



November 19, 2021

Vanessa De La Piedra, Groundwater Management Unit Manager
Santa Clara Valley Water District

Re: Comments on 2021 Draft Groundwater Management Plan for the Santa Clara and Llagas Subbasins

Dear Ms. De La Piedra,

Green Foothills submits the following comments on Valley Water's 2021 Draft Groundwater Management Plan for the Santa Clara and Llagas Subbasins (Draft Plan).

As a general matter, we support and ask Valley Water to adopt the seven comments and recommendations from the Santa Clara Valley Open Space Authority (OSA) letter of November 19, 2021, attached separately. In particular, we wish to emphasize and expand on the seventh comment regarding the importance of the Coyote Valley area. As Valley Water's own November 16, 2021 letter to San Jose City Council (also attached) states:

The Santa Clara Subbasin begins in the Coyote Valley, then flows north under San José and Santa Clara toward the Bay. Development in Coyote Valley could convert pervious soil to impermeable concrete, pavement, and buildings, flushing water into streams and the Bay rather than letting it percolate to groundwater. In most parts of the subbasin, but not in Coyote Valley, the drinking water aquifer is deep underground, and extensive clay layers provide some natural protection from contamination. In Coyote Valley, the drinking water aquifer is often very close to the surface and the soils allow relatively rapid downward percolation, making groundwater there highly vulnerable to contamination. Industrial contamination in Coyote Valley could potentially impact not only local groundwater users, but also those drawing on the subbasin in San José and other downgradient areas.

We suggest this language be included in the Draft Plan in an appropriate location, possibly in section 6.2.4 or 6.2.5.

Finally, the attached 2018 analysis "Coyote Valley and Groundwater Protection" draws heavily from the Santa Clara Valley Water District's 2010 Revised Final Groundwater Vulnerability Study (Groundwater Study), with the gratefully-acknowledged help of data provided by Valley Water. The 2018 analysis concludes that Coyote Valley is uniquely vulnerable and available to substantial reduction in vulnerability by protecting the groundwater from incompatible development. Since then, two things have occurred. San Jose land use protections recommended by Valley Water in its letter have passed, eliminating any additional industrial uses beyond existing developed parcels, and in addition 1400 acres in Coyote Valley are now publicly owned, so vulnerability to farming operations and fertilizer contamination can also be managed in cooperation with the public agencies that own the land. We suggest the Draft Plan acknowledge the vulnerability and the change since the 2010 Groundwater Study. We also suggest the Draft Plan recommend Valley Water's cooperation with San Jose and Santa Clara County as land use agencies, and with San Jose and OSA as landowners to achieve reductions in



groundwater vulnerability. This cooperation could include financial “buy-in” or other incentives from Valley Water.

Thanks for this opportunity to comment. Please contact us with any questions.

Sincerely,

A handwritten signature in black ink that reads "Brian Schmidt". The signature is fluid and cursive, with a long horizontal stroke at the end.

Brian Schmidt
Legislative Advocacy Director





Andrea Mackenzie, General Manager
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Mike Flaughner, District 2
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November 19, 2021

Santa Clara Valley Water District
Vanessa De La Piedra, Groundwater Management Unit Manager

RE: 2021 Draft Groundwater Management Plan for the Santa Clara and Llagas Subbasins

Dear Ms. De La Piedra,

On behalf of the Santa Clara Valley Open Space Authority (Authority), thank you for the opportunity to provide comment on Valley Water's Draft Groundwater Management Plan (Draft Plan).

The Open Space Authority is a public, independent special district created by the California State Legislature in 1993 to conserve the natural environment, support agriculture, and connect people to nature by protecting open spaces, natural areas, and working farms and ranches for future generations.

Valley Water serves a critical role as our Groundwater Sustainability Agency (GSA), where it is responsible for delivering sustainable groundwater conditions in Santa Clara County. The Draft Plan is proposed to serve as the Groundwater Sustainability Plan update for Santa Clara County, which requires Valley Water to outline specific sustainable groundwater management criteria that avoid the six undesirable results outlined by the Sustainable Groundwater Management Act (SGMA), including the avoidance of depleted interconnected surface waters that supply water to Groundwater Dependent Ecosystems (GDEs) like wetlands, wetted stream channels, and riparian corridors.

We applaud Valley Water for its work to map GDEs in the Draft Plan and we are grateful for Valley Water's ongoing groundwater management actions that help maintain our aquifers in long-term balance. Nevertheless, the Draft Plan fails to include sustainable management criteria that avoid the depletion of interconnected surface waters, the only SGMA undesirable result not addressed in the Draft Plan, and one that is critical for Valley's Water's responsibility as a GSA, its mission to "Provide Silicon Valley safe, clean water for a healthy life, environment, and economy", and its Ends Policy E-4 "Water resources stewardship protects and enhances ecosystem health". Despite the immense efforts of Valley Water, we continue to observe the depletion of interconnected surface waters in our GDEs due to declines in groundwater levels. One particularly notable example being Fisher Creek and the Laguna Seca wetland complex in Coyote Valley, which underwent significant periods of drying during the 2012-2016 drought and are currently nearly completely dry as groundwater levels decline in the Coyote Valley.

As you know, the Authority, its conservation partners, and funders, have invested over \$150million to date to permanently protect nearly 1,500 acres of land in Coyote Valley that encompass groundwater dependent ecosystems in and around Fisher Creek and the Laguna Seca wetland complex (**Exhibit A attached**). This includes more than \$32 million in state grants from the California Natural Resources Agency (CNRA), Department of Conservation, Strategic Growth Council, Wildlife Conservation Board, and the State Coastal Conservancy. These lands will be subject of the Coyote Valley Conservation Areas Master Plan, an integrated restoration master plan process, which will enable large-scale restoration actions to begin within the next 3-5 years. In restoring Coyote Valley's groundwater-dependent ponds, wetlands, and riparian channels, our aim is to protect surface and groundwater quality and promote habitat conditions favorable to the recovery of rare, threatened, and endangered species such as California red-legged frog, California tiger salamander, and tri-colored blackbird among others.

Valley Water is a key partner of the Authority where its groundwater management actions are essential for the protection and restoration of groundwater dependent ecosystems in Coyote Valley. Given Valley Water's unique role, commitment to environmental stewardship and responsibilities under SGMA, we respectfully provide the following comments on the Draft Plan:

1. Consider updating the Draft GSP's sustainability goal to specifically include sustainable supplies for all groundwater users (including the environment).

The Draft GSP identifies two sustainability goals: (1) "Manage groundwater to ensure sustainable supplies and avoid land subsidence", and (2) "Aggressively protect groundwater from the threat of contamination. While Valley Water has been able to provide long term balance of our aquifers, groundwater dependent ecosystems rely on groundwater supplies being maintained at or near the ground surface to sustain these ecosystems. Please consider updating Goal (1) to "Manage groundwater to ensure sustainable supplies for all groundwater users, including environmental users of groundwater, and avoid land subsidence".

2. Include a new outcome measure and outcome measure lower thresholds that, if met, would avoid the depletion of interconnected surface waters.

The Draft GSP currently lacks sustainability criteria that directly addresses the depletion of interconnected surface waters. The Department of Water Resources' Alternative Assessment Staff Report: Santa Clara Subbasin (2-009.02) sent on July 17, 2019 stated that "...sustainable management criteria have not been established to avoid significant and unreasonable depletion of interconnected surface water." and "GSP Regulations specify that the minimum threshold for depletions of interconnected surface water shall be the rate or volume of surface water depletions caused by groundwater use that has adverse impacts on beneficial uses of the surface water and may lead to undesirable results.". Please consider adding a sixth outcome measure and lower threshold that would avoid depletion of interconnected surface waters.

3. Consider developing an estimate of a sustainable yield or sustainable recharge that avoids undesirable results

The Authority wishes to support the long-term viability of land uses that are compatible with groundwater sustainability, and do not contribute to the depletion of the aquifer. The Draft Plan states "Valley Water does not manage to a particular value for sustainable yield, but instead manages groundwater to maintain sustainable conditions through annual operations and long-term water supply planning.". If Valley Water does not wish to provide a sustainable yield, please consider providing an estimate of sustainable recharge levels so that land use agencies and water users know what amount of water extraction is possible in areas like the Coyote Valley management area without exceeding Valley Water's recharge capabilities.

4. Consider updating groundwater models to evaluate seasonal fluctuations in surface water groundwater interactions

The Draft GSP states "models are used to evaluate and forecast groundwater storage and water levels under various operational and hydrologic conditions. Maintaining calibrated models that can reasonably forecast groundwater conditions is an important part of Valley Water's comprehensive groundwater management strategy". It appears that some of Valley Water's groundwater models do not directly consider the interaction between groundwater and surface water and how that relates to the health of groundwater dependent ecosystems. Please consider updating your groundwater models to enable estimates of seasonal fluctuations in groundwater levels, since seasonal variability drives the health and sustainability of groundwater dependent ecosystems. The Authority is currently in the process of securing a consultant team for the Coyote Valley Conservation Areas Master Plan that will develop a SWAT-MODFLOW model of the Coyote Valley Management Area to better understand interconnected surface water behavior. We appreciate the Groundwater Unit's willingness to serve as a collaborator and technical adviser on this work and the Authority hopes this modeling could be useful for Valley Water's groundwater

condition forecasting and management activities that support groundwater dependent ecosystems.

5. Consider opportunities to pilot or implement voluntary actions that address groundwater demand, especially when sustainability indicators are not being met.

Piloting tools, frameworks, and programs that support voluntary reductions in pumping could be an essential first step in addressing groundwater overdraft conditions without requiring regulatory action. Please consider potential next steps or opportunities to explore or implement programs like groundwater trading programs, farmland fallowing programs, ag irrigation efficiency grants, or voluntary agreements with well users to reduce pumping when sustainability indicators are not being met. The Authority and Peninsula Open Space Trust hold a conservation easement over the City of San Jose's land in Coyote Valley that requires the City consider reducing groundwater extraction from its municipal wells when they contribute to unsustainable groundwater conditions in Coyote Valley. We are in the process of determining the tools and frameworks that will be required to do this and appreciate the Valley Water Groundwater Unit's willingness to partner with us on this work and hope to develop new tools and monitoring frameworks that will make it easier for well operators to voluntarily reduce pumping when groundwater levels are trending in an unsustainable direction.

6. Add the Laguna Seca wetland complex and Fisher Creek as locations of known groundwater emergence.

Figure 20 in the Draft GSP, "Likely Groundwater Emergent Areas in the Santa Clara Subbasin" does not include Fisher Creek or the Laguna Seca wetland complex, likely due to limitation in the resolution of GIS data that was used to identify those areas. However, the report recognizes Fisher Creek and Laguna Seca as locations of interconnected surface waters and groundwater dependent ecosystems. Please consider a manual update to Figure 20 to include Fisher Creek and Laguna Seca as groundwater emergent areas.

7. Add acknowledgment that Coyote Valley is a resource of statewide significance.

- a. AB-948 was approved by the Governor on September 27, 2019, authorizing the Authority to administer a newly created Coyote Valley Conservation Program, and declaring Coyote Valley is a resource of statewide significance. The bill requires that Coyote Valley to be acknowledged as an area of statewide significance in local planning documents developed or updated on or after January 1, 2020, affecting land use within Coyote Valley. Please add this acknowledgment given Coyote Valley land uses depend on groundwater, including the Authority's ongoing management and restoration of groundwater dependent ecosystems in and around Laguna Seca and Fisher Creek.

Thank you for your consideration.

Sincerely,



Andrea Mackenzie
General Manager

CC: Santa Clara Valley Open Space Authority Board of Directors

Exhibit A: Coyote Valley A Conserved Landscape- showing recently protected valley floor lands outlined in yellow





November 16, 2021

City of San José
Mayor and City Council
200 East Santa Clara Street, 18th Floor
San José, CA 95113

Re: Item #10.3 on November 16, 2021 City Council Agenda

Dear Mayor and City Council:

Valley Water appreciates the opportunity to comment on the proposed development of Coyote Valley. First, Valley Water supports items 1 through 5 recommended by staff, rather than the Planning Commission's direction to deny staff's recommendation at their October 27, 2021 Planning Commission meeting. Furthermore, Valley Water would also like to take this opportunity to respond to comments and questions from Planning Commissioners related to the price of water, and the availability of water, for Coyote Valley farmers. Statements that were made suggested that the availability and/or cost of water were reasons why farming isn't viable as a business in Coyote Valley, and thus recommended against the staff and General Plan Task Force proposals to protect Coyote Valley from further development.

Valley Water has not wavered in its commitment to provide a safe, clean water supply to not only the farming and agricultural communities, but to all communities here in Santa Clara County. Price and availability of water are competitive advantages for Coyote Valley farmers compared to other regions such as the Central Valley, Imperial Valley, and elsewhere. This is due to the natural advantages of climate, rainfall, and depth of groundwater, as well as the many decades of sustainable groundwater management by Valley Water. Because of our activities to replenish and protect local aquifers, groundwater is readily available and sustainable throughout Coyote Valley to support agricultural, domestic, municipal/industrial, and environmental uses.

Valley Water worked with the County and Open Space Authority on the Santa Clara Valley Agricultural Plan, which "acknowledges the vital importance of Santa Clara Valley agriculture to the region for long-term sustainability and health of our county." Valley Water's agricultural rate is lower than its municipal and industrial rate to encourage open space preservation, which is important to watershed health. Agricultural and open space can replenish local groundwater by allowing water to infiltrate and recharge aquifers, unlike developed areas with associated impervious surfaces. Valley Water continues to support the viability of agriculture in the County through sustainable groundwater management and by keeping agricultural water rates low.

While our surface water reservoirs are crucial, more water is stored in local groundwater basins than all of our reservoirs combined. The Santa Clara Subbasin begins in the Coyote Valley, then flows north under San José and Santa Clara toward the Bay. Development in Coyote Valley could convert pervious soil to impermeable concrete, pavement, and buildings, flushing water into streams and the Bay rather

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City of San José – Mayor and City Council
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than letting it percolate to groundwater. In most parts of the subbasin, but not in Coyote Valley, the drinking water aquifer is deep underground, and extensive clay layers provide some natural protection from contamination. In Coyote Valley, the drinking water aquifer is often very close to the surface and the soils allow relatively rapid downward percolation, making groundwater there highly vulnerable to contamination. Industrial contamination in Coyote Valley could potentially impact not only local groundwater users, but also those drawing on the subbasin in San José and other downgradient areas.

Finally, Coyote Valley in its current state also provides benefits to improve or maintain a healthy watershed ecology. Water-dependent species like Western pond turtles, California tiger salamanders, and red-legged frogs need a healthy environment around their waterways. Open space and agricultural habitats are much more compatible with wildlife than new development. The loss of Coyote Valley as open space could potentially harm the environment, and new roads or increased traffic threatens wildlife corridors for small animals as well as larger ones like bobcats and deer. Coyote Valley could continue to be a thriving valley-bottom watershed ecosystem if it is preserved as such.

Valley Water greatly respects the autonomy and authority of the Council in its decisions such as this; please know this letter is only intended to provide clarity and respond to points raised from the Planning Commissioners for your consideration, while also offering other potential environmental impacts for your consideration. We would respectfully request that you support the staff recommended actions, and we stand ready and willing to support you in your environmental stewardship of the precious water and lands we have here in our county.

Thank you for your time and consideration, and please feel free to reach out to Don Rocha, Deputy Administrative Officer for Government Relations, should you have any questions or concerns at (408) 630-2338 or at drocha@valleywater.org.

Sincerely,



Tony Estremera
Chair, Board of Directors

cc: Board of Directors (7), R. Callender, M. Richardson, R. Gibson, D. Rocha
bz:jh
1116a-l

COYOTE VALLEY & GROUNDWATER PROTECTION

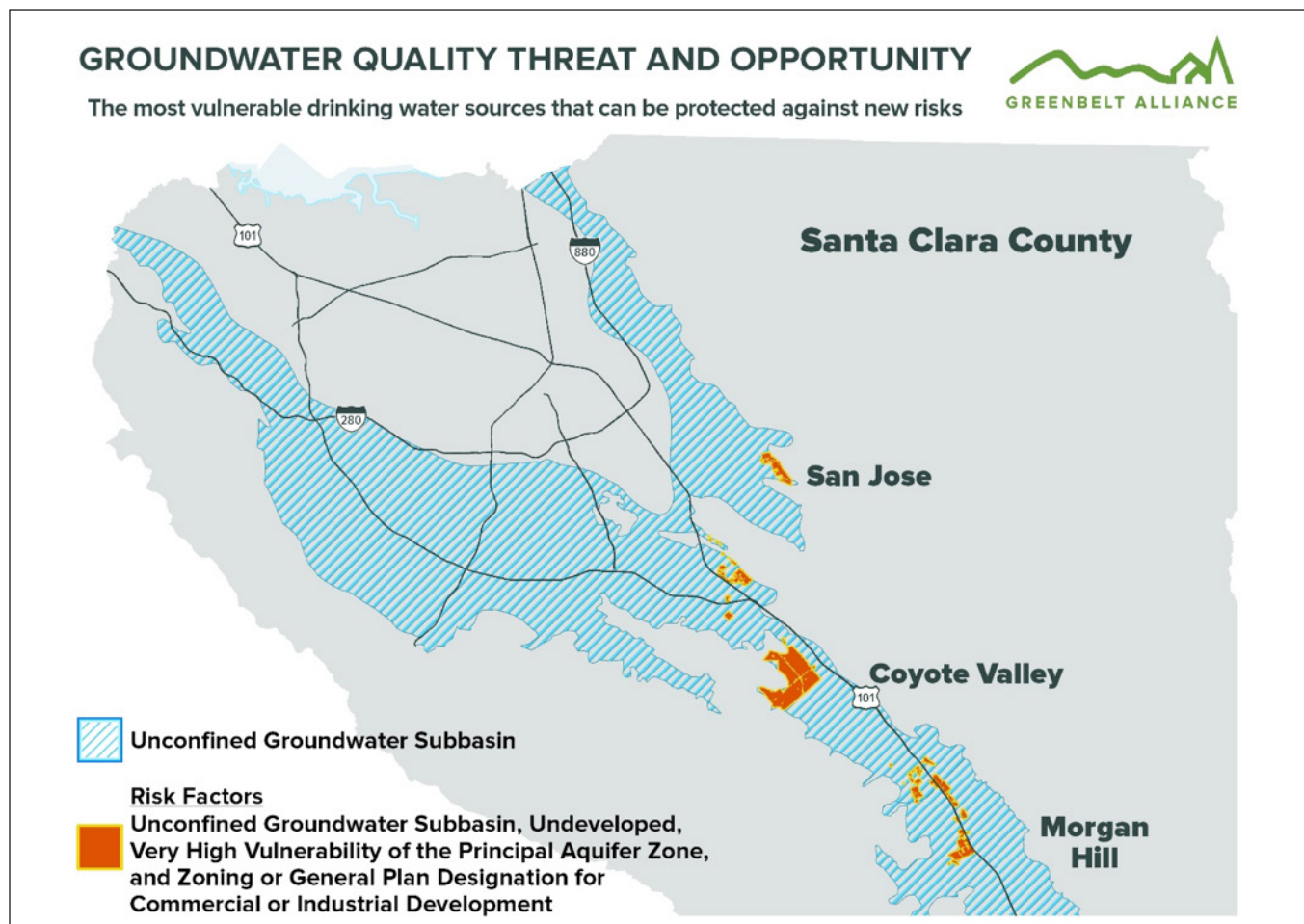
NORTH COYOTE VALLEY PRESENTS A UNIQUE OPPORTUNITY TO PROTECT GROUNDWATER QUALITY FROM A POTENTIAL THREAT TO THE DRINKING WATER FOR THOUSANDS OF SAN JOSE RESIDENTS. Physical characteristics of the land make it one of the most vulnerable areas in the county for contamination, but widespread industrial development has not yet occurred. The risk from that development can still be prevented entirely, while in already-developed areas it can only be managed. Local government agencies should undertake proactive policies and purchases in light of the combined opportunity and vulnerability for San Jose's groundwater supplies.



The map below draws from the Santa Clara Valley Water District's *Revised Final Groundwater Vulnerability Study (Groundwater Study)*, and from land-use zoning and General Plan designation mapping to identify a combination of factors showing which land is most vulnerable to harm to groundwater quality and can most easily be protected.

Features of the Threat and Opportunity Map:

- The unconfined subbasin aquifer, shown on the map as the “Unconfined Groundwater Subbasin,” is an area where underground drinking water sources are more vulnerable than the rest of the county. The remaining gray areas on the map are either hilly areas without large aquifers, or “confined” aquifers where drinking water sources deep underground are partially protected by intervening layers of clay and separate, shallow aquifers above that clay.
- “Very High Vulnerability” is the Water District’s own most vulnerable rating category in its model. The study combined physical characteristics of the land in the county that increase or decrease the consequences if a contamination event occurred, together with the land uses that occur there that increase or decrease the likelihood of a contamination event. Combined, they measure vulnerability, and only a small part of the entire county is rated “Very High”.
- Undeveloped land zoned for commercial or industrial development presents a great opportunity for groundwater protection. Much of the threat to drinking water results from potential future development, but because the land is still vacant, the opportunity remains to find an alternative use that does not create this risk. Existing risk from undeveloped land uses (e.g. farming activities) could be limited through purchase of easements or fee title.



- The Water District does monitor groundwater for contamination, but the monitoring is not a guarantee against any contamination. Monitoring will only detect contamination after it has spread far enough to reach a monitoring location.

Why Coyote Valley Stands Out:

- Unlike most other locations, the drinking water aquifer is very near the surface. A contamination event that might not even reach the groundwater table in other locations will reach it in Coyote Valley and then become mobilized with the moving groundwater.
- Water moves quickly through Coyote Valley sediment, both vertically and horizontally. This means contamination may reach groundwater quickly and then move quickly to contaminate the aquifer further north.
- The speed at which groundwater moves in Coyote Valley could make it more difficult for groundwater monitoring to respond in time to limit additional contamination, even assuming the contaminant is being monitored.
- North Coyote Valley represents by far the largest geographic area with combined significant risk and significant opportunity to avoid inappropriate development.
- The three other areas also rated highly in this analysis are distinguishable from Coyote Valley in that they are generally small, scattered parcels that would be difficult to acquire or manage for agricultural benefit, they are surrounded on most or all sides with urbanization that makes their own development nearly inevitable or, in the case of the Evergreen Industrial Park, have no near-term prospects for industrial development. Regardless, even if the other three areas are considered equivalently important, over half (1,363 acres of 2,484 acres) of the priority land that is most vulnerable and feasibly protected is located in North Coyote Valley.

The Problem at Coyote Valley Could Be Even Worse Than It Appears:

- Several reasons suggest that this map is a conservative estimate of the risk from North Coyote Valley. It is at the most upstream portion of the broader Santa Clara Valley aquifer, so underground water flows north from it through much of the remaining aquifer. By contrast, other potential contamination sites further north could harm a smaller portion of the aquifer. In addition, a surface-spill contamination event in Coyote Valley that reached Fisher Creek or Coyote Creek would rapidly move north past Coyote Valley in Coyote Creek's surface water. Contamination moving in this surface water percolates down into the drinking water aquifer for another mile before being stopped at the shallow aquifer (and then contaminating that shallow aquifer as well).¹
- Allowed land use includes industrial use with significant risk of contamination.
- The "Very High Vulnerability" rating for Coyote Valley could underestimate the future risk in that area. The study acknowledges the risk of future development in the text, but the risk weighting would become even worse if the area is developed. See *Groundwater Study* at page 61.

Coyote Valley, especially North Coyote Valley, stands at the confluence of threat and opportunity. With industrial development just a possibility rather than an on-the-ground reality, the risk that development entails can be entirely prevented rather than simply managed. The following recommendations for Santa Clara Valley Water District and other agencies present significant opportunities to protect San Jose's groundwater.

Recommendations for Water District and Other Agency Policies:

- The Water District has an existing policy that groundwater basins be “aggressively protected from contamination and the threat of contamination.” (*Vulnerability Study*, page 18.) Both this policy and new policies should help guide how the Water District acts regarding Coyote Valley.
- Where undeveloped land in the unconfined aquifer is highly vulnerable only because of potential development, the Water District should support reasonable efforts to maintain the land’s use in a non-developed state.
- In addition, the Water District should fully communicate to the City of San Jose and the public regarding the risk and consequences of groundwater contamination in Coyote Valley, including extensive, multi-year cleanup costs that may be passed along to retail water agencies and potential inability to use groundwater sources in the event of contamination.²
- The Water District should investigate the creation of and funding of groundwater protection easements that prevent uses and development that pose contamination risks. The easements could allow existing agriculture to continue while restricting agricultural practices that increase risk.
- The Santa Clara Valley Open Space Authority should support groundwater protection policies such as those described above for the Water District and for land use agencies.
- The Open Space Authority should support funding and protection of land for reasons of groundwater protection.
- The Open Space Authority and the Water District should consider an agreement with each other granting to the Water District a groundwater quality protection easement for land owned by the Open Space Authority in Coyote Valley. See the Supplemental Information Section of this document for more details.
- The City of San Jose should consider re-designating North Coyote Valley to maintain its existing agricultural and other open space use in order to protect the City’s groundwater quality.
- The City of San Jose should consider funding and supporting the funding of land acquisition and easement acquisition for purposes of protecting groundwater quality.

SUPPLEMENTAL INFORMATION

- SELECTED CASES OF CONTAMINATION IN SANTA CLARA
- CASE STUDY: AUSTIN TEXAS GROUNDWATER PROTECTION PROGRAM OF
LAND PURCHASES
- GROUNDWATER EASEMENT
 - GENERAL CONCEPT
 - SPECIFIC APPLICATION TO OSA AND POST LAND
- METHODOLOGY AND COMPONENT MAPS
 - DISCLAIMER REGARDING SHALLOW AQUIFERS

Selected Examples of Groundwater Contamination in Santa Clara County

Multiple groundwater contamination events have occurred in Santa Clara County, with more federal Superfund sites than any other county in the US. Fortunately, the most dangerous events have generally occurred in northern parts of the county where clay layers create shallow aquifers that trap contamination before it reaches the drinking water aquifer. This pattern highlights the risk of putting industrial development in Coyote Valley, where the drinking water aquifer is unshielded and near the surface.

Below are some contamination examples. More information can be found at the Santa Clara Valley Water District and its *Groundwater Study*.³

Perchlorate and Volatile Organic Compound (VOC) contamination:

- Middlefield-Ellis-Whisman & Moffett Field (349 acres)
- National Semiconductor (195 acres)
- Varian, 601 California Ave. (175 acres)
- Hewlett-Packard, 395 Page Mill Rd. (175 acres)
- Hewlett-Packard, 640 Page Mill Rd. (175 acres)
- FEI (TRW), 825 Stewart Dr. (124 acres)
- Mohawk Laboratories (110 acres)

Notes: the above contamination all happened in areas protected by the shallow aquifer. Most also did not reach deep levels, averaging a depth only 40 feet below ground. The drinking water aquifer in Coyote Valley, however, is closer to the surface than 40 feet.

- Fairchild: this Superfund site was located in South San Jose, an area not protected by clay layers and a shallow aquifer, resulting in drinking water aquifer contamination and significant cleanup costs. Even this location was not quite as vulnerable as Coyote Valley, with a greater depth to groundwater.

- Olin Facility Perchlorate: the most serious drinking water aquifer contamination was from perchlorate contamination in Morgan and San Martin, in the Llagas sub-aquifer that drains south instead of north. A nine-mile plume costing millions of dollars for cleanup resulted from this contamination. Again, this area was not protected by shallow aquifers, and was contaminated although groundwater levels were deeper and less exposed to contamination than in Coyote Valley.

Groundwater Quality Conservation Easement General Concept

In order to protect groundwater drinking sources in the Santa Clara Valley Subbasin from the unique contamination issues in Coyote Valley, the Water District should acquire easements from Coyote Valley landowners. Two possible uses of the easement include restrictions on certain types of activities when the land is in agricultural use and/or easements that restrict industrial activities. An easement applied to any particular property would not need to restrict both types of uses (e.g., restrict certain agricultural practices without being applicable if the land is converted to industrial use).

An agricultural-groundwater protective easement would restrict activities that increase the risk of contamination. Most prominently, it would reduce the risk of nitrate contamination from fertilizer use, given that that is the main agricultural contamination issue for groundwater. It could prohibit certain kinds of uses of fertilizer, mandate certain types that limit contamination if fertilizer is used, or simply set standards for the maximum amount of fertilizer applied per acre per time period. It could also prohibit certain kinds of pesticides or allow only certain other pesticides to avoid other contamination issues. The easements could potentially include related groundwater issues like limitations on certain types of irrigation that use excessive amounts of water.

An industrial-use groundwater conservation easement could function at several alternative levels. At the broadest, it might prohibit all industrial and all other non-open space use of the property. This level would be similar to a general purpose conservation easement, but it might be useful as a way to divide up the value of conserving the land, where a certain amount is paid to recognize the monetary value of protecting groundwater quality, while other sources pay for the other environmental values in land protection.

Less broadly, an industrial groundwater conservation easement could protect against limited types of uses that jeopardize groundwater without prohibiting industrial usage outright. A specifically important and relevant example would be to prohibit warehouses on the property. Even if toxics are theoretically prohibited from being stored, actually enforcing that prohibition against, for example, a contractor temporarily storing something in violation of the terms is extremely difficult. Prohibiting warehouse uses outright would be much more enforceable and effective. Other uses might face restrictions, e.g. prohibiting certain types of toxic materials from being stored or used at all and/or maximizing the amount of toxics that can be stored at any one time.

The Water District can make use of the Drinking Water State Revolving Fund as a source to pay for groundwater protection easements (see “Using the Drinking Water State Revolving Fund for Source Water Protection Loans” at <https://www.epa.gov/sites/production/files/2015-04/documents/landmanage.pdf>).

POST/OSA Pilot Project with the Water District

A pilot-project version of the groundwater quality conservation easement could be part of an exchange between POST or OSA and the Water District. The Water District’s vulnerability study for North Coyote Valley shows a significant vulnerability due to agricultural practices that constitute potentially contaminating activities. Coyote Valley land currently controlled by those two agencies could be managed in a way that prohibits those activities.

We suggest the following exchange:

- POST/OSA grants an agricultural groundwater quality conservation easement (and possibly an industrial groundwater quality conservation easement) to the Water District that prohibits certain potentially contaminating activities. Terms of the easement would be subject to negotiation with the Water District, sufficient to result in revision of the Groundwater Vulnerability analysis as described in Part 2 below. An agricultural groundwater quality easement would only restrict agricultural uses; if Coyote Valley is ultimately developed and POST/OSA decide not to keep all of their parcels undeveloped, then the easement would not prohibit development.
- In compensation for the easement, the Water District will revise the 2010 Groundwater Vulnerability analysis to reflect the increased protections on the property with the easement, with the terms of the easement negotiated to be sufficiently strict to revise downward the Vulnerability Analysis of the parcels with the easements.⁴

No money needs to be transferred, which simplifies and facilitates the pilot project. As a result of this exchange, the Water District can guarantee incrementally better protection of groundwater than had previously been the case and can show its progress in its primary analysis. POST or OSA get recognition of the environmental values they seek to protect while giving up only the ability to conduct certain agricultural practices they would likely want to avoid. Together the three agencies have established a mechanism and example for future groundwater quality conservation easements that could protect additional properties in Coyote Valley or elsewhere.

San Antonio and the Edwards Aquifer Example

San Antonio, Texas, together with other areas of Texas, draws its primary water supply from the Edwards Aquifer. This parallels the situation with Santa Clara County, where the groundwater table stores twice as much water as all local reservoirs put together. Just as Coyote Valley is associated with important wildlife values, the Edwards Aquifer supports unique ecological values.

After a major, multi-year drought, Texas and its local governments embarked on a number of measures to protect their groundwater aquifer. Over the years, the protections involved a mix of regulatory actions, water conservation plans, and purchases. Beginning in 2000 and with regular renewals thereafter, San Antonio voters authorized a sales tax of one-eighth percent to purchase conservation easements on a voluntary basis from landowners. The easements prevent further subdivision of property and usually amount to significantly less than the land's total value. The program has protected over 130,000 acres and is intended to protect water quality as well as quantity.

Similar programs exist in other parts of Texas to protect Edwards Aquifer. Austin has been involved in both regulating and purchasing development rights in the parts of the aquifer that provide water to the city. Controversies over protection of the land mirror those seen in Coyote Valley. A documentary movie, *The Unforeseen*, was made about that process that begins with the Wendell Berry poem, "Santa Clara Valley," highlighting our area as a cautionary example where development here in Silicon Valley has ignored the natural resource values of the land and water. Excerpts of "Santa Clara Valley" are quoted below:

I walked the deserted prospect of the modern mind where nothing lived or happened that had not been foreseen. What had been foreseen was the coming of the Stranger with Money. All that had been before had been destroyed: the salt marsh of unremembered time, the remembered homestead, orchard and pasture....

New buildings, built to seal and preserve the inside against the outside, stood in the blatant outline of their purpose in the renounced light and air. Inside them were sealed cool people, the foreseen ones, who did not look or go in any way that they did not intend....

Outside, what had been foreseen was roaring in the air. Roads and buildings roared in their places on the scraped and chartered earth; the sky roared with the passage of those who had been foreseen toward destinations they foresaw, unhindered by any place between. The highest good of that place was the control of temperature and light...I could not see past it but to its ruin.

I walked alone in that desert of unremitting purpose, feeling the despair of one who could no longer remember another valley where bodies and events took place and form not always foreseen by human, and the humans themselves followed ways not altogether in the light, where all the land had not yet been consumed by intention, or the people by their understanding, where still there was forgiveness in time, so that whatever had been destroyed might yet return. Around me as I walked were dogs barking in resentment against the coming of the unforeseen.

And yet even there I was not beyond reminding...The coots and gallinules skulked in the reeds, the mother mallards and their little ones afloat on the seaward-sliding water to no purpose I had foreseen. The stilts were feeding in the shallows, and the killdeer treading with light feet the mud that was all ashine with the coming day. Volleys of swallows leapt in joyous flight out of the dark into the brightening air in eternal gratitude for life before time not foreseen, and the song of the song sparrow rang in its bush.

Local California agencies here in Santa Clara County could consider following the environmental leadership demonstrated in Texas.

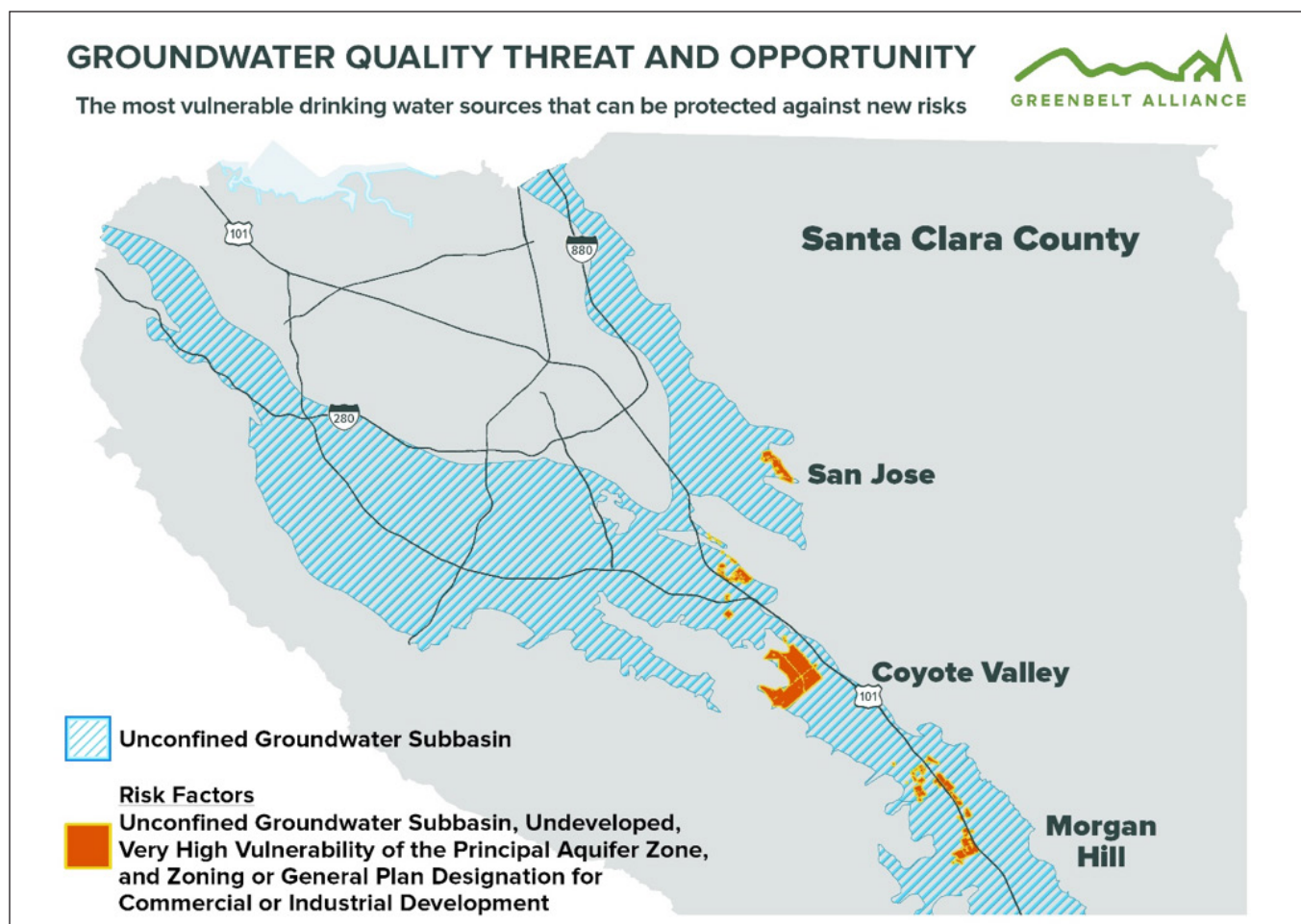
Greenbelt Alliance Methodology for This Analysis

Greenbelt Alliance's research objective was to map where the greatest overlap exists between groundwater vulnerability on the one hand, and on the other hand, the opportunity to prevent that vulnerability threat because the development has not yet occurred. This analysis relies on the greater ability to prevent a threat if the development posing the threat has not yet occurred.

The analysis also makes use of the information that drinking water aquifers in much of Santa Clara County are partially protected from surface contamination by impermeable clay "aquitard" layers and shallow aquifers above the clay layers. Contamination from the surface affects those shallow aquifers long before it reaches the (in places, very deep) underlying drinking water aquifer. The methodology here prioritizes groundwater that is not

confined and protected by clay layers and shallow aquifers (called "unconfined aquifers").

The prioritization of unconfined aquifers does not in any way assume that protecting the confined aquifers or shallow aquifers is unimportant. Both confined aquifers and shallow aquifers have important functions for people and ecology. The ongoing cleanup of some contaminated shallow aquifers is necessary and an important lesson about preventing contamination threat where we can. This analysis simply focuses on the greater threat where aquifers are unconfined.



Mapping Analysis

To create the Groundwater Quality Threat and Opportunity Map for this report, Greenbelt Alliance researchers created a map that overlapped multiple GIS layers from governmental source data. The analysis overlays:

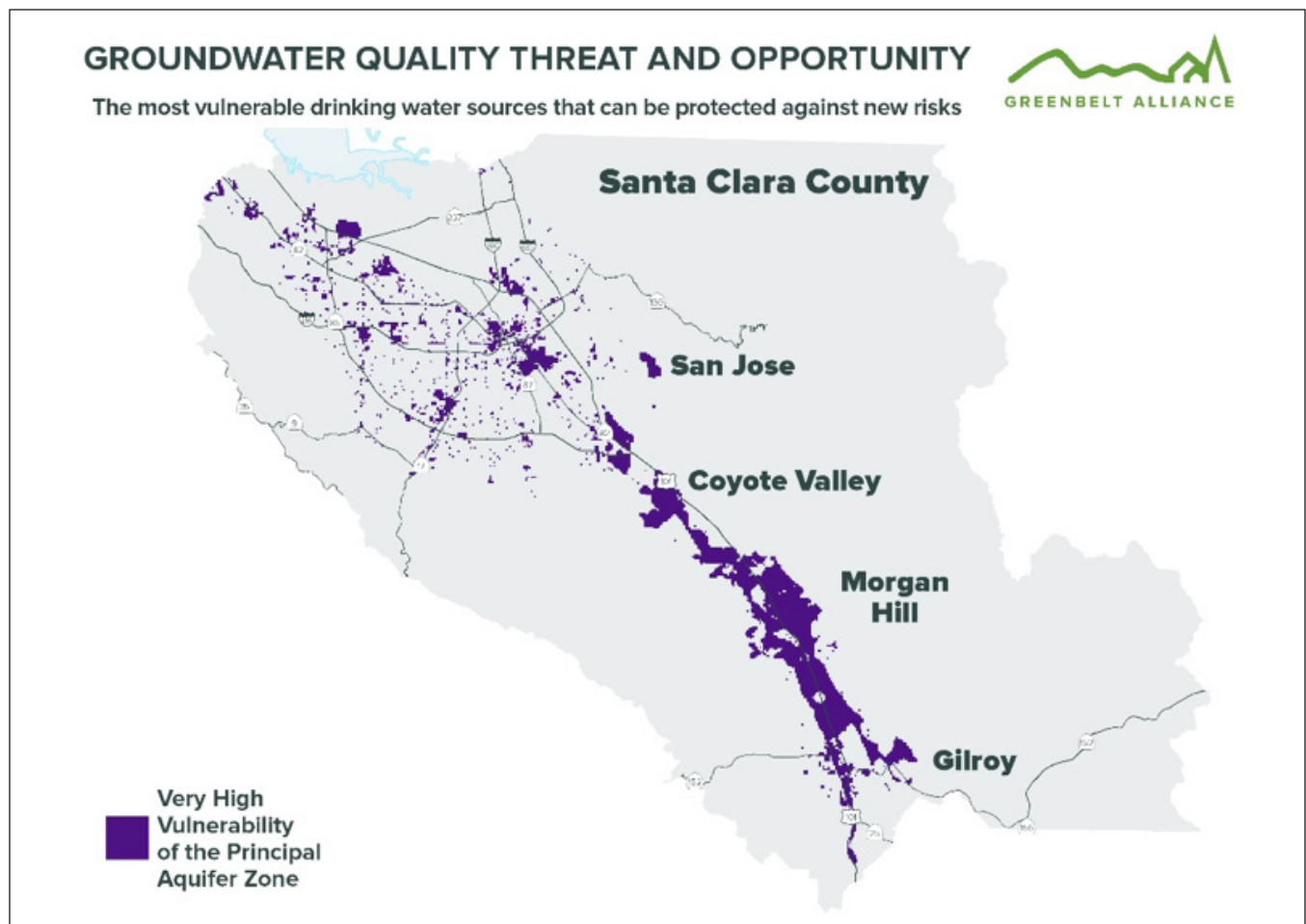
- GIS mapping data layers from the Water District's 2010 Groundwater Vulnerability analysis showing the highest rating ("Very High Vulnerability") for the principal aquifer;
- from the same Groundwater Vulnerability analysis, a map layer showing the Unconfined Aquifer portions of the principal aquifer;
- GIS mapping data layers from Santa Clara County and cities showing zoning and General Plan designation for commercial and industrial development; and

- mapping layers showing the land that is undeveloped.

The first three factors show where the threat to drinking water aquifers is potentially the greatest, while the fourth shows where there is at least a theoretical opportunity to prevent that threat because the development has not yet occurred.

As described above, Greenbelt Alliance used the following map layers to create the final version.

THREAT FACTOR: VERY HIGH VULNERABILITY



THREAT FACTOR: UNCONFINED ACQUIFER



THREAT FACTOR: ZONING OR GENERAL PLAN DESIGNATION FOR COMMERCIAL/INDUSTRIAL DEVELOPMENT

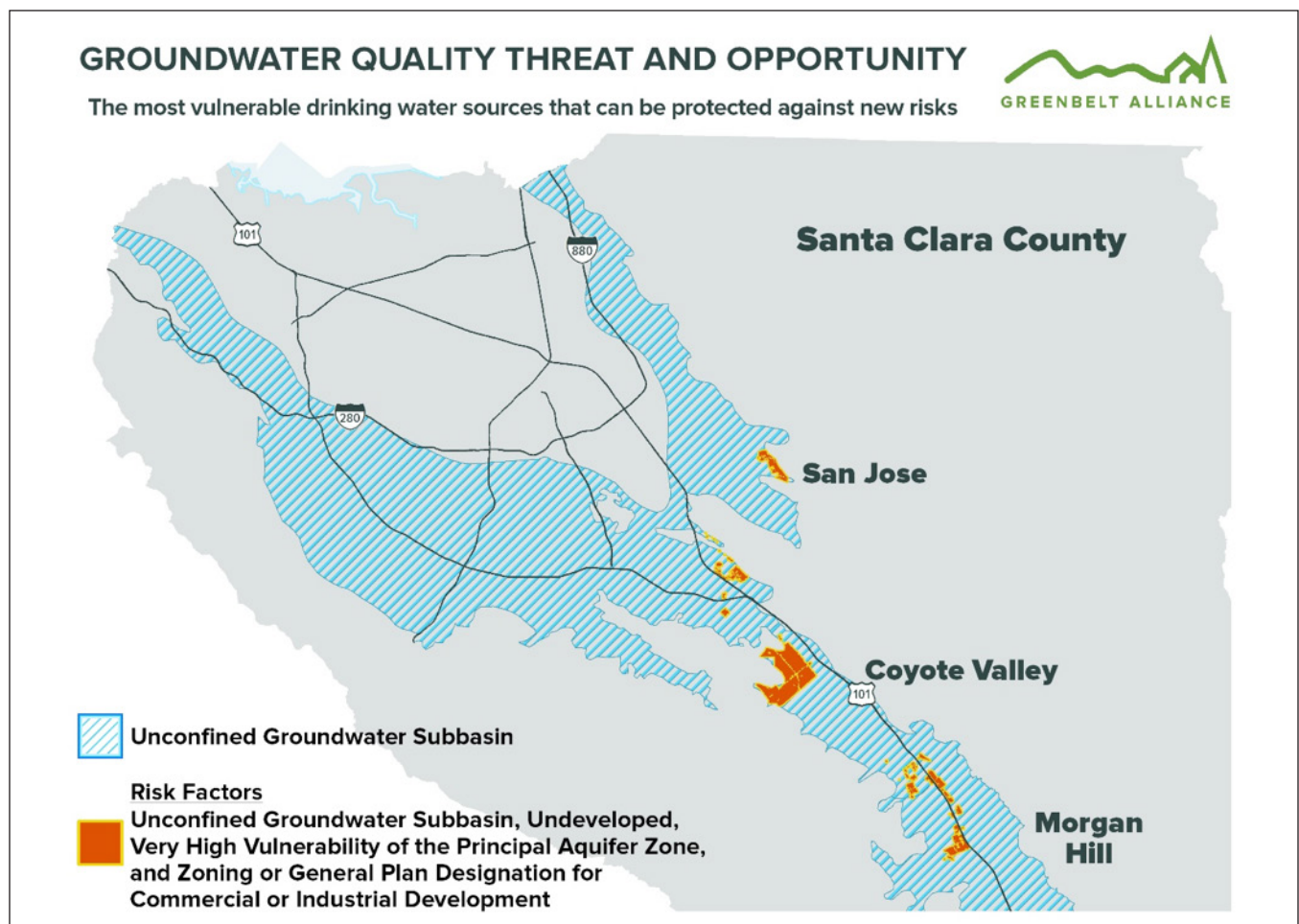


OPPORTUNITY FACTOR: UNDEVELOPED LAND



When putting the layers together into the final map, recopied below, the orange area shows where all four layers overlap. The unconfined aquifer is also shown to provide context that a relatively small part of that aquifer provides the best place to focus protection efforts for the combined threat and opportunity.

As described in the text, several additional reasons not analyzed in this mapping exercise demonstrate that the feasibility of protecting Coyote Valley exceeds that of the other areas mapped in orange.



ENDNOTES

- 1 Contamination of the creeks, a significant biological issue in addition to drinking water concerns, could come from a surface spill and could also come from a groundwater plume leaking into a creek in Coyote Valley and then flowing north for miles along Coyote Creek.
- 2 In theory, potentially responsible parties that caused the contamination would be required to pay for cleanup, but they cannot always be located and are not always financially capable of paying full cleanup costs.
- 3 In addition to the above examples, Southern Santa Clara County also experiences some groundwater nitrate contamination from agricultural activities. This contamination, a separate issue from industrial contamination, has been addressed to manageable levels and could be further managed with land use protections in Coyote Valley that still allow appropriate agricultural use.
- 4 Currently, the Vulnerability Analysis does not distinguish between groundwater vulnerability caused by overlying property and vulnerability of the underlying groundwater within a parcel regardless of the cause. For small parcels, the easement would dramatically affect vulnerability caused by the parcel, while only incrementally affecting the vulnerability of the groundwater itself. The revised analysis should distinguish between these two types of vulnerability so the benefit of the easement will be recognized.

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