A National Analysis of Recovery Potential Indicator Usage

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For several years, the EPA Office of Water has provided technical assistance to states in applying Recovery Potential Screening (RPS), an indicator-based method for comparing differences in restorability among watersheds. This watershed screening technique measures ecological, stressor, and social indicators in systematic comparisons that help determine driving factors that affect the prospects for restoration success. The RPS website contains step-by-step methods, tools, and a library of recovery potential indicators that provide a blueprint for RPS projects. In 2013, nine states have been actively engaged in RPS projects that are related to nonpoint source strategies, TMDL implementation priorities, watershed prioritization for nutrients management, healthy watersheds and other applications.

Statewide RPS projects generally begin with the state's direct selection of candidate indicators that may help them craft more effective program strategies and actions. We aggregated a master spreadsheet of 17 project-specific RPS indicators lists, compiled mainly from single-state workshops, and then used our findings to evaluate indicator availability, usage, and apparent needs. After compiling these indicators and organizing them into the RPS categories (ecological, stressor, social) and subcategories, we evaluated the usage patterns of each indicator by considering its frequency of use to date, data availability, actual versus potential application, and obstacles to broader usage. The results appear in Table 1 (over) by usage category and indicator class/subclass. Highlights appear below:

- We identified 262 metrics that were selected and/or used in 17 projects over the past five years. These were all reviewed and assigned to usage categories (see descriptions A - E, Table 1) to guide EPA planning for future RPS state support and plans to generate national, pre-measured indicator datasets. The spreadsheet of all RPS projects and the indicators they used is now a valuable project planning resource for new RPS efforts.
- We found that 52 A1 or A2 indicators were frequently used in RPS and available nationally from consistent data.
- An additional 60 B1 or B2 indicators with nationally consistent data sources appeared underutilized and could be more widely useful if they were more familiar and available; A2 and B2 indicators are the best candidates for pre-measurement on a national basis for ready availability to states.
- Of the 112 A and B indicators, which all have nationally available source data, 101 require an additional measurement step to generate watershed-specific indicator values. EPA assistance has been generating these measurements to increase the number and variety of indicators available to state RPS projects.
- An additional 98 C1 or C2 indicators appeared widely useful and desirable but have been sporadically used due to data availability differences from state to state or unusual complexity/expense of measurement. These included some metrics (e.g., flow dynamics, channelization, biotic integrity indices) that are among the most powerful when available. Some would make excellent national investments to increase the breadth and relevance of the RPS indicators that are commonly available to states.
- Another 52 D and E indicators selected or used in RPS projects appeared to be locally important and available but not consistently relevant in all states.
- Overall, there were good quantities and variety of commonly available indicators in all three of the RPS classes (ecological, stressor, social), but some subclasses were sparse and more affected by data gaps on potentially valuable indicators. Targeted investments in RPS indicator development could consider gap areas.
- The increase in state RPS projects and the substantial numbers of frequently used indicators with national data sources point to a valuable opportunity to pre-measure dozens of RPS indicators on a common watershed scale (HUC12) as well as develop more RPS analytical tools. The Region 4 watershed index project has made substantial progress on calculating RPS metrics for HUC12s in the lower 48 states and developing prototype web-based analysis tools, but more support is needed to make a national HUC12 indicators library widely available and accessible.
- Time and resources could be saved through availability of RPS indicators pre-measured on the HUC12 scale. With less effort needed to develop state-specific datasets, more could be redirected to recovery potential screening applications in direct support of those states' program strategies and critical decisions.

Table 1: CATEGORIZATION OF RPS INDICATORS SELECTED OR USED IN 17 RPS PROJECTS

CELL VALUES ARE THE NUMBER OF RPS INDICATORS BY INDICATOR CLASS/SUBCLASS (ROWS) AND USAGE CATEGORY (COLUMNS) FROM ALL PROJECTS, MARCH 2013.

Full spreadsheet of indicators and projects available on request.

Usage Categories

A: Highly useful, used frequently; consistently available data -
A1: nationally available, already measured on HUC12 or other unit.
A2: nationally consistent data available, but needs measurement.

B: Highly useful but not frequently used; consistently available data.
B1: nationally available, already measured on HUC12 or other unit.
B2: nationally consistent data available, but needs measurement.

C: Highly useful but not frequently used, or unused; data-limited or labor-intensive.
C1: data available but labor-intensive to measure.
C2: often has data gaps or data are unavailable.

D: In use, consistently available, but applicability varies with place and purpose.

E: Not frequently or never used; generally available.

	A1	A2	B1	B2	C1	C2	D	E	TOTAL
ECOLOGICAL METRICS	**2**	**10**	**0**	**17**	**3**	**22**	**11**	**6**	**71**
Watershed natural structure	1	3	0	3	0	1	5	2	15
Corridor and shorelands stability	0	4	0	6	0	4	1	0	15
Flow and channel dynamics	0	0	0	1	3	6	1	1	12
Biotic community integrity	1	0	0	1	0	7	1	1	11
Aquatic connectivity	0	1	0	4	0	4	2	0	11
Ecological history	0	2	0	2	0	0	1	2	7
STRESSOR METRICS	**0**	**20**	**0**	**24**	**7**	**35**	**12**	**12**	**110**
Watershed-level disturbance	0	7	0	4	0	6	3	5	25
Corridor and shorelands disturbance	0	8	0	9	1	5	3	3	29
Hydrologic alteration	0	0	0	1	2	9	0	3	15
Biotic or climatic risks	0	0	0	0	0	2	1	0	3
Severity of pollutant loading	0	4	0	3	3	6	2	0	18
Legacy of past, trajectory of future land use	0	1	0	7	1	7	3	1	20
SOCIAL METRICS	**1**	**8**	**0**	**15**	**4**	**26**	**5**	**4**	**63**
Leadership, organization and engagement	0	0	0	2	0	6	0	0	10
Protective ownership or regulation	0	1	0	1	0	1	0	0	3
Level of information, certainty and planning	0	1	0	7	0	3	0	1	12
Restoration cost, difficulty, or complexity	1	2	0	1	0	3	0	0	7
Socio-economic considerations	0	0	0	1	2	10	1	1	15
Human health, beneficial uses, recognition and incentives	0	4	0	3	2	3	4	2	18
BASE DATA METR1CS	**5**	**6**	**3**	**1**	**1**	**0**	**0**	**2**	**18**
Totals	**8**	**44**	**3**	**57**	**15**	**83**	**28**	**24**	**262**