ASSESSMENT, INVENTORY, AND MONITORING

BLM's AIM - NAMF Program Overview

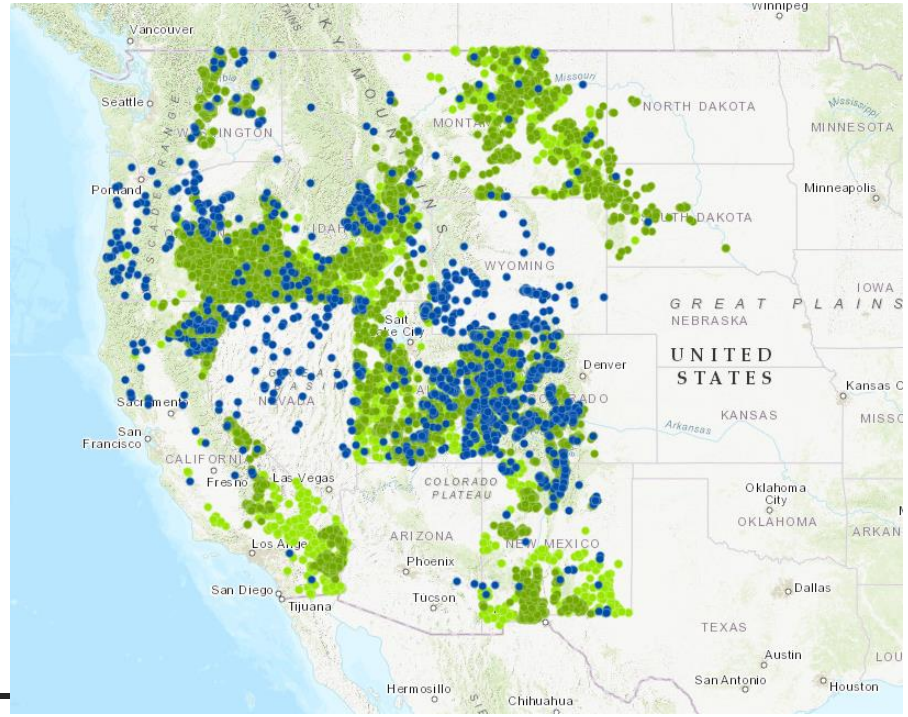
AIM Strategy

- *Establish Core indicators and standardize field methods*
- *Use statistically valid sample designs*
- *Electronic data capture and storage*
- *Use analytical tools that enable data to inform decisions*
- *Integrate remote sensing technologies*

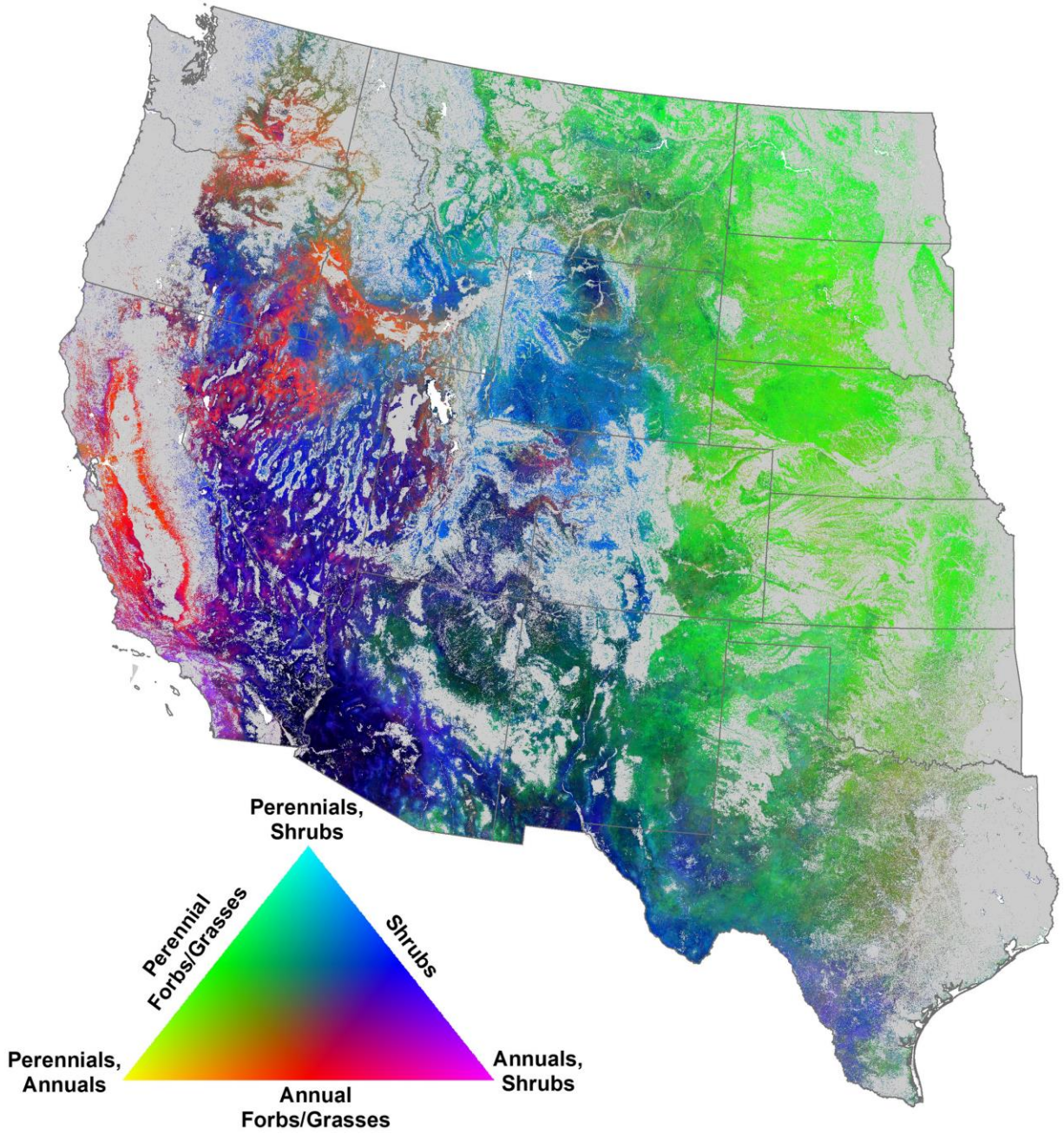
"The AIM Strategy is a national strategy designed to facilitate integrated, cross-program resource monitoring at multiple spatial scales of management" TR-1735-1

Scaling & Data Access

- Local – Grazing Permit Renewals, Restoration/Reclamation
- Regional/Landscape – RMP effectiveness
- National – Annual Reporting



https://landscape.blm.gov/geoportal/catalog/main/home.page

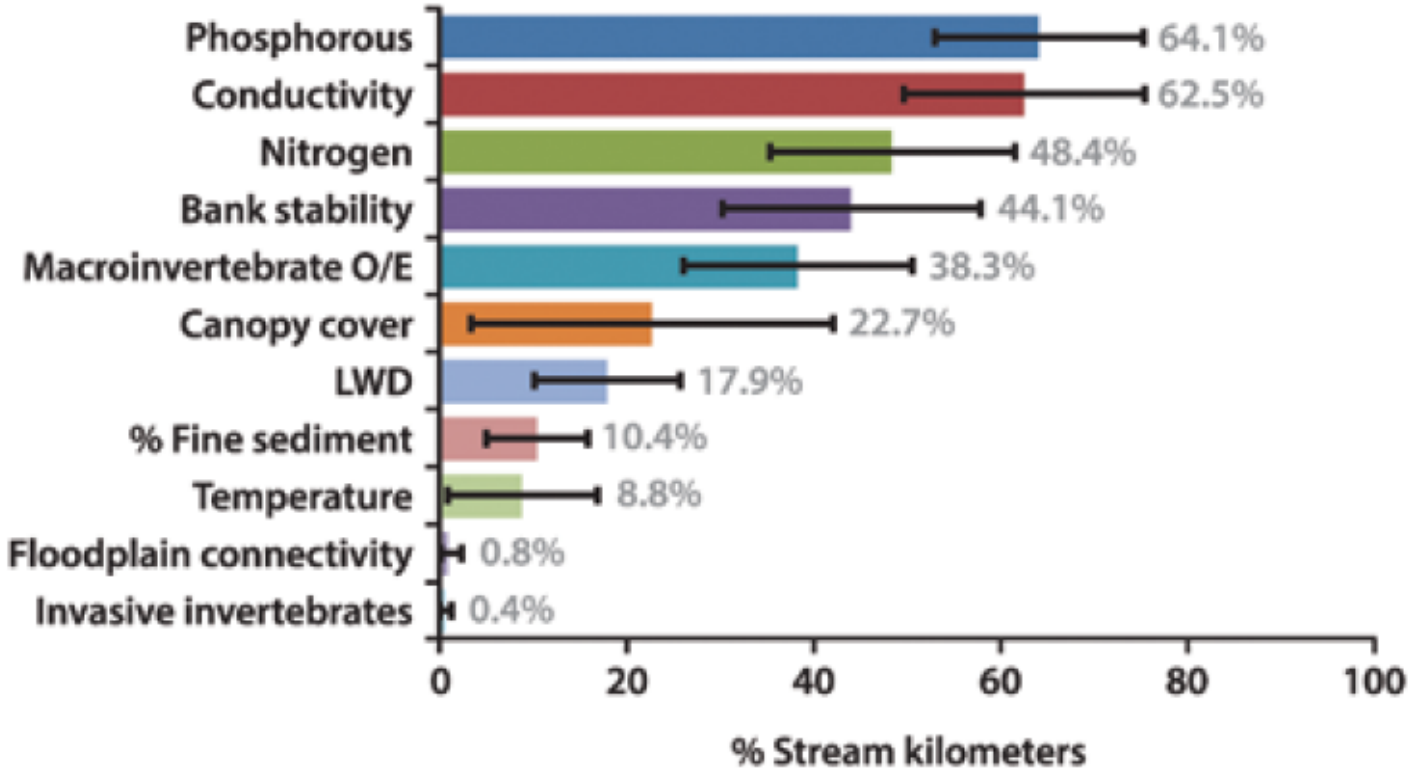


Source : Jones et al 2018

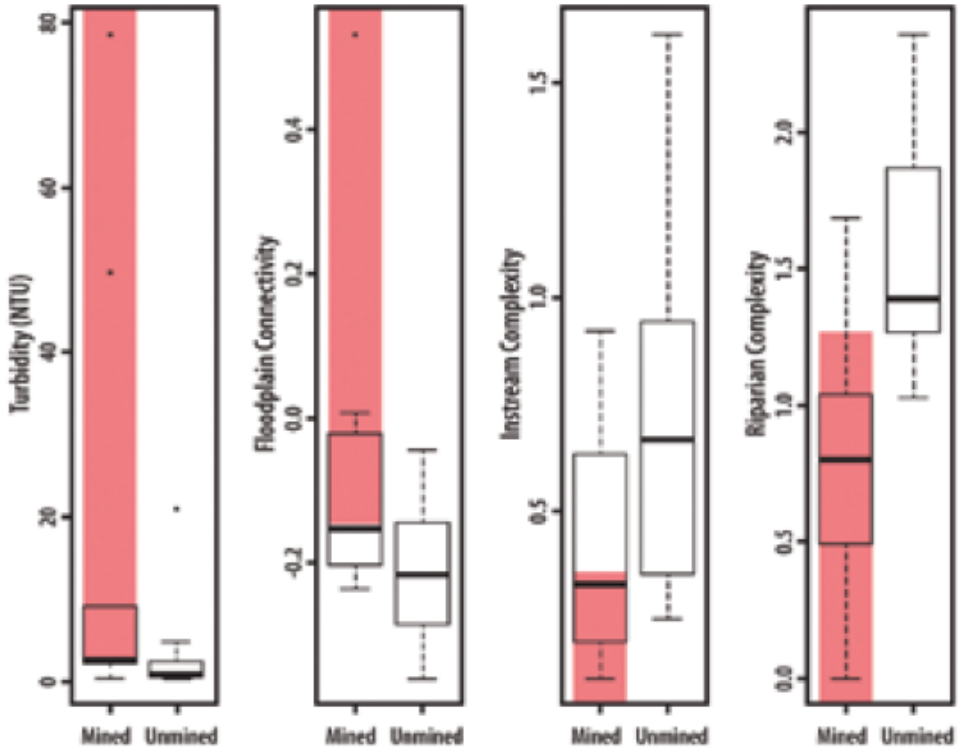
National Aquatic Monitoring Framework (NAMF)

- Perennial Wadable Streams (Lotic)
- Compiled from established aquatic monitoring programs:
  - Multiple Indicator Monitoring
  - PACFISH/INFISH Biological Opinion (PIBO)
  - National Rivers and Streams Assessment Protocol
  - Surface Water Ambient Monitoring Program
- Targeted and Random Sampling

NAMF - Case Studies



Percentage of Utah wadeable stream kilometers having significant departure from reference conditions.



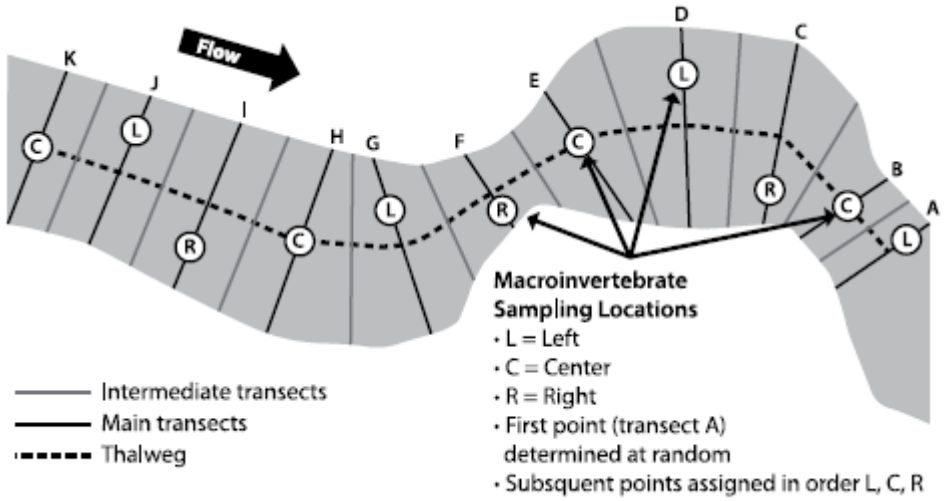
Example preliminary results for water quality, riparian, and instream conditions between mined and unmined sites, in which values falling within the red shading for mined sites indicate deviation from potential natural conditions.

Lotic Indicators

Core, Contingent, and Covariate

Core indicators grouped into these Categories:

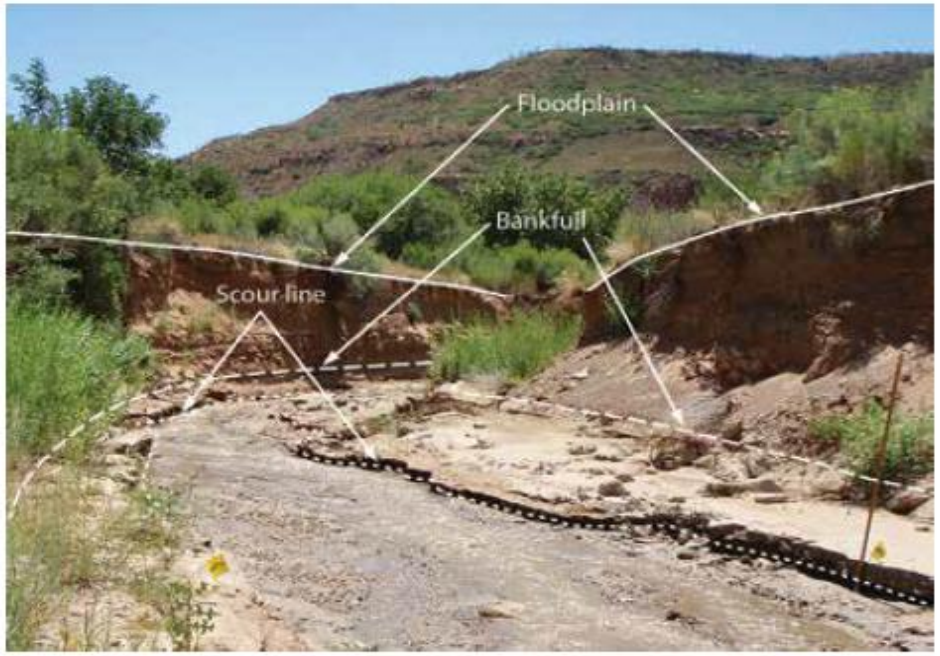
- Water Quality
- Watershed Function/Physical Habitat
- Biodiversity and Riparian Habitat

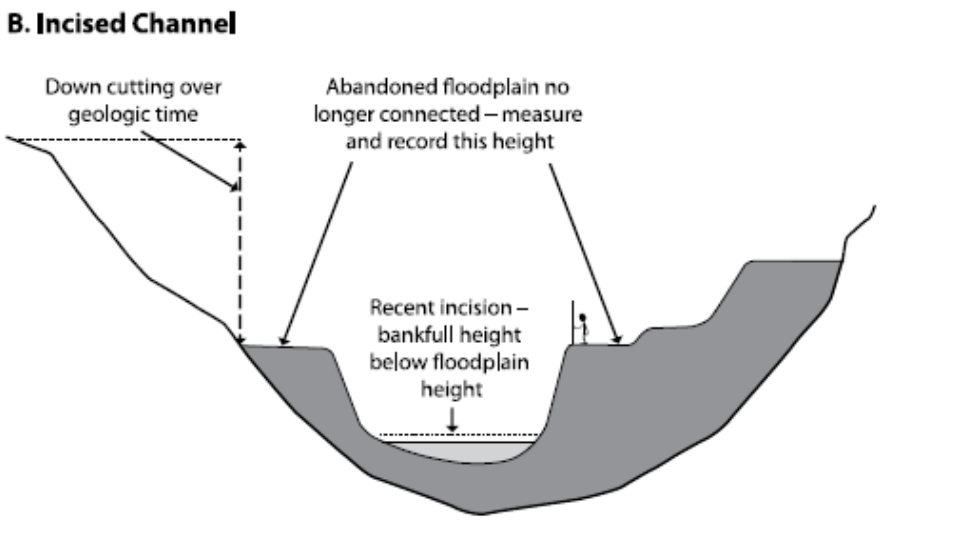


Water Quality

- Core:
  - pH
  - Specific Conductance
  - Temp
- Contingent:
  - TN + TP
  - Turbidity

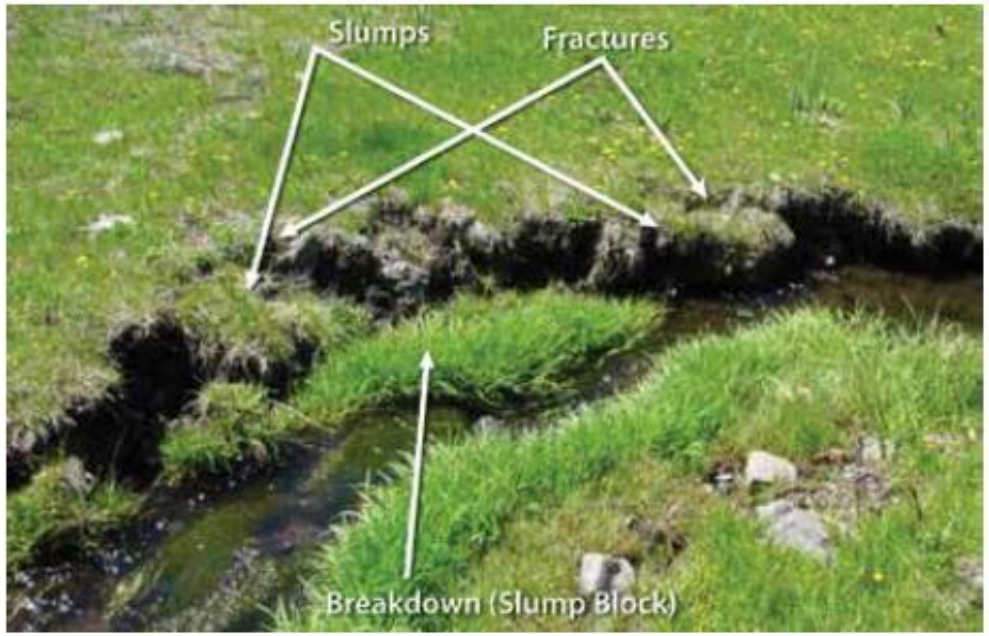
Watershed Function / Physical Habitat

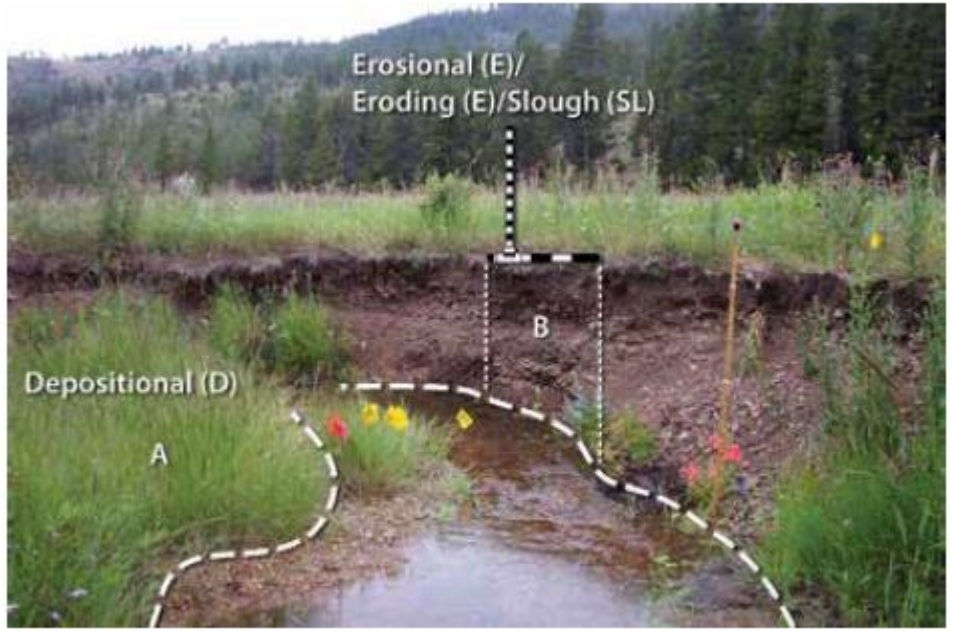




- Bankfull Width
- Floodplain connectivity (Bankfull and Floodplain height)
- Flood prone width

Bank Stability and Cover





MORE Stable

Absent (A): None of the erosional features subsequently described are present.

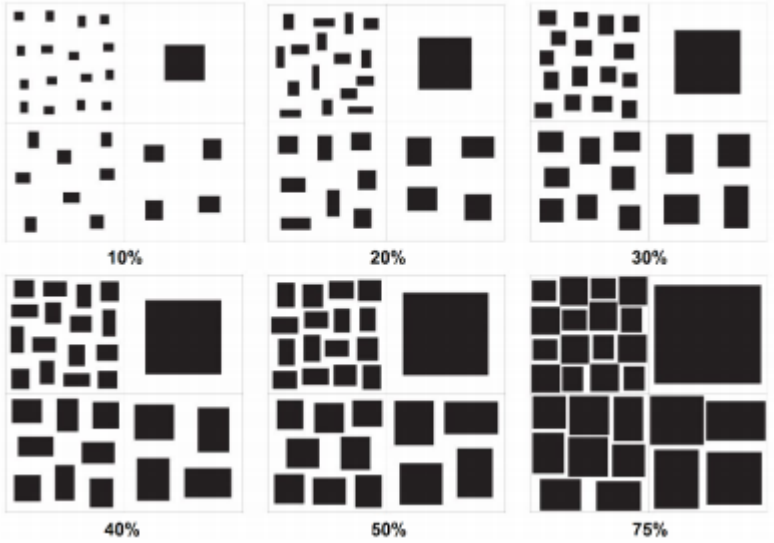
Fracture (F): An obvious crack on the top of a bank that has not yet separated from the bank and resulted in downward displacement of the detached block (Figure 6).

Slump (S): A portion of a streambank that has obviously slipped down resulting in a block of soil/sod that is completely separated from the bank (Figures 6 and 7).

Slough (SL): Generally disaggregated soil (loose and not bound together in clumps) or sod material that has been shed or cast from the bank and usually accumulates near the base of the bank. Sloughing typically occurs on banks that are less than vertical and void of herbaceous or grassy vegetation (Figures 7, 9, 10, and 11).

Eroding (E): Banks that are bare and nearly vertical (between 80 and 90 degrees). Eroding banks are usually located on the outside curves of meander bends in the stream (Figure 11).

LESS Stable



Physical Habitat Cont.

Pools

Depth, length, and frequency

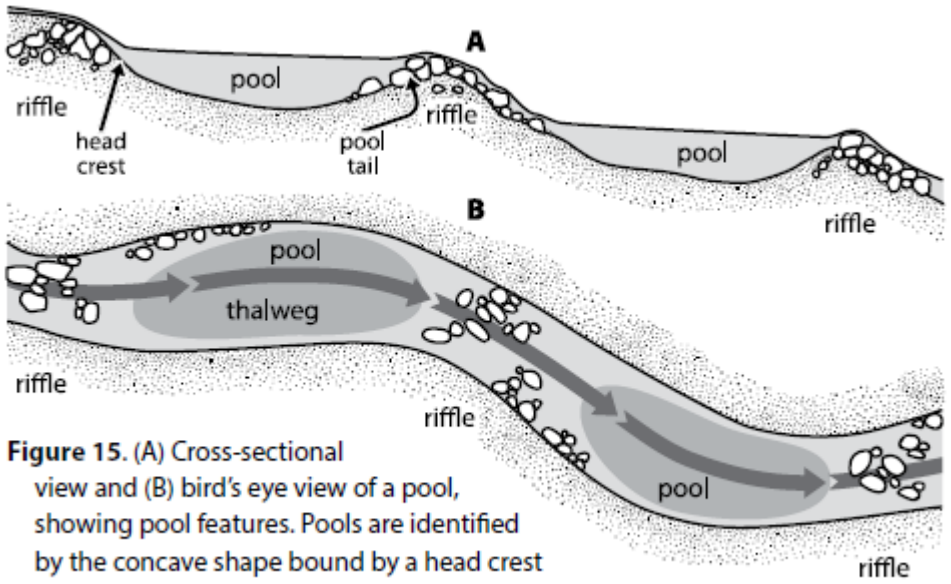
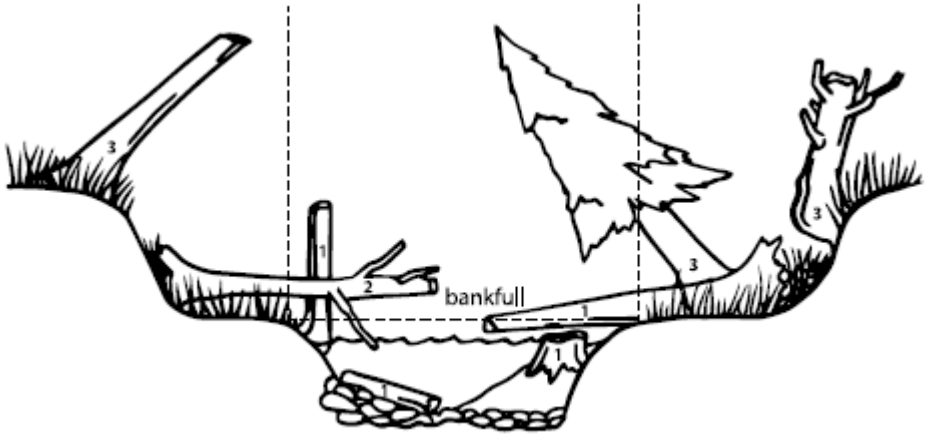
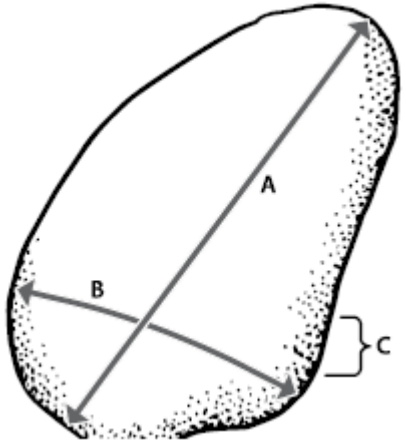


Figure 15. (A) Cross-sectional view and (B) bird's eye view of a pool, showing pool features. Pools are identified by the concave shape bound by a head crest and tail and a max depth more than 1.5 times the pool tail depth.

Large Woody Debris



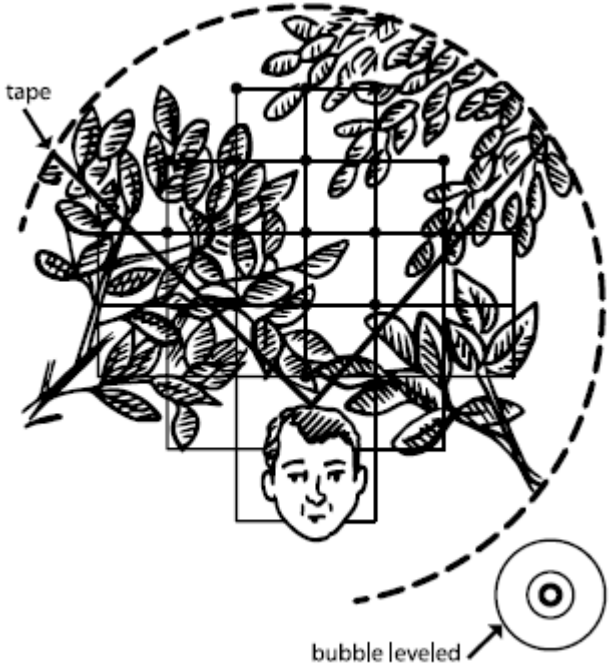
Streambed Particle size



Physical Habitat Cont.

Biodiversity and Riparian Habitat

Benthic Macroinvertebrates



- Canopy Cover
- Ocular estimates
- Quantitative estimates (MIM)

Applying to the San Pedro

- RMP effectiveness monitoring
- Grazing Permit Renewals
- Special considerations:
  - Interrupted reaches

- Previous Monitoring

				riparian area monitored			parameters measured										
event/study	who	where	when	streamside?	floodplain?	terrace?	canopy cover	veg complexity	age class structure	diversity	non-native	woody basal area	ground cover	veg height	vigor	Large Woody	photos
"Hydrologic Requirements.. "	USGS	26 sites. throughout SPRNCA.	2001-2003 2005 pub	Y	Y	Y	Y, densitometer	Y, volume and height	Y	Y, woody, herb. along streamside	Y	Y	N	Y	N	N	Y
Riparian Inventory San Pedro River	BLM, Kim McReynolds	pace transects (60 paces apart) permendicular to the	1988	Y	Y	N	N	N	Y	Y, woody	Y	Y	Y	N	N	N	?
PFC	NRST	51 miles delineated into 10 reaches	2012	Y	Y	N	N	Y?, qualitative	Y, qualitative	Y, species list, qualitative	Y, qualitative	N	Y, qualitative	N	Y, qualitative	Y, qualitative	Y
Aquatic AIM		11 transects within a stream reach		Y	Y, somewhat	N	Y, densitometer	Y, estimated	N	Y, categorized by deciduous,	Y	N	Y, estimated	N	N	Y	Y

Questions & Suggestions for going forward