From: Wood, Dylan@Wildlife
To: gzlotnick@sjwd.org
Cc: Wildlife R2 CEQA; Torres, Juan@Wildlife; Barker, Kelley@Wildlife; Thomas, Kevin@Wildlife; OPR State Clearinghouse; Seapy, Briana@Wildlife; Hutton, Tiffanee@Wildlife
Subject: Comments on the IS/ND for the 2022 Temporary Water Transfer of Pre-1914 Water Rights Water to the Santa Clara Valley Water District and consortium of State Water Contractors (SWC)(SCH: 2022040400)
Date: Tuesday, May 17, 2022 4:00:12 PM
Attachments: Attachment 1.docx
image001.png

Dear Mr. Zlotnik:

The California Department of Fish and Wildlife (CDFW) received and reviewed the Initial Study and Negative Declaration (IS/ND) from the San Juan Water District (SJWD) for the 2022 Temporary Water Transfer of Pre-1914 Water Rights water to the Santa Clara Valley Water District and a consortium of State Water Contactors (Project) pursuant to the California Environmental Quality Act (CEQA) statute and guidelines. (Public Resources Code § 2100 et seq.)

Thank you for the opportunity to provide comments and recommendations regarding those activities involved in the Project that may affect California fish, wildlife, native plants, and their habitat. Likewise, we appreciate the opportunity to provide comments regarding those aspects of the Project that CDFW, by law, may need to exercise its own regulatory authority under the Fish and Game Code.

CDFW ROLE

CDFW is California's **Trustee Agency** for fish and wildlife resources and holds those resources in trust by statute for all the people of the State (Fish & G. Code, §§ 711.7, subd. (a) & 1802; Pub. Resources Code, § 21070; CEQA Guidelines § 15386, subd. (a)). CDFW, in its trustee capacity, has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species. (Fish & G. Code., § 1802.) Similarly for purposes of CEQA, CDFW provides, as available, biological expertise during public agency environmental review efforts, focusing specifically on projects and related activities that have the potential to adversely affect fish and wildlife resources.

CDFW is also submitting comments as a potential **Responsible Agency** under CEQA. (Pub. Resources Code, § 21069; CEQA Guidelines, § 15381.) CDFW expects that it may need to exercise regulatory authority as provided by the Fish and Game Code. As proposed, for example, to the extent implementation of the Project as proposed may result in "take" as defined by State law of any species protected under the California Endangered Species Act (CESA) (Fish & G. Code, § 2050 et seq.), the project proponent may seek related take authorization as provided by the Fish and Game Code. CDFW also administers the Native Plant Protection Act, Natural Community Conservation Act, and other provisions of the Fish and Game Code that afford protection to California's fish and wildlife resources.

PROJECT DESCRIPTION SUMMARY

As part of a regional water transfer proposed to be conducted by several American River water agencies to provide supplemental water supplies to the Buyers during 2022, SJWD will temporarily transfer up to 4,302 acre-feet of its pre-1914 water rights water supplies that have been quantified and are made available on a perpetual, no-cut basis by the United States Bureau of Reclamation under a 1954 settlement contract. The water demands that would otherwise be served by SJWD's delivery of this surface water to its wholesale customers Fair Oaks Water District (FOWD) and Citrus Heights Water District (CHWD) will instead be satisfied by increased groundwater pumping by FOWD and CHWD to serve their respective retail customers. The transfer water will be delivered to the buyers by DWR using existing SWP facilities from July through November 2022. However, the

transfer water may be temporarily stored in San Luis Reservoir for later delivery to an individual Buyer's service area.

COMMENTS AND RECOMMENDATIONS

CDFW offers the comments and recommendations below to assist SJWD in adequately identifying and, where appropriate, mitigating the Project's significant, or potentially significant, direct and indirect impacts on fish and wildlife (biological) resources.

Groundwater Substitution Transfer Comments

Groundwater Management

The IS/ND indicates the proposed Project will not adversely impact groundwater. CDFW is concerned with potential localized and cumulative impacts associated with proposed and pending groundwater substitution water transfers within or adjacent to the North American Subbasin that have the potential to impact groundwater dependent ecosystems.

Ecological communities or species that depend on groundwater emerging from aquifers or on groundwater occurring near the ground surface are collectively known as groundwater dependent ecosystems (GDEs) (23 Cal. Code Regs. § 351(m)). These GDEs include seeps and springs; wetlands and lakes; rivers, streams, and estuaries; and terrestrial vegetation. Water transfers made available by groundwater substitution have the potential to affect groundwater hydrology due to increased groundwater use. Correlating effects could be temporary and/or long-term declines in groundwater levels, reduction of groundwater storage, depletions of interconnected surface water, land subsidence, and degraded water quality. These effects have the potential to adversely impact GDEs in basins where water transfers are made available by groundwater substitution.

CDFW is specifically concerned with SJWD's reliance on 'historical baseline groundwater pumping' as a threshold for significant impacts during the transfer period. SJWD purports the transfer will result in no significant hydrological impacts by noting consistency of operations with the North American Subbasin Groundwater Sustainability Plan (NAsb GSP). Per comments submitted by CDFW on the NAsb Draft and Final GSP on October 7, 2021, and March 29, 2022 (Attachment A), CDFW does not believe NAsb GSP minimum groundwater elevation thresholds to be protective of GDEs. A significant lowering of groundwater elevations, as permitted within the NAsb GSP, can cut off GDEs from critical water supply and result in stress or loss of vegetation and/or depletions of interconnected surface water, adversely affecting the fish and wildlife that depend on GDE habitat. To protect against adverse impacts to GDEs, including increased streamflow temperature, that have occurred during dry and critically dry water years with historically low groundwater levels (DFW 2019), CDFW recommends selecting a more conservative groundwater elevation trigger that would result in a reduction in pumping volume or a cessation of transfer pumping. The groundwater level trigger should be shallower than the historical low groundwater level to avoid adverse impacts of transfer-related pumping on GDEs, especially cumulative impacts that may manifest after sequential dry or critically dry water years when groundwater reliance and streamflow depletion compound, and the cumulative volume of NAsb groundwater substitution transfers maintains or increases, as it may this year.

For groundwater substitution transfers, DWR requires groundwater monitoring and a mitigation plan designed to alleviate possible injury to other legal users of water including environmental users. SJWD notes in the IS/ND that they have DWR-approved groundwater monitoring, reporting, and mitigation plans which ensure no unreasonable and adverse impacts to the groundwater basin. CDFW requests SJWD provide CDFW with groundwater monitoring and mitigation plans, documentation demonstrating the NAsb groundwater sustainability agencies (GSAs) have been notified of the proposed transfer, and details on how the proposed groundwater substitutions will be consistent with GSP requirements. Absent shared information on the mitigation measures built-in

to this specific transfer, it is difficult to assess potential impacts to GDEs and the species therein. Effective, comprehensive monitoring and mitigation will help understand hydrologic patterns and their relationship to corresponding habitat/GDE trends to inform groundwater transfer operations. Accordingly, groundwater monitoring should be accompanied by habitat monitoring designed and deployed to capture seasonal and operational variability and follow accepted technical procedures and best practices established by the USGS (Cunningham 2011) and DWR (DWR 2016) respectively. Monitoring plans and data should be made publicly accessible.

Streamflow Depletion Factors

According to DWR's 2019 Draft Technical Information for Preparing Water Transfer Proposals (Draft Technical Information), a minimum streamflow depletion factor (SDF) of 13 percent will be applied to each groundwater substitution transfer when determining the volume of surface water made available for transfer, unless information supports the need for development of a site-specific SDF (DWR 2019). The minimum SDF value is based on analysis completed within the updated Long-Term Water Transfers Environmental Impact Statement/Environmental Impact Report (LTWT EIS/R), prepared by the Bureau of Reclamation and the San Luis & Delta-Mendota Water Authority. The LTWT EIS/R analysis shows a range of potential streamflow depletions resulting from groundwater transfer pumping that suggests the reduction in streamflow may be more significant in sequential dry water years, and impacts of back-to-back transfers can compound over time (Reclamation 2019).

Streamflow depletion is a function of many factors, including the distance of a pumping well from a nearby stream. Streamflow depletion can occur relatively quickly from continued pumping from wells adjacent to surface waters (USGS 2012). The LTWT EIS/R states that the minimum 13 percent SDF would mitigate the impacts of streamflow depletions to be less than significant (Reclamation 2019), but the mitigation measure fails to provide adequate reasoning for the selection of the 13 percent SDF value from among the range of modeled depletions, nor does it justify the uniform application of the minimum standard SDF to all proposed groundwater substitution transfers, which have varied geographies, hydrogeologic conditions, well specifications, and proximities to major surface waters.

CDFW recommends the development of site-specific SDFs that consider multiple criteria impacting streamflow depletion rates and more accurately account for the volume of streamflow depletion attributable to pumping transfer water. Absent accurate streamflow depletion factors, groundwater transferors may be 'double-counting' by selling their surface water rights while pumping additional river water via subsurface stream depletion. In the interim, until site-specific SDFs are developed, CDFW recommends selecting a higher SDF than the *minimum* 13%, particularly when transfer pumping wells are located proximate to surface water bodies.

Well Recovery

The Petitioner indicates that the proposed groundwater pumping is consistent with the GSP, basin management objectives, and the SGA accounting framework and would not adversely impact the groundwater basin. If records for transfer production wells and/or associated monitoring wells do not show that groundwater levels have fully recovered to pre-transfer levels, alternative production wells that do demonstrate full recovery between transfer seasons should be used to avoid adverse impacts related to the cumulative effects of repeated groundwater depletion.

ENVIRONMENTAL DATA

CEQA requires that information developed in environmental impact reports and negative declarations be incorporated into a database, which may be used to make subsequent or supplemental environmental determinations (Pub. Resources Code, § 21003, subd. (e)). Accordingly, please report any special-status species and natural communities detected during Project surveys to the California Natural Diversity Database (CNDDB). The CNNDB field survey form can be found at the

following link: https://www.wildlife.ca.gov/Data/CNDDB/Submitting-Data. The completed form can be submitted online or mailed electronically to CNDDB at the following email address: CNDDB@wildlife.ca.gov.

FILING FEES

The Project, as proposed, would have an effect on fish and wildlife, and assessment of filing fees is necessary. Fees are payable upon filing of the Notice of Determination by the Lead Agency and serve to help defray the cost of environmental review by CDFW. Payment of the fee is required in order for the underlying project approval to be operative, vested, and final. (Cal. Code Regs, tit. 14, § 753.5; Fish & G. Code § 711.4; Pub. Resources Code, § 21089.)

CONCLUSION

Pursuant to Public Resources Code sections 21092 and 21092.2, CDFW requests written notification of proposed actions and pending decisions regarding the Project. Written notifications shall be directed to: California Department of Fish and Wildlife North Central Region, 1701 Nimbus Road, Rancho Cordova, CA 95670.

CDFW appreciates the opportunity to comment on the IS/ND and recommends that the San Juan Water District address CDFW's comments and concerns in the forthcoming EIR. CDFW personnel are available for consultation regarding biological resources and strategies to minimize impacts.

If you have any questions regarding the comments provided in this letter, please contact Dylan Wood, Environmental Scientist at (916) 358-2384 or dylan.wood@wildlife.ca.gov.

Sincerely,

Dylan Wood
California Department of Fish and Wildlife
Environmental Scientist
(916) 358-2384

CALIFORNIA DEPARTMENT OF FISH and WILDLIFE

REFERENCES

Bureau of Reclamation, San Luis & Delta-Mendota Water Authority (Reclamation). 2019. Long-Term Water Transfers Environmental Impact Statement/Environmental Impact Report

Cunningham, W. L., and C. W. Schalk. 2011. Groundwater Technical Procedures of the U.S. Geological Survey

Department of Water Resources. 2016. Best Management Practices for Sustainable Management of Groundwater.

Department of Water Resources (DWR). 2018. Natural Communities Commonly Associated with Groundwater Dataset.

DWR. 2019. Draft Technical Information for Preparing Water Transfer Proposals.

Attachment A

CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE COMMENTS ON THE FINAL NORTH AMERICAN SUBBASIN GROUNDWATER SUSTAINABILITY PLAN

COMMENTS AND RECOMMENDATIONS

COMMENT #1 Groundwater Dependent Ecosystems (Appendix O): GDE identification, required by 23 CCR § 354.16(g), is based on methods that risk exclusion of ecosystems that may depend on groundwater.

a. Issues:

i. Depth to Groundwater: The Department recognizes and appreciates the effort put into identifying GDEs within the subbasin, including the assessment of both vegetation diversity and critical species dependence to inform relative priority. Further refinement and clarification of GDE identification methods used in the GSP will help to create a more robust analysis. Appendix O states that groundwater contours were developed using groundwater level measurements from Spring 2020 (Section 1.2, page 3), but then also states that GDEs were prioritized using 2019 depth to groundwater contours (Section 1.3, page 4). It is unclear which year of groundwater data was used in the analysis. Additionally, while the Department supports the use of seasonal high spring measurements, 2020 was a dry water year type for the Sacramento Valley. Analysis that relies on depth to water thresholds should incorporate data from a representative hydrologic period that includes a variety of water year types, rather than from a single point in time. The analysis also assumes that groundwater must be less than 30 feet below the ground surface (bgs) to support GDEs based on the maximum rooting depth of Valley Oak (Q. lobata); however, mature Valley Oak can access groundwater up to 80 feet below the ground surface (Howard 1992, Lewis & Burgy 1964). The use of a 30-foot threshold may incorrectly exclude Valley Oak communities within the subbasin from further consideration as a GDE.

ii. Perched Groundwater Areas: The GSP discusses locations within the subbasin that have a depth to groundwater of less than 30 feet and may also have areas of perched water, and potential GDEs from these areas were removed. The GSP does not sufficiently characterize the relationship between these perched groundwater areas and the Principal Aquifer, including the impacts of pumping or of seasonally elevated groundwater levels on the groundwater in these perched areas.

iii. Special Status Species: The GSP methodology includes an evaluation of "nonaquatic critical fauna" that may be present in the subbasin. Interconnected surface waters and their associated aquatic species are also a type of groundwater dependent ecosystem that must be evaluated within the GSP and considered in the development of sustainability criteria and analysis of undesirable results.

b. Recommendations:

i. Depth to Groundwater: The Department recommends that Appendix O be revised to clarify which year of data was used to create the groundwater elevation contours for the GDE analysis

and consider how the methodology could be updated to integrate a range of water years for determining potential GDEs. The Department also recommends the GSP narrowly update the methodology for GDE identification for areas within the subbasin that underlie Valley Oak communities to reflect a potential maximum rooting depth of 80 feet bgs.

ii. Perched Groundwater Areas: The Department recommends the GSP include additional information characterizing the relationship between areas of perched groundwater and the Principal Aquifer. The GSP should discuss whether seasonal highs within the Principal Aquifer contribute to the perched areas, and whether pumping within the Principal Aquifer has the potential to deplete these perched areas that may support GDE communities. If the relationship cannot be adequately characterized, the GSP should conservatively include GDEs from these areas, particularly as depth to groundwater for the principal aquifer is within the identified potential root zone for GDEs.

iii. Special Status Species: The critical species analysis included within the GSP should be broadened to include discussion of aquatic species that are supported by interconnected surface waters.

In Response to the Department's Comment #1 Groundwater Dependent Ecosystems: *The GSAs state:*

Depth to Groundwater: Comment noted. Groundwater elevations observed during spring 2020 were not significantly different than those observed in spring 2019. Almost no changes in groundwater elevations were observed where groundwater is shallow relative to the ground surface (i.e. areas of the subbasin where groundwater is encountered at a depth of 30 feet or less) and therefore use of spring 2020 measurements was deemed appropriate for establishing sustainable management criteria. The GSP has been updated with use of a minimum threshold of 80 feet below ground surface in where areas of Valley Oak have been identified. This is a change from 30 feet below ground surface as documented in the draft GSP. Information related to these GDEs is provided in Appendix O and the NASb GSAs are committed to monitoring GDEs as described in the added management action provided in Section 9.

Perched Groundwater: Comment noted. The GSAs have provided additional information within the GSP in Appendix O regarding areas of perched water. However, perched water areas are not in direct hydraulic connect to the NASb principal aquifer and the ability for GSAs to managed perched water is extremely limited and not required by SGMA.

Special Status Species: Comment noted. The GSAs have added the list of aquatic species referenced in CDFW's (see Appendix O). Additional analysis has been provided in Table 8-8 that provides seasonal rate and volume of streamflow depletion.

The Department's Reply is: *The Department appreciates the comparison of shallow groundwater depths between 2019 and 2020, the updated maximum rooting depth of 80 ft below ground surface for potential GDEs in areas where Valley Oak has been identified, and the addition of aquatic species in Appendix O and associated analysis of streamflow depletion in Table 8-8. The Department also appreciates the addition of the GDE Assessment Program Management Action and the planned*

incorporation of Normalized Difference Vegetation Index (NDVI) analysis to better characterize GDE water sources and vegetative health over time.

The Department continues to recommend characterization of GDEs that rely on perched aquifers, regardless of connectivity with the Principal Aquifer, to comply with 23 CCR § 354.16(g)) which requires identification of GDEs, defined as ecological communities or species that depend on groundwater emerging from aquifers or on groundwater occurring near the ground surface.

COMMENT #2 Sustainable Management Criteria (Sustainable Management Criteria; 8.4 Chronic Lowering of Groundwater Levels, 8.9 Depletion of Surface Water; starting page 8-1): Sustainable management criteria (SMC) are unlikely to protect against undesirable results for groundwater dependent ecosystems and fish and wildlife beneficial uses and users of groundwater and interconnected surface waters.

a. Issues:

i. Groundwater Levels Minimum Thresholds: The GSP projects that development and land use changes within the subbasin will result in increased groundwater use. Additionally, with climate change, some portions of the subbasin are projected to experience a climate-driven decline in groundwater elevations. The GSP uses the model-projected groundwater level declines at each representative monitoring site (RMS) to establish minimum thresholds (MTs) by subtracting this projected decline from a baseline set at the average of Fall 2014 and 2015 groundwater elevations (page 8-15). The GSP fails to contextualize that 2014 and 2015 were two consecutive critically dry water years that occurred during an extended dry period in the Sacramento Valley, wherein groundwater extraction increased to replace more than 70% of lost agricultural water supplies (Lund 2018). Though the GSP asserts that the MTs protect against undesirable results to ecological beneficial users (page 8-20), it is probable that environmental users of groundwater were already experiencing significant adverse impacts in 2014 and 2015 due to combined groundwater depletion and reduced surface water availability. These adverse impacts include stressed or dying riparian vegetation, poor instream habitat availability, and increased water temperatures (DFW 2019). It is inappropriate to rely on groundwater levels from 2014 and 2015 as a baseline from which groundwater could continue to decline before reaching the established MTs, as undesirable results will likely be experienced before MTs are reached.

ii. Depletion of Interconnected Surface Waters: As a result of the projected increases in groundwater use within the subbasin, the GSP projects that groundwater level declines along the interconnected Sacramento River will result in approximately 5,800 acre-feet per year (AFY) of surface water depletions. The GSP asserts that though the Sacramento River will experience depletions, municipal development along the Sacramento River that takes agricultural land out of production will result in a net increase in flows of approximately 17,200 AFY (page 8-40). Additional information is needed in the GSP to support this claim and ensure that environmental users are protected from undesirable results. The GSP does not provide information related to interconnected surface waters within the subbasin other than the Sacramento River, and it is unclear what effect the SMCs will have on depletions. Furthermore, these anticipated land use changes and concurrent reduced surface water demands are not within the control of GSAs. GSAs should anticipate future scenarios wherein they are accountable for mitigating interconnected surface water depletions attributable to groundwater pumping, instead of leaning on proposed land use change to reduce surface water demand, particularly when surface water rights are not under GSA management.

b. Recommendations:

i. Groundwater Levels Minimum Thresholds: The Department recommends the GSP reselect its chosen groundwater level baseline to a more representative hydrologic period for the subbasin, rather than relying on groundwater levels experienced during critically dry years. MTs should be updated accordingly.

ii. Depletion of Interconnected Surface Waters: The GSP should include a discussion of projected depletions of all interconnected surface waters in the basin, not only the Sacramento River, based on the established SMCs. The GSP should include additional detail in a table that summarizes the projected depletions, reduced diversions, and streamflow by month to facilitate comparison to depletions under existing conditions. In order to better support its claim that Sacramento River flow would increase over the SGMA implementation period, the GSP must provide additional details related to the underlying assumptions used in this calculation, including the following:

1. A characterization of the water rights that the GSP assumes will stop diverting water from the Sacramento River, including a discussion of how the water will be maintained instream to support surface flows.
2. The anticipated timeline for the conversion of land from agricultural to municipal use.
3. The anticipated timeline for groundwater pumping increases within the subbasin.
4. Contingency plans, triggered by specific monitoring metrics, that will initiate projects to avoid surface water depletions should the land use changes fail to offset the increase in groundwater pumping as anticipated.

In Response to the Department's Comment #2 Sustainable Management Criteria: *The GSAs state:*

Groundwater Minimum Thresholds: Comment noted. Additional information that supports the rationale for use of groundwater elevations from 2014 and 2015 has been added to Section 8.

Depletion of Interconnected Surface Waters: Comment noted. Additional information supporting the analysis for interconnected surface water has been added to Section 8.9. The anticipated timeline for land use changes and potential increases in pumping does not effect the ability for the NASb to reach sustainability. The established minimum thresholds and description of undesirable results as provided in the NASb GSP is protective of beneficial uses and users of groundwater within the implementation horizon identified in SGMA of 20 years.

Environmental Beneficial Users: Comment noted. Information related to GDEs is provided in Appendix O and the NASb GSAs are committed to monitoring GDEs Normalized Derived Moisture Index (NDMI) as described in the added management action provided in Section 9.

The Department's Reply is: *The Department recognizes that additional information was added to the GSP to describe the rationale for the use of groundwater levels from 2014 and 2015. The GSP suggests that because 2014 and 2015 are from the most recent decade of hydrological records, they are representative of current hydrology; the Department contends that two back-to-back critically dry years, though recent, are not representative nor are they an appropriate baseline. The additional information provided does not detail what monitoring or observation was completed during 2014 or 2015 to support the GSP's claim that no significant impacts to environmental users occurred during these years.*

*The Department appreciates the additional discussion of the impacts of MTs on vegetated GDEs and modeled streamflow depletion on Central Valley steelhead (*Oncorhynchus mykiss*) and Chinook salmon (*Oncorhynchus tshawytscha*). However, the GSP still does not include the information requested by the*

Department related to the discrete timeline of anticipated increased groundwater pumping relative to decreased surface water diversions. Though the discrete timelines may not impact the subbasin's ability to achieve sustainability over the full SGMA implementation period, real impacts to GDEs and environmental users of ISW may occur on a shorter time scale. The GSP also fails to provide the requested water rights information to support the plan's underlying assumption that water currently diverted for agricultural use will not continue to be diverted for an alternative purpose following municipal development. Without such information, the validity of the GSP's claim of a net increase in surface flows is uncertain. Accordingly, portions of the original comment remain relevant.

CONCLUSION

In conclusion, though the North American Subbasin Final GSP addresses several of the Department's comments, thoughtfully discusses beneficial uses of groundwater, provides detailed characterization of groundwater conditions in the subbasin, and incorporates robust modeling of future scenarios; the Department recommends continued improvements to the Final GSP's consideration of GDEs and environmental beneficial uses and users of groundwater and interconnected surface water, including fish and wildlife and their habitats. The Department recommends that DWR carefully consider the above comments when assessing whether the Final GSP is likely to achieve the sustainability goal for the Basin as required under SGMA statutes and regulations.

The Department further recommends that DWR fully consider the Department's comments, recommendations, and other available information concerning the Final GSP's consideration of GDEs and environmental beneficial uses and users when determining whether (1) to require the GSA to correct deficiencies in the Final GSP prior to the applicable statutory deadline; or (2) to determine that the Final GSP is inadequate due to incompleteness or significant deficiencies based on one or more criteria identified in SGMA regulations that have not been corrected prior to the applicable statutory deadline (23 CCR §§ 355.2(e) and 355.4(b)).The Department's comments indicate that the Final GSP contains the following discrepancies that may materially affect the ability of the GSA to achieve the sustainability goal for the Basin, and thus may warrant corrections to the Final GSP:

1. The assumptions, criteria, findings, and objectives, including the sustainability goal, undesirable results, minimum thresholds, measurable objectives, and interim milestones are not reasonable and/or not supported by the best available information and best available science. [23 CCR § 355.4(b)(1)] (See Comments #1, 2)
2. The interests of the beneficial uses and users of groundwater in the basin, and the land uses and property interests potentially affected by the use of groundwater in the basin, have not been considered. [23 CCR § 355.4(b)(4)] (See Comments #1, 2)

COMMENTS AND RECOMMENDATIONS

The Department's comments are as follows:

1. **Comment #1 Interconnected Surface Waters** (Groundwater Conditions, 5.11 Interconnected Surface Water; starting page 5-52): The GSP fails to include an estimate of the quantity and timing of depletions of interconnected surface water systems as required by 23 CCR § 354.16(f).
    a. *Issue*: The GSP identifies the locations of interconnected surface waters within the subbasin (Figure 5-31) and presents hydrographs that demonstrate the relationship between groundwater levels and surface water elevations. However, the GSP does not include information related to the quantity and timing of depletions from these interconnected surface waters as required by 23 CCR § 354.16(f).
    b. *Recommendation*: The Department recommends that the GSP include a table quantifying the volume of surface water depletions, by month, for all interconnected surface waters identified within the subbasin.

2. **Comment #2 Groundwater Dependent Ecosystems** (Appendix O): GDE identification, required by 23 CCR § 354.16(g), is based on methods that risk exclusion of ecosystems that may depend on groundwater.
    a. *Issues*:
        i. <u>Depth to Groundwater:</u> The Department recognizes and appreciates the effort put into identifying GDEs within the subbasin, including the assessment of both vegetation diversity and critical species dependence to inform relative priority. Further refinement and clarification of GDE identification methods used in the GSP will help to create a more robust analysis. Appendix O states that groundwater contours were developed using groundwater level measurements from Spring 2020 (Section 1.3, page 3), but then also states that GDEs were prioritized using 2019 depth to groundwater contours (Section 1.4, page 3). It is unclear which year of groundwater data was used in the analysis. Additionally, while the Department supports the use of seasonal high spring measurements, 2020 was a dry water year type for the Sacramento Valley. Analysis that relies on depth to water thresholds should incorporate data from a

representative hydrologic period that includes a variety of water year types, rather than from a single point in time. The analysis also assumes that groundwater must be less than 30 feet below the ground surface (bgs) to support GDEs based on the maximum rooting depth of Valley Oak (*Q. lobata)*; however, mature Valley Oak can access groundwater up to 80 feet below the ground surface (Howard 1992, Lewis & Burgy 1964). The use of a 30-foot threshold may incorrectly exclude Valley Oak communities within the subbasin from further consideration as a GDE.

ii. Perched Groundwater Areas: The GSP discusses locations within the subbasin that have a depth to groundwater of less than 30 feet and may also have areas of perched water, and potential GDEs from these areas were removed. The GSP does not sufficiently characterize the relationship between these perched groundwater areas and the Principal Aquifer, including the impacts of pumping or of seasonally elevated groundwater levels on the groundwater in these perched areas.

iii. Special Status Species: The GSP methodology includes an evaluation of "non-aquatic critical fauna" that may be present in the subbasin. Interconnected surface waters and their associated aquatic species are also a type of groundwater dependent ecosystem that must be evaluated within the GSP and considered in the development of sustainability criteria and analysis of undesirable results.

b. *Recommendations*:

i. Depth to Groundwater: The Department recommends that Appendix O be revised to clarify which year of data was used to create the groundwater elevation contours for the GDE analysis and consider how the methodology could be updated to integrate a range of water years for determining potential GDEs. The Department also recommends the GSP narrowly update the methodology for GDE identification for areas within the subbasin that underlie Valley Oak communities to reflect a potential maximum rooting depth of 80 feet bgs.

ii. Perched Groundwater Areas: The Department recommends the GSP include additional information characterizing the relationship between areas of perched groundwater and the Principal Aquifer. The GSP should discuss whether seasonal highs within the Principal Aquifer contribute to the perched areas, and whether pumping within the Principal Aquifer has the potential to deplete these perched areas that may support GDE communities. If the relationship cannot be adequately characterized, the GSP should conservatively include GDEs from these areas, particularly as

depth to groundwater for the principal aquifer is within the identified potential root zone for GDEs.

iii. Special Status Species: The critical species analysis included within the GSP should be broadened to include discussion of aquatic species that are supported by interconnected surface waters.

3. **Comment #3 Sustainable Management Criteria** (Sustainable Management Criteria; 8.4 Chronic Lowering of Groundwater Levels, 8.9 Depletion of Surface Water; starting page 8-9): Sustainable management criteria (SMC) are unlikely to protect against undesirable results for groundwater dependent ecosystems and fish and wildlife beneficial uses and users of groundwater and interconnected surface waters.
    a. *Issues*:
        i. Groundwater Levels Minimum Thresholds: The GSP projects that development and land use changes within the subbasin will result in increased groundwater use. Additionally, with climate change, some portions of the subbasin are projected to experience a climate-driven decline in groundwater elevations. The GSP uses the model-projected groundwater level declines at each representative monitoring site (RMS) to establish minimum thresholds (MTs) by subtracting this projected decline from a baseline set at the average of Fall 2014 and 2015 groundwater elevations (page 8-14, line 318). The GSP fails to contextualize that 2014 and 2015 were two consecutive critically dry water years that occurred during an extended dry period in the Sacramento Valley, wherein groundwater extraction increased to replace more than 70% of lost agricultural water supplies (Lund 2018). Though the GSP asserts that "no negative impacts were reported by beneficial users in the subbasin" (line 320), it is probable that environmental users of groundwater were experiencing adverse impacts due to combined groundwater depletion and reduced surface water availability. These adverse impacts include stressed or dying riparian vegetation, poor instream habitat availability, and increased water temperatures (DFW 2019). It is inappropriate to rely on groundwater levels from 2014 and 2015 as a baseline from which groundwater could continue to decline before reaching the established MTs, as undesirable results will likely be experienced before MTs are reached.
        ii. Depletion of Interconnected Surface Waters: As a result of the projected increases in groundwater use within the subbasin, the GSP projects that groundwater level declines along the interconnected Sacramento River

will result in approximately 5,800 acre-feet per year (AFY) of surface water depletions. Though the GSP presents information related to the projected change in groundwater pumping, seepage, diversions, and streamflow in Figure 8-7 (page 8-42), a table summarizing this information by month would clarify potential ISW impacts and facilitate comparisons to baseline conditions (See Comment #1). The GSP asserts that though the Sacramento River will experience depletions, municipal development along the Sacramento River that takes agricultural land out of production will result in a net increase in flows of approximately 17,200 AFY (page 8-41, line 907). Additional information is needed in the GSP to support this claim and ensure that environmental users are protected from undesirable results. The GSP does not provide information related to interconnected surface waters within the subbasin other than the Sacramento River, and it is unclear what effect the SMCs will have on depletions. Furthermore, these anticipated land use changes and concurrent reduced surface water demands are not within the control of GSAs. GSAs should anticipate future scenarios wherein they are accountable for mitigating interconnected surface water depletions attributable to groundwater pumping, instead of leaning on proposed land use change to reduce surface water demand, particularly when surface water rights are not under GSA management.

iii. Environmental Beneficial Users: The GSP does not sufficiently analyze potential impacts of the selected SMCs on environmental beneficial users of groundwater or interconnected surface waters. While the GSP does include sections that discuss the effects of the minimum thresholds for each sustainability indicator on each beneficial user within the subbasin, for the groundwater level MTs, the GSP states only that the groundwater level MTs "protect most known GDEs" within the subbasin (page 8-20, line 426). It is unclear what the GSP means by "most GDEs," and no further detail is provided about whether any analyses were completed that involve comparing the MTs at each RMS to nearby GDE communities and their rooting depths. Additionally, in its discussion of interconnected surface waters within the subbasin, the GSP does not analyze potential impacts to environmental users of surface waters, including aquatic habitat or species (See Comment 2(iii)).

b. *Recommendations*:

i. Groundwater Levels Minimum Thresholds: The Department recommends the GSP reselect its chosen groundwater level baseline to a more

representative hydrologic period for the subbasin, rather than relying on groundwater levels experienced during critically dry years. MTs should be updated accordingly.

ii. Depletion of Interconnected Surface Waters: The GSP should include a discussion of projected depletions of all interconnected surface waters in the basin, not only the Sacramento River, based on the established SMCs. The GSP should include additional detail in a table that summarizes the projected depletions, reduced diversions, and streamflow by month to facilitate comparison to depletions under existing conditions. In order to better support its claim that Sacramento River flow would increase over the SGMA implementation period, the GSP must provide additional details related to the underlying assumptions used in this calculation, including the following:

    1. A characterization of the water rights that the GSP assumes will stop diverting water from the Sacramento River, including a discussion of how the water will be maintained instream to support surface flows.
    2. The anticipated timeline for the conversion of land from agricultural to municipal use.
    3. The anticipated timeline for groundwater pumping increases within the subbasin.
    4. Contingency plans, triggered by specific monitoring metrics, that will initiate projects to avoid surface water depletions should the land use changes fail to offset the increase in groundwater pumping as anticipated.

iii. Environmental Beneficial Users: The Department recommends the GSP include additional analysis related to the impacts of the established SMCs on environmental users, including GDEs and interconnected surface water. The groundwater level MTs at each representative monitoring well identified for GDEs in Figure 7-3 (page 7-14) should be compared to the rooting depths of the identified vegetation in each GDE community (See Comment #2(i)). Monitoring of physical indicators of GDE health (i.e., Normalized Difference Vegetation Index (NDVI)) should be completed in addition to the continued monitoring of groundwater levels. The GSP should also include additional analysis to demonstrate that environmental users of interconnected surface waters would not experience undesirable results under the established MTs. The GSP

should explicitly discuss the impacts of projected depletions on surface flows, water temperatures, and aquatic species and habitat.

4. **Comment #4 Projects and Management Actions** (Projects and Management Actions; 9.2 Projects and Management Actions, 9.3 Supplemental Projects; starting page 9-3): Inclusion of additional demand management strategies would strengthen the GSP's list of supplemental projects.
    a. *Issue*: The planned and supplemental project and management activities included in the GSP focus on increased surface water supplies and delivery, conjunctive use, or water banking and recharge. Though the GSP indicates that the planned projects are expected to be sufficient to achieve basin sustainability, should the projects fail to produce the anticipated groundwater benefit or encounter unexpected delays, it may be necessary to implement additional demand management projects that could likely produce groundwater benefits within a shorter timeframe.
    b. *Recommendation*: The Department recognizes that the GSP discusses existing demand management activities within the subbasin, including temporary conservation measures and urban and agricultural water use efficiency programs (page 9-3, line 38). Additional discussion of potential program expansion or other demand reduction projects that could be implemented within the subbasin would strengthen the GSP's list of supplemental projects.

CONCLUSION

In conclusion, the draft GSP thoughtfully discusses all beneficial uses of groundwater, provides detailed characterization of groundwater conditions in the subbasin, and incorporates robust modeling of future scenarios; however, the GSP can further refine its management criteria to better avoid potential impacts to GDEs and interconnected surface water. The Department recommends that the North American Subbasin GSAs address the above comments before GSP submission to DWR to best prepare for the following regulatory criteria for plan evaluation:

1. The assumptions, criteria, findings, and objectives, including the sustainability goal, undesirable results, minimum thresholds, measurable objectives, and interim milestones are not reasonable and/or not supported by the best available information and best available science. [23 CCR § 355.4(b)(1)] (See Comments #1, 2, 3)
2. The interests of the beneficial uses and users of groundwater in the basin, and the land uses and property interests potentially affected by the use of groundwater in the basin, have not been considered. [23 CCR § 355.4(b)(4)] (See Comments #1, 2, 3)

3. The projects and management actions are not feasible and/or not likely to prevent undesirable results and ensure that the basin is operated within its sustainable yield. [23 CCR § 355.4(b)(5)] (See Comment #4)