Watershed Index Online – National Data and Tools for Watershed Comparison
Project Status Summary: March 2015
http://gispub.epa.gov/wsio/

U.S. ENVIRONMENTAL PROTECTION AGENCY

Watershed Index Online (WSIO)

Contact Us   Search: ⦿ All EPA [   ] [Go]

Watershed Index Online (WSIO)

This site provides tools and data for comparing watershed characteristics within user-defined geographic areas to support their strategic planning decisions.

A Tool for Comparative Watershed Assessment

Federal, State and Local agencies are increasingly making use of comparative watershed assessment techniques to support their strategic planning decisions.

In recognition that that are limited resources to work on every water quality problem in every watershed at the same time, both the Federal Nonpoint Source Program and the TMDL Program have encouraged states to prioritize their watersheds for restoration and protection.
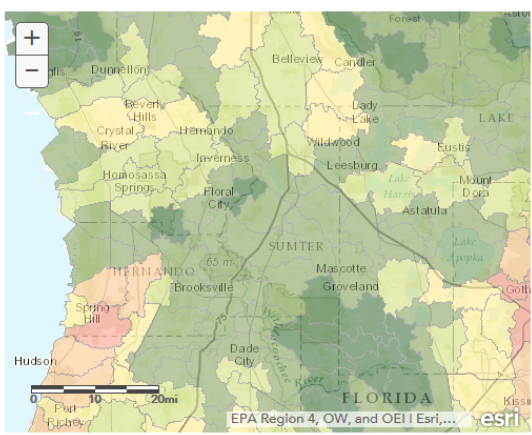
The Watershed Index Online (WSIO) is a comparative analysis tool that provides indicator data, for the contiguous United States, for download into a scoring MS Excel spreadsheet.

The WSIO utilizes the spreadsheet tool developed for EPA's Recovery Potential Screening project. The WSIO allows the user to download data into the spreadsheet for a defined geographic area.

For the defined geographic area, you would then select indicators (or provided datasets that relate to your analysis) for the objective of your comparison.

The tool then calculates ecological, stressor, and social indicator scores, as well as a combined Watershed Index score to use for comparison and analysis. The tool creates a ranked list of the results and visual comparison tools in the form of bubble plots and maps.

- WSIO Overview Slides (PDF)
- About WSIO

This interactive map shows an example of one of the datasets (or indicator) you can select in the WSIO to use in your analysis: Impervious Cover Indicator Data by Watershed (HUC12)

Watershed Index Online (WSIO) - A joint product of EPA Region 4 and EPA/OW-HQ Recovery Potential Screening to provide online watershed comparative assessment support ... now a tools/data website

- <u>Data</u>: Over 500 key watershed indicators compiled on all HUC12 watersheds nationally
- <u>Tools</u>: Recovery Potential Screening Tool – the online engine, custom state versions for lower 48
- <u>Analyses</u>: High-interest prioritizing topics (nutrients, protection) compiled in demo projects
- <u>Program Links</u>: Assistance finding other major tools and watershed data sources

In recent years, use of geospatial data in evaluating and comparing watershed characteristics across large areas such as states, regions or the nation has increased dramatically as a mainstream component of water quality program tracking, evaluation, prioritization and strategic planning. Watershed data and comparative assessment techniques have been applied on local and statewide scales for several years, but the opportunity to compile and make available uniform watershed parameter and indicator information nationwide is just now being fulfilled. The timing has never been better to fill state and local watershed data and tools needs more efficiently at the national scale, especially as the CWA Section 319 Nonpoint Source Program Guidance and the TMDL Program Vision have both recently increased the emphasis on states' systematic comparison and prioritizing of watersheds. These and many more programs need key watershed-based indicators and the analytical tools to use them.

Watershed Index Online (WSIO) has been developed jointly by EPA Region 4 and EPA Headquarters Watershed Branch's Recovery Potential Screening (RPS) Project to substantially increase watershed prioritizing capacity, tools and data available to states and others. WSIO is consolidating and making widely available a library of many of the most popular watershed indicators along with easily accessed tools for using them. This site offers national-scale watershed indicator data and tools at a single online location dedicated to helping users evaluate, compare, and prioritize among watersheds, in support of the several program activities above (TMDL vision, watershed prioritization, Recovery Potential Screening, Healthy Watersheds and others). As this online site is being developed collaboratively by EPA Offices responsible for these programs, it focuses on meeting program needs while it integrates and builds on some of

the most widely used watershed geospatial assessment data and tools that can be efficiently served through existing EPA web geospatial architecture. In particular, Watershed Index Online offers indicator data and tools at the HUC12 scale, which increasingly has been the watershed scale of choice for assessment, management and planning in recent years. Over 20 states have engaged in Recovery Potential Screening projects using mainly HUC12 indicators since 2005.

The primary components of WSIO, and progress highlights to date, include:

- *Watershed Attributes Library*: This contains HUC12-specific values for many ecological, stressor, and social indicators calculated consistently and nationwide. The heart of the library is Region 4's Watershed Index (WSI) datasets compiled for the conterminous US, but many other indicator sources are being jointly compiled. As a library of attributes (i.e., tabulated indicator values per watershed) geo-referenced only to the HUC12 national GIS dataset, this library maximizes attribute information while minimizing the geographic data storage burden. Thus it will utilize a fraction of the storage and response time that would be required to host all of the source GIS datasets from which all these indicators were measured. Attributes may be individually user-selected for user-defined project areas such as states, major river basins, or HUC8s and downloaded or used online. *Progress Highlights***: *Over 500 Ecological, Stressor, and Social Indicators have already been measured and compiled on all the HUC12 watersheds in the lower 48 states. Most are of demonstrated interest for state prioritizing based on previous projects and workshops. Data table design, content and download support in WSIO are continually under development and enhancement.*

- *Analytical Tools*: The WSIO user interface is an online adaptation of the Recovery Potential Screening (RPS) Tool, which has been in use as a custom-coded excel file for several years helping states compare and prioritize watersheds for restoration investments. The RPS tool enables users to define a project area, select indicators and weight them, perform a variety of different RPS screening scenarios and save results as rank-ordered priority lists, thematic maps, and bubble plots. RPS assessments can be conducted with this tool online or locally after tool and data downloads, but the interface will support other forms of data download and analysis as well. *Progress Highlights: The RPS Tool has been used in over 20 state projects, and state-specific custom RPS Tools with part of the WSIO data library embedded were released to all lower 48 states in 2014. The RPS tool has been adapted for online in WSIO.*

- *Pre-compiled Screening Assessments*: Although a primary purpose of WSIO is to support a variety of user-customized and controlled watershed analyses, a small number of high-interest screening assessments will be pre-developed as warranted. These would apply RPS and potentially other watershed-based methods and would generate example results and demonstration products for users without the time to customize their own analyses**.** *Progress Highlights: Nutrients RPS projects in several states and a healthy watersheds preliminary assessment on the lower 48 states are some of the potential demonstration assessments currently planned.*

- *Programmatic Links*: Although Watershed Index Online may eventually have a broader user audience, its initial design is to support watershed analysis, comparison and prioritization relative to Clean Water Act programs mentioned above. We plan to offer portal links to the appropriate programmatic websites that utilize watershed indicators and tools, and plan over time to increase the use of new analytical tools and data through such program-focused collaboration. *Progress Highlights: Development of the WSIO website will continue to build linkages with key water program sites (WATERS tools and databases, Water Quality Framework) and keep pace with the continuing evolution of EPA web.*

The practical benefit of expanding RPS tools and WSI data to become Watershed Index Online, with user selection of indicators and data from consistent national datasets, is the immediately improved capacity of any of the lower 48 states to prioritize watersheds. This will ensure that states have tools and data to implement an important, first goal of the TMDL Vision as well as many other applications of watershed comparison and prioritization. Please contact Gary Davis (Region 4, davis.garys@epa.gov) or Doug Norton (OW, norton.douglas@epa.gov) for additional information.