

Conférencier / Speaker

Chris Drew
Ocean Mist Farms





***WATER DEMAND and use
IN THE WESTERN UNITED STATES***

Chris Drew, President & CEO
Ocean Mist Farms

WATER DEMAND AND USE IN THE WESTERN UNITED STATES: FROM A GROWERS PERSPECTIVE

- AGENDA



Introduction to Ocean Mist Farms



History of Farming in the Western United States



Western United States Water Sources



Impacts of Drought in the Western United States



Managing Water Use



Conclusion

Introduction to Ocean mist farms

COMPANY NAME

Ocean Mist Farms

HEADQUARTERS

Castroville, CA

WEBSITE

www.OceanMist.com

www.AllAboutArtichokes.com

GROWING REGIONS



OUR COMPANY

- Ocean Mist Farms is a fourth-generation family-owned business founded in 1924
- The largest grower of fresh artichokes in North America
- The company's full line of 30 fresh vegetables includes the award-winning Season & Steam product lines
- Ocean Mist Farms is committed to delivering the highest standards in the industry for food safety, product quality, customer service and innovation
- Today we farm over 23,000 crop acres in multiple locations throughout California, Arizona & Baja Mexico
- Ocean Mist Farms Vegetable Production:

Salinas Valley: March – November

Oxnard: October – December, April – June

Coachella & Yuma Valley's: November – March

Mexico: November - June

INTRODUCTION TO OCEAN MIST FARMS

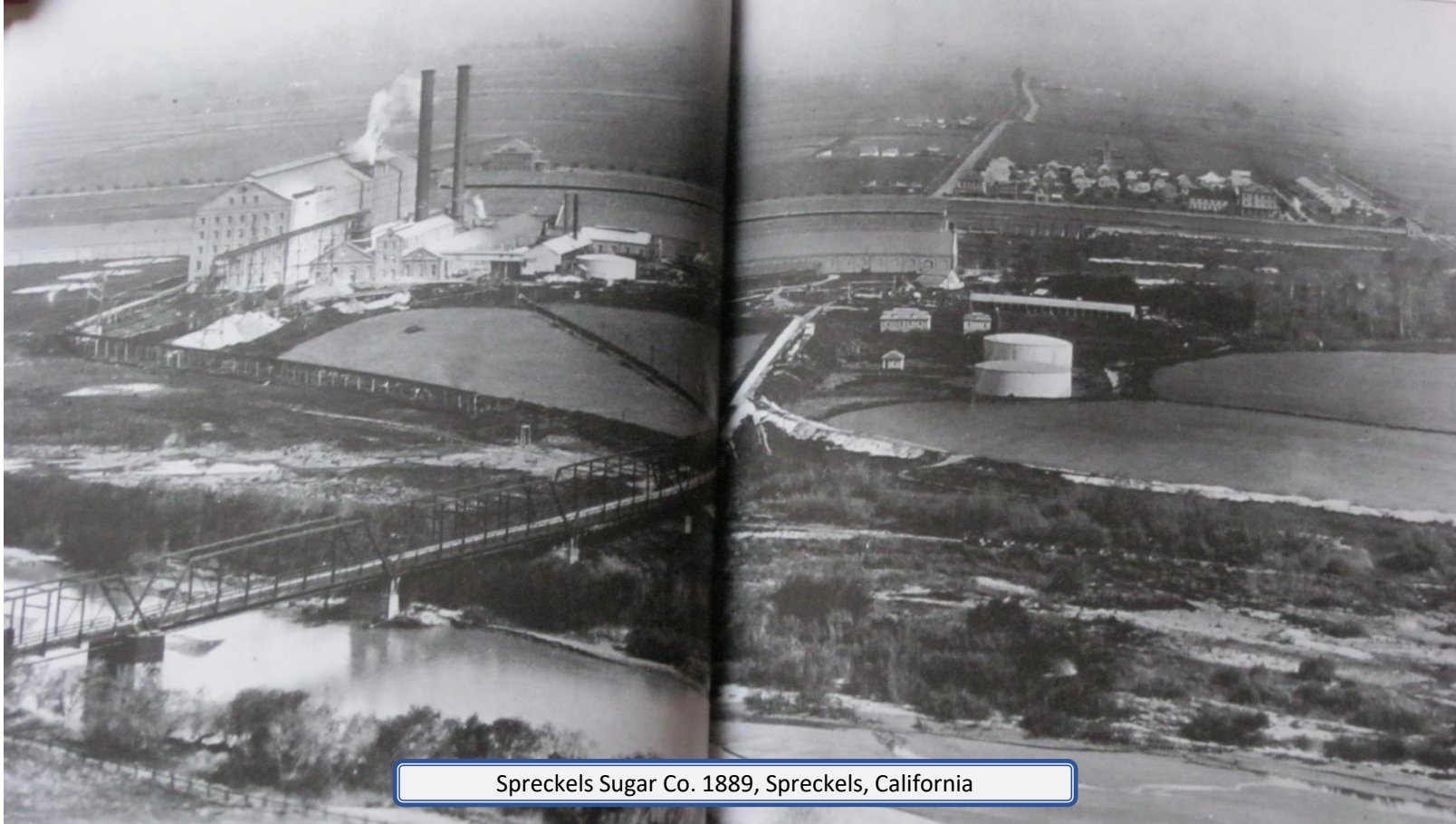
CROPS GROWN BY OCEAN MIST FARMS



- *Anise*
- *Artichokes*
- *Broccoli (bunched)*
- *Broccoli Crowns*
- *Brussels Sprouts*
- *Cardone*
- *Cauliflower*
- *Celery*
- *Leaf, Butter*
- *Leaf, Green*
- *Leaf, Red*
- *Iceberg Lettuce*
- *Romaine*
- *Romaine Hearts*
- *Spinach*
- *Spinach (cello)*

HISTORY OF FARMING IN THE WESTERN UNITED STATES

THE BEGINNING OF SALINAS VALLEY AGRICULTURE



Spreckels Sugar Co. 1889, Spreckels, California

HISTORY OF FARMING IN THE WESTERN UNITED STATES

THE BEGINNING OF SALINAS VALLEY AGRICULTURE

1923: 350 Acres of Iceberg Lettuce Grown



Irrigation Canals

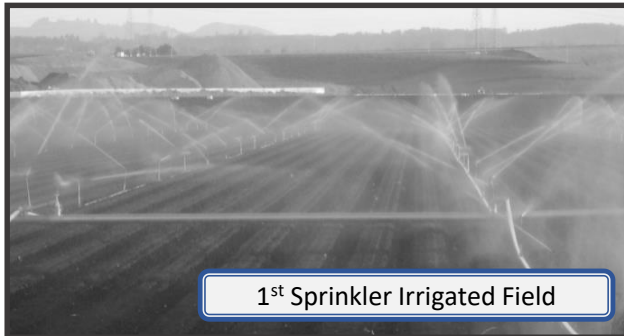


Crop Irrigation



New Planting Technology

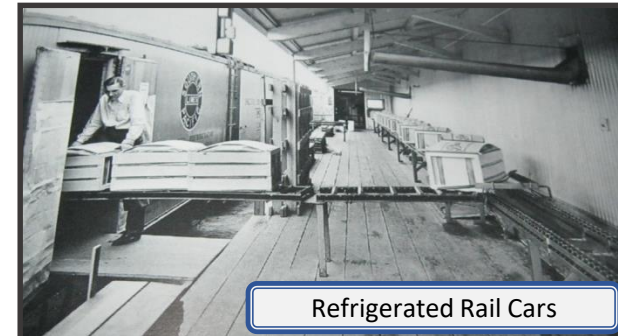
1945: 50,000 Acres of Iceberg Lettuce Grown



1st Sprinkler Irrigated Field



New Harvest Technology



Refrigerated Rail Cars

HISTORY OF FARMING IN THE WESTERN UNITED STATES

SALINAS VALLEY GROWING REGION

“THE SALAD BOWL OF THE WORLD”



Salinas Valley Crop Production:

- Over 300,000 Irrigated Crop Acres
- Produces more than 85% of the nations fresh vegetables during the months of March – November
- Salinas agriculture is a multi-billion-dollar industry

HISTORY OF FARMING IN THE WESTERN UNITED STATES

COACHELLA VALLEY GROWING REGION

- *Farming began in the Coachella Valley in the early 1900's, and has grown to 100,000 acres of irrigated farmland today*
- *Annual Revenue is just over one billion dollars*
- *Primary Water source is the Colorado River*
- *Most farms have secondary water sources from well water supported by a large underground aquifer*
- *Crops Farmed Include:
Winter & Summer Vegetables:
Citrus, Dates & Table Grapes*
- *Annual Rainfall is less than 3 inches*

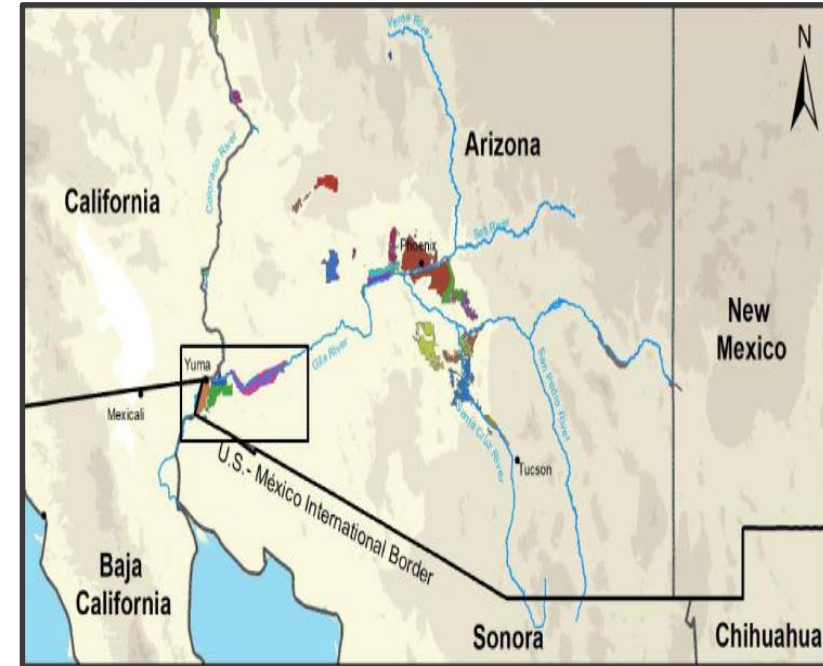


Our Winter Home
COACHELLA VALLEY, CA

HISTORY OF FARMING IN THE WESTERN UNITED STATES

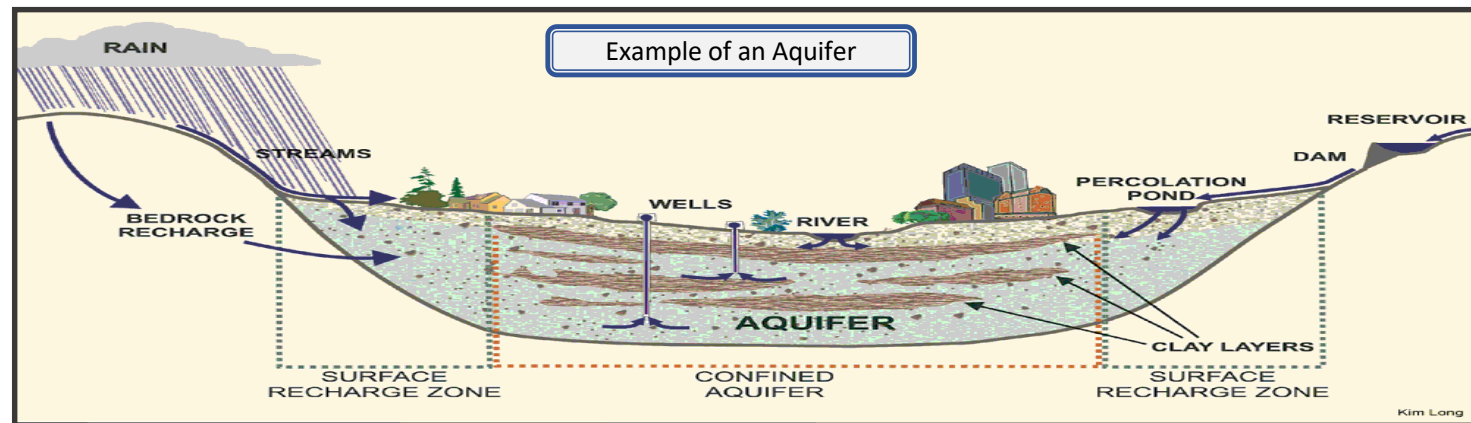
YUMA VALLEY GROWING REGION

- *Vegetable Farming began in the Yuma Valley around 1910 and has grown to 230,000 acres of irrigated farmland today*
- *Annual Revenues represent a multi-billion-dollar industry*
- *Primary water source is the Colorado River*
- *Most farms do not have secondary source*
- *Crops Farmed Include:*
Winter & Summer Vegetables:
Grain, Alfalfa & some Citrus
- *Annual Rainfall is less than 4 inches*



WESTERN UNITED STATES WATER SOURCES

SALINAS VALLEY WATER SOURCES



WESTERN UNITED STATES WATER SOURCES

COACHELLA AND YUMA VALLEY WATER SOURCE

THE COLORADO RIVER SYSTEM

- *Provides water & power for 40 million people, in 7 states and 22 tribes*
- *Supports billions of dollars annually in economic activity*
- *Irrigates 15% of U.S. crops (5 million farm acres)*
- *Is a lifeline for two dozen National Parks, Wildlife Refuges, and Recreational Areas*
- *The life of the Colorado River is dependent on Annual Snowmelt from the Colorado Rocky Mountain Range*



WESTERN UNITED STATES WATER SOURCES

CONTINUOUS WATER NEEDS & THE IMPACT ON SUPPLY

Irrigation for Farmland

- The Western United States produces 85% of the nation's fresh fruits and vegetables.
- Water storage infrastructure in the West has not been increased since the late 1960's

Needs for Growing Urban Development

- The Desert Southwest has seen a significant increase in the demand for housing and migration from other States in the US.
- The Cities of Las Vegas, Nevada and Phoenix, Arizona have seen over a 300% population growth since 1960's.

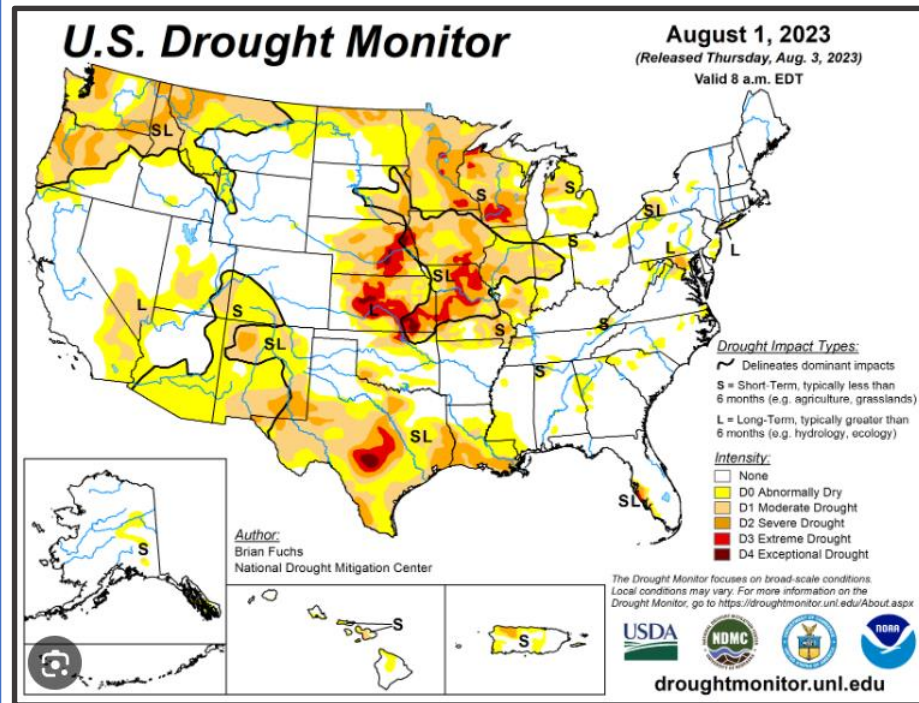
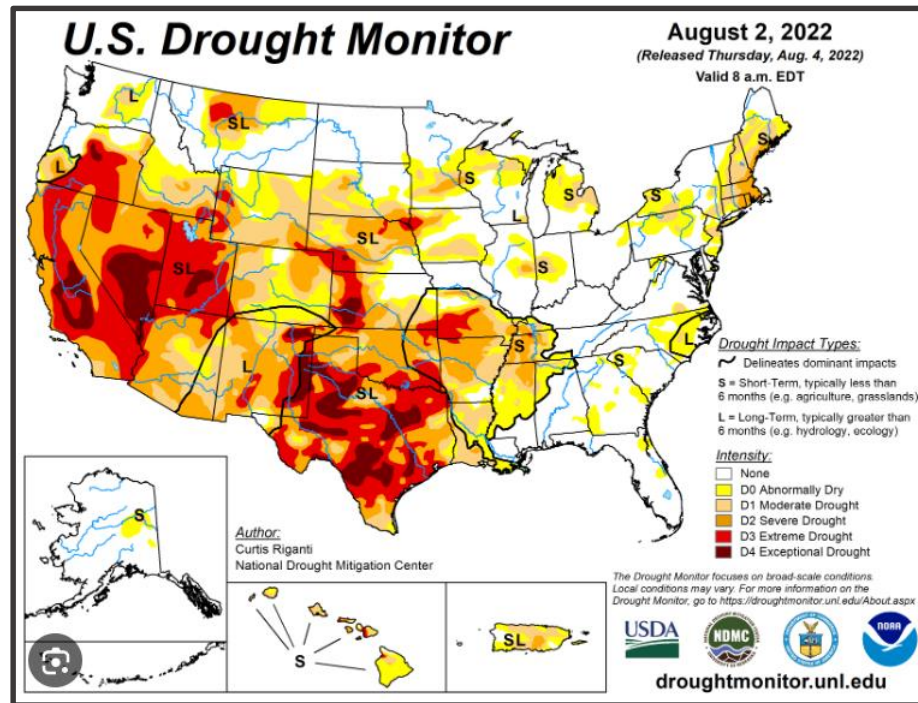
Across the West, years of drought are exceeding years of normal or above average rainfall. Stored water in aquifers and reservoirs is being depleted at faster rates than it can be replenished naturally through rain and snowfall.

Do we have enough water to support our farming needs for the next decade?

WESTERN UNITED STATES WATER SOURCES

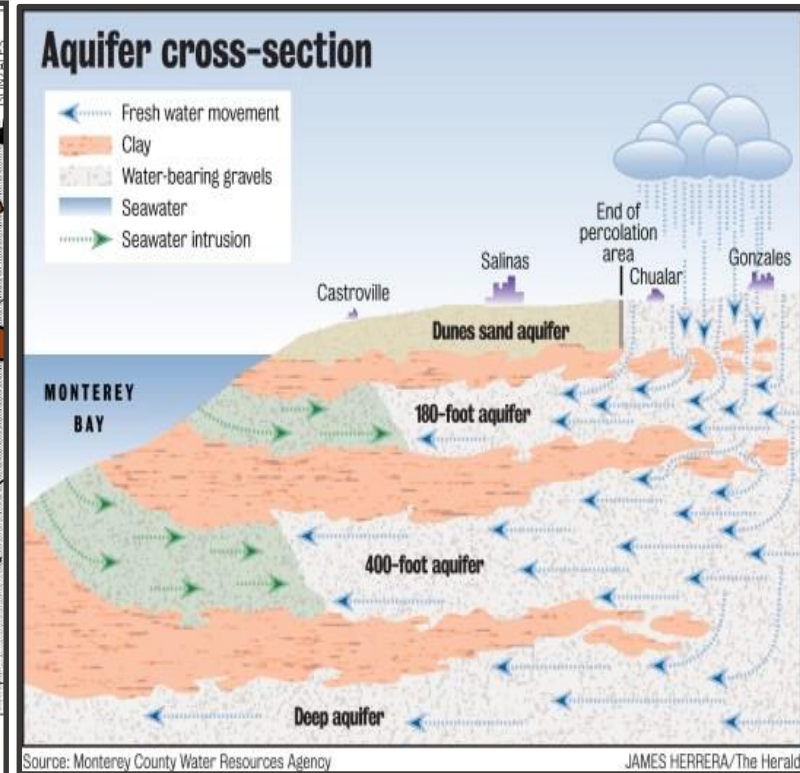
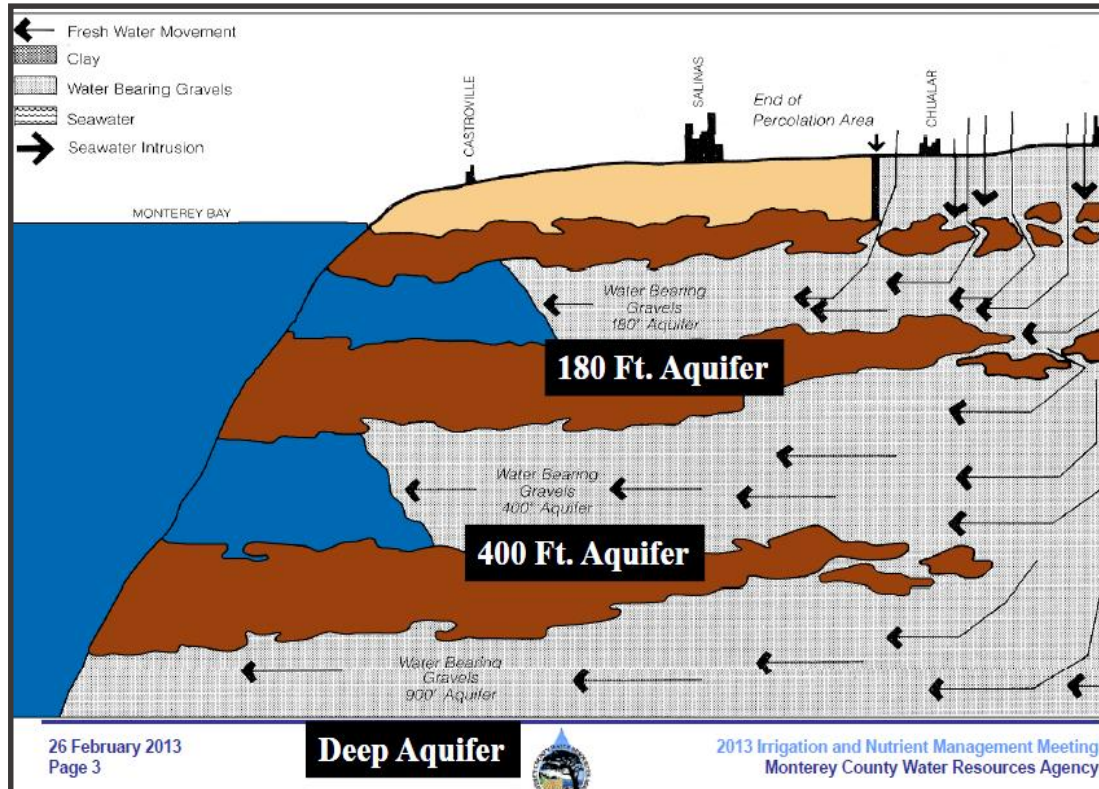
THE IMPACT OF DROUGHT IN THE WESTERN UNITED STATES

- Several Years of Consecutive Drought have led to over drafting of the aquifers in the Salinas Valley and Major Reservoirs on the Colorado River.
- Although the West has received an increase in rainfall over the last year, which resulted in some flooding, it has not been enough to offset the impact of long-term drought.



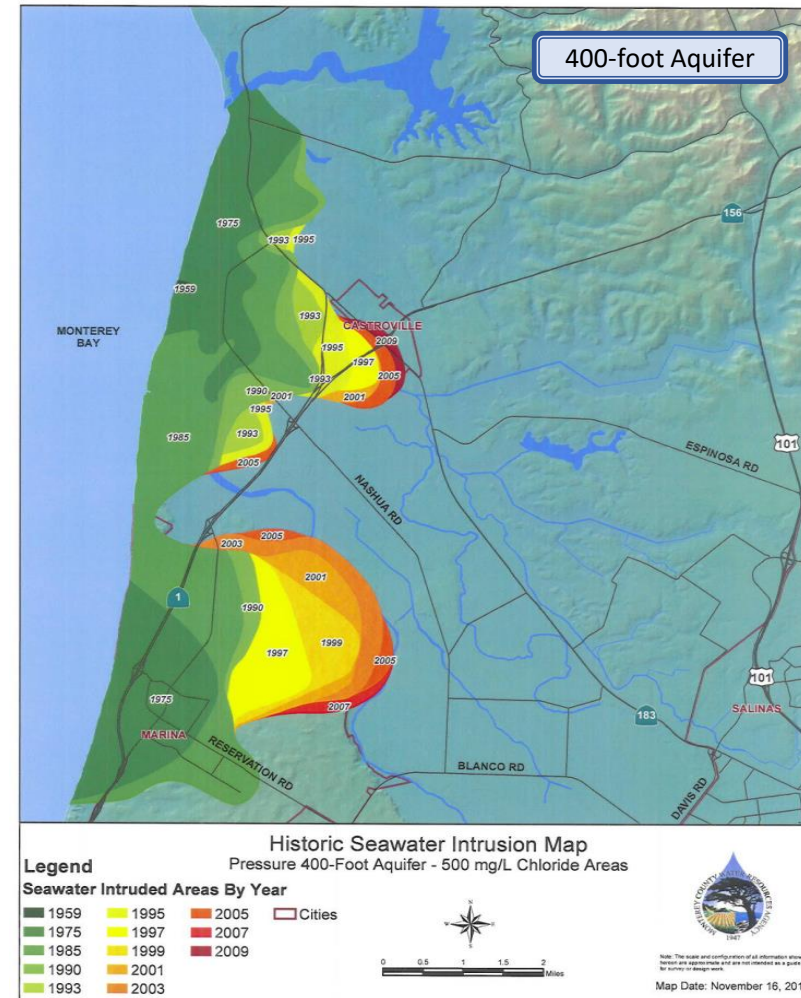
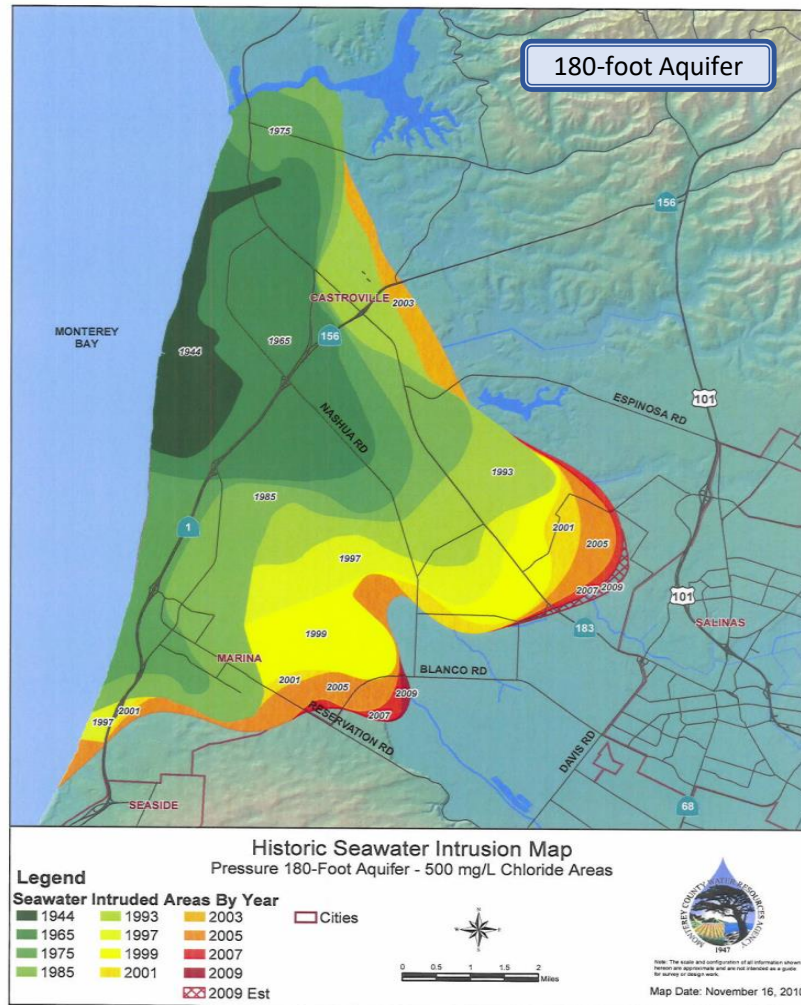
IMPACTS OF DROUGHT IN THE WESTERN UNITED STATES

FRESH WATER AQUIFERS LOCATED UNDER THE SALINAS VALLEY



IMPACTS OF DROUGHT IN THE WESTERN UNITED STATES

SALT WATER INTRUSION



IMPACTS OF DROUGHT IN THE WESTERN UNITED STATES

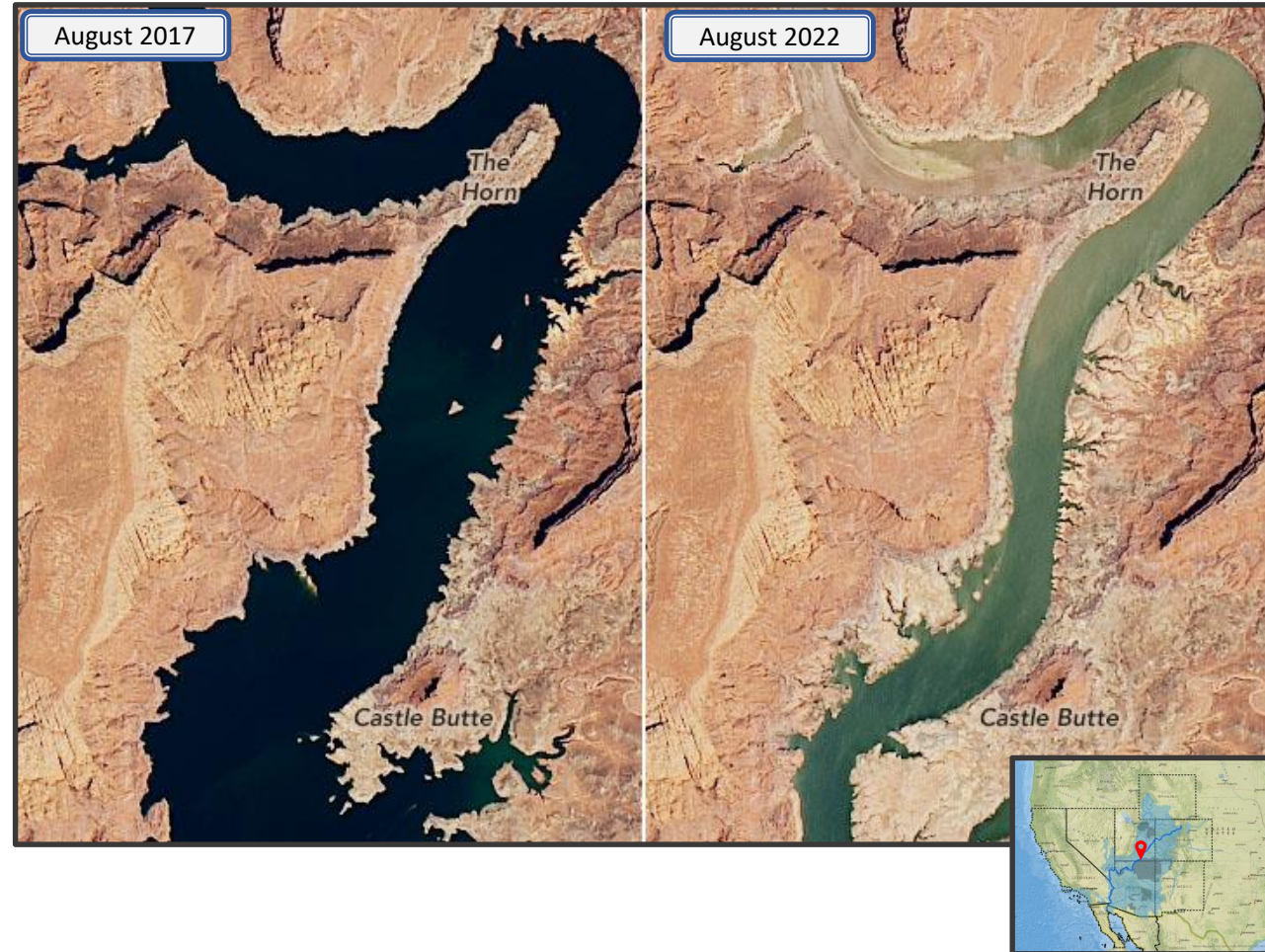
LAKE POWELL – COLORADO RIVER

*As of June 2023,
Lake Powell was 30% Full*

Glen Canyon Dam



- *Opened 1960*
- *One of two primary reservoirs on the Colorado River*
- *When Full, Holds 24 Million acre / ft of Water*



IMPACTS OF DROUGHT IN THE WESTERN UNITED STATES

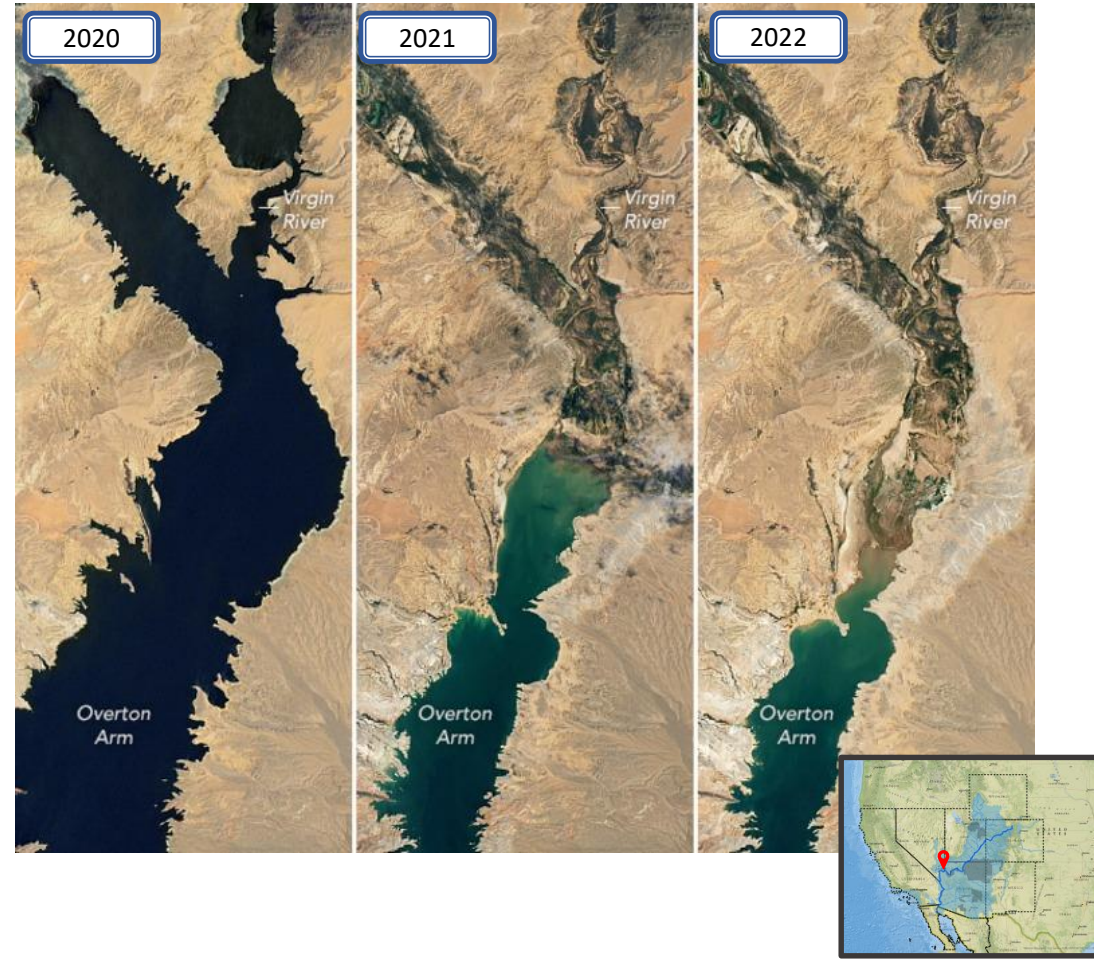
LAKE MEAD – COLORADO RIVER

*As of June 2023,
Lake Mead was 40% Full*

Hoover Dam



- *Opened 1935*
- *The second of two primary reservoirs on the Colorado River*
- *When Full, holds 26,134,000 acre / ft of Water*



IMPACTS OF DROUGHT IN THE WESTERN UNITED STATES

WHAT IS NEXT?



**Focus
on methods to
reduce water
use**



**Recycled water
programs**



**Changes
in irrigation
methods**



**Utilizing
technology
to monitor
moisture
utilization of
crops**

MANAGING WATER USE

- Focus on shifting from past irrigations methods to newer technology.
- Drip Irrigation has been growing in use over the past fifteen years and uses 1/3 the water volume as past methods like flood irrigation.
- Today, the Yuma Valley still relies heavily on Flood Irrigation to help manage salt in the soil.
- Current studies through the University of Arizona are focusing on ways to manage salt content in the soil without having to use water to leach it out.



MANAGING WATER USE

WATER RECYCLING FACILITIES & DISTRIBUTION AREA



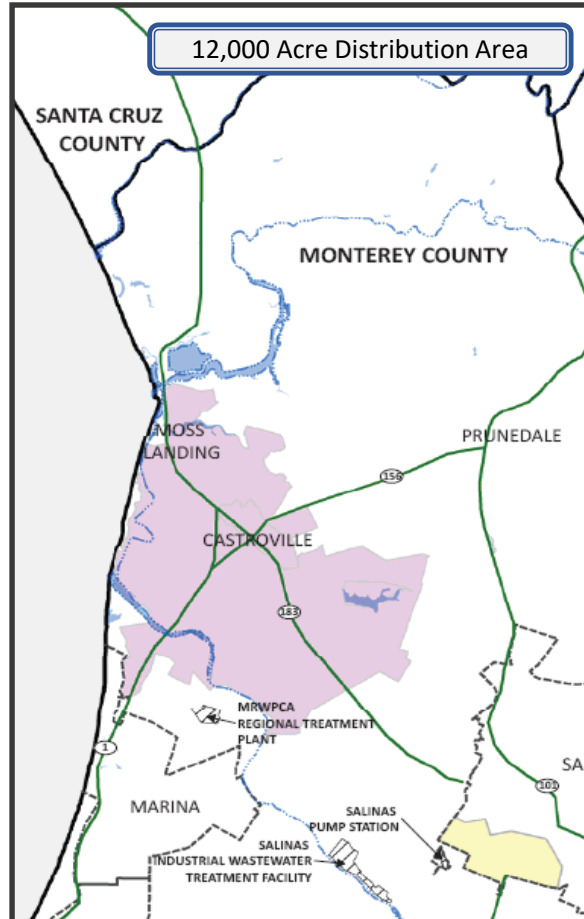
1997: Construction Completed



1998: Deliveries Began

MANAGING WATER USE

CASTROVILLE SEA WATER INTRUSION PROJECT (CSIP)

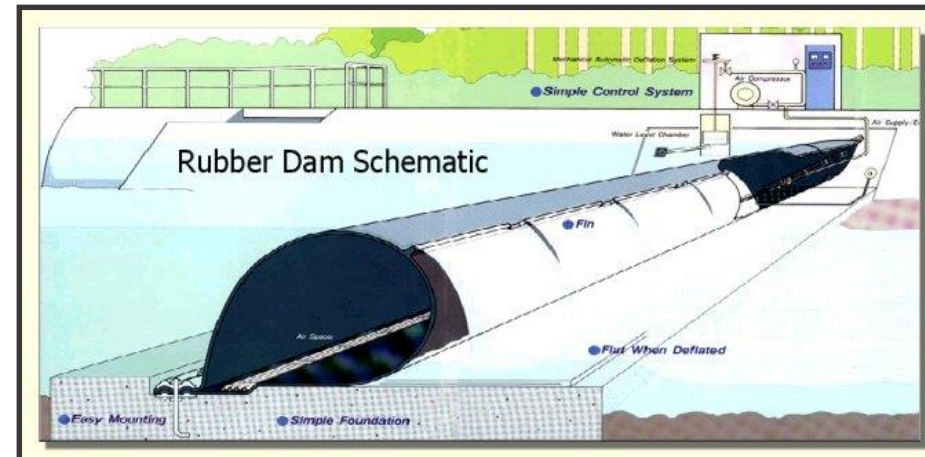
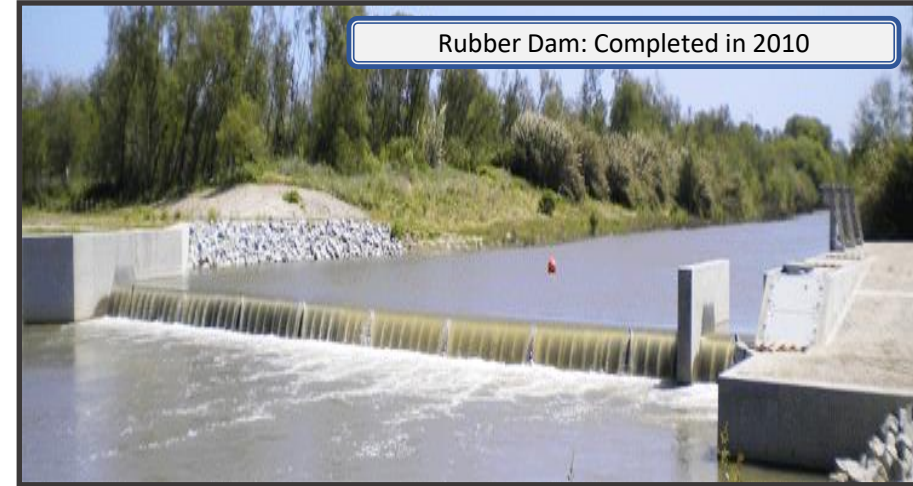


Delivery Specifics

- *Turnouts sized to ranch needs*
- *Water Delivered at 40 PSI*
- *Mandatory water orders*
- *Average daily usage during peak season is 35MM gallons*
- *Since 1998, CSIP has delivered over 70 billion gallons of recycled water.*

MANAGING WATER USE

REDUCED PUMPING WITH USE OF SALINAS RIVER WATER



MANAGING WATER USE

TODAY'S IRRIGATION METHODS

- Today Ocean Mist Farms utilizes drip irrigation on 85% of our crops.
- Pressure compensating drip tape has enabled rolling topography to be irrigated with drip tape.

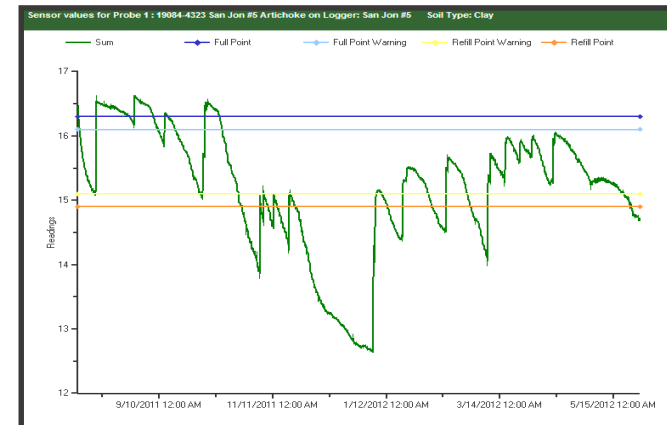
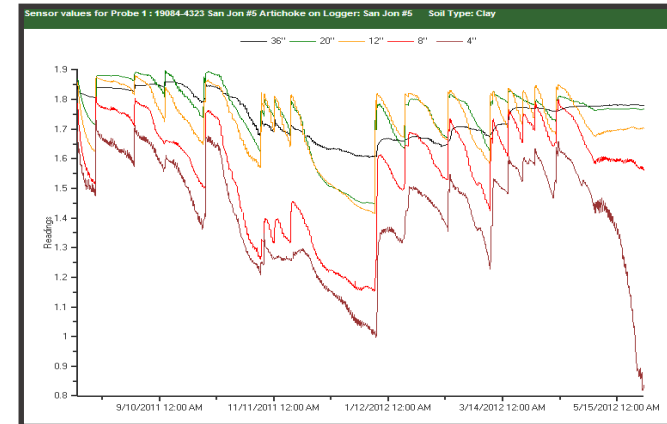


MANAGING WATER USE

TODAY'S IRRIGATION METHODS



Using Technology to
Sense Moisture in the Soil Profile,
to “Step” Moisture out of the Root Zone



CONCLUSION

WHERE DO WE GO FROM HERE?

Science states it may take Lake Powell and Lake Mead fifty years to refill with normal rain and snowfall.

The State of California has implemented SGMA (State Groundwater Management Act) to sustain adequate levels of groundwater held in aquifers. SGMA ensures underground aquifers are balanced between what is pumped out and what is recharged annually. Aquifers will be monitored and brought into balance by 2040.

Dealing with Cutbacks

Drought will more than likely continue, and cutbacks will come, both in California and Arizona whether well or Colorado River water. We must plan and focus on proactive methods of conservation. Some cities in the Southwest have placed a moratorium on home building due to shrinking water availability. Today many are being reactive or don't believe running out of water is a reality. This type of thought process is not sustainable and will exacerbate and accelerate the depletion of one of our most indispensable resources for farmers in the West.

The Bureau of Reclamation is proposing cutbacks of three-million-acre feet in irrigation demand in the next two years on water delivered from the Colorado River, as drought continues volumes of cutback may increase.

Pumping allocations may be restricted in years of drought in the Salinas Valley if deemed out of balance.

Assuring a Supply of Fresh Vegetables

Farmers are a resilient group of people. We have been adapting to changes since farming began in the West over 100 years ago. While this will be a challenge, we will adapt and overcome by focusing on technology (recycled, desalination, reverse osmosis) to reduce our fresh water needs and/or areas of the country that have sustainable water sources.



QUESTIONS?