

Treasure Valley Reuse

...in 50 years

Jack Harrison

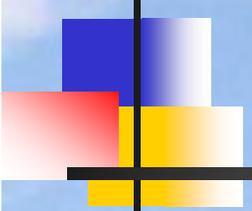
PhD, PE , PH-GW

June, 2008

HYQUAL

*Hydraulics
Hydrology
Water Quality*

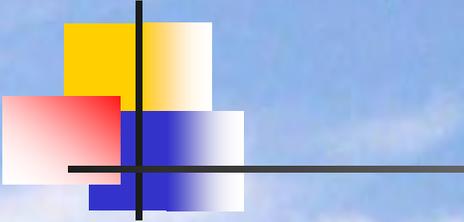
Reuse ... is needed to meet future water supply and quality requirements in the Treasure Valley



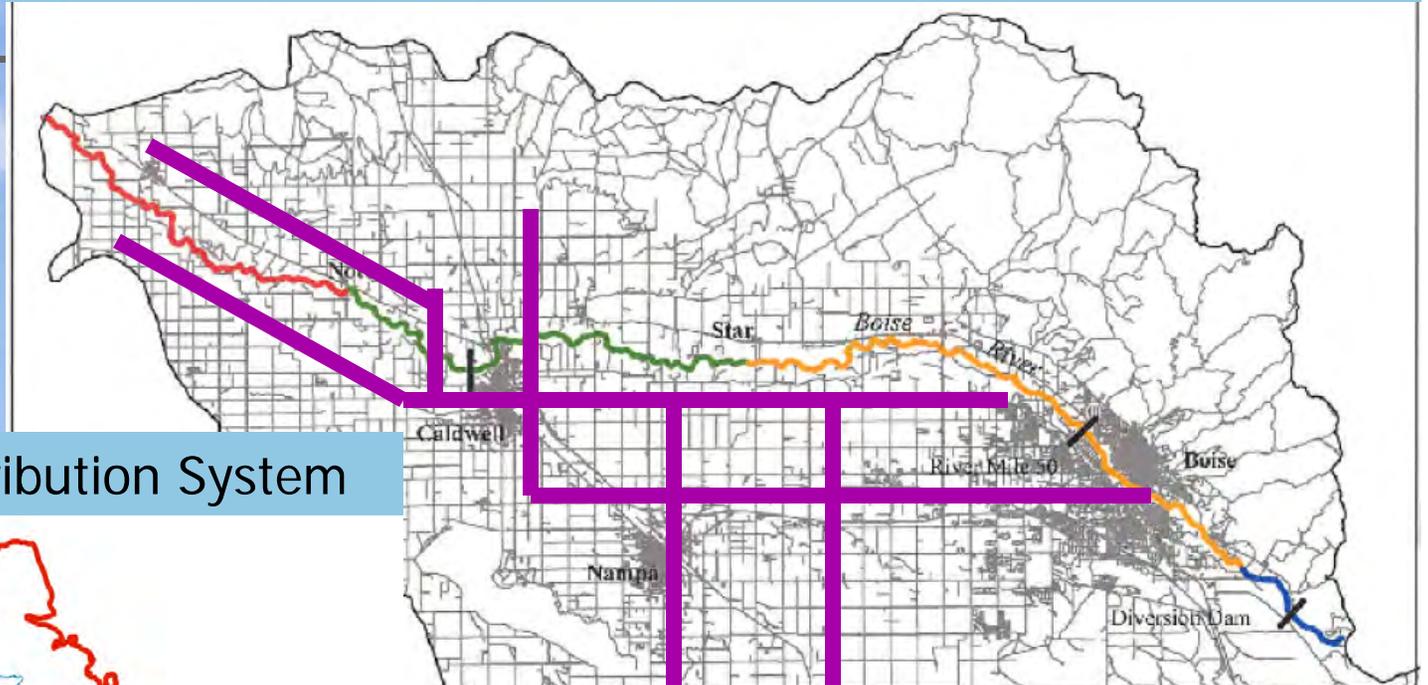
For Urban and Residential growth ...
we need Water Management Goals:

- ❖ Reduce ...water use
- ❖ Reclaim ...wastewater
- ❖ Reuse ...reclaimed water

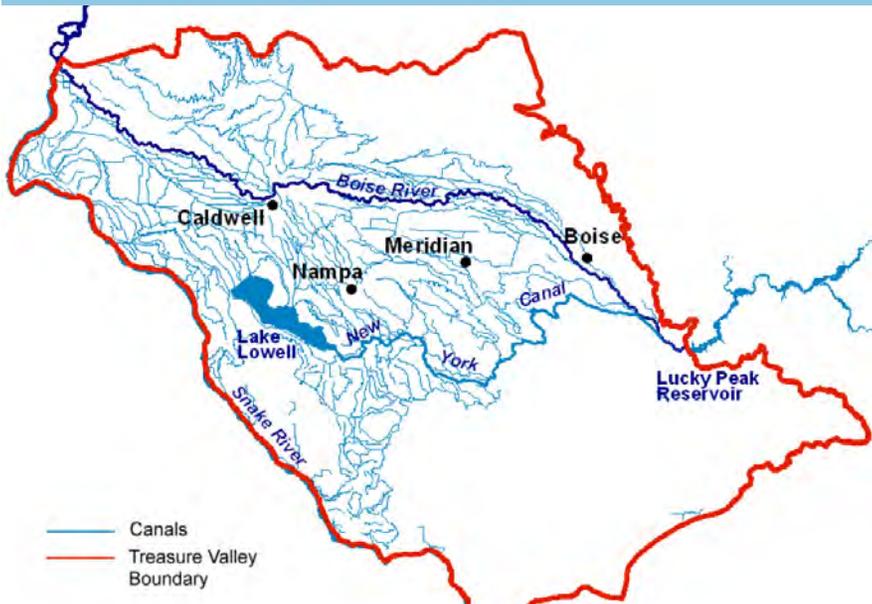
The Key...a Reuse System!!!



2000's Reclaimed Water Distribution System



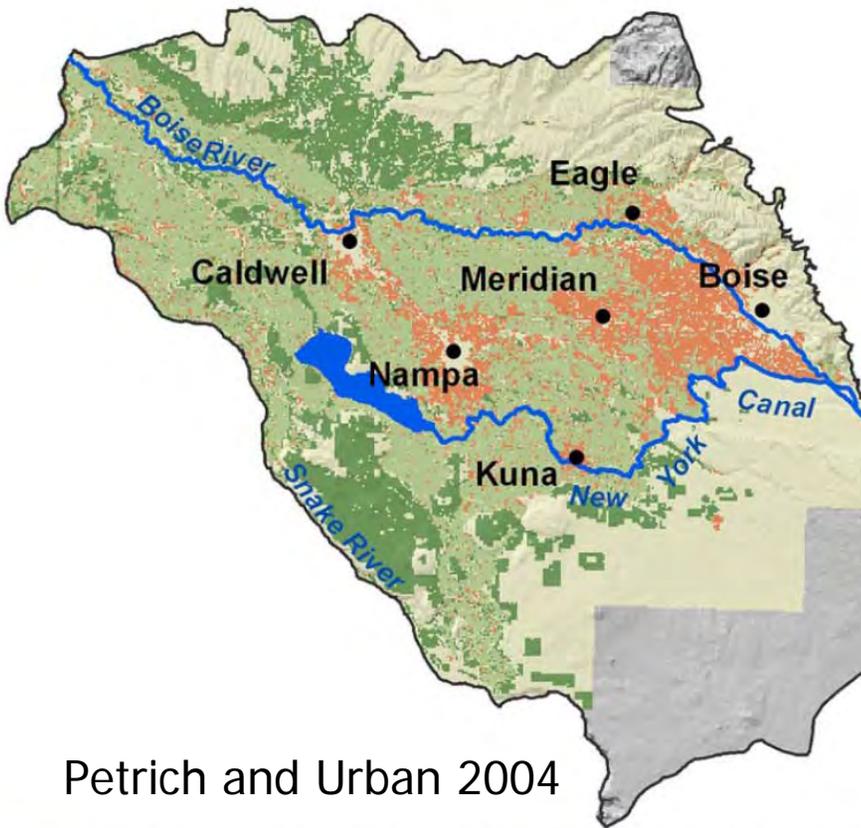
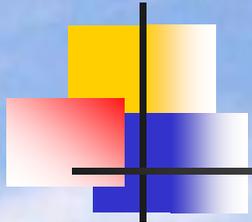
1900's Water Distribution System



and we need to start building now!!

❖ Reduce

*Land use is changing
...so will water use*



Petrich and Urban 2004

Irrigated in 2000 and Irrigated in 1938/1939
 Not Irrigated in 2000,
 Irrigated in 2000, Not Irrigated in 1938/1939
 Not Irrigated in 2000,

Water balance for ~150,000 ac		
	Ft	%LP
Ag Consumptive Use (CU)	2.1	101%
Current Urban/Residential		
Domestic Total	0.6	27%
Landscape CU	1.9	90%
Domestic + Landscape	2.4	117%
Future Urban/Residential?		
Domestic CU	0.2	8%
Landscape CU - WW Reuse	0.4	19%
Landscape CU - Irr Water	0.4	19%
Domestic + Landscape	1.0	47%
Extra Water ??	1.1	55%

❖ Reclaim

when "green"
...turns to "brown"?

Irrigation and land use in 1994 based on IDWR data (Petrich and Urban 2004)

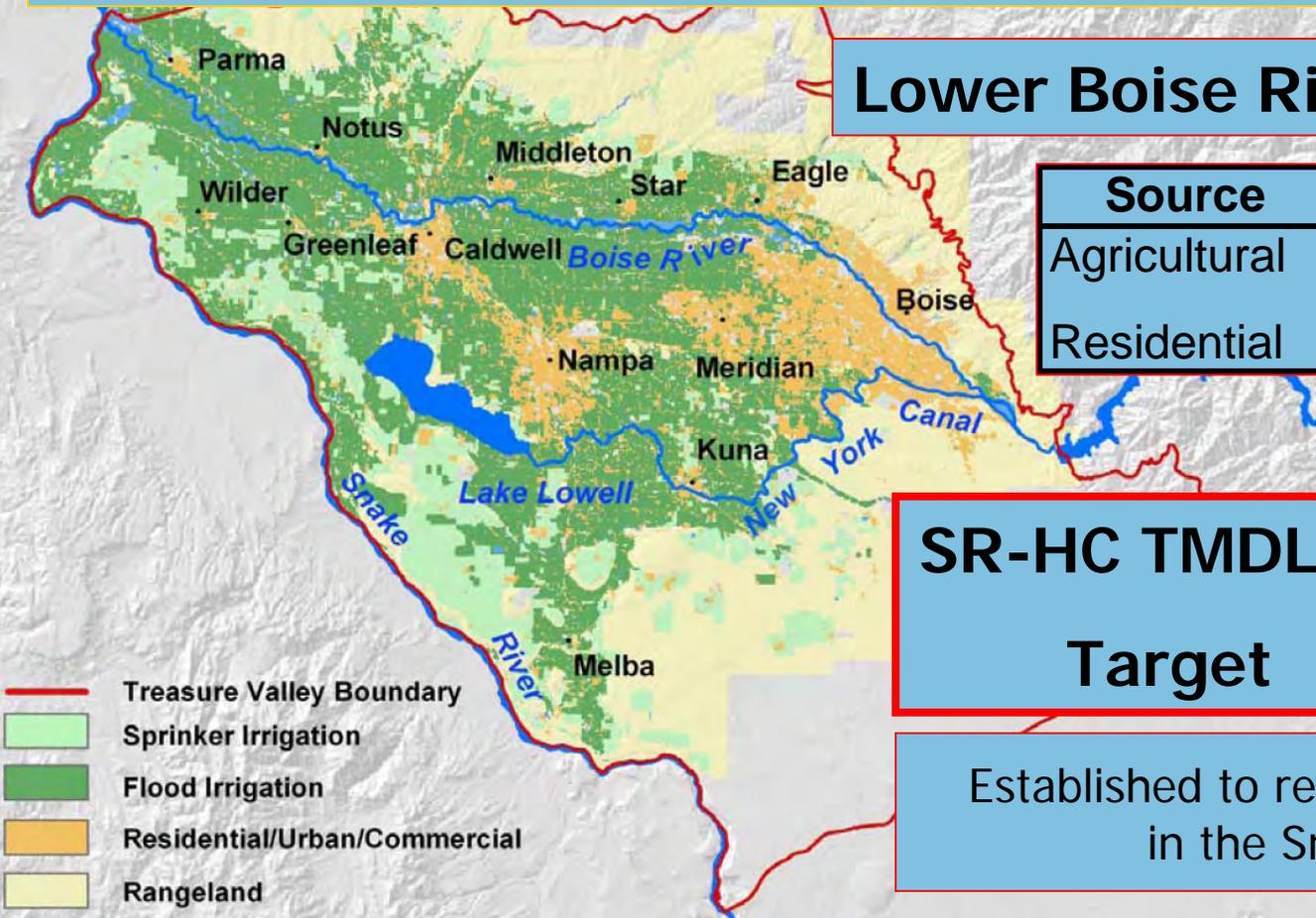
Lower Boise River TMDL 2007

Source	P Load	Units
Agricultural	5.0	g/ac/day
Residential	0.5	g/ac/day

SR-HC TMDL:

Target = 70 ug/L

Established to restore water quality
in the Snake River!

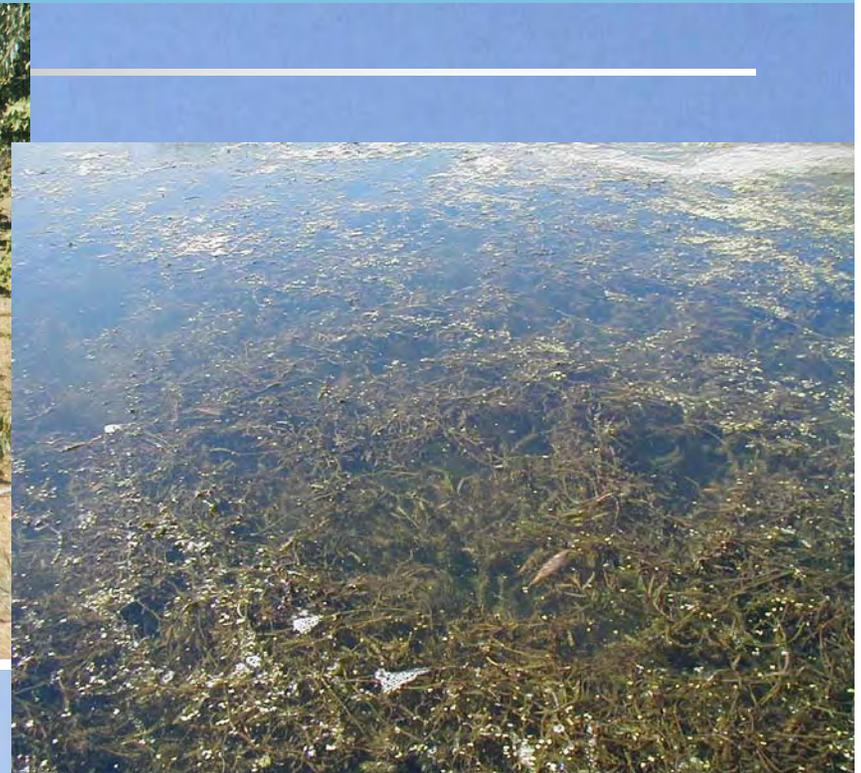


The "Lower"

... Lower Boise River



**Boise River TSS Target
= 50 mg/L**



**Boise River = 280 ug/L
TP Target = 70 ug/L ??
Lucky Peak = 20 ug/L**

Boise River Water Quality

...must also change

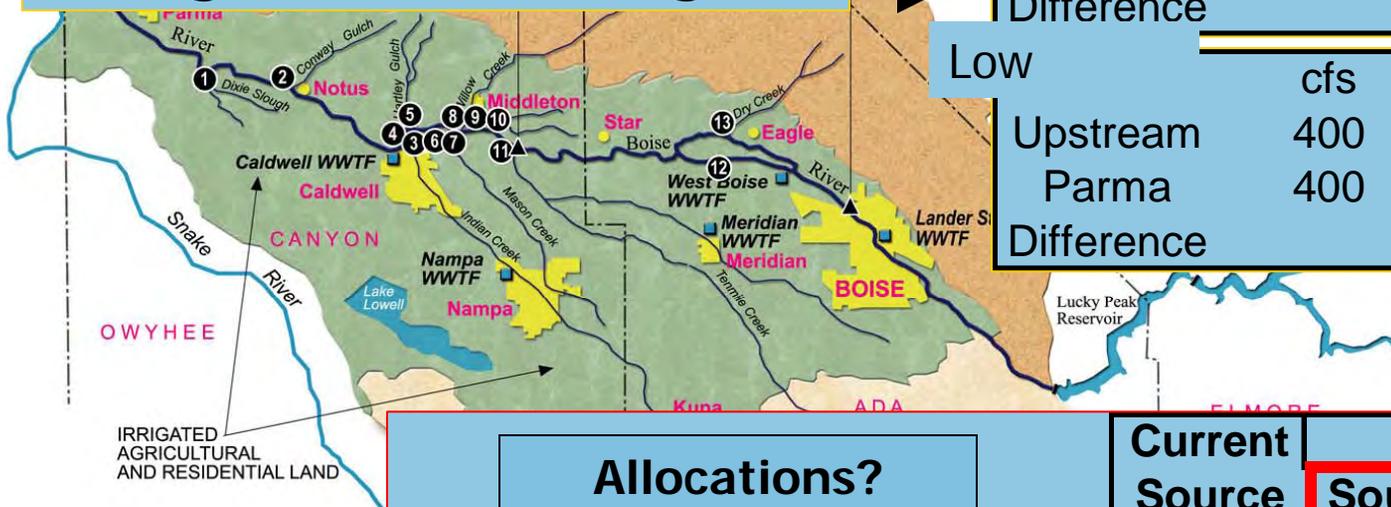
Boise River = 280 ug/L

Target = 70 ug/L

Flow x Concentration = Load

Average	Q (cfs)	C (mg/L)	L (kg/d)
Upstream	1200	0.02	59
Parma	1200	0.07	205
Difference			147

Low	cfs	mg/L	kg/day
Upstream	400	0.02	20
Parma	400	0.07	68
Difference			49

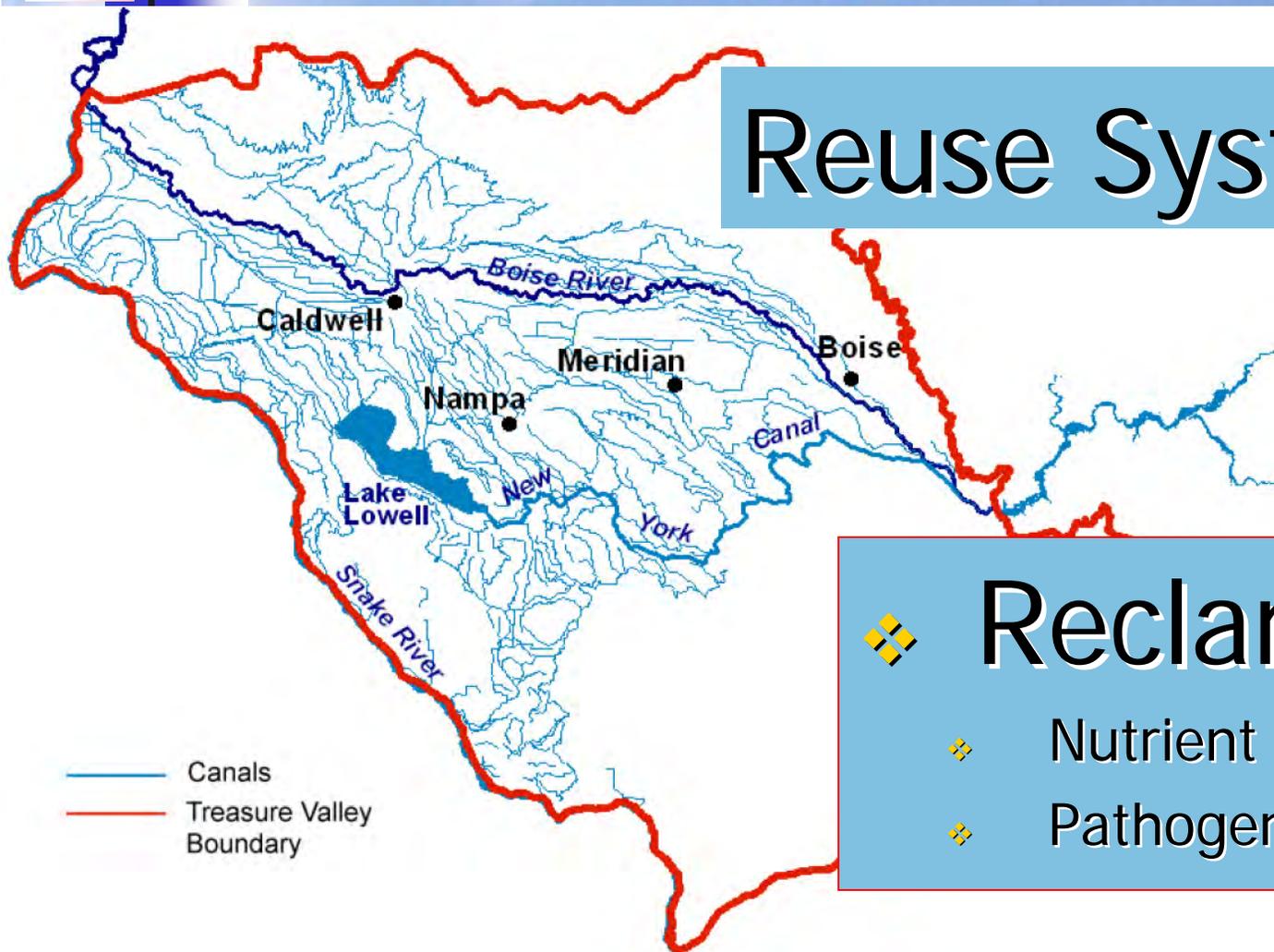


- ② CREEKS AND DRAINS MONITORING STATIONS
- ▲ LOWER BOISE RIVER MONITORING STATION
- WASTEWATER TREATMENT FACILITY (WWTF) MONITORING STATION

Allocations?		Current Source (kg/day)	Projected Source (kg/day)	Relative Contrib.	@Parma (kg/day)
Sources	200 ug/L	670	75	50%	37
WWTFs		79	102	50%	51
Stormwater		792	71	50%	36
Agricultural		1541	248		125
Subtotal					

Boise River allocations "ASSUME" ... 50% "Watershed" Reuse

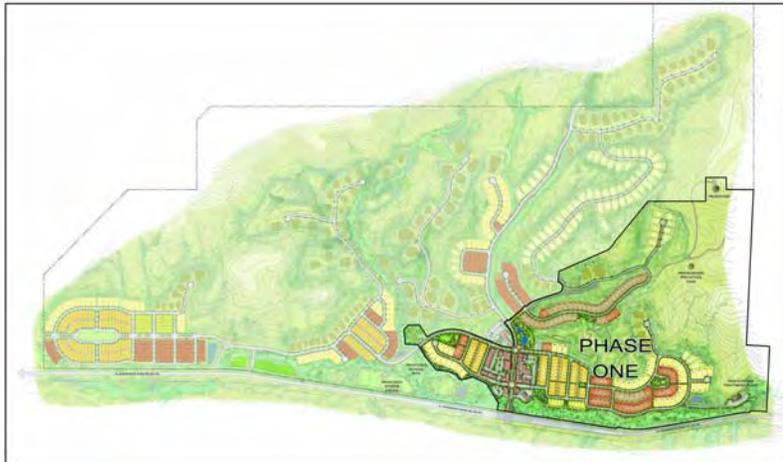
Reuse System?



Reclamation

- ◆ Nutrient reduction
- ◆ Pathogen reduction

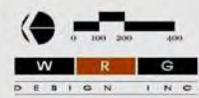
an example - Avimor's Water Management Approach



- Reduce
- Reclaim
- Reuse

*Drought-tolerant turf
and landscaping*
*Maximum turf goal: 10%
to 20% of lot area*

Class B WWTF
TP < 70 ug/L

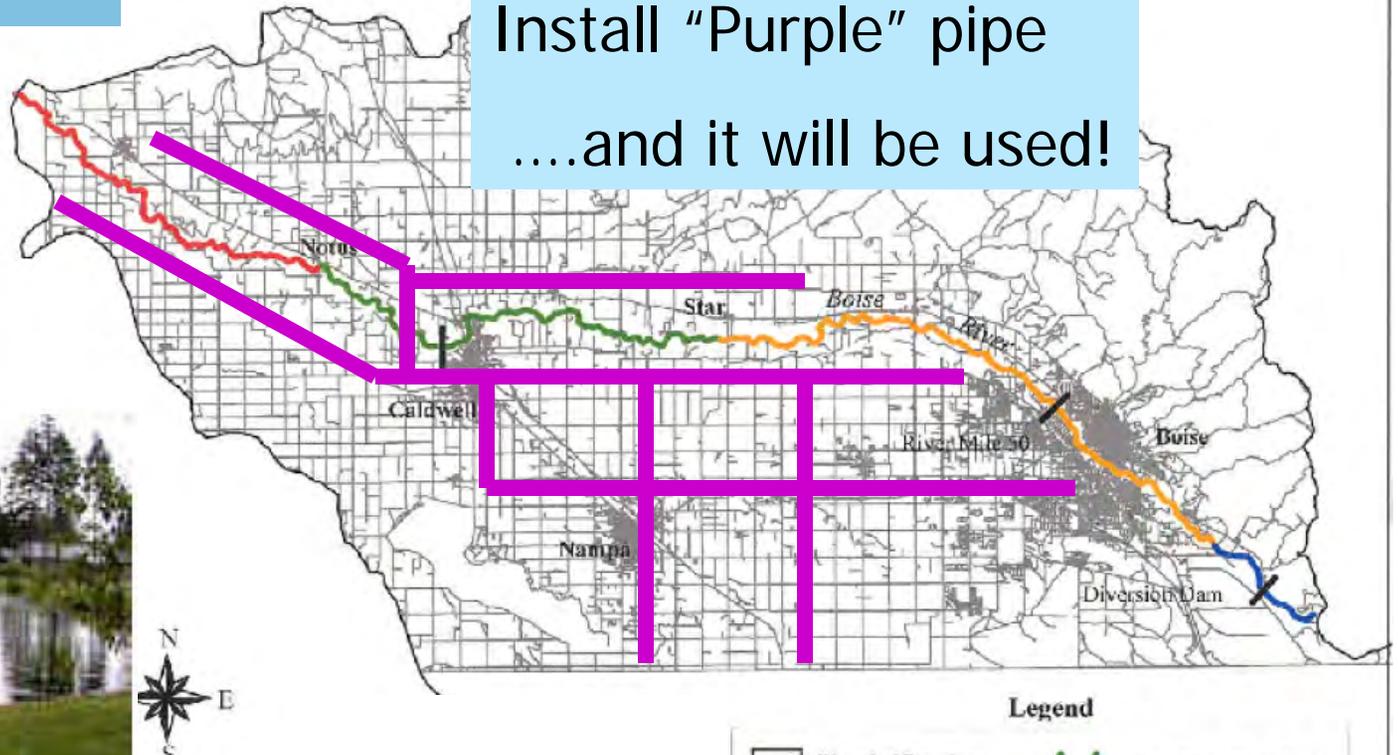


Avimor Village 1, Phase 1
A "SunCor" Development

❖ Reuse

...requires infrastructure...

Install "Purple" pipe
....and it will be used!



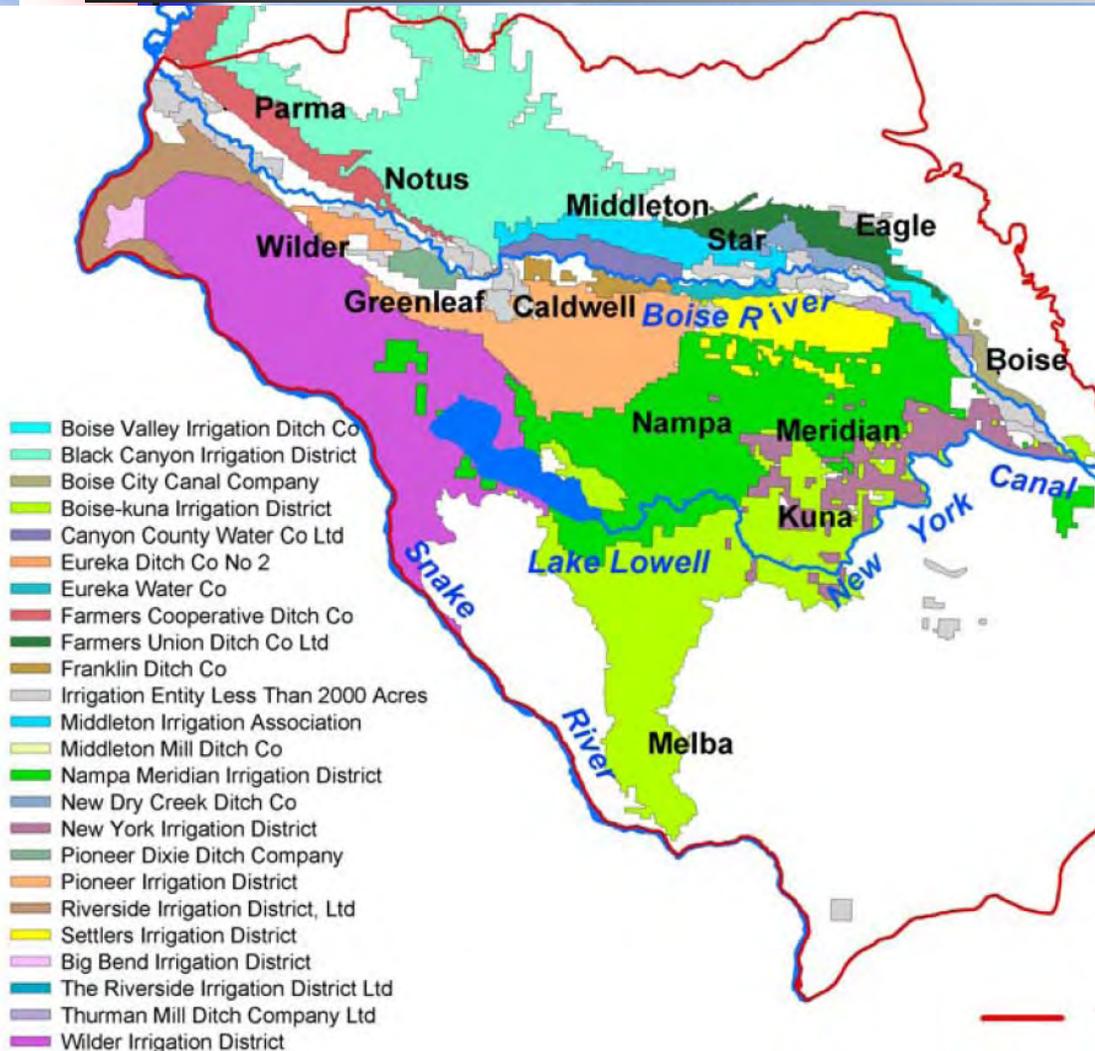
Legend	
Watershed Boundary	Boise River, Star to Notus
Boise River, Lucky Peak Dam to Barber Diversion	Boise River, Notus to Snake River
Boise River, Barber Diversion to Star	Roads and Cities

Another example: Meridian City Reuse

A Reuse System ...

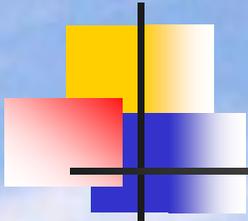
....won't be cheap or easy!

- 24+ Ag Entities
- 13+ Cities
- 2 Counties
- ? Transportation Districts
- ? State Agencies
- ? Legislators

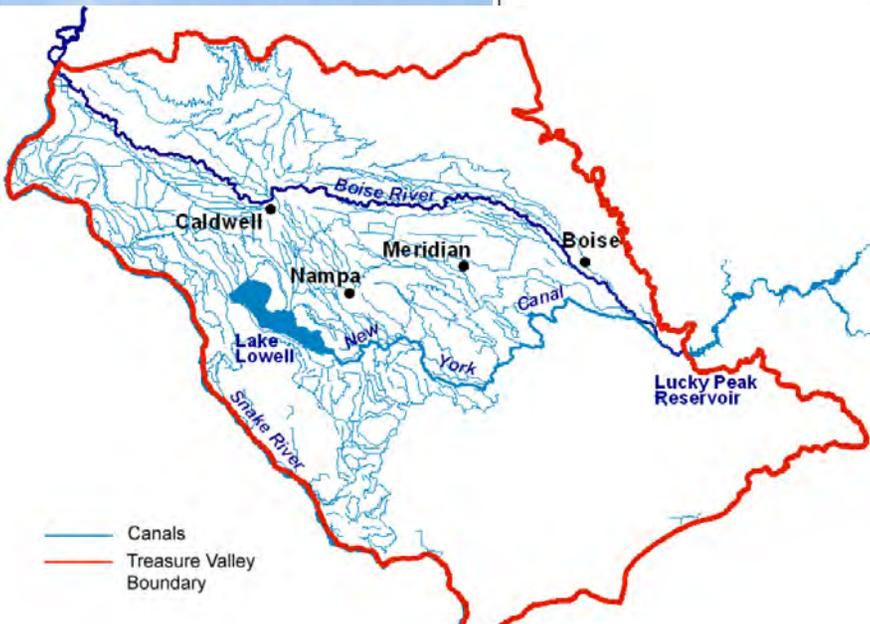
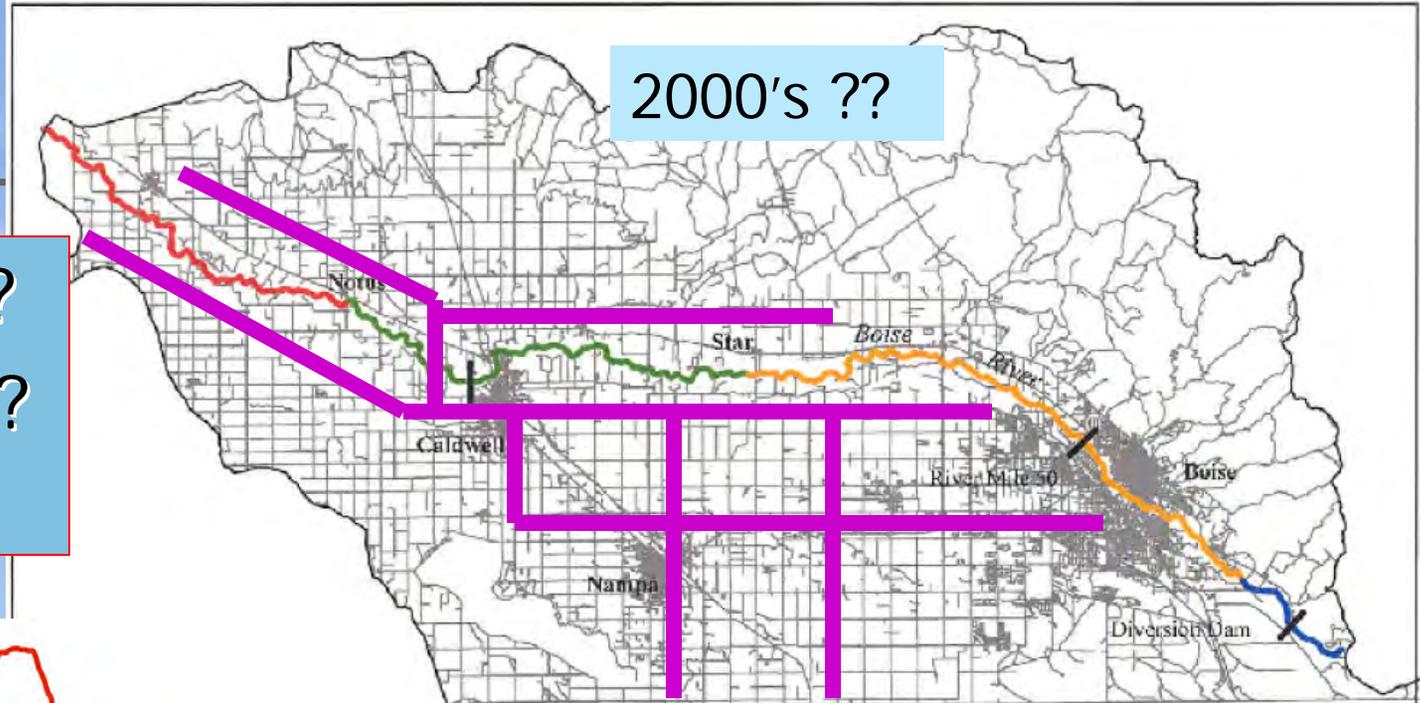


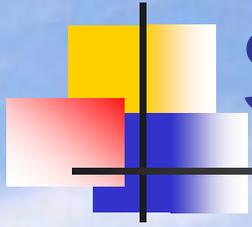
- ❖ Reduce?
- ❖ Reclaim?
- ❖ Reuse?

Questions?



- ❖ Reduce?
- ❖ Reclaim?
- ❖ Reuse?





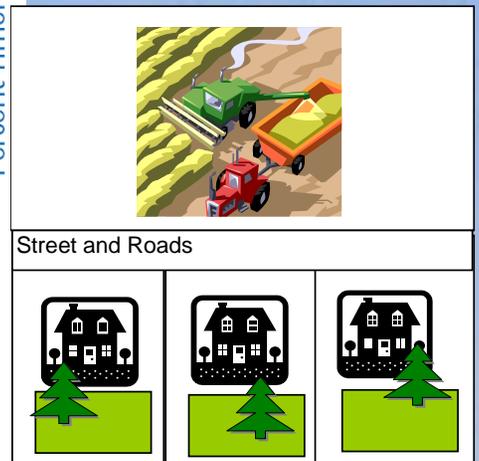
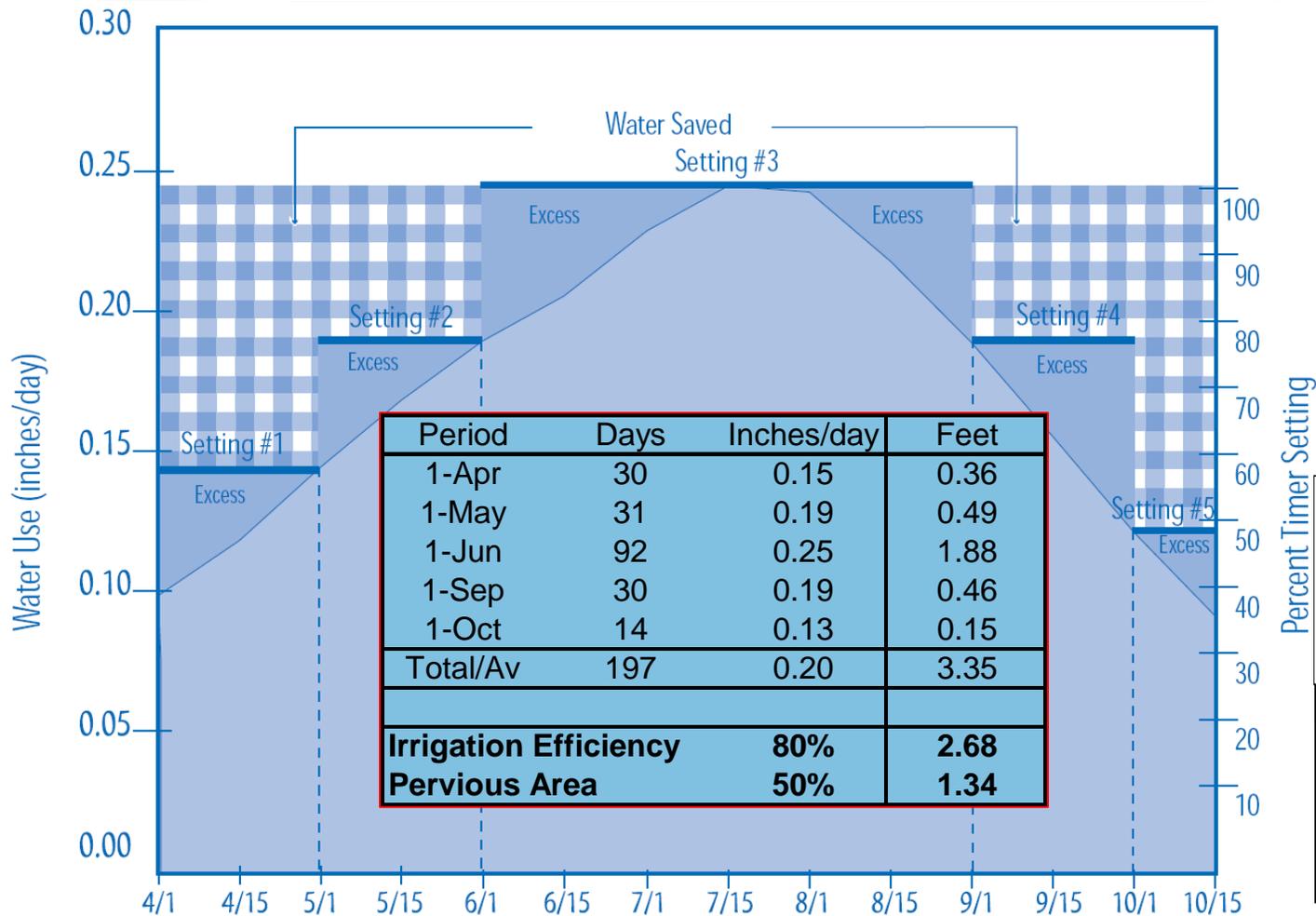
Supporting info

HYQUAL

*Hydraulics
Hydrology
Water Quality*

Urban/Residential Water use

UI College of Agriculture, CIS 1098



Seasonal Water Use per Acre

Source	CU (ft)		Reference
	Total	Pervious	
SEBAL	2.0	2.8	Kramber and Morse, IDWR 2002
UI (lawn)	1.9	2.7	UI College of Agriculture, CIS 1098
Personal	1.8	2.5	Harrison, 2007 actual water use
% Pervious	100%	70%	Typical Residential

