Seattle Public Utilities

Customer Success Story

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"I believe that we will spend less time reviewing project data and more time finding ways to protect Seattle's valuable waterways. For projects such as Seattle's natural drainage program, Autodesk products have the potential to reduce the design cycle up to 40 percent."

Chang-Chi Hwang
Associate Civil Engineering Specialist
City of Seattle
Seattle Public Utilities Technical Resources

Seattle Completes Sustainable Designs 40 Percent Faster

Seattle Public Utilities uses Autodesk® civil engineering software to reduce runoff and protect wildlife

Project Summary

Tasked with managing Seattle's water, sewage, and drainage resources, Seattle Public Utilities (SPU) relies on Autodesk civil engineering software to provide storm-water management services while being good stewards of urban water resources. For more than 100 years, SPU has designed the roads, bridges, watersheds, seawalls, sewers, and drainage systems that have helped Seattle become one of the country's largest and most vibrant cities.

Using Autodesk technology to complete an award-winning, sustainable natural drainage project, SPU has been able to:

- Complete designs 40 percent faster
- Reduce neighborhood flash flooding
- Protect Seattle's salmon population
- Improve water quality

The Challenge

As the city of Seattle has grown, so has the amount of hard surfaces such as highways, roofs, and parking lots. Storm-water runoff from these surfaces has changed the makeup of area streams and waterways. Pollutants in the runoff from these hard surfaces have affected not only water quality, but also vegetation and wildlife.

When it rains in natural landscapes, water soaks easily into the ground, trickling deep to aquifers or feeding plants that release it slowly back into the air. However, in developed areas such as urban Seattle, the water runs off hard surfaces, taking dirt, oil, and pesticides with it.

"We saw the urgent need for a sustainable storm-water management system," says Chang-Chi Hwang, a civil engineering specialist at the city of Seattle. "SPU took action to create a natural drainage system that would meet citizens' requests for street, pedestrian, and local drainage improvements while having a positive impact on the environment."

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"Seattle Public Utility uses Autodesk products for our day-to-day design and construction needs. We rely on the functionality and look forward to implementing the technology in future sustainable design projects."

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The Solution

Autodesk's civil engineering products helped SPU complete the design phase of the natural drainage project in the Pinehurst neighborhood, covering a 49-acre drainage area. The project included narrowing streets and shifting parking from gravel and concrete parking strips to the streets, effectively shrinking roadways. In addition, a few homes received gravel driveways, which absorb more water than traditional designs.

SPU's sustainable drainage efforts are reducing water volume and effectively eliminating flash flooding. While other neighborhoods are increasing hard surfaces and harmful runoff, the Pinehurst area is reducing its runoff to streams and waterways. SPU's natural drainage system does not simply move the problem of excess storm water downstream as traditional systems do; it reduces total volume, making it a viable solution for future generations.

Protecting the Environment
Experts blame pollution from rainwater runoff for the drastic reduction of salmon in Seattle's streams and waterways. They cite removing the chemicals, dirt, and debris from the runoff as the best way to increase Seattle's native salmon population.

Seattle's natural drainage system project is doing just that. It includes designing and building grassy swales, or ditches with sloping sides, along one side of streets to capture rainwater. The soil and vegetation in the swales absorb the rainwater and prevent pollutants from entering waterways and streams, giving remaining salmon a clean habitat in which to increase their numbers.

By reducing the quantity and speed of storm-water runoff, SPU helps to protect area creeks from channel and habitat damage. Slowing the water also allows storm water to infiltrate the soil, helping sustain creeks in dry summer months and preventing roadway pollutants and pesticides from being transported downstream.

Award-Winning Benefits
SPU's success has gained national attention. Seattle's natural drainage program won the Innovations Award from Harvard University's Kennedy School of Government. The award came with a $100,000 grant to expand its natural drainage program.

The Result

After implementing Autodesk's civil engineering software into SPU's workflows, Hwang estimates that the organization can complete designs up to 40 percent faster. "I believe that we will spend less time reviewing project data and more time finding ways to protect Seattle's valuable waterways," observes Hwang. "For projects such as Seattle's natural drainage program, Autodesk products have the potential to reduce the design cycle up to 40 percent."

SPU sees Autodesk software delivering measurable benefits now and in the future. "Seattle Public Utility uses Autodesk products for our day-to-day design and construction needs. We rely on the functionality and look forward to implementing the technology in future sustainable design projects," concludes Hwang.

To learn more about how Autodesk Civil 3D is helping organizations around the world complete projects faster and more cost effectively, visit us on the web at www.autodesk.com/civil3D.

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