Creeks and Communities

PFC Assessment Approach & Definitions

What is possible?

Bear Creek, OR

1977

1988

What is possible?

Burro Creek, AZ

1981

2000

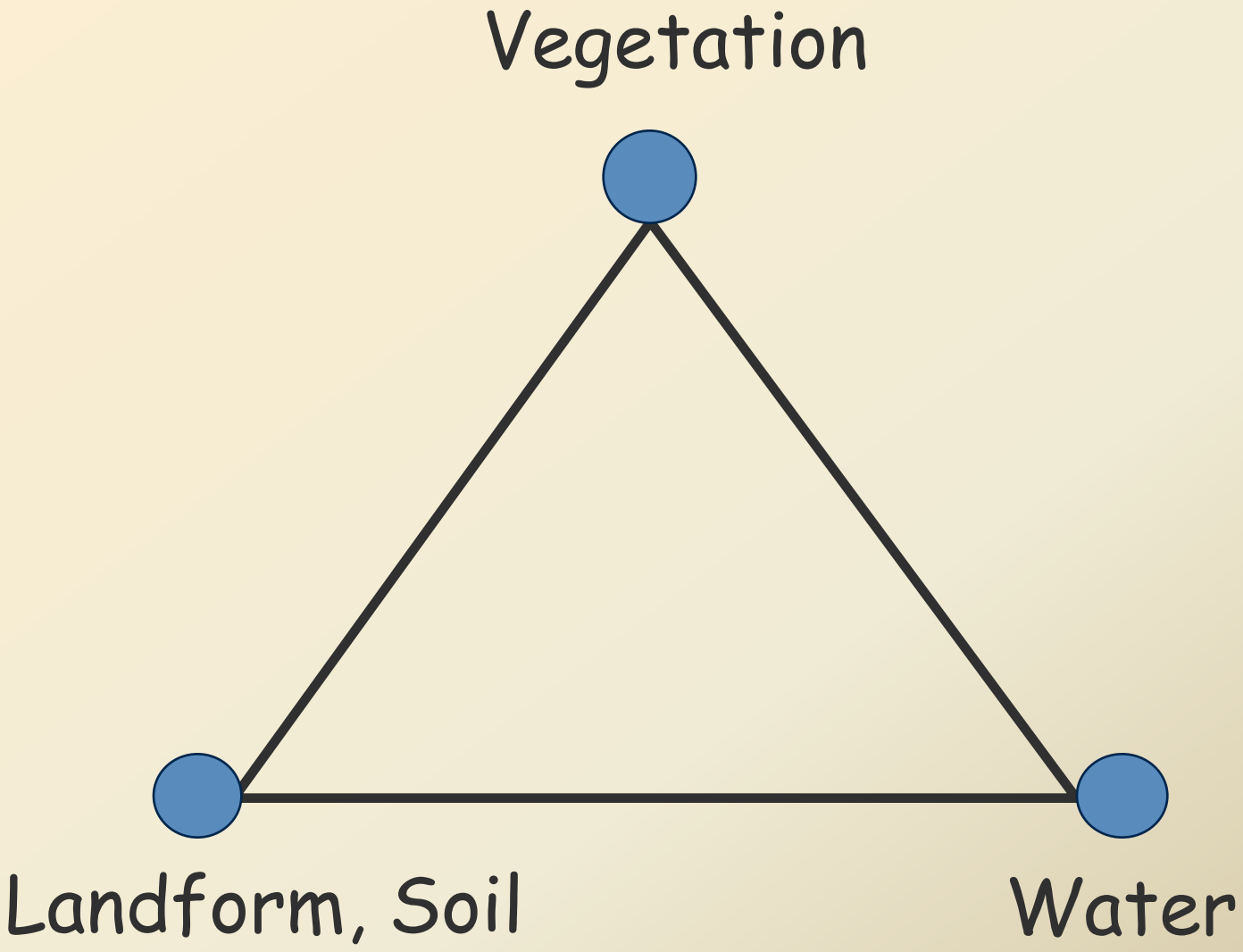
PFC Assessment Development

- ✓ID Team from the BLM, the FWS, and the NRCS with expertise in vegetation, hydrology, soils, and biology.
- ✓Four year study period in the 12 Western States (1988-92).
- ✓Collected soil, hydrology, and vegetation information at field sites – ESI
- ✓Identified common and important attributes/ processes that could be visually assessed.

PFC Development continued

- ✓ Incorporated these elements into lotic & lentic checklists.
- ✓ Draft document TR 1737-9 & 11.
- ✓ Additional field test.
- ✓ Finalized TR 1737-9 (1993) & 11 (1994)
- ✓ Riparian Coordination Network Review
- ✓ User Guides TR 1737-15 (1998) & 16 (1999)

Riparian-Wetland Areas



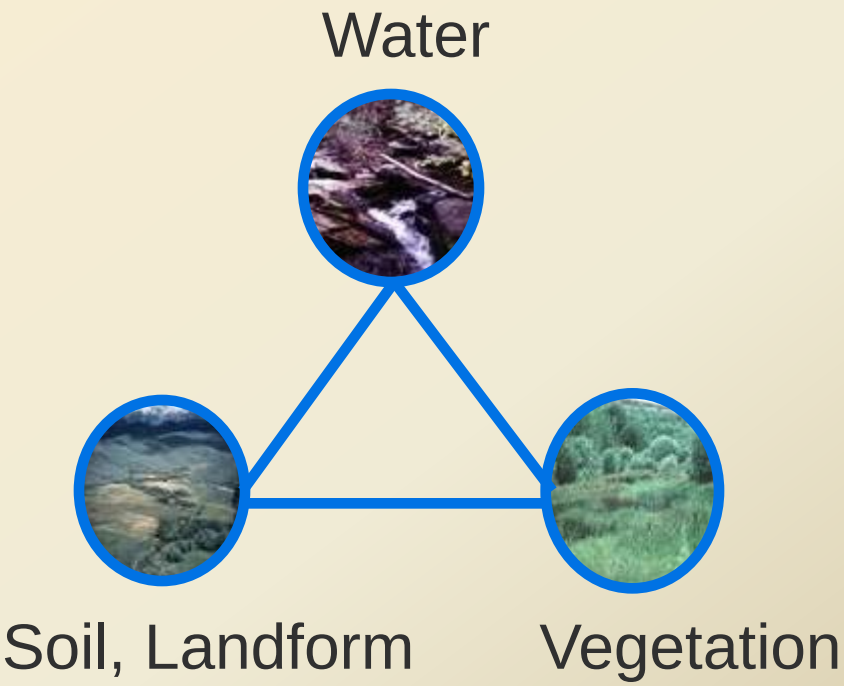
The PFC Assessment Tool

- ✓ Requires an interdisciplinary (ID) team
  - Vegetation
  - Hydrology
  - Soils
  - Biology

Local, on-the-ground experience in interpreting quantitative sampling techniques that support the PFC checklist

PFC Assessment Method

- Requires an interdisciplinary team with strong technical skills and experience.
- All members of the community can participate.



Common Vocabulary

Lotic

Running water

Lentic

Standing water

Wetland Area

- ✓ Inundated or saturated by surface or ground water
- ✓ Frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions
- ✓ Marshes, swamps, bogs are examples

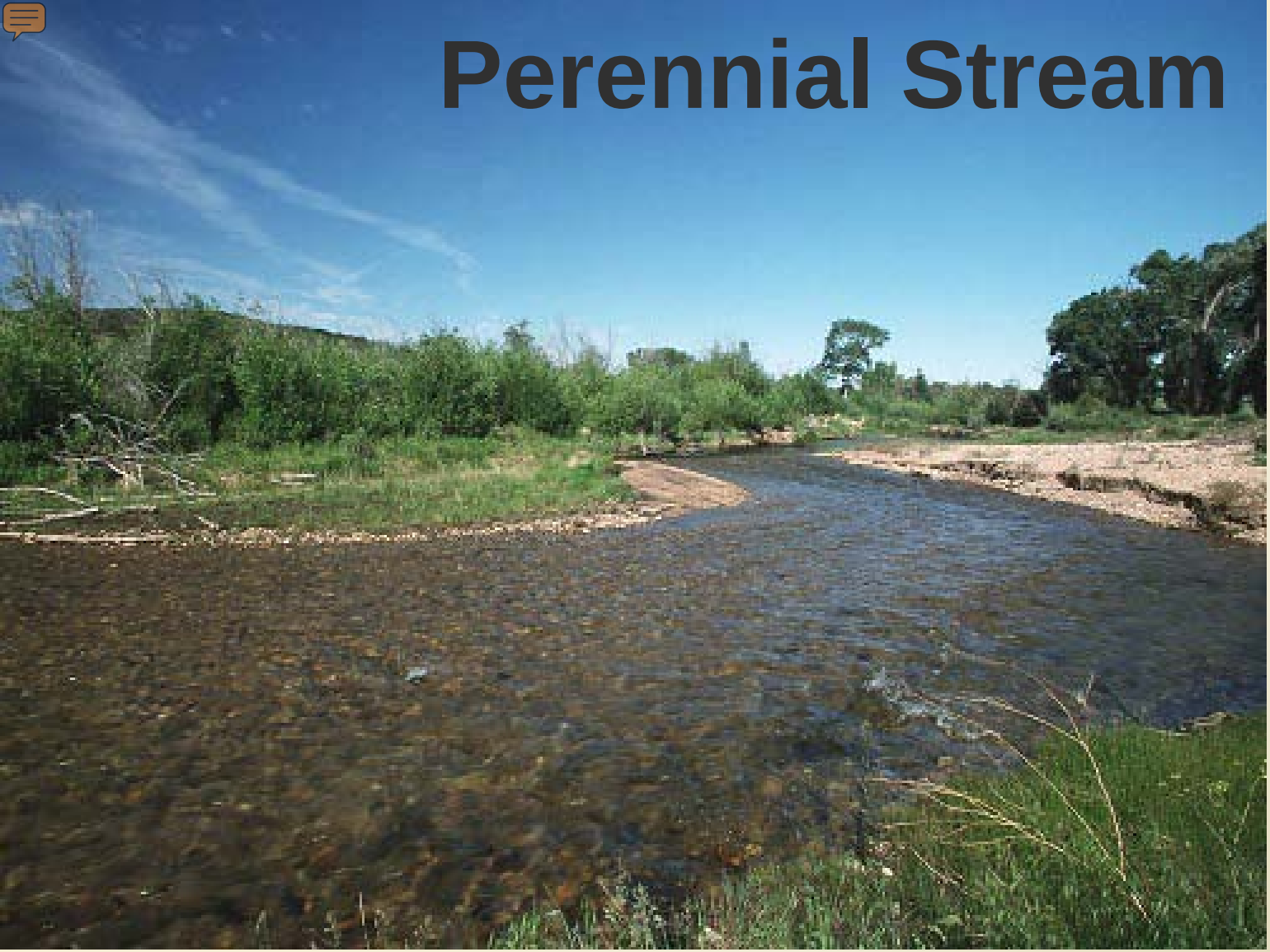
Lentic = standing water systems

Riparian Area

- ✓ Transition between the wetlands and upland areas
- ✓ Vegetation and physical (soil) characteristics reflect the influence of permanent surface or subsurface water
- ✓ Land along streams, shores of lakes are examples

Lotic = running water systems

Perennial Stream



A stream that flows continuously. Perennial streams are generally associated with a water table in the localities through which they flow.

Intermittent Stream

Meinzer's suggestion (1923): flow continuously for periods of at least 30 days

A stream that flows only at certain times of the year when it receives water from springs or from some surface source such as melting snow in mountainous areas.

Ephemeral Channel

Meinzer's suggestion (1923): do not flow continuously for periods of at least 30 days

A stream that flows only in direct response to precipitation, and whose channel is at all times above the water table.

Interrupted Stream

A stream with discontinuities in *space*

Riparian Proper Functioning Condition

- ✓ Term is used in two ways
  - Assessment process
  - Defined on the ground condition
    - How well the area's physical processes are functioning
    - State of resiliency that will allow an area to hold together during moderately high flows, such as 5-, 10-, and 20-year events

PFC Assessment is a Qualitative Tool

Lotic PFC

Adequate vegetation, landform or large woody material to:

- ✓ Dissipate stream energy
- ✓ Reduce erosion
- ✓ Filter sediment
- ✓ Capture bedload
- ✓ Aid floodplain development
- ✓ Improve floodwater retention and groundwater recharge
- ✓ Develop root masses that stabilize stream banks

To Yield

- ✓ **Increased water quality and quantity**
- ✓ **Diverse ponding and channel characteristics**
- ✓ **Habitat for fish and wildlife**
- ✓ **Greater biodiversity**

Physics → Values

Lentic PFC

Adequate vegetation, landform or debris is present to:

- ✓ Dissipate energies – wind, wave, overland flow
- ✓ Reduce erosion
- ✓ Filter sediment
- ✓ Improve floodwater retention and groundwater recharge
- ✓ Develop root masses that stabilize islands and shoreline features against cutting action
- ✓ Restrict water percolation

To Yield

- ✓ **Increased water quality and quantity**
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- ✓ **Habitat for fish and wildlife**
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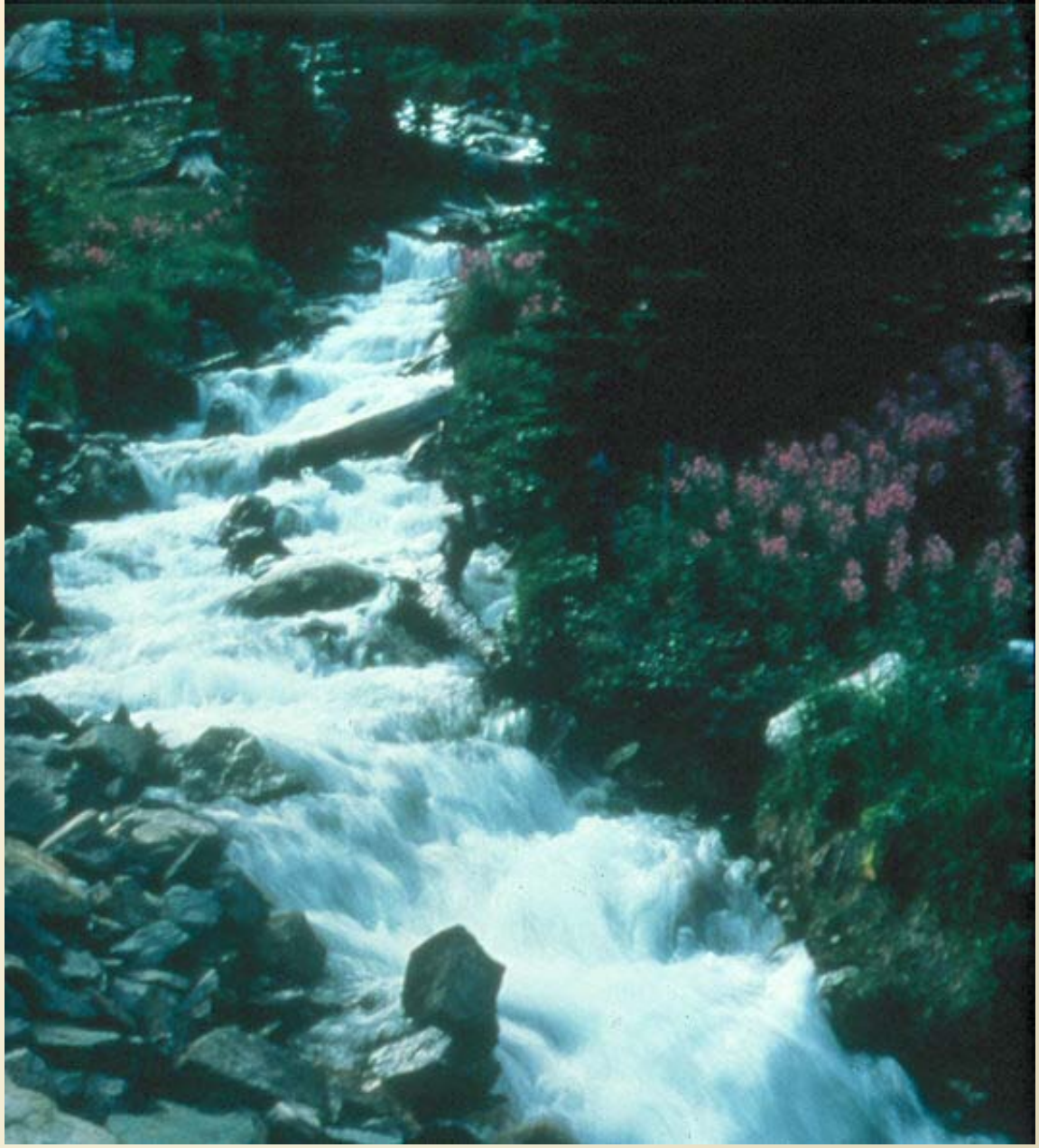
Physics → Values

adequate vegetation

adequate vegetation

adequate landform



adequate landform

adequate large woody material

adequate large woody material

PFC On-The-Ground Condition

Adequate vegetation, landform or large woody material to:

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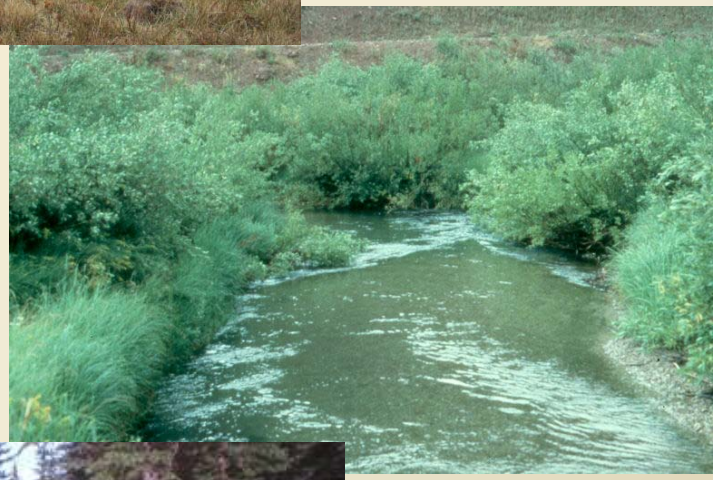
Physics → Values

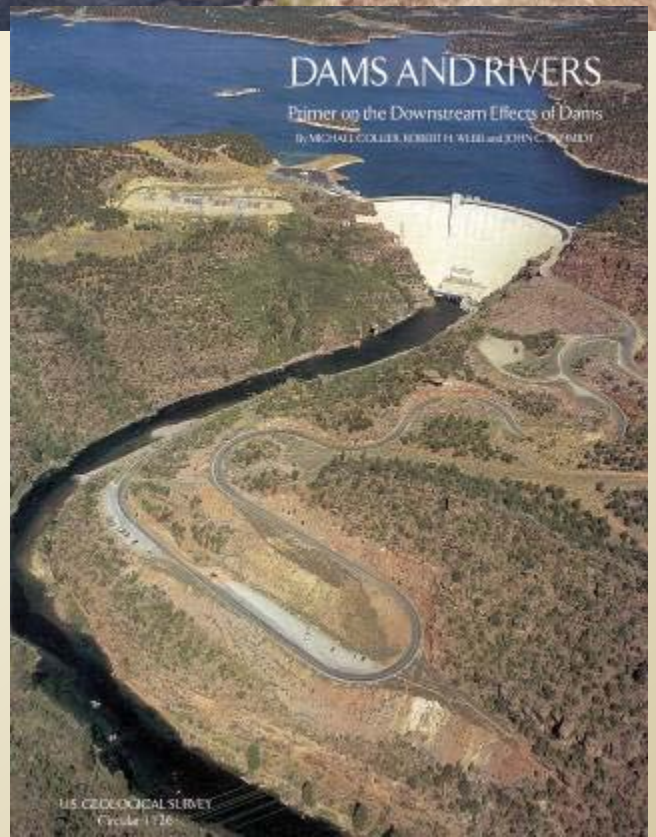
Potential

The highest ecological status a riparian-wetland area can attain given no political, social, or economical constraints, and is often referred to as the potential natural community (PNC).



Capability

Highest ecological status an area can attain given political, social, or economic constraints, which are often referred to as limiting factors.



Functional - At Risk

Riparian-Wetland Areas that are in Functional Condition

But an existing attribute

- ✓ Soil
- ✓ Water
- ✓ Vegetation

Makes them susceptible to degradation during high-flow events such as the 5-, 10-and 20- year events

Nonfunctioning

Areas that are *clearly* not providing adequate vegetation, landform, or large woody material

To:

- ✓ Dissipate stream energy
- ✓ Improve floodwater retention & groundwater recharge
- ✓ Stabilize streambanks
- ✓ *And other characteristics common to PFC*

Unknown

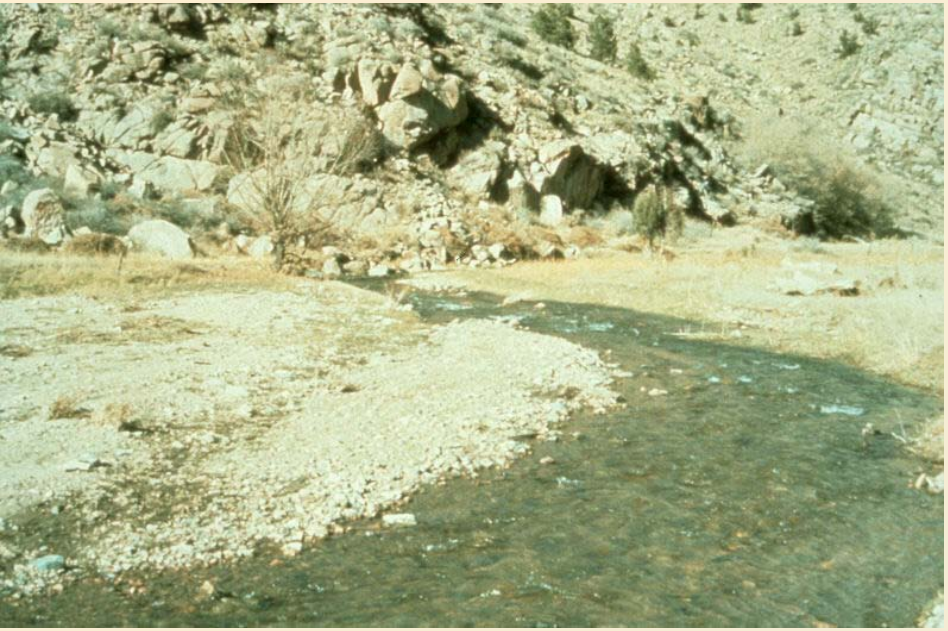
For accounting purposes

- ✓ Riparian-wetland areas that lack sufficient information to make any form of determination
- ✓ Has not been visited

Areas that are *clearly* not providing adequate vegetation, landform, or large woody material

An existing attribute makes them susceptible to degradation during high-flow events such as the 5-, 10-and 20- year events

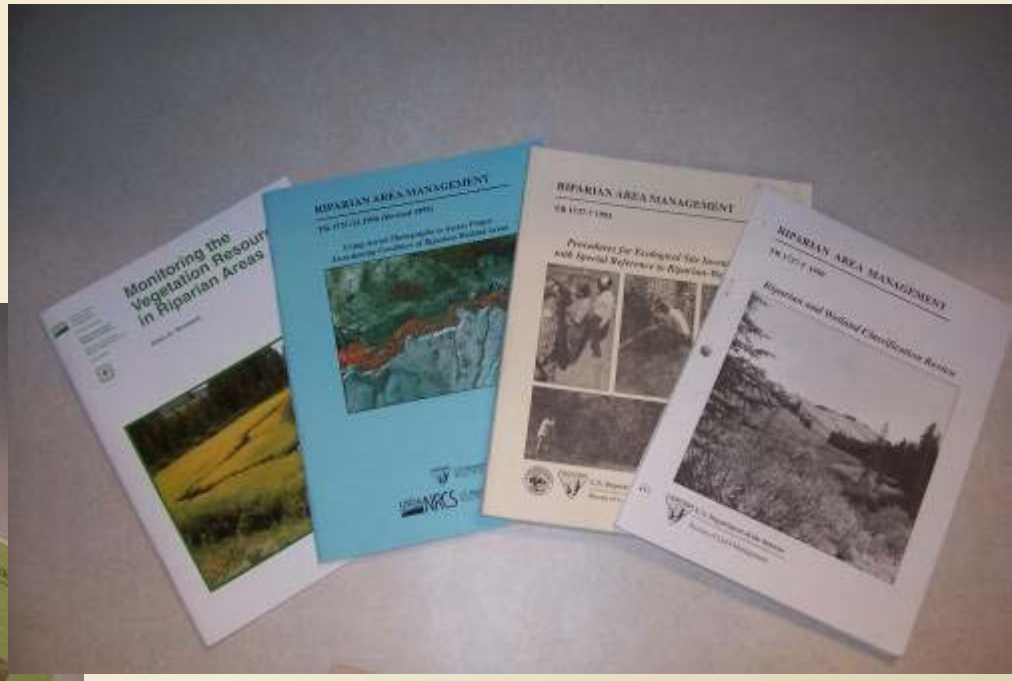
Adequate vegetation, landform or large woody material present



PFC Assessment Procedure

- ✓ **A. Review Existing Documents**
- ✓ **B. Analyze the Definition of PFC**
- ✓ **C. Assess Functionality using an ID Team**

A. Review Existing Documents



B. Analyze the Definition of PFC

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To Yield

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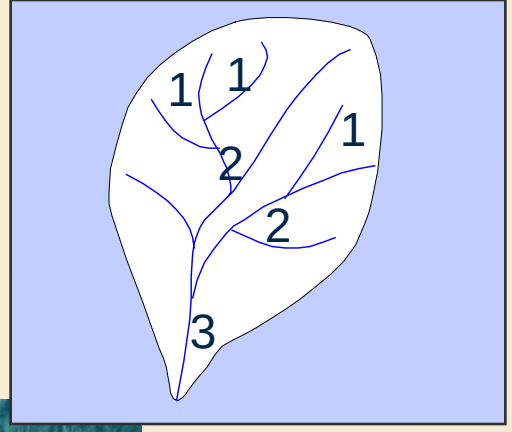
Physics → Values

C. Assess Functionality using an ID Team

1. **Stratification**
2. **Attributes & Processes**
3. **Potential & Capability**
4. **Functioning Condition**

Assess Functionality using an ID Team



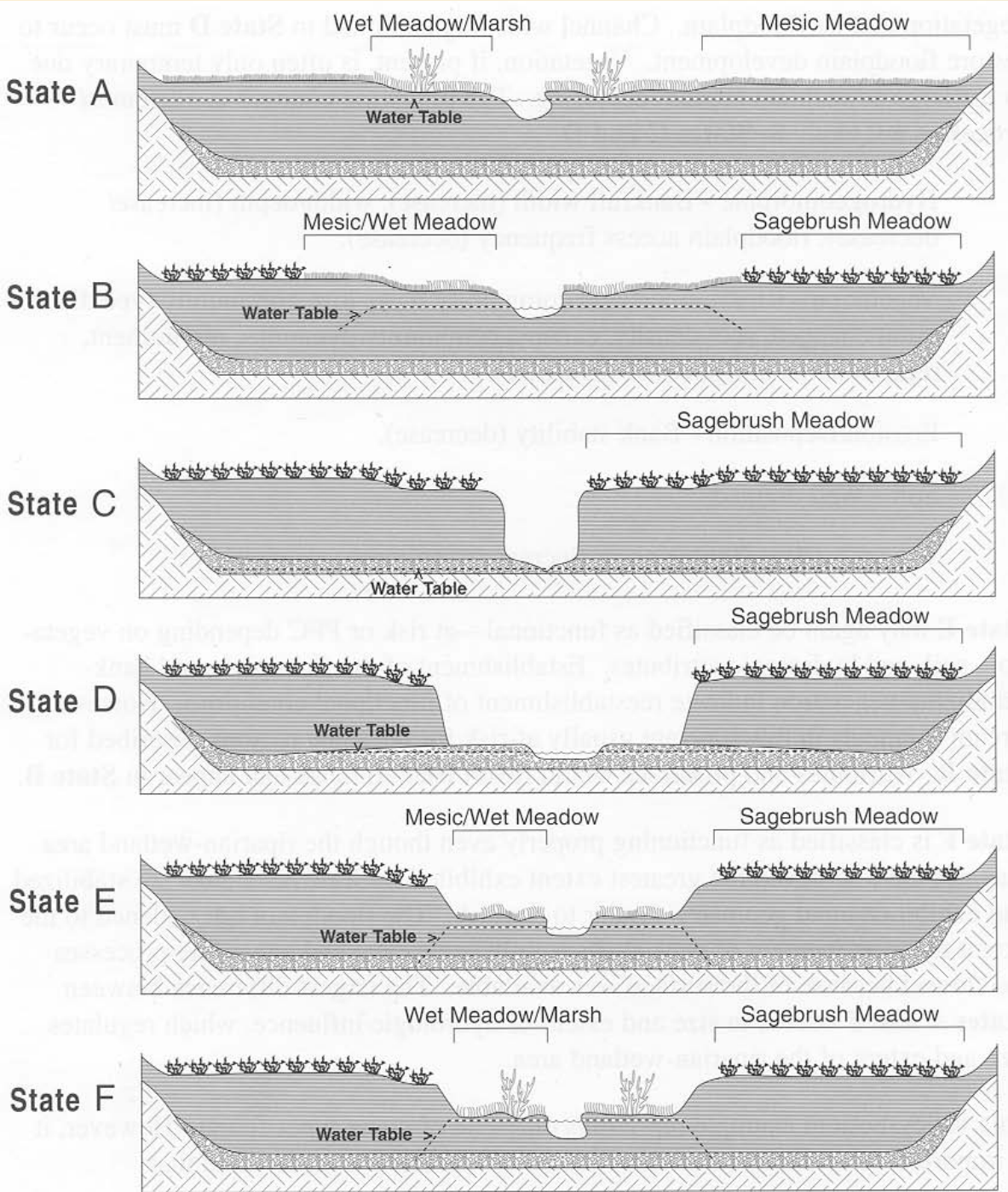
1. Stratification

- ✓ Stream order
- ✓ Valley bottom type
- ✓ Stream type (Rosgen)
- ✓ Management/ landowner change

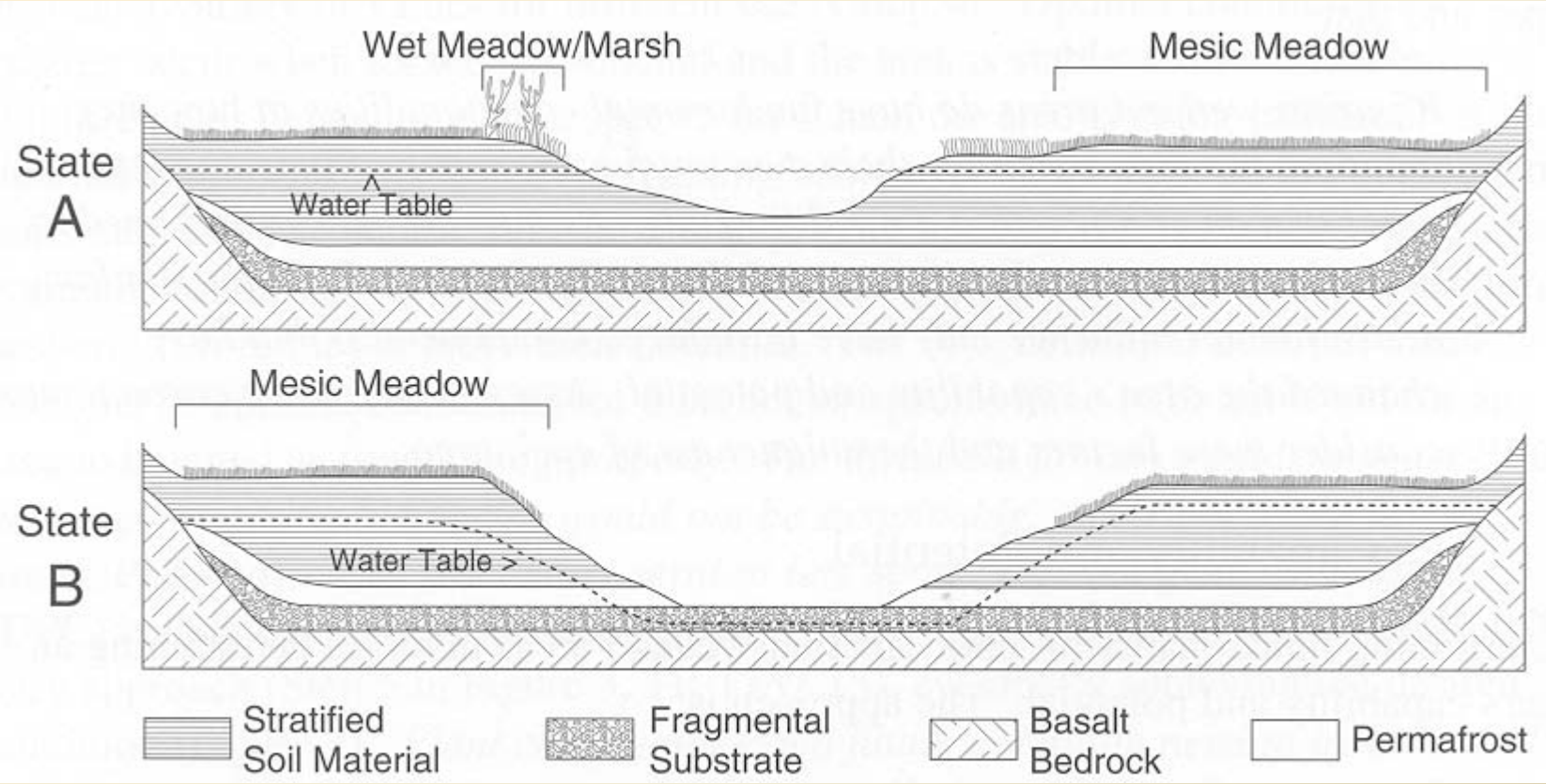
Reference or comparison sites

2. Attributes & Processes

Lotic Example from Great Basin



2. Attributes & Processes
Lentic Example from Alaska



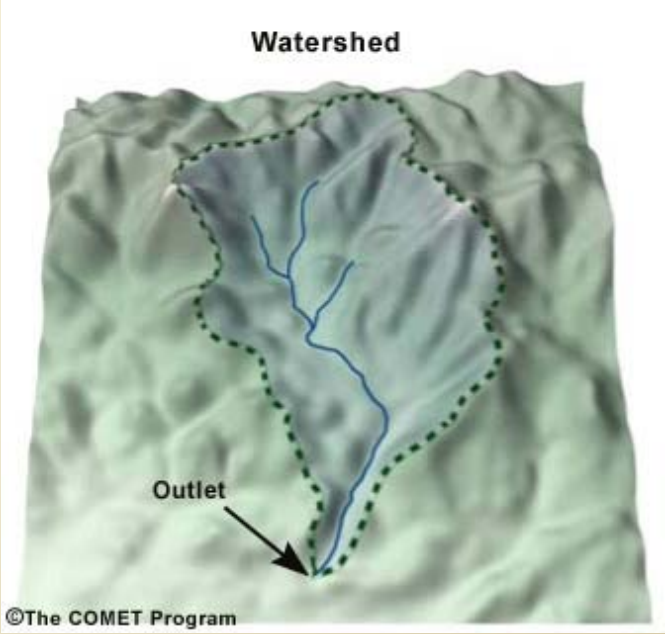
3. Determining Potential & Capability

- ✓ Relic areas (preserves, exclosures etc.)
- ✓ Historic photos, survey notes, documents
- ✓ Species lists – animals & plants
- ✓ Soils & Hydrology
- ✓ Ecological site classifications
- ✓ Identify major landforms
- ✓ Look for limiting factors, both human-caused and natural, and determine if they can be corrected

Experienced ID Team (Hydrology, Soils, Vegetation, Biology)

4. Functioning Condition

The condition of the entire watershed/catchment is important



4. Functioning Condition

Fixed Catchment/Watershed Variables

- ✓ Area
- ✓ Shape
- ✓ Orientation

- ✓ Geology
- ✓ Elevation
- ✓ Climate

4. Functioning Condition

Management Influenced Catchment/Watershed Variables

- ✓ Impervious Area
- ✓ Soils
- ✓ Drainage Density
- ✓ Vegetation
- ✓ Channel Features

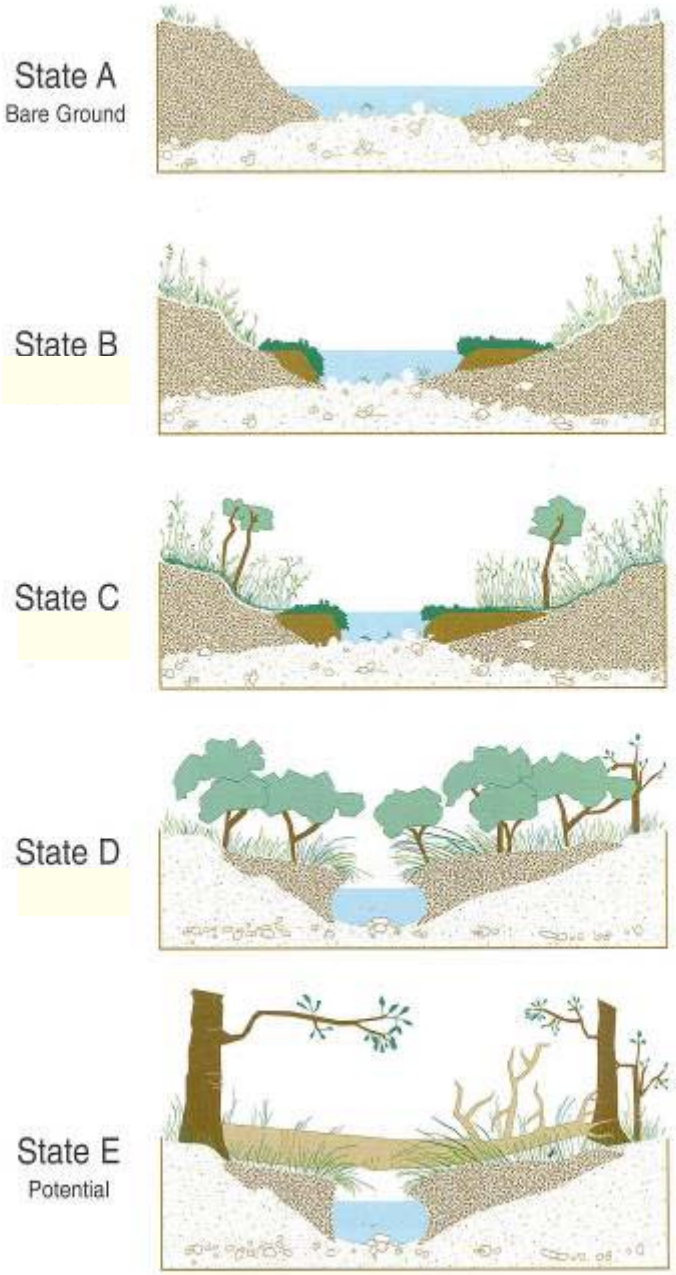
4. Functioning Condition

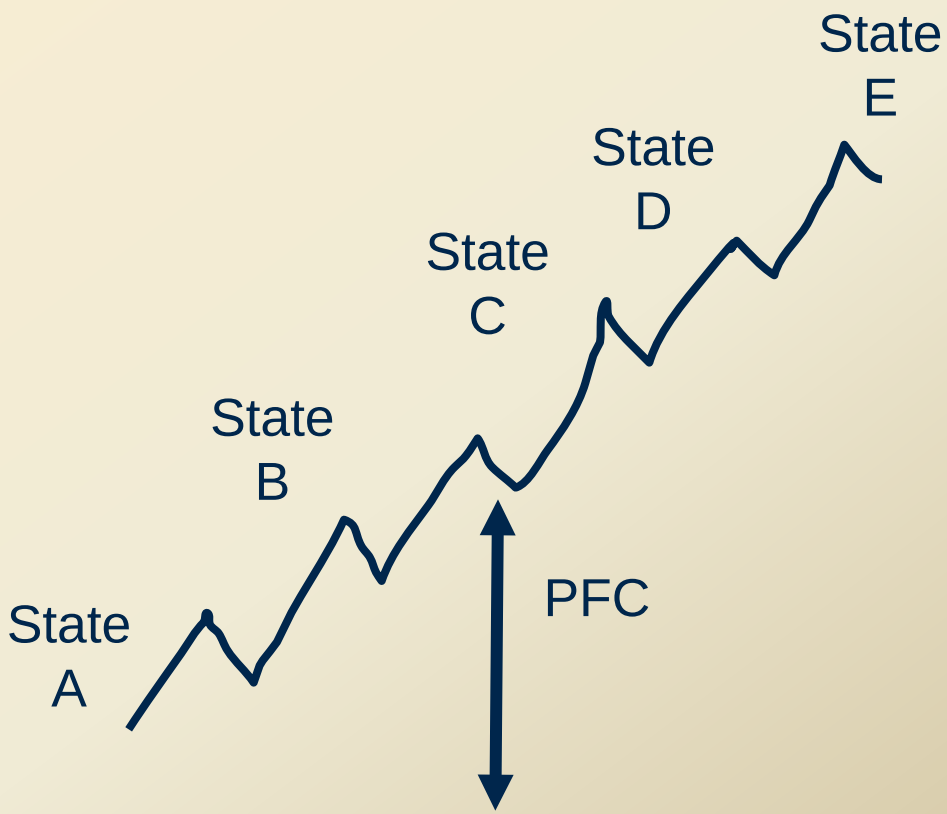
Some riparian-wetland areas can function properly before they achieve their potential.

4. Functioning Condition

Others may require the potential vegetation to function.

4. Functioning Condition





IDT and Community Working Through the PFC Assessment Helps Determine

- ✓ Potential & Capability
- ✓ How well physical processes are working
- ✓ How well withstand energies of high-flow events like 5-, 10-, and 20- year events

Intro to Checklist – General Instructions

- ✓ Potential/capability
- ✓ Interdisciplinary Team
- ✓ Mark one box for each item.
- ✓ No – remarks about severity of the condition
- ✓ Functional rating and checklist summary section completed
- ✓ Establish photo points where possible to document the site