

#21

COMPLETE

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Page 1: I. Program Overview and Update

Q1

I.1 Department(s) Reviewed:

Center for Water Studies

Q2

1.2 Lead Author

Joseph D. Young

Q3

Respondent skipped this question

I.3 Collaborator(s) - List any person that participated in the preparation of this report

Q4

I.4 Dean/Manager:

Larry McLemore

Q5

I.5 Program Update: Please summarize the changes, additions, and achievements that have occurred in your program since the last program review was submitted. To access your 2020 program review, visit the Program Review webpage.

The Fall semester of 2019 and Spring of 2020 represented the final year of our 3 year NSF grant. The construction of the Skills Yard Demonstration water system, the repurposing of the "L" building, the integration of existing and newly developed curriculum to promote "hands-on" learning concepts, and the rebranding of the "Water & Wastewater Technology Program" into the "Center for Water Studies" has substantially been completed.

The remaining deliverables under the grant involved developing improved career pathways to further strengthen student success, promote the engagement of veterans and women in exploring the water industry as a career, and strengthening the Center's partnerships with the local water industry. This was the Center for Water Study's focus over this last year.

The Center has developed new stackable certificates that facilitate the student's comprehension of the right classes and the proper progression that promotes success in the students chosen discipline. Each of the three levels of certificates satisfies the California State requirements to apply for the State certification exam at that level in that discipline. The stackable certificates provide a clearer path for the students to follow to reach their educational and career goals.

To further strengthen the Centers connections to the local water industry, the Center actively participated on a number of local water committees over the past year, including the San Diego County Water Authority's Regional Workforce Development Work Group and the American Water Works Association's Veteran Engagement and Transition Committee.

To promote and encourage women to seek careers in the water industry, the Center held the third annual "Women in Water Symposium" in January of 2020. The symposium provides professional development and networking opportunities to K-12 students, college students, early career professionals and seasoned professionals. Keynote speakers were women water industry leaders from San Diego County. The symposium was a huge success, and it was noticed by the Center's instructors that women student counts have improved as a result of the symposiums. We also developed several videos of women who have completed our program and are currently working in the water industry.

To promote careers in the water industry to military veterans, the Center worked with veteran transition groups Zero8hundred and Operation Reboot to increase veteran's awareness of the water industry as a career that fits their unique skillset learned while serving in the military. The Center worked with a local film company to develop several short videos of veterans currently working in the water industry and sharing how they found that path through the Center for Water Studies.

The following links will take you to the videos:

www.sdwaterstories.com OR <https://vimeopro.com/roncookmedia/san-diego-water-stories>

Page 2: II. Assessment and Student Achievement

Q6

II.A.1 Is your program following the assessment plan on file with the SLO Coordinator (or Outcome Assessment Committee)?

Yes, the assessment plan is on file and the program is following the plan

Q7

OPTIONAL: You may upload a copy of your SLO assessment plan for SLOAC here. If you have an Excel sheet, please convert to one of the supported files listed below before submission.

CWS SLO Assessment Plan Fall '14 through Spring '23.pdf (41.2KB)

Page 3: II. Assessment and Student Achievement

Q8

Respondent skipped this question

You indicated either 1) the department assessment plan is on file, but work is needed to update the plan, or 2) the department has no assessment plan on file and/or the program is not currently following assessment plan II.A.1a. Please describe how your program is adjusting (or developing) its assessment plan to ensure all courses are assessed within the assessment 4-cycle:

Page 4: II. Assessment and Student Achievement

Q9

II.A.2 Please provide an analysis of your Student Learning Outcomes (SLOs) findings over the past year and what changes, if any, were made as a result. This may include, for example, changes to departmental practices, program improvements, and/or professional development opportunities over the past year. *If the department did not complete assessments during the COVID-19 public health crisis, please note that here and provide additional context.

The plan going in to Fall 2019 was to assess every class over the Fall 19 and the Spring 20 semesters. Fall 19 courses were assessed, but COVID-19 got in the way of completing the entire process. 16 CWS courses were assessed in Fall 19, with a success rate of 96%. The remaining 12 CWS courses will be assessed when conditions permit.

The results of the 16 assessed courses were discussed at the CWS department (Zoom) meeting held in August 2020. The CWS SLO's that indicated improvement needed are all related to mathematical calculations regarding water & wastewater treatment, pipe flow, flow velocity, pumping calculations, time and volume transfer relationships of moving water, and similar mathematical calculations. It has been shown in past assessments that the math component is generally the most challenging for the students to comprehend, and yet is critical to student success in passing State mandated certifications necessary for employment. The following recommendations were agreed upon by the program instructors:

1. Adjust lesson plans to focus more aggressively on the math components of the class.
 2. Review homework assignments to assure that math is sufficiently included to give students more practice working problems.
 3. Include frequent short quizzes to provide students more ongoing feedback on their math skills.
 4. Develop and post additional practice math problems for those students who desire some extra work developing their math skills.
 5. Promote the use of the tutoring center to students experiencing difficulty in performing mathematical computations.
-

Page 5: II. Assessment and Student Achievement

Q10

II.B.1. What progress has been made in your program to address the institutional goals set around student success and equity? (2019 Equity Plan) If qualitative or quantitative data is available, please summarize any findings.

Based on the last 5 years of data, the equity gaps prevalent in the Center for Water Studies program center around two ethnic groups: African-American/Black Non-Hispanic and Hispanic/Latino. There were no significant or pervasive gaps in gender or in any other ethnic group.

The last five years data showed an average retention and success rate for African-American/Black Non-Hispanic of 80% and 68% respectively. Modest progress can be seen in the most recent Spring '20 semester results of 84% and 79% for retention and success.

For the Hispanic/Latino group, last 5 years average showed 91% and 80% for retention and success respectively. Progress is seen in the last five semester average of 93% and 84% in retention and success.

The college goals and concept of improving equity results has been discussed with CWS instructors at department meetings. Instructors are encouraged to take advantage of equity-minded teaching and learning professional development programs and equity-based conferences and workshops. Instructors are encouraged to promote to students to take advantage of the college's expanded tutoring and learning assistance services if they are experiencing difficulties with their coursework. All students are encouraged to take advantage of the college's wide array of student support services.

This past year has proven very difficult to pursue these goals of improving equity gaps because of the disruption to normal classroom activities resulting from the pandemic. Delivering coursework through the Zoom platform eliminates the personal interaction with students and severely impairs making solid and lasting connections with the student. I believe that once back to a more normal classroom experience, the CWS program can make better progress towards more equitable outcomes across all ethnic groups.

Q11

II.B.2 In light of the goals set in your program review, what are your plans to improve equitable student outcomes (success, retention, persistence, graduation, etc.) in the coming year?

The number one goal of the Center for Water Studies program is to prepare our students to gain State Water Resources Control Board certifications required to gain employment in their chosen field of endeavor, and to ultimately begin a career in the water industry. Our program does an excellent job in meeting this goal. Having said that, improvement is needed in achieving more equitable outcomes in success, retention, persistence, and graduation across all ethnic groups.

A key component of achieving improvement is to encourage struggling students to take advantage of college support programs such as tutoring and learning assistance. Instructors will be encouraged to take advantage of equity-minded teaching and learning professional development programs and equity-based conferences and workshops.

Page 6: II. Assessment and Student Achievement

Q12

No

Do you offer distance education (online) courses? (excluding emergency remote teaching in 2020)?

Page 7: II. Assessment and Student Achievement

Q13

Respondent skipped this question

II.C.1 If there were differences in success rates for distance education (online) versus in-person sections of program courses in your last comprehensive program review, what has the department done to address these disparities? If online and in-person sections had comparable success rates, please describe what the program did to achieve that.

Q14

Respondent skipped this question

II.C.2 What mechanisms are in place to ensure regular and effective contact? For resources, see Cuyamaca Guide to Best Practices in Online Teaching

Page 8: III. Previous Goals: Update

Q15

Goal 1:

Create new STEM pathways in the CWS water & wastewater technology program by developing a four year baccalaureate degree program in water & wastewater management and administration.

Q16

Completed

Goal Status

Page 9: III. Previous Goals: Update continued

Q17

Please describe the results or explain the reason for deletion/completion of the goal:

Partnering with National University, a four year baccalaureate degree program has been established, titled "Bachelor of Public Administration – Waterworks Management Pathway". The new 4 year program is fully integrated with the Center for Water Studies degree program. First classes will begin in February 2021.

Q18

Yes

Do you have another goal to update?

Page 10: III. Previous Goals: Update continued

Q19

Respondent skipped this question

Action steps for the next year: If you are requesting resources in order to achieve this goal, please list them below as action steps and specify the type of request (e.g. submit technology request for new laptop computers).

Q20

Respondent skipped this question

Do you have another goal to update?

Page 11: III. Previous Goals: Update continued

Q21

Goal 2:

Improve workforce development as follows:

- 1) Recruit transitioning military members, women and other underrepresented populations for entry into the water & wastewater industry through nontraditional pathways
 - 2) Create an apprenticeship program for transitioning active duty military members and veterans
 - 3) Create a resource guide toolkit for recruiting minority and underrepresented students into STEM.
-

Q22

In Progress - will carry this goal forward into next year

Goal Status

Page 12: III. Previous Goals: Update continued

Q23

Respondent skipped this question

Please describe the results or explain the reason for deletion/completion of the goal:

Q24

Respondent skipped this question

Do you have another goal to update?

Page 13: III. Previous Goals: Update continued

Q25

Action steps for the next year: If you are requesting resources in order to achieve this goal, please list them below as action steps and specify the type of request (e.g. submit technology request for new laptop computers).

Much progress has been made to recruit veterans, women and minorities into the water industry. Over this last year, the Center for Water Studies has worked with veteran transition groups Zero8Hundred and Operation Reboot to help direct transitioning veterans toward exploring careers in the water industry. Several videos have been developed highlighting veterans that have completed the Center for Water Studies program and are actively working in the industry.

In January 2021, the Center for Water Studies will host our fourth annual "Women in Water" symposium. The symposium provides professional development and networking opportunities to K-12 students, college students, early career professionals and seasoned professionals. Keynote speakers were women water industry leaders from San Diego County. The Women in Water symposium has been very well received and is very successful in encouraging women to enroll in our program and explore careers in the water industry. Over this last year, we have created several videos highlighting women who have successfully completed our program and are currently working in the water industry.

In the coming year, the Center for Water Studies will build on these successes to further recruit veterans, women, and minorities to consider a future in the water industry.

Q26

No

Do you have another goal to update?

Page 14: III. Previous Goals: Update continued

Q27

Respondent skipped this question

Goal 3:

Q28

Respondent skipped this question

Goal Status

Page 15: III. Previous Goals: Update continued

Q29

Respondent skipped this question

Please describe the results or explain the reason for deletion/completion of the goal:

Q30

Respondent skipped this question

Do you have another goal to update?

Page 16: III. Previous Goals: Update continued

Q31

Respondent skipped this question

Action steps for the next year: If you are requesting resources in order to achieve this goal, please list them below as action steps and specify the type of request (e.g. submit technology request for new laptop computers).

Q32

Respondent skipped this question

Do you have another goal to update?

Page 17: III. Previous Goals: Update continued

Q33

Respondent skipped this question

Goal 4:

Q34

Respondent skipped this question

Goal Status

Page 18: III. Previous Goals: Update continued

Q35

Respondent skipped this question

Please describe the results or explain the reason for deletion/completion of the goal:

Page 19: III. Previous Goals: Update continued

Q36

Respondent skipped this question

Action steps for the next year: If you are requesting resources in order to achieve this goal, please list them below as action steps and specify the type of request (e.g. submit technology request for new laptop computers).

Page 20: IV. New Goals

Q37

Yes

Would you like to propose any new goal(s)?

Page 21: IV. New Goals continued

Q38

New Goal 1:

Develop two new courses, Advanced Water Treatment I and Advanced Water Treatment II, and develop a new Major titled Advanced Water Treatment.

Q39

Guided Student Pathways

Which College Strategic Goal does this department goal most directly support? (Check only one)

Q40

Please describe how this goal advances the college strategic goal identified above.

The latest technology and trend in the water industry involves taking wastewater, purifying it through a series of advanced processes, and re-introducing it into the drinking water supply. The City of San Diego is currently under construction with a 80 million gallon per day treatment plant employing these new processes and technologies. A new certification has been developed (Advanced Water Treatment or AWT) that is now required for employment in a facility utilizing these new processes and technologies. It is of critical importance to the CWS program to develop coursework and a new Major that focuses on the new processes and technologies surrounding Advanced Water Treatment. In addition to the City of San Diego's project, there are dozens of similar projects in various stages of development throughout California. This is the wave of the future, and our CWS students will be well served to have this instruction and preparation for the AWT certification available to them.

Q41

Please indicate how this goal was informed by SLO (student learning outcome) assessment results, PLO (program learning outcome) assessment results, student achievement data, or other qualitative or quantitative data (from any source):

This goal was informed by the direction the water industry has taken, out of necessity, in recent years. After decades of drought, climate change, population growth, and the resulting scarcity of imported water supplies, the trend towards converting wastewater into drinking water and reusing it was inevitable. This need was the driving force behind developing new technologies and processes utilized in purifying wastewater: membrane technology, ozonation, reverse osmosis, ultraviolet disinfection, and advanced oxidation. In addition to San Diego's Pure Water program, dozens of similar projects are in various stages of development throughout California. It is imperative that the CWS program offer these two new courses and Major, and that students can prepare themselves for AWT certification and the job opportunities the certification will provide.

Q42

Action steps for this year: If you are requesting resources in order to achieve this goal, please list them below as action steps and specify the type of request (e.g. submit technology request for new computer hardware).

1. Develop new courses AWT I and AWT II, and the new AWT major
 2. Submit through Curriculum Committee and gain approval
 3. Hire new full-time faculty position with career emphasis in wastewater discipline
-

Q43

How will this goal be evaluated?

The success of this goal will be based on having the two new courses and the major fully approved and the new faculty position approved and filled

Q44

No

Do you have another new goal?

Page 22: IV. New Goals continued

Q45

Respondent skipped this question

New Goal 2:

Q46

Respondent skipped this question

Which College Strategic Goal does this department goal most directly support?

Q47

Respondent skipped this question

Please describe how this goal advances the college strategic goal identified above.

Q48

Respondent skipped this question

Please indicate how this goal was informed by SLO (student learning outcome) assessment results, PLO (program learning outcome) assessment results, student achievement data, or other qualitative or quantitative data (from any source):

Q49

Respondent skipped this question

Action steps for this year: If you are requesting resources in order to achieve this goal, please list them below as action steps and specify the type of request (e.g. submit technology request for new computer hardware).

Q50

Respondent skipped this question

How will this goal be evaluated?

Q51

Respondent skipped this question

Do you have another new goal?

Page 23: IV. New Goals continued

Q52 Respondent skipped this question

New Goal 3:

Q53 Respondent skipped this question

Which College Strategic Goal does this department goal most directly support?

Q54 Respondent skipped this question

Please describe how this goal advances the college strategic goal identified above.

Q55 Respondent skipped this question

Please indicate how this goal was informed by SLO (student learning outcome) assessment results, PLO (program learning outcome) assessment results, student achievement data, or other qualitative or quantitative data (from any source):

Q56 Respondent skipped this question

Action steps for this year: If you are requesting resources in order to achieve this goal, please list them below as action steps and specify the type of request (e.g. submit technology request for new computer hardware).

Q57 Respondent skipped this question

How will this goal be evaluated?

Q58 Respondent skipped this question

Do you have another new goal?

Page 24: IV. New Goals continued

Q59 Respondent skipped this question

New Goal 4:

Q60 Respondent skipped this question

Which College Strategic Goal does this department goal most directly support?

Q61

Respondent skipped this question

Please describe how this goal advances the college strategic goal identified above.

Q62

Respondent skipped this question

Please indicate how this goal was informed by SLO (student learning outcome) assessment results, PLO (program learning outcome) assessment results, student achievement data, or other qualitative or quantitative data (from any source):

Q63

Respondent skipped this question

Action steps for this year: If you are requesting resources in order to achieve this goal, please list them below as action steps and specify the type of request (e.g. submit technology request for new computer hardware).

Q64

Respondent skipped this question

How will this goal be evaluated?

Page 25: V. Resources Needed to Achieve Goal(s)

Q65

Faculty Resource Needs

What resources is your program requesting this year to achieve the program's goal(s)?

Page 27: Final Check

Q66

I am ready to submit my program review

Are you ready to submit your program review? If you would like to go back and review a section, select a section and click "Next."
