Investor Water Hub Speaker Series
Water Risk in the Colorado River: An Exploration of Private Sector Solutions

Rachel O’Connor, EDF
Fawn Bergen, Intel
Paul Fleming, Microsoft
Jonathan Morris, Encourage Capital
Marc Robert, Water Asset Management

Co-moderators from Ceres:
Cindy Clark, Manager, California Policy Program
Robin Miller, Manager, Investor Engagement, Water

May 7, 2020
Join by computer audio or dial-in
Who we are

*Ceres is transforming the economy to build a sustainable future for people and the planet.*

**Company Network**
60+ companies in more than 20 sectors

**Investor Network**
160+ investors representing $25 trillion AUM

**Policy Network (BICEP)**
40+ leading companies

**Nonprofit Network**
140+ environmental, social and labor groups
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Webinar Logistics

• Session is being **recorded**

• If you have a question you would like to ask the panelists or a technical question, please type your question in the Question Box
  o We will aim to answer as many questions as possible during our Q&A session at the end.
  o If you have a technical question, please feel free to “Raise your Hand” and we will aim to answer your questions as soon as possible.

• Everyone is in **listen-only mode**
Speakers

Water Risk in the Colorado River: An Exploration of Private Sector Solutions

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Water Asset Management
California Water Policy
FY20 Connect the Drops

35 Signatory Companies

1M+ Workers Employed

12 Sectors of the CA Economy

$315B Annual Revenue

SIGNATORY COMPANIES

WHY IS WATER IMPORTANT TO INTEL?

• High quality water is critical to semiconductor manufacturing
• Many of our large operations located in water sensitive regions
• Important issue to our communities, investors, customers and employees
INTEL’S WATER STRATEGY

**CONSERVE**
water in our operations and buildings

**COLLABORATE**
on water initiatives to support our watersheds and communities

**CREATE**
technology solutions to reinvent the way the world uses water
RESTORING WATER TO OUR WATERSHEDS

In 2017, Intel committed to restore 100% of water we use with a local, contextual approach:

- Hydrologic connection to Intel and community
- Investment criteria:
  - Environmental non-profits with successful track record
  - Long-term or permanent benefits (~10 year target)
  - Volume benefit: water saved, protected, treated and returned
  - ROI to watershed and other project benefits – technology solution, habitat, wildlife, catalyze other solutions, employee engagement

Our progress: www.intel.com/water

projects funded to date

Billion Gallons (BG) restored in 2018 & 2019 combined

BG / year restored once all projects complete

BG / year Arizona projects funded
INTEL SUPPORTS COLORADO RIVER DCP

Arizona water footprint

- 2 manufacturing sites ~25% of company-wide freshwater use
- Partnership with City: construct & operate water treatment, reuse in community
- Conserved ~3 billion gallons of water over last 3 years
- Constructing onsite water treatment plant

Water restoration: opportunity to expand investment in AZ water resources

- Drought Contingency Plan critical to Arizona
- 1 of 3 projects supporting Colorado River, 13 total projects for Arizona
Microsoft’s support for water replenishment in AZ

Paul Fleming
Head of Global Water Program
Microsoft
Water security in Phoenix

Gila River Water Storage and Microsoft

Project overview
Gila River Water Storage, in partnership with Microsoft, is recharging and replenishing groundwater levels in the Phoenix Active Management Area—with long-term Storage Credits donated to the cities of Goodyear and El Mirage to balance a portion of Microsoft’s future water use. This project will also support economic development for the Gila River Indian Community.

By the numbers
613,040 m$^3$ estimated volumetric impact
14,000 large water trucks
Supports regional efforts to achieve safe yield by 2023

Project benefits
- Increase water security in Goodyear and El Mirage
- Support long-term business and community needs
- Promote economic development for the Gila River Indian Community

Partnerships
Gila River Water Storage
SRP
Bonneville Environmental Foundation
Water conservation in the Verde River Basin
The Nature Conservancy and Microsoft

Project overview
The Eureka Ditch draws water for farms from the Verde River, but leaking pipes result in significant water losses. The Nature Conservancy and Microsoft have partnered to install a 30-inch HDPE pipe to eliminate water losses from the leakiest half-mile section of Eureka Ditch and increase resilience for local farms.

By the numbers
33,519 m³ estimated volumetric impact
44,691 bottles of wine

Project benefits
- Improve water delivery efficiency to irrigators
- Reduce water diversions and lower maintenance costs
- Increase food security and resilience for local farms
- Support habitat benefits for eagles, cuckoos, and river otters

Partnerships
The Nature Conservancy

Eureka Ditch
Historic Camp Verde 1895
Water conservation in Lake Mead

Arizona Department of Water Resources, Microsoft, and the Colorado River Indian Tribes

Project overview
Microsoft is supporting a project led by the Colorado River Indian Tribes that reduces consumptive use of water by allocating 150,000 acre-feet of "system conservation" water to shore up levels of Lake Mead. This project will bolster water levels, help mitigate against shortages, and improve water supply conditions throughout California, Arizona, and Nevada.

By the numbers
- 873,211 m³ estimated volumetric impact
- 150,000 acre-feet of permanent water stores
- 198 water towers

Project benefits
- Foster stabilized water levels in Lake Mead
- Prevent shortages by using "system conservation" water stores
- Support Arizona's System Conservation obligations
- Support tribal water plans and infrastructure development

Partnerships
- Water Funder Initiative
- BONNEVILLE ENVIRONMENTAL FOUNDATION
- EDF
Investor Water Hub

120+ institutional investors
$20+ trillion in AUM

• Peer-to-peer working group on water risk integration and engagement practices

• Speaker Series

• Quarterly calls and meetings

Advisory Committee
Investor Water Toolkit: Key Sections and Elements

- Provides “how-to” guidance
- Allows for decision-making support
- Focus on methods, but not prescriptive
- Catalyzes better investor water data, analysis methods and research
- Showcases peer case studies
- Tools: databases, charts, tables, visuals, etc.
Water Risks and Opportunities in the Colorado River Basin

Regional Facts

- ~80% of diverted water used for agriculture
  
- 4 million irrigated acres in the region

- 15% of nation’s crop output produced

- 13% of nation’s livestock produced

Key Commoditys

- livestock and forage
- wheat
- vegetables
- cotton

Key Risks

Water Scarcity
Increased water use combined with prolonged and severe droughts are depleting the Colorado River.

Water Salinity
Agriculture contributes to and is affected by increased accumulation of salt in irrigation water. This can decrease crop yields.

Water-Related Financial Impacts

In May 2019, officials and leaders from the seven Colorado River Basin states signed the Colorado River Drought Contingency plan. Next year, the Federal Bureau of Reclamation will require for the first time that several states in the basin reduce their water withdrawals. Many experts believe that these mandatory actions will have serious implications for farmers, who already rely on an increasingly depleted groundwater supply for irrigation.
ABOUT ENCOURAGE

- We are a research-driven impact investment firm.
- We seek to generate commercial rates of return for our investors while helping to solve critical environmental and social problems.
- We are backed by a strong investor base of family offices.
- A core commitment of ours is preserving working farms in the western United States while reducing the strain these farms place on local and regional water supplies.
- Our knowledge in this topic is rooted in a multi-year research project and the 2015 publication of “Liquid Assets: Investing for Impact in the Colorado River Basin.”
TARGETING THE PROBLEM

Water shortages in the West, over-allocation of the Colorado River, and the importance of impact investment solutions

THE PROBLEM

• **Chronic water shortages**
  • Persistent local and regional droughts in much of the American West have caused significant economic, political, and ecological disruption
  • Water shortages affect agricultural production, hydropower, municipal users, the spread of invasive species, American Indian tribes, U.S. GDP, wildfires, forest health, wildlife, recreation, and more

• **Over-allocation**
  • The 1922 Colorado River Compact and Treaty of 1944 allocate over 16.5 million acre-feet of water\[^1\][\(^2\)]
    • This is more water than exists in the Colorado River Basin
  • Since 2003, increasing demand for Colorado River water has consistently exceeded the naturally-available supply\[^3\]
  • No more “surplus” water to grow into

IMPORTANCE OF INVOLVEMENT

• Opportunity to alleviate stress on the many parties affected by water shortages
• Opportunity to advance the use of less water-intensive agricultural and ranching practices across the West
• Economic incentive to conserve water is seemingly lost due to Western water law
• We believe the rewards justify the risks, but this strategy is not for the faint of heart
  • “Whiskey is for drinking; water is for fighting over”
• We believe there are ecological benefits to be gained from leaving more water in Western rivers for longer periods of time
• We believe over-use of groundwater resources can also have devastating environmental consequences

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\[^1\]**Colorado River Compact.** Available at: https://www.usbr.gov/lc/region/pao/pdfs/crcmpct.pdf.


IDENTIFYING SOLUTIONS

Well-designed investments can help simultaneously reduce water use and create more profitable agricultural and ranching operations

No “Buy & Dry”
• Continue farming and ranching: reduce consumption of water without negatively impacting the ag/ranching economy

Reduce Use
• Switch from low-value, high-water-use crops to high-value, low-water-use crops
• Implement improved irrigation techniques

Go Organic
• We are researching how organic farming may further help address these issues and improve water quality and soil health
U.S. farmland has fundamental properties that drive steady returns over the long-term.

**LONG-TERM DRIVERS OF ECONOMIC RETURNS**

**Strong fundamental drivers**
- Global population growth
- Rising middle class
  - Increasing consumption per capita
- Possible increased use of biofuels
- They aren’t making more land

**Low-risk, uncorrelated asset**
- Crop insurance

**Technology-related output improvements**
- Precision agriculture and big data will favor the professionals

**Hedge against inflation**
- Concerns about money supply will drive up land prices

**Resilient and secure asset class**
- Land will always have a residual value

**Economies of Scale**
- 69% of U.S. farms generate an operating profit margin <10%[^1]
  - 87% of these generate gross cash farm income <$100,000
    - Mostly smaller farms
- 20% of farms have operating profit margins >20%
  - Mostly larger farms
- Roll-up strategy can drive returns
  - Possible inflection point at 3,000 acres

COMMODITY RISK AND TENSION BETWEEN ECONOMICS & IMPACT

Commodities involve high levels of uncertainty and impact goals will push us toward lower-quality agricultural areas

**RISKS**

- Impact goals will focus our attention on less productive soil areas and water-challenged areas
- It is not possible to control input costs or the price at which products are sold in a commodity business
- Production yield is uncertain

Annual Mean Total Precipitation

Soil-fertility Constraints to Cropland Productivity

IDENTIFYING SOLUTIONS

Well-designed investments can also make more efficient use of a scarce resource

We are also looking at aquifer, storage and recovery projects that can help eliminate the need for buy-and-dry strategies, support rural economies and restore or promote wetland environmental benefits.

For any investment we would consider, there must be clear and measurable positive environmental and social outcomes. Among the outcomes we seek to promote with our Western U.S. water strategy are:

- **Preserving working farms** and ranches while **reducing the water** consumed in these operations
- Improving **soil health**
- Improving **instream flows**
- Fostering **collaboration** among cities, farms and industries
- Avoiding **subsidence** and loss of **topsoil**
- Avoiding **groundwater contamination**
- Avoiding structural **impairment of the aquifer**
WAM Value Creation

Water Enhancement

- Long-Term Water Lease
  - WAM establishes long-term water leases with municipalities, agricultural districts, state agencies, industrial and residential entities, environmental users

- Short-Term Water Lease
  - WAM works with local farm neighbors to establish short-term water fallowing programs to solve immediate water demands

Other Revenue Enhancements

- Additional sustainable business enhancements are explored (e.g., solar, water banking and infrastructure)

Property Assemblage

- WAM assembles nearby properties with the objective of scaling to 2,000+ acres to create efficiencies in both farm and water management

Farm Lease and Property Improvements

- WAM acquires row crop properties and invests to improve the land and infrastructure. Leases to local farm partners
WAM Agriculture and Water Portfolio

Location of Current WAM Investments

WAM Pending Investment Areas
Rotational Fallowing

Provides reliable sustainable water supplies for agriculture, municipalities, real estate development, industrial and power users, and the environment.

Enhances soil management by allowing fallowed soils to rest and naturally replenish nutrients while eradicating pests and significantly improving yields.

Offers measurable Impact by:
- Increasing flexibility of water supply, potential for storage
- Reducing energy consumption from avoided irrigation
- Reducing fertilizer and pesticide use on fallowed acres
- Reducing groundwater overdraft in recipient geographies
- Increasing amount of water for environment

Helps maintain financially viable agricultural communities by providing farmers with diversified, predictable income.
Mohave Valley AZ, Creation of ICS Credits

- **Oct 2012** WAM acquires initial row crop property in the Mohave Irrigation and Drainage District (MVIDD), completes a total of 16 transactions for $20MM through November 2017.

- **June 2019** WAM designed a short-term Rotational Fallowing Program for MVIDD with 11 neighboring farmers to fallow 61 fields.

- **December 2019** Received approval to launch a short term annual Rotational Fallowing Program on 30% of district acreage, generating 6,137 AF of Intentionally Created Surplus (ICS) credits. Plans to expand program to 50% of district acreage.
Q&A
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