RPS Tool: Final Indicator Selection

RPS Meeting Agenda

- Section 1: Introduction and Background (15 min)
  - Introductions, RPS and Survey, Meeting outline
    - Introductions
    - Briefly recap the main goals of the RPS project, the survey that was sent out, and the goals for today (indicator selection)
    - Handouts
  - Survey Results and Initial Indicator Selection Process
    - Previous examples
    - Reasoning behind selections

Section 2: Ecological Indicators (30 min)

- Previous examples, survey results
- Select 5-10 ecological indicators

Section 3: Stressor Indicators (30 min)

Section 4: Social Indicators (NCTCOG) (30 min)

Conclusion (15 min)

- Review indicator selections and notes
- Document: who is doing what
- Closing remarks

Note to attendees

This is your chance to agree, disagree or add to these recommendations

- **Stakeholder involvement is crucial to making this an effective tool**
- **Keep in mind, if you feel strongly about an indicator – you may be asked to contribute!**

Especially looking for additional sources to fill in data gaps

- **Begin document with name and contact info for indicator data sources**

Recovery Potential Screening Tool

- Recovery Potential Screening (RPS) provides a systematic approach for comparing waters or watersheds and identifying differences in how well they may respond to restoration
- Developed by Doug Norton and others at the EPA, Office of Water, RPS has been used successfully across the country for a variety of impairments and restoration goals
- Comprehensive resources accessible through Recovery Potential Screening tool website

USEPA Office of Water - TMDL Program Results Analysis Fact Sheet – Doc. No. EPA841-F-11-002, March 2011

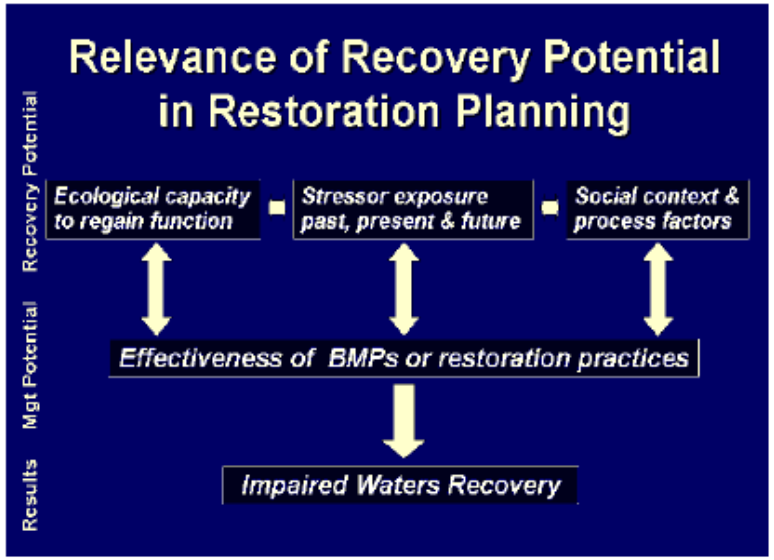
Fact Sheet: Recovery Potential Project

Landscape Screening Tools and Resources for Comparing the Restorability of Impaired Waters

Project Goal: Develop methods and tools that help state TMDL and nonpoint source programs consider where best to use limited restoration resources among large numbers of impaired waters and watersheds.

- Compile information on factors relevant to recovery potential from the technical literature and practitioner experience;
- Apply these findings to develop recovery potential indicators measurable from commonly available geospatial and monitoring data;
- Develop a rapid, flexible recovery potential screening methodology and tools; and
- Help states compare impaired waters recovery potential during restoration planning by using watershed geospatial analysis techniques and aquatic monitoring data.

Recovery potential should be a primary consideration in restoration programs whose main aim is to bring about recovery



<u>Recovery Potential</u> is the likelihood of an impaired water to reattain Water Quality Standards or other desired condition, given its ecological capacity to regain function, its exposure to stressors, and the social context affecting efforts to improve its condition.

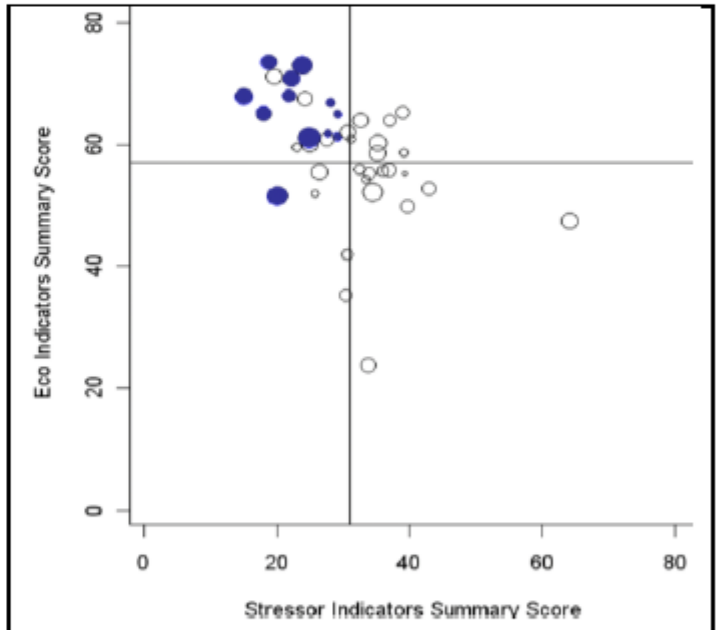
Funding for restoration is always limited, and difficult choices are inevitable. Poor decisions and strategies can result in little or no program success. Comparative methods to aid restoration planning can lead to better-informed investments that restore valued waters earlier, more consistently, more cost-effectively, and in more places. Recovery potential screening enables rapid, statewide comparison of large numbers of waters using ecological, stressor and social indicators of restorability selected for the place and purpose at hand. Recovery potential should be a primary consideration in restoration programs whose aim is to bring about recovery.

Practical Applications of Recovery Potential

- Aid state decisions in 303(d) impaired waters list scheduling for TMDL development, and in TMDL implementation;
- Assist in restoration-related decisions regarding Clean Water Act Section 319 nonpoint source control projects as well as state-level restoration initiatives;
- Help EPA regions and states develop strategies to meet performance tracking measures, such as identifying where increases in restored waters and improved watersheds can most likely be achieved;
- Assist watershed-level programs that need to focus on priority places due to limited resources; and
- Reveal underlying factors that influence restoration success and use these new insights to improve programs.

Recovery Potential Tools and Resources for Restoration Practitioners

- **Recovery Potential Screening Methodology**: A rapid, comparative assessment approach that uses commonly available datasets to screen user-selected indicators that influence restorability. Integrates three sub-indices (ecological, stressor, social) that relate to the three major drivers affecting recovery potential.
- **Recovery Potential Indicators** (see examples on back): Ecological capacity, stressor exposure, and social context traits measurable from common datasets. 200+ metrics demonstrated, 70+ with reference sheets on their scientific basis and measurement.
- **Restoration and Recovery Literature Database**: 1700+ published citations in a partially annotated MS Access database; open for each user's personal option to add entries and keywords on a local copy.
- **Tools for Scoring and Displaying Results**: A programmed data spreadsheet that weights and normalizes indicators and auto-calculates summary scores; a tool for visualizing screening results as 3D bubble plots (right); measurement methods and data sources for indicators; and more.
- **Recovery Potential User Support Website**: Central source of step-by-step screening directions, literature database, indicator reference sheets, auto-scoring spreadsheet, 3D bubble plotting tool, training materials, case studies, other resources. *[http://www.epa.gov/recoverypotential/]*



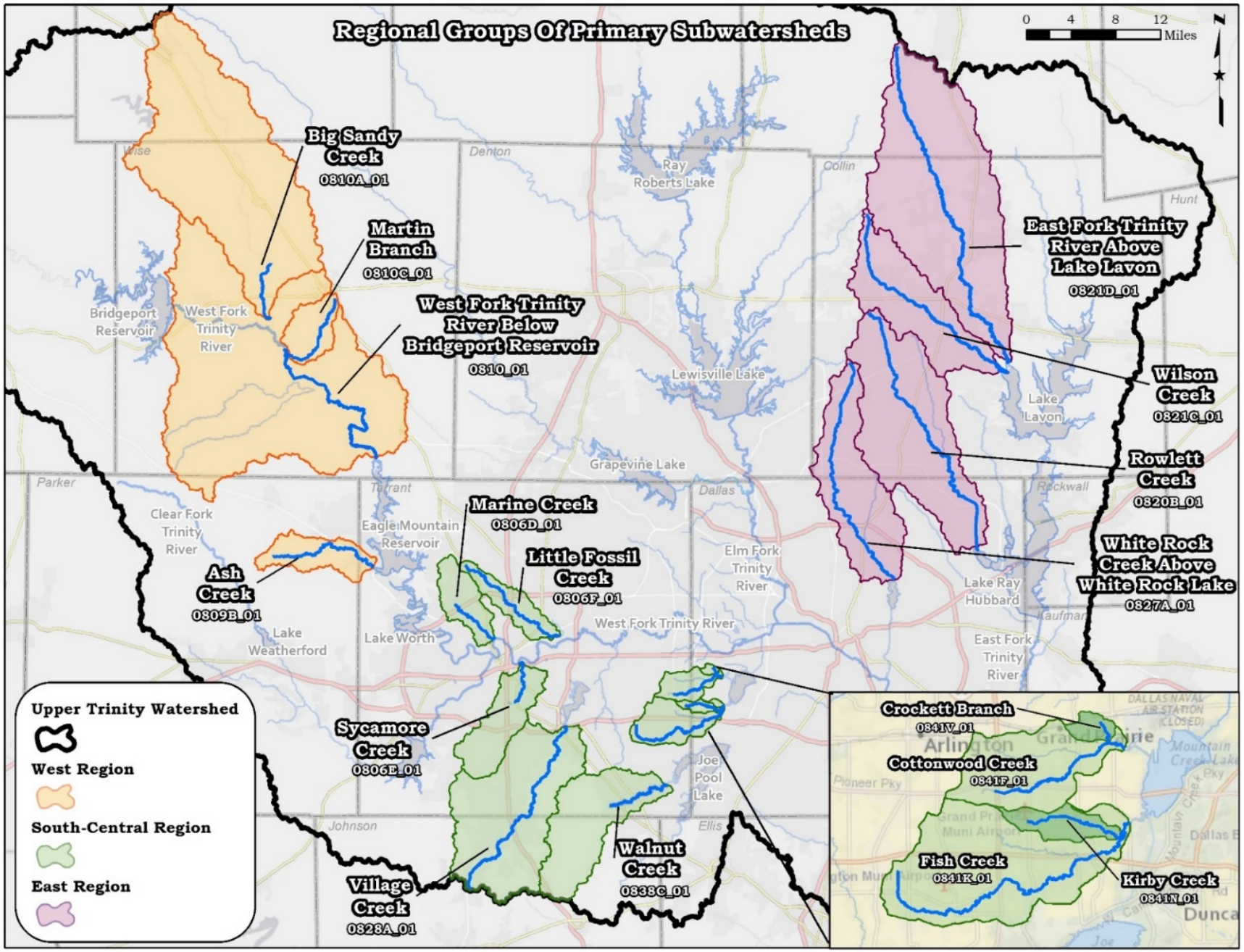
Recovery potential of impaired and healthy (blue) watersheds compared in a 3D bubble plot; dot size increases with social score.

303(d) Vision Project: Upper Trinity River

Through the 303(d) Vision project, AgriLife Research and Extension Stephenville is working with a team of partner organizations and stakeholders to determine the recovery potential of impaired segments and their designated subwatersheds in the Upper Trinity River

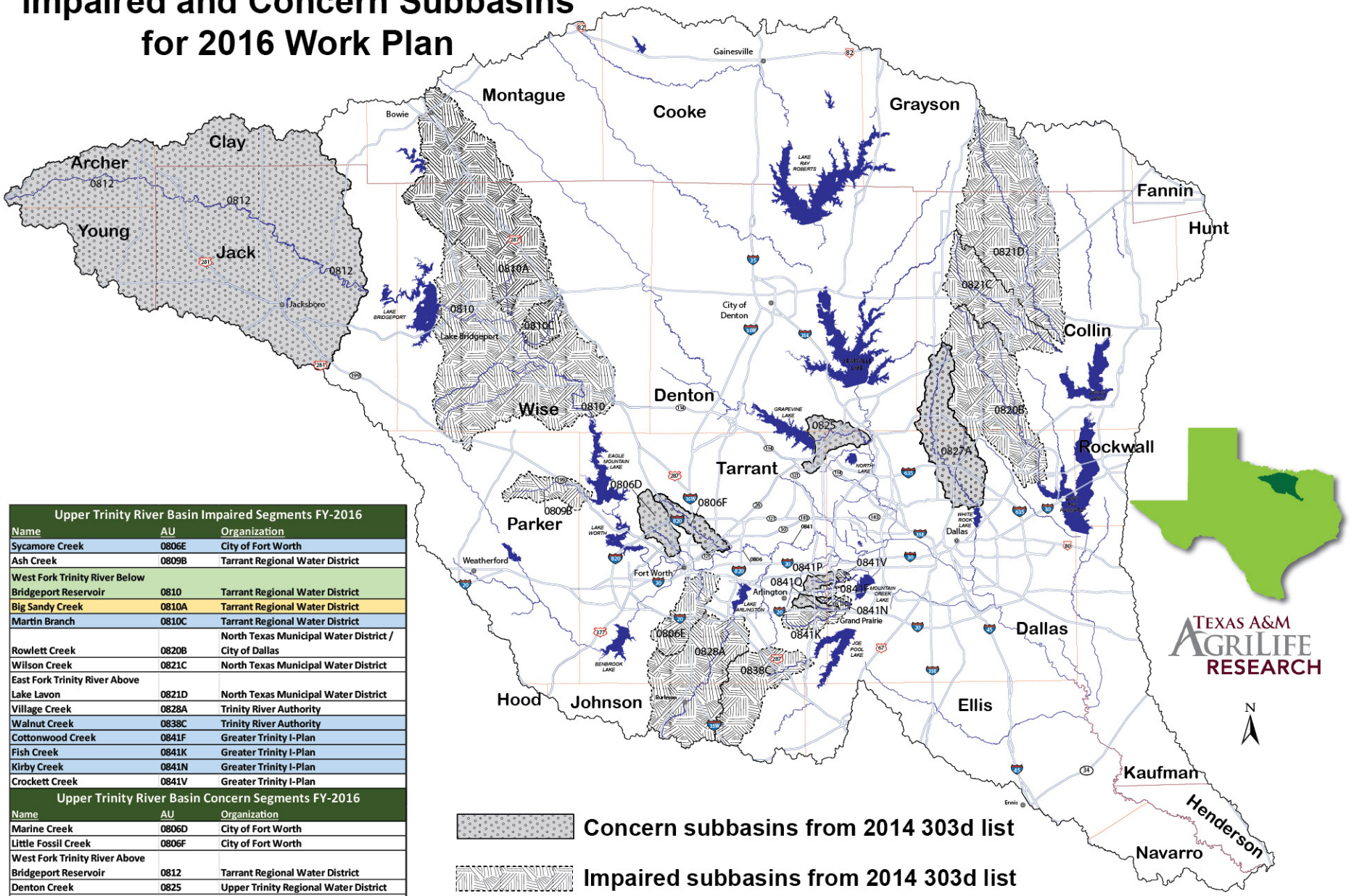
- Recovery Potential Screening allows for determination of how likely watersheds are to recover from the impairment of interest; in the case of this project - **bacteria**
  - RPS tools offer a flexible framework that can be adapted across a wide range of circumstances.
  - **If data exists**, the tool provides a rapid assessment and comparison method for screening

Image from: http://media.nbcdfw.com/images/1200*675/dallas-swollen-trinity2.jpg



303(d) Vision Project regional groups of primary subwatersheds in the Upper Trinity River watershed.

Impaired and Concern Subbasins for 2016 Work Plan



Upper Trinity River Basin Impaired Segments FY-2016		
Name	AU	Organization
Sycamore Creek	0806E	City of Fort Worth
Ash Creek	0809B	Tarrant Regional Water District
West Fork Trinity River Below Bridgeport Reservoir	0810	Tarrant Regional Water District
Big Sandy Creek	0810A	Tarrant Regional Water District
Martin Branch	0810C	Tarrant Regional Water District
Rowlett Creek	0820B	North Texas Municipal Water District / City of Dallas
Wilson Creek	0821C	North Texas Municipal Water District
East Fork Trinity River Above Lake Lavon	0821D	North Texas Municipal Water District
Village Creek	0828A	Trinity River Authority
Walnut Creek	0838C	Trinity River Authority
Cottonwood Creek	0841F	Greater Trinity I-Plan
Fish Creek	0841K	Greater Trinity I-Plan
Kirby Creek	0841N	Greater Trinity I-Plan
Crockett Creek	0841V	Greater Trinity I-Plan

Upper Trinity River Basin Concern Segments FY-2016		
Name	AU	Organization
Marine Creek	0806D	City of Fort Worth
Little Fossil Creek	0806F	City of Fort Worth
West Fork Trinity River Above Bridgeport Reservoir	0812	Tarrant Regional Water District
Denton Creek	0825	Upper Trinity Regional Water District
White Rock Creek Above White Rock Lake	0827A	City of Dallas
North Fork Cottonwood Creek	0841P	Greater Trinity I-Plan
North Fork Fish Creek	0841Q	Greater Trinity I-Plan

RUAAs Complete - TCEQ Developing Recommendation

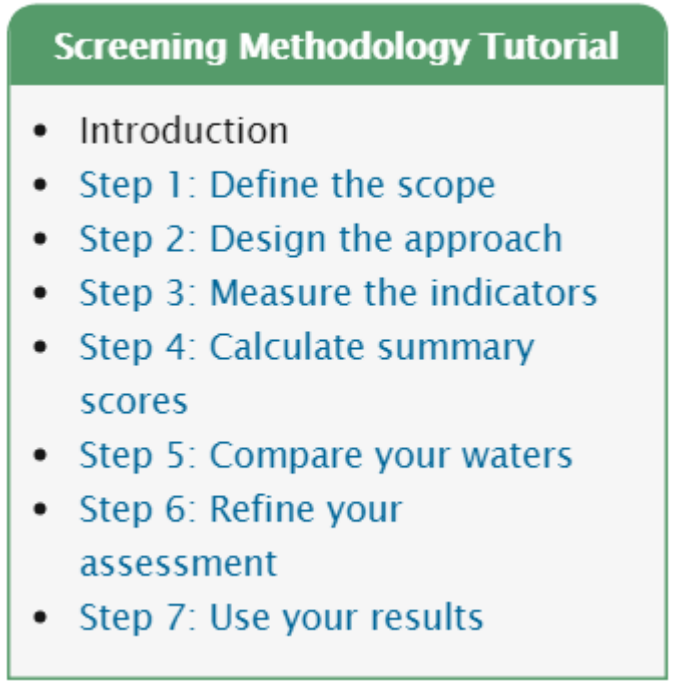
Recommended to Retain PCR

Recommended to Change to SCR1

TEXAS A&M AGRILIFE RESEARCH

RPS Methodology

- RPS provides a step-by-step methodology to follow (here)



Bubble Plot

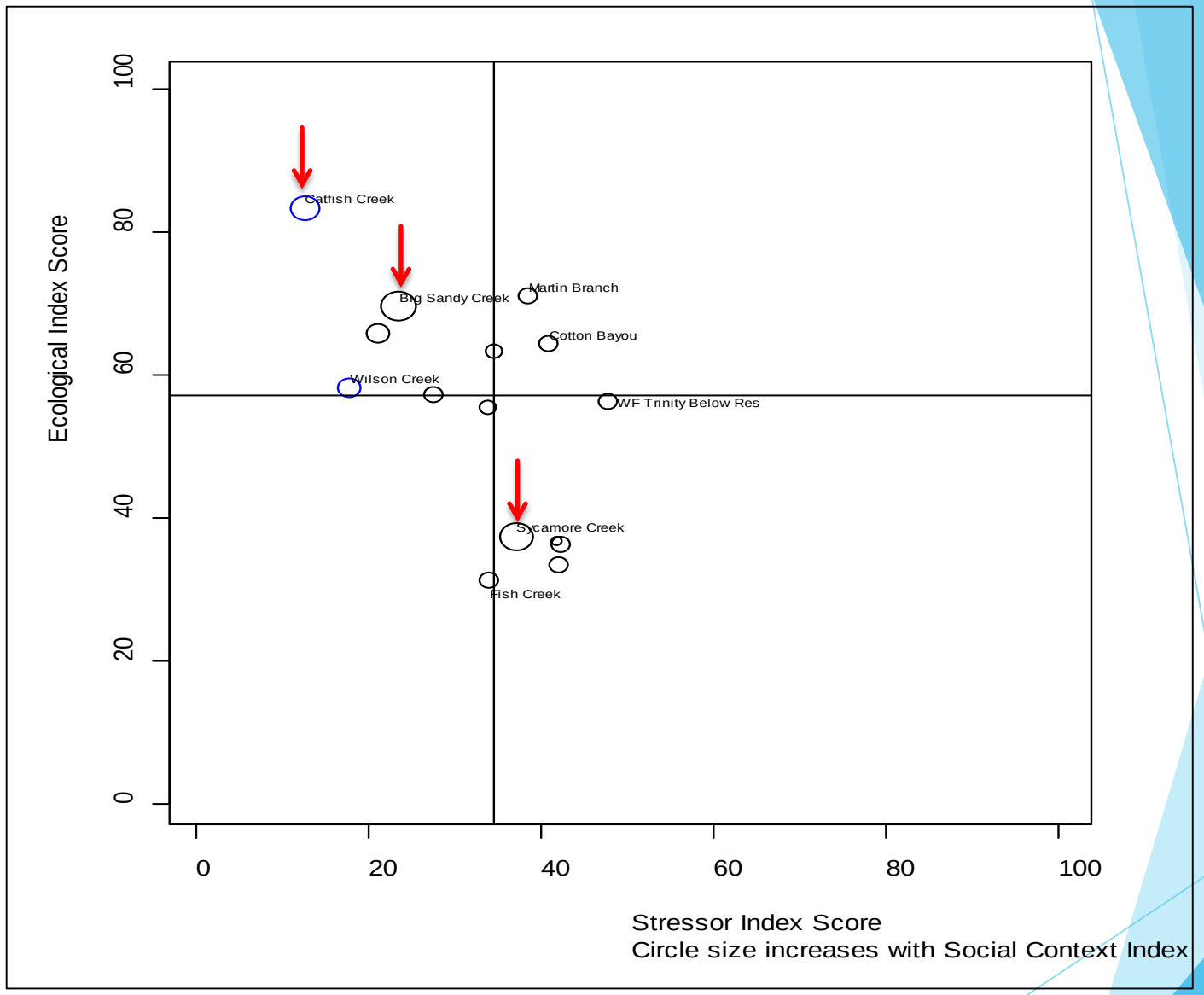
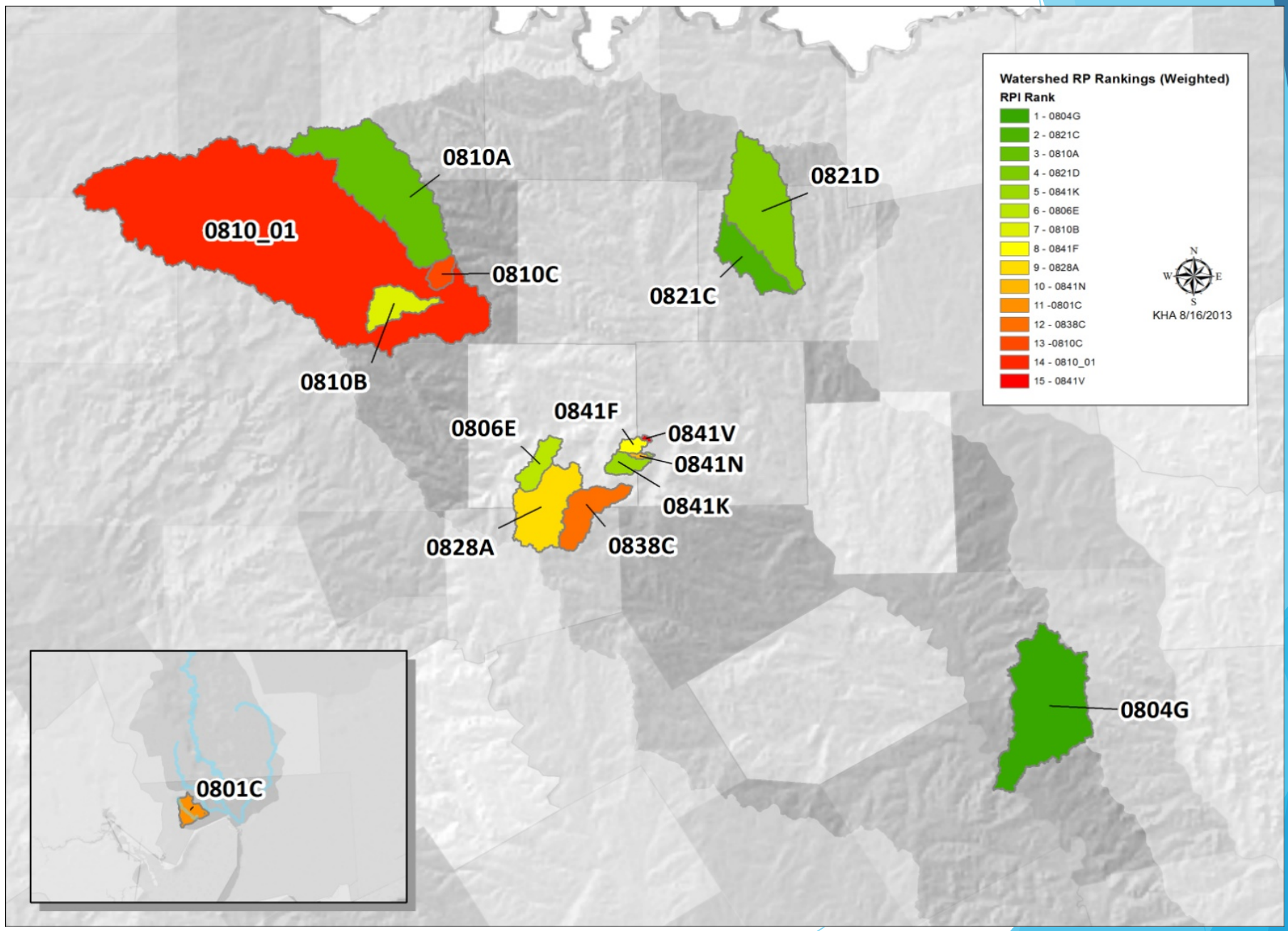


Figure 8: 3-D Bubble Plot of Segments (Weighted). Blue circles indicate Reference Reaches and circles with red arrows indicate segments with the most social interest of recovery potential.

RPI Rankings



Recovery Potential Indicators

For each subwatershed included in the analysis, indicators from each of the following categories are used:

> Ecological
> Stressor
> Social context

Determine the likelihood of success of restoration based on user selected criteria appropriate to the situation being assessed.

A **Recovery Potential Integrated (RPI) score** is calculated by combining the ecological, stressor and social indices.

The list of possible indicators, along with examples, uses, likely data sources and reference sheets can be found in the materials provided
Ecological Indicators
Stressor Indicators
Social Context Indicators

INDICATOR	SCORE
watershed # of CAFOs	44
human health and safety	44
age of sewer infrastructure	41
estimated restoration cost	41
severity of loading	40
watershed # of septic systems	39
watershed % impervious cover	39
watershed % urban	38
maintenance of % natural cover	37
corridor % urban	37
linear % of channel through agriculture	37
% identified stressor sources	37
watershed population	37
watershed % natural cover	36
corridor % agriculture	36
large watershed management potential	36
land use change trajectory	35
political support	35
recreational resource	35
corridor soil erosion potential	34
corridor % legacy urban	34
jurisdictional complexity	34
funding eligibility	34
watershed size	33
bank stability/soils	33
corridor % wetlands	33
corridor slope	33
watershed stream density	33
watershed % agriculture	33
corridor % impervious cover	33
number of 303d listed causes	33

Survey Results – Top Overall Indicators (31)

Ecological	8
Stressor	14
Social	9

Appendix 3: Round 2 Indicator Revisions		
I. Ecological Indicator Summaries (4)	**II. Stressor Indicator Summaries (8)**	**III. Social Context Indicator Summaries (3)**
A. Watershed natural structure	**A. Watershed-level disturbance**	**A. Leadership, organization and engagement**
watershed % natural cover	watershed # of septic systems (should this be %, to match inverse category?)	watershed organizational leadership
watershed % stream length impaired	% Sewered	*# of conservation plans (include TMDL or other plan existence)
	B. Corridor and shoreland disturbance	**B. Protective ownership or regulation**
	corridor % impervious cover	watershed % protected land (include land managed for recreational uses/significant recreational resource)
	corridor % agriculture	
	corridor road crossings	
C. Flow and channel dynamics		
low-flow maintenance		
D. Biotic community integrity	**D. Biotic or climatic risks**	
trophic state	invasive species risk	
	E. Severity of pollutant loading	
	number of permits	
	severity of loading (*impairment)	

Indicators for Trinity River Basin RPS		
Ecological (4)	**Stressor (5)**	**Social Context (3)**
Watershed Natural Structure: % natural cover	Corridor % Urban	Leadership, organization and engagement: watershed organizational leadership
Corridor % Natural Cover	Corridor % Agriculture	Leadership, organization and engagement: # of conservation plans
Corridor % Wetlands	Corridor # of Road Crossings	Protective ownership and regulation: watershed % protected land
Trophic State	Severity of Loading: # of WWO Permits	
	Severity of Loading: Geo Mean	

Table 2. Indicators selected for use in the initial application of the RPS tool in the Matagorda Bay watershed

Ecological Indicators	Stressor Indicators	Social Indicators
Stream Density	% Agricultural Land Use	# of Recreational Resources
% of Natural Cover	% Impervious Cover	Population
% Forests	% Urban	
% Wetlands	Road Density	
% Woody Vegetation	# of WWTF Outfall Permits	
% Unimpaired Stream Length		
Subbasin Size (Acres)		

Section 2: Ecological Indicators

- **Select 5-10 ecological indicators**
  - ***For each indicator selected, consider the following:***

  1. **Justification for use**

  2. Suggestions for data acquisition

  3. Scoring, ranking or weighting suggestions to make available data comparable across all segments

  - Questions to keep in mind:
    - Is this indicator really going to inform recovery from a bacterial impairment?
    - Is there accurate data available for this indicator, throughout the entire study region?
      - Document with names of contributors to be developed
    - Are any of the indicators within a group too repetitive? Can similar indicators be eliminated, leaving a single indicator that would be most useful?
    - Are there any additional indicators that you think would be important for this region? (Write-in option)

Survey Results - Ecological

Indicators for Trinity River Basin
Ecological (4)
Watershed Natural Structure: % natural cover
Corridor % Natural Cover
Corridor % Wetlands
Trophic State

ECOLOGICAL	
maintenance of % natural cover	37
watershed % natural cover	36
corridor soil erosion potential	34
watershed size	33
bank stability/soils	33
corridor % wetlands	33
corridor slope	33
watershed stream density	33
watershed % wetlands	32
watershed % streamlength unimpaired	31

Section 2: Stressor Indicators

- **Select 5-10 ecological indicators**
  - ***For each indicator selected, have notes on the following:***

1. **Justification for use**

2. Suggestions for data acquisition

3. Scoring, ranking or weighting suggestions to make available data comparable across all segments

  - Questions to keep in mind:
    - Is this indicator really going to inform recovery from a bacterial impairment?
    - Is there accurate data available for this indicator, throughout the entire study region?
      - Document with names of contributors to be developed
    - Are any of the indicators within a group too repetitive? Can similar indicators be eliminated, leaving a single indicator that would be most useful?
    - Are there any additional indicators that you think would be important for this region? (Write-in option)

Survey Results - Stressor

RPS
Stressor (5)
Corridor % Urban
Corridor % Agriculture
Corridor # of Road Crossings
Severity of Loading: # of WWO Permits
Severity of Loading: Geo Mean

STRESSOR	
watershed # of CAFOs	44
age of sewer infrastructure	41
severity of loading	40
watershed # of septic systems	39
watershed % impervious cover	39
watershed % urban	38
corridor % urban	37
linear % of channel through agriculture	37
corridor % agriculture	36
land use change trajectory	35

Section 3: Social Indicators

- **Select 5-10 ecological indicators**
  - ***For each indicator selected, have notes on the following:***

  1. **Justification for use**

  2. Suggestions for data acquisition

  3. Scoring, ranking or weighting suggestions to make available data comparable across all segments

  - Questions to keep in mind:
    - Is this indicator really going to inform recovery from a bacterial impairment?
    - Is there accurate data available for this indicator, throughout the entire study region?
      - Document with names of contributors to be developed
    - Are any of the indicators within a group too repetitive? Can similar indicators be eliminated, leaving a single indicator that would be most useful?
    - Are there any additional indicators that you think would be important for this region? (Write-in option)

Survey Results – Social Context

Social Context (3)
Leadership, organization and engagement: watershed organizational leadership
Leadership, organization and engagement: # of conservation plans
Protective ownership and regulation: watershed % protected land

SOCIAL CONTEXT	
human health and safety	44
estimated restoration cost	41
% identified stressor sources	37
watershed population	37
large watershed management potential	36
political support	35
recreational resource	35
jurisdictional complexity	34
funding eligibility	34
government agency involvement	32
certainty of causal linkages	32
watershed # of drinking water intakes	32

Conclusion

- Review indicator selections and notes
- Document
  - Name, contact info, date of communication
- Closing remarks

Next Steps:

- Acquire data on each indicator
  - Will be contacting participants
- Narrow down initial indicator choices as new information emerges
- Communicate final indicator list to participants
- Will allow a short period for comments (electronic) before final score is calculated
- Calculate final RPS scores based on chosen indicator values