

**Water Metrics:
How Can Better Information
Protect and Save Water?**

Jon Christensen
Executive Director
Bill Lane Center for the American West
Stanford University

Conservation In Practice

A Publication of the Society for Conservation Biology

Summer 2003



AUDITING CONSERVATION IN AN AGE OF ACCOUNTABILITY

Why Behavioral Ecology Can Change the Way We Do Conservation

Rediscovering an "Extinct" Fish Reveals Novel Ways to
Reconcile Fisheries and Conservation



THE NEW YORK TIMES SCIENCE TUESDAY, NOVEMBER 5, 2002

Fiscal Accountability Concerns Come to Conservation

By JON CHRISTENSEN

Conservation biology has long been driven by a mission to save all the pieces at whatever cost. But just as questions about accounting are shaking up the financial world, conservationists are beginning to pay much closer attention to results. They are looking for more bang for the buck — not just financially but biologically, too.

In recent months, scientists from diverse conservation groups have been meeting to discuss principles and accounting standards for auditing environmental projects. Two of the largest conservation groups, the Nature Conservancy and the World Wildlife Fund, are leading the effort, with help from the nonprofit Foundations of Success, which specializes in measuring results.

Government agencies and the people and groups that finance the projects are watching closely to see if greater accountability can be achieved.

Measuring the effects of conservation projects can be bewildering. Biological systems are so complex that complete audits are practically impossible. Conservation also depends on making judgment calls about the effectiveness of political, economic and social strategies.

Still, a consensus is emerging that the environmental movement needs something akin to the generally accepted accounting principles that govern financial reporting. In "The Future of Conservation," a recent article in *Foreign Affairs*, Dr. Steven Sanderson, president and chief executive of the Wildlife Conservation Society at the Bronx Zoo, called for independent scientific audits of international conservation projects. Dr. Sanderson said that the audits should include the work of groups like his own and that those audits should be subject to peer review. "If we are honest with ourselves," he said, "we won't do it as well as it could be done independently."

Billions of dollars are spent annually — some estimates are \$120 billion — on protecting ecosystems in the United States alone. The World Bank has overseen about \$3 billion in loans and investments for conservation projects in the last decade. But measuring the returns is an inexact science at best.

In September, "The State of the Nation's Ecosystems," a two-year study involving about 150 scientists, fell short by its own admission. About half of the data needed to

Seth Neiman, left, a venture capitalist, and M. A. Sanjayam of the Nature Conservancy are developing methods for auditing environmental projects. Many conservation groups are trying to quantify the success of their own efforts.



Jon Christensen

assess the health of ecosystems was found inadequate for the report, published by the U. John Heinz Center for Science, Economics and the Environment. The scientists hope eventually to fill in the blanks.

But even long-term studies won't answer all the questions about ecosystem health, said Dr. Thomas E. Lovejoy, president of the Heinz Center and an adviser to the World Bank on biodiversity. He directed a study that ran for more than 20 years in the Amazon to learn the effects of forest fragmentation and the minimum critical size of ecosystems.

"The bad news is, we don't know all the answers because the rates of change are slow," Dr. Lovejoy said. "The good news is you're not losing things instantaneously." Conservationists can often stem the loss of species while figuring out how ecosystems function, he said, and that is why measurements of success are important.

Dr. Lovejoy is on the board of Foundations of Success, which grew out of the Biodiversity Support Group, a 10-year project supported by the federal Agency for International Development to improve the effectiveness of conservation.

"As a conservation industry, we have to prove we are effective and achieve what we say we are," said Nick Salafsky, the co-director of Foundations of Success. "If we can't show that, the attention and pressure from donors is forcing conservation to wake up and face this

issue."

With a grant from the Gordon and Betty Moore Foundation, Foundations of Success is working with the Wildlife Conservation Society and Conservation International on a study tracing the history of accounting and impact assessment in fields like business, education and social services, as well as the environment. Deloitte Consulting conducted a similar survey for the Nature Conservancy this year.

"We're latecomers to this game," said Dr. M. A. Sanjayam, a scientist

to help save open space on Mount Hamilton, an island of natural habitat in a sea of encroaching suburbs south of San Jose.

Mr. Neiman asked how the conservancy knew the investment would provide lasting protection for the oak woodlands and the creatures that live there. Mr. Neiman said he was not interested in preserving a piece of land for 20 years. "That would be an act of vanity," he said. "I want to know what we might do as a way to protect an ecosystem for 500 years."

Mr. Neiman asked Dr. Sanjayam: "How do you know you're having an impact? Why should I donate millions of dollars and time if it isn't possible to reach this goal?"

"That stamped me," Dr. Sanjayam said. He told Mr. Neiman he did not have an answer. But maybe with Mr. Neiman's help they could find a way to begin answering the question of whether conservation groups were conserving what they said they were over the long run.

Mr. Neiman agreed to help underwrite the effort. His company, Crosspoint Ventures, is a limited partnership that has invested more than \$2 billion in almost 200 companies. He has watched high-tech startups grapple with finding the right measurements for their business performances in recent years.

Measuring results is crucial for honest reporting of financial results, he said, but it is even more vital for management and learning.

"In business, you have an unending feedback cycle," he said. "If you don't make a profit, you're dead."

Mr. Neiman has given the Nature Conservancy about half a million dollars for the auditing project. In the short term, the auditing has meant some painful self-examination for the conservancy, which had revenues of \$787 million last year and assets of \$2.8 billion.

The new auditing has been tested at two sites, the Cosumnes River Preserve in California, home to sandhill cranes and salmon on the Sierra Nevada's last wild river, which is increasingly hemmed in by suburbs and vineyards, and Komodo National Park in Indonesia, home of the famous Komodo dragons, as well as coral reefs threatened by fishermen who use cyanide and crude bombs to stun fish.

The audits examine detailed site conservation plans and strategies for countering threats at each site, as well as monitoring threatened species and determining whether managers have the resources to carry out their plans.

Both audits showed progress was being made toward conserving what the projects set out to save, but the projects had a long way to go to be truly sustainable, especially in Komodo National Park. The conservancy is now road-testing the method by auditing projects across the organization, which has more than 1,400 preserves in 50 states and 28 other countries.

In the long term, Dr. Sanjayam and Mr. Neiman believe, auditing will result in better returns on the money invested annually, roughly \$6.3 billion, in private conservation efforts around the world. If government agencies adopt the methods, it may have an even greater effect.

"If this is done right, it will change the whole discussion about conservation," Mr. Neiman said. "People will start asking, 'What are your results?'"

Julie Packard, the director of the Monterey Bay Aquarium and a board member of her parents' foundation, the David and Lucile Packard Foundation, called the move toward auditing exciting.

In recent years, the foundation has given millions to the Nature Conservancy and other groups. "The organizations need to feel a responsibility not only to the ecosystems they are seeking to protect," Ms. Packard said, "but to donors and investors who are expecting that the lands will be protected as healthy ecosystems in the 500-year time frame. It's a lofty goal. And it's an imperfect science. But it's the right question to be asking."

Second Thoughts for a Designer of Software That Aids Conservation

By JON CHRISTENSEN

Australia's recent decision to ban fishing on a third of the Great Barrier Reef represented an important endorsement for an obscure computer program that has become the brains behind many conservation plans around the world.

But last month, one of the inventors of the program raised questions about its usefulness in protecting the environment, suggesting that simpler rules used by conservationists for years may be more effective than elaborate plans concocted with computer software.

The program, Marxan, was developed in 1998 as a Ph.D. thesis by an Australian graduate student, Ian R. Ball, working with Dr. Hugh P. Possingham, a professor of mathematical ecology and director of the Ecology Center at the University of Queensland. The program, which is free, takes data about species and their habitats and spits out an optimal design for the most efficient network of reserves to preserve biodiversity in a region.

Since the software was developed, conservation groups and academic biologists worldwide have been using it and various offshoots to create plans to guide land purchases and government policies for protecting endangered species.

But in a paper in Ecology Letters and at a meeting of the Society for Conservation Biology at Columbia University, Dr. Possingham warned that, according to a recent study he conducted, unless such plans were put in place within a year after they were created, it was better to follow the simple rules of thumb that conservationists have long used, before the advent of complex computer-based conservation designs.

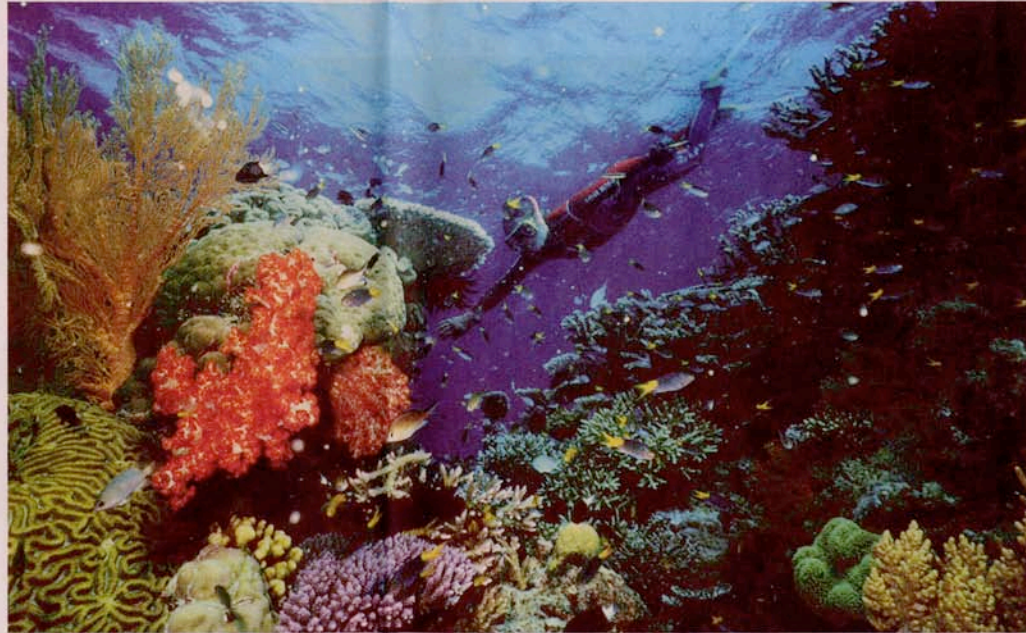
Many conservationists have criticized these conclusions, arguing that computer-based plans have many uses, in fund-raising, for example, and in providing goals for governments to meet.

Dr. Ball, who is now a researcher for the Australian government in Tasmania, said he welcomed dialogue on his program's effectiveness. "Any young scientist is very happy to see their work being used," he said.

Simpler rules may be more effective than computer models.

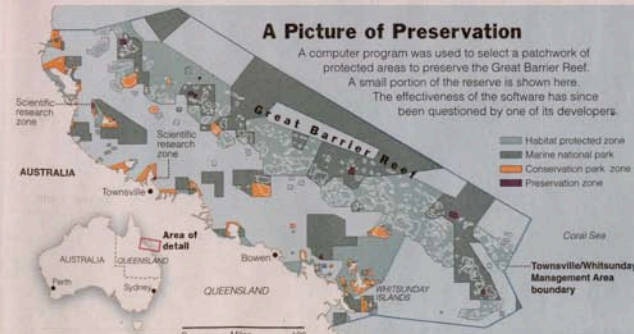
in a telephone interview. "This one has had an effect because it was the right thesis at the right time."

Indeed, conservation planning is booming these days; the Great Barrier Reef is just one example of how planners are thinking big. In the United States, every state must have a conservation plan by 2005 to qualify for millions of dollars in federal financing



Jon Christensen for The New York Times

Dr. Hugh P. Possingham and Dr. Sandy Andelman helped assemble data and run an experiment testing a computer-generated conservation plan. Top, a healthy part of the Great Barrier Reef, which is under threat from pollution and overfishing.





Water in the West
Metrics and Performance Measurement Group
Listening Tour

Sacramento

Art Baggett, Board Member, State Water Resources Control Board

Jonathan Bishop, Chief Deputy Director, State Water Resources Control Board

Ginny Cahill, Consultant, Resources Legacy Fund

Tam Doduc, Board Member, State Water Resources Control Board

Maurice Hall, Senior Hydrologist, The Nature Conservancy

Michael Lauffer, Chief Counsel, State Water Resources Control Board

Tim Quinn, Executive Director, Association of California Water Agencies

Mary Scoonover, Resources Legacy Fund

Caren Trgovcich, Director, Office of Research, Planning & Performance, State Water Resources Control Board

Vicky Whitney, Deputy Director for Water Rights, State Water Resources Control Board



Los Angeles

Ron Gastelum, Interim Executive Director, Southern California Water Committee

Jeff Kightlinger, General Manager, Metropolitan Water District

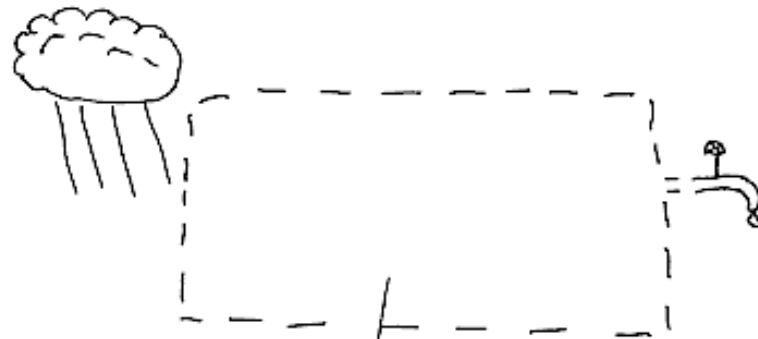
Thomas Love, General Manager, Inland Empire Utilities Agency

Debra Man, Assistant GM and Chief Operating Officer, Metropolitan Water District

Michael Markus, General Manager, Orange County Water District

Jim McDaniel, Senior Assistant General Manager, Los Angeles Department of Water and Power

HOW WE GET WATER IN OUR HOMES



I DON'T
HAVE ANY
INFORMATION
ON THIS BIT

SOUTHERN CALIFORNIA'S WATER RESERVE LEVELS

Water Reserve Levels



**WATER
RESERVE
LEVELS
HAVE
DROPPED**

How you can help

Fresno

Dan Errotabere, President, California Farm Bureau Federation

Russ Freeman, Supervisor of Resources, Westlands Water District

Tom Glover, Director, Resources Division, Westlands Water District

Sarge Green, California Water Institute, CSU-Fresno

Ron Jacobsma, General Manager, Friant Water Authority

William Phillimore, Executive VP Paramount Farms / Chairman of the Board, Kern
Water Bank

Mike Wade, Executive Director, Agricultural Water Management Council / ED, Farm
Water Coalition



1925

1955

SAN JOAQUIN VALLEY
CALIFORNIA
ON 1991
SUBSIDENCE ON
1925-1977

1977

San Francisco

John Bohn, Commissioner, California Public Utilities Commission

Hal Candee, Partner, Altshuler Berzon

Jim Fiedler, Chief Operating Officer, Santa Clara Valley Water District

Ellen Hanak, Research Fellow and Director of the Economy Program, Public Policy Institute of California

Laura Harnish, California Regional Director, Environmental Defense Fund

Ellen Levin, Deputy Manager of Water Resources, SFPUC

Doug Obegi, Staff Attorney, Natural Resources Defense Council

Greg Thomas, Founder and President, Natural Heritage Institute

Meanwhile Back on The Farm and Out and About

Joya Banerjee, Program Associate, S.D. Bechtel, Jr. Foundation

Stephen D. Bechtel, Jr.

Chuck Bonham, California Director, Trout Unlimited

Ginny Cahill, Consultant, Resources Legacy Fund

Celeste Cantu, General Manager, Santa Ana Watershed Project Authority Mark Cowin, Director, California Department of Water Resources

Laurie Dachs, President, S.D. Bechtel, Jr. Foundation

Sarah Davies, Senior Director of Western Development, Trout Unlimited

Allison Duncan, Principal, Amplifier Strategies

Allison Harvey, Program Officer, S.D. Bechtel, Jr. Foundation

Bob Fisher, Pisces Foundation

Ann Hayden, Senior Water Resource Analyst, Environmental Defense Fund

Eric Heitz, President, The Energy Foundation

Don Howard, Partner, The Bridgespan Group

Jim Howard, San Mateo District Conservationist, USDA, Natural Resource Conservation Service

Brian Johnson, Trout Unlimited

Rich Juricich, Statewide Integrated Water Management, CA Department of Water Resources

MaryAnn King, Trout Unlimited

Marty Laporte, Associate Director, Environmental Quality & Water Conservation, Stanford Utilities

Bill Leahy, President, Big Sur Land Trust

Kai Lee, Conservation and Science Program Officer, Packard Foundation

Michael Mantell, Resources Legacy Fund

Paul Massera, Chief of Strategic Water Planning Branch, CA Department of Water Resources

Felicia Marcus, Western Director, Natural Resources Defense Council

Jeff Mount, UC Davis Center for Watershed Sciences

Kellyx Nelson, Executive Director, San Mateo County Resource Conservation District

Tim Quinn, Executive Director, Association of California Water Agencies

Mary Scoonover, Resources Legacy Fund

Michael Scott, Environment Program Officer, Hewlett Foundation

John Seebach, American Rivers/Hydropower Reform Coalition

Peter Williams, Chief Technology Officer, Big Green Innovations, IBM

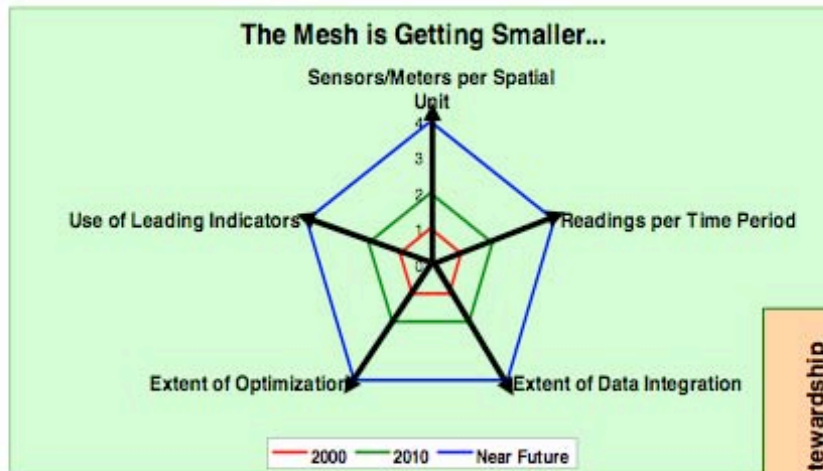
Bob Wilkinson, Director, Water Policy Program, UC Santa Barbara, Bren School of Environmental Science and Management

John Woodling, Executive Director, Regional Water Authority





“A Smarter Planet” – The Major IT Trend of Our Time

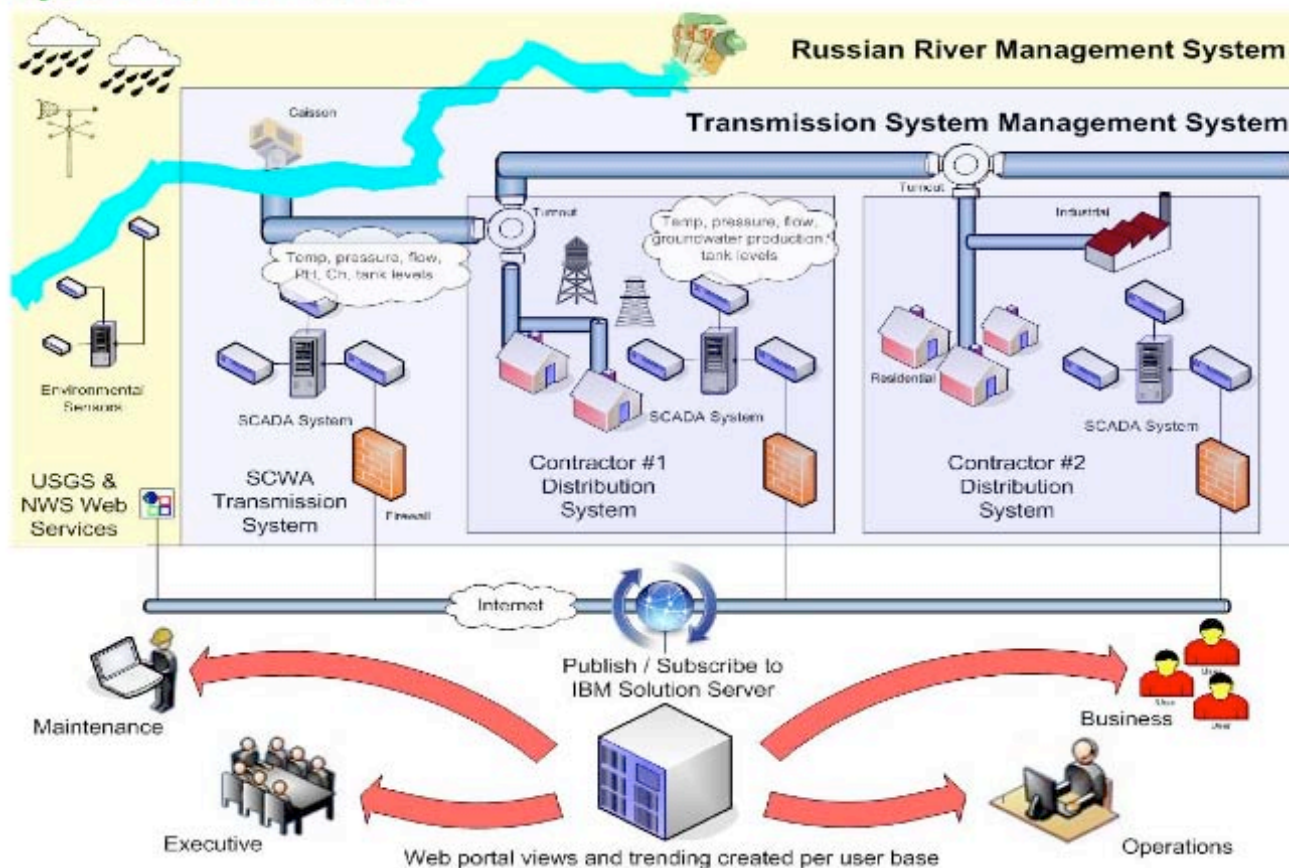


- “Instrumented”
- “Interconnected”
- “Intelligent”





Project Schematic



SONOMA COUNTY WATER AGENCY COLLABORATION PLATFORM

OPTIMIZATION
CONSERVATION
INFORMATION
EFFICIENCY
COLLABORATION

Geo Spatial Mode | System Map Mode

System Map View

Map Controls: [Icons] Map Select: SCWA Overview

Pan & Zoom system map to focus on specific elements and areas

System maps will not be duplicative of the SCADA systems. Instead, they are focused on illustrating the data integration occurring in the Collaboration Platform and answering core questions: **Total production, Total Storage, River Levels, Flow, & expected precipitation**

Real Time Data for Selected tag - 11465600 - LAGUNA DE SANTA ROSA A STORY PIED MOUNTAIN CA

Tag Name	Site Name	Property	Unit	Real Time Value	Historical
S14_Annual_Level	S14_Annual	Height	m	17.0	[Icon]

Historical Data for S14_Annual_Level - 1 and 30 days

Change Time Period to Display

Basinets: Board

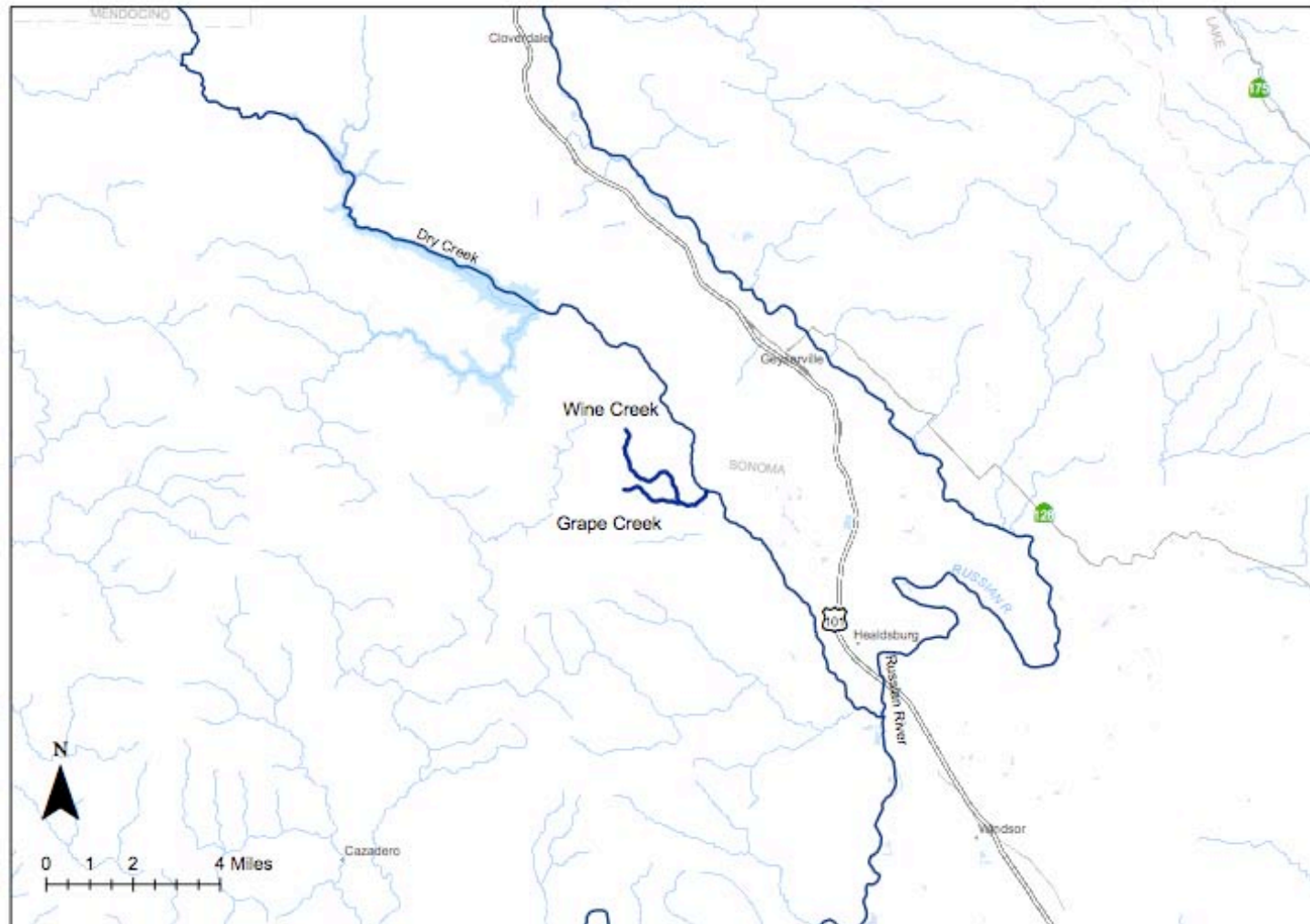
Basinets: Board Type: Water Cycling Maintenance Advisory (Default)

Basinets: Message:

- * S14_Magnitude is applied to 4 hours on 25/02/2010, connecting @ 20%
- * Basins (Reservoir) is to be taken off-line for 12 hours on 25/02/2010, connecting @ 100%
- The following tanks will be taken off-line:
- * S14_tank_01
- * S14_tank_02
- * S14_tank_03
- * S14_tank_04



Grape Creek and Watershed



HU/HA/ HSA	HYDROLOGIC UNIT/AREA/ SUBUNIT/DRAINAGE FEATURE	BENEFICIAL USES																										
		MUN	AGR	IND	PRO	GWR	FRSH	NAV	POW	REC1	REC2	COMM	WARM	COLD	ASBS	SAL	WILD	RARE	MAR	MIGR	SPWN	SHELL	EST	AQUA	CUL	FLD	WET	WQE
105.30	Middle Klamath River Hydrologic Area																											
105.31	Ukonom Hydrologic Subarea	E	E	E	E	E	E	E	P	E	E	E	E	E			E	E		E	E			P	E			
105.32	Happy Camp Hydrologic Subarea	E	E	E	E	E	E	E	P	E	E	E	E	E			E	E		E	E			P	E			
105.33	Seiad Valley Hydrologic Subarea	E	E	E	E	E	E	E	P	E	E	E	E	E			E	E		E	E			P	E			
105.35	Beaver Creek Hydrologic Subarea	E	E	E	E	E	E	E	P	E	E	E	E	E			E	E		E	E			P				
105.36	Hornbrook Hydrologic Subarea	E	E	E	E	E	E	E	P	E	E	E	E	E			E	E		E	E			P				
105.37	Iron Gate Hydrologic Subarea	P	P	P	P		E	E	E	E	E	E	E	E			E	E		E	E	E		E				
105.38	Copco Lake Hydrologic Subarea	E	E	E	P		E	E	E	E	E	E	E	E			E	E		E	E			E				
105.40	Scott River Hydrologic Area																											
105.41	Scott Bar Hydrologic Subarea	E	E	E	P	E	E	E	E	E	E	E	E	E			E	E		E	E			P				
105.42	Scott Valley Hydrologic Subarea	E	E	E	P	E	E	E	E	E	E	E	E	E			E	E		E	E			E				
105.50	Shasta Valley Hydrologic Area																											
	Shasta River & Tributaries	E	E	E	P	E	E	E	P	E	E	E	E	E			E	E		E	E			E				
	Lake Shastina	P	E	P	P	E	E	E		E	E		E	E			E			P				P				
	Lake Shastina Tributaries	E	E	E	P	E	E	P	P	E	E	E	E	E			E			E	E			P				
105.80	Butte Valley Hydrologic Area																											
105.81	Macdoel-Dorris Hydrologic Subarea	E	E	P	P				E	E	E	E	E	E			E	E		E	E			P				
	Meiss Lake	E	E	P	P	E				P	E		E	E			E							P				
105.82	Bray Hydrologic Subarea	E	E						P	E	E	E	E				E	E		E	E			P				
105.83	Tennant Hydrologic Subarea	E	E	P	P	E	E		P	E	E	P	P	E			E	P		E	E			P				

How Can Better Information Protect and Save Water?

- Information systems reform and reporting requirements at state level enable sustained performance measurement, analysis, and improvement at state, regional, and local levels.

How Can Better Information Protect and Save Water?

- Information systems reform and reporting requirements at state level enable sustained performance measurement, analysis, and improvement at state, regional, and local levels.
- State level sustainability scorecard/index motivates reform.

Environmental Performance Index 2010: United States of America

http://epi.yale.edu/Countries/UnitedStatesOfAmerica

GO TO COUNTRY PAGE ▾ MAP RANKINGS METRICS COUNTRY GROUPS FILES SEE 2008 SITE

PREV NEXT PRINT OR DOWNLOAD THIS PAGE PDF

UNITED STATES OF AMERICA

EPI RANK: **61** EPI SCORE: **63.5** Average EPI score for income peer group (1st decile): 67.1 GDP per capita: \$42,672
 Average EPI score for Americas: 64.0 Population: 301,290,000

PEER GROUPS AMERICAS ▾ 1ST INCOME DECILE ▾ OECD ▾ FTAA ▾ APEC ▾ CLUSTER 7 ▾

MAP Zoom in/out Political Metrics ▾ Scale by ▾ +

SCORES (UNITED STATES OF AMERICA) +

Indicator	Score (approx.)
Environmental Performance Index	63.5
Environmental Health	88
Ecosystem Vitality	38.7
Env. Burden of Disease	60
Air Pollution (effects on humans)	75
Water (effects on humans)	85
Climate Change	55
Water (effects on ecosystem)	70
Biodiversity & Habitat	65
Agriculture	80
Air Pollution (effects on ecosystem)	60
Fisheries	85
Forestry	95

SCORES (WORLD) Categories ▾ +

EPI and Objectives

Objective	Score
EPI	63.5
Environmental Health	88
Ecosystem Vitality	38.7

Done

How Can Better Information Protect and Save Water?

- Information systems reform and reporting requirements at state level enable sustained performance measurement, analysis, and improvement at state, regional, and local levels.
- State level sustainability scorecard/index motivates reform.
- Providing actionable information to consumers motivates conservation and better understanding of water quality, supply, sources, and environmental impact, creating more informed voters.

The Water Connection

California's Water Resources and You

NOW SHOWING

Introduction

SELECT

More Guides ▶

California's water is concentrated in the north. It is transported statewide to support cities and agriculture that feeds the whole nation. Our supplies are stretched to the limit, while native habitats and species are under threat. What is our plan for the future?

Learn how you're connected.



...your water use and choices

...about your local community

... your water delivery, treatment and quality

...the health of your source water supply

...what you can do to make a difference

My Home

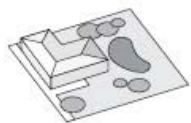
Smith Family House

CHANGE

Residence ▼

Single Family Home
Small Pool
0.6 acre Irrigated Yard

CHANGE



ADULTS

CHILDREN

— GAL. Daily Water Use
— GAL. Daily Water Use/Person
\$ — Average Monthly Cost

Usage estimates will appear after you choose your town and utility

Action Center ▲

Yard Planner ▲

My Town

ENTER A ZIP CODE

Enter Zip

GO

OR PICK A CITY FROM THE LIST

Los Angeles
San Francisco
San Diego
San Jose
Oakland
Sacramento
Bakersfield
Fresno
Modesto
Stockton
Santa Cruz

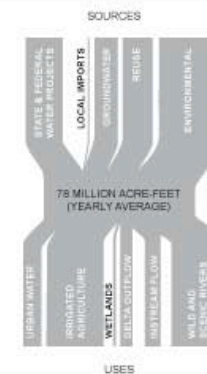
My Utility

My Sources

California's Water

A Fragile Balance

Sources and Uses ▼



Future Outlook: 20% by 2020 ▲

Wildlife Reports ▲

State Water News ▲

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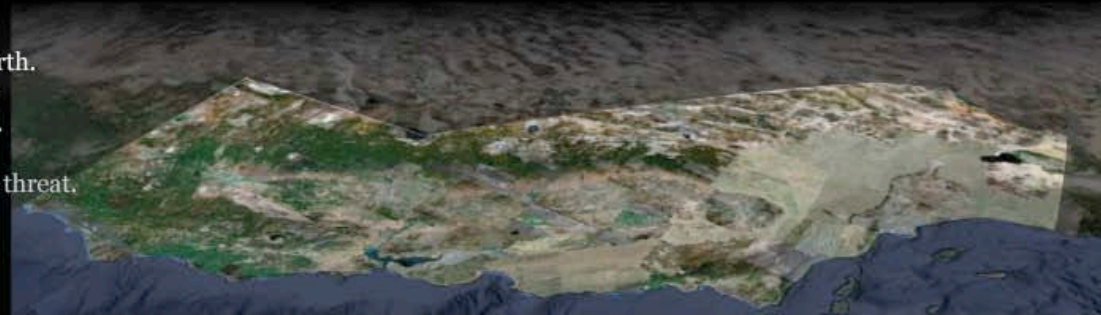
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...the health of your source water supply

...what you can do to make a difference

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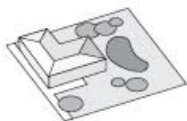
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Action Center ▲

Yard Planner ▲

My Town

ENTER A ZIP CODE

94306

GO

RESULT

Palo Alto, Santa Clara County
94306

SEARCH AGAIN ?

OR PICK A CITY FROM THE LIST

Los Angeles
San Francisco
San Diego
San Jose
Oakland
Sacramento
Bakersfield
Fresno
Modesto
Stockton
Santa Cruz

My Utility

My Sources

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My Home	My Town	My Utility	My Sources	California's Water
Smith Family House <small>CHANGE</small> Residence ▼ Single Family Home Small Pool 0.6 acre Irrigated Yard ADULTS CHILDREN - GAL. Daily Water Use - GAL. Daily Water Use/Person \$ -- Average Monthly Cost Usage estimates will appear after you choose your town and utility	Palo Alto, Santa Clara County <small>CHANGE</small> Climate ▼ CURRENT WEATHER 78°F TEMP SUNNY HUMIDITY 48% 0" PRECIPITATION LAST 24 HRS 8" SINCE JAN. 1 CLIMATE INFORMATION ? Coastal, Semi-Arid 2010 DROUGHT LEVEL ? Normal AS OF AUG. 1	City of Palo Alto Public Works WEBSITE CONTACT INFO Water Supplies ▼ IMPORTS- WATER FROM ELSEWHERE 85% Hetch-Hetchy Aqueduct LOCAL WATER SOURCES 15% Groundwater ? 0% Recycled or Reclaimed ? 0% Desalinated Water ?	Hetch-Hetchy Aqueduct System Overview ▼ ELEVATION PROFILE 100 MILES 0 With its watershed located nearly entirely within Yosemite National Park, the Hetch Hetchy system delivers about 265,000 acre-feet of pristine Sierra Nevada water per year, providing for about 80% of urban uses for San Francisco, as well as parts of San Mateo, Santa Clara and Alameda counties.	A Fragile Balance Sources and Uses ▼ SOURCES STATE & FEDERAL WATER PROJECTS LOCAL IMPORTS WETLANDS WILDLAND SCENIC RIVERS 78 MILLION ACRE-FEET (YEARLY AVERAGE) USES FUTURE OUTLOOK: 20% BY 2020 WILDLIFE REPORTS STATE WATER NEWS
Average Water Use ▲ Action Center ▲ Yard Planner ▲	Average Water Use ▲ Drought Information and Tips ▲ Growing Conditions ▲	Water Quality Reports ▲ Water Treatment ▲ Conservation Programs ▲	Water Sources ▲ Reservoir Status ▲ Recreation and Visitor Info ▲	Future Outlook: 20% by 2020 ▲ Wildlife Reports ▲ State Water News ▲

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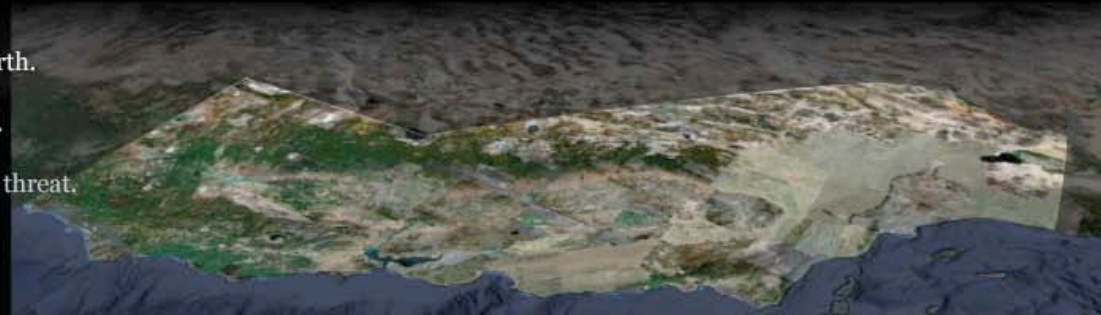
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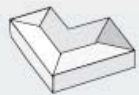
Describe the place where you live...

Residence ▼

Single Family Home
Small Pool
0.6 acre Irrigated Yard

CANCEL SAVE CHANGES

Dwelling Type ▶



Single Family Home

Appliances

- Dishwasher
- Washing Machine
- Hot Tub
- Ice Maker

Conservation Measures

- Lo-Flush Toilets
- Lo-Flow Shower Heads
- Graywater Recycling
- Poolwater Recirculation

Occupants



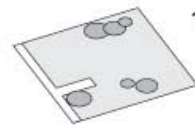
Swimming Pool



1,000
GALLONS

Small

Irrigated Yard



10,000
SQ. FEET

0.22
ACRES

Action Center ▲

Yard Planner ▲

Growing Conditions ▲

Conservation Programs ▲

My Sources

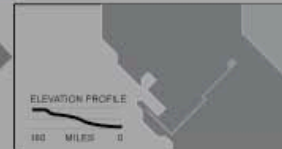
Works

Hetch-Hetchy Aqueduct System

Overview ▼

WHERE

Aqueduct



With its watershed located nearly entirely within Yosemite National Park, the Hetch Hetchy system delivers about 285,000 acre-feet of pristine Sierra Nevada water per year, providing for about 80% of urban uses for San Francisco, as well as parts of San Mateo, Santa Clara and Alameda counties.

Water Sources ▲

Reservoir Status ▲

Recreation and Visitor Info ▲

California's Water

A Fragile Balance

Sources and Uses ▼

SOURCES



USES

Future Outlook: 20% by 2020 ▲

Wildlife Reports ▲

State Water News ▲

How Can Better Information Protect and Save Water?

- Information systems reform and reporting requirements at state level enable sustained performance measurement, analysis, and improvement at state, regional, and local levels.
- State level sustainability scorecard/index motivates reform.
- Providing actionable information to consumers motivates conservation and better understanding of water quality, supply, sources, and environmental impact, creating more informed voters.
- Monitoring and reporting of groundwater management enables prioritization of reform, motivates reform, and increases understanding of future costs of groundwater depletion.

Groundwater Basins in California

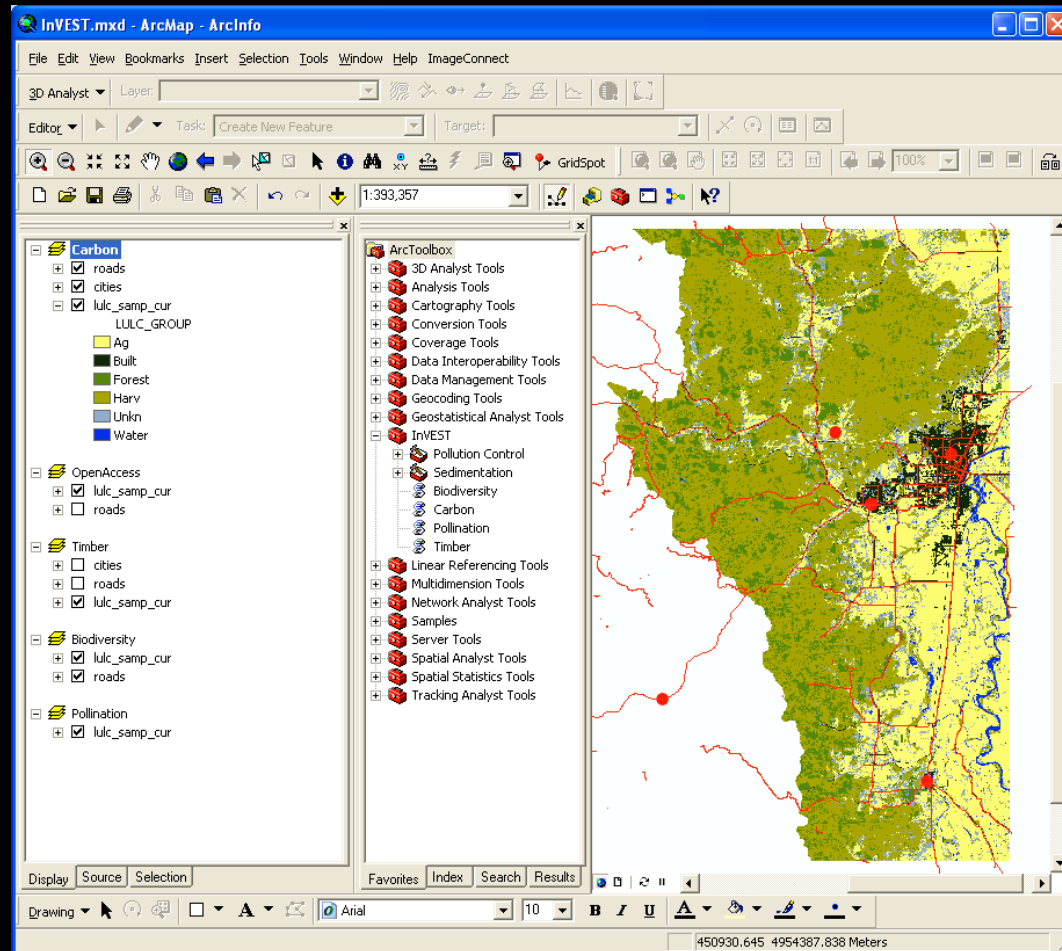




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