UTAH

Division of Air Quality

2007
ANNUAL REPORT

February 2008

Table of Contents

List of Tables

List of Figures

Division of Air Quality
2007 Annual Report

Introduction

Utah Division of Air Quality

The mission of the Utah Division of Air Quality (DAQ) is to protect public health and the environment from the harmful effects of air pollution. It is the responsibility of DAQ to ensure that the air in Utah meets health and visibility standards established under the federal Clean Air Act (CAA). To fulfill this responsibility, DAQ is required by the federal government to ensure compliance with the U.S. Environmental Protection Agency's (EPA) National Ambient Air Quality Standards (NAAQS) statewide and visibility standards at National Parks. DAQ enacts rules pertaining to air quality standards, develops plans to meet the federal standards when necessary, issues preconstruction and operating permits to stationary sources, and ensures compliance with Utah air quality rules.

Utah's mountain and valley topography, diverse economy, and a rapidly growing population create air quality challenges for the state. Despite these challenges, Utah's air is significantly cleaner than it was 25 years ago. In the early 1980s, the health standards for four of the six major ambient air pollutants identified by the EPA were violated in one or more Utah counties. As of December 2007, all Utah counties attained the federal air quality standards. More stringent federal regulations for motor vehicles and industry, as well as other emission controls developed as part of the State Implementation Plan for Utah, have resulted in reduced air pollution and improved visibility..

The DAQ allocates a large portion of its resources to implementing the CAA. The Utah Air Conservation Act empowers the Utah Air Quality Board (UAQB) to enact rules pertaining to air quality issues. The DAQ staff supports the Board in its policymaking role. Board membership provides representation from industry, local government, environmental groups, and the public, and includes the Executive Director of the Department of Environmental Quality. The eleven board members have diverse interests, are knowledgeable in air pollution matters and are appointed by the Governor with consent of the Senate. The Director of DAQ is the Board's Executive Secretary.

The Utah Air Quality Rules describe and define the Utah air quality program. Implementation of the rules requires DAQ interaction with industry, other government agencies and the public. The state air program is responsible for the implementation of both the federal standards under the CAA as well as state pollution rules for sources not regulated by the federal rules.

2007 Synopsis

The year 2007 saw the continuation of an ongoing trend of progress toward compliance with all federal health standards for criteria air pollutants. Despite an ever-increasing population, Utah remained in compliance with the 8-hour ozone standards. However, during hot summer months ozone concentrations approach the current EPA health standard. In late 2007, EPA completed a review of the 8-hour ozone standard, and proposed revising it to within a range that many areas of the state cannot meet. At the lower end of that range, attainment of the standard could be in jeopardy even within some of the national parks in the state. When that revised standard is promulgated in early 2008, DAQ will need to devote significant resources to begin the process to analyze our existing data and identify additional data needed to develop appropriate plans to meet a new standard, possibly in many areas of the state where such planning has never before been done.

The same can be said of DAQ's efforts to curb the levels of particulate matter. During 2007, all areas of the state met the federal health standards for PM_{10}, but not for PM2.5. During wintertime episodes of air stagnation and temperature inversion, we routinely experience elevated concentrations of both PM10 and PM2.5, although PM10 concentrations no longer exceed the standards. In early 2007, we experienced a significant temperature inversion that lasted for many days, yet our ambient concentrations of PM10 never exceeded about 80% of the standard. This demonstrates the success of the plan developed in the late 1980s to bring this valley into compliance with the PM10 standard.

EPA revised the 24-hour standard for $PM_{2.5}$ on September 21, 2006, strengthening it from the 1997 level of 65 $\mu g/m^3$ to 35 $\mu g/m^3$. At the same time, EPA retained the annual $PM_{2.5}$ standard at 15 $\mu g/m^3$. The 24-hour $PM_{2.5}$ standard is based on a three-year average of the 98^{th} percentile monitored values. All areas of Utah have always been in compliance with the 1997 standard, and ambient 24-hour $PM_{2.5}$ concentrations have steadily decreased along the Wasatch front from 2000 through 2006, although not at a pace that would let us avoid having areas that could not meet the new EPA standards. DAQ spent significant resources during 2007 to analyze the areas that actually do not meet the new standard, and in December, submitted a recommendation to EPA on which areas should be designated as nonattainment and attainment for the new PM2.5 standard. The recommendation was that all of Salt Lake and Davis Counties, and portions of Utah, Weber and Cache Counties be designated as nonattainment areas for PM2.5, and that all other areas of the state be designated as attainment/unclassifiable. DAQ will spend much of 2008 and 2009 working with EPA to finalize the nonattainment area boundaries prior to EPA's final publication of the designations in the Federal Register by June of 2010.

The Department of Environmental Quality is concerned about elevated levels of mercury in Utah, and has begun a program to control airborne mercury emissions. In May of 2005 EPA issued a final mercury rule, the Clean Air Mercury Rule (CAMR), to address mercury emissions from coal-fired electric generating units larger than 25 megawatts. Utah proposed (on November 1^{st} 2006) a "Designated Facilities Plan" as well as a number of other state rules to comply with EPA's mercury rule. Utah has proposed restrictions on mercury emissions from coal-fired power plants as required by the CAMR to ensure a decrease of mercury emissions in the state.

During 2007, fish caught in several of Utah's waterways were found to have elevated levels of mercury. In an effort to understand how much of that mercury may have come through airborne transport, DAQ acquired a wet-deposition monitor to evaluate the amount of mercury that is deposited via rain or snow in Utah. In 2008, DAQ will seek funding from the Legislature to also acquire a dry-deposition mercury monitor to attempt to identify the amount of mercury that is deposited in Utah during dry weather. The operation and maintenance of these monitors is critical to understanding the mechanism for mercury deposition in Utah, and will lead to and understanding of the source of the mercury that is being deposited in Utah.

DAQ also sits on the Statewide Mercury Work Group; a 15 member task force representing industry, government and advocacy groups that was organized to assess the extent of mercury contamination in Utah and set priorities for protecting the public. In late 2007 the Utah Department of Environmental Quality signed an MOU with the states of Idaho, Nevada, and EPA Regions 8, 9, and 10 to cooperate on technical and regulatory issues regarding mercury. This MOU created the Great Basin Mercury Working Group which held its first regional conference in Reno, Nevada in early January, 2008. The director of DAQ co-chaired the meeting while staff members from DAQ were among the technical presenters who attended. Scientists and researchers from around the region and the country also took part in the meeting.

The Division spent a large amount of time defending the permit for a coal-fired power plant to be located near Sigurd, UT. The Sierra Club had appealed the permit over several issues that they felt were inadequately addressed. The Air Quality Board heard three full days of testimony and upheld the permit with no changes. The Sierra Club is now appealing the board's decision to the Utah Court of Appeals.

Division Organization

The DAQ is divided into three separate branches: Permitting, Planning, and Air Standards. The *Permitting Branch* is responsible for issuing construction and operating permits to stationary sources that emit air pollutants. Construction permits are issued to new or modified stationary sources of air pollution through the New Source Review program. Operating permits are issued on an ongoing basis through Title V of the CAA to "major" stationary sources. The Permitting branch is comprised of three sections: Minor Source NSR, Major Source NSR and Operating Permits.

The *Planning Branch* is responsible for the Air Monitoring Center (AMC) which gathers and analyzes data on concentrations of ambient air pollutants. It is also responsible for developing comprehensive plans to reduce air pollution. Emissions inventories are routinely compiled in order to understand the origins of the various contaminants detected in the air. Computer models are used to evaluate the impacts of new and existing sources of air pollution, and to understand the relationship between the emissions, meteorology, and pollutant concentrations measured in the air. The branch is also involved in identifying the air quality impacts of transportation issues which include vehicle inspection and maintenance, clean fuels, and highway construction. This information must be considered in the development of State Implementation Plans (SIPs)

in order to ensure that Utah's ambient air remains in compliance with the federal health standards, even as our population and our economy continue to grow. The planning branch is comprised of four sections: The Air Monitoring Center (AMC), Mobile Sources, SIP/Rules and Technical Analysis.

The Air Standards Branch has responsibility for both insuring that industries and residents comply with Utah's air quality regulations. The Air Standards Branch is comprised of three sections: The Major Source Compliance, Minor Source Compliance Section and the Air Toxics, Lead-Based Paint, Asbestos and Small Business Environmental Assistance (ATLAS) section which was formerly known as the Hazardous Air Pollutants Section. The Major and Minor Source Compliance Sections are responsible for ensuring that all Utah air quality regulatory requirements are met. This is done through inspections and enforcement. The ATLAS Section is responsible for the regulation, under EPA air quality programs, of toxic air pollutants, also known as Hazardous Air Pollutants. HAPS are those pollutants listed in the CAA that are known or suspected to cause cancer and other serious health problems. The ATLAS section is also responsible for the enforcement of federal and state regulations for preconstruction asbestos removal and a number of outreach and enforcement programs designed to reduce exposure to lead paint.

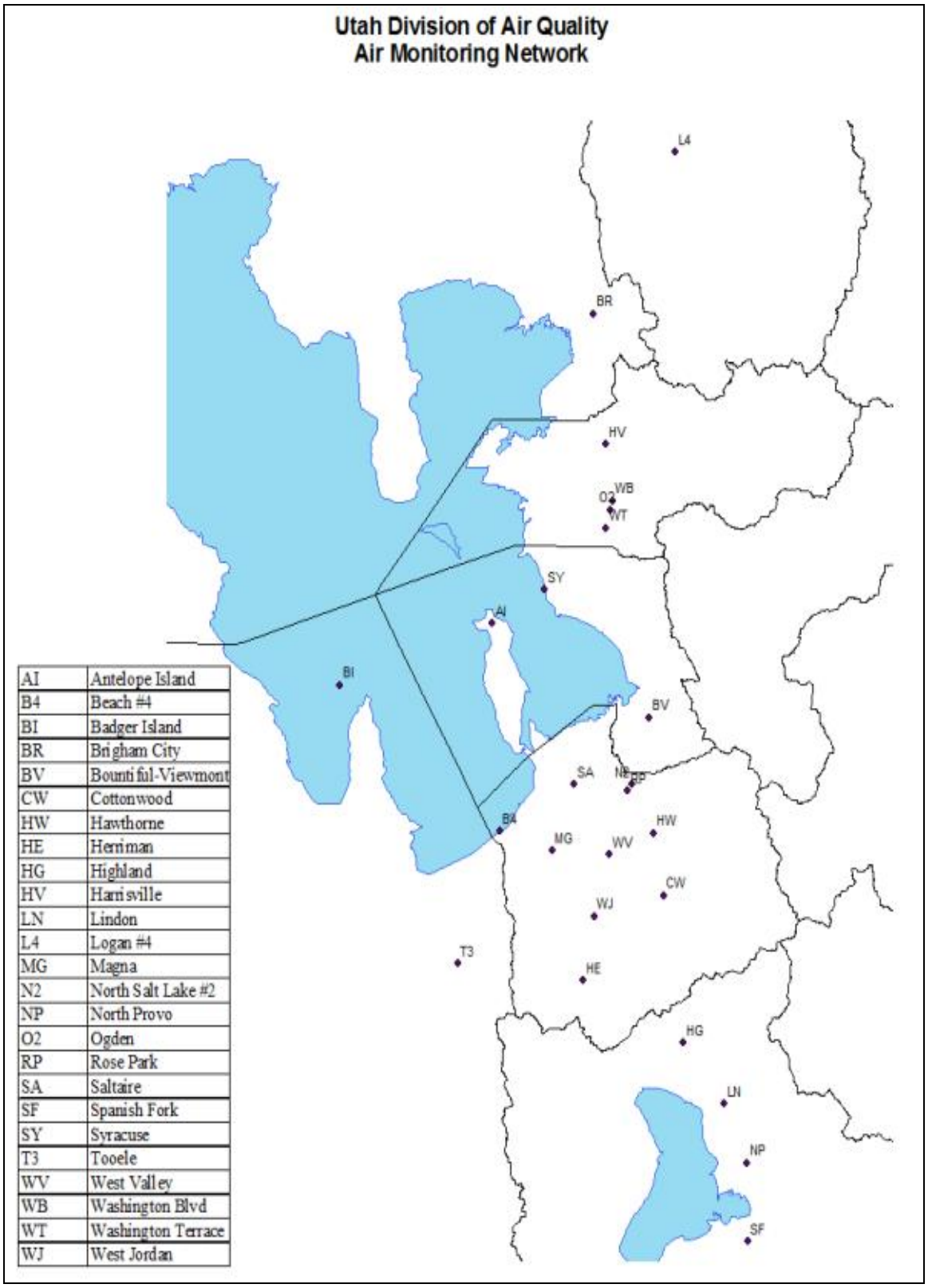
The Division of Air Quality assists small businesses in complying with state and federal regulations including New Source Performance Standards (NSPS), National Emission Standards for Hazardous Air Pollutants (NESHAP), NSR and Utah Air Quality Rules. The Small Business Assistance Program can advise small businesses on permitting requirements, emission calculations, technical issues, and pollution prevention techniques.

Ambient Air Quality in Utah

Utah's Air Monitoring Network

The Air Monitoring Center operates a network of monitoring stations across along the Wasatch Front from Logan to Spanish Fork. The monitors are situated to measure air quality in neighborhoods and industrial areas. Figure 1 shows the general location of currently active monitoring sites in Utah, and Table 1 presents the location, meteorology and pollutants monitored for each site. In addition, meteorological data are collected at many locations to provide localized data for air quality modeling that is used to evaluate the impacts of new sources and to assess the effectiveness of regional mitigation strategies.

Figure 1 Utah Air Monitoring Network



AI	Antelope Island
B4	Beach #4
BI	Badger Island
BR	Brigham City
BV	Bountiful-Viewmont
CW	Cottonwood
HW	Hawthorne
HE	Herriman
HG	Highland
HV	Harrisville
LN	Lindon
L4	Logan #4
MG	Magna
N2	North Salt Lake #2
NP	North Provo
O2	Ogden
RP	Rose Park
SA	Saltaire
SF	Spanish Fork
SY	Syracuse
T3	Tooele
WV	West Valley
WB	Washington Blvd
WT	Washington Terrace
WJ	West Jordan

Table 1 Utah Monitoring Stations

Station	City	Address	CO	Lead	NO_2	O_3	PM_{10}	$PM_{2.5}$	SO_2	Met.
Antelope Island	None	North end of island								X
Badger Island	None	On Island								X
Beach	Lakepoint	12100 W. 1200 S.				X			X	X
Bountiful	Bountiful	171 W. 1370 N.			X	X		X	X	X
Brigham City	Brigham City	140 W. Fishburn Dr.				X		X		X
Cottonwood	SLC	5715 S. 1400 E.	X		X	X	X	X		X
Harrisville	Harrisville	425 W. 2250 N.				X		X		X
Hawthorne	SLC	1675 S. 600 E.	X		X	X	X	X		X
Herriman	Herriman	12950 S. 5600 W.				X		X		X
Highland	Highland	10865 N. 6000 W.				X		X		X
Lindon	Lindon	30 N. Main St.					X	X		X
Logan	Logan	125 W. Center St.	X			X	X	X		X
Magna	Magna	2935 S. 8560 W.		X			X	X	X	X
North Provo	Provo	1355 N. 200 W.	X		X	X	X	X		X
N. Salt Lake	SLC	1795 N. Warm Springs Rd.					X		X	
Ogden #2	Ogden	228 32nd St.			X		X	X		
Rose Park	SLC	1375 W. 1230 N.						X		
Saltaire	None	NW of Int'l Center								X
Spanish Fork	Spanish Fork	312 W. 2050 N.				X		X		X
Syracuse	Syracuse	5100 W. 1700 S.								X
Tooele	Tooele	434 N. 50 W.				X		X		X
Washington Blvd.	Ogden	2540 S. Washington Blvd.	X							
West Jordan	West Jordan									X
Washington Terrace	Washington Terrace	4601 S. 300 W.						X		
West Valley	West Valley City	3275 W. 3100 S.	X			X		X		X

Air Quality Standards

The Clean Air Act, which was last amended in 1990, requires EPA to set National Ambient Air Quality Standards for pollutants considered harmful to public health and the environment. The Clean Air Act established two types of national air quality standards. Primary standards set limits to protect public health, including the health of sensitive populations such as asthmatics, children, and the elderly. Secondary standards set limits to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings.

Table 2 – EPA Designated Criteria Pollutants

Name	Sources	Health Effects	Environmental Effects
Carbon Monoxide (CO); a clear, colorless, odorless gas	Burning of gasoline, wood, natural gas, coal, oil, etc.	Reduces the ability of blood to transport oxygen to body cells and tissues; cells and tissues need oxygen to work. Carbon monoxide may be particularly hazardous to people who have heart or circulatory (blood vessel) problems and people who have damaged lungs or breathing passages.	

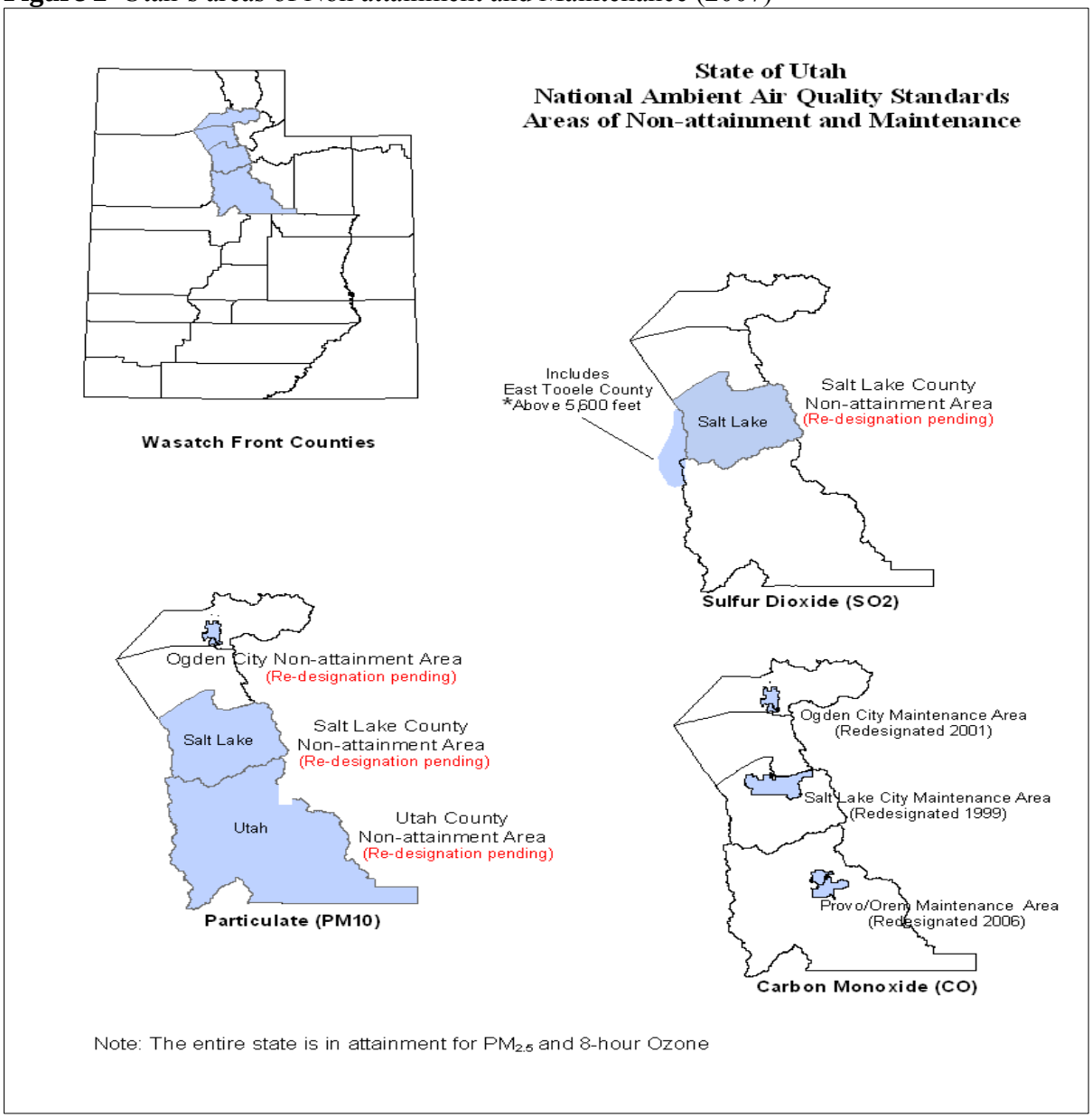
Name	Sources	Health Effects	Environmental Effects
Lead (Pb)	Paint (houses, cars), smelters (metal refineries); manufacture of lead storage batteries; note: burning leaded gasoline was the primary source of lead pollution in the US until unleaded gasoline was mandated by the federal government.	Lead damages nervous systems, including brains, and causes digestive system damage. Children are at special risk. Some lead-containing chemicals cause cancer in animals.	Lead can harm wildlife
Nitrogen Dioxide (NO_2) (one component of NO_x); smog-forming chemical	Burning of gasoline, natural gas, coal, oil, and other fuels; Cars are also an important source of NO_2	Nitrogen dioxide can cause lung damage, illnesses of breathing passages and lungs (respiratory system).	Nitrogen dioxide is an ingredient of acid rain (acid aerosols), which can damage trees, lakes, flora and fauna. Acid aerosols can also reduce visibility
Ozone (O_3) (ground-level ozone is the principal component of smog)	Chemical reaction of pollutants; VOCs and NO_x	Ozone can cause breathing problems, reduced lung function, asthma, irritated eyes, stuffy noses, and reduced resistance to colds and other infections. It may also speed up aging of lung tissue.	Ozone can damage plants and trees; smog can cause reduced visibility
Particulate Matter (PM_{10}, $PM_{2.5}$); dust, smoke, soot	Burning of gasoline, natural gas, coal, oil and other fuels; industrial plants; agriculture (plowing or burning fields); unpaved roads, mining, construction activities. Particles are also formed from the reaction of VOCs, NO_x, SO_x and other pollutants in the air.	Particulate matter can cause nose and throat irritation, lung damage, bronchitis, and early death.	Particulate Matter is the main source of haze that reduces visibility
Sulfur Dioxide (SO_2)	Burning of coal and oil (including diesel and gasoline); industrial processes.	Sulfur dioxide can cause breathing problems and may cause permanent damage to lungs.	SO_2 is an ingredient in acid rain (acid aerosols), which can damage trees, lakes, flora and fauna. Acid aerosols can also reduce visibility

The EPA has established health-based National Ambient Air Quality Standards (NAAQS) for six pollutants known as "criteria pollutants." These are carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter, and sulfur dioxide. Each of these pollutants is addressed in greater detail later in this chapter, but Table 2 provides a brief description of each. The primary health standards are established by considering both the concentration level and the duration of exposure that can cause adverse health effects. Pollutant concentrations that exceed NAAQS are considered unhealthy. The DAQ monitors each of these criteria pollutants, as well as several non-criteria pollutants for special studies.

NAAQS Non-attainment & Maintenance Areas

Areas that are not in compliance with the NAAQS are referred to as non-attainment areas (NAA). Figure 2, on the next page, is a map of the current non-attainment and maintenance areas within the state. A maintenance area is an area that was once designated as non-attainment, and which subsequently demonstrated that it will attain and maintain a particular standard for a period of 10 years. EPA must approve the demonstration. Figure 12, found on page 20 of this report, depicts areas of the state that have been recommended to the EPA as nonattainment areas for $PM_{2.5}$ as a result of the recent tightening of that standard. Discussion regarding Utah's recommendation is found on pages 19 -20.

Figure 2 Utah's areas of Non attainment and Maintenance (2007)



Criteria Air Pollutants

Carbon Monoxide

Carbon monoxide (CO) is a colorless and odorless gas, formed by the incomplete combustion of carbon fuel. CO is primarily produced from on-road motor vehicle emissions. Other significant sources of CO emissions are wood burning stoves and fireplaces. The remaining emissions come from industrial facilities, construction equipment, miscellaneous mobile sources and other types of space heating.

Because motor vehicle emissions are the major source of CO, the highest concentrations occur during morning and evening rush hours near high traffic areas. The worst problems occur when there are large numbers of slow-moving vehicles in large parking lots, busy intersections, and traffic jams. Carbon Monoxide problems are greater in winter due to several factors: cold weather makes motor vehicles run less efficiently, wood burning and other space heating takes place in the winter, and cold weather temperature inversions trap CO near the ground.

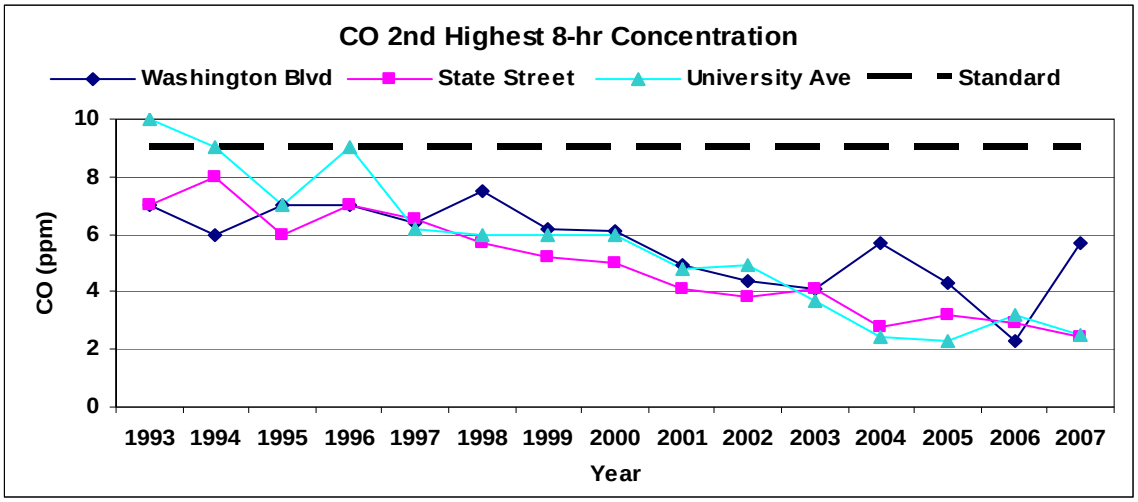
Standards

The EPA has developed two national standards (NAAQS) for CO. They are 35 ppm (parts per million) of CO averaged over a 1 hour period and 9 ppm of CO averaged over an 8-hr period. A violation of the NAAQS occurs with the second exceedance of either standard at a single location in a calendar year. Once a location measures a second exceedance of either standard, it is considered to be in violation and becomes designated as a "non-attainment area." Three cities in Utah (Salt Lake City, Ogden, and Provo) were, at one time, designated non-attainment areas for CO. Due primarily to improvements in motor vehicle technology, both Salt Lake City and Ogden were successfully re-designated to "attainment" status in 1999 and 2001 respectively. DAQ submitted a re-designation request and associated maintenance plan for EPA's approval in March 2004 for Provo. This request was approved by EPA and Provo was re-designated as an "attainment" area effective January 3, 2006.

CO in 2007

The State of Utah was in compliance with the CO standards in 2007. No exceedances of the CO standards were observed during 2007. Figure 3 shows a 15-year trend in CO emissions. The steady decline is primarily due to improvements in vehicle emissions control technology.

Figure 3



Lead (Pb)

Lead in the ambient air exists primarily as particulate matter in the respirable size range. In the past, the major source of lead was from gasoline. However, because leaded

gasoline for automobiles was completely phased-out in the United States by the end of 1995, lead from this source is no longer a significant problem. The extraction and processing of metallic ores is currently the major source of lead in Utah, and dust from the removal of lead-based paint is another.

Standard

The current standard for lead is a calendar quarter (3-month) average concentration, not to exceed 1.5 micrograms per cubic meter of air. Utah has not exceeded the health standard for lead since the late 1970s.

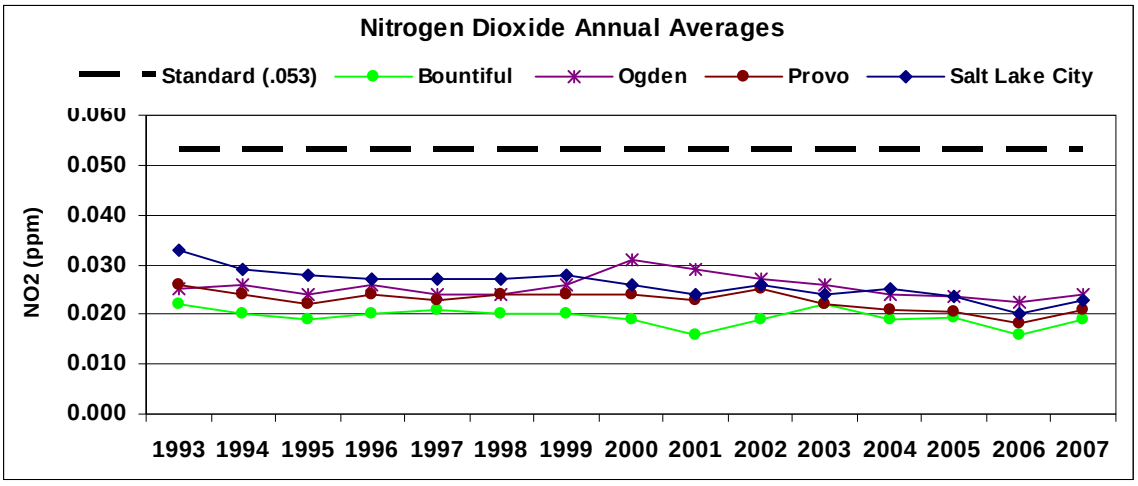
Nitrogen Dioxide (NO_2)

During high temperature combustion, the nitrogen in the air reacts with oxygen to produce various oxides of nitrogen, or NO_x, a reddish-brown gas. One of the oxides of nitrogen, nitrogen dioxide (NO_2), is considered a criteria pollutant.

Standard

The annual standard for nitrogen dioxide is 0.053 ppm expressed as an annual arithmetic mean (average). Los Angles is the only U.S. city that has recorded exceedances of the nitrogen dioxide annual standard in the past seventeen years. The DAQ monitors the concentrations of NO_2 at various locations throughout the state, but has never observed a violation of the annual standard. However, oxides of nitrogen react with other air contaminants to form other criteria pollutants. In the summer, photochemical reactions between NO_2 and volatile organic compounds (VOCs) lead to ground-level ozone. In the winter, NO_2 reacts with ammonia to form fine particulate matter. Both of these seasonal scenarios can result in increased pollution. Utah continues to struggle with both the ozone and particulate matter standards, and because of this, DAQ is mindful of the trend in NO_2 emissions illustrated in Figure 4.

Figure 4



Ozone (O_3)

Ozone is a gas composed of three oxygen atoms. Ozone at ground level can be inhaled and is considered a pollutant. Ground-level ozone should not be confused with the stratospheric ozone layer that is located approximately 15 miles above the earth's atmosphere. It is this layer that shields the earth from cancer-causing ultraviolet radiation. Ground level ozone is formed by a complex chemical reaction involving Volatile Organic Compounds (VOC) and Oxides of Nitrogen (NO_x) in the presence of sunlight.

Ozone production is a year-round phenomenon. However, the highest ozone levels occur during the summer when strong sunlight, high temperatures, and stagnant meteorological conditions combine to drive chemical reactions and trap the air within a region for several days. Some of the major sources for these pollutants are vehicle and engine exhaust, emissions from industrial facilities, gasoline vapors, chemical solvents, and biogenic emissions from natural sources.

Standard

In July 1997, the EPA established a new ozone standard. The 1-hour primary standard of 0.12 ppm was replaced by an 8-hour standard at a level of 0.08 ppm. The standard is calculated based on a 3-year average of the annual 4th highest daily 8-hour average concentrations. Following several years of litigation, the new 8-hour ozone standard took effect on June 15, 2004 and is based on health studies that indicate long-term exposures to ozone are more harmful than shorter, 1-hour exposures

In the 1970's and early 1980's Salt Lake and Davis counties violated the 0.12 ppm 1-hour ozone standard. In 1984 Utah submitted and the EPA approved an ozone State Implementation Plan (SIP) with sufficient control measures to attain and maintain the 1-hour standard. In 1990, while some counties in Utah were non-attainment, Congress amended the Clean Air Act (CAA) and, as a result, Salt Lake and Davis Counties were designated "moderate" non-attainment areas. In 1993 Utah submitted a formal re-designation request with an accompanying revision of the ozone SIP which was approved by the EPA.

In response to the requirements of the new 8-hour ozone standard, the DAQ prepared a new 8-hour ozone SIP which was adopted by the Utah Air Quality Board on January 3, 2007. This plan was submitted to the EPA for approval in the spring of 2007.

Ozone in 2007

Utah continues to remain in compliance with the 8-hour standard, based on a 3-year average of the 4th highest ozone concentration at each monitor.

The following charts illustrate recent trends in ozone concentrations along the Wasatch Front. Figure 5 presents the NAAQS threshold which is the 3-year average of the 4th

highest 8-hour ozone concentration from monitors along the Wasatch front. Due to rounding requirements the actual annual standard is exceeded at 0.085 ppm. The heavy dashed lines indicate the current NAAQS standard and violation levels.

Figure 5

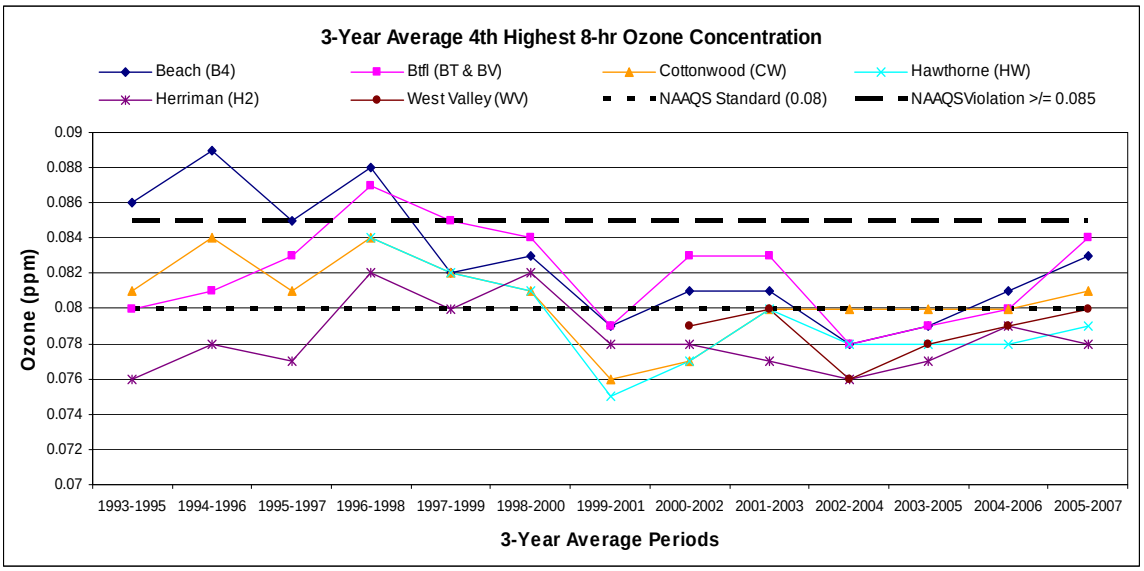
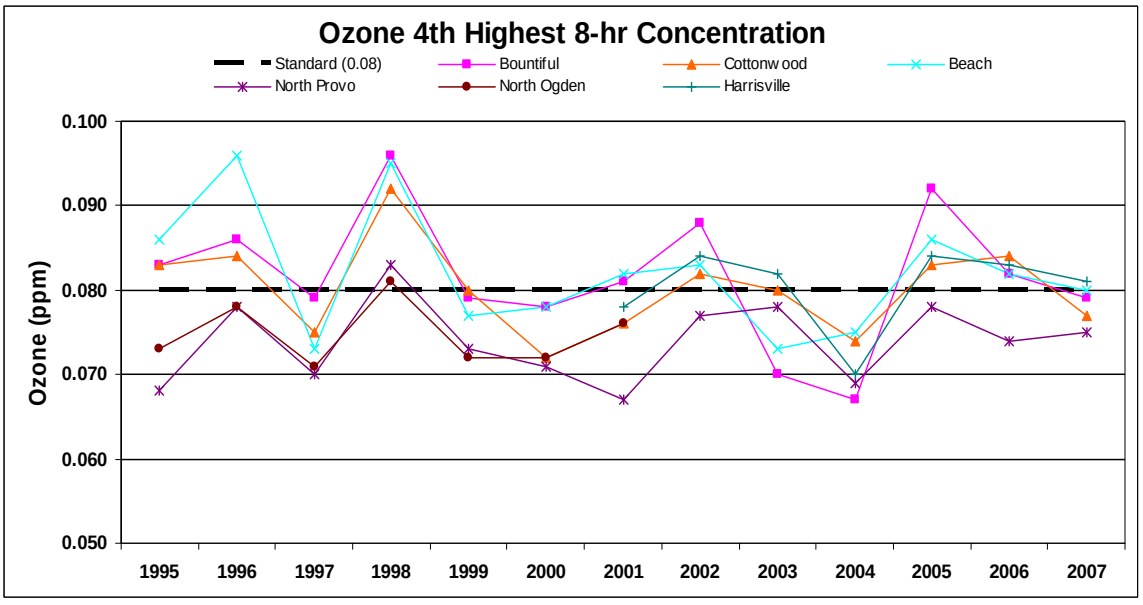


Figure 6 examines the 8-hour ozone concentrations by looking at the 4th highest annual concentration at monitors for the past thirteen years. Although the State of Utah continues to comply with the 8-hour standard, which is based on a three year average, it is not uncommon to record yearly values that are greater than the NAAQS.

Figure 6



The EPA is expected to release a final rule making to amend the current 8-hour ozone NAAQS in March 2008. Their proposal, which was released on June 20, 2007, recommended tightening the primary ozone standard to between 0.070 ppm and 0.075

ppm. If this occurs, Utah could be re-designated to non-attainment and once again have to prepare an ozone SIP revision.

Particulate Matter: PM_{10} and $PM_{2.5}$

Regulated particulate matter (PM) is a complex mixture of extremely tiny particles of solid or semi-solid material suspended in the atmosphere. PM is divided into two categories: PM_{10} and $PM_{2.5}$. PM_{10} is particulate less than 10 micrometers in diameter, which is about one-seventh the width of a strand of human hair. PM_{10} can lodge deep in the lungs and cause respiratory problems. The coarse fraction of $PM_{10,}$ that which is larger than 2.5 microns, is typically made up of "fugitive dust" (sand and dirt blown by winds from roadways, fields, and construction sites) and contain large amounts of silicate (sand like) materials.

$PM_{2.5,}$ or fine particulate, is less than 2.5 micrometers in diameter. $PM_{2.5}$ is generally produced from combustion sources and includes fly ash (from power plants), carbon black (from cars and trucks), and soot (from fireplaces and woodstoves). Much of Utah's $PM_{2.5}$ is called secondary aerosol. "Secondary" means that it was not emitted directly as a particle, but was produced when gasses such as sulfur dioxide (SO_2) or nitrogen oxides (NO_x) reacted with other gasses in the atmosphere such as ammonia (NH_3) to become tiny particles. SO_2 and NO_x are also products of combustion. Wintertime temperature inversions not only provide ideal conditions for the creation of secondary aerosols, but at the same time act to trap air in valleys long enough for concentrations of $PM_{2.5}$ to build up to levels that can be unhealthy. The smallest of particles that make up $PM_{2.5}$ are major contributors to visibility impairment in both urban and rural areas. Along the Wasatch Front, the effects can be seen as the thick brownish haze that lingers in our northern valleys, particularly in the winter. These particles are so small that they can become imbedded in human lung tissue, exacerbating respiratory diseases and cardiovascular problems. Other negative effects are reduced visibility and accelerated deterioration of buildings. DAQ currently operates PM_{10} and $PM_{2.5}$ monitors throughout the state to assess the ambient air quality with respect to the standards for both PM_{10} and $PM_{2.5}$.

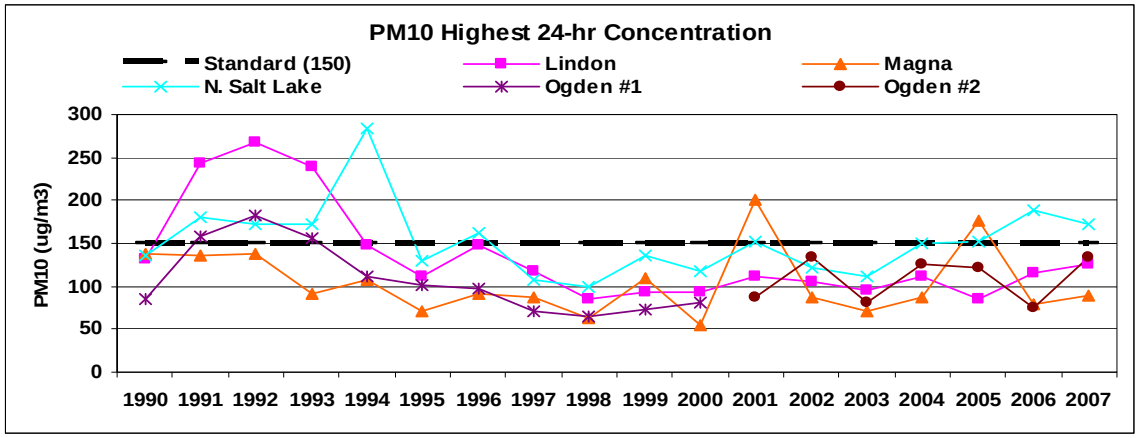
Standards

PM_{10}

Annual and 24 hour air quality standards for PM_{10} were established by EPA in July 1987. The 24-hour standard was set at 150 micrograms per cubic meter ($\mu g/m^3$) and is met when the probability of exceeding the standard is no greater than once per year for a 3-year averaging period. In other words, four exceedances within a 3-year period would constitute a violation. The annual PM_{10} standard was set at 50 $\mu g/m^3$ and calculated as the 3-year average of annual means. The PM standards were effectively revised by EPA in December of 2006. In so doing, the agency retained the 24-hour PM_{10} standard but revoked the annual standard. Utah had never violated the annual standard for PM_{10}. Figure 7 presents the highest 24-hour PM_{10} concentrations recorded at each station from 1990 to 2007. The heavy dashed line indicates the national ambient air quality standard. State Implementation Plans promulgated in 1991 were responsible for the marked decrease in concentrations observed in the early 1990s. The associated control strategies were phased in through 1995. High monitoring values resulting from exceptional events

(high winds and wildfires) in 2005 through 2007 have been flagged and are currently under review.

Figure 7



Standards - $PM_{2.5}$

EPA effectively revised the PM standards in December of 2006. It lowered the 24-hour $PM_{2.5}$ standard from (the 1997 level of) 65 µg/m^3 to 35 µg/m^3, and retained the current annual $PM_{2.5}$ standard at 15 µg/m^3. Both standards are evaluated by considering monitored data collected during a 3-year period. In this way, the effects of meteorological variability are minimized. For the annual standard, a 3-year average of the annual mean concentrations record for each of the three years must not exceed 15 µg/m^3. The 24-hour standard is met when the average of 98th percentile values collected for each of the three years is less than or equal to 35 µg/m^3. The 98th percentile concentration for each year is selected from all of the data recorded at a given monitor, such that the values of at least 98 percent of all that data were of a lower concentration. Some historical $PM_{2.5}$ data is presented in the following figures. Figure 8 presents the three year averages of the 98th percentile concentrations at Wasatch front monitors for 2000- 2007. The graph shows that under the 1997 standard Utah was in compliance with the standard but is not in incompliance under the revised standard.

Figure 8

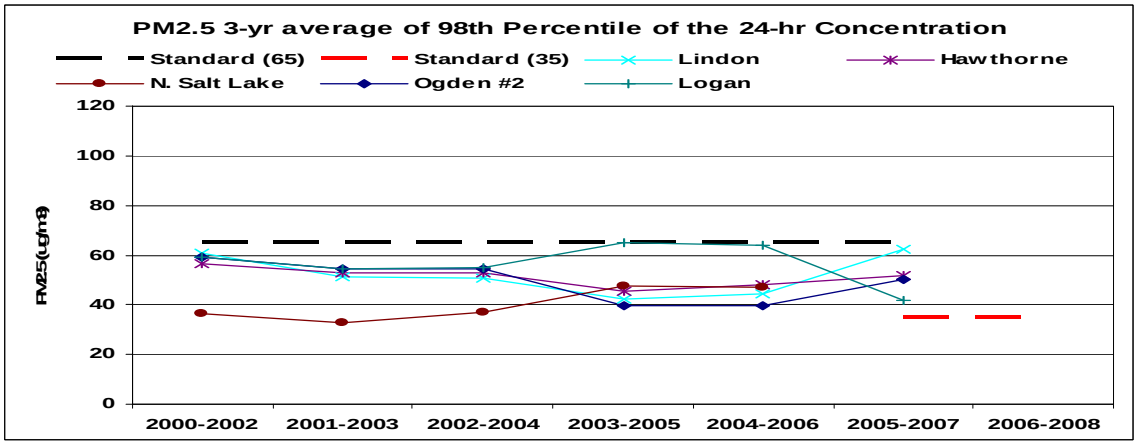
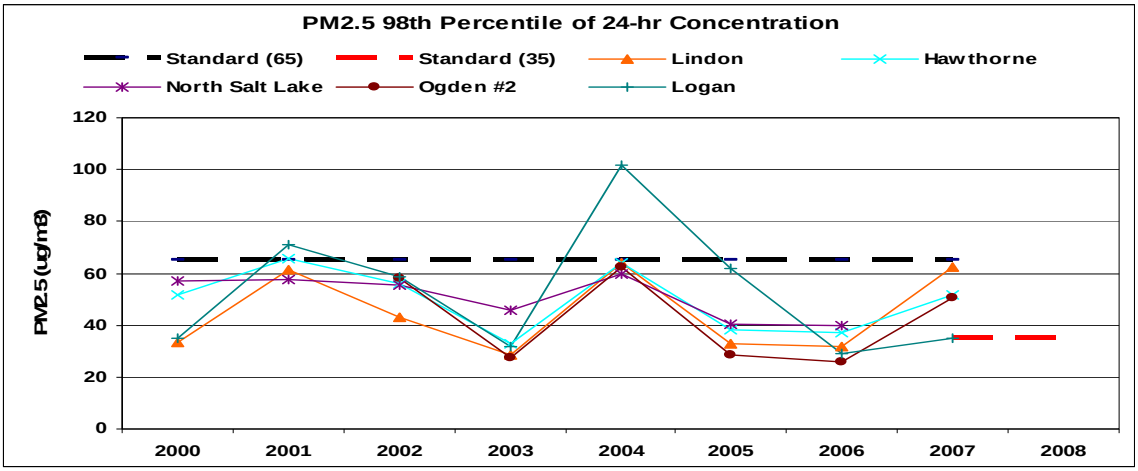


Figure 9 shows the 98th percentile concentrations for discrete years within the period 2000-2007. This illustrates the effect of meteorological variability. In particular, the strength and duration of wintertime temperature inversions has a dramatic effect of PM2.5 concentrations collected year to year.

Figure 9



Sulfur Dioxide (SO_2)

Sulfur dioxide is a colorless gas with a pungent odor. In the atmosphere, sulfur dioxide is easily converted into sulfates, which are detected as particulates. It is also converted into sulfuric acid, the major acidic component of acid rain. It is emitted primarily from stationary sources that burn fossil fuels (mainly coal and oil) such as power plants and refineries, and is also a byproduct of copper smelting and steel production. Diesel fuel and, to a lesser extent, gasoline contain sulfur and are considered contributors to sulfur dioxide in the atmosphere.

Standards

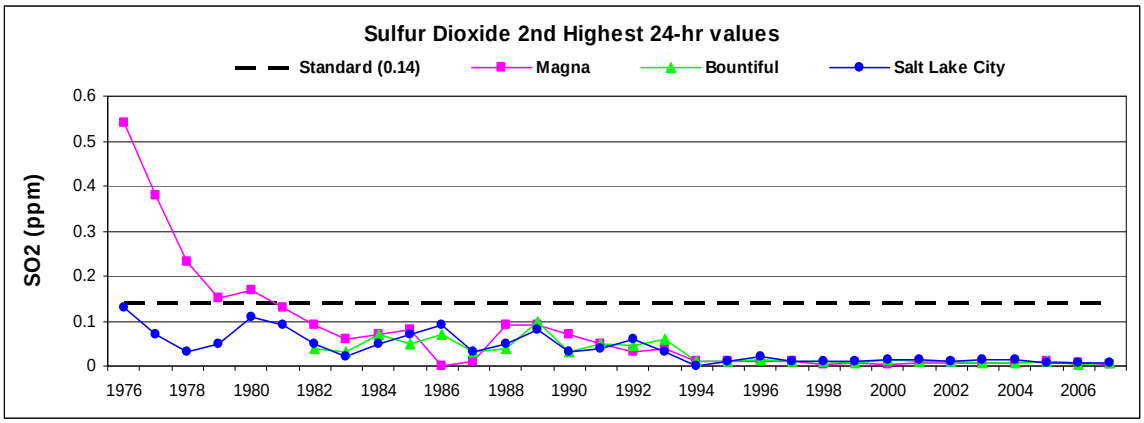
There are two primary health based NAAQS for SO_2: a 1-year average of 0.03 ppm, and a 24-hour average of 0.14 ppm. In addition there is a secondary welfare related standard of 0.5 ppm averaged over a 3-hour period.

The DAQ has situated its monitors near the largest sources of SO_2 (Kennecott Utah Copper and the five refineries along the Wasatch Front). Throughout the 1970s the Magna monitor routinely measured violations of the 24-hour standard. Consequently, all of Salt Lake County and those parts of Tooele County above 5600 feet were designated as non-attainment for SO_2. Two significant technological upgrades at the Kennecott smelter have resulted in continued compliance with the SO_2 standard since 1981.

In the mid 1990s, Kennecott, Geneva Steel, the five refineries, and several other large sources of SO_2 made dramatic reductions in emissions as part of an effort to curb concentrations of secondary particulate (sulfates) that were contributing to PM_{10} violations. Utah submitted a maintenance plan and re-designation request for Salt Lake and Tooele Counties to EPA in April of 2005. Recent measurements of SO_2 indicate that

Utah's ambient air is well within the federal health standards. Figure 10 shows the trend in SO_2 concentrations over the past 31 years.

Figure 10



Emissions Inventories

Every three years, DAQ collects information about the quantity and characteristics of the various air pollutants released by all emission sources in the state. In between the triennial inventory years, emissions information is also collected annually for the larger industrial sources. Finally, more detailed inventories are prepared, as needed, for special projects to quantify emissions during specific seasonal air pollution episodes.

Figure 12 presents the updated 2005 triennial emissions inventory, by source category, in six pie charts for the criteria pollutants, VOCs and biogenic emissions. The triennial inventory covers 355 individual point sources, 75 area source categories, and 12 non- and on-road source categories. Biogenic emissions are produced from non-anthropogenic, non-human natural activity, sources including wildfires and vegetation.

Once collected, the inventory information is reviewed, quality assured, analyzed, and stored in the DAQ data system. This emissions information is used by DAQ to look at trends over time, and to create air quality models. The emissions information is also tallied according to source type to provide billing information for the Title V operating permits program. A copy of the emissions inventory data is uploaded to the EPA's National Emissions Inventory data system. In recent years, Utah has made significant strides toward automating the collection of emissions information from the major industrial sources resulting in more timely and higher quality inventories.

Sources of Air Contaminants

Emission inventories are typically organized into three categories of sources: Point, Area and Mobile.

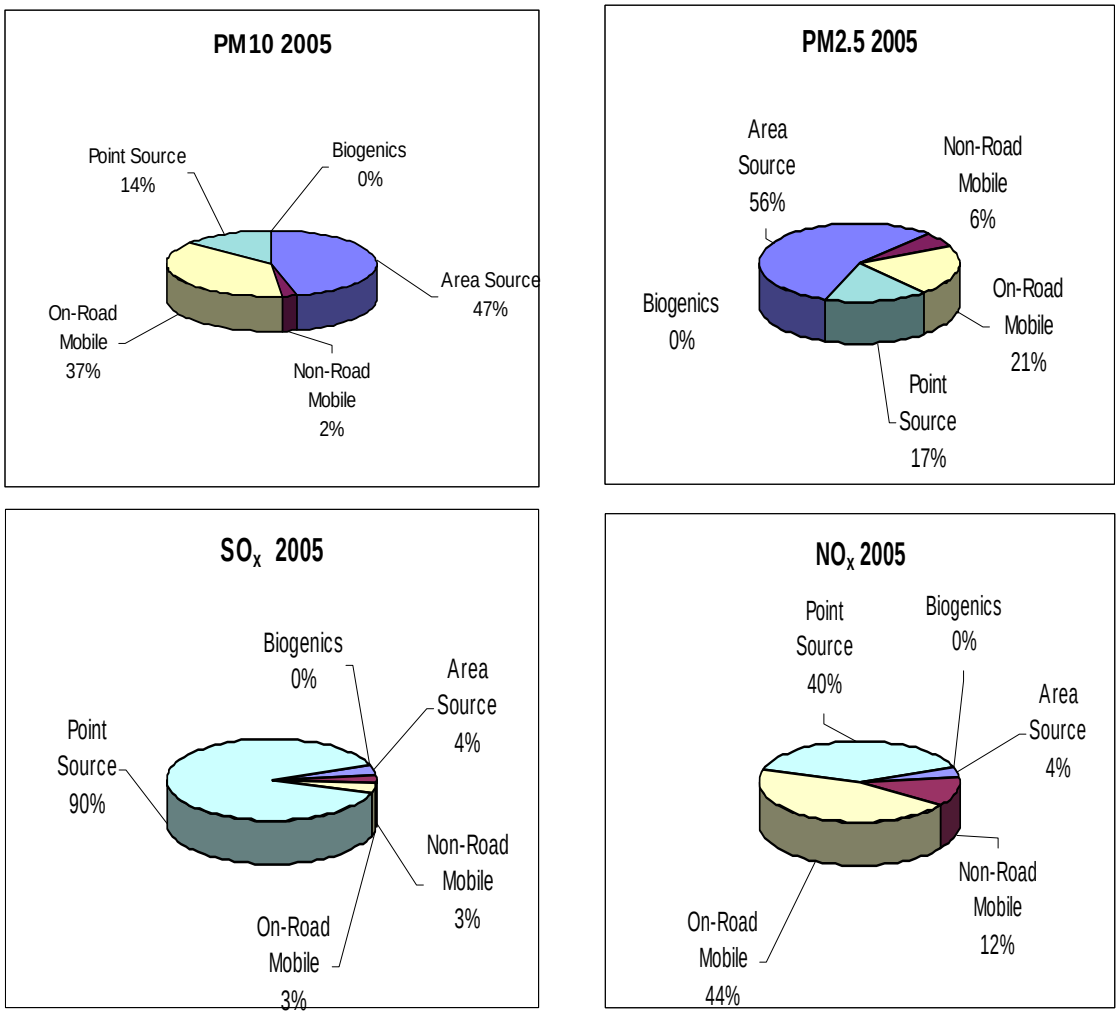
Point sources are larger, stationary industrial or commercial facilities such as power plants, steel mills, and manufacturing facilities. Air pollutants released from stationary sources are accounted for on a facility-by-facility basis.

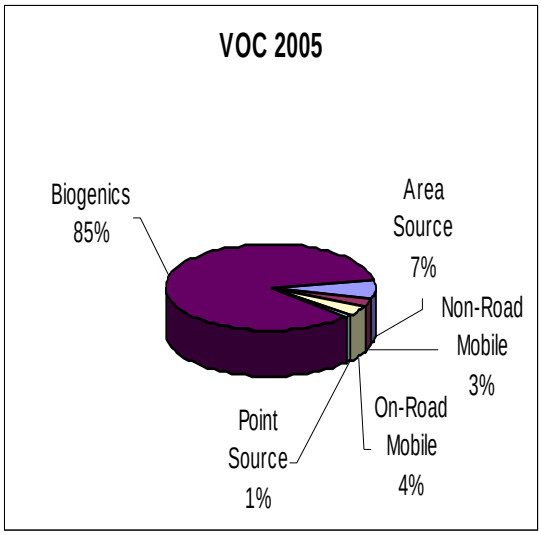
Area sources are smaller stationary sources that, because of their greater number, are accounted for by classes of sources. Home heating, agricultural burning and harvesting, construction, residential and commercial energy generation, wildfires, and biogenics (emissions from vegetation) are examples of area sources.

Mobile sources make up the third category and consist of emissions from non-stationary sources such cars, trains, and aircraft. Mobile emissions are often further broken down into on-road mobile and off-road mobile categories. On-road mobile sources primarily consist of cars and trucks, and contribute by far the largest part of the mobile source emissions. Off-Road Mobile sources consist of a diverse group of heavy construction equipment, small engines (lawnmowers and snow blowers), trains, and aircraft. Estimating emissions from mobile sources requires an understanding of the various emission characteristics of the many types of vehicles and model years that make up the fleet, as well as an understanding of how they are driven and the distance they travel.

The 2005 triennial inventory is the most recent state-wide inventory available. Table 3 shows, by county, the criteria pollutants and volatile organic compounds (VOCs) for the most recent triennial statewide emissions inventory compiled by DAQ. Figure 11 shows the 2005 emissions inventory by source category for the criteria pollutants and VOC's.

Figure 11 Updated 2005 Triennial Emissions Inventory by Source Category





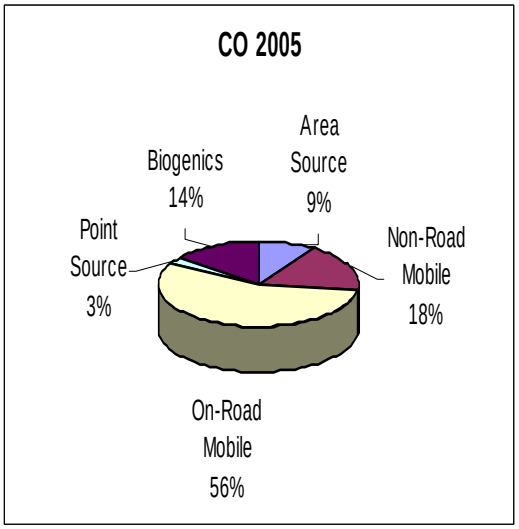


Table 3 Updated 2005 Triennial Inventory (tons/year)

County Summary	PM10	PM2.5	SOx	NOx	VOC	CO
Beaver	1,322	320	98	1,552	29,953	14,394
Box Elder	6,286	2,443	233	5,616	41,019	58,377
Cache	3,404	966	206	4,086	17,478	30,492
Carbon	1,391	408	6,496	5,999	17,013	13,394
Daggett	371	185	7	919	14,423	5,125
Davis	3,641	1,000	3,480	10,720	16,958	63,439
Duchesne	1,631	539	72	1,874	24,244	14,197
Emery	3,576	1,166	23,795	30,025	32,613	19,933
Garfield	1,715	608	57	648	45,625	16,160
Grand	941	256	28	1,616	36,949	18,537
Iron	2,128	606	301	3,277	40,512	28,894
Juab	2,288	785	132	4,758	30,026	30,904
Kane	893	329	54	654	49,410	16,585
Millard	3,190	862	3,775	27,020	51,487	29,679
Morgan	675	170	247	3,171	10,062	6,872
Piute	257	68	19	139	11,705	3,012
Rich	780	262	27	246	9,465	4,643
Salt Lake	15,086	4,056	6,071	38,030	44,494	221,888
San Juan	2,077	800	374	1,664	65,900	25,200
Sanpete	1,310	310	206	1,122	18,902	12,711
Sevier	1,609	470	262	3,426	19,459	17,273
Summit	1,971	479	265	4,163	20,945	24,407
Tooele	5,184	1,935	267	5,492	44,550	43,568
Uintah	1,856	746	84	1,855	31,492	20,580
Utah	7,198	1,994	716	13,559	35,054	76,943
Wasatch	883	201	44	1,228	18,320	11,013
Washington	6,350	3,750	275	6,300	62,657	70,774
Wayne	526	130	80	228	24,670	6,896
Weber	2,882	807	238	6,868	14,796	47,956
Total	**81,423.93**	**26,651.13**	**47,910.36**	**186,253.86**	**880,180.58**	**953,846.29**

Planning Branch

The Planning Branch is responsible for developing State Implementation Plans (SIPs) in order to ensure that Utah's ambient air meets the federal health standards, even as our population and our economy continue to grow. These plans address a variety of air quality issues, but most often focus on areas of the state where the monitoring found air quality to be unhealthy for one or more of the criteria pollutants

In addition, the Clean Air Act now requires transportation planning organizations to prepare information detailing the air quality impacts associated with improvements in the transportation infrastructure. These plans must conform to the SIPs prepared by the DAQ. Therefore, many of the recent SIP revisions were undertaken with the goal of helping transportation planners adapt to an ever-growing population base and updated air quality health standards.

Status of Utah Projects and Initiatives

$PM_{2.5}$

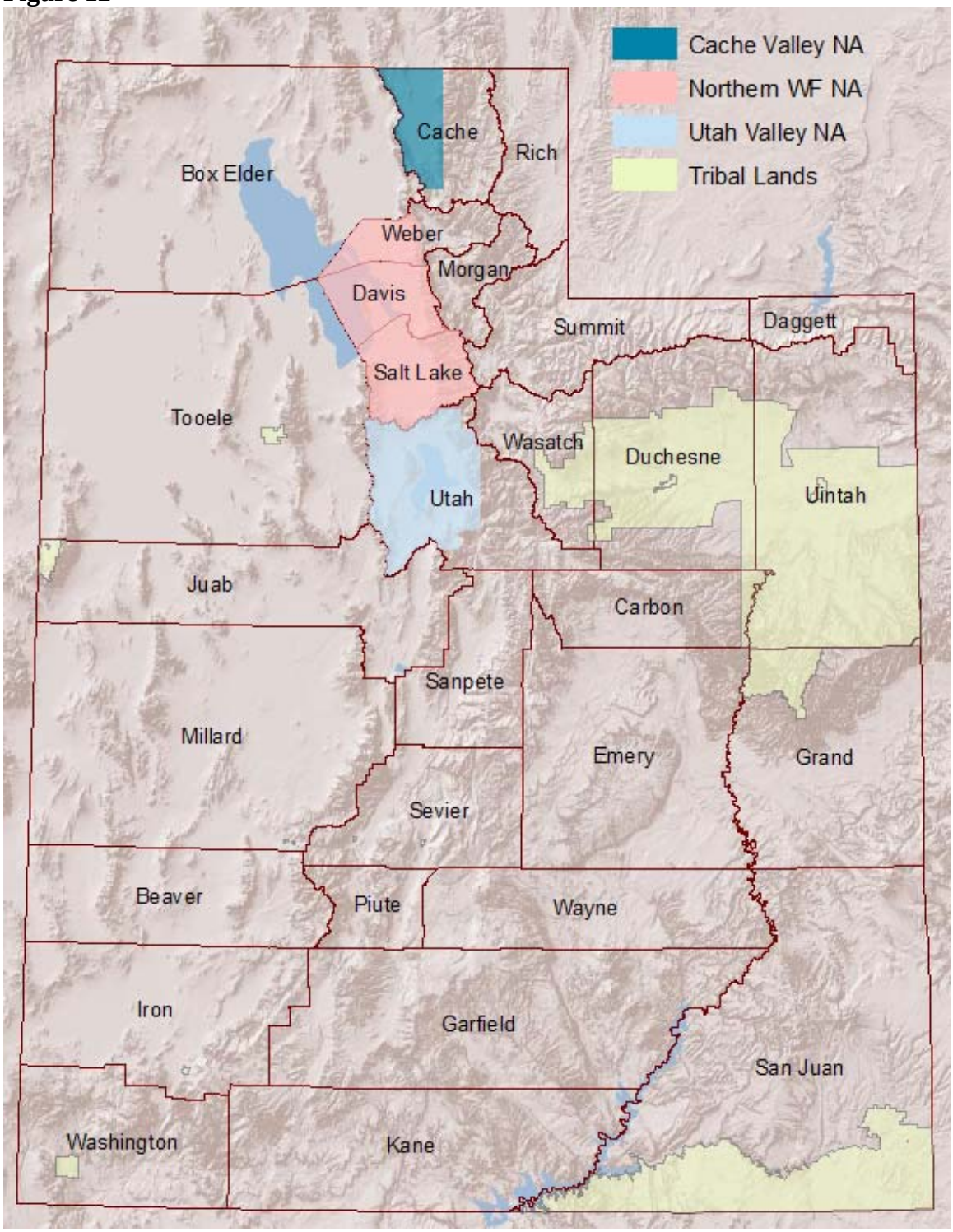
One of the six "criteria" pollutants identified for regulation in the original Clean Air Act of 1970 was total suspended particulate (TSP). In 1987, EPA defined an "indicator" of the suspended particles that were of concern to public health. These were particles with an aerodynamic diameter of ten microns or less, and this regulated subset of TSP was called PM_{10}. It includes a complex mixture of extremely small particles and liquid droplets that can be emitted directly, as in smoke from a fire, or it can form in the atmosphere from reactions of "precursor" gases such as sulfur dioxide and ammonia.

Further study of PM_{10} has revealed a bi-modal size distribution. There are typically two distinct groups of PM_{10} particles – those between 2.5 and 10 microns in diameter, and those smaller than 2.5 microns. A growing body of health studies has led to the conclusion that it is the smaller of these particle groups that most severely impacts public health. In response, EPA in 1997 added a new indicator to the regulatory framework for particulate matter. "$PM_{2.5}$" is inclusive of particles having an aerodynamic diameter of 2.5 microns or less.

DAQ has monitored for the $PM_{2.5}$ since 2000, and found that all areas within the state have been in compliance with the 1997 standards. In September of 2006, EPA revised the standards for $PM_{2.5}$. While the annual standard remained unchanged at 15 micrograms per cubic meter (µg/m3), the 24-hr standard was lowered from 65 µg/m3 to 35 µg/m3. The monitoring data DAQ has been collecting since 2000 suggests that meeting this new standard will be one of our greatest challenges. At this new $PM_{2.5}$ level, it is likely that all or parts of at least five counties would be in noncompliance. DAQ has recently completed its recommendation to the EPA concerning the boundaries of its $PM_{2.5}$ nonattainment areas. In addition to the air quality data, some of the information taken into consideration for this recommendation was: population density, location of emission sources, meteorology, topography, and pre-existing jurisdictional boundaries. These considerations pointed to the establishment of the three areas of nonattainment shown below (see Figure 12). EPA now has until December of 2008 to make its determination regarding these area designations final. To address non-compliance the state will have to

prepare comprehensive plans to meet the revised standards in these areas within three years of EPA's final action.

Figure 12



In this past year, DAQ completed a specialized air monitoring field project in the Cache Valley to help determine what role volatile organic compounds (VOC) play in the formation of $PM_{2.5}$. Results from this study are now being used in computer modeling studies in anticipation of SIP work where it will be critical to accurately predict the

effects of possible control strategies. Looking forward to 2008, DAQ plans to address $PM_{2.5}$ along the Wasatch Front by enhancing its collection of speciated data and monitoring for ammonia. This information should prove critical in understanding the formation of secondary aerosol, which is such a large fraction of the overall $PM_{2.5}$ during wintertime episodes of elevated concentrations. Elsewhere, DAQ will also collect speciated $PM_{2.5}$ data in the Vernal area and assist the local health department in Park City with the collection of $PM_{2.5}$ data in that area.

DAQ actively participated in the Cache Valley $PM_{2.5}$ Air Quality Task Force to investigate particulate formation and deposition for Logan and the greater Cache Valley area. A cooperative air measurement campaign between DAQ and Utah State University is planned for January 2007. VOCs and nitric acid will be measured during several pollution episodes to further the development of a $PM_{2.5}$ chemistry model for the Cache Valley.

Community and Neighborhood Health

The Division of Air Quality, in conjunction with local health departments and local governments participated in air quality assessments, public meetings and health assessments in communities and neighborhoods throughout the state. These types of activities are usually in response to concerns raised by neighbors to industrial areas our other sources of air pollution. Community scale investigations include a review of the compliance status of the sources of air pollution including any emission testing and reporting required by applicable permits. In some cases further assessments include additional targeted air monitoring correlated with observations logged by neighboring residents and evaluation of health statistics by the Utah Department of Health. Findings are presented at public meetings and in cases where there is general interest; informational web pages are developed to provide a repository for information.

Community investigations included work in the following areas:

- Cottonwood Heights City (Gravel, Asphalt and Concrete operations at the mouth of Big Cottonwood Canyon)
- West Bountiful City (Trinity Highway Safety Products)
- North Salt Lake (Stericycle Medical Waste Incinerator and Refineries)
- Salt Lake City (Beck Street Sand and Gravel operations)
- Salt Lake City (Intermountain Vermiculite)
- Mapleton - Spanish Fork (Ensign Bickford Company)
- Washington County (Sand, Gravel and Construction activities and support for the Southern Utah Air Quality Task Force)

Utah Asthma Task Force

The Utah Asthma Task Force is a State of Utah initiative to develop a multi-agency task force to address the problem of asthma in Utah. The Task force convened in March of 2002 and released a State of Utah Asthma Plan in September of 2003. The Task Force meets quarterly and has a number of projects currently underway in addition to the programs initiated under the State Plan. The Task Force issued an updated of the Asthma Plan in 2007. The Risk Factors Action Group, one of several action groups created by the

Task force, is comprised of air quality experts, school officials and health care professionals. Work performed by the Risk Factors group has led to guidance for school districts in Cache County and along the Wasatch Front regarding when it would be recommended that accommodation be made for indoor recess on bad pollution days. It is anticipated that this guidance will help reduce confusion for students, parents, and schools on the appropriate action to take during high pollution events. The guidance is keyed to current air pollution levels reported on the Utah Division of Air Qualities web page.

In 2007, DAQ team up with the Utah Asthma Task Force, Utah Department of Health, the University of Utah, Utah State University, Cache Valley School District and Bear River Health Department in a study of indoor and outdoor air quality and their effects on children's respiratory health. The study tested students' lung function and monitored the air quality both inside and outside North Logan's Greenville Elementary. The results which are being submitted for peer-reviewed publication will provide scientific support for the recess guidance and help school administrators, students and parents make informed decisions on the risks and benefits of outdoor recess and exercise in relation to air pollution levels. It will also help indicate the degree of protection offered to compromised individuals in the general population on high pollution days.

Ozone

All areas of the state were officially designated as attainment areas for the 2004 8-hour ozone standard in 2007. To complete the transition to the 2004 8-hour ozone standard, the DAQ developed an ozone maintenance plan that demonstrates that emissions of precursors to ozone in Salt Lake/Davis County will continue to remain below 2002 levels through 2014. The plan was formally adopted by the Utah Air Quality Board on January 3, 2007 and submitted to the EPA for approval in March 2007. EPA is currently in the process of reviewing and probably revising the 2004 8-hour ozone standard. They are scheduled to issue a final rule making in March of 2008, at which time it is very possible that much of Utah will not be in attainment of the ozone standard.

Mercury

Although mercury is a naturally occurring metal, it is a neurotoxin that easily penetrates the brain and central nervous system. It can also become toxic when biochemical processes transform it into methylmercury. Methylmercury builds up in the food chain, accumulating in muscle tissue and putting people and wildlife at risk. The most common pathway to human exposure is consumption of contaminated food; most typically this contamination occurs in ocean fish.

The State has issued specific consumption advisories for both fish and waterfowl. Current information concerning these advisories may be found online at http://www.deq.utah.gov/Issues/Mercury/index.htm.

Mercury emissions are a global problem. The US presently accounts for only 3% of global mercury emissions and of the total deposition in the US in 2001, 84% was due to sources outside of the US and Canada. Much of the global contamination ends up in the oceans, where it finds its way into the food chain.

Coal fired power plants are the largest remaining source of mercury emissions in the US. Other sources include gold mines, hazardous waste incinerators, medical waste incinerators, and salvage operations that dispose of mercury switches in cars.

In order to address mercury emissions from coal-fired power plants, EPA issued the Clean Air Mercury Rule (CAMR) on May 18, 2005.

- It targets coal-fired electrical generating units (EGUs) that are larger that 25 MW.
- It sets nation-wide caps of 38 tons/yr in 2010 and 15 tons/yr in 2018 and beyond.
- Each state has been allocated a cap total for each phase of the program
- The rule allows states to adopt plans appropriate to their circumstances

To comply with the CAMR, Utah wrote a "Designated Facilities Plan" (as well as a number of other rules) in the Spring of 2007. Utah also implemented restrictions on mercury emissions from coal-fired EGUs that go beyond what is required by the CAMR.

DAQ also sits on the Statewide Mercury Work Group; a task force representing industry, government and advocacy groups that was organized to assess the extent of mercury contamination in Utah and set priorities for protecting the public.

Regional Haze SIP

When the Clean Air Act was reauthorized by Congress in 1990 it included provisions to improve visibility in large national parks and wilderness areas and established the Grand Canyon Visibility Transport Commission (GCVTC) to determine the causes of poor visibility at the Grand Canyon. The Commission determined that many kinds of sources contribute to visibility impairment and recommended strategies for improvement. These strategies were included in EPA's 1999 regulations as an option that western states could use in writing the visibility plans (SIPs) required of all states. Utah is one of five states that submitted plans in 2003 under this option. Key elements of the plan include using a regional cap (emission milestones) on SO_2 emissions and a backstop market trading program to be triggered if emissions exceed the emissions cap. Other components identify reduced emissions from prescribed fires and require tracking emissions and visibility conditions every five years through 2018. The most current 2005 Milestone Report prepared by the five states shows that actual SO_2 emissions in 2005 were 27 percent below the emissions cap for that year.

Utah is currently developing an update to the 2003 Regional Haze SIP. The update will be submitted to the Utah Air Quality Board in April of 2008. The 2003 SIP is available on the DAQ website; the update will make revisions in the 2003 backstop trading program for sulfur dioxide from large industrial sources as required by litigation completed in 2005. In addition, the update will assess the impact of Utah sources of emissions on protected areas (federal Class I areas) in adjacent states, and the impact of emission sources in adjacent states on Utah's protected areas, and will set forth appropriate control measures as needed. Finally, the SIP update will address the effects of NO_x and PM emissions from Utah's large industrial sources on protected areas in Utah and adjacent states. Technical work is ongoing with other western states and tribes that

are members of the Western Regional Air Partnership to prepare the plan for the 2008 update.
The 2003 Regional Haze SIP addressed emissions from a wide variety of sources, including vehicles and anthropogenic fire. Smoke emissions under the Regional Haze SIP are controlled with an Enhanced Smoke Management Plan which was updated January 16 2006. The purpose of the plan is to facilitate coordination between federal land managers and DAQ to mitigate the impact on public health, and visibility from prescribed and wild-land fires.

Greenhouse Gas Emissions and Climate Change

In 2006, Governor Huntsman appointed a Blue Ribbon Advisory Council (BRAC) on Climate Change to make recommendations on policies that could reduce the State's emissions of greenhouse gases and possible exposure to the effects of climate change. The BRAC and its subgroups were made up of representatives from the business community, environmental interests, clean energy advocates, consumer groups, government agencies, and other interests.

The Utah Division of Air Quality (DAQ) received a grant from the Hewlett Foundation to support the BRAC in the development of recommendations for the Governor. Throughout 2007, DAQ organized and staffed well over fifty BRAC-related meetings, including three educational symposia for BRAC members and other interested parties. This effort culminated in the completion of a report to the Governor in October 2007 that included 72 policy recommendations to address greenhouse gas emissions and climate change in Utah.

In fall 2007, DAQ began negotiations with the Duke University Nicholas Institute to obtain assistance with a detailed economic analysis of the BRAC policy recommendations. At the end of 2007, DAQ was continuing to work with the Institute with a goal of developing a preliminary report by May 2008.

In May 2007, the State of Utah joined the Western Climate Initiative (WCI), a group of western states and provinces that is working together to address greenhouse gas emissions. In 2007, DAQ provided staff support for the WCI and its five subcommittees. The WCI is working to develop a plan by August 2008 for the creation of a regional cap and trade program.

Transportation Conformity

Several Metropolitan Planning Organizations are responsible for developing, producing and adopting the Regional Transportation Plan (RTP), and Transportation Improvement Program (TIP) for the state of Utah; these include Cache, Dixie, Mountainland Association of Governments (MAG) and Wasatch Front Regional Council (WFRC). MPO's located in nonattainment and/or maintenance areas have the responsibility to ensure that the current RTP and TIP conform to the State of Utah Implementation Plan (SIP). The Federal Highway Administration and Federal Transit Administration review the conformity determinations along with the RTP and TIP in consultation with EPA to ensure that the relevant planning regulations have been adequately addressed.

During 2007, MAG and WFRC demonstrated conformity to the SIP. MAG established conformity (July 2007) for the 2030 RTP and 2006 TIP for: Provo\Orem City Carbon Monoxide maintenance area and Utah County PM_{10} non-attainment area. In 2008 MAG plans to amend the 2006 TIP.

WFRC established conformity (July 2007) for the 2030 RTP and 2008-2013 TIP for: Salt Lake City Carbon Monoxide maintenance area, Ogden City Carbon Monoxide maintenance area and PM_{10} non-attainment area, and Salt Lake County PM_{10} non-attainment area. In the summer of 2008, WFRC plans to amend the 2030 RTP and update the TIP (2009-2014) and demonstrate conformity to the SIP.

Ancillary Programs

Air quality programs and information outreach programs which have their roots in the air quality plans developed at DAQ include the following:

Utah Air Quality Public Notifcation

In response to the changes in $PM_{2.5}$ air quality standards and to improve the presentation of air quality information to the public DAQ has updated its air quality forecasting webpage. The web page now shows the air quality forecast for today and the next two days. The Air Monitoring Center (AMC) provides air pollution information based on daily air quality status. The AMC data is used to determine the relationship of existing pollutant concentrations to the National Ambient Air Quality Standards. There is a three tiered air quality alert system: Green, Yellow (alert days) and Red (Actions Days) that is used to implement winter and summer controls on the use of wood and coal burning stoves and fire places and motor vehicles. There are five health advisory categories: good, moderate, unhealthy advisories A and B, and very unhealthy. The AMC advisory is calculated for 5 major pollutants including ground-level ozone, particulate pollution (particulate matter), carbon monoxide, sulfur dioxide and nitrogen dioxide. The new index now also incorporates recommendations for actions to take on days when concentrations are in the red zone, to mitigate the effects of pollution for affected groups and recommendations for industry and citizens that help reduce pollution levels. The outreach program information consolidated in the three day forecast include: the Summer and Winter Control Programs and Choose Clean Air information.

Winter Control Program (red-burn / green-burn) – This program originated with the PM_{10} SIP. Although the program originally met with some skepticism, the measurable success has been outstanding, owing much to the voluntary cooperation of Wasatch Front residents. The program runs from November through early March of each year. In addition, to the burning restrictions, residents are encouraged to drive less and industry is encouraged to optimize operating conditions.

Summer Control Program (red, yellow and green) – These are announced whenever the probability of exceeding the ozone standard is forecast to be high. High temperature and stagnant air masses contribute to this probability. Residents are also encouraged to minimize driving when we approach the PM standards.

Choose Clean Air – An interactive source of information about ways individuals can help improve air quality by making smart choices in their personal lives. The Utah Department of Environmental Quality is also sponsoring an electronic mail server (Listserv). Subscribers will be automatically notified by e-mail when unhealthy air pollution levels are forecast for the Wasatch Front.

Vehicle Inspection/Maintenance Programs – Although not run directly by DAQ, the emissions portions of these programs were instituted because of past problems in attaining the federal health standards for several pollutants; most notably CO and ozone. Implementation of these programs was critical to attaining these standards, and their continued operation is necessary for the Wasatch Front to remain in attainment of these standards. These programs are administered by the county health departments.

Smoking Vehicles - Vehicles emitting excessive smoke contribute to poor air quality. To promote clean air, several local health departments operate smoking vehicle education and notification programs. People who spot a vehicle producing excessive smoke can report it through their respective county health department:

Cache County	435-792-6611
Davis County	801-546-8860
Salt Lake County	801-944-SMOG
Utah County	801-851-SMOG
Weber County	801-399-7140

Permitting Branch

The DAQ Permitting Branch is responsible for issuing permits to any new or modified stationary sources that emits air contaminants to insure that air quality is not significantly degraded. Permits are legally enforceable documents that specify what construction is allowed, what emission limits must be met, and often how the emissions source must be operated. Permit limits can be actual emissions or surrogate limits such as production rates, hours of operation, fuel consumption or a combination of limits. Opacity, the transparency of emission plumes, is also a common metric used to both limit and measure source emissions.

The branch issues two types of permits. New Source Review (NSR) permits, known as Approval Orders, are pre-construction permits for new and modified sources of air emissions. These are issued by the New Source Review Sections and have been required since 1969. The Operating Permits Section issues the Title V Operating Permits to the larger "major" stationary sources in the state; there are approximately 100 of these sources. Operating permits consolidate all air quality related requirements, from numerous federal air quality programs into a single regulatory document. The purpose of an operating permit is to clarify for the permit holder as well as DAQ compliance inspectors the wide range of requirements for any regulated source in one consolidated document.

In addition, the branch processes a number of smaller actions such as deminimus determinations for NSR, name changes, tax exemption certificates for pollution control equipment purchases, and soil aeration approvals.

New Source Review

Any new or modified source of air pollution in Utah is required to obtain an approval order (AO) before it is allowed to begin construction. For non-attainment areas that are not in compliance with NAAQS standards, NSR insures that air quality is not further degraded from the existing levels by new emission sources. While, in areas that are in compliance with NAAQS, NSR insures that new emissions do not significantly worsen air quality.

The application for an AO, called a notice of intent (NOI), is reviewed to make sure that the source will install state-of-the art emissions controls. For non-attainment areas state of the art technology is known as lowest achievable emissions rate (LAER). For areas in attainment of the NAAQS, state of the art controls are known as the best available control technology (BACT). Both LAER and BACT are case-by-case determinations of control technology for a specific source. BACT takes into account both the cost and environmental benefits of the control equipment while LAER technology takes into account only environmental benefits.

The general public and EPA are given an opportunity to review the proposed approval order before it is issued. The criteria indicating which sources must obtain an approval order are specified in the Utah Air Quality Rules. Potential applicants are encouraged to contact DAQ prior to submitting the necessary paperwork. In fiscal year 2007 (7/1/06 to 6/30/07) the NSR section completed or was working on 209 different projects. This included the completion of 152 AO's and 57 other projects.

Operating Permits

Congress created Title V of the Clean Air Act in 1990. This Title requires States to issue an operating permit to the larger or "major" sources of air pollution within the state. Utah developed and submitted a program in 1994 and received approval from the EPA in 1995. Operating permits are legally enforceable documents issued to air pollution sources after the source has begun to operate. As stated above, a primary purpose of the permit is to consolidate the applicable requirements from the many and varied air quality programs such as NSR, federal New Source Performance Standards (NSPS), National Emissions Standards for Hazardous Air Pollutants (NESHAP), and Maximum Available Control Technology (MACT). Like the approval orders, the general public is given an opportunity to review the draft operating permits before they are issued; in addition, the EPA has up to 45 days to review the proposed operating permit. The criteria indicating which sources must obtain an operating permit are specified in R307-415 of the Utah Administrative Code (UAC). As with the NSR permit or AOs, potential applicants are encouraged to contact DAQ prior to submitting the necessary paperwork.

Another significant objective of the Title V program is to shift the compliance liability from the regulating agency to the permitted source. Each year the source must certify that it is in compliance with all permit terms and conditions, or indicate non-compliance issues. False reports have criminal implications, beyond the civil liabilities of other violations. In addition, sources must report the results of monitoring at least every six months. Permit provisions for monitoring, record keeping and reporting are added or enhanced to assure compliance with the permit conditions and limits.

During 2007, the Operating Permits section issued permit modifications, coordinating extensively with the NSR Section. The Operating Permit has a life of only five years (as opposed to the AO that does not expire), and in 2007 the section issued several permit renewals. These renewal permits are complex, and care must be taken to ensure that new federal requirements for the Compliance Assurance Monitoring Rule (CAM) and any other new requirements (such as new MACT Standards) are included.

Air Standards Branch

The Major Source Compliance Section, Minor Source Compliance Section and the Air Toxics, Lead-Based Paint, Asbestos and Small Business Environmental Assistance (ATLAS) Sections are responsible for ensuring that all regulatory requirements are met. This is done through inspections, emission testing, and review of periodic reports from industry and enforcement.

Inspection and Enforcement

DAQ regulates more than 2,000 facilities within the state through approval orders, state rules and federal emission standards. Annual inspections encourage these facilities to maintain continuous compliance with the rules and permit conditions. Possible enforcement actions, which may lead to financial penalties or additional regulatory requirements, provide incentive for source operators to see that all regulatory, Approval Order and permit conditions are met. Inspectors in the Major/Minor Source Compliance Sections and the ATLAS Section average roughly 1,500 inspections per year. They also respond to about 250 complaints each year and frequently conduct drive-by observations of visible emissions.

A Compliance Advisory Notice (CAN) is typically sent to sources that appear to be out of compliance with state regulatory requirements and provides an opportunity for the Division and the regulated source to discuss the findings of the inspection. If the source is issued a CAN and responds with prompt compliance, a reduced penalty may be offered for expedient cooperation. Should enforcement actions become necessary, the DAQ may issue a Warning Letter, an Early Settlement Agreement or a Notice of Violation (NOV) with an Order to Comply. Warning Letters are usually reserved for first-time offenders with minor infractions. Early Settlement Agreements provide incentive for regulated sources to address these issues in a timely manner. NOVs are used whenever there are significant violations of the rules or permit conditions and the violator may be fined as much as $10,000 per day per violation. Most NOVs are resolved with a Settlement Agreement between the Executive Secretary and the regulated source which saves time and court costs. Settlements may also include Supplemental Environmental Projects (SEPs). SEPs are environmentally beneficial projects that the regulated source agrees to undertake as a way to offset some, or all, of the civil penalty.

Stack Test Audits

Regulated sources are required to conduct periodic stack tests in order to verify that their facilities are operating properly. Some of the largest sources maintain continuous emissions monitors that record real-time emission rates and concentrations around the

clock. In either case, DAQ personnel will audit the records and reports to ensure that the testing was done in accordance with EPA reference methods.

2007 Compliance Summary

The following is a summary of 2007 compliance activities:

Annual Inspections completed	326
Stack Test and Continuous Emission Monitor Audits	288
Complaint Responses	346
Miscellaneous Inspections (Includes VOC degreasers, transport inspections, paint booths and surveillance)	388
Total Inspections Conducted	1348
Penalty Assessments for 2007 Air Quality violations:	
Number of violations resolved	48
Penalties collected in cash	$794,967
Penalties credited for environmental enhancement	$ 86,484
Total penalties collected	$881,451

Air Toxics, Lead-Based Paint, Asbestos and Small Business Environmental Assistance Section (ATLAS)

The Air Toxics, Lead-Based Paint, Asbestos and Small Business Environmental Assistance Section (ATLAS), formerly known as the Hazardous Air Pollutants Section, determines compliance with specific regulations involving asbestos, lead-based paint and area sources of air pollutants that are not required to have a Division Approval Order but are subject to Maximum Achievable Control Technology (MACT), Title 40 Code of Federal Regulations (40 CFR) Part 63 (R307-214-2) requirements.

The following programs are the responsibility of the ATLAS Section:

National Emission Standards for Area Source Categories – Sources that are required to comply with 40 CFR Part 63 Subpart M National Perchloroethylene Air Emission Standards for Dry Cleaning Facilities MACT and the 40 CFR Part 63 Subpart N National Emission Standards for Chromium Emissions From Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks MACT that are not required to have Division Approval Order are inspected by the ATLAS Section.

Lead-Based Paint - Toxic Substances Control Act (TSCA) Title IV, 40 CFR Part 745 (R307-840). Under this program, ATLAS deals with the accreditation of training programs, certification of individuals and firms, work practices for lead-based paint activities, and lead-based paint outreach activities.

Asbestos in Schools – TSCA Title II Asbestos Hazard Emergency Response Act (AHERA), 40 CFR Part 763 (R307-801). Under this program, ATLAS deals with the

approval of training providers, certification of individuals and companies, inspections of school buildings and inspections of asbestos abatement in schools.

Asbestos NESHAP and State asbestos work practices - 40 CFR Part 61, Subpart M, R307-801. Under this program, ATLAS deals with the certification of individuals and companies, review of asbestos project notifications, review of demolition notifications for structures, review of alternate work practices, inspection of asbestos abatement projects and demolition of structures and asbestos outreach activities.

2007 ATLAS Activity Summary

The following is a summary of 2007 ATLAS activities:

Inspections completed	354
Asbestos Notifications processed	1,416
Asbestos Certifications Company/Individual	121/995
Asbestos phone calls	5,109
Lead-Based Paint Notifications processed	14
Lead-Based Paint Certifications Company/Individual	42/84
Lead-Based Paint phone calls	1,156

Penalty Assessments for 2007 ATLAS violations:	
Number of violations resolved	82
Total penalties collected	$14,972.63

The Utah Division of Air Quality (Division) provides access to all plans, rules, and permits currently open for public comment, lists training workshops available to assist industry understand permitting and compliance issues, provides Air Quality Board minutes and information and also provides access to all Air Quality Permitting and Compliance forms. Citizens in the State of Utah and sources of air pollution are assisted by Division staff based on assigned responsibilities. Each year, thousands of businesses are assisted, questions are answered and tasks completed through the assistance of knowledgeable Division staff.

Small Business Environmental Assistance Program

The Small Business Environmental Assistance Program (SBEAP) helps small businesses understand and comply with state air quality rules. The SBEAP provides "plain language" educational information to help small sources learn about the many air quality requirements and the SBEAP also provides on-site assistance with process evaluation, compliance assistance and pollution prevention techniques.

The SBEAP works with and incorporates advice of a Small Business Ombudsman and a Small Business Compliance Advisory Panel (CAP). The CAP is appointed by the Governor and the Legislature and is required by federal Clean Air Act. The CAP provides feedback to the SBEAP regarding program effectiveness. SBEAP services are

designed to provide education to small businesses outside of the regulatory environment. All SBEAP services are free of charge. A toll-free telephone hotline number (1-800-270-4440) provides access to SBEAP services 24 hours a day/seven days a week.

2007 SBEAP Activity Summary

The following is a summary of 2007 SBEAP activities:

Phone Calls	208
Email	138
Site Visits	89
Mailed Items	257
Workshops	2

Appendix 1 – Acronyms

AO – Approval Order
AQI – Air Quality Index
AHERA – Asbestos Hazard Emergency Response Act
ATLAS – Air Toxics, Lead-Based Paint, Asbestos and Small Business Environmental Assistance Section
BACT – Best Available Control Technology
BEIS – Biogenic Emissions Inventory System
CAA – Clean Air Act
CAM – Compliance Assurance Monitoring
CAN – Compliance Advance Notice
CAP – Compliance Advisory Panel
CAST – Center for Automotive Science and Technology
CFR – Code of Federal Regulations
CO – Carbon Monoxide
Criteria Pollutants - Pollutants for which EPA sets standards to protect public health
DAQ – Division of Air Quality
DEQ – Department of Environmental Quality
EPA – Environmental Protection Agency
FDMS – Filter Dynamics Monitor System
GCVTC – Grand Canyon Visibility Transport Commission
HAPs – Hazardous Air Pollutants
IDEQ – Idaho Department of Environmental Quality
KUCC – Kennecott Utah Copper Corporation
MACT – Maximum Available Control Technology
MPO – Metropolitan Planning Organization
$\mu g/m^3$ – Micrograms per cubic meter
Micron – One millionth of a meter
NAAQS – National Ambient Air Quality Standards
NESHAP – National Emissions Standards for Hazardous Air Pollutants
NH_3 – Ammonia
NOI – Notice of Intent
NO_2 – Nitrogen Dioxide
NOV – Notice of Violation
NOx – Nitrogen Oxides
NSPS – New Source Performance Standard
NSR – New Source Review
O_3 - Ozone
PM – Particulate Matter
PM_{10} – Particulate matter smaller than 10 microns in diameter
$PM_{2.5}$ – Particulate matter smaller than 2.5 microns in diameter
ppm – Parts per million
SBEAP – Small Business Environmental Assistance Program
SCAN – Source Compliance Action Notice
SIPs – State Implementation Plan
SO_2 – Sulfur Dioxide
SOx – Sulfur Oxides
TSCA – Toxic Substances Control Act
VOC – Volatile Organic Compounds

UAC – Utah Administrative Code
USU – Utah State University

Appendix 2 – Web-page Links

Air Monitoring Center: http://www.airmonitoring.utah.gov/

Air Quality Board: http://www.airquality.utah.gov/Air-Quality-Board/Air-Quality-Board-Members.htm

Air Quality Home Page: http://www.airquality.utah.gov/

Air Quality Rules: http://www.airquality.utah.gov/Planning/Rules/index.htm

Cache Valley $PM_{2.5}$: http://www.airquality.utah.gov/Public-Interest/Current-Issues/cache-valley-PM/index.htm

Climate Change: http://www.deq.utah.gov/Issues/Climate_Change/index.htm

Compliance Section: http://www.airquality.utah.gov/Compliance/index.htm

Mercury: http://www.deq.utah.gov/Issues/Mercury/index.htm

Permitting Section: http://www.airquality.utah.gov/Permits/index.htm

Planning Section: http://www.airquality.utah.gov/Planning/index.htm

Small Business Assistance:
http://www.airquality.utah.gov/Permits/Small_Business_Assistance_Program.htm

Regional Haze: http://www.airquality.utah.gov/Public-Interest/Current-Issues/Regionalhazesip/index.htm