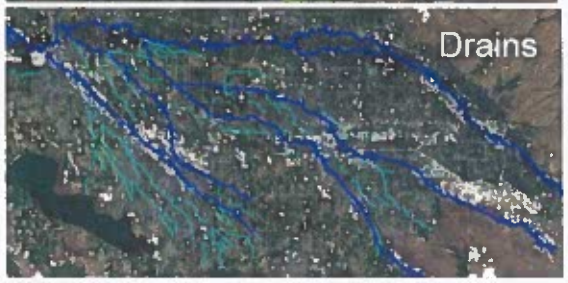
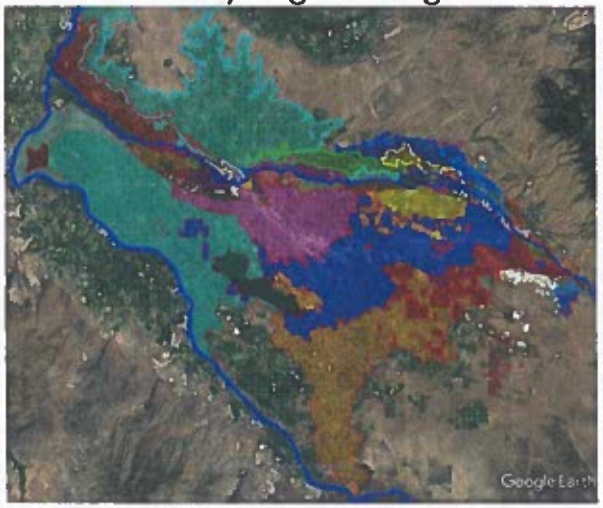
Treasure Valley Water Supply Assessment and Sustainability Project

The Watershed



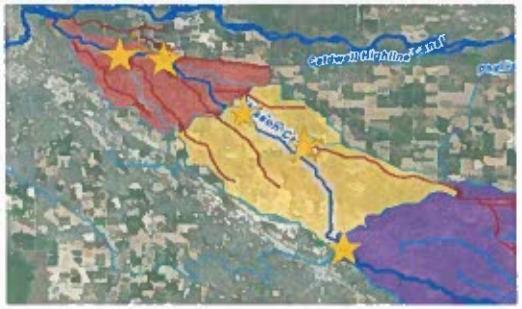
Treasure Valley Irrigation Organizations



Urbanization

Treasure Valley Water Supply Assessment and Sustainability Project

Phase 1: Initiate Robust Drain Monitoring, Hydrologic Analysis & Online Data Hub (2023-2024)



- Project development
- Install measuring stations in unmeasured drains
- Collect and analyze flow data
- Develop Boise River mass balance & trend analysis

Phase 2: Continue Monitoring & Analysis, Develop Land Use/Hydrologic Modeling & Online Data Hub (2024-2027)

- Correlate changes in land use and other factors to measured changes in drain flows
- Develop and integrate hydrologic models to estimate and forecast water supply changes
- Develop online data hub for monitoring data, hydrologic analysis, and modeling

Phase 3: Identify, Evaluate & Recommend Water Supply Management Alternatives (2023-2028)

- Manage/mitigate hydrologic impacts of land use changes
- Groundwater management and mitigation (e.g. managed recharge)
- Surface water supply management and mitigation
- Water conservation incentives

Project Cost Summary

Phase 1 Costs (2023-2024)

➢ Project Development	**$ 15,000**
➢ Start-up Costs:	**$131,000**
➢ Annual Maintenance:	**$130,000**
➢ Analytics:	**$50,000**
	$326,000

Phase 2 Costs (2024-2027)

➢ Annual Maintenance:	**$130,000**
➢ Annual Analytics & Modeling:	**$200,000**
	$330,000

Phase 2 Total ($990,000)

Phase 3 Costs (2023-2028) **(TBD)**

Project Start Up & Annual Maintenance Costs

Start Up Costs	
Transducers, Recording, and Telemetry Equipment	$75,000 ($1,500 per site x 50 sites)
Installation (WD63 Wages)	$6,000 ($120 per site x 50 sites)
Flow Measurement Equipment	$50,000 ($25,000 per ADCPx2)
Total Start Up Costs	**$131,000**

Annual Maintenance Costs	
General Equipment Maintenance	$10,000 ($200 per site x 50 sites)
Data Collection and Storage	$50,400 ($84 per site per month x 50 sites x 12 months)
Website Maintenance	$40,000
WD63 Wages	$30,000
Estimated Annual Maintenance	**$130,000**

Project Sponsors & Funding

Treasure Valley Water Supply Assessment and Sustainability Project Phase 1: Potential Project Supporters (as of 6/29/23)

Project Supporter	Funding Request	Commitment	Received
1. Water District 63 (water users)	$ 71,000.00	$ 36,000.00	
2. Treasure Valley Water Users Association (irrigation organizations, Project Development)	$ 15,000.00	$ 15,000.00	$ 13,675.00
3. Flood Control District No 10	$ 5,000.00	$ 10,000.00	
4. Idaho Water Resource Board	$ 155,500.00		
5. Ada County	$ 50,000.00		
6. Canyon County	$ 20,000.00		
7. City of Boise	$ 5,000.00		
8. City of Caldwell	$ 5,000.00		
9. City of Eagle	$ 5,000.00		
10. Garden City	$ 5,000.00		
11. City of Middleton	$ 5,000.00		
12. City of Nampa	$ 5,000.00	$ 5,000.00	
13. Idaho Power	$ 5,000.00		
14. Veolia Water	$ 5,000.00		
TOTAL:	**$ 356,500.00**	**$ 66,000.00**	**$ 13,675.00**

TIMELINE

Before Irrigation:
* The Boise River Landscape outside the Boise River flood plain was a desert
* Five Mile, Ten Mile, and Indian Creeks were ephemeral, flowing only for a month during spring snowmelt
* Mason Creek, Three Mile, Eight Mile, Nine Mile, and other smaller drains did not exist prior to irrigation

1864-1904 Private canal construction, irrigation development, water rights perfected

1900
* Seepage from flood irrigated fields and canal systems created the shallow aquifer
* Large, previously ephemeral Creeks flowed throughout the year, new creeks formed & flowing

1904-1910 Treasure Valley land areas waterlogged or entirely submerged, extensive ag. lands unproductive

1905 Bureau of Reclamation, Boise Project

1912-1918 BOR/water users drainage planning, contracts and drain construction/enlargement
(Five Mile, Ten Mile, Nine Mile, Mason Creek, Dixie, Wilson, Elijah, Purdam, and many others)

1920s & 30s Additional smaller drain construction

1918 to present
* Drains become the primary source of water for the Boise River downstream of Middleton
* Use/reuse of water developed in drains for agricultural and urban (pressurized) irrigation

Urbanization 1990s to present:

**** 2001-2016 (long term), 46,859 acres that drain to Boise River developed (2% per year)***
**** 2016-2020 (recent) 4,006 acres (3%-4% per year) developed major drainages (Fifteen Mile, Mason Cr., Indian Cr.)***
**** Water Supply Impacts:***
-> elimination of flood irrigation, piping ditches
-> Reduced field and canal seepage to the shallow aquifer
-> Reduced shallow ground water flow into drains
-> Reduced surface return flows to drains
-> Water managers observe declining drain flows
-> Water managers supplement drain flows with water from canal systems to supply drain deliveries (ag. & urban)

2008	USBR "Distributed Parameter Water Budget Data Base for the Lower Boise Valley," * On-farm field seepage averages 520 kaf per year (51% of 1,012 KAF) * Canal seepage averages 492 kaf per year (49% of 1,012 KAF total groundwater infiltration)
2009-2023	* LBWC ag. TMDL implementation: Federal and State grants to convert 5,221 ag. acres from flood to sprinkler * Significant additional conversion without grants (proliferation in hops fields)
2014	Dave Shaw's estimate of reductions in major drain discharges after elimination of flood irrigation
2017-2021	***USGS measurements of drains shows declining trends***
2020	IWRB "Treasure Valley Managed Recharge Feasibility Study"
2020-2022	Delineation of Treasure Valley canal systems, drainage systems, drainsheds, remaining agricultural acres and developed acres that drain to the Boise River
2022	* IWUA Urbanization Resolution * June 30, natural flow in Boise River, Caldwell to Notus reach inadequate to supply water rights -> storage released for flow augmentation delivered * Water District 63, Treasure Valley Water Users Association and HDR: -> begin to correlate Boise River flow shortages with drain flow declines -> formulate TV Water Supply Assessment and Sustainability Project
2023	* TV Water Supply Assessment and Sustainability Project added to IWRB Regional Sustainability Priority List * Process to engage TV stakeholders and supports begins
2023-2024	Phase 1: Initiate Robust Drain Monitoring, Hydrologic Analysis & Online Data Hub Development
2024-2027	Phase 2: Continue Monitoring & Analysis, Develop Land Use/Hydrologic Modeling & Online Data Hub
2023-2028	Phase 3: Identify, Evaluate & Recommend Water Supply Management Alternatives

Phases 2 and 3 will utilize the Treasure Valley Groundwater Model in consultation with USGS and IDWR