

ENGINEER PROFILE

Name: Richard Wilson

Organization: EBMUD

Engineering Discipline (Check one below):

- Civil
- Mechanical
- Electrical
- Environmental (including Process)
- Structural
- Information Technology
- SCADA
- Other



1. Please describe the work you do:

I manage and direct work relating to improvements to water treatment plants and raw water distribution pipelines. In many cases, I act as the project manager and engineer. My projects usually have specific and measurable goals related to the quality and production of drinking water. Since electrical, mechanical and civil engineering disciplines are needed to complete a project, it is my job to understand how the different disciplines are related to one another. I also work with contractors and maintenance staff that create what is drawn and specified. Often times, my work requires that I consult with them before the project begins and during the construction to answer questions about what was intended in the drawings and specifications.

2. What combination of education, experience, and skill was required in order for you to obtain your job?

My present position requires that I have an engineering degree from a four-year university and am licensed by the State of California to practice mechanical engineering. When I took my position, I already had 18 years of experience working with four companies. I didn't need that much experience to obtain my position but it has helped in my ability to perform my work. Experience and skill are closely linked; skills are developed with more experience. Having a degree and a license takes time and hard work, but in the end it is a check in a box on an employment application. It didn't make me stand out because it was a requirement, but my skills and experience made the difference. I worked with trades people and engineers of all types, in shipyards and in gold mines. I managed design projects for systems on nuclear submarines and unmanned offshore loading stations in the North Sea. Naturally, my engineering skills became more refined with experience. But the skills that helped me obtain my position the most were: 1) the ability to work independently on a variety of projects and 2) the confidence gained by working with many different people.

3. What do you like best about your job?

Many times, I am told that there is a problem with a mechanical system. That's all I am told. The *process* of figuring out why there is a problem and recommending a solution is very satisfying. First, I have to keep an open mind because the process demands that I talk with many people – people who are going to

disagree about many things. Sometimes someone will say that there is no problem. Personalities and office politics always color the information provided. If you've ever seen the TV show Colombo, it is a lot like that. I have to interview people, sometimes many times, because I need to cross-check the story that I get from one person to see if it matches with what a different person tells me. After a while, I can get a sense of what is happening and I can better define the range of solutions. The process of understanding "why?" is always different each time. It is the best part of my job. But it is also the part that nobody sees because it is subtle and informal.

4. Please tell us about the water or wastewater engineering project you enjoyed working on the most, and what made it rewarding,

One of the most rewarding projects for me was the conversion of an old sludge removal system to a new system. It had all the makings of an interesting project: politically, it was high-profile; there were unknown site conditions; outage requirements; the design had to be completed quickly; it was a one-of-a-kind system never installed before; and it required modifications to existing structures. It was part of a larger Program and the success of that program was dependent on the success of my project.

As the project manager I was responsible for coordinating the design and purchase of equipment. Watching my design go from paper to reality so quickly was very satisfying and knowing that its successful completion was instrumental to the success of a larger program was very rewarding.

5. What qualities and capabilities are needed in order for an engineer to be successful in the water/wastewater industry?

Certainly an engineer must have a mastery of the basic engineering concepts within your field - that is only the beginning. Like any other field, whether it is in law, business or entertainment, one must consistently strive to build upon each success and to establish a reputation for quality and consistency. This means taking ownership of your projects and following through on commitments. Three words come to mind describing the formula for success in working on engineering projects, particularly in the water/wastewater field where systems operation and process/production are critical functions : "Make it happen".

A successful engineer must rely on others, *especially others outside of their training*, to only begin understanding the problem or situation. You have to make that process happen by being active in the pursuit of learning and you have to be active in reaching out to others for knowledge and information. With time, you realize that just because you have a degree you don't have to pretend you're an expert – sometimes you think that is expected of you. I remember how I felt so free when I finally had the confidence to say "I don't know." Once you understand that there will always be infinitely more things you don't know than what you do know, the pressure is off and you can confidently ask a mechanic or a technician how something works. They will respect you for it. The worst thing you can do is to fake your way through something. People can see through it and it will be difficult to turn that image around.

Read! Read novels, classics, non-fiction, newspapers. Learn a new language. Join Toastmasters. Travel. Interesting people make the workplace fun and as you engage in such activities you will develop the skills (beyond the technical) necessary to move up in an organization.

6. Do you have any advice for an individual who is considering pursuing a career as an engineer in the water/wastewater industry?

When I was in college I didn't exactly know what engineers did on a day-to-day basis until I became one. My advice is to visit your local treatment plant. Many plants offer tours and people are usually helpful and supportive when asked for advice about their chosen career. There are also private firms, such as consultants, contractors and equipment manufacturers that serve the water industry.

You should also think about what type of working environment is right for you. Do you like big companies? How about small ones? They each have their pros and cons. I was a managing partner at a five-person firm that designed, built and installed waste water treatment equipment. I paid the bills, managed projects, avoided bill collectors – you name it, I did it. Now I work for a large water company that serves 1.3 million people. I get to work with many people in various departments and have learned so much by being around so many great people.

Talk to as many people as you can and let them know what you're interested in. People can't lend a hand or offer advice if they don't know you're interested in something.