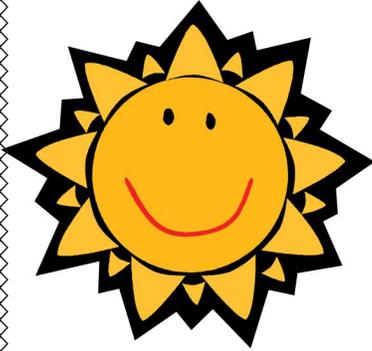


August 2014

Kickapoo Environmental Office

# The Green Clan



Working Together for a Better Community!  
[ktik-nsn.gov/kickapooenvironmentalprotection.htm](http://ktik-nsn.gov/kickapooenvironmentalprotection.htm)  
Phone: 785-486-2601

## New Sedimentation Basins Completed Along the Delaware

Jim Reitz, Kickapoo Environmental Office



Figure 1. Gully Erosion

Two new erosion preventative practices, called Sedimentation Basins, have been recently completed along the Delaware River. One basin can be seen just south of highway K20 from the west end of the Delaware River Bridge. The other basin is located farther south on the east side but cannot be seen from the highway.

The purpose of sedimentation basins are to reduce the gully erosion that sometimes occurs along rivers and streams. As shown in the picture above, they also save valuable farm ground which can become unfarmable.

To prevent this type of erosion, a tile is installed beneath the surface of the field to convey surface water to a controlled outlet near the stream.



Figure 2. Laying Tile Line

To prevent this type of erosion, a tile is installed beneath the surface of the field to convey surface water to a controlled outlet near the stream.

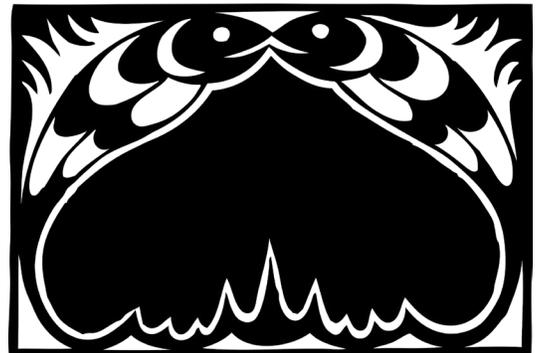




Figure 3. Oragne Tile Inlet

At the intake end of the underground tile is an orange riser into which water flows out of the sediment basin and into the river.

Once the underground tile lines are installed, the basin can be constructed by building an earthen embankment to form a water retention basin and sediment trap.

Once the underground tile lines are installed, the basin can be constructed by building an earthen embankment to form a water retention basin and sediment trap.



Figure 4. Building the Basin

During a rainfall event, field runoff occurs and the basin will start to fill. The orange riser becomes the drain that allows the water to leave the basin at a controlled rate. The pooling of the water in the basin allows the sediment and other pollutants to settle out in the basin so that it is not carried into the river.

At the outlet end of the tile is a splash pad that receives the water leaving the basin. In this case, 6" by 12" limestone rip/rap.



Figure 5. Limestone Splash Pad

In using these best management practices the Kickapoo Tribe can better maintain the safeguards that protect of its most precious resources.

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Figure 6. Finished Sedimentation Basin

# Water and Climate Change

Moud Safadi, Environmental Specialist

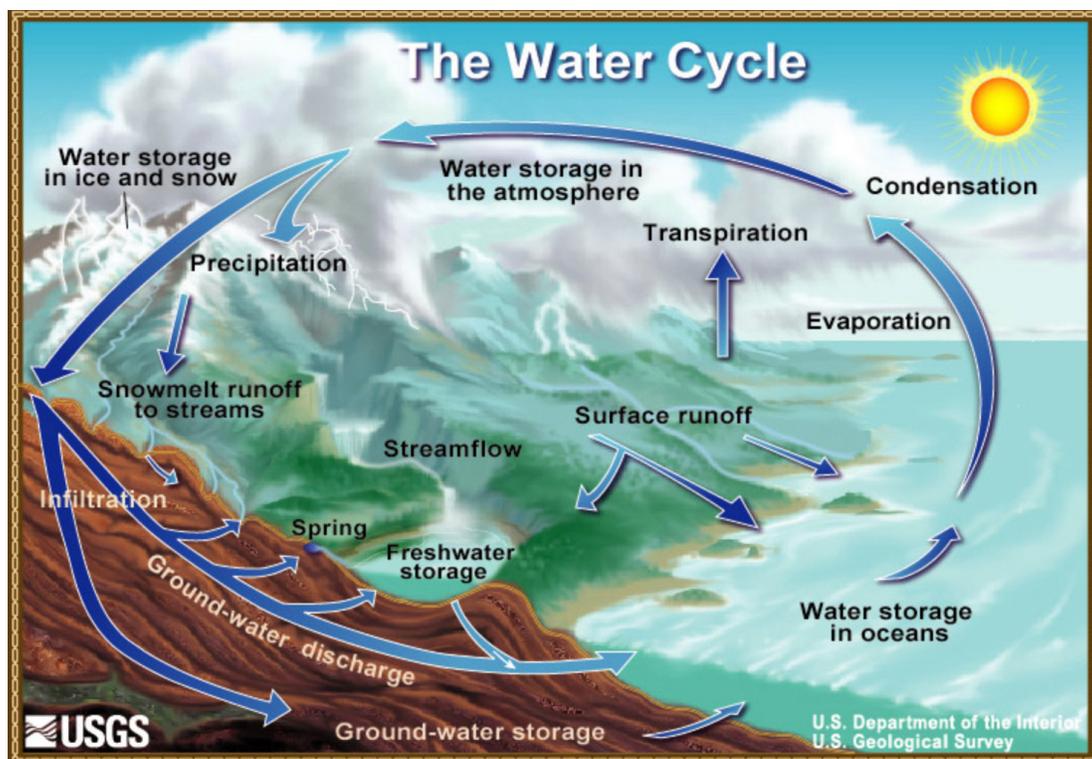
The Earth's water resource consists of salt and fresh water. The oceans hold approximately 97% of the Earth's water supply and the remaining 3% is fresh water, found in ice and glaciers or in lakes and rivers. According to the Climate Institute, approximately 70% of fresh water available on the planet is frozen in the icecaps of Greenland and Antarctica, leaving the remaining 30% (.7% total water resources worldwide) available for consumption. With that said, from the remaining 0.7%, approximately 87% is used for agricultural purposes which illustrates the drastic problem of water scarcity facing the world (IPCC, 2007).

Approximately 1.2 billion people, or almost one-fifth of the world's population, live in areas of water scarcity. Another 1.6 billion people live in a developing country that lacks infrastructure to take water from aquifers and rivers (Comprehensive

Water scarcity is an issue that will only get worse with time due to various reasons. The distribution of precipitation in space and time is uneven, which leads to a vast sequential unpredictability in water resources worldwide (Oki, 2006). The rate of evaporation differs depending on relative humidity and temperature, which affects the amount of water accessible to replenish groundwater supplies. Also, the increase in population in the last century has tripled which in turn increases the amount of water consumption. Finally, as the climate changes, the resources of freshwater will shrink.

## Hydrological Cycle

As climate change warms the atmosphere and alters the hydrological cycle, mankind will continue to witness changes to the timing, amount, intensity and form of precipitation, as well as the quality of aquatic and marine environments (EPA, 2014).



# Water and Climate Change

Moud Safadi, Environmental Specialist

The hydrological cycle initiates with the evaporation from the water of land or the surface of the ocean. As air is lifted (evaporation), it cools and water vapor condenses to form clouds. Moisture is transferred around the world until it returns to the surface as precipitation (rain, snow, sleet or hail that falls to the ground). As water reaches the ground, some of the water may penetrate the surface and become groundwater, or the water may evaporate back into the atmosphere. The groundwater, or the water that's held underground in pores or in the soil, either seeps its way into the rivers, oceans, and streams, or is released back into the atmosphere as transpiration (evaporation of water from plant leaves).

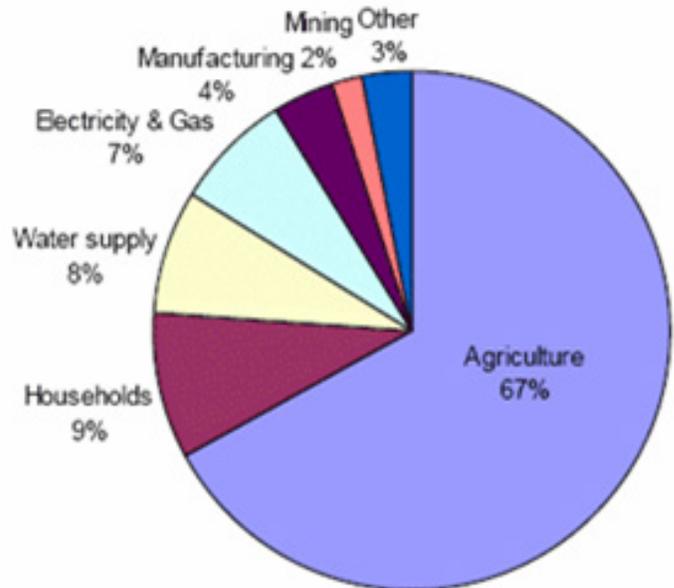
## Water and Climate Change in Kansas

Water resources are vital and equally important to the ecosystems and society. Here on the Kickapoo reservation, we depend on a steady, sanitary supply of drinking water to sustain our health, for agriculture, recreation, and for a multitude of other uses.

With global climate change being an issue that continues to rise, precipitation levels could drop up to 20% in Kansas, increasing the probability of drought (Natural Resources Defense Council, 2010). As this reservation is particularly susceptible to a lack of water even a small decrease in rainfall could be devastating.

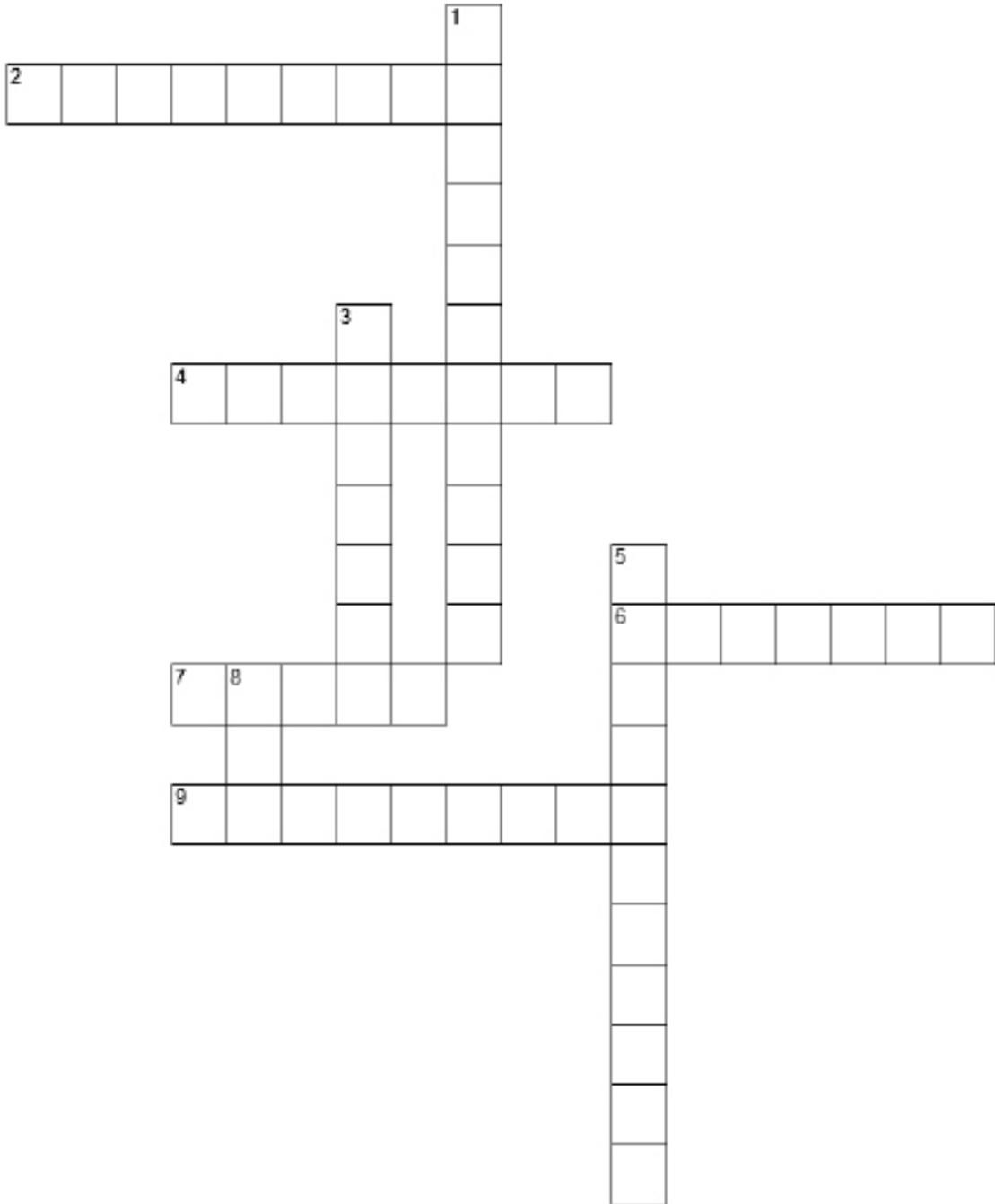
It is currently reported that due to the effects of climate change, approximately 86% of Kansas's counties now face elevated risks of water shortages

in the foreseeable future. It is also predicted that north-east Kansas as a whole will likely see limitations on water availability as demand begins to exceed supply by 2050 (Climate Change, Water, and Risk, 2010). in the foreseeable future. It is also predicted that north-east Kansas as a whole will likely see limitations on water availability as demand begins to exceed supply by 2050 (Climate Change, Water, and Risk, 2010). By beginning to take action now, we can reduce the risk factors to the Kickapoo Nation.



- Oki, Taikan and Shinjiro Kanae. (2006). Global Hydrological Cycles and World Water Resources. *Science* (313): 5790. 1068-1072.
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# KEO Crossword Puzzle



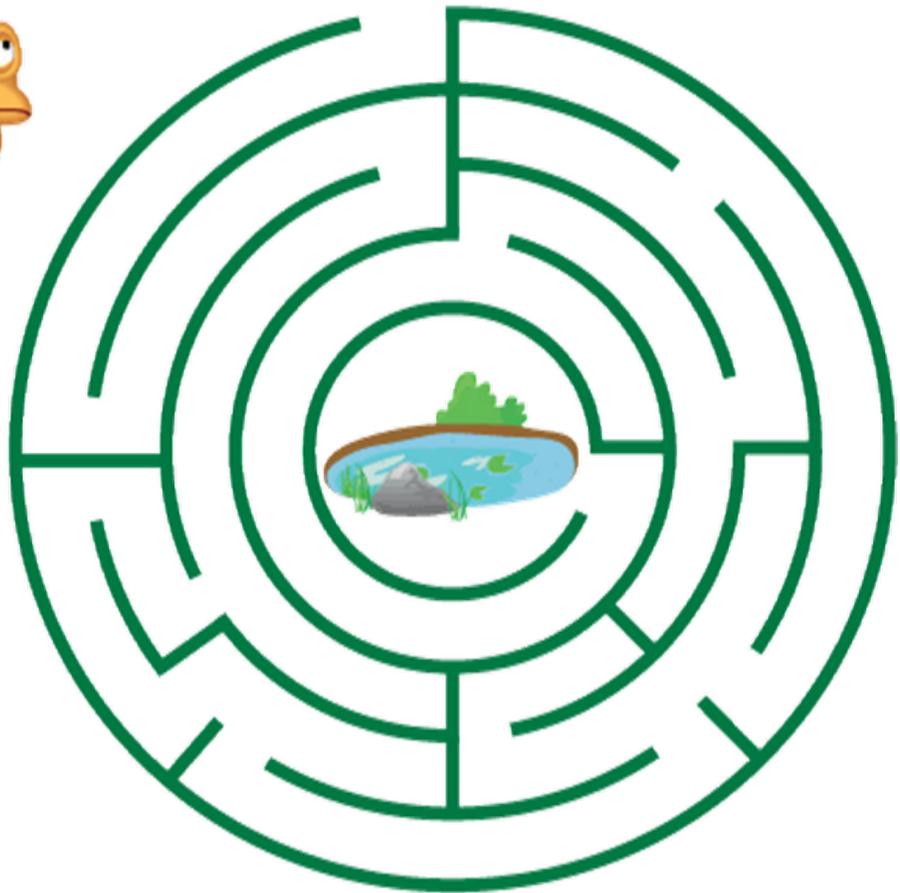
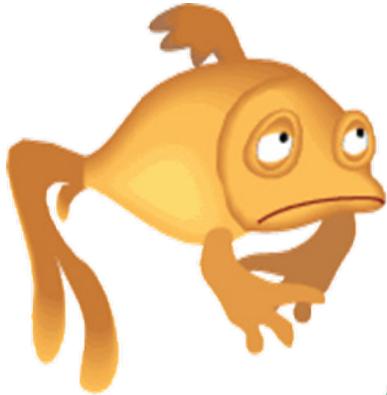
**Across:**

**Down:**

- 2. Introduction of harmful substances or products into the environment.
- 4. Saturated land consisting of swamps or marshes.
- 6. Convert waste into reusable material.
- 7. A colorless, tasteless, odorless liquid that forms the lakes, rivers, and rain.
- 9. A news letter the Kickapoo Environmental Office sends out every month.

- 1. The natural world.
- 3. Weather conditions in a particular area over a long period of time.
- 5. Disused or abandoned land, often contaminated to some degree.
- 8. Invisible gaseous substance surrounding the earth.

The fish is sad because it is away from the water.  
Help the fish be happy again by getting it back to  
the pond.



**Answers to the crossword puzzle**

**Across:**

- 2. Pollution
- 4. Wetlands
- 6. Recycle
- 7. Water
- 9. Greenclan

**Down:**

- 1. Environment
- 3. Climate
- 5. Brownfields
- 8. Air