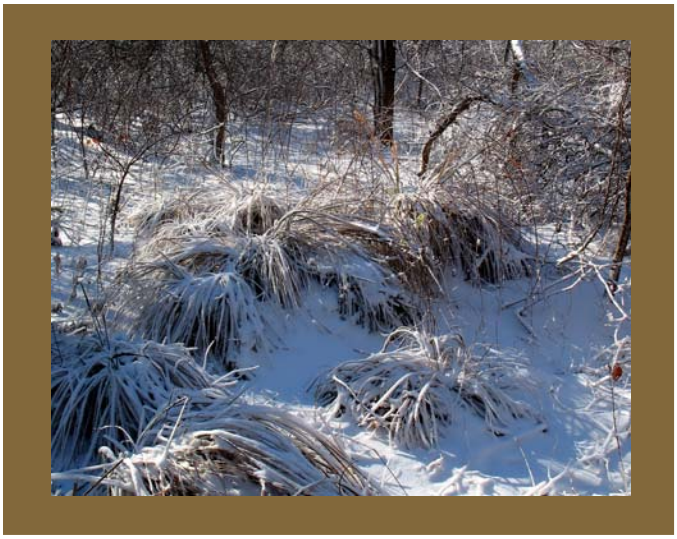
The Land Report

January 2006 through December 2006



OKLAHOMA
DEPARTMENT OF ENVIRONMENTAL QUALITY

. . .for a clean, attractive, prosperous Oklahoma

Oklahoma's state reptile, the Mountain Boomer or Collared Lizard, seen during a site inspection

O K L A H O M A
DEPARTMENT OF ENVIRONMENTAL QUALITY
…for a clean, attractive, prosperous Oklahoma

Cover photos, taken by Hal Cantwell of the Land Protection Division, are of various places in Oklahoma representing the four seasons of the year.

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Contents

The Land Report

January 2006 through December 2006

By the Land Protection Division of the Oklahoma Department of Environmental Quality

This report highlights land restoration projects carried out in several DEQ programs: Brownfields; Voluntary Cleanup; Oil and Mining Land Restoration; Hazardous Waste Generator Cleanup; Superfund and Waste Tire sites. There are a number of projects that are not in this report including smaller, short-term projects or those in which negotiations for a consent order are underway.

For more information, contact the Land Protection Division at (405) 702-5100.

Brownfields

Idle property where contamination may thwart redevelopment

RCRA

A statewide program to address historical hazardous waste releases at regulated facilities

Voluntary Cleanup Program

A responsible party initiated and funded program to voluntarily clean up contaminated property

Superfund

Large-scale federal program designed to address the nation's most severely contaminated waste sites

Site Cleanup Assistance Program (SCAP)

A state program to facilitate re-use of armories and to clean up abandoned waste sites that do not qualify for other programs

Radiation

A statewide program that licenses and inspects most users of radiation, such as industrial radiography, material usage and research

Brownfields

Cleanup and reuse of contaminated properties is an increasingly common practice throughout Oklahoma. The term "Brownfields" describes properties with environmental concerns that affect their value and marketability. The potential for Superfund liability led developers, lenders, and potential purchasers to shy away from former industrial properties for fear they might be contaminated.

The passage of state and federal Brownfields laws limiting environmental liability helps revitalize interest in former industrial facilities, as well as resurrect urban downtown areas. By entering into and completing the DEQ Brownfields process program participants, their lenders, lessees, and successors gain specific relief from state environmental and federal Superfund liability. The Brownfields Program breaks the chain of environmental liability that hampered the redevelopment of America.

Oklahoma's Brownfields Program is an EPA-approved cleanup program. It includes a low-interest loan program for the cleanup of contaminated properties and a Targeted Brownfields Assessment Program to help local governments and non-profit groups evaluate the environmental condition of properties they own or plan to buy.

The Oklahoma Brownfields Conference 2006 presented by DEQ and Oklahoma City was held November 30 through December 1, 2006

Oklahoma Brownfields CONFERENCE 2006

Brownfield Sites

Oklahoma City Landfill/Dell Computer
Oklahoma City

Dell Oklahoma City Campus

During the past few years, citizens of Oklahoma City have invested in improving their community by creating a beautiful downtown area, improving schools, and taming the Oklahoma River. The City is reaping the benefits of this investment through tourism and the creation of new business. One of those new businesses is Dell Computer. Dell was interested in obtaining land on the River Walk, near the junction of Interstates 40 and 44.

The City owned the property, but there was one problem: it was a former municipal landfill. Wastes were buried under what appeared to be a vacant lot. As wastes degrade in a landfill, gases are generated, most notably, methane and carbon dioxide. Gases migrate through a landfill from areas of high pressure to areas of low pressure, which is usually the surface. These gases are not dangerous to humans in the outside environment – they are naturally occurring gases. It is only when they concentrate within a structure that problems occur. Methane can explode, and carbon dioxide can displace air in low areas and cause asphyxiation.

The City requested DEQ's assistance to evaluate the environmental issues at the site. Management of the landfill gases was the best option for the site. DEQ worked with the City to cut off the migration pathways for the landfill gases. The landfill was compacted to remove voids in the waste and provide a stable building foundation. The new Dell building was constructed with specially designed vapor barriers. A modified heating and air conditioning system was installed that creates a positive pressure environment on the first floor, which prevents landfill gases from migrating into the building.

The Dell Oklahoma City Campus employs 1,000 people with an average annual salary of $40,000 and is an important and dynamic step in the revitalization of the Oklahoma River corridor.

Oklahoma City is applying for a Brownfield "No Action Necessary" Certificate for the site, and once it is issued the property will be transferred to Dell.


Dell Campus during construction


Dell Oklahoma City Campus completed

Claremore Hospital Office Building

Claremore

C-OK, L.L.C., and DEQ have worked together on a medical office building constructed over an old landfill. Many landfills have the potential to generate methane gas for years after closure. In this case, an impermeable barrier and a vent system were installed to vent away any gases produced by the landfill. The medical office building was constructed, and groundwater and the venting system will be monitored for two years. This is a good example of how the Brownfields process helps return idle lands to productive use.

Summit Machine

Oklahoma City

Summit Machine Tool completed work at its Oklahoma City industrial property. Site characterization revealed an abandoned leach field with contaminated soil and groundwater. Summit removed more than 200 cubic yards of contaminated soil, which significantly reduced the potential for additional groundwater contamination. The groundwater plume had encroached into the adjacent Little Giant Pump Company property. Both companies applied for Brownfield Certificates and received them in January 2007.

Targeted Brownfields Assessments

A Targeted Brownfields Assessment (TBA) is an environmental study, much like a Phase I or Phase II Environmental Site Assessment. DEQ performs the TBAs at the request of public and non-profit entities at no cost to the participant. The assessment is used to determine if contamination is likely to be found at a site where redevelopment is planned.

Public and non-profit entities are eligible to apply for Targeted Brownfields Assessments (TBAs). TBAs are for sites where reuse is planned, but the environmental condition of the property is unknown. Reuse can involve the creation of commercial, industrial, recreational, conservation or other uses. For more information, contact Hal Cantwell at (405) 702-5139.

Drilling and sampling a TBA monitor well

2006 TARGETED SITE ASSESSMENTS

Alva, Atoka, Ardmore, Bartlesville, Cherokee, Chickasha, Cushing, Eufaula, Fairview, Hartshorne, Healdton, Hobart, Hominy, Konawa, Muskogee, Pawnee, Tishomingo, Wagoner, Watonga, Wewoka

Voluntary Cleanup

DEQ has operated the Voluntary Cleanup Program (VCP) since the late 1980s. Some companies need a way to clean up historic contamination on their properties without EPA Superfund Program involvement.

The VCP allows companies or individuals to clean up property under negotiated consent orders that give the DEQ oversight authority on the investigation and cleanup. This option is often selected by companies or individuals that do not need a specific liability release under federal or state law, but need to document that the cleanup was conducted properly. The VCP process generates a record of the cleanup and ensures the protection of human health and the environment.

The voluntary cleanup program includes sites ranging in size from oil refineries with hundreds of acres and many sources of contamination to smaller sites, often less than an acre, that may deal with only a single chemical.

New Wal-Mart Sparks Cleanup

Yale Cleaners

Tulsa, Tulsa County

Redevelopment drives many cleanups. To facilitate the installation of a new Wal-Mart in Tulsa, DEQ worked with property owners at 21st and Yale to clean up soil and groundwater contaminated by a former dry cleaning business.

Historical practices led to the contamination of soil and groundwater with the solvent tetrachloroethylene (also know as PCE or Perc).

Prior to cleanup, PCE concentrations in shallow groundwater were as high as 3,700 parts per billion. The drinking water standard is five parts per billion.

Contaminated soil was excavated in early 2006, and groundwater responded quickly to the removal of the source of contamination. The PCE concentration in groundwater is already down to only seven parts per billion. The shallow groundwater is very limited in extent and will not be used as drinking water. It is believed that degradation of contaminants by natural processes will continue to reduce the already low levels of PCE in the groundwater.

Okmulgee Refinery

Okmulgee, Okmulgee County

Yellow iron, otherwise known as construction equipment, has dominated the scene at the Okmulgee Refinery this year. Construction began on a 25-acre on-site disposal cell and is nearly complete. Large waste pits at the old refinery are being excavated and treated. The treated wastes are placed in an on-site disposal cell. The refinery was demolished several years ago, and cleanup is scheduled for completion in 2007. The cleanup at Okmulgee is the result of a partnering arrangement between ConocoPhillips, the Okmulgee Area Development Corporation and DEQ.

Abandoned Refinery Razed

Duncan Refinery

Meridian, Stephens County

ConocoPhillips, Stephens County and DEQ are working together to investigate and clean up this 400-acre inactive refinery, located five miles south of Duncan. The refinery operated from the 1920s until 1983.

In 2006, ConocoPhillips finished asbestos abatement and demolition activities. The last owner did not shut down the refinery properly, leaving deteriorating tanks, vessels, and buildings with wastes and chemicals that had to be removed prior to demolition.

ConocoPhillips is performing this work with an emphasis on the health and safety of its workers and nearby residents. In late 2006, a site-wide environmental investigation was started to define the extent of contaminated soil, sediment, surface water and groundwater.

August 2005 Looking west toward the refinery

August 2006

Catalytic Cracker after explosive demolition

December 2005 Looking east toward the refinery

August 2006

Superfund

National Priorities List (NPL) and Removal Actions

The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), or Superfund, was enacted in 1980. It created a large-scale national program to identify and clean up sites contaminated from previous hazardous waste management practices. The program is known as Superfund because the law established a national trust fund to pay for cleanup at sites where owners are financially insolvent or can't be found. Eleven sites in Oklahoma are on EPA's National Priorities List (NPL). Three NPL sites have been completed and removed from the priority list. Sites on the NPL are often referred to as Superfund sites. DEQ is the designated lead agency for remediation activities on five of these Superfund sites.

Remediation technology has come a long way in two and a half decades

Buyout At Tar Creek

Tar Creek NPL Superfund Site

Ottawa County

Tar Creek is Oklahoma's largest and most challenging Superfund site, covering more than 40 square miles. The site includes the towns of Picher, Cardin, Quapaw, Commerce, and North Miami and an entire watershed in northeastern Oklahoma. Historically, this site was one of the world's largest lead and zinc mining districts, where ore was mined underground and processed at the surface. The environmental legacy of this economic activity is a devastated landscape of mine tailings, mine collapses, mine drainage into area streams, abandoned mine shafts, and elevated blood lead levels in area children.

The most significant event at the site this year was the decision by state and federal officials to offer a voluntary buyout to residents at risk from subsidence (mine collapses). Federal funding and legislation were followed by state legislation that created a Trust Authority to conduct the voluntary buyout. The Trust established priorities, and those most at risk will be bought out first. The Trust will continue to work through a myriad of issues related to the buyout, such as the fate of municipal utilities and the demolition or resale of homes.

Tar Creek Residential Cleanup

Excavation and removal of lead-contaminated soil continued this year and is nearing completion:

Miami

12 city parks cleaned up

Commerce

118 residential and church properties cleaned up

This work was accomplished in each city through a unique partnership between the state, federal and local governments. DEQ contracted with the cities, using federal EPA dollars, for this cleanup work. These agreements provided local control of the work and were cost-effective. The Miami parks were completed 29 percent lower than the cost estimate and lower than the EPA contractor estimate. The work in Commerce has been completed on schedule and within the budget. These projects show how government, working together for the common good, can achieve its goals in a practical and cost-effective manner.

For more information, contact Angela Brunsman at (405) 702-5141.

Superfund Emergency Response/Removals

Superfund provides for emergency and response actions when and where there is imminent and substantial danger to people or the environment.

Ponca City Mercury Removal Action
Kay County

An adolescent boy was admitted to the OU Children's Medical Center with what appeared to be mercury poisoning. DEQ was notified and requested EPA to investigate the boy's home to determine if mercury was present at unsafe levels. DEQ encouraged the hospital and the boy's parent to ensure other children living in or visiting the home also were tested.

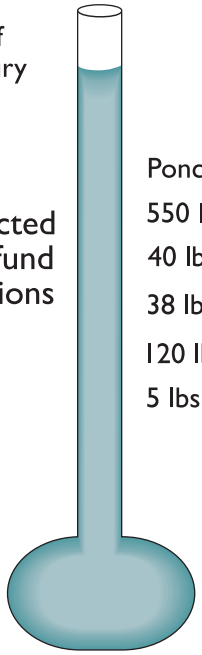
EPA found extremely high levels of mercury vapor in the home. Liquid mercury was found in substantial amounts through the home and especially in the refrigerator. The boy had tried to freeze the metal and it spilled. At least seven children, ranging in ages from two to 17, were tested for mercury. Three children had to be given chelation therapy to remove mercury from their systems.

People often have mercury stored in their homes because they don't have a way to properly dispose of it. During the mercury cleanup, DEQ and EPA worked with the City of Ponca City to collect mercury from local residents.

Approximately 300 pounds of mercury and mercury-containing devices were sent to a recycler. For more information, contact Rita Kottke, Ph.D., at (405) 702-5127.

Total
1,000 lbs of
Household Mercury

Mercury Collected During Superfund Removal Actions



Ponca City - Ongoing
550 lbs. Cyril Refinery
40 lbs. Hudson Refinery
38 lbs. Duncan Mercury
120 lbs. Chickasha Mercury
5 lbs. Dewey Mercury

More About Mercury and Voluntary Mercury Collection:

Mercury has been known to man since ancient times. It was found in Egyptian tombs dating back to 1500 BC, and its toxic effects have been known for centuries. In the past, mercury was used in the making of felt hats, and the phrase "mad as a hatter" is based on the neurological effect of mercury on the hat makers.

Mercury's unique properties, which make it so useful in industrial processes and consumer products, also make it extremely intriguing and highly dangerous to children. The health risks of a spill can be aggravated by inappropriate attempts to clean it up. Conventional vacuums will further disperse the metal in the home.

Mercury vaporizes at room temperature, which results in people breathing mercury fumes. Children are more prone to severe mercury poisoning due to the fact that mercury vapors are heavier than air and tend to hover around two to three feet above the floor, in the breathing zone of young children.

To educate Oklahomans about the dangers of mercury and to provide a means for citizens to dispose of this toxic substance, DEQ and EPA partner to issue press releases and collect and recycle mercury during Removal Actions where mercury is a chemical of concern. To date, more than one-thousand pounds of mercury have been collected and recycled through this public service.

Osage Power Plant Superfund Removal

Ponca City

EPA began asbestos abatement in September at the Osage Power Plant. The derelict plant is located south of Ponca City on the west bank of the Arkansas River. The coal-powered, electrical generation plant was taken off the power grid and closed in the 1980s. Illegal removal of asbestos during salvage operations occurred in the late 1980s, spreading contamination throughout the building.

Recent investigations show that giant windows in the power plant have been shot or broken out. The broken windows provide a route for contaminants in the building to escape into the environment, which makes the site eligible for the Superfund actions. DEQ is assisting EPA to evaluate the environmental condition of the property and to clean up the asbestos in the building and the surrounding area.

Close-up of the Power Plant

The Osage Power Plant

Inside Power Plant

Drums of waste in the facility

Larry's Electroplating Superfund Removal
Oklahoma City

In September, DEQ requested EPA's assistance to remove chemicals and contaminated soil and debris from a small electroplating facility in Oklahoma City. The operator abandoned the business, and the owner of the building moved the plating vats and chemicals outside the building so he could rent it again.

The chemicals were not properly stored and some drums released chemicals to the neighbor's property. The facility is adjacent to a residential neighborhood. The cleanup was performed in September.

Sampling during the Removal at Larry's Plating

Hub Waste Oil Superfund Removal
Muskogee

The Hub Waste Oil site is an abandoned property in Muskogee, which the county seized for back taxes. Investigations show soil contamination and hazardous waste stored in tanks on site. A residential neighborhood is adjacent to the site. The site is only partially fenced, and the front gate is open. Vandals have reportedly set fire to an on-site building on several occasions. The local fire department and DEQ have received unsubstantiated complaints that someone was discharging the liquid hazardous wastes in the tanks to a nearby drainage ditch. DEQ requested EPA's assistance in August to remove the site hazards. EPA began work in December to remove the hazardous wastes.

Tanks to be removed at Hub Oil

Three State-Lead Superfund Sites are Undergoing Investigation and Feasibility Study

Once a site becomes a Superfund site, the first step is an investigation to define the nature and extent of contamination. This is followed by a detailed evaluation of cleanup options. Part of this evaluation is risk assessment, which is used to calculate hazards posed by the site. The investigation, risk assessments and feasibility study take about two years to complete. The outcome of the study is a plan that outlines the best option for cleanup, which is made available for public comment. The final output is a plan that documents the cleanup decision. DEQ is working on three of these projects this year:

Hudson Refining Company NPL Site - Superfund

Cushing, Payne County

Site-wide sampling was completed and DEQ's consultant is preparing a risk assessment and Remedial Investigation Report. Evaluation of cleanup options is underway. A public meeting in Cushing was held in mid-December to present the Proposed Plan and to take comments. This former refinery began operations in the early 1900s and shut down in 1983. The refinery was not properly shut down and many tanks, vessels and lines contained product and wastes. The refinery superstructure was demolished by EPA, paving the way for the current investigation.

Imperial Refining Company NPL Site - Superfund

Ardmore, Carter County

Heavy metals and semi-volatile organic compounds are the most common contaminants of concern at this site. Waste, soil, surface water and biota sampling and analysis was completed in March 2006. DEQ held a public meeting in Ardmore in January 2007 to inform the community of the findings of the investigation. The risk assessment and evaluation of cleanup options and technologies are underway and completed by the end of 2006.

Tulsa Fuel & Manufacturing NPL Site – Superfund

Collinsville, Tulsa County

The first phase of sampling and analysis was completed earlier this year. A second phase of field work concluded in September on this abandoned lead and zinc smelter site. The samples were analyzed by the State Environmental Laboratory and will be published in a report. Site data will be used to calculate the human health and ecological risk posed by the contaminants. This 50-acre site has a large volume of smelter slag and debris. Heavy metals, lead, cadmium and arsenic are the primary concerns at the site. Data evaluation, reporting and the risk assessments will continue through early 2007, when the detailed evaluation of cleanup options and technologies will begin.

Sampling During the Imperial Refining Company Remedial Investigation

Installing a monitoring well

Ecological sampling

Sampling the West Pond

Sampling a monitoring well

Site Cleanup
Assistance Program

The State legislature, in April 2006, passed a bill that provides funds to support cleanup of armories and some abandoned waste sites around the state. These projects fall within the DEQ Site Cleanup Assistance Program and will:

- Assess and cleanup abandoned hazardous waste sites, and
- Evaluate and remediate the military armories being closed under Base Realignment and Closure (BRAC)

Cleanup of abandoned hazardous waste sites will help protect human health and safety and minimize impact to the environment. There are no private resources available for the cleanup of these sites, and they do not meet the eligibility requirements of other environmental cleanup programs. If left unchecked, these sites will pose health and safety risks to their local communities.

More than 90 communities in Oklahoma are host to National Guard armories. Many exhibit potential environmental problems due to residues from firing ranges, lead paint, or asbestos-containing materials. Although the military has successfully managed the environmental issues at these facilities, the federal BRAC committee recently recommended that the majority of Oklahoma's Army National Guard armories be closed. Once the facilities are no longer used for military purposes, they will be returned to the local communities.

DEQ, in coordination with the Oklahoma Military Department, the Department of Central Services, and the local communities will ensure the environmental issues are appropriately addressed prior to transfer of ownership.

At the end of 2006, contracts were in place to begin asbestos assessment and design cleanup at several armories.

For more information, contact Angela Brunsman at (405) 702-5141.

The Watonga Armory is similar to many others built by the WPA in the 1930s

Wewoka Armory Leads to Cleanup Funds

The Wewoka Armory has been vacant since the National Guard left, and the building has deteriorated. It was in continual use by the National Guard from 1965 through the mid-1990s, and holes in the roof led to extensive water damage. The Oklahoma Military Department planned to transfer the armory to the City of Wewoka, but the potential environmental hazards and the cost to remedy them complicated the transfer.

The Department of Central Services, the state agent for the property transfer, requested DEQ's assistance. DEQ performed a Phase I Site Assessment and found high levels of lead in the firing range sand-trap.

Indoor firing ranges are often contaminated with lead which is concentrated in a sand trap. The sand trap absorbs the bullet's energy after it hits a steel backstop and drops into the trap. Cleanup of the sand would be expensive, and without cleanup reuse was unlikely. Asbestos was also identified as a potential hazard at the facility.

The Wewoka Armory is one of many across the state slated for transfer to local communities. Many have firing ranges and are old enough to contain asbestos as well as other environmental hazards that could impair reuse. DEQ has federal Brownfield funding to assess hazards at some of the armories. In 2006, the state legislature provided funding to DEQ for armory cleanups across the state. DEQ hired a contractor in October to clean up the lead contamination at the Wewoka Armory. Asbestos abatement at the armory will soon be addressed.

Vacuuming lead dust at the Wewoka Armory

The Wewoka Armory shooting range before cleanup

Cleaning the walls of the shooting range

Wewoka is the first of the Armories to be cleaned up. It has the distinction of being the model for upcoming armory cleanups across the state. DEQ is proud to partner with the Oklahoma Military Department, Department of Central Services and local communities to preserve these historically significant structures and to help foster beneficial reuse of these buildings.

Taking wipe samples for lead

Resource

Conservation and Recovery Act (RCRA)

The 1976 Resource Conservation and Recovery Act (RCRA) was the nation's first comprehensive hazardous waste management law. RCRA created a system that regulated treatment, storage and disposal of hazardous wastes. This program has subsequently been delegated to the state by EPA. It was amended several times, and for the most part, addresses land disposal of hazardous waste and corrective action.

Sunoco Refinery

Tulsa, Tulsa County

The Sunoco Refinery, located on the banks of the Arkansas River in Tulsa, has a crude oil capacity of 90,000 barrels per day. Sunoco operates under DEQ permits. The refinery is reworking several old on-site landfills along the property boundary. Wastes are being stabilized and covered with an engineered cap designed to prevent erosion and infiltration of water. The refinery is continuing longer-term groundwater cleanups.

Anadarko Petroleum

Enid, Garfield County

The migration of chemicals as gases from soil or groundwater into indoor air, known as vapor intrusion, is receiving much attention nationally. Certain chemicals, because of their natural characteristics, can potentially migrate from groundwater and/or soil into homes and other structures. This is a relatively new aspect of risk assessment for which assessment protocols are quickly evolving. Anadarko Petroleum and DEQ are working together to determine the best way to evaluate potential vapor intrusion of benzene in groundwater associated with the former Champlin Refinery in Enid. The refinery is dismantled and closed, but refined products containing benzene as a constituent, were historically released and have impacted the groundwater.

In March, 2006, Anadarko Petroleum assembled a panel of experts including members from academia, industry, and EPA to discuss the characteristics of the groundwater plume associated with the former refinery site. Previous soil vapor sample information was helpful, but not definitive for predicting whether vapor intrusion was occurring. The expert panel, Anadarko and DEQ agreed on a list of recommendations for how best to proceed with the investigation, which resulted in Anadarko conducting additional soil vapor sampling during October 2006. The approach used at this site demonstrated how well industry, academia, and the regulatory community can work together in a cooperative fashion to resolve challenges in a rapidly changing area of risk evaluation.

Soil vapor sampling at Anadarko Petroleum

GRAND REOPENING

Ventura Refining & Transmission
Near Thomas, Custer County

The Thomas/Barrett Refinery was built in the early 1980s with a capacity of approximately 14,000 barrels per day. It operated until the mid-1990s when it ceased operations and entered bankruptcy. Several interim owners or bankruptcy trustees attempted to return the refinery to production without success. Over time, leaks and spills of petroleum contaminated the soil.

In the summer of 2006, the refinery was purchased by Ventura Refining, with the goal of reopening the refinery. Ventura worked with DEQ to clean up areas of contamination. Several hundred cubic yards of contaminated soils were excavated and either disposed of off-site or treated on-site and used for backfill. The refinery hopes to reopen soon and plans to produce 14,000-plus barrels per day of motor fuels.

Ventura facility in Custer County

Supplemental Environmental Projects

Many DEQ enforcement actions for noncompliance are resolved through settlement agreements with violators. As part of a settlement, a violator may voluntarily agree to undertake an environmentally beneficial project as partial satisfaction of the penalties assessed against it. A Supplement Environmental Project (SEP) furthers DEQ's mission to ensure a clean, attractive, and prosperous Oklahoma. It does not include the activities a violator must take to return to compliance with the law.

Because SEPs are part of an enforcement settlement, they must meet certain legal requirements.

- There must be a relationship between the underlying violation and the human health or environmental benefits that will result from the SEP.
- A SEP must improve, protect, or reduce risks to public health or the environment.
- The SEP must be undertaken in settlement of an enforcement action as a project that the violator is not otherwise legally required to perform.

Panhandle State University

Goodwell, Texas County

Panhandle State University (PSU) in Goodwell, Oklahoma, is closer to Texas, Kansas, Colorado and New Mexico than to Oklahoma City, so PSU officials depend on the local DEQ office to answer their environmental questions. PSU recently had a small environmental problem arise.

The university wanted to use a basement in a classroom building, but the space had been used as an ROTC firing range. Indoor firing ranges are often contaminated with lead concentrated in the sand trap.

University staff turned to the local DEQ Environmental Complaints and Local Services (ECLS) office for advice and assistance. ECLS contacted the Land Protection Division to learn how the sand might be reused. Laboratory data showed the sand was too contaminated to reuse without extensive treatment. LPD suggested a waste disposal company facing a DEQ-imposed fine might be willing to remove and dispose of the sand as a Supplemental Environmental Project as a portion of its fine. The company agreed, and the cleanup was successfully completed in May 2006.

Putting the sand from the shooting range in drums

Indoor shooting range during cleanup

OKC Solvent Plume

Oklahoma City, Oklahoma County

A plume of contaminated groundwater in northwest Oklahoma City was referred to DEQ by another state agency. The plume contains high levels of tetrachloroethylene (PCE) and trichloroethylene (TCE) between Northwest 23rd Street and Northwest 19th Street and between North Ann Arbor Avenue and North Minnie Lane. The highest contamination level found was 240 times the safe level for drinking water. PCE is a chemical widely used for dry cleaning and for metal-degreasing operations. TCE is a common breakdown product from PCE. These chemicals are notoriously difficult to remove from groundwater and it could be years before cleanup is complete.

DEQ discovered that several drinking water wells in the area were impacted by the contaminants and several other wells were threatened. The Land Protection Division worked closely with the Water Quality Division, Environmental Complaints and Local Services, the City of Oklahoma City, and EPA to provide clean drinking water to the affected homes.

Installing a monitoring well

Working to connect homes to city water

Oil and Mining

Land Restoration Program

The emerging field of land restoration is changing our understanding about the dynamics of healthy soil. Organic materials, such as yard waste and paper, comprise more than fifty percent of the material that is discarded each day. These can be diverted from disposal and processed into useful soil amendments.

State legislation in 1995 directed several state agencies to use recovered solid waste materials to restore land impacted by oil production and mining. DEQ is working with other agencies to increase the use of diverted organic materials as soil amendments in restoration projects. For more information, contact Fenton Rood at (405) 702-5159.

FY 2006

Acres in planning	1443
Acres treated	191
Acres in follow-up	36

Community Assistance Sites

Ongoing projects
Altus
Elk City
Henryetta
Hollis
Hominy
Hugo
Valliant
Wetumka
Wewoka
Shattuck
Vinita
Custer City
Kingfisher
Miami
Marietta

Projects just beginning
Stillwater - Oklahoma State University - a minimum of 225 homes.
Ardmore
Wilson
Hinton - 50-60 homes and 4 commercial buildings.
Muskogee - 100 homes.
Sallisaw - 20-25 homes.
Waurika - 25-30 homes.
Duncan - 40 homes and 1 commercial building.
Broken Bow
Idabel
McAlester - 25-30 homes

Eliminating Small Community Blight

The high cost of demolition and disposal has left small communities struggling with the problem of dilapidated structures. Many local governments were unable to remove these blights because it was cost-prohibitive.

The Solid Waste Management Act provides relief by eliminating permits on projects approved by both DEQ and the appropriate local conservation district. The projects use suitable portions of the structures to restore and reclaim Oklahoma lands.

DEQ works with local communities and conservation districts to identify dilapidated buildings, ensure that they are free of toxic hazards and develop a plan for using the demolition material to restore scarred land. For many localities this has sufficiently reduced costs, making blight removal an affordable enterprise.

For more information, contact Marvin Boatright at (405) 702-5153.

Our State's Wildflower, Indian Blanket, planted by the DEQ Green Team to beautify the DEQ parking garage

Radiation Program on Target

DEQ Contact: Mike Broderick (405) 702-5155

DEQ runs most of the Nuclear Regulatory Commission (NRC) programs in Oklahoma, including inspection and licensing of most radioactive materials users.

The program is subject to periodic reviews by the NRC. In June, a team of federal, tribal and state representatives visited DEQ and reviewed the program. Four days of file review and interviews with staff focused on aspects of licensing and inspections including timeliness, reporting, technical quality of licensing reviews and inspection, staff qualifications, and compatibility of state rules with federal regulations.

Oklahoma did well. The team had some recommendations for the program, but the Oklahoma Radiation Management Program was determined to be "Adequate and Compatible."

Radiation Specialist performing field inspection

Waste Tires

DEQ Contacts: Ferrella March (405) 702-5175 and Melissa Adler (405) 702-5173

The Oklahoma Waste Tire Recycling Act was the subject of much public discussion during the past year. Companies in waste tire collection and recycling businesses were frustrated that revenues from waste tire recycling fees were not sufficient to reimburse the full amount envisioned by the statute. Some proposed raising the waste tire recycling fee.

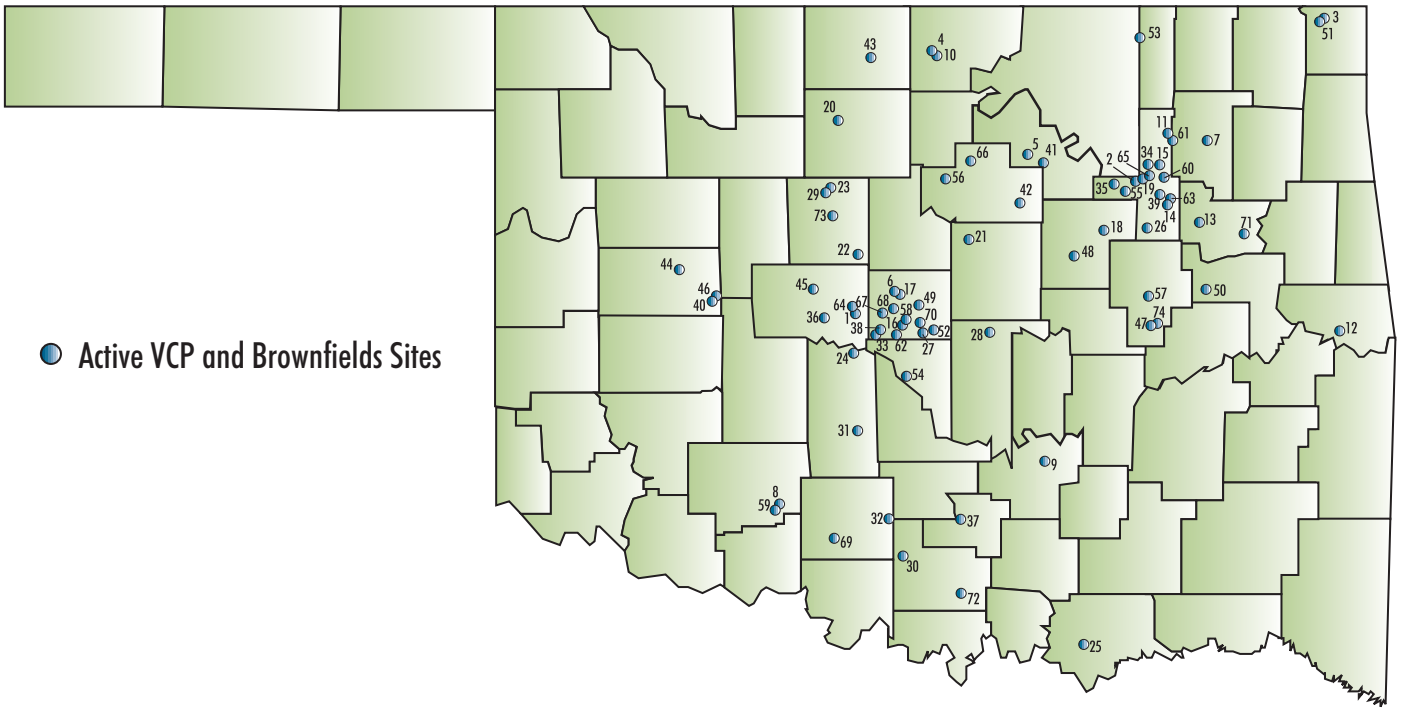
Instead, the Legislature changed the reimbursement process. The Oklahoma Waste Tire Recycling Act was amended to direct reimbursements to end-users as they actually consumed the waste tires, and the recycling fee remained unchanged.

Since its inception, an objective of this law has been to clean up illegal tire dumps. Progress continued, as 43 dumps were cleaned up in 2006. Tire dump cleanup remains an integral element of the amended statute.

The Oklahoma Waste Tire Recycling Act also helps Oklahoma communities. Sixty-three cities and towns cleaned up waste tires in community collection events in 2006. The amended statute continues to support community clean up efforts.

Appendices

Voluntary Cleanup and Brownfields Map



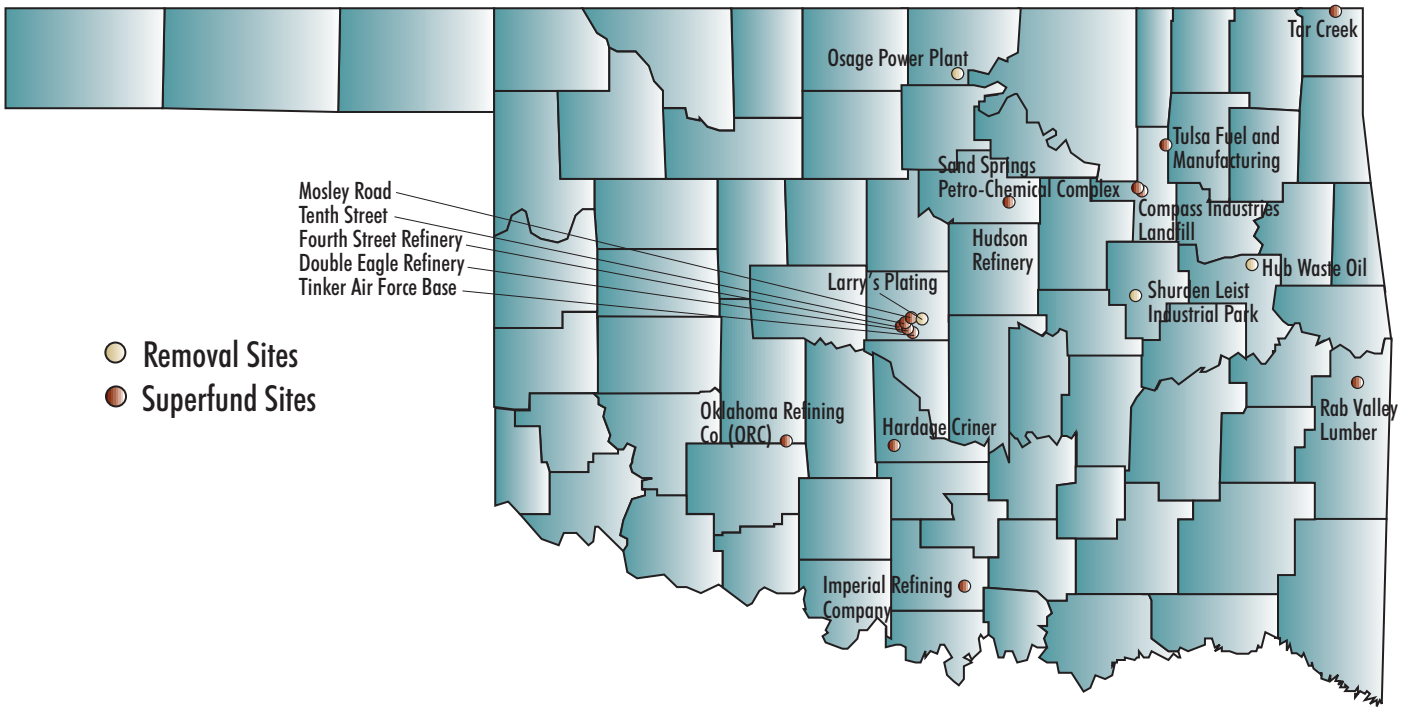
Active VCP Brownfields Sites for 2006

Number	Site Name	Project Manager	Phone
1	Altec Lansing/Telex Comm.	Replogle, Robert	702-5118
2	Baker Petrolite	Posey, Kendel	702-5120
3	BF Goodrich/Ottawa Mgmt Co	Roberts, Ray	702-5137
4	Blackwell Zinc	Downard, Sara	702-5126
5	BNSF/(BurkBales)/Phillips Pet.	Roberts, Ray	702-5137
6	Casady Square/MVP Part.	Roberts, Ray	702-5137
7	Claremore, City of (Hospital Medical Bldg	Keck, Jarrett	702-5107
8	Lawton, City of	Reid, Jon	702-5121
9	Camrose Tech/Flex-N-Gate	Young, Hillary	702-5106
10	ConAgra Foods	Reid, Jon	702-5121
11	Collinsville Smelter	Downard, Sara	702-5126
12	Coltec	Roberts, Ray	702-5137
13	Coweta Retail Dev.	Reid, Jon	702-5121
14	Crescent Mach/Scott-Macon	Davis, Paul	702-5132
15	Crosby-McKissick	Ukpaka, Sam	702-5148
16	Dell Computer Site-OKC	Kottke, Rita	702-5127
17	Dollar 75/MVP	Roberts, Ray	702-5137
18	Dowell Schlumberger	Roberts, Ray	702-5137
19	Dowell Schlumberger	Keck, Jarrett	702-5107
20	Dowell Schlumberger	Roberts, Ray	702-5137
21	Duke Energy-Carney GP	Johnson, Dale	702-5122
22	Duke Energy-Cashion GP	Johnson, Dale	702-5122

Active VCP Brownfields Sites 2006 Continued

Number	Site Name	Project Manager	Phone Number
23	Duke Energy-Hennessey GP	Johnson, Dale	702-5122
24	Duke Energy-Mustang GP	Johnson, Dale	702-5122
25	EMC Test Systems/Emerson	Johnson, Dale	702-5122
26	Enogex/Riverside PP	Reid, Jon	702-5121
27	Epperly/Mr. Keens Cleaners	Roberts, Ray	702-5137
28	ExxonMobil Chem/Shawnee Films	Lyon, Amil	702-5140
29	ExxonMobil-Dover/Hennessey	Johnson, Dale	702-5122
30	ExxonMobil-Fox CS	Johnson, Dale	702-5122
31	ExxonMobil-S. Chitwood GP	Johnson, Dale	702-5122
32	ExxonMobil-Sholem Alec. GP	Johnson, Dale	702-5122
33	FAA Mike Monroney	Posey, Kendel	702-5120
34	Facet International	Replogle, Robert	702-5118
35	Federated Metals	Roberts, Ray	702-5137
36	Gemini Coatings	Bennett, Jeannine	702-5115
37	Halliburton Services- Davis	Roberts, Ray	702-5137
38	Harcros Chemicals	Replogle, Robert	702-5118
39	Home Depot/Emerson	Replogle, Robert	702-5118
40	Imation Enterprises Corp (3M)	Posey, Kendel	702-5120
41	Kerr McGee Cleveland	Roberts, Ray	702-5137
42	Kerr McGee Cushing	Posey, Kendel	702-5137
43	Koch Hydrocarbon, LP	Davis, Paul	702-5132
44	Koch Ind./Custer City	Davis, Paul	702-5132
45	Koch Ind./El Reno	Davis, Paul	702-5132
46	Kodak Polychrome Graphics	Posey, Kendel	702-5120
47	Kusa/ASARCO	Roberts, Ray	702-5137
48	Kwikset	Bennett, Jeannine	702-5115
49	M-D Building Products	Roberts, Ray	702-5137
50	Marathon Oil/Boynton	Posey, Kendel	702-5120
51	Michelin/BFG	Roberts, Ray	702-5137
52	Midwest City/MidAmerica Mall	Posey, Kendel	702-5120
53	National Zinc	Datin, Dennis	702-5125
54	Normandy Creek	Posey, Kendel	702-5120
55	Norris Sucker Rod Plant	Lyon, Amil	702-5140
56	Okla. State Burial Site	Davis, Paul	702-5132
57	Okmulgee Refinery	Brunsman, Angela	702-5141
58	Cintas/Omni Services	Johnson, Dale	702-5122
59	Cintas/Omni Services	Johnson, Dale	702-5122
60	Cintas/Omni Services	Johnson, Dale	702-5122
61	Owasso Land Trust	Replogle, Robert	702-5118
62	Pilchers Lakewood Shpng Ctr.	Roberts, Ray	702-5137
63	Ruhrpumpen	Keck, Jarrett	702-5107
64	Samson Res./Global Compress	Hamill, Gail	702-5112
65	Southern Specialties Corp.	Replogle, Robert	702-5118
66	Stillwater Regional Airport	Lyon, Amil	702-5140
67	Summit Machine Tool/Seagate	Lyon, Amil	702-5140
68	Target Corp:Store T-0043	Davis, Paul	702-5132
69	Tosco Corp/Duncan Refinery	Brittain, Amy	702-5133
70	Trumbull Asph/Owens Corning	Davis, Paul	702-5132
71	Unarco/Thorco	Davis, Paul	702-5132
72	Union Oil Co. of California	Posey, Kendel	702-5120
73	Union Pacific Railroad Kingfisher	Cates, David	702-5124
74	US Zinc Smelter	Roberts, Ray	702-5137

Superfund
& Removal Sites Map

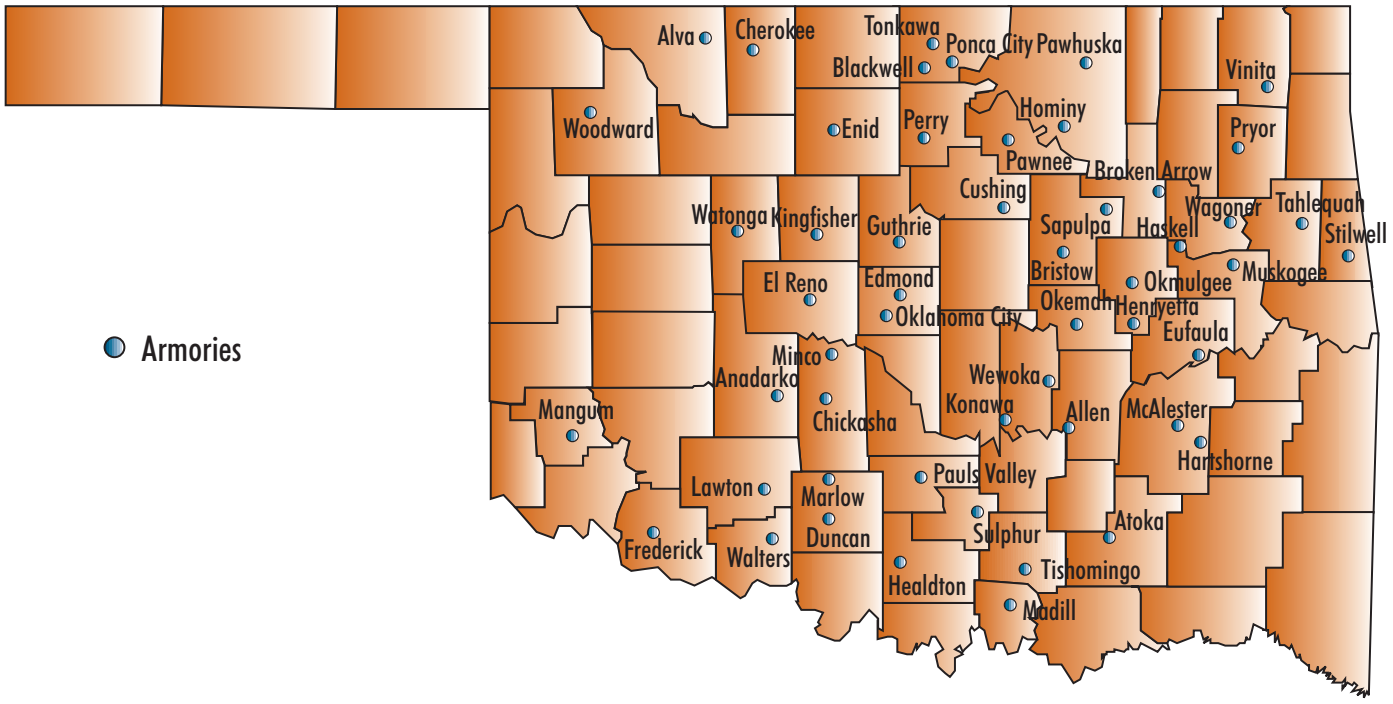


Sites in the NPL – Superfund program. Additional information is available from the DEQ Contact.

Site	Location	Contact	Status
Compass Industries Landfill	Berryhill, Tulsa, OK	Hal Cantwell (405) 702-5139	Operation & Maintenance
Hardage/Criner	South of Criner, OK	Hal Cantwell (405) 702-5139	Operation & Maintenance
Hudson Refinery	Cushing, OK	Amy Brittain (405) 702-5133	Feasibility Study
Imperial Refinery Company	Ardmore, OK	Meghan Lloyd (405) 702-5135	Remedial investigation
Mosley Road Landfill	Oklahoma City, OK	Dennis Datin (405) 702-5125	Remedial Action
National Zinc	Bartlesville, OK	Dennis Datin (405) 702-5125	Remedial Action
Rab Valley Lumber EPA Removal	Panama, OK	Karen Khalafian (405) 702-5122	Feasibility Study
Sand Springs Petrochemical Complex	Sand Springs, OK	Dennis Datin (405) 702-5125	Operation & Maintenance
Tenth Street	Oklahoma City, OK	Dennis Datin (405) 702-5125	Operation & Maintenance
Tinker AFB	Midwest City, OK	Hal Cantwell (405) 702-5139	Operation & Maintenance
Tulsa Fuel & Manufacturing	Collinsville, OK	Sara Downard (405) 702-5126	Remedial Investigation
Oklahoma Refining Company	Cyril, OK	Meghan Lloyd (405) 702-5135	Remedial Investigation
Tar Creek	Ottawa County, OK	Dennis Datin (405) 702-5125	Operation & Maintenance
Double Eagle Refinery	Oklahoma City, OK	Amy Brittain (405)-702-5133	Operation & Maintenance
Fourth Street Refinery	Oklahoma City, OK	Amy Brittain (405)-702-5133	Operation & Maintenance

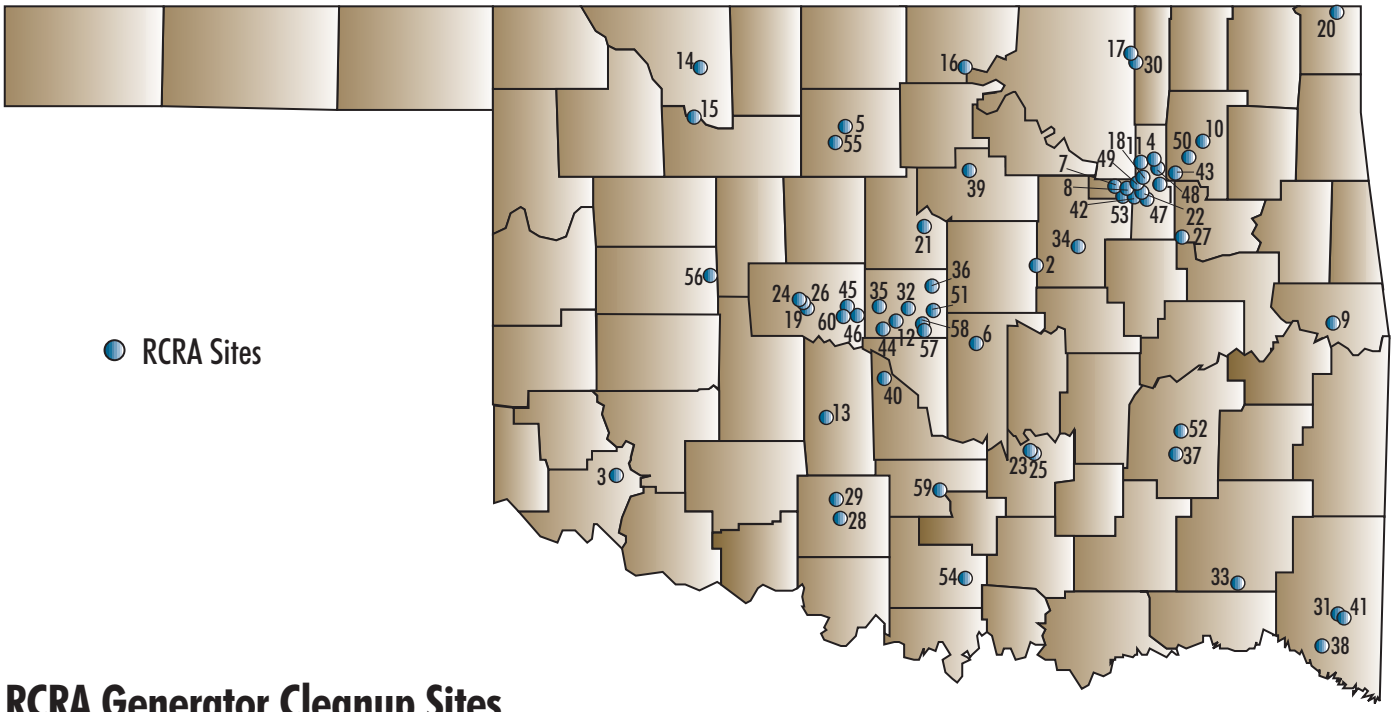
Site Cleanup

Assistance Program Armory Sites Map



DEQ Contacts: Angela Brunsman (405) 702-5141 and Rita Kottke, Ph.D., (405) 702-5127

Resource Conservation and Recovery Act (RCRA) Map



RCRA Generator Cleanup Sites

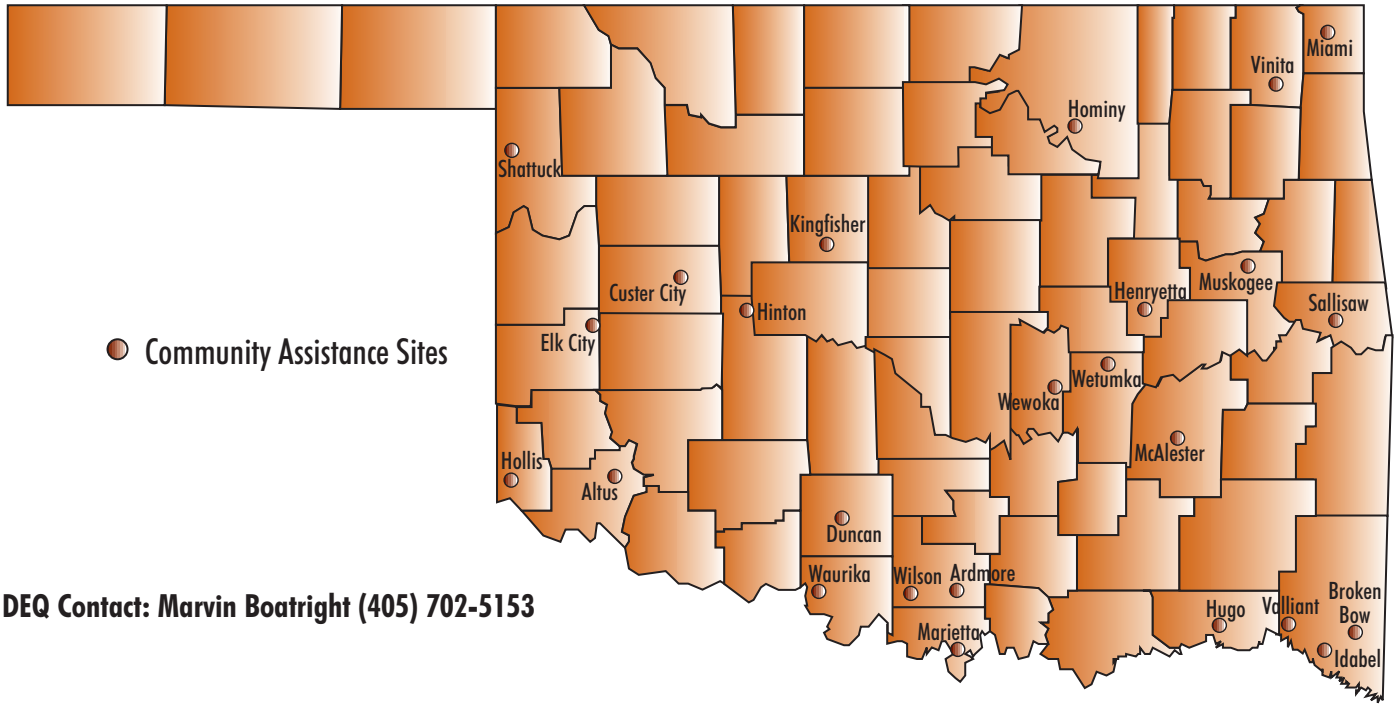
There are numerous other sites undergoing generator cleanups.

	Project Name	Project Manager	Phone
1	Air Force Plant #3 -Tulsa	Replogle, Robert	702-5118
2	Allied Materials - Stroud	Young, Hillary	702-5106
3	Altus AFB - Altus	Replogle, Robert	702-5118
4	American Airlines - Tulsa	Hensch, Don	702-5152
5	Anadarko Petroleum (Union Pacific Resources) - Enid	Young, Hillary	702-5106
6	Ashland Chemical -Tulsa	Hensch, Don	702-5152
7	Barrett Thomas Refinery - Thomas	Hensch, Don	702-5152
8	Boeing/Spirit Aerosystems Tulsa	Lawson, David	702-5104
9	Cavenham Forest Industries Sallisaw	Zaidi, Askari	702-5145
10	ChemCentral - Tulsa	Zaidi, Askari	702-5145
11	Chemical Products Division -OKC	Ukpaka, Sam	702-5148
12	Chickasha Manufacturing Chickasha	Ukpaka, Sam	702-5148
13	Clean Harbors (Safety-Kleen/HRI) Tulsa	Lawson, David	702-5104
14	Clean Harbors-Lone & Grassy Mtn. (Laidlaw/USPCI/Safety Kleen) Waynoka	Ukpaka, Sam	702-5148
15	Commercial Distributing, Inc. (CDI) - Sapulpa	Young, Hillary	702-5106
16	ConocoPhillips - Ponca City Refinery	Lawson, David	702-5104
17	ConocoPhillips Research - Bartlesville	Lawson, David	702-5104
18	Crosby-McKissic Prod. - Tulsa	Ukpaka, Sam	702-5148
19	Dowell Schlumberger - El Reno-	Hamill, Gail	702-5112
20	Eagle Picher EOM - (Umicore Quapaw	Zaidi, Askari	702-5145
21	Eagle Picher/Boron - El Reno	Zaidi, Askari	702-5145
22	El Reno Prison - El Reno	Hamill, Gail	702-5112
23	Environmental Mgmt, Inc. - Guthrie	Young, Hillary	702-5106
24	Envirosolve - Tulsa	Young, Hillary	702-5106

RCRA Generator Cleanup Sites continued

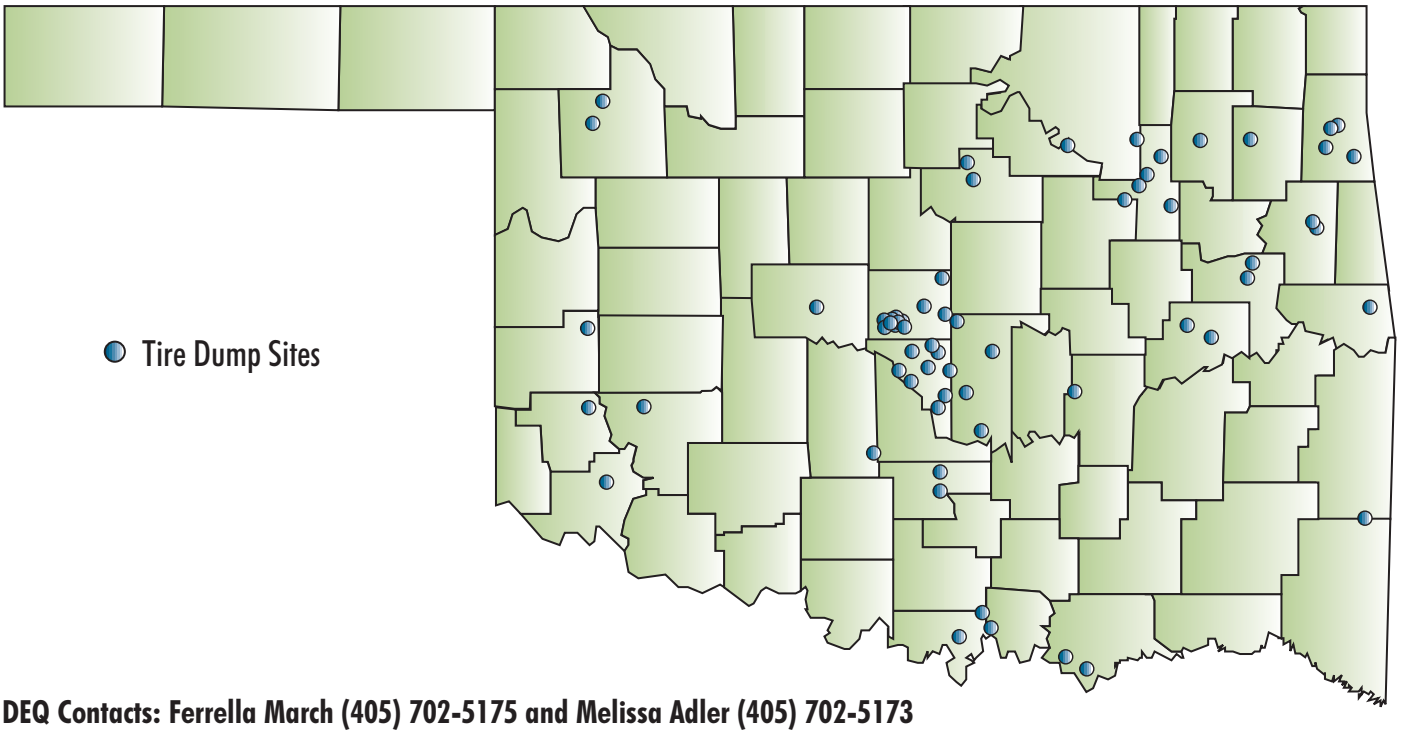
	Project Name	Project Manager	Phone
25	Exxon - Ada	Zaidi, Askari	702-5145
26	Flexingate (Ada Gen. Tires		
27	Gemini Coating -El Reno	Bennett, Jeannine	702-5115
28	GEO Holdings - OKC	Lawson, David	702-5104
29	Greenway (Chief Chemical) Stone Bluff	Hailes, Cindy	702-5114
30	Halliburton SVC Ctr - Duncan	Lawson, David	702-5104
31	Halliburton/Osage Rd - Duncan	Hamill, Gail	702-5112
32	Huffman Wood - Broken Bow	Hensch, Don	702-5152
33	Hughes Centrilift - Claremore	Zaidi, Askari	702-5145
34	Interstate Metals - OKC	Ukpaka, Sam	702-5148
35	Julian Lumber - Rattan	Hailes, Cindy	702-5114
36	Kwikset Corp. - Bristow	Young, Hillary	702-5106
37	Lucent Technologies/Celestica (AT&T) - OKC	Bennett, Jeannine	702-5115
38	Madewell & Madewell - Jones	Ukpaka, Sam	702-5148
39	McAAP (McAlester Army) - McAlester	Lawson, David	702-5104
40	Mixon Bro.. - Idabel	Hailes, Cindy	702-5114
41	Moore Bus. Forms - Stillwater	Bennett, Jeannine	702-5115
42	Newcastle Land - Newcastle	Zaidi, Askari	702-5145
43	Ozark Fluorine (Ozark Mahoning) - Tulsa	Zaidi, Askari	702-5145
44	Perma-Fix (CRT/RTI) - Tulsa	Ukpaka, Sam	702-5148
45	Safety Kleen Systems - Tulsa	Young, Hillary	702-5106
46	Safety Kleen Systems - Wheatland	Young, Hillary	702-5106
47	Sampson Resources - OKC	Hamill, Gail	702-5112
48	Seagate - OKC	Zaidi, Askari	702-5145
49	Shawnee Asphalt - Shawnee	Ukpaka, Sam	702-5148
50	Sinclair - Tulsa	Young, Hillary	702-5106
51	Sunoco, Inc. (Sun Refining) - Tulsa	Hensch, Don	702-5152
52	Terra Nitrogen (Verdigris Plant) Catoosa	Hamill, Gail	702-5112
53	Texaco - Alva	Zaidi, Askari	702-5145
54	Texaco - Woodward	Zaidi, Askari	702-5145
55	Thomason Lumber - Broken Bow	Hailes, Cindy	702-5114
56	Tinker AFB - MWC	Replogle, Robert	702-5118
57	Tricat - McAlester	Young, Hillary	702-5106
58	Unit Parts - OKC	Hamill, Gail	702-5112
59	Valero (TPI, Total Petroleum) Ardmore	Zaidi, Askari	702-5145
60	Vance AFB - Enid	Hamill, Gail	702-5112
61	Wall Colmonoy - OKC	Hamill, Gail	702-5112
62	Wynnewood Refining - Wynnewood	Young, Hillary	702-5106
63	Xerox - OKC	Hamill, Gail	702-5112
64	ZCA/Horsehead - Bartlesville	Lawson, David	702-5104

Community Assistance Sites Map



DEQ Contact: Marvin Boatright (405) 702-5153

Waste Tires Map



DEQ Contacts: Ferrella March (405) 702-5175 and Melissa Adler (405) 702-5173

O K L A H O M A

DEPARTMENT OF ENVIRONMENTAL QUALITY

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