



**City of Dallas FY 2005/2006 Annual Report on the
Metropolitan Environment**

**Prepared by the
Office of Environmental Quality**

April 2007

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*Letter from the City Manager,
Mary Suhm*



This has been an exciting and challenging year for the City of Dallas. We have implemented many new programs to improve the efficiency of City operations and to be

more responsive to the needs of our citizens.

We are also guardians of the City's built and natural environments. Our citizens and employees take pride in living in one of America's most lovely and dynamic cities. We have a commitment to preserve and enhance the environment through our everyday work and policies. Our City Council and City employees have a desire for us to be a leader in environmental stewardship.

I am fortunate to have Departmental Directors who are committed to environmental management as a part of their operations. This commitment is embodied by leading by example and by making environmental programs a priority in their individual operations. Together, we have aligned with a clear view of our environmental priorities:

- Implementation of a City wide Environmental Management System that

will improve our overall environmental stewardship and compliance performance

- Significant progress in the areas of air emission reductions, water quality and conservation, and waste management
- A commitment to environmental training for City staff
- Opportunities for our City staff to demonstrate environmental stewardship by implementing their environmental initiatives at all levels of the organization
- A commitment to a greatly improved urban environment through the development of Forward Dallas! A comprehensive land use plan that gives citizens opportunity to work and play in a close proximity to their home.
- Outreach to citizens of Dallas on the importance of making smart choices related to the environment in their everyday lives

Using an eclectic mix of actions, technological improvements, policies and educational outreach, the City of Dallas is boldly committing itself to a future in which a strong environmental ethic fosters both a healthy urban lifestyle and an economy unhampered by preventable environmental impacts.

I am very proud to say that Dallas is taking a leading role in the nation on environmental stewardship across our many initiatives of improved air and water quality, energy conservation, green buildings, and our City wide Environmental Management System.

Introduction

The City of Dallas, with over 400 parks and 45 square miles of lakes, is known for its trees and green spaces. However, like other large urban areas, the City can also have a negative impact on the surrounding environment. The City recognizes this and is committed to minimizing our impact on the environment, being a leader in environmental stewardship and performing our services in an environmentally responsible manner. Over the past decade, the City has made a lot of simple changes to improve the environmental and quality of life for the region including:

- Switching from gasoline to natural gas vehicles;
- Building new City buildings to LEED silver certified standard
- Changing from traditional incandescent stoplights to new LED models, which save taxpayers \$2.1 million annually in electricity costs and make City intersections safer; and
- Adopting in 2005, a Trail Network Master Plan, which identifies over 200 miles of urban trail corridors, adding to 80 miles of trails that currently exist. Trail corridors create green space and linear parks, like the Katy Trail



The City's efforts have been much more substantial than the occasional project. Our green evolution is a City-wide, employee-driven metamorphosis, just starting to take cohesive form, and promising to reshape the environmental ethic of the region.

The City's vow to continuously improve our environment is bolstered by its adoption of an Environmental Management System (EMS), a revolutionary tool now in use across 14 municipal departments. Dallas' actions will not only pay off in concrete benefits—cleaner air and water, lower energy usage and reduced taxpayer costs—but will also poise Dallas as a leader in environmental stewardship for other municipalities to follow.

“No other City has quite so embraced the Environmental Management System as Dallas,” says Debra Griffin, an official with the U.S. Environmental Protection Agency. “I mean, you are setting the bar, and hopefully you will be an example and inspiration to other cities.”

This first Annual Environment Report will give a clear sense of why and how Dallas is becoming a national environmental leader. The report will also point out telling examples across a spectrum of areas on which Dallas and the nation must focus if we are to survive and thrive in the complex and challenging future.

This report also serves to underscore a crucial point: that everything in today's world is interconnected. An effort in one area bolsters efforts in others. When citizens and municipal

employees all understand what is at stake, the result of our combined efforts will be greater than the mere sum of their seemingly independent parts.

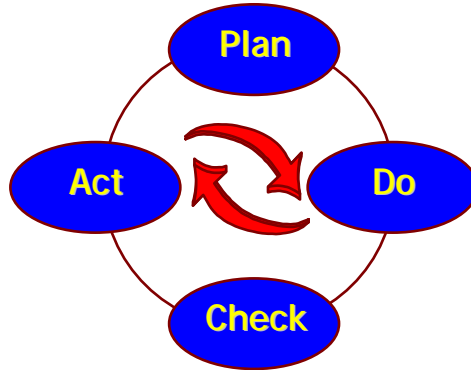
While it's often logistically useful to confront our various problems separately—that is, with one team of specialists tackling air quality, another working on water safety, and still another scratching their heads over waste disposal—we must ultimately view all of these issues together. Terms such as “environment” and “ecology” are, by their very natures, part of the science of interconnectedness.

Each section of this report highlights environmental practices and initiatives of which the City is most proud for Fiscal Year 2005/2006. In each section, you will find an overview of the issue and the inspiration for the initiative, our achievements to date, and our aggressive plans for the future.

The Environmental Management System

Inspiration...

An Environmental Management System (EMS) is the business system of “plan, do, check, and act” applied to the management of environmental issues. Instead of an organization focusing all of its efforts on just complying with the law, an EMS requires an organization to review the actual environmental impacts of its operations, and to continually strive to reduce those impacts. Reducing environmental impacts leads to reduced environmental regulatory burden, decreased costs, improved efficiencies, and enhancement of the natural world around us.



Organizations that have implemented an EMS have experienced numerous benefits including improved compliance, reduction of environmental impacts, cost reductions, and improved employee understanding of environmental issues.

An organization with an EMS may seek to have a third party auditor “register” its EMS to certify that it conforms to the ISO 14001 standard. This is the international standard for EMS.

In April of 2004, the City of Dallas City Managers Office decided to implement an EMS across the City Departments with environmental impacts. The focus of the EMS is to reduce the City’s environmental impact and institute a cultural change related to the way environmental issues are managed throughout the City. Expected benefits of the EMS are as follows: improved environmental compliance, management and promotion of environmental stewardship programs,

and increased efficiency in City operations. This first of its kind broad-based municipal EMS is scheduled to be completed in 2007 in the following City departments:

- ✿ Equipment and Building Services
- ✿ Dallas Water Utilities
- ✿ Aviation
- ✿ Dallas Police Department
- ✿ Dallas Fire Rescue
- ✿ Code Compliance
- ✿ Streets Services
- ✿ Park and Recreation
- ✿ Sanitation Services
- ✿ Convention and Event Services
- ✿ Public Works and Transportation.

Measuring Success FY 2005/2006...

City Departments have been busy with EMS implementation and we are proud of their accomplishments. The following is a list of important milestones achieved in the EMS during FY 2005/2006:

- ✿ ***Environmental Policy*** – The City’s Environmental Policy, which can be found on the City’s internet site, was officially adopted by the Dallas City Council in January 2005. This policy sets the framework for the City’s EMS as well as providing direction to staff on environmental stewardship. It is physically posted throughout City of Dallas facilities and provided to employees during training sessions and tailgate meetings.
- ✿ ***Environmental Aspects/Impacts*** – For the better part of calendar year 2005, City Departments catalogued operations that resulted in environmental impacts. From changing oil to storage of hazardous chemicals, City Departments identified the most important environmental impacts of their jobs.
- ✿ ***Environmental Objectives and Targets*** – Once the City’s highest environmental priorities were understood, City Departments set measurable environmental goals to reduce our environmental impacts. These goals were set either City wide, with multiple Departments, or by an individual facility. These goals are comprehensive and require frequent updates on progress. Examples include water and energy conservation, the purchase of green vehicles, and replacement of chemicals with cleaner, more environmentally friendly substitutes.
- ✿ ***Environmental Legal Requirements*** – Each City Department thoroughly documented all environmental legal requirements which affected their operation. These legal requirements are reviewed frequently and communicated to employees so their role in ensuring and/or exceeding environmental compliance is understood.

Momentum Forward...

While the City has made significant progress in the EMS, there is still a lot of work to be done to meet the internal deadline of 2007. The following EMS components are scheduled to be completed in the first two quarters of FY 2006/2007:

- ***Training, Awareness, and Competency*** – Training is an important component of any environmental program. Not only for compliance with the law, but to instill stewardship in the heart of every City employee. Every job title and description, from mechanics to the City Manager, was reviewed and assigned requisite environmental courses. These courses range from regulatory classes to stewardship courses such as climate change and energy efficiency. Training classes are tracked to ensure each employee attends their required training.
- ***Communication*** – The EMS must be communicated to all City employees as well as interested external parties. There are many tools the City plans on utilizing to accomplish this including websites, calendars, handouts, brochures, presentations, and quarterly City environmental awards.
- ***Emergency Response*** – City employees already understand their role in responding to environmental emergencies. In FY 2006/2007 we will deploy table top exercises to sharpen their response skills by working through emergency scenarios.
- ***Monitoring and Measurement*** – The City already collects environmental data related to water conservation and air quality improvements. As part of the EMS, the City will be collecting, analyzing and reporting on environmental metrics across a wide selection of programs.
- ***Document Control/Records*** – It is crucial that City employees have access to the latest, most up to date environmental documents and information that have been approved by appropriate level of management.
- ***EMS and Compliance Auditing*** – In order to make sure we are implementing our programs to meet the expectations of the City Manager’s Office, the City will develop a comprehensive City wide internal auditing program. Audit findings will be reported to the appropriate Department Director who will work to identify the root cause to prevent reoccurrence.
- ***Senior Management Review*** –The EMS and its components will be reviewed every six months to allow the City Manager to provide input, guidance, and direction.

Air Quality

Inspiration...

"Remember when atmospheric contaminants were romantically called stardust?" -Lane Olinghouse

Air quality is probably the most difficult environmental issue we face today in North Central Texas. The City of Dallas, along with many others across the United States and around the world, recognizes the impact smog and ozone formation have on our health and economic well-being. Through cooperation in recent years, the Dallas/Ft. Worth area's measurable amounts of all the U.S. EPA's National Ambient Air Quality Standard pollutants—except for ozone—have been reduced to levels below the national human health standards.

The City of Dallas continues to make air quality a priority in every employee's consciousness. The most important component to addressing air quality is understanding the source of the air pollutants. In the DFW area, the largest contributors to ozone generation are mobile sources: emissions from cars, trucks, and construction equipment; and energy generation. With mandated employee trip reduction programs during ozone season and solar panel installation at City Hall, the City continues to work to reduce air pollutants and the habits that lead to their production. Small steps to help us all breathe a little easier.

Measuring Success FY 2005/2006...

With the experience of a decade of strong air quality commitments, the City of Dallas continued to be aggressive in FY 2005/2006 in emissions reductions. Progress was made by reducing emissions from City operations, as well as reducing the number of vehicle miles traveled by city staff.

Priority air emissions for the City of Dallas include nitrogen oxide (NO_x) and volatile organic compounds (VOC), which are important pollutants related to the formation of ozone, particulate matter (PM 2.5 and PM 10), carbon monoxide, and carbon dioxide.

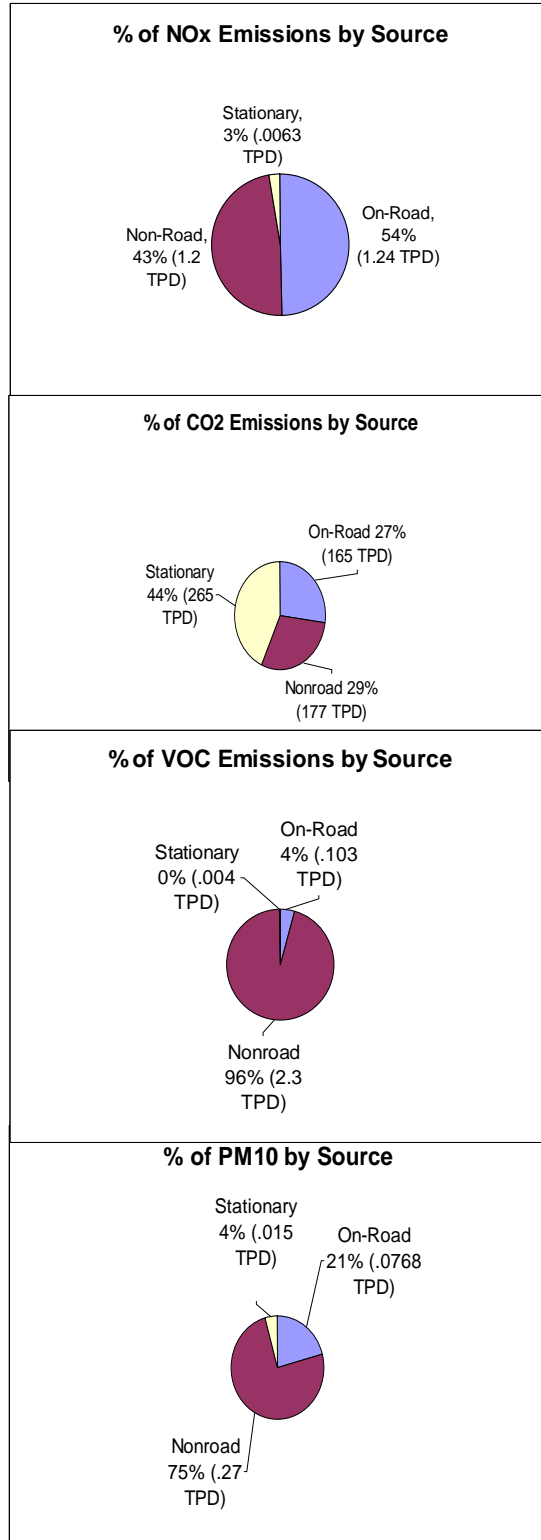


■ **Understanding our Emissions** - In FY 2005/2006 the City of Dallas began updating its emission inventory in order to thoroughly understand our associated contributions to not only the ozone problem, but climate change as well. Pollutants inventoried include VOC, NOx, PM2.5, CO, and CO2. The report outlines emissions by on-road mobile sources, off-road mobile sources, and stationary sources. Interesting highlights from the report are as follows:

■ NOx emissions are highest for City operations in the on-road category. On-road sources are those sources with a license plate such as Sanitation trucks, police cars, and fire trucks.

■ After NOx emissions, the largest source of emissions from City operations is off-road equipment. Examples of off-road equipment include lawn mowers, construction equipment, and tractors. In the off-road category, lawn and garden equipment is the largest source of NOx and CO2 emissions.


■ The City's stationary sources are primarily comprised of boilers, emergency generators and the landfill. In fact, the landfill is the only major stationary source at the City of Dallas and it holds a Title V air permit.




An example table from the emission inventory is provided below. This data is extremely important in focusing the City's efforts on emission reductions into the future.

Off-road Equipment emission inventory

	VOC	CO	NO _x	PM _{2.5}	CO ₂
Agricultural Equipment	397	1,636	6	44	4,113
Airport Equipment	1	3	0	0	10
Commercial Equipment	20	1,345	8	0	2,438
Construction and Mining	160	4,198	26	1	7,865
Industrial Equipment	5	31	58	5	7,526
Lawn and Garden Equipment	20	98	192	19	22,716
Logging Equipment	0	1	2	0	144
Pleasure Craft	3	16	33	3	3,616
Railroad Equipment	1	2	7	1	843
Recreational Equipment	5	17	0	0	113
Grand Total (tons per year)	613	7,346	331	74	49,384

 **Monitoring the Air** - The City of Dallas is very proud of its air quality partnership with the Texas Commission on Environmental Quality (TCEQ). In FY 2005/2006, the City's Ambient Air Quality Monitoring Section in the Department of Environmental Health Services was extremely busy and completed the following tasks:

- Collected 419,839 samples of Dallas air.
- Conducted 223 complaint investigations for dust, smoke, mists, fumes through the City's Compliance and Enforcement Section.
- Evaluated 45 permit applications for new or modified construction of facilities with potential to emit air pollution.
- Conducted 865 regulated source compliance investigations.
- Issued 87 notices of violations for sources not complying with special permit provisions and/or state or federal regulations, and sent 8 regulated sources to the state for legal enforcement when these could not show compliance within state-mandated time lines.

 **Clean Air Steering Committee** - In FY 2005/2006, the City of Dallas formed a Clean Air Steering Committee to assist the City in its clean air efforts. This Steering Committee included representatives from key City Departments, as well as interested citizens, environmental organizations, and the North Central Texas Council of Governments. The Steering Committee developed a Clean Air Plan to focus the City's Clean Air efforts in the following areas: emission inventories, technologies, education/outreach, enforcement, and grants.

Equipment and Fleet Purchases - The City was an early user of Texas Low Emission Diesel (TxLED), biodiesel, and lower sulfur fuels. The City continues to explore cleaner fuels and cleaner vehicles. As a result of these strategies, the City has a very large natural gas (1089) and hybrid fleet (175). These efforts have led to emission reductions outlined below:

2005 Emissions Reductions from Using CNG and TxLED Instead of Conventional Fuels (Tons/Day)

Fleet --	VOC	CO	NOx	PM10	CO2
Without CNG & TxLED (Baseline)	0.148	1.80	1.73	0.0987	210
With CNG & TxLED	0.129	1.47	1.61	0.0974	204
2005 Emissions	0.019	0.33	0.12	0.0013	6.00
Reduction	(13%)	(18%)	(7.1%)	(1.3%)	(2.8%)

City Employee Ozone Action Plan – The City of Dallas implements a City Wide ozone Plan each year from May 1 through October 31. In ozone seasons 2005 and 2006 this effort fostered significant reductions of ozone’s key ingredients. The City of Dallas is a proud member of the EPA’s Best Workplaces for Commuters. By offering flex schedules where applicable and providing DART passes to employees at a reduced price, the City has reduced vehicles miles traveled in the DFW region. This has helped to improve traffic congestion and reduce emissions associated with the formation of ozone. This ozone plan resulted in a reduction of over 7 million miles during the 2006 ozone season.

Key Ozone ingredients	2005 reductions in tons	2006 reductions in tons
NOx	9.33	8.4
VOC	4.45	4
CO	99.77	89.2
CO2	4,093.10	3,661.2

Reduced Workplace Vehicle Miles Driven 2006 Ozone Season

Saved Employee Miles Traveled - 7,082,820 miles

Saved Emissions - 8.4 tons NOx, 4.0 tons VOC, 89.2 tons CO, 3661.2 tons CO2

Citywide averaged an 11.5% reduction in vehicle miles and emissions

On average during each month of ozone season:

- 1418 employees worked compressed schedules
- 282 employees carpooled 1+ days
- 367 employees used DART 1+ days
- 57 employees Biked, Walked or Teleworked 1+ days
- 324 meetings were scheduled after 10 AM
- 186 employees carpooled to those meetings
- 211 gas/diesel vehicles were deferred for use after 10 AM 1+ days
- 498 employees walked, biked, used DART and carpooled to lunch 1+ days
- 2,339 employees ate lunch at their workplace 1+ days
- 181 employees worked flexible hours 1+ days

🌿 **Climate Change** - FY 2005/2006 was a very active year for the City of Dallas on climate change. In April 2006, the Dallas City Council heard speakers from across the country on the topic of climate change. Briefings included presentations from Texas A&M climate scientist Tom “Smitty” Smith on the environmentalist perspective, and from a San Francisco representative on that City’s efforts. As a result, the Mayor of Dallas signed the US Mayors Climate Change Agreement and the City joined the International Council for Local Environmental Initiatives (ICLEI). Formal details of the City’s climate change plan will be incorporated into the City’s Clean Air Plan that will be updated and released in FY 2006/2007.

🌿 **Initiatives** - Along with the City’s Clean Air Plan, the City has actively reduced greenhouse gas emissions from numerous other initiatives already in place. Some of them are:

Purchase of Alternative Fuels	Curb Side Recycling	Planting Trees & Composting
Adoption of Forward Dallas	Installation of Cool Roofs	Recycling in City Offices
City of Dallas Trail Master Plan	Green Building Construction	Purchase of Energy Star Computers
Energy Efficiency	LED Street Lights	Capture of Methane from City Landfill

- Texas Clean Air Cities Coalition** - In April 2006, utility companies, announced plans to greatly increase the number of coal fired power plants in the State of Texas. With 18 proposed pulverized coal power plants planned to be permitted in Texas, Dallas Mayor Laura Miller collaborated with the Mayor of Houston, to form a first of its kind coalition of Texas Cities, counties, and school districts. These 36 entities united together to take a stand on an environmental issue that potentially could significantly impact the air and water quality in our State. If built, these proposed coal fired power plants will negatively affect the air quality of the State of Texas in the form of increased ozone formation, mercury, and sulfur dioxide emissions. These emissions not only aggravate asthma, but also cause additional harm to East Texas Lakes that are already struggling with fish advisories for mercury emissions related to power plants. The CO₂ emissions from the TXU power plants alone would amount to an additional 75 million tons into our atmosphere. The Texas Clean Air Cities Coalition raised more than \$500,000 to pay for scientific experts to participate in the permit hearings.
- EPA Blue Skyways Program** – In FY 2005/2006, the City of Dallas joined Blue Skyways-a collaborative project created to encourage voluntary air emissions reductions. Participants of this project pledge to reduce air emissions through active and meaningful participation in planning or implementation of projects that use innovations in diesel engines, alternative fuels, and renewable energy technologies.

You can see how even this partial list of City initiatives works in concert to reduce ozone, improve health, ease traffic congestion, and contribute to overall environmental quality. The City recognizes these measures merely as first steps in a cycle of continuous improvements to the air we breathe.

Movement Forward...

The work is well underway, but there is still a lot to be done. The City of Dallas is in the process of making these objectives happen:

- Purchase “green” sedans to reduce the following air emissions by December 2008: 1.5 tons of VOC, 13 tons of NO_x, 0.7 tons of PM, 2300 tons of CO₂.
- Purchase the cleanest construction equipment (tier 3 or 4 engines) to reduce the following emissions by December 2008: 8 tons of VOC, 13 tons of NO_x, 0.05 tons of PM, and 400 tons of CO₂.
- Reduce the diesel fueled tractor fleet from 14 to 12 (15%) by December 2008.
- Reduce number of gasoline fueled vehicles by 5% by December 2008.
- Reduce use of aerosol cans by 2% in the City Departments and replace with bulk product purchases (i.e. purchase 55 gallon drums of WD-40) to utilize in spray bottles instead of purchasing individual aerosol cans.
- Evaluate City operations for efficiencies that may lead to emission reductions.

- ❖ Reduce VOC air emissions by 5% from automotive refinishing and welding operations in the Fire Department.
- ❖ Reduce VOC air emissions in the Fire Department by 20% for wheel painting operations.
- ❖ Produce an educational video for the Dallas Police on the importance of vehicle maintenance and vehicle operational practices.
- ❖ Continue implementation of the City's Clean Air Plan and update as necessary.
- ❖ Evaluate ordinances and incentives for businesses operating within DFW to reduce air emissions.
- ❖ Evaluate City's cement purchases and consider pollution control requirements for cement kilns.
- ❖ Evaluate use of cleaner fuels including using an additive with biodiesel fuel to reduce NOx emissions
- ❖ Purchase of 14 LNG Sanitation trucks
- ❖ Participate in the State's SIP development and comment process.

Water Quality and Conservation

Inspiration

Water covers two-thirds of the planet's surface. It is essential to all forms of life, and most importantly human life. Clean and plentiful water is vital for our existence. People around the world are dependent on water to grow food, bathing, cool industrial machines, and/or transporting products to market. Water also provides habitat for a variety of earth's creatures and it links a variety of ecosystems.

However, the quality of water in creeks, rivers, lakes and reservoirs is being stressed by the release of pollutants from many sources including storm water runoff from parking lots and illegal dumping of hazardous chemicals. When we drive our cars, flush our toilets, maintain our lawns, construct or renovate buildings, we can unknowingly pollute water bodies. Much of the pollution does not originate from a pipe that flows to a water body. Much of it originates from rain water flowing across paved or dirt surfaces into storm drains and creeks. However, all of us can reduce our impact on the quality of water in creeks, rivers, lakes and reservoirs.

Conservation of water is vital in order to reduce the City's impact on the environment. Less water used means more water available in local reservoirs for wildlife and downstream for the beneficial use of people. Less water from landscape and lawn sprinklers will flow across surfaces and carrying pollutants into Dallas creeks. Considering North Central Texas is in a prolonged drought, using water wisely is important to the economy and prosperity of our region.

The City of Dallas has aggressive programs in place across numerous departments to promote water conservation, protect and clean our drinking water, and minimize human impact on the quality of water in our lakes and streams. The City of Dallas provides water and wastewater services to about 1.9 million people in Dallas and 26 nearby communities. It utilizes five reservoirs — Lewisville, Grapevine, Ray Hubbard, Tawakoni, Ray Roberts transported to users in 4,639 miles of water mains. DWU treated 68 billion gallons of waste water in FY 2005/2006 pumped through 4,100 miles of wastewater mains.

Measuring Success in FY 2005/2006

The following are the many successes the City have had in FY2005/2006 to improve water quality in Dallas water bodies and to conserve water.

Water Quality Improvement

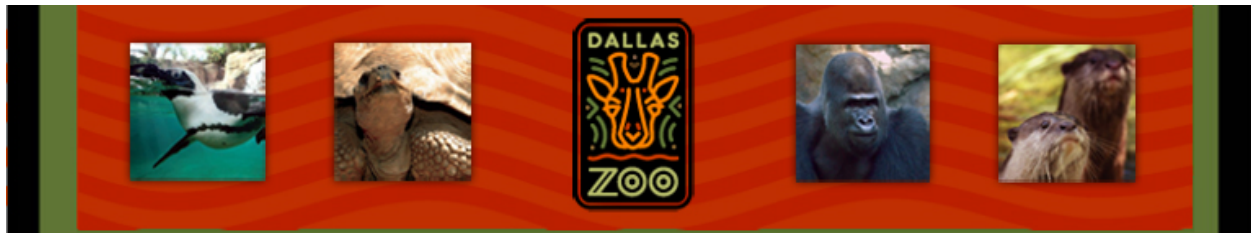
■ ***Phase I Storm Water Permit*** - The Public Works and Transportation Storm Water Management Section manages a Storm Water Management Program (SWMP) that works to ensure that storm water runoff from residential, commercial, and industrial properties is as clean as possible. The City improved the SWMP in FY 2005/2006 by clarifying the program, and by including measurable goals for implementation of best management practices. The following are some of the results for the SWMP for FY 2005-2006.

- Cleaned over 16,000 storm drain inlets
- Conducted 1,997 inspections at construction sites
- Conducted inspections of over 20% of all drainage system outfalls during dry weather looking for signs of possible illicit connections to the system (1818 inspections completed of approximately 8500 outfalls)
- Conducted 1,324 inspections of industrial facilities
- Conducted 431 inspections of Superfund Amendments and Reauthorization Act (SARA) locations
- Responded to complaints, including 434 routine incidents, 505 urgent incidents, and collected 325 analytical samples
- Developed and distributed 14 educational publications on storm water pollution prevention
- Conducted 200 public outreach activities including public events, public presentations, and volunteer events
- Continued maintenance of a website targeting children in order to educate them on storm water pollution and its prevention - www.wheredoesitgo.com

■ ***Leaking Vehicles at the Auto Pound*** - At the Dallas Police Auto Pound, employees worked with the City's environmental staff to come up with new ways to clean up and safely dispose of petrochemical products that often leak from damaged vehicles towed into the lot. In addition to these housekeeping measures, the pound installed ten oil/water separators, which capture pollutants during rainstorms that could—if not collected—flow from the pound's very large asphalt lot into the Trinity River. Also, filters trap

contaminated sediment along with motor oil and transmission fluid, preventing these toxins from degrading the water quality of this river.

- **Dallas Zoo Storm Water Management Program** - At the Dallas Zoo, Phase II of a Storm Water Improvement Project neared completion and Phase III construction was authorized. The first two phases included installation of erosion control and installation of storm water separators and diverters to remove sediment and debris from storm water runoff and divert the initial storm water runoff from a ½ inch of rainfall into the sanitary sewer system. Phase III completes the installation of these devices, provides additional erosion control, and includes a surge tank to slowly meter the collected storm water into the sanitary system.



- **Best management practices** - Besides large-scale interventions such as oil/water separators and site-specific treatment facilities, many City departments have implemented simple measures that, taken together, will not only improve water quality Citywide but also will increase employee awareness of what are called “best practices”, improved ways of dealing with potentially dangerous products or procedures.

- **Sanitary Sewer Overflows** - The Grease Abatement Outreach Program targets Dallas residents and businesses to reduce the amount of grease in the sanitary sewer system. Grease blockages in the collection system often result in sanitary sewer overflows (SSOs), which is untreated sewage discharging into the environment. The Grease Abatement Program’s goals are to reduce grease in the sanitary sewer by increasing focus on educational outreach programs to improve public health and safety and to decrease sewer maintenance costs. The program identifies Dallas residents and businesses that have a high incidence of grease related SSOs and provides educational tools and information to help alleviate these problems. FY 2005/2006 accomplishments of this program include:

- 1,338 inspections of food service establishments (including restaurants, schools, nursing homes, etc.)
- 178 sanitary sewer overflow inspections
- 3,819 grease bags delivered to 14 apartment complexes
- 80,000 copies of the Department of Water Utility’s (DWU) Grease Abatement book cover distributed to DISD grades 1-8
- Participated in over 35 public events
- Coordinated the “Cost Savings through Environmental Compliance Workshop” along with Sanitation, Storm Water Management, and Water Conservation.
- Published an article outlining the program’s efforts in the March 2006 Texas Water Utilities Journal.

Monitoring and Measuring to Improve Water Quality

■ ***City and Volunteer Monitoring*** - In order to determine if there are impacts to City water bodies, the City monitored water quality in Dallas water bodies by collecting water and biota samples from over 122 locations in creeks across the City. In addition, the City assisted residents in this monitoring effort through the Texas Watch Program. One of the organizations participating in the Texas Watch Program was “For the Love of the Lake” (FTLOTL). This group of citizens currently has 18 monitors that test 9 sites along the creeks that feed White Rock Lake. The organization has conducted over 100 separate monitoring events since becoming involved in Texas Watch in January 2005. Training, equipment, and supplies for the Texas Watch Program are provided free of charge by the City to any citizen or community group that wishes to monitor a creek, pond, or lake within the Dallas City limits.

■ ***Bio-monitoring and Habitat Assessments*** - During FY 2005/2006 the Storm Water Management Program also began an enhanced bio-assessment study of 55 sites on 49 creeks using habitat assessments and water quality sampling. Water quality parameters routinely tested included field parameters of pH, temperature, specific conductance, dissolved oxygen, total dissolved solids (TDS), total suspended solids (TSS), and turbidity. Water chemistry performed in the laboratory included nitrates, nitrites, total phosphorus, copper, iron, chemical oxygen demand (COD), and fecal coliform analysis. These parameters were compared to benchmark values established using guidelines from EPA and the Texas Surface Water Quality Standards (TSWQS). Additionally, habitat assessments were performed on all streams and given a score based on thirteen habitat parameters, which included epifaunal available cover, embeddedness, velocity/depth regime, sediment deposition, channel flow status, channel alteration and sinuosity, pool variability, substrate type, frequency of riffles, bank vegetation cover, riparian zone width, and bank stability. It was determined that two of the reference sites, and six of the other stream sites, attained an aquatic life use score (ALU) of “Intermediate”. Three of the reference sites, and thirteen of the other stream sites, received an ALU of “Limited”.



Water Conservation

Water conservation has increasingly been an important element of the City's water supply plan. Since adoption of the water conservation ordinance relating to lawn and landscape irrigation in October of 2001, the City has dramatically increased its efforts to promote water conservation. In 2002, the City launched a two-year multi-media campaign to increase public awareness of the City's new ordinance on watering restrictions. In 2004, the City continued its public awareness campaign to further educate water customers about conservation. In addition, the approach to water conservation was broadened to include several technical studies and development of a Five-Year Strategic Plan on Water Conservation. The following are some of the City's water conservation programs:

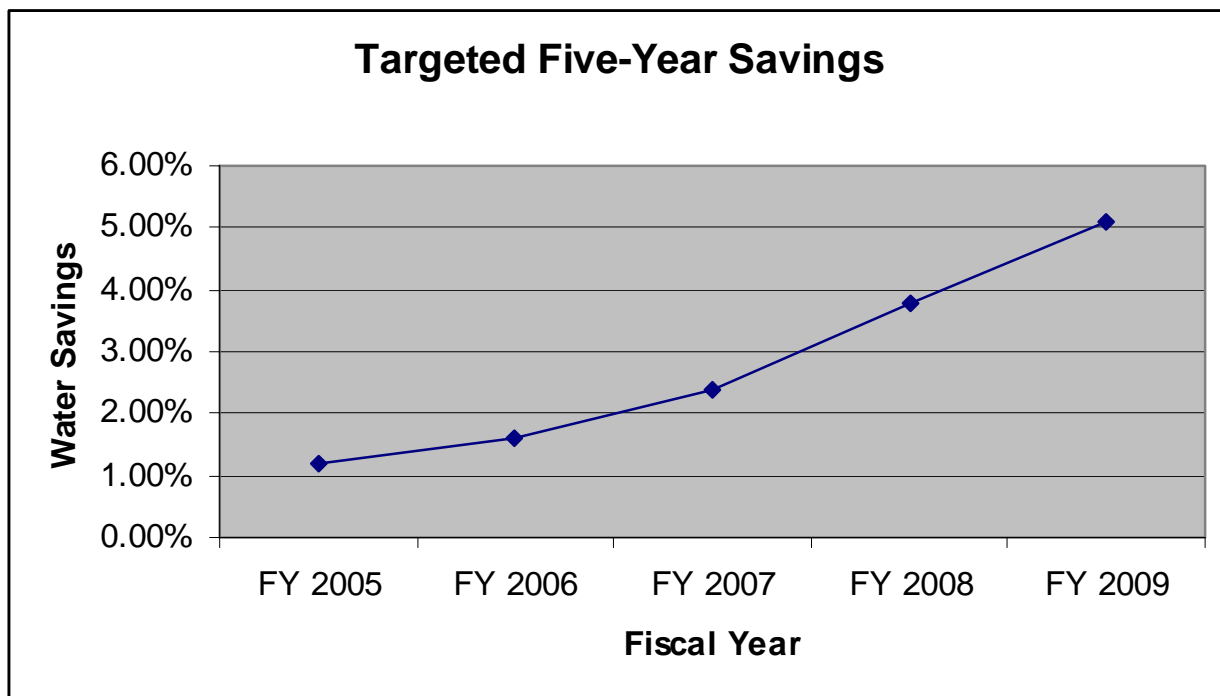
- ***Recycled Water*** - Dallas Water Utilities took the first step of what promises to be a long journey in 2005 through the completion of a pipeline and delivery system to provide highly treated wastewater effluent from its Central Wastewater Treatment Plant directly to the Cedar Crest Golf Course to be used for irrigation. The project became operational in April, 2005. The Cedar Crest Golf Course had recently completed a renovation including a new irrigation system. During 2005, the golf course was watered with 81.7 million gallons of wastewater effluent. The use of this large volume of highly treated wastewater effluent for irrigating the golf course was an important step in Dallas' future. Because of this, 81.7 million gallons of potable water was made available for other users. As this treated wastewater effluent pipeline and delivery system grows, the City will use less potable water, thereby conserving more of its potable water supplies, and thereby extending the life of its water supplies.
- ***Survey of indoor plumbing fixtures at 25 City facilities-*** The survey resulted in the replacement of 152 plumbing fixtures, yielding an estimated annual water savings of 2.7 million gallons of water.
- ***Leak Detection, Repair, and Control of Unaccounted-for Water-*** The City has an extensive leak detection and repair program, and is committed to maintaining a rate of less than 10% for unaccounted-for water losses in its water system. Annual unaccounted-for water averaged about 8% for the past twelve (12) months. This is well below the national average of 12% and below the American Water Works Association goal of 10%. The City's record on controlling unaccounted-for water is considered excellent compared to other large cities. For FY 05-06 this program achieved the following:
 - An estimated water savings in FY 05-06 of 85.5 million gallons from some of the following actions:
 - Survey of 511.3 Miles of Water Main
 - Identified 100 Main Unknown Leaks thru Surveys
 - Identified and marked an additional unknown 174 Main Leaks for Repair Districts
- ***Audits of irrigation systems at City facilities-*** The City performed detailed irrigation system audits on three high traffic City facilities: Skyline Branch Library; Fire Station #10; and Kiest Park

- **Minor Repair Fixture Replacement Program-** This program (designed to serve low income and elderly customers) was initiated, resulting in the installation or replacement of 834 fixtures yielding an estimated annual water savings of 3.1 million gallons of water.

- **Developed Environmental Educational Initiative (EEI) -** The EEI is collaboration with the Department of Sanitation, which resulted in over 1,300 children participating in the program in 2006.

- **Xeriscape Demonstration Garden-** DWU worked with the North Texas Xeriscape Association (NTXA) to design and install the North Texas Xeriscape Demonstration Garden at DWU's historic White Rock Pump Station, which is centrally located near the Dallas Arboretum in White Rock Lake Park. The demonstration garden contains more than 80 varieties of plants, and is designed to show the beauty of water-conserving landscaping. The first phase of the garden was installed in 1992. Perennials and wildflowers were added in 1993 and 1995. The technical consultant contracted to assist with the implementation of the Strategic Plan's first year strategies is currently reviewing potential sites for a public Xeriscape demonstration garden that would be highly visible and accessible.

Table illustrating the targeted percent savings in water savings with a cumulative total of 5.1 percent in FY 2009



Moving Forward...

- ✿ Establish baseline water usage in 2006 for 784 City facilities at 1.35 billion gallons
- ✿ Establish a goal of reducing City facility water usage by 67.86 (5%) million gallons by December 2008
- ✿ Improve coordination between City departments regarding water conservation efforts (such as DWU, Parks and EBS). Utilize an internal City outreach program to help conservation efforts.
- ✿ Landscape Irrigation Audit Program - Provide on-site consultation for ornamental horticulture and irrigation needs for single family and multi family Dallas water customers. Conduct site inspections to determine condition of each zone and measure zones to determine precipitation rates, distribution, and uniformity. Determine estimate of irrigation efficiency and provide detailed results of audit and recommendations.
- ✿ Set new Environmental Management Plans, including internal City facility audit ranking criteria to rank facilities for potential conservation audits and savings.
- ✿ Install storm water quality devices at the Zoo as part of Phase III of their Storm Water Improvement Project which will remove 75% of suspended solids on 43 acres (45%) of developed zoo property by January 2009.
- ✿ Reduce storm water run-off at salvage yard operation by 15% by 2010.
- ✿ Protect storm water run off by standardizing the city wide storm ceptor maintenance and monitoring program.
- ✿ Reducing the flow of illicit material into storm water system by retrofitting existing storm water drains with “Environmentally Safe Washing Drains”.
- ✿ Completion of the Lower Chain of Wetlands along the Trinity River, including flowing water from the CWWTP treated effluent.
- ✿ Exceeding the waste water treatment permit by removing 50% more solids from treated water before it is released into the environment.
- ✿ Collection and reuse of 30,000 gallons of non-potable water monthly by the Aviation Department.
- ✿ The Zoo's Storm Water Management Program calls for eventual installation of on-site collection systems to isolate human and animal wastewater. The animal wastewater and much of the storm water flow from exhibits and holding areas will be diverted to on-site treatment facilities, instead of the sanitary system.

Waste Reduction and Recycling

Inspiration...

Despite the growing realization of the quantity of trash individuals generate on a daily basis, most are unaware how much is produced as a result of living and working together in a large metropolitan area such as Dallas. This presents concerns for both our health and for our economic well-being. In response, the City of Dallas now dedicates many resources to re-imagining the way it disposes of waste, how that waste is defined, and how the City can educate the public and encourage recycling efforts. Another challenge is the proper disposal of hazardous waste. Illegal dumping or improper disposal of hazardous waste can lead to pollution of our land, water, and air.

In Dallas, the Sanitation Services Department serves 1.2 million people through 240,000 residential garbage accounts. This Department also manages McCommas Landfill and several transfer stations that serve as collection points throughout the City. However, Sanitation is not the only Department that is focused on waste reduction and recycling. Other Departments such as the City Marshal's Office and Equipment and Building Services work on illegal dumping and increasing recycling in City Departments.

Measuring Success FY 2005/2006...

🗑️ **City-Wide Recycling** - In FY 2005/2006, the City recycled 9,000 tons of residential waste and over 65,000 tons of tires, wood waste, and pavement that would otherwise have gone into the City's landfill. This number is expected to increase greatly next year with the City wide curb side recycling program.



🗑️ **Road Surface Recycling** - In one year alone, the landfill accepted 78,361 tons of concrete and asphalt to be recycled into aggregate for road building and erosion and sediment control projects. This is enough to construct 20.42 lane miles of highway. Sanitation engineers re-used more than 13,000 tons of asphalt by milling it into pebble-size pieces and building temporary roads in and around the landfills. Additionally, the landfill accepted 37 tons of metals for recycling.

- Office Recycling** - City departments diverted 2,316,435 pounds of materials from landfills. Additionally, around 20% of office supplies purchased for the City are made from recycled materials. Some City departments are further reducing waste by using electronic writing tablets to replace paper reports and printed forms. The City's Downtown Library along with 22 branch libraries have implemented recycling programs and diverting 48,200 pounds per month

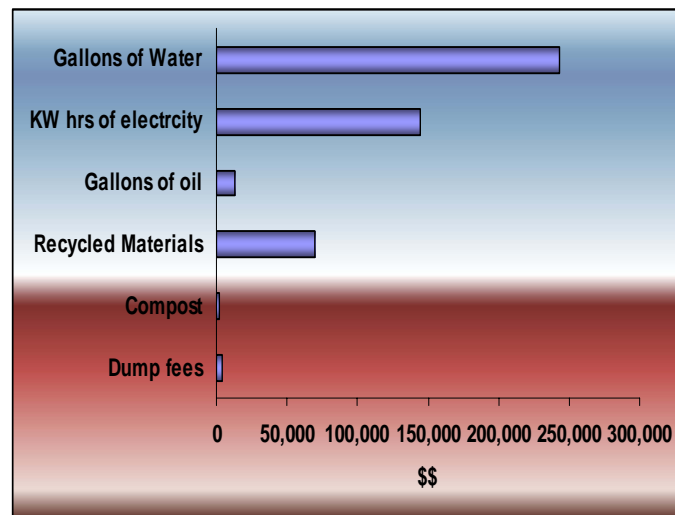
City of Dallas's Office Recycling Program has saved the following natural resources:

- 2,585 trees**
- 57,776 gallons of oil**
- 623,372 KiloWatt Hours of Electricity**
- 1,064,294 gallons of water**
- 502 Cubic Yards of landfill spaced saved**

The program has 141 facilities on line, and will be starting the 51 Fire Stations in the next 30 days.

- Ammo and Target Recycling** - In FY 2005/2006, at the Police Gun Range, the staff not only recycled shell casings and shotgun shells in 55-gallon drums, they also recycled thousands of used cardboard targets.
- Composting** - At the Dallas City Zoo, the grounds manager developed a system for recycling the daily "green" waste such as grass, tree limbs, leaves, and plants. Now, instead of paying to dispose of these materials and filling the landfill, Zoo personnel employ a chipper and turn 30,000 cubic yards of green waste, grass and leaves into rich compost which is used on Zoo grounds.

Amount saved at Dallas Zoo, equivalent to saving 115 cubic yards of landfill space.



Efforts/Activities	Savings
Dumping fees	\$3,700
Saved on Compost	\$2,080
Cost offset of Recycled Materials	\$69,408
Cost saved on Oil	\$13,187
Cost of saved Electricity	\$144,270
Cost of saved Water	\$242,900

Hazardous Waste Collection Program - The City's Sanitation Department manages a Household Hazardous Waste Program in conjunction with Dallas County and 12 neighboring cities. One permanent location on Plano Road is staffed to collect old tires, paints, petrochemical products, pesticides, lubricants, even hazardous components from computers and other electronic products.

Illegal Dump Team - With a goal of eliminating illegal dumping of solid waste in the City of Dallas, the City Marshal's Office has a staff of five officers and one sergeant working diligently to protect our natural resources. Last year, the illegal dump team collected 652 tires, 140,933 pounds of solid waste and conducted monitoring of illegal dump sites 1,869 times during the year. Over 54 cases were filed against these polluters by the Marshal's Office.

Waste Recycling - The City facilities also recycle waste such as used oil, used oil filters, oily rags, used absorbent with oil, used antifreeze, unusable petroleum products, scrap metal, used batteries, used fluorescent lights, used mercury containing devices, paint and paint related waste, and some pesticides. All of this leads to substantial cost savings as the City does not have to pay high hazardous waste disposal costs.



Methane Collection Program - The landfill gas collection facility operated by McCommas Landfill Partners collected 1.818 billion cubic feet of landfill gas which netted 994.7 million cubic feet of methane gas. This was enough methane to heat 66,313 homes for an entire year.

Reduction in Aerosol Can Use - Equipment and Building Services (EBS), DWU and Fire Rescue have reduced the use of aerosol cans -- a hazardous waste as defined by EPA.

Aerosol cans contain propellants like carbon dioxide, propane and butane which are harmful to the environment. City Departments have implemented:

- An aerosol system to safely puncture aerosol cans and capture the vapors through a filter. The punctured aerosol cans may be recycled as scrap metal, thus, minimizing the amount of hazardous waste generated and saving costs in the transportation and disposal of a hazardous waste and landfill bulk.
 - EBS has started using refillable spray bottles that do not contain propellants. The two basic types of refillable spray bottles are metal bottles that spray product using compressed air and plastic bottles that use a hand pump to spray product. Refillable metal bottles, resembling aerosol cans in terms of their design and performance, and refillable spray bottles have eliminated the use of aerosol cans and minimized the generation of a hazardous waste and the costs associated with transportation and disposal of that hazardous waste.
- **Product Replacement** - In 2005, EBS began replacing solvent-based cleaners with steam cleaning procedures, which eliminates disposal of hazardous chemicals. It also started using compressed air systems instead of aerosol propellants, which lessens damage to the layer of good ozone surrounding the Earth.
- **E-cycling Program** - The Office of Environmental Quality, Sanitation Services, and Equipment and Building Services have worked together to implement an Electronic Recycling (eCycling) Program. The goal of eCycling is to encourage the proper handling of electronic equipment, such as old computers, cell phones, and televisions, at their end-of-life in such a way that they will not cause harm or human health concerns. The City's goal is to reduce the amount of waste that goes into the landfill, keep heavy metals out of the landfills, reduce illegal dumping of electronic waste, increase storage space, and conserve natural resources by recovering recyclable materials. To date, the City has recycled approximately 6,795 pounds of electronics.

Moving Forward . . .

The City is determined to be a good environmental steward that other municipalities can look up to. These future goals show how the City plans to accomplish this goal:

- Increase the amount of used oil collected and recycled from City operations by 2% to achieve 6% cumulative increase by September 2009
- 10% increase in tons of applied compost materials at City facilities by December 2009
- Evaluate the use of vegetable waste from farmer's market for composting by April 2007
- Implement a recycling program for street right of way (ROW) litter collection and for street construction material (spoils)
- 20% increase in recycling used materials
- Reduce the amount of hazardous waste collected from accident scenes.
- Increase electronic recycling (ecycling) and recycling of paper, plastic, glass, cardboard, and aluminum by City facilities

- Increase citizen waste diversion through an improved citywide residential recycling program by 5% by April 2007, residents will receive a 96-gallon bin for a single recycling stream program
- Increase amount of compost generated at Dallas Zoo by 8.6 cubic yards (10%) by September 2008
- Replace mercury thermostats with non-mercury thermostats by October 2007
- Implement leachate re-circulation plan at landfill
- Public Works will reduce the amount of hazardous waste disposed from the Hazardous Waste Yard by increasing the amount of absorbent recycled by 5% and the disposal of universal waste by 20%.
- Fire Department to implement cardboard recycling program by December 2007.
- Fire Department's goal to eliminate 20% of combustible trash (clean up products and by-products) by October 2008, in effort to minimize waste generation and save landfill space.

Spill Reduction

Inspiration...

As the City increases its operations to meet the needs of a growing population and the services established to address those needs, greener, more durable choices can be made when purchasing equipment. But despite our best intentions, accidents do still happen. In order to safeguard and protect ourselves and our environment from spills, procedures have been created which require constant evaluation and updating in order to keep ahead of what we do not know...the future.

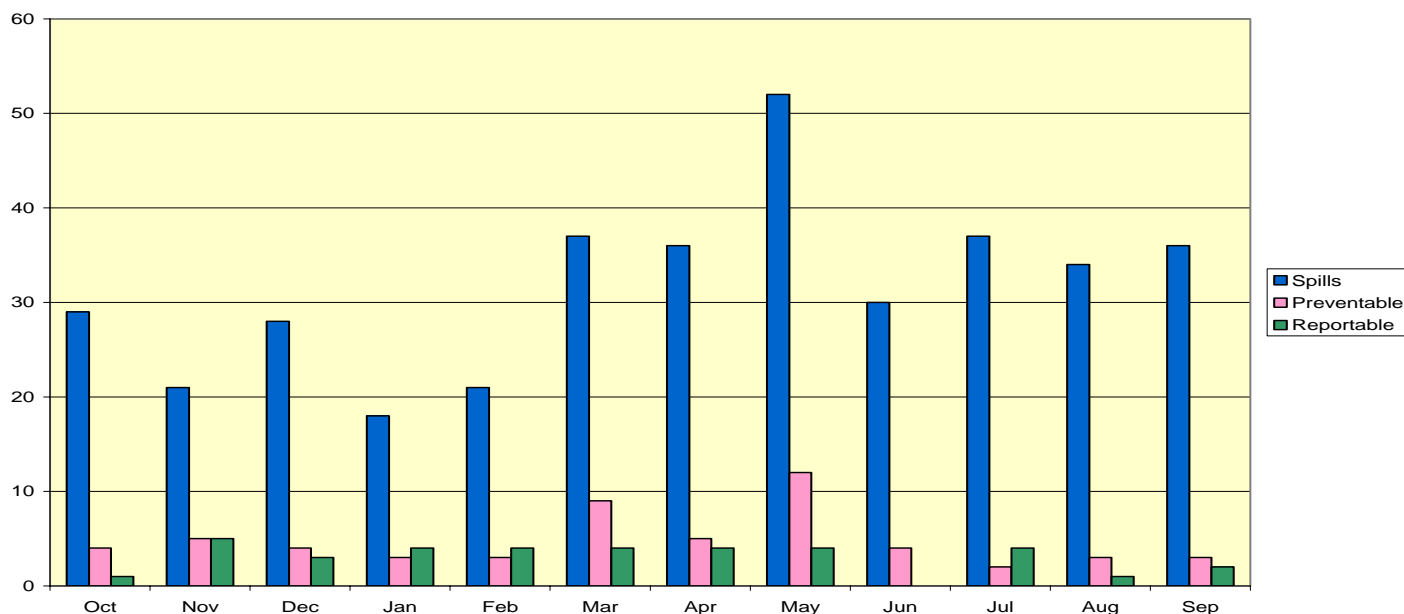
Through education and training, City employees are better prepared to handle the accidents we cannot predict. In the event of an spill, whether accidental or deliberate, procedures are set in motion to best minimize the impact of the occurrence while allowing crews time to properly and thoroughly manage the situation and any damage. The OEQ Spill Response Team assists City Departments with clean-up through on-scene response, clean-up of non-hazardous spills, investigations, and regulatory reporting and tracking, and root cause and trend analyses.

Spills are costly. Prevention remains our best weapon. However, not all spills are preventable. The costs to our health, our environment and our future make it necessary for us to be diligent in preventing what we can so we can be better prepared to respond when we need.

Measuring Success FY 2005/2006...

The City has approximately over 4,600 pieces of on-road and off-road equipment in operation. Several types of petroleum based products are used to maintain the equipment. Incidents may occur while employees operate equipment, handle products, or repair and maintain equipment. In the event of a spill incident, the affected Department as well as the Office of Environmental Quality Spill Response Team conducts on-scene response, cleanup of non-hazardous spills, spill investigation, regulatory reporting, tracking, and root cause and trend analysis.

Spills - Fiscal Year 2005 - 2006



Spills - In FY 2005/2006 a total of 376 spills, accounting for about 3,950 gallons, were reported to the Office of Environmental Quality. This was the first full year a City wide reporting system on spills was implemented. Most spills were non-hazardous in nature and some 85% of the spills included oils and fuels. The majority of these spills occurred as the result of equipment malfunction and was not of reportable quantities which did not require reporting to a state or federal agency. Next year, the City will be able to compare data between years to determine spill reduction progress.

Environmental Compliance Committee - The City also has a five member Environmental Compliance Committee (ECC) with volunteers from environmental professionals from across the City that meet monthly to review incidents, spills, and Notices of Violation/Enforcement. The Committee determines if the spills were handled correctly, if a spill was preventable, and works to identify root causes and trends. If a spill was deemed to be preventable or was not handled correctly, the Committee may recommend disciplinary action to the affected Department Director. This level of commitment by the City of Dallas to reduce and prevent pollution has led to a phenomenal increase in employee awareness and commitment to spill prevention, and a decrease in the quantity and severity of City spills. By identifying the true cause of a spill (as outlined below) the City will be better prepared to identify ways to reduce spills in the future.

ROOT CAUSE ANALYSIS	NUMBER OF SPILLS
Human Error	68
Mechanical	298
Procedural	4
Unknown	6

- **Best Management Practices (BMPs) and Employee Training** and other written procedures continue to help guide personnel and to raise the level of environmental awareness. The City has identified numerous BMPs for the reduction and elimination of spill incidents. These include operations training, driver training, spill training, pre trip/post trip inspection procedures, equipment operating procedures, oil filling procedures, equipment washing procedures, and spill cleanup procedures. The City is in the process of updating the BMPs as other practices are identified.

Moving Forward...

While a lot has been accomplished to make City employees aware of the importance of proper spill prevention, response, and reporting, there is still room for improvement. The following goals have been set for FY 2005/2006:

- Decrease the number of preventable petroleum based spills caused by city operations by 15% by September 2009.
- Continue spill response training for city employees.
- Conduct quarterly table top exercises to practice spill response including one conducted in the field
- Review spill costs and prevention measures to determine additional best management practices to implement

Infrastructure and Land Management



Inspiration...

"Growth is the only evidence of life" -John Henry Newman

As we grow, we change. The City of Dallas is growing and changing every day. With careful direction, these changes can benefit the City's residents and our economic futures simultaneously. As our City grows, we must logically and responsibly expand our infrastructure and utilities in order to support the services and people we represent. Through proper design,

construction, operation and maintenance, the placement of the new and the removal of the old can be conducted in a manner which will reduce the City's impact on the environment, wildlife habitats and hydrologic cycle while influencing the overall quality of human life.

In order to sustain the City's growth, the City of Dallas has adopted a comprehensive land use plan called ForwardDallas! This plan compliments the already existing environmental stewardship initiatives such as a premier Green Building program, progressive energy conservation goals, and a trails master plan, to name a few. The City of Dallas is working to ensure that the growth demands of today also provide for residents' needs for the future.

Measuring Success FY 2005/2006...

Here is just a sampling of some of the largest infrastructure and land management programs going on in the City of Dallas.

❖ **LEED Buildings** - The City's Green Building Program, which began in 2003 with the construction of the Jack Evans Police Headquarters, requires all municipal buildings over 10,000 square feet to meet the Leadership in Energy and Efficient Design (LEED) Silver Certified Criteria. The City of Dallas has had great success in not only reducing its environmental footprint from construction of these highly efficient buildings, but has also received significant cost savings from the operation of the buildings. These City buildings include a wide range of sustainability components from geothermal wells at a Police Substation to a cistern installed at a Library to collect rainwater for irrigation. The table below presents some of the benefits the City has received as a result of building green.

Some facts about LEED Certified Building.....

- ❖ *Average 30% less energy use and average 20% less water use*
- ❖ *Are more likely to generate renewable energy onsite*
- ❖ *Use less toxic materials, low-emitting adhesives, sealants, paints, and carpets*
- ❖ *Better indoor chemical and pollutant source control*
- ❖ *Significantly better lighting quality, including 75% more daylight building space*
- ❖ *Generally improved thermal comfort and better ventilation*
- ❖ *Commissioning and CO2 monitoring to ensure better performance of HVAC systems*

In FY 2005/2006, the City had many LEED buildings underway including the Northwest Service Center, Hensley Field, Fire Stations 33, 35, and 40, three libraries, an Executive Airport Terminal, and the Central Police Station. As part of the LEED process, the City has identified numerous measures that it consistently incorporates in building design. Some of the more interesting examples are outlined below:

1. Fly ash in building foundation and paving concrete.
2. Highly reflective roof with minimum 0.90 emissivity with extra roof insulation
3. Thermally efficient windows
4. Use of day lighting to reduce HVAC load and to reduce electrical consumption of light fixtures
5. Motion sensors to control lighting
6. Alternative vehicle space (Electrically powered vehicles)
7. Bicycle racks and staff showers
8. Low maintenance landscaping or Xeriscape
9. Reflective concrete paving
10. High efficiency gas water heaters
11. High efficiency air conditioners with high efficiency gas heaters
12. Window blinds to help reflect heat and reduce glare when needed.
13. Exterior sun shades to reduce air conditioning load
14. Carbon dioxide sensors
15. Energy Management system to enhance temperature and relative humidity control
16. High efficiency lighting fixtures, lamps, and ballasts
17. Low water use plumbing fixtures with infrared hands free controls that are self powered (no batteries or electrical power supply required)
18. Solar panel array
19. Living machine for wastewater treatment



Trinity River Project - Comprising over 70% of the Earth's surface, water is undoubtedly the most precious natural resource that exists on our planet. Along the Trinity River, water is not only used for human consumption, but also supports the diverse wildlife. The City of Dallas has made major improvements that are helping to reduce our impact on the quality of water in Dallas creeks and the Trinity River. Along with ForwardDallas, the City is working with the Army Corps of Engineers to realize the Trinity River Project. With City funding from a \$246 million bond issue—plus an additional \$1 billion from state and federal sources—the ambitious plan will enhance flood protection with new levees, create urban lakes, preserve and develop new wetlands, protect the 6000 acre Great Trinity Forest, and establish new trails for hiking, biking and horse riding. In addition, the project scope calls for a new highway, the Trinity Parkway, to help relieve traffic congestion that is part of the region's air quality plan. The Trinity Corridor project also includes:

- Completion of the Lower Chain of Wetlands, with flowing water from treated effluent discharged from the Central Waste Water Treatment Plant
- Construction of the Trinity River Audubon Center. This facility was designed by renowned LEED certified architect Antoine Predock, and will provide many environmental education opportunities. The Center is being built on a former Brownfield landfill site
- The Great Trinity Forest Management Plan will begin development to guide us in the operation and maintenance of the forest for the next 80-100 years
- Trails and parks construction along the Trinity River creating a 10,000 acre park
- Environmental enhancement of the Trinity River channel by restoring sinuosity and riffle-pool sequences

■ ***ForwardDallas!*** - The purpose of this Comprehensive Plan, adopted by City Council in June 2006, is to promote sound development of the City and promote public health, safety and welfare. The Plan covers land use, economic development, housing, transportation, urban design, the environment, and neighborhoods. The Plan has a specific element on the Environment outlining goals, policies, and implementation strategies for the following issues: protecting water quality and watersheds; mitigating non-point source pollution; establishing a tree canopy enhancement program; promoting green building practices; instituting transportation demand management; limit vehicle miles traveled; promoting alternative energy and reducing consumption; identifying, restoring, and protecting open spaces; restoring and managing sensitive areas; updating and implementing the Trails Master Plan; increasing recycling and conservation of resources; and promoting sustainability of the City while reducing urban sprawl. A complete copy of the Plan can be found at www.forwarddallas.org and City staff is excited about moving this Plan forward since its adoption.

■ ***Energy Reductions using Energy Performance Contracting:*** The City has reduced energy usage at its existing facilities by almost 5% a year over the past five years. This was accomplished by a variety of measures including energy Performance Contracting. This clever gambit uses future savings from increased energy efficiency and energy conservation measures to finance structural upgrades that, over time, will save energy and thus save money. These projected savings pay for new technologies and construction costs in the present day which will in turn allow the program to cover its own costs over a term of ten or so years. Enhancements to Dallas City Hall, financed with Energy Performance Contracting, are 99.5% complete. The more efficient building used 5,790,165 fewer kilowatt-hours of electricity in 2005, translated into a cash savings of \$1,494,313—which goes to pay for the building's energy upgrades. From Energy Performance Contracting at Love Field, the City expects to save 8,479,432 kilowatt hours annually and \$564,713 in cash savings, and at the Convention Center, it expects to save 23,463,607 kilowatt hours annually and \$2,148,213.

■ ***LED Traffic Signals*** - The Department of Public Works and Transportation operates traffic signals at approximately 1300 intersections in the City of Dallas. In 2003, the City started to replace the traffic signals with energy efficient light emitting diode (LED) signal units. This project has resulted in an annual reduction of power consumption by more than 14.5 million

kilowatt hours and saved 9,341.6 tons of CO2 emissions per year. In addition to receiving more than \$900,000 in incentive payments from the utility company for participating and completing the energy conservation and reduction project, the LED traffic signal replacement project is funded entirely by the energy savings obtained in the next six years immediately after project completion.

✿ ***Solar Powered School and Warning Flashers*** - To eliminate the need to install electric meters for each flasher location, since 2003, the City uses solar powered flashers for all new installations and replacements of knocked down school and warning flashers. Currently, the Department operates more than twelve hundred school and warning flashers and more than eighty of those are powered by solar energy.


✿ ***Cool roofs*** - A growing part of the City of Dallas commitment to sustainability in facility management efforts is the shift towards the use of “Cool Roofs” in design standards for new construction and roof replacements on existing buildings. The design concept involves using a lighter colored roofing finish material to reflect some of the heat gain from daily sun exposure. Reflecting the heat reduces the absorption into dark roofing materials, which combines with other heat absorptive materials such as asphalt and concrete paving. This keeps the heat in and radiates it back out at night. As a result the localized atmosphere is consistently hotter than surrounding areas. The City has completed one cool roof with five additional roofs expected next year. In addition, EBS will utilize “Cool Roofs” for all roof replacements in the 2006 Bond Program.

✿ ***Citizen Urban Forest Advisory Committee*** - In late 2005, the Mayor created the Citizens Urban Forest Advisory Committee and shortly thereafter received a grant to establish a City Forester position. The Forester was hired in September 2006 to establish a City specific program. As part of the program, the City will initiate public outreach and education, as well as educational programs for City staff. Additionally, the City has planted more than 500 trees at golf courses and other parks which will create shade and lower ambient temperatures, which help lower ozone levels. The City is also working a proposal to enable better public utilization of the Reforestation Fund for public tree planting projects and the planting of at least 1000 trees annually.

✿ ***New Trails*** - The City of Dallas Trail Master Plan calls for 230 miles of multi-use hike and bike trails at full build out. The trail system will link into DART light rail stations, green belts, schools, business centers, and parks. Additionally, the city currently has 1,000 lane miles on street bicycle commuter system as designed by local bicycle groups. The City currently has approximately 8 miles of new trails in design; the East Dallas Veloway, AKA Santa Fe Trail phase I and II, Katy Trail phase III and IV, the Preston Ridge Trail phase II, and Kiestwood Trail phase I. The 2006 Bond Program provides funding for approximately 10 miles of additional new trails, as well as funding for renovation of approximately 6 miles of existing trails.

✿ ***Brownfields*** - Brownsfields are abandoned or underutilized commercial or industrial properties with real or perceived environmental issues. Since its inception, the program has

provided no-cost Phase I and Phase II Environmental Site Assessments (ESAs) for private developers, land owners, and City departments to assist with assessment of properties, primarily in the Southern Sector. During Fiscal Year 2005/2006, the Dallas Brownfields Program received the fourth Assessment Grant, for \$200,000, from the EPA bringing the 10-year total to more than \$1.1 million; provided six Phase I and three Phase II Environmental Site Assessments for projects in the Southern Sector; managed and finalized an innovative cleanup technology demonstration from the EPA for site in South Dallas; coordinated quarterly Brownfields Forum meetings to provide community stakeholders with current information on Brownfields activities and legislation at local, state and national levels; and, included a success story list of 40 Brownfield sites.

 **MSDs** - Another land use tool at the City of Dallas is Municipal Setting Designations (called MSDs). MSDs promote redevelopment of contaminated properties while protecting human health and the environment. Some properties overlie ground water that is contaminated with chemicals from historical onsite or offsite uses. Many of these properties may have been vacant for years due to contaminated ground water that will never be used for human consumption. The City stipulates that if there is public water supply to the property and all properties within a ½ mile radius, then an MSD ordinance can be requested to prohibit the use of the groundwater as drinking water at that property – no water wells can be installed on the property that will use the impacted groundwater. The groundwater use restriction from an MSD allows otherwise uninhabitable land to be used. These MSDs are heavily coordinated with the TCEQ and must be in a current regulatory program. Seven (7) MSDs were approved by City Council in FY 2005/2006, restricting 36.16 total acres of land from potable use of water and allowing the property to be redeveloped.

Council District	Number of MSDs Approved	Total Acres Restricted In MSD
District 2 – Pauline Medrano	4	18.32
District 14 – Angela Hunt	3	17.84
Total	7	36.16

Momentum forward...

- ❖ **Energy use reductions** – The City is continuing with its 5% per year goal to reduce its consumption at City facilities.
- ❖ **Green Power** – The City will be purchasing 40% of its power for its street lights from renewable power beginning in 2007. Additionally, the City is reviewing its purchasing strategies for the remaining electricity needs and will be considering a larger renewable power portfolio.
- ❖ **Green Buildings** – The City will continue its green building commitment to construction of City buildings over 10,000 square feet as LEED Silver. The City will also be reviewing the existing City green buildings to quantify the environmental and cost benefits.
- ❖ **Downtown Park** – The City is moving forward with implementation of the four core urban park sites for downtown. Three of these sites will eliminate existing surface parking lots, which will help with the urban heat island in downtown. The other park will deck over a portion of Woodall Rogers Freeway. All of these projects are in various stages of land acquisition and design.
- ❖ **Green space** - Park and Recreation department is planning to increase green space acreage in the City by expanding the trail system as part of the long term development plan – the Renaissance Plan. Next year, construction will begin on the Trinity River Audubon Center including trails and parks and the Margaret Hunt Hill Bridge. The City will also begin development of the Great Trinity Forest Management Plan which will guide us in the operation and maintenance of the forest for the next 80 to 100 years
- ❖ **Trinity River** – City staff will continue working on making the Trinity River project a reality.
- ❖ **Cool Roofs** – The City will continue to specify cool roofs for installation in its building renovation program.
- ❖ **MSD** – The City has set a target of 450 acres of property with impacted groundwater be protected in a MSD by 2010.
- ❖ **Urban Heat Island** – In cooperation with EPA, the City of Dallas will begin exploring ways to reduce the urban heat island effect – elevation of temperatures at the City's core which leads to higher formation of ozone.
- ❖ **Forward Dallas** – The City will begin its first full year of implementation of the comprehensive land use plan.

- **Brownfields** – The Dallas Brownsfields Program (DBP) anticipates conducting four Phase I and two Phase II Environmental Site Assessments (ESAs) for sites in the Southern Sector; initiating and completing the Municipal Designation Setting process for a site in the Grand Park South Tax Increment Financing (TIF) District; and, will assist a South Dallas non-profit obtain Innocent Owner/Operator Program (IOP) certificates for 24 lots in the Grand Park South TIF District to promote economic development.

Auditing and Compliance

Inspiration...

Environmental performance begins with employee knowledge, cooperation, and compliance with federal, state, and local environmental regulations. The City of Dallas strives to go beyond compliance to environmental stewardship and sustainable growth. But to effectively determine where the City of Dallas is headed, we must know where we are and where we have been. Environmental performance must be measured using tools such as auditing. Through the auditing process, the success of the City's environmental compliance and environmental management programs can be translated into tangible progress reports.

Managing our environmental impact within the complex systems of regulatory guidance occurs through a program of formal compliance assessments of City department facilities. A compliance audit determines which environmental laws and regulations apply to a department's facility and whether the facility is properly managing its compliance requirements. The compliance audit:

1. Determines applicable regulatory requirements.
2. Reviews and compares current operations and procedures for compliance with federal, state, and local regulations and internal City policies.
3. Identifies opportunities for improvement and best management practices.

OEQ is responsible for conducting the compliance audit and utilizes the following standardized protocol in the following order: Opening meeting to discuss purchase and scope; discussion of the operation of the facility and any known or suspected concerns; review of applicable environmental documentation; a site tour of the facility; an onsite closing meeting to discuss results and answer questions; a second closing meeting with the City Manager's Office and Department Director; issuance of a report; and a follow up visit to close any items identified.

Results of the audit come in the form of non-conformances or commendable. Non-conformances are an issue discovered at the facility that needs to be corrected. A commendable is an area where the facility is going beyond compliance or should be recognized for innovative efforts.

Measuring Success FY 2005/2006...

The OEQ compliance auditing program began at the City in October 2004 and continues to be a successful way to self identify environmental compliance issues and drive continual improvement. Here are successes in these programs from this Fiscal year:

- Notices of Violation/Enforcement - In FY 2005/2006, the City of Dallas received nine notices of violation (NOV) and two notices of enforcement (NOE). Of the 11 received, six were related to the work of contractors on City facilities. The two notices of enforcement were related to the updating of a Risk Management Plan and submittal of a Certification of Compliance under a Title V permit. The remaining NOV's were related to storm water documentation issues and maintenance of a grease trap. The City of Dallas is now tracking and reporting NOV's/NOE's City wide and conducting a root cause analysis to ensure the violations do not reoccur
- OEQ conducted 30 audits of City facilities this fiscal year. The City continues to perform these compliance audits, and to educate the City employee's regarding the environmental requirements for City facilities. OEQ is in the process of assisting each department to resolve the open non-conformances. Additionally, OEQ continues to provide training and technical assistance to each department with regard to environmental stewardship and environmental compliance. The following table indicates the number of non-conformances closed and the number of non-conformances remaining active.

Table: Compliance Auditing Program Status, FY 2004/2005 to FY 2005/2006

	No. Facility Compliance Assessments Conducted	No. Nonconformance's Identified	No. Nonconformance's Closed	No. Nonconformance's Remaining Open
Totals	78	655	343	312

Moving Forward...

While this Fiscal Year, OEQ's auditing program was focused strictly on compliance, starting in November of 2006, the City will expand its internal auditing program to include the EMS.

- The City of Dallas has committed to actively manage its environmental footprint through the implementation of an environmental management system (EMS) based on the requirements of the ISO 14001:2004 standard. All the elements of EMS tie into three core values: a commitment to compliance, a commitment to pollution prevention, and a commitment to continual improvement.

Outreach and Education

Inspiration...

Margaret Mead (1901-1978) once wrote, "Never doubt that a small group of thoughtful, committed citizens can change the world; indeed, it is the only thing that ever has."

With the cooperative harmony of all City employees setting the example, an informed Dallas will be better able to change the world through environmental stewardship and responsibility. Through outreach and education, the City believes knowledge is power and that every one of us can have a positive impact on the environment by making better choices in our everyday life.

The City of Dallas has many environmental education and outreach programs geared towards pollution prevention and resource conservation. These programs are delivered by many City Departments in a variety of forums including school education programs, workshops, and community events. The City also recognizes our employees can make better environmental choices whether it's shutting City vehicles off instead of idling, or buying environmentally friendly cleaning products for their home. Therefore, the City also offers a variety of training programs for its employees to increase environmental stewardship and awareness.

Measuring Success FY 2005/2006...

The City of Dallas participated in a wide variety of community events with environmental education booths. These events included everything from the Mayor's Back to School Fair to the E & E Zoo Fair educating citizens in Districts 1 and 3 on the wide variety of City services. At these events, residents have the opportunity to speak with environmental professionals on City staff regarding environmental issues or initiatives. Particular environmental outreach and educational events the City is most proud of in FY 2005/2006 are outlined below.

🌱 ***Storm Water Quality*** - Specialists from Public Works and Transportation made more than 120 presentations to trade groups, students and the general public about ways citizens as well as businesses can reduce storm water pollution and foster a cleaner and greener Dallas environment. Special workshops are held for contractors to understand the importance of storm water protection during construction projects. Public Works and Transportation also has an educational program geared strictly for school aged kids. "Trinity Trudy" is a young dragonfly that lives in the Trinity River and must have a pollution free environment to survive. Trinity Trudy explains to young children the importance of not throwing items down the storm drain and understanding the water cycle.



🌱 ***Dallas Environmental Educational Initiative*** - The Dallas Environmental Educational Initiative is a unique partnership between Dallas Water Utilities and Sanitation Services to educate elementary school children on the importance of water conservation and recycling. Teachers receive lesson plans approximately 45 minutes in length with hands-on demonstrations to reinforce the topic. In 2006, this program reached over 1,300 children.

🌱 ***Grease Abatement Program*** – Dallas Water Utilities has a comprehensive public education program on the importance of conserving water and ways to reduce water use. The program

reaches citizens through a variety of measures including billboards, commercials and inserts in water bills. Dallas Water Utilities also offers education on the importance of the proper disposal of oil and grease.



■ **Water Utilities Outreach Program** – Dallas Water Utilities attended 34 special events that reached over 5,900 residents. The staff also conducted 27 seminars that reached approximately 20,000 customers.

■ **Water-wise Garden Tour** – In June 2006 DWU held its Annual Water-wise Garden Tour. The tour visited gardens in Desoto and Coppell. An estimated 1,480 citizens participated.

■ **Graffiti Wipe Out Event** - From 2004 to 2005, Dallas received over 1,700 graffiti complaints and spent more than \$220,000 to clean up defaced property. And yet the City had no comprehensive graffiti prevention program in place. A handful of residents, city employees, and an elected official got the ball rolling. From there, a coalition of neighborhood groups, City services, and Keep Dallas Beautiful was organized. The coalition set out to achieve three goals: create a new city program targeting graffiti vandalism, seek \$250,000 in funding to operate the program, and organize a citywide paint out called Graffiti Wipe Out 2006. They also designated a single contact in the city for graffiti, wrote a new anti-graffiti ordinance, and established a database to track vandalized sites and volunteers. Finally, better coordination between prosecutors, the district attorney's office, and the City of Dallas was established. The Graffiti Wipe Outs drew 1,500 volunteers to clean up over 200 graffiti sites and cover over 50,000 square feet of graffiti. These events were featured on the Dallas Morning news, ABC, NBC, Fox, and Telemundo. Graffiti education also made its way into nine schools.



■ **EarthFest** – Every year the City participates in EarthFest. It is a joint celebration partnered by the EPA, DowntownDallas, and Keep Dallas Beautiful for Earth Day. This event featured live entertainment and over 70 booths showcasing environmental stewardship. It is estimated that over 10,000 people participated in 2006.

■ **Cartridges for Kids Program** - Every department and every division recycles Inkjet and LaserJet cartridges from work and home as well as personal used cell phones. FedEx collects the recycled cartridges and cell



phones at no cost and delivers them to **Cartridges for Kids**, which recycles them and then sends a check to **Children's Miracle Network**. This in turn directs the monies earned from the City of Dallas program directly to our local Children's Hospitals.

- ❖ ***City Employee Environmental Training*** - In January of 2005, OEQ adopted an environmental topic-of-the-month to help educate City employees on a wide range of regulatory-based and stewardship issues. The training gave City environmental staff additional knowledge to help with implementation of regulatory programs, including such topics as Worker and Community Right-to-Know, Waste Management (Resource Conservation Recovery Act (RCRA), Spill Prevention Control and Countermeasures (SPCC), Environmental Recordkeeping, Clean Air Act, Conducting Phase I/II, and Pollution Prevention. Then, in May 2005, OEQ conducted a daylong crash course in Environmental Legislation covering changes that had been passed since the adoption of the National Environmental Policy Act (NEPA). The session gave participants a sense of the scope and nature of current environmental requirements. OEQ also teamed up with Human Resources in June to develop one day of seminars in City Hall focused on environmental and health and safety. With a variety of seminars starting every hour on the hour from 9 a.m. to 4 p.m., City employees were exposed to a variety of topics from traffic safety, blood-borne pathogens, and property inspections as wells as storm water inspections, waste management, and pollution prevention. The seminars were delivered by City staff and outside experts from agencies such as the TCEQ. 800 City employees participated in this daylong training.

Moving forward...

The City is very dedicated to environmental stewardship; part of that stewardship includes outreach and education on environmental issues. In order to continue this dedication the City had the following goals for this next fiscal year:

- ❖ Continue public educational and outreach programs and enhance coordination between City Departments to more effectively utilize City resources
- ❖ Continue and Expand the Graffiti Wipe Out Event
- ❖ Continue and Expand the Dallas Environmental Educational Initiative
- ❖ Re-evaluate and enhance the City's internal environmental education program
- ❖ Implement an Environmental Education Program for tenants at City facilities by December 2009
- ❖ Implement an Environmental Education Program for multi-family units by December 2009
- ❖ Continue Earthfest partnership with US EPA

Awards and Recognition

Inspiration...

Recognition for all the hard work accomplished on the environment is a key component in pushing sustainability programs even further. There are many environmental recognition events through the State and Federal government, as well as private partners to the City of Dallas. Receiving an award allows City employees to stop, cherish our significant environmental improvements, and motivate ourselves to achieve even more.

Measuring Success FY 2005/2006...

The City of Dallas is proud of these environmental awards received in FY 2005/2006:

- The Pretreatment and Laboratory Services Division of Dallas Water Utilities received the Pretreatment Program of the Year Award from the Texas Water Utilities Association.
- Central and Southside Wastewater Treatment Plants received Peak Performance Awards from the National Association of Clean Water Agencies. The Peak Performance Awards program recognizes NACWA member agency facilities for excellence in wastewater treatment as measured by their compliance with their National Pollutant Discharge Elimination System permits.
- East Side, Elm Fork, and Bachman Water Treatment Plants received recognition by the Partnership for Safe Water for implementing optimized water treatment. The Partnership for Safe Water is a unique cooperative effort between EPA, American Water Works Association, Association of Metropolitan Water Agencies, National Association of Water Companies, and Association of State Drinking Water Administrators. The Partnership encourages and assists water suppliers in the United States in voluntarily enhancing their water systems' performance and better protecting citizens from Cryptosporidium, Giardia and other microbial contaminants.
- In October 2005, the EPA applauded Dallas for its efforts to reduce ground-level ozone and deemed the City "one of the best places to commute."
- For its work at Love Field, the City's Aviation Department received recognition from the EPA's National Partnership for Environmental Priorities (NPEP) program for eliminating hazardous polychlorinated biphenyls (PCBs) from ballasts in lighting fixtures.
- In 2006, the City was awarded the "Tree City USA" designation by the National Arbor Day Foundation. This designation, which must be renewed annually, is an acknowledgement that the city meets certain standards regarding urban forestry management, such as a tree Board and tree ordinances.
- All municipal golf courses have received Certificates of Achievement from The Audubon Society for meeting standards of the Audubon Cooperative Sanctuary Program. The

certificates recognize the City's courses for their conservation and preservation programs for plants and animals, including wildlife and habitat management as well as integrated pest management practices.

- In 2006 SustainLane ranked Dallas 24th out of the 50 largest US cities for urban sustainability. The rankings explain how people's quality of life and city economic and management preparedness are likely to fare in the face of an uncertain future. These indicators gauge, for instance, which cities' public transit, renewable energy, local food, and development approaches are more likely to either limit or intensify the negative economic and environmental impacts of fossil fuel dependence.

Moving forward...

- In FY 2006/2007, the Conservation Division of Dallas Water Utilities will receive a Watermark Award for Communications Excellence from the Water Environment Association of Texas and the Texas Section of the American Water Works Association
- The City of Dallas plans to apply for the TCEQ's Environmental Excellence Awards next year.
- The City will implement its own employee environmental awards in FY 2006/2007



Epilogue

The City of Dallas, as a dynamic, living entity, has come to understand the necessity and urgency of environmental stewardship and increased awareness of our impacts on the delicate ecological systems of our planet. The air we breathe and the water we drink are not disposable luxuries; we must conserve and protect them. As the City continues to grow and our density increases, smart and effective planning with regard to best management practices in handling our resources and wastes will be crucial if Dallas is to continue working toward a better way of life for its citizens and the citizens of Earth.

Seldom do we realize the long-term costs to our eco-system for the short-term benefits to our convenience. To remedy that, we must continue to educate and conduct ourselves, as a City and as its residents, to the methods and practices that will yield the greatest long-term benefits at the smallest short-term costs.

Already the City has taken steps to reduce its environmental impact. Through the purchase of hybrid vehicles, the City is stepping up its efforts to reduce the production of greenhouse gases and the elements attributable to ozone generation. By working towards the implementation of Environmental Management System protocols and the attainment of ISO 14001 Certification, the City is working toward increased environmental stewardship to not just meet but exceed regulatory requirements, which will ultimately save money. As the first city in the EPA's Sustainable Skylines program, Dallas hopes to be a model for the rest of the nation in the efforts to reduce air pollution. Finally, through energy and water conservation efforts, the City hopes to reduce the production impact of energy generation and ensuring water supply for future generations.

The task may seem daunting at times, but with the support of our City leaders and elected officials, we will continue to strive toward making our City a better place to live, a better place to work, and a better place to be.