

UTAH  
**Report**  
on the Environment  
**2008**

Air | Climate Change | Land | Water

## *Message from the Acting Executive Director*

As the [Utah Department of Environmental Quality](#) (DEQ) unveils the agency's third annual State of the Environment Report for 2008, [Governor Jon Huntsman](#) is poised to select a new director to oversee an agency with a strong record of fulfilling our mission – *safeguard public health and our quality of life by protecting and enhancing the environment*. We continue to emphasize the best science and collaboration to achieve environmental success prompted by the foresight of DEQ directors Rick Sprott and Dianne R. Nielson, the Huntsman Administration and the [Utah Legislature](#).



Bill Sinclair

As this report shows, Utah's environment is getting incrementally better due to significant milestones achieved in 2008.

Air quality is improving due to tougher federal standards we are preparing to meet. We are achieving this even at a time when the 2008 population grew to 2.76 million – a 2.2 percent increase. Our partnerships with schools, businesses, local governments, [Environmental Protection Agency](#) (EPA) and clean air advocates have helped secure funding to [retrofit school buses](#) with cleaner technology. And our air quality [three-day forecast](#) continues to provide valuable information about current and pending air quality conditions, which is now more meaningful to school administrators and parents as the Asthma Task Force has recommended guidelines on when to keep children inside during recess based on the air quality index.

For the first time, benchmarks have been set for cutting [greenhouse gasses](#) (GHG) to combat climate change and ensuring a sustainable energy-efficient future. This came about as a result of Huntsman's [Blue Ribbon Advisory Council on Climate Change](#) (BRAC) recommendations on how to reduce GHG in Utah and encourage continued growth of our renewable energy sector. This has provided the framework of continued progress. Utah is one of the growing members of the [Western Climate Initiative](#) (WCI) with a long-term commitment to significantly reduce GHG emissions. Meanwhile, numerous Utah businesses have signed up for the [Climate Registry](#) which lays the groundwork for the state to begin reporting GHG emissions.

In 2008, significant progress was achieved in the clearing of a 1,700-acre parcel, formerly the Geneva Steel mill property on the eastern shore of Utah Lake where cleanup is under way to transform a once blighted property into a bustling redevelopment that will encompass retail shops, office complexes, residential areas and light industrial space. We continue to work closely with city leaders, local residents and businesses to clean up contamination that is often the result of historic, unregulated practices that harmed the environment. Through the [Superfund](#), [Brownfields](#) and Utah's [Voluntary Cleanup programs](#), thousands of acres of commercial and residential properties have been cleaned and put back into beneficial use.

The first-ever standard for selenium pollution for the Great Salt Lake is now set – a ground-breaking achievement – while a governor-appointed [Great Salt Advisory Council](#) is looking at how to manage the lake for future generations.

More fish testing this past year has pinpointed mercury contamination in various waterways that has set the groundwork for further study.

Our ongoing success continues to be our dedicated employees who work in partnership with our various stakeholders. In August, Governor Huntsman launched the [Working 4 Utah](#) initiative, extending government service hours from 7 a.m. to 6 p.m. Monday through Thursday. Non-essential government buildings are now closed on Fridays in order to save money, energy, improve air quality and enhance government services. The initiative, which has other states considering similar proposals, will be evaluated for a year to determine whether to continue it. I invite you to learn more about DEQ and the issues we are following by visiting our Web site at [www.deq.utah.gov](http://www.deq.utah.gov).

## Cleaner Air



### *Introduction*

Utah's air quality continues to be a growing concern. Our mountain-and-valley topography, diverse economy, and a vastly growing population create some air quality challenges for the state. Despite these challenges, Utah's air continues to improve. As noted in the last two previous reports – [2006](#) and [2007](#) – in the early 1980s, Utah struggled to meet the health standards for four of the six criteria pollutants identified by the EPA. By 2006, all Utah counties attained current federal air quality standards. Two decades later, Utah finds itself in a similar position with ozone and very fine particles,

known as PM<sub>2.5</sub>, because scientific evidence shows that exposure can be much more harmful to health than previously known.

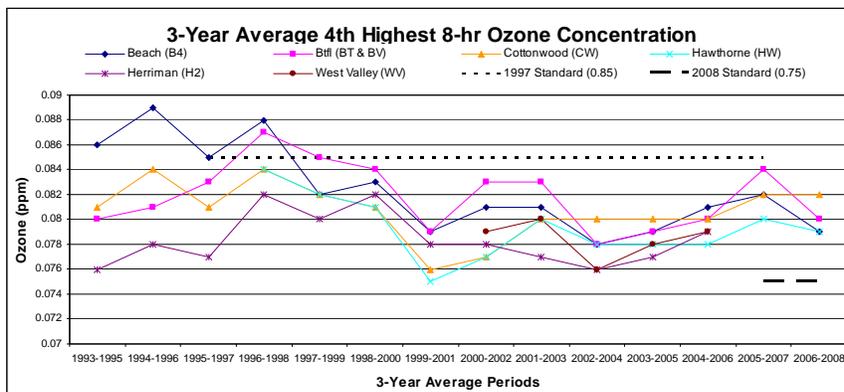
On December 2006, the allowable daily average of fine particles (PM<sub>2.5</sub>) went into effect, reducing the standard from 65 micrograms per cubic meter (ug/m<sup>3</sup>) to 35 ug/m<sup>3</sup>. On March 12, 2008, EPA tightened the limits on the 8-hour standard for ozone from 85 parts per billion (ppb) to 75 ppb. Remarkably, the 2008 air quality season improved from 2007 despite the tougher air quality rules and the fact that Utah’s population continued to climb to 2.75 million – up 2.2 percent from the previous record-breaking year.

We can measure that by the fact that the number of “red” air quality days declined significantly in 2008. The [Division of Air Quality](#) alerts people all year long to pollution conditions by issuing “green, yellow and red” air alerts. Salt Lake and Davis counties recorded only 13 “red” days during the winter season, which means that conditions were in place where the PM<sub>2.5</sub> federal standards could be exceeded, compared to 30 the previous winter season. In the summer Ozone season of 2008, the Division issued 5 “red” days compared to 20 for the 2007 summer season.

## Ozone

[Ozone](#) is formed when volatile organic compounds (VOCs) and nitrogen oxides (NO<sub>x</sub>) mix with sunlight and heat. Ozone, sometimes referred to as smog, is principally a summer time problem when temperatures are high and daylight hours are long, but it may have implications to wintertime particulate problems as well. It is a mix of chemicals emitted mainly from vehicle tailpipes, diesel engines and industrial smokestacks. It becomes a more acute problem on hot summer days and can lead to shortness of breath, chest pains and lung inflammation.

In March, EPA’s new ozone standards went into effect following mounting evidence of health risks. The new standard of 75 ppb means that additional areas will be evaluated for inclusion in the recommendation for areas of non-attainment that the Governor will submit to EPA in March, 2009.



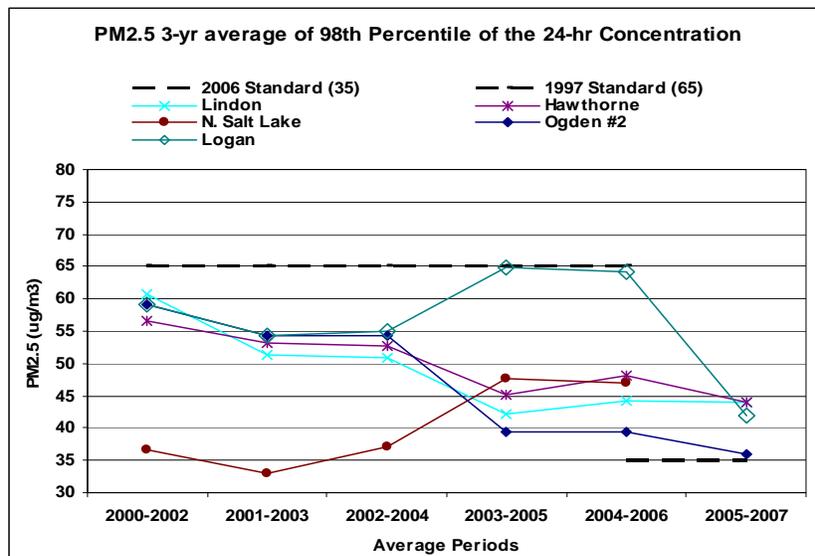
## Particulate Matter

[Particulate matter](#) refers to the tiny particles found in the atmosphere that range in size from less than one tenth of a micrometer (about one-tenth the size of a human hair) up to 50 micrometers. Fine particulate matter known as  $PM_{2.5}$  – those particles less than or equal to 2.5 micrometers – is a more serious health problem. As noted earlier, EPA adopted new standards for  $PM_{2.5}$ , setting the standard at 15 micrograms per cubic meter ( $g/m^3$ ) on an annual basis and 35  $g/m^3$  for the 24-hour average – about half the limit of the previous standard.

Much of the particulate pollution can be attributable to emissions from automobiles. Industry, woodstoves, lawn mowers – among many other sources – also contributes to poor air quality. Wildfires also produce air pollution. Because a major portion comes from automobiles, the Division of Air Quality’s [Choose Clean Air](#) program continues its public outreach by encouraging people to reduce vehicle trips and take mass transit when air pollution levels are on the rise.

Particulate matter is associated with both respiratory-related and cardiovascular effects. For instance, short-term exposures may aggravate asthma and bronchitis and have been associated with heartbeat irregularities and heart attacks. Long-term exposures have been linked to deaths from heart and lung diseases.

The new federal standards has put the Wasatch Front – including all of Salt Lake and Davis Counties and portions of Weber, Box Elder and Toole counties – into a “non-attainment” status – as well as the low-lying portions of Utah and Cache Counties. The state has until 2012 to draft a plan to EPA on how it will achieve compliance that will ultimately, improve the air quality for decades to come.



## ***Successes: New Air Quality Recess Guidelines***

*In November 2008, DEQ, in partnership with the [Department of Health](#) (DOH), released air quality guidelines that will assist parents and schools in deciding when to let children play outside during recess. The new guidelines are intended to provide flexibility based on ongoing studies by the [Asthma Task Force](#). In 2004, DEQ teamed with DOH and the University of Utah to study the air quality and its effects on children's respiratory health. Data collected at Hawthorne Elementary showed the air quality was better inside than outdoors during winter inversion days. In 2006-07 the study moved to Greenville Elementary in Cache County where the study concluded there was no difference in a child's ability to breathe when playing outside for a 15- to 20-minute recess on days when the air quality is less than perfect. These conclusions prompted state and school officials to draft guidelines to help give parents more information on when they should limit their child's outdoor activity based on air quality conditions.*

## ***School Buses are getting cleaner with Retrofits***

*About 861 diesel-powered school buses are getting a remake by having cleaner technology installed that will significantly reduce air pollution. Twenty-two school districts across the state have applied for grants, made eligible by EPA, Utah, Salt Lake counties and the Utah Legislature that will retrofit older buses with pollution control devices that capture pollutants and reduce tailpipe emissions.*



*Horizon Elementary School, Murray*

*The work is a result of partnerships with the Division of Air Quality, Utah State Office of Education, Salt Lake County's mayor's office, EPA, Utah Clean Cities, Utah Department of Transportation, Wasatch Front Regional Council, Mountainland Association of Governments, Utah Moms for Clean Air, Wasatch Clean Air Coalition and Utah County. The technologies are expected to reduce particulate matter by 40 percent, carbon monoxide by 50 percent and hydrocarbons by 75 percent. For more information, visit: [http://www.deq.utah.gov/Issues/School\\_bus\\_retrofit/index.htm](http://www.deq.utah.gov/Issues/School_bus_retrofit/index.htm)*

## ***DEQ Employees Put the Brakes on Driving Alone***

*On Earth Day 2008, about one-third of DEQ's 400-employee work force committed to drastically cutting air pollution by carpooling or taking alternative transportation to get to the office. As a result, 4,578 pounds of CO<sub>2</sub> was prevented from being emitted – that means DEQ employees collectively reduced air pollution in a single day about the equivalent of the emissions an average automobile produces in six months.*

## **Tax Credits for Cleaner Vehicles**

As of Nov. 28, 2008, about 318 vehicles received one-time tax credits from DAQ as an incentive for helping reduce air pollution with cleaner vehicles. However, that's down more than half from last year when a record number of vehicles – 675 received tax credits. The reduction can be attributable to the change in law. In 2008, the Utah Legislature revised the [state's Clean Air and Efficient Vehicle Tax Incentives](#). This revision reduced the tax credit for natural gas vehicles to \$2,500 or 35 percent of the vehicle's purchase price, whichever is less. Other clean fuel vehicles are eligible for a credit of up to \$750 if they meet air quality and fuel economy standards. This revision also added hybrid electric vehicles as eligible for the tax credit as long as it meets the standards.

Even with the decline from the previous year, more vehicles are cleaner as shown by the numbers of vehicles eligible for tax credits. In 2002, when the tax credits were being administered by DAQ, 73 received tax credits, with each year increasing to 308 in 2005. After 2005, hybrids no longer were eligible for the tax credits until the change in 2008.

Utah's low natural gas prices have prompted a growing number of people to convert their vehicles to compressed natural gas. But the conversion kits must be EPA certified and installed by a certified mechanic. Some self-conversion kits on the market do not meet EPA standards and can be both dangerous and dirty. For more information on tax credits, visit: [http://www.airquality.utah.gov/Planning/Mobile/Clean\\_Fuel\\_Tax\\_Credit.htm](http://www.airquality.utah.gov/Planning/Mobile/Clean_Fuel_Tax_Credit.htm)

## ***Climate Change/Energy Efficiency***

Since 2007, Utah has been a partner of the [Western Climate Initiative](#) (WCI), joining Arizona, California, New Mexico, Oregon, Washington, Montana and the Canadian provinces of British Columbia, Manitoba, Ontario and Quebec, to address climate change. Thirteen other U.S. states, Canadian provinces, and Mexican states are official observers in the WCI.

As part of its commitment to joining WCI, Utah achieved two significant milestones last year. In June 2008, Utah pledged to reduce [greenhouse gas emissions](#) (GHG) to 2005 emissions levels by 2020 – a state goal based on an analysis of a wide range of options identified by the Governor's [Blue Ribbon Council on Climate Change](#) (BRAC). In

September 2008, Utah joined WCI members in unveiling a plan for a [market-based cap-and-trade program](#) as a major tool to reduce GHG emissions regionally. Meanwhile, numerous Utah businesses have signed up for the [Climate Registry](#) which lays the groundwork for the state to begin reporting GHG emissions.

Also in September, as directed by [Senate Bill 202](#), the Department of Environmental Quality launched a two-year process to develop regulations for [carbon capture and sequestration](#), an approach for reducing GHG by capturing carbon dioxide from industrial sources, such as coal-fired power plants, and storing it in deep rock formations. A diverse [workgroup](#) is divided into three subcommittees to study the environmental and health impacts of capturing the carbon from an emission source, transporting the pressurized carbon to the sequestration site, and the injection of the carbon into the ground. The group is expected to submit draft regulations to the Legislature by January 2011.

This progress will continue as the Department of Environmental Quality continues working with the Governor's Office to evaluate economics of the cap-and-trade program in an effort to balance environmental protection, economic growth and a sustainable [energy-efficient](#) future. For more information on this issue, visit: <http://www.climatechange.utah.gov/>

## ***Indoor Air/Radon***

The [Division of Radiation Control](#) (DRC) has seen a substantial increase in radon testing. [Radon](#) is an odorless gas and the second leading cause of lung cancer behind smoking. The DRC's Indoor Radon Program, funded by the State Indoor Radon Grant from EPA attempts to reduce the indoor radon concentrations in homes throughout the state to concentrations less than EPA's 4.0 picocuries per liter. DRC does this through public outreach and providing individualized assistance to homeowners and public agencies on all aspects of the indoor radon hazard problem.

In 2005 about 900 radon tests were conducted throughout the state of Utah resulting in about 150 mitigation systems installed in residential housing. So far in 2008, a total of 2,243 radon tests have been conducted with approximately 629 mitigation systems installed.

The successes can be attributable to increased outreach. The Radon Program has continued its longstanding cooperative alliance with IHC Hospitals throughout the state and works in partnership with the Utah Department of Health, the American Cancer Society, the American Lung Association, the Utah Safety Council, the Wasatch Front Regional Council, and other community groups to provide accurate information and awareness about Radon to the general public.

In December 2008, Governor Huntsman declared January 2009 "Radon Action Month" to coincide with the national awareness campaign. A national poster contest is held each year, with local winners recognized. For more information, visit: [www.radon.utah.gov](http://www.radon.utah.gov).

# Cleaner Land



## *Introduction*

Protecting the environmental quality of the land is integral to ensuring Utah's air is clean and its water pure. To this end, DEQ focuses on the prevention, management, control and cleanup of toxic chemicals.

## **Toxic Chemicals**

Utah continues to make improvements in its national ranking for the amount of toxic chemicals released to the environment. In 2007, Utah remained in the No. 6 ranking in the nation for releases to toxic chemicals to air, land, and water. That's a continual improvement considering Utah was at once in the top 3 of the nation's toxic releases.

Under the Emergency Planning and Community Right to Know Act of 1986, and the Pollution Prevention Act of 1990, facilities must report their releases of more than 650 toxic chemicals and chemical compounds to the EPA and state officials. It is important to note that the majority of the releases include properly permitted activities allowable under federal law. This data is available to the public through the [Toxics Release Inventory \(TRI\)](#). In 2007, the latest annual TRI available, the total toxic releases in Utah were about 130.0 million pounds of chemicals. This represents a 22.1 percent decrease to last year's estimated 166.8 million pounds in 2006.

## **Toxic Chemical Releases**

### **2007**

**Air Releases:** 9.3 million lbs

**Land Releases:** 167.6 million lbs

**Water Releases:** 94,405 lbs

## **2006**

**Air Releases:** 9.9 million lbs

**Land Releases:** 135.7 million lbs

**Water Releases:** 100,741 lbs

## **2005**

**Air Releases:** 10.0 million lbs

**Land Releases:** 162.1 million lbs

**Water Releases:** 54,524 lbs

## **Waste Management**

The Division of Solid and Hazardous Waste provides regulatory oversight of the management of hazardous waste generated by industries and businesses along with municipal solid waste generated by residential and commercial sources.

Approximately 2.4 million tons of non-hazardous solid waste was disposed in permitted landfills during 2007, the most recent reporting year for hazardous waste generation and management. An additional 120,000 tons was disposed in approved solid waste incinerators. This represents a decrease from the previous year of 2.5 million tons disposed and another 127,415 incinerated – a reduction that could be attributable to the increasing success of recycling.

### *Recycling On the Rise Success Story*

*Utahns are recycling more today than five years ago, a Dan Jones and Associates poll showed. The Division of Solid and Hazardous Waste commissioned Dan Jones to conduct a survey during July and August of 2008 to gauge people's attitudes toward recycling. The survey of 803 Utahns statewide showed 87 percent think recycling is important. Another 94 percent said their attitudes towards recycling are more positive than it was five years ago. The results also indicated people wanted more recycling options than is currently available, a growing sentiment that may influence elected officials to expand recycling efforts. Other recycling successes include: A one-day electronic waste collection event for residents of Salt Lake County was held in November 2007 where about 40,000 pounds of used electronic equipment was collected during the single-day event. DEQ's oversight of the Mercury Switch Removal Program has resulted in 8,909 mercury switches removed from automobiles and 19.6 pounds of mercury collected that might of otherwise been put in the trash and ultimately ended in the landfill.*

## **Federal Facility**

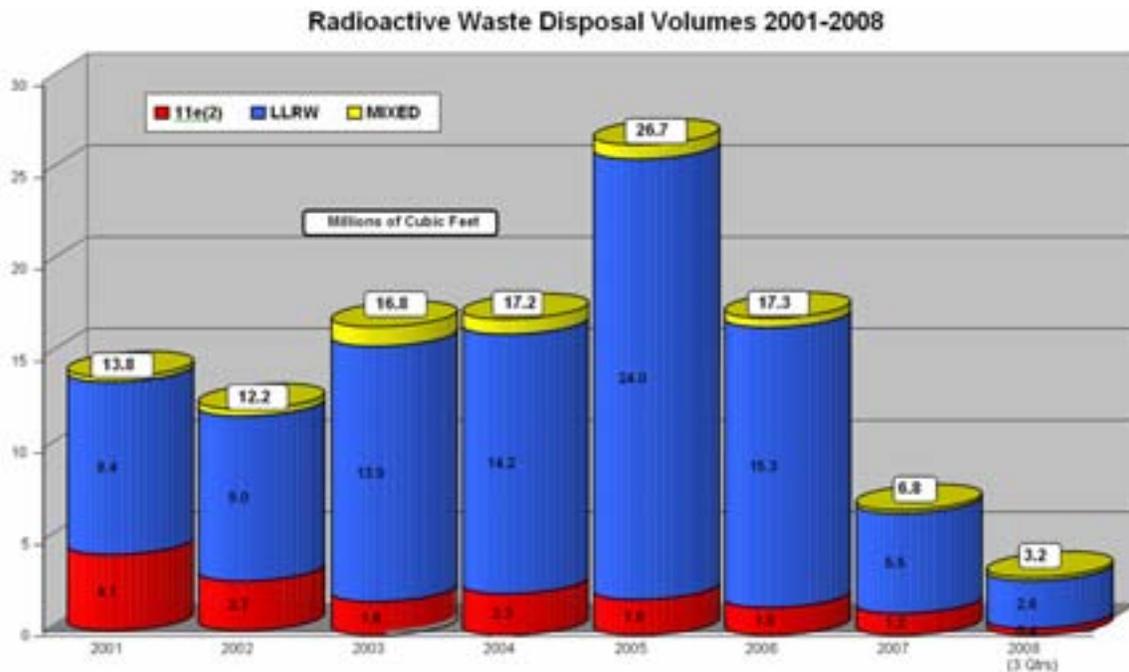
The Deseret Chemical Depot, located in Tooele County, is on schedule to close in 2011 after it finishes the mission of destroying 45 percent of the nation's chemical weapons stockpile. As of November 2008, approximately 40 percent, or 2,600, one-ton containers

of the total of 6,400 containers of chemical mustard agent have been processed. One hundred percent of all nerve agents in containers and munitions, which were stored at the Depot, have been destroyed.

## Low-Level Radioactive Waste Disposal

On the national front, one site, Chem-Nuclear, LLC, a subsidiary of [EnergySolutions, Inc.](#), in Barnwell, S.C. stopped taking waste from anyone outside of the Atlantic Compact on July 1, 2008. Chem-Nuclear, LLC, a subsidiary of EnergySolutions, Inc., receives all classes (A, B and C) of low level radioactive waste. The U.S. Ecology facility at Hanford, Wash., serving the Northwest Compact (Alaska, Hawaii, Oregon, Washington, Montana, Wyoming, Utah and Idaho) also receives all classes of low level radioactive waste and partners with the Rocky Mountain Compact (Colorado, New Mexico and Nevada) in receiving limited amounts of low level radioactive waste. A new facility, Waste Control Specialists in Texas is in the process of licensing a low-level radioactive waste facility to take care of low-level wastes from Texas and Vermont.

Volumes of waste received for disposal at EnergySolutions continue to decline from a peak 26.7 million cubic feet in 2005 to the current year. This volume represents Class A low-level radioactive waste, uranium mill tailings, mixed waste, and Naturally Occurring Radioactive Wastes known as NORM.



## *Foreign Waste*

EnergySolutions' plans to dispose of foreign waste from Italy were derailed in 2008 by opposition that included Governor Huntsman and the [Northwest Interstate Compact on Low-Level Radioactive Waste](#), an eight-state compact formed by Congress to oversee regional solutions for low-level radioactive waste. In 2007, EnergySolutions applied for a license to the [Nuclear Regulatory Agency](#) (NRC) to import up to 20,000 tons of waste from Italy's nuclear program, process it in a company-owned plant licensed in Tennessee and dispose of up to 1,600 tons of process residue at its disposal site in Tooele County, Utah. The [Utah Radiation Control Board](#) and Governor Huntsman opposed the move, contending that low-level radioactive waste disposal capacity in the United States is very limited and should be reserved for domestically generated low-level waste. The Northwest Compact notified EnergySolutions that its agreement with EnergySolutions does not allow waste generated in another country to be disposed. EnergySolutions filed a lawsuit in federal court, claiming the compact has no authority to block foreign waste from its Utah disposal site. The state of Utah and the Northwest Compact disagreed and in May 2008 filed a lawsuit as a defendant. A year ago, Utah Congressman Jim Matheson sponsored a bill in Congress that bans foreign waste imports. Congress has held hearings but no further action has been taken.

## ***State's Radiation Program Given Clean Bill of Health***

*The Nuclear Regulatory Commission (NRC) completed an audit of the radiation regulatory program and deemed it to be adequate and compatible with the federal program.*

## ***Making Radioactive Materials Safer***

*The NRC implemented additional security requirements for licensees with large quantities of radioactive materials. The NRC imposed fingerprinting and Federal Bureau of Investigation identification and criminal history check requirements for employees with unescorted access to the large quantities of radioactive materials. These security requirements are being imposed nationwide and states must have programs in place by June 2008. The Utah requirements were effective May 16, 2008.*

## *Uranium Mills*

Denison Mines (USA) Corporation, (formerly International Uranium Corporation) operates a mill in Blanding, Utah, where it extracts uranium from ores and alternate feed materials. The mine processed 44,136 tons of alternate feed material in 2007. Only 500 tons of alternate feed materials were processed in 2008 before switching to conventional ores. The mine estimates it will process 247,000 tons of conventional ore in 2008. Uranium One Utah (formerly Plateau Resources) in Ticaboo has submitted a license amendment request to resume operations. The Division of Radiation Control is currently working through the technical issues regarding the amendment. Rio Algom in Lisbon

Valley, southeast of Moab, is in the process of reclamation activities. Most of the reclamation activities are completed.

## **Pollution Prevention**

### *Waste Tire Program*

The Waste Tire Recycling Program continues to achieve success. During fiscal year 2008, nearly 100 percent of all tires collected in the state were recycled or reused. That amounted to 39,957 tons, or 2.4 million tires recycled. Of that total, 961 tons (67 more tons than the previous year) of waste tires, roughly 57,660 tires were removed from the waste tire piles located at landfills or abandoned sites.

### *Used Oil Recycling*

In 1993, the Utah Legislature enacted the Used Oil Management Act, which required DEQ to develop a statewide Used Oil Recycling Program. The volume of used oil recycled per year from household participation has grown from 475,656 gallons in 2006 to 480,745 gallons in 2007. The increase is largely due to a “Do-It-Yourself Program,” which promotes use of statewide collection centers by individuals who change their own oil.

## **Reclamation Projects**

The [Utah Division of Environmental Response and Remediation](#) (DERR) is charged with protecting public health and Utah’s environment by administering the superfund and state voluntary cleanup programs in order to clean up chemically contaminated sites and ensuring that underground storage tanks are properly managed.

During 2008, 100 sites were mitigated with a total of 4,145 [Underground Storage Tank](#) sites cleaned up as of June. In 2008, 58 new sites were identified to be added to the 449-site list currently undergoing remediation.

### *Superfund*

During 2008, the DERR staff worked closely with EPA to achieve milestones in the Superfund Program. Records of Decision were completed and signed for the Tooele Army Depot OU9 and Hill Air Force Base OU12 sites. Additionally, DERR assisted the EPA with outreach regarding the proposal to list the U.S Magnesium site on the National Priorities List (NPL) in September. Cleanup work progressed at many other NPL sites including Flagstaff/Davenport, Bountiful/Woods Cross OU1, Midvale Slag Riparian zone and ground water monitoring system, just to name a few.

## *Voluntary Cleanup Program*

The Utah Legislature in 1997 passed a law that created the [Voluntary Cleanup Program](#) (VCP). The VCP allows for property owners or others wanting to voluntarily clean up environmentally impaired sites to do so with DEQ oversight. As of June 2008, 27 projects have been completed under the Voluntary Cleanup Program.

## ***Geneva Steel Success Story***

*One of the biggest [Resource Conservation and Recovery Act](#) (RCRA) [Brownfields](#) cleanups in the country is under way at the 1,700 acre former Geneva Steel property on the eastern shore of Utah Lake. A once blighted contaminated property is now visibly on its way to becoming a premier residential and commercial development.*

*Just this year, 200 acres have been restored, with a new FedEx terminal constructed and open for business on Geneva Road. It didn't happen overnight but the area is in the national spotlight as a success under RCRA.*

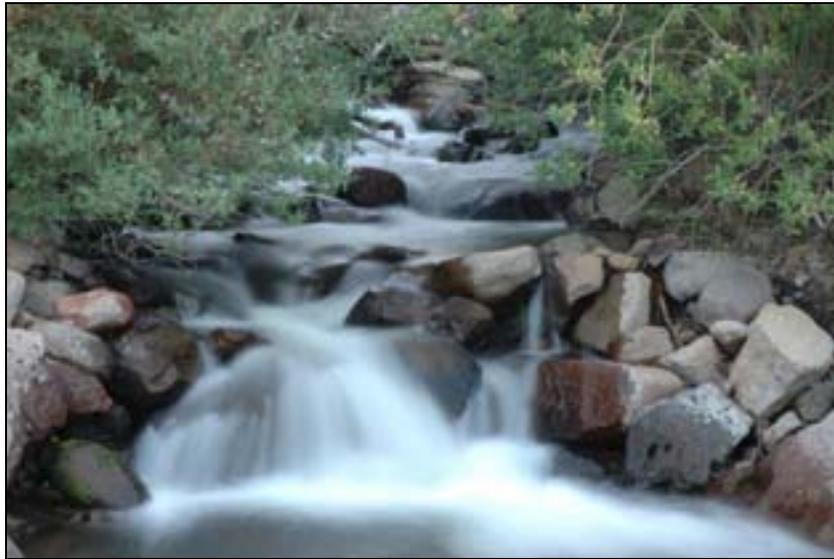


*Geneva Steel: before and after*

*The Division of Solid and Hazardous Waste issued Geneva a post-closure permit in 1989 for long term care and monitoring of hazardous waste left on site. Geneva Steel filed for Chapter 11 bankruptcy in 2002.*

*In 2004, a bankruptcy court gave Anderson Development, a Sandy-based real estate development company, permission to purchase Geneva Steel and approved a cleanup plan that opened the door for development. U.S. Steel, which purchased the plant from the U.S. government after World War II, and Geneva share the responsibility of reclaiming the property. In 2006, the entire steel mill was dismantled. The cleanup is being done on a piecemeal basis, with entire completion a few years away.*

# Cleaner Water



## *Introduction*

Utahns and countless visitors continue to enjoy safe drinking water and many relatively pristine waterways for numerous industrial, agricultural, and recreational purposes. Given that Utah is the second driest state in the nation, it goes without saying that water is a precious resource needed to maintain our communities and many aspects of our economy. Given its importance, water conservation efforts are critical, but so is the need to maintain the quality of water if this precious resource is to continue to meet the needs of current and future generations.

Significant strides have been made in protecting water resources since passage of the [1972 federal Clean Water Act](#) (CWA). The vast majority of Utah's waters are of sufficient quality to meet the uses required of them, but 30 percent are partially impaired. High levels of mercury continue to be found in some fish species in waters throughout Utah. [The Division of Water Quality](#) (DWQ) continually works toward not simply identifying problems, but searching for solutions for continued improvements in waters throughout the state.

In 2008, significant strides were made to better understand the Great Salt Lake – a truly unique ecosystem that has worldwide significance as a refueling stop for millions of migratory birds. Until now, there has been little scientific understanding of this magnificent lake, which has made determining how to best protect its uses difficult. Last year, a group of scientists completed a four-year study that resulted in rules that will protect nesting birds from toxic selenium concentrations. Similar studies are under way to investigate how best to protect the Great Salt Lake ecosystem from mercury problems.

## **Protecting, Maintaining and Restoring Utah's Waters**

Nationwide, all waters are classified with numerous beneficial uses that reflect the services that each waterbody provides to society and the environment. In Utah, these uses include protection of aquatic organisms (fish and other important organisms upon which they depend), recreational uses, agricultural uses, and drinking water sources. Standards, developed with numerous scientifically rigorous studies conducted over the past 30 years, are applied to each of these uses and represent the core of Utah's efforts to ensure that healthy waters can continue to be enjoyed by all. Simply put, standards are the rules that establish pollutant concentrations that ensure protection of the beneficial uses of all waters.

Federal law requires states to carefully revisit their water quality standards every three years. This "[triennial review](#)" was undertaken by DWQ in 2008 and resulted in the most extensive single revision to Utah's standards that have occurred since they were originally adopted as rule. Throughout this process, DWQ enlisted the help of stakeholders representing the interests of the environment, industry, and agriculture who met on a regular basis for over a year to draft a proposed change of rule. This process resulted in updated standards that protect water resources, while not requiring an overly onerous regulatory burden on our citizens.

## **Measuring Current Conditions**

The federal CWA requires that Utah monitor current conditions and water quality trends for all 14,250 miles of rivers and streams and nearly 3000 lakes and reservoirs. To accomplish this task DWQ collected tens of thousands of samples from hundreds of locations in 2008. DWQ expanded partnerships with other state and federal agencies in order to help pay for such an undertaking. DWQ also received over \$200,000 in federal funds to assist with monitoring efforts, which continues to become a growing need as Utah's population expands. To that end, DWQ started developing a 10-year strategic monitoring plan in 2008 and anticipates completing the document and implementing changes in 2009.

The monitoring information is included in a [biennial report to Congress](#) that evaluates whether water quality is sufficient to maintain their uses. Development of this report, required under section [303\(d\) of the Clean Water Act](#), involves analysis and interpretation of thousands of data points, which must be placed in context of local beneficial uses and water quality standards. This process allows DWQ to identify "impaired" waters that are in need of improvement. Trends in water quality are also evaluated in this report, which measures the progress made in protecting Utah's waters. DWQ recently completed a draft of this *Integrated Report*, which will be available for public comment in early 2009. New in 2008 are mathematical models that allow DWQ to more efficiently and effectively evaluate the overall condition of these waters.

## Improving Utah's Waters

If impaired waters are identified, the next challenge is to determine how to restore its uses. One way this is accomplished is with a required restoration plan based on a "[Total Maximum Daily Load](#)" (TMDL) study that calculates the maximum amount of pollution a body of water can receive in order to still meet water quality standards. This plan also identifies sources of pollution so that subsequent restoration efforts can be prioritized.

DWQ also partners with other agencies, such as the [Division of Wildlife Resources](#), [Utah Department of Agriculture and Food](#), [Farm Bureau](#) and the [Utah Association of Conservation Districts](#) to combine resources and avoid duplication of efforts in watershed protection programs. An example of that effort is the [Utah Nonpoint Source Pollution Management Program](#), which helps landowners obtain funding to implement restoration practices on private land.

Several TMDL studies were completed in 2008 that outline the causes and sources of impairments as well as the actions needed to restore water quality. Studies were completed for Brough, Steinaker, and Red Fleet reservoirs in the Uintah Basin and Newcastle Reservoir in Iron County in cooperation with local, state and federal stakeholders.

Also in 2008, DWQ completed a final report on PCBs found in Utah Lake after the discovery two years earlier that elevated levels were found in carp during Division of Natural Resources' (DNR) efforts to restore the endangered June Sucker. The [report](#) concluded that the sediment PCB concentrations are below ecological screening levels that scientists have set as a protective benchmark. PCB concentrations in fish from Utah Lake were also found to be comparable to those sold in the supermarket. These studies will allow DNR to proceed with their market-based restoration plans.

## Permitting Surface Water Discharges

Another way DWQ protects the quality of our waters is by issuing [permits](#) to all entities that discharge pollutants to surface waters, including: discharges of domestic and industrial wastewater, and more diffuse sources like storm water. These permits establish allowable concentrations of pollutants and monitoring requirements to ensure that industry can continue to operate without degrading the uses of Utah's waters. DWQ works to ensure that the terms of these permits are followed. Also, a careful review of each permit is conducted every five years to accommodate growth or respond to unforeseen environmental consequences of these discharges.

Numerous studies have identified storm water as one of the most significant threats to water quality in suburban and urban areas. Federal law requires that some industrial facilities and construction projects develop plans to minimize stormwater problems and apply for a permit from DWQ who ensures compliance. Currently there are approximately 1818 active construction storm water permits and 401 presently active

industrial storm water permits. Storm water permits are also required for municipal separate storm sewer systems that serve communities with more than 10,000 people and a population density of at least 1000 people per square mile. These permits require that DWQ works with communities to develop a comprehensive storm water management program that evaluates potential sources of stormwater pollution, and then establishes ordinances and public outreach efforts to minimize potential water quality problems. Currently 78 communities in Utah have stormwater permits that have been completed or are under development.

DWQ currently oversees 115 domestic and industrial entities that have individual permits to discharge treated industrial or domestic wastewater in Utah's waters. These include industries or cities and towns which have treatment facilities that discharge effluents to surface waters. Another 124 specialty permits have been issued, which cover discharges from activities such as coal mines, construction de-watering and pipeline hydrotesting projects, fish hatcheries, drinking water plants, ground water remediation projects, biosolids (sewage sludge) processing projects, and industrial pre-treatment facilities. In addition there are 53 permits for "Concentrated Animal Feeding Operations (CAFO), which will be discussed in a separate section of this report.

Permits typically define a sampling schedule that allows DWQ to ensure that the discharge does not intend the beneficial uses of the receiving water. On average, there was a 94 percent compliance rate for all the regulated domestic and industrial facilities in 2008.

## **Drinking Water and Groundwater Protection**

The vast majority – 99.8 percent – of Utahns drink water from approved public water systems, with only a small number of individuals and businesses get their drinking water from private wells. Most of these public drinking water systems ultimately receive their water from groundwater sources. DWQ helps protect groundwater sources from being contaminated by pollution, whereas [Utah's Division of Drinking Water](#) (DDW) helps ensure that all of our citizens can enjoy clean and healthy waters by assisting with testing treatment and delivery systems. These programs are a success as 92.6 percent of the public water systems meet all health-based standards of the [Safe Drinking Water Act](#). There was only one instance in 2008 of water borne disease reported in Utah, which occurred at a seasonal camp. The system is following directives from the Division of Drinking Water to remedy the situation and prevent any reoccurrence.

The Groundwater Protection Section in the Division of Water Quality administers two primary programs to protect the quality of Utah's groundwater resources: (1) the federal [Underground Injection Control \(UIC\) Program](#) and (2) the state [Ground Water Discharge Permit Program](#).

The UIC Program protects underground sources of drinking water by reviewing and approving numerous small-scale injection activities such as storm water dry wells,

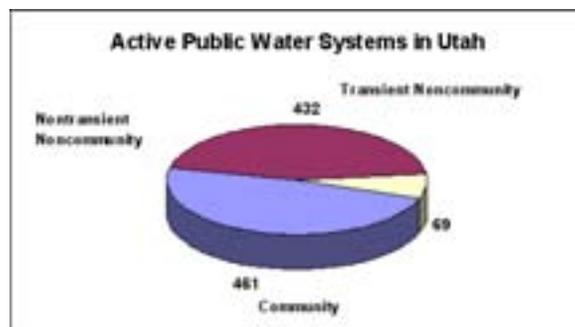
ground water remediation wells, and domestic underground drainfields. A major effort is underway to identify and close motor vehicle waste disposal wells that have been banned by EPA. The UIC Program also issues permits for aquifer storage and recovery operations to allow municipal water districts to capture spring runoff water and store it in drinking water aquifers for future use. The UIC Program Coordinator recently assembled a diverse work group to develop rules for the capture, transportation, and geologic storage of carbon dioxide into deep saline aquifers in response to 2008 legislation.

The Ground Water Discharge Permit Program protects ground water quality by issuing permits to agricultural and industrial facilities that have the potential to discharge pollutants into ground water. Agricultural facilities include large concentrated animal feeding operations such as dairies and swine, and industrial facilities include fossil fuel power plants, mining and processing operations for copper, gold, phosphates, tar sands, and uranium.

The two primary elements of ground water discharge permits are (1) best available technology to minimize subsurface discharge, and (2) ground water quality monitoring. Currently there are 35 active groundwater discharge permits regulating about 90 facilities.

This program also reviews aquifer classification petitions for approval by the Water Quality Board, which may be used as a planning tool by local governmental agencies. The Board has approved 11 aquifer classifications throughout the state including the recent Salt Lake Valley classification.

## Public Drinking Water Systems



Utah has 938 water supply systems. A public water system is defined as any water system, either publicly or privately owned, which provides drinking water for 15 or more connections, or 25 or more people, at least 60 days of the year. These include community systems serving people year round; non-transient non-community water systems that serve workers at a factory, and transient non-community water systems such as seasonal campgrounds or highway rest stops.

## Utah's Water Loan Programs

In 2008, the [Division of Drinking Water Board](#) funded 16 projects, totaling \$20.6 million through the State Revolving Fund. These loans are being used to help construct new water treatment plants, replace aging water pipes and storage tanks, develop new sources of drinking water (wells and springs), and perform planning studies to determine the community needs and best alternatives to correct system problems. Since 1983, 319 projects have been funded at a cost of \$206.7 million.

The development and maintenance of Wastewater Treatment Plants that use the best available science and technology to remove pollutants from wastewater remains a critical part of DWQ's efforts to protect the quality of Utah's waters. Construction of new sewer plants or major upgrades to existing plans can cost millions of dollars, yet these expenses are sometimes necessary to accommodate economic growth. DWQ works with local communities to find the resources to meet the challenging needs of their communities. These efforts include helping communities seek federal grants and with programs that provide low interest loans, with payments going back into a pool of funds to pay for future development needs.

The [Utah Water Quality Board](#) funded an additional 10 wastewater projects were funded in 2008 with the assistance of EPA grants, the State Revolving Fund or the Utah Wastewater Loan Program. To date, these projects have totaled \$734 million – an increase from the \$683 million since 1972. The number of wastewater projects that have received funding total 304.

## Great Salt Lake Water Quality Steering Committee

The Great Salt Lake (GSL) is a critical resource to our economy, supporting a multimillion dollar fishing industry, tourism and industrial practices such as mineral extraction. The lake is also important to the environment, providing critical habitat to tens of thousands of birds. Overall, the lake is truly unique, a property with provides many of these benefits.



However, the lake's unique characteristics also make it difficult to apply water quality practices employed elsewhere to ensuring that the many benefits that the lake provides can continue to be enjoyed by future generation. Developing programs to protect the lake continues to be a DWQ priority.

The high salinity of GSL prohibits application of water quality standards applied elsewhere. Last year saw the culmination of a four-year-long process to develop a

selenium standard based on bird tissue concentrations. This effort was overseen by a [committee](#), composed of diverse stakeholder, who in turn oversaw a science panel of international experts of selenium toxicity. The standard was recently recommended for adoption by the Water Quality Board. Both the standard itself and the open collaborative process used to generate the rule are already receiving national attention.

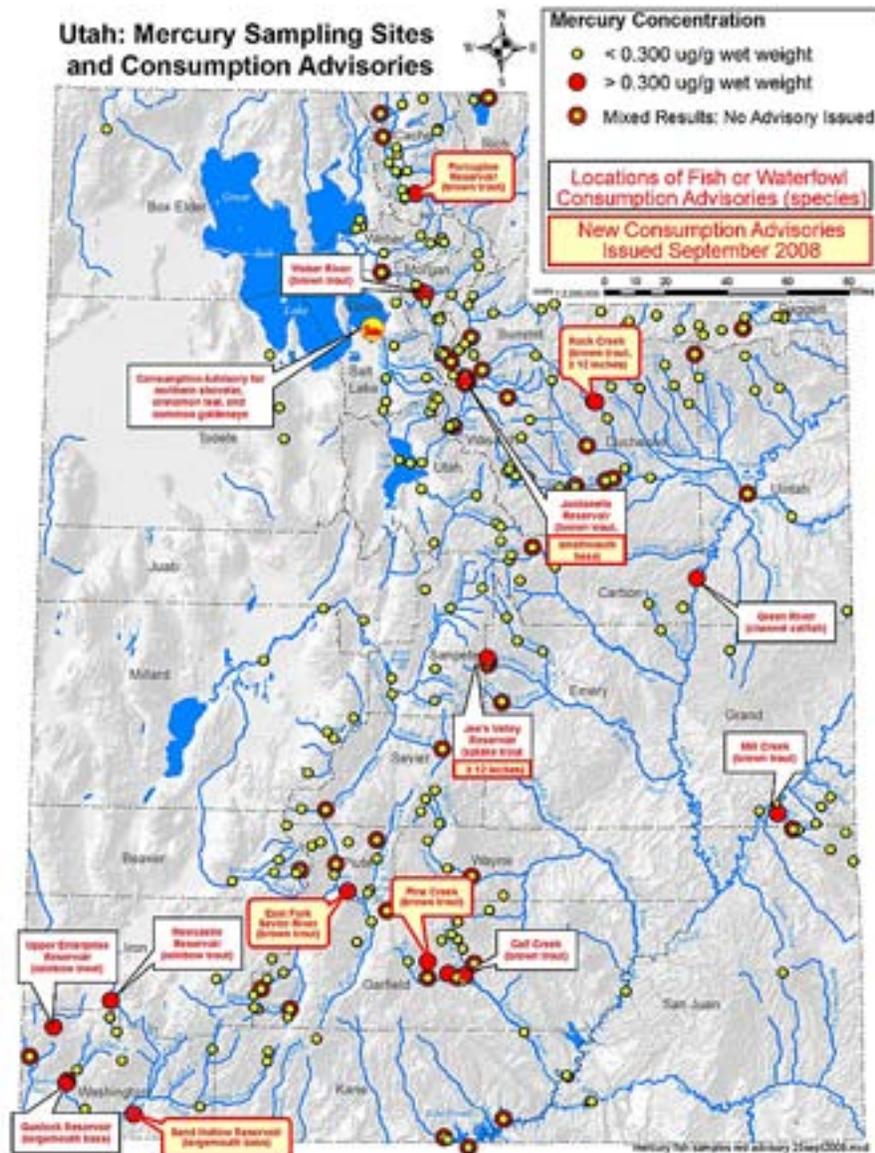
The selenium standard, while a good start, only represents the first step in developing a water quality program for the GSL. In 2008, DWQ worked with EPA and others to develop a framework that identifies methods to assess the overall condition of the GSL ecosystem. Also, DWQ is currently involved in a multi-agency collaboration that is attempting to better understand the overall effects of mercury in the lake; this study also hope to quantify mercury sources and estimate the potential for rehabilitation in areas where mercury levels are high. DWQ is also in the final phases of recommending an assessment method for the wetlands surrounding the GSL, which will allow DWQ to measure the overall health of these critical nesting habitats. While all of these studies are ongoing, many of the results are already becoming available and 2009 promises to be a landmark year in obtaining a sufficient to take significant strides forward with GSL water quality programs. For more information, visit: [http://www.deq.utah.gov/Issues/GSL\\_WQSC/index.htm](http://www.deq.utah.gov/Issues/GSL_WQSC/index.htm).

### ***Great Salt Lake Advisory Council***

In 2008, Governor Huntsman appointed a 12-person [Great Salt Lake Advisory Council](#) to decide how to manage the lake for future generations. Increasing pressures from development, mineral extraction, pollution, and drilling have increased pressure on this unparalleled resource. A common forum or governance structure, similar to those which oversee other water bodies of national importance, could help guide protection and management of the lake. The Council is considering the creation of an overarching commission similar to those in the Great Lakes, Chesapeake Bay and the Puget Sound. The group is expected to draw up a list of recommendations, some of which could be taken up by the Legislature in 2010.

### **Additional Mercury tests in Fish Yield more Advisories**

Since 2000, the Division of Water Quality has tested fish for mercury contamination in 261 bodies of water in Utah, which includes 192 streams and rivers and 69 lakes and reservoirs. Fish in 14 of those waterways tested – which amounts to only 5 percent – have elevated levels of mercury. In September 2008 new and revised fish consumption advisories were issued. When mercury is deposited in waterways, bacteria convert it to [methylmercury](#), which can build up in the tissue of fish and other wildlife, which may be eaten by wildlife and people. Exposure to mercury occurs most frequently through eating contaminated fish.



The 2008 fish consumption advisories include: smallmouth bass from Jordanelle; largemouth bass from Sand Hollow Reservoir and brown trout from Porcupine Reservoir, Rock Creek, East Fork Sevier River and Pine Creek. Some fish advisories were revised to recommend that pregnant woman and children not eat Splake trout from Joe's Valley Reservoir; rainbow trout from Newcastle Reservoir and Upper Enterprise Reservoir and brown trout from Weber River. The existing Calf Creek advisory was revised for pregnant women and children to limit their consumption of brown trout to two 4-ounce meals per month.

For a complete list, visit: <http://www.fishadvisories.utah.gov/>

Limited funding could slow down fish testing in 2009. However, given their importance to Utahns DWQ hopes to continue work in Lake Powell and the Great Salt Lake (GSL).

Fish have already been collected in Lake Powell and DWQ is attempting to leverage the funds to process these samples. In the GSL, studies are under way to analyze water, sediment, waterfowl and organisms in their foodchain. Meanwhile, the Division of Air Quality will track the deposition of mercury from the air, including evaluations of mercury emitted by industrial sources. These air deposition studies were made possible by mercury monitors purchased in 2007 and late 2008. These GSL studies were prompted by U.S. Geological Survey studies that found some of the highest levels of water column mercury in the country and subsequent DWQ investigations that found high concentrations in some duck species.

## **Animal Feeding Operations/Concentrated Animal Feeding Operations**

The Animal Feeding Operations (AFOs) Committee is a partnership of the Division of Water Quality, Utah Department of Agriculture and Food, Utah Farm Bureau, Utah Association of Conservation Districts, Utah State University Extension, Natural Resources Conservation Service, and animal producer groups.

In 2001, the AFO/CAFO Committee developed the Utah Strategy which is a compliance assistance agreement to help animal feeding operations with compliance to environmental regulations to improve water quality. AFOs are animal production facilities where animals are confined, such as dairies.

On Dec. 31, 2008, the Utah Strategy expired, requiring the AFO Committee to prepare a new one. The Utah Strategy provides assistance to AFOs through the compliance and engineering experts of the partnership. The partners conduct on-farm assessments, prepare nutrient management plans, help provide waste containment structures, and assist in the implementation of proper management practices. In addition, the partners assist producers in obtaining cost-share and loan funding to address manure management problems. The Utah Strategy focuses compliance assistance on the smaller AFOs which do not require discharge permits. The Utah Strategy focuses compliance assistance on the smaller AFOs which do not require discharge permits.

To date, nearly 3,000 facilities have been assessed. Of those, 394 are AFOs with compliance problems. Since 2001, 98 percent of the problem AFOs have had management plans prepared and 70 percent are in full compliance through the cooperative efforts of the partners. Through the AFO Committee and the Utah Strategy, water quality impacts from animal agriculture have been greatly reduced.