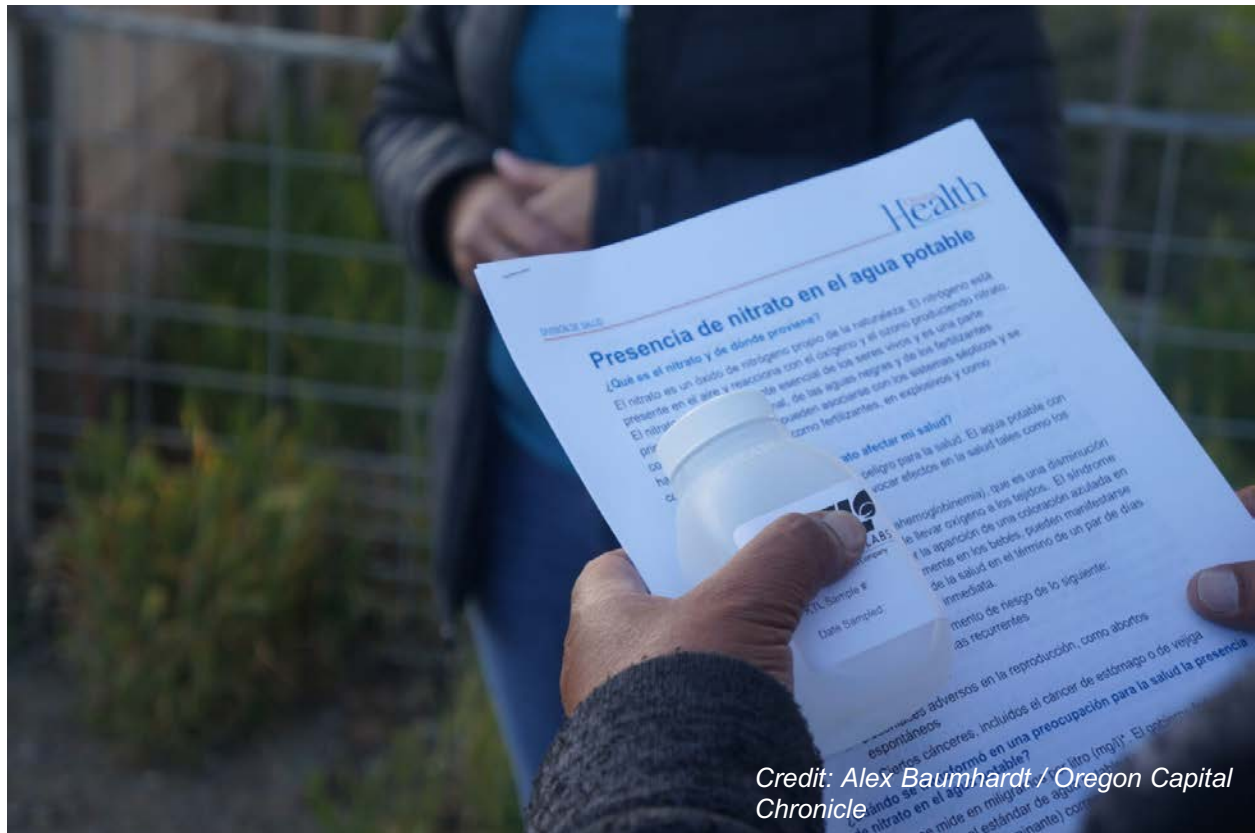


# Responses to nitrate contamination in groundwater: case studies from Montana, California, and Washington



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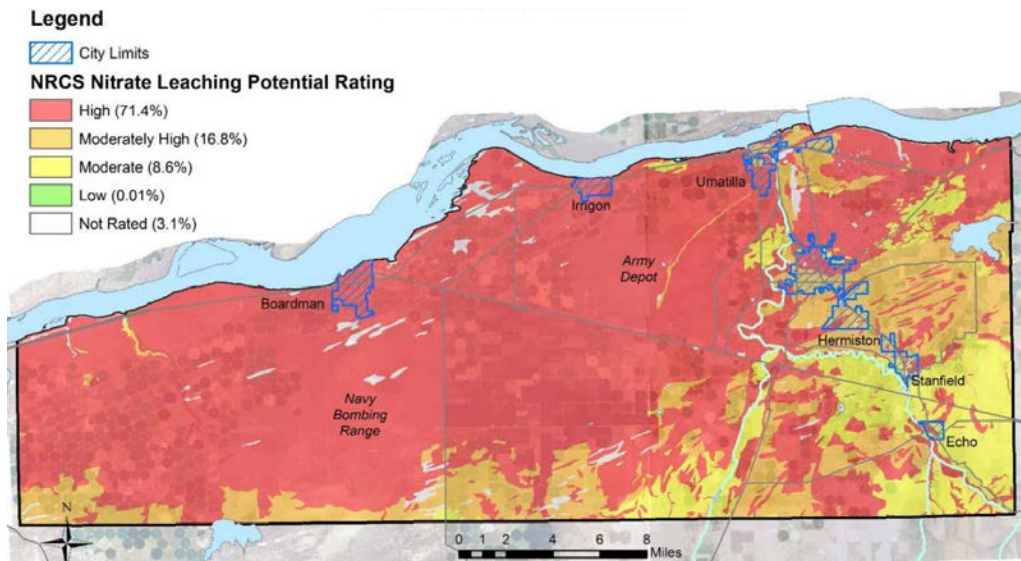
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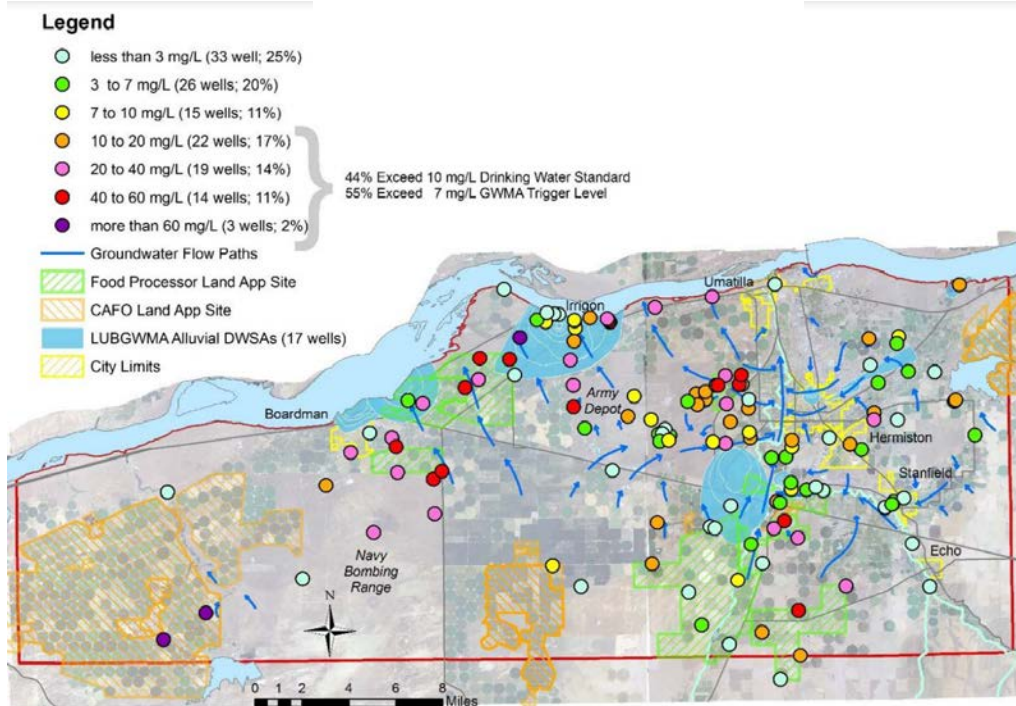
## Introduction

Households in Umatilla and Morrow Counties are faced with elevated nitrate concentrations in groundwater that they rely on for drinking water. [The Lower Umatilla Basin Groundwater Management Area Committee](#), which consists of representatives of local governing authorities, industry representatives, an environmental nonprofit, and members of the community, developed an [action plan](#) to reduce groundwater nitrate concentrations; however, largely unaddressed by the Committee is the problem that households reliant on domestic wells and small water systems without substantial infrastructure and resources cannot mitigate the immediate risks of nitrate contamination in their drinking water. These three case studies offer insights into how other rural communities in the West are trying to overcome nitrate contamination in their groundwater and provide safe and affordable drinking water.





Nitrate leaching potential rating for the Lower Umatilla Basin (LUBGWMA)



Results from 4th synoptic sampling event, Nov. 2015 and Apr. 2016 (LUBGWMA)

## I. Central Montana: Coalescing around an infrastructure solution

### *Highlights*

- Creating a regional rural water system is difficult and requires a lot of planning to get authorization and a lot of financial and technical assistance to secure the necessary resources to build.
- Resources for mega projects serving rural communities are available post-COVID (e.g., Bipartisan Infrastructure Law [BIL] and American Rescue Plan Act [ARPA]), but they generally require considerable upfront investments in design to make the project shovel ready.
- EPA was not a central impetus for this solution. It was largely a grass-roots effort led by a charismatic community member (non-elected).
- In addition to addressing water quality and related regulatory challenges, the regional rural water system was promoted as an economic development strategy (in part, because of the priorities of the Rural Water Supply Program that authorizes such projects). This served as another means of building general support from the different communities it would serve.
- Soliciting federal and state financial assistance necessitates sustained leadership and publicity. It took 20 years to gain enough attention from lawmakers to secure federal funding. The project was lobbied by a paid lobbyist in DC as well as in Helena.
- There is still a risk that some communities, such as unincorporated households, will be excluded from the regional system and continue to face water security concerns.

### *1. Background: Rural Montana*

#### *1.1 Regulatory environment*

| Regulations in Montana                                                                                                                                                                                                        | Regulations in Oregon                                                                                                                                                                                             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| There is no regulation of water quality for private wells.                                                                                                                                                                    |                                                                                                                                                                                                                   |
| Private well owners are recommended to test annually, but testing is voluntary.                                                                                                                                               | Private well owners are required to test and report water quality during real estate transactions, but this is not enforced. All other testing is voluntary.                                                      |
| There is no regulation for very small water systems in Montana. The threshold for regulation of public systems are for 25 or more connections, as spelled out under EPA's Groundwater Rule under the Safe Drinking Water Act. | Oregon regulates small water systems that have 4 to 14 service connections, or serve between 10 and 24 individuals, per the Drinking Water Act. Any system that does not reach these thresholds is not regulated. |

|                                                                                                                                                       |                                                                                                                                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Public water systems require periodic sanitary surveys and source water monitoring under federal law. Testing must use certified labs.                |                                                                                                                                                                                                     |
| Department of Environmental Quality (Montana DEQ) regulates public water systems in addition to source pollution and discharge permitting             | Oregon's drinking water is regulated under Oregon Health Authority, a separate department from Oregon Department of Environmental Quality which regulates source pollution and discharge permitting |
| Both Montana and Oregon have the ability to promote regionalization and/or consolidation of existing public water supplies with financial incentives. |                                                                                                                                                                                                     |

## 1.2 Geography and demographics

The region's economy and identity is tied to cattle ranching and dryland farming. Farm labor is the second largest form of employment, behind only the service sector. Median household income in the core Central Montana Regional Water Authority (CMRWA) counties ranges from 66% to 75% of the national average (Gansauer et al., 2021). The largest town is Roundup, with a population of under 2,000. There are several communities in the region of interest that are under the threshold of regulation under the Safe Drinking Water Act, and therefore do not have regulated testing and monitoring in place. The region as a whole has seen population decline, especially among the more rural communities.

## 2. Solution: Develop a regional water system

### 2.1 A grassroots proposition

Several towns and unincorporated areas across central Montana have grappled with both poor water quality and insufficient supply for decades. Water quality was tangibly foul—locals complain of odors, clothes turning orange in the wash, calcified appliances, and out-of-town visitors getting sick (Gansauer et al., 2021). Several small water systems were facing noncompliance with EPA's mandates through the Safe Drinking Water Act,

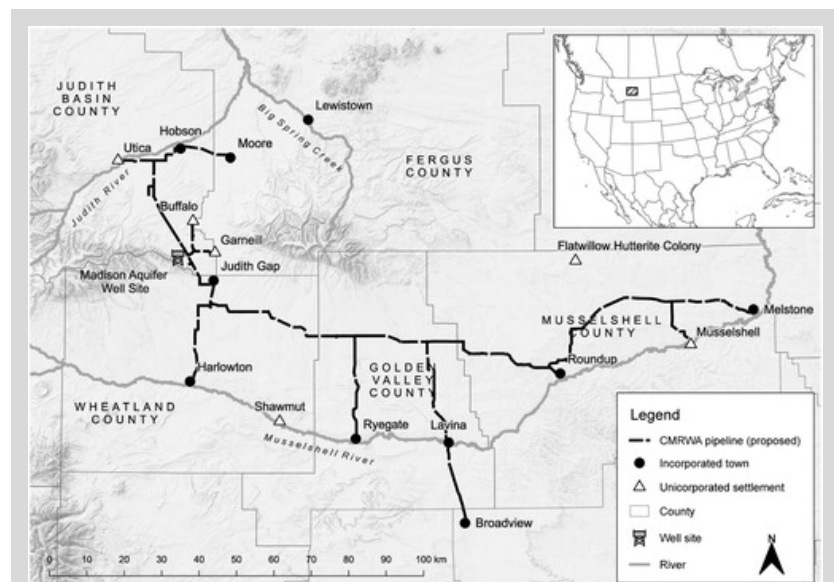


Figure 1.1: Proposed extend of the CMRWA pipeline (Gansauer et al., 2021)

although EPA involvement did not trigger grassroots action.

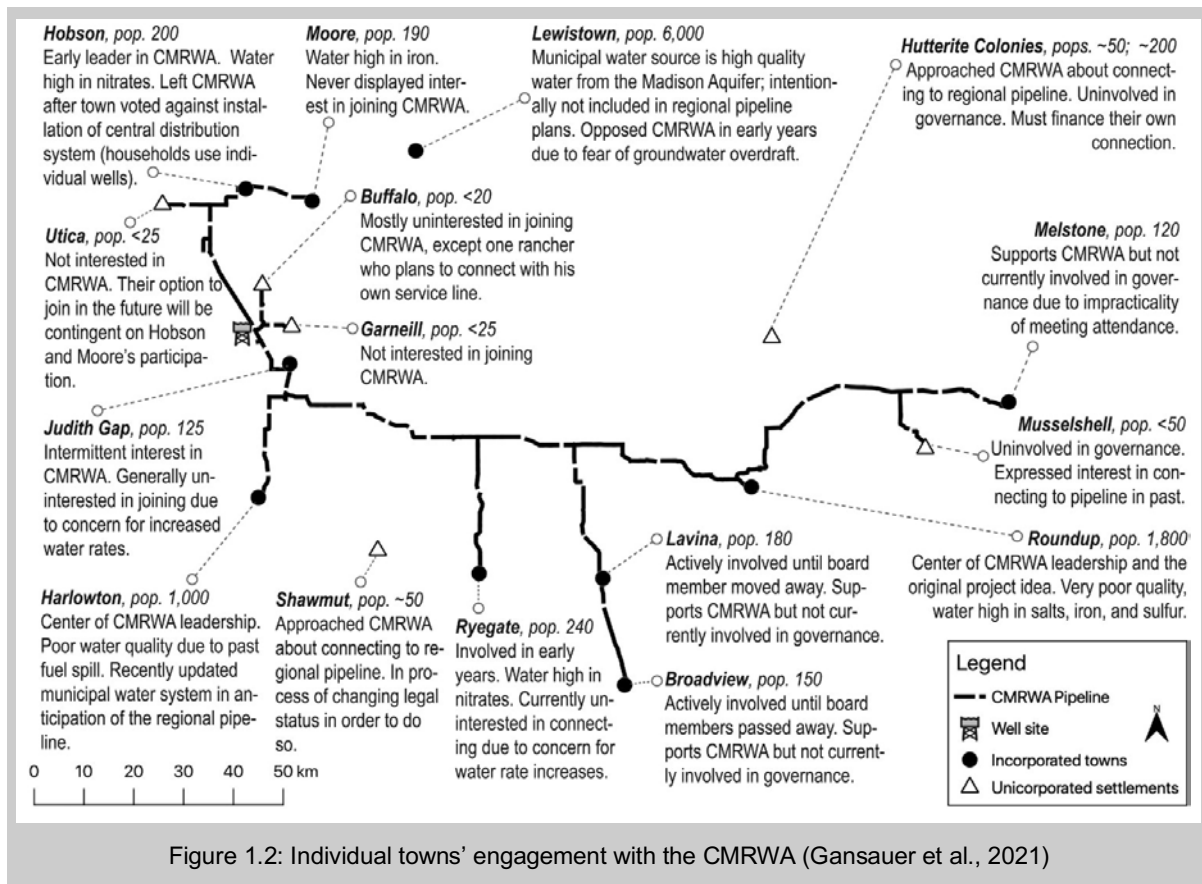
The concept of a regional water system caught on with rural communities when very capital-intensive solutions were being earmarked in federal funding for Nebraska in the 1990s. In Central Montana, the vision of a pipeline connecting rural communities was championed by an unelected, yet charismatic figure in the community (who continues to operate as a consultant for the regional water authority). In 2004, proponents of a regional water system began organizing around the mega-project that would link small towns and individual rural households to a single wellsite via a pipeline more than 230 miles long, serving about 6,000 people. The groundwater source of the single wellsite will only require chlorine treatment, thereby avoiding more costly water treatment.

The justification for CMRWA's regional approach was twofold. First, the scale of the problems—water systems benefit from economies of scale and the small water systems across the region all share issues with maintaining water quality standards. Second, the project was justified to the public and to policymakers as part of a regional economic development strategy. Brochures and media publications hailed the regional water system for providing short-run jobs during its construction and attracting businesses and new residents in the long run (Gansauer et al, 2021). In interviews conducted by Gansauer et al., community members would not go so far as to blame the region's demographic and economic stagnation on 'bad' water, but as one interviewee shared: 'bad water will definitely keep [new residents] away.'

## 2.2 Securing funds

The substantial capital cost of the project meant its success would rely heavily on external support from the state and federal governments. The proposed cost-sharing agreement for the \$87 million project consisted of 65% federal, 17.5% State, and 17.5% local government. In 2021, the CMRWA received over \$11 million from the USDA Rural Development program, which included over \$7 million in grant funds, and the remainder in low interest loans. The State contributed \$2.8 million from the DNRC's Regional Water Trust Fund. Great West Engineering was a particularly effective consultant from the beginning in proving the project was technically feasible and the benefits outweighed the costs. Additional resources were spent toward lobbying the state and federal government. CMRWA had a cost-sharing agreement with another regional rural water system in Montana to fund a resident lobbyist in DC.

In 2020, after nearly two decades of organizing and lobbying U.S. lawmakers, the project received federal financial appropriations, acquiring \$56M to begin construction. The success in securing significant federal resources can be at least partially attributed to the COVID recovery



and the substantial infusion of federal resources toward shovel-ready projects. Several towns had already retrofitted their water systems to immediately make use of the project.

### 3. Takeaways: Pros and cons of a regional water system

#### Pros:

- Once complete, the pipeline will serve 16 small communities ranging in population from <20 to 6,000. Now that construction is underway, communities that were originally opposed or indifferent to the project are now interested in being included.
- By distributing water via a pipeline, a water source can be chosen that does not require significant treatment for use as drinking water.

#### Cons:

- A regional rural water system is a very expensive solution. The CMRWA pipeline is estimated to cost \$87M. These capital costs require significant investments from federal and state governments. CMRWA received direct earmarks in the federal and state budgets, and further financed the project with grants and revolving fund loans.
- Securing that much money from federal and state governments requires a lot of lobbying. Proponents of the pipeline spent two decades building a coalition of support across largely independent communities and gaining lawmakers' attention to obtain federal funding for the project.

- A regional water system faces several governance challenges. Coordinating as many communities as are involved in the CMRWA required significant and sustained leadership. Generally, rural communities suffer from limited leadership capacity where governance is typically performed by a handful of volunteers. The project's success relied heavily on a persistent and charismatic community visionary. Other options might exist for working out governance challenges, such as establishing a special district.
- A regional water system takes time to authorize, secure funding, and construct, and does not solve the immediate drinking water crisis. Other solutions are needed to ensure access to safe drinking water in the meantime.

#### 4. Appendix

##### 4.1 Semi-structured Q&A w/ Grete Gansauer (edited for clarity)

***How did the idea of a regional water system come about? Was there a particular organization, committee, or advisory group that championed the idea? Or was it initially led by small drinking water systems?***

It was largely led by a charismatic community member without a particular affiliation. The individual was not an elected leader or connected with a water system in any way.

The idea of a regional water system in MT was a legacy of successful direct earmarking in federal budgets awarded to communities in Nebraska in the 1990s. To reduce the number of earmarks for regional rural water system projects, Congress passed the [Rural Water Supply Act in 2006](#), which created the Rural Water Supply Program within the Bureau of Reclamation (BOR). This program is responsible for reviewing and recommending projects to Congress for appropriation [Grete: "weird choice for an agency lead"]. However, COVID-19 changed everything. The stimulus packages (first CARES then BIL) fast-tracked funding for NEPA-ready projects. Seven projects were authorized in 2020-21.

***Were unincorporated households involved in the call to action?***

No. The water quality concerns were generally a region-wide issue that was affecting water systems and unincorporated areas equally.

***Most of the history I have read does not state EPA's direct intervention. Was that the case? Or was there the threat of EPA involvement?***

EPA intervention was not a motivator for organizing this solution.

***Who were the partners and funders for the planning and administrative work of organizing and running the board? Did DNRC seed funding for the water authority, or was it through loans?***

The [Resource Conservation & Development program](#), administered by the Natural Resources Conservation Service (NRCS), was a vital resource. Through the program, USDA provides a staff person—a RC&D Coordinator—to assist the local group in developing a Council and assists the Council in carrying out its objectives and goals by providing guidance, advice, and

technical assistance. Unfortunately, the program was cut during the Obama administration. They also received highly effective technical assistance from Great West Engineering

CMRWA had a lobbyist in DC, paid in partnership with the Dry Red project (another MT project that was successfully funded in 2020).

Montana's DNRC and state legislators earmarked money for studies and planning through grants and some loans. While there was some local funding to match, it didn't come from a philanthropic source. I am unsure where the local funds came from that covered costs for things like a DC lobbyist.

***Were there other solutions being proposed in the early years, such as source-protection solutions and voluntary mitigation of non-point source pollution? If so, what changed the conversation toward this more technical and capital-intensive route?***

No. It was always about a regional rural water system for those who became proponents. However, there are ways of building more capacity and resources for faltering small water systems, such as sharing a staff person for water systems across the region. Alternatively, the region could create a special district that would be inclusive of unincorporated communities.

***Is the municipal water system connected to a treatment plant?***

No, [it is only chlorinated](#)

***What is/are the interim solution(s) for communities waiting on the project to finish? Are they receiving on-going emergency water reserves? Water filters?***

There aren't really any. It's a clear deficiency in the solution set. I wrote a [paper highlighting the resource gap for the immediate drinking water crisis](#).

***Is there anything else that you think I should know about this case study?***

In addition to being NEPA-ready, several towns had upgraded their water system in preparation for a regional hook up (e.g., some of the communities had pipes made out of wood!). These investments in local infrastructure likely supported the pitch that the community was able to fully benefit from the regional system.

Regional rural water systems (RRWS) are hard to do. They require a lot of money, coordination, and time. Identifying and knowing the funding avenues is half the battle. Technical assistance is essential to get approval by BOR. [RCAC](#) could be a good resource for Umatilla.

There are also potential funding avenues that haven't been explored. ARPA dollars at the county level (if still available) can be used toward broadband and water infrastructure projects until 2025. There are also [USDA rural development](#) (section 7) grants and loans for regional collaborations.

***Who else could I talk to about this case study?***

I am willing to introduce you to some of the proponents, but several were hard to reach or unwilling to talk with me, at least at first.

#### 4.2 Additional resources

Central Montana Regional Water Authority website: <https://www.centralmontanawater.com/>

*This website contains secondary documents, such as meeting minutes going back to 2007, dozens of reports, the organizational structure and bylaws, as well as a self-described history of the project.*

Gansauer, G. & Haggerty, J. (2021). Beyond city limits: infrastructural regionalism in rural Montana, USA. *Territory, Politics, Governance*. DOI:10.1080/21622671.2021.1980428

Gansauer, G. (2022). Regional partnerships can be a boon for local drinking water systems—if done right. *Water Resources Impact*, 24(1), 37-40.

Gansauer, G., Haggerty, J.H., Dunn, J. (2022). “Public water system governance in rural Montana, USA: A ‘slow drip’ on community resilience.” *Society & Natural Resources*. DOI:10.1080/08941920.2023.2212363

Great West Engineering project website: <https://www.greatwesteng.com/project/central-montana-regional-water-authority/>

*This website hosts a short (<7 minute) video on the regional water system and a few details about the project.*

## **II. San Joaquin Valley: Advocating for greater State involvement**

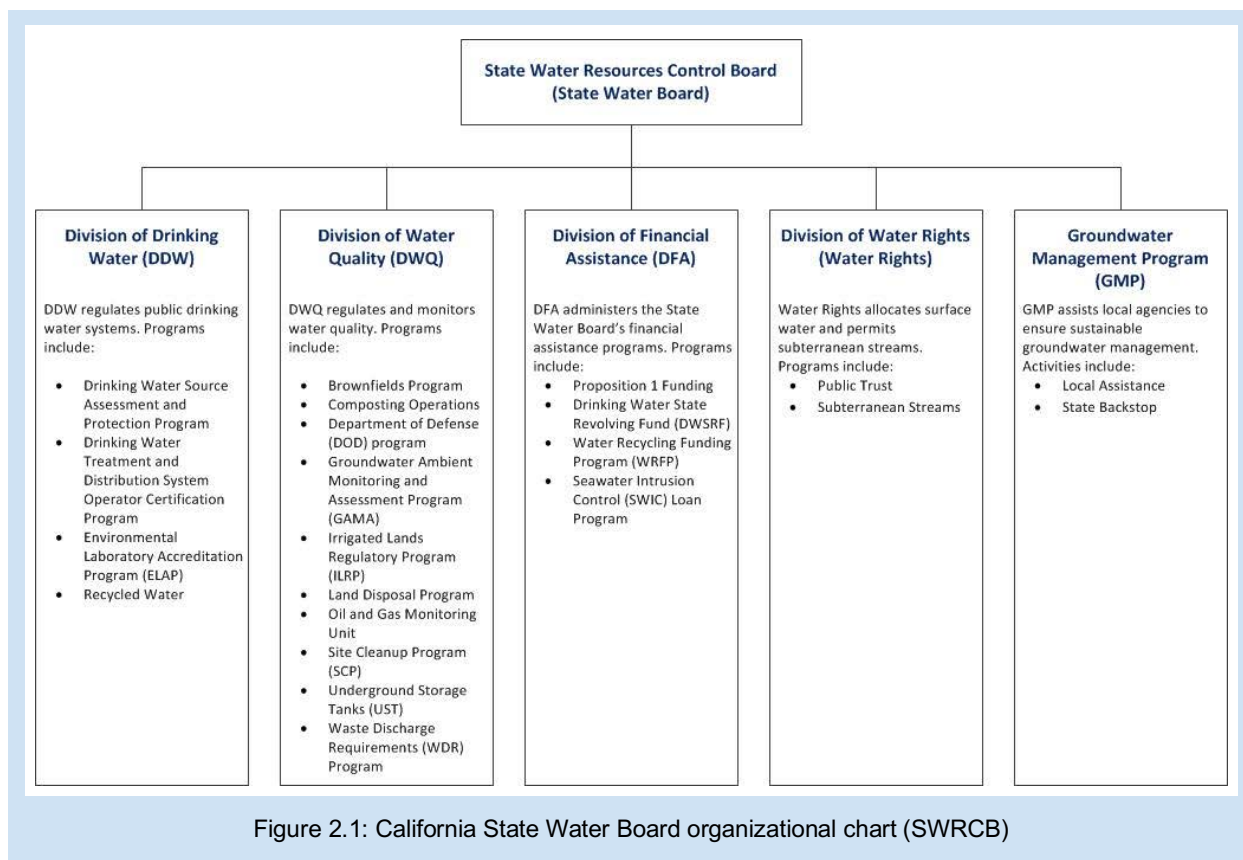
### *Highlights*

- Residents throughout the San Joaquin Valley spend up to 10 percent of their income on water and are often forced to buy bottled water on top of their high monthly water bills.
- A coalition of community groups and environmental justice organizations have been successful at gaining political attention and contributing to the passage of important legislation and referendums.
- California has since dedicated money through legislation, pronouncements, and propositions (synonymous with ballot measures) to address issues of safe and affordable drinking water affecting disadvantaged communities, including to households reliant on domestic wells.
- State appropriated funds have been allocated for drinking water solutions in the short-term (e.g., point-of-use filters and bottled water deliveries) and long-term (e.g., system consolidation and treatment plants), with a priority on disadvantaged communities.
- Investments from the state are generally one-time, therefore best dedicated for capital projects like planning or construction. Many small water systems serving economically disadvantaged communities lack the financial capacity to afford operations and maintenance costs.
- California's State Water Board has authority to mandate failing water systems to consolidate with, or receive an extension of service from, another public water system. The consolidation can be physical or managerial.

### *1. Background: California groundwater management*

#### *1.1 Regulatory environment*

Unlike Oregon, California has organized much of its water protection and allocation programs under one unified organizational structure. The Division of Drinking Water (DDW) operates similarly to the division within the Oregon Health Authority, the Division of Water Rights operates similarly to the Oregon Water Resources Department, and the Division of Water Quality consists of programs comparable to what is housed under the Oregon Department of Environmental Quality (see Figure 1).



| Regulations in California                                                                                                                                                                                              | Regulations in Oregon                                                                                                                                                                                                                |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| There is no regulation of water quality for private wells.                                                                                                                                                             |                                                                                                                                                                                                                                      |
| State small water systems—those with fewer than 15 service connections and serving 24 or fewer individuals—are not under the regulatory jurisdiction of the State Water Board.                                         | Oregon regulates small water systems that have 4 to 14 service connections, or serve between 10 and 24 individuals, per the Drinking Water Act. Any system that does not reach these thresholds is not regulated.                    |
| Public water systems require periodic sanitary surveys and source water monitoring under federal law. Testing must use certified labs.                                                                                 |                                                                                                                                                                                                                                      |
| There are limited water quality records data for small water systems and domestic wells. The State Water Board reportedly does not have water quality data for approximately 90% of domestic wells. New legislation in | Private well owners are required to test and report water quality during real estate transactions, but all other testing is voluntary. Small water systems (called Oregon Very Small, <25 users) are required to test every 5 years. |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
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| 2019 created requirements for reporting to the State Water Board.                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| California has a 5-member statewide Water Resources Control Board. Positions on the board are designed to represent the public, engineering expertise, water quality expertise, and water supply. There are also 9 semi-autonomous regional water quality control boards (each representing major watersheds of the state) that develop basin-specific water quality control plans and govern waste discharge requirements, monitor water quality, and take enforcement action against violators.      | Oregon has an 18-member Watershed Enhancement Board that advises on protection and restoration of watersheds and a 7-member Water Resources Commission with a focus on water supply needs. No statewide board exists to oversee water quality issues.                                                                                                                                                                                                                                                                                                                |
| The State Water Resources Control Board (SWRCB) regulates water quality from the source through disposal. The Drinking Water Program was transferred from the Department of Public Health in 2014 to <a href="#">“achieve maximum program efficiencies.”</a>                                                                                                                                                                                                                                           | Oregon’s water quality is regulated under two separate agencies, the Public Health Division of Oregon Health Authority (OHA) regulates drinking water and the Department of Environmental Quality (DEQ) regulates source pollution and wastewater.                                                                                                                                                                                                                                                                                                                   |
| Per the Sustainable Groundwater Management Act (SGMA), individual basins must form groundwater sustainability agencies (GSA) to develop groundwater sustainability plans (GSP) that are principally focused on mitigating overdraft. GSAs have authority to adopt rules, regulations, ordinances, and resolutions in the promotion of sustainability goals. The Department of Water Resources provides planning, technical, and financial assistance to GSAs and review GSPs for compliance with SGMA. | Oregon has administrative areas to address basin-specific issues with water quantity (critical groundwater areas) and water quality (groundwater management areas). Groundwater management areas are administered by DEQ, whereas critical groundwater areas are administered by the Water Resources Department. DEQ establishes a management committee composed of affected and interested parties to advise state agencies and develop an action plan. However, these management committees have no ascribed authority, regulatory power, or state agency funding. |
| California uses financial incentives to promote consolidation for failing or at-risk water systems, prioritizing those serving disadvantaged communities. However, SWRCB has the authority to order consolidation of systems that consistently fail                                                                                                                                                                                                                                                    | Oregon only has the power to provide financial incentives to promote consolidation of water systems.                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

|                                                       |  |
|-------------------------------------------------------|--|
| to provide an adequate supply of safe drinking water. |  |
|-------------------------------------------------------|--|

## 1.2 Geography and demographics

San Joaquin Valley (“Valley”) is home to about 10% of California’s total population, but the region has about 60% of all groundwater wells. The Valley is a large semi-arid agricultural region in Central California spanning eight counties. Most of the Valley consists of low-density settlements where poverty and unemployment are high. There are 220 designated “disadvantaged communities”<sup>1</sup> in the Valley, housing over 500,000 residents.

Safe and secure drinking water is intrinsically linked with agricultural production in the Valley—over half of California’s agricultural production is located in the Valley. Industrial farming practices have been operating in the region for nearly a century. Dewatering of wells and high concentrations of nitrate found in the groundwater are a result of these practices. The Valley has 11 critically overdrafted sub-basins and some of the highest rates of drinking water contamination in the state. Nitrates were detected in 97 percent of wells sampled in the Valley from 2005 to 2008, and 92 individual drinking water systems had a well with nitrate levels above the legal limit.

A large percentage of households across the state have domestic wells that are classified as at-risk in terms of water quality (92,635, or 30%).<sup>2</sup> Socio-economic analyses have indicated that water systems and domestic wells that are “at risk” typically serve areas with higher poverty, greater linguistic isolation, and serve a greater proportion of non-white households relative to systems that are not at risk. Further, the State of California has found that households served by systems with water quality issues typically have high affordability burdens in accessing potable water. A 2013 study by Community Water Center estimated that residents



Figure 2.2: San Joaquin Valley (EPA)

<sup>1</sup> “Disadvantaged communities” are defined as no less than 10 dwellings adjacent or in close proximity to one another with a median household income 80 percent or less than the statewide median household income (SB 244 Section 65302.10)

<sup>2</sup> Additionally, 64,176 of those wells are also at risk for drought.

throughout the San Joaquin Valley spend up to 10 percent of their income on water and are often forced to buy bottled water on top of their high monthly water bills.

## *2. Solution: Advocate for legislative action*

### *2.1 Making the case to the California Assembly*

In the early-to-mid 2000s, environmental justice groups began organizing around a platform that clean drinking water and sanitation are essential to the realization of all human rights. In 2006, environmental justice advocates in San Joaquin Valley founded a coalition of 19 community and advocacy groups called Asociación de Gente Unida por el Agua (AGUA) to have a unified voice in advocating for systematic change in water quality for the region. (Today, AGUA has 53 member organizations.) Together with research institutions like UC Davis Center for Watershed Science, the California Institute for Water Resources, Pacific Institute, and others, they documented and highlighted the impact water quality had on disadvantaged communities.<sup>3</sup>

As a result of increased attention to water quality concerns, California legislators passed Assembly Bill 685, also known as The Human Right to Water or HR2W, in 2012, becoming the first state to legislatively recognize a human right to water. Although the law lacks enforcement mechanisms, it was an essential milestone in improving access to safe and affordable drinking water for disadvantaged communities in California. Continued attention to the failings of HR2W in changing outcomes for disadvantaged communities ultimately led to the passage of Safe and Affordable Funding for Equity and Resilience in 2019 (see Section 2.2.5 for more details).<sup>4</sup> The California Water Board, itself, acknowledges the significance of years of advocacy in the passage of SAFER.

One of the leaders in advocacy in the San Joaquin Valley has been the [Community Water Center](#) (CWC).<sup>5</sup> CWC serves as the fiscal sponsor for the AGUA coalition and has produced a number of reports and resources that assist in community organizing around drinking water. AGUA and CWC led rallies and organized meetings with legislators in the lead up to HR2W's passage ([HCN 6/24/13](#)). Informed by nearly two decades of legal and legislative action, CWC and partners developed a [248-page guide](#) that extensively details steps to securing safe drinking water, along with trainings and templates for organizing community advocates and where to find funding and legal advice in the State of California.

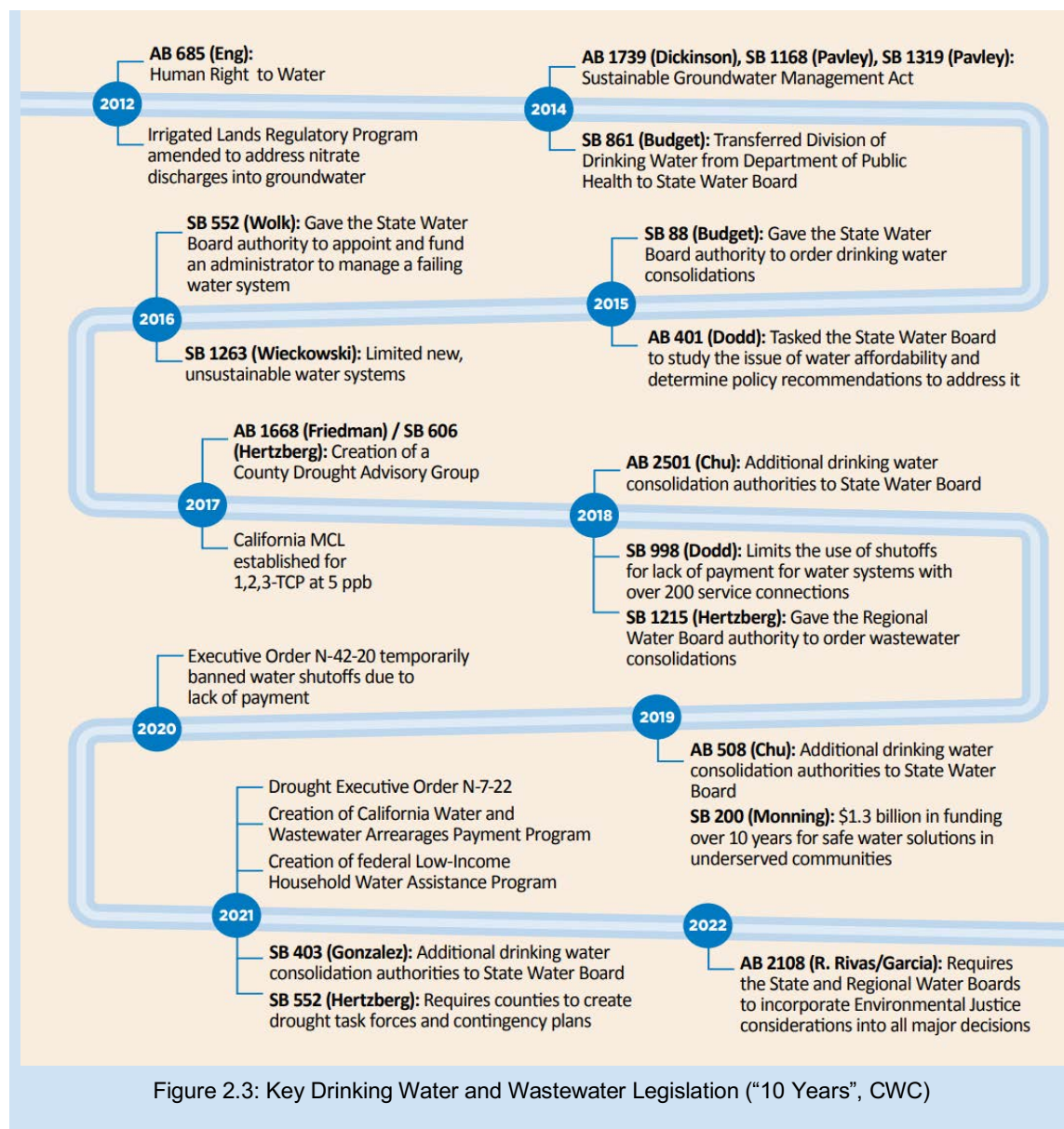
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<sup>3</sup> A 2011 report by Pacific Institute found that households spend on average \$0.65 per gallon on non-tap drinking water, more than 200 times the average water rate in California.

<sup>4</sup> A separate report by Pacific Institute found over half a million Californians were served by water utilities that were out of compliance with the Safe Drinking Water Act as of 2018, five years after H2RW went into effect.

<sup>5</sup> CWC also serves as a core member of the Water Equity and Climate Resilience Caucus, a national network of organizations who work to build a shared analysis and understanding of the problems, codify policy strategies, and enable members to deliver on water equity results for their communities.

## 2.2 Legislative action



### 2.2.1 Proposition 84 (2006)

Known as the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006, Proposition 84 authorized the state to issue [\\$5.4B in general obligation bonds](#) to fund water and natural resources related projects to be appropriated by the Legislature. A sum of \$10M was explicitly earmarked for the Department of Health Services to facilitate access to water during emergencies and to disadvantaged communities. Eligible projects under the proposition include, but were not limited to, the following:

- Providing alternate water supplies including bottled water where necessary to protect public health;

- Improvements in existing water systems necessary to prevent contamination or provide other sources of safe drinking water including replacement wells;
- Establishing connections to an adjacent water system; and
- Design, purchase, installation and initial operation costs for water treatment equipment and systems.

#### ***Ensuring investments in disadvantaged communities***

[An analysis by UCLA](#) found that Proposition 84 funds were not equitably distributed across all sections of the measure. In sections that lacked explicit prioritization of investments in disadvantaged communities, the majority of funds were delivered to communities with higher median household incomes. The study's author recommends that stating clear priorities for objectives in measures is essential to achieving equity goals.

#### *2.2.2 Human Right to Water (2012)*

The law declares that every human being has the “right to safe, clean, affordable and accessible water adequate for human consumption, cooking, and sanitation purposes.” It requires State agencies to consider the human right to water when “revising, adopting, or establishing policies, regulations, and grant criteria.” Because it lacks enforcement mechanisms, this law is largely seen as symbolic.

#### *2.2.3 Sustainable Groundwater Management Act, or SGMA (2014)*

California was the last state in the West to regulate groundwater. SGMA became law based on a three bill package. The statutes require local agencies, called groundwater sustainability agencies (GSA), in individual high- and medium-priority basins to halt overdraft and bring basins into balance.<sup>6</sup> SGMA does not provide a technical definition of sustainability, giving communities some liberty to define it themselves; however, plans are ultimately reviewed for their compliance with the law by the Department of Water Resources.<sup>7</sup> The GSAs are principally focused on water *quantity* concerns—they are not required to address water quality issues that occurred before and were not corrected by January 1, 2015—although, plans are prospectively required to avoid “undesirable results,” which includes degraded quality.<sup>8</sup>

#### ***Improving representation in local water management***

According to [a report by the California Civic Engagement Project at UC Davis](#), some groundwater sustainability plans define sustainability in a way that favors priorities of the dominant economic actors over vulnerable groundwater users by setting sustainability measures that do not change historical trends of groundwater level decline. As of early

<sup>6</sup> 99% of affected basins are now covered by local groundwater sustainability agencies (GSA) that develop local plans.

<sup>7</sup> GSAs' authority does not limit or supersede the authorities of the State Water Resources Control Board, the Regional Water Quality Control Boards, the California Department of Public Health, or county or city governments.

<sup>8</sup> Each GSA must establish minimum thresholds for six sustainability indicators, which include: 1) chronic lowering of groundwater levels, 2) reduction of groundwater storage, 3) seawater intrusion, 4) degraded water quality, 5) land subsidence, and 6) depletions of interconnected surface water. (23 CCR § 354.28)

2018, fewer than 15% of GSA board members were Latino in the southern San Joaquin Valley despite being the majority demographic group. Further, SGMA does not mandate the inclusion of domestic well users in all GSA boards. To change this dynamic, CWC has [expressed a commitment](#) to advance public understanding of local water boards' roles and responsibilities, encourage local water board leadership by investing in trainings for potential water board candidates, and motivate and support a diverse group of candidates to run for elected water board seats, a majority of which run unopposed.

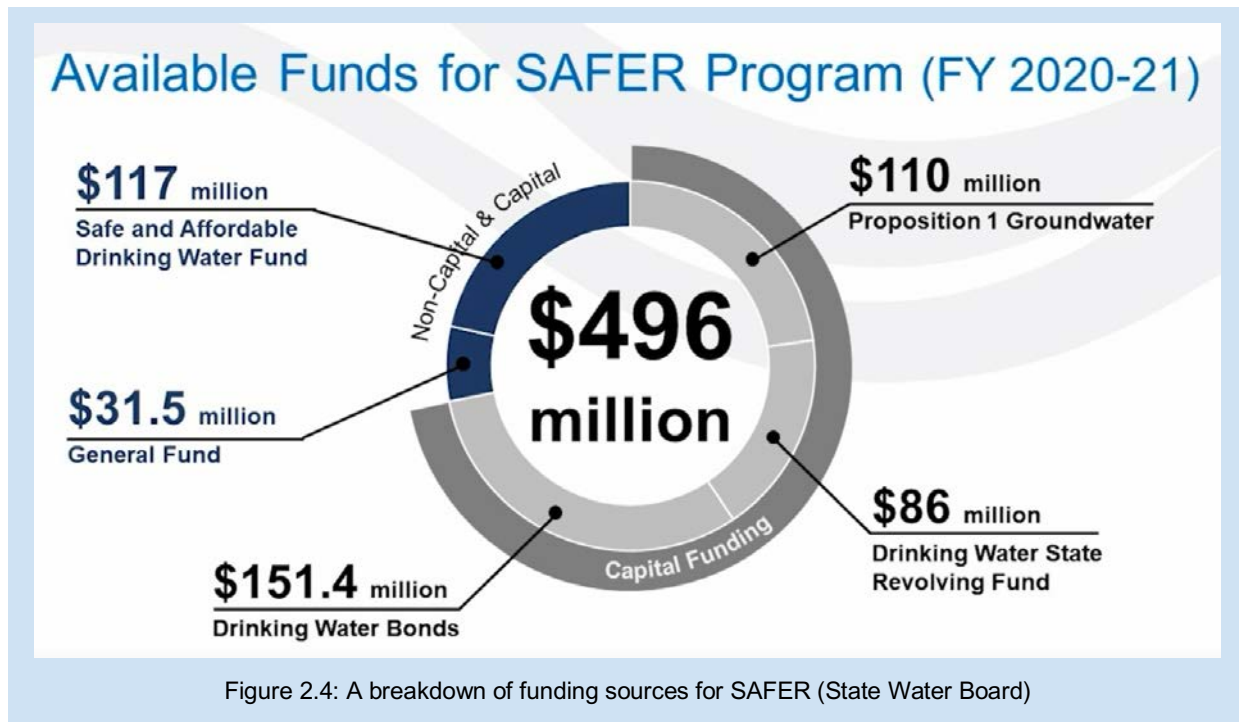
#### *2.2.4 Proposition 1 (2014)*

The voter-approved measure authorized [\\$7.5B in general obligation bonds](#) to fund a host of water projects, including watershed protection and restoration, water supply infrastructure, and drinking water protection. \$820M was allocated to groundwater sustainability and \$520M to safe drinking water. Funds were issued as grants and loans.

#### *2.2.5 Safe and Affordable Funding for Equity and Resilience, or SAFER (2019)*

SAFER creates multiple tools for monitoring and investing in communities served by at-risk water systems. One element of the legislation gives the State Water Board the authority to direct consolidations of failing small water systems or appoint temporary administrators, but the central piece of the law is the development of a trust—a stable source of funding—for improving access to safe and affordable drinking water in the short- and long-term. The trust, called the [Safe and Affordable Drinking Water Fund](#), promises to invest \$1.4B over 10 years for the development and implementation of sustainable safe drinking water solutions for small systems with violations of drinking water standards. Funding comes from a fertilizer mill fee, a safe drinking water fee on dairies, and a new small safe drinking water fee assessed monthly on water bills.

To assist in the equitable prioritization of funding decisions, the law has several additional programs. Each year the State Water Board is required to issue a [drinking water needs assessment](#) that tracks at-risk systems across the state. SAFER also requires the creation of an advisory group to advise on expenditures. The 19-member group has specific composition requirements in their [charter](#), including a requirement that 7 are served by water systems in disadvantaged communities, state small water systems, or domestic wells; 2 are nonprofit organizations; and 3 are members of the public.



About \$40M from Safe and Affordable Drinking Water Fund was awarded to the greater San Joaquin Valley region in 2021 and 2022 to provide technical assistance to develop, fund, and implement capital improvement projects that support the Human Right to Water. Services under this agreement include:

- Revolving Bridge loans for Interim Construction Financing,
- Emergency funding for emergencies experienced by a water system serving a small, disadvantaged community,
- Full project planning through technical assistance - Acceleration of the implementation of critical drinking water solution Planning projects,
- Application and funding administration support, and
- Technical, Managerial, and Financial capacity support.

An additional \$800K was awarded to San Joaquin Valley to help local communities with legal assistance and community outreach and education to assess and develop long term regional drinking water and wastewater solutions. (See [funding projects from SAFER](#)) The Safe and Affordable Drinking Water Fund also designated \$13.3M in FY 2022-23 for interim water supplies and emergencies serving small water systems and households reliant on domestic wells.

### 3. Takeaways: Pros and cons of legislative action

#### Pros:

- Legislators can earmark financial resources for more immediate distribution that can serve short-term problems, such as water bottle distribution programs.
- Legislation has the ability to encode equity priorities into law that can better serve disadvantaged communities.

- Assembly members or representatives generally have a better local understanding of the problem and are more likely to be available for meetings and influenced by rallies or other community action.

#### Cons:

- There is no guarantee that passed legislation will have enforcement mechanisms or performance metrics that serve disadvantaged communities. Sponsored legislation is vulnerable to cuts or changes in committee that detract or distract from the original intent.
- Significant or influential action may require that it take place at the capitol. San Joaquin Valley is relatively close to Sacramento, which may have contributed to the community's ability to assemble larger, more impactful rallies and hold frequent meetings with assembly members.
- Policy design is important to resist regulatory capture by industry or others resistant to changing the status quo. The creation of local water boards did not translate to representation of disadvantaged communities.
- Most solutions from legislation treat the low-hanging fruit, such as service to communities of at-risk or failing water systems. In California, the last decade of legislation has not made significant progress on finding solutions for households reliant on domestic wells.

## 4. Appendix

### 4.1 Additional resources

[10 Years of the Human Right to Water: California's path to water justice for all](#). (2023).

Community Water Center.

*A high-level overview of issues in groundwater access, recent legislation, and recommendations to satisfy California's Human Right to Water.*

Bostic, D., Dobbin, K., Pauloo, R., Mendoza, J., Kuo, M., and London, J. (2020). [Sustainable for Whom? The Impact of Groundwater Sustainability Plans on Domestic Wells](#). UC Davis Center for Regional Change.

[Developing equitable and effective early action plans: The cost of interim drinking water solutions and public outreach for nitrate contaminated drinking water](#). (2021). Corona Environmental Consulting, LLC. Prepared for Community Water Center.

*A study funded by CWC that attempts to estimate the cost for interim drinking water solutions across different sub-basins in San Joaquin Valley. Solutions considered in this study include delivered bottled water, point-of-use (POU) treatment, and water kiosks supplied by water from a public water system.*

Firestone, L. (n.d.). [Guide to Community Drinking Water Advocacy](#). Community Water Center. *An exhaustive guide for advocacy groups and impacted communities. It includes everything from tools for determining risk and how to get safe drinking water in the interim to how to hold public water systems accountable and organize rural communities.*

[Framework for a Drinking Water Well Impact Mitigation Program](#). (2022). Self-Help Enterprises, Leadership Counsel for Justice and Accountability, and the Community Water Center.

*This guide includes recommendations for a mitigation program, a matrix of estimated costs for interim and permanent solutions, as well as four case studies of programs in CA, NV, and TX.*

[Groundwater Sustainability Agencies](#) from California State Water Resources Control Board.  
*This webpage provides a breakdown of roles and responsibilities across governing entities under SGMA.*

[The Human Costs of Nitrate-contaminated Drinking Water in the San Joaquin Valley](#). (2011).  
*A report by the Pacific Institute in collaboration with three other organizations who conducted community-based research to document the economic, social, and health impacts of nitrate contamination of drinking water in the San Joaquin Valley.*

Lund, J.R., Harter, T., Fogg, G.E., Howitt, R., Quinn, J.F., and Viers, J. (2012). [Addressing Nitrate in California's Drinking Water](#). UC Davis Center for Watershed Sciences. Technical Reports prepared for the California State Water Resources Control Board.  
*A little older, but demonstrates the extent of work that UC Davis has done in contributing to understanding the nitrate issues in San Joaquin Valley and the solution space (e.g., [Technical Report 8: Regulatory and Funding Options for Groundwater Contamination](#))*

[Nitrate Factsheet](#). Community Water Center.  
*A one-page factsheet for educating communities about the source and risks of nitrate pollution and tips for reducing exposure at home.*

Pannu, C. (2012). Drinking Water and Exclusion: A Case Study from California's Central Valley. *California Law Review*, 100(1): 223-268.

[Safe Drinking Water Plan of California: Report to the Legislature in compliance with the Health and Safety Code Section 116355](#). (2021). State Water Resources Control Board.  
*A lengthy report that details several legislative milestones, current regulations of drinking water, and the limitations in serving households reliant on small water systems and domestic wells.*

[SAFER Program](#) from California State Water Resources Control Board.

Weiner, Charlotte. (2018). [Untapped Opportunity: Local Water Boards and the Fight for Water Justice](#). Community Water Center.  
*A report examining the underrepresentation of disadvantaged communities in GSAs and recommendations for how to course correct.*

### III. Lower Yakima Valley: A Different Approach in Groundwater Management

#### *Highlights*

- An investigative news story connecting the effects of concentrated farm animal operations impact on household drinking water helped build institutional awareness at the EPA and elevated it as a suitable location for an environmental justice pilot program.
- EPA involvement has been sustained over a decade. It has not necessarily translated into tangible results, but it has led to increased transparency and accountability of state agencies and some verifiably known sources of nitrate pollution.
- Monitoring has been more systematic in the Lower Yakima Valley. EPA and the Washington State Department of Ecology drilled purpose-built wells to have targeted groundwater monitoring near presumed polluters. The new monitoring was able to pinpoint a cluster of dairies as a source of excess nitrates in groundwater. EPA requisitioned a consent order with these point source polluters and instituted quarterly groundwater testing.
- Purpose-built wells are not sufficient to monitor groundwater for the region on their own. The Department of Ecology has also contracted with private well owners for a more expansive network for monitoring.
- In a separate effort, deep soil sampling by the South Yakima Conservation District found significant leaching of nitrate below the root zone (up to 6 feet below the surface) on cropland in the GWMA.
- Washington State's administrative code directs the creation of an implementation committee composed of agencies with jurisdiction authority to implement the community-led and -developed action plan. However, the administrative code does not account for funding, which poses a fundamental challenge to accomplish certain actions.

#### *1. Background: Lower Yakima Valley*

Water quality and safe drinking water programs in Washington are organized similarly to Oregon. Washington's Drinking Water Systems, which regulates water quality at the tap, is within the Department of Health, similarly to the Oregon Drinking Water Services within the Oregon Health Authority. However, Washington's Water Resources Program administers water quantity and water quality rules and regulations. Oregon has divided these authorities in the Oregon Department of Water Resources and Oregon Department of Environmental Quality, respectively.

#### *1.1 Comparing Washington and Oregon regulatory environments*

| Regulations in Washington                                | Regulations in Oregon |
|----------------------------------------------------------|-----------------------|
| Neither state regulates water quality for private wells. |                       |

|                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| The state does not require that private wells be tested, but many counties require water-sampling results for real estate transactions.                                                                                                                                                                 | The Oregon Health Authority (OHA) requires private well owners to test and report water quality during real estate transactions, but all other testing is voluntary.                                |
| Washington's small public water systems, those with less than 15 service connections and serve less than 25 people per day, are called "Group B". Since 2009, the state does not require routine ongoing monitoring of Group B systems, but local health jurisdictions can adopt their own regulations. | Oregon regulates small water systems that have 4 to 14 service connections, or serve between 10 and 24 individuals, per the Drinking Water Act. Any system below these thresholds is not regulated. |
| Washington State Department of Health (DOH) administers regulations on drinking water, analogous to OHA. The WA DOH's Office of Drinking Water conducts rulemaking and oversees the implementation of the Drinking Water State Revolving Fund.                                                          |                                                                                                                                                                                                     |
| Playing a similar role to Oregon's DEQ, Washington's Department of Ecology ("Ecology") administers in situ water quality under the Clean Water Act, Washington Water Pollution Control Act, and Water Quality Standards for Groundwaters of the State of Washington.                                    |                                                                                                                                                                                                     |
| Washington's DOH provides grants to promote consolidation and source water protection for Group A water systems. Similarly, Oregon's OHA manages a drinking water source protection fund that provides low-interest loans and grants for a similar purpose.                                             |                                                                                                                                                                                                     |
| Both states allow a local government to assume the lead agency role in developing a groundwater management program. In Washington, groundwater management areas can be ordered by Ecology based on quality and/or quantity concerns                                                                     |                                                                                                                                                                                                     |

## 1.2 An industrial dairy economy: geography and demographics

Agriculture is the primary economic and land use activity in the Lower Yakima Valley. The 25 years from 1987 to 2012 tell a story of shifting economy from irrigated cropland to dairy production. During that time, irrigated cropland decreased by 9%, but overall farmland increased by 10% and the number of milk cows saw a nearly five-fold increase. In 2012, there were 91 dairies with over 110,000 cows, making it one of the largest dairy-producing areas in the nation. A scientific study around the same time found that 72 percent of dairies in the Valley were high-density operations with more than 500 cows.

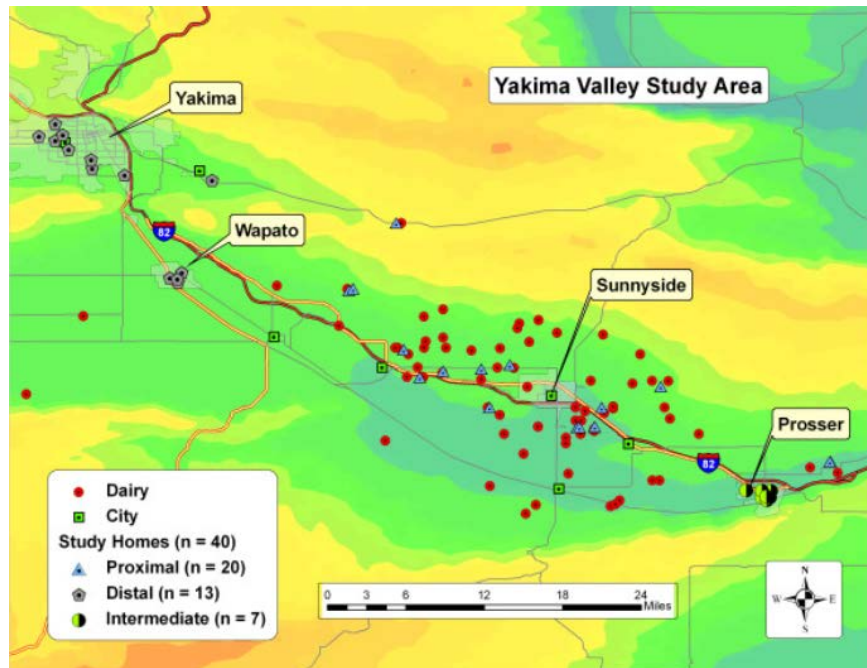


Figure 3.1: Concentrations of dairies in Lower Yakima Valley  
(Williams et al, 2011)

While the City of Yakima makes up a large portion of the population, some general statistics offer insights into the demographic makeup of the Lower Yakima Valley. Agriculture employs roughly 28% of the total employment countywide. The agriculture industry has helped moderate unemployment during recent recessions, however, in the years following the 2007-2009 recession, Yakima saw unemployment rates above 10% until 2012. The median household income from 2016 through 2020 was \$54,917, considerably below median income for the state and the nation as a whole. Yakima County's poverty rate in 2020 was at 14.8%.

In their 2018 "Minority Report", the environmental group Friends of Toppenish Creek (FOTC) provides demographic estimates for the Lower Yakima Valley, in particular:

*The population is about 70% Latino and is much younger than average for Yakima County or for the state. Many people are recent immigrants who speak English less than well. About 20% of the population lives below the poverty level and slightly over half have a high school diploma. ("Minority Report")*

Abutting the groundwater management area is the Yakama Nation Reservation. The Yakama Nation Reservation dominates a large part of Yakima County and the Yakima Valley; it includes over 1 million acres of land within the Valley. The Yakama Nation generally has a younger population, is less educated, and has significantly higher rates of poverty than the rest of Yakima County and the United States overall. Roughly 38% have less than a high school diploma and median household income of \$43,322.

The number of households that rely on domestic wells is not certain—wells constructed before 1971 did not have to secure a license—but Yakima County has location and ownership information for 7,695 private wells, and 95 public water system wells. Many domestic household wells are shallow, tapping into upper aquifers above the less permeable layer of basalt. These

shallow wells are more directly susceptible to land use practices and generally have higher nitrate pollution.

## *2. Solution: Petition for federal intervention*

### *2.1 Gaining recognition of the problem: initial response and EPA's involvement*

Nitrate levels on sampled wells going back to 1975 have shown a gradually increasing trend until the turn of the century, when concentration of nitrate in groundwater began rising sharply, presumably in response to the transition from irrigated agriculture to concentrated animal feeding operations (CAFOs). Local environmental and environmental justice (EJ) community groups raised concerns of poor air and water quality going back to the early 2000s.<sup>9</sup> Much of the attention was focused around the impacts of a proliferation of concentrated animal feeding operations (CAFOs). Significant statewide and national attention came in November 2008 with the publication of a three-part investigative report called "[Hidden Wells, Dirty Water](#)" in the Yakima Herald Republic, which outlined the impact of groundwater pollution on low-income households and the failures of regulators to work together in addressing the problem. The EPA responded immediately, hosting its first of many public meetings the following month.

The environmental health threats to Latino and tribal communities and the complicated jurisdictional context made the problems in Lower Yakima Valley a particularly appealing location for new investments in community-based approaches to environmental justice for the US EPA. In her first year in 2009, EPA Administrator Lisa P. Jackson announced a national initiative to address environmental justice challenges in ten communities. Yakima was one of the ten to participate in the EJ Showcase Community pilot program. According to EPA documentation, Yakima's involvement in the sampling effort was partially in response to concerns raised by several agencies and community members who participated in the EPA Community Action for a Renewed Environment (CARE) cooperative agreement with the Northwest Communities Education Center (NCEC) in Yakima County, Washington.

#### ***EPA's legal authority under the Safe Drinking Water Act (SDWA)***

When drinking water in private wells contains or is likely to contain a contaminant that may present an imminent and substantial endangerment, such as nitrate, EPA may take an emergency action under the SDWA. EPA must first determine that the state and local authorities have not taken action to protect the health of such persons. Where appropriate, EPA may issue orders to require the provision of alternative water supplies. EPA may also judicially enforce its orders, through action seeking civil penalties for each day of such violation. If violation of EPA's orders is "willful," EPA may seek criminal penalties of fines or imprisonment for not more than three years. (Section 1431 of the SDWA)

With the infusion of \$100,000 from the EJ Showcase Community pilot and additional funding from an EPA Regionally Applied Research Effort (RARE) grant, approximately 330 private wells were tested in February and March 2010. Based on preliminary results (see Figure 2), the EPA determined that conditions warranted invoking SDWA Section 1431 to investigate

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<sup>9</sup> Two of the more active and vocal EJ proponents in the region are the Friends of Toppenish Creek and Community Association for Restoration of the Environment (CARE).

sources of contamination and order curtailment of activities that were identified as contributing to the endangerment of public health.<sup>10</sup>

| Date Range of Well Samples | Number of Wells (n) | Mean Nitrate <sup>1</sup> | Median Nitrate <sup>1</sup> | Standard Deviation <sup>1</sup> |
|----------------------------|---------------------|---------------------------|-----------------------------|---------------------------------|
| 1975 to 1979               | 4                   | 1.45                      | 1.10                        | 1.66                            |
| 1980 to 1984               | 51                  | 3.48                      | 1.70                        | 4.10                            |
| 1985 to 1989               | 40                  | 3.33                      | 1.80                        | 3.63                            |
| 1990 to 1994               | 76                  | 3.52                      | 2.60                        | 3.89                            |
| 1995 to 1999               | 69                  | 4.06                      | 3.90                        | 3.29                            |
| 2000 to 2004               | 295                 | 6.36                      | 4.00                        | 8.56                            |
| 2005 to 2009               | 90                  | 4.74                      | 4.44                        | 3.60                            |
| 2010 to 2014               | 323                 | 13.51                     | 11.50                       | 11.17                           |

<sup>1</sup> nitrate mg/L

Figure 3.2: Trend in nitrate concentrations (Pacific Groundwater Group, 2013)

While sampling was underway, the EPA was also involved in developing a report with relevant state agencies that provide an overview of conditions in the area and offer recommendations for further action. Also part of the flurry of activity by the EPA in early 2009 was the authorization of a neutral third party to conduct a situation assessment to determine the willingness of stakeholders to participate in a process of determining and implementing actions that characterize and remediate groundwater contamination. The assessment determined that convening a stakeholder group was feasible and most likely to lead to successful remediation.

## 2.2 Creation of the Lower Yakima Valley Groundwater Management Area

The Yakama Nation decided to pursue a reservation-only project to address its groundwater contamination, and Benton County successfully petitioned to withdraw from the GWMA.<sup>11</sup> It took a year for Yakima County to prepare a request for identifying the Lower Yakima Valley as a Groundwater Management Area, or GWMA. Per Washington Administrative Code (WAC), a local groundwater protection body was required. In their request for identification, Yakima County recommended the advisory committee be multi-agency and citizen-based, including four members from the public,<sup>12</sup> four members from local business, three from local government, and 10 from state and national agencies. Also in their request was a cost estimate for the development and administration of the groundwater management program over two years—a total of \$750,000 to be spent on plan development and administration, monitoring and characterization, public information and outreach, and implementation of best management practices (BMP). In our research, it was unclear how much money was allocated for these efforts, nor how it was spent. However, by end of that year (2011), the Department of Ecology accepted the communities' request to designate the Lower

<sup>10</sup> The EPA sampling found nearly 20% of the wells sampled exceeded the federal standard nitrate standard of 10 parts per million (ppm)

<sup>11</sup> Benton County raised many reasons to withdraw, including the creation of a separate GWMA.

<sup>12</sup> Yakima County identified specific criteria for the four members from the public for the advisory committee. They were: 1) an environmentalist, 2) an environmental justice representative, 3) a Hispanic Community Leader, and 4) a user of a small water system (called Group B in Washington).

Yakima Valley as a groundwater management area and appointed Yakima County as lead agency.

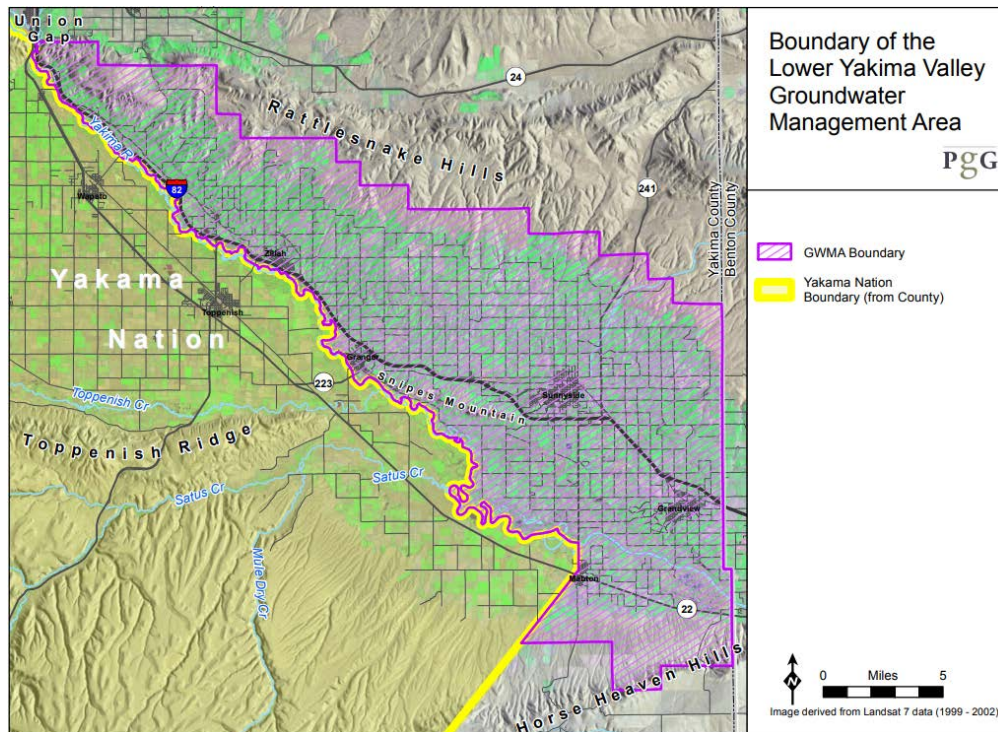


Figure 3.3: Lower Yakima Valley GWMA (PGG)

### 2.3 “Has anything happened?”: continued calls for action

One of the stated goals by the participating state and federal agencies was to “reduce or stabilize the contamination threat within five years.” In spite of this, it took seven years for the advisory committee to submit their program recommendations to Ecology, which it did at the end of 2018. The advisory committee met 56 times over the course of seven years, reviewing goals and objectives; developing work plans; and learning about research conducted by EPA, USGS, and others.

Meanwhile, the EPA continued their involvement pursuant of Section 1431. In December 2012 and January 2013, the EPA installed 10 groundwater monitoring wells in the vicinity of five Yakima Valley dairies suspected of being a major point-source pollutant for a network of 26 purpose-built groundwater monitoring wells. Data from quarterly monitoring confirmed that the dairies are a source of nitrate contamination to the groundwater beneath and downgradient of these dairies (US EPA, 2013b). In March of 2013, EPA and the offending dairies signed a legal agreement called a [Consent Order](#), where the dairies agreed to:

- “Provide an alternate source of drinking water for neighbors within one mile down gradient of the dairies whose wells have levels of nitrate above EPA’s drinking water standard of 10 mg/L, or “parts per million” (ppm);”
- “Conduct [quarterly] soil and groundwater testing at each dairy to evaluate if nitrogen sources are being controlled;” and

- “Take steps to control nitrogen sources (manure and commercial fertilizer) at their facilities.”

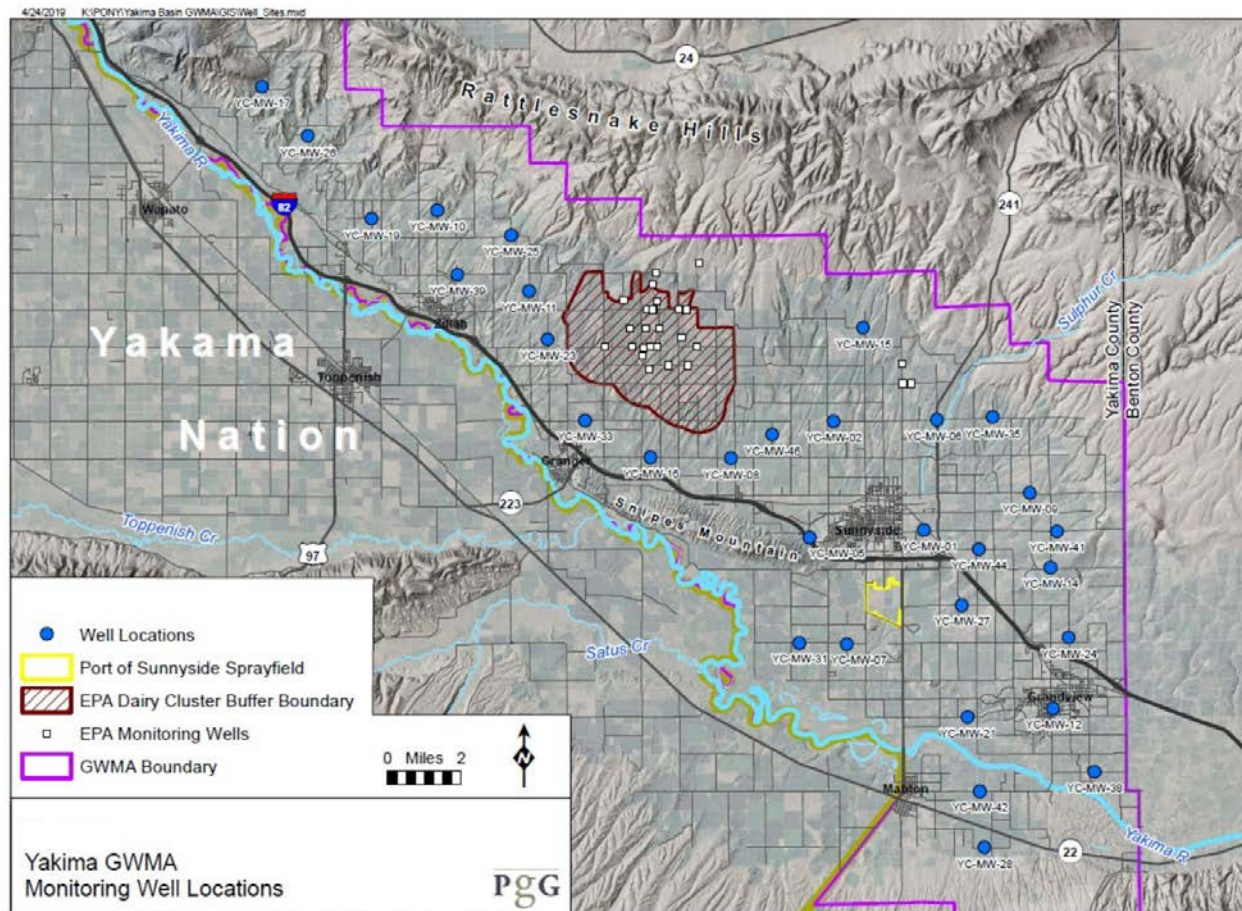


Figure 3.4: Monitoring well locations in Lower Yakima GWMA (PGG, 2019)

However, groundwater contamination persisted and even worsened in some locations. A multi-sample study conducted by USGS in 2017 found that 26% of the 156 private wells it tested had at least one of its six samples exceeding the drinking water standard (Figure 5).<sup>13</sup> Deep soil sampling by the South Yakima Conservation District found significant leaching of nitrate below the root zone (up to 6 feet below the surface) on cropland in the GWMA. The delays and perpetuation of what it saw as the principal source of contamination, led Friends of Toppenish Creek (FOTC), a member of the advisory committee, to issue a lengthy [minority report](#) detailing the failings of the process and what it sees as gaps in regulation.

<sup>13</sup> The USGS sampled domestic wells every two months as part of their 2017 study. Geographic variations in results are likely a result of differing well depths.

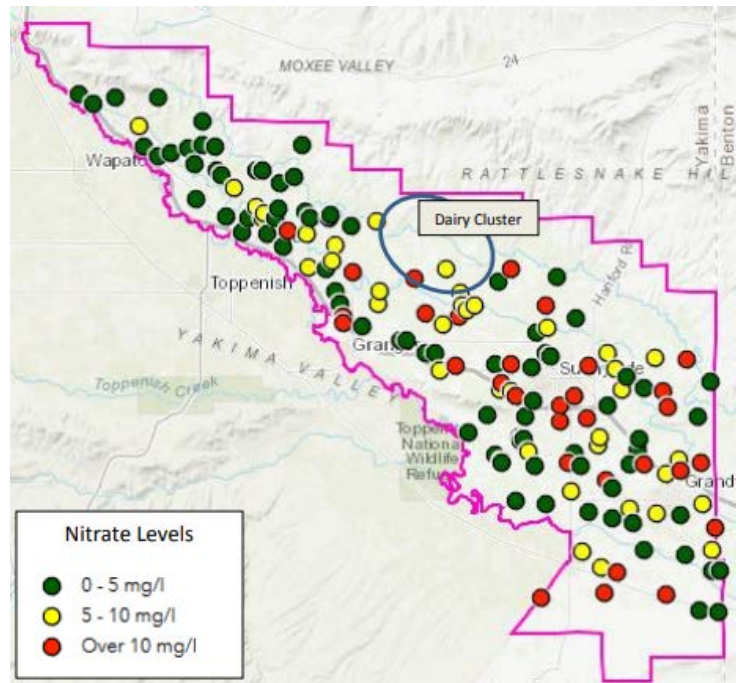


Figure 3.5: Results of well testing in the Lower Yakima Valley (USGS, 2017)

#### 2.4 Working in a black box: ongoing challenges of implementation

Beyond the delays in reaching consensus on the action plan, there was one major unfulfilled objective in the advisory committee's work: seeking sustainable funding to carry out the work plan. Based on FOTC's minority report, the Funding Work Group did not meet until the summer of 2017 and then only met on three occasions. "None of the identified tasks were completed."

In accordance with WAC 173-100, an implementation committee was assembled among the multiple agencies with jurisdictional authority i.e., community members outside of local government). Administrative code does not explicitly fund implementation of GWMA programs. Implementation committee meetings are not open to the public, but meeting minutes suggest that the committee has taken some steps toward tackling the 64 recommended actions from the groundwater advisory committee. However, considerable attention in the monthly meetings is directed toward strategizing how to secure additional funding necessary to achieve a portion of the recommended actions.

Well testing by the Department of Ecology in 2021 found nitrate contamination continued to exceed safe drinking water standards for many domestic wells.<sup>14</sup> Of the 136 private domestic wells tested, 15% had concentrations greater than 10 mg/L and 16 of the 34 purpose-built monitoring wells similarly exceeded the drinking water standard.<sup>15</sup> Frustrated by the intervening

<sup>14</sup> Ecology was funded by the state legislature to conduct quarterly testing for two years and annually thereafter, indefinitely.

<sup>15</sup> Many of the purpose-built monitoring wells were sited downgrade from known point-sources of pollution, so it may not be surprising that a greater percentage of these wells exceeded the drinking water standard.

years of what they see as insufficient implementation and enforcement by the State of Washington, a coalition of community groups have begun petitioning the EPA to exercise its broad emergency powers established in SDWA. The EPA has responded by launching inquiries into actions by state and county agencies. The inquiries are ongoing. The EPA is meeting quarterly with the multiple agencies involved in the implementation of the work plan and has mandated quarterly reports to monitor ongoing progress. The EPA's involvement has shed light on deficiencies in the multi-agency comprehensive work plan, and it has yet to be determined whether the EPA will invoke its authority under Section 1431 to enforce its orders.

### *3. Takeaways: Pros and cons of EPA involvement*

#### Pros:

- EPA involvement provides an extra level of accountability and transparency to the inner-workings of state and local government agencies.
- Investigation by the EPA elevates the profile of the environmental problem and can lead to more state-appropriated resources by the legislature.
- EPA may also require the provision of alternative water supplies.
- EPA can seek civil and criminal penalties through Section 1431. The threat of these can compel point source polluters to come to the table and agree to increased monitoring and regulatory oversight.

#### Cons:

- States can request primary responsibility for implementing the Safe Drinking Water Act, which adds a layer of sovereignty but also programmatic evaluation of effective enforcement before EPA will exercise its authority. This can serve to delay action by EPA in these states. Both Washington and Oregon have had their primacy requests accepted.
- Federal involvement does not necessarily translate to more financial resources.

### *4. Appendix*

4.1 Semi-structured Q&A with Damon Roberts, Water Quality Section Manager, WA Dept. of Ecology (edited for clarity)

#### 4.2 Additional Resources

Friends of Toppenish Creek. (2018). [Lower Yakima Valley Groundwater Management Area: Minority Report](#).

*Friends of Toppenish Creek is a 501(C)3 non-profit environmental group that has been involved in the Lower Yakima Valley Groundwater Management Area since 2012. This Minority Report chronicles the six year history of the GMA and the justification that led to its lawsuit.*

Pacific Groundwater Group. (2013). [Potential Groundwater Monitoring Stations: Yakima Groundwater Management Area](#). Prepared for Yakima County and the lower Yakima Valley Groundwater Advisory Committee.

Washington State Department of Ecology. (n.d.). [Lower Yakima Groundwater Management Area](#). [website]

Washington State Department of Ecology. (2005). [Implementation Guidance for the Ground Water Quality Standards](#). Prepared by Melanie B. Kimsey. Publication #96-02.

*This document explains the Ground Water Quality Standards (Chapter 173-200 WAC), including which activities are regulated, elements to consider in monitoring impacts, and how violations are enforced.*

Washington State Department of Ecology. (2010). [Lower Yakima Valley Groundwater Quality: Preliminary assessment and Recommendations Document](#). Prepared by Washington State Departments of Agriculture, Ecology, and Health, Yakima County Public Works Department, and U.S. Environmental Protection Agency. Ecology Publication No. 10-10-009

US EPA. (2010). [Situation Assessment: Report On Yakima Valley Groundwater Assessment](#). EP-W-09-011 CPRS2. Prepared by Dispute Resolution Center of Yakima and Kittitas Counties.

US EPA. (2013). [EPA Region 10 Administrative Order on Consent](#). SDWA-10-2013-0080.

US EPA. (n.d.). [Environmental Justice Showcase Communities by Region](#).

US EPA. (n.d.). [Citizen Petition and Correspondence](#).