Example 4: Using GIS to plan for source water protection

The Casper Aquifer in Albany County, WY lies under a vast expanse of pastureland that is undergoing rapid development. Due to an influx of residential properties, the Aquifer faced threats from septic systems and urban runoff to recharge areas. The County used a software called Community Viz, a GIS-based decision support system, to quantitatively and visually model three land use scenarios for 1,331 residences that had been assigned sites in sensitive areas. The land use scenarios represented 1) continuation of existing trends, 2) aquifer protection, and 3) density shift categories.

Albany’s GIS decision-support systems showed county planners that the “continuation of existing trends” scenario stood to dramatically reduce groundwater quality. As a result, both the city of Laramie and Albany County adopted Aquifer Protection Ordinances, which required a joint city/county Aquifer Protection Overlay Zone. The Environmental Advisory Committee (EAC) now uses the tool to develop nuanced planning recommendations. In addition, Laramie’s Water Outreach Coordinator uses the tool in education campaigns to promote public awareness of drinking water sources.

• For more information on this, and other, GIS tools to support source water protection, visit: http://cdm16658.contentdm.oclc.org/cdm/ref/collection/p267501ccp2/id/2013
• To access and download free geospatial data such as the National Hydrography Dataset and Watershed Boundary Dataset, visit: http://datagateway.nrcs.usda.gov/
• To browse an index of environmental databases, see this Toolkit’s “Data and Information Resources” section.

Also check out...

Enabling Source Water Protection: Aligning State Land Use and Water Protection Programs

The Trust for Public Land, the Smart Growth Leadership Institute (SGLI), River Network, and the Association of State Drinking Water Administrators developed recommendations for source water protection priorities in eight states. The group recommended the following GIS-based approaches in Maine and Oregon.

Maine

Streamline statewide GIS databases and develop protocols for collecting, analyzing, uploading, and managing data to provide a one-stop center for state, local and regional governments, and to reduce duplication of efforts and funding.

Oregon

For specific watershed, create a GIS-based tool to identify healthy lands most important for conservation of water quality as well as impaired lands where restoration efforts will protect water quality. Use resulting landscape analysis tool to highlight opportunities for:

• Voluntary land conservation and restoration: Land conservation specialists can review the maps and reach out to landowners to see if they are willing to sell or donate land that can be managed for water quality benefits and habitat conservation. Technical service providers can review the maps and offer landowners resources to help them employ best management practices on their lands.
• Guidance for land use regulations: The GIS tool can inform local government planning and zoning decisions so that they better protect drinking water sources.
• Prioritize pollution control efforts: The tool can be used to prioritize places to improve existing pollution controls and management practices to address risks to public health through drinking water, recreation and fish consumption.
• Minimize risks from natural disasters: Data layers showing the flood zone and vulnerable soils identify some of the lands most vulnerable to natural disasters. Their locations may be useful to decision makers who identify priority areas, and plan for prevention, treatment needs, mitigation, and/or alternative water sources.
• Track water quality improvements: With some added features, the GIS tool’s land use information, together with DEQ’s existing monitoring data, could be used to track implementation and effectiveness of best management practices (BMPs) for source water protection, and point towards potential improvements.

http://sourcewatercollaborative.org/how-to-collaborate-toolkit/advancing/