The Dry Gulch Project:

Water is Life

THE DEFINING CRISIS OF OUR TIMES: WILL THERE BE ENOUGH WATER TO DRINK ?

THE AMERICAN SOUTHWEST

ARE WE RUNNING DRY?

ACROSS THE AMERICAN SOUTHWEST, THE SUB-TROPICAL DRY ZONE IS EXPANDING NORTHWARD AT

Myth:

Limiting water supply limits growth
("Keep Pagosa, Pagosa")

or, conversely

"If you build it, they will come."

Fact:

They are coming anyway!

And we need to be prepared….

…or our community will stagnate and die

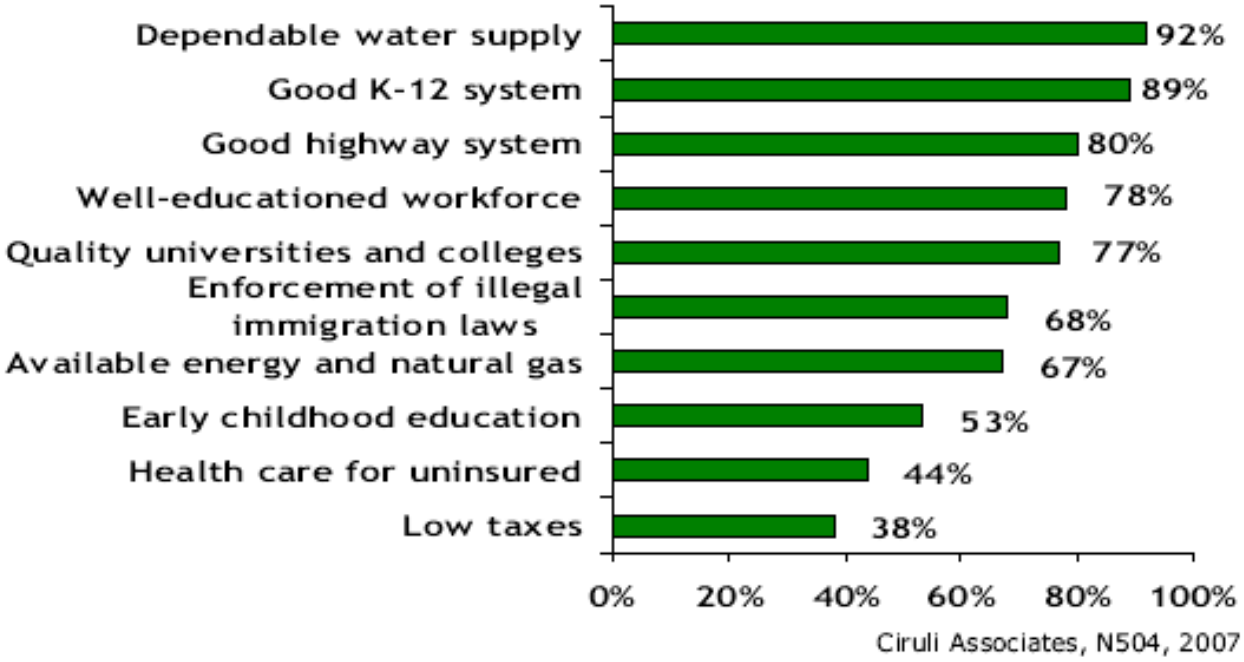
Water is Life;
Water *is* Community Prosperity

Source: What Coloradans Think About Water

Floyd Ciruli, Ciruli Associates (as presented at the Colorado Water Congress Annual Convention, January 29, 2009)

Water is Top Policy Needed to Maintain a Strong Economy

Is it very important Colorado has…?



Ciruli Associates, N504, 2007

Question: Thinking about Colorado's ability to compete for jobs and maintain a strong economy, as I read the following list of public policy issues, please tell me if you believe the issue is very important, somewhat important, not very important or not at all important to Colorado's ability to compete for jobs and maintain a strong economy. If you don't have a view, just say so. [Rotated] Ask: "Colorado should have…": a well-balanced workforce, a health care system that provides care for uninsured, an early childhood education program, available electrical energy and natural gas, strong enforcement of illegal immigration laws, high quality universities and colleges, a dependable supply of water, a good highway and transportation system, low taxes on businesses and workers, a good kindergarten to high school public school system.

What are our water supply options?

1. Stretch what we have through:
    1. Water Conservation practices
    2. Through AMR* and increased leak detection
    3. Meter replacement and operating efficiencies

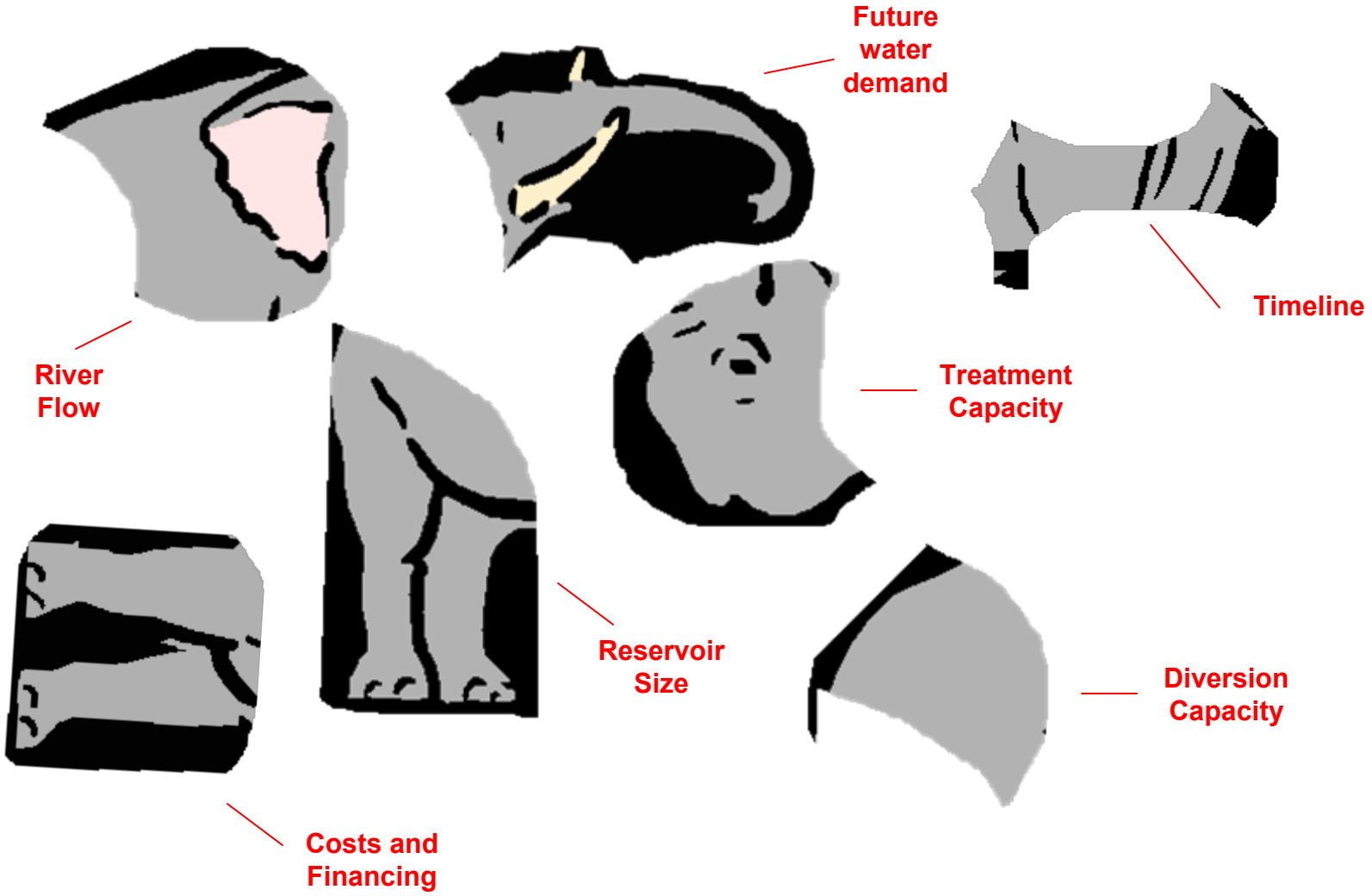
4. Water restrictions:

the ultimate solution unless…

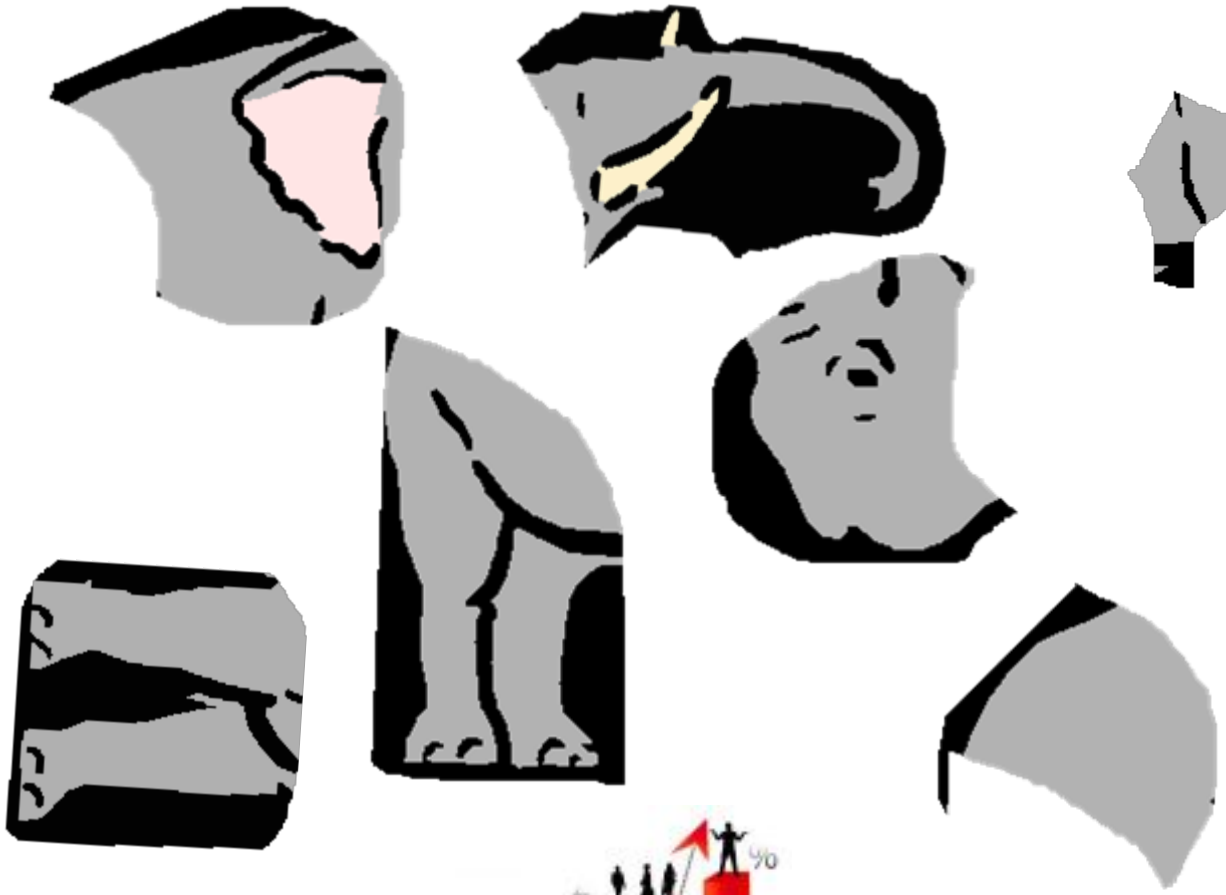
*Automated Meter Reading

…unless we develop more raw water storage and treatment capacity:

Many parts to the elephant



But all the parts



rest on Growth

Growth rate projection

There is no Oracle of Delphi!

There are, however, historical data:

- State Demographer's Office:
  - permanent population only, primarily estimates
- PAWSD historical Equivalent Unit growth
  - actual EU growth, representing transient population, commercial, irrigation and permanent population water use

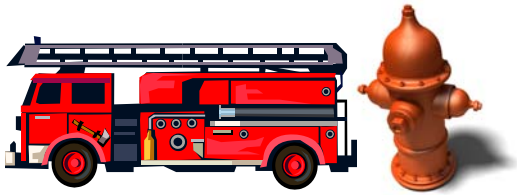
An EU is not a person, it is a unit of water demand

Permanent Residents

State Demographer's Office data

Tourists

Commercial Uses



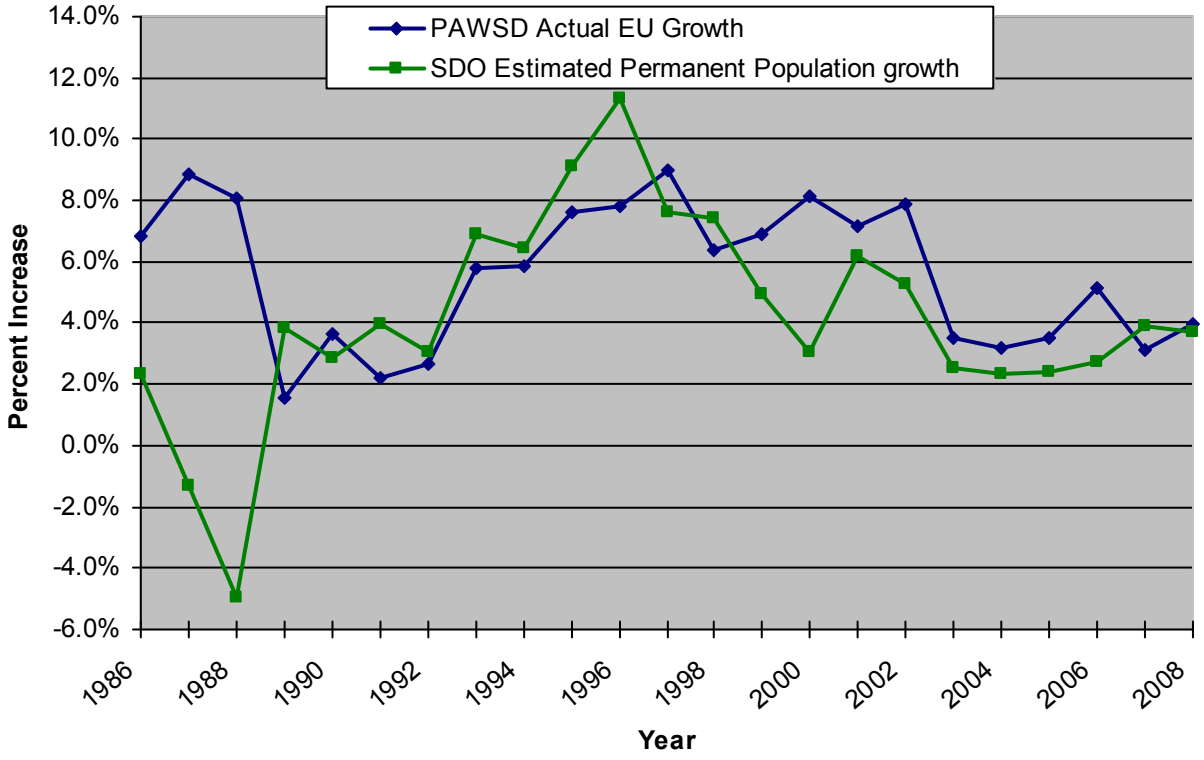
Fire & hydrant flushing

Second home owners

Outdoor irrigation

In-House Uses

Growth rate projection



Average annual growth:

	PAWSD EU	SDO
5 yr	3.8%	3.0%
10 yr	5.3%	3.7%
~~22 yr~~	~~5.6%~~	~~4.2%~~

Growth rate projection

The Result: 3.9% Annual Growth Rate

What this means:

YEAR	EUs
2008	7227
2009	7509
2010	7802
2015	9446
2020	11,438
2025	13,849
2030	16,769
2035	20,304
2040	24,584
2045	29,767
2050	36,042
2055	43,640

36,413 new EUs

50 -Year Planning Horizon

Future Water Demand

Again, based on historical data:

- Since 2002, average usage of 260 gal/EU/day
- Maintain aggressive water savings due to conservation
- Maintain provision of 900 Acre Feet for irrigation

Therefore, in 2055:

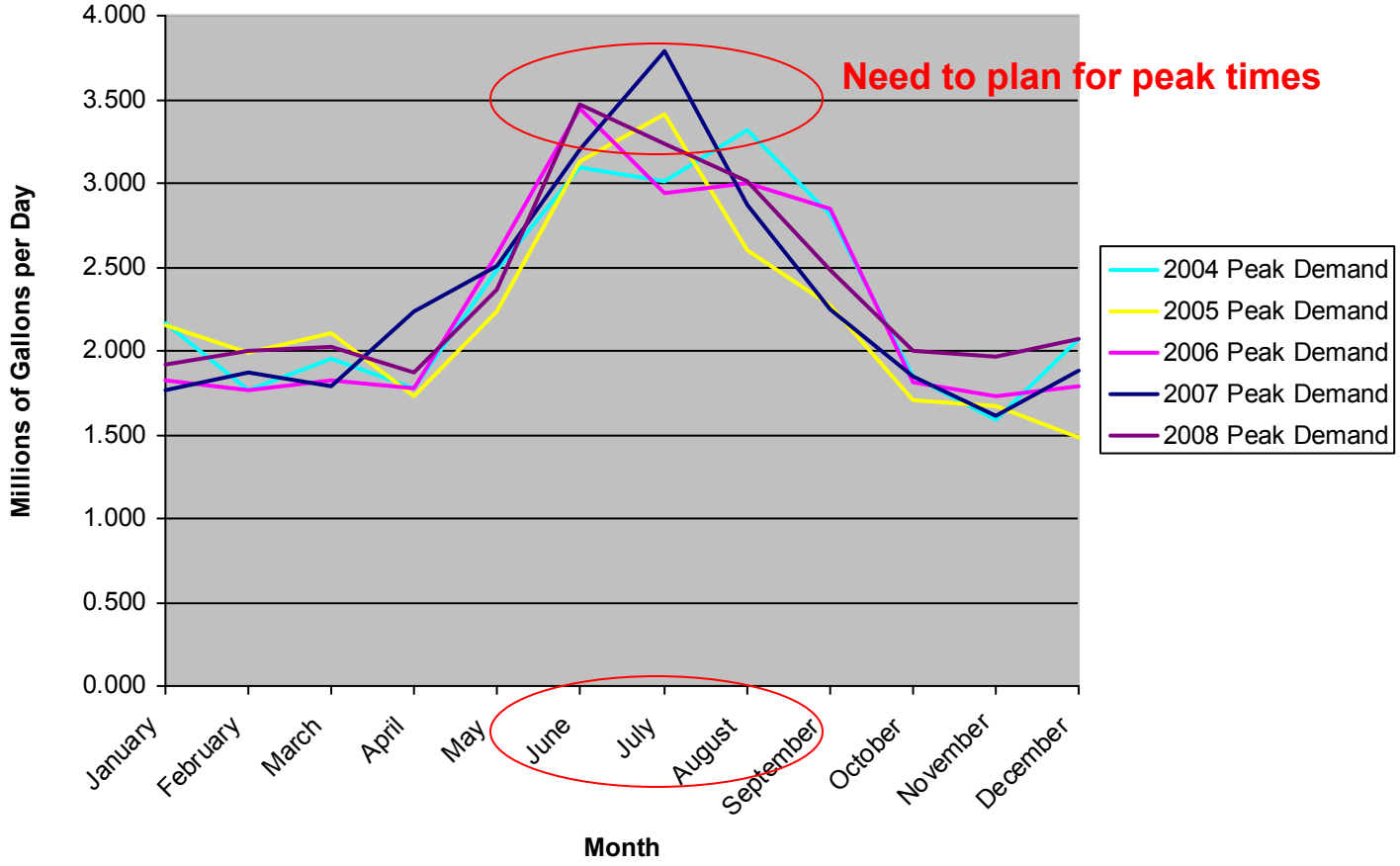
[(43,640 EUs x 260 gal/day x 365 days) / 325,851 gal/AF] + 900 AF =

13,610 AF water demand

Does NOT include safety supply margin!

Water Treatment

Peak demand dictates treatment capacity needed



Water Treatment

Dry Gulch Project Treatment Capacity components:

- Upgrade and enlarge Snowball WTP
- 5.2 cfs pump station for WTP
- Increase treatment capacity throughout District

Snowball WTP

Snowball WTP filter

Diversion

Dry Gulch Project Diversion Capacity components:

- 150 cfs pump station to reservoir
- Diversion and intake structures at river
- Replace Snowball raw water pipeline
- New parallel San Juan WTP raw water pipeline

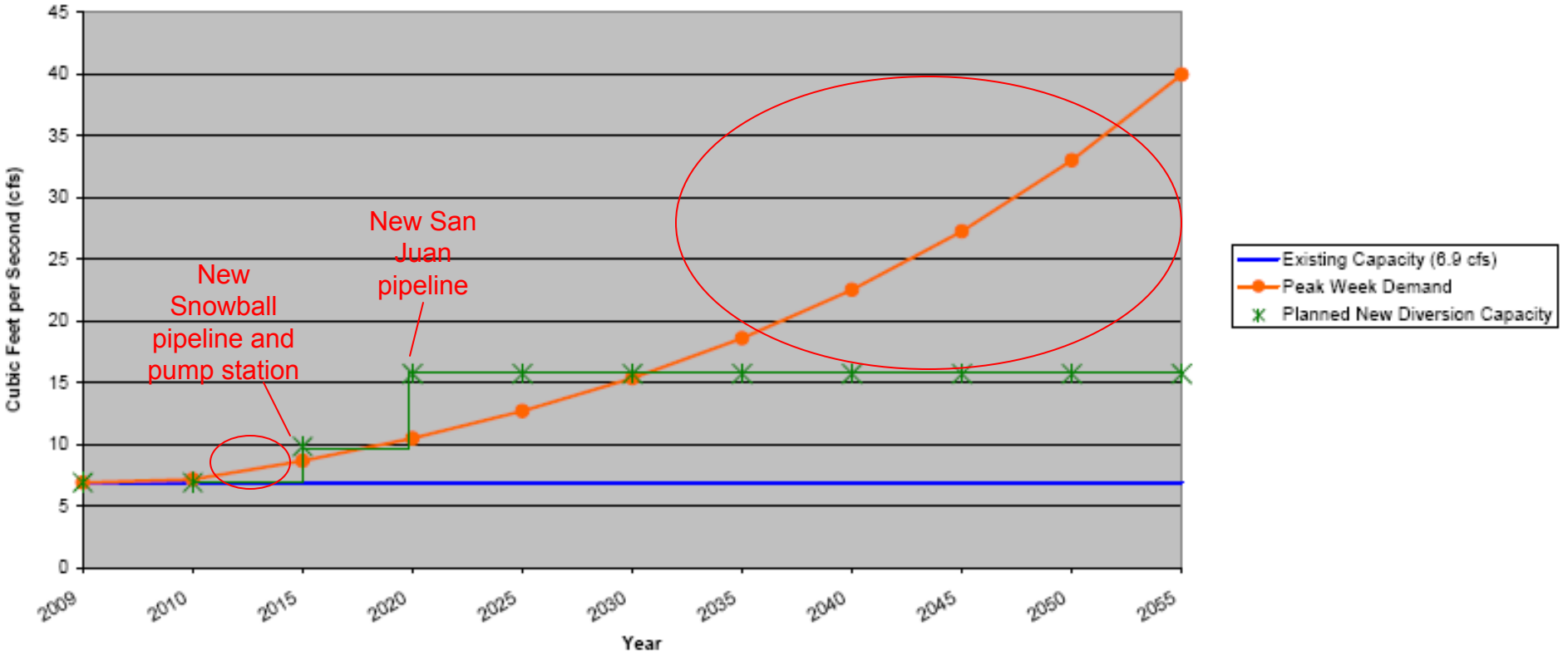
Older intake structure at West Fork of the San Juan River

Diversion and intake from Four Mile Creek

Diversion

Diversion Capacity Required to Meet Demand

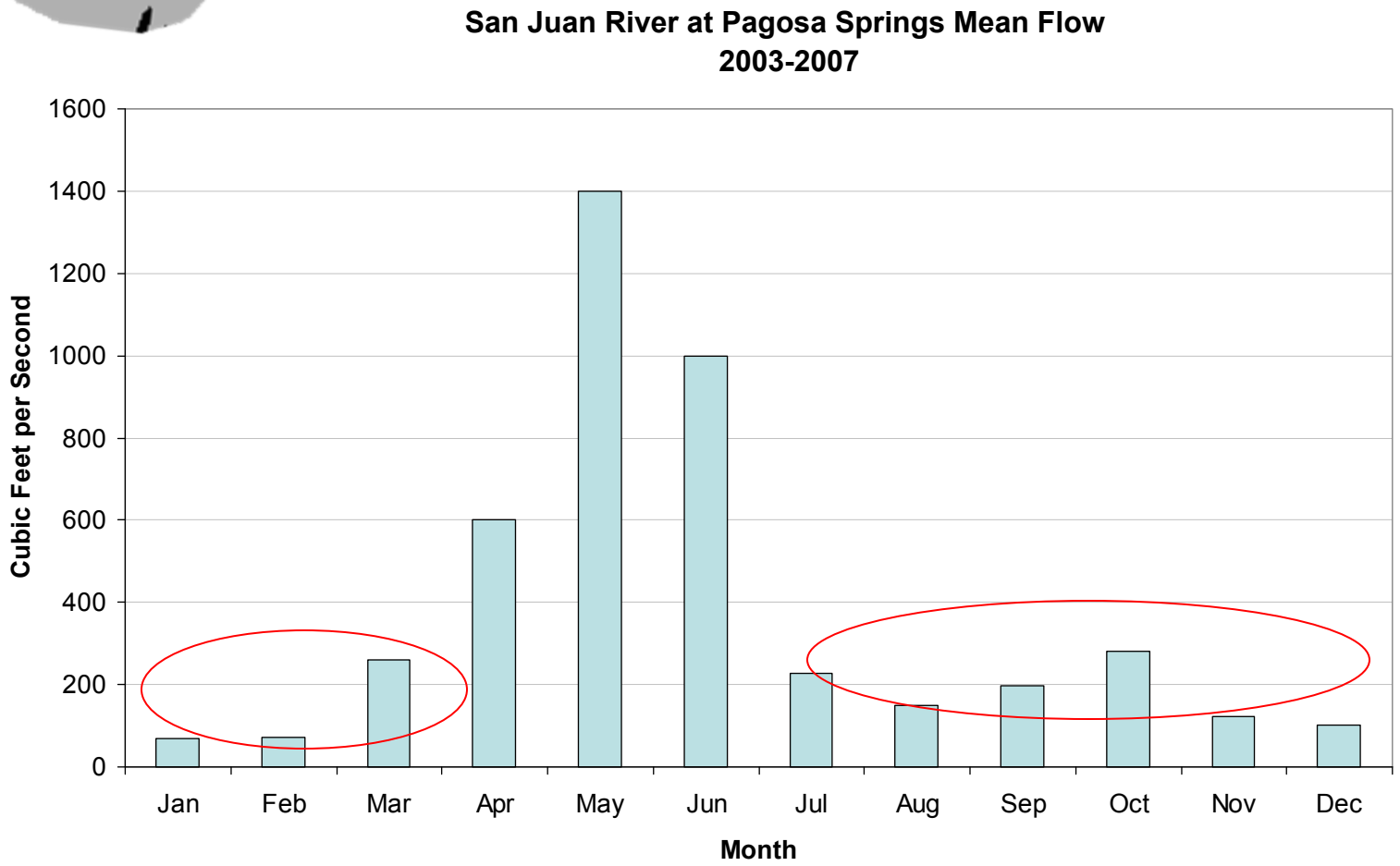
Peak Week curve based on .41 gpm/EU Historical Peak Demand



During peak periods, we must rely on reservoir storage

River Flow

Diversion capacity is dependent upon River Flow



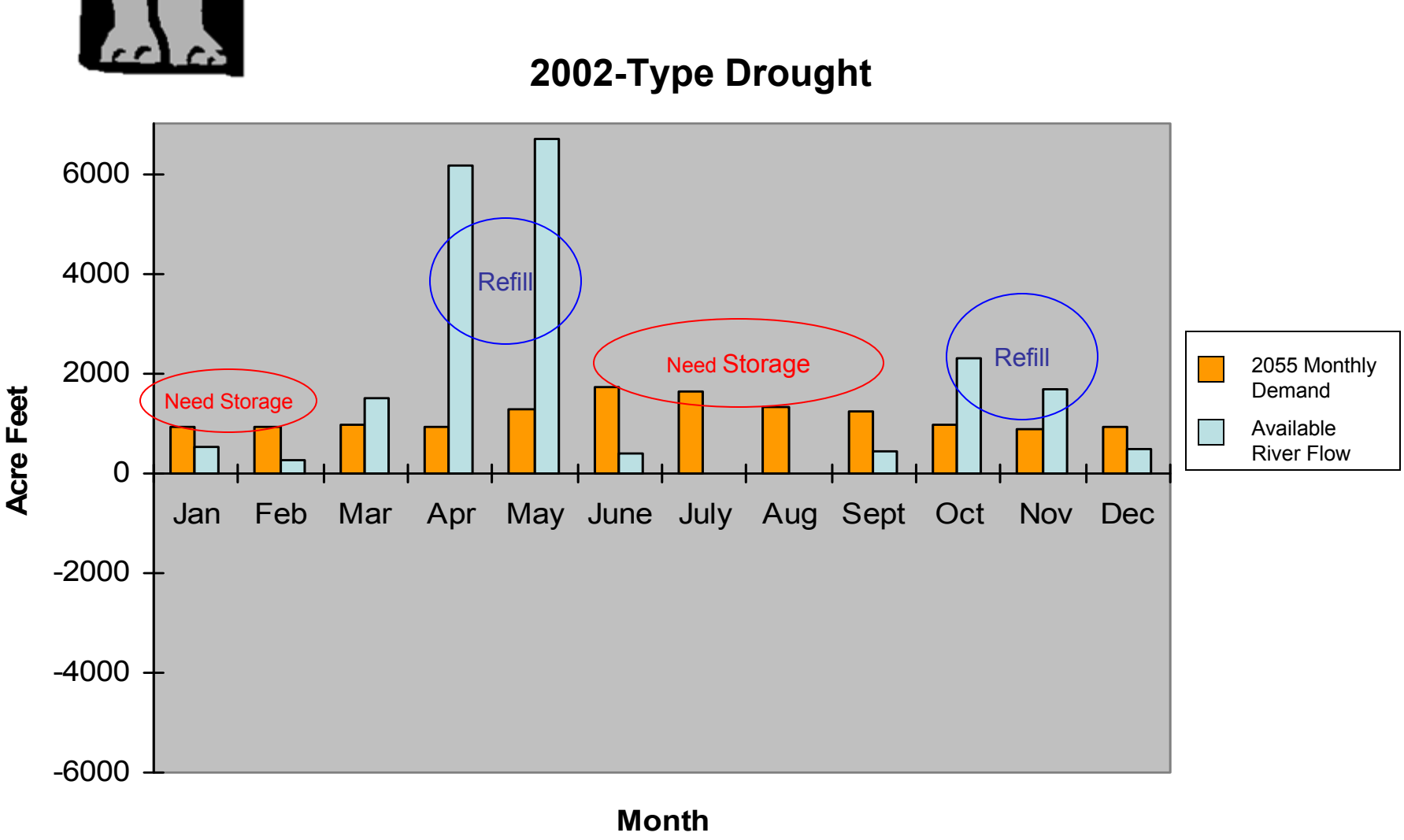
During low-flow periods, we must rely on reservoir storage

Calculating Reservoir Size

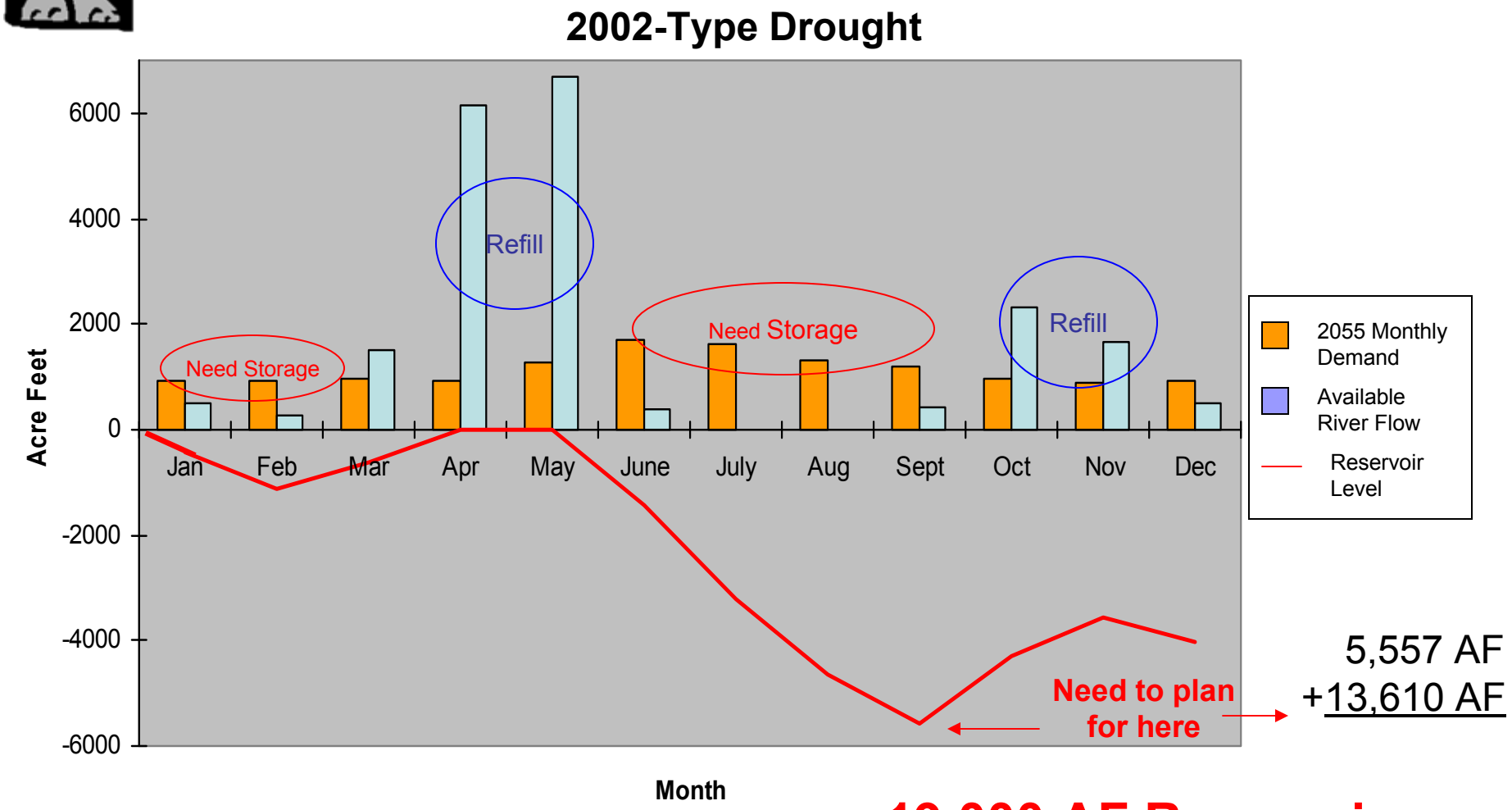
- During peak demand periods we rely on storage
- During low river flow periods, we rely on storage
- Low river flow and peak demand typically correspond in summer months
- Combine this with drought conditions
- Combine this with potential for catastrophic events
- Combine this with CWCB* in stream flow water rights
- Combine this with reservoir evaporation
- Combine this with need for safety supply margin

* Colorado Water Conservation Board

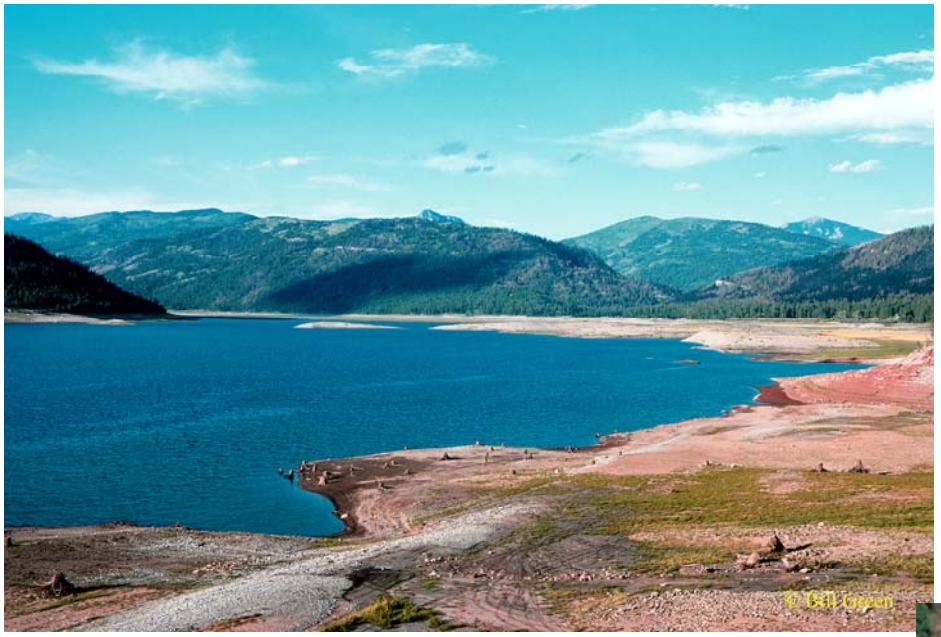
Reservoir Size



Reservoir Size



2002 Drought



Vallecito Reservoir

San Juan River

Project Technical Team

Harris Water Engineering, Inc.

MWH Americas

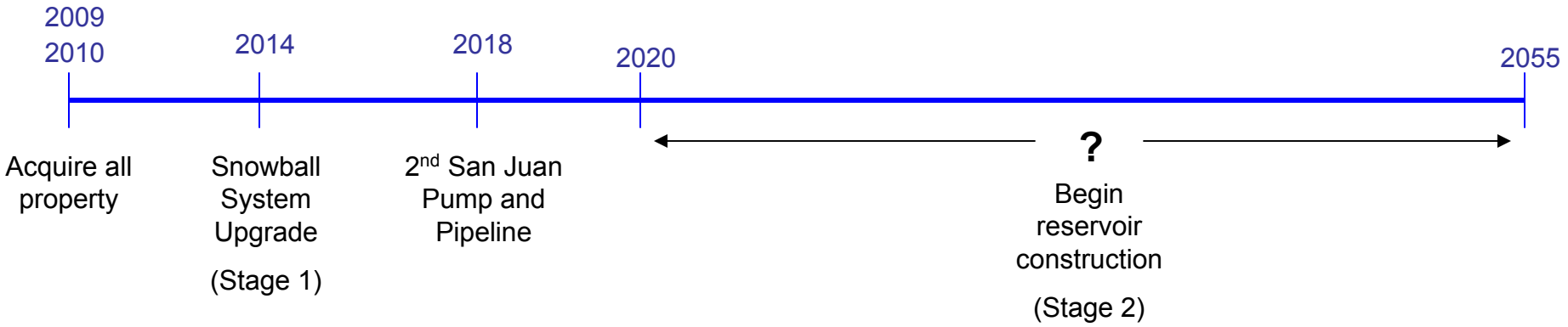
Briliam Engineering

Davis Engineering

Aqua-Hab, Inc.

Ecosphere Environmental Services

Project Timeline



Financing

Sources of Capital From Future Development (CIF/WRF*)

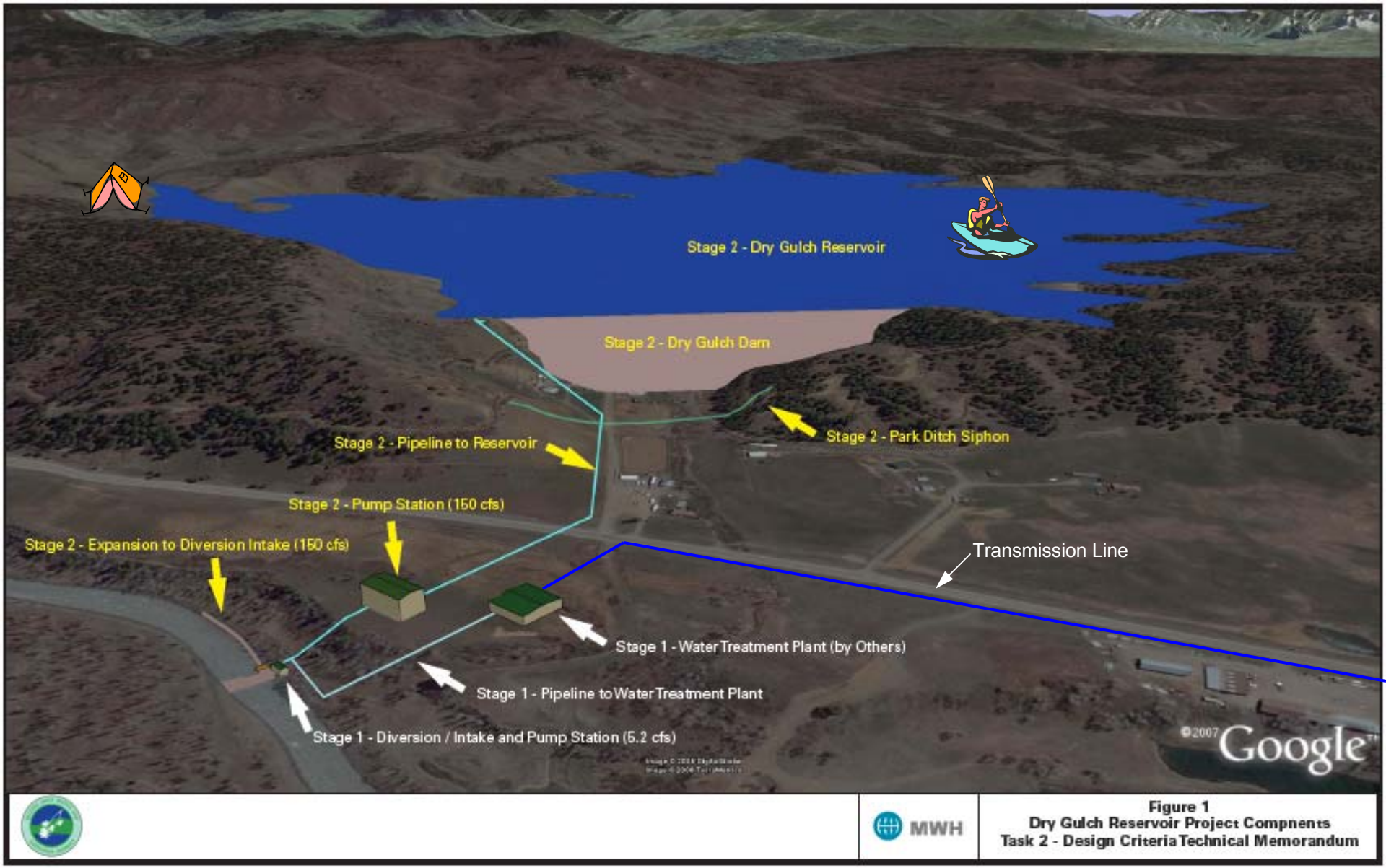
Year	Growth Rate		
	3.9%	3.0%	2.0%
2010	$5,284,351	$2,065,000	$1,376,000
2015	$20,407,494	$11,228,000	$7,278,000
2020	$38,718,821	$24,316,000	$15,344,000
2025	$60,890,448	$39,488,000	$24,250,000
2030	$87,736,182	$57,077,000	$34,083,000
2035	$120,241,396	$77,467,000	$44,939,000
2040	$159,599,192	$101,105,000	$56,925,000
2045	$207,254,195	$128,508,000	$70,159,000
2050	$264,955,581	$160,276,000	$84,770,000
2055	$334,821,275	$197,103,000	$100,902,000

Bottom Line:

We will build what we can afford WHEN we can afford to and WHEN demand requires

* Capital Investment Fee / Water Resource Fee

Putting It All Together



MWH

Figure 1
Dry Gulch Reservoir Project Compnents
Task 2 - Design Criteria Technical Memorandum

Project Costs

(2008 Dollars)

- Land: $14.5 M
- Permitting: $4 M
- Environmental Accommodations: $10 M
- Intake, pumps and pipelines to WTP: $27 M
- Dam and pump plant: $161 M
- Treatment plants: $140 M

Total project cost estimated to be **$356.5 Million** *over the life of the 50-year Project planning period.*

Future water security: Priceless

Financing Principles

- ✓ Growth Should Pay for the Needs of Growth
- ✓ Existing users will pay for the replacement of existing facilities
- ✓ Growth will dictate what and when facilities are needed, and what we can afford to build
- ✓ Must continue accumulating capital now: current storage capacity coupled with aggressive water conservation program will provide extended time for accumulation of funds
- ✓ We have obtained and will continue to seek grants
- ✓ We will pursue the best financing options available

Mr. Tom Pippin
President and Managing Director,
BBC Research and Consulting

Water Resource Fee

Total CIP Value	$	216,587,000
Total Deductions (1)	$	12,068,000
Net CIP Value	$	204,519,000
EU Growth 2008-2055		36,413
Net Cost per Growth EU	$	5,617

- Water Resource Fee focuses on raw water resources and supply.
- Capital Improvement Plan (CIP) includes cost of Dry Gulch Reservoir and supporting infrastructure.

(1) Deductions include facilities to be used and paid for by existing customers ($2 million) and $10 million contribution from SJWCD to fund the "Environmental Accommodations" portion of project.

Water Capital Investment Fee

Total CIP Value	$	139,681,000
Total Deductions (1)	$	9,371,088
Net CIP Value	$	130,309,912
EU Growth 2008-2055		36,413
Net Cost per Growth EU	$	3,579

- Capital Investment Fee focuses on water treatment and distribution.
- Capital Improvement Plan (CIP) includes new treatment plant and transmission pipelines.

(1) Deductions include facilities to be used and paid for by existing customers ($9.4 million).

Wastewater Capital Investment Fee

Total CIP Value	$	115,949,646
Total Deductions (1)	$	25,777,761
Net CIP Value	$	90,171,886
EU Growth 2008-2055		21,207
Net Cost per Growth EU	$	4,252

- Capital Improvement Plan (CIP) includes new wastewater treatment plant, collection system improvements and additional lift stations.

(1) Deductions include facilities to be used and paid for by existing customers ($25.8 million).

Fee Summary and Comparison

	Current Fee	New Fee	Difference
Water Resource Fee	$ 7,210	$ 5,617	$ (1,593)
Water System Capital Investment Fee	$ 2,575	$ 3,579	$ 1,004
Total Fee	$ 9,785	$ 9,195	$ (590)

	Current Fee	New Fee	Difference
Wastewater System Capital Investment Fee	$ 3,195	$ 4,252	$ 1,057

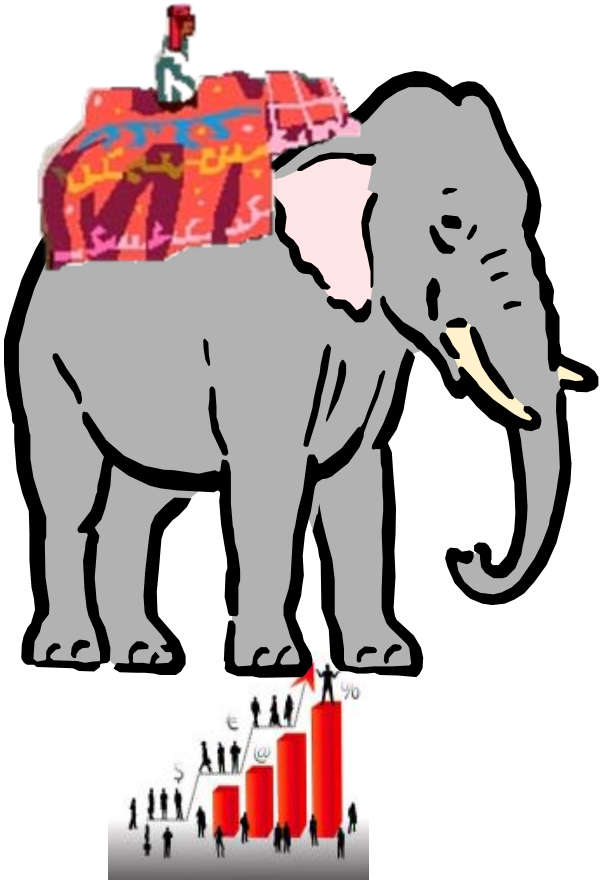
Potential for Fee Changes

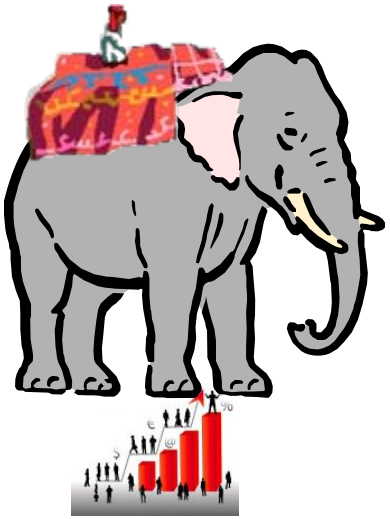
Important note: CIF and WRF are subject to change due to:

- Changes in growth projections
- Changes in facility requirements
- Inflation
- Potentially adding value of interest payments for growth-related portion of bonds

The Project and fees will continue to be re-evaluated annually

Public Access and Use of Dry Gulch Reservoir



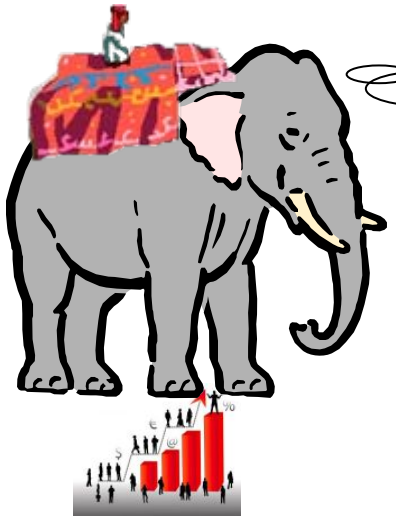


Public Access and Use of Dry Gulch Reservoir

- Investigating public Conservation Easements

- Will encourage partnership with other agencies for the development of wildlife, recreational and public access amenities

- Will pursue grant opportunities as appropriate



Final Thoughts

- Without water, there will be no community economic prosperity
- All the water we have now is all we will ever have: a reservoir is necessary to provide what we need, when we need it
- We will build what we can afford when we can afford to and when demand requires us to
- CIF and WRF are vehicles to accumulate capital by growth, for needs of growth

Water is Life

Thank you!

This presentation and further information may be viewed and downloaded at www.pawsd.org