Perez-Reyes, Marisa

From: Matt Parker <mparker@co.siskiyou.ca.us>
Sent: Monday, September 27, 2021 8:07 AM
To: Perez-Reyes, Marisa; Duncan, Katie
Subject: FW: Draft plan comments
Attachments: Ch2.docx; Ch3.docx; Ch4.docx

-----Original Message-----
From: David Webb <Dave.webb@shastariver.org>
Sent: Sunday, September 26, 2021 8:51 PM
To: SGMA <sgma@co.siskiyou.ca.us>
Subject: Draft plan comments

Please accept the attached comments to the latest version of the SGMA plan.

We would like to have it noted that we are filing under protest, in that the entire document has not been available for the entire 45 days, and that some of it is still not available, hence we were not able to review either all that has been posted, nor the entire document since some is not posted at all. At eh same time, we do recognize that DWR seems to not be willing to allow additional time for completion and proper review.

FOSR-001

Thank you.

David Webb

COUNTY OF SISKIYOU

Flood Control & Water Conservation District

Reviewer name: David Webb for Friends of the Shasta River
Submission date: 9/26/2021
GSP sections reviewed: Chapter 2

Chapter	Page	Section	Line/Table/ Figure #	Comment (*please delete example text below once you submit*)	
2	8		1	The numbers appear to be for the entire watershed. They should be subsetted out for the management area only.	FOSR-002
2	9		3	Unclear what the X and Y axes are. There should be a link to an electronic version that can be downloaded and viewed at such a scale as to be meaningful	FOSR-003
2			450-4	Check with Lisa Faris, but I think BSID has formally abandoned its right to Big Springs as a water source	FOSR-004
2	20		466	MWCD has a storage right to 35,000 af from the Shasta and ~14,000 af from Parks Creek, with no restriction on flow from the Shasta, and 150 cfs max from Parks Creek. And you should be more explicit about their gw usage since it has already been the target of an interference lawsuit. They pump gw from both the Pacy Wells and the Flying L pumps, and until the last few years their canal leaked to groundwater 20-30 cfs constantly when running full, which is now gone as a result of public funding for canal lining. Also MWCD has blocked public access to any of the data from the gauges below the dam, so they may not be worth mentioning.	FOSR-005
2	22		494	I don't think the SVRCD has had funding for operation of the Yreka Creek gauge for some years. Better check.	FOSR-006
2	23-4		519-68	This contains internal inconsistencies and errors, is overly long. Needs to be completely rewritten	FOSR-007
2	26		637-45	2014 data should be updated from current county records. Additionally, note should be made that the reduced property tax income to the county has not been offset by state subvention funds since 2009.	FOSR-008
2			650-658	This sections should include information on the impacts of the recently lost lawsuit where the county is now required to do CEQA analysis on new well permits, providing a basis for future gw demand management.	FOSR-009
2					

COUNTY OF SISKIYOU

Flood Control & Water Conservation District

2	27-28	660-701	This illegal use needs to be put into perspective, with the range of water usage estimates converted to estimated acre feet, with comparison to other agricultural uses of groundwater in the Shasta Valley. The county is already under fire for claimed racist treatment of illegal growers. Not adding this perspective adds to that issue.	FOSR-010
2	28	712-19	This could be a whole lot clearer. Rewrite please	FOSR-011
2	29	726-7	This ignores the de facto replenishment from the extensive network of irrigation ditches. And it should be noted that public funding is steadily reducing that recharge through payments for pipelines and canal lining, both of which need to be factored into availability calculations going forwards from baseline years.	FOSR-012
2	30	738-69	You really should mention the lahar forming the bulk of the flat portion of the Shasta Valley, and much of the gw basin, and which is responsible for forcing water in Pluto's cave basalt to surface as springs.	FOSR-013
2	35	Fig 8	Text of caption does not quite match illustration	FOSR-014
2	43-4	814-	Completely ignoring the lahar filling the Shasta Valley presents a very outmoded interpretation of surficial geology. See USGS Bulletin 1861	FOSR-015
2	44	819-21	It should be clearly noted that the Hornbrook formation does not yield potable or agriculturally useful water and serves as the lower extent of usable aquifer space	FOSR-016
2	48-9	975-980	This needs to be re-written so as to be meaningful to the ordinary reader	FOSR-017
2	78	1480	Range of data years not correct.	FOSR-018
2	85	1586-94	For proper understanding, merely saying gw levels are stable doesn't impart the most important pieces of the picture. More accurate would be to say something along the lines that overall, full recharge occurs by the spring of each year, but because measurement are taken only spring and fall nothing is known about the timing or maximum depth of summer drawdown as it may be changing over time.	FOSR-019
2	86	1615-6	It is also important for domestic uses which must be noted here. Additionally, the importance for fish should be further highlighted with the need for gw levels to be sufficiently high to sustain cold gw discharges in the stream bed and from springs feeding the river. Without that discharge no cold water fish habitat will survive, and its maintenance will necessarily serve to guide future gw management	FOSR-020

2	86	1621-2	Reference is made to section 2.3, which doesn't seem to exist. Why not go into gw storage here along with the following maps, rather than making a reader jump around?	FOSR-021
2	87-91	figs	These figs would be improved if you added the east-west roads--HY 3, A-12, Louie Rd and Jackson Ranch Road.	FOSR-022
2	87	Fig 35	Elevations throughout should be converted to MSL also with a 2nd map set to show that, since surface elevation is highly variable, hence depth to water is largely meaningless, especially without surface elevation..	FOSR-023
2	93	1627 ff	Mention in this background section needs to be made of the absolutely crucial role gw discharge to surface water plays on surface water quality in terms of temperature, and while gw temperature isn't going to change, reduction in gw discharge will/has negatively impacted surface water quality and placed an possibly insurmountable burden on surface water users in terms of meeting TMDL goals without integrating gw depletion into TMDL targeted efforts.	FOSR-024
2	94 ff	1668 ff	You fail to provide any insight into the marked degradation in water quality resulting from extraction from the Hornbrook formation vs. overlying sediments. That degradation effectively makes the Hornbrook unsuitable for any current uses and limits water availability in the basin to those sediments overlying it only.	FOSR-025
2	94	1675-77	In this section it is not clear, but it appears that what may have been done is approach the contamination question backwards--taking existing wells and using them as the basis for a monitoring plan. A proper approach would be to first determine what areas and constituents needed to be monitored, then looking to see if any existing wells were located where needed. If so, their usage would be appropriate Limiting investigations to only existing wells is completely faulty and needs to be done properly.	FOSR-026
2	95	1718	Refers to Appendix 2-b, which is the correct title as posted, but the document itself is called Appendix C in the headers and title sheet.	FOSR-027
2	105	2055-59	Surface diversion has an arguably greater impact on flow most of the year than any of the natural factors except winter floods. As such, to keep flow variation in perspective, irrigation diversion absolutely must be pointed out here as taking 90% or more of the total natural flow at times in nearly all summers,	FOSR-028

				overwhelming other factors.
2		108	2095-8	Data was presented to the consultants by representatives of the water master district strongly indicating that in 2020 considerable losses of surface water to groundwater was occurring between the CDEC gauges SPU and SRM. While not part of any planned study, the implications and magnitude are too great not to be mentioned here. Also important is that the apparent placement of the SRU transect near the apparent confluence of Julien Creek may have inadvertently left it influenced by stream underflow from Julien creek and its near-stream associated springs to the west of the Montague Grenada Road. As such, its findings should be clearly explained as not necessarily representative of any other portion of the river, and the data from between SPU and SRM should be included here to offset any misperceptions.
2		110	Fig 46	Need a more detailed location of transects please.
2				
2	120 ff, 126,	2.2.2.7	2230, 2331-3	The GDE screening use of DWR's identified irrigated areas in an effort to exclude man-made wet areas yields faulty results in that (in the words of UC Extension agent Dan Drake describing one such area in particular) there are irrigated areas of natural wetland which he described as " an irrigated swamp". That situation of rising groundwater creating small to large wetlands is relatively common in the Shasta Valley with its confused surface and subsurface geology, and the impossibility of fine-tuning flood irrigation to not irrigate such wet areas if the surrounding areas below the ditches need irrigation. Failing to identify and capture the seeps, springs, and wetlands effectively eliminates many early-warnings of declining groundwater, and will ultimately result in decreased surface flows. Many such areas are also irrigated, or surrounded by irrigated lands, making them impossible to identify by DWR. There needs to be further study, perhaps along the lines of performing remote sensing of leaf moisture content in the Fall of the year well after irrigation has ceased to identify areas with leaf moisture levels higher than surrounding areas, regardless of whether irrigation ditches are present near-by or not. Large areas meeting this description can be found south of the Parks Creek crossing of HY 99 and north of the Edgewood Exit , north of the Hy 3 crossing of the Shasta River, South of

FOSR-028 contd.

FOSR-029

FOSR-030

FOSR-031

			the Montague-Grenada Road Crossing, and along a broad swath of the little Shasta west of Harry Cash Road and East of Montague, and elsewhere. In addition, the tiny maps in the document do not allow review of any specific areas for inclusion or exclusion and are useless eye candy. GIS data needs to be posted and accessible and also detailed PDF maps so the general public can draw proper conclusions.	FOSR-031 contd.
2	130 ff	2394-2400	This appears to be saying that an acceptable depth to gw will be at the extreme end of the maximum depth of willow rooting, or even beyond. That provides no margin of error for climatic fluctuations, and ignores the necessity of water reaching the surface in order to allow seedling propagation. If this is correct, it is not at all conservative and needs to be reduced to some mid depth value for dry years, and near surface for wet years. The same applies further on for other gw dependent species also. If this is incorrect, the topic needs additional clarification please.	FOSR-032
2	133-3	2412-2433, fig 58	Given the unique geology of much of the Shasta Valley, there needs to be some sort of validation that "*These grid or raster geospatial datasets were developed by interpolating between statistical representations of observed groundwater elevations for each three-year rolling period using data obtained from the California Statewide Groundwater Elevation Monitoring (CASGEM) Program using the well-establish kriging method*" can in fact be accurately used to interpolate between known points. Common methods won't always work in uncommon situations, and there is no discussion/documentation of their applicability in an area dominated by the largest volcanic lahar on the planet and with large areas of volcanic deposits which collectively funnel groundwater to the surface or restrict it below the surface in ways not consistent with conditions found in purely alluvial areas. See also lines 2679-82 in Chapter 2 confirming this complexity. Finally, depth to gw seems to be a relatively useless metric in an area of highly varying surface elevation, again as different from typically fully alluvial areas. All gw data should be also presented in height relative to mean sea level.	FOSR-033
2	135	2434-2437	The processes described seem reasonable, assuming the data is accurate, but in fact it necessarily relies on multiple layers of approximations. As far as I know,	FOSR-034

				elevation for most of the Shasta Valley is only available as 30 m digital elevation models (DEMs), making comparisons of measured depth to gw at one well location impossible to compare to depth to water at another potential GDE location, since the electronic surface elevations are not nearly sufficiently accurate at the elevations involved. As with the rest of the document, there isn't sufficient time to adequately research this other than to bring it up as an apparent problem. While the normal accuracy of 30 M DEM's is stated as "3.04 meters." It is followed by the following caveat "It is important to note that the vertical accuracy actually varies significantly across the U.S". Given the target depth for willow roots of 13', or 4 meters, there is ample room for mis-classification of all species.	FOSR-034 contd.
2	136		2504-09	This paragraph claims the analysis (described in our prior comment above) describes "the maximum possible extent" of vegetated GDEs. As stated above, surface elevation data appears to be inadequate to support the analysis used, and hence the conclusion stated. It goes on to note that it is not a definitive determination, but the plan includes no sub sample analysis type project proposal to validate its accuracy, and instead will leave unknown acres unprotected.	FOSR-035
2	138-9		2513-4, fig 60 and 61	Sufficient data is not provided in appendix 2E as here stated. We have asked for numeric data used to produce the two figures, and the sources of that data and have received no response as of 9/26. This appears to be the validation period for the model, and a cursory look suggests multiple problems with the data assumptions built into the figures. Those problems cannot be evaluated without the above information. Included are: A static leakage value from canals despite ongoing canal lining, seemingly static lake leakage into gw, despite variable lake elevations and consequent leakage, increasing gw leakage into streams over time, despite expanding gw usage, and apparently unrelated to water year type, and no change in streams leaking into gw, despite presentation of data suggesting just that in the course of plan development..	FOSR-036
2	143-5	2.2.3.2, 2.2.3.3	Tables 13-18, 2637-2656	Collectively these pages and lines describe values used in depicting annual water budgets for a ~20 year period from 1991-2018. No source of the data values sued is provided. No explanation is given for how the values are	FOSR-037

FOSR-037 contd.

prorated for the various water years, The absence of this sources and methods information makes proper review and commenting on all terms impossible. Other published data strongly suggests significant inaccuracies exist in the numbers used. This information was presumably used to calibrate and validate the model outputs. If so, the model itself needs to be re-configured: As an example, Appendix 2-B page 23 includes a map of the longer leaky ditches within the watershed. Looking at just one of those explicitly identified ditches--the Montague Water Conservation District Main Canal--A study by Willis and Deas in 2010 for the Montague Water Conservation District (District) determined that the canal lost 28 cfs on a continuous basis when running at capacity. That quantity over a 180 day irrigation season equates to 10.1 TAF. In table 13 and 14, the **maximum** value for canal leakage to gw for the entire GW basin and watershed both is listed as 10 TAF, less than the measured leakage from this one ditch alone, let along all the other major and minor ditches throughout the watershed. To offset this error, some other factor(s) must be proportionally smaller than what is real, and a model built to target those inaccurate numbers will necessarily predict poorly. The other values shown are not so easily disputed in the absence of more source information, but would seem to be equally suspect. This error is compounded by the District's ongoing efforts to eliminate that leakage, and they currently have ~ $4 million in public grant funds to complete the lining of the canal, with an obvious impact on gw supply. Nowhere does the model make mention of subtracting an appropriate amount of recharge to compensate for this loss. Instead it calls for spending more public money to duplicate the effect of leaky ditches with MAR type projects. A proper plan should address this. It is also worth noting that the District doesn't necessarily operate for a full irrigation season in a dry year, nor does the Grenada Irrigation District, which also utilizes an unlined canal reported in their own documents as losing as much as 12 cfs when full, making for what should be a dynamic amount of canal leakage to gw value in the water budget, while the chart shows it as essentially straight line amount through all water year types. It appears that numbers have been over simplified with unknown consequences.

2	145	2605-7	The word "enhanced" while technically correct, presents the opposite feeling than what is needed to characterize conditions. Exacerbated would be a better word.	FOSR-038
2	146	2708-10	The reduction in discharge isn't caused solely by the absence of natural recharge, but is also reduced by GW pumping. Since this is a plan leading to management of gw usage, its impacts should never be ignored.	FOSR-039
2	146	2717-8	This sentence should include not just reduction in precipitation , but also reduction in anthropogenic recharged, as from ditch and canal lining, projects which should include offsetting measures if publicly funded.	FOSR-040
2	146	2722-4	The claim that climatic reductions in recharge will not cause overdraft is not supported by the identified consequences in these sentences--all of these are undesirable effects. GW usage and hence what constitutes overdraft is going to shift in harmony with gw supply in order not to cause a diminishment of surface flows.	FOSR-041
2	146	2724-2726	This concept is not given proper adherence elsewhere in the document when talking about monitoring--The amount of decline in gw levels is going to be apparently related to a great degree to the underground flow rate/underground porosity. Nowhere is that factor captured in changes in gw elevation standards proposed. I.e. all wells are treated as equal in terms of % decline before requiring management action..	FOSR-042
2	148	2797-8	No factual basis is provided for this assertion. It should be removed here and elsewhere.	FOSR-043
2	150	Fig 66	This is too small to be useful. It needs to be available full sized electronically. The apparent if slight increase in discharge of gw into streams needs to be explained. Nowhere has that been done.	FOSR-044
2	151	2826-8	Her and elsewhere this plan fails to recognize the critical role of gw in supplying cold water to the system, and the fact that existing usage levels are already significantly diminishing that cold inflow, jeopardizing attainment of the TMDL, further endangering coho salmon, and putting Fall Chinook salmon more at risk.	FOSR-045
2		2826-8	The claim that the sustained yield for the Shasta Valley is 42-45 TAF/year hasn't been substantiated anywhere. AS such it is an unsubstantiated assertion here	FOSR-046

			and absolutely needs to have its basis fully documented. That volume translates to 115-125 net CFS on a continuous basis for a 6 month growing season. That translates to 10,500-11,250 acres cropped with 4' of water per acre. In 2010 DWR estimated that approximately 10,200 acres were irrigated with just GW, an additional 1,230 acres were irrigated with a combination of surface and ground water, and no accounting was made of domestic use. At best there is no room for further expansion and that should be clearly noted. Also domestic use and illegal use needs to be factored in, along with planned reductions in gw irrigated acreages as recharge from canals is eliminated over time. We appear to have actually to have exceeded supply already, assuming that 115-125 cfs is even sustainable, which remaining instream flows say absolutely is not..	FOSR-046 contd.
2	151	2816-2822	While the assertion that the basin is not in overdraft, the previous comments suggests we are right on the edge. Beyond that, the experience of people whose wells have gone dry suggests that the out dated definition that looks only at long term ability to regain a spring-time gw level completely fails to protect gw users in mid summer if heavy irrigation use draws down summer levels below well depths, yet winter precipitation and soil porosity is still sufficient to allow full recharge. Hiding behind this interpretation does the citizens of the county no good, and only highlights the failure of the count to allow designating special management areas to address those areas experiencing summer water shortages. Reliance on this definition is a violation of state policy *" It is the policy of the State of California that every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes"*	FOSR-047

COUNTY OF SISKIYOU

Flood Control & Water Conservation District

Reviewer name: David Webb for Friends of the Shasta River
Submission date: 9/26/2021
GSP sections reviewed: Chapter 3

Chapter	Page	Section	Line/Table/ Figure #	Comment (*please delete example text below once you submit*)	
3	6		155	Appendix Z should read Appendix 3-A	FOSR-048
3	7		167-74	It would seem prudent to have these needed study items consolidated into a master PMA list to facilitate future funding.	FOSR-049
3	7		178-93	If the collection of the indicated data is needed, then there needs to be a fall-back approach identified to be utilized when/if voluntary measures fail to yield needed results. More detail is needed in terms of where the identified data is needed, at what well density, etc.	FOSR-050
3	8-11		maps	These maps are somewhat redundant, are too small to convey much useful information, and there is an excess of white space. The maps could be larger, and have key roads on them for helping know what is where.	FOSR-051
3	12		221-5	PMAs should be recognized as being made up of both actions taken, **and actions avoided/not taken.** The county has made it clear that any actions that will reduce existing gw usage are going to be stringently avoided--an example of actions deliberately not taken. Monitoring wells should be adequately distributed in areas where those actions avoided are likely to have undesirable impacts to adjoining gw users and or ISW.	FOSR-052
3	12		236-7	This sentence imparts no useful information. If it is supposed to be saying something it needs to be written.	FOSR-053
3			246-50	Activities on the West side of the River need to be tracked and monitored separately from those on the East side. Likewise Pluto's Cave Basalt really needs its own monitoring plan with triggers and actions.	FOSR-054
3	12		256-8	While they may lack numeric data for depth to water over multi-years, the fact that domestic wells near A-12 are going dry should be treated as a long term trend if the owners can indicate that in past years no such problems existed	FOSR-055

COUNTY OF SISKIYOU

Flood Control & Water Conservation District

			and as a result of declining water levels, now they do. With luck some or all of them will have a reliable depth to water at the time of drilling, to be compared to current problematic depths, providing an indication of long term trends.	FOSR-055 contd.
3	18	281-4	It would seem prudent to add to the list of projects the securing of extra well loggers to be standing by so that wells deemed potentially needed can be monitored on a preliminary basis and/or added immediately should they prove to be essential to proper management. they would also be good to have in the event of logger failure.	FOSR-056
3	18	286-7	Given the importance of the wells supplying Lake Shastina, it seems like they should be immediately added to the monitoring network if the CSD is willing. Specific outreach to them is in order.	FOSR-057
3	18	288-90	It seems likely that DWR guidance for well density is poorly suited to a volcanic area such as the Shasta Valley, with its convoluted and confused geology and hence hydrology. that should be clearly noted so as to allow finding funding for a greatly expanded monitoring network.	FOSR-058
3	22	305-8	2x annual monitoring may be good enough for some purposes, but protection of domestic wells in a meaningful fashion requires near-real time monitoring during critical periods. There should be a separate focus on meeting domestic needs in near real time, with monitoring, triggers and actions defined.	FOSR-059
3	22	318-21	It appears that the SWGM cannot provide a numeric value for Storage as the text here states, but only an indication of whether it is increasing or decreasing or staying the same based on gw elevation. Is this correct? If so the language needs to be corrected. If not, additional information needs to be included in Appendix 2-E to explain how a model utilizing cross section data with an unknown boundary between usable water bearing strata and the Hornbrook formation, with seemingly no data known for subsurface porosity, and gw levels at the edge of the river varying from above and below stream water level, is able to estimate volume of groundwater. Perhaps an illustration.	FOSR-060
3	23	363-6	Developing a plan based solely on what is available free or cheap seems arbitrary at best. It would be more appropriate to first develop an ideal plan, then see what if any existing wells approximate it. After that others need to be	FOSR-061

			secured. Having such a plan should facilitate securing funding for additional wells.	FOSR-061 contd.
3	24	366-7	This speaks to the need for equipment, specifically a down-hole camera to be used to capture screening details. Use of it might also help to further validate well logs, and cause those not accurate to be discarded from use.	FOSR-062
3	24	367-8	USGS examined 21,400 well logs (as reported in USGS Bulletin 1766) in eh Central Valley, and found that only 590 of them had sufficient information on screening and water depths to be usable in assessing gw availability in the Central Valley--2.8%. We should expect no better here. A program needs to be established and funded where-by a trained geologist accompanies drillers to perform well logging in key areas when wells are being drilled there, along with a down hole camera to capture and/or validate well log information or add to it.	FOSR-063
3	24	381-2	Does it matter if a well to take a water sample from is domestic or Ag? Might other parameters matter more especially water source depth and proximity to known or suspected sources of Water Quality problems?	FOSR-064
3	27	397	It seems as if a plan should have sequential steps evaluated for relevance via the prioritization process, then organized into a table, making it clear that each is an essential step that is part of a well organized plan. This SGMA plan is long on explanation, which is good, but short on identified and organized action items. That really needs to be fixed. Here, there needs to be an action item explicitly committing to doing something specific with regards to adding more wells and/or drilling dedicated wells, or at least a process for deciding those details.	FOSR-065
3	27	408-10	Section 3.3.4.1 really doesn't provide any enlightenment on where and how and how many additional wells will be selected.	FOSR-066
3	29	Fig 6	Description does not match illustration. Illustration needs to be made clear--is it hypothetical for the Shasta Valley, or data based? Does the table refer to the 70 cfs discharge or 35 cfs?	FOSR-067
3	29-30	487-95	While this methodology could be able to work well given proper targets, there seem to be unrecognized issues that need to be resolved before it can hope to be reliable. First, aquatic organisms do not live on 2 year averages, or any	FOSR-068

			other long term metrics. They live or die in the moment, depending on river flow, temperature, and dissolved oxygen levels. Properly protecting GDEs and ISW will require a real time monitoring and response process, not one apparently intending to look at 2 years of data prior to taking anything seriously, and even then perhaps not acting on those observations other than study them more. As a "Plan" this needs to recognize that reality and specify triggers and actions to be taken. Secondly, , many diverters, either by choice or at the direction of the water master do not divert their full water right continuously. Somehow that needs to be captured in a real time basis. At present that is not possible and needs to be created ASAP so as to utilize the full 5 year window. Third, from 20+ years of working with irrigators, developing irrigation efficiency studies, and educating myself on irrigation practices, it is painfully obvious that no one is 100% efficient. 50% is as good as is normally encountered. Persons with difficult to irrigate ground, or excessive water rights can do even worse. The excess water they apply is not consumed, and in instead generally finds its way back to the river, either very quickly as surface tailwater, or a little more slowly as subsurface return flow. The rapidity of those process can be visualized by the response of the river at the end of the irrigation season when the river rapidly rises to a static flow, but doesn't rise up then decline as diversion ceases and tailwater continues to supplement natural flow. Having the water master inform you of the gross diversion Q every 2 weeks is of little or no value in terms of determining surface depletion or meeting the minute by minute needs of aquatic systems. Somehow you will have to arrive at a real time value for ET in order to be able to know what the depletion is from surface diversion. Finally, as a general observation the SPU gauge seems far more useful as an index of GW discharge to the stream from nearly all sources than would a complicated process of trying to work out a water balance with multiple users doing unpredictable things as the whim strikes them. FOSR-068 contd.
3	30	Table 4	SV02 seems to be oddly placed to monitor GW levels for anywhere except very close to where it exactly is. I have seen no explanation as to why this FOSR-069

			location was chosen--it appears to have been arbitrarily selected on some other basis other than functionality. It is completely unclear how it can be expected to be representative of GW levels anywhere else, especially in areas where GW is discharging to the stream. Review of data from SRM and SRY suggest that about 5-10 cfs is added to stream flow between SRM and SRY in the absence of precip., suggesting that GW is of little significance between those two stations, especially when compared to the 70-150 cfs that discharges tot eh river upstream of SPU, where monitoring of gw levels would seemingly be far more useful. This site either needs to be fully justified vs. other potential sites, or some other site(s) than can be justified chosen. Given the acknowledges uncertainty of how best to properly manage gw in the absence of adequate information, it would seem far more sensible to monitor multiple sites in the expectation that one will be unpredictably better than he others, rather than arbitrarily settle on one location and hope for the best while waiting for 5 years to discover no useful information was gained. These observations are supported by lines 871-5 in this document, ch 3.	FOSR-069 contd.
3	30	509-11	While a target of 2032 may or may not be reasonable, I have not seen any specific steps identified that will make addressing the details of the Little Shasta any easier or more doable in 2032 than it is now. Data gaps, along with proposed steps that need to be taken to fill them need to be identified, along with a timeline for accomplishing them.	FOSR-070
3	31	513-521	The validity of this approach isn't immediately apparent, and needs to be more fully developed and explained especially with regards tot eh rationales used. In >30 years of driving I-5 over Parks Creek, and always driving in the fast lane when going across the Parks creek bridge so as to be able to see the creek where it crossed the Mills ranch low water crossing under I-5. In all those years, I have never seen a no flow condition other than this summer. I question if it should be adopted at the expected target prior to initiation of monitoring. Both Parks Creek has spring flows both above and below the "dry reach", flow that is in large part diverted. Again, I am not sure exactly what is being tracked by this process. The Little Shasta has substantial flow upstream of the dry reach, again diverted, and possibly about to be supplemented by	FOSR-071

			1707 water from the Hart Ranch. Again, just how this process yields useful information isn't clear.	FOSR-071 contd.
3	31	522-3	These two sentences seem contradictory--will the monitoring be continuous or 2x annually?	FOSR-072
3	35	599-605	"Excessive" needs to be defined or described, as does "adverse". Without definition this section is meaningless.	FOSR-073
3	36	614-5	Selecting as a target the drying up of domestic wells as an acceptable and anticipated outcome when it could be prevented by proper management and sharing of eh GW resource is not acceptable as a planned approach. I hope the people likely to be affected are outraged. Will your recommend red tagging homes with no water supply for that portion of the summer when there is none?	FOSR-074
3	36	638-42	This 75th percentile and 10% buffer seems to be completely arbitrary, with no basis for determining if it is protective of all uses. Additionally, it appears that it would allow pockets of severe impacts to the functionality of most wells, as long as elsewhere in the watershed things were doing better enough to meet the 75th percentile overall. Given the complicated geologic conditions and substantial unknowns, this doesn't seem like an acceptable approach. Something more protective of domestic users along with GDEs and ISW needs to be selected, especially for the first 5 years. It needs to be recognized that all existing wells almost certainly have been adequate for meeting domestic needs for all years since they were drilled, until the last 2 years. That potentially decades long history shouldn't be ignored, just because a depth to water value is unknown. It is known that the depth to water was above the level of the pump until excessive extraction relative to supply occurred in 2020 and/or 2021.	FOSR-075
3	40	720-21	The Shasta River jumps up within 2-3 days of the cessation of most irrigation on or before October 1, regardless of any precip. That flow is a direct measure of the then-impaired gw discharge to the stream. This sentence appears to belong in the Scott watershed, not the Shasta	FOSR-076
3	40	723	This sentence appears to refer to the Scott River also.	FOSR-077
3	40	727-28	This sentence appears to refer to the Scott River also.	FOSR-078

3	41	751-2	It needs to be noted that adverse impacts happen to junior water users in all or essentially all water year types (i.e. GID always gets curtailed sooner or later each summer). That is easy to document. Equally important, aquatic organisms are negatively impacted each year as a result of low flows, excessive temperatures, low levels of dissolved oxygen and passage barriers. The presence of those impairments should be sufficient to define a gw dependent ecosystem as in chronic overdraft during each summer and Fall. there is certainly no need to wait for 2 years in a row of some other impacts to make that determination. This has been the case since 1916,	FOSR-079
3	42	796-801	The multiple deficiencies of this approach were described above.	FOSR-080
3	44	842	Artificially imposing the "Fall Minimum" (plus buffer?) as an acceptable target is likely to result in reproductive failure when GDE plants generally need surface water for seed germination, followed by a slow decline in water level below the surface. This will potentially yield the same results as are seen in the Shasta River at eh beginning of the irrigation season when water levels unnaturally drop in advance of the release of willow seeds, effectively eliminating natural recruitment.	FOSR-081
3	44	844-5	It seems unlikely that satellite imagery will be able to discern the above reproductive failure, but will instead track the presence of mature over story plants until they get old and die, with nothing to replace them. By that point cause and effect are likely to be unlinked in people's minds.	FOSR-082
3	45	849	Again, selecting 100 cfs as the MT appears to be entirely arbitrary, especially given that Figure 10 shows that flows that low only occurred in one unusually dry year since 2010. At this point, there would seem to be sufficient data to select targets based on average conditions or past water year types for which we have data, pending the collection of more data, not the lowest number available. Setting a low number will only provide an opportunity to allow additional gw development to take place while the next 5 years pass, assuming they are normal water years and not a continuation of drought. Adding to the existing overdraft condition will only make future management harder. In the face of considerable uncertainty, a conservative approach should be taken.	FOSR-083

3	45	856-7	To be useful, it is necessary to know the surface elevation of the river closest to this well--what is it vs. the MSL elevation of the water target in this well?	FOSR-084
3	45	857	This depth to water appears to preclude the establishment or survival of any GDE native to the Shasta Valley. Please explain how that relates to line 855.	FOSR-085
3	45	Table 8	Suddenly this table says the MT can now be 80cfs (20% less than 100 cfs). Nowhere is that mentioned nor justified. 100 cfs is already unreasonably low. This is bait and switch. If a 20% buffer is needed, then the MT should be set 20% higher than any acceptable minimum, or 125 cfs.	FOSR-086
3	45	864-8	The importance of these lines is not clear and they need to be better explained. Historic data needs to be supplied for this well to allow the numbers presented to be evaluated.	FOSR-087
3	49	1003-4	No adequate justification is provided for limiting water quality tracking to these tow constituents only. In addition, language in lines 1073-5 acknowledges that subsurface gw flows in any direction are possible in the presence of heavy gw pumping, potentially mobilizing naturally occurring contaminants from where they are naturally found to areas where they won't be expected nor looked for. Less frequent but periodic monitoring is needed to provide indications of this should it begin to occur.	FOSR-088
3	51	1096-7	I have looked through the Harter reference, and can find no justification for the statement here to the effect that Shasta Valley CAFO stocking densities are not of concern. As such, that assertion is not supported by any facts and must be seen as arbitrary. Please provide a page number if I am mistaken.	FOSR-089
3	61	1349-51	I was unable to find any such reference document. Please provide a proper link and/or title	FOSR-090
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COUNTY OF SISKIYOU

Flood Control & Water Conservation District

Reviewer name: David Webb for Friends of the Shasta River
Submission date: 9/26/2021
GSP sections reviewed: Ch 4

Chapter	Page	Section	Line/Table/ Figure #	Comment (*please delete example text below once you submit*)	
4	2		60-3	The GSA should be explicitly identified as having responsibility for commenting both in favor and opposed to activities, both those brought to it for endorsement, and other publicly funded activities that further or retard GWMP goals	FOSR-091
4			80-5	The plan fails to live up to this goal, particularly in regards to its failure to in any way acknowledge or address the absolutely essential role discharged groundwater plays in providing cold water refugia and in overall water temperature protection.	FOSR-092
4			88-9	Again, as a responsible management agency the GSA should be prepared to speak up to both support and oppose future proposed activities. Merely staying silent on detrimental projects isn't acceptable.	FOSR-093
4			131-3	I have not seen criteria for rejection of any project, just higher or lower scores, with no suggested threshold for rejection either as inadequately beneficial vs. cost, or likely to cause harm. That leaves the door open for "smokescreen" and "sweetheart" projects	FOSR-094
4	9		Table, row 2	In addition to leasing, higher priority should be given to permanent purchase of water. Leasing is appropriate for temporary situations. These issues are not temporary.	FOSR-095
4	9		Table, row 3	"irrigation efficiency" should never be given blanket endorsement--such projects often lead to an expanded irrigation footprint, reduction in anthropogenic recharge, and the transfer of "saved" water to more upstream junior users. Where mentioned language should include something along the lines of "carefully vetted" irrigation efficiency projects "scrutinized to assure no unintended consequences result". Particular scrutiny should be given to NRCS projects, in that NRCS is legislatively constrained to looking at only "on farm" impacts for the project recipient, not community, basin	FOSR-096

			wide or off farm unintended consequences.	FOSR-096 contd.
4	10	Table, row 2	ILR sounds like a benign approach, but to the extent that it allows a diminution of gw discharge to the stream by replacing it with a similar volume of the mixed natural water and tailwater that constitutes current river flow, it undermines essential water quality needs and goals in terms of water temperature and potentially nutrient loading. It is often unlikely to be overall beneficial at meeting the combined water management goals the river must achieve from all regulatory agencies.	FOSR-097
4	10	Table, row 3	It is inappropriate to propose large physical project such as this without first doing a preliminary engineering study to document its likelihood of success. Nowhere is that essential first step proposed.	FOSR-098
4	10	Table, Row 4	This approach also needs to have a preliminary study and action plan in place well before any needed implementation so that actual implementation can be carried out in a fair and effective fashion, with minimal surprises or discussion-related delays. No such study and plan development is proposed anywhere, effectively preventing groundwater curtailment as a real option.	FOSR-099
4	11	211 ff	Significant portions of this project have been the subject of a Notice of Violation from the SWRCB for violation of state water law. It is an example of a (deliberately?) flawed examination of project details before investing money in preliminary studies, and/or the preparation of funding requests. Endorsing projects with illegal components undermines the credibility of the GSA and will impact the future effectiveness of it.	FOSR-100
4	12	225	This project needs to be expanded, especially in the area between river mile 15.5 and 31 that becomes a losing reach over the course of the summer under current gw usage conditions.	FOSR-101
4	12	236	As of 9/22 this appendix appears not to exist	FOSR-102
4	13	264-73 ff	Needing to be added here are projects to perform preliminary engineering studies of most Tier 3 actions, to complete instream flow studies so as to quantify the availability of "excess water" for storage projects or MAR, to define likely benefits of proposed MAR experiment, funding for water acquisition, funding for well installation to fill data gaps, funding for hiring a qualified geologist to accompany well drillers to prepare reliable well logs,	FOSR-103

			either local legislation requiring above geologist on wells, or incentive payment to landowner and driller for allowing geologist to log well while being drilled, funding or additional piezometer transects between rm 15.5 and 31, and elsewhere, studies to quantify accurately the recharge occurring from unlined ditches so as to respond appropriately as they become lined over time, studies to define underground transit times in various areas to set a foundation for evaluating recharge and water banking proposals,	FOSR-103 contd.
4	14	309	Add "canal leakage" to the list of recharge sources	FOSR-104
4	14	311	Replace "lead to" with "are indicative of"	FOSR-105
4	14	321-23	As noted elsewhere in the plan, gw usage has decreased the flows from Big Springs alone by approximately 1/2 (~60 cfs),, severely degrading the ability of the river to support groundwater dependent ecosystems, specifically cold water fish, or to support existing surface water users. This plan needs to acknowledge that failure to reverse, or partially reverse that impact will guarantee continued uncertainty and risk of litigation. Using as a stated goal the continuation of the current usage levels is not acceptable.	FOSR-106
4	14	328-9	Comparing the 5 or 10 year average ET to the maximum ET observed between 2010 and 2020 will result in an increase in gw usage. It should be compared to the comparable average between 2010 and 2020;	FOSR-107
4	15	350	To meet this standard, it isn't sufficient to minimize future extraction. It will also be necessary to reduce current extraction proportionately to identifiable reductions in recharge. Specifically, 8 miles of publicly funded canal lining by the Montague Irrigation District slated for completion in 2021, and is intended to reduce gw recharge by approximately 28 cfs continuously, during all periods when the canal is running full. Estimates and modeling were based on a time frame when that leakage was customarily part of the working gw system. See further comments on the topic in Ch2 comments. Other individuals and entities are similarly taking steps that will reduce their recharge, with no effort within this plan to track, offset, or oppose the substantial and measurable losses.	FOSR-108
4	16	402	The unsubstantiated statement, that "Currently, there is no threat of chronically declining water levels in Shasta Valley" is not supported by any	FOSR-109

			preventative measures yet in place to limit gw extraction to its current levels, let along levels that would not result in undesirable results. In fact numerous domestic users are finding that they are increasingly without water as a result of declining water levels that is becoming more problematic each year.	FOSR-109 contd.
4	16	403	The unsubstantiated statement "the basin is not in an overdraft condition" here and elsewhere is in direct contradiction to data documenting that Spring flows in summer, as measured at Big Springs, have declined by ~ 60 cfs. That loss of cold water both where measured in Big Springs, and presumably from other springs fed by the Pluto's Cave Basalt has directly and adversely affected the ability of the river to support its most iconic GDE species--salmon, both coho and Chinook. Additionally, the decrease in gw discharge to the surface has directly impacted junior water users who are increasingly frequently curtailed by the water master. The presence of one or more undesirable results is the definition of an overdraft condition., The Shasta River meets that definition. All statements claiming not to be in overdraft condition should be removed.	FOSR-110
4	16	416-7	The Shasta River is not a gaining stream at all times as a direct result o excessive gw pumping. Specifically, data has been presented to the project consultants by the water masters showing that the Shasta between River miles 15.5 and 31 became a losing reach by the end of the summer in 2020. Data for other years is not available, but since little has changed in terms of gw usage in 2020 vs. recent years, there is no reason to presume this has not been an ongoing condition. That data documenting the annual development of a losing reach in the river should be included as an appendix so the public can readily see and understand it, and support appropriate measures to address it.	FOSR-111
4	17	427	Add the words "canal leakage" as another source of recharge.	FOSR-112
4	17	436-7	The observation that gw levels slope from the basin margins towards eh Shasta River should color MAR concepts. MAR on the west side of the river (as is proposed herein elsewhere) will not benefit gw levels or users on the East side of the river, where identifiable shortages now exist. No explanation is provided as to why MAR is being proposed in this unfruitful	FOSR-113

COUNTY OF SISKIYOU

Flood Control & Water Conservation District

			area.	FOSR-113 contd.
4	17	446-7	This statement conveniently ignores the other sources of recharge, specifically canal leakage and deep peculation from excess irrigation, reductions in both of which are currently and for years have been the focus of public and private pending.	FOSR-114
4	18	470-1	This statement ignores the SGMA use of the presence of one or more undesirable conditions as the indicator of overdraft, an error made throughout the document.	FOSR-115
4	18	473-5	Merely stating the existence of diminishing amounts of precip. isn't enough. Where is the response to this fact? Instead throughout the document there is a concerted effort to continue the slowly expanding and demonstrably excessive usage of gw, and to ignore the developing climatic trend that calls out for a conservative approach until climatic conditions prove otherwise. That is not a plan. at best it is an ex That is not a plan. at best it is an excise in wishful thinking.	FOSR-116
4	19	511 ff	Reliance on zoning seems misplaced, particularly with the proposed urban "partners" within whose jurisdiction little or no gw usage for irrigation occurs. Why is there no mention of a moratorium on the issuance of new well drilling permits for wells >6" diameter or similar county level actions that would immediately halt gw usage expansion, but instead pointing to a long, cumbersome and difficult process not likely to occur?	FOSR-117
4	19	518--box	Example 2--There is no existing nor proposed county staff position that will be monitoring agreements such as is described, nor is there a penalty nor other recourse if the agreement isn't adhered to. It is also unclear if this example agreement runs in perpetuity, or only for 10 years.	FOSR-118
4	22	558-60	There should be an appropriate sharing of additional gw between gw users, surface users and GDEs.	FOSR-119
4	23	588-9	The plan should note where this baseline data is located, and how it was calculated so that it can be independently verified over time.	FOSR-120
4	24	635-6	Deliberately positioning the GSA to endorse someone's pet projects with little or no relevance to gw management is inappropriate. The GSA members have had many years of opportunity during which time they have	FOSR-121

			frequently met with the specific "other agencies" responsible for such projects. This is a transparent effort to enhance the fundability of projects that should stand on their own, and not deplete gw related funding.	FOSR-121 contd.
4	24	641-4	Irrigation efficiency improvements cannot be given a blanket endorsement. Each needs to be individually assessed to determine all its effects. As already pointed out, recharge from leaking ditches is substantial, and is relied upon unknowingly by many gw users in the basin, as is deep percolation. Reduction in those avenues of recharge need to be offset by equivalent reduction in gw demand.	FOSR-122
4	25	669-70	Published University of California Extension Service research by Kuhn et. al. (*Juniper removal may not increase overall Klamath River Basin water yields*, California Agriculture, Volume 61, #4, 2007) suggests that gw benefits from this effort will be negligible. If it is undertaken as a gw management exercise, any benefits need to be documented by measured gw results, not by theoretical expectations.	FOSR-123
4	25	674	Complete reliance on voluntary participation is at best disingenuous. There needs to be a fall-back method in place for when voluntary efforts are inadequate to generate needed data. Additionally, the existing well log based data base of existing wells is incomplete to an unknown degree. Without an accurate accounting of the total number of wells, evaluating the representative nature of any voluntary data will be impossible. There at minimum needs to be a method proposed for arriving at a count of total wells so that the representative nature and locations of any volunteered wells can be verified. One approach would be to secure from PP&L a total count of agricultural pump power drops, and subtracting from that the number of surface diversion pumps.	FOSR-124
4	26	724-6	While stream flow augmentation by reducing diversions will yield desirable results, it cannot be overlooked that in addition to wet water ESA listed coho salmon require cold water, water already depleted by existing gw usage. Further planned depletion might well violate section 9 of the ESA. Given that, they cannot be accurately said to "effectively offset" an increase in gw usage.	FOSR-125

4	27	766-9	Use of the SWHM model for project assessment alone is not consistent with claimed plans to work with other agencies in that it has apparently no water quality component, most importantly for assessing temperature impacts on large and small refugia areas. Neither does it attempt to address minimum instream flow requirements. Project evaluation needs to be more appropriately comprehensive focusing on not reducing the likelihood of attaining all other mandatory water related targets, and in spreading any burdens fairly.	FOSR-126
4	27	771 ff	As presented, this appears to be a construction project, without first performing proper feasibility and preliminary engineering studies to document availability of "excess water", reasonable locations and size, potential costs, residence time, and reasonably expected benefits. If it is intended to be a preliminary study, then it should clearly be described that way only, with no fore-ordained outcome in terms of a physical project to follow, as it is currently described. It is worth noting that no mention of a gw shortage for **existing** gw users in the area identified have been made known at the advisory committee meetings. Beyond a project specific preliminary investigation, there needs to be the completion of an instream flow study in order to document the availability of excess water with which to do recharge on a regular enough basis to be useful. Proposed ownership of the stored water needs to be identified, as does its planned disposition, and how this meshes with the Grenada Irrigation Districts plans to initiate reliance on groundwater in lieu of river water so as to avoid water master curtailments.	FOSR-127
4	28	792	There is no such thing in the Shasta Watershed as "excess winter runoff" in almost all years.	FOSR-128
4	31	931	In essentially all years there are no excess winter and spring flows in the Shasta River given the presence of Dwinnell Res. and diversions from the Little Shasta.	FOSR-129
4	31	944-5	This appendix doesn't seem to exist.	FOSR-130
4	33	1020	This appendix doesn't seem to exist.	FOSR-131
4	32	991-97	This information should be collected as part of a plan development project	FOSR-132

			so as to be in place when needed. Existing well logs are known to be incomplete. An alternative count of production wells needs to be done, probably via securing from PP&L a count of irrigation power drops. That in turn would allow accurately assessing the level of incompleteness of the well log dataset.
4	34	1055 ff	A project intended to generate geologically accurate well logs needs to be initiated. It could consist of paying for a qualified geologist to accompany well drillers as they drill new wells, and/or should include the drilling of dedicated wells to better characterize the subsurface geology and water bearing strata. It might be necessary to include incentive
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FOSR-132 contd.

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