

Land Protection



Land Protection Division

A large, vibrant rainbow arches across a cloudy sky, casting its colors over a vast field of water lilies. The lily pads are densely packed, filling the foreground and middle ground. In the distance, a line of trees marks the horizon. The overall scene is peaceful and natural.

After a good rain when the world has been rinsed free of residue, the revitalized landscape influences our human sensibilities in a positive way. Across Oklahoma, revitalization of another kind is occurring. Properties destroyed by years of environmental neglect are being cleaned up and beneficially reused. Communities across the state are establishing new and exciting economic development

projects on property that was once environmentally impacted by pollutants. The Land Protection Division is committed to playing a key role in these restoration efforts because the well being of Oklahomans and the places they call home are at stake.

Within DEQ's Land Protection Division, environmental programs such as Voluntary Cleanup and Brownfields Re-development, Resource Conservation

Left: Rainbow after the rain at an Oklahoma pond.



Oklahoma farmland as far as the eye can see.

and Recovery Act (RCRA), Land Reclamation, and Superfund Site Remediation paved the way for the cleanup of con-

taminated properties in a manner that allows for a beneficial reuse of the land. These restoration programs help pro-

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A blackbird chick among the cattails – the next generation.



Wild turkeys enjoy the Oklahoma wilderness.

tect Oklahoma's productive farmlands and vast scenic wilderness areas by encouraging reuse of properties previously set aside for industrial activities, thereby diminishing the need to develop undisturbed areas.

Within the Land Protection Division, there also exist many important programs designed to monitor the ongoing activities that keep communities operating in an environmentally responsible manner. These additional programs regulate disposal of solid waste, non-hazardous industrial waste, discarded tires, hazardous waste, biomedical waste, and certain radiation sources. Other important functions of the Land Protection Division are development of community waste management and recycling programs and environmental education programs designed for the express benefit of the public.

Ensuring the continued cleanup of contaminated sites and preventing additional environmental damage to Oklahoma's landscapes is the mission of DEQ's Land Protection Division. By restoring contaminated properties to productive use, devising methods for assisting citizens and communities in the proper disposal of wastes, and providing environmental education forums for the public, the Land Protection Division helps set the standards for safeguarding Oklahoma's precious natural resources. Clean landscapes, surface water, ground water, and air are synonymous with a healthy state, and through application of environmentally responsible actions today, Oklahomans can feel good about the environmental legacy they pass on to successive generations. ■

Cement Kilns Find A Supplemental Fuel Source In Oklahoma's Waste Tires

*Stockpile of
waste tires at
the cement
kiln.*

Waste tires, when burned, are an excellent source of energy, and this fact is welcome news for Oklahoma. Nearly 3.4 million waste tires are collected, processed, and marketed

by permitted waste tire processors every year. Until recently, the major, but often unstable, markets for processed tires were for use in civil engineering applications, as tire-derived fuel (TDF), and as ground rubber used for feedstock to make new products. Engineering uses of the state's waste tires has declined significantly over the past few years, and the ground rubber feedstock market is a relatively small portion of the overall Oklahoma market picture. The tire-derived fuel market has increased significantly in Oklahoma over the past two years, due to interest from two major cement kilns in the state that burn whole tires for supplemental fuel. Because of this interest, Oklahoma can be assured of having a reliable market for its waste tires.

The two major cement kilns in Oklahoma that burn waste tires as a supplemental fuel are Holcim (US) Inc. in Ada, and Lafarge North America in Tulsa. In 2003, Holcim consumed nearly 2.48 million waste tires, and Lafarge burned

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*Waste tire
trailer delivery
system at
Holcim.*



nearly 500,000 waste tires. While not all of these tires were Oklahoma waste tires, the vast majority were, showing that these two cement kilns have the capacity to burn nearly 2.98 million tires annually, or 88 percent of the waste tires generated annually in the state.

Waste tires are delivered to the cement kilns by permitted waste tire processors, who collect tires from all 77 counties. At the cement plant, the tires are loaded into a special trailer that delivers them to a conveyor belt system; the tires are grasped by a hook that draws them up to the large rotating cement kilns; and through a specially timed process, the tires are deposited into the kiln which is heated to over 2,600 degrees Fahrenheit.

The energy content of a waste tire is 15,000 BTUs per pound compared to coal, which on average contains 12,000 BTUs per pound. The public's perception of emissions released during the burning of tires for fuel has not always been positive, but an EPA report suggests the emissions from burning tires in a cement kiln are minimal. After the tires are burned, there is no ash or residue to dispose of because all of the components of the tire are either destroyed, combined into the superheated raw ingredient mix that makes up the cement (clinker), or captured in the air pollution control devices.

An environmental partnership has emerged between the state and the cement kilns. Oklahoma needs to properly manage several million waste tires annually, and the cement kilns need the waste tires for use as supplemental fuel. Through Oklahoma's waste tire management program, a steady stream of waste tires is delivered to the kilns, and the kilns in turn properly dispose of the tires to Oklahoma's benefit. ■



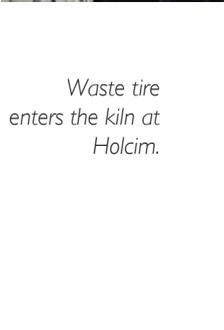
Waste tires in motion on the conveyor belt at Holcim.



Waste tires being hoisted by hooks up to the hot kiln at Holcim.



Large set of rotating kilns at Lafarge.



Waste tire enters the kiln at Holcim.

Oklahoma Refining Company (ORC) Superfund Site

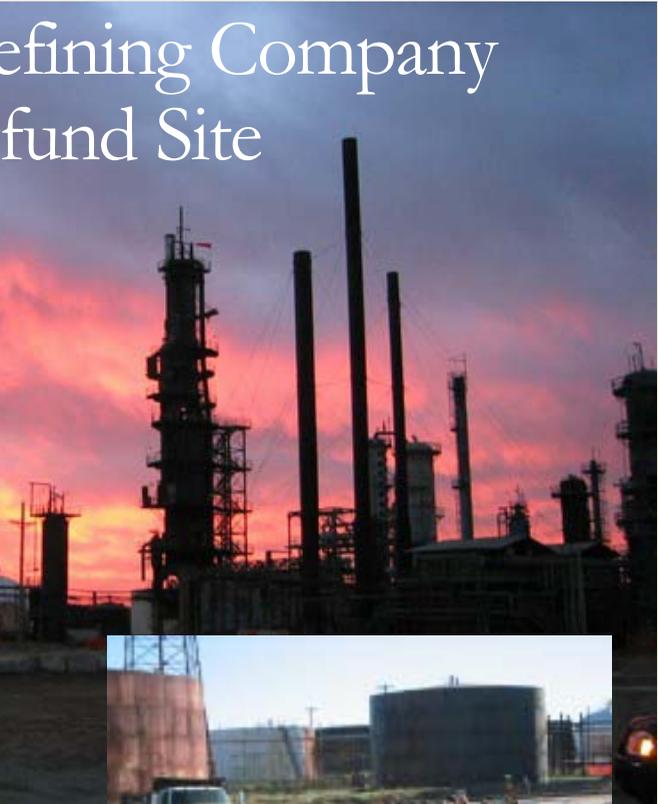


DEQ and EPA begin the Superfund Removal.

In 2002, DEQ completed the cleanup of the abandoned southern portion of the ORC Superfund Site in Cyril. The refinery superstructure north of the railroad tracks was not included in the Superfund cleanup due to successive attempts to restart the refinery. The interest in restarting the facility kept the superstructure portion of the refinery under the jurisdiction of the Resource Conservation and Recovery Act (RCRA) – the law that governs active hazardous waste facilities. Also in 2002, EPA RCRA, after unsuccessful efforts to get the owner(s) to clean up the site, referred the site to Superfund. DEQ, as lead agency for the project, was concerned that the money available would not cover the

costs involved in mitigating the threats presented by the abandoned refinery, such as asbestos, laboratory chemicals, and leaking vessels and tanks. Due to the successful partnership formed between DEQ and EPA during the Hudson Refinery cleanup, DEQ requested EPA Superfund Removal assistance with the cleanup of the ORC refinery in Cyril. The innovative use of Superfund and state assets allowed the cleanup to proceed without delay. Future long-term soil and ground water remediation will follow. ■

Above: The ORC refinery sees its last sunrise.



The Cyril High School Class of 2004 had its photo taken in front of the refinery.



Asbestos abatement crews begin work.



Shears cut metal for recycling.



A contractor evaluates a pipe rack.



A small tower is lowered to the ground by cranes.



Aerial photograph of an asbestos containment wind-wall around some of the refinery towers.



The two tallest and heaviest towers were brought down by explosive demolition.

Cleanup of Greenway Environmental



Contaminated equipment at Greenway Environmental.



Workers stage and over-pack deteriorating drums.

Greenway Environmental is an 18-acre, abandoned hazardous waste treatment, storage, and recycling facility located near Stone Bluff. Greenway ceased operations at the site in 2000. Hazardous wastes and contaminated equipment remained on site. DEQ's enforcement activities were interrupted when the financial assurance com-

pany that held the operating/site closure bond for the site went into corporate rehabilitation. DEQ negotiated a settlement with the company in rehabilitation for a portion of the bond money in December 2003. DEQ recognized that the settlement money might not pay for the complete closure of the site. In an effort to maximize the available funds, DEQ re-

requested the U.S. Environmental Protection Agency to conduct a Superfund Emergency Response to remove the waste and contaminated equipment from the site. DEQ will conduct the remaining closure activities in FY 2005.

The site was originally operated by Chief Supply Corporation. Chief Supply operated the site from 1977 until 1997. Chief declared bankruptcy following an explosion and fire that killed an employee. Greenway took control of the facility in 1998. ■



Workers sample and categorize waste for disposal.



Shears were used to cut metal for recycling.

Oklahoma Refinery Roundup

For many years, the Department of Environmental Quality (DEQ) has been working to solve the environmental problems created by historical refining practices in Oklahoma. The goal is to ensure that old abandoned facilities are located, properly assessed, and cleaned up if necessary. Historical refineries in Oklahoma range in size from very small skimming operations to large petrochemical complexes. Some small refineries have been difficult to locate since they operated before adequate records were kept.

DEQ relies on the federal Superfund Program and the state Voluntary Cleanup Program to get the refinery sites cleaned up. DEQ works with the oil companies, EPA and other stakeholders to ensure that the old refineries do not pose a threat to human health or the environment. Prior to pursuing Superfund listing for an old refinery, DEQ will try to locate a responsible party to conduct a cleanup. If a responsible party cannot be found or it refuses to voluntarily conduct a cleanup, DEQ will refer the site to Superfund.

Waste water pond at the Duncan Refinery.





Refinery waste liquefies during the summer and migrates through the soil and turns waste pits into death traps for many animals.

Waste slowly flowing down a hill at the Imperial Refinery in Ardmore.



Superfund Program

The Superfund Program exists to clean up abandoned waste sites. Six Oklahoma refinery sites have been cleaned up or are in the cleanup process under Superfund authority: the Oklahoma Refining Company (ORC) in Cyril, the Sand Springs Petrochemical Complex in Sand Springs, the Double Eagle and Fourth Street refineries in Oklahoma City, Imperial Refining Company in Ardmore, and the Hudson Refinery in Cushing. Several other refineries are currently under investigation for possible inclusion of the National Priorities List. Refinery cleanups can be very complicated and time consuming, but when the cleanup is complete, the land can be returned to productive use. The City of Oklahoma City and the City of Cushing are pursuing reuse plans for their Superfund refinery sites.

Voluntary Cleanup Program

DEQ operates a Voluntary Cleanup and Brownfield Redevelopment Program. Many viable responsible parties choose to conduct voluntary cleanups under

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state authority and avoid EPA Superfund oversight of the cleanup. Several refineries are in or have completed the program: the Sinclair Topping Plant in Cushing, the Kerr-McGee refinery sites in Cushing and Cleveland, the Okmulgee Refinery in Okmulgee, and the Duncan Refinery in Meridian (formerly Sunray). The Sinclair site is currently being used for agricultural related activities, and there are plans to reuse the Okmulgee site for commercial and industrial activities. ■



Cyril refinery during demolition and cleanup.



Derelict Cyril refinery prior to demolition.



Remediation of wastes at ORC in Cyril



The final two towers at the Cyril Refinery await their fate.

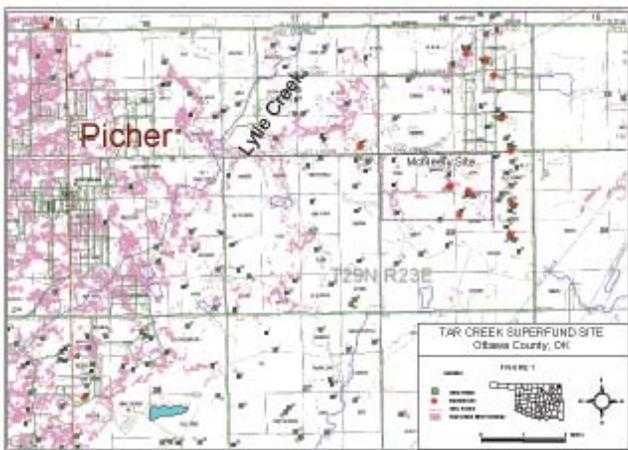


Green fields replaced the refinery structures at the Hudson refinery in Cushing.

Tar Creek



DEQ pilot study site prior to beginning of dirt work.



Map of site showing areas of subsidence.

The northern part of Ottawa County is riddled with mine shafts and boreholes, as well as sinkholes and seeps, related to the abandoned lead and zinc mines of the Tri-State Mining District. Recent activities to address some of the problems associated with this widespread contamination were funded by the 2002 legislative session and more recently by federal appropriations to accomplish the goals set out in the Oklahoma Plan for Tar Creek. The text of the plan is on DEQ's web site, but the highlights include projects to plug mine shafts, fill in sinkholes and remove chat bases in many parts of the site, as well as treating mine seeps and clearing chat out of creek beds. Many of these activities will begin around Commerce in



Scientists take measurements in a sink hole.

the summer of 2004. Other projects will take place in Picher, Cardin, and Quapaw.

The map shows the scope of the work that must be done to address abandoned mine shafts. Many of the old shafts have been plugged but many also remain open, or worse, are not properly

plugged and can open unexpectedly in fields and yards. Erosion around a borehole caused concern for the safety of a state highway last year, when it appeared at the side of the road. Subsequent exploration showed that this area is not un-

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Sink hole.



Scientist enters mine shaft.

derlain by an extensive mine cavern, but there are other areas of the site that are heavily undermined.

One of the projects in the Oklahoma Plan involves comparing an area where known collapses of the mine roof occurred to another area where there is undermining but no collapse. Borehole logs will be compared and geologists and mining experts will assess the data to attempt to develop a predictive tool for the probability for future collapses. The comparison area, the former Meteor Mine, was the site of a reclamation effort recently completed by the Oklahoma Conservation Commission, working with DEQ, to fill in several mine collapses, explore seven mine shafts to see if they were plugged securely, and remove almost 80,000 cubic yards of chat base and chat contaminated soil. The materials were placed in the large sinkholes, compacted and then filled with a layer of clay and organic material. Several ponds were dug on site and pasture grasses were planted to allow the land to return to a usable state.



Work begins on pilot study.



Work continues.

This kind of success story will be repeated on many areas of the Tar Creek Mega Superfund Site where the large chat piles have left their footprints. Many aspects of the plan include monitoring these demonstration

projects to document their success to show what can be done as the larger piles are dealt with during EPA's Remedial Investigation/Feasibility Study of the non-residential portions of the site that also began last year. ■

Workmen fill in a sink hole.



Life returns to once barren land.

DEQ Extends Sampling in the Tar Creek Superfund Area

Beginning in FY 2004, the Sampling Assistance Unit of the Customer Services Division and personnel from the Tulsa Region of the United States Geological Service (USGS) initiated surface water sample collection in the Tar Creek Superfund area. This particular task is an extension of an on-going project evaluating the extent of surface and ground water contamination impacting the creeks, rivers and lakes of northeastern Oklahoma.

DEQ is also evaluating the plant and animal life above, through and below the area of Tar Creek where mine runoff and infiltration are suspected to have impact. This includes the rapid bio-assessment protocol on three sites in Tar Creek where insects from riffles, woody debris and streamside vegetation will be collected. During the insect collection portion of the study, the fish community at each of the sites will be assessed. ■

DEQ has historically collaborated with other state and federal agencies in field monitoring exercises. One of the benefits of this study is that it has afforded DEQ the opportunity to extend its capabilities in new methods of environmental surface water monitoring.

In an effort to properly assess this region, DEQ personnel have trained with USGS staff and undertaken on-the-job training in field techniques to adapt sampling methods to meet the stringent guidelines of both state and federal entities.

This is the initial step of a monitoring effort for the Tar Creek region where the results of metals analysis will be combined with flow measurements of water bodies to enable better prediction of the actual volume of various metals contaminants flowing into the Neosho and Spring Rivers and ultimately Grand Lake.

Jamye Jones and Brian Maggot rinsing sampling equipment



Brian Maggot preparing to take measurements of creek flow

Tar Creek Cooperative Project Underway

The DEQ, working in cooperation with the U.S. Geological Survey (USGS) and the Seneca-Cayuga Nation, is spearheading a project to evaluate metals loading to Tar Creek, Spring River and the Neosho River. DEQ is planning to use this information to help establish Total Maximum Daily Loads (TMDLs) for the Spring and Neosho Rivers and to utilize the data set as the baseline for future long-term decisions concerning the remediation and restoration of downstream sites affected by the Tar Creek Superfund site. The project also will allow us to look at how much sediment per day is being deposited in Grand Lake and the related concentration of metals in the sediment.

This project was developed with state, federal and tribal partners in a cooperative effort to obtain data that will be beneficial for each of the stakeholders affected by these flows in the watershed. The study includes high flow and base flow sampling, as well as an assessment of the diversity of fish and other

biota at three sites within Tar Creek. Water quality data being collected will include general water quality properties, trace elements and major ions. Sediment data produced by the USGS lab include suspended sediment size and concentration. In addition, the State Environmental Lab at DEQ will analyze bed sediment samples to determine metals concentrations.

Sediment coring is also being conducted along the floodplain at Tar Creek. Core samples taken at the 22nd Street Bridge in Miami will be analyzed to determine the metals composition in the alluvial deposits in that area. The data collected from these cores will help define the quantity of metals being deposited from the Tar Creek Superfund Site along the stream corridor as well as those deposited downstream into Grand Lake. ■



DEQ sampling Tar Creek near Picher.



USGS sampling Spring River.

When Trash is a Treasure: Recovering Lost Radioactive Sources in Oklahoma

Ardmore, Oklahoma. A local business was about to make a slightly unnerving discovery. Resting within its property was a two-foot long, 30-pound metal bar which had been lying around the property for about 18 years. Where it came from, or even how they got it, no one really knew. To their eyes, the object looked like any other piece of scrap metal seen in a junkyard. Then on February 9, 2004, a curious worker cleaned an inscription found on its side, and found the words "Uranium". The property owners became concerned that an apparent source of radiation had been discovered at their business.

For some other state's businesses, this event would be a problem, but not in Oklahoma. DEQ provides radioactive material recovery services.

The DEQ Radiation Management Section acts as the state representative to aid in the recovery of lost or misplaced radioactive sources. The program actually starts with the people of Oklahoma notifying DEQ when they suspect something is radioactive, and they require an evaluation to determine if radioactivity is present. The personnel in this section perform, on average, forty evaluations of this nature per year. Not every evaluation results in a found source: for every 20 evaluations made, they usually recover only one. But it is that one recovery, as in the case of the Ardmore discovery that makes each visit worthwhile.



A potential source of radiation after 18 years exposure of to the Oklahoma elements.



The source after cleaning and an evaluation with a Geiger counter.



The true nature of the source was determined upon further cleaning.

As in every case, the Ardmore evaluation was fast and efficient. Contacted on February 9, 2004, DEQ dispatched personnel the next day to evaluate the item. Monitoring confirmed that the item was radioactive. Securing the item, the team used the information gathered from the inscription to find the previous owner. Identifying the object as a

former Department of Defense aircraft weight, they contacted the local military representatives, who readily agreed to take the item back with the intention of recycling it.

Be it trash to some or a treasure to others, the Orphan Source initiative is just one more success story in the services that DEQ delivers to Oklahomans. ■

Unique EPA/State Coordination Makes Abandoned Site Investigation Happen

Oklahoma shares a problem with all other states. There are many small sites or facilities where hazardous wastes were handled over the years but where no responsible owners exist to investigate the sites for problems and perform cleanup as needed. In many cases, the sites are abandoned and have no identifiable owner. Some sites have had preliminary investigations performed that indicate a potential problem exists, but its extent and any needed remedies are unknown. These sites do not present a large enough problem to be addressed under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), but languish as orphaned sites because no alternate funding is available to investigate and clean them. As a result, potentially useful land remains abandoned and off the tax rolls.

The Huffman Wood Preserving facility in Broken Bow is a good example of an abandoned facility. The facility opened in 1956 and treated various wood products with creosote and pentachlorophenol, managing waste products in a series of impoundments. The owner of the facility temporarily closed it in 1984 to make needed improvements under the Resource Conservation and Recovery Act (RCRA) hazardous waste program. Unfortunately, cleanup took longer than anticipated and the facility never re-opened. The owner died in 1991, and no heirs have expressed an interest in claiming the site, given its possible liabilities. Non-payment of property taxes has blurred

the possible ownership of the land.

This was the situation in 2002 when DEQ reexamined the site to see if a solution could be found. The potential contamination at the site was believed to be limited to a relatively small area. It was decided that DEQ staff would conduct a small targeted investigation to determine if there was indeed an environmental problem or if the site could be declared clean.

Even a small investigation requires a significant sum of money and, with the state budget cutbacks, there was insufficient money available in the Land Protection Division budget to undertake it. DEQ requested assistance from EPA. EPA provided assistance in personnel and equipment from the EPA's Robert S. Kerr Environmental Research Laboratory Environmental Research Center in Ada, EPA's Environmental Laboratory in Houston, and one contract consultant. Working cooperatively, a workplan was developed and the site was extensively sampled in late March of 2003.

Sampling results were received late in 2003 and are currently being reviewed. A preliminary evaluation indicates that the sampling confirmed DEQ's assumptions – contamination is limited to a few specific areas. While some cleanup and removal will be needed, much of the site can be released. A final decision on the site is expected later in 2004.

The City of Broken Bow also assisted in the project. It recognized that the Huffman site has great potential for industrial or commercial redevelopment.



Huffman Panorama



Obtaining soil samples underneath the chemical storage shed.

To ensure that the project moved forward, the City provided work crews and equipment to assist with the sampling effort, without cost. City crews cleared the heavy brush on the site, moved heavy debris which blocked access in many areas, supplied decontamination water and equipment, and used backhoes to excavate the nearly 100 sampling pits. Without the savings realized by the City's contribution, it is doubtful that enough other resources could have been found to allow the project to proceed. The more precise documentation of the extent and degree of contamination will greatly facilitate future clean up and development of the property. ■

Horsehead Corporation Bartlesville Facility

The draft post-closure permit for the Horsehead Corporation (formerly Zinc Corporation of America) facility in Bartlesville is nearing completion and will be available for public comment in early FY 2005. The Horsehead facility began operations as a primary lead and zinc smelter in the early 20th century and is now closed. The facility has completed an extensive corrective action that covered and capped thousands of tons of waste material on site.

The before and after pictures, on the right hand page, show the contrast due to substantial effort of Horsehead Corporation. The heavy industrial site has been converted into a park-like, grassy area. Long-term groundwater monitoring will be required to assure no metallic contaminants leave the site. Concurrently clean up activity in areas surrounding the plant has been accomplished to reduce exposure to metals that were deposited as a result of the operation of the smelters. ■



The site is currently a lush green field.



Aerial photo taken in 1984, prior to cleanup activities.



Aerial photo taken in 2003, after the cleanup.

Cimarron Center/Federated Metals Brownfield Site Nominated for International Development Award

The Cimarron Center redevelopment of the Federated Metals Brownfield Site in Sand Springs, which opened in August 2003, received the prestigious Phoenix Award for Region 6. The regional award makes the site a finalist in the competition for the International Phoenix Award. The award "recognizes individuals and groups who work together to solve the critical environmental problem of transforming abandoned industrial areas into productive new uses."

The Federated Metal Brownfield Site was a former zinc smelter facility that closed in the mid-1980s. The site sat vacant for several years. It was cleaned up and redeveloped by a unique collaboration between Federated Metals (the responsible party), Kucharski Development (a private, fam-

ily-owned development company), and Wal-Mart (the anchor store for the new development). In 1995 and 1996, the project provided major impetus for the passage of the Oklahoma Voluntary Brownfield Redevelopment Act. The Act created a structure for the cleanup of contaminated properties and provided a means for releasing participants and the future owners, operators, and tenants from the environmental liability associated with the historical land use.

Its nomination for the Phoenix Award was based on the positive economic impact that the project brought to the City of Sand Springs. The Wal-Mart Super Center created 350 new jobs and retained 300 jobs from the former Sand Springs store (total jobs = 650). The Super Center is expected to have gross sales of \$80 million in its



Ray Roberts, the DEQ Project Manager for the cleanup, attended the Grand Opening.



Business is brisk!



Smelter waste on the property prior to cleanup.

first year and to top \$100 million by FY 2008. Projected figures for FY 2008 show the Wal-Mart Super Center contributing more than \$3.5 million toward city sales tax, annually.

During the process, the City increased its internal economic development capacity (through its foray into Tax Increment Financing to compensate the developer for \$2,333,815 in public infrastructure improvements that were necessary for the project) and is now in a position to effectively deal with large-scale commercial development.

The schools are also benefiting from the redevelopment project. Prior

to cleanup and redevelopment, the vacant smelter site only generated \$2,800 a year in property tax, of which the school system received \$1,500 a year. This year, the property is expected to generate \$224,000 in property taxes, of which the school system will receive \$126,000.

Due to the reuse of the smelter site as a Super Center, the Sand Springs Trade Area has more than doubled in size to an estimated 130,000 households. The major influence the project has had is the renewed interest in the area for development, which will have long-range effects on the community of Sand Springs. ■

DEQ Evaluates Alternate Landfill Covers

DEQ Land Protection Division staff member David Smit, Ph.D., is an active member of the Alternate Landfill Technologies (ALT) Team of the Interstate Technology and Regulatory Council. He works with the team as a sub-team leader assisting in the development of technology and regulatory guidance documents and during internet training sessions on Alternate Landfill Covers, specifically evaporation/transpiration covers for closure of landfills. This involved authoring/editing sections of publications and contributing to the course content for the training. The team documents were published in 2003, and the internet training went "live" in 2004. Currently, he is working with the ALT team to develop a guidance document on bioreactor landfill design and operation and another document on alternative procedures for the closure/postclosure care procedures of landfills. ■



Waste Management's Quarry Landfill: Well established vegetation as a result of the construction of an alternate landfill final cover that is designed to promote good plant growth. In the background is a gas flare that is part of the gas control system to reduce possible landfill gas emissions.



Waste Management's Quarry Landfill: The objective of the alternate landfill cover design is to promote good growth of native vegetation to protect the cover and eliminate infiltration of water into the waste.

Solid Waste - the year in review

Oklahoma City Opens New Household Hazardous Waste Facility

During the year, DEQ permitted the solid waste transfer station built by the City of Oklahoma City specifically to

manage household hazardous waste. The facility is part of the City's stormwater management program and is an outgrowth of the popularity of the Household Waste Collection Events, which began in 1995.

The Oklahoma City Household Waste Collection Facility is located at 1621 S. Portland, approximately 0.1 miles south of

the intersection of S.W. 15th and Portland Avenue. It provides a location for transfer of household wastes from citizens' ve-

hicles to an inspection and classification area. Thereafter, the wastes are segregated by a hazardous materials coordinator and packaged for disposal or reuse.

The facility permit includes a Recycling Plan that maximizes reuse of waste material and provides an active recycling program for materials such as metal, tires, batteries, oil, paint and antifreeze. Business relations have been established with commercial recyclers in order to establish markets for material reuse.

Landfills continue to be the waste management method of choice

In 1984, Congress amended federal law and required EPA to upgrade the quality of the nation's municipal landfills. Thereafter, landfills were required to be built with a chemically resistant plastic liner and two feet of compacted clay.

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Oklahoma City's permanent household hazardous waste collection and recycling facility.



Subtitle D landfill's chemically resistant plastic liner.



Beneficial reuse of the Mosley Road Superfund Site.

Implementation of these “Subtitle D” requirements began in 1994 and continues to the present day.

In Oklahoma, DEQ has implemented these changes. In order to preserve the existing disposal options in rural communities, DEQ allowed rural areas time to transition to the higher standards of subtitle D while minimizing economic impacts. Today, an increasing portion of Oklahoma’s municipal wastes is disposed in cells with the plastic liners.

Virtually all of the household waste generated in the state’s major metropolitan areas is disposed in these landfills. The cities of Tulsa, Oklahoma City, Lawton, Enid, Edmond and McAlester all place their wastes in state-of-the-art cells.

Mosley Road Superfund Site Reuse

EPA has been encouraging states to redevelop and reuse contaminated land. Reuse of contaminated land may be complicated because of uncertainties re-

garding clean-up. However, cleaning up and reusing these sites creates jobs, takes development pressures off of other land, and improves and protects the environment.

Mosley Road Landfill was closed in 1987 in accordance with state closure requirements. Later, the landfill was placed on the National Priorities List (NPL) as a Superfund Site. It has been remediated and is currently under review by EPA for delisting from the NPL.

East Oak Recycling and Disposal Facility (East Oak RDF) is located adjacent to the Mosley Road NPL site. Recently, DEQ permitted a lateral expansion of the East Oak RDF site that reused land located between East Oak (RDF) and the Mosley Road Landfill.

The lateral expansion provided an additional 19 years for the East Oak RDF landfill to serve Oklahoma City. In addition, the expansion eliminated the need for development of other open land. ■

Conference Attendees Glean Ideas for More Sustainable Living

Hoping to contribute to promoting the responsible use of Earth's many valuable natural resources, more than 220 attendees gathered for the Oklahoma Sustainability Network's (OSN) third annual conference, "Sustainable Oklahoma—Actions Speak Louder than Words," on March 12, 2004, in Norman. The event featured Mathis Wackemagel, Ph.D., the

Founder and Executive Director of the Ecological Footprint Network (www.ecofoot.net) and author of several books, as the keynote speaker. Wackemagel provided an overview of the ecological footprint concept and how it is being used worldwide to measure human impacts on nature's ecological services. The footprint is one of the tools utilized by DEQ's Use Less Stuff Campaign.

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Mathis Wackemagel, Ph.D., the Founder and Executive Director of the Ecological Footprint Network (www.ecofoot.net) was the conference's keynote speaker.



Dianne Wilkins (left), DEQ Customer Service Pollution Prevention Program, discusses the OSN Conference Business track. On the right is Jay Yowell, OSN Chair.



Dave Dillon, DEQ Customer Service, visits with Lyntha Wesner, speaker from the Norman Area Land Conservancy, in front of DEQ exhibit.

Four Action tracks, Personal, Business, Community and Design were offered to attendees. Concurrent sessions covered such topics as Smart Houses, Straw Bale Building Techniques, Utilizing Native Plants and Prairie Landscaping, Smart Growth, Leadership in Energy and Environmental Design (LEED), Overview and Application, Steps to Business Sustainability, and Starting A Land Trust. Afternoon panels of experts addressed Native American Environmental Stewardship Projects, Renewable Energy, Sustainable Agriculture, and the CrossTimbers Sustainable Housing Development Project at Skiatook Lake.

“Part of the OSN mission is to connect those working toward sustainability in Oklahoma, and the annual conference helps to achieve this mission,” said Ilda Hershey, from DEQ’s Water Quality Division. Hershey served as 2004 Conference Co-Chair and serves as Board Treasurer for OSN. Hershey is also an active member of the second OSN Chapter (local community groups for sustainabil-

ity), Sustainable Stillwater. Dave Pruitt, also from DEQ’s Water Quality Division, produced the massive signs for the conference.

In addition to Hershey and Pruitt, several other DEQ employees were involved with the OSN conference. DEQ’s Customer Services Division was represented by Dianne Wilkins, OSN Board member and DEQ Pollution Prevention Coordinator. Wilkins arranged for grant funding and provided expertise in the selection of speakers for the business track, which she moderated. Melissa Sims, DEQ Air Quality Division, assisted with DEQ’s exhibit.

Four DEQ Land Protection Division staff members were crucial to the success of the conference. Susie Shields, who serves as OSN Board secretary, partnered with Hershey as 2004 Conference Co-Chair. Fenton Rood is an OSN Board member and served as co-moderator of the 2004 conference along with OSN President, Jay Yowell, a local architect. Amber Magdaleno managed the



The Spirit of Oklahoma, formula-lightning, open-wheel, electric car was on display at the conference.



exhibits for the conference in addition to handling the difficult task of on-site registration. Hal Cantwell, well-known for his excellent photography, took a variety of photos throughout the day.

Find out more on the Oklahoma Sustainability Network web site: www.oksustainability.org. Two list servers and a bulletin board are available there for communication purposes. ■

DEQ Water Quality's Ilda Hershey (right), OSN 2004 Conference Co-Chair, answers a question from Bob Waldrop, OSN board member and founder of the Oklahoma Food Co-op.

DEQ Employees Involved as University Instructors



Dr. Evelina Morales explains the periodic table of elements.

The Land Protection Division has several employees who use their advanced degree status to teach courses at the University of Oklahoma in Norman and at the University of Phoenix, which maintains campuses in Oklahoma City and Norman. During the day, these individuals use their credentials to tackle a host of environmental issues corresponding to their careers as environmental professionals at DEQ. In the evenings they apply that knowledge to a wider audience.

Saba Tahmassebi, Land Protection Division's Chief Engineer, received a Ph.D. in Petroleum Engineering from the University of Oklahoma, an M.S. in Petroleum Engineering from the University of Southern California, and a B.S. in Chemical Engineering from the University of California at San Diego.

Tahmassebi teaches environmental science and Mathematics I & II courses at the University of Phoenix. Through his connection with DEQ, Saba is able to bring to the classroom specific real world environmental science examples currently being addressed in Oklahoma. For Saba, teaching provides an opportunity for personal growth, a chance to do something a little bit different, and also keeps him up to date on current environmental science issues.

Evelina Morales, Land Protection Division's Risk Assessment and Toxicological Information Expert, received a Ph.D. in Zoology from Miami University in Oxford, Ohio, an M.S. in Environmental Engineering from the Asian Institute of Technology in Bangkok, Thailand, and a B.S. in Zoology from the University of the Philippines in Quezon City. Evelina

Fenton Rood describes the function of a landfill liner (geomembrane).

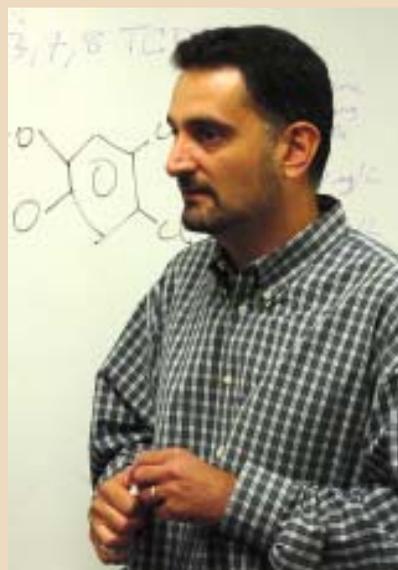


taught Zoology, Ecology, and Human Anatomy/Physiology courses for three years at the Oklahoma School of Science and Math prior to her arrival at DEQ. She has spent two recent semesters teaching environmental elective courses at the University of Phoenix. Evelina points out that the University of Phoenix curriculum was designed specifically for adult students currently employed in the work force. She views this demographic with particular importance and capitalizes on the opportunity to pass on problem-solving techniques the students can apply as they encounter potential or real environmental problems. She has found, while working for DEQ, that often stakeholders are not informed about the health issues and risks brought about by exposure to nearby contaminated sites. Therefore, she informs her mature students about the availability of resources, information on who to call, and lists of questions to ask. Finally, she teaches them to be objective.

Fenton Rood, Land Protection Division's Director of Waste Systems

Planning, received a Masters of Public Health (M.P.H.) from the Health Sciences Center at the University of Oklahoma, and a B.A. in Geography from the University of Oklahoma. In the spring of 2004, Fenton taught Urban Ecology at the University of Oklahoma's Geography Department. The course curriculum was focused on solid waste planning techniques, a subject on which Fenton is considered an expert around the state. In addition, he currently teaches Environmental Issues and Ethics and Algebra at the University of Phoenix. Teaching is a personally stimulating experience for Fenton and helps him keep up with new ideas in the field of environmental science. Fenton also enjoys the student interaction inherent with teaching.

As longtime DEQ employees, these three individuals routinely apply their expert knowledge to solve complex environmental problems affecting the state. In turn, they are able to complete the environmental education cycle by using problem-solving experiences and ideas, accumulated throughout their careers, to motivate a new generation of curious students. ■



Dr. Saba Tahmasebi discusses the molecular structure of dioxin.

DEQ Recycles

The DEQ has been cutting its waste stream for several years through its recycling program. For 12 years, DEQ has been recycling office paper, plastic and glass beverage containers, and aluminum cans. Outdated telephone books have been recycled for nine years, and wooden pallets have been re-used and recycled for the last 10 years. These efforts have recycled over 250 tons of material and have reduced DEQ's trash services expenses. DEQ has also supported recycling campaigns such as operation Clean Sweep where employees were encouraged to clean up at home and in their office area and bring the old magazines and junk mail to recycle at work.

DEQ's current recycling program involves recycling waste office paper, plastic, aluminum cans, batteries, toner/laser cartridges, cell phones, pallets and computers. ■

In Fiscal Year 2004, DEQ recycled

- 25,100 pounds of office paper,
- 2,200 pounds of aluminum cans,
- 4,0450 pounds of glass,
- 3,940 pounds of plastic containers,
- 3,300 pounds of corrugated cardboard,
- 250 toner cartridges,
- 190 wooden pallets
- 718 telephone directories.



Bryce Hulsey, DEQ's Recycling Coordinator, begins the recycling effort by emptying his office paper collection box into the common recycling bin..



Larry Stevenson and Elroy Lewis, building custodians, prepare the waste office paper for the recycling contractor.