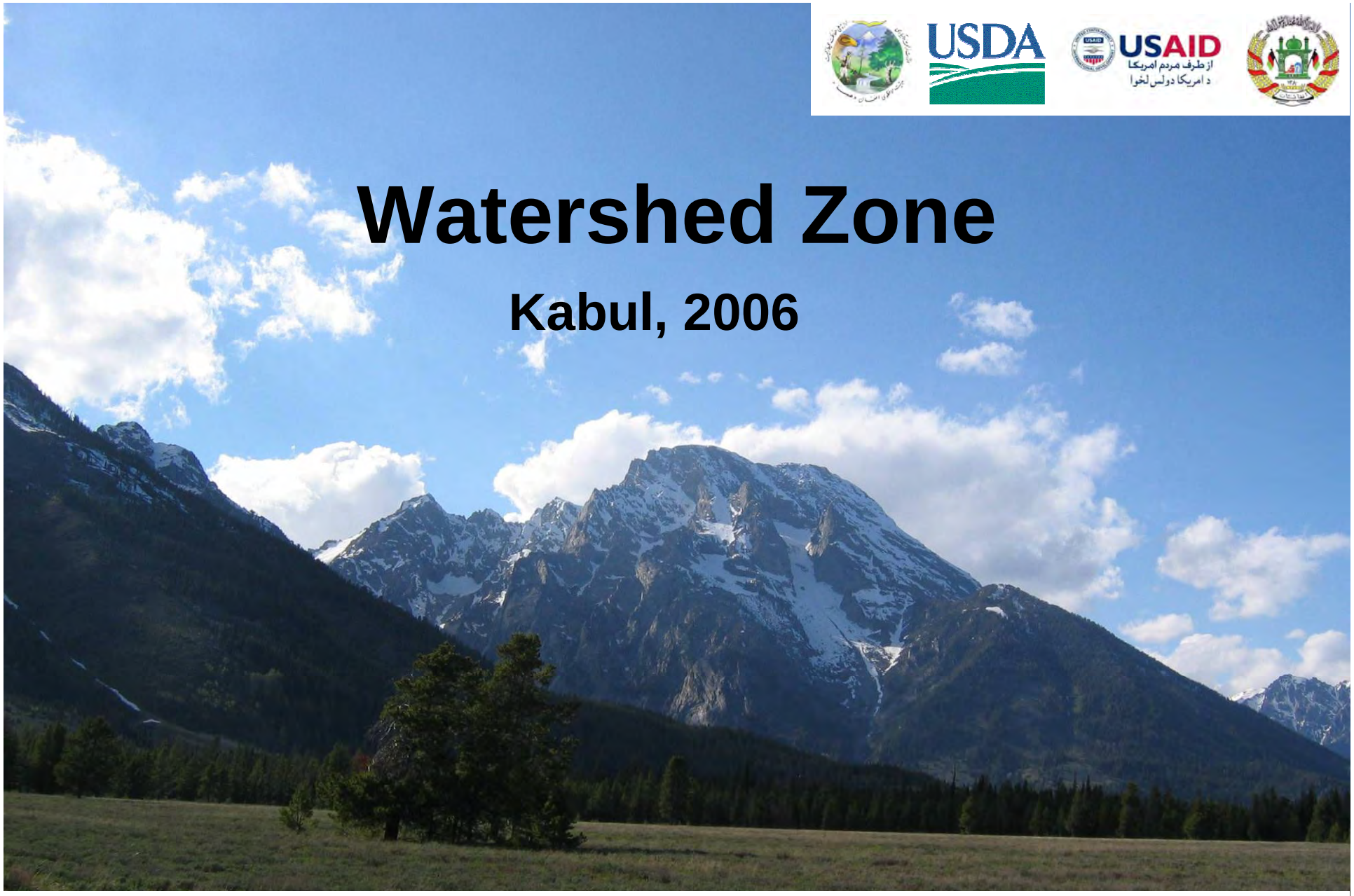


Watershed Zone

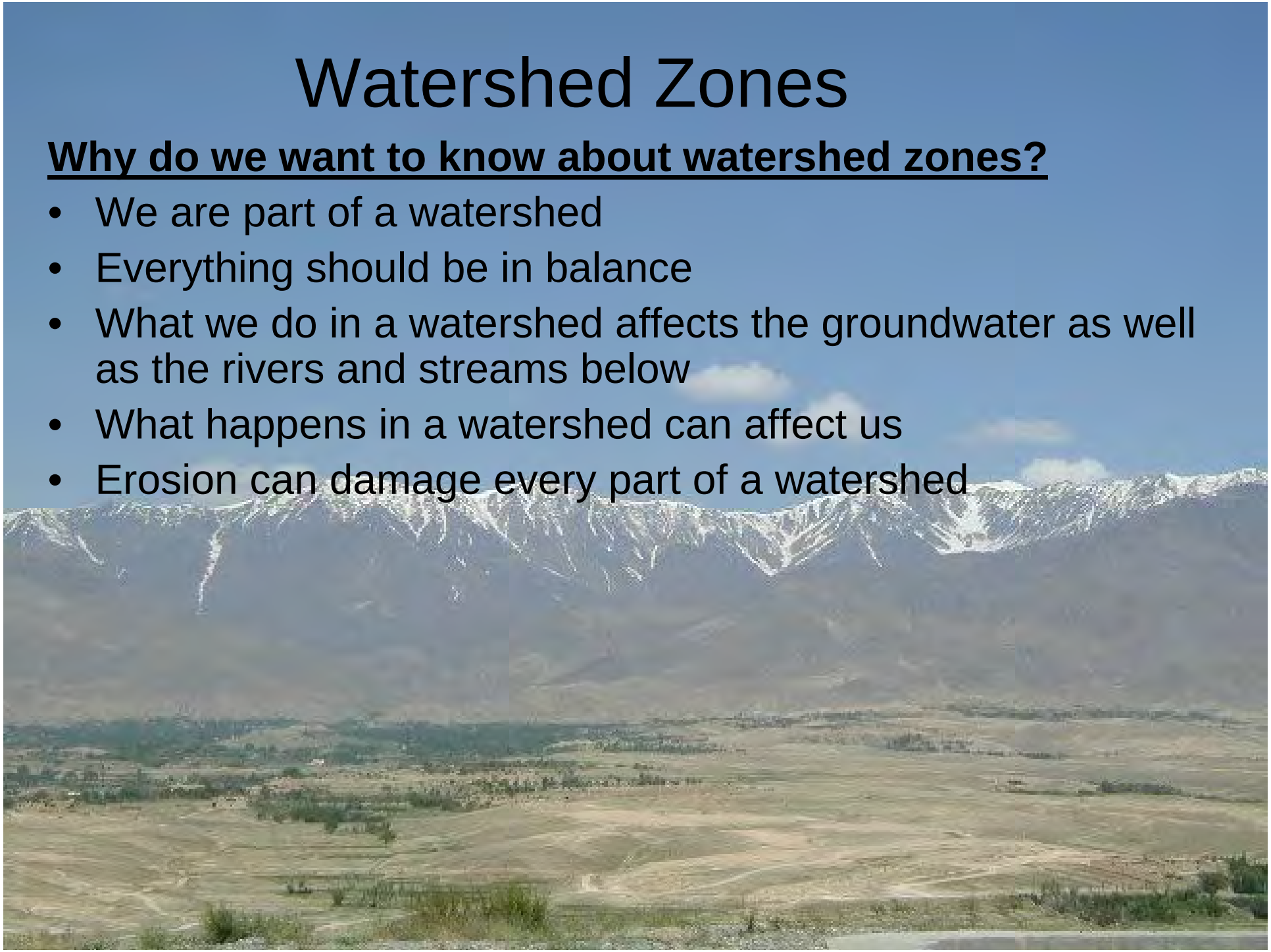
Kabul, 2006

This training was prepared by the U.S. Department of Agriculture (USDA) team of Sarah Librea-USDA Foreign Agricultural Service (Development Resources Specialist), Jon Fripp (Civil Engineer), Chris Hoag (Wetland Plant Ecologist), and Dan Robinett (Rangeland Management Specialist) -USDA Natural Resources Conservation Service. Fripp, Hoag, Robinett were the primary authors of this material. The U.S. AID provided funding support for the USDA team.

Watershed Zones

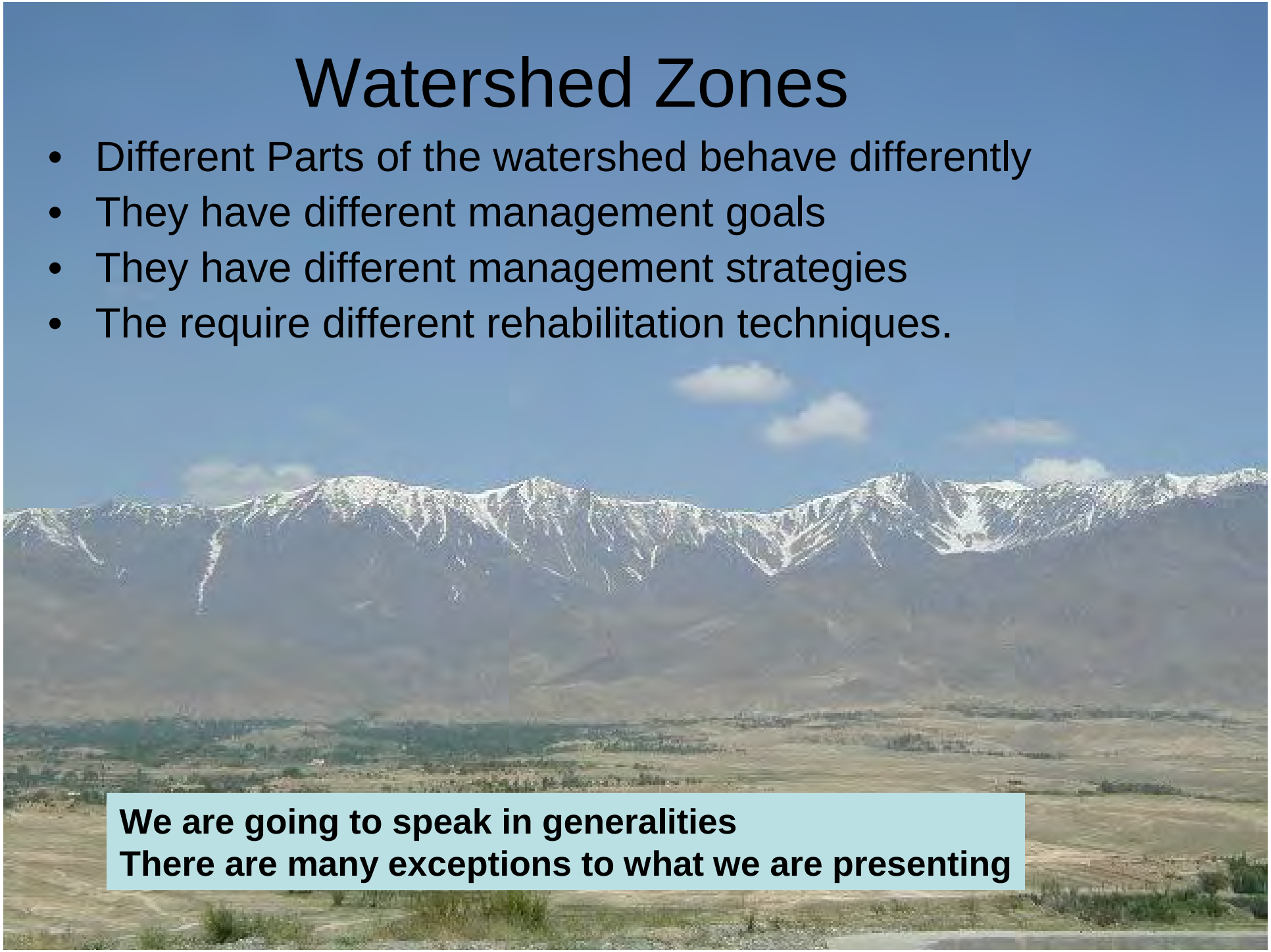
Why do we want to know about watershed zones?

- We are part of a watershed
- Everything should be in balance
- What we do in a watershed affects the groundwater as well as the rivers and streams below
- What happens in a watershed can affect us
- Erosion can damage every part of a watershed



Watershed Zones

- Different Parts of the watershed behave differently
- They have different management goals
- They have different management strategies
- The require different rehabilitation techniques.

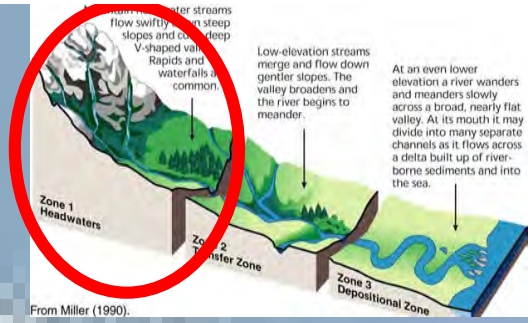


We are going to speak in generalities
There are many exceptions to what we are presenting

Parts of a watershed

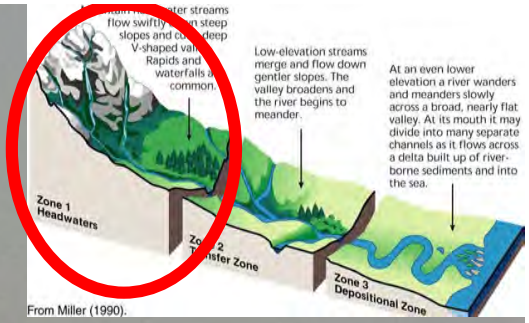
We can think of a watershed as three parts

The *collection zone* or headwaters is at the top of the watershed. It has the steepest slope and the thinnest layer of good soil.



From Miller (1990).

On a smaller scale, the collection zone may look like this.

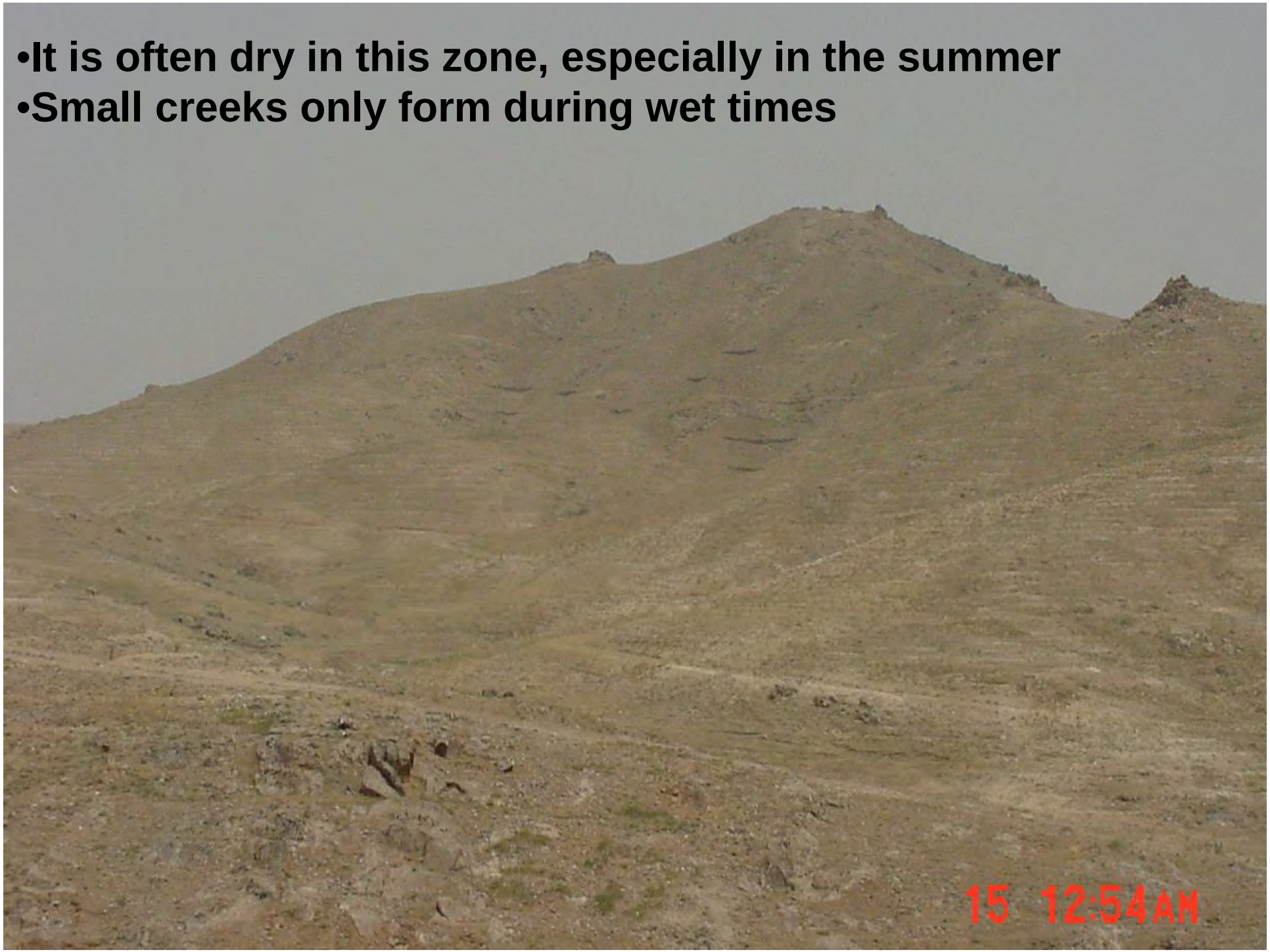


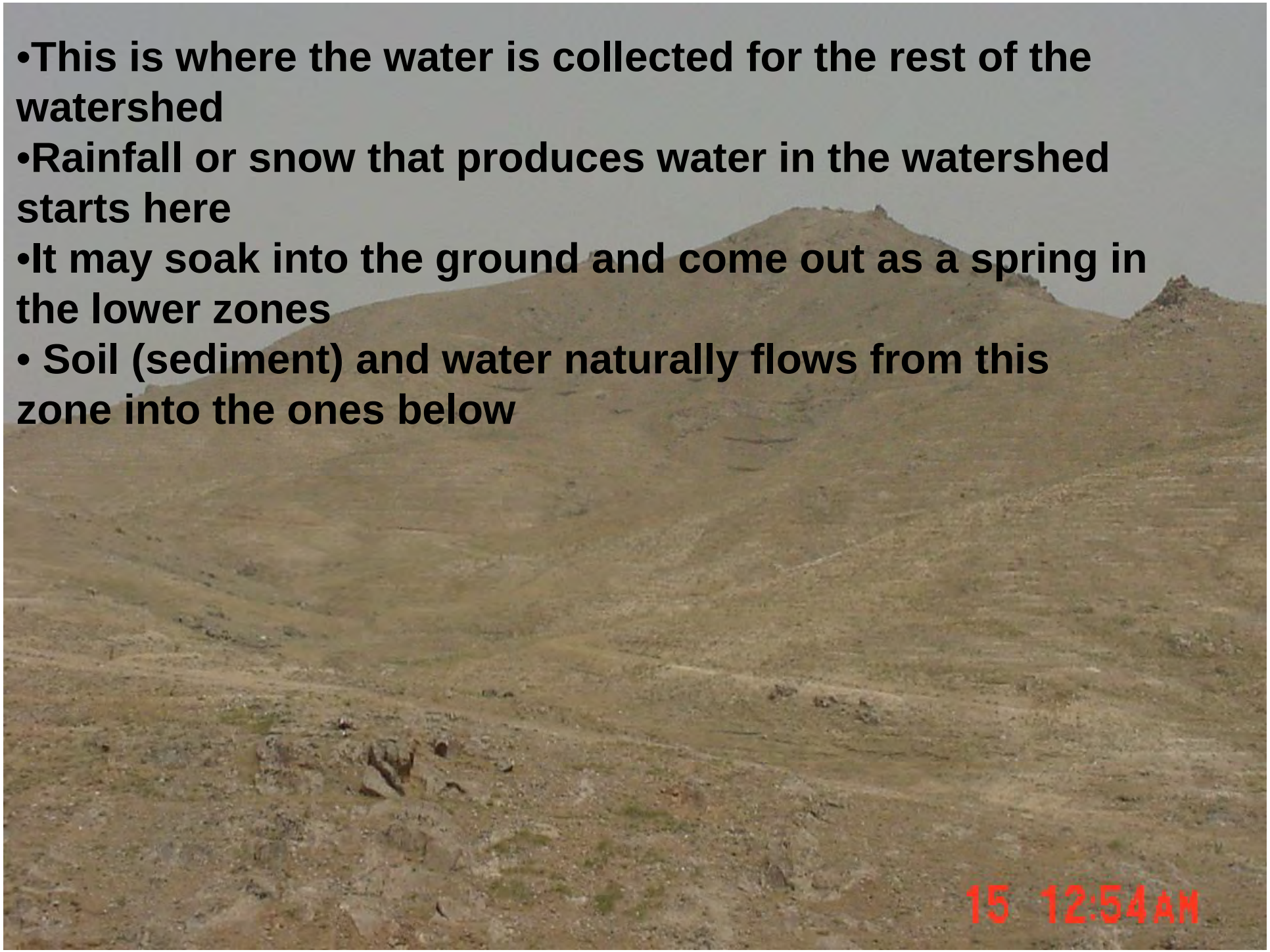
From Miller (1990).

Remember:

- **A watershed can be very large, or it can be small.**
- **A very large watershed is composed of many smaller watersheds.**

15 12:54 AM


•It is often dry in this zone, especially in the summer
•Small creeks only form during wet times
15 12:54 AM



- This is where the water is collected for the rest of the watershed
- Rainfall or snow that produces water in the watershed starts here
- It may soak into the ground and come out as a spring in the lower zones
- Soil (sediment) and water naturally flows from this zone into the ones below

- If too much good soil washes off, grass and vegetation will not survive.
- Less water will soak into the ground and more will run off.
- This will reduce springs in the lower zones.
- This will also result in even more erosion.
- Too much eroded soil can damage the zones below.

Strategy or Goal for Collection Zone:

- Keep the soil where it is
- Encourage infiltration

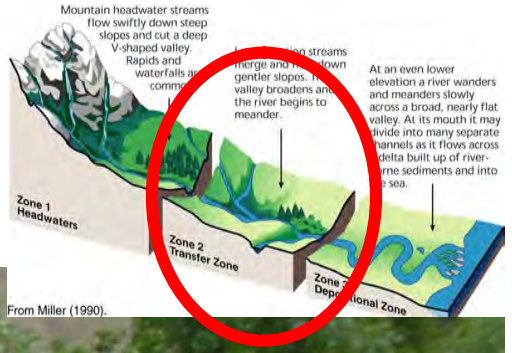
Management Practices

- Limit over grazing and agriculture use
- Preserve vegetation and forests

<u>Rehabilitation Treatments for the collection zone:</u>

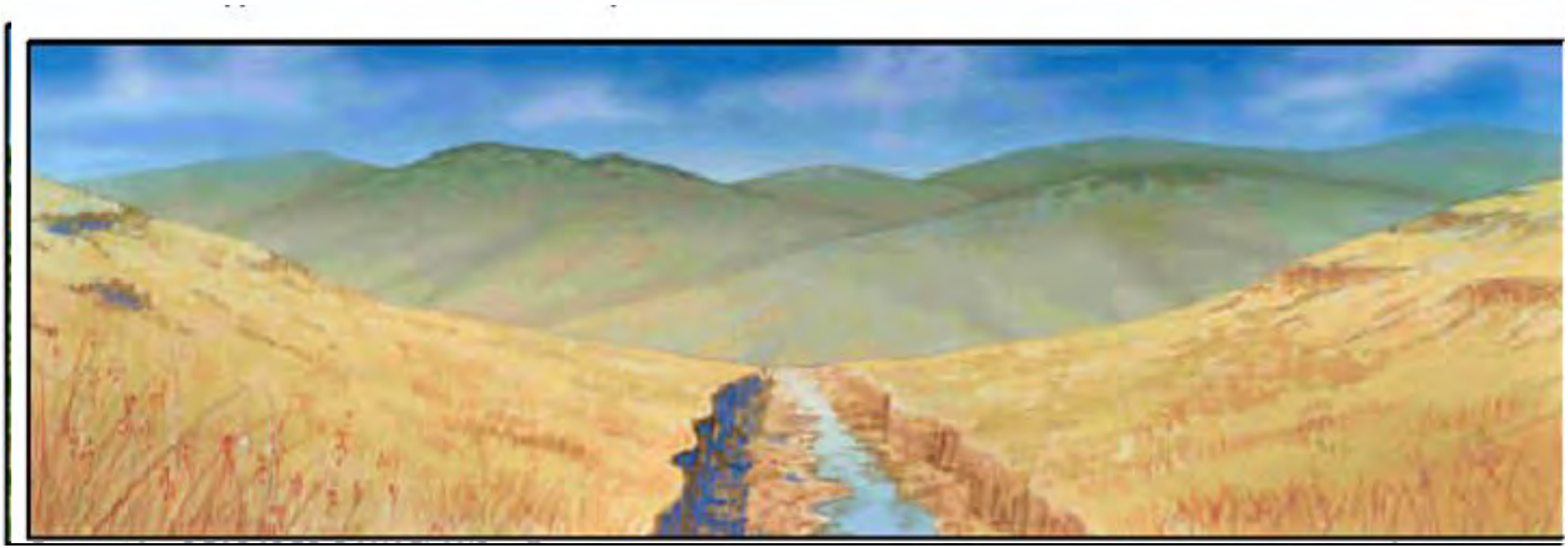
- Revegetation
- Treatments to slow the water
- Use treatments to stop and repair badly eroded gullies

The *transfer zone* is in the middle of the watershed. We often see out the wet streams and rivers throughout the year in this area



Water and eroded sediment moves through this area

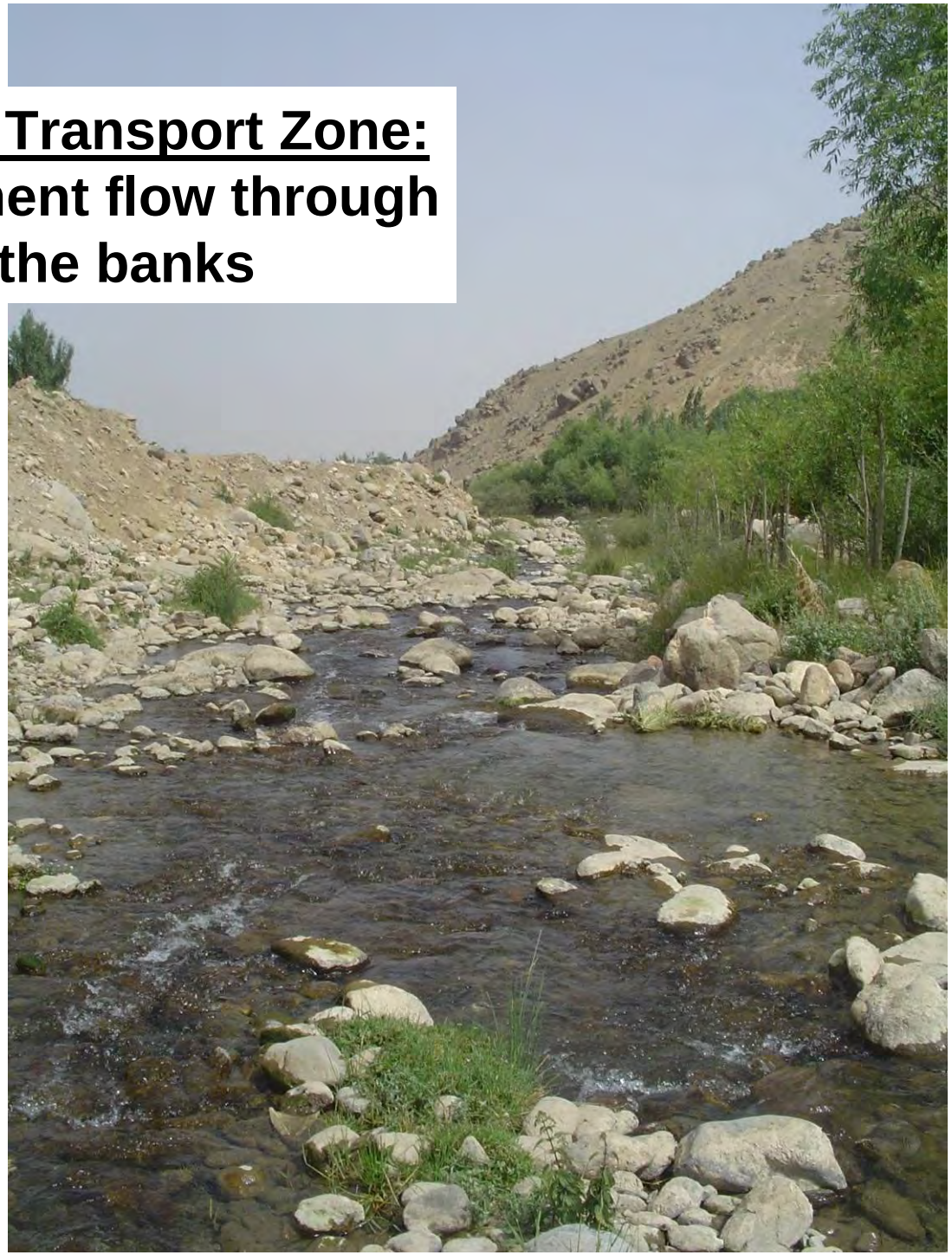
With increases of flow
And/or
Without vegetated and protected banks, erosion may occur.



- **The channel will get wider and deeper.**
- **Structures on the bank can be affected.**
- **The groundwater may drop and the surrounding land may become drier.**
- **Grazing and agriculture can be affected.**

Strategy or Goal For the Transport Zone:

- **Let the water and sediment flow through**
- **Protect and strengthen the banks**



Management Practices:

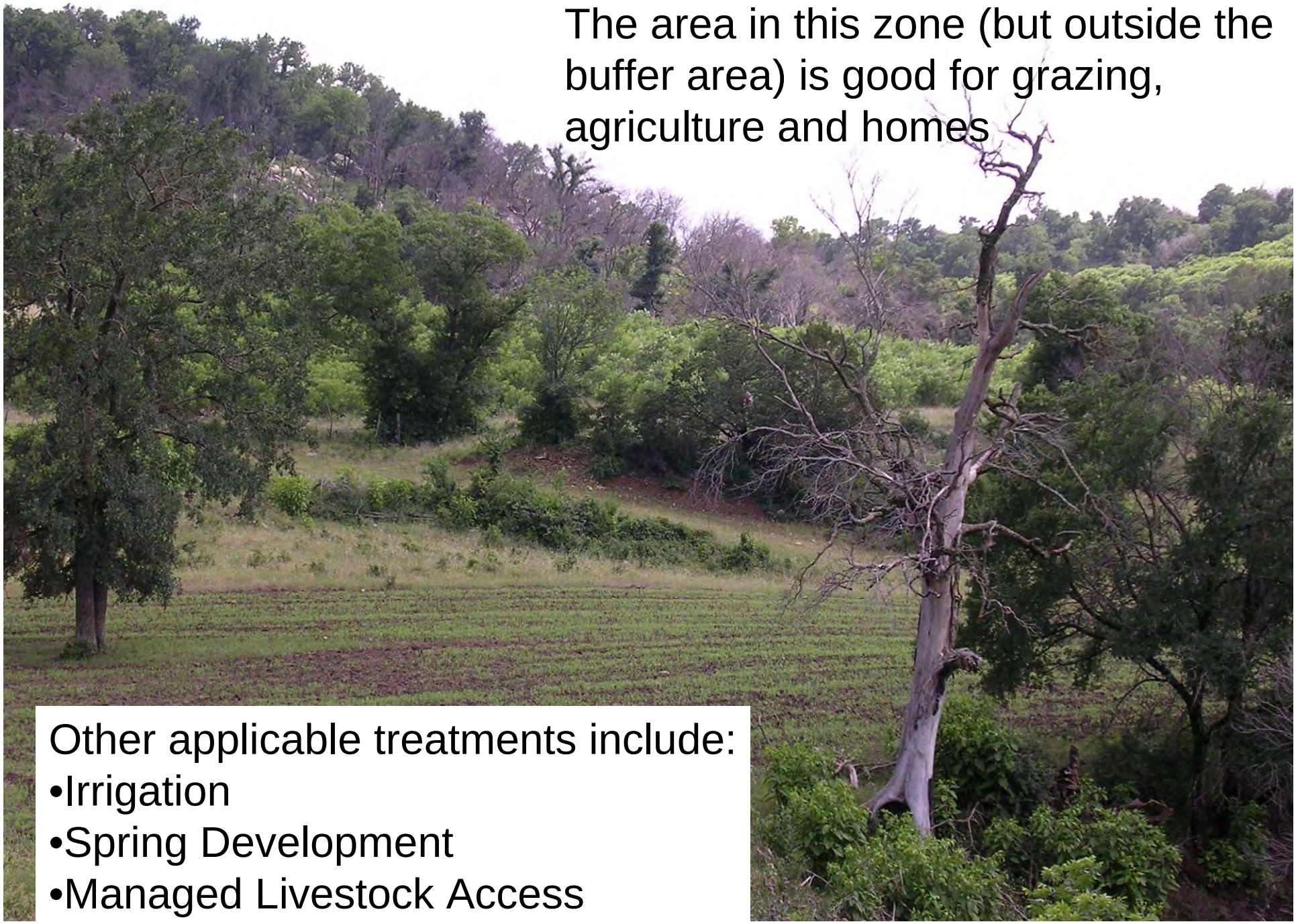
- Keep the sediment and water in balance
- Keep the banks strong

How do we do that?

- Manage the collection zones
- Preserve Riparian Vegetation

Rehabilitation Treatments:

- Riparian Buffers
- Stone protection
- Deflectors
- Soil Bioengineering

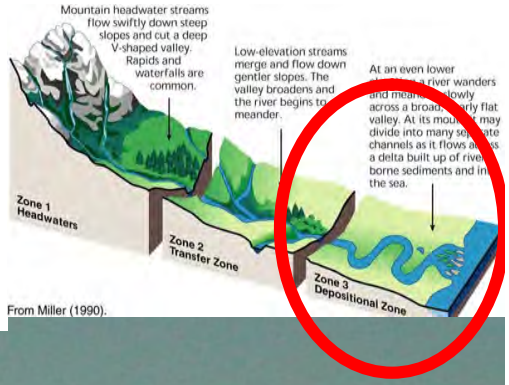


The area in this zone (but outside the buffer area) is good for grazing, agriculture and homes

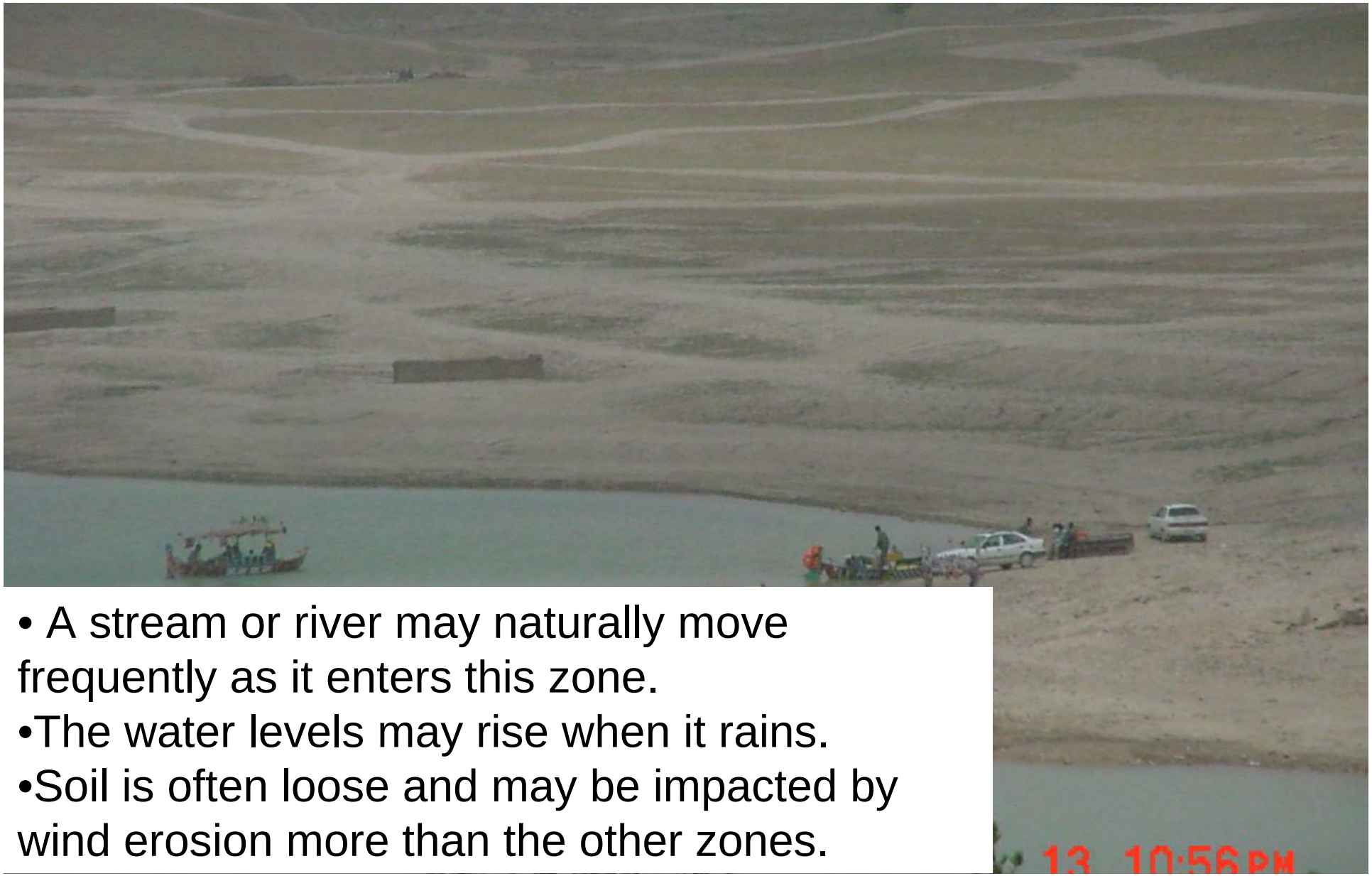
Other applicable treatments include:

- Irrigation
- Spring Development
- Managed Livestock Access

The *deposition zone* is at the end of the end of the watershed. Water and sediment stops here. It has the flattest slope and the thickest layer of good soil.



We often see lakes or wetlands in this zone. This depositional area can be natural or made by man.



- A stream or river may naturally move frequently as it enters this zone.
- The water levels may rise when it rains.
- Soil is often loose and may be impacted by wind erosion more than the other zones.

Strategy or Goal for Deposition Zone:

- Keep the soil from being blown away by the wind
- Keep too much sediment from being deposited
- Manage and use (agriculture, grazing, rocks, sand, bricks, etc)

Management Practices

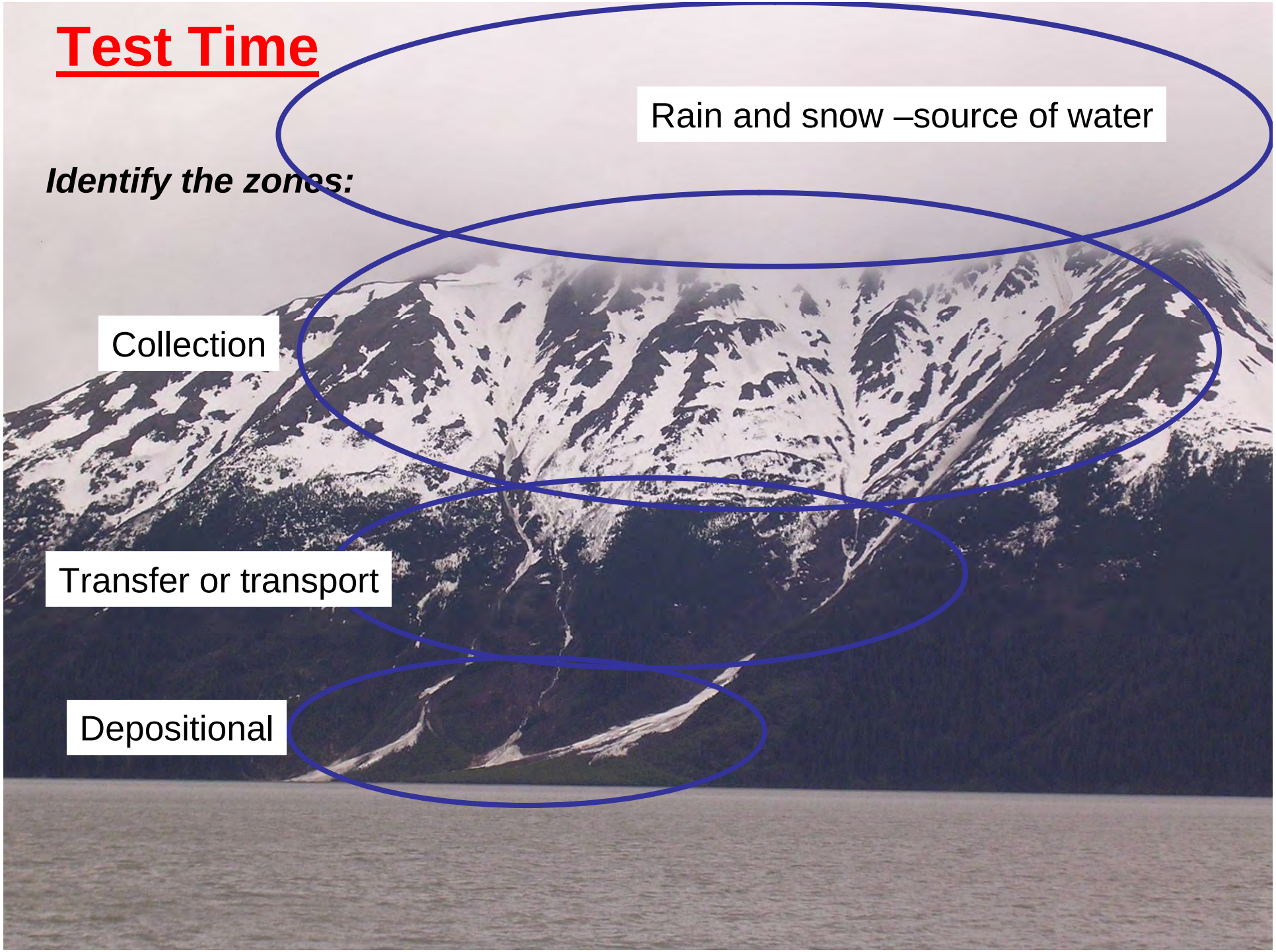
- Effective Use
- Preserve Vegetation

Rehabilitation Treatments:

Wind/Cold Breaks

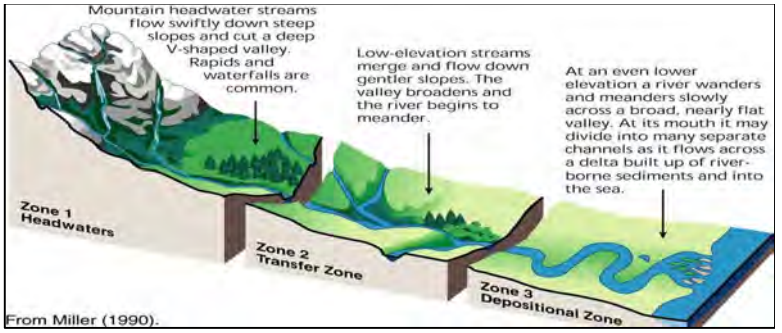
Wetland Restoration

Test Time


Rain and snow –source of water
Identify the zones:
Collection
Transfer or transport
Depositional

Test Time

Match the strategy or goal to the zone



- **Let the water and sediment flow through**
- **Protect and strengthen the banks**

Collection Zone

- **Keep the soil from being blown away by the wind**
- **Keep too much sediment from being deposited**
- **Manage and use**

Transport Zone

- **Keep the soil where it is and encourage infiltration**

Deposition Zone