



KAW NATION ENVIRONMENTAL DEPARTMENT

# environment

Winter 2012-2013



**WHAT WE HAVE DONE,  
ARE DOING AND WILL DO**

- Goals and priorities
- Projects and grants
- 5-year strategic plan

**PRESERVE  
PROTECT  
& IMPROVE**





VANESSA  
AILEY

SKYLER  
MATHIEWS

JUSTIN  
BUSH

KRISTOFER  
RUSSELL

DEJENE  
ALEMAYEHU

# Who are we?

**Kaw Nation Environmental Department (KNED)** was established in 1996 by the Kaw Nation to **PRESERVE, PROTECT AND IMPROVE** the quality of our natural resources for the benefit of Kaw Nation and their descendants.

KNED has developed various environmental codes including solid waste management, underground storage, food safety, fishing and hunting, and water and air codes. All of these codes were approved through a Tribal Resolution.

KNED was also approved by the U.S.

Environmental Protection Agency for treatment in the same manner as the state (TAS) for Section 106 and 319 of the Clean Water Act. The application for TAS in Air Quality is in progress.

Our office is located at 698 Grandview Drive, at the west end of the Kaw Nation Administration Complex, in Kaw City, Okla. We are available to review your concerns or answer any questions. Office hours are 8 a.m. to 4 p.m. Monday through Friday. Our number is 1-866-404-5297 toll-free or 580-269-2552, ext. 227.

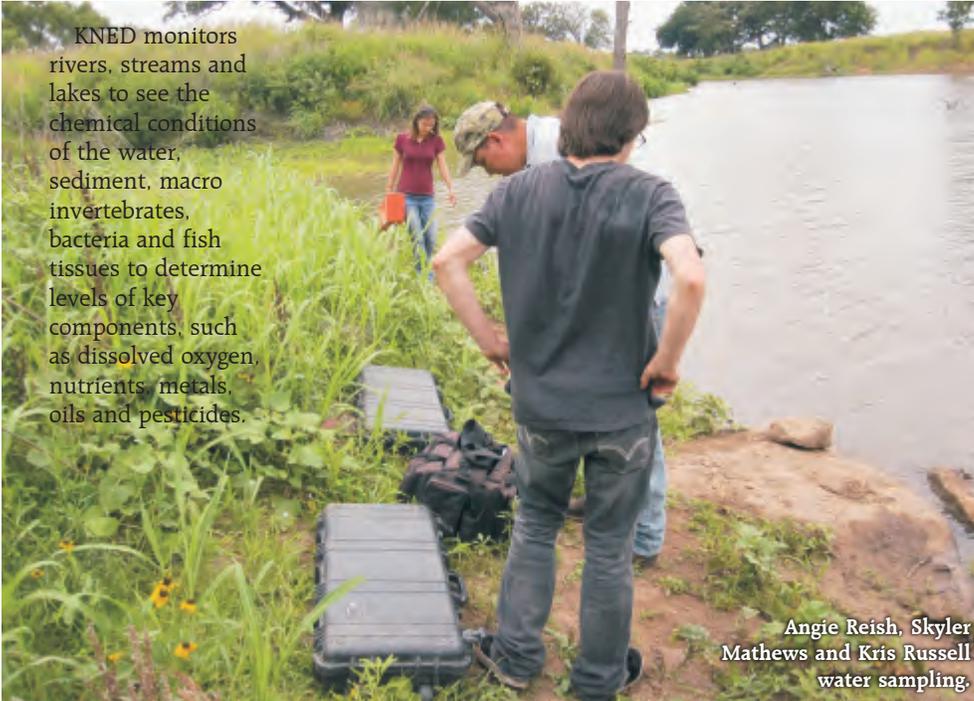


- Represent tribal interest to public and private entities;
- Develop a communication network inside and outside the tribe on environmental principles and practices;
- Establish environmental management as a fundamental institutional part of the tribe;
- Support water rights and the development of enforceable water quality standards;
- Land acquisition and management;
- Facilitate safe drinking water and water quality for members of the public by supporting water treatment plants and distribution;
- Encourage environmental stewardship among nearby schools and tribal youth;
- Arkansas River Watershed Protection Program;
- Provide the professional capacity for environmental assessments;
- Restore ecologically degraded areas through wetland enhancement;
- Provide education materials to schools within the Kaw Nation service area;
- Strengthening our inspecting capacity and conducting outreach service to elders and youth groups;
- In close cooperation with local municipalities and county commissioners, clearing illegal dump sites that affect the health and welfare of our society.



# Water Quality Monitoring

KNED monitors rivers, streams and lakes to see the chemical conditions of the water, sediment, macro invertebrates, bacteria and fish tissues to determine levels of key components, such as dissolved oxygen, nutrients, metals, oils and pesticides.



Angie Reish, Skyler Mathews and Kris Russell water sampling.

## Lake and sampling sites

### Why we monitor

Per U.S. EPA guidelines, we monitor to:

- Characterize water and identify change or trends in water quality over time;
- To identify pollutants that affect the water quality;
- Gather information to develop a plan to prevent pollution problems.

### What we monitor

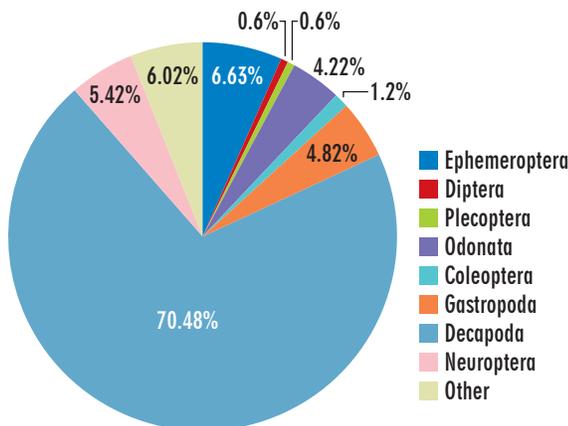
- Macroinvertebrates
- Fish
- Temperature
- Productivity



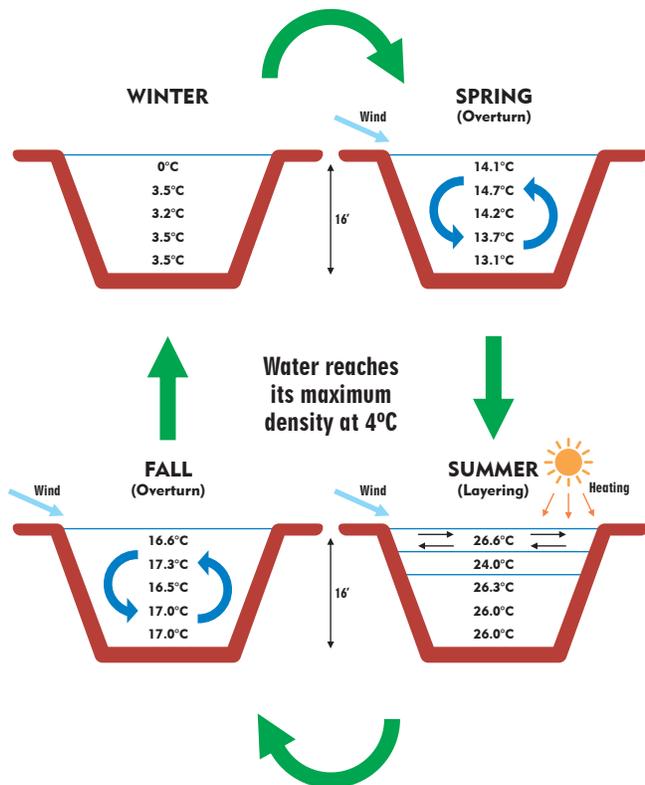
Macroinvertebrates are monitored from a water sample.

## Macroinvertebrate family percentages

Little Beaver, June 8, 2011



## Temperature cycles in Kaw Lake



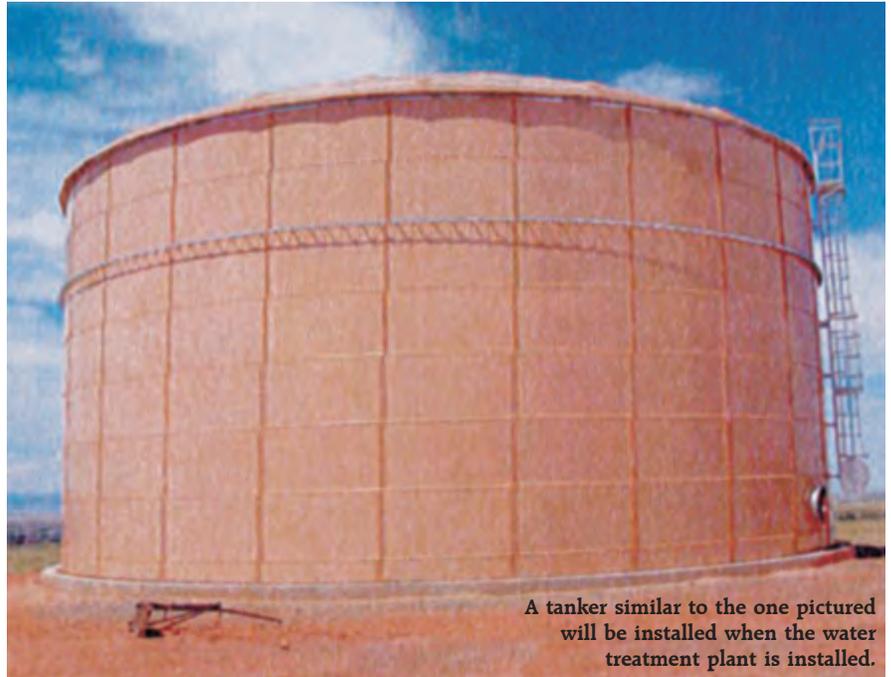
# Water Management Plan

KNED, in close cooperation with the Tribal Council, is working to put a short- and long-term resource plan in place to ensure that an adequate water supply is available to all tribal citizens and the surrounding cities to meet existing and future water demands.

KNED, in cooperation with the Bureau of Land Reclamation, has drafted a water master plan for the area. Oklahoma State University has also been contacted and has done some cost benefit analysis for a water treatment plant for the tribe to see if it is feasible.

Recently, KNED conducted an assessment to drill a well and have a water treatment plant near Washunga Bay. The department is looking ahead to conduct a water marketing survey.

A water reservoir, similar to the one pictured at right, will be constructed at a later stage when the water treatment operation begins.



A tanker similar to the one pictured will be installed when the water treatment plant is installed.



Drilling at the Chilocco water well sites.



**146,992**  
gallons

The total maximum **daily** usage of the area lake and wells, according to a feasibility study by the Kaw Nation and Oklahoma State University



Open discussion of a possible water treatment plant and water-bottling facility are in progress with Andre Rosa, background far left, vice president of PNE Wind USA, Inc.



# Non-Point Source Pollution

The Kaw Nation is one of the few tribes to have Treatment as State (TAS) in place for sections 106 and 319 of the Clean Water Acts.

According to the U.S. EPA, non-point source pollution is generally runoff from land surfaces entering a water body, which may include excess fertilizers, herbicides, insecticides, oil, grease and toxic chemicals from urban runoff and sediment from improperly managed construction sites, crops, forest land and eroding streams. The list also includes bacteria and nutrients from livestock, pet waste and faulty septic systems.

Kaw Lake and the dam were established in 1976 and 1977. Since then a lot of sediment has been deposited from various corners. KNED wanted to know how much of this sediment is deposited under the lake. If the sediment is not checked now, the lake might be silted with sediment and a number of aquatic species could be endangered as well as the quality of the drinking water supply.

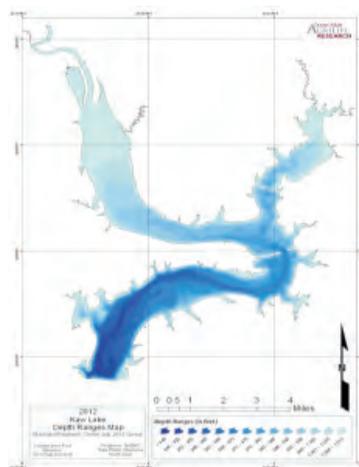
In cooperation with Texas A&M University, KNED has conducted a bathymetry survey to determine the volume of sediment deposited at the bottom of Kaw Lake. The study team has mapped the lake and found where the highest concentration of sediment is.

The study team also took sediment core samples. The samples will be looking at the depth of the lake, what type of trace metals, nutrients and pesticides are attached to the sediment. The sediment samples will be analyzed by Oklahoma State University.

KNED has also made a research paper on turbidity and total suspended solids, and prepared soil maps and slope and land use maps of the watershed.



Jason McAlister and William (Bill) Fox



In July 2012 Kaw Nation Environmental Department contracted Texas A&M's Blackland Research Center to conduct a bathymetry study and sub-bottom profile of Kaw Lake.

The purpose of the study was to accurately determine how much sedimentation is occurring in the lake and what the current storage capacity of the lake is.

Obtaining this data will allow KNED and other agencies to pursue land use changes around the lake and watershed to reduce sediment runoff, as well as help other agencies make better decisions in water management.

**Bathymetry is underwater mapping**, similar to a topography map on land. It maps different elevations under the water.

Bathymetry maps usually show contour lines or isobaths just as a topography map does. A survey vessel travels back and forth over pre-plotted transects, sending sound waves (data points) that ping off the bottom of the lake floor. **Kaw Lake had 500,000 data points.**

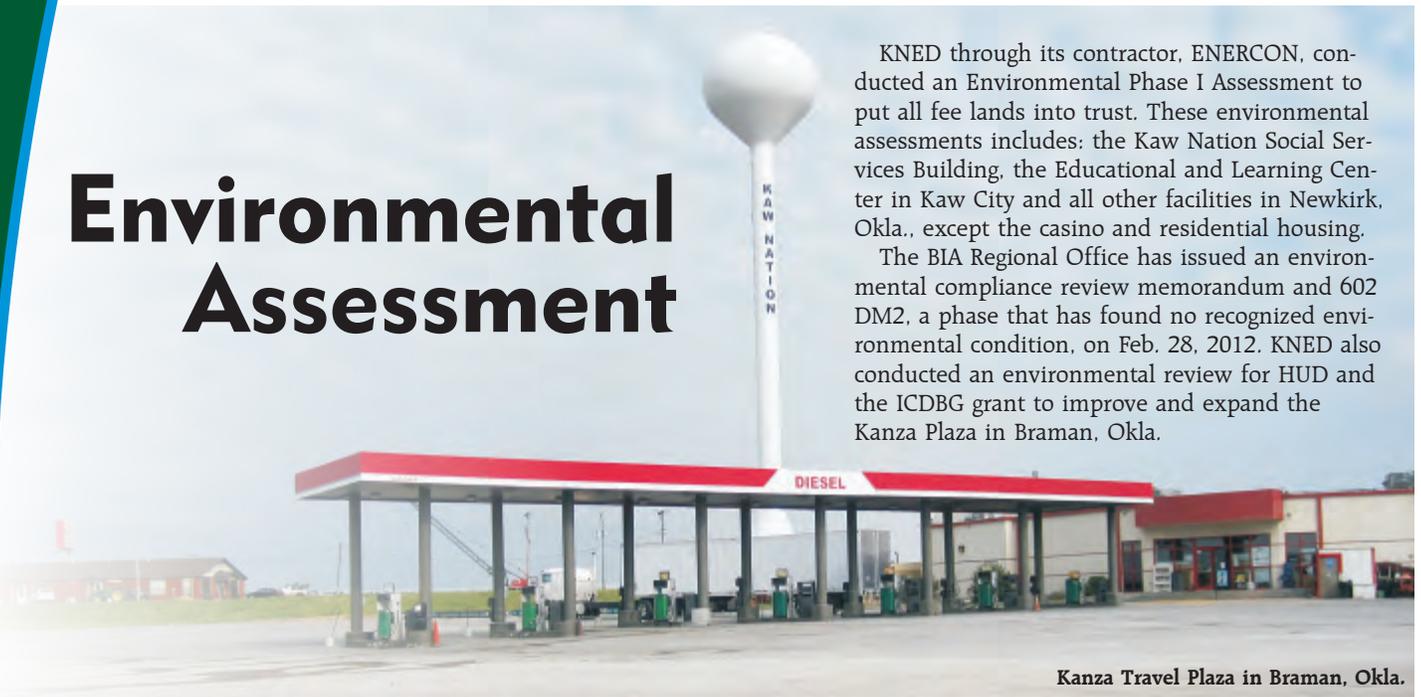
The sound waves go through the sediment, bounce off the hard bottom substrate and return to the survey vessel. Software records all of the data and creates a computerized model of the lake bottom.



# Environmental Assessment

KNED through its contractor, ENERCON, conducted an Environmental Phase I Assessment to put all fee lands into trust. These environmental assessments includes: the Kaw Nation Social Services Building, the Educational and Learning Center in Kaw City and all other facilities in Newkirk, Okla., except the casino and residential housing.

The BIA Regional Office has issued an environmental compliance review memorandum and 602 DM2, a phase that has found no recognized environmental condition, on Feb. 28, 2012. KNED also conducted an environmental review for HUD and the ICDBG grant to improve and expand the Kanza Plaza in Braman, Okla.



Kanza Travel Plaza in Braman, Okla.

Kaw Nation Social Services Building



Kanza Health Clinic

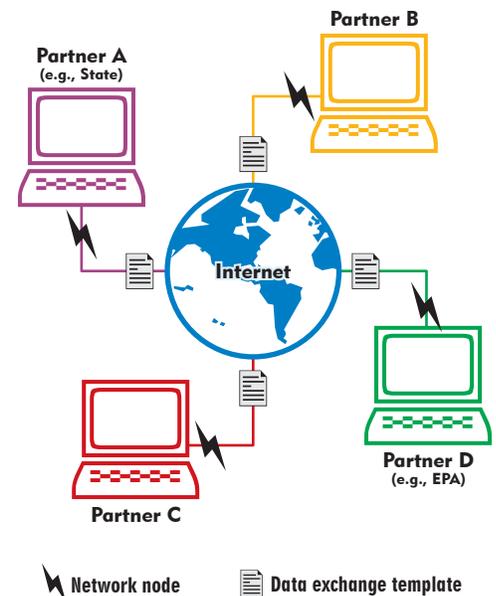


All solid waste, air and water quality data that is collected using U.S. EPA funds are submitted electronically. The KNED IT technician will upload environmental data into the Kaw Nation node and transfer this information electronically to the United States Environmental Protection Agency.

KNED also collects air quality data from its air monitoring station at the Kanza Travel

Plaza every hour. With software called **WinCollect**, the data is then submitted to the U.S. EPA Air Quality System (AQS) through the Kaw Nation Node (transmitter). The monitor is maintained and audited every week by trained specialist.

KNED has also received a grant from the U.S. EPA to collect and submit information on the cleanup of solid wastes. The solid waste data will be transferred to the EPA.



# Beaver Creek Wetland



Below, KNED Environmental Scientist Justin Bush explains soil functions to students.



The Kaw Nation Environmental Department, in close cooperation with Newkirk and Blackwell middle schools, conducted a study tour of the Beaver Creek Wetland project site May 7-10, 2012.

Under the leadership of Marcie Rutter and Kayla Ailey, 76 students from Blackwell and Newkirk middle schools visited the Kaw Nation Wetland Project. At the site the students learned about wetland soil types, their functions and properties, and upland and bottom land vegetation characteristics.

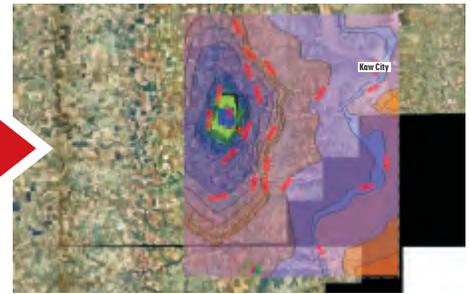
The students also learned and had hands-on exercises on identifying various macroinvertebrates, insects that live in water. They also learned the importance of aquatic insects in relation to water quality and pollution tolerance levels. The students were exposed to various kinds of gaming fish. KNED employees advised to lower the fish consumption frequency due to the pollution of methyl mercury seen in some fish species.

The students were also allowed to tour Kanza Museum. They learned about the history of the Kaw Nation before the tribe was moved to Oklahoma. The students were also shown various videos on global climate change and greenhouse gases.



Top photo, KNED Director Dejene Alemayehu, Ph.D., explains the functions of wetlands to students on tour. Middle photo, Newkirk Middle School students tour the Beaver Creek Wetlands. Bottom photo, Blackwell Middle School students tour the Beaver Creek Wetlands.

# Monitoring Air Quality



A plume of smoke from a refinery, left, and any pollutants within the plume are measured in an AERMOD dispersion computer model, above. AERMOD determines how much of these pollutants fall on tribal lands.

**The Clean Air Act** requires the Environmental Protection Agency to accept National Ambient Air Quality Standards (NAAQS) that protect public health and provide an adequate margin of safety.

Recent studies indicate particulate matter (PM 2.5) and ozone in ambient air have health effects on the respiratory system and can lead to heart diseases. The two groups most affected are the elderly and children. Major sources of particulate matter are motor

vehicles, power plants and wood burning or smoke.

Because of these health impacts, KNED installed one PM 2.5 air monitor at the Kanza Travel Plaza in Braman, Okla. All the information on the quantity and concentration of the pollutants will be transmitted electronically to KNED's office in Kaw City. After the data is analyzed and refined, it will be submitted to the U.S. EPA Air Quality Service to be shared among state and federal agencies.

KNED has also collected air quality emission data from power plants, refineries, gas stations, dry cleaners and landfills. The amount of these pollutants' concentration has been calculated and reported to the EPA.

KNED, through its dispersion model AERMOD, has determined how much of those pollutants fall on tribal lands. KNED has also determined the amount of air pollutants released on the old Kaw Nation reservation using the EPA computer model called MOVES.



KAW EPA tours the Cherokee Nation air quality monitoring stations.



Meeting with Dallas EPA about KNED's air quality project. From left, Donnett Patterson, Maria Martinez, Trisha Curran and Dejene Alemayehu.

## U.S. EPA AIR QUALITY INDEX

- 0-50 ■ Good
- 51-100 ■ Moderate
- 101-150 ■ Unhealthy for sensitive groups
- 151-200 ■ Unhealthy
- 201-300 ■ Very unhealthy
- 301-500 ■ Hazardous



Above, the Kaw air quality monitoring station in Braman, Okla. Left, Jackie Adam of the Cherokee Nation assists in installing the air monitor.



# GAP General Assistance Grant

KNED received a **General Assistance Program grant** from the U.S. Environmental Protection Agency Region 6. One of the main focuses of the grant is to clean up dumpsites in the Kaw Nation service area.

**Dumpsites** are "small landfills" where people dump unwanted things in isolated areas.

Dumpsites can be hazardous to the environment by polluting soils and water, which in turn can harm the health and well-being of wildlife, fish and even humans.

Dumpsites are located by driving around the service area or by tribal members or citizens. Once a dumpsite is found, KNED contracts the cleanup to local businesses. After a dumpsite is cleaned, an anti-litter sign is then placed once the dumpsite as part of an outreach service.

In 2012, KNED cleaned up a hazardous oil dumpsite at the Kaw Nation maintenance building. The soil was removed to ensure no pollutants were left.

In 2011 and 2012, KNED cleaned up three dumpsites in the service area.

KNED staff members have also attended the Tribal Environmental and ITEC Summits conducted in Tulsa.



Kaw City Wastewater Treatment Plant cleanup.



Maintenance building cleanup.



Wetland cleanup.



## Outreach



Above left, Dr. Dejene Alemayehu, KNED Director; Kayla Ailey, Newkirk Middle School science teacher; and Guy Munroe, Kaw Nation Chair. Above right, Dr. Dejene Alemayehu, KNED Director; Guy Munroe, Kaw Nation Chair; and Michael Webber, Roosevelt Elementary science teacher. Below right, Justin Bush mans the KNED booth at the Kaw Nation Powwow.



Under the GAP grant, KNED provided an area elementary school and middle school \$500 each to help purchase educational materials used to teach environmental sciences.

About 120 students visited the Beaver Creek Wetland, learning with hands-on exercises about identifying macro-invertebrates, insects that live in water. The students also learned the functions of soils and their properties, along with upland and bottom-land vegetation.

KNED attended the annual Kaw Nation Powwow. KNED Environmental Specialist Justin Bush set up a booth for people to come by and visit. The booth featured various publications produced by KNED and equipment used by staff to conduct water quality sampling and various activities. To end the night, a pair of muck boots were given away in a drawing.

# EECBG

## The Energy Efficiency and Conservation Block Grant

The **Energy Efficiency and Conservation Block Grant** program of the American Recovery and Reinvestment Act (Recovery Act) of 2009 was funded by the U.S. Department of Energy.

The goals of the program were:

- To develop a five-year strategic plan that serves as a road map for the Kaw Nation to reduce its energy costs;
- Conduct residential and commercial energy audits on at least 50 tribal houses and government buildings;
- Carry out energy efficiency retrofit.

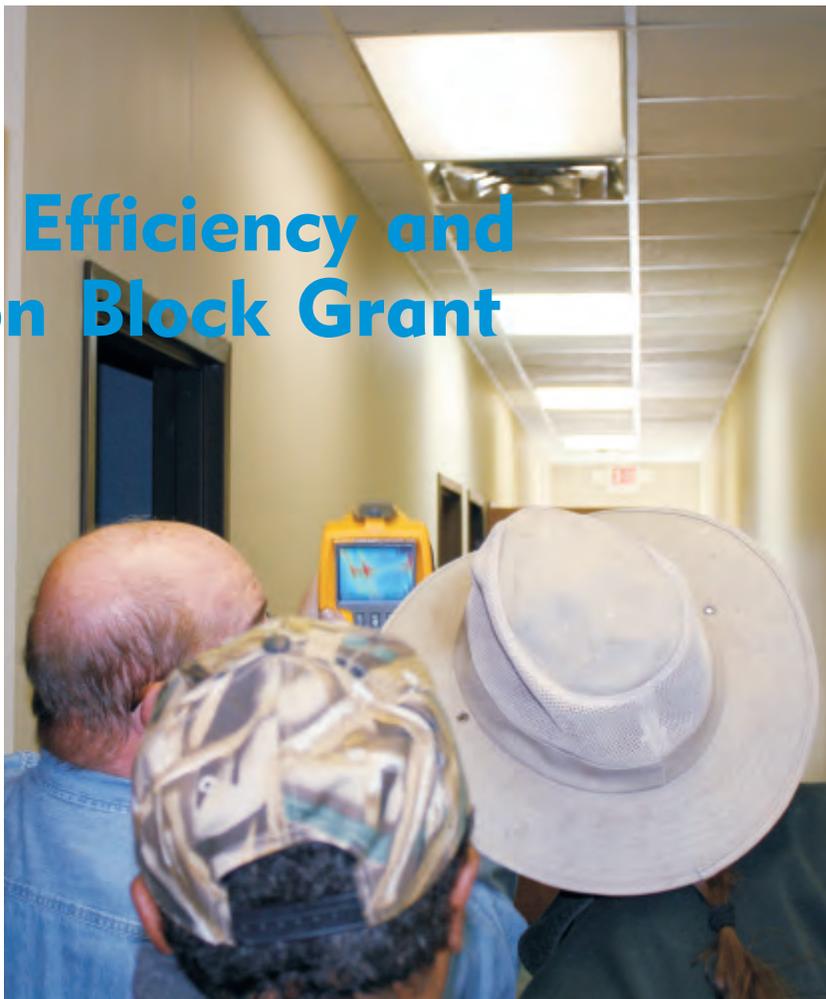
KNED, in close cooperation with Oklahoma State University, developed a five-year **Energy Efficiency and Conservation Strategic Plan**. By employing consultants from California, KNED developed and implemented a micro-scale Energy Efficiency Strategic document as Part II of the total five-year strategic plan.

By training two of the Kaw Nation Maintenance Department employees, KNED conducted energy efficiency and energy audits to more than 50 residential and government buildings.

Under the Energy Retrofit, KNED purchased various sizes of condensed florescent lights (CFL), energy-saving light bulbs, and distributed them to tribal citizens whose homes were audited and have lower energy ratings.

KNED replaced heaters and air conditioners of tribal government offices.

To sustain the EECBG program, the department purchased the necessary energy auditing equipment for its future use.



KNED conducted energy efficiency and energy audits to more than 50 residential and government buildings.



KNED purchased condensed florescent lights (CFL), energy-saving light bulbs, and distributed them to tribal citizens.



# SERVICES OFFERED TO KAW TRIBAL CITIZENS



## Radon Testing

**Radon is a cancer-causing natural radioactive gas that you can't see, smell or taste.** It comes from the natural decay of uranium that is found in nearly all soils.

Radon claims an estimated **20,000** lives a year. The Surgeon General warns that radon is the **second-leading cause of lung cancer in the U.S.** If you smoke and your home has high radon levels, your risk of lung cancer is especially high.

Radon from soil gas is the main cause of radon problems. Sometimes radon enters the home through well water. In a small number of homes, building materials can also give off radon. However, building materials rarely cause radon problems by themselves.

Testing is easy and takes a few minutes. Low-cost "do-it-yourself"

radon test kits are available through the mail and in hardware stores and other retail outlets.

If you prefer, or if you are buying or selling a home, you can hire a trained contractor to do the radon testing for you.

Any home may have a radon problem.

This means new and old homes, well-sealed and drafty homes, and homes with or without basements.

- **Cracks in solid floors**
- **Construction joints**
- **Cracks in walls**
- **Gaps in suspended floors**
- **Gaps around service pipes**
- **Cavities inside walls**
- **The water supply**

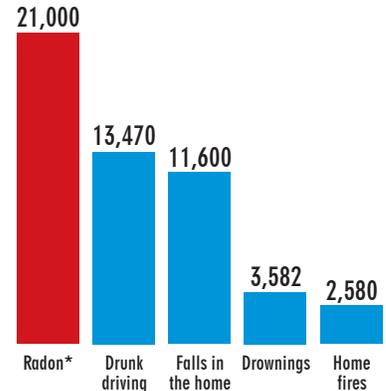


The U.S. EPA recommends you contact your state radon office for a list of testers. You can also contact one or both of the known private radon proficiency programs for lists of privately certified radon professionals in your area.

For more links and information, go to [www.radon.com/pubs/citguide.html](http://www.radon.com/pubs/citguide.html) **#howdoes**. The Kaw Nation Environmental Department also provides this service to tribal citizens.

Radon can be detected with a simple test and fixed through well-established venting techniques.

**Radon is estimated to cause thousands of cancer deaths in the U.S. each year**



\*Radon is estimated to cause about 21,000 lung cancer deaths per year, according to EPA's 2003 Assessment of Risks from Radon in Homes (EPA 402-R-03-003). The numbers of deaths from other causes are taken from the Centers for Disease Control and Prevention's 2005-2006 National Center for Injury Prevention and Control Report and 2006 National Safety Council Reports. Graphic information from [www.epa.gov](http://www.epa.gov)



Above, a continuous radon monitor mounted to a tripod in an unfinished house basement. Kaw tribal citizens needing their homes tested for radon should submit a request to the Kaw Nation Environmental Department, attention Skyler Mathews, at 1-866-404-5297, ext. 232.

# SERVICES OFFERED TO KAW TRIBAL CITIZENS



Molds are part of the natural environment. Outdoors, molds play a part in nature by breaking down dead organic matter such as fallen leaves and dead trees.

**But indoors, mold growth should be avoided.**

Mold can cause allergic reactions, asthma and other respiratory problems.

## Mold Testing



### Getting rid of mold

- If you have health concerns, consult a health professional before starting cleanup.
- If there is much water damage, and/or mold growth covers more than 10 square feet, consult the U.S. Environmental Protection Agency guide. Get a free guide from the EPA by calling 1-800-438-4318 or going online at [www.epa.gov/mold](http://www.epa.gov/mold).
- If you suspect the heating/ventilation/air conditioning system may be contaminated with mold — whether it is part of an identified moisture problem or there is mold near the intake to the system — do **not** run the HVAC system. It could spread mold throughout the building.
- If the water and/or mold damage was caused by sewage or other contaminated water, call a professional who has experience cleaning and fixing buildings damaged by contaminated water.

Mold may begin growing indoors when mold spores land on wet surfaces. There are many types of mold, and none of them will grow without water or moisture.

**Molds have the potential to cause health problems.**

Molds produce allergens, irritants, and in some cases, potentially toxic substances (mycotoxins).

Inhaling or touching mold or mold spores may cause allergic reactions in sensitive individuals. Allergic responses include hay fever-type symptoms such as sneezing, runny nose, red eyes and skin rash (dermatitis).

Allergic reactions to mold are common. They can be immediate or delayed. Mold can cause asthma attacks in people with asthma who are allergic to mold. Mold exposure can irritate the eyes, skin, nose, throat and lungs of both mold-allergic and non-allergic people. Symp-

toms other than the allergic and irritant types are not commonly reported as a result of inhaling mold.

It is impossible to get rid of all mold and mold spores indoors: some mold spores will be found floating through the air and in house dust.

**The key to mold control is moisture control.** If mold is a problem in your home, clean up the mold promptly and fix the water problem. Dry water-damaged areas and items within 24 to 48 hours to prevent mold growth.

Who should do the cleanup depends on a number of factors, one of which is the size of the mold problem. If the moldy area is less than about 10 square feet (less than a 3-foot-by-3-foot patch), in most cases, you can handle the job yourself. Remember to avoid breathing in mold or mold spores and to wear gloves and goggles.



# SERVICES OFFERED TO KAW TRIBAL CITIZENS

Lead is a powerful neurotoxin that interferes with the development and functioning of almost all body organs, particularly the kidneys, red blood cells and central nervous system.



## Lead Testing

Childhood lead poisoning is the No. 1 environmental health risk facing children in industrialized countries today. In the United States, more than 3 million children age 6 and younger — or one out of every six children — already has toxic levels of lead in their bodies.

In young children, lead retards the development of the central nervous system and brain. High levels of lead exposure can result in a coma, convulsions and death. At low levels, lead can cause reduced IQ, reading and learning disabilities, attention deficit disorder and behavioral problems.

Ninety percent of pre-1940 buildings have lead. Eighty percent of pre-1960 and, 62 percent of pre-1978 buildings have lead. The best way to find out if your home potential lead paint hazards is to have a risk assessment performed by a KNED or a certified inspector.

There are chemical filled applicators that the user rubs on an area to check for lead. If lead is present, the applicator tip changes color. These kits are relatively inexpensive, provide quick results, and are widely available at retail hardware and home improvement stores.

Professional testing for lead in paint is recommended. To receive a list of laboratories that have passed proficiency testing for analysis of lead in paint, soil, and/or dust samples, call 1-800-424-LEAD or fax 202-659-1192 to request a lab list by fax. When you

call or fax, specify that you are requesting the **NLLAP/ELPAT List of Laboratories**.

The federal government — HUD's Lead Hazard Reduction Office — also sponsors **The Lead Listing**, a list of certified lead inspectors. For more information visit HUD's web site at [www.hud.gov/lea/leahome](http://www.hud.gov/lea/leahome).



One way to check for lead is to rub a chemical-filled applicator onto a suspected area.

- Lead paint was banned in U.S. residential paint in 1978. It was banned in France and many other countries prior to 1920.
- Three-quarters of the nation's housing contains lead paint.
- Children under age 6 are most at risk.
- Children from every region, race and socioeconomic level are at risk.
- Lead poisoning causes learning and developmental disabilities.
- There are usually no symptoms.
- Even children who appear healthy can have dangerous levels of lead in their blood.
- Most lead poisoning happens at home.
- The primary cause is tiny particles of lead dust from deteriorated paint or from painted surfaces disturbed during remodeling, repair or renovation.
- Lead dust is invisible, so tiny in fact that it passes through most masks and filters.
- Lead poisoning can affect adults as well as children.

Sources: U.S. EPA, HUD, Centers for Disease Control, National Conference of State Legislators, and Alliance to End Childhood Lead Poisoning

# 5-YEAR STRATEGIC PLAN



Dr. Dejene Alemayehu makes his presentation at the annual Kaw Nation Environmental Commission meeting.

In 2010, KNED received a grant from the U.S. Department of Energy to develop a Five-Year Energy Strategic Plan for Kaw Nation. In cooperation with Oklahoma State University, KNED completed that energy plan.

The plan breaks down all of Kaw Nation's current energy costs and suggests ways to cut costs over the next five years. Kaw Nation will be able to identify energy efficiency issues and develop retrofit projects for multiple facilities using the energy plan.

In order to have a five-year energy master plan for all the Kaw Nation's facilities, Kaw Nation has contracted a Phase 1 program with consultants from California.



Kaw Nation is also working closely with the DOE and Department of Agriculture to get more funding for energy projects. The plan will help Kaw Nation with the tools and knowledge to develop renewable energy sources.

**Developmental activities.** In December 2010, KNED published the final version of its Five-Year Strategic Plan. Developing the strategic plan was a tedious year-long process. The stra-

tegic plan was funded by the Administration for Native Americans.

Four Kaw Environmental Protection Commission meetings were conducted throughout the development of the plan to get input and advice. The strategic plan includes all of the goals and objectives KNED will focus on over the next five years. Both the energy and the KNED's activity strategies were approved by a resolution of the Tribal Council members.

## Renewable Energy Resources

Energy efficient usage and conservation are major issues in the United States. To reap the benefits from energy efficient usage and conservation, the Kaw Nation conducted a study on renewable energy resources, funding options, energy auditing and retrofit, transportation, waste management and education.

Solar, wind, hydropower, biomass and geothermal energy were considered as feasible renewable energy sources. Each resource was evaluated to find the best energy combination for the Kaw Nation.

Fifty-kilowatt wind turbine systems were evaluated for the SouthWind parking lot, Kanza Health Center, Kaw Nation Day Care, McCauley Community Building, Wellness Center in Newkirk, and Kaw City Headquarters.



Installation of turbine systems in all Kaw Nation facilities resulted in more than a 20-year payback period.

KNED, in close cooperation with BIA and PNE Wind USA Inc., will install a 20-kilowatt hour wind turbine at Kanza Travel Plaza, Braman, Okla.

Solar photovoltaic (PV) and solar hot water systems were evaluated as renewable energy resources.

The solar PV system was designed for the office building next to the SouthWind Casino by the RETScreen method, resulting in a 16-year payback period. The solar hot water system evaluated for the Wellness Center in Newkirk found a 13.5-year payback period.



## Energy Audits and Retrofits

The easiest and most efficient way to improve energy usage within the Kaw Nation is to audit the existing facilities. An audit was performed and is evaluated in four categories: envelope measures, lighting, appliances and heating and cooling.

All Kaw Nation facilities were inspected to analyze their lighting systems and the current electricity consumption were examined and recorded for future upgrade of the utility infrastructure.





## Water Quality Monitoring

Since the Clean Water Act, governments, citizens and tribes have worked together to make dramatic progress in improving the quality of surface and drinking water.

Cleaner, safer water has renewed interests in swimming, boating and fishing in most bodies of water. However, despite numerous ac-

tions of improving water quality there is still a very serious risk of polluted and contaminated drinking water.

We received our first **Water Quality Monitoring** grant in 1996 to monitor rivers, creeks and lakes in the Kaw Nation service area. Since then we have developed in-depth water quality information that is used on

each body of water. The grant also allows us to analyze water from each site in many different parameters to ensure the water is safe for all uses.

KNED is dedicated to monitoring bodies of water in Kay County to ensure that its tribal citizens and all residents in the county have safe water.



## Air Quality Monitoring

During the 1970s, the U.S. EPA began developing **air quality protocols** for big industries that emitted potentially harmful chemicals into the air.

Since the development of the protocols the levels of pollution have steadily decreased, harmful pollutants are still being released into the atmosphere. Air pollution from power plants and petro-

leum plants can travel great distances and pose threats to communities' miles away.

In 2009, the U.S. EPA awarded us an air quality grant to run tests for road and non-road emissions. We are enthusiastic about working in close cooperation with the U.S. EPA to improve the quality of our air, and educating the public on the effects of air pollution.

## Restoring and Protecting the Beaver Creek Wetland

The **Beaver Creek Wetland** is a historical wetland and is recognized by the National Wetlands Inventory as **PEM1F**, Palustrine Emergent Persistent Semi-permanently Flooded, and **PUBFh**, Palustrine Unconsolidated Bottom Semi-permanently Flooded Diked/Impounded.

In 2004, we were awarded a grant from the U.S. EPA to restore and protect the Beaver Creek Wetland. After receiving the grant, the Oklahoma Department of Wildlife agreed to let us lease the 40 acres of the wetland sites. Prior to our receiving the grant, the Beaver Creek Wetland had suffered from oil contamination, degradation and erosion.

Since 2004, we have set and achieved many goals to restore and protect the wetland. We have worked closely with the United States Fish and Wildlife Service to enroll the wetland into the "**outdoor classroom**" program. We are committed to further restoration and protection of the wetland for many years to come.



## 'Green' Energy Sources

The world's demand for fossil fuels has grown exponentially. Fossil fuels are the leading source of power for the entire world. Some experts believe we are at peak oil production, which will soon be followed by coal and natural gas production.

Not only are the world's sources of power reaching peak levels, they are one of the leading sources of pollution as well. Recently many "green" sources of power have been discovered — such as solar, geothermal, wind and biofuels.

Kaw Nation is working to adopt "green" power sources and practice sustainable energy use. In 2012, Kaw Nation leased its land to PNE to install nine wind turbines on its Chilocco land. Kaw Nation and PNE will share information and exchange experience on the cost-and-benefit analysis and technical matters for future expansion of renewable energy.

The goal of the Kaw Nation is to have the ability to run the majority of its facilities off green energy.



## General Assistance Program and Solid Waste Cleanup

In 2004, KNED was awarded a **General Assistance Program Grant** from the U.S. EPA to clean up dumpsites and conduct **Underground Storage Tank** inspections.

Since the grant was awarded, we have cleaned up numerous dumpsites of not only solid wastes but hazardous chemicals as well. We have worked in close cooperation with the Inter-Tribal Environmental Council to conduct quarterly UST inspections at the Kaw Nation's gas station facilities in Ponca City and Bristow, Okla.

KNED strives to keep the public aware of environmental issues through seminars, workshops, meetings and publications.

Intertribal and council meetings are held to educate the tribe on what environmental issues are approaching. We host "**outdoor classrooms**" for children from local schools that teach them about different aspects of our environment. Each grant possesses a slightly different public outreach sector, which allows us to educate the public in a variety of areas.

We are dedicated to enhance our public outreach program in the future. This will enable us to reach more people and educate them on environmental issues.



Skyler Mathews, Kris Russell and Vanessa Ailey man a KNED booth at the Kaw Nation Health Fair.



Above, Barbara Tricinella and Sheila Williams teach the class. Right, a trainee uses an orange solution and a black light to see how well she washed her hands.



## Food Handling and Safety

KNED presented a **Food Handling and Safety Training** for 44 food-handling employees Oct. 23, 2012. Attendance included employees from Wood Ridge Market, Casino Café and Title VI.

The class was taught by Sheila Williams and Barbara Tricinella, Food Safety Training Specialists from Oklahoma State University's Tulsa Extension. The training

focused on personal hygiene as well as the three general categories of contamination: chemical, physical and biological.

Food safety involves protecting food from anything that could harm the health of consumers. Kaw Nation instills high standards and safeguards so consumers can enjoy their food without illness, injury or other problems.

## Environmental Exchange Network

Over the past 30 years, databases and exchange networks have allowed different agencies, tribes and states to store and exchange data amongst each other, saving time, money and resources.

In 2008, KNED was awarded an **Exchange Network Grant** through the U.S. EPA. The grant allowed us to develop a data base for the water quality data, and create an application to manage the data in all aspects. This has allowed us to organize and share data with the U.S. EPA to help them make better decisions regarding our water.

### Study: Tomatoes shown to lower stroke risk

Researchers examining the blood levels of more than 1,000 Finnish men aged 46 to 65 found that those whose blood contained the highest levels of lycopene had 55 percent less chance of suffering a stroke. Tomatoes and tomato-based products are particularly recommended because they contain more lycopene than other fruits and vegetables. Lycopenes are a powerful antioxidant that reduces inflammation and helps guard against the formation of blood clots that block blood flow to the brain. — From Healthline.com



"Trails Leaving Independence — 1837"  
by Charles Goslin



# Santa Fe Trail Exhibits

In 2010, Kaw Nation received a **Challenge Cost Share Program** grant from the National Parks Service. The grant provided funding to develop two exhibits to place along the Santa Fe Trail in Council Grove, Kan.

The signs displays historical pictures and text in both English and Kanza presenting the historical background of the Kaw Nation along the Santa Fe Trail.



Grandmother McCauley, Kaw.

**W's Onikashi'ga (Kaw Nation) and the Santa Fe Trail**

**Gaxá khexi baskú a'gólí'be**  
**We Lived along the River**

The Kanza Indians left their homelands east of the Mississippi River during the 1600s. They settled into what is today the northern part of Kansas. Waterways provided the sustenance for their people and were part of the culture of the tribe. The Kanza's next moves were forced.

**Leaving Home**  
In the 1600s, thousands of Kanza were displaced from their ancestral homelands in the Mississippi River valley. They traveled westward through the mountains, and many people found their way to the Santa Fe Trail. The Kanza's next moves were forced.

**Living Heritage**  
The Kaw Nation is proud to share its rich history and culture with the public. We are committed to preserving our traditions and passing them on to future generations. We are also committed to protecting our natural resources and the land that we call home.

**W's Onikashi'ga (Kaw Nation) and the Santa Fe Trail**

**W's Onikashi'ga (Kaw Nation) and the Santa Fe Trail**

**Ak'a Onikashi'ga**  
**People of the Southwind**

The Kanza Indians left their homelands east of the Mississippi River during the 1600s. They settled into what is today the northern part of Kansas. Waterways provided the sustenance for their people and were part of the culture of the tribe. The Kanza's next moves were forced by the success of the Santa Fe Trail, which passed through the reservation. As more people headed west, either for trade or to settle, the Kanza were yet again forced to move, this time to Indian Territory, in present-day Oklahoma.

**Lifeways Change**  
In the 1700s, the Kaw people were labeled the Kanza by Euro-Americans. The name Kanza is Kanza spelled in the people's own words and later, the name. After the success of the Santa Fe Trail, more than 1,000 Kanza were relocated to a reservation near Council Bluffs, Iowa, by treaty in 1846. The final move, forced in 1872, moved the tribe to Oklahoma.

**Living Heritage**  
The Kaw Nation maintains its connections to the outdoors with programs that seek to protect natural resources. It's rich cultural heritage — dance, prayer, and family — is preserved through education, its exciting tribal arts and crafts, preserving cultural practices and traditions, and serving as a cultural center.

**W's Onikashi'ga (Kaw Nation) and the Santa Fe Trail**



# KAW NATION ENVIRONMENTAL DEPARTMENT

# OUR STAFF



## **DEJENE ALEMAYEHU, Ph.D.**

**KNED Director**

**[dejene@kawnation.com](mailto:dejene@kawnation.com)**

Dr. Dejene Alemayehu has been with the Kaw Nation since 2000. He has a bachelor's degree in plant science from Alemaya University in Diredawa, Ethiopia, in 1982; a master's degree in agronomy from Oklahoma State University in 1995; and a Ph.D. in environmental science from OSU in 2000.

During his time with Kaw Nation, he has expanded the role of the Environmental Department to cover programs to help protect the environment and to help tribal citizens.



## **JUSTIN BUSH**

**Environmental Specialist**

**[jbush@kawnation.com](mailto:jbush@kawnation.com)**

Justin Bush started with the Kaw Nation in February 2010 as the Administration for Native Americans coordinator. He has a bachelor's degree in natural resource ecology and management with a wildlife option.

As the environmental specialist, Justin assists the department in water sampling, lab work and wetland activities.



## **VANESSA AILEY**

**Administrative Assistant**

**[vailey@kawnation.com](mailto:vailey@kawnation.com)**

Vanessa started with the Kaw Nation Environmental Department in May 2011 as the administrative assistant.

After high school, Vanessa attended Northern Oklahoma College in Tonkawa, where she received her associate's degree in agriculture. She later attended Oklahoma State University, graduating in May 2010 with a bachelor's degree in agricultural communications and a minor in agricultural economics.

Vanessa enjoys reading, photography and spending time with friends and family.





## KRISTOFER RUSSELL

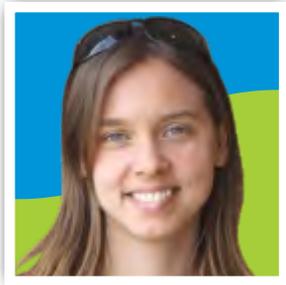
EPA IT Tech

[krussell@kawnation.com](mailto:krussell@kawnation.com)

Kristofer Russell started as a summer intern for the Kaw Nation Environmental Department in 2012.

A graduate of Ponca City High School, he plans to attend Northwestern State University to study computer programming. He enjoys programming, especially in Java. His main inspiration for becoming a programmer is Markus Persson, creator of the survival sandbox game "Minecraft."

In his spare time, Kristofer enjoys spending time with friends, fixing computers and playing games on the computer.



## ANGIE REISH

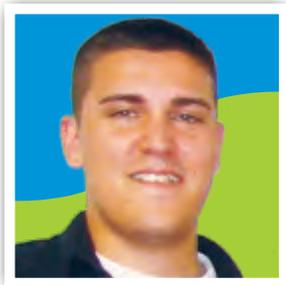
Summer Intern

Angie Reish received a bachelor's degree in zoology from Oklahoma State University in 2007 and a Master of Science in zoology from OSU in 2011.

Angie has worked at the OSU Tick Rearing Facility and completed an internship with the U.S. Fish and Wildlife Service.

Angie will be assisting with wetland maintenance, water sampling and water quality analysis, and she will be processing research data.

She enjoys birding, hiking, camping, SCUBA diving, horseback riding, rock climbing and spending time with her husband.



## SKYLER MATHEWS

Water Technician

[smathews@kawnation.com](mailto:smathews@kawnation.com)

Skyler Mathews, Kaw tribal citizen, started as a summer intern in the Kaw Nation Environmental Department in 2004. He also served on the Kaw Nation Cultural Committee.

Skyler and his family were the Keepers of the Drum in the resurrection of the I'n-Lon-Schka Dance. Skyler has danced with his family, imparting his values to dance to his daughter Kimber.

Skyler served his country with the 45th Oklahoma Army National Guard in Afghanistan in 2011 and 2012. He received a Purple Heart and an Army Commendation for his service.



KNED is thankful for getting full assistance and support to accomplish all our grant deliverables. Special thanks goes to Chairman Guy Munroe, the Kaw Nation Tribal Council and Kaw Nation Attorney Ken Bellmard for their cooperation and support in our journey for a better tomorrow.

At left is the Kaw Nation Tribal Council: front row, Gena Warren, Patti Kramer and Elaine Huch; back row, Jason Murray, Jim Lessert and Chairman Guy Munroe. Not pictured is Erin Kekahbah.



698 Grandview Drive  
P.O. Box 50  
Kaw City, OK 74641  
580-269-2552  
Toll-free 1-866-404-5297  
www.kawnation.com

PRSR STD  
U.S. POSTAGE PAID  
PERMIT NO. 49  
STIGLER, OK 74462

## from the Kaw Nation *chair*

Dear friends:

Over the past 16 years, Kaw Nation's Environmental Department has pledged to focus on core issues of protecting our natural resources. The staff has promised that all efforts will be geared to **PRESERVE, PROTECT AND IMPROVE** the quality of our natural resources for the benefit of Kaw Nation and its descendants.

Dr. Dejene and his staff have done an outstanding job, and we are very proud of their accomplishments and their continued efforts. We hope readers will enjoy this educational magazine and visit our website at [www.kawnation.com](http://www.kawnation.com) for additional environmental news.

Our land and its natural resources must be protected — we cannot survive without it. Let us all commit to supporting and protecting our environment.

— GUY MUNROE  
Chair, Kaw Nation

