



Presenting the Lakeshore Ecosystem:
Environmental Data for Washington Lakes

Category:

Open Government and Data, Information and
Knowledge Management

Washington State Department of Ecology

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Executive Summary

The Washington State Department of Ecology receives requests from the public, and from other agencies, for lake related information. Responding to these requests was complicated because the information was scattered within the agency. This situation was difficult for the public and for Ecology staff as well.

The Lakes application presents data about diverse subjects – aquatic and shoreline plants and algae, grants and permit activity, aquatic herbicides, water quality monitoring reports, fishing information – in a usable way. With the Lakes application, we can now respond quickly and efficiently to requests from citizens. This application successfully delivered on its goal to make it easy for Washington State citizens to get information on lakes.

The Lakes application uses responsive technology to present the information on mobile devices and desktop devices. Previously, information on lakes was scattered among multiple databases and in discrete electronic documents (for example, report documents stored in PDF files). The system gathers data from many Department of Ecology databases and presents the data to the public in a friendly, map-based interface. Internal users also benefit when they use the application to handle citizen phone calls.

The Lakes application is accessed at <https://fortress.wa.gov/ecy/coastalatlus/tools/LakeDetail.aspx> and also through our Coastal Atlas portal (<https://fortress.wa.gov/ecy/coastalatlus/>) – an online application that provides the public with access to environmental data organized around the sea and the seashore. The Lakes application extends that concept to the lakeshore. Citizens can search for their favorite lake, or navigate to it using the map the same way as they do with Coastal atlas. Everyone is excited to view information on Washington lakes and find the answers to their lake related questions all in one place.

Business Problem and Solution

The main problem addressed by the Lakes application is how to present scientific data internally and to the public in a friendly, usable way. Whenever the public is the customer, the audience, and the audience devices, cover the full spectrum of possibilities. The customer could be anyone from an eighth grade student to a retired fisherman who is looking for lake information. Also, the customer may be using a laptop computer, tablet or cell phone to view the data. The project requirements included a broad range of use cases.

Previously, Ecology information on lakes (water quality, bathymetry, toxic algae, invasive species, pesticide use, etc.) was scattered across multiple databases and locations. Many of Ecology's traditional data portals do a good job of presenting information to the scientific community, but are difficult to use for the average citizen. We needed an application that could present information in a way that is easier to use for other segments of the public, for example, homeowners, realtors, vacationers, students, and anyone who wants to enjoy Washington's lakes.

Less than half of the data presented in the Lakes application existed in previous Ecology databases, more was available online in reports (usually PDF files), while a portion of the information wasn't available publicly at all. The Lakes application makes extensive use of map-based interfaces to present its data and photographs. Thanks to the use of responsive design, the Lakes application can present that data to the public on desktop or mobile devices. The Lakes application also makes it easier for Ecology staff to respond to user inquiries.

The most common interaction Ecology staff have with the public about lakes occurs when an herbicide or a pesticide treatment is taking place. A concerned citizen contacts the agency about the activity. Using the Lakes application, we can show user what activities are permitted for their lake, the date of application, what product is being used, and the target species.

Ecology staff gets inquiries from the public and other agencies for lakes information. Responding was complicated due to the scattered nature of the data. This module will

supplement, and integrate, some of the information currently on Environmental Assessment and Water Quality Program websites. This makes it easier for other agencies to find our data.

The Lakes system implementation focused on user experience, and having that experience be available across multiple platforms and devices. We built on the simplest foundation possible: HTML and JavaScript. We did use industry standard libraries to maximize productivity and maintainability: the jQuery library and ESRI JavaScript API. Lakes uses responsive design patterns to operate with desktop or mobile devices.

The project required 0.5 staff equivalent (0.5 FTE) at a project cost of \$79,700. This work was mostly in designing the user interface. This relatively small investment will capitalize on the hundreds of hours required to gather the data in the field.

Usability was top priority of this project. The majority of time went into user analysis to make the information easy to find fast. Testing provided critical information about how first time users handled a set of tasks. The results were analyzed and changes were made. Then we tested again. The final version of the site is easy to navigate and simple to use.

Significance

With Lakes, users can get a more complete picture of a lake ecosystem by browsing with the Lakes application than by searching through multiple databases and reports. A citizen can now get a more complete picture of lake ecosystems much more quickly and easily by searching with the new Lakes application. What used to take lots of time – sometimes hours of searching through multiple databases, PDFs, links, and reports – now takes seconds to minutes.

Our investment in the Lakes application can also be leveraged by other programs within Ecology. On the business side, we can now link users to Lake-specific information from other applications (for example, applications from our Water Quality program) to add deeper context and understanding to their work.

On the technical side, we used the Lakes project to create a simple, extensible programming framework (using html, css and jQuery) that can be used to build new projects.

In addition, the effort we invested to implement responsive design in a mapping application will also set the Ecology standard going forward. The Lakes project has created a simple, extensible template that is already being used to build new projects in other environmental programs.

Benefit of the Project

The Lakes application serves a wide variety of citizens including homeowners, realtors, vacationers, students, and anyone who wants to enjoy Washington's lakes. In addition, Ecology staff, partner agencies (for example Washington Department of Fish and Wildlife, Washington Department of Natural Resources), and local governments can now easily access the work that Ecology has done. As one happy fisheries manager stated "Whoa! I didn't know Ecology had all this information about lakes."

When we present the information in a user friendly way, people flock to it. For example, the Coastal Atlas application has become one of Ecology's most frequently visited web sites, with over 25,000 visitors per month. We expect the Lakes application to exceed that level of user involvement, considering its multi-media design and the ever increasing popularity of mobile devices.