



FRIENDS OF
THE SANTA CLARA RIVER

March 31, 2021

Via Electronic Mail

Mr. Anthony Emmert
Executive Director
Fillmore and Piru Basins Groundwater Sustainability Agency
P.O.Box 1110
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Re: Environmental Stakeholder Input on Draft Technical Memorandum Assessment of Groundwater Dependent Ecosystems for the Fillmore and Piru Basins Groundwater Sustainability Plan and Sustainability Management Criteria

Dear Mr. Emmert:

Thank you for this opportunity to comment on the Draft Technical Memorandum Assessment of Groundwater Dependent Ecosystems for the Fillmore and Piru Basins Groundwater Sustainability Plan (Tech Memo) and associated Sustainability Management Criteria.

Friends of the Santa Clara River is a 501 (c)(3) public interest organization formed in 1993 with the mission of protecting and preserving the biological and cultural resources of the Santa Clara River Watershed. The impetus for forming FSCR was provided when the Santa Clara River Enhancement and Management Plan Steering Committee was set up in the early 1990s but lacked any voice from the environmental community. FSCR served on the Steering Committee for 13 years. For the past 28 years, FSCR has promoted all aspects of river health, including public outreach, water quality monitoring, wetland restoration, opposition to floodplain development, and improving fish passage. FSCR is also a founding member of the Santa Clara River Steelhead Coalition, whose mission is to restore and protect wild southern California steelhead and its habitat on the Santa Clara River watershed.

According to the California Sustainability Groundwater Management Act (SGMA) and Water Section 10720, Groundwater Sustainability Plans (GSP) are required to identify and consider impacts to Groundwater Dependent Ecosystems (GDE) that have significant and unreasonable adverse impacts on all recognized beneficial uses of groundwater and related surface waters.

To ensure GDE's are adequately considered in GSP development, local environmental interests came together to form the Santa Clara River Environmental Groundwater Committee (SCREGC) that is comprised of The Nature Conservancy, Friends of the Santa Clara River, Keep Sespe Wild, California Trout, Sierra Club, Central Coast Alliance United for a Sustainable Economy (CAUSE), Citizen for Responsible Oil and Gas (CFROG), Surfrider Foundation, Los Padres Forest Watch, National Audubon Society, and the Santa Clara River Watershed Conservancy.



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California has lost 90 percent of its native wetland and river habitats, leading to the precipitous decline of native plants and animals. To that end, the Santa Clara River watershed is home to 17 federally listed species, many being groundwater dependent.

General Draft GDE Tech Memo Comments:

1. Many wells are located at higher elevations compared to GDEs, and when comparing depth-to-groundwater well data to plant rooting depths this can result in misinterpretation in groundwater-connectivity.

Recommendation: Instead of using groundwater well data near GDEs, correct for land surface elevation at GDEs to determine depth-to-groundwater at the GDEs. See Best Practice #5 in this TNC guidance: https://groundwaterresourcehub.org/public/uploads/pdfs/TNC_NCdataset_BestPracticesGuide_2019.pdf

2. Section 5.4.3 should describe groundwater thresholds for the 3 GDE units most susceptible to groundwater impacts. For example, it is highly recommended that groundwater levels at Cienega be restored to pre-drought (circa 2011) levels. This will ensure that groundwater conditions can facilitate riparian succession can occur, that the invasive non-native *Arundo donax* doesn't take over and increase evapotranspiration losses in the basin, and critical species habitat isn't permanently lost.

Recommendation: One way to determine thresholds and objectives (ideal conditions) for your three target GDEs is to plot NDVI versus depth to groundwater (DEM corrected). This would assist in determining what depth to groundwater conditions are needed to maintain GDE conditions. Use a baseline prior to the recent drought, which is more hydrologically robust, building in resilience and taking precautions for future droughts and accounting for projected mega-droughts. The average 2011 hydrograph and groundwater level in the shallowest aquifer could perform as a measurable objective.

3. The Nature Conservancy has new updated guidance on developing groundwater thresholds and objectives for ecosystems.

Recommendation: Please review

https://groundwaterresourcehub.org/public/uploads/pdfs/GroundwaterThresholdFramework_Final_updated_Dec2020.pdf

4. Reevaluate Elimination of GDE's Based on a 30-foot Depth to Groundwater Criteria. At the March 18, 2021 FPBGSA stakeholder workshop, California Department of Fish and Wildlife representative Steve Slack noted that the Department has noted GDE's with the rooting depth to groundwater that was greater than 30 feet and voiced concern with the removal of potential GDEs using this criteria.



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Recommendation: Follow CDFW suggestion to develop a hydrologically robust baseline that considers groundwater elevation fluctuations associated with climate conditions, inter-seasonal and inter-annual variability of GDE water demand and source species list noting GDE's with a rooting depth greater than 30 feet.

5. Projected Flow Releases from Los Angeles County. Effluent releases from Santa Clarita wastewater treatment works and bypass flows from Pyramid Dam (Southern State Water Project) are contributors to surface water flow, and riparian habitat and GDEs within the basin. Both facilities are going through re-permitting processes.

Recommendation: Monitoring and/or request reporting of effluent releases from Los Angeles County needs to be adequately captured in the inter-basin memorandum of understanding. The MOU should include timelines to adequately capture any and all foreseen changes to future releases, particularly if these trigger minimum thresholds associated with sustainable management criteria for beneficial users and uses.

Southern California steelhead

The Southern California steelhead Distinct Population Segment was listed as endangered by National Marine Fisheries Service (NMFS) in 1997 (62 FR 43937), with listing of Critical Habitat in 2005 (70 FR 52488) and reaffirmation of listing status in 2006 (71 FR 834). In 2012, NMFS finalized the Southern California Steelhead Recovery Plan (Recovery Plan) that outlines necessary actions required before a delisting of the species can occur. This plan outlines five biogeographic population groups (BPGs) that will require a minimum number of viable populations within each group before delisting can occur. Within each BPG, watersheds are classified based on their intrinsic potential into Core 1, 2, or 3 populations, with Core 1 populations having the highest priority for recovery.

The Santa Clara River Basin is one of the largest basins in southern California that supports anadromous runs of steelhead and is listed as a Core 1 watershed within the Monte Arido Highland BPG in the NMFS Recovery Plan. The Wild Salmon Center also named the Santa Clara River the Salmonid Stronghold for southern Steelhead regionally.¹

¹ Salmonid Stronghold: The term "stronghold" refers to a watershed, multiple watersheds, or other defined area where wild salmon populations are strong and diverse, and habitats are highly functioning and intact. Salmon strongholds represent watersheds that have high salmon and steelhead productivity, and genetic diversity, as well as outstanding habitat important to sustaining these wild Pacific salmon species.



The Santa Clara River Steelhead Coalition is guided by the Recovery Plan, and restoration efforts are focused on areas within the critical habitat designation that includes the main stem of the Santa Clara River, estuary, and upstream tributaries to the Santa Clara River (e.g., Santa Paula Creek, Sespe Creek, and Piru Creek, and Hopper Creek). Critical steelhead habitat provides spawning habitat, freshwater rearing sites, and freshwater migration corridors that support the different southern Steelhead life cycle history patterns. Ensuring that the Fillmore and Piru basins groundwater management actions do not negatively impact vegetation communities and critical habitat on the lower Santa Clara River critical habitat is of significant important to our environmental stakeholder community. Water quality and quantity provides instream conditions that support spawning, incubation, larval development, floodplain connectivity, physical habitat that will affords growth, foraging, and fish passage. Water quality and quantity also supports riparian vegetation communities which several threatened and endangered species inhabit and consequently depend on. Supporting sustainable management criteria for Southern steelhead will inevitably support numerous other aquatic and GDE beneficial uses and users.

Today, the precious few unfettered creeks and streams of the Santa Clara River are still home to healthy wild rainbow trout populations producing out-migrating steelhead smolts bound for the Pacific. These streams are treasured by environmentalists, enthusiasts of a range of recreational activities, and a community rooted in agriculture. The long-term viability and economy of the region depends on successful and sustainable groundwater management. Complex demands on the river reflect this diversity of interests and bring disparate perspectives and agendas into the community dialogue about watershed management. This is a unique opportunity to integrate water management and develop multi-benefit projects that offer solutions to these contesting needs.

Recognizing that designated critical habitat in the Endangered Southern California Distinct Population Segment (DPS) of Steelhead has been adversely affected by loss and modification through activities such as groundwater extractions and related surface-water diversions (NMFS, 2012), is a necessary acknowledgement to ensure solutions, sustainability criteria, and necessary projects are adequately identified in the Draft GSP. Once an iconic steelhead river, dams, diversions and other migration barriers have decreased surface water flows, significantly degraded and in certain cases resulted in habitat availability loss – threatening biological needs of steelhead, contributing to the loss of the historic steelhead run of 9000 returning adults by not supporting habitat that provides habitat for survival and/or recovery of the species (NMFS, 2012). The current run size for the Santa Clara River is precariously low, underscoring the species' continuing dire condition under current management conditions. California Trout's State of Salmonids report lists the level of concern for southern Steelhead survival as critical, with extinction likely within the next 20-45 years.

NMFS' Recovery Plan (NMFS 2012) outlines a threats assessment, recovery strategy, and recovery criteria that identifies surface-water diversions for groundwater replenishment, and related groundwater extractions, to support agricultural and urban developments that utilize groundwater resources as a limiting factor for species recovery. (NMFS 2012, pp. 9-1 through 9-17.)



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To address the identified threats to endangered steelhead in the Santa Clara River watershed, the Recovery Plan identifies recovery actions targeting surface diversions and groundwater extraction (NMFS 2012, p. 8-6, Table 9-7, p. 9-61). These recovery actions can and may impact surface and groundwater interactions and are as follows:

SCR-SCS-4.2 Develop and implement a water management plan to identify the appropriate diversion rates for all surface water diversions that will maintain surface flow necessary to support all *O. mykiss* life history stages, including adult and juvenile *O. mykiss* migration, and suitable spawning, incubation, and rearing habitat.

SCR-SCS-6.1 Conduct groundwater extraction analysis and assessment. Conduct hydrological analysis to identify groundwater extraction rates, effects on the natural stream pattern (timing, duration and magnitude) of surface flows in the mainstem and tributaries, and the estuary, and effects on all *O. mykiss* life history stages, including adult and juvenile *O. mykiss* migration, spawning, incubation, and rearing habitats.

SAC-SCR-6.2 Develop and implement groundwater monitoring and management program. Develop and implement groundwater monitoring program to guide management of groundwater extractions to ensure surface flows provide essential support for all *O. mykiss* life history stages, including adult and juvenile *O. mykiss* spawning, incubation and rearing habitats.

The Santa Clara River currently supports an endangered population of steelhead that is critical to the future survival and recovery of the broader Endangered Southern California DPS of Steelhead. The public trust doctrine protects public trust uses.² Thus, to the extent a public trust use or interest (e.g., recreational fishery) is impacted by a water diversion and/or extraction, the Groundwater Sustainability Agency has jurisdiction to, and must, consider GDE's, beneficial uses, and implement projects that remedy the impact.

We recognize the GSA's use of The Nature Conservancy's 2018 Groundwater Dependent Ecosystems under the Sustainable Groundwater Management Act: Guidance for Preparing Groundwater Sustainability Plans framework. However, the potential effects on non-vegetative beneficial users and uses such as Southern steelhead, and the subsequent steps of setting of sustainability criteria for these, needs further development and improvement. Without a thorough understanding of hydrologic/biotic relationship, the draft Groundwater Sustainability Plan cannot ensure that significant and unreasonable adverse impacts from groundwater depletion are avoided (California Department of Water Resources 2016).

² *National Audubon*, 33 Cal. 3d at 446.



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Recommendation: Further analysis and efforts to assess the quantity and timing of interconnected surface water and groundwater is necessary for GDE's. These either need to be developed or captured as a data gap with actionable study to address data gap by the five-year review of the GSP. Installation of additional shallow groundwater monitoring wells and streamflow gauges near GDEs are necessary to understand the interconnectedness and monitor ongoing health and SMC compliance.

Management of the groundwater of the Fillmore and Piru basins can and has affected the water resources and other related natural resources throughout the Santa Clara River watershed. Extraction of groundwater from the basins has lowered groundwater levels to the point of impacting a wide variety of plant and animal species, and affected surface flows that support the migrations of endangered steelhead in the Santa Clara River watershed (Stillwater Sciences 2011a, 2007a, 2007b).

Currently, the Draft Sustainability Criteria for GDEs are based on statewide data on "vegetation known to use groundwater" and doesn't include minimum thresholds and measurable objectives for groundwater used by other biological resources, such as seasonal migration of fishes. The TNC framework does call for further biological assessment in the case of endangered species. The lack of further biological assessment and SMC development would be a gross omission in thoroughly identifying GDE needs in the Draft Plan. In addition to supplying water to the root zone of plants, groundwater can also contribute to surface flows, influencing the timing, duration, and magnitude of surface flows, particularly base flows that support aquatic invertebrates, avian fauna, and fish species, including native resident and anadromous fishes. Groundwater that supports seasonal surface flows can also contribute to the life-cycle of migratory fishes, such as steelhead and lamprey, that can make use of intermittent flows for both migration, spawning and rearing. While we appreciate and commend Stillwater Sciences on identifying GDE, the current vegetative-centric approach to minimum thresholds and measurable objectives of GDE's is not sufficient to capture the potential impact to other beneficial uses/biota.

Recommendation: All identified environmental beneficial uses and users need to be explicitly included in the Draft Plan's sustainability goals, not solely vegetative communities. SMC's need to be developed that will capture and protect all GDE's identified. Model-based predictions suggest a minimum flow of 800 cfs is required to provide a depth of 0.6 ft continually across 10ft of channel (Keller et.al, 2006), and should be considered when setting sustainability criteria for a wider set of beneficial uses/users in the GSP.

While these groundwater-influenced flows may not support permanent vegetative cover, they can nevertheless support seasonal use of this reach of the Santa Clara River for migratory or rearing purposes, depending on the amount, and timing of annual rainfall and runoff and the groundwater elevation. The Santa Clara River along its entire reach is always connected to an aquifer because it either



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receives water from the surrounding sediments or supplies water to the surrounding sediments, or both. This reach is also designated critical steelhead habitat and constitutes a beneficial use.

It is also important to recognize that the TNC assessment of groundwater water conditions reflects conditions that have been and continue to be significantly influenced by extensive water developments within the Santa Clara River watershed, including extensive water diversion and groundwater pumping programs (e.g., Pyramid, Santa Felicia, and Castaic dams); these activities have had a cumulative affect on groundwater levels and related surface flows within the Fillmore and Piru basins (Stillwater 2011a). Past and/or current effects of anthropogenic activities should not exclude or significantly delay the capacity of the aquatic environment to develop or maintain essential physical or biological features that species rely upon for growth and survival, otherwise the SMC's and ultimately the GSP would not be consistent with the sustainability requirements of SGMA. This reiterates the importance of the MOU and inter-basin agreement with upstream users aforementioned.

Flow in the lower Santa Clara River has historically been perennial, supported by groundwater during the summer months. Reaches between the Piru and Fillmore narrows exhibit perennial surface flow, supported by groundwater where unconsolidated sediment deposits in combination with subsurface bedrock formations causes groundwater to rise to the surface, depending on groundwater elevations and surface flows (Stillwater Sciences 2007a, 2011a and Kennedy/Jenks 2008.)

The historical estimates for the basins' sustainable yield should include groundwater supporting instream beneficial uses in the Santa Clara River or other GDEs. SGMA legislation and SGMA regulations, contains an expanded definition of sustainability that includes avoiding undesirable results, includes changes to groundwater dependent ecosystems that have significant and unreasonable adverse impacts on all recognized beneficial uses of groundwater and related surface waters (Water Section 10720).

To ensure that the Fillmore and Piru Basins GSA's GDE Tech Memo and subsequent GSP's adequately recognizes instream beneficial uses of the Santa Clara River that are potentially affected by the management of groundwater within the basins, the sustainable management criteria, minimum thresholds, and measurable objectives, must analyze and capture the important relationship between the extensive surface diversions and groundwater recharge program within the basins, and its potential adverse effects on GDE's and namely the federally endangered steelhead (*Oncorhynchus mykiss*).

Undesirable results for Southern steelhead include any adverse loss or modification to critical steelhead habitat (rearing, spawning and migration corridors) that hinders the ability of designated critical habitat to provide for steelhead survival because of pumping. Outside of the aforementioned flow metric,



additional complementary sustainability metrics could include those used in NMFS “envelope method”³. Many natural variables such as seasonal surface flow patterns, water quality including temperature and established wetted channel, are significantly impacted by artificial modification in freshwater habitat and are possible metrics for minimum thresholds and measurable objectives. Ultimately identifying a metric that will identify an affect to the timing, duration and/or magnitude of surface flows essential for steelhead migration, spawning and rearing due to sub-surface extractions. Steelhead metrics will likely have a spatial and temporal component, as sustainability needs may vary due to life-cycle needs and migration windows, which may require dedicated management areas.

Surface water and groundwater interactions and their influence on GDEs is undoubtedly complex. To adequately address Southern steelhead impacts, a steelhead limiting factor analysis may likely be needed, as the Recovery Plan’s analysis may be too coarse for these two basins. This is a data gap that can better inform management decisions that invariably may impact the endangered species. The GSA needs to identify the flow levels that effectively support essential life-history functions, specifically flows that adequately support adult steelhead and smolt migration during the winter and spring, and juvenile rearing year-round. The steelhead limiting factor analysis, shallow groundwater monitoring wells paired with stream flow gauges will begin to address the existing data gap around hydrologic/biotic relationships. Low summer baseflow is a significant stress to steelhead, and groundwater inputs can affect fine scale surface flow conditions and will need to be closely monitored in identified GDE areas.

While pool depths and riffle depth were discussed as possible sustainability metrics, it was acknowledged that changing channel morphology makes it difficult to map in a reliable way. Furthermore, we would caution using a minimum instream flow need, as these don’t necessarily address broader life history needs and habitat requirements for long-term survival and recovery. Functional flows that incorporate and provide migration cues for adult steelhead and ecological flow functions will need to be sustained.

FSCR requests that a revised Draft Tech Memo and Sustainable Management Criteria Matrix be re-circulated to give interested parties an opportunity to review and comment on the memo before it is finalized. Particularly, as per the TNC Critical Species Lookbook, it behooves the GSA to formally request NMFS’ comments on the draft at this juncture. Further input from the Santa Clara River Steelhead Coalition could also be requested to ensure pertinent stakeholders are adequately engaged.

³ This method uses observed associations between fish distribution and the quantitative values of environmental parameters such as stream gradient, summer mean discharge and air temperature, valley width to mean discharge, and the presence of alluvial deposits – habitat features that are critical to steelhead spawning and rearing.



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FSCR appreciates the opportunity to comment regarding on the Draft Tech Memo. These are intended to be and are preliminary comments; FSCR reserves its rights to submit other, different and/or additional comments on the GSA's Draft Tech Memo and GSP following its release and, where appropriate, throughout subsequent phases of the Agencies' review process for the plan. If you have a follow up questions regarding this letter, please contact myself on (310) 890-2834 or candicemeneghin@gmail.com. We look forward to further discussion of GDE considerations and other sustainability indicators.

Sincerely,

Candice Meneghin
Friends of the Santa Clara River Board Member

Cc: Santa Clara River Environmental Groundwater Committee
Mary Larson, California Department of Fish and Wildlife
Mark Capelli, National Marine Fisheries Service
Anthony Spina, NMFS
Ed Pert, CDFW
Chris Dellith, USFWS



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