

2003 Silicon Valley Environmental Index



Air Quality

Population Growth

Resource Use

Species & Habitats

Water Quality

Hazardous Materials

TAKING THE
PULSE OF
SILICON
VALLEY'S
ENVIRONMENT

Published by the

**SILICON VALLEY
ENVIRONMENTAL PARTNERSHIP**

www.svep.org

An Initiative launched by

JOINT VENTURE: SILICON VALLEY NETWORK

SVEP defines Silicon Valley as Santa Clara County, plus adjacent parts of San Mateo, Alameda, and Santa Cruz Counties in Northern California. Specifically, the definition includes: all of Santa Clara County; San Mateo County south of Highway 92; Fremont, Newark, and Union City in Alameda County; and Scotts Valley in Santa Cruz County. With a population of more than 2.3 million people, this region has more residents than 18 of the U.S. states. The indicators in this report reflect this definition of Silicon Valley, except where specifically noted as Santa Clara County or otherwise.

**SILICON VALLEY
ENVIRONMENTAL PARTNERSHIP**

The Silicon Valley Environmental Partnership (SVEP) is an Initiative launched by Joint Venture: Silicon Valley Network. A 501(c)(3) non-profit organization established in 1993, SVEP promotes environmentally-sound business and community practices through collaboration and education. Our vision for Silicon Valley is a sustainable community with a vibrant economy and a healthy environment. We focus on efforts that bridge the traditional "tension" between the environment and the economy, demonstrating that both goals must be achieved in a mutually supportive fashion to move our community toward sustainable development.

FOREWORD

The natural environment is the physical basis on which all life depends. Without it, the enterprise of human civilization cannot endure, and all forms of life are ultimately at risk. We are the stewards of this environment, held in trust for our children and future generations.

The concept of sustainability teaches us that a healthy natural environment must co-exist with a well-designed economy. Sustainability and its promise sparked the creation of the Silicon Valley Environmental Indicators Project.

Sophisticated environmental protection laws in the U.S. have resulted in significant – though uneven – progress in protecting the natural environment. But much work remains to be done. This indicators report aims to document the progress that Silicon Valley has made toward restoring a healthy natural environment, and charting those areas where declines in our natural environment must be reversed if we are to aspire toward a sustainable community. In this way, we can identify and prioritize the actions we can each take – as citizens, public agencies, and corporate organizations – to reverse environmental decline and ultimately bring about environmental restoration.

The "environmental indicators" in this report are simply ways of displaying the direction in which a given environmental condition, such as water use or air quality, in the Silicon Valley is currently heading. This report shows that some of these indicators are improving, while others are in decline.

These indicators can be a tool for better understanding the quality of our environment and tracking changes over time. We hope that this brief report will encourage policymakers, citizens, and businesses to take action to improve the quality of our environment. Our children and grandchildren deserve no less.

Signed:



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This report, along with the corresponding data, are posted on our website at www.svep.org. Other regions wishing to create their own environmental indicators can find instructions on how to replicate these indicators on our website.

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WE DEPEND ON THE ENVIRONMENT...

for the food we eat, the air we breathe, the water we drink, and for the clothes, shelter, and other necessities of life. We cannot live without the resources that nature provides.

People affect the environment in two primary ways: using nature's resources and emitting waste and pollution. When the human population was small, nature could absorb and adapt to our activities. Now that our numbers are much larger, we must take great care to reduce our impact and preserve a healthy environment for future generations.

WHY DID WE WRITE THIS REPORT?

The purpose of this indicators report is to increase the understanding of environmental issues among community leaders and decision-makers, residents, and workers in Silicon Valley. We aim to present objective, fact-based information about environmental trends in the Valley to foster more informed decision-making.

PEOPLE NEED BETTER INFORMATION

Studies show that the majority of Americans are supportive of environmental protection, but that two-thirds of the public lack simple knowledge of key environmental concerns.

This gap in understanding makes it more difficult for people to know what they can do to protect the environment and to support policies addressing tough environmental issues.

A HEALTHY ENVIRONMENT IS KEY TO A SUSTAINABLE COMMUNITY

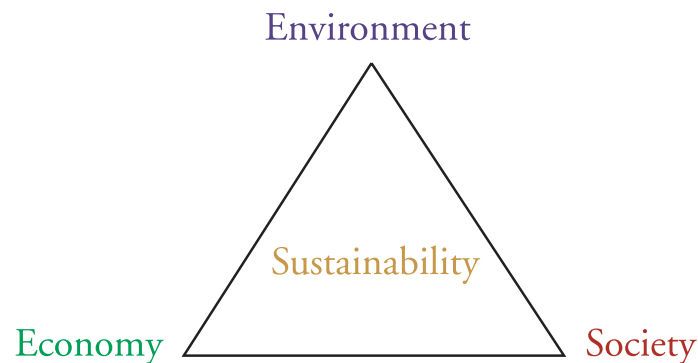
Long-term sustainability means that we meet our present needs without compromising the ability of future generations to meet their needs. This will require that we integrate economic prosperity, environmental protection, and social equity and well-being into every

decision we make. All three goals must be achieved to ensure that future generations have the same opportunities to live and prosper that this generation enjoys. Our economic vitality and quality of life are dependent on a healthy, well-functioning environment.

CREATING A SUSTAINABLE FUTURE

Finding solutions to environmental problems will require the kind of innovations and breakthroughs for which Silicon Valley is known. Along with an entrepreneurial spirit and scientific expertise, the people of Silicon Valley can

take a leadership role in protecting our planet and safeguarding our children's future. By making sound lifestyle choices and supporting effective policies, we can move toward a sustainable future.



NATIONAL SURVEY

- Sixty-five percent of Americans believe the economy and the environment can go hand-in-hand.
- If a compromise cannot be reached, 69 percent would choose environmental protection over economic development.
- High levels of environmental knowledge enable people to see more opportunities for compromises and solutions.

Source: National Environmental Education and Training Foundation

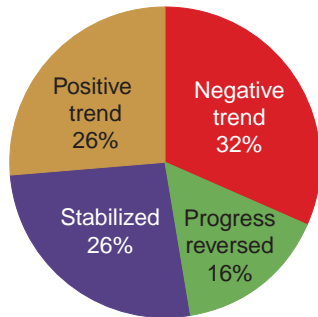


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HIGHLIGHTS

While slightly more than half of the indicators show a positive or stabilized trend, almost half show a negative trend or reversal of a positive trend.



How Do These Findings Compare With Our 1999 Index Report?

While progress has been mixed, overall environmental trends have improved somewhat since we published the 1999 Silicon Valley Environmental Index. Almost half of the indicators in this report show a negative trend or reversal of a positive trend. However, this is an improvement from the 1999 Index Report when two-thirds of the indicators showed such trends.

WHICH TRENDS STAYED THE SAME

Gasoline and other energy uses—and the associated carbon emissions—have continued to increase, as have population growth, endangered species listings, and loss of burrowing owl habitats.

In terms of positive trends, drinking water continued to meet standards, and leaking underground fuel tanks continued to decline.

WHICH TRENDS CHANGED

Many of the changes from the 1999 report are positive. A landmark deal was struck that provides hope in restoring much of the Valley's diminished tidal marshes, habitat that is critical to many endangered species. Hazardous waste generation has declined in the past few years, and toxic releases have stabilized. Vehicle miles traveled decreased slightly after a three-year climb. Water use, detections of MTBE in water sources, garbage disposal, and solo driving (i.e., driving in single-occupancy vehicles) have stabilized. In our previous report, these four indicators showed negative trends or progress had reversed. Some of the changes are negative. South Bay populations of the endangered California clapper rail have

declined in the past few years. Use of the most toxic pesticides is increasing, after falling for several years. More of the Valley's land is being paved over for development.

The following four indicators have been dropped from our Index due to insufficient data or lack of updated information: watershed health, non-native species, emissions of ozone-depleting chemicals, and indoor air quality.

Also, new with this publishing, the Silicon Valley Environmental Partnership has posted information on our website, www.svep.org, listing actions that individuals and organizations can take to improve performance on each indicator.

IMPROVEMENT NEEDED

Negative Trend

- Energy Use (p. 12)
- Land Use (p. 13)
- Population (p. 17)
- Carbon Emissions (p. 20)
- Endangered Species (p. 24)
- Burrowing Owl (p. 28)

Progress Reversed

- Air Quality (p. 18)
- Clapper Rail (p. 27)
- Pesticides (p. 30)

PROGRESS SHOWN, MORE NEEDED

Stabilized

- Water Use (p. 15)
- Garbage (p. 16)
- Commute Modes (p. 19)
- MTBE (p. 23)
- Toxic Releases (p. 29)

Positive Trend

- Vehicle Miles Traveled (p. 19)
- Drinking Water (p. 22)
- Fuel Leaks (p. 23)
- Wetlands (p. 26)
- Hazardous Waste (p. 31)

KEY CHALLENGES TO ATTAINING LONG-TERM SUSTAINABILITY INCLUDE REDUCING FOSSIL FUEL USE, STABILIZING POPULATION GROWTH, AND PROTECTING SENSITIVE SPECIES AND THEIR HABITATS.

Over the past two decades, Silicon Valley's residents, workers, and leaders have demonstrated that we can make a difference in protecting the environment when we choose to do so. We've made significant strides in improving air quality, reducing consumption and waste, cutting releases of some toxic chemicals, and protecting our treasured open spaces.

However, if Silicon Valley is going to move toward long-term sustainability, we will need to address persistent challenges including increased fossil fuel use, population growth, and protection of sensitive species and their habitats.

GROWING USE OF FOSSIL FUELS

Burning fossil fuels such as gasoline, oil, natural gas, and coal produces air pollution and creates carbon dioxide, a significant "greenhouse gas" contributor. In Silicon Valley, vehicles are responsible for more than half of our air pollution and carbon emissions.

Our energy use (including gasoline consumption) increased 28 percent from 1986 to 2000, and carbon emissions climbed 41 percent. The largest contributor was a 46 percent (21 percent per capita) increase in gasoline use. More than three-quarters of the Valley's residents and workers commute alone, and vehicle miles traveled hit a record high of over 8.1 billion in 1999.

The Valley's continued reliance on carbon-emitting fossil fuels does not portend well for our ability to stave off global warming. Trends over the past 400,000 years reveal a strong correlation between average carbon dioxide concentrations and global average temperature. Current carbon dioxide

concentrations are well above historical averages, and continue to escalate rapidly.

Two pieces of legislation recently signed into law in California may help to address this serious issue. AB 1493 requires the California Air Resources Board to adopt regulations to reduce the emissions of greenhouse gases by motor vehicles. SB 1078 requires electricity retailers to increase procurement of electricity from renewable energy sources by at least one percent of retail sales per year until their portfolio of renewable energy increases to 20 percent by 2017.

Another cause for optimism is the greater availability of fuel-efficient hybrid vehicles and, eventually, the emergence of pollution-free fuel-cell technology. These provide the Valley's residents, workers, companies, and other organizations with fuel-efficient and renewable options that, if taken, could begin to reverse negative trends.



HIGHLIGHTS

POPULATION GROWTH

When people think of population growth in Silicon Valley, they usually assume that most of the growth is due to migration of new residents from other areas. This isn't the case. Santa Clara County's population has grown by nearly one-third in two decades, and almost all (89 percent) of this growth is driven by natural increases (also known as "births in excess of deaths"). That means, on average, people are having more than the "replacement" rate of two children per couple.

This creates a significant challenge to our long-term sustainability because each person has a large impact on the environment.

While environmental impacts associated with each Silicon Valley resident are generally improving or remaining stable, the more of us there are, the greater our cumulative impact on the environment.

PER PERSON IN SANTA CLARA COUNTY (2000)

Solid waste	1,933 pounds per year
Carbon dioxide	18,367 pounds per year emissions (a greenhouse gas)
Energy use	1,010 equivalent gallons of gasoline per year
Water use	71,540 gallons per year

SPECIES AND HABITAT PROTECTION

Twenty-two percent of the land in Santa Clara County was urban in 2000, up seven percent since 1984. While we continue to lose land to development, we are using urban land more efficiently, with the density of urban land use increasing from 8.1 people per acre of urban land in 1984 to 9.3 people per acre in 2000. We are also making strides in protecting open space, with 26 percent of Silicon Valley and its perimeter permanently protected as open space in 2002.

A recent highlight in the effort to protect Silicon Valley species and habitat was the landmark deal to purchase 16,500 acres of salt ponds from Cargill Salt and restore them to wildlife habitat, the biggest wetlands restoration effort ever undertaken on the West Coast. While the restoration will take decades, it will help reverse drastic reductions of tidal marshes and provide critical habitat for some of the Valley's most endangered species, such as the California

clapper rail and salt marsh harvest mouse. In Santa Clara County, 158 rare species exist or may be affected by projects in the County, and 11 rare plant species are locally extinct.

If we are to protect species and habitat we must also keep pollutants out of our waterways. Silicon Valley organizations were doing a good job at reducing their use of the most toxic pesticides until recently. Use of the most toxic pesticides has been trending downward since 1992, but increased 12 percent in 2000 as compared to 1997. To move toward a more sustainable future, we need to find less toxic ways of controlling pests around our buildings, agricultural lands, and homes. Choosing non-toxic pest management techniques and organic food are ways that people can protect our waterways from harmful pesticides.

How You Can Use This Information

LOCAL GOVERNMENTS

- Help identify priorities, facilitate long-term visioning, allocate resources, manage local environmental issues, and track your City's environmental performance.
- Evaluate land-use policies and regulatory frameworks. Consider environmental conditions during updates of your General Plan.
- Enhance accountability of agencies or departments with primary responsibility for an area of environmental performance.

COMMUNITY ORGANIZATIONS

- Communicate to the public and decision-makers about local environmental trends.
- Advance the goal of environmental sustainability.
- Hold organizations and individuals accountable for improved environmental performance.

BUSINESSES

- Understand how your company's actions impact the local environment.
- Benchmark your company's progress against regional performance.
- Pursue operational improvements that can benefit the environment and your business, including reduced costs and liabilities, enhanced community relations, and market access.

INDIVIDUALS

- Consider how your day-to-day activities impact the environment.
- Make more informed purchasing decisions, voting choices, and everyday actions.
- Better understand environmental conditions in your community.

EDUCATORS AND THE MEDIA

- Integrate the concepts of environmental sustainability into school curricula.
- Include coverage of environmental indicators in the news.

SUPPORT IMPROVED INFORMATION ABOUT LOCAL ENVIRONMENTAL CONDITIONS!

Your tax-deductible contribution will help us to publicize this information and update it in the future. Please make your contribution payable to the Silicon Valley Environmental Partnership, and send it to:

SILICON VALLEY ENVIRONMENTAL PARTNERSHIP
C/O MARKETPOINT
27544 CANYON ROAD
LOS ALTOS, CA 94022
THANK YOU!!

Silicon Valley Environmental Partnership is a 501(c)(3) non-profit organization. Contributions are tax-deductible.

RESOURCE USE

ENERGY USE JUMPS 28 PERCENT IN 15 YEARS

WHY IS THIS IMPORTANT?

There are no environmentally-benign energy sources, except energy conservation. Burning fossil fuels such as coal, oil, gasoline and natural gas produces air pollution and creates carbon dioxide, a significant "greenhouse gas" contributor. Nuclear energy creates long-lasting radioactive waste as a byproduct, and hydroelectric energy results in the destruction

of habitat. Although the environmental impact is substantially less than those above, even renewable energy sources, such as wind and solar power, have impacts.

Inherent in the concept of sustainability is the conservation and more efficient use of energy, and a shift from higher to lower environmental impact energy sources.

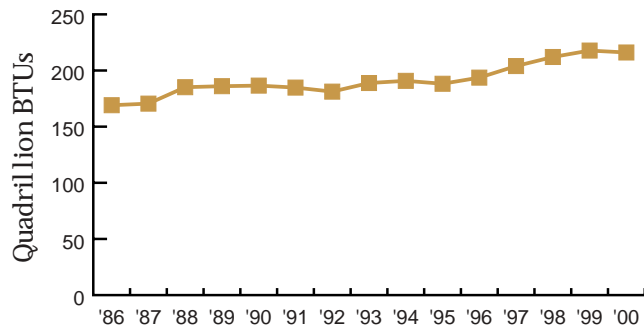
HOW ARE WE DOING?

Total energy use in Santa Clara County climbed 28 percent and per capita energy use climbed six percent between 1986 and 2000. The largest contributor was gasoline use—up 46 percent (21 percent per capita). On average each person in the County used 521 gallons of gasoline in 2000. Electricity use rose 40 percent (17 percent per capita). These increases were offset somewhat by an eight percent (23 percent per capita) drop in natural gas use. The increasing use of

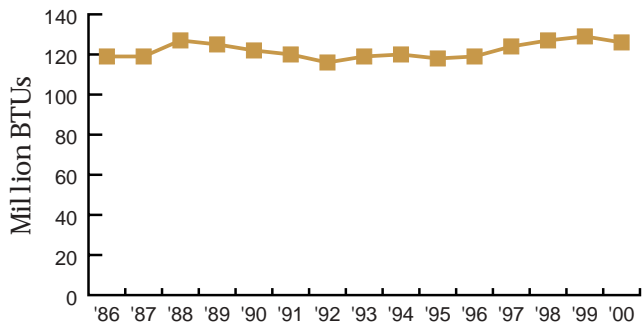
electricity and gasoline does not bode well if Silicon Valley is to become more sustainable. These trends need to change.

Although updated information was not yet available at the time of this report, Joint Venture's 2002 Index of Silicon Valley estimates that electricity consumption in Santa Clara and San Mateo Counties decreased five percent from 2000 to 2001.

Energy Use in Santa Clara County
(Electricity, Natural Gas & Gasoline)



Per Capita Energy Use in Santa Clara County
(Electricity, Natural Gas & Gasoline)



Data Sources: California Energy Commission
and California Department of Transportation

URBAN LAND USE CONTINUES TO EXPAND

WHY IS THIS IMPORTANT?

The way humans use land has a profound impact on ecosystems and species as well as our ability to grow our food locally, preserve open space, and protect water supplies. Modern forms of urban development such as roads, parking lots, and buildings destroy habitats and farmland and induce urban runoff pollution. The "sprawl" associated with urban development also harms our quality of life by degrading open space, increasing commute times, air pollution, and the use of petroleum fuels, and decreasing the amount of time spent in one's home community.

Moving toward a more sustainable future will entail preserving open space and protecting and restoring natural habitats and water resources. Reducing impacts to land requires better planning to locate houses and jobs near one another, protecting more open space, and shortening commute times and distances.

We can also incorporate alternative forms of development which reduce impervious surfaces, reduce surface water and groundwater pollution, and preserve natural features of the land.

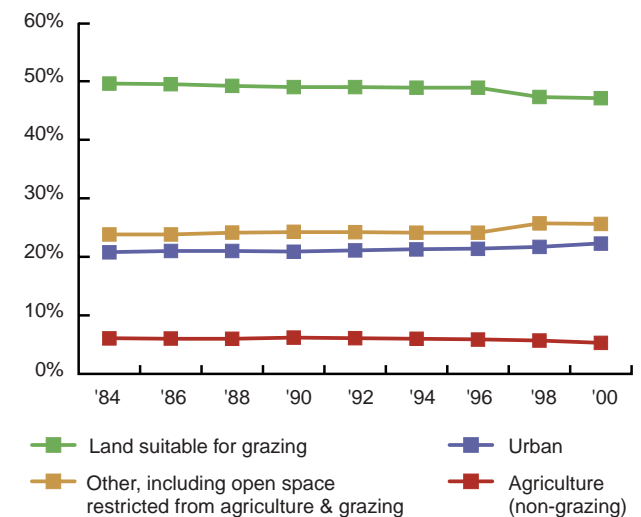
HOW ARE WE DOING?

Historically our region was rich in a variety of habitat types and in plant and animal life. With our fertile soil and diverse micro-climates, much of the land was converted to agricultural uses after the Gold Rush. At the time, the Santa Clara Valley was known as the "Valley of Hearts Delight" for its cloak of fragrant and beautiful orchards. Since then, much of the farmland has been developed for urban uses. Santa Clara County is on the California Department of Conservation's top ten urbanization list, which ranks counties based on the amount of agricultural land lost to development.

Twenty-two percent of the land in Santa Clara County is urban, up seven percent since 1984. However, we are using urban land more efficiently, with the density of urban land use increasing from 8.1 people per acre of urban land in 1984 to 9.3 people per acre in 2000.

Land suitable for grazing and agriculture continue to decrease, down to 47 percent and five percent respectively of total land use. About a quarter of our land is used for other purposes, including open space that is restricted from agriculture and grazing. In 2002, 26 percent of Silicon Valley and its perimeter was permanently protected open space.

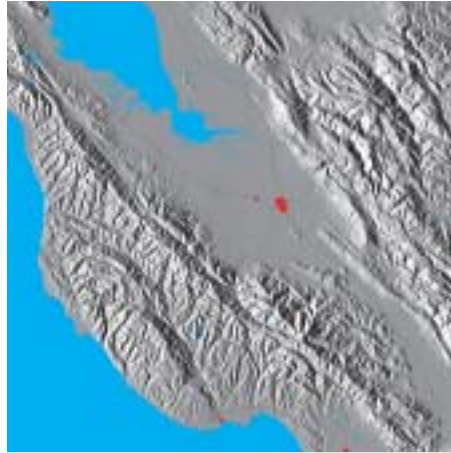
Land Use in Santa Clara County



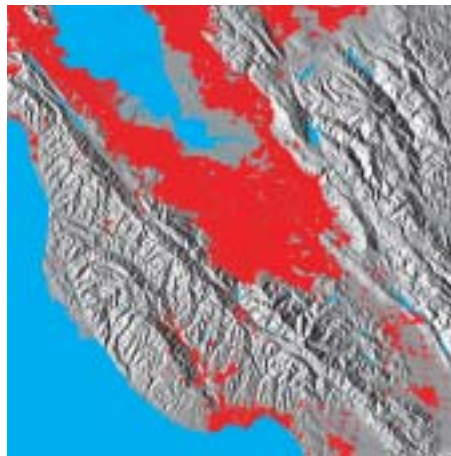
Data Source: California Department of Conservation, Division of Land Resource Protection, Farmland Mapping and Monitoring Program

RESOURCE USE

South Bay Sprawl: 1850-1996



1850 - Small outposts around San Francisco Bay
Map source: U.S. Geological Survey



1996 - Explosive growth fills the central flats
Map source: U.S. Geological Survey

Santa Clara County is on the California Department of Conservation's top ten urbanization list, which ranks counties based on the amount of agricultural land lost to development.

Protected Open Space Lands San Francisco Bay Area



WATER USE STEADIES; RECYCLED WATER AND CONSERVATION EXTEND VALLEY'S RESOURCES

WHY IS THIS IMPORTANT?

In 2001, California's energy crisis again underscored our region's vulnerability to shortages of essential resources. As population growth and economic expansion place increasing demands on the State's limited water supplies, securing sufficient water resources may be our greatest long-term challenge.

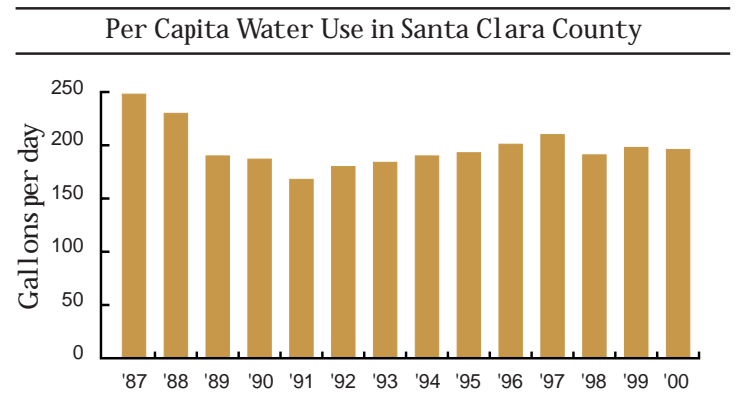
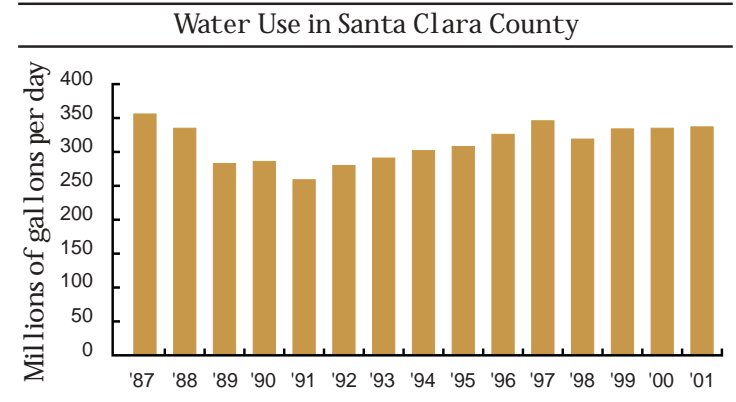
In Santa Clara County, more than half of the water supply is imported from other parts of the state. Moving toward sustainability

will entail using and reusing water efficiently so water supplies are not depleted faster than they can be restored by nature. The challenge is to use the water we have more efficiently, to rethink our needs and wants, and to identify alternative supplies of this vital resource. Recycled water will increasingly play an important role in the efficient use of this limited resource.

HOW ARE WE DOING?

Responding to drought conditions in 1991, Santa Clara County residents used 25 percent less water compared to pre-drought years. Since then, there has been a general upward trend in water consumption, up 34 percent from 1991 to 1997. Following unusually wet weather in 1998 (when water use dipped by eight percent) consumption has continued this upward trend, although at a more modest pace. Despite these increases, water use has remained below pre-drought usage due, in part, to ongoing water conservation programs implemented by the Santa Clara Valley Water District and its water retailers.

In 2001, Santa Clara County residents and businesses used more than 337 million gallons of water per day, higher than all but two years since 1987. In 2001, which was a dry year, demand increased and supply decreased. Recycled water use accounted for about 2.1 percent of the total use in 2001, up 33 percent from the previous year. In Santa Clara County, residents account for more than half of water use, the majority of which is used to water lawns and gardens and for toilets. Almost one-third of the County's water use is for businesses and industry.

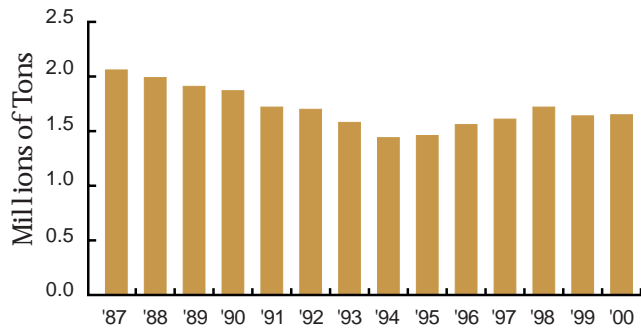


Data Source: Santa Clara Valley Water District

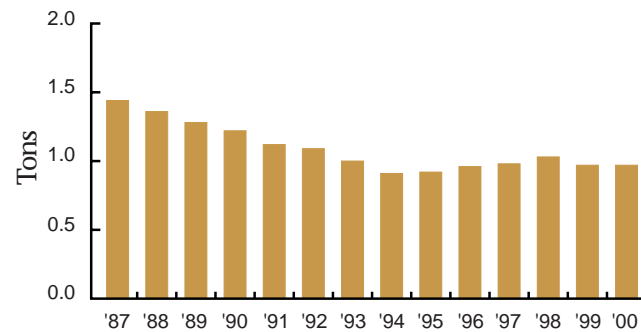
RESOURCE USE

WASTE DISPOSAL LEVELS OFF

Tons of Solid Waste Disposed from Santa Clara County



Tons of Solid Waste Disposed Per Capita



Data Source: Santa Clara County Integrated Waste Management Program. See www.ReduceWaste.org for waste reduction tips.

WHY IS THIS IMPORTANT?

Disposed products were originally made from raw materials, which were extracted from natural resources. Moving toward a more sustainable future requires that we use natural resources no faster than they can be renewed, and to generate waste no faster than it can be naturally broken down and assimilated by nature.

In 1989, California passed the Integrated Waste Management Act (AB 939), which required municipalities to cut waste in half by the year 2000. Achieving this goal entails reducing consumption, reusing materials, recycling, composting, and buying products made from recycled materials.

HOW ARE WE DOING?

Santa Clara County has reduced its annual disposal by 20 percent since 1987, sending about 411,300 fewer tons to the landfill than 13 years ago. However, total disposal has increased 13 percent since 1994 due to population growth and increased economic activity. In 2000, almost one ton of solid waste was disposed for each person in Santa Clara County, down from 1.44 tons per person in 1987.

Even though total disposal has dropped by 20 percent since 1987, the County is

estimated to be diverting 53-58 percent of its waste for purposes of measuring progress toward the state law requiring a 50 percent cut in waste. This means that 53-58 percent more waste would have been disposed in 2000 (taking into account population growth and economic expansion) without the reductions achieved by local waste prevention and recycling programs.

POPULATION GROWTH CONTINUES; 89 PERCENT DUE TO BIRTHS OUTPACING DEATHS

WHY IS THIS IMPORTANT?

Population, the environment, and quality of life are closely linked. The degree of environmental impact caused by a society depends on its population size, per capita consumption, and the efficiency of resource use. Since Americans have high consumption rates (Americans comprise only four percent of the world's population but use 25 percent of its resources), our environmental impacts per person are large.

Population growth increases human demands on land and other resources. In order to offset the environmental impacts associated with a growing population, it is necessary to use resources more efficiently and to reduce consumption per person. Long-term sustainability requires population stabilization, which results when the average number of children born per female remains about 2.10 for an extended period of time.

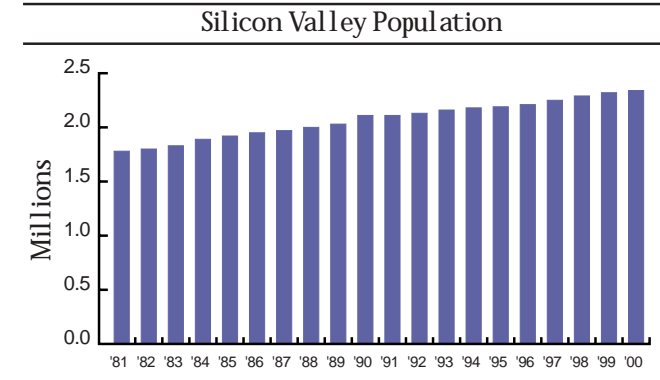
HOW ARE WE DOING?

Santa Clara County began last century with a human population of about 60,200. One hundred years later, our County's population has increased to 1.7 million people. The total population of Silicon Valley is more than 2.3 million.

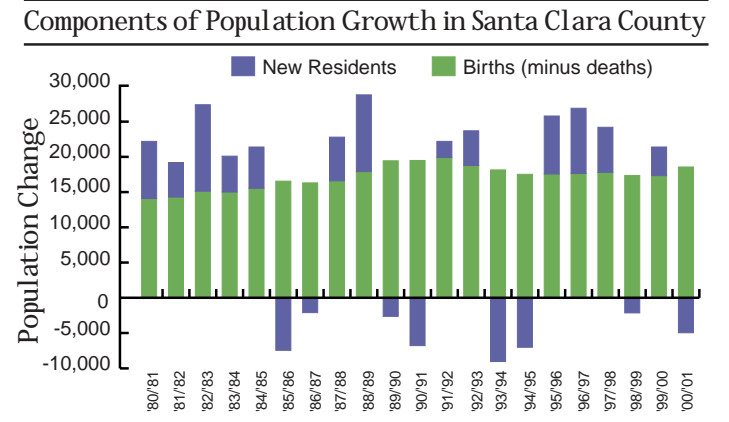
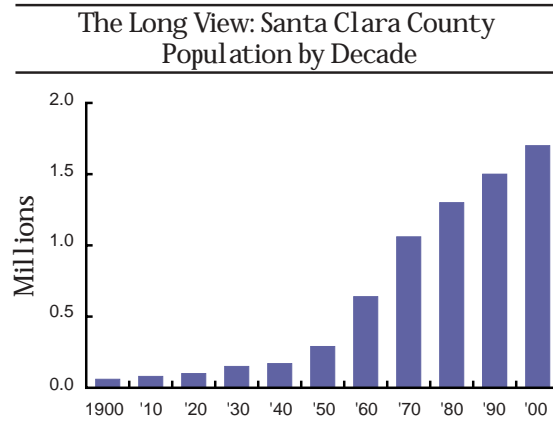
Although the County's fertility rate is only slightly higher than the "replacement rate" of 2.10, small increases in population growth rates translate over time into large numbers of additional people.

The County's population has increased by almost one-third since 1980. Eighty-nine percent of this growth is driven by "natural increases," or the excess of births over deaths. The remaining 11 percent of the County's population growth is due to an inflow of new residents.

The average number of children born per female (the fertility rate) in Santa Clara County has ranged from approximately 2.11–2.26 since 1990, which is higher than 2.10—the rate required for long-term population stabilization (not accounting for population changes caused from migration).



Data Source: California Department of Finance, Demographic Research Unit



AIR QUALITY

PARTICULATES THREATEN RECENT IMPROVEMENTS TO AIR QUALITY

WHY IS THIS IMPORTANT?

Life is dependent on air. Each one of us breathes about 3,400 gallons of air every day. Yet our air is contaminated daily by human activities such as driving cars, burning fossil fuels, using chemicals, etc. Reduced air quality results in the haze that obscures our views and poses both chronic and acute problems to at-risk segments of our community.

The number of days Silicon Valley air exceeds ozone and particulate matter standards are indicators of air contamination. Ground-level

ozone is the main component of smog and is created when volatile organic compounds (VOCs) mix with nitrogen oxides in the presence of sunlight—especially on hot, summer days. Vehicles are the primary source of VOCs and nitrogen oxides. Particulate matter of 10 microns or less (PM10) – dust, smoke, and soot—is generated primarily from roads, grading, and construction. Other sources of PM10 include vehicles, parking lots, wood-burning, and industrial and agricultural processes.

HOW ARE WE DOING?

Overall, Silicon Valley's air quality has improved notably since the 1980s. However, we must guard against recent increases in bad air days.

Silicon Valley exceeded the state standard for ozone nine days in 2001, up from just five days in 2000. However, the Federal standard was not exceeded on any day in either 2000 or 2001, an achievement which had only been matched once previously, in 1997.

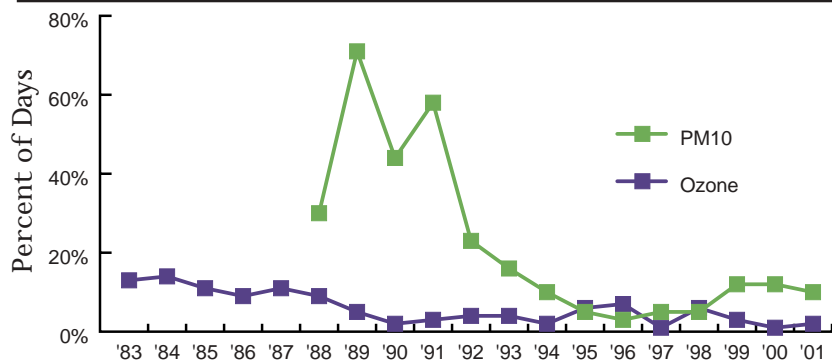
In addition to ozone, which exceeded state standards about two percent of days in 2001, Silicon Valley exceeded the State standard for particulate matter (PM10) about 10 percent of days monitored, the third year in a row during which PM10 standards have been exceeded on at least 10 percent of days monitored.

This represents a persistent degradation compared with the years 1995 to 1998, during which PM10 standards were exceeded on at most five percent of days monitored. Health consequences associated with particulate matter are more severe than with ozone. The increase in PM10 exceedances may partly be due to several major wild fires and landfill fires in late summer and early fall of 1999.

Standards for carbon monoxide have not been exceeded in Silicon Valley since 1991, while nitrogen dioxide and sulfur dioxide standards have not been exceeded since the 1970s.

Improving air quality will require alternatives to conventional modes of transportation, improved technologies, and different commuting behavior.

Percent of Monitored Days that Silicon Valley's Air Quality Exceeded State Ozone (1-hour) and PM10 (24-hour) Standards



Data Source: Bay Area Air Quality Management District

MOST DRIVERS STILL COMMUTE SOLO; VEHICLE MILES TRAVELED DROPS SLIGHTLY AFTER YEARS OF INCREASE

WHY IS THIS IMPORTANT?

Transportation has a huge impact on the environment, economy, and our quality of life. Traffic congestion causes costly delays which translate into lost productivity, lost time with families, wasted gas, and higher stress.

Automobiles and light trucks account for more than half of our air pollution and carbon

emissions, and contribute to water pollution due to the wearing of brake pads, engine emissions, and runoff from roads and parking lots.

Reliance on automobiles also encourages low-density land use patterns, leading to urban sprawl. Auto infrastructure uses about 33-50 percent of land in a typical American city.

HOW ARE WE DOING?

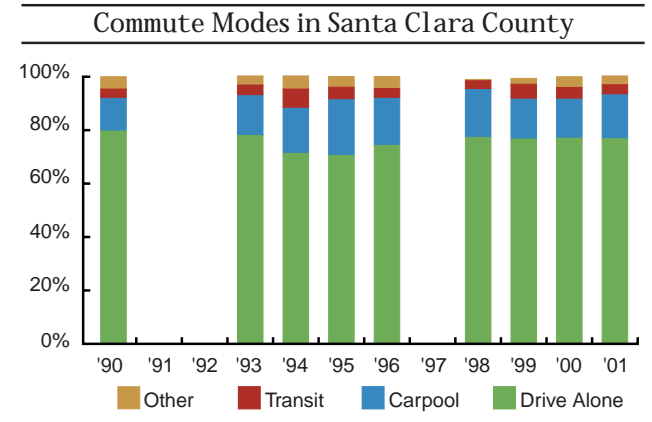
In the years following World War II, 40 percent of the American work force commuted by public transit. Now only 3.4 percent of Santa Clara County's residents commute that way, with more than three-quarters driving to work alone.

After trending downward slightly from 1990 to 1995, more Santa Clara County residents have resumed driving to work alone (76.8 percent commuted alone in 2001, a figure that has been virtually unchanged since 1998).

Carpooling, which peaked in 1995 at about 21 percent, resurged slightly in 2001 to 16.8 percent after hitting a low for the decade of 15 percent in 2000.

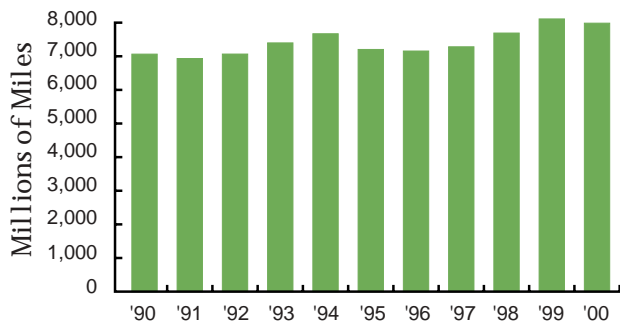
The total vehicle miles traveled in Silicon Valley fluctuated through the 1990s, but climbed 13 percent from 1996 to a record high in 1999, then decreased two percent in 2000

to about eight billion vehicle miles traveled for the year. About 52 percent of the change from 1996 to 2000 is due to increases in Silicon Valley's population, while the remaining 48 percent is caused by increases in vehicle miles traveled per person.

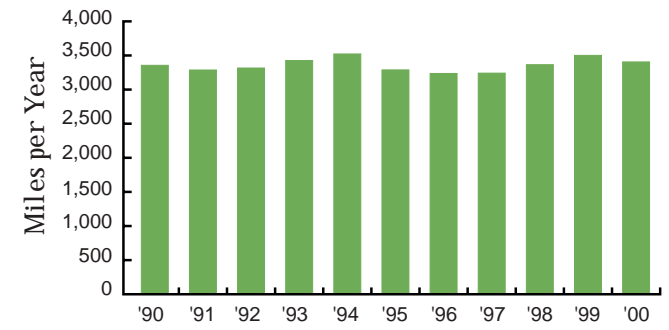


Data Source: RIDES for Bay Area Commuters

Vehicle Miles Traveled Per Year, Silicon Valley



Vehicle Miles Traveled Per Capita, Silicon Valley



Data Source: California Department of Transportation, Division of Transportation System Information

AIR QUALITY

CARBON EMISSIONS INCREASE 41 PERCENT SINCE 1986;

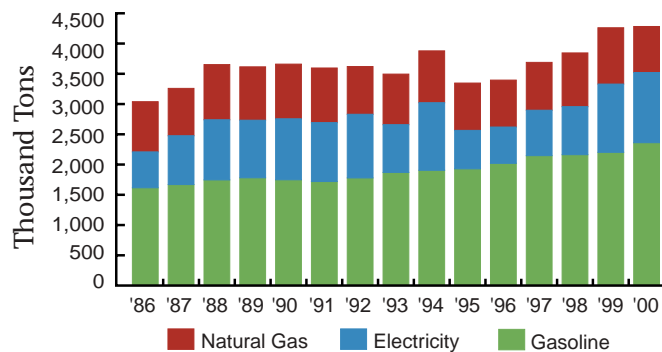
WHY IS THIS IMPORTANT?

The principal source of man-made carbon emissions is the combustion of fossil fuels. These emissions are changing the chemistry of the atmosphere and leading to global climate change. Most scientists tell us that climate change, including global warming, will be detrimental to human health, ecosystems, food security, and water resources in many regions of the world, including the United States.

With only four percent of the world's population, the United States accounts for a quarter of all man-made carbon emissions worldwide. As indicated in the graph on the next page, atmospheric carbon dioxide concentrations are significantly higher now than at any time during the last 400,000 years and continue to rise. Atmospheric models predict that increasing carbon dioxide concentrations will result in increasing global temperatures. The graph shows there is a high correlation between average temperature variations and carbon dioxide concentrations.

In 1997, more than 2,500 economists—including eight Nobel Laureates—endorsed a statement saying that, there are policy options that would slow climate change without harming American living standards, and these measures may in fact improve U.S. productivity in the longer run.

Estimated Carbon Emissions from Santa Clara County



Data & Conversion Factor Sources: California Energy Commission, California Department of Transportation, U.S. Department of Energy

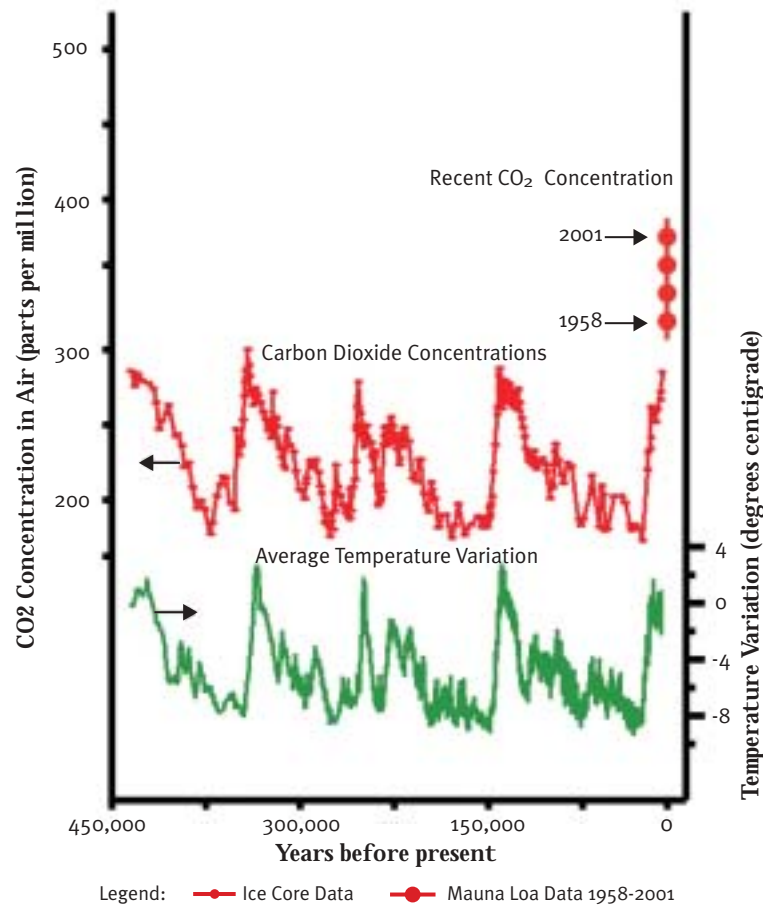
TRANSPORTATION SECTOR THE LARGEST CONTRIBUTOR

HOW ARE WE DOING?

The total carbon emissions attributable to gasoline, electricity, and natural gas use in Santa Clara County were 4.3 million tons in 2000, or 5,009 pounds per person. Since 1986, total carbon emissions from these three sources have increased 41 percent (17 percent per capita). The transportation sector still accounts for more than half (55 percent) of the total carbon emissions in the County.

To allow the Earth's climate to return to equilibrium over the next few centuries, man-made carbon emissions must be reduced to the rate at which the oceans and forests can absorb them—as much as 80 percent below today's rate. Santa Clara County has a long way to go.

Carbon Dioxide Concentrations are highly correlated with average Temperature Variations and continue to rapidly increase



Data Source: Carbon Dioxide Information Analysis Center, Oak Ridge National Laboratory (see appendix for full citation).

WATER QUALITY

DRINKING WATER MEETS OR SURPASSES STANDARDS; PROTECTION FROM CONTAMINANTS IS CRITICAL

WHY IS THIS IMPORTANT?

Healthful, safe supplies of drinking water are critical to human survival and well-being. Water-borne diseases can become epidemic in communities with contaminated water supplies. Contaminated water may also lead to birth defects, infant mortality, increased cancer rates, and other systemic ailments. Federal and State safe drinking water laws aim to assure the high quality of public water supplies.

The risks to our drinking water from potential sources of contamination are increasing. Contaminants in urban runoff, chemicals used in agricultural operations, and chemical releases from manufacturing operations all

place pressure on the drinking water supply. Increased demands for drinking water are discussed under the Drinking Water Supplies Indicator.

More than half of Santa Clara County's drinking water is imported, and roughly 40 percent comes from local groundwater. Surface water is disinfected and filtered before it is distributed. Groundwater is usually not treated since it is naturally cleansed of most substances as it moves down through the soil, though it is sometimes disinfected to provide additional protection from biological contaminants. Both water sources are thoroughly tested before delivery to customers.

HOW ARE WE DOING?

Extensive laboratory analyses conducted by water utilities serving Santa Clara County confirm that drinking water delivered to their customers generally meets or surpasses all State and Federal standards for health, safety, and aesthetics. Most substances for which drinking water standards have been set or proposed are not found in Santa Clara County's drinking water supplies, or they are detected at levels far below the standards.

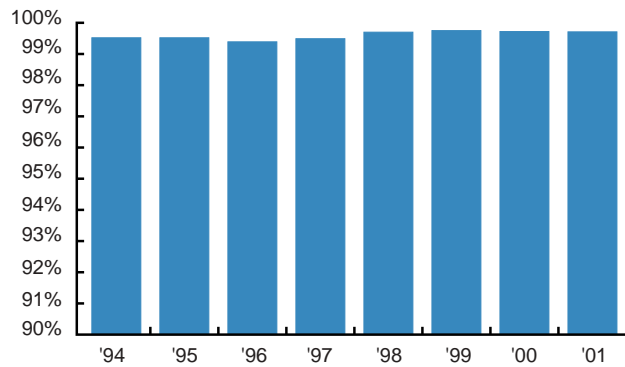
The percentage of analyses in compliance with drinking water standards has been greater than 99 percent since 1994. Fewer than one percent of analyses are not in compliance with drinking water standards.

Drinking water is tested prior to treatment for most chemical contaminants before it enters the distribution system, and it is tested for some parameters such as bacteria in the distribution system, after treatment. For example, industrial solvents have been detected annually in 0.7 percent to 2.1 percent of groundwater samples from drinking water supply wells analyzed between 1989 and 1999. However, just because an industrial solvent was detected in groundwater samples from drinking wells does not mean that the water served to the public contains that substance. In many cases, the water utility removes the well from the distribution network upon detection of a contaminant and continues to monitor it,

or blends the water with another source until the substance is not detectable. Small amounts of MTBE have been detected in some of Santa Clara County's drinking water sources (see next page for more information). Two drinking water wells and three surface water reservoirs in Santa Clara County have been affected by MTBE. One of the wells was taken off-line immediately after confirmation of the contamination. Water from the second well is blended with water from another source so that the MTBE level in the water served to consumers is below the Maximum Contaminant Level (MCL). MTBE levels in the three local reservoirs have been below the MCL since 2000, when the Santa Clara Valley Water District and Santa Clara County Department of Parks and Recreation implemented an MTBE management program. There has been no detectable MTBE in the treated surface water served to consumers in the County.

A class of compounds called endocrine disruptors is gaining attention in the scientific community. These compounds come from such sources as medications, cosmetics, and pesticides. These compounds have been detected in some drinking water sources. However, drinking water standards and associated monitoring for most of these compounds are not yet established and, therefore, specific trend data are not included in this report.

Percent of Drinking Water Analyses in Compliance with Drinking Water Standards



Note: These data exclude regulated radioactivity, microbiological contaminants, and general mineral and physical standards.

Data Source: California Department of Health Services

FUEL LEAK CASES CONTINUE TO DECLINE; MTBE DETECTION IN WATER SOURCES STABILIZING

WHY IS THIS IMPORTANT?

Roughly 40 percent of Santa Clara County's drinking water comes from groundwater. The County's groundwater has traditionally been of very high quality and was once considered relatively safe from pollution. Although soil filters out bacteria and most other pollutants, it cannot filter out everything. Chemicals may seep down into the groundwater from numerous sources including leaking underground storage tanks, illegal dumping, surface spills, landfills, septic systems, and improperly constructed and maintained wells. Once an aquifer becomes polluted, clean-up is difficult and very expensive.

In recent years, leaking underground tanks and industrial spills have threatened groundwater

quality in some areas of the county. Motor fuel and other hazardous chemicals are discharged from leaks and spills. Motor fuel has contained methyl tertiary butyl ether (MTBE) on a state-wide, year-round basis since 1996, when it was introduced to California's gasoline to meet federal smog regulations. Although the human health effects of MTBE are not fully understood, the U.S. Environmental Protection Agency classifies it as a possible human carcinogen (i.e., cancer-causing). If left unchecked, contaminants from leaks and spills could seep down into deep aquifers and become a major water quality problem.

HOW ARE WE DOING?

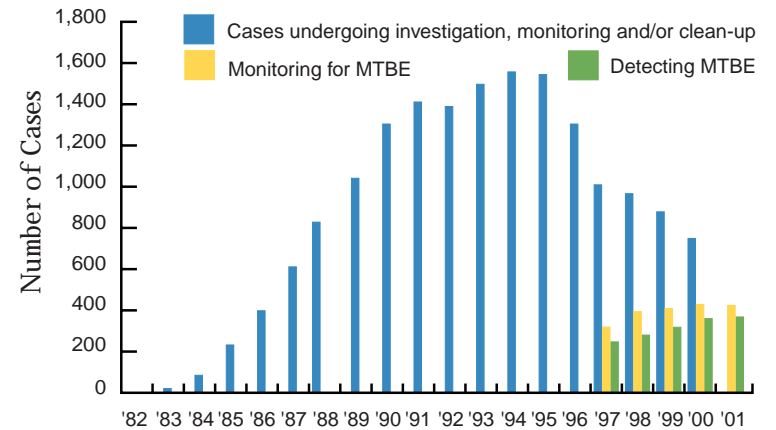
The number of motor fuel leak sites in Santa Clara County and Scotts Valley discovered and undergoing investigation, monitoring, and/or clean-up peaked at 1,557 in 1994, and has since decreased by 52 percent to 749 in 2000. This achievement is due to clean-ups, retrofits, upgrades, and case closures triggered by Federal and State underground storage tank regulations enacted about 13 years ago. Motor fuel contamination from leaking tanks has been largely confined to the shallow groundwater aquifers, which are not used for drinking water. However, about 87 percent of the fuel leak sites that monitored for MTBE in 2000 detected it, and small amounts of MTBE have been detected in two drinking water supply wells in Santa Clara County (see Drinking Water section).

Policymakers plan to remove MTBE from California's gasoline by the end of year 2003. However, many refiners plan to eliminate MTBE

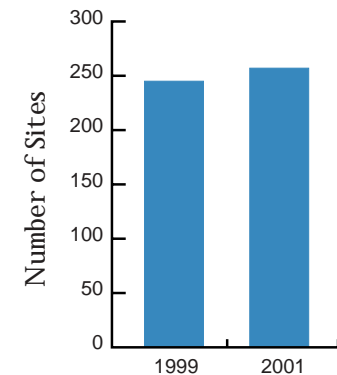
from California's gasoline well ahead of the scheduled phase-out. Currently, '76' branded stations (owned by Phillips 66) are MTBE-free. One lesson learned is the importance of taking a precautionary approach and considering how policy decisions will affect a variety of media, including air, water, and land.

In addition to the approximately 749 fuel leak cases undergoing investigation, monitoring, and/or clean-up during 2000 in Santa Clara County and Scotts Valley, 257 sites with hazardous chemical leaks are undergoing clean-up in Silicon Valley during 2001, up five percent since 1999. Hazardous chemical leaks, which are largely comprised of solvents, pose a greater threat to groundwater than do motor fuel leaks because solvents are highly soluble (capable of being dissolved), mobile, and long-lasting.

Leaking Underground Fuel Tanks Undergoing Clean-up in Santa Clara County and Scotts Valley



Hazardous Chemical Leaks Undergoing Clean-up in Silicon Valley



Data Sources: San Francisco & Central Coast Regional Water Quality Control Boards, and Santa Clara Valley Water District

SPECIES AND HABITATS

ENDANGERED SPECIES LISTINGS CONTINUE TO ACCELERATE

WHY IS THIS IMPORTANT?

Several hundred years ago, Ohlone Indians were the only people living in the southern San Francisco Bay Area. The region was rich with a great variety of habitat types and plant and animal life. Grizzly bears, elk, and wolves were common.

Destruction of habitat is the primary reason why species become endangered. When habitats are reduced, species decline and become more vulnerable to natural and man-made stresses. This is partially caused by urban land use and planning that encourages sprawl.

We are living at a time with the greatest rate of worldwide species extinctions since the dinosaurs disappeared approximately 65-million years ago.

As the human population continues to expand, this high rate of species decline is likely to

continue. Although it is yet unclear what effect continued loss of biological diversity will have on the world's ecosystems and human welfare, scientists believe it could be severe. Each species occupies a unique niche in the delicate web of life. If too many species are removed, ecosystems risk collapse.

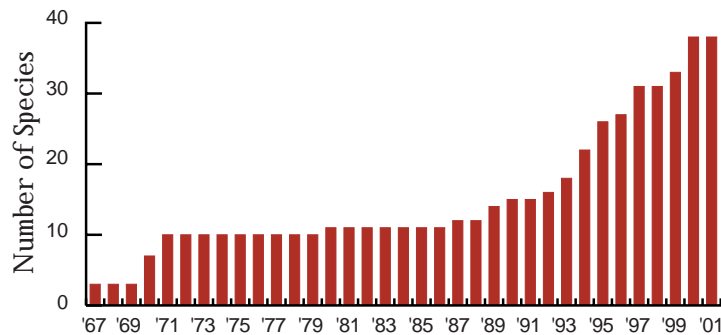
Healthy ecosystems enrich and sustain human life, providing services valued at many trillions of dollars. Examples of ecosystem services include: raw materials for the production of products, pest and disease control, fresh water and flood regulation, pollination and crop dispersal, climate moderation, production of oxygen by plants, new medicines, and disease-resistant wild strains of crops.

HOW ARE WE DOING?

In the last 200 years, the human population in Silicon Valley grew from a few thousand to more than 2 million. Along with these people came development and filling in large sections of the bay and wetlands. Immigrants brought plants from their native lands, many of which now crowd out native California species. Domestic and imported game animals, hunting, and recreational activities have also contributed to species decline.

Santa Clara County is one of a few endangered species "hot spots" in the U.S. (see map on next page). Thirty-eight Federally- or State-listed endangered or threatened plant and animal species and critical habitat may occur, or be affected by projects, in the County, along with one proposed species, three candidate species, 79 species of concern, and 48 additional rare species not Federally- or State-listed.

Federal or State Endangered & Threatened Species that May Occur, or be Affected by Projects, in Santa Clara County



Note: Excludes 131 additional rare species not Federally- or State-listed as endangered or threatened.

Data Sources: U.S. Fish & Wildlife Service, California Department of Fish & Game, and California Native Plant Society

ENDANGERED SPECIES LISTINGS (CONT.)

In all, 158 species that are rare throughout the United States and/or California exist in Santa Clara County or may be affected by projects in the County, and 11 rare plant species are extinct in the County. Many more species qualify for listing than are actually Federally- or State-listed as endangered or threatened. The dramatic increase in listed species since 1992 is mainly due to recent court decisions requiring the U.S. Fish & Wildlife Service to list more species according to the Endangered Species Act.

Much of the land in threatened areas is privately owned; thus, it is very important to work with landowners to join in voluntary efforts to protect species. In addition, expanding our public preserves will help to maintain continuous natural habitat greenbelts and large expanses of habitat, which is a top priority for saving endangered species.

Federally- or State-Listed Endangered and Threatened Species That May Occur, or Be Affected By Projects, in Santa Clara County

Mammals

Salt marsh harvest mouse
San Joaquin kit fox

Birds

American peregrine falcon
Bald eagle
Bank swallow
California black rail
California brown pelican
California clapper rail
California least tern
Least Bell's vireo
Marbled murrelet
Western snowy plover

Reptiles

Alameda whipsnake
San Francisco garter snake

Amphibians

California red-legged frog

Fish

Central California coastal steelhead
Central Valley Spring-run chinook salmon
Coho salmon
Delta smelt
Sacramento splittail
South Central California steelhead
Tidewater goby
Winter-run chinook salmon

Invertebrates

Bay checkerspot butterfly
Vernal pool fairy shrimp

Plants

California sea blite
Contra Costa goldfields
Coyote ceanothus
Metcalf Canyon jewelflower
Robust spineflower
Santa Clara Valley dudleya
Showy Indian clover
Tiburon paintbrush

Critical Habitat

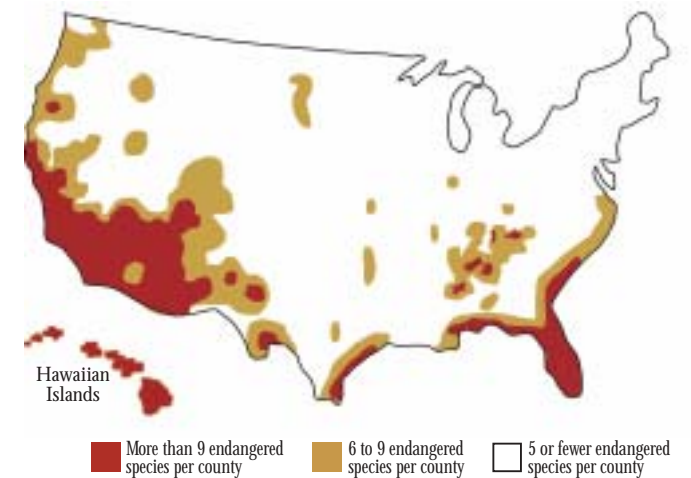
Alameda whipsnake
Bay checkerspot butterfly

Central California Coastal steelhead
Central Valley spring-run chinook salmon

South California Coastal steelhead

In addition to these species, 120 rare species exist in Santa Clara County or may be affected by projects in the County, and 11 rare species are locally extinct.

Where Species are in Jeopardy
Endangered Species "Hot Spots" in the U.S.



Map Source: Environmental Defense Fund

SPECIES AND HABITATS

LANDMARK DEAL AIMS TO RESTORE DISAPPEARING TIDAL MARSHES

WHY IS THIS IMPORTANT?

The San Francisco Baylands ecosystem is the largest estuary on the West Coast of North and South America. Since wetlands are one of the most productive ecosystems on Earth, San Francisco Bay wetlands are recognized as among the nation's most valuable natural resources.

and seasonal freshwater wetlands are especially important because they are used by more than 60 of the estuary's endangered, threatened, rare, or candidate species such as the California clapper rail and the salt marsh harvest mouse. The wetlands also improve water quality, protect against flooding, aid in groundwater recharge, deter erosion, absorb air pollutants, and provide open space and recreational opportunities.

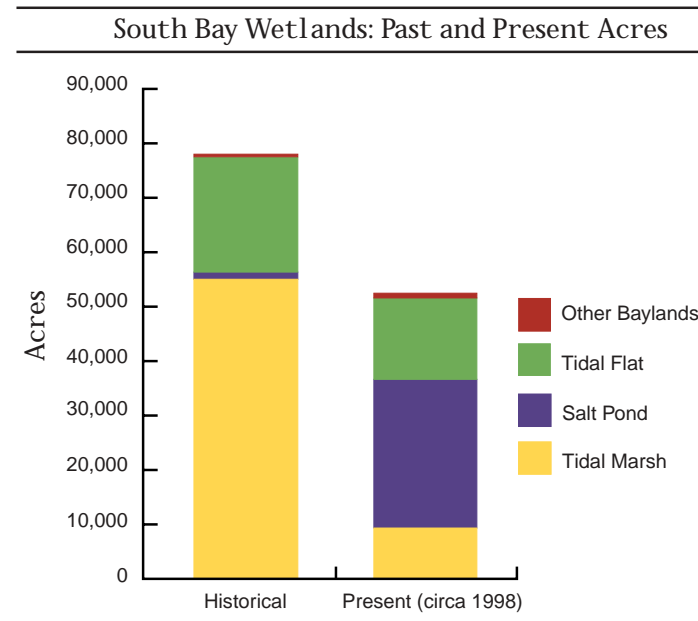
The San Francisco Bay wetlands are critical habitat for more than 500 species of fish, birds, mammals, and other wildlife. Tidal marshes

HOW ARE WE DOING?

The most striking thing to note about South Bay wetlands is not the total change in acres, but the overall change in the types of wetlands. Because South Bay wetlands were too saline to support agriculture, they were converted to shallow salt ponds for salt production. As a result, South Bay tidal marshes have been reduced 83 percent in the last 200 years, most of which have been converted to less biologically productive salt ponds. In addition to salt production, urbanization and farming have contributed substantially to these changes.

Nonetheless, an expanding population and the associated need for housing, transportation, and employment opportunities continue to be a major threat to South Bay wetlands.

On May 29, 2002, a landmark deal was announced, through which public and private entities agreed to pay Cargill Salt \$100 million for 16,500 acres, mostly in the South Bay. If all goes as planned, Cargill's property—former wetlands that were diked and flooded more than a century ago for commercial salt production—will be protected from urban development and restored as wildlife habitat over the next several decades. This will be the biggest wetlands restoration effort ever undertaken on the West Coast.



Data Source: San Francisco Bay Area Wetlands Ecosystem Goals Project

CLAPPER RAIL DECLINES 19 PERCENT FROM RECENT PEAK IN 1997-98

WHY IS THIS IMPORTANT?

The California clapper rail is one of California's most endangered species. Endangered species are species that are at risk of extinction within the foreseeable future throughout all or a significant portion of its range.

Historically, thousands of California clapper rails could be found in the marshes of San Francisco Bay. However, excessive commercial and sport hunting depleted this bird species' population. Then, increased urbanization led

to the diking of most of the Bay's productive tidal marshes—the rail's habitat—for salt ponds, industry, agriculture, and airports.

More recently, non-native red foxes and feral cats have established themselves in the Bay's marshes, preying on the California clapper rail and other species at risk such as the burrowing owl, least tern, snowy plover, and salt marsh harvest mouse.

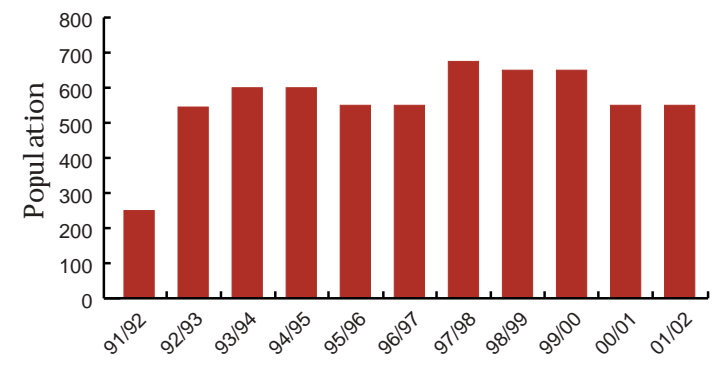
HOW ARE WE DOING?

In the South Bay, the California clapper rail's tidal marsh habitat has been reduced 84 percent since historical times. This habitat loss, and the associated reduction in population size, made the clapper rail more vulnerable to extinction when non-native species appeared. Numbering nearly 1,000 in the South Bay during the early 1980s, the rail was almost eliminated after red foxes migrated to the San Francisco Bay in the late 1980s. By 1991, 200 to 300 were left in the South Bay.

During the 1990s the South Bay's California clapper rail population rebounded from the brink of extinction. Aggressive controls on red foxes and feral cats led to a dramatic recovery

through the end of the decade. However, their population has been declining again in the past couple of years for unknown reasons. The South Bay population was estimated to be just 500 to 600 in 2001/2002, down about 19 percent from a recent high of 650 to 700 in 1997/1998. Due to habitat loss and fragmentation, rail populations will probably not be stable bay-wide until large-scale salt marsh restoration occurs and rail populations increase substantially. Without more habitat, the relatively small rail populations in each marsh are very vulnerable to any number of factors, and subject to local extinctions and wide annual/cyclic fluctuations.

California Clapper Rail South Bay Population Estimates



Data Source: San Francisco Bay National Wildlife Refuge Complex

SPECIES AND HABITATS

BURROWING OWL HABITAT DISAPPEARING IN SILICON VALLEY

WHY IS THIS IMPORTANT?

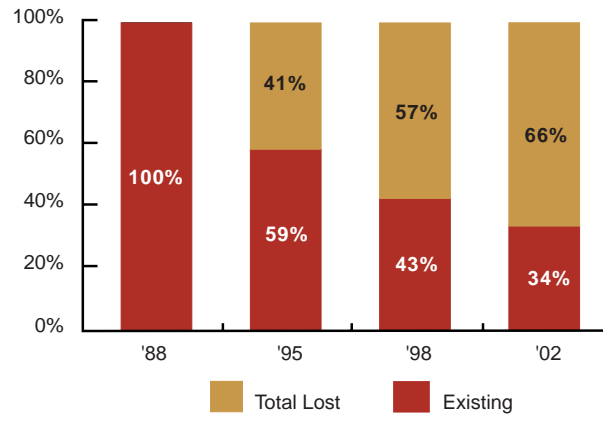
The Western Burrowing Owl is classified as a Species of Special Concern by the California Department of Fish and Game. It is one of 79 species of concern in Santa Clara County. These rare species do not receive specific habitat protection under the State or Federal Endangered Species Acts, but impacts to these species must be mitigated under the California Environmental Quality Act.

The burrowing owl is an indicator of the presence of open space, especially grasslands,

on Silicon Valley's floor. The owls nest on flat, open grasslands on Silicon Valley's alluvial plain, where land prices can exceed \$1 million an acre.

These open grasslands are valuable recreation sites and improve our quality of life. But, because they are so highly prized for development, they are in danger of disappearing almost completely from the Valley.

Percent of 111 Burrowing Owl Sites Occupied in 1988 that Still Exist versus Were Lost Over Time



Data Source: Lynne Trulio, Ph.D., Environmental Studies Department, San Jose State University

HOW ARE WE DOING?

The burrowing owl is declining in Silicon Valley, where it once flourished. Owl habitat in protected areas such as parklands (Byxbee Park, Shoreline Park, and the Sunnyvale Baylands) and Federal lands (Moffett Federal Airfield) has remained relatively unchanged. However, occupied owl habitat on privately-owned or city-owned development lands has declined severely. A survey of 111 sites on private or city-owned development lands known to be occupied by burrowing owls shows a steady decline since 1988, with

66 percent of the open grassland patches lost to development or other major disturbance.

With declines in its habitat, the number of owls in northern Santa Clara County fell by half, to about 150 pairs, between the early 1980s and the early 1990s. A major reason for this decline is habitat loss to urban development. The burrowing owl may require Endangered Species Act protection in the future if proactive grassland protection measures are not implemented.

HAZARDOUS MATERIALS

TOXIC CHEMICAL RELEASES REMAIN RELATIVELY STABLE

WHY IS THIS IMPORTANT?

More than 3,000 facilities in Silicon Valley generate hazardous waste. Release of toxic chemicals into our air, land, water, or sewage systems can cause public health and environmental hazards. Ninety-six companies in

Silicon Valley are required by law to report releases of certain toxic chemicals to the U.S. Environmental Protection Agency under the Emergency Planning and Community Right-to-Know Act.

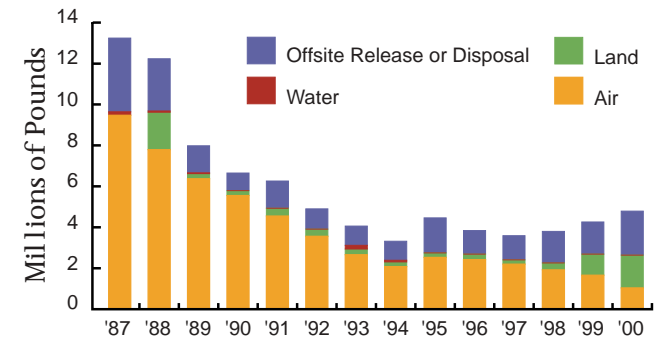
HOW ARE WE DOING?

Silicon Valley manufacturers subject to Toxic Release Inventory (TRI) reporting achieved a 64 percent reduction in toxic releases since 1987, releasing or disposing 4.8 million pounds into the environment in 2000. Two main reasons are driving this decrease. First, fewer manufacturers are located in Silicon Valley today than there were in 1987, which means fewer companies are required to report

under TRI. Second, companies phased-out the use of ozone-depleting substances, leading to drastic reductions in air releases from 1987 through the early 1990s.

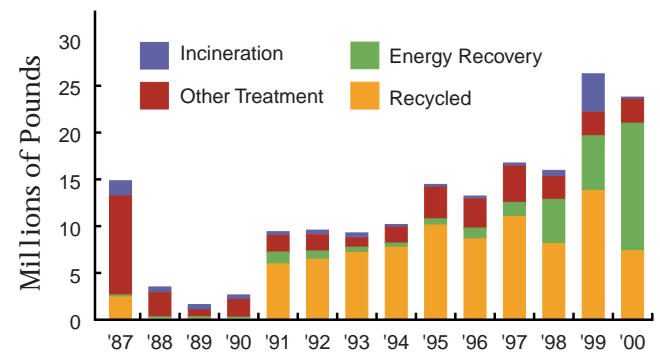
An additional 24-million pounds of Toxic Release Inventory chemicals were recycled, recovered for energy, treated, or incinerated offsite in 2000.

Toxic Release Inventory Chemicals Released or Disposed from Silicon Valley Manufacturers



Note: Release data for 1999 and 2000 are overstated due to erroneous over-reporting by one facility. Actual total releases in 1999 and 2000 were roughly commensurate with previous years.

Toxic Release Inventory Chemicals Recycled, Recovered for Energy, Treated, or Incinerated Offsite



Data Source: U.S. Environmental Protection Agency

HAZARDOUS MATERIALS

AFTER TRENDING DOWNWARD, USE OF THE MOST TOXIC PESTICIDES INCREASES (EXCLUDES RESIDENTIAL USE)

WHY IS THIS IMPORTANT?

Widespread use of toxic pesticides can damage human health and the environment. The most toxic pesticides can cause cancer, pose reproductive hazards, disrupt hormone function, are nerve toxins, and/or pollute the air and water.

places run off into our waterways, polluting water and threatening the health of wildlife. Organic food production (growing nationally at 20 percent per year) and non-toxic pest management are emerging as alternatives to toxic pesticide use.

Pesticides applied to homes, gardens, buildings, agriculture, rights-of-way, and other

HOW ARE WE DOING?

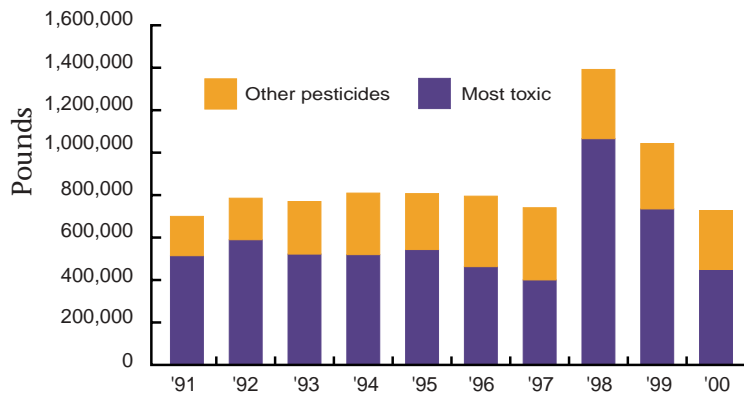
Of the 727,458 pounds of pesticides applied in Santa Clara County during 2000—excluding residential use—more than 60 percent are classified as most toxic. (The sharp increase in pesticides used in 1998 and 1999 were confirmed by the Santa Clara County Agriculture Department to most likely be reporting errors.)

Use of the most toxic pesticides has been trending downward since 1992, but increased 12 percent in 2000 as compared to 1997. Most of the increase was due to a jump in sulfuryl fluoride for structural pest control and chloropicrin for agriculture.

The majority of toxic pesticides used in Santa Clara County during 2000—excluding residential use—was for structural pest control (such as termite, ant, and roach control measures). The following five pesticides account for almost one-half of the most toxic pesticides used in 2000: sulfuryl fluoride, liquified nitrogen, methyl bromide, chloropicrin, and metam-sodium.

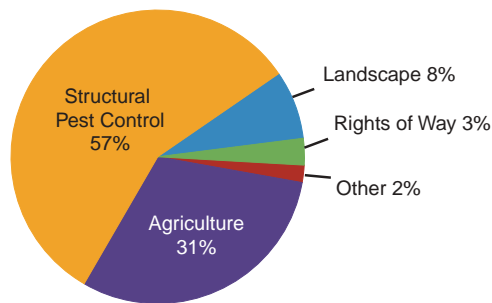
Consumer use of home and garden pesticides is not reported, nor are most industrial or institutional uses, unless applications are performed by a licensed pest control applicator. Unreported pesticide use in California is estimated to be approximately 30 percent of total pesticide use.

Pounds of Pesticides Used in Santa Clara County (Excludes Residential Use)

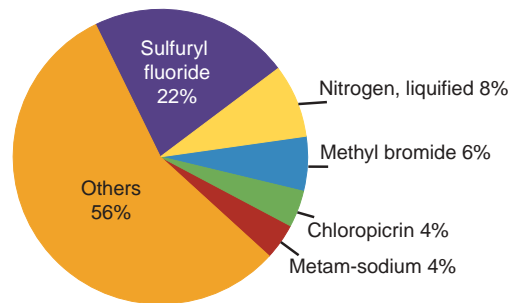


Note: 1998 and 1999 data graphed above are most likely in error.

Uses of the Most Toxic Pesticides in Santa Clara County During 2000 (Excludes Residential Use)



Most Toxic Pesticides Applied in Santa Clara County During 2000 (By Pounds Applied; Excludes Residential Use)



Data Sources: California Department of Pesticide Regulation and Pesticide Action Network

HAZARDOUS WASTE GENERATION DECREASES TO 1989 LEVELS

WHY IS THIS IMPORTANT?

Inadequate control of hazardous waste can result in substantial risks to human health and the environment. Hazardous waste disposed to land or improperly managed may lead to risk of an increase in mortality or illness, and can pose a hazard to human health and the

environment. Open dumping, spills, and leaks may be particularly harmful to health, contaminate drinking water, and pollute the land and air. The processes required to destroy, treat, and otherwise make such waste less harmful use energy and other resources.

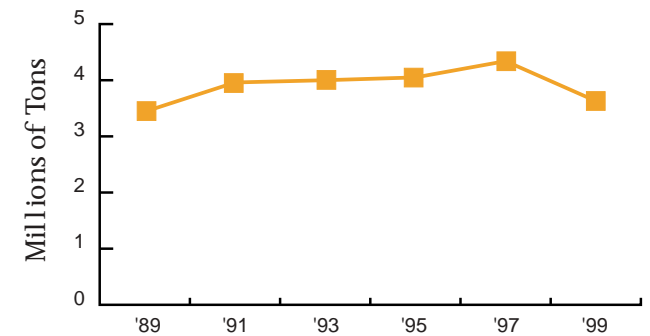
HOW ARE WE DOING?

Total tons of hazardous waste generated by Santa Clara County's large quantity generators and treatment, storage and disposal (TSD) facilities increased from 3.4 million tons in 1989 to 4.3 million tons in 1997 and then decreased to 3.6 million tons in 1999. This is an 18 percent increase from 1989 to 1997 and a 17 percent decrease from 1997 to 1999. These hazardous wastes were recycled, treated, or disposed.

An important source of hazardous wastes that is not included in the graphed data is household wastes, such as old paint, pesticides, and

batteries. Santa Clara County's Household Hazardous Waste program has been making steady progress in keeping household hazardous waste out of municipal landfills. Participation in the program over the past five years has increased from 9,200 to approximately 19,000 households in 2002, with an average collection of 95 pounds of hazardous waste per program participant. However, with a population of almost 1.7 million, there is clearly a long way to go in reducing household contributions to the hazardous waste stream.

Quantity of Hazardous Waste Generated in Santa Clara County by Large Quantity Generators and Treatment, Storage and Disposal Facilities



Data Source: Biennial Reporting System, Center for Environmental Information and Statistics, U.S. Environmental Protection Agency



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The data and information incorporated into this report reflect the best information available to our knowledge and have been reviewed for accuracy to the best of our ability. Each indicator has been reviewed by the organization(s) supplying the corresponding data. The Silicon Valley Environmental Index is a living document that will continue to evolve over time as new and improved data become available. The Silicon Valley Environmental Partnership is open to new information that enhances the accuracy of our findings. We welcome your comments.

Introduction (Why Did We Write This Report?)

National survey results are from the "1997 National Report Card on Environmental Knowledge, Attitudes, and Behaviors," published by the National Environmental Education and Training Foundation in Washington, D.C.

Energy Use Jumps 28 Percent in 15 Years

Quads of energy use were calculated using conversion factors of 125,071.4 BTU per gallon of gasoline, 100,000 BTU per therm of natural gas, and 3,413 BTU per kWh of electricity. Information sources used for the analysis include: California Energy Commission; California Department of Transportation; and Joint Venture's *2001 Index of Silicon Valley*.

Urban Land Use Continues to Expand

Land use definitions are from the California Department of Conservation. Urban and Built-Up Land is used for residential, industrial, commercial, construction, institutional, public administrative purposes, railroad yards, cemeteries, airports, golf courses, sanitary landfills, sewage treatment plants, water control structures, and other development purposes. Highways, railroads, and other transportation facilities are included as Urban and Built-Up Land if they are part of a surrounding urban area.

Grazing Land is land on which the existing vegetation, whether grown naturally or through management, is suitable for grazing or browsing of livestock. Agricultural Land includes Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance, as defined by the Department of Conservation. Other Land consists of government lands not available for agricultural use; brush, timber, wetlands, and other lands not suitable for livestock grazing; vacant and nonagricultural land larger than 40 acres in size and surrounded on all sides by urban development; rural development which has a building density of less than one structure per 1.5 acres, but with at least one structure per 10 acres; confined livestock, poultry, or aquaculture facilities of 10 or more acres unless accounted for by the County's Farmland of Local Importance definition; strip mines, borrow pits, gravel pits, ranch headquarters, or water bodies larger than 10 acres; and a variety of other rural land uses.

Protected open space not used for agriculture and restricted from grazing is generally included in Other Land. Water areas 40 acres or larger were excluded from the graph and analysis. Water areas in 2000 were 8,457 acres, or about one percent of Santa Clara County.

The shift in land use from "Grazing" to "Other" between 1996 to 1998 was caused by the following three factors: 1) grazing leases expired in the Redfern Ranch addition to Henry Coe State Park, causing a large change from Grazing to Other; 2) a few County and State parks previously mapped as Grazing, including Coyote Creek County Park near Morgan Hill, were reclassified as Other; 3) new ranchette development (low-density housing) was discovered in the San Jose East quadrangle.

Impervious surfaces refers to land which has been paved over or which otherwise does not allow water to seep through the Earth. Information sources used for the analysis include: California Department of Conservation, Division of Land Resource Protection, Farmland Mapping and Monitoring Program; "The Bay Area's Farmlands", Greenbelt Alliance, 1991; and Joint Venture: Silicon Valley Network's *2003 Index of Silicon Valley*.

Water Use Steadies; Recycled Water and Conservation Extend Valley's Resources

Water supplies and reserves

In Santa Clara County for calendar year 2001, actual demand slightly exceeded the available 2001 water supply, and a small reliance on reserves from local groundwater and surface reservoir storage was drawn upon to meet the annual demand. The Water District has a target of maintaining reserves sufficient to meet demands in a subsequent repeat of the single driest year of record (1977). The decline in use from 1988 to 1992 is a result of District efforts to achieve water use reduction during the last major drought. The trend for water supply reserves is a significant increase from 1987 to 2000. This increase from less than 300,000 acre-feet to about 700,000 acre-feet is attributed to recovery of our local groundwater storage, water banking in Semitropic Aquifer (in the Central Valley), surface water carryover, and transfer or exchange agreements.

To provide adequate supplies during drought conditions, water supply reserves were more than doubled during the first 10 years of the tracking period, due primarily to aggressive efforts to restore local groundwater storage and initiation of Semitropic Banking Program.

Water recycling

Recycled water is becoming increasingly important in Santa Clara County. In 2001, recycled water use was 8,000 acre-feet, about 2.1 percent of total annual water use and 33 percent more than the previous calendar year's recycled water use. One acre-foot is about 325,851 U.S. gallons.

All four wastewater plants deliver recycled water. There are major recycling projects being developed, especially through the South Bay Water Recycling project and the South County Regional Water Recycling project (SCRWR). Recycled water use is projected to continue to increase in the future as different phases of these projects come on-line, new pipelines are built, and new markets and customers are developed.

The Santa Clara Valley Water District estimates countywide recycled water use will increase more than nine percent per year. The District's target is that five percent of total water use be met by recycled water by 2010.

Information sources used for the analysis include: Santa Clara Valley Water District; Gleick, P. H. 1998. "Water in Crisis: Paths to Sustainable Water Use," *Ecological Applications*, Vol. 8, No. 3, pp. 571-579; Gleick, P.H. 2000. "The World's Water 2000-2001: The Biennial Report on Freshwater Resources," Island Press, Washington, D.C.; and "Annual Ends Report, Fiscal Year 2001-2002 Index" (7/16/02). Santa Clara Valley Water District.

Waste Disposal Levels Off

Note that the data for years 1987 to 1994 are slightly different from the data for years 1995 through 1998. The data for years 1987 to 1994 represent the total tons disposed in Santa Clara County regardless of the origin of those tonnages. Tonnages for 1995 to 1998 reflect tons disposed by Santa Clara County jurisdictions at landfills both inside and outside the County. Information sources used for the analysis include Santa Clara County Integrated Waste Management Program. The Countywide diversion rate for 2000 is expressed as a range (53-58 percent) because Gilroy, Santa Clara, Cupertino, and San Jose are applying for a base rate change.

Population Growth Continues; 89 Percent Due to Births Outpacing Deaths

Information sources used for the analysis include: California Department of Finance, Demographic Research Unit; and "Immigration Question Tears at Environmentalists," *San Jose Mercury News*, 4/12/98. Fertility rate estimates for Santa Clara County are from: the California Department of Health Services, Center for Health Statistics, Office of Health Information and Research, see www.dhs.ca.gov/hisp/chs/OHIR/vssdata/2000data/2000NRatesEX.htm and www.dhs.ca.gov/hisp/chs/OHIR/vssdata/tables.htm; and California Department of Finance, Demographic Research Unit, Actual and Projected Births by County, 1970-2010, with Births by Age of Mother and Fertility Rates. The numbers 2.11-2.26 represent the range of the total fertility rate (average number of children born to a woman during her lifetime) for Santa Clara County from 1990 to 2000.

Particulates Threaten Recent Improvements to Air Quality

The Bay Area Air Quality Management District takes daily measurements of air quality (except PM10 which is monitored once every six days) at monitoring stations throughout Silicon Valley. The graph depicting ozone exceedances reflects the percentage of days that at least one of these stations exceeded the State standards. The Federal standard, at 120 parts per billion, is set to protect the health of the average person, while the stricter State standard, 90 parts per billion, protects the health of persons with respiratory difficulties. The graph depicting PM10 exceedances shows the number of days in exceedance relative to the total number of days monitored. Exceedances of PM10 are measured against the State 24-hour PM10 standard. PM10 is measured for 24-hour periods once every six days.

Information sources used for the analysis include: Bay Area Air Quality Management District; "Environmental Profile for Santa Clara County, California - Air Quality", U.S. Environmental Protection Agency's Center for Environmental Information and Statistics; Joint Venture: Silicon Valley Network's *1997 Index of Silicon Valley*, and the City of Fort Collins, Colorado, website on 1/5/03, <http://fcgov.com/airquality/particulate-matter.php>.



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Most Drivers Still Commute Solo; Vehicle Miles Traveled Drops Slightly After Years of Increase

Commute data shown on the graph is generated by RIDES for Bay Area Commuters, Inc., via random telephone surveys. Survey results are statistically valid at the 95 percent level, with a confidence interval of +/- five percent. This means that 95 times out of 100 the characteristics of the sample would reflect the characteristics of the population, within +/- five percent.

Information on vehicle miles traveled is based on estimates of daily vehicle miles of travel on maintained roads, as reported by the California Department of Transportation, Division of Transportation System Information. A maintained road is generally any road that is open to the general public and maintained by an agency (City, County, State, or Federal government). Unmaintained roads are private roads. The definition is from the Highway Performance Monitoring System as established and administered by the Federal Highway Administration. Information sources used for the analysis include: Rider Commute Profiles, RIDES for Bay Area Commuters, Inc.; California Department of Transportation, Division of Transportation System Information; "Road Building a Dead End for Congestion", *San Jose Mercury News*, 11/14/98; "Make the Bay a Bridge, Not a Barrier", *San Jose Mercury News*, 3/30/98; "Auto Addiction", *Metro, Santa Clara Valley's Weekly Newspaper*, 7/27-8/2, 1995.

Carbon Emissions Increase 41 Percent Since 1986; Transportation Sector the Largest Contributor

The average carbon emissions indicator reflects the carbon emissions in Santa Clara County associated with gasoline, natural gas, and electricity usage. It does not include emissions from aviation, diesel sources, self generated industrial sources, and sources not derived from fossil fuels.

PG&E's electric generation portfolio was used as a proxy for the Northern California electric generation mix from 1990 - 1998. Use of PG&E's portfolio after 1998 is no longer a reasonable proxy of the Northern California portfolio because of PG&E's divestiture of most of its fossil generation in California. A Lawrence Livermore National Labs (LLNL) study was the source for the 1999 data. Year 2000 data is not yet available. Average carbon emissions associated with each kWh of electricity use in 2000 were assumed to be the same as in 1999.

Estimated per capita carbon emissions were as follows, in pounds per person: 1986-4,282; 1987-4,546; 1988-5,015; 1989-4,867; 1990-4,789; 1991-4,673;

1992-4,641; 1993-4,419; 1994-4,882; 1995-4,189; 1996-4,189; 1997-4,474; 1998-4,596; 1999-5,049; 2000-5,009.

The sharp increase in electricity-derived carbon emissions during 1994 is because PG&E burned the last of its fuel inventory that year, and oil emits more carbon per kWh of electricity generated than natural gas. Information sources used for the analysis include: California Energy Commission; PG&E; LLNL; California Department of Transportation; U.S. Department of Energy; "Emissions of Greenhouse Gases in the United States, 1995," Energy Information Administration, U.S. Department of Energy, 10/96; *State of the World 1996*, Worldwatch Institute; "Getting the Prices Right: Can Tax Reform Help Both the Economy and the Environment?," Briefing Book, Redefining Progress, 5/21/97; "U.S. Must Lead the Global Warming Battle," *San Jose Mercury News*, 11/16/98.

The data sources of the graph titled "Carbon Dioxide Concentrations are Highly Correlated with Average Temperature Variations and Continue to Rapidly Increase" are as follows:

Carbon dioxide concentrations 414,085-2,342 years before present: Barnola, J.M., D. Raynaud, C. Lorius, and N.I. Barkov. 1999. "Historical CO₂ Record from the Vostok Ice Core." *In Trends: A Compendium of Data on Global Change*. Carbon Dioxide Information Analysis Center, Oak Ridge National Laboratory, U.S. Department of Energy, Oak Ridge, Tenn., U.S.A. See <http://cdiac.esd.ornl.gov/trends/co2/vostok.htm>.

Carbon dioxide concentrations 1958-2001: Keeling, C.D. and T.P. Whorf. 2002. "Atmospheric CO₂ Records from Sites in the SIO Air Sampling Network." *In Trends: A Compendium of Data on Global Change*. Carbon Dioxide Information Analysis Center, Oak Ridge National Laboratory, U.S. Department of Energy, Oak Ridge, Tenn., U.S.A. See <http://cdiac.esd.ornl.gov/trends/co2/sio-mlo.htm>.

Average temperature data: Petit, J.R., D. Raynaud, C. Lorius, J. Jouzel, G. Delaygue, N.I. Barkov, and V.M. Kotlyakov. 2000. "Historical Isotopic Temperature Record from the Vostok Ice Core." *In Trends: A Compendium of Data on Global Change*. Carbon Dioxide Information Analysis Center, Oak Ridge National Laboratory, U.S. Department of Energy, Oak Ridge, Tenn., U.S.A. See http://cdiac.esd.ornl.gov/trends/temp/vostok/jouz_tem.htm.

Drinking Water Meets or Surpasses Standards; Protection From Contaminants is Critical

Constituents included in the graph (showing percent of drinking water analyses in compliance with drinking water standards) are inorganics, nitrates/nitrites, volatile organic compounds (VOCs), and synthetic organic compounds (SOCs). Constituents not included in the graph are radioactivity, bacteriological indicator organisms, and general minerals and physical characteristics.

Maximum Contaminant Levels (MCLs), drinking water standards, are limits of contaminants that are allowed in drinking water. They are developed based on toxicological risk calculations to ensure that the contaminant's presence in drinking water does not pose any short-term or long-term health effects. MCLs have been established for most, though not all, of the contaminants found in the South Bay. Such standards are typically based on lifetime exposure for an adult. However, some MCLs may not be as protective of sensitive populations such as children and those with immune system disorders. Also, these standards are set for contaminants on an individual basis, and do not address any potential synergistic effects between mixtures of chemicals that may exist.

In addition to calculating the percentage of drinking water analyses not meeting MCLs, SVEP also analyzed the percentage of VOCs and SOCs exceeding the California Department of Health Service's "trigger level", which is typically the detection limit for VOCs and SOCs. Fewer than one percent of samples exceeded the trigger, ranging from 0.25 percent to 0.61 percent during 1994 through 2001.

Some north Santa Clara County communities receive disinfected, but unfiltered Hetch Hetchy water from the San Francisco Public Utilities Commission. Information sources used for the analysis include: California Department of Health Services Water Quality Monitoring Database – April 2002; Environmental Profile for Santa Clara County, California, from the Center for Environmental Information and Statistics, which depicts data from the U.S. Environmental Protection Agency's Safe Drinking Water Information System; "Discover Water", Santa Clara Valley Water District, 1990; *Indicators For a Sustainable San Mateo County*, Sustainable San Mateo County, 1998; "Annual Water Quality Report", Sunnyvale Quarterly Report, 4/98; "Annual Water Quality Report", City of Palo Alto Utilities, 3/15/99; and "Governor Issues Order to Phase Out MTBE", *San Jose Mercury News*, 3/26/99.

Fuel Leak Cases Continue to Decline; MTBE Detections in Water Sources Stabilizing

The motor fuel leak data shown on the graph represents "open" cases (i.e., sites discovered and undergoing clean-up) in Santa Clara County and Scotts Valley (San Martin data is excluded), as tracked in the Leaking Underground Storage Tank Information System (LUSTIS) databases of the San Francisco and Central Coast Regional Water Quality Control Boards (RWQCB). For years 1982-1997, 70 open fuel leak cases are excluded due to insufficient information or data entry errors. Note that for the year 2000, the SF RWQCB did not create the April report, and for 2001, reports for September through November were lost, thus the total number of open cases for these years might be slightly understated. The number of hazardous chemical leaks represents active cases in Silicon Valley as of January 2002 from the Spills, Leaks, Investigations, and Clean-Ups (SLIC) databases of the San Francisco and Central Coast RWQCBs.

MTBE has been detected in Santa Clara County's water supplies in concentrations ranging from 0.6 to 2.9 parts per billion (ppb). The California Department of Health Services, Office of Drinking Water has adopted a five ppb drinking water standard that protects consumers from unpleasant tastes and odors and a 13 ppb standard that protects consumers from adverse health effects. In addition, the California Office of Environmental Health Hazard Assessment has adopted a public health goal of 13 ppb MTBE in drinking water to protect consumers against health risks over a lifetime of exposure. (The primary maximum contaminant level [MCL] for MTBE in California as adopted by the Department of Health Services is 13 ug/l.)

Note that Scotts Valley is excluded from the MTBE monitoring and detection data on the graph because SVEP did not have data from the Central Coast RWQCB on the number of Scotts Valley cases being monitored for MTBE. Also note that our calculation of open fuel leak cases includes all cases that were open at some point during the year, but the MTBE monitoring data summary sheets represent only a static point in time. Thus, the total number of sites monitoring for MTBE and those monitoring and detecting MTBE, as represented on our graph, are likely to be slightly understated. An aquifer is a water-bearing, underground zone of generally gravel and sand.

Information sources used for the analysis include: LUSTIS databases of the San Francisco and Central Coast RWQCBs; MTBE Summary Sheets, Santa Clara



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Valley Water District (SCVWD); "Facts About MTBE & Drinking Water" from SCVWD's web site: www.valleywater.org/Water/Water_Quality/Protecting_your_water/Leaking_Underground_Storage_Tanks.shtml; "A Challenge for the '90s: Protecting Santa Clara County's Water", Santa Clara Valley Water District, 1993; "Trace Levels of MTBE in Drinking Water", *San Jose Mercury News*, 1/27/98; "Gas Stations Low on Time to Upgrade Tanks", *San Jose Mercury News*, 7/10/98; "Governor Issues Order to Phase Out MTBE", *San Jose Mercury News*, 3/26/99.

Endangered Species Listings Continue to Accelerate

Much better information is needed to create meaningful indicators of South Bay species and habitats. It is important to note that the dates on the graph do not represent the biological, scientific dates that each species became rare. Rather, the graph reflects the dates that the species were listed as endangered or threatened through the Federal or State regulatory process. Another limitation of the graph is that it does not display how well we are managing the endangered and threatened species in Santa Clara County. In other words, local populations of these species may increase or decrease, but this would not be reflected in the graph. Where possible, in this report, we have tried to supplement the graph with indicators on local population estimates or habitats.

The animals counted in our data set are ones that occur, or may be affected by projects, within Santa Clara County. Fish and other aquatic species are included if they are in the same watershed as Santa Clara County or if water use in Santa Clara County might affect them. The plants that are included are ones that have actually been observed in Santa Clara County. Please note that scientists differ in opinion as to which species actually occur in a given county. The species reflected in our data set include those actually observed in Santa Clara County and, in the case of animals and fish, those that may be affected by projects within the County. Note that the 2000 and 2001 figures include critical habitat, which can now be listed as endangered or threatened. Critical habitat are specific geographic areas, whether occupied by listed species or not, that are determined to be essential for the conservation and management of listed species, and that have been formally described in the Federal Register. If critical habitat were not included, the total number of Federally- or State-listed endangered or threatened plant and animal species that may occur, or be affected by projects, in the County in 2000 and 2001 would be 33 instead of 38, the same number as in 1999.

Information sources used for the analysis include: U.S. Fish & Wildlife Service; California Department of Fish & Game's Natural Diversity Database, 1/02; California Native Plant Society's Inventory of Rare and Endangered Plants of California; "Species in Danger in Our Own Backyard: Endangered, Threatened and Rare Species in the South San Francisco Bay Area," Peninsula Conservation Center, 1992; and Environmental Defense Fund.

Landmark Deal Aims to Restore Disappearing Tidal Marshes

An estuary is a partially-enclosed body of water where river water meets and mixes with ocean water. The term "baylands" is used to describe the lands near the bay. Information sources used for the analysis include: "Baylands Ecosystem Habitat Goals: A Report of Habitat Recommendations," prepared by the San Francisco Bay Area Wetlands Ecosystem Goals Project. U.S. Environmental Protection Agency, San Francisco, CA./S.F. Bay Regional Water Quality Control Board, Oakland, CA. 3/1/99; Wetlands information sheet published by the San Francisco Estuary Project, 12/93; and "San Francisco Bay Restoration Takes a Giant Leap Forward," 7/12/02, by John Krist, Environmental News Network, http://www.enn.com/news/enn-stories/2002/07/07122002/s_47761.asp

Clapper Rail Declines 19 Percent from Recent Peak in 1997-98

Data reflects population estimates, not actual counts. Data points for 91/92, 95/96, 96/97, 97/98, 98/99, 99/00, 00/01, and 01/02 represent the average of a range. Information sources used for the analysis include: San Francisco Bay National Wildlife Refuge Complex; "Feral Cats: Friend or Foe?", J. Mark Frederick, Animal Damage Specialist, U.S. Department of Agriculture, 11/96; "Baylands Ecosystem Habitat Goals: A Report of Habitat Recommendations," prepared by the San Francisco Bay Area Wetlands Ecosystem Goals Project. U.S. Environmental Protection Agency, San Francisco, CA./S.F. Bay Regional Water Quality Control Board, Oakland, CA. 3/1/99; "Proposition 4 Worries Wildlife Experts," *San Jose Mercury News*, 11/10/98.

Burrowing Owl Habitat Disappearing in Silicon Valley

The indicator was developed by Lynne Trulio, Ph.D., Chair and Associate Professor of Environmental Studies at San Jose State University, using data

collected by the consulting firm of H.T. Harvey and Associates. In 1994, H.T. Harvey and Associates prepared a list of 215 sites identified by local birders and consultants as occupied by burrowing owls between 1981 and 1988. They found that on 97 percent of these sites, there were 10 or fewer birds and on 81 percent just one or two birds survived.

In the spring and summer of 1995, 1998, and 2002 Trulio surveyed 111 of these sites (which had descriptions accurate enough to find) to determine their fate over the decade. Sites completely converted to a use unacceptable as owl habitat were scored as lost; reduced sites were those diminished in size or habitat quality; existing sites were those which, in Trulio's opinion, could still support a pair of owls. The sites are located in Palo Alto, Mountain View, Sunnyvale, Santa Clara, San Jose, and Alviso. This indicator reports only on private or city-owned lands. Bayside parks, Moffett Federal Airfield and the San Jose International Airport were not included in the survey.

It is important to note that the H.T. Harvey data do have limitations. They are anecdotal and not the result of a rigorous survey. However, they have been considered reliable enough for an analysis of owl population change over time (DeSante, et al., 1996). In addition, the sites were not randomly chosen. Those sites provided by consultants are likely to be biased, since these were probably sites being investigated due to their development potential. Sites from birders do not have this bias, but are likely to be in the more accessible areas. Though imperfect, these data are the best records that exist of owl locations in the 1980s and are a valuable baseline from which to evaluate site change over time.

Further, these data are a subset of the existing owl population and are not an accurate reflection of the number of owls in the Valley. These data also do not indicate how many owls were lost. Although 81 percent of sites supported only one or two owls, any particular location may have had between one and 10 birds. These data show only the decrease in the number of owl locations that were occupied in 1988.

Information sources used for the analysis include: "The Burrowing Owl as an Environmental Monitor of CEQA Effectiveness & Quality of Life in Silicon Valley" and "Burrowing Owl Habitat Loss: One Indicator of Quality of Life in Silicon Valley", Lynne Trulio, Ph.D., Associate Professor of Environmental Studies, San Jose State University, 8/98; List of Endangered & Threatened

Species That May Occur in or Be Affected by Projects in Santa Clara County, U.S. Fish & Wildlife Service, 2/25/99; "The Distribution and Relative Abundance of Burrowing Owls in California: Evidence for a Declining Population", David DeSante, Eric Ruhlen and Daniel Rosenberg, 1996; "Environmental Impact Report on the Burrowing Owl: Interland-Mission College Development", H.T. Harvey and Associates, 1994.

Toxic Chemical Releases Remain Relatively Stable

The TRI list includes 667 chemicals, some of which were added in 1995 and 2000. Further, starting in 1994, federal facilities were required to report under TRI, and in 1998 new industries were added. Note that the pounds of chemicals released do not necessarily correlate with the public health or environmental impact because hazards vary among chemicals.

Release data for 1999 and 2000 are falsely high due to erroneous over-reporting from one facility. A review and preliminary correction of this error indicates that total releases in 1999 and 2000 have remained stable, rather than increased.

Information sources used for the analysis include: the U.S. Environmental Protection Agency and the California Department of Toxic Substances Control, part of the California Environmental Protection Agency. For more information about the Toxic Release Inventory, refer to the following websites: www.scorecard.org by the Environmental Defense Fund and www.epa.gov/tri by the U.S. Environmental Protection Agency.

After Trending Downward, Use of the Most Toxic Pesticides Increases (Excludes Residential Use)

Data on pounds, types, uses, and toxicology of pesticides applied in Santa Clara County is from the California Department of Pesticide Regulation as processed by Pesticide Action Network (PAN), based on PAN's data processing methodology available at http://docs.pesticideinfo.org/documentation4/ref_PURCA.html#PANProcess. The term "most toxic" pesticides refers to currently registered pesticide active ingredients in at least one of the following five categories (defined by PAN and Californians for Pesticide Reform (CPR), http://docs.pesticideinfo.org/documentation4/ref_toxicity7.html#BadActor): 1) known or probable carcinogens, as designated by the International Agency for Research on Cancer (IARC), U.S. EPA, U.S. National Toxicology Program, or the state of California's



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Proposition 65 list; 2) reproductive or developmental toxicants, as designated by the State of California's Proposition 65 list; 3) neurotoxic cholinesterase inhibitors, as designated by California Department of Pesticide Regulation, the Materials Safety Data Sheet for the particular chemical, or PAN staff evaluation of chemical structure (for organophosphorus compounds); 4) known groundwater contaminants, as designated by the state of California (for actively registered pesticides) or from historic groundwater monitoring records (for banned pesticides); 5) pesticides with high acute toxicity, as designated by the World Health Organization (WHO), the U.S. EPA, or the U.S. National Toxicology Program. The list of "most toxic" pesticides differs from the list used in the *1999 Silicon Valley Environmental Index* because of additions to the component lists. The analysis for this report used the "Bad Actor Pesticides" list from the Pesticides Action Network based on data released in 11/99 and downloaded on approximately 1/8/02.

Structural pest control represents any pest control work performed within or around buildings or other structures. "Other" pesticide use includes: public health pest control; vertebrate pest control; fumigation of nonfood and nonfeed materials such as lumber, furniture, etc.; pesticides used in research; regulatory pest control used in ongoing control and/or eradication of pest infestations; other fumigation; and uncultivated non-agricultural areas.

The sharp increase in pesticides used in 1998 and 1999 were confirmed by the Santa Clara County Agriculture Department to most likely be reporting errors. The error lies in the reporting of sulfuryl fluoride, a most toxic pesticide. An estimated correction to the 1999 figures would be to subtract 159,720 pounds from the most toxic totals, leaving the overall total at 883,236 pounds of pesticides. The authors of this *Silicon Valley Environmental Index* also noticed that the 1998 numbers seem to be skewed by liquified nitrogen, which shows 654,705 pounds applied in 1998 while fewer than 78,125 pounds were applied in any other year reported.

Information sources used for the analysis include: California Department of Pesticide Regulation and Pesticide Action Network (PAN) and references contained therein. For more information see DPR's website, www.cdpr.ca.gov/docs/pur/purmain.htm and PAN's website, www.pesticideinfo.org/.

Hazardous Waste Generation Decreases to 1989 Levels

Information on hazardous wastes comes from the U.S. Environmental Protection Agency's Biennial Reporting System (BRS). BRS is an automated data processing

system that contains data from Hazardous Waste Report Forms submitted by regulated hazardous waste generators and handlers.

A site is a Large Quantity Generator if it meets certain threshold criteria established in the regulations. Total waste depicted on the graph is the combined total of Resource Conservation and Recovery Act (RCRA) waste and State-regulated hazardous waste. (A RCRA waste is a solid waste assigned a Federal hazardous waste code and regulated by the RCRA law, either because it was managed in a unit subject to RCRA permitting standards or because it was shipped and subject to RCRA hazardous transportation requirements.) A TSD facility is a facility that treats, stores, or disposes of hazardous waste.

Beginning with the 1997 biennial reporting cycle, EPA changed the reporting requirements for aqueous wastes, commonly called wastewaters, managed in treatment systems regulated by the Clean Water Act (CWA) and not by the Resource Conservation and Recovery Act (RCRA).

Under the new reporting requirements, wastewater (except wastewaters managed by deepwell/underground injection) are excluded from the 1999 National Biennial Report. For purposes of this *2003 Silicon Valley Environmental Index*, SVEP has added both non-wastewater and wastewater data to arrive at total RCRA and State-regulated hazardous wastes for all years graphed (1989-1999). For more information about EPA reporting requirements and the National Biennial RCRA Hazardous Waste Report, see www.epa.gov/epaoswer/hazwaste/data/brs99/index.htm.

The tonnage of waste reported is meant to give a gross estimate of industrial waste activity in Santa Clara County and the amount of waste generated and managed, rather than an estimate of the risk to local populations. Facilities vary according to how close they are to human population areas and sensitive ecological features. Therefore, the figures shown may not accurately reflect risk to people and the environment.

Information sources used for the analysis include: "Environmental Profile for Santa Clara County, California," from the Center for Environmental Information and Statistics website, [http://tree2.epa.gov/CEIS/CEIS.NSF/\\$\\$All/0606085BRS](http://tree2.epa.gov/CEIS/CEIS.NSF/$$All/0606085BRS), which depicts data from the U.S. Environmental Protection Agency's Biennial Reporting System and EPA Region 9.

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California Department of Toxic Substances Control
California Department of Transportation
California Energy Commission
California Native Plant Society
Center for Environmental Information and Statistics
Central Coast Regional Water Quality Control Board
Environmental Defense Fund
Greenbelt Alliance
Greeninfo Network
Joint Venture: Silicon Valley Network
NASA Ames Research Center
Pesticide Action Network
San Francisco Bay Area Wetlands Ecosystem Goals Project
San Francisco Bay National Wildlife Refuge Complex
San Francisco Regional Water Quality Control Board
Santa Clara County Integrated Waste Management Program
Santa Clara Valley Water District
Silicon Valley Toxics Coalition
Lynne Trulio, San Jose State University
U.S. Department of Energy
U.S. Environmental Protection Agency
U.S. Fish & Wildlife Service
U.S. Geological Survey
And other individuals and organizations

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