

Q & A WITH JESSICA KNICKERBOCKER

TWA members and others are talking to writer Sharon Babcock about enduring inspirations, life lessons, and perspectives from their experiences on the working waterfront.

*This month's feature: **Jessica Knickerbocker**, an environmental engineer with the City of Tacoma.*



If you've been by the entrance to Point Defiance Park along Pearl Street in recent months, you may have seen the massive excavation of soil across the street. It is prelude to the Point Defiance Regional Treatment Facility which is designed to improve the quality of stormwater that flows from the 754-acre section of the North Tacoma watershed and currently discharges untreated water into Commencement Bay.

Jessica Knickerbocker is an environmental engineer and the project manager for the City of Tacoma Environmental Services in this effort. Here she shares what is happening on the site.

Q: What are people seeing here?

A: If you look closely, you see that construction consists of a series of cascade pools, troughs (and) weirs to evenly distribute the water, and cells with treatment media and an underdrain system that discharges treated water into a swale and ultimately into Puget Sound. We are collaborating with Metro Parks Tacoma to redevelop this area of Point Defiance using green infrastructure and integrating stormwater management as both an amenity and an educational demonstration.

Q: How does it work?

A: Stormwater will enter the facility through the cascade pools. At each step pool, part of the flow will be diverted through an opening onto one or two distribution channels. The remaining stormwater within the cascade pool will overflow through a weir and be conveyed down to the next step pool. Stormwater that enters the distribution troughs will spill into treatment cells. Treated water from the underdrain system beneath the filtration media on each cell will drain into a swale. Then the swale and a stormwater collection system convey the stormwater down to the Point Defiance Marina and Commencement Bay.

Q: What brought you to this work?

A: I grew up in Michigan. When I was a child, my grandfather took me to the shores of Lake Superior and introduced me to its plants, birds, and animals. I knew then that I wanted to be involved in environmental work. I went on to study environmental engineering at Michigan

Technological University at Houghton. Over the years while doing career preference tests, I learned that I test high on vision and scope. A project like this one lets me exercise those preferences as well as my affinity for seeing an impact from what we construct.

Q: What is unique about this project?

A: We have moved a lot of dirt, as you can see. This has not previously been done at this scale. The coordination with multiple agencies—the Science and Math Institute of the Tacoma Public Schools, the University of Puget Sound, University of Washington Tacoma—is special in that faculty and architects who are involved drove an open channel concept. That means that elements like the concrete of the weirs are not hidden and everyone can see how the water gets treated to go back into Puget Sound, whether or not they read the plaques we will construct to explain it. We are also communicating with the school district so that future educational curriculum reflects that stormwater is an amenity and a part of our lives rather than simply something to be rid of. What we learn with this project could change the way the city does business with stormwater. Currently we extract it with drains on every corner of every street. In the future, we may be able to do it with one facility for many acres as this project does. In the future, we may consider the best and most effective locations that make the most difference for an intelligent approach to handling stormwater. This could work on a regional scale. (This) project is located at the gateway to Point Defiance, a Tacoma treasure that is recognized as one of the best urban parks in the country. It allows us the opportunity to spread the stormwater message and how building green ultimately impacts Puget Sound.

Q: Who has influenced you?

A: Besides that grandfather on the Lake Superior shore imparting a sense of protecting the water, nature and beauty, the strategist/futurist Rebecca Ryan who encourages people like me to bring to the process a thoughtfulness about what a neighborhood wants to be and can be—and to build what is needed for that area. A circle of work colleagues who challenge and support one another. My own children who remind me that young people are constantly watching, and we are preparing them to be caretakers in the future.

Q: What has challenged you most with this project?

A: Because green projects are holistic and because there are not a lot of industry standards with this work, it takes a good amount of research, educating, and explaining. People are learning that water can go through pavement that can be constructed to be permeable. How you prepare the dirt matters; the rock you use matters; whether you use concrete or asphalt matters. This helps us get to where water re-enters our mindset. My colleagues and I have been able to put together what we have collectively learned into a specification for the state to use going forward on building projects such as this one.

Q: What else have you learned?

A: That water does not have to be collected in a gutter pan at the curb if you use permeable pavement; visiting Chicago and seeing no street gutters was a revelation in this. The importance of having a well-rounded project team; this can save you money in the long run. That a change in the structures you build can change human behaviors.

Q: Now that you are close to completion, what keeps you awake at night?

A: Coordinating all the moving pieces of the project and our deadline to meet federal grant requirements at the end of December 2015

Q: What will this look like when finished?

A: The landscaping and plantings will make the site look like a prairie, with very clean sand.