

**PROGRAM APPROVAL APPLICATION**  
**NEW or SUBSTANTIAL CHANGE or LOCALLY APPROVED**  
**(This application may not exceed 3 pages)**

**Fill In Form**

Water Efficiency Management  
 Proposed Program Title

Fall 2017  
 Projected Program Start Date

Citrus  
 College

Citrus  
 District

**Contact Information**

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 Voting Member

Dean  
 Title

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**Goal(s) of Program (Check all that apply):**

- Career Technical Education (CTE)       Transfer       Other

**Type of Program (Check all that apply):**

- Certificate of Achievement 12-17 (or 17-27 quarter) units       Certificate of Achievement 18+ semester (or 27+ quarter) units  
 Associate of Science Degree       Associate of Arts Degree

**Reason for Approval Request (Check One):**

- New Program       Substantial Change       Locally Approved

**Program Information**

0958.00      Recommended [Taxonomy of Program \(TOP\) Code](#)  
 18-19      Units for Major-Degree  
 60-61      Total Units for Degree  
 26-27      Required Units-Certificate

**Written Form**

**1. Insert the description of the program as it will appear in the catalog. (See PCAH pp. 142 and 170)**

This certificate prepares students for entry-level careers in water use efficiency and conservation. After completing the program, students may find employment as a specialist in water supply, water efficiency, program conservation, conservation outreach, natural resources, or environmental protection. Those already employed in public works, construction, landscaping, municipal administration, water distribution/treatment, or facilities oversight and planning are encouraged to complete this certificate to complement their knowledge and potentially increase employability, wages, and promotion opportunities. Students are expected to complete several industry certifications throughout the program including the California State Water Resources Control Board (SWRCB) D-1 Water Distribution Operator's Certificate examination and the T-1 Water Treatment Operator's Certificate examination as well as the California/Nevada American Water Works Association (AWWA) Grade 1 and 2 Water Use Efficiency Practitioner Certification exams.

## 2. Provide a brief rationale for the program.

In 2012, the Center of Excellence conducted a workforce study on the water and wastewater workforce in California. In their final report focusing on the seven southern California counties they found water conservation specialists/water use efficiency specialists to be an emerging occupation. Increasing environmental regulation was also cited as the number one factor that significantly impacts the workforce. Additionally, the report recommended the expansion of existing programs with courses and/or creating certificate options in water conservation. Citrus College answered the recommendation by adding one water conservation course and positioning it as an elective for the water technology certificate/degree. Unfortunately, the college was not able to fully develop a certificate at that time due to budget restraints. This certificate and degree will now complete the work recommended by the COE by adding additional coursework in water efficiency/conservation and offering a certificate and degree option for students.

Students completing the Water Efficiency Management Certificate of Achievement will:

1. Collect, interpret, and analyze water use data; calculate possible water savings; recommend ways business, agriculture, municipalities, and consumers can save water; and analyze implemented programs to determine if an agency is meeting usage goals.
2. Adhere to water conservation regulations, implement water conservation projects, and promote conservation practices and regulations in the region.

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## 3. Summarize the Labor Market Information (LMI) and employment outlook (including citation for the source of the data) for students exiting the program. (See PCAH pp. 85-88, 136, 147, 148, 165, 168, and 176)

Fourteen occupations in the Los Angeles economy are strongly involved with water use efficiency efforts. The jobs range from building and operating water infrastructure to researching and managing urban landscapes. They provide an estimated 34,350 jobs in Los Angeles County, or approximately one percent of the county's total employed workforce. Their mean wages vary from \$13.65 to \$47.80 per hour, or \$28,390 to \$99,430 annually. While some of these occupations are already common in the local economy, Los Angeles is underrepresented in several of them compared with the nation's workforce. Relative underemployment indicates an opportunity for job growth, especially if we maintain or increase local investments in water use efficiency (pg. 2)....[It is recommended to] invest in targeted workforce training in community colleges and establish uniform certification programs for emerging water occupations. Develop apprenticeships for young adults, specialized job opening lists, and employer forums in the water use efficiency field to identify essential skills for key occupations and plan training curricula (pg. 6)

*Source: Water Use Efficiency and Jobs, 2011. Patrick Burns and Daniel Flaming. Economic Roundtable. www.economicrt.org*

The Citrus College joint public works and water technology advisory concurred with the abovementioned. Employers cited that this certificate and/or degree would provide an add-on credential that gave those currently in the industries or those entering the workforce a competitive advantage. Many cited that water efficiency management was a component of someone's job within the company/agency but not their entire job or they contracted out for consulting services as needed; making it difficult to gauge a predictable annual demand from their viewpoint.

In looking at SOC 51-8031 (Water and Wastewater treatment plant and systems operators) across LA County:

- The 2016-2021 job change is projected to be 88 jobs (3.7% growth). Annual openings are projected to be 80.
- The average entry-level wage (10<sup>th</sup> percentile) is \$28.31 with a median wage of \$37.29.
- In 2015 there were 87 water quality and treatment (CIP 15.0506) openings in Los Angeles county. On the supply side there were 70 completions, with Citrus College providing the majority of the supply. Note: most of these completions from Citrus are incumbent workers, not new people entering the workforce.

Looking at Natural Resources/Conservation we find there are 49 annual openings across four occupations in the cluster (forest and conservation technicians; forest and conservation workers; foresters; and conservation scientists); however, there are zero completions in the region providing any supply.

Source: EMSI

4. List similar programs at other colleges in the Los Angeles and Orange County Region which may be adversely impacted. (There is space for 10 listings, if you need more, please contact [laocrc@rscdd.edu](mailto:laocrc@rscdd.edu))

College	Program	Who You Contacted	Outcome of Contact
LA Trade Tech	Water Tech (treatment)	Marcia Wilson	Phone call: Supportive
Rio Hondo	Water Technology	Bruce Noble	Adv. Mem./Ph.: supports
Saddleback	Water Technology	Tony Tang	Phone Call: Supports
Santiago Canyon	Water Technology	Von Lawson	Phone Call: Left Message

5. List all courses required for program completion, including core requirements, restricted electives and prerequisites. (There is space for 20 listings, if you need more, please contact [laocrc@rscdd.edu](mailto:laocrc@rscdd.edu)).  
 (See PCAH pp. 143 and 171)

<b>Complete all of the following core courses:</b>		<b>Units</b>
WATR150	Introduction to Water Systems	3
WATR162	Water Use Efficiency I	3
WATR164	Water Use Efficiency II	3
BIOL145	Environmental Science	3
PUB165	Environmental Management	3
SPCH100	Interpersonal Communication	3
 <b>Complete one (1) of the following mathematics courses:</b>		 <b>Units</b>
MATH140	Pre-Statistics	5
MATH144	Technical Mathematics	5
 <i>Students may substitute a higher level mathematics course</i>		
 <b>Complete one (1) of the following electives:</b>		 <b>Units</b>
BUS152	Business Communications	3
ITIS130	Microcomputer Applications I	4
PUB159	Urban Forest Management Planning	3
PUB163	Turf and Landscape Management	3
WATR151	Water Resources and Distribution I	3
WATR156	Water Treatment I	3