

# Water Quality in Oklahoma



# DEQ Water Quality Activities

**W**ater Quality (WQD), Customer Services (CSD) and Environmental Complaints and Local Services Divisions (ECLS) play significant roles in protecting the ground and surface waters to ensure the designated beneficial uses as established in Water Quality Standards and in safeguarding the public by ensuring safe drinking water. These roles consist of licensing, permitting, monitoring, enforcement and technical assistance.

The Operator Certification Section conducts training sessions and administers

examinations for water, wastewater, and laboratory operators. This process allows for the continuing education of local personnel, while ensuring that only qualified people are making decisions about the treatment of drinking water and wastewater. These properly trained individuals contribute to protection of the environment and the health of the citizens of Oklahoma.

Permitting has been simplified in recent years by the use of general permits, permits by rule and the inclusion of state of the art technol-

ogy into rules in order to reduce the need for variances. The enforcement activities have been prioritized to ensure that the most serious violations are addressed in a timely manner to protect the environment and drinking water. Orders with penalties are issued in response to environmental damage to Oklahoma's water.

Public Water Supply engineers and ECLS staff make more than 3,800 facility visits each year to public water supply systems and the CSD State Environmental Labora-



tory analyses more than 37,500 samples from these systems. Additionally, the Municipal and Industrial District Representatives and ECLS staff make more than 2,600 facility visits. These visits verify compliance, evaluate complaints, and offer technical assistance. 🌊

## New Standards Affect Public Water Supply Systems

**T**he State of Oklahoma's Public Water Supply (PWS) Program currently oversees 1,701 public water supplies. These PWS systems serve approximately 3.55 million customers. Eighty percent of this population is served by surface water. Approximately 94 percent of these systems reported no violations. The remaining six percent of systems were issued 408 enforcement actions by DEQ in response to various violations.

Recent changes to Federal drinking water rules have impacted surface water systems. Previously the standard for turbidity was 0.5 Nephelometric Turbidity Units (NTU) 95 percent of the time with no individual sample exceeding 5.0 NTU. Beginning January 1, 2002 the standard for turbidity was lowered for systems serving greater than 10,000 in population. At the same time the standards for disinfection by-products was also lowered.



The former standard for Total Trihalomethanes (THM) was 0.100 mg/l. This standard was lowered to 0.080 mg/l on January 1, 2002 and an additional class of chemicals, Haloacetic acids (HAA5)

were added. Additionally, these systems were required to begin monitoring for Total Organic Carbon (TOC) in this same timeframe. Many systems are having difficulty adjusting treatment plants to

# WATER

meet these new Federal rules. Furthermore, beginning January 1, 2005 all systems under 10,000 population must meet the same lower standards.

Another new rule that may pose difficulty to a number of groundwater systems in Oklahoma is the revised arsenic rule. Recent lowering of the arsenic limit to 0.01 mg/l may affect close to 40 water systems in Oklahoma that met the old standard of 0.05 mg/l but have some wells that may not be able to meet the new standards, effective January 1, 2006. This will require a serious effort to

bring systems into compliance with the new arsenic standards. If unaddressed, this has the potential to become the greatest compliance problem in the state.

DEQ has provided a number of training opportunities for affected systems and is currently implementing in-plant training by DEQ staff. These individuals will assist water systems in their efforts to meet the new standards and maintain high levels of compliance in the state.

DEQ's ultimate goal is to assist systems in gaining compliance, rather than waiting

until the standards take effect and then addressing compliance, or lack thereof, through enforcement. By doing so,

better utilized resources and helped systems with limited budgets avoid costly enforcement penalties. 🌍



*Proper operation and maintenance of water plant filters lowers the turbidity.*

## DEQ Initiates Security Checks at Drinking Water Plants

On September 19, 2001, following the terrorist attacks on the World Trade Center and Pentagon on September 11, 2001, the Water Quality Division initiated an intensive security review of all surface and ground water community drinking water systems in Oklahoma.

The initial study revealed that 62 percent of the systems had adequate security measures and procedures. The remaining 38 percent were targeted for additional review. After notification in September, most of these systems upgraded the security of their drinking water facilities. Follow up site visits by DEQ in November 2001, revealed that only 39 systems, approximately five percent of systems, had the need to implement additional security measures.

DEQ increased its emphasis on the importance and necessity of adequate security measures through tech-



*Carl Gray of Del City installs a new security camera at the Del City water plant*

nical assistance and correspondence to the remaining community water systems. Almost immediately, 31 of the remaining systems up-

graded their security measures. The remaining eight systems required more extensive measures and time to update security systems.

They entered into signed agreements with DEQ and are scheduled to have the new measures in place no later than August 1, 2002. 🌍

# New Requirements for Safer Drinking Water



*Customer Services Division's Charles Freshour analyzes total organic carbon samples in the State Environmental Laboratory.*

The Disinfectant/Disinfection By-Product Rule, part of the Safe Drinking Water Act, went into effect on January 1, 2002. In addition to existing drinking water regulations, which require sampling and analysis of drinking water for a variety of parameters, the rule requires the monitoring of the chemicals used to disinfect water and the breakdown products of those chemicals. Since this is a new requirement, the State Environmental Laboratory, which analyzes drinking water from cities and towns across Oklahoma, needed to upgrade both the instruments and techniques necessary for the new procedures.

The Lab upgraded instrumentation and implemented new analytical methods in order to monitor Public Water Systems throughout the state for total organic carbon, chlorite, chlorate, bromate, and bromide. This included purchasing a Total

Organic Compound Analyzer, an Ion Chromatograph, and a Gas Chromatograph. Laboratory personnel were trained on the new instruments as well as on new analytical techniques. The Lab demonstrated proficiency in all the new areas of analysis and is accredited by the U.S. Environmental Protection Agency to perform the analyses.

Establishing and maintaining accreditation for these parameters has resulted in a significant cost savings to the agency and a better response time for the customer. The closer monitoring of the efficiency of disinfectants will allow Public Water Systems to have better control of the concentrations of chemicals used to disinfect drinking water. As a result, drinking water will be safer and more pleasing for the public. 🌱

# Biosolids: land application of biosolids to supply nutrients and replenish soil organic matter

Biosolids are primarily organic materials produced during wastewater treatment that may be beneficially re-used. An example is the land application of biosolids to supply nutrients and replenish soil organic matter. Biosolids are used on agricultural land, forests, rangelands, and on disturbed land in need of reclamation.

Recycling biosolids through land application serves several purposes. It improves soil properties, such as texture and water holding capacity, which make conditions more favorable for root growth and increases the drought tolerance of vegetation. Biosolids application also supplies nutrients essential for plant growth which are an alternative for expensive chemical fertilizers. The nutrients in the biosolids of-



*Biosolids are pumped onto drying beds in preparation for land application.*



fer several advantages over those in inorganic fertilizers because they are organic and are released slowly to grow-

ing plants. These organic forms of nutrients are less water soluble and, therefore are less likely to leach into

groundwater or run off into surface waters.

The DEQ biosolids coordinator approved nine new biosolids management plans this year. In addition, presentations were made to the EPA Region VI pretreatment coordinators, the Oklahoma Water Environment Association, and the Oklahoma Rural Water Association and 34 other smaller groups to educate them on the regulations and beneficial uses of biosolids. 🌱



*A tanker truck applies liquid biosolids to an agriculture field as fertilizer.*



# Drinking Water State Revolving Fund (DWSRF) Program Completes Projects During Fiscal Year 2002



*Stillwater's New Water Plant goes on-line after DWSRF loan program system improvements are made.*



*Above are the original sign and the building at the newly upgraded El Reno Water Plant.*

The Drinking Water State Revolving Fund (DWSRF) is a low interest loan program created to assist municipalities and rural water districts with water system improvement projects. The DWSRF loan program is financed through an Environmental Protection Agency (EPA) grant and is jointly managed by the Oklahoma Department of Environmental Quality (DEQ) and the Oklahoma Water Resources Board (OWRB). The DEQ loaned communities in Okla-

homa just over \$15 million in FY 2002. Five public utilities were awarded money for drinking water facility expansion, upgrade, and new construction. Loan amounts ranged from \$343,400 to \$10.7 million.

Recently two projects have been completed and are in operation: Stillwater Utilities Authority and El Reno Municipal Authority. Stillwater Utili-

ties Authority began construction in February 2000 and completed work in December 2001 on a new clearwell, new solids contact unit, new filters, installation of new ozone feed system, and upgrading the raw water and finished water pump stations. The City of Stillwater made the determination to expand its water treatment plant to increase capacity, to better insure residual compliance in

the distribution system, and to reduce taste and odor problems.

The El Reno Municipal Authority started construction in August 2000 and construction was completed in March 2002. This project included construction of two new 36 foot clarifiers, a new chemical storage building, new filters, and upgrades to existing clarifiers and filters, to correct

problems with meeting water demand and hardness. This upgrade increased the treatment capacity of the El Reno water treatment plant from three to seven million gallons a day. This project should provide adequate capacity to correct El Reno water shortage problems and provide high quality water during periods of high demand. 🌍



A new control panel was part of the upgrade at the El Reno Water Plant.

FACILITY	LOAN AMOUNT
Okeene -----	\$343,400.00
Cherokee -----	\$382,000.87
Bartlesville -----	\$ 2,150,000 .00
Edmond -----	\$10,743,486.00
Hennessey -----	\$1,417,150.00
<b>TOTAL -----</b>	<b>\$15,036,036.87</b>



El Reno's new filters were paid for by the Drinking Water State Revolving Fund loan program.



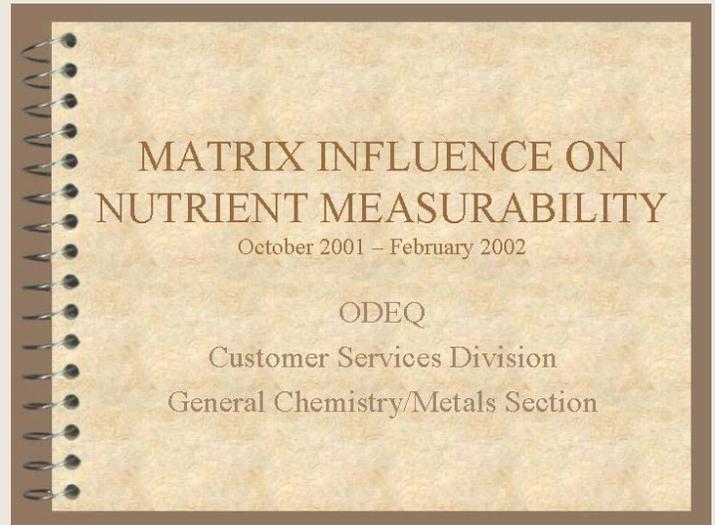
# DEQ Staff's Presentation Sheds Light on Standards for Oklahoma Water

At the annual Oklahoma Clean Lakes Association Symposium, DEQ staff presented the results of a study of environmental samples. The State Environmental Laboratory (SEL) at DEQ analyzed over 55,000 samples during FY 2002. These samples came from a wide variety of materials called matrices, which include water, soil, sediment, and sludge. One of the problems for laboratory analysis of environmental samples is determining what effect the matrix has on the reliability of results. It is important to insure the results of a lab analysis are reliable.

During the past year the SEL has designed and partici-

parted in several cooperative studies with the Oklahoma Water Resources Board in an attempt to qualify and quantify the environmental effect of matrix interference on results. Specifically, DEQ examined the effect of sediment and mineral content on the analysis of nutrients, from a variety of water bodies throughout the state. The goal was to make sure analysis of water from lakes and streams around the state was accurate and reliable so that decisions about use of that water could be made with confidence.

DEQ staff presented the results of this study at the annual Oklahoma Clean Lakes As-



sociation (OCLA) symposium. As a result of these efforts, DEQ will be participating on a committee with other state agencies to establish statewide standards for nutrient levels in Oklahoma water.

The SEL will be able to ensure data quality for analysis of samples from different areas and thus will better understand if the standards are being met in Oklahoma waters. 🌱

## DEQ Supports Water Monitoring Program

The DEQ continues to provide analytical support for the Oklahoma Water Resources Board's Beneficial Use Monitoring Program (BUMP). This program coordinates the monitoring of Oklahoma's surface water including streams, rivers, and lakes. The project provides state agencies and citizens with a better picture of the waters of the state including areas where problems are occurring. This information can be used to correct problems and prioritize pollution control activities. During FY 2002, there was a 32 percent increase in the number of surface water



Customer Services Division inspects glasswork for micro-TKN (Total Kjeldahl Nitrogen) analysis.

samples submitted by the Oklahoma Water Resources Board for nutrients, metals, and minerals analysis. This increase had the potential to overload the resources of DEQ.

Responding to this challenge, DEQ implemented

strategies to improve the quality of results, turnaround time for results, and overall customer service. These strategies included the semi-automation of methods previously carried out by hand. Additionally, DEQ improved the number of samples that could be

analyzed in a given time.

As a result, DEQ is able to provide better data quality in a shorter period of time for an increased number of surface water samples. This means that a more accurate and timely picture of Oklahoma's water quality is

available for BUMP. This information can be used by state agencies to protect surface water where the quality is good and to begin plans to improve water quality where problems are detected. The result is a better quality of water for Oklahoma citizens. 🌍

## Sediment Runoff Prevented Through Storm Water Program



Typical storm water controls are in place at a construction site.

The Storm Water Program was developed to prevent sediments from washing from construction and industrial sites during rainfall events. Owners of these sites are required to submit a Notice of Intent to the De-

partment, receive authorization from the Department, develop a plan of control measures and implement those measures. The DEQ reviews NOIs, assures protection of sensitive watersheds, issues authorizations

and monitors compliance during operation and closure of the site.

Through its locally based environmental specialists, the DEQ has greatly increased the monitoring aspect of this program. Previously, moni-

toring of these operations was primarily complaint driven. Now, the DEQ is able to routinely perform all site closure inspections and to inspect new sites for the effectiveness of control measures. 🌍

# Storm Water Regulation for Small and Medium Cities

The DEQ was delegated the National Pollutant Discharge Elimination System (NPDES) Storm Water Discharge permitting program in September of 1997. At that time, EPA only regulated large cities (those over 100,000 in population). In 1997, only two cities in Oklahoma qualified as Large Municipal Separate Storm Sewer Systems (MS4s) under the EPA Storm Water Phase I rules. These cities were Oklahoma City and Tulsa. A second set of regulations under Phase I required all construction sites of five acres or greater to obtain coverage under the General Permit for Storm Water Discharges from Construction Activities.

On October 8, 1999, EPA finalized their Phase II rules. These rules created a need for another round of MS4 permitting. Phase II requires the permitting authority to review and possibly designate cities or towns that need to obtain a MS4 permit for small and medium MS4s. Small and medium MS4s are defined as a city or township with at least a 10,000 population and 1,000 people per square mile density. The DEQ has until December 9, 2002 to review and designate small and medium MS4s that need to obtain a MS4 permit under Phase II rules. Those cities designated to be permitted must have submitted a proper MS4 application by March 10, 2003. The DEQ

is currently in the process of evaluating possible small MS4 townships and cities. All Oklahoma cities and townships that will require an MS4 permit will be notified prior to December 9, 2002.

For the Phase II construction requirements, those sites one acre and greater will be required to comply with the terms of the permit. This includes the development of Storm Water Pollution Prevention Plans (SWP3s), implementation of plans, inspection, maintenance and proper termination procedures.

For industrial permittees the only change under Phase II regulations is the opportunity to file a No Exposure Certification for those permittees with processes protected from contact with storm water. This will allow the facility to be exempt from the requirements of the General Permit for Storm Water Discharges from Industrial Activities. 🗑️



Trash discarded in an urban area can easily find its way into nearby creeks through drainage channels. This is one of the reasons EPA promulgated the storm water MS4 regulations.



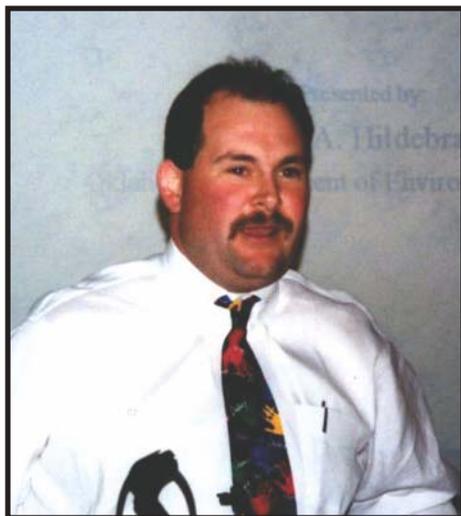
During a storm event, sediments quickly run off a site, filling the natural drainage path.



Contractors install silt fences to limit the amount of sediment runoff from construction sites.

# Wastewater Inspector Training

The Sixth Annual National Pollutant Discharge Elimination System Inspector Workshop coordinated by DEQ's Water Quality Division was held in Oklahoma City in February 2002. Sam Coleman P.E., EPA Region VI, Director of Compliance Assurance and Enforcement Division, addressed impacts of a terrorism threat on environmental protection issues during a keynote address. The workshop was the only regional training offered to environmental inspectors in the United States. The workshop strengthened the skills of local, state and federal NPDES inspectors in Region VI. More than 140 inspectors from Oklahoma, Texas, Arkansas, Louisiana, and New Mexico attended the workshop. Approximately 40 of the participating inspectors were from Oklahoma



Mark Hildebrand makes a concrete batch plant presentation.



DEQ including Environmental Complaints and Local Services personnel.

Useful information and experiences were shared among inspectors. Workshop topics included legal issues, inspection procedures, discharge reporting, and analytical procedures.

These regional workshops are beneficial to the regulated community since they allow for equality across state boundaries. Uniform training helps to ensure that an industry or municipality in Oklahoma receives the same level of scrutiny as it would in any other regional state.

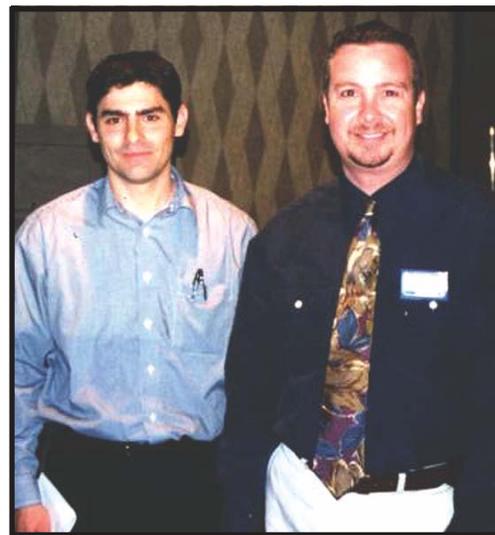
Additionally, this training allows for the regulators to learn about wastewater treatment processes that the regulated community uses. This training helps the regulators to stay up to date with the wastewater treatment technologies that regulated facilities use. 



Dale Washam, Arkansas DEQ, joined other Region 6 states in discussing inspection issues in OKC at the regional inspector training workshop.



Sam Coleman, P.E., EPA Region 6, delivers the keynote address at the NPDES training in OKC.



Brian Clagg and Jeff Brents discuss the importance of facilities achieving compliance during sessions at the NPDES Region 6 training held in OKC.

# DEQ Regulates Industrial Users



*A shaker screen is operated at a carpet mill in order to remove carpet fiber before discharging the wastewater to a publicly owned treatment works.*

As part of the delegation of the National Pollutant Discharge Elimination System (NPDES) program in 1996, the DEQ was given the authority to regulate industrial discharges to publicly owned treatment works (POTWs) as well as those that discharge directly to waters of the state. Due to the impact these industries are having on POTWs that are not required to implement a pretreatment program, the

DEQ has begun permitting and inspecting Significant Industrial Users (SIUs) in order to protect the POTWs and the environment.

During FY 2002, DEQ issued 14 Pretreatment Permits to Industrial Users. These facilities range from food processors to metal finishers. Additionally, WQD staff performed seven Industrial User Compliance Inspections. Approximately twenty-two other facilities

are currently undergoing the permitting process. Once permits are issued, these industries will receive inspections a minimum of once every two years.

In order to ensure that industrial users understand the requirements for them to properly pretreat any wastewater prior to discharge to the POTW, if necessary to prevent non-compliance at the POTW, the DEQ has conducted training sessions

and routinely sends out mailings. Additionally, the WQD staff works with POTWs to determine what industries discharge to the treatment plant. The DEQ will continue to identify and regulate industrial user facilities in order to provide protection to the POTW's from detrimental discharges and maintain the highest standard of water quality throughout the State.





*An aerator is filled with carpet fiber because the pretreatment equipment was not operational*



*When pretreatment equipment is not properly operated, the ability to treat wastewater is impacted resulting in foam, suspended solids and other pollutants being discharged into waters of the state.*

# DEQ Employees Get Hands-on Training in Lab Class

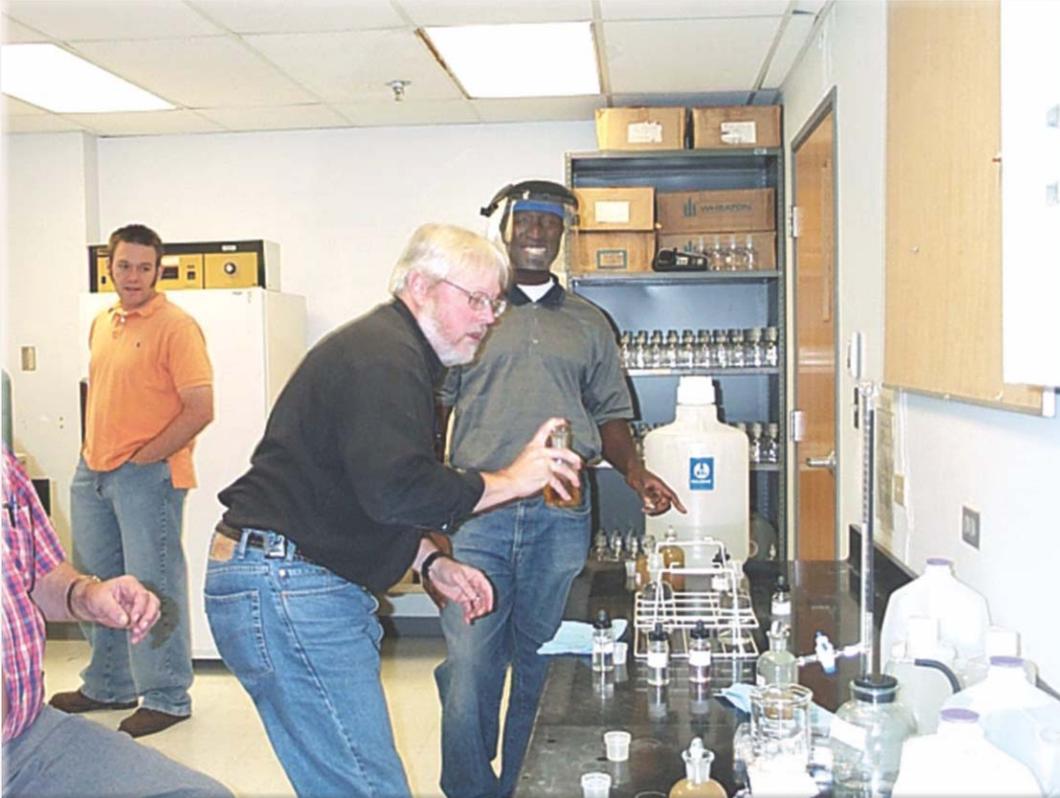
During the first week in June several wastewater employees took a wastewater

laboratory class, which is DEQ approved for wastewater operators. DEQ routinely

inspects wastewater laboratories as part of the NPDES program. In many cases,

when a person joins the staff, he/she has little hands-on training in the laboratory analysis that they must regulate. Classes like this give DEQ employees better knowledge and understanding of laboratory tests performed at the wastewater plants that are being inspected.

Seven WQD staff attended this training led by Karl Potochnik, a recognized local expert in the field. Mr. Potochnik is a graduate of the University of Arkansas and holds a B.S. degree in Environmental Science, with a concentration in chemistry. He has been teaching water chemistry for about 20 years, with experience including the Navy, Carl Albert State College, Indian Capital Technology Center, and the Rural Water Association. 🌍



Mike Madden practices his analytical skills while Myles Mungle and Wale Adesanwo look on.



Instructor Karl Potochnik watches Ron Breaux and Wale Adesanwo conduct analyses.

# Operator Certification Prepares For Internet Examination



*Water Quality Division's Angie Ratcliff prepares for Internet examination.*

The Operator Certification section of the DEQ administers an education and licensing program for water and wastewater laboratory and plant operators. This year over 4,300 hours of training were provided to operators in Oklahoma. For the first time 2,000 operators became certified or advanced their certification. Operator certification and training is im-

portant to protect the environment and the health of citizens through the proper treatment of wastewater and properly treated drinking water.

In order to make training and certification more readily available in all areas of Oklahoma, the DEQ is making examinations available over the Internet as well as at locations throughout the state. Operators will be able to access DEQ ex-

aminations from computers across the state. If an operator wishes to take an examination online, an application (that can be downloaded from the internet) must be submitted and approved. The application must be mailed in with an original signature and the required fee for each test. Each operator's name and password for the scheduled examination

will then be programmed. The examination information will be available only for a scheduled date and the operator must have his password to access the exam. A DEQ approved instructor will be on-site when the examination is accessed to monitor the examination and identify each examinee by viewing photo identification. Printouts of scores are available on site. 

# Water Quality General Permits

General permits are created in an effort to simplify the permitting of facilities that generate wastewater with the same characteristics and in a similar manner. They all will have the same permitting requirements. The general permit allows the issuance of authorizations to qualifying facilities reducing the time required to obtain permit coverage to approximately 30 days and in some cases even less. Reducing the time required to obtain a permit from approximately

180 days to 30 or fewer allows business or construction to begin sooner while being equally protective of water quality.

At the present time, DEQ's Water Quality Division has 12 general permits in force that are related to the management of wastewater. Some of the areas covered by these permits include: car and truck washes, total retention impoundments that contain wastewater that has sediments as the primary pollutants, coal

mines, hydrostatic testing of tanks and piping, underground storage tanks, concrete batch plants, mobile concrete batch plants, and municipal discharging lagoons. To date, the DEQ has issued 229 authorizations under these general permits (excluding the mobile concrete



General Permits Water Quality Division		Type	Description	Expiration/Status
Storm Water			Construction Activities	09/13/07
			Multi-Sector Industrial	09/28/05
Waste Water	Total Retention		Car Wash Facility	12/31/02
			Class III Industrial Impound	12/31/02
			Concrete Batch Plant	03/31/03
			Mobile Concrete Batch Plant	05/05/07
	Discharging		Petroleum UST Cleanup	12/14/02
			Coal Mines	12/31/02
			Car Wash Facility	12/31/02
			Concrete Batch Plant	03/31/03
			Hydrostatic Test Projects	09/30/04
			Municipal Discharge Lagoon	06/30/06
			Aquaculture	Fall 2002 Issuance
			Sand & Gravel Quarries	Fall 2002 Issuance
			Drinking Water Treatment Plant Backwash	Winter 2003 Issuance
Construction			Water Line Extensions	Fall 2002 Issuance
			Sewer Line Extensions	Fall 2002 Issuance
			Minor Water System Slow Sand Filter	In use
Land Application			Biosolids – Minor System & OneTime Removals	Fall 2002 Issuance
			PWS Alum Sludge	Fall 2002 Issuance
			PWS Lime Sludge	Fall 2002 Issuance
			Minor System Treated Effluent (including application at golf course)	Winter 2003 Issuance

batch plants). In addition, the DEQ administers two general permits related to the management of stormwater associated with industrial facilities and one general permit for construction activities on sites greater than five

acres. In fiscal year 2002 there were 263 stormwater construction general permits issued and 234 industrial stormwater general permits issued.

DEQ is currently developing general permits for fish

farming, rock, sand, and gravel quarries, and public water supply filter backwash facilities. It is anticipated that the new general permits could affect approximately 84 facilities that currently have individual permits. An additional

30 currently unpermitted facilities are expected to apply for coverage under the mobile concrete batch plant general permit that was issued in early June 2002. Approximately 60 facilities are expected to be affected by the fish farm general permit. 🌊

## DEQ Reduces Permit Back Log to Four Percent



Miguel Florez, from the EPA Region VI office, prepares to present a 2001 recognition award for meeting the national EPA goal of reducing the NPDES permit backlog.

EPA recognized DEQ's reduction in the backlog of major wastewater dischargers with expired permits. Quang Pham, Engineering Manager of the Wastewater Discharge Permit Section, and his staff of permit writers put forth an extraordinary effort to achieve this accomplishment. EPA presented a special

award to the DEQ, Quang Pham, Ming Yu, Joe Ahmadifar, and Afsaneh Jabbar to commemorate the magnitude of the achievement and show its appreciation for DEQ's professionalism. EPA representatives on hand to present the award and certificates were Miguel Flores, Ed McHam and Jack Ferguson with Region 6's Water Quality Protection Division. Additionally, several state agencies had representatives present to share in the

recognition of the Oklahoma National Pollutant Discharge Elimination System (NPDES) program.

When DEQ received delegation of the NPDES program from EPA in November of 1996, there were a total of 70 expired major permits on

the permit backlog list. In 2001, the backlog of expired NPDES permits across the nation including Oklahoma, was highlighted by a General Accounting Office report. A subsequent news article identified Oklahoma as the seventh highest state in the nation with backlogged permits. Oklahoma started the 2001 calendar year with 26 previously expired permits for major facilities. An additional six major permits expired during 2001.

In spite of the receipt of permit applications for new facilities, the DEQ committed to the national EPA goal of reducing the permit backlog for major facilities to no more than 10 percent. DEQ went beyond the committed goal by reducing the major discharge permit backlog to four percent. Oklahoma is the only EPA Region 6 state to meet or exceed the national backlog reduction goal, and one of only 14 states in the nation to do so. 🌊



Quang Pham, Engineering Manager of the Wastewater Discharge Permit Section Water Quality Division, accepts the award on behalf of DEQ. Miguel Florez, EPA Region 6, presented the award, while Jon Craig, Division Director of the Water Quality Division, looks on.

# Customer Services in Oklahoma

