Program Endorsement Brief:

Environmental Technology (Water/Wastewater Management) for Woodland Community College

North/Far North Center of Excellence, March 2018

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INTRODUCTION

Woodland Community College is exploring an opportunity to expand an Environmental Technology (Water/Wastewater Management) certificate into an associate degree. The programs would provide students with an expanded foundation in water/wastewater management in preparation for entry-level and middle-skill employment in water industry positions.

This report provides estimates and indicators of the labor market outlook for students exiting the proposed program.

Key findings include:
- Students entering water and wastewater treatment jobs must have technical training and/or experience to be competitive when entering the labor market.

- The number of available jobs in water and wastewater management is increasing; yet, the pool of qualified applicants is shrinking, leading to a widening gap between supply and demand within the labor market.

- This labor market gap is anticipated to grow over the next few years due to high levels of anticipated retirements.

- Water industry jobs, in general, pay well due to the technical skills and training required.

- Only seven colleges in the North/Far North region offer programs related to water and wastewater; of these, there are only, on average, 36 awards conferred annually (32 certificates and four associate degrees).

- BAYWORK, a Bay Area industry group of water and wastewater utilities, released a report in partnership with the Center of Excellence (COE) that expands on the findings presented in this report.

This report uses labor market data from the Bureau of Labor Statistics (BLS), U.S. Census Bureau data from Emsi and job posting data from Burning Glass.

It contains the following sections:
- Occupational demand,
- Wages and job postings,
- Educational attainment and supply, and
- Findings and recommendations.

OCCUPATIONAL DEMAND

There is one Standard Occupational Classification (SOC) code for the water treatment occupation related to Yuba's planned program: Water and Wastewater Treatment Plant and System Operators (51-8031). Exhibit 1 summarizes job trends for the SOC code in the seven-county North region and California.

Exhibit 1: Water/wastewater employment and projected occupational demand in the region and state[1]

Geography	2007 Jobs	2017 Jobs	2022 Jobs	2017-22 Jobs % Change	Annual Openings	Annual Replacement Jobs
North Region	793	786	925	17.7%	86	63
California	11,785	11,710	12,507	6.8%	1,155	965

Exhibit 2 shows the percentage change in number of jobs between 2007 through 2017 and projections from 2017 through 2022. The rate of change is indexed to the total number of jobs in 2007 as the base year and compares the North region and state.

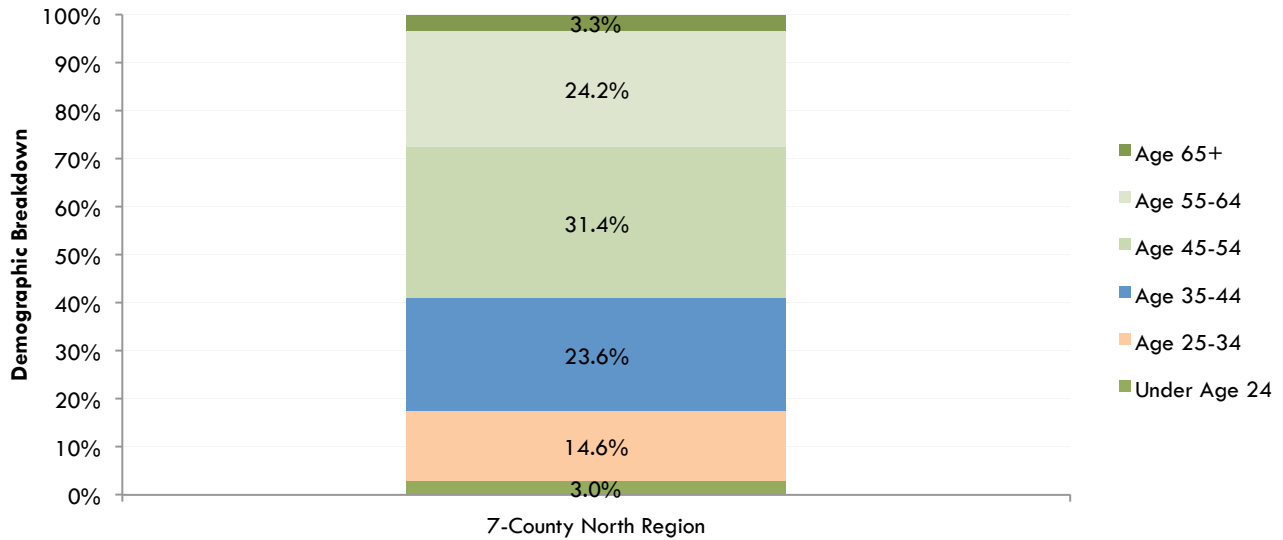**Exhibit 2: Rate of change for water/wastewater jobs in the North region and state**[2]

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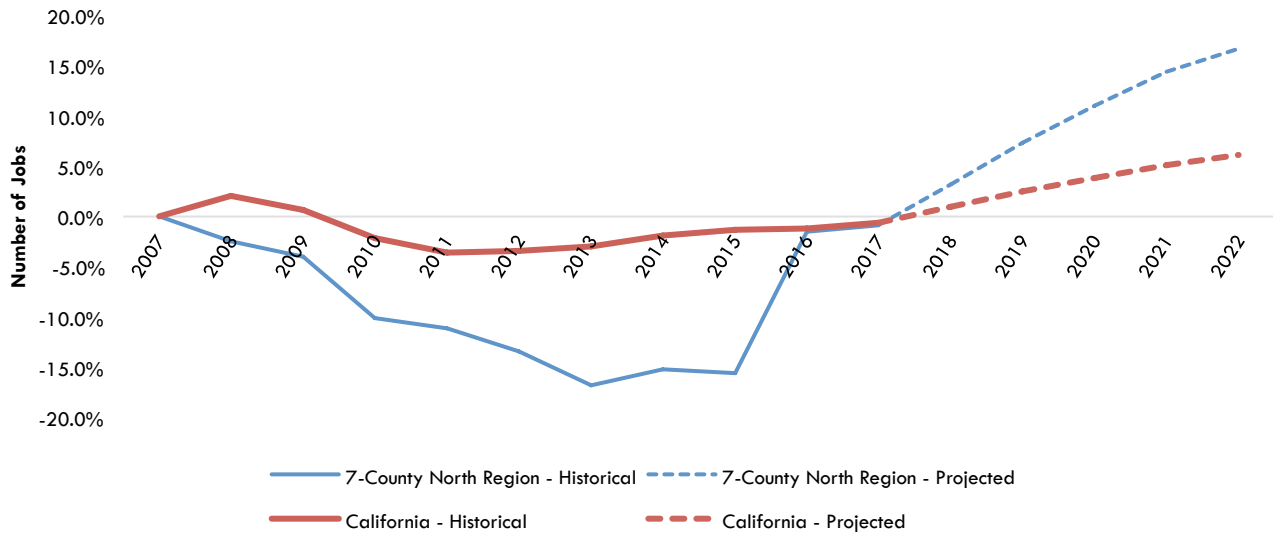
[1] EMSI; 2018.1 QCEW Employees, Non-QCEW Employees and Self-Employed. The seven-county North region includes El Dorado, Placer, Nevada, Sacramento, Sutter, Yolo and Yuba.
[2] EMSI; 2018.1 QCEW Employees, Non-QCEW Employees and Self-Employed.

Exhibit 3 displays the demographic breakdown of workers in water/wastewater occupations. Generally, this industry is top heavy, with nearly 60% of the workforce age 45 or older.

Exhibit 3: Demographic distribution of water/wastewater occupations[3]

WAGES AND JOB POSTINGS

Exhibit 4 displays the hourly wages for water/wastewater jobs in the North region and California compared to Yuba County's living wage for a one-adult, one-child household.[4] The chart highlights wages at various percentiles along the earnings spectrum.

Exhibit 4: Wages for water/wastewater jobs in the North region and California[5]

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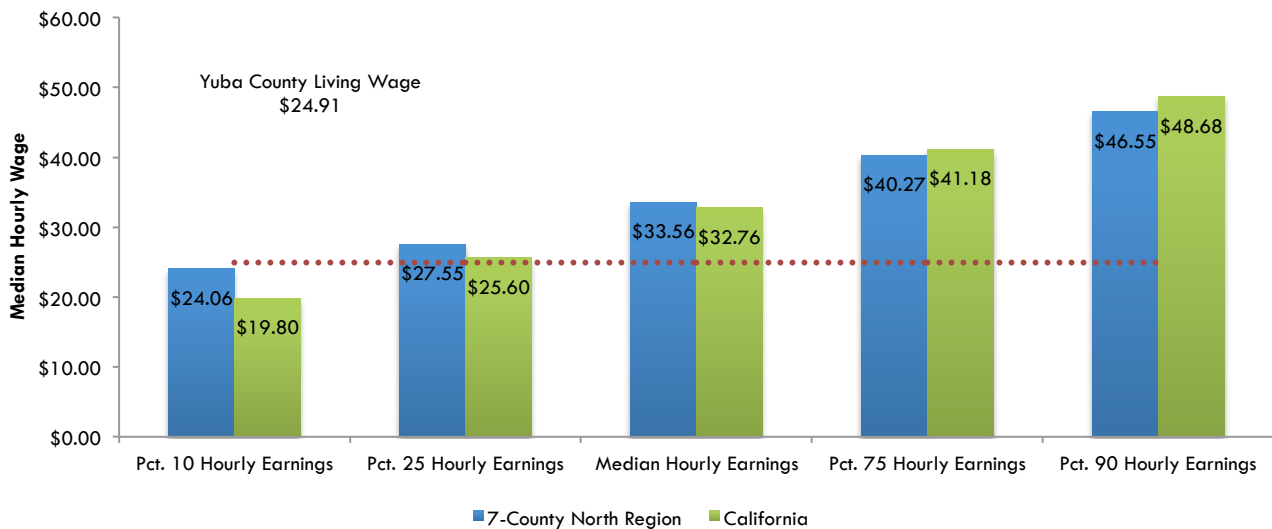
[3] Ibid
[4] Living Wage Calculator: Counties and Metropolitan Statistical Areas in California, http://livingwage.mit.edu/states/06/locations.
[5] EMSI; 2017.4 QCEW Employees, Non-QCEW Employees and Self-Employed.

Burning Glass data on job postings was used to determine skills, employers and job titles related to the water industry. The data analysis used a pool of 105 listings in the North region. The data was filtered based on keywords related to water/wastewater systems and an education requirement of an associate degree or less (including unspecific postings). Data was pulled for the last 12 months from March 1, 2017 through February 28, 2018.

Exhibit 5 presents the job postings trend for water/wastewater jobs over the past 10 years compared to the median during the same period in the North region.

Exhibit 5: Job posting trends for water/wastewater occupations in the North region[6]
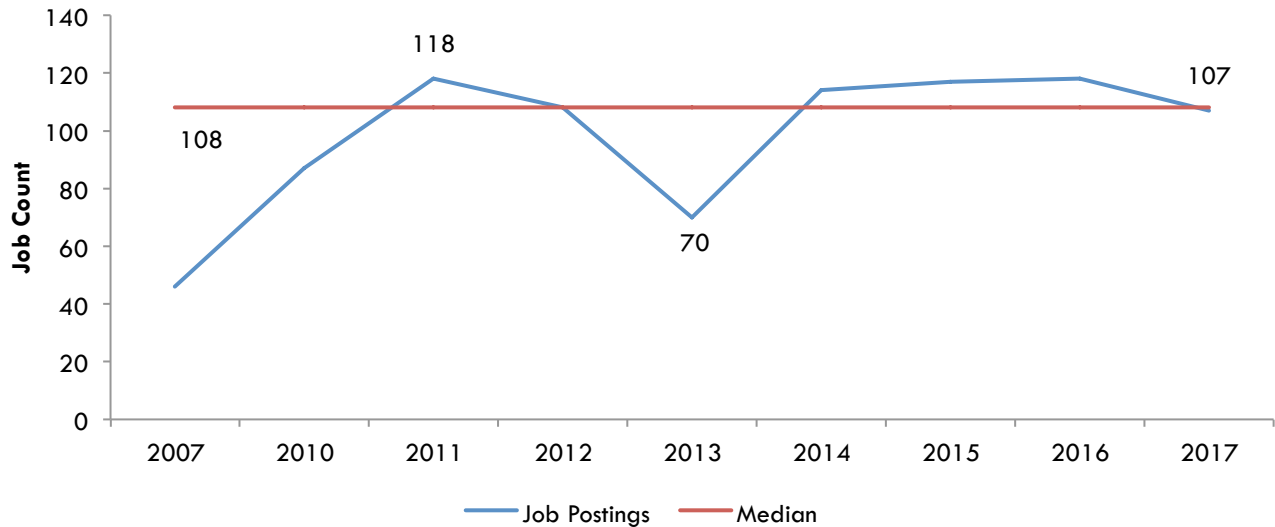

Exhibit 6 shows the top job titles for water/wastewater occupations in the job postings.

Exhibit 6: Top titles among water/wastewater job postings[7]

Top Titles	Number	Percent (n=105)
Water Resource Control Engineer	34	32.4%
Wastewater Management	9	8.6%
Maintenance Supervisor	4	3.8%
Water Treatment Plant Operator	4	3.8%
Maintenance Worker	2	1.9%
Project Engineer	2	1.9%
Wastewater Systems Operator	2	1.9%
Wastewater Specialist	2	1.9%

[6] Burning Glass Technologies, "Labor Insight Real-Time Labor Market Information Tool," 2018.
[7] Ibid.

Exhibit 7 shows the top employers in the North region for water/wastewater jobs. Of the 105 postings, there were only 46 records that included an employer. As a result, the table below may not be representative of the full sample.

Exhibit 7: Top employers among water/wastewater job postings[8]

Top Employers	Number	Percent (n=46)
City of Roseville	12	26.1%
Ch2m Hill	5	10.9%
Army Corps of Engineers	2	4.3%
City of Davis	2	4.3%
City of Nevada City	2	4.3%
City of Woodland	2	4.3%
South Tahoe Public Utility District	2	4.3%

Exhibit 8 shows the top skills in demand for water/wastewater jobs in the North region. Of the 105 postings, there were only 90 records that included an employer. As a result, the table below may not be representative of the full sample.

Exhibit 8: Top skills for water/wastewater job postings [9]

| Top Skills	Number	Percent (n=90)
Water Treatment	44	5.2%
Repair	34	4.0%
Inspection	30	3.5%
Supervisory Skills	22	2.6%
Water Distribution	21	2.5%
Scheduling	19	2.2%
Water Quality	18	2.1%

[8] Ibid.
[9] Ibid.

EDUCATIONAL ATTAINMENT AND SUPPLY

At the national level, water/wastewater occupations do not typically require advanced education for an entry-level position. Exhibit 9 shows educational attainment for all workers in the industry. About 42% of the workforce has completed some high school or less while nearly 35% has completed some college, but not a degree.

Exhibit 9: Typical educational attainment for water/wastewater occupations nationally[10]
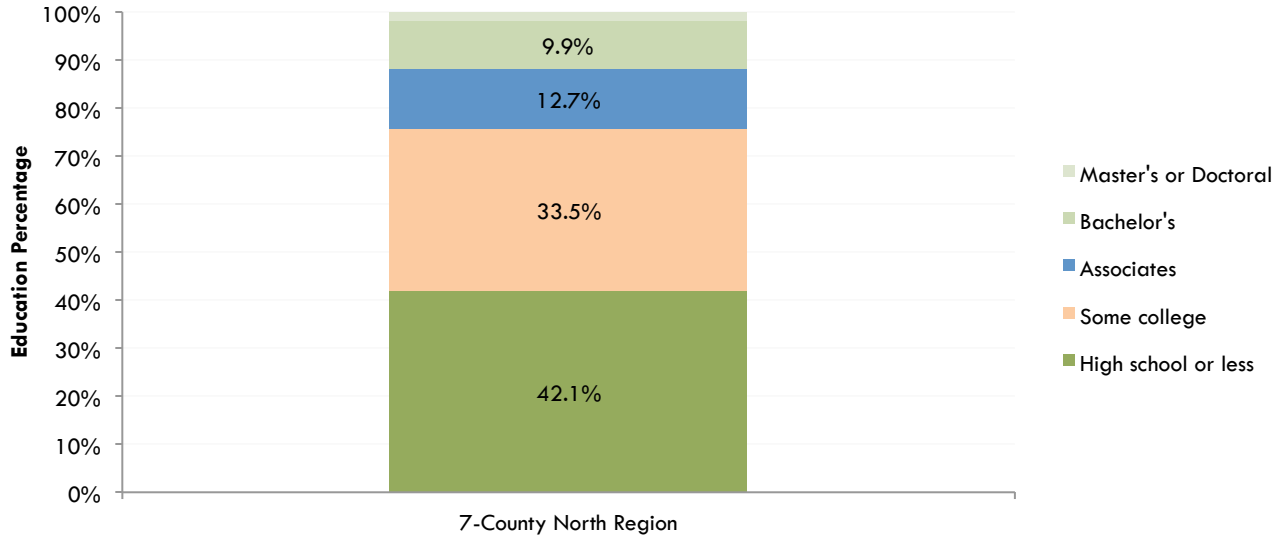
Two Taxonomy of Programs (TOP) codes were identified related to the water industry: Water and Wastewater Technology (0958.00) and Environmental Technology (0303.00). There are eight colleges in the North/Far North region that offer a related program. Exhibits 10a and 10b show the number of awards earned on average at these colleges during the past three academic years.

Exhibit 10a: Total awards conferred by North/Far North community colleges, 2014-2017[11]
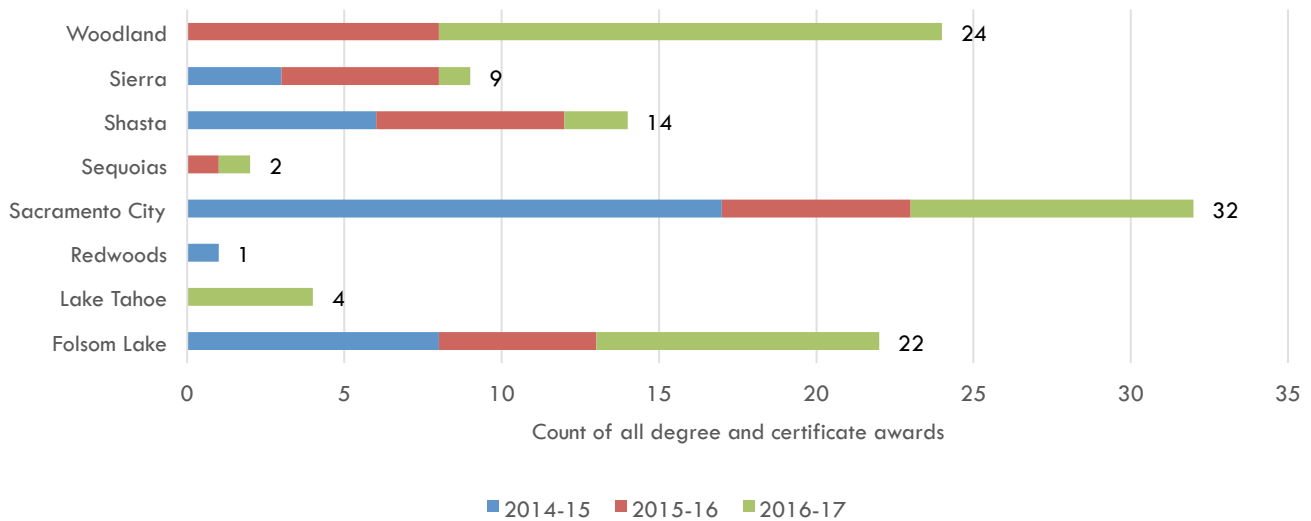
Exhibit 10b: Annual awards conferred by North/Far North community colleges, 2014-2017[12]

Institution	Certificate				Associate Degree			
	2014-15	2015-16	2016-17	3-Yr Avg	2014-15	2015-16	2016-17	3-Yr Avg
Folsom Lake	8	5	9	7	0	0	0	0
Lake Tahoe	0	0	1	0	0	0	3	1
Redwoods	0	0	0	0	1	0	0	0
Sacramento City	15	6	9	10	2	0	0	1
Sequoias	0	1	1	1	0	0	0	0
Shasta	6	6	2	5	0	0	0	0
Sierra	1	2	0	1	2	3	1	2
Woodland	0	8	16	8	0	0	0	0
Total	**30**	**28**	**38**	**32**	**5**	**3**	**4**	**4**

FINDINGS AND RECOMMENDATIONS

- Data analysis shows that water and wastewater treatment jobs require technical training and/or experience which qualify these occupations as a middle-skill jobs.

- Demographic data and job openings data indicate a large percentage of the workforce is aging, posing a challenge for the industry to backfill these positions. A comprehensive study done by the industry group BAYWORK and the COE echo these findings.

- The number of available jobs in water and wastewater management is increasing. A supply gap is especially significant in the North region. Over the next five years, water/wastewater occupations are expected to grow by nearly 18%, far exceeding overall job growth in the regional economy.

- This labor market gap is anticipated to grow over the next few years. Retirements are contributing to the number of annual openings. More than a quarter of the workforce is at or near the retirement age, and almost 60% of workers are more than 45 years old.

- Water industry jobs generally pay well. Wages in the North region for related occupations exceed Yuba County's living wage, even at the lower percentiles of the earnings distribution.

- Only seven colleges in the North/Far North region offer programs related to water/wastewater; some may not train specifically for water technician requirements. (This report included environmental technology programs in the analysis). Only 36 awards, on average, were conferred annually during the last three years; of these 32 were certificates and four were associate degrees. The total annual awards count indicates a supply gap, since the 36 completions are lower than the projected 86 annual openings in the region.

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[12] Ibid.

APPENDIX A: SOURCES

Sources used for data analysis purposes in this report include:

- U.S. Department of Labor/Employment and Training Administration (DOLETA) O*NET Online

- Burning Glass, Labor Insight/Jobs

- Economic Modeling Specialists, International (EMSI)

- California Employment Development Department, Labor Market Information Division (EDD, LMID)

- Bureau of Labor Statistics, Occupational Employment Statistics (OES)

- California Community Colleges Chancellor's Office, Cal-PASS Plus LaunchBoard

- Santa Rosa Junior College, CTE Outcomes Survey (CTEOS)

- Living Insight Center for Community Economic Development, Self-Sufficiency Standard Tool for California

- California Community Colleges Chancellor's Office Management Information Systems (MIS Data Mart)

- U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS)

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