

Hydrologists

Labor Market Analysis: San Diego-Imperial Region

March 2018

Summary

This report was produced for Imperial County; however, due to insufficient data in the labor market, the greater San Diego-Imperial Region was used for analysis. The following list summarizes findings from the labor market analysis below for *Hydrologists*:

- There is insufficient data for Imperial County to determine labor market demand for *Hydrologists*; however, when analyzing data in the greater San Diego-Imperial Region between 2017 and 2022, *Hydrologists* are projected to increase by eight jobs or seven percent.
- Employers in San Diego-Imperial Region will need to hire 13 workers annually to fill new jobs and backfill jobs due to attrition such as retirement or turnover.
- Between 2010 and 2017, there was an average of eight online job postings per year for *Hydrologists* in the San Diego-Imperial Region.
- There is insufficient data for Imperial County, however, when analyzing data in the greater San Diego-Imperial Region, *Hydrologists* earn median hourly earnings of \$52.02, more than the Self-Sufficiency Standard for two adults and two children (school-age) in Imperial County, which is \$11.32 per hour.
- According to the California Community Colleges Chancellor's Office Management Information System (MIS) Data Mart, there are no programs or awards associated with this occupation. However, according to the Classification of Instructional Programs (CIP) data, four colleges supply the region with awards for this occupation: University of California-San Diego, San Diego State University, Grossmont College and San Diego Miramar College.
- Comparing labor demand (annual openings) with labor supply suggests that there is an oversupply for this occupation in the San Diego-Imperial Region, with 13 annual openings and 116 awards. Comparatively, there are 79 annual openings in California and 905 completions. There are zero awards in Imperial County; however, there is insufficient labor market data to determine if there is a supply gap in Imperial County.
- Between January 1, 2015 and December 31, 2017, the top five employers in the San Diego-Imperial Region for this occupation were Geological Survey, Environmental Science Associates, United States Geological Survey, Forest Service and Environmental Service Associates Esa.

- The typical entry-level education is a bachelor’s degree. This occupation may be considered for an Associate Degree for Transfer (ADT) program.

Introduction

This report provides labor market information in the San Diego-Imperial Region for the following occupational code in the Standard Occupational Classification (SOC)¹ system:

Hydrologists (SOC 19-2043): Research the distribution, circulation, and physical properties of underground and surface waters; and study the form and intensity of precipitation, its rate of infiltration into the soil, movement through the earth, and its return to the ocean and atmosphere.

Sample reported job titles include:

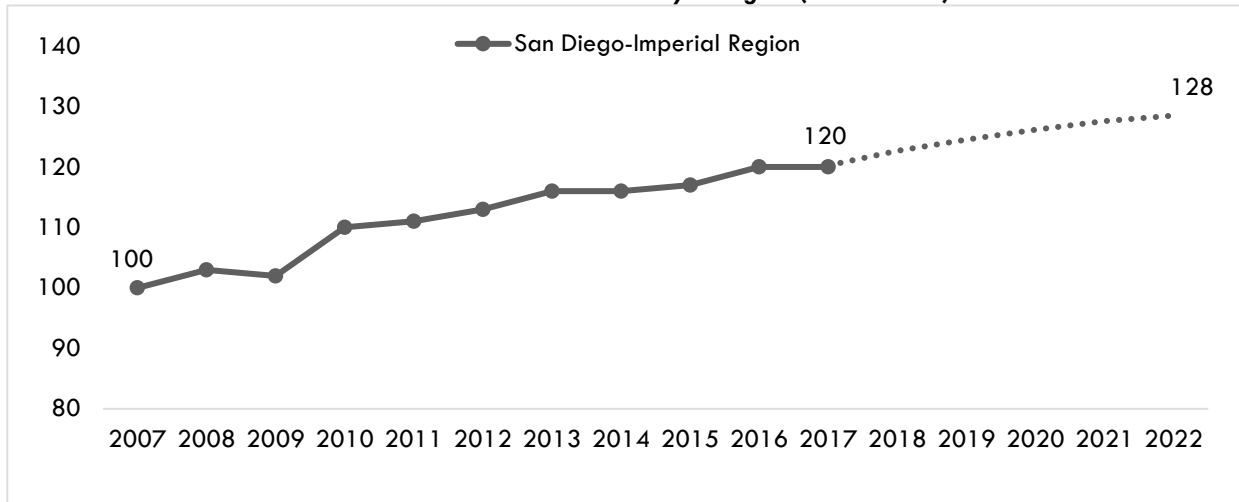
- Hydrogeologist
- Water Resources Program Director
- Source Water Protection Specialist
- Groundwater Programs Director
- Research Hydrologist
- Hydrologist
- Environmental Consultant
- Scientist
- Physical Scientist
- Groundwater Consultant

Projected Occupational Demand

There is insufficient data for Imperial County to determine labor market demand for *Hydrologists*; however, when analyzing data in the greater San Diego-Imperial Region between 2017 and 2022, *Hydrologists* are projected to increase by **eight** jobs or **seven** percent (Exhibit 1). Employers in San Diego-Imperial Region will need to hire **13** workers annually to fill new jobs and backfill jobs due to attrition such as retirement or turnover.

¹ The Standard Occupational Classification (SOC) system is used by federal statistical agencies to classify workers into occupational categories for the purpose of collecting, calculating or disseminating data. [bls.gov/soc](https://www.bls.gov/soc).

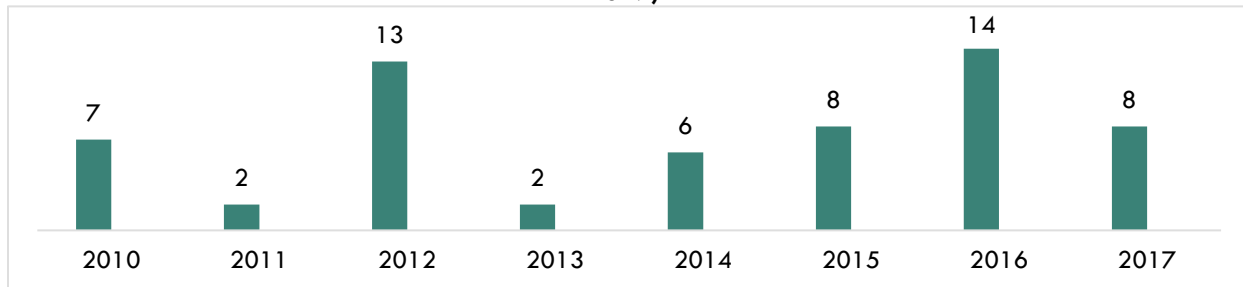
Exhibit 1: Number of Jobs for Hydrologists (2007-2022)²



Online Job Postings

Between 2010 and 2017, there was an average of **eight** online job postings per year for *Hydrologists* in the San Diego-Imperial Region (Exhibit 3).

Exhibit 3: Number of Online Job Postings for Hydrologists in the San Diego-Imperial Region (2010-2017)³



Earnings

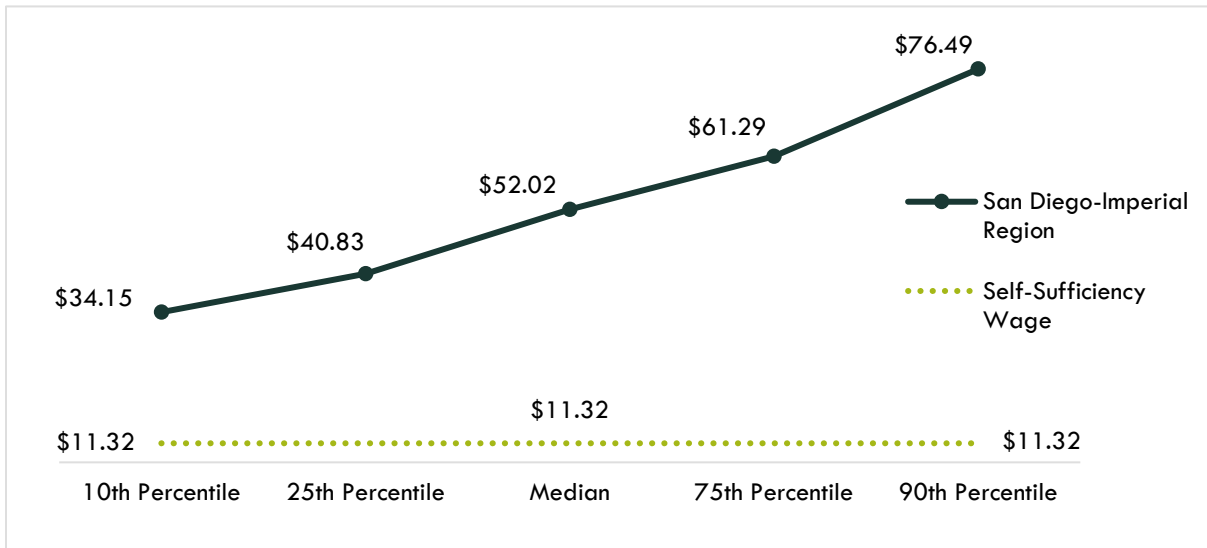
There is insufficient data for Imperial County, however, when analyzing data in the greater San Diego-Imperial Region, *Hydrologists* earn median hourly earnings of **\$52.02**, more than the Self-Sufficiency Standard for two adults and two children (school-age) in Imperial County, which is **\$11.32** per hour (Exhibit 4).⁴

² Economic Modeling Specialists, Int'l. (EMSI). San Diego County (6073); Imperial County (6025). 2018.01 Class of Worker. QCEW + Non-QCEW+ Self-Employed. 2007-2022.

³ Labor Insight Jobs. Burning Glass Technologies. Imperial, CA. San Diego, CA. Full years 2010-2017.

⁴ The standard for two adults and two children was chosen due to the 3.68 persons per household (2012-2016) as determined by the U.S. Census for Imperial County.

Exhibit 4: Hourly Earnings for Hydrologists in San Diego-Imperial Region⁵



Educational Supply

Educational supply for an occupation can be estimated by analyzing the number of related program completers/graduates/awards in Imperial County. According to the California Community Colleges Chancellor's Office Management Information System (MIS) Data Mart, there are no TOP codes associated with this occupation. However, there are three Classification of Instructional Programs (CIP) codes related to the SOC code analyzed: CIP 19.3000: Earth Science, 19.1400: Geology and 19.2000: Oceanography (Exhibit 5).

Exhibit 5: Related CIP Codes in the San Diego-Imperial Region

SOC 19-2043: Hydrologists

CIP 40.0601 Geology/Earth Science, General

CIP 40.0607 Oceanography, Chemical and Physical

According to the CIP data, **four** colleges supply the region with awards for this occupation: **University of California-San Diego, San Diego State University, Grossmont College and San Diego Miramar College** (Exhibit 6).⁶

⁵ EMSI. San Diego County (6073); Imperial County (6025). 2018.01 Class of Worker. QCEW + Non-QCEW + Self-Employed. 2017-2022.

⁶ EMSI. San Diego County (6073); Imperial County (6025). 2018.01 Class of Worker. QCEW + Non-QCEW + Self-Employed. 2017-2022.

Please note: An award is not equivalent to a single person in search of a job opening because a student may earn more than one award such as an associate degree in addition to a certificate.

Exhibit 6: Number of Awards (Certificates and Degrees) Conferred by Postsecondary Institutions by Occupation (Program Year 2013-14 through PY2015-16 Average)

CIP	CIP Title	3-Yr Annual Average CC Awards (PY13-14 to PY15-16)	Other Educational Institutions 3-Yr Annual Average Awards (PY13-14 to PY15-16)	3-Yr Total Average Supply (PY13-14 to PY15-16)
40.0601	Geology/Earth Science, General	4	58	62
	<ul style="list-style-type: none"> University of California-San Diego 	0	36	36
	<ul style="list-style-type: none"> San Diego State University 	0	22	22
	<ul style="list-style-type: none"> Grossmont College 	2	0	2
	<ul style="list-style-type: none"> San Diego Miramar College 	2	0	2
40.0607	Oceanography, Chemical and Physical	0	50	50
	<ul style="list-style-type: none"> University of California-San Diego 	0	50	50
			Total	112

*Total number of awards may not add up exactly due to rounding.

Demand vs. Supply

Comparing labor demand (annual openings) with labor supply⁷ suggests that there is an **oversupply** for this occupation in the San Diego-Imperial Region, with **13** annual openings and **112** awards.

Comparatively, there are **79** annual openings in California and **905** completions.⁸ There are zero awards in Imperial County; however, there is insufficient labor market data to determine if there is a supply gap in Imperial County (Exhibit 7).

⁷ Labor supply can be found from two different sources: EMSI or the California Community Colleges Chancellor's Office MIS Data Mart. EMSI uses CIP codes while MIS uses TOP codes. Different coding systems result in differences in the supply numbers.

⁸ EMSI. San Diego County (6073); Imperial County (6025). 2018.01 Class of Worker. QCEW + Non-QCEW + Self-Employed. 2017-2022.

Exhibit 7: Labor Demand (Annual Openings) Compared to Labor Supply (Average Annual Awards)

	Demand (Annual Openings)	Supply (Total Annual Average Supply)	Supply Gap or Oversupply
Imperial County	Insufficient Data	0	-
San Diego-Imperial Region	13	112	99
California	79	905	826

Please note: This is a basic analysis of supply and demand of labor for these occupations. This data should be used to discuss the potential gaps or oversupply of workers for these occupations; however, it should not be the only basis for determining whether or not a program should be developed. Additionally, the data does not include workers who are currently in the labor force who that could fill these positions or workers who are not captured by publicly available data.

Student Outcomes

There are no student outcomes data available in the CTE LaunchBoard⁹ for this occupation because there is no TOP code related to SOC 19-2043: *Hydrologists* (Exhibit 8).

**Exhibit 8: Strong Workforce Program Metrics for
N/A in the San Diego-Imperial Region (PY2014-15)**

Metric	San Diego-Imperial	California
Number of course enrollments ¹⁰	N/A	N/A
Number of students who got a degree or certificate ¹¹	N/A	N/A
Number of students who transferred ¹²	N/A	N/A
Employed in the second fiscal quarter after exit ¹³	N/A	N/A
Employed in the fourth fiscal quarter after exit ¹⁴	N/A	N/A

⁹ calpassplus.org/LaunchBoard/SWP.aspx.

¹⁰ The number of enrollments in courses assigned to the TOP code in the selected year.

¹¹ The number of unduplicated students who earned a locally-issued certificate, Chancellor's Office approved certificate, associate degree, and/or California Community Colleges bachelor's degree in the selected TOP code

¹² Students who took non-introductory courses or completed a California Community Colleges Chancellor's Office award in the selected TOP code in selected year who subsequently enrolled for the first time in a four-year institution the following year.

¹³ Among all exiters with a valid SSN, the percentage who were employed two quarters after exiting California Community Colleges.

¹⁴ Among Exiting students with a valid SSN, the percentage who were employed four quarters after exiting California Community Colleges.

Metric	San Diego-Imperial	California
Job closely related to field of study ¹⁵	N/A	N/A
Median earnings in the second fiscal quarter after exit ¹⁶	N/A	N/A
Median change in earnings ¹⁷	N/A	N/A
Attained a living wage ¹⁸	N/A	N/A

Top Employers and Work Locations

Between January 1, 2015 and December 31, 2017, the top five employers in the San Diego-Imperial Region for this occupation were [Geological Survey, Environmental Science Associates, United States Geological Survey, Forest Service and Environmental Service Associates Esa](#) (Exhibit 9).

Exhibit 9: Top Employers in the San Diego-Imperial Region for *Hydrologists*

Top Employers

- Environmental Science Associates
- United States Geological Survey
- Forest Service
- Environmental Service Associates Esa
- Geological Survey
- AECOM Technology Corporation
- Usgs1
- Medical Professionals
- Halcrow
- Geosyntec Consultants Incorporated
- Ch2m Hill

Skills, Education and Certifications

Exhibit 10 indicates the educational attainment for the occupation found currently in the national labor force. There is no typical on-the-job training for this occupation. The typical entry-level education is a [bachelor's degree](#).¹⁹

¹⁵ Among students who responded to the CTEOS, the percentage reporting employment in the same or similar field as their program of study.

¹⁶ Among exiting students, the median second-quarter earnings one year after the year in which they exited California Community Colleges

¹⁷ Among exiting students with a valid SSN, the percentage change in earnings one year before and one year after exiting California Community Colleges.

¹⁸ Among completers and skills-builders who exited, the proportion of students who attained a living wage.

¹⁹ EMSI. San Diego County (6073) Imperial County (6025). 2017.04 Class of Worker. QCEW + Non-QCEW + Self-Employed. 2017-2022.

Exhibit 10: National Educational Attainment of Hydrologists ²⁰

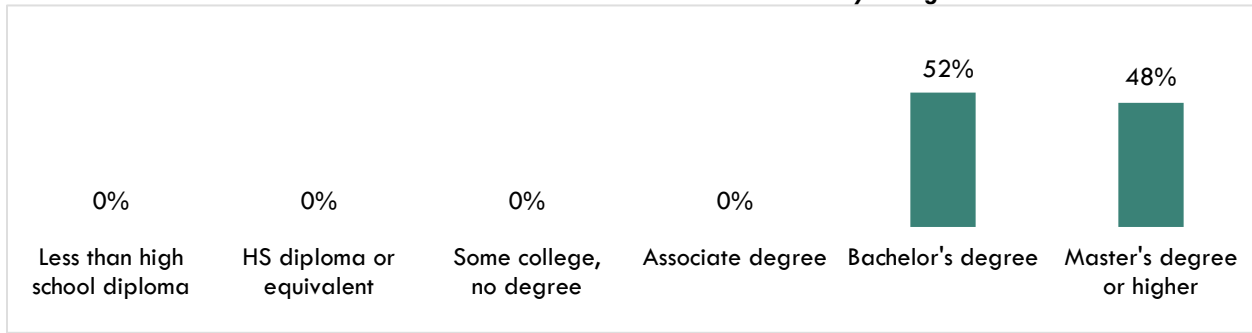


Exhibit 11 lists the top specialized and soft skills that appeared in online job postings for between January 1, 2015 and December 31, 2017.

Exhibit 11: Top Skills for Hydrologists in the San Diego-Imperial Region²¹

Specialized Skills	Soft Skills	Software Skills
<ul style="list-style-type: none"> Hydrology Hydrogeology Project Management Natural Resources Geology Chemistry Water Quality 	<ul style="list-style-type: none"> Writing Communication Skills Planning Research Mathematics Preparing Reports Computer Skills 	<ul style="list-style-type: none"> Microsoft Excel Microsoft Word Microsoft Office Microsoft Powerpoint Geographic Information System (GIS) ArcGIS AutoCAD

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²⁰ Bureau of Labor Statistics, Educational attainment for workers 25 years and older by detailed occupation. bls.gov/emp/ep_table_111.htm
²¹ Labor Insight Jobs. Burning Glass Technologies. Imperial, CA. San Diego, CA. Full years 2015-2017.