

A landscape photograph showing a field of tall, dry grasses and several thistles in the foreground. In the background, there is a dense line of trees with autumn-colored foliage. The sky is clear and blue.

Land Report
2010

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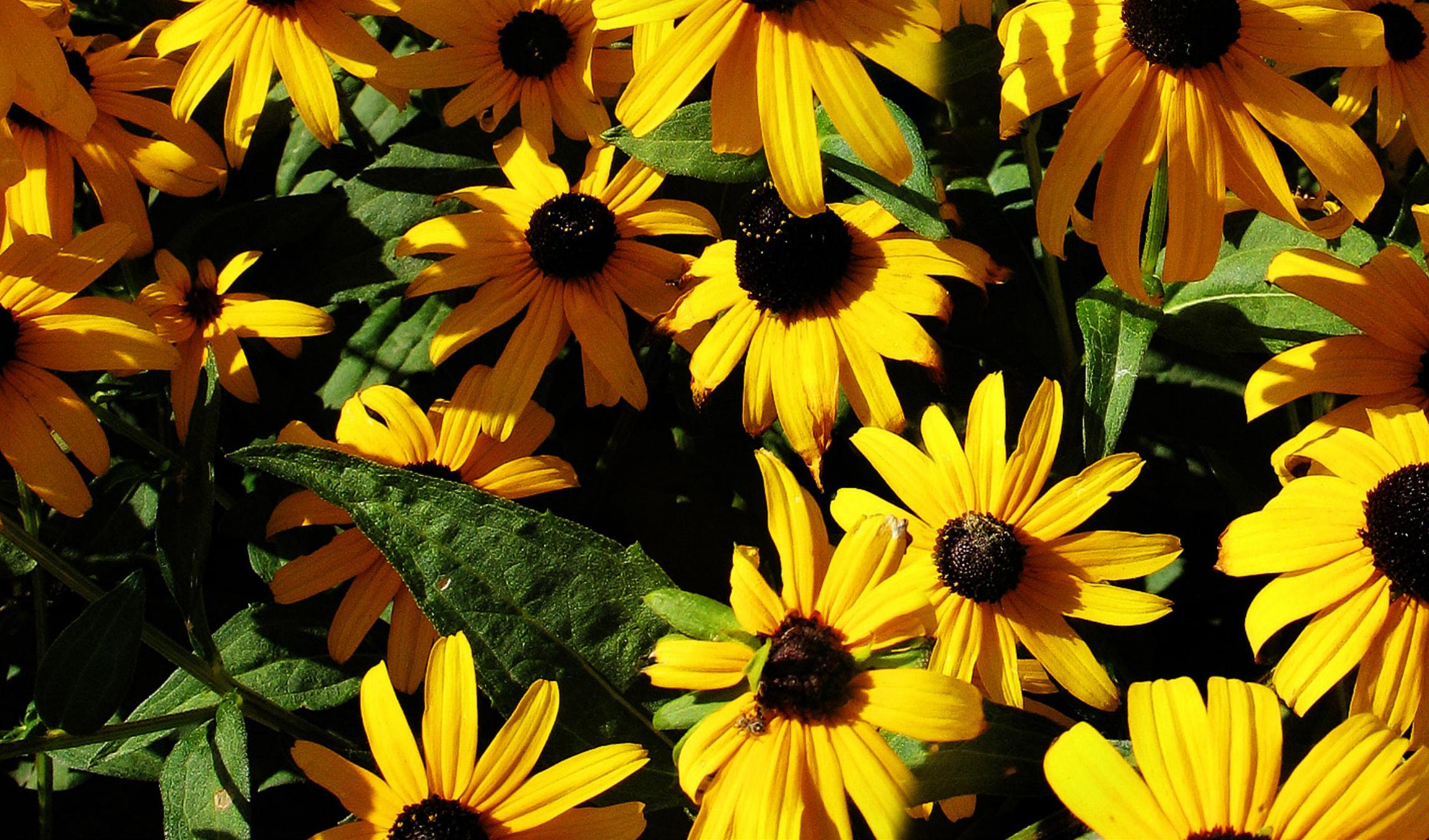
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Environmental Milestones

The foundation for Land Protection Division (LPD) programs is protection of human health and the environment. LPD places a strong emphasis on addressing historical contamination in Oklahoma and anticipating future environmental needs. A look back at the past three decades will reveal numerous environmental milestones on the national and state level.

In this report, you will read about the transformation of National Guard armories so they can be reused by communities, the evolution of the state's Voluntary Cleanup Program to assist participants with seeing a reachable resolution for some sites, and extensive training and outreach to the community and industry.

You will also read about both how the Superfund program has matured and how sites in Oklahoma have noted substantial progress in

being cleaned up properly. You will find details about revisions to the state's Brownfields rules and about Oklahoma businesses going above and beyond to be good environmental stewards.

Internally, there have been milestones as well. One of those milestones is the division's name. In state fiscal year 2001, the division's name was changed from Waste Management to the Land Protection Division in an effort to reflect its expanding responsibilities. The division grew from regulating waste disposal to a comprehensive program to ensure that impacted lands are returned to productivity.

An overview of work conducted by LPD staff is illustrated in the following pages. For more information on LPD, visit <http://www.deq.state.ok.us/lpdnew/index.htm> or call (405) 702-5100.

1890

Concept of a public nuisance and first examples of illegal disposal practices codified into the statutes of Oklahoma Territory

1907

Oklahoma State Department of Health is formed

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30 Years of Superfund

Entering its third decade, Superfund is an important tool in the cleanup of environmental contamination. While it was a few key events that led to Superfund, there is one site that is etched in many people's minds as the beginning. Love Canal, New York is a perfect historical example of how not to operate a landfill.

Love Canal was originally meant to be a dream community. Instead it captured national and international notoriety for toxic waste buried beneath the neighborhood that included a school. Residents had complained of health problems and odd smells, but the full extent of the problem didn't become known for several years. In the 1970s, an exceptionally heavy rainfall caused the chemicals buried underground to rise to the surface.

In 1979, the Environmental Protection Agency (EPA) estimated that there were thousands of uncontrolled hazardous waste sites in the United States. At this time, the country had very little means to address sites like Love Canal.

In response to the Love Canal issue, Congress passed the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund, in 1980. CERCLA's purpose was to implement a national response for problems that resulted from past hazardous waste management practices, to impose liability on those entities that created the problem, and to remediate contaminated soil and ground water caused by those practices. CERCLA implemented taxes on chemical and petroleum industries. These taxes were deposited into a trust fund to be used for remediations.

EPA published its first Hazard Ranking System in 1981, which is a scoring system used to evaluate potential risks to public health and the environment from releases at uncontrolled waste sites. The following year, EPA published the first National Priorities List, which is the list of hazardous waste sites eligible for long-term cleanup under Superfund.

Compass Industries Landfill Superfund Site

1931

U.S. Advisory Committee on X-ray and Radium Protection publishes first U.S. government radiation protection guide

1947

Los Angeles Air Pollution Control District created; first air pollution agency in the U.S.

The Superfund Amendments and Reauthorization Act, passed in 1986, made several changes and additions to CERCLA, including increasing the funding of Superfund and providing for studies and the use of new technologies. The tax that funded these projects expired in 1995. Work is currently funded through general appropriations.

Currently, there are 13 Superfund sites in Oklahoma. Over the past 30 years the Superfund program in Oklahoma has evolved. Currently cleanup is complete at nine sites, underway at three and pending at one site.

Compass Industries Landfill Superfund Site

- **City:** Sand Springs
- **County:** Tulsa
- **Site Type:** Abandoned Landfill
- **Area:** 42 acres
- **Cleanup Oversight Authority:** DEQ and EPA
- **Lead Agency:** DEQ
- **Current Status:** Cleanup completed

Double Eagle Refining Co. Superfund Site

- **City:** Oklahoma City
- **County:** Oklahoma
- **Site Type:** Abandoned Refinery
- **Area:** 12 acres
- **Cleanup Oversight Authority:** DEQ and EPA
- **Lead Agency:** DEQ
- **Current Status:** Cleanup completed

Fourth Street Refinery Superfund Site

- **City:** Oklahoma City
- **County:** Oklahoma
- **Site Type:** Abandoned Refinery
- **Area:** 27 acres
- **Cleanup Oversight Authority:** DEQ and EPA
- **Lead Agency:** DEQ
- **Current Status:** Cleanup completed

Hardage/Criner Superfund Site

- **City:** Criner
- **County:** McClain
- **Site Type:** Industrial Landfill
- **Area:** 160 acres
- **Cleanup Oversight Authority:** U.S. District Court of Western Oklahoma, Hardage Site Remediation Corporation (HSRC), DEQ, and EPA
- **Lead:** U.S. District Court of Western Oklahoma
- **Current Status:** Cleanup completed



Hardage/Criner Superfund Site



Hudson Refinery Superfund Site

- **City:** Cushing
- **County:** Payne
- **Site Type:** Abandoned Refinery
- **Area:** 200 acres
- **Cleanup Oversight Authority:** DEQ and EPA
- **Lead Agency:** EPA
- **Current Status:** Cleanup underway

1948

Federal Water
Pollution Control Act

1954

Atomic Energy Act

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Imperial Refining Company Superfund Site

Mosley Road Sanitary Landfill Superfund Site

- **City:** Oklahoma City
- **County:** Oklahoma
- **Site Type:** Municipal Landfill
- **Area:** 72 acres
- **Cleanup Oversight Authority:** Waste Management of Oklahoma (WMO), DEQ and EPA
- **Lead Agency:** EPA
- **Current Status:** Cleanup completed



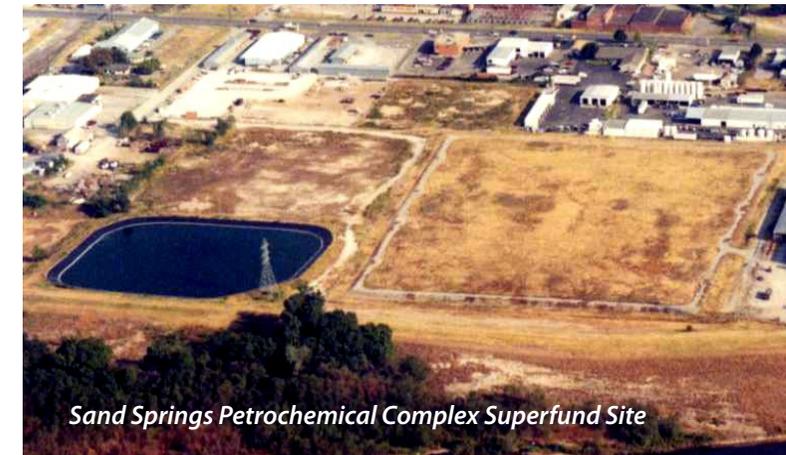
Mosley Road Sanitary Landfill Superfund Site

Oklahoma Refining Co. Superfund Site

- **City:** Cyril
- **County:** Caddo
- **Site Type:** Refinery
- **Area:** 220 acres
- **Cleanup Oversight Authority:** DEQ and EPA
- **Lead Agency:** DEQ
- **Current Status:** Cleanup underway

Sand Springs Petrochemical Complex Superfund Site

- **City:** Sand Springs
- **County:** Tulsa
- **Site Type:** Refinery/Solvent Recycling
- **Area:** 235 acres
- **Cleanup Oversight Authority:** EPA, DEQ, Atlantic Richfield Company (ARCO)
- **Lead Agency:** EPA
- **Current Status:** Cleanup completed



Sand Springs Petrochemical Complex Superfund Site

Imperial Refining Company Superfund Site

- **City:** Ardmore
- **County:** Carter
- **Site Type:** Abandoned Refinery
- **Area:** 72 acres
- **Cleanup Oversight Authority:** DEQ and EPA
- **Lead Agency:** EPA
- **Current Status:** Cleanup completed

1955

National Air Pollution Control Act

1963

Clean Air Act (United States)

Tar Creek Superfund Site

- **County:** Ottawa
- **Site Type:** Hard Rock Mining
- **Area:** 25,600 acres
- **Cleanup Oversight Authority:** U.S. Geological Survey, DEQ, EPA, the Quapaw Tribe
- **Lead Agency:** EPA
- **Current Status:** Cleanup underway

Tenth Street Dump/Junkyard Superfund Site

- **City:** Oklahoma City
- **County:** Oklahoma
- **Site Type:** Salvage/Junk Yard
- **Area:** 3.5 acres
- **Cleanup Oversight Authority:** EPA, DEQ, and U.S. Army Corps of Engineers
- **Lead Agency:** DEQ
- **Current Status:** Cleanup completed

Tinker Air Force Base Superfund Site

- **City:** Oklahoma City
- **County:** Oklahoma
- **Site Type:** Aircraft Maintenance/Refurbishing
- **Area:** 8.25 square miles / 5,277 acres
- **Cleanup Oversight Authority:** EPA, Department of Defense, and DEQ
- **Lead Agency:** DOD (Air Force)
- **Current Status:** Cleanup underway

Tar Creek Superfund Site



Tulsa Fuel and Manufacturing Superfund Site

- **City:** Collinsville
- **County:** Tulsa
- **Site Type:** Smelter
- **Area:** 60 acres
- **Cleanup Oversight Authority:** EPA and DEQ
- **Lead Agency:** DEQ
- **Current Status:** Cleanup pending



1963

Oklahoma Public Health Code enacted, which included Oklahoma's first, broad-based waste disposal restrictions

1964

Wilderness Act

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Most residents moved away from Tar Creek as part of two government buyouts.



A Tar Creek Turning Point

The mining legacy of Tar Creek likely will not be forgotten anytime soon. Work at the site has been ongoing for several years and championed by multiple entities. It is important to take note of progress made at the state's largest Superfund site.

Most residents moved away from the area as part of two voluntary government buyouts. In the most recent buyout, 878 residents accepted the offer. Thirty-six rejected the offer.

As the result of a 2006 U.S. Army Corps of Engineers report, a voluntary buyout was offered to residents and businesses in Picher, Cardin, and Hockerville. The report warned of possible safety hazards due to underground mine collapses.

The previous buyout was offered as the result of children in the area with elevated blood lead levels.

EPA continues work today to remove the large waste piles left from the historical mining operations. The cleanup includes consolidating unusable material in a central repository and working with companies who can reuse the material as aggregate in asphalt to purchase the material. Due to the large volume of material, the cleanup is estimated to take almost 30 years.

1965

National Emissions Standards Act

1965

Motor Vehicle Air Pollution Control Act

Division Employees Recognized for Work at

Two Oklahoma Sites

To address growing volumes of municipal and industrial waste, Congress passed the Resource Conservation and Recovery Act (RCRA) in 1976. RCRA amended the Solid Waste Disposal Act of 1965 and set national goals to:

- Protect human health and the environment from the potential hazards of waste disposal
- Conserve energy and natural resources
- Reduce the amount of waste generated
- Ensure that wastes are managed in an environmentally friendly manner

RCRA was divided into various subtitles. In 1980, EPA published its first RCRA regulations that established the “cradle to grave” approach to hazardous waste management. RCRA was strengthened in 1984 through the Hazardous and Solid Waste Amendments (HSWA). HSWA required that land disposal of hazardous waste be phased out. HSWA also called for more stringent hazardous waste management standards. In 1985

DEQ received delegation from EPA to perform RCRA compliance monitoring activities.

This year a handful of Land Protection Division employees have been recognized by federal officials for their work at two RCRA sites. Jon Roberts, Jonathan King, Orphius Mohammad, and Don Hensch received a Public Service Excellence Award in recognition of significant accomplishments made at the Huffman Wood Preserving facility and Oklahoma Pole & Lumber, both in Broken Bow. The award was presented by the Dallas-Fort Worth Federal Executive Board, which is comprised of executive level senior federal officers in this region for all federal agencies.

“This type of recognition is a testament to the caliber of work performed by Land Protection Division employees,” said Division Director Scott Thompson. “Due to the dedication of these employees, we were able to make great progress at two sites that may not have otherwise been addressed.”

Huffman

Huffman Wood Preserving opened in 1956 and treated various wood products. The facility closed in 1984 to make needed improvements. The cleanup took longer than expected, and the facility never reopened. The owner died in 1991.

With no responsible party, DEQ started looking for solutions to address environmental problems at the site. DEQ has been working with EPA for several years to clean up contamination at Huffman. In 2010, approximately 50 to 60 tons of contaminated soil was removed from the site. One building was demolished.

Oklahoma Pole and Lumber

Oklahoma Pole and Lumber Company took responsibility for a Broken Bow wood preserving facility in 1999. The company abandoned the property but retained the deed. Through a collaborative effort between DEQ and EPA at this site, it was determined that contamination would be capped in place.

In 2010, DEQ and EPA revisited both sites. In 2010, sampling at Oklahoma Pole and Lumber revealed ground water contamination that does not currently pose a threat to human health. As a precaution, further monitoring will be conducted.

1965

Solid Waste Disposal Act

1967

Air Quality Act
(amendment to Clean Air Act)

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Lucky's Used Car's development

Voluntary Clean Up Program

Helps Development in Some Communities

DEQ's Voluntary Cleanup Program was developed in the mid-1980s following two events. One involved historical contamination at a closed battery manufacturer in Oklahoma City. The second involved a large refinery that was in need of cleanup.

Under what became known as the Voluntary Cleanup Program (VCP), facility owners and operators could voluntarily work with DEQ to ensure contaminated properties were investigated and remediated. The actual work is performed by the owner or facility, and LPD staff provides

oversight from the initial planning to final completion.

"This voluntary initiative often leads to beneficial reuse of the land, which is a cornerstone of DEQ's mission," said VCP Manager Ray Roberts.

Under this program, DEQ partners with the applicant to address environmental issues. Once the entity successfully completes the program, it gets a letter that no further action is needed.

"The key to the success of VCP is communication," Roberts said. "Both DEQ and the applicant have to stay active and stay in touch."



Ground water sampling underway at Marathon Boynton.



Ground water sampling underway at Baker - Petrolite.

1969

OSDH published ODH Bulletin 0523, "Sanitary Landfill Operations"

1970

National Environmental Policy Act (NEPA)

Midwest City Development

*M*idwest City participates in VCP. A chlorinated solvent plume was found around 29th Street and Air Depot. LPD worked with the city to determine the most practical way of addressing the plume. Vapor barriers were installed in new buildings, and yearly monitoring will be ongoing. The area has been safely developed with several businesses in place.

"A main concept of VCP is to bring a participant into the program, let it know what the end point is, and walk it through the program," Roberts said.

Norris Sucker Rod Plant

*A*t this site, there is a significant solvent plume. LPD has been working closely with site officials to investigate and clean up this 20-acre property. Wells, an interceptor trench, and impermeable barrier wall have been installed to address contamination. The solvent plume was mitigated before it reached a nearby residential area.

"VCP provides an avenue for people who want to resolve environmental issues when they discover them instead of waiting for someone else to discover the problem," Roberts said.



1970

EPA created by Executive Order

1970

Clean Air Act (Extension)
(major rewrite of CAA)

Tire Recycling Program Continues

Proper disposal of tires has been an ongoing effort for two decades. The Oklahoma Waste Tire Recycling Act was created in 1989. The purpose of this act was to clean up historical nuisance tire dumps and prevent further illegal dumping by providing an outlet for tire dealers. Illegal tire dumps can be a health hazard by attracting mosquitoes and vermin. Through its Tire Recycling Program, LPD continuously works to beneficially reuse tires.

Over the years, LPD has been given more authority under the Waste Tire Recycling Act. In 2007, DEQ received authorization to conduct tire dealer inspections. The goal is to identify tire dealers and other businesses that sell tires and are not in compliance with the act. Since 2008, LPD staff has conducted 277 inspections, at least one in each county. LPD provided outreach to many tire dealers who are now in compliance as a result of the inspections.

Additionally, the number of tires cleaned up in the past three years is up by one million tires from previous years. Oklahoma continues to make visible progress toward cleaning up tire dumps and deterring illegal dumping by encouraging participation in community wide events.

"Tire processors were able to recycle an estimated 9.4 million waste tires over the past three years," said Ferrella March, program manager.

DEQ estimated Oklahoma generated about 0.8 waste tires per person in 2010 (Based on projected population for 2010 - Oklahoma Department of Commerce). This amounted to approximately 3.0 million tires.

1970

Williams-Steiger Occupational Safety and Health Act created OSHA and NIOSH

1970

Lead-Based Paint Poisoning Prevention Act

Ground water sampling underway at Greenway environmental site.



Enhanced Investigation Conducted at Greenway Environmental Site

Settled on 19 acres 6 miles northwest of Haskell, the Greenway Environmental site is known for its complex history. In 1984, Chief Supply Company began operations under a DEQ permit. Tragically, more than a decade later a fatal explosion and fire occurred. Chief Supply continued to operate the hazardous waste treatment, storage and disposal facility until late 1997 when a bankruptcy court awarded Greenway Environmental control.

Three years later, operations at the site stopped. The property was abandoned with as much as 33,000 gallons of hazardous waste left onsite. Surface waste removal was completed in 2004. The county has owned the property since 2008.

“The long-term goal is for DEQ to work with the county so it can turn the site into a productive piece of property,” said DEQ Engineer Cindy Hailes.

Recently, DEQ received grant money from EPA to conduct an investigation at the site. The purpose was to perform a more in-depth study to determine flow direction of ground water and whether contamination is leaving the site.

Monitoring continues at the site.



Monitoring well installation

1970

Environmental Quality Improvement Act

1970

First Earth Day celebrated

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1970

Oklahoma Solid Waste
Management Act (OSWMA)

1973

Endangered Species Act

Monitoring Agency Performance

*I*n 1996, the federal government passed legislation known as the Government Performance Results Act (GPRA) to monitor the performance of governmental agencies. For environmental agencies, EPA was tasked with setting goals and deadlines for every state to achieve. For land facilities, these goals were based on permitting and site cleanup milestones.

DEQ was notified in 1999 that Oklahoma had 22 high priority sites targeted by GPRA. DEQ not only met but also exceeded all of the requirements set forth by GPRA. For the 2008 deadline, 14 new facilities were added to the list bringing the total

to 36, and yet again, DEQ met and exceeded every requirement.

The final deadline for GPRA is set for 2020, and DEQ is well on the way to meeting every goal. Oklahoma is currently leading the region in meeting GPRA requirements. There is still much to be done; however, DEQ appears poised to face the challenge.

"We are very proud of the work DEQ is doing to meet the GPRA goals. Our staff has done an excellent job, and we are excited for the challenge that lies ahead," said LPD Engineering Manager Donald Hensch.

Why is GPRA important?

The Government Performance and Results Act was the result of an initiative headed by then-Vice President Al Gore, in an attempt to provide specific, measurable goals for all federal government agencies. These goals were to be reviewed periodically and the results submitted to Congress and made available for public review. In this way, the actual performance of every government agency could be evaluated, and decisions could be made whether a particular agency was doing what it had been authorized to do. It would also allow an evaluation of how well the taxpayers' money was spent.

Since many federal programs are delegated to state agencies for implementation, such as RCRA, agencies such as DEQ perform much of the "nuts and bolts" activity, which allows a federal agency to report progress to Congress. The Oklahoma DEQ has consistently exceeded our portion of the GPRA goals for RCRA and intends to continue in this manner. Current RCRA goals run through 2020.

1974

Safe Drinking Water Act

1974

Energy Reorganization Act created the Nuclear Regulatory Commission

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Fenton Rood received a Lifetime Achievement award from Keep Oklahoma Beautiful.

LPD Employee Recognized for Environmental Efforts

He sometimes refers to himself as the garbage man, but Fenton Rood is much more. Many people have heard the saying, "Practice what you preach." One person who truly does just this is Rood, and he is being recognized for it.

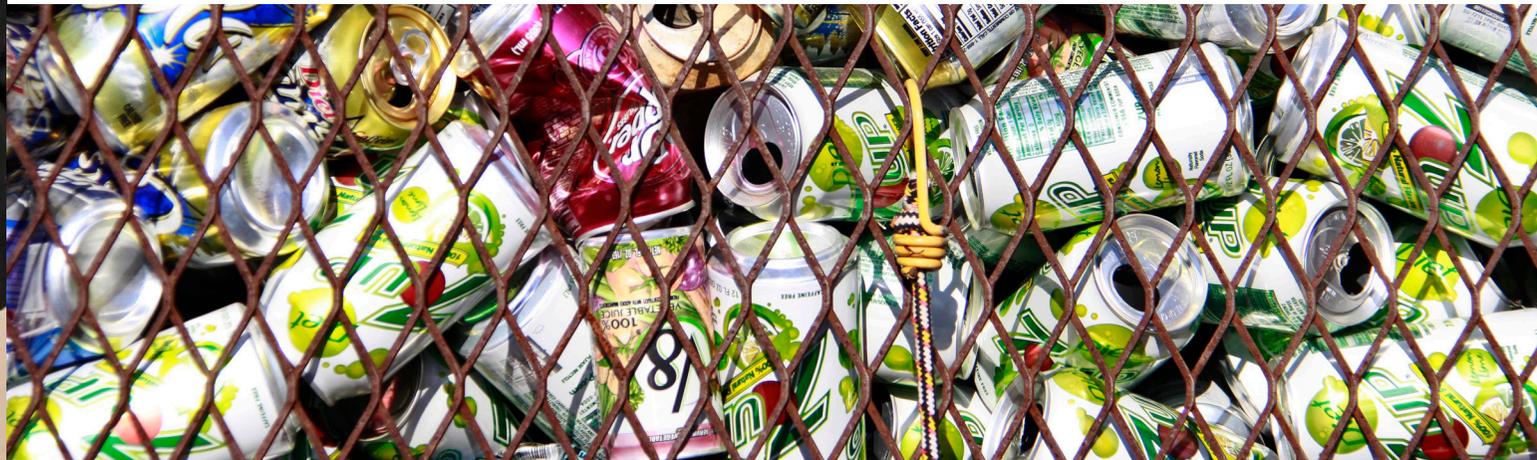
Rood was presented with Keep Oklahoma Beautiful's Lifetime Achievement award in November. This award is presented to an individual for work spanning 25 years that demonstrates leadership in environmental stewardship and efforts that have improved Oklahoma's environment.

"Anyone who knows Fenton, knows that he is

a shining example of environmental stewardship," said LPD Director Scott Thompson.

Rood was also recognized recently by the Department of Central Services as an Energy Champion for his efforts. Rood has been instrumental in helping DEQ launch its own Green Team, promote recycling in the building, and organize recycling at community events. Rood also rides his bicycle or walks to work, weather permitting.

In addition to serving as LPD's Director of Waste Systems Planning, Rood also teaches environmental science at the University of Phoenix.



1975

Hazardous Materials Transportation Act

1976

Resource Conservation and Recovery Act (RCRA)

RCRA *Biennial Report*

2009 Data from the Biennial Report

- Generators - 184
- Hazardous Waste Generated (tons) - 114,306
- Hazardous Waste Managed (tons) - 190,472



To achieve the agency's goal of protection of human health and the environment, it is important to effectively manage Oklahoma's hazardous waste. To achieve this goal, the state collects information about generation, management, and disposal of hazardous waste regulated by the Resource Conservation and Recovery Act (RCRA).

Under the Biennial Reporting System, all RCRA Large Quantity Generators (LQG) and Treatment/Storage/Disposal (TSD) facilities are required, by law, to report the amount of wastes generated or handled every other year

(biennially) to EPA. The collection, validation, and verification of the Biennial Report data is the responsibility of the state.

Information collected in the report is used to perform trend analysis and is also very important in both state and federal policy making. As such, it is critical that a high degree of data quality is maintained throughout the process. Once the state is satisfied with the report's level of accuracy, the collective data is sent to EPA.

The need for such accurate data requires a great deal of effort on the part of LPD staff.

Throughout the process, Jarrett Keck from the Land Protection Division ensured that information and instruction were readily available to facilities, even developing Power Point training for the generators. The assistance provided by Keck to facilities helped to create a friendly working relationship, enabling open communication which allowed for the highest degree of accuracy in reporting. The customer service provided by Keck also made the process easier and allowed Oklahoma to be the first state to submit to EPA all the data needed for the 2009 Biennial Report.

1976

Toxic Substances Control Act (TSCA)

1976

Oklahoma Controlled Industrial
Waste Disposal Act (OCIWDA)

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Redevelopment of the Sand Springs Superfund Site will begin in 2011.

Clean Up

Former Superfund Site Being Redeveloped Through Brownfields Program

*F*or the first time in Oklahoma, a Superfund National Priorities List (NPL) site is being redeveloped through LPD's Brownfields Program. In 2010, Sand Springs Railway completed the Brownfields Program and plans to build a rail facility on the Sand Springs Petrochemical Complex Superfund site in order to better serve its customers.

The Sand Springs Superfund site was once home to various petrochemical companies. Left behind was a significant amount of contamination, and the site was added to the NPL in 1986. In the ensuing 14 years a great deal of work was done to clean up the site, and in 2000 it was deleted from the NPL.

"Progress made at this site will hopefully encourage more development of once contaminated properties in Oklahoma," said LPD Brownfields Program Manager Rita Kottke.

1977

Clean Water Act

1977

Surface Mining Control and Reclamation Act

Altus Air Force Base Continues Cleanup

DEQ is currently working with Altus Air Force Base to reduce and clean up ground water contamination due to years of long-term maintenance operations on the site. Over time, large quantities of chlorinated solvents, aircraft jet fuel and oil spilled onto the property. As a result, a chlorinated solvent plume extends south from the base for approximately one mile.

In 1996, EPA issued an administrative order to Altus Air Force Base to begin cleanup. Officials at the base performed extensive work to address contamination. In 2006, LPD worked with the base and EPA to craft a corrective action permit that would give DEQ authority to oversee the rest of remedial work done at the site. Since then, LPD has worked closely with the base to continue cleanup efforts. Progress has been made in reducing the amount of contamination in the ground water; however, the process will most likely take several years to complete.

The base has used traditional investigation and cleanup approaches. It also is using innovative techniques with the installation of a mile-long bioreactor wall filled with tree bark, vegetable oil, and microbes to digest the contamination as it flows through the wall. In another location, a bioreactor wall was placed into a large excavated hole to capture contamination. The ultimate goal at the air force base is to eliminate contamination at the source.

Superfund Assessments Help Lead to Cleanup in Other Programs

In determining how to address a site, LPD has to find answers to a number of questions. A tool to help find those answers is site assessments. Superfund site assessments have helped staff determine whether a particular site should be placed on the National Priorities List or whether it could fit into another LPD program. Site Assessment staff look at the following in assessing a site:

- Who owns the site?
- Who is impacted by the site?
- How many people live near the site?
- How many drinking water wells are nearby?
- Are there any surface water intakes for the public water supply?
- How many wetlands are in the area?
- Are there private drinking water wells in the area?
- Are endangered species present?
- Is there a release or potential release of hazardous substances?
- What is the industrial history of the site?

At the end of the process, LPD looks at whether the site will rank on the National Priorities List and if there is a potentially responsible party who could enter into one of the division's voluntary programs to clean up the site.

LPD conducted an audit of site assessments to determine how many sites transferred to other programs. The audit revealed that some sites were referred to RCRA, some went into the Brownfields

Program, and others went to the Voluntary Cleanup Program. In all, over the past 30 years about 130 sites fit into other programs.

"The state works with EPA to get a grant for site assessments," said Superfund Program Manager Amy Brittain.

"The grant allows us to really assess a property and figure out the best way to get it cleaned up appropriately."

DEQ has received the grant from EPA to conduct superfund site assessments since the early 1980s.



1978

National Energy Conservation Policy Act

1980

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) created the Superfund program

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Hudson cleanup



Pipe draining at Hudson

Progress Made at Hudson Site

Substantial work has taken place at the Hudson Refinery Superfund site, located in Cushing. Contractors removed approximately 60,000 cubic yards of waste. Site activities included removal of contaminated soil, sediments, scrap metal, pipe, and asbestos. The potentially responsible party, Land O’Lakes, and its contractor worked with LPD to set discharge limits for water from ponds on the property to ensure a nearby creek is not impaired.

“LPD staff has spent a considerable amount of time at the Hudson site to ensure work is performed to DEQ standards,” said Superfund Program Manager Amy Brittain. LPD technical staff spent three to four days per week on site, closely working with EPA and contractors.

Monthly on-site meetings and weekly conference calls were held as well.

The site operated as a refinery as early as the mid-1920s. Operations ended in 1982, and the site was abandoned without proper closure. Historically, Hudson produced liquid propane, gasoline, aviation fuel, and diesel fuel. Over the years, some of the equipment left on site began to leak.

In 1998, EPA removed 6,000 gallons of hydrofluoric acid from the site. In 2002, EPA demolished unsafe structures and removed more chemicals.

LPD will continue to work with Land O’Lakes on future ground water monitoring.

1980

Fish and Wildlife Conservation Act

1980

Low-Level Radioactive Waste Policy Act

Community Outreach

Boosting Awareness about Recycling

Sharing local solutions was the theme of this year's Oklahoma Recycling Seminar held in Stillwater. The seminar was designed for city and county government officials, recycling professionals, community and business leaders, educators, students, and Oklahomans interested in recycling.

LPD Director of Waste Systems Planning Fenton Rood participated in a panel that discussed regional recycling collaborations. The panel focused on multi-county reuse and recycling partnerships. Another panel explored stewardship issues such as the Oklahoma Computer Equipment Recovery Act and pharmaceutical take-back programs.

"The seminar provided participants an avenue to learn more about recycling as well as discuss issues with recycling," Rood said. "We explored everything from recycling plastics and glass to introducing a new Oklahoma facility that recycles styrofoam."

The event was hosted by the Oklahoma Recycling Association. DEQ was a co-sponsor of this seminar.

First Facilities to be ECO Certified

- Canebrake Restaurant and Spa in Wagoner
- National Center for Employee Development in Norman

DEQ Promotes Sustainable Travel

Through a partnership with the Oklahoma Tourism and Recreation Department, DEQ is promoting sustainable travel practices. Encouraging Conservation in Oklahoma (ECO) offers education, technical guidance, certification and marketing support that businesses and organizations need to provide economical and environmentally friendly travel options.

"Guidelines used in the Oklahoma Star Incentive Program are used in the ECO program to improve environmental performance," said LPD Oklahoma Star Incentive Program Manager Dianne Wilkins.

Facilities must comply with all applicable laws and regulations to obtain ECO certification. Participants are also required to submit baseline performance data, conduct a thorough assessment of their property, establish waste reduction goals and implement sustainable practices. These include waste reduction, reuse and recycling, water conservation and energy efficiency.

Electronic Waste

- Some electronics can contain lead and mercury. According to the Environmental Protection Agency, electronic or e-waste is the fastest growing waste stream. Senate Bill 1631 went into law May 12, 2008. The Oklahoma Computer Equipment Recovery Act became effective January 1, 2009.
- The act was created to establish convenient and environmentally sound collection, recycling, and reuse of electronics.
- It is important to recycle used electronics as opposed to disposing them in a landfill. In Oklahoma, 817,277 pounds of electronics were recycled in 2009. Numbers for 2010 will be available April 2011.

1982

Nuclear Waste Policy Act

1983

First Oklahoma Superfund Sites listed on the National Priorities List

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Mercury droplets

LPD Manages Mercury

*M*ercury is a naturally occurring metal that can be hazardous to humans and the ecology. In the past, mercury was used for various things. Its use has been phased out over time but many people still have jars of mercury stored in their homes. LPD launched its Mercury Program last year to collect household mercury to prevent exposure and environmental contamination.

LPD developed procedures for the program and is training staff on how to safely handle mercury. As a part of the program, LPD purchased a mercury vapor analyzer to detect mercury in the air at low levels that can pose a risk to humans.

In most cases, mercury spills occur in the home. Mercury can be very dangerous as it can splatter into tiny droplets that may not be visible. It vaporizes and can contaminate an entire home, and mercury is easily tracked from one place to another, contaminating many areas. Mercury exposure can cause wide ranging symptoms such as:

- Severe headache
- Chills
- Nausea

- Skin rash
- Increased blood pressure and heart rate
- Eye irritation
- Shortness of breath, cough, bronchitis, and pneumonia
- Elevated blood and urine mercury levels
- Metallic taste, mouth sores, and swollen gums
- Irrational behavior
- Death

“Our goal is to educate Oklahomans on the dangers of mercury and to let them know that DEQ has a program in place to collect and recycle mercury. We also want people to know that if they have a mercury spill they should contact us immediately,” said DEQ Mercury Program Coordinator Jon Reid.

Information on mercury can be found by visiting <http://www.deq.state.ok.us/factsheets/index.htm> or calling (405) 702-5100.

1984

Hazardous and Solid Waste
Amendments (HSWA)

1985

Oklahoma received authorization
to manage the RCRA Subtitle C program

Pollution Prevention Efforts Receive a Star

Each year LPD recognizes Oklahoma businesses that go above and beyond compliance. The Oklahoma Star Incentive Program (OKStar) is a voluntary program that ranks participants among peers. A silver, gold, or platinum star is earned by meeting specific performance criteria. OKStar also does the following:

- Recognizes facilities that achieve and maintain compliance and go beyond the regulations to protect the environment and promote employee safety.
- Recognizes businesses and organizations that voluntarily meet and exceed the program's high standards of environmental responsibility. By meeting the standards, these organizations demonstrate to the public that they have gone well beyond compliance with environmental law, and have voluntarily implemented a thorough waste prevention and pollution prevention plan.
- Is both pro-business and pro-environment. Organizations that are more environmentally responsible also have a stronger bottom line. By examining an organization's waste streams and making internal changes to reduce them, significant financial and environmental savings may be realized.

"The program began in 2005. It requires that facilities be committed and have a clean compliance record for the previous three years," said OKStar Manager Dianne Wilkins.

Applications are reviewed by a 13-member committee made up of environmental professionals. Certification is for three years. DEQ's Pollution Prevention Program provides any education, training and support to achieve the criteria necessary for recognition.



Current OKStar Facilities

| Silver | Gold | Platinum |
|---------------------------------------------------------|--------------------------------------------------|-----------------------------------------------------|
| Beams Industries, OKC | Preferred Film, Tulsa | Natural Evolution, Tulsa |
| A Perfect Place to Stay, Calera | WEBCO Industries, Sand Springs Gold, Platinum | Flex-N-Gate, Ada |
| Chickasaw Nation Cultural Center, Sulphur | Standley's Office Systems, Chickasha | UNARCO, Wagoner |
| Embassy Suites Norman Hotel & Conference Center, Norman | Tinker AFB | Altus AFB |
| Keystone State Park, Sand Springs | Canebrake, Wagoner | Dry Cleaning Station, Owasso |
| OU Lean Institute, Norman | Colcord Hotel, Oklahoma City | NCED Conference Center and Hotel, Norman |
| | Inn at Woodward Park B&B, Tulsa | Best Dry Cleaning & Laundry Services, Oklahoma City |
| | Kimray, Inc., Oklahoma City | Oklahoma City Memorial Marathon, Oklahoma City |
| | Norman Convention & Visitors Bureau, Norman | |
| | Polo Grill, Tulsa | |

1986

Emergency Planning and Community Right-to-Know Act (EPCRA)

1986

Superfund Amendments and Reauthorization Act (SARA)

Land Report
2010

National Guard Armories: A Centerpiece of the Landscape

For more than a century, National Guard armories have symbolized the dedication of soldiers. These structures stand out in communities serving as a one-time training ground and home to military men and women but also as a centerpiece for dances, celebrations, skating rinks, and basketball games. It is often easy to spot an armory building as these structures become part of the landscape due to a common architectural style.

The Oklahoma Military Department (OMD) and the Department of Central Services (DCS)

approached the governor about armories in the state that are being closed under Base Realignment and Closure. With the possibility of environmental issues at these facilities, DEQ was also approached. In 2006, the state Legislature passed a bill that provided funding to support cleanup of armories and some abandoned waste sites across the state.

With a funding mechanism in place, DEQ developed a program to address environmental issues at these sites. Many armories exhibit potential environmental problems due to

residue from firing ranges, lead paint, or asbestos materials. DEQ, in coordination with OMD, DCS, and local city leaders ensure that environmental issues are appropriately addressed before surplus armories are returned to the communities.

"The heritage of community service that surrounds armories is the result of the exemplary actions of the citizen soldiers who served in them. It is only appropriate that these armories, with their heritage, be returned to communities so that they can continue that tradition and history of service," said retired Col. David W. Brown.

"It is good to see that these facilities can be safely transferred back to communities for the next mission," said Site Cleanup Assistance Program Manager Angela Hughes.

Since its inception, the Site Cleanup Assistance Program has addressed 25 sites in Oklahoma, including armories and abandoned waste sites. Fourteen sites are currently being addressed by LPD.



Basel Convention



Oklahoma Waste Tire Recycling Act (OWTRA)

Oklahoma Brownfields Conference Held at the Skirvin

Brownfields redevelopment offers environmental, economic, and social benefits to the state of Oklahoma. The goal of the 2010 Oklahoma Brownfields Conference was to provide up-to-date information about technical, economic, and regulatory considerations that affect the reuse of brownfield sites. Public and private sector leaders were on hand to discuss the many benefits of reusing brownfield sites and highlight new ideas and initiatives that could help communities and developers reuse these sites. This year's conference was held at the Skirvin Hilton Hotel in Oklahoma City, a shining example of what can be accomplished on a brownfield site.

The conference has grown significantly over the past few years. In the beginning the event's focus was local. Oklahoma City and the University of Oklahoma sponsored the first conference. DEQ sponsored the next four. Earlier brownfields conferences detailed how the state program worked and which organizations had grants to work on brownfields. A limited amount of time was devoted to the national view of brownfields. As the conference grew, the focus became broader. This year's conference introduced the audience to new ideas from across the nation.

Oklahoma Secretary of Environment J.D. Strong spoke at the Oklahoma Brownfields Conference.



Brownfields Program Rules Revised

When dealing with the environment, it is necessary for program requirements to evolve to better meet the needs of today. In 2010, DEQ created a new structure for the state Brownfields Program. The Environmental Quality Board passed rules that modified and reorganized the Brownfields Program to make it consistent with recent amendments to the Oklahoma Brownfields Voluntary Redevelopment Act. The changes eliminated permitting requirements for Brownfield program participants. The changes reduce the amount of paperwork that must be submitted to DEQ. The investigation, risk evaluation, public participation, and cleanup requirements remain the same.

"The recent changes also give DEQ more authority over site characterization and long-term stewardship plans at brownfield sites," said Brownfields Program Manager Rita Kottke.

EPA began the Brownfields Initiative in 1995 by clarifying several of its policies on contaminated properties and encouraging states to create brownfields programs. The intent of the initiative was to resolve environmental liability at former industrial or otherwise contaminated properties, in order to attract developers to blighted areas. The state Legislature passed the Oklahoma Brownfields Voluntary Redevelopment Act in 1996. By entering into the Brownfields Program, entities who own contaminated properties can work with DEQ to voluntarily investigate and, if necessary, clean up these sites for reuse. Often this eliminates blight in a community and provides an economic boost.

"The Brownfields Program continues to build momentum and expand," Kottke said.

Lloyd Kirk from the Land Protection Division coordinated the Oklahoma Brownfields Conference.



1990

Clean Air Act
Amendments of 1990

1990

Pollution Prevention Act

Stimulus Funds Help Finance Brownfields

*I*n December 2009, the DEQ Brownfields Program received more than \$1.9 million from the American Recovery and Reinvestment Act (ARRA) to capitalize its Brownfields Revolving Loan Fund. DEQ determined that the best way to move the funds quickly into the economy was to subgrant the funds. The Brownfields Program developed a competitive subgrant process and announced availability of the funds. In 2010, DEQ awarded \$1 million total divided between them to the City of Seiling, Love Link Ministries, the George Kaiser Family Foundation, the City of Tulsa, and the Oklahoma Municipal League to clean up brownfield properties. The cleanup funds will allow the redevelopment of these properties to move forward, which will create and preserve jobs as well as improve the quality of life in these areas. DEQ will announce a second round of subgrant availability in early 2011. Local governments and non-profit organizations are eligible for the subgrants. For-profit companies are eligible for low-interest loans for the cleanup of brownfield sites.

This funding can also be used for the abatement of asbestos. Asbestos often stops the reuse of older buildings due to the cost of abatement. This is the only state or federal funding currently available for the abatement of asbestos.

ARRA became law February 17, 2009. The bill made more than \$500 billion in funds available to state and local governments. Some of the funding was for environmental projects.

What's Going into the Landfill?

*T*he greatest environmental advance in waste management came with the separation of hazardous chemical waste from regular garbage in the Resource Conservation and Recovery Act of 1976. Since then municipal solid waste landfills have been required to have an ongoing program to watch for and screen out inappropriate waste. In 2010 the Environmental Quality Board extended the same requirements to transfer stations and construction/demolition landfills.

Operators of transfer stations and construction/demolition landfills are preparing plans for submittal to DEQ that detail their procedures for screening out hazardous chemicals, liquids, refrigerators and air conditioners that still contain refrigerant, and problem wastes such as tires. Construction/demolition owners are specifying their process for ensuring that they take only construction/demolition debris.

An essential element of waste screening is training for employees at each facility. DEQ experts teamed with the Solid Waste Association of North America (SWANA) in two events that offered training on the new rules and screening procedures.

"These sessions were so popular that SWANA has decided to continue to offer this training at least twice each year," said Director of Waste Systems Planning Fenton Rood.



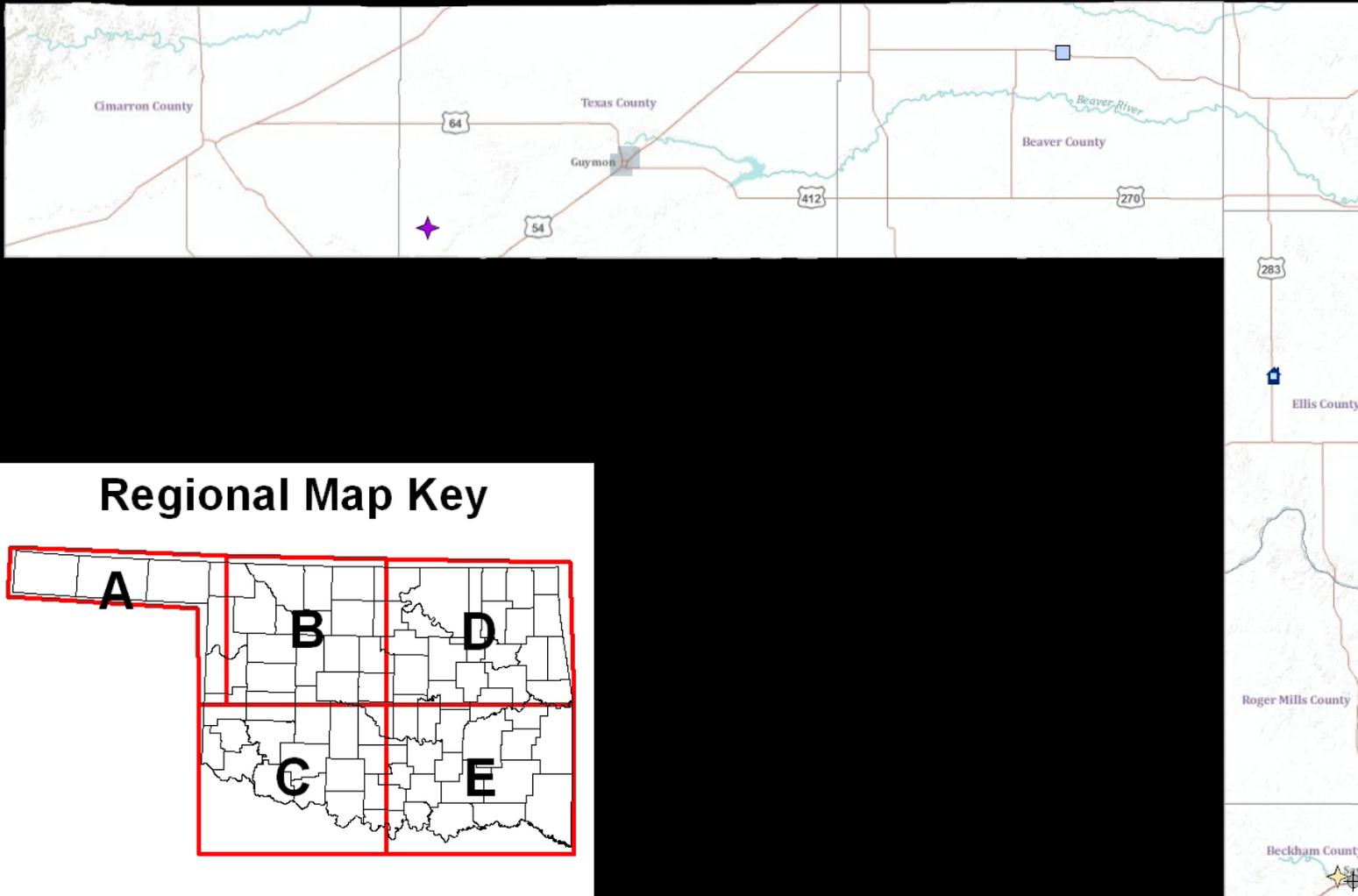
1992

Residential Lead-Based
Paint Hazard Reduction Act

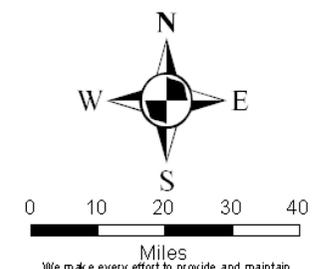
1992

OCIWDA was renamed
"The Oklahoma Hazardous Waste Management Act"

2010 Land Report Map A



- Legend**
- ▲ Construction/Demolition Landfill
 - ▲ Municipal Solid Waste Landfill
 - ▲ Non-Hazardous Industrial Waste Landfill
 - Brownfield Certificate Issued
 - 🏠 Community Assistance Project
 - 🏭 Formerly Used Defense Site
 - Illegal Tire Dump
 - ★ RCRA Large Quantity Generator
 - ★ RCRA TSD/Corrective Action Site
 - ▲ Site Cleanup Assistance Program
 - ★ Oklahoma STAR Participant
 - ◆ Superfund Site
 - Targeted Brownfield Assessment
 - ⊕ Underground Injection Control Well
 - Voluntary Cleanup Program



We make every effort to provide and maintain accurate, complete, usable, and timely information. However, some data and information on this map may be preliminary or out of date and is provided with the understanding that it is not guaranteed to be correct or complete. Conclusions drawn from, or actions undertaken on the basis of, such data and information are the sole responsibility of the user.
Map Created by Michael Reid on 09/30/2010



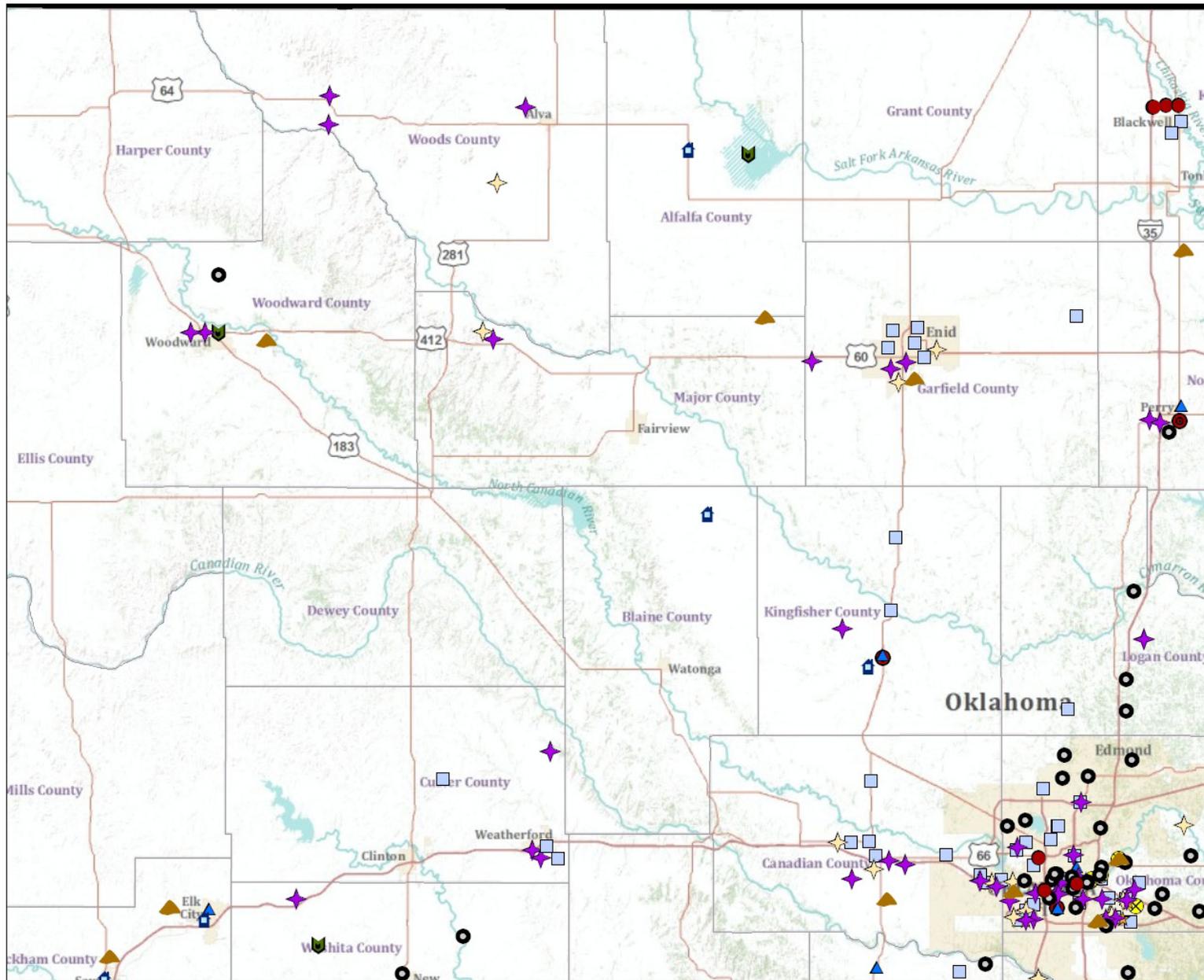
1993

Oklahoma Environmental Quality Act

1993

Oklahoma Department of Environmental Quality is formed

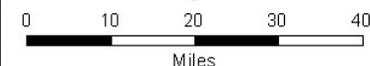
Land Report
2010



2010 Land Report Map B

Legend

- Construction/Demolition Landfill
- Municipal Solid Waste Landfill
- Non-Hazardous Industrial Waste Landfill
- Brownfield Certificate Issued
- Community Assistance Project
- Formerly Used Defense Site
- Illegal Tire Dump
- RCRA Large Quantity Generator
- RCRAT SDF/Corrective Action Site
- Site Cleanup Assistance Program
- Oklahoma STAR Participant
- Superfund Site
- Targeted Brownfield Assessment
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Map Created by Michael Reid
on 09/30/2010

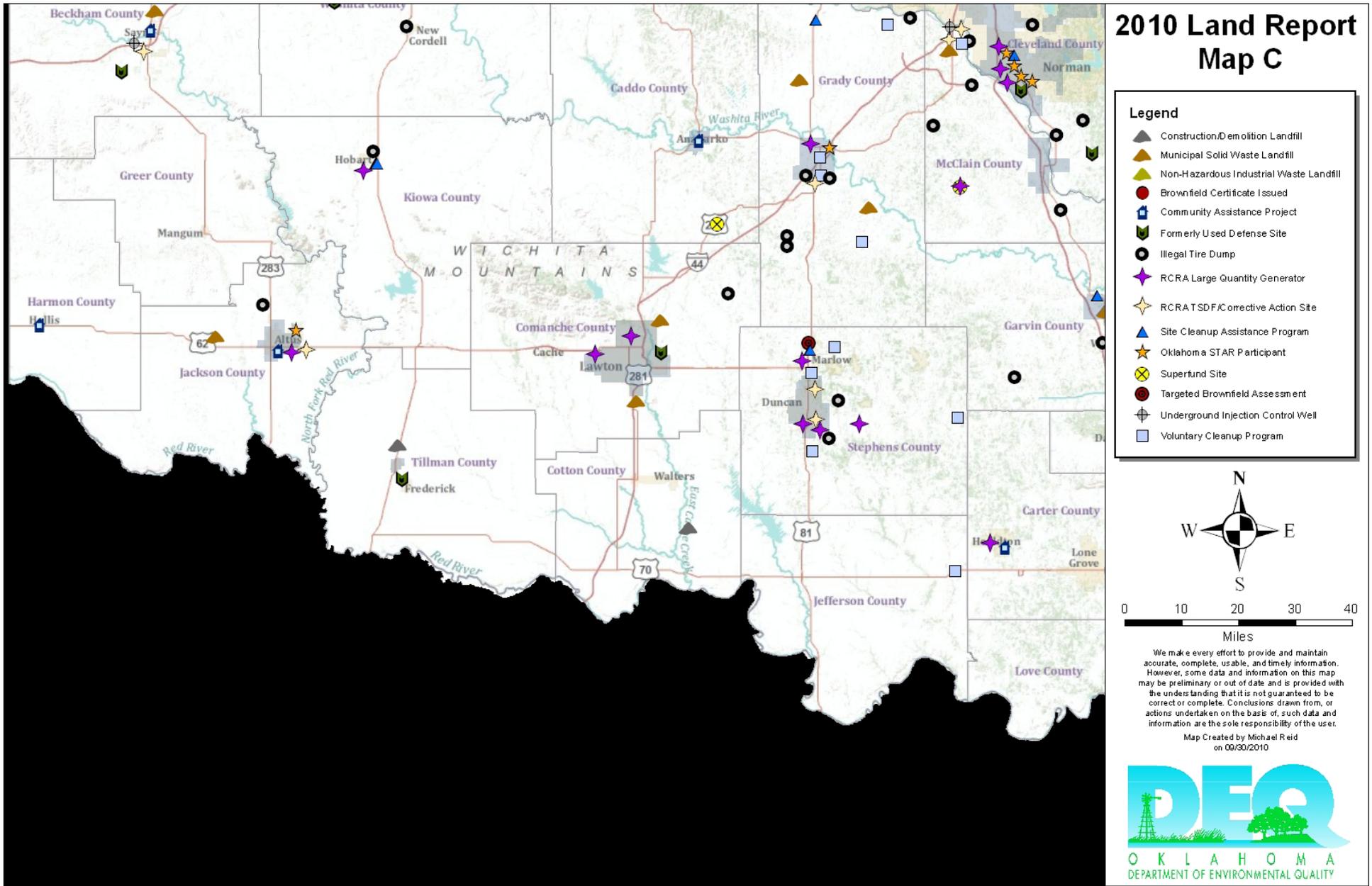


1994

Oklahoma receives authorization to manage the Solid Waste Subtitle D program

1994

Oklahoma Uniform Environmental Permitting Act



1994

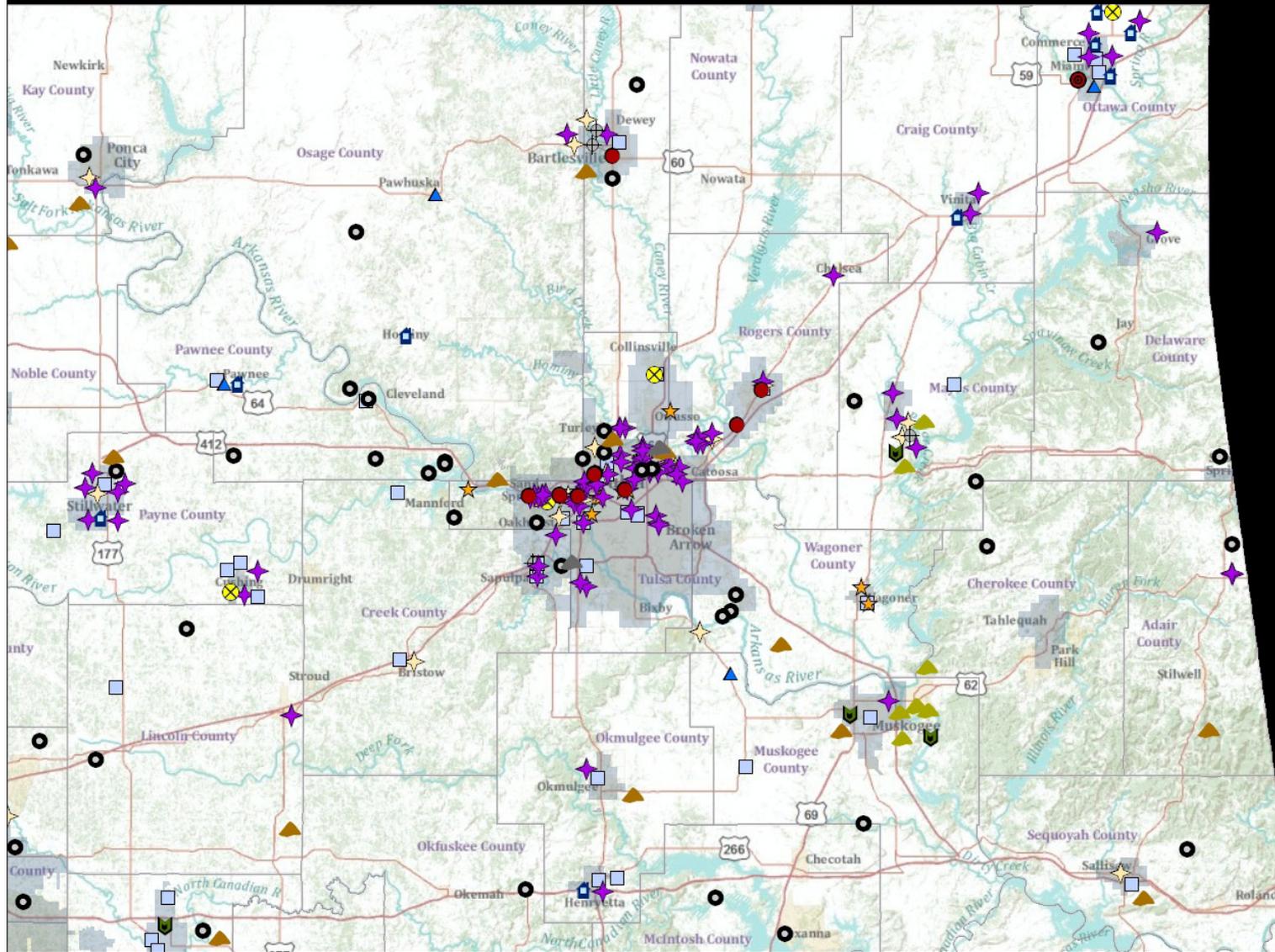
Oklahoma Pollution Prevention Act

1996

Mercury-containing and Rechargeable Battery Management Act (PL 104-19)

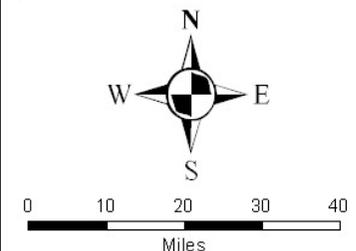
Land Report
2010

2010 Land Report Map D



Legend

- ▲ Construction/Demolition Landfill
- ▲ Municipal Solid Waste Landfill
- ▲ Non-Hazardous Industrial Waste Landfill
- Brownfield Certificate Issued
- Community Assistance Project
- Formerly Used Defense Site
- Illegal Tire Dump
- ◆ RCRA Large Quantity Generator
- ◆ RCRA TSD/F/C Corrective Action Site
- ▲ Site Cleanup Assistance Program
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Map Created by Michael Reid
on 09/30/2010



1996

2000

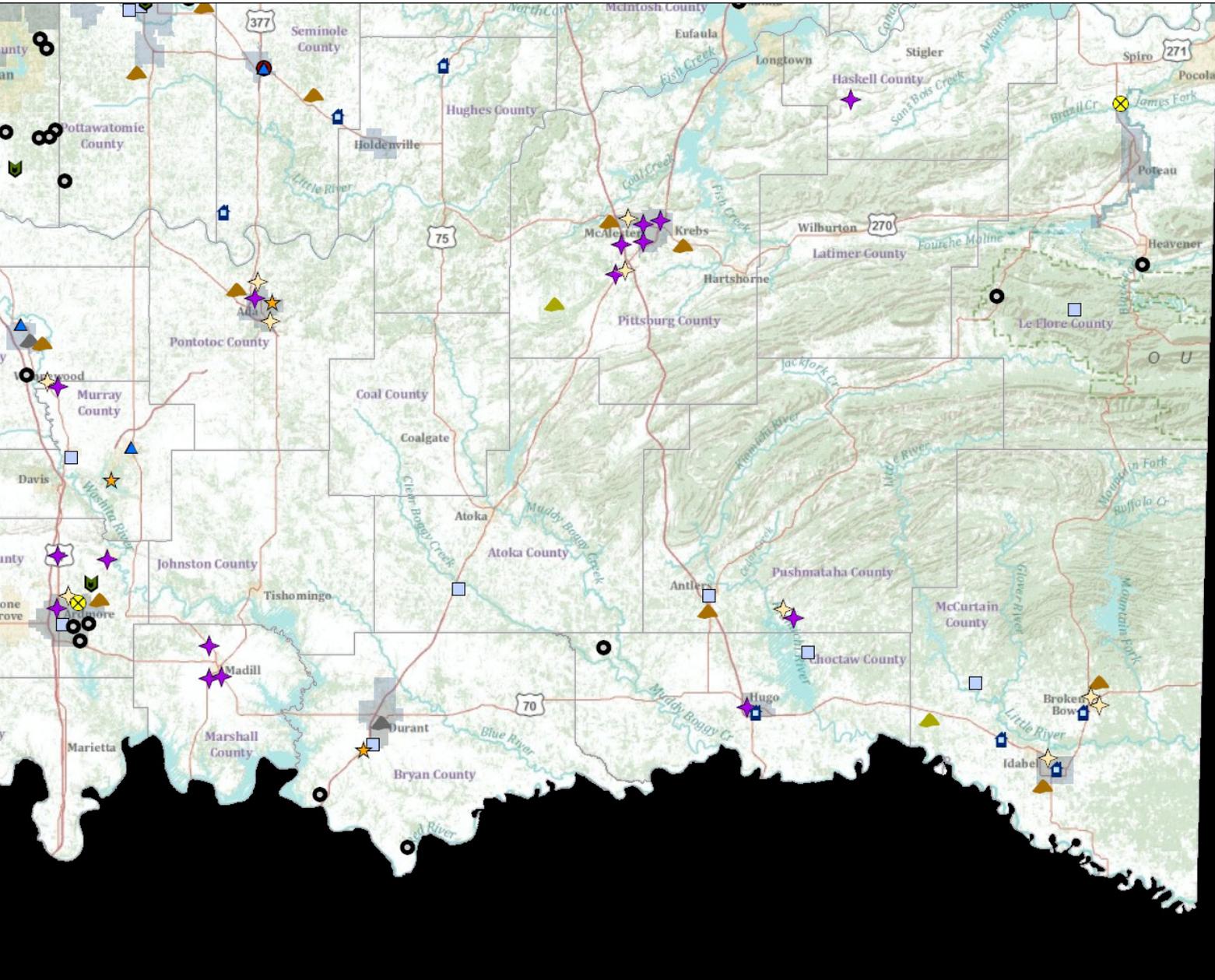
2010 Land Report Map E

Legend

- Construction/Demolition Landfill
- Municipal Solid Waste Landfill
- Non-Hazardous Industrial Waste Landfill
- Brownfield Certificate Issued
- Community Assistance Project
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- Superfund Site
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- Voluntary Cleanup Program

0 10 20 30 40
Miles

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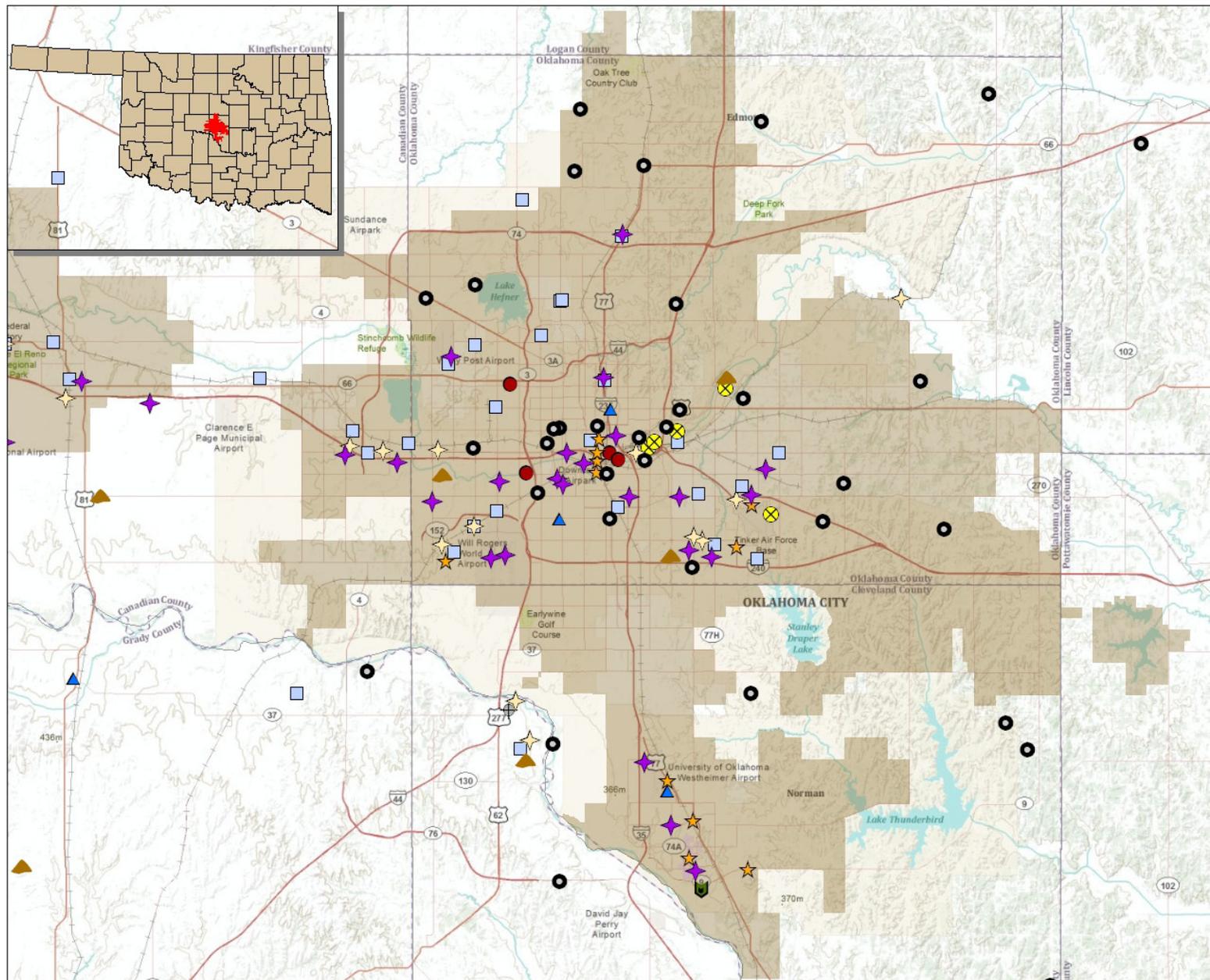
2002

Small Business Liability Relief
and Brownfields Revitalization Act
(amended CERCLA)

2003

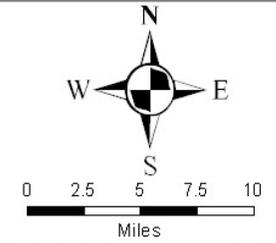
Oklahoma Emergency
Management Act

Land Report
2010



2010 Land Report Oklahoma City Urban Area

- Legend**
- ▲ Construction/Demolition Landfill
 - ▲ Municipal Solid Waste Landfill
 - ▲ Non-Hazardous Industrial Waste Landfill
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Map Created by Michael Reid
on 09/30/2010



2004

Lead-impacted Communities
Relocation Act

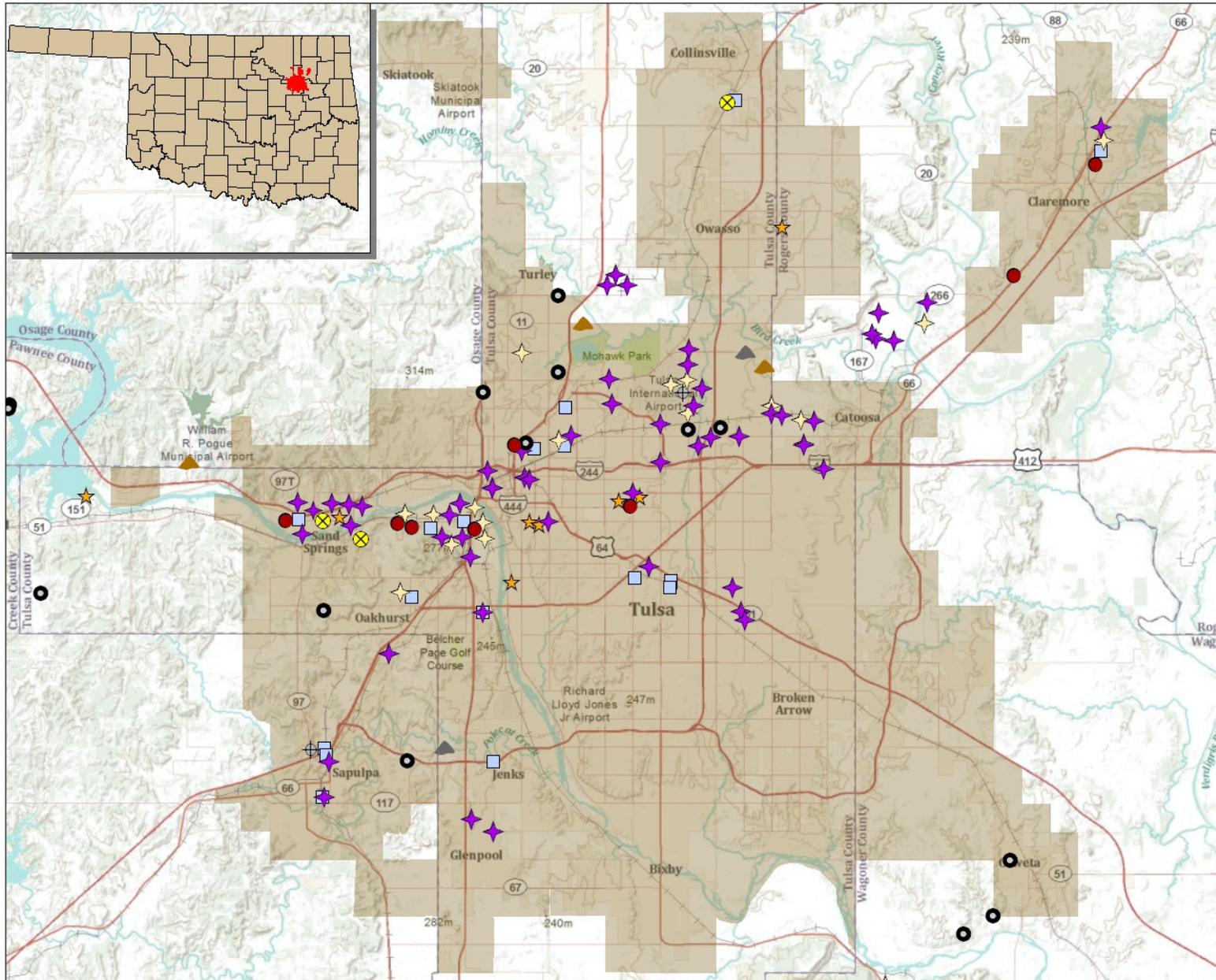
2007

EPA Tar Creek
Chat Rule

2008

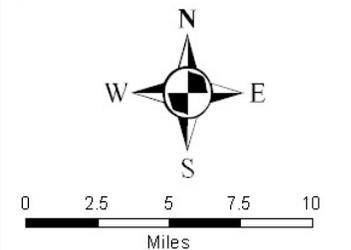
Oklahoma Computer Equipment
Recovery Act

2010 Land Report Tulsa Urban Area



Legend

- ▲ Construction/Demolition Landfill
- ▲ Municipal Solid Waste Landfill
- ▲ Non-Hazardous Industrial Waste Landfill
- Brownfield Certificate Issued
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Map Created by Michael Reid
on 09/30/2010



2009

Oklahoma Brownfields
Voluntary Redevelopment Act
(in compliance with CERCLA)

2009

Notice of Remediation Law
enacted for CERCLA property and
risk based cleanups was amended

Land Report
2010



