



MEMORANDUM

To: Brad Johnson, Esq., Everview Ltd.

From: Annjanette Dodd, PhD, PE

Date: November 11, 2021

Subject: Review of Sourz HVR, Inc. Evaluation of Impacts to Groundwater Resources – Lake County UP 21-10 and IS 21-10

INTRODUCTION AND PURPOSE

An Administrative Draft Initial Study (IS) was prepared for High Valley Ranch Use Permit UP 21-10 in May 2021 (the Project) and adopted as a Mitigated Negative Declaration (MND) by the Lake County Planning Commission on July 22, 2021 along with certain Mitigation Measures and Conditions of Approval. The IS/MND did not identify the Project's impacts to groundwater resources in the Hydrology and Water Quality (IS/MND Section X) or Utilities and Service Systems (IS/MND Section XIX) sections as "Potentially Significant Impacts". The IS/MND imposed no mitigation measures on the Project's use of groundwater.

The IS/MND's conclusion that the Project's impacts to groundwater resources would be less than significant is unsupported by substantial evidence. Further, substantial evidence indicates that the Project may have a significant impact on groundwater resources.

REVIEW OF SELECTED SIGNIFICANCE CRITERIA

The IS/MND evaluates the Project's potential impacts to groundwater resources in sections - Hydrology and Water Quality (IS/MND Section X) and Utilities and Service Systems (IS/MND Section XIX). The memorandum addresses each in turn.

1. Section X Hydrology and Water Quality Significance Criterion X(b).

Subsection X(b) addresses the following question: "Would the project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?"

A Hydrology Technical Memorandum (TM), dated February 5, 2021, was prepared for the Project and was the basis for the analysis provided in the IS/MND. According to the TM, the Project would be served by an existing well (Well #4 southeast corner of site) and a new, proposed well. The TM states that Well #4 has a yield of 200 gallons per minute (gpm) and that a well test was conducted to confirm the yield. The TM identifies five additional, existing wells, that are no longer functional and that would need to be replaced. The Project also proposes total irrigation storage of 50,000 gallons of water.



The Project proposes an irrigation system requiring 24 gpm per acre of cannabis irrigated 6 hours per day (8,640 gallons per day per acre), 3 times per week (25,920 gallons per week per acre) for 22 weeks. This equates to a demand of 48,470,400 gallons (148.8 acre-feet) over a 22-week cultivation season.¹ Irrigation would occur in three, 6-hour sets using up to 680 gpm per set. At this rate, it would take 18 hours to supply the water needed to irrigate 85 acres of cannabis. The TM includes employee water demand of 500 gallons per day or 2.26 acre-feet per season. Without additional wells and storage and at a constant rate of 200 gpm, Well #4 could supply only 216,000 gallons in 18 hours which could irrigate up to 25 acres at 8,640 gallons per acre.

Section X(b) of the IS/MND summarizes the Project's demand and provides the following statements to justify that the Project would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the Project may impede sustainable groundwater management of the basin:

- The proposed project would comply with all the requirements of the Model Water Efficient Landscape Ordinance,
- Cultivation area would remain permeable and would not reduce groundwater recharge on the site,
- A well draw-down test was completed suggesting the well on the southern end of the project area has sufficient yield,
- The well permit for the new well has been issued,
- The project would not alter a stream or river, nor would it substantially increase the amount of runoff that would result in flooding, and
- There are no above ground water sources near the site.

Notably, none of these factors relates to the pertinent question, i.e., "will the Project's use of groundwater decrease overall groundwater supplies or interfere substantially with groundwater recharge"? To answer this question, analysis of the relevant groundwater basin, groundwater supply capacity, total groundwater basin demand, and cumulative impacts are necessary. The IS/MND contains no analysis of any of these factors.

Following preparation and circulation of the IS/MND, the Project was brought forward at the July 8, 2021 Lake County Planning Commission (Commission). During this meeting the Commission requested that the Project proponent provide additional information regarding water hydrology and the Commission continued review of the Project to the July 22, 2021 Commission meeting. In response to this, the TM was revised on July 14, 2021 to include additional information regarding the localized hydrogeology and existing and future water use demands based on the 2006 *Lake County Groundwater Management Plan*, the 2021 *California's Groundwater Update 2020, Bulletin 118* (Bulletin 118), and the 2016 *Groundwater Availability Study* prepared by EBA Engineering prepared for the Brassfield Estates Winery (EBA GAS).

¹ Table 1 of the TM provides an annual irrigation demand of 351.6 acre-feet, which would be the approximate groundwater usage for year-round cultivation at the Project. However, the IS/MND only analyzes cultivation activities for 22 weeks annually.



The Revised TM states that a new, 8-inch diameter well (Well #7) was installed approximately 50 feet west of existing Well #4 at a depth of 292 feet below ground surface (bgs). No yield was provided for Well #7.

The source groundwater basin for the Project is the High Valley Groundwater Basin (Basin). The Basin has two principal water-bearing units, the Quaternary alluvium and the Holocene volcanics aquifers. According to the Lake County Groundwater Management Plan and Bulletin 118, the Quaternary alluvium consists of up to 100 feet of fine-grained lake deposits and is a good water producing unit. The Holocene volcanics underlie the fine-grained alluvium and likely originated from the vicinity of Round Mountain located to the east. These volcanics, which also dammed the ancestral valley, were later buried in the central portion of the valley by fine-grained alluvium reducing potential recharge on the valley floor. The volcanics were initially a productive aquifer; however, it has been noted that well yields in this unit have reduced over time. Recharge is likely reduced by the fine-grained alluvium preventing infiltration to the volcanics. In 1960, the California Department of Water Resources (DWR) estimated the storage capacity of the Basin to be 9,000 acre-feet for a saturated depth interval of 10 to 100 feet and the usable storage capacity was estimated to be 900 acre-feet.

The EBA GAS was prepared to determine whether there are adequate existing and future groundwater supplies to accommodate the proposed development of an additional 130 acres of vineyards. The Sourz HVR project is within the same study area as the EBA GAS. The EBA GAS estimated the combined storage capacity of the Quaternary alluvium and Holocene volcanics to be 27,799 acre-feet, the High Valley groundwater demand to be 378.70 acre-feet (not including the SourzHVR Project), and the average annual recharge (over a recharge area of 1,973 acres) to be 2,425 acre-feet.

Discussion: The EBA GAS storage capacity estimate of 27,299 acre-feet is more than three times the 9,000 acre-feet estimate provided by DWR. The EBA GAS estimate assumes the entire extent of the Quaternary alluvium unit, 1,973 acres, is the storage area for both the Quaternary alluvium and Holocene volcanics aquifers. While this area is likely reasonable for the Quaternary alluvium, it is likely an overestimate of the area for the Holocene volcanics. These volcanics were derived from the east and it is unknown how far they extend into the valley. In addition, there is significant variability in yield within the volcanic unit, indicating “pocket” aquifers. Thus, the storage capacity estimate in the confined volcanic unit is likely high. The average annual recharge estimation method and amount provided in the EBA GAS is likely reasonable. The groundwater demand in the Basin, including the Project, is 529.8 acre-feet. This represents approximately 22% of the average annual recharge of 2,425 acre-feet. Based on the information provided in the EBA GAS, it appears there is sufficient recharge during an average year to support the Project.

However, these data are gross estimates, and do not reflect the concept of *usable storage capacity*. Bulletin 118 defines *usable storage capacity* as the amount of groundwater of suitable quality that can be economically withdrawn from storage. A groundwater basin’s useable storage capacity may be only a fraction of its total gross storage capacity (for example, DWRs estimate of the usable storage capacity is 10% of overall storage capacity). This is important because, as more groundwater is extracted, groundwater levels may fall below some existing wells, which may then require replacement or deepening. Other impacts that should be evaluated include the potential for subsidence and groundwater quality degradation. This is key to evaluating potential impacts, especially due to the confined nature and size of High Valley as well as the fact that multiple existing onsite wells are in poor condition and need to



be abandoned. Also, wells in the valley, within the Holocene volcanic unit, have been seen to decrease in capacity over time. This could be because the confined volcanic unit takes much longer to recharge compared to the alluvium unit. The TM and Revised TM identified numerous wells on the Project site that are no longer functional and other wells in the High Valley Groundwater Basin have seen decreased capacity. These are indicators that the Basin's storage capacity is less than estimated in the EBA GAS. No discussion was provided on usable storage capacity. Thus, the Revised TM contains no analysis of the Project's impacts on usable storage capacity of the Basin and the potential impact to neighboring wells.

There is no discussion in the IS/MND or the Revised TM of the measures the Project applicant would take in the event well production declines and/or if well production from drilling the additional well(s) turns out to be insufficient. At the time of the IS/MND, there was only one well, Well #4, with a yield of 200 gpm. This yield is only sufficient to irrigate approximately 25 acres of cannabis. The Well Driller's Report for Well #4, which was not provided or discussed in the IS/MND, TM, or the Revised TM, shows that the well was drilled in 1958, at a depth of 115 feet bgs into dark volcanic rock, thus, the well is likely drawing water from the Holocene volcanic unit. The Revised TM makes mention of new Well #7 but provides no information regarding the production capacity of this well.

A strong indicator that the Project does not have sufficient groundwater supplies from either Well #4, Well #7, or both, is that the Project applicant has entered into a Water Purchase Agreement to obtain water from an offsite source and pipe it to the cultivation areas. This offsite source, located approximately 0.85 miles south of the center of the project site, is a 7-acre water storage reservoir that is filled using water pumped from existing groundwater wells. In an email to Katherine Schaefer of the Lake County Community Development Department, dated September 10, 2021, the applicant's representative, Brad Stoneman, provided an attachment discussing the waterline and inclusion in the CEQA analysis. The attachment states:

"Regarding the current use of the waterline, the waterline is currently routed to a filtration station and directed to the sunflower area; an area within the HVR property where cannabis cultivation is not occurring this year. While this is part of the area that is within the original cultivation footprint, the sunflowers are being grown in an area that was voluntarily set aside by the applicant during the (second) Planning Commission hearing.

Again, this voluntary and temporary change includes planting of sunflowers in a garden area that is approved for cannabis. The sunflowers are being grown this year in said garden area as opposed to cannabis. This 10-acre area is the only area where water from the Brassfield waterline is being used and will be used to water. No water from Brassfield is currently being used or is planned to be used for cannabis cultivation. The applicant will only use previously identified water sources from existing wells on-site in support of the cultivation of cannabis. All areas where cannabis is being cultivated were discussed and disclosed as required in the IS/MND. "

The discussion in the attachment continues to explain that these changes to the project are extremely minor, they are voluntary and temporary changes, they would not result in new, more severe, or additional significant impacts. The discussion in the attachment concludes that the IS/MND (as written and approved) satisfies the disclosure requirements and that all the prior analysis that was conducted remains valid and there are no new impacts not previously disclosed. However, in their argument, there



is no discussion on the amount of water 10-acres of sunflowers require. There is also no discussion of the water source and the impacts using water from this source would have on the surrounding area. Additionally, video documentation taken prior to the second Planning Commission Meeting shows that this water system was in place prior to the meeting, indicating the intended use was to augment onsite groundwater.

This waterline, which is not described in the Project Description nor analyzed in the IS/MND, raises the obvious question of why additional water was needed to irrigate sunflowers, which are a drought-tolerant crop, if ample water was in fact available for the Project from either or both of the identified groundwater wells. This waterline also begs the question of why the Project applicant would go to the expense of executing a Water Purchase Agreement and installing a pipeline for the temporary cultivation of 10-acres of sunflower, which is not a particularly high-value crop. These facts do not square with the analysis of the IS/MND, and strongly indicate that the Project site lacks sufficient water supplies. Further, there is no indication that the waterline will be removed prior to the Project applicant's cultivation of cannabis in that 10-acre area.

Also not discussed in the IS/MND, TM, or the Revised TM, is that Well #4 is a California Statewide Groundwater Monitoring (CASGEM) Program monitoring well (CASGEM Well ID #35927) that has been used to track and monitor seasonal and long-term groundwater elevation trends in the High Valley Groundwater Basin since 1961. Groundwater elevations in the well have been recorded almost every March and October since 1961. CASGEM identifies the monitoring entity as the Lake County Watershed Protection District. Although the general trend in groundwater depth, in feet bgs, appears to have been increasing since the well was drilled, it has been trending downward over the last 10 to 20 years (Figure 1 through Figure 3). This data, accordingly, contrasts with the data provided in the EBA GAS that seems to suggest the Basin has ample storage and recharge capacity.²

In summary:

- The data cited in the TM and IS/MND to support the “no significant impact” conclusions is not relevant to the analysis of Project impacts to groundwater resources under IS/MND Section X(b), and does not constitute substantial evidence supporting the IS/MND's conclusions in that section.
- The additional data provided in the Revised TM, including the EBA GAS, suggests that the High Valley Groundwater Basin may have adequate groundwater resources to support the Project, however, competing data, including the poor functionality of wells on the Project site, CASGEM data, and data from surrounding wells, indicates that the useable groundwater capacity of the Basin is far less than indicated in the EBA GAS, and is decreasing rather than increasing. These factors all constitute substantial evidence indicating that the Project may have a significant impact on groundwater resources.
- The IS/MND contains no analysis whatsoever of the Project's cumulative impacts to groundwater resources when taking into consideration current and reasonably foreseeable future projects in the High Valley Groundwater Basin.

² We note that no water level measurements were provided in the CASGEM database for October 2020 or October 2021. Will this well continue to be a part of the CASGEM Program? If not, this would result in a data gap in seasonal monitoring of groundwater in the High Valley Groundwater Basin.



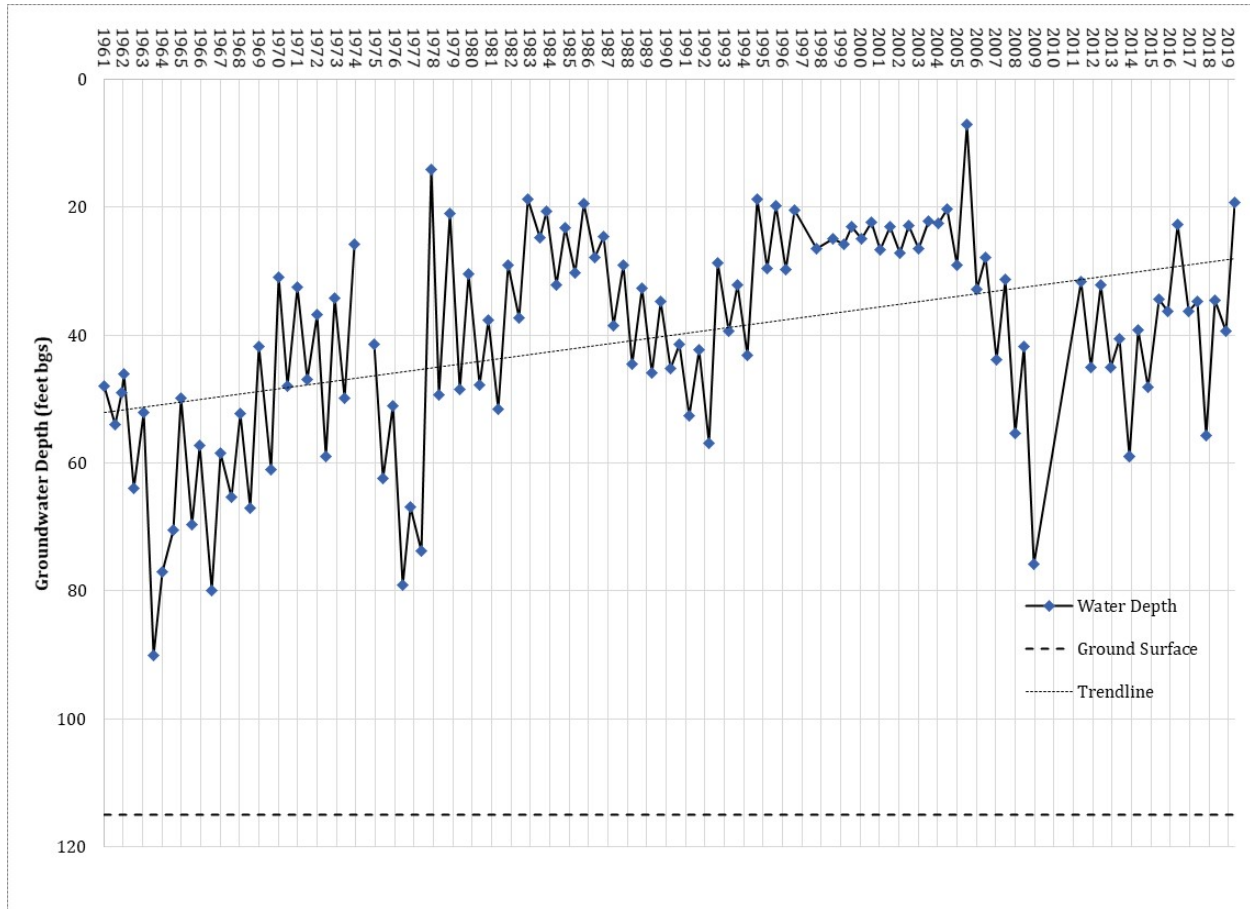


Figure 1. Depth of water (feet bgs) recorded at Well #4 from 1961 to 2020.



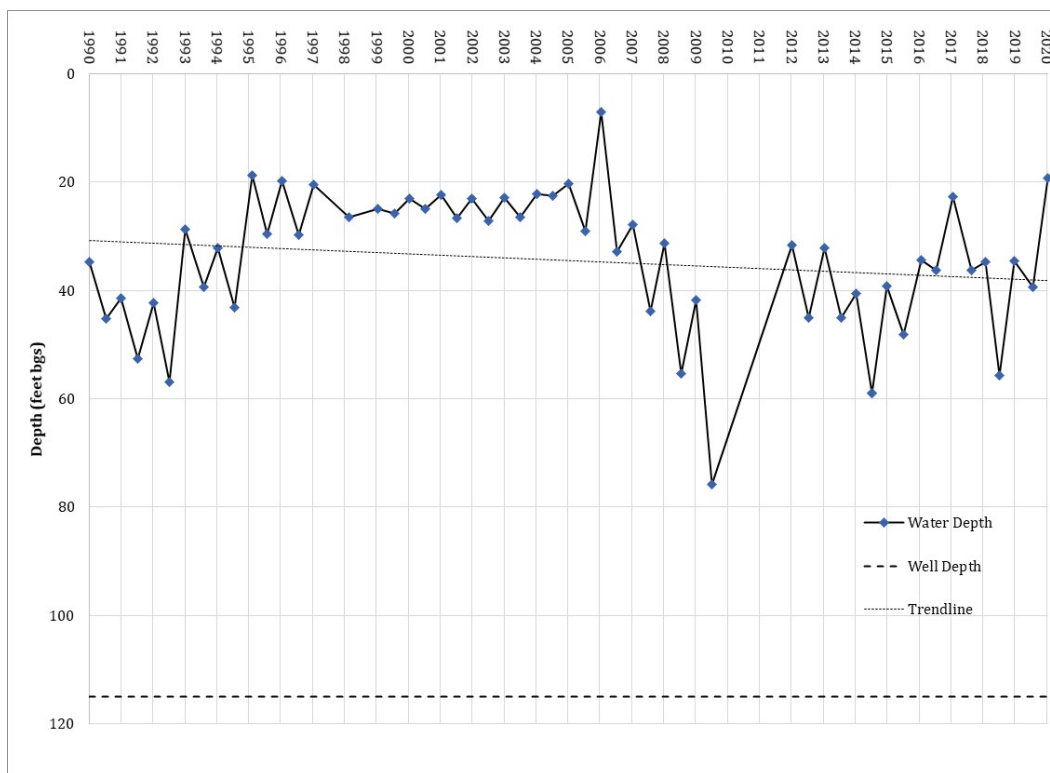


Figure 2. Depth of water (feet bgs) recorded at Well #4 from 1990 to 2020.

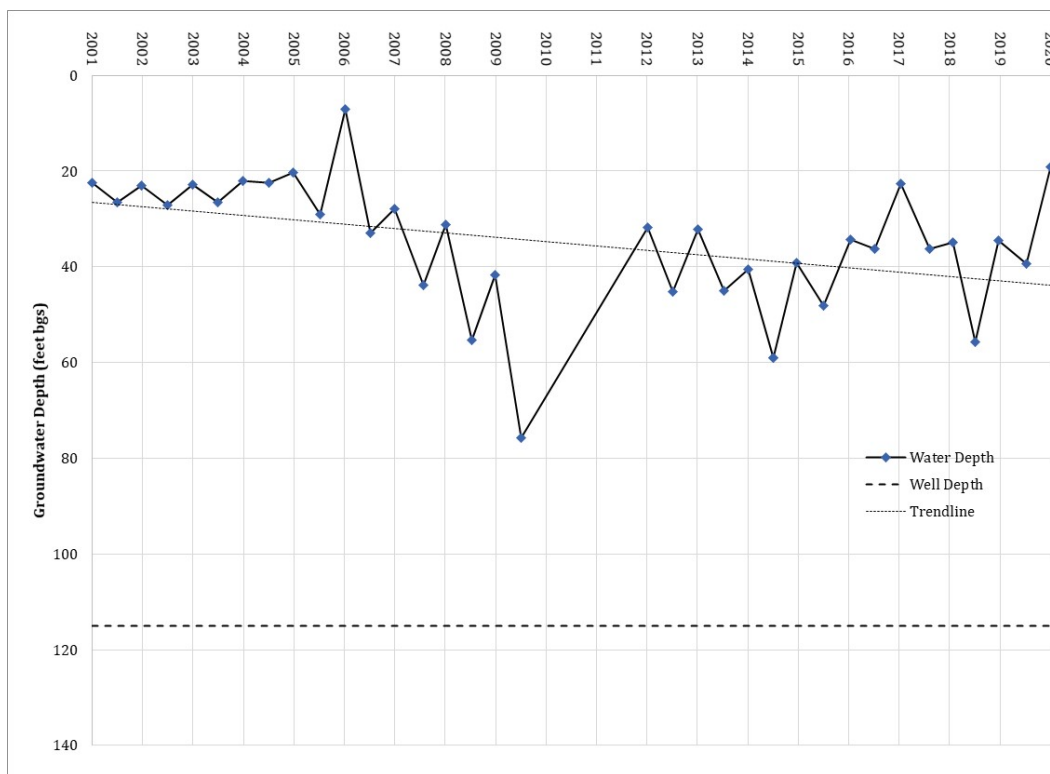


Figure 3. Depth of water (feet bgs) recorded at Well #4 from 2001 to 2020.



2. Section XIX Utilities and Service Systems Significance Criterion XIX(b).

Subsection XIX(b) addresses the following question: “Would the project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?”

Section XIX(b) of the IS/MND provides the following statements to justify that the project would have sufficient water supplies to serve the project:

- The site contains six existing on-site wells and one new well will be drilled,
- If necessary, existing wells may be reconditioned to provide efficiency in the water supply or redundancy for the irrigation system,
- The existing well and proposed well would produce an adequate volume of water to serve the cultivation and other project demands,
- The annual water demand for High Valley Ranch is approximately 353.86 acre-feet³, and
- Accounting for evapotranspiration and overspray, it is anticipated that approximately 60% to 70% of the irrigation water will be returned to the aquifer through infiltration in an average year, which will reduce the net decline in water levels within the aquifer. ⁴

As stated above and in the IS/MND, the Project proposes an irrigation system requiring 24 gpm per acre of cannabis irrigated 6 hours per day (8,640 gallons per day per acre), 3 times per week (25,920 gallons per week per acre) for 22 weeks. This equates to a demand of 48,470,400 gallons (148.8 acre-feet) over a 22-week cultivation season.⁵ Irrigation would occur in three, 6-hour sets using up to 680 gpm per set. At this rate, it would take 18 hours to supply the water needed to irrigate 85 acres of cannabis. The TM includes employee water demand of 500 gallons per day or 2.26 acre-feet per season.

Without additional wells and storage and at a constant rate of 200 gpm, Well #4 could supply only 216,000 gallons in 18 hours which could irrigate up to 25 acres at 8,640 gallons per acre. Neither the IS/MND, TM, nor the Revised TM provide the yield capacity of Well #7, and therefore the only available data indicates that the Project does not have adequate water supplies to serve the Project.

Further, as also stated above, a strong indicator that the Project does not have sufficient groundwater supplies from either Well #4, Well #7, or both, is that the Project applicant is piping water from an offsite source that was not included as part of the proposed Project. It was noted, also stated above, in

³ We note the inconsistency with the annual water demand stated in Section X of the IS/MND, which is based on 22 weeks of cultivation per year. This higher figure suggests year-round cultivation, which is not analyzed in Section X of the IS/MND or in any other section of the IS/MND.

⁴ This statement is highly suspect, and would require the Project applicant to apply water to cannabis plants far in excess of agronomic rates, which would conflict with the County’s Model Water Efficient Landscape Ordinance as well as state water use guidelines applicable to cannabis cultivation, and would also likely result in root rot.

⁵ Table 1 of the TM provides an annual irrigation demand of 351.6 acre-feet, which would be the approximate groundwater usage for year-round cultivation at the Project. However, the IS/MND only analyzes cultivation activities for 22 weeks annually.



correspondence with the County that the applicant is using this offsite water to irrigate 10-acres of sunflowers that were voluntarily set aside by the applicant during the Planning Commission meeting. However, video documentation taken prior to the second Planning Commission Meeting shows that this water system was in place prior to the meeting, indicating the intended use was to augment onsite groundwater.

Although not discussed in the IS/MND, the Revised TM included a discussion regarding recharge during an average year, but lacked any discussion or analysis of recharge during a dry year or multiple dry years. For example, the lowest annual precipitation on record at the gage used by the EBA GAS (<https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca1806>) occurred in 1976 and was 8.17 inches. Using 8.17 inches of precipitation to represent a dry year and the methodology provided by EBA GAS, there would be a recharge deficit of 407.7 acre-feet during a dry year. The greatest drawdown in Well #4 occurred in October 1976, at 79 feet bgs.

In summary:

- The data cited in the TM and IS/MND to support the “no significant impact” conclusions is not relevant to the analysis of Project water supply under IS/MND Section XIX(b), and does not constitute substantial evidence supporting the IS/MND’s conclusions in that section.
- Neither the IS/MND, TM, or Revised TM provide any analysis or substantial evidence indicating that Project water supplies are adequate to serve the Project currently, or in dry or multiple dry years. To the contrary, substantial evidence cited above indicates that the Project currently lacks adequate water supplies.

PREPARER’S QUALIFICATIONS

Dr. Dodd has a PhD in Water Resources Engineering. In addition, Dr. Dodd is a licensed Professional Engineer with the State of California with 30-years of experience practicing and teaching Water Resources Engineering, including over 15 years of teaching, practicing, and modeling surface and groundwater hydrology.



ATTACHMENT 6

To Appeal (AB 21-04) of Early Activation/Major Use Permit (EA/UP 21-10) and Initial Study (IS 21-10), Dated November 15, 2021

Independent Water Use Analysis and High Valley Aquifer Impact Study –
Sourz HVR Major Use Permit [UP-21-10. Initial Study [IS21-10]

7-8-21

- Address the impacts of the HVR project on the High Valley Aquifer and all of the existing wells.
- A drawdown analysis should be done that includes monitoring of the surrounding wells and the recovery rate of the wells. Include the effects/impacts of any new wells.
- If water is to be sourced from offsite, this should be incorporated into the analysis.
- Address these impacts in the context of drought conditions. What do the existing well levels look like now? How much are they producing? Are some wells truly going dry? Is the aquifer level being depleted? Will the storage capacity of the aquifer potentially be reduced due to ground subsidence?
- Reference information in the Lake County Groundwater Management Plan, which states the usable capacity, is 900 acre-feet. Reference, historical information, and information from the State DWR.
- Indicate that the projected project demand is 352 acre-feet per year, almost 40% of the usable capacity. What mitigation measures will be implemented during drought years to limit overdraft?
- Any modeling that is conducted should include all model assumptions and how parameters were determined/estimated.
- The new report should be included in the CEQA Initial Study analysis of water impacts from the project.
- List the qualifications of the individuals doing the study.

Don and Margie Van Pelt
(707) 272-2850
1325 Valley Oak Dr.
Clearlake Oaks, CA. 95423

ATTACHMENT 7

To Appeal (AB 21-04) of Early Activation/Major Use Permit (EA/UP 21-10) and Initial Study (IS 21-10), Dated November 15, 2021

Katherine Schaefer

From: Annje Dodd <Annje@northpointeureka.com>
Sent: Wednesday, June 30, 2021 11:42 AM
To: Tracy Cline; Eric Porter; Andrew Amelung; Katherine Schaefer
Cc: Cannabis@lakecountyca.gov
Subject: [EXTERNAL] UP 21-10 Sourz at 50 High Valley Road

Importance: High

Out of curiosity, how did Sourz get Early Activated? It is the 80 acre cultivation project at 50 High Valley Road. I hear that at least one neighbor submitted a letter of complaint (a rumor, so I could be wrong).

I came across it in a discussion about another project and looked it up as a reference since it was posted to the state clearinghouse (<https://ceganet.opr.ca.gov/2021050225>). I was curious how their consultant conducted analysis for that project and thought there may be things I could use in future analyses. I thought I should bring some of the obvious items to your attention. I only have access to the clearinghouse documents, so there may have been other docs that took care of these, but they were not posted.

The project proposes to use 48,400,000 gallons (149 acre-feet) per year of water and there was no discussion of the aquifer or the well yield...frankly, the discussion regarding the impact to water is woefully lacking in both the PMP and the IS MND. There is mention of a drawdown test, but no discussion of the results of that test. There is a model in the PMP, but a model is not a test of actual conditions and does not appear to be sufficient. According to California Bulletin 18, the site is located in the High Valley Groundwater Basin. The Lake County Groundwater Management Plan discusses this basin, but none of that was incorporated into the project analysis.

I reviewed the bio-assessment. The bio assessment does not include full floristic surveys. It says field surveys were conducted in September...missing both spring and summer. With all of the other bio reports I have reviewed, there is some chance that rare plant species could occur in the types of plant communities that occur on site and that the two floristic are required to rule them out. I am surprised that this project was allowed to move forward without them.

Also, no formal wetland delineation was completed. The national wetlands inventory shows potential wetlands on the site. This was not discussed in the bio. Screen capture below.

The number of trips seems low for an 80-acre cultivation project.

I felt it important to bring this to your attention due to the level of scrutiny projects are getting for water, bio, and traffic and the potential for litigation.



Annje Dodd, PhD, PE
Vice President

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