

# Watershed Tools for Tribes

In recent years, use of geospatial (GIS) data in evaluating and comparing watershed characteristics has increased dramatically. The EPA's CWA Section 319 [Nonpoint Source Program](#) and the [TMDL Program Vision](#) have both increased the emphasis on systematic comparison and prioritizing of watersheds, to help programs plan well and be more successful as a result. Tribes need watershed-based information and analytical tools for a variety of water quality program decisions and plans. EPA is supporting watershed data and tools development.

## ***What watershed information and tools would help tribes?***

The Recovery Potential Screening (RPS) Tool series is available publically for download at <http://gispub.epa.gov/wsio/states/states.html>. Although originally created to help states compare and prioritize watersheds for restoration and protection program planning, data included in each tool makes it possible to identify, assess and compare only those watersheds with tribal lands or adjacent to tribal lands. RPS Tools can be used on your desktop in Excel. The Watershed Index Online at <http://gispub.epa.gov/wsio/> is an internet source of more watershed data and a modified version of the RPS Tool that allows for screening user-defined geographic areas.

## ***What is Recovery Potential Screening?***

[Recovery Potential Screening \(RPS\)](#) is a systematic, comparative method for identifying differences among watersheds that may influence their relative likelihood to be successfully restored or protected. It was developed by the EPA Office of Water as a flexible, user-driven tool to help compare impaired waters more quickly and efficiently and set priorities for investing limited restoration resources. The RPS screening approach involves identifying a group of watersheds to be compared and a specific purpose for comparison, selecting appropriate indicators in three categories (Ecological, Stressor, Social), calculating index values for the watersheds, and applying the results as part of strategic planning and prioritization. See the Recovery Potential Website for more information, but note that the Tools section is currently undergoing update and does not have the recent tool versions downloadable at the URL above.

## ***What is the Recovery Potential Screening Tool?***

The RPS Tool is a custom-coded Excel spreadsheet that performs all RPS calculations and generates RPS outputs. It was developed several years ago to help users calculate Ecological, Stressor, Social, and Recovery Potential Integrated index scores for comparing up to thousands of watersheds systematically in a desktop environment using widely familiar software. The RPS Tool series includes individual tools for each of the lower 48 states with indicator data (on HUC12 watersheds, each approximately 35 sq mi in area) already embedded. Complete usage directions are included on all the Tool's worksheets. Many of the indicators are landscape characteristics derived from common GIS datasets, but other attributes derived from field monitoring and geo-referenced to water bodies or watersheds, such as selected impairment-specific 303(d) and TMDL data, are also included.

## ***What kinds of skills and equipment does an RPS Tool user need?***

Anyone with basic familiarity with Microsoft Excel (versions 2003 or later) and a personal computer can learn how to use the RPS Tool quickly at their own desktop. Directions for each step and worksheet are contained within the Tool file, and a user manual with more detailed directions is under development.

## ***What kind of outputs can an RPS Tool generate?***

The RPS Tool generates the results from each screening run in tabular, graphic, and map format. Results from a RPS Tool include a table of index scores and rank orders (Ecological, Stressor, Social, and Integrated), a bubble plot display, and a HUC12 map display. Users can customize the bubble plot display and the map (e.g., use a color gradient on the HUC12 bubbles or the mapped HUC12s to represent value differences for one key indicator of interest), and different iterations of the map and bubble plot can be saved as JPG files for future use while iteratively changing settings and exploring options with screening results.

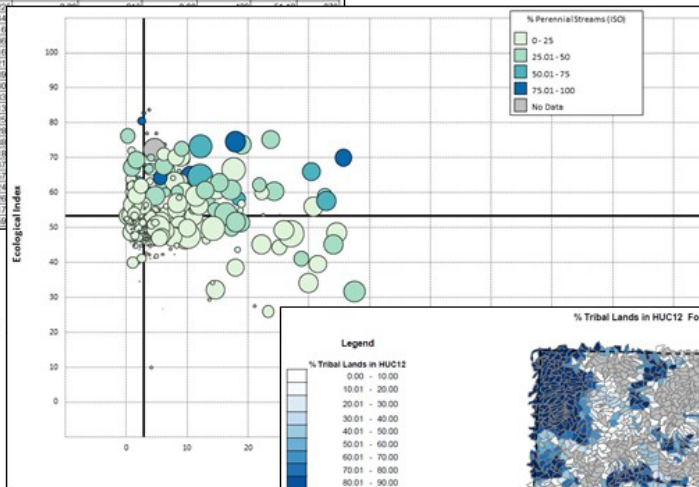
## ***What should I do to use an RPS Tool to analyze tribal watersheds?***

Please follow the general instructions on the back of this page. For more information or assistance, please contact [norton.douglas@epa.gov](mailto:norton.douglas@epa.gov).

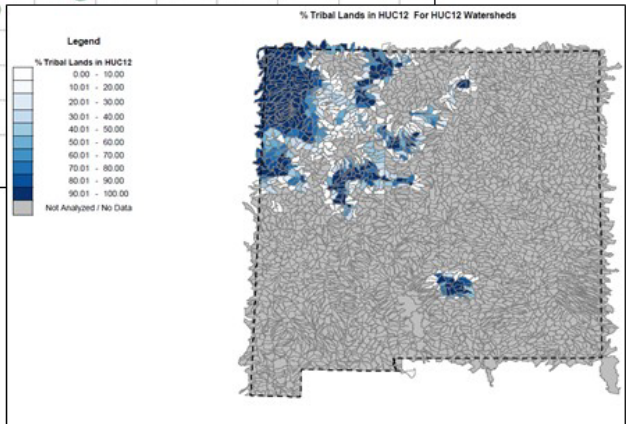
1. **Download the RPS tool** for the state or states within which the tribe's lands occur, at the public website <http://gispub.epa.gov/wsio/states/states.html>. Contact EPA for help working with multi-state data.
2. **Open the Tool in Excel.** First, save the RPS Tool by a different name so you always have the original copy unchanged. Scroll to the right along the list of worksheet tabs (bottom of the screen), and go to the tab marked HUC12\_DATA. Copy this data sheet to a new, blank Excel file so you may examine it and rearrange it without affecting the Tool, which will malfunction if you rearrange its data worksheet.
3. **Identify the tribal and tribal-adjacent watersheds.** In the new Excel file, delete the top six rows, leaving the indicator names as the new top row. Then find the indicator column named "% Tribal Lands in HUC12". In Excel, use DATA/SORT/ to rearrange the whole data table in order from highest to lowest value in the "% Tribal Lands" column. Then, select and copy all of the HUC12 IDs (leftmost column) that have any tribal lands. Paste them into the RPS Tool's worksheet called SUBSETS and name the column TRIBAL HUCS. Repeat with the column "HUC12 Adjacent to Tribal HUC12s", and copy these into a second column on the SUBSETS worksheet.
4. **Set yourself up to do a tribal watersheds screening.** In the RPS Tool, select and copy the whole list of tribal HUC12 IDs from the SUBSETS worksheet and paste the list into the left-most column of the SETUP worksheet (left end of the tabs). You are now ready to compare these watersheds to one another based on indicators you will select from the dropdown menus for Ecological, Stressor, and Social indicators. Select at least one in each of the three categories, but ideally not more than 10 in each. Click on the button "RUN SCREENING". You can choose countless combinations of indicators to compare your watersheds for different purposes.
5. **View your results.** After seeing the pop-up "Project Successfully Created" you can find the results of your watershed comparison in three different formats: tabular rank-ordered indexes, a bubble plot graphic, and a map graphic. Examples of each appear below (data for demonstration only).

Watershed ID	Watershed Name	Ecological Index	Ecological Rank	Stressor Index	Stressor Rank	Social Index	Social Rank	RPI Score	RPI Rank
13020102405	Stone Lake	63.38	297	3.48	354	0.00	428	49.99	365
13020102045	Stinking Lake	54.78	254	2.96	300	0.00	428	50.61	307
130202010420	Lower Hells Canyon Wash	53.69	290	1.64	136	0.00	428	50.68	304
13020204000	Middle Canada de Los Apaches	51.98	349	2.52	243	0.00	428	49.82	374
13020204070	Canada Apaches-Sio Dueno	53.43	298	10.74	530	26.03	57	55.90	81
130202070501	Upper Acoma Creek	55.85	217	2.38	229	0.03	394	51.17	263
130202070502	Cap Canyon	57.48	190	1.90	175	0.00	428	51.84	214
130202070503	Paradise Canyon	59.96	117	1.18	72	0.00	428	52.91	163
130202070504	Dinosaur Rock	53.48	291	2.08	196	0.00	428	50.47	322
130202070505	Middle Acoma Creek	55.90	216	1.52	125	0.03	394	51.47	239
130202070506	Lower Acoma Creek	48.93	534	2.14	203	0.00	428	48.26	505
130202070610	Acoma Creek-Rio San Jose	49.43	539	3.90	402	0.05	371	47.53	544
130202070804	Arroyo Conchas	49.38	457	1.84	163	0.00	428	49.18	448
130202071005	Sandy Wash	55.63	229	1.88	170	0.00	428	51.11	268
130202071101	Rio Opusum-Rio San Jose	49.60	474	1.88	170	0.00	428	49.11	455
130500011201	South Fork Tularosa Creek	63.10	1	1.00	1	0.00	428	51.10	1
130500011202	North Fork Tularosa Creek	51.68	39	1.00	1	0.00	428	51.68	39
130600000101	North Fork Pine Tree Canyon	57.48	190	1.00	1	0.00	428	57.48	190
130600000102	Turkey Canyon	55.93	21	1.00	1	0.00	428	55.93	21
130600000103	Turkey Canyon-Whitetail Canyon	60.93	39	1.00	1	0.00	428	60.93	39
130601010102	Inadadates Elk Canyon	63.29	34	1.00	1	0.00	428	63.29	34
140801010504	Dulce Canyon	52.15	33	1.00	1	0.00	428	52.15	33
140801010610	Navajo River-San Juan River	58.50	13	1.00	1	0.00	428	58.50	13
140801011001	Long Bridge Flat-La Jara Creek	54.63	25	1.00	1	0.00	428	54.63	25
140801011002	Choe Rock-Rodriguez-La Jara Creek	53.00	28	1.00	1	0.00	428	53.00	28
140801012005	Monseno Wash	51.25	38	1.00	1	0.00	428	51.25	38
140801030101	Five Lakes Canyon-Canon Largo	50.58	43	1.00	1	0.00	428	50.58	43
140801030103	Chaco Canyon	49.05	45	1.00	1	0.00	428	49.05	45
140801030105	Sonsalliyel Mesa-Canon Largo	40.98	51	1.00	1	0.00	428	40.98	51
140801030304	Las Noras Canyon-Tapicho Creek	54.95	27	1.00	1	0.00	428	54.95	27
140801030401	Buena Canyon	54.00	29	1.00	1	0.00	428	54.00	29
140801030402	El Hany Canyon-Arroyo Companero	50.78	47	1.00	1	0.00	428	50.78	47
140801050503	140801050503	9.88	58	1.00	1	0.00	428	9.88	58

A



B



C

Recovery Potential Screening Tool outputs from a demonstration analysis of tribal watersheds that compares their relative condition and restorability.

A: Ecological, Stressor, and Social Index values calculated and rank-ordered for all New Mexico watersheds with any tribal land.

B: Bubble plot of the same watersheds (bubble symbols); position and size are determined by index score per watershed, and bubble color shows % perennial streams.

C: HUC12 watersheds in New Mexico with varying % tribal lands shown by color shades (darker blue is higher).