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AMERICAN WATERWORKS ASSOCIATION
PACIFIC NORTHWEST SECTION

Developing New Sources of Municipal Supply

Dave Tuthill, PhD, PE

May 8, 2014





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Idaho Water Engineering

We are a civil engineering and water resource consulting firm that specializes in finding quick and effective solutions. Our experts provide helpful and professional resolution for a wide variety of water related problems and needs. Our many years of experience include particular expertise in; water rights, water measurement and automation, ground water recharge, water resource development and marketing, water planning, GIS mapping and modeling.

Our goal is to use our expert capabilities to help you with your water problem, whether simple or complex, in a timely and economical way.



Rights Analysis & Solutions



Measurement and Automation



Ground Water Recharge



State and Federal Permitting



Development and Marketing



Mapping and Modeling

Contact

Office: (208) 378-1513

Cell: (208) 870-0345

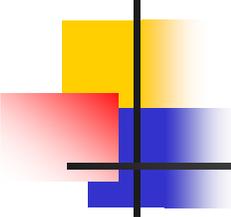
Fax: (888) 538-7703

Email:

info@idahowaterengineering.com

Upcoming Water Events

- "Developing New Sources of Municipal Supply" Presentation to American Water Works Association, Pacific Northwest Section
 - 8 May 14
 -

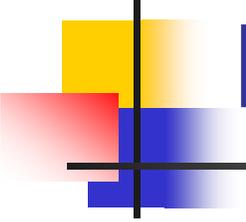


Outline

- Water right consideration matrix
- Threats
- Opportunities
 - Disastrous Example
 - Hopeful Examples

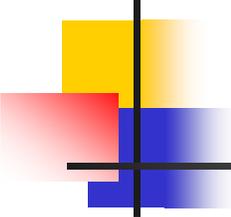
Matrix of Water Right Considerations for Municipal Providers

Source	Reliability Now	Reliability in 20 Years	Strengths	Weaknesses	Opportunities	Threats
	10 high, 1 low	10 high, 1 low	Quality, Quantity, Location, Reliability	Quality, Quantity, Location, Reliability	Acquire New Water Rights, Acquire Above Ground Storage, Aquifer Storage and Recovery	Conjunctive Administration, Climate Change, Changes in Other Uses, Statutory Changes
Stream source 1						
Stream source 2						
Ground water 1						
Ground water 2						
Ground water 3						



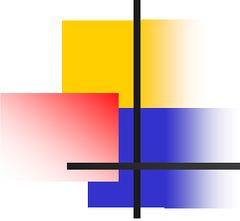
Water Supply Threats to Municipal Suppliers

- Threats are unique to each municipal supplier
- Both short term and long term should be evaluated
- Some solutions solve multiple threats
- Act early to enable a full suite of solutions



Some Common Threats

- Increasing supply requirements
- More uses are competing for existing supplies
- Water quality requirements are increasingly stringent
- Climate change?
- Statutory changes?
- Conjunctive administration of surface and ground water



Bottom line...

**DEVELOP AN
UNDERSTANDING OF
THREATS –
THIS PROVIDES A BASIS FOR
EVALUATING OPPORTUNITIES**



With the CA train coming down the track, what is a municipal water provider to do?

Water Shutoffs Might Loom, Thousands in Magic Valley Could be Affected

f Recommend 13

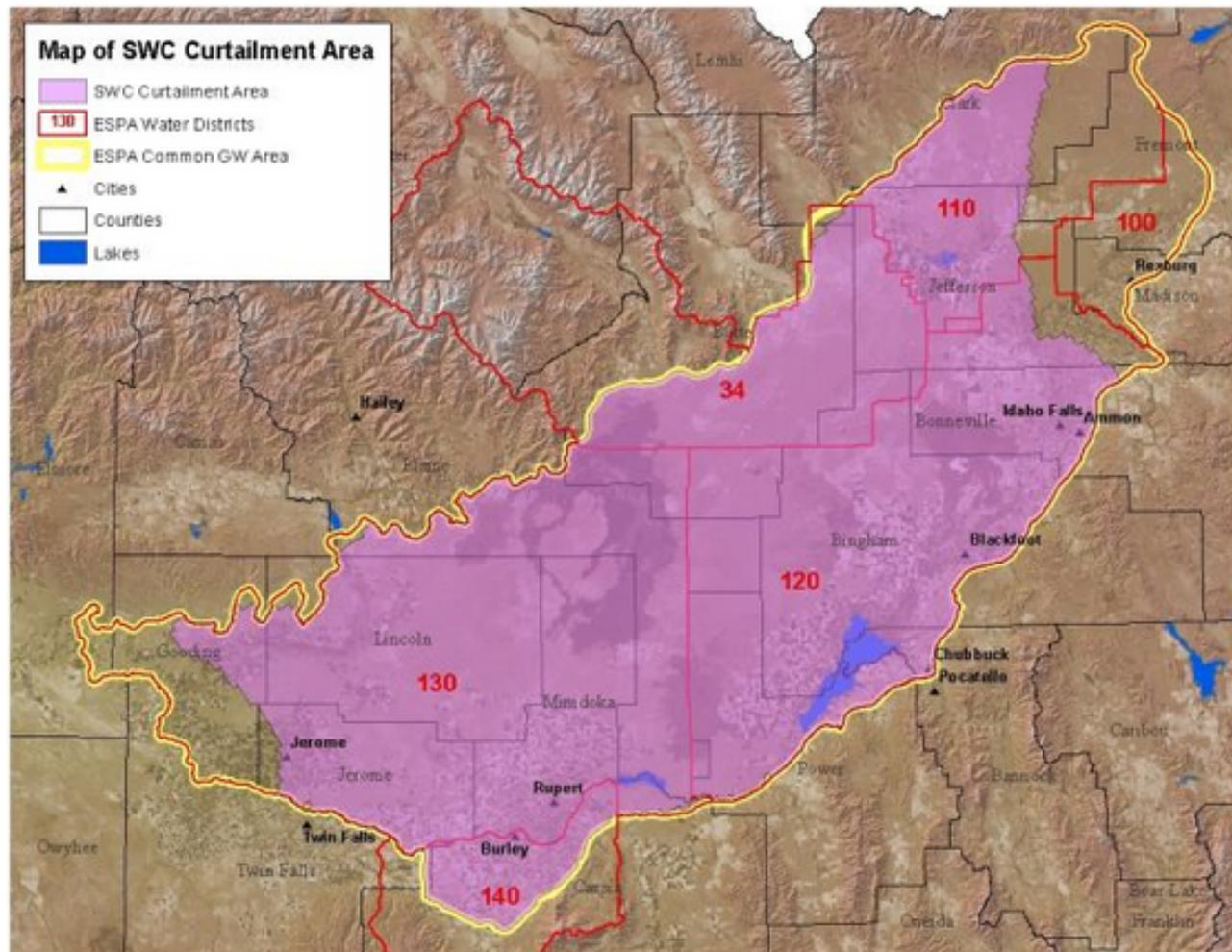
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State of Idaho

DEPARTMENT OF WATER RESOURCES

322 East Front Street • P.O. Box 83720 • Boise, Idaho 83720-0098

Phone: (208) 287-4800 • Fax: (208) 287-6700 • Website: www.idwr.idaho.gov

C.L. "BUTCH" OTTER
Governor

GARY SPACKMAN
Director

March 4, 2014

«OwnerName»

«StreetAddress1»

«StreetAddress2»

«StreetAddress3»

«City» «StateCode» «PostalCode»

RE: Notice of Potential Curtailment of Ground Water Rights in the Eastern Snake Plain Aquifer

Dear Water Right Holder,

The purpose of this letter is to update you on the latest water supply conditions as they relate to the Surface Water Collation (SWC) delivery call. You are the water right holder of record for one or more water rights that received a letter dated January 28, 2014 informing you that your water right could be subject to curtailment during the 2014 irrigation year (November 1, 2013 – October 31, 2014) as a result of the SWC delivery call. The SWC delivery call applies to ground water rights that affect reaches of the Snake River in the American Falls area that are hydraulically connected to

Rangen's Water Call Threatens Area economy; Attorneys and Users Fight Back

Print

Email



February 23, 2014 3:00 am • By BRIAN SMITH - bsmith@magicvalley.com

Magic Coalition

On Thursday, the attorneys for the 14 cities formally organized. They'll return to their city councils to confirm the decision to intervene not only in Rangen's call, but also all future calls against their water rights.

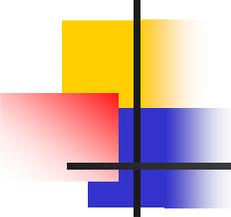
The cities are Heyburn, Rupert, Burley, Declo, Paul, Carey, Hazelton, Shoshone, Jerome, Richfield, Dietrich, Bliss, Gooding and Wendell. Last week, the attorneys filed a request to intervene in the call and joined IGWA's request for a stay on the curtailment order, Williams said.

"This Rangen call only affects 19 percent of (Jerome's) water ... We are going to be OK unless it gets really hot," Mayor Davis said. "But down the road, if more calls come along, it could affect us even worse. We have got to do something right now."

Williams said the group may argue that two provisions of water law conflict — the prior appropriation doctrine (first in time, first in right) and the "maximum economic benefit" from use of Idaho water.

Weaver, of IDWR, said the courts have ruled that the department can't weigh economics. "We need to consider the beneficial use of water independent of the economic effects."

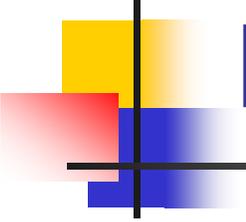
But even the threat of curtailment dampens the economic hopes of cities such as Jerome and a region known for low wages, Davis said. The damage may already be done, he said. Companies "are definitely going to hear about it, and it'll be a deterrent for them."



Opportunities

- Acquire existing senior water rights
- Become a shareholder in a water delivery organization
- Conduct Aquifer Storage and Recovery
- Conduct Ground Water Recharge
 - Irrigation District or Canal Company
 - Private Recharge Company
- Participate in a Watershed Solution
- Participate in a Public-Private Partnership

Acquire Existing Senior Water Rights



- See Bill Carr's presentation from United Water Idaho (next)

Become a Stakeholder in a Water Delivery Organization

- Benefits:
 - Maintains diversion infrastructure
 - Maintains viability of water delivery organization
 - Place of Use often remains the same
 - Point of Diversion of water purveyor is added to the water right
 - Use can remain as irrigation if a showing can be made that this is realistic

Conduct Aquifer Storage & Recovery

Page 1

State of Idaho
Department of Water Resources
Permit to Appropriate Water
NO. 63-31409

Priority: November 16, 2001

Maximum Diversion Rate: 20.00 CFS

This is to certify, that UNITED WATER IDAHO INC
C/O ROGER DITTUS
8248 W VICTORY RD
PO BOX 190420
BOISE ID 83719-0420

has applied for a permit to appropriate water from:

Source: BOISE RIVER

Tributary: SNAKE RIVER

and a permit is APPROVED for development of water as follows:

<u>BENEFICIAL USE</u>	<u>PERIOD OF USE</u>	<u>RATE OF DIVERSION</u>
MUNICIPAL	01/01 to 12/31	20.00 CFS
GROUND WATER RECHARGE	01/01 to 12/31	20.00 CFS

Conduct Ground Water Recharge – Irr Dist or Canal Co

FORM 202 03/10 Print form as a 2 page, single-sided document

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
APPLICATION FOR PERMIT
To appropriate the public waters of the State of Idaho

Ident. No. 1-10626
RECEIVED
JUN 19 2013
Department of Water Resources
Eastern Region

1. Name of applicant(s) Snake River Valley Irrigation District Phone (208) 357-3420
Name connector (check one): and or and/or

Mailing address: 221 S Emerson City Shelley
State Idaho Zip 83274 Email: snielson@gmail.com

2. Source of water supply Snake River which is a tributary of Columbia River

3. Location of point(s) of diversion:

Twp	Rge	Sec	Govt Lot	¼	¼	¼	County	Source	Local name or tag #
01N	37E	15	2	NE	SW	NW	BONNEVILLE Bingham	Snake River	

4. Water will be used for the following purposes:

Amount 585 for Ground Water Recharge purposes from 1/1 to 12/31 (both dates inclusive)
(cfs or acre-feet per year)

Conduct Ground Water Recharge – Private Company

FORM 2020-37100 (print format) 2 page, single-sided document

Ident. No. Amended
37-22682

RECEIVED

SEP 04 2013

DEPT. OF WATER RESOURCES
SOUTHERN REGION

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
APPLICATION FOR PERMIT
To appropriate the public waters of the State of Idaho

1. Name of applicant(s) Innovative Mitigation Solutions, LLC Phone 208-378-1513
Name connector (check one): and or and/or

Mailing address: 2918 N El Rancho Pl City Boise

State ID _____ Zip 83704 Email: dave@idahowaterengineering.com

2. Source of water supply Big Wood River which is a tributary of Snake River

3. Location of point(s) of diversion:

Twp	Rge	Sec	Govt Lot	¼	¼	¼	County	Source	Local name or tag #
3N	18E	20			SW	NW	Blaine	Big Wood River	Hiawatha Canal
<i>See Other PODs Attached</i>									

4. Water will be used for the following purposes:

Amount 154 cfs for Ground Water Recharge purposes from 1/1 to 12/31 (both dates inclusive)
(cfs or acre-feet per year)

Opportunities for a Watershed Approach in a River Basin

Automation of
Irrigation Delivery
Systems

Reuse of Ag
and
Municipal Water

Precision
Agriculture

Riparian
Activities



Automation

Objective: Take only what you need –
leave the rest in the river

Reuse

Objective: Use nutrient laden water for Irrigation *before* it returns to the river



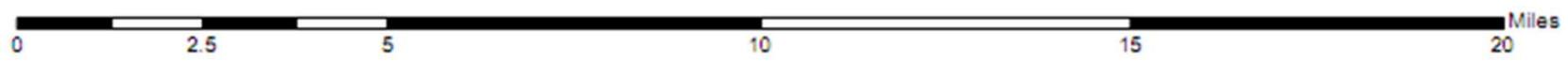
Twin Falls Canal Company – Photo by Brian Olmstead, Manager



Idaho Water Engineering
Water Solutions

Legend

-  Cross_Canal_Points
- World Basemap



Precision Agriculture



Objective: Apply the correct amounts and types of nutrients in the right places



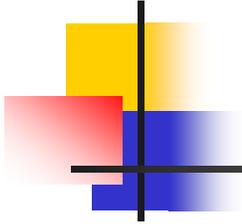


Riparian Activities

Objective: Create wetlands to remove nutrients and lower temperatures

Photo by Dr. Rob Tiedemann

Potential Signatories to Fifteen Mile Creek Water Quality Improvement Project Strategic Agreement



	Relationship with IWS	Initial Discussions	Concept Presentation	Decision to Sign		Anticipated Participation	
				Agreement	Collaboration	In-Kind	Cash
City of Meridian	X	X	X		X	X	X
United Water Idaho Pioneer Irrigation District	X	X			X	X	X
Idaho Rivers United Idaho Conservation League	X	X			X	X	
Life Outdoors	X				X	X	
Idaho DEQ	X				X		
Idaho Water Engineering U.S. EPA <i>Water Solutions</i>	X				X		

REACH FLOWS IN CPS	ACTUAL DATE	NATURAL FLOW	ACTUAL FLOW	REMAINING NAT FLOW	OPERATN FLOW	STORED FLOW	RESERVOIR EVAP	NATURAL FLOW DIV	TOTAL RCH DIV	REACH GAIN	LAST RIGHT
1 TWIN SPRINGS	SEP 9	273.	273.	273.	0.	0.	0.	0.	0.	273.	18900901
2 FEATHERVILLE	SEP 9	149.	149.	149.	0.	0.	0.	0.	0.	149.	18900901
3 FTHRVL TO ANDERSEN RANCH	SEP 9							0.	0.	67.	18900901
4 ANDEN RANCH TO ARROWROCK	SEP 9							0.	0.	31.	18900901
5 MORES CREEK	SEP 9							0.	0.	16.	18900901
6 ARROWROCK TO LUCKY PEAK	SEP 9							0.	0.	9.	18900901
7 LUCKY PEAK TO DIVSN DAM	* SEP 9	543.	814.	543.	0.	270.	0.	0.	0.	-3.	18900901
8 DIVSN DAM TO BOISE	* SEP 9	543.	765.	504.	0.	261.	0.	39.	49.	0.	18900901
9 BOISE TO GLENWOOD BR	SEP 9	515.	596.	373.	0.	223.	0.	102.	140.	-29.	18900901
10 GLENWOOD BR TO MIDLTLN	SEP 9	761.	343.	0.	255.	88.	0.	364.	499.	246.	18900901
11 MIDDLETON TO CALDWELL	* SEP 9	1350.	557.	419.	50.	88.	0.	375.	375.	589.	20051228
12 CALDWELL TO NOTUS	* SEP 9	1588.	657.	519.	50.	88.	0.	139.	139.	239.	20051228
13 NOTUS TO PARMA	SEP 9	2068.	1010.	960.	0.	50.	0.	88.	127.	480.	20051228

Storage Water Bonus

* - INDICATES FLOW ESTIMATED, NOT MEASURED

TOTALS 1108. 1329. 2068.

RESERVOIR	PREV CONT (AF)	CURR CONT (AF)	CHNG CONT (CFS)	ACCR STOR (CFS)	TOTL STOR (AF)	TOTL EV (AF)	PRIORITY	RESERVOIR	RIGHT (AF)	STORED (AF)
1 ANDERSON RANCH	106780.0	106031.0	-377.6	0.0	0.0	4935.8	1	ARROWROCK	260624.0	40.4
2 ARROWROCK	53604.0	53679.0	37.8	0.0	40.4	2823.1	2	ARROWROCK	11600.0	0.0
3 LUCKY PEAK	111714.0	111882.0	84.7	0.0	0.0	3835.8	3	ANDERSON RANCH	449530.0	0.0
4 DIVERSION DAM	820.5	815.1	-2.7	0.0	0.0	0.0	4	LUCKY PEAK	213366.0	0.0
							5	ANDERSON RANCH LTF	500.0	0.0
TOTAL	272918.5	272407.1	-257.8	0.0	40.4	11594.7	6	LUCKY PEAK LTF	51004.0	0.0
							7	ANDERSON RANCH LLTF	0.0	0.0
	CHANGE IN CONTENT	STORAGE USED	MIDDLETON STORED	TOTAL STORED	UNACCT STORED			TOTAL	986624.0	40.4
								TOTAL EARLY SEASON FILL -		783333.4
YEAR-TO-DATE AF	-344174.9	437609.6	25624.6	130791.2	0.0			STEWART DECREE - 60%		BRYAN DECREE - 0%

AVERAGING ERROR -786.2

DIVERSION	CFS DIVN	CFS STOR	AF USED	AF RMNG	DIVERSION	CFS DIVN	CFS STOR	AF USED	AF RMNG	DIVERSION	CFS DIVN	CFS STOR	AF USED	AF RMNG
1 SPRING SHORES	0	0	0	0	27 FARMERS UNION	75	35	8363	3295	53 OTTER	0	0	0	0
2 GREEN RANCH	0	0	0	0	28 BOISE VALLEY	43	3	170	1001	54 RIVERSIDE	199	0	0	36
3 OSPREY	0	0	44	246	29 CAPITOL VIEW	7	0	0	7	55 SEBREE	160	0	0	1121
4 WILDERNESS RANCH	0	0	25	169	30 RIVERSIDE VIL	0	0	19	16	56 CAMPBELL	9	0	86	-86
5 USFS NURSERY	0	0	4	182	31 NEW DRY CREEK	20	0	2770	1085	57 SIEBENBERG	7	0	0	0
6 SANDY POINT	0	0	0	0	32 NEW UNION	2	0	0	382	58 SHIPLEY	0	0	0	0
7 FISH AND GAME FL	0	0	0	48706	33 WOODS	0	0	4	-4	59 WAGNER	0	0	12	-12
8 USBR FLOW	0	0	0	102295	34 LEMP	2	0	0	0	60 GOLDEN GATE	2	0	0	0
9 DISCOVERY PARK	0	0	0	0	35 WARM SPRINGS	3	0	74	-15	61 SIMPLOT	0	0	0	0
10 PENITENTIARY	0	0	841	0	36 GRAHAM-GILBERT	1	0	0	0	62 EUREKA #2	87	0	3721	-3721
11 NEW YORK	0	0	319618	95912	37 BALLENTYNE	14	3	867	485	63 UPPER CENTER DOI	12	0	0	0
12 SURPRIS VY/MICRN	6	0	82	2842	38 CONWAY-HAMMING	0	0	1	0	64 MCMANUS AND TRAT	0	0	88	-88
13 SHAKESPEARE	0	0	0	0	39 EAGLE ISLAND PAR	0	0	6	-6	65 VALE PUMP	0	0	0	0
14 RIDENBAUGH	0	0	46872	368	40 THOMAS AIKEN	2	0	127	46	66 LOWER CENTER DOI	36	0	788	-788
15 WILLIAMS PARK	0	0	38	-23	41 MACE-CATLIN	1	0	52	509	67 BOWMAN AND SWISH	0	0	0	0
16 BUBB	2	0	0	518	42 MACE-MACE	0	0	0	0	68 BAXTER	9	0	384	-384
17 HERRICK	0	0	1	-1	43 NAGY	0	0	0	0	69 ANDREWS	11	0	15	-15
18 MEEVES	0	0	0	0	44 HART-DAVIS	6	0	158	135	70 MCCURRY PUMP	0	0	0	0
19 ROSSI MILL	7	0	77	213	45 MIDDLETON	110	0	355	6874	71 MAMMON	7	4	1108	-1108
20 BOISE CITY	21	0	14	266	46 BARBER	0	0	38	-38	72 HAAS	6	0	77	-77
21 UNITED WATER	13	9	3902	1685	47 PERRY	0	0	0	0	73 PARMA	29	18	5481	-5481
22 K ALBERTSON	0	0	0	10	48 PHYLLIS	230	132	41355	15105	74 ISLAND HIGHLINE	37	17	6526	-6526
23 SETTLERS	0	0	9436	2169	49					75 CRAWFORTH	0	0	3	-3
24 FAIRVIEW ACRES	0	0	699	752	50 LITTLE PIONEER	15	0	117	472	76 MCCONNELL ISLAND	28	0	5530	-5530
25 ANN MORRISON	0	0	0	15	51 CANYON COUNTY	51	0	29	1358	77 STUTHEIT	0	0	0	0
26 THURMAN MILL	15	0	460	165	52 CALDWELL HIGHLIN	23	0	207	0					

Participate in a Public Private Partnership

Types of Public-Private Partnerships



Water hub

From Guardian Sustainable Business

Financing water: how public-private partnerships can solve challenges

Investing in nature is a smart development strategy, but as public funding dries up we need more sophisticated solutions

Giulio Boccaletti
Guardian Professional, Tuesday 23 July 2013 12.16 EDT

Jump to comments (0)



In New Mexico, ash from recent forest wildfires has been washed into the river streams. Photograph: Reuters

More than 30 states have enacted legislation encouraging PPPs so far. In addition, former Governors Ed Rendell of Pennsylvania and Arnold Schwarzenegger of California, along with New York Mayor Michael Bloomberg, formed the Building America's Future Educational Fund - a Rockefeller Foundation-funded group dedicated to rebuilding infrastructure via alternative methods that include PPPs. The Brookings Institution's Hamilton Project estimates that infrastructure PPPs have increased fivefold in the wake of the Great Recession. These contracts typically enjoy high renewal rates, demonstrating the ability of a well-planned PPP to deliver high quality services and innovative solutions, illustrated by a number of examples.

THE BLOG

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HOT ON THE BLOG

Greta Van Susteren
Sec. Arne Duncan



Michael Deane

Executive Director, National Association of Water Companies

GET UPDATES FROM MICHAEL DEANE

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2013: The Year of Public-Private Partnerships

Posted: 04/24/2013 9:18 am



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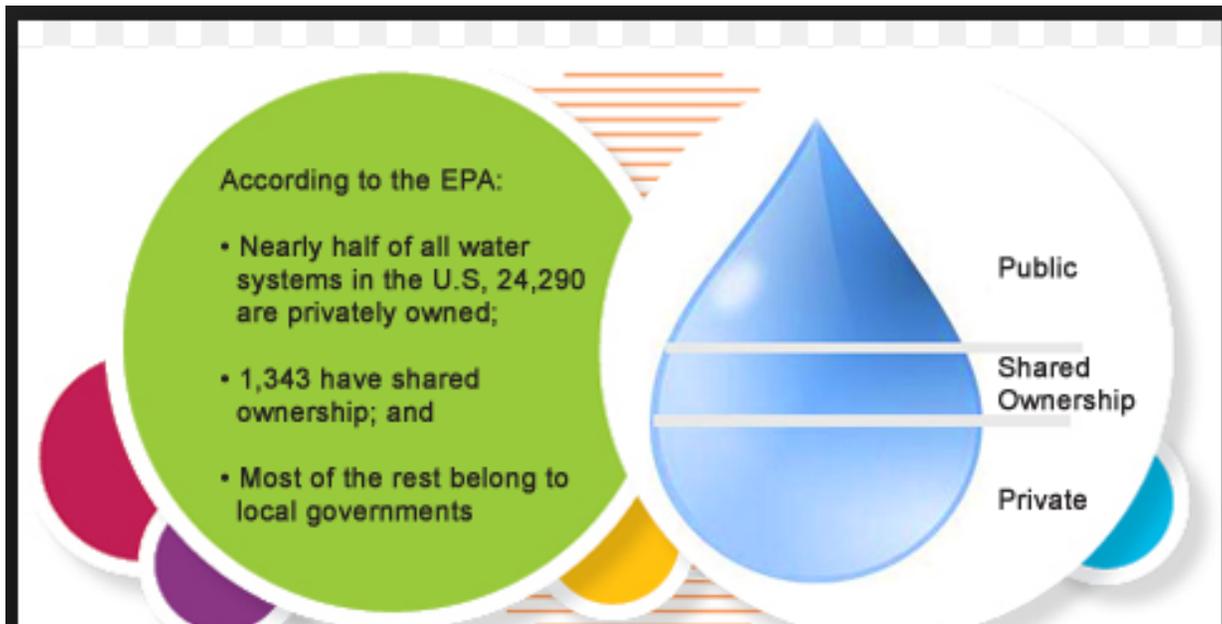
Submit this story

"...America works best when it's calling upon the resources and ingenuity of our vibrant private sector."

-The White House, Rebuild America Partnership announcement, March 29, 2013

If the first four months of the year are any indication, we may look back on 2013 as the year of the Public-Private Partnership (PPP). In January's State of the Union address, President

Obama called needed attention to the private sector's role in addressing our nation's pressing infrastructure challenges, announcing both his Fix-It-First proposal - designed to address critical repairs - and the Rebuild America Partnership - intended to leverage private resources in meeting these national needs.



#EFISUMMIT



Goldman Sachs

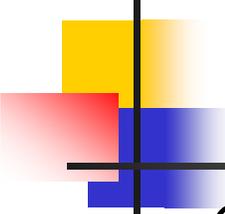
Water – Innovative Public-Private Partnerships (P3s)

P3s in the US: In the US, government owned systems comprise 84 percent of the country's ~53,000 water systems and 98 percent of its ~16,000 wastewater systems¹. The American Society of Civil Engineers assigned US water infrastructure a D+ grade (*Poor: At Risk*) citing more than \$1 trillion in drinking water, wastewater and stormwater infrastructure capital improvements needed over the coming decades². With growing public sector financial constraints and aging water systems, municipalities have become more receptive to partnerships with the private sector.

For example, in December 2012, the city of Rialto, California, teamed up with private equity firm Table Rock Capital, Union Labor Life Insurance Co. and Veolia Water in a 30-year water and wastewater concession. At the time of the transaction, Rialto was

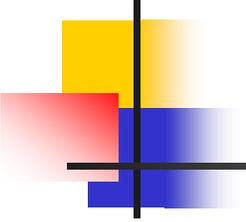


In February 2013, Goldman Sachs, GE and WRI hosted a summit entitled "Water: Emerging Risks & Opportunities" to discuss the intersection of capital, policy and technology in addressing critical US water challenges. [Read the white paper](#) and [watch videos](#) from the summit.



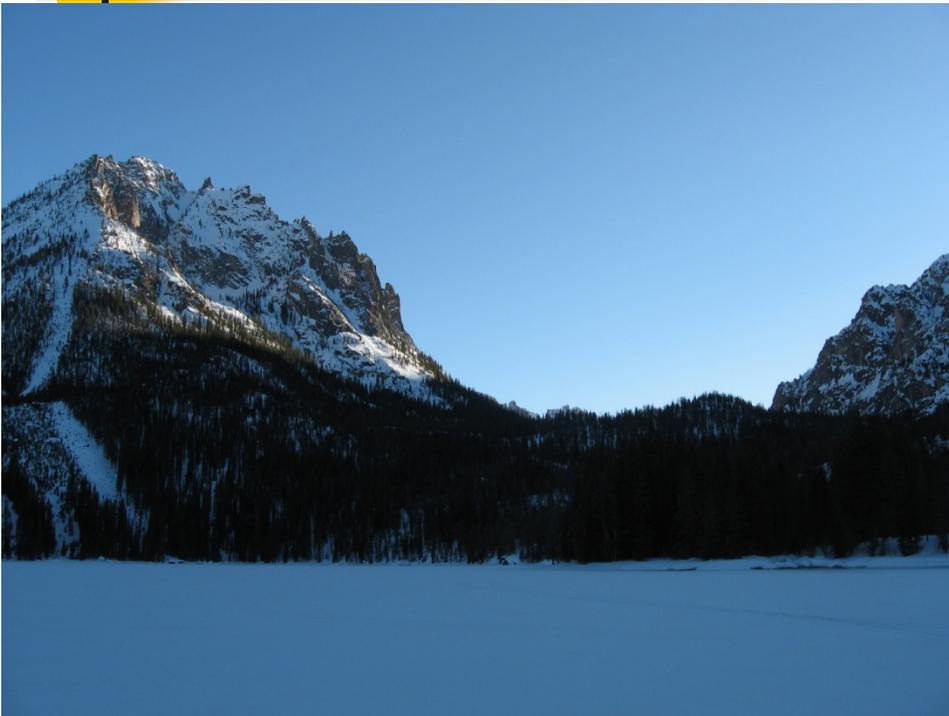
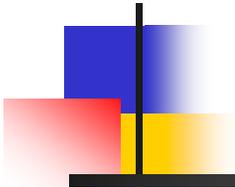
Suggestions

- Consider investing in a qualified consultant to assist with water right matters
- Train full time staff and leverage their efforts
- Employ the consultant as a guide while doing much of the work in-house
- It is better to initiate the process too early than too late – it is gratifying to deal optimize options from a number of choices



Summary

- Gone are the days of:
 - easy water rights
 - wells pumping merrily away without anyone taking notice
 - municipalities focusing exclusively on water quality issues
- Hello to the 21st Century – it should be interesting, and successful for the prior planners!



208-378-1513
Website:
Idahowaterengineering.com
Email:
info@idahowaterengineering.com