing Valves	Developer	Prior to Issuance of Building Permit	City Building Department/Otay Water District
Water Efficient Dishwashers	Developer	Prior to Issuance of Building Permit	City Building Department
Dual Flush Toilets	Developer	Prior to Issuance of Building Permit	City Building Department

REFERENCES

1. Bahman Sheikh, Water Use Efficiency, Strategies for Proposed Residential Developments, September 2001.
2. City of Chula Vista Water Conservation Plan Guidelines, adopted May 27, 2003.
3. Chapter 20.12 Chula Vista Landscape Water Conservation Ordinance, 2015.
4. Otay Water District Water Facilities Master Plan Update, 2015 Atkins.
5. California Green Building Standards Code, 2019.

APPENDIX A

LAND USE MAP

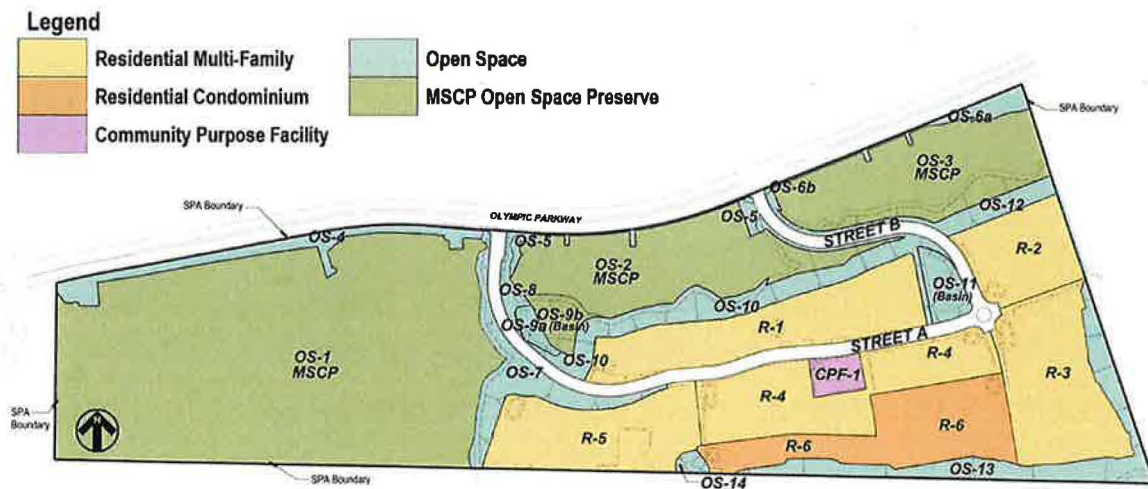
**Sunbow II, Phase 3
Project Description
Revised 9/17/2020**

Sunbow II, Phase 3 Sectional Planning Area (SPA) Plan Amendment encompasses approximately 135.7¹ acres (Project Area) that includes a 67.5 development area comprised of 44.2 acres of residential, a 0.9-acre Community Purpose Facility (CPF) site, 5.9 acres of public streets and 16.5 manufactured slopes/basins/wetland resource and associated buffer area. Approximately 4.3 acres of conserved Poggi Canyon Easement areas, a 0.3 acre wetland avoidance area and 63.6² acres of adjacent MSCP Preserve area are also within the Project Area.

The Proposed Project's residential land use includes four unique multi-family attached residential product types with 15 unique floor plans, ranging in square footage from approximately 1,100 to 2,050 square feet in two- and three-story units. Each home includes a two-car garage and two to four bedrooms.

The Proposed Project includes a Chula Vista General Plan Amendment, Sunbow General Development Plan Amendment, Sunbow II SPA Plan Amendment, a rezone, and a Tentative Map. The Proposed Project also includes a Chula Vista MSCP Boundary Adjustment to implement minor adjustments to the development limits and the adjacent MSCP Preserve areas that would result in a 0.09-acre increase to MSCP Preserve Area and an MSCP Minor Amendment to address off-site grading adjacent to the southwestern boundary of the development area.

Sunbow II, Phase 3 Site Utilization Plan (revised)



¹ Acreages are rounded to the nearest 1/10th acre and may vary slightly from calculated total.

² The Proposed MSCP area includes approximately 1.31 acres of "Mapping Correction Area" and approximately 1.12 acres of MSCP Allowable Use (Basin – Future Facility).

Sunbow II, Phase 3 Site Utilization Table

Sunbow II, Phase 3	Land Use District	Acres ³	Units	Density
Multi-Family Residential				
R-1	RM	8.5	131	15.4
R-2	RM	4.6	73	15.8
R-3	RM	8.1	108	13.3
R-4	RM	8.2	118	14.4
R-5	RM	7.1	104	14.7
R-6	RC	7.6	184	24.1
Subtotal Residential		44.2	718	16.3
Other				
Community Purpose Facility	CPF	0.9		
MSCP Preserve Conserved Open Space (OS-1,2, 3 and OS-9b)	OSP	63.6		
Poggi Creek Easement Conserved Area (OS-4, 5, 6a and 6b)	OS	4.3		
Manufactured Slopes/Basins (OS-7, 8, 9a 10 -13)	OS	16.5		
Wetland Avoidance Area (OS-14)	OS	0.3		
Public Streets	Circulation	5.9		
Subtotal Other		91.5		
TOTAL		135.7	718	16.3

³ Acreages rounded to nearest 1/10th acre and may vary slightly from the calculated total.

Sunbow II, Phase 3 Surrounding Land Uses

