

NPS Wilderness Character Monitoring Technical Guide - DRAFT

Natural Quality

(Excerpt from pages 68-71)

WATER STRONGLY ENCOURAGED MEASURE: Clean Water Act water quality impairments

Context and Relevance

The Clean Water Act (CWA) of 1972 and its various amendments provide the structure for regulating water quality in the nation's waters. Under the CWA, states, territories, and tribes (hereafter, simply just 'states') are responsible for determining the designated beneficial uses of waters within their jurisdictions and promulgating and enforcing numeric and/or narrative water quality criteria that safeguard those uses. On a biennial basis, Section 305(b) of the CWA 2414 requires states to assess and report on the condition of their aquatic resources. One aspect of the assessment, according to Section 303(d) of the CWA, is a list of those waters that fail to attain (support) the state's designated beneficial use (or uses) and are therefore considered 'impaired'. Waterbodies designated as impaired require the state to develop a total maximum daily load (TMDL) plan to bring the waterbody back into compliance so that it fully supports the state's designated beneficial use (or uses).

Collecting and assessing timely data on the status and trend of water quality conditions nationwide in NPS wilderness areas would be an enormous logistical and financial undertaking. Most NPS ongoing water quality monitoring is conducted by the Inventory and Monitoring Division's (IMD) Vital Signs Networks, but this monitoring tends to be limited geographically and is often not conducted in Wilderness areas due to logistics and other constraints. The most cost effective solution for assessing water quality conditions is to tap into the existing data collection and assessment efforts of the states who manage the nation's waters under the CWA. Every two years, states are required by the CWA to assess all available, credible data to determine compliance with their state-designated beneficial uses and report to the Environmental Protection Agency those waters that fail to attain (support) their designated use(s). This provides a relatively easy metric to track over time. Waterbodies can be designated as impaired by one or more pollutants. If a state indicates a particular wilderness waterbody is impaired under the CWA then the wilderness ecological system is likely being impacted by anthropogenic activities, unless the water is 'naturally' impaired.

Definitions

- Not applicable

Protocol

Access the NPS Hydrographic and Impairment Statistics (HIS) Database and follow these steps:

1. In Step 1, select the desired management unit type. In Step 2, select the specific management unit and then, in Step 3, click 'Submit'.

2. A grid with all the hydrographic and impairment statistics for the selected management unit will be displayed. If the selected management unit is a park, the grid will be followed by a download link for the park's HIS ArcGIS geodatabase, a list and map of water quality impairments, outstanding resource water and anti-degradation policies, and a list of data sources.
3. Selecting 'All Parks/Service-wide' in Step 2 (when 'Parks' was selected as the unit type in Step 1) will provide the summary statistics across all NPS units and provide a download link to an Excel spreadsheet containing the data for all management units.

Note: While the HIS website provides CWA impairment information for parks, it does not break that data down by wilderness area. To determine whether the CWA impairments in a park occur within a wilderness area, the analyst can do one of the following:

- Visually consult the HIS website map for a park to see if there are any CWA impairments in the park and whether they occur within a Wilderness area
- Download the park's HIS ArcGIS geodatabase from the HIS website (Note: all park HIS ArcGIS geodatabases are also available in the NPS Integrated Resource Management Applications Data Store – search for "Hydrographic and Impairment Statistics Database" and the desired park) and overlay your map of the park's Wilderness boundaries; and/or
- Use the HIS Web Mapping Service to open the CWA impaired waters map in ArcGIS and overlay your map of the park's Wilderness boundaries.
 - o Note: This (intersecting/joining the impaired waters GIS coverage with a coverage of NPS Wilderness area boundaries) would be the quickest way to determine what wilderness areas have CWA impaired waters in one quick process. If more granularity is required, such as the miles of CWA impaired rivers or streams or acres of impaired lake in each Wilderness rather than just the presence/absence of any CWA impairments, these hydrographic statistics can be readily calculated using ArcGIS.

Data Sources

NPS Water Resources Division (WRD) has developed the HIS database to track summary statistics of surface hydrography (acres of lakes, miles of streams, etc.) within and adjacent to each park and NPS Partnership Wild and Scenic River using the US Geological Survey's (USGS) high resolution National Hydrography Dataset (NHD) and the NPS Administrative Park Boundary Dataset. Information regarding CWA water impairments is furnished by state management agencies and attributed to NHD to derive impairment hydrographic statistics for each park. Using the website, users can obtain an estimate of the total miles of waterway (rivers, streams, canals, etc.), acreage of waterbodies (lakes, reservoirs, oceans, etc.), number of lakes, the acreage of ice mass, and much more for any park or NPS Partnership Wild and Scenic Rivers, or summarized across regions, networks, or the entire National Park System. Users can also see which parks contain CWA impaired hydrography, which parks have no hydrography, and which parks are 'coastal'. Information on outstanding national resource waters and state anti-degradation water quality provisions is also provided by HIS.

The HIS database and associated products are managed and maintained by WRD to track hydrographic and CWA impairment statistics for parks and NPS Partnership Wild and Scenic Rivers. As indicated above, data derive from three key sources: (1) the high-resolution NHD; (2) the NPS Administrative Park Boundary Dataset; and (3) state CWA assessment reports and 303(d) impairment lists. The most dynamic data source is the state CWA information which can change biennially as states submit their required assessment reports and TMDL plans to the Environmental Protection Agency. WRD staff obtains the latest available state CWA information (typically documents and/or GIS coverages) and attribute the impairment information to the NHD over parks. For information on the processing methods and caveats, consult the NPS HIS Methods and HIS Caveats.

Frequency

Data are compiled and reported as updates to the HIS database are made available, recognizing there is a lag between reporting years and data availability. Every five years, the most current three-year rolling average is entered into the WCMD.

Threshold for Change

The presence of a CWA water quality impairment within an NPS wilderness area indicates a waterbody is impacted by anthropogenic activities (unless the waterbody was listed for 'natural' impairment). The absence of CWA water quality impairments, however, does not necessarily mean the wilderness area's waterbodies are pristine. It may mean that there have been no credible water quality data collected in the Wilderness area and/or the state hasn't assessed the data. A decrease in the number of CWA impaired waters, not including 'natural' impairments, within wilderness results in an improving trend in this measure. See the "Determining Significant Change and Trend in a Measure" section for additional guidance.

Caveats and Cautions

States do not have the resources to obtain current data on all waters within their boundaries; consequently, many waterbodies cannot be assessed. Although the Environmental Protection Agency provides oversight, designated uses, standards, and enforcement typically vary by state; consequently, what may be considered impaired by one state may be acceptable by another state. Once a state develops a TMDL for an impaired water it can de-list the water (move it to Category 4 rather than Category 5 on the 303(d) list) regardless of whether the TMDL actually ameliorated the impairment