Loon Lake:
Soil and Water/Assessment Report

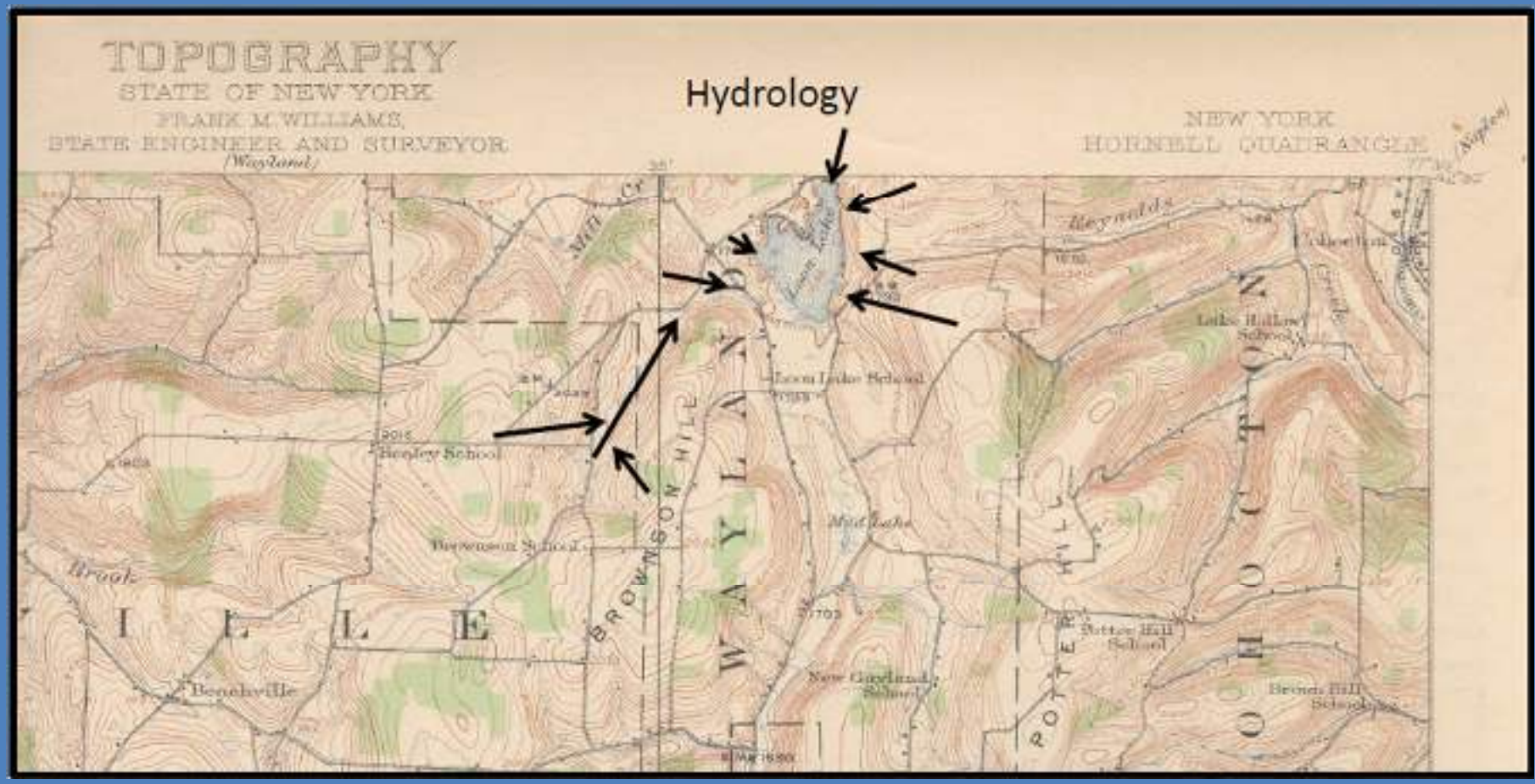
December 2014

Quick History of the Lake (In Geologic time)

- About 10,000 years ago (at the end of the Ice Age) glaciers retreated carving out sections of land that formed the region we now call “The Finger Lakes.”

- Although Loon Lake is not a “Finger Lake” in the recreational/promotional sense of the word. From a geologic and geographic sense it has the same make up as many of the larger “Finger Lakes”.

We know all of this…but what else makes this lake different?

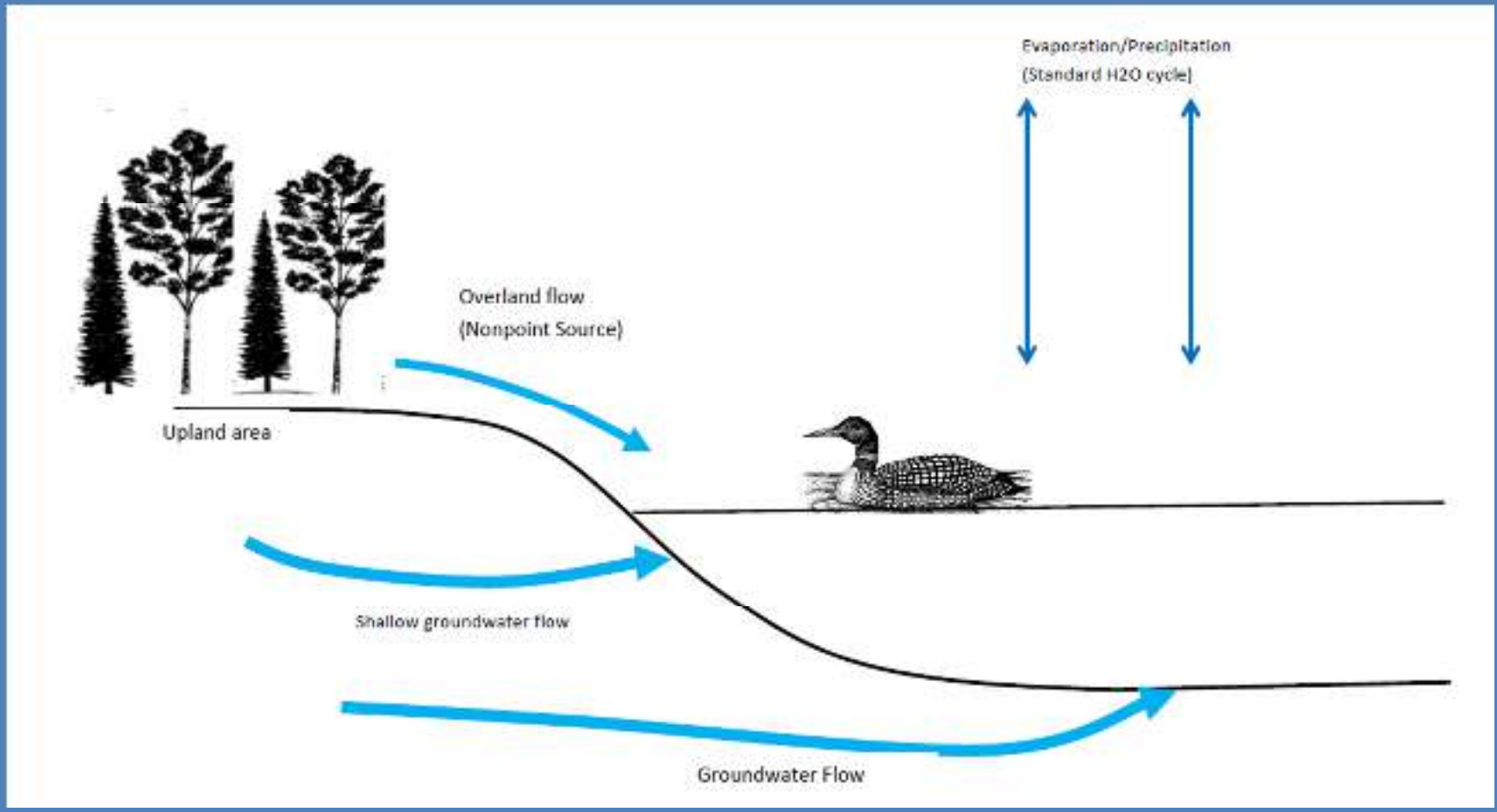


1918 USGS Quadrangle showing the topography

What makes us Different

I have not examined other lakes, but one thing that makes Loon Lake unique is the water supply. (And it is this supply that is of concern to us)

What Make us Different



The Greatest area of concern is

OVERLAND FLOW

OVERVIEW OF OVERLAND FLOW

This is a field example of Overland Flow, water flowing across the fields to the lowest point.

Is this a problem?

- As seen in the previous title, overland flow is typically infiltrated by large areas where plants reduce runoff. The plants can uptake the majority of Phosphorous and Nitrogen. In addition, soil acts as a natural filter to remove the nutrient deposits and allow shallow groundwater to conduct the clean water to its destination (in this case the lake)

OVERVIEW OF OVERLAND FLOW

Intermittent and ephemeral streams, however, are largely made up of concentrations of overland flow

Why is this such a big deal?

- Concentrated flows, such as the previous slide, can have concentrated nutrients with no filtration and direct discharge to the surface water of the lake.

Additional Problems with this type of flow

Livestock contribute significantly to nutrient loading in the neighboring waterways. This can be problematic to producers who use draws as a primary watering source.

What can be done in this situation?

There are several alternatives for protecting the lake AND helping local producers. While I am NOT a state agent, and not 100% familiar with how these programs work, I work with similar ones in NC. Here are some of New York's counterparts

Programs Provided In NY by LOCAL Agencies

- Agricultural Nonpoint Source Abatement and Control Grant Program (Ag NPS) – Operated by the local Soil and Water Conservation District. This program's goal is to "assist farmers in preventing water pollution from agricultural activities by providing technical and cost-share assistance."
- They can pay up to 87.5% of the cost of proper BMP installations.
- Similar to NCACSP that I write in NC.

Programs Provided in NY by FEDERAL Agencies

- Environmental Quality Incentive Program (EQUIP) – This program offered by the USDA through NRCS is a cost share program that provides technical and cost share assistance by paying for BMPs that help to improve water quality issues on Agricultural lands. Their payback is 75% of the cost to the land owner.

- www.nrcs.usda.gov/programs/eqip/

What BMPs would work?

- In the case of cattle in the creek, BMPs may include

1.) a well and fencing

2.) frost free watering system,

3.) cattle crossing,

4.) heavy use area for livestock.

Examples of BMPs

Non-Livestock Concerns

Because of the hydrology, would erosion from fields and neighboring properties play a large role in the fate and transport of nutrients and other compounded toxicants?

WORST CASE SCENARIO – TOTAL IMPAIRMENT FROM AN URBAN STREAM – (Construction Site)

Non-Livestock Concerns

- The bulk of the soil surrounding Loon Lake (By bulk I mean a little over 83%) is Howard Series Soil.

What in the world is a Howard Series Soil? And Who Cares?

To be precise, a Howard Series Soil is:

Mesic Glossic Hapludalfs

SAY WHAT!?

- The main thing to look at in Howard's scientific name is the last part Hapludalf. Let me break this down a bit:

- Hapludalf – Alfisol with a udic soil moisture regime (Alfisols are commonly cultivated, but are traditionally found under forest canopy's. Udic moisture regime means that it rarely goes more than 90 days without rain or moisture occurring.) Haploidization has occurred. (This is the excessive movement or mixing of soil over time, also known as pedoturbation) The movement is likely from animals, humans, (AKA Faunal Pedoturbation) or via plants (Floral Pedoturbation).

So what does this mean?

In general, this means that Howard soil from natural rainfall does not have a high erosive base or is not generally considered Highly Erodible Land (HEL). It has great infiltration as is common with glacial till and is pretty stable.

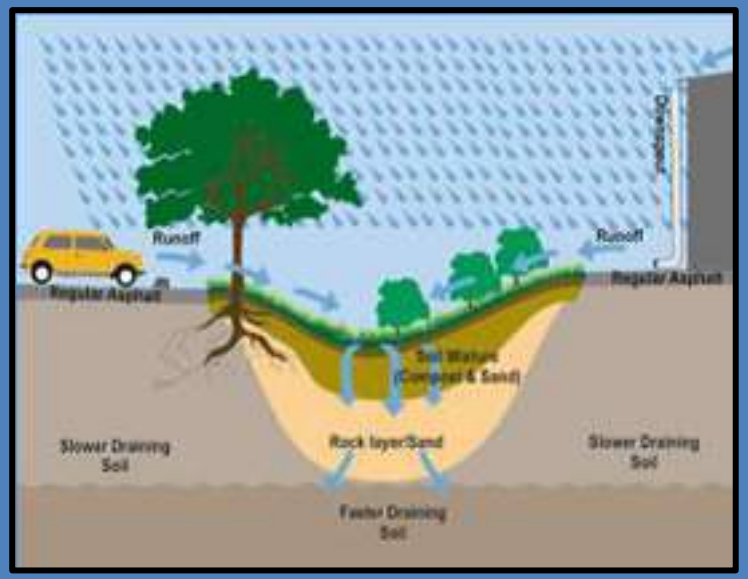
What is the best method to prevent erosion on Howard…or ANY soil?

VEGITATION!!!!!

(The best form of grade stabilization and the least labor intensive is this type of passive BMP.)

Are their any alternatives?

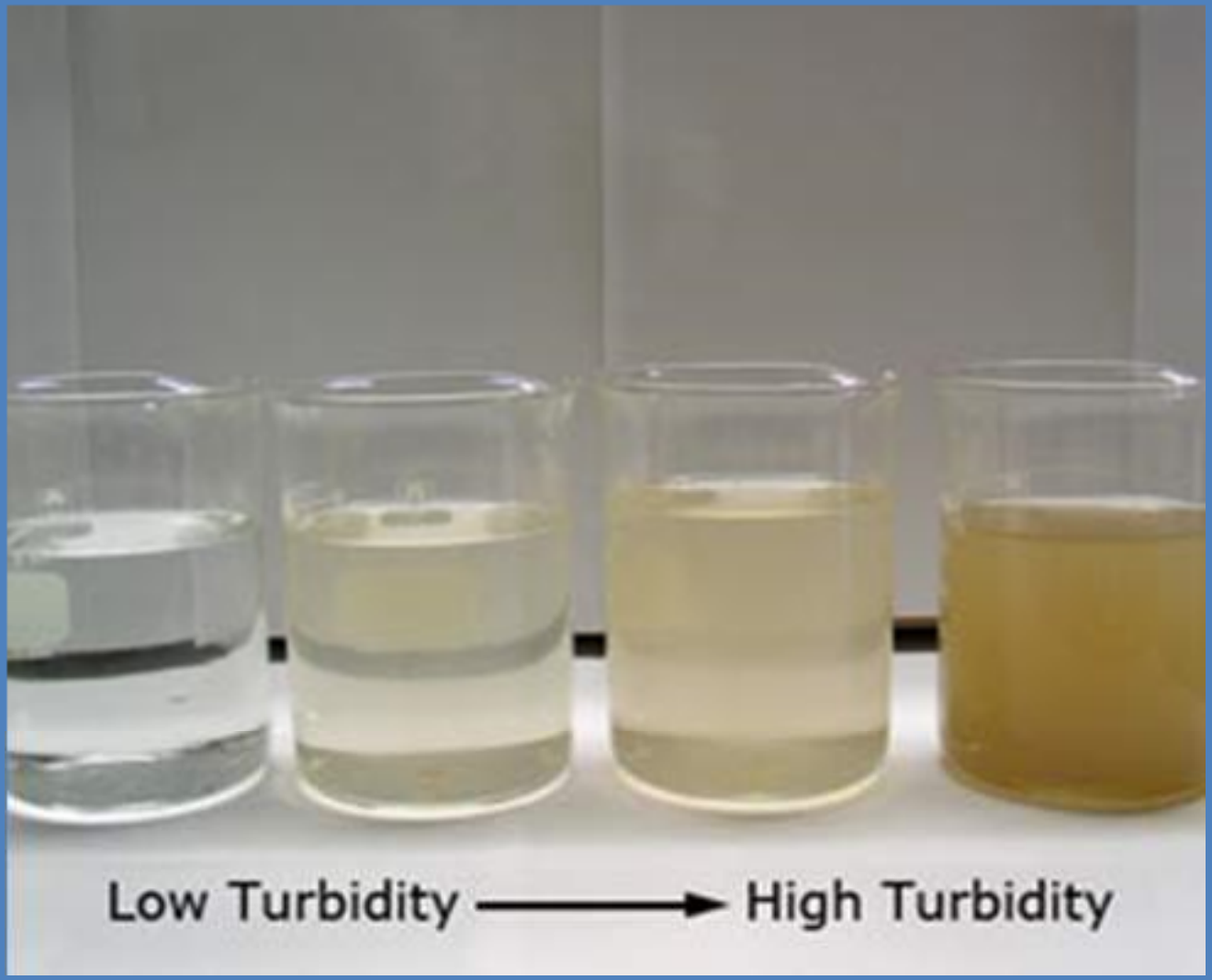
- Filter strips
- Detention swales (Biofiltration swales)
- RSC



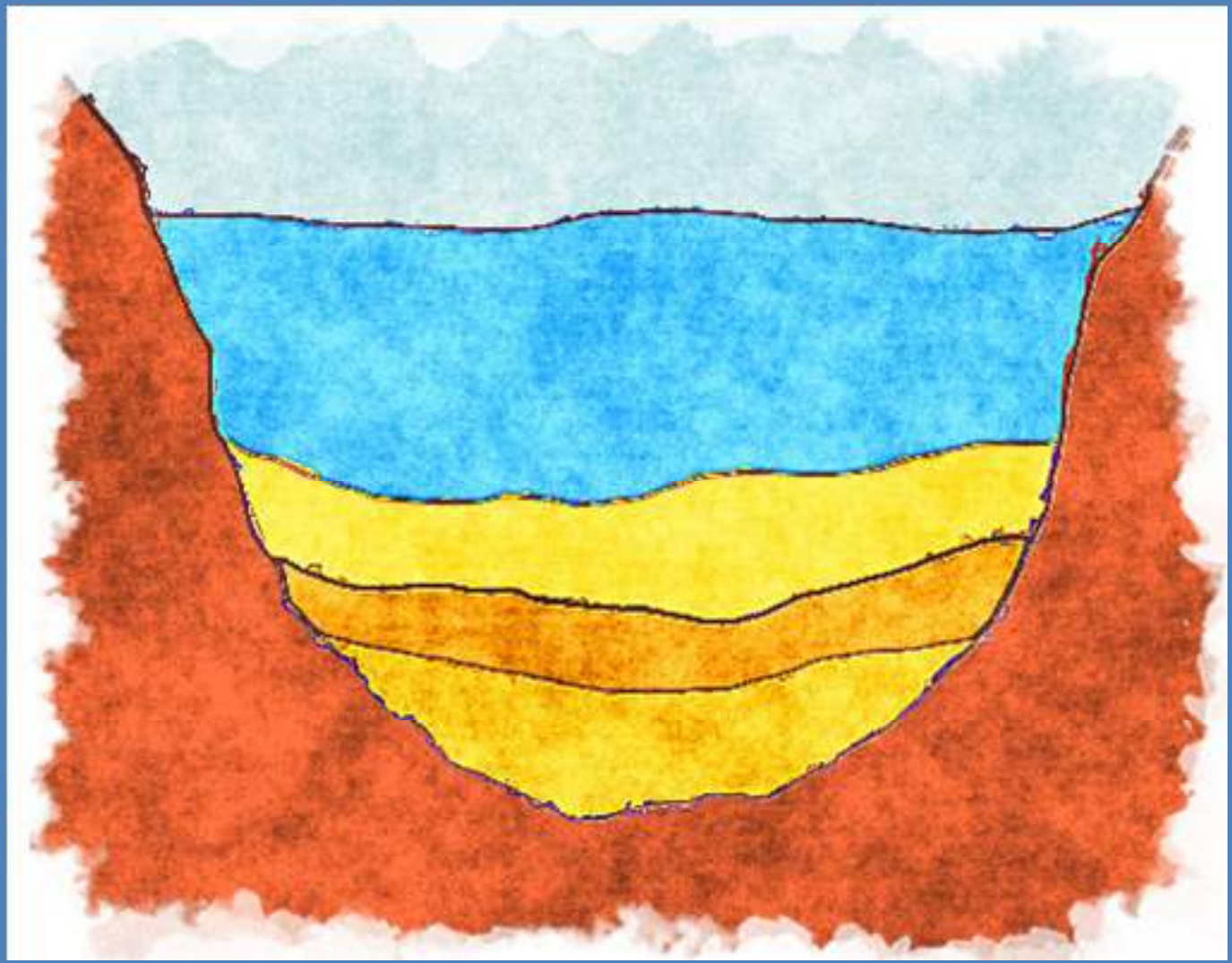
The Impact of Runoff

- Is the runoff from the surrounding soils sedimentation or turbidity and what is the difference?

Turbidity



Sedimentation



Questions?