Hingtgen, Robert J

From: Scott Snyder - Snyder Geologic <scott@snydergeologic.com>
Sent: Friday, January 30, 2015 3:51 PM
To: Gungle, Ashley; Bennett, Jim; Hingtgen, Robert J; Horn, Bill; Cox, Greg; Jacob, Dianne; Roberts, Dave; Ron-Roberts
Subject: Public Input Comments to Soitec Solar FEIR
Attachments: Soitec Solar Report.pdf

Good afternoon,

Please accept these comments with regard to groundwater issues for the Soitec Solar Project FEIR.

Regards,
--

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SNYDERGEOLOGIC

January 30, 2015
Project No. 0023.003

San Diego County Board of Supervisors
1600 Pacific Highway
San Diego, CA 92101

Subject: Soitec Solar Final Environmental Impact Report Comments

Dear Chairman Horn and Members of the Board,

Scott Snyder, Principal Hydrogeologist of Snyder Geologic, was contracted by the non-profit organization Backcountry Against Dumps to provide an independent, technical review of relevant groundwater portions of the Soitec Solar Final Environmental Impact Report (FEIR) for the Rugged and Tierra Del Sol Solar Farm Project (project). Scott Snyder is a California Professional Geologist and Certified Hydrogeologist with 20 years of experience in hydrogeology, 14 of which have been in San Diego County.

PURPOSE

The purpose of this report is to provide an opinion as to whether or not the groundwater technical work (groundwater resources investigation reports [GRIR] and groundwater monitoring and mitigation plans [GMMPs]) were conducted in accordance with County of San Diego guidelines and if the hydrogeologic work meets the standard of care for the industry, as well as providing an opinion as to the adequacy of protections proposed for the groundwater users surrounding the project sites. We have also reviewed actual water usage for a similar solar farm developed by the project proponent and compared the water use with expected demand for the project.

SUMMARY OF FINDINGS AND RECOMMENDATIONS

The water demands for construction of the TDS and Rugged sites should be reanalyzed using actual water use data from the Soitec Desert Green Solar project. The actual water use per acre for Desert Green is nearly 60% higher than current projections of water use for TDS and Soitec (and double the original estimates in the Draft EIR), the site conditions of which are similar to Desert Green. The water demand was already increased by 35% for TDS and 40% for Rugged between the DEIR and the FEIR due to omissions or initial underestimates of project activities that would use water (Table 9-2, page 9.0-42).

The following is a summary of the findings and recommendations resulting from the review of EIR related documents. A more detailed explanation of the recommendations is provided at the end of this report.

- In addition to total groundwater withdrawal caps that have been imposed on the groundwater extraction wells, each extraction well should have a maximum flow rate cap based on the well interference analyses performed in the GRIRs. The flow rate caps should be:
    - Well B: 15 gallons per minute (gpm)
    - Well 6a: 49 gpm
    - Well 6b: 39 gpm
    - Well 8: 27 gpm
    - JCSD Well 6: 56 gpm
    - PVMWC Well 5: 40 gpm
- Exceedances of groundwater withdrawal rates and water level thresholds should be reported to the County Groundwater Geologist within 1 day of the exceedance. This is to ensure any adverse impacts to residential wells are prevented.
- Due to the heterogeneity of fractured rock hydrogeologic properties, we recommend that residential wells within a 2-mile radius of the extraction well be monitored. Residential wells being monitored should be checked daily during the first week of operation of the extraction wells.
- The County should conduct routine, unannounced, random inspections of the groundwater extraction activities at all of the locations during peak construction and for the first year of the project. We also request that a consultant selected by the BPG also be permitted to conduct similar random, unannounced inspections of the same with the cost to be borne by Soitec.
- The baseline water levels selected by the County Groundwater Geologist in consultation with the consultant for the project should be made public, and input should be solicited from the public.
- Water level thresholds and groundwater production limits should not be considered "minor alterations" and may not be altered.
- The water demands for construction of the TDS and Rugged sites should be reanalyzed using actual water use data from the Soitec Desert Green Solar project. The actual water use per acre for Desert Green is nearly 60% higher than current projections of water use for TDS and Soitec (and double the original estimates), the site conditions of which are similar to Desert Green.
- Groundwater in storage calculations (related to the 50% reduction in storage analysis significance criterion) should be reanalyzed using the maximum permitted groundwater use per residence of 22.4 AFY.
- The battery storage units should be required to have secondary containment to capture any release of hazardous materials that could occur due to battery failure or fire.

BACKGROUND

Snyder Geologic has reviewed several GRIRs and GMMPs for the project. The purpose of the GRIRs were to evaluate groundwater resource availability in the McCain Valley (Rugged), Tierra

Del Sol (TDS) area, Jacumba Community Services District area, and the Pine Valley Mutual Water Company service area to determine if the available groundwater resources are sufficient to meet the demands of the project, as well as the demands of existing and potential future users of the groundwater in the vicinity of the four groundwater resource area. The reports were prepared to satisfy requirements of the County of San Diego Groundwater Ordinance and Guidelines for groundwater investigations for projects subject to the California Environmental Quality Act (CEQA). The GMMPs were prepared to establish guidelines and thresholds for groundwater use and monitoring in the four resources areas. The plans incorporate maximum groundwater use thresholds and maximum water level reduction thresholds, as well as reporting requirements from the project owner to the County Groundwater Geologist during the course of the project.

Snyder Geologic also reviewed the County of San Diego Planning Commission Hearing Report which included groundwater conditions imposed by the County on the project; these were derived in part from the GMMPs and in consultation and negotiation with the Project Owner's groundwater consultant.

The following documents, or portions thereof, have been reviewed, with regard to the Project FEIR:

- Section 1.0 Project Description
- Section 3.1.5 Hydrology and Water Quality
- Section 3.1.9 Utilities
- Chapter 9.0 Response to Comments
- Appendix 3.1.5-5 Final Groundwater Resources Investigation Report, Tierra Del Sol Solar Farm Project (Dated November 2013)
- Appendix 3.1.5-5 Final Groundwater Resources Investigation Report, Rugged Solar Farm Project (Dated November 2013)
- Appendix 3.1.5-5 Final Groundwater Resources Investigation Report, Rugged Solar Farm Project (Dated December 2013)
- Appendix 3.1.5-5 Final Groundwater Resources Investigation Report, Pine Valley Mutual Water Company (Dated December 2013)
- Appendix 3.1.5-5 Final Groundwater Resources Investigation Report, Jacumba Community Services District (Dated December 2013)
- Appendix 3.1.5-5 DRAFT Groundwater Resources Investigation Report, Jacumba Community Services District (Dated September 2014)
- Final Groundwater Mitigation and Monitoring Plan, Tierra Del Sol Solar Farm Project (Dated November 2013)
- Final Groundwater Mitigation and Monitoring Plan, Rugged Solar Farm Project (Dated November 2013)
- Final Groundwater Mitigation and Monitoring Plan, Rugged Solar Farm Project (Dated October 2014)

- Final Groundwater Mitigation and Monitoring Plan, Pine Valley Mutual Water Company (Dated December 2013)
- Final Groundwater Mitigation and Monitoring Plan, Jacumba Community Services District (Dated December 2013)
- Appendix 9.0-2
- Appendix 9.0-6
- County of San Diego Planning Commission Hearing Report (dated January 16, 2015)
- Presentation to Boulevard Planning Group by the County of San Diego, dated January 8, 2015
- County of San Diego Groundwater Ordinance
- County of San Diego Guidelines for Determining Significance and Report Format and Content Requirements - Groundwater Resources

DEMAND/PROJECT PLAN

The Soitec Solar project plans to develop more than 6,000 concentrated photovoltaic (CPV) trackers, roads, transmission lines, and support facilities on 1,185 acres of land in the East San Diego County mountains. In order to build the project, Soitec Solar, the project proponent has applied for a Major Use Permit (MUP) and amendments to the County General Plan. The project is divided into two primary areas, Tierra del Sol ([TDS] 430 acres, 2,600 CPV trackers, and 60 megawatts of electrical generating capacity) and Rugged (516 acres, 3,600 CPV trackers, and 80 megawatts of electrical generating capacity).

According to the GRIRs for TDS and Rugged, project construction is expected to take one year. Peak construction at each of the Rugged and TDS sites is expected to last 50 days. The peak daily water demand is expected to be 296,000 gpd at Rugged and 272,000 gpd at TDS. The peak daily water demand will occur when clearing, grubbing, grinding, and dust control are all required on the same day. During mass grading, the daily demand is expected to be 76,000 gpd for 8 days at TDS, while at Rugged the mass grading will require between 192,000 and 196,000 gpd for 9 days. It is expected that daily demand will range between 18,000 and 22,000 gpd for both sites when the CPV tracker foundations are being constructed and/or dust control is being performed. (Note that these numbers have likely increased because the GRIRs were produced in 2013 and in the Final EIR produced late in 2014, the total project demands were increased by 35% for TDS and by 38% for Rugged [FEIR Table 9-2, Pages 9.0-42].)

The operational demand for Rugged on an ongoing basis for the life of the project is 8.7 AFY and will be used for dust control, CPV tracker cleaning, and potable use for the on-site operations and maintenance (O&M) building. The operational demand for TDS on an ongoing basis for the life of the project is 6.6 AFY and will be used for dust control, CPV tracker cleaning, and potable use for the on-site operations and maintenance (O&M) building.

According to the Final EIR, the total construction water demand for each activity at TDS is as follows:

- Dust control (initial clearing, grubbing, and grading): 42 AF
- Mass grading: 1.5 AF
- Daily dust control: 16.4 AF
- Concrete mixing: 2.1 AF
- Application of soil binding agent: 1.9 AF
- TDS gen-tie line: 2.5 AF
- Fire protection: 0.2 AF
- Weed mitigation: 0.8 AF
- Total: 67.3 AF

According to the Final EIR, the total construction water demand for each activity at Rugged is as follows:

- Dust control (initial clearing, grubbing, and grading): 50.6 AF
- Mass grading: 5.3 AF
- Daily dust control: 19.8 AF
- Concrete mixing: 2.8 AF
- Application of soil binding agent: 2.6 AF
- Rock crusher: 0.8 AF
- Fire protection: 0.2 AF
- Weed mitigation: 0.9 AF
- Total: 83.0 AF

The construction water for TDS will be obtained from a combination of on-site Well B (18 AF, with no more than 7 AF permitted to be used in the first 90 days of construction), Well 6 from the JCSD well field (21 AF, with no more than 14 AF to be produced in the first 60 days of peak construction; with a daily limit of 80,000 gpd), and the remainder from Padre Dam Municipal Water District as recycled water (29 AF). The construction water for Rugged will be obtained from a combination of the on-site Wells 6a, 6b, and 8 (54 AF), Well 6 from the JCSD well field (27 AF, with no more than 14 AF to be produced in the first 60 days of peak construction; with a daily limit of 80,000 gpd), and Well 5 from the PVMWC well field (16 AF); any shortfall would be supplemented from Padre Dam Municipal Water District as recycled water.

The water for ongoing O&M for Rugged will be obtained from Well 8 (maximum annual withdrawal of 8.7 AF) and Wells 6a/6b (maximum annual withdrawal of 6 AF); the well field of Well 8 and 6a/6b cannot exceed 8.7 AFY. The source of water for ongoing O&M for TDS will be obtained from Well B with an annual use cap of 6.6 AF.

ANALYSIS

We reviewed the GRIRs for the two project sites as well as those for JCSD and PVMWC as they are being proposed as sources of construction water for both TDS and Rugged. The following are comments related to items discussed in the reports. In some cases the comments are general and apply to all of the reports. Where an item discussed relates to a particular site, it is indicated as such.

Well Depths (TDS)

The depth of Well B at TDS is 1,311 feet. No other residential wells in the vicinity are as deep; the deepest well is 1,000 feet according to the GRIR. The average depth of wells in the area based on the GRIR is 353 feet and the median depth is 299 feet. There is a reasonable concern that a deep well such as Well B, while perhaps not reducing groundwater in storage to less than 50%, could reduce the overall groundwater levels below the depths of shallower wells. Per the GRIR, water-bearing fractures in Well B were encountered at depths greater than nearly every well in the area. If these fractures are connected to fractures used by shallower wells, groundwater levels could be drawn down below the bottom of residential wells.

Well B Testing and Off-Site Impacts (TDS)

Although in the GRIR Dudek claims drawdown was not observed in any off-site wells during testing of Well B, drawdown at GS-2 is apparent in the graph (Figure 21 of the Dudek GRIR) during the test, but the supporting datalogger readings are not provided in the report, only three manual measurements. Data from the data loggers for GS-2 should be provided.

Well Interference Calculations (TDS)

- An important item to note with regard to the transmissivity used for the well interference calculations at TDS, is that of the four transmissivities calculated from the aquifer test, the second highest was used, which is 5% higher than the average value. A more conservative approach would be to use either the average value, or the lowest value.
- Given the transmissivity value used however, the calculation of drawdown for the 90-day construction period at a flow rate of 18 gpm for wells RM-1 and RM-2 (located 784 feet from Well B) not 19.9 feet, but rather exceeds the 20-foot threshold at 20.46 feet. This result was calculated using the same numbers provided in the GRIR. The reason for the discrepancy is unknown, but it is our opinion that the 20.46 foot result is correct. At 17 gpm, the threshold is not exceeded, with a result of 19.32 feet of drawdown. Based on the inaccuracy of flow meters, a flow rate of 17 gpm, without exceedance, is infeasible.

- The drawdown calculation for the one year timeframe is similarly flawed at RM-1 and RM-2. The drawdown after one year is not 19.9 feet at 11.2 gpm, but rather 20.35 feet. At 11 gpm, the 20-foot threshold is not exceeded.
- While a total extracted volume cap has been placed on Well B for the peak construction period, *a flow rate cap has not been placed on the well*. Based on our analysis, if the well is used at the maximum flow rate of 61 gpm:
  - the 20-foot interference criterion is exceeded after 17 days; at 90 days, the drawdown is 69 feet,
  - at 30 gpm, the 20-foot criterion is exceeded after 35 days; at 90 days the drawdown is 34 feet, and
  - at 20 gpm, the criterion is exceeded after 68 days; at 90 days the drawdown is 22.7 feet.

With regard to the 10-foot drawdown cap for off-site wells imposed by the County, at 61 gpm, drawdown at RM-1 would exceed the 10-foot criterion in 15 days, at 30 gpm it would be exceeded in 21 days, and at 20 gpm it would be exceeded in 30 days.

General Comments on all GRIRs

50% Reduction in Storage Calculations

For the 50% reduction in storage calculations for each GRIR, a groundwater withdrawal rate for residential properties of 0.5 AFY was assumed, equivalent to 0.31 gallons per minute (gpm) or 446 gpd. While this may be water use for a typical American family, this extraction rate for residents of the project area is grossly underestimated for some of the land owners, and at the very least places an undue burden and restriction on residents. The size of the properties for many residents in the area can exceed 10 acres and some own 100 acres or more. In addition, many residents have livestock or landscaping which both place an additional demand on the water resources. Residential properties can use up to 20,000 gpd without being considered a water intensive use, i.e., without special permission from the County, and this is not factored into the storage calculations. As a conservative approach, the 50% reduction in storage analysis which reflects true "full General Plan build out" should consider the maximum permitted withdrawal by residences, or 22.4 AFY per property.

For the TDS reduction in storage analysis, it was assumed that at maximum build out the residential properties (8 existing and 8 future additional) would use 0.5 AFY per home, or 8 AFY total. At 20,000 gpd, these residences could use 358 AFY. For the Rugged reduction in storage analysis, it was assumed that at maximum build out the residential properties (7 existing and 2 future additional) would use 0.5 AFY per home, or 4 AFY total. At 20,000 gpd, these residences could use 202 AFY.

While many of the residents of the area choose to conserve water as much as possible, they are permitted to use such quantities; as mentioned, it is entirely likely that they do use much more than 450 gpd.

Well Monitoring

Due to the heterogeneous nature of hydrogeologic properties of fractured rock, wells within close proximity of the pumping well may not experience effects due to pumping if they do not penetrate the same fracture system as the pumping well, while wells at much greater distance from the pumping wells may be affected if the wells intersect the same fracture network as the pumping well. For this reason, we recommend monitoring any residential well within a 2-mile radius from the pumping wells.

ITEMS NOT ADDRESSED

Battery Storage

At some time in the project development process, a battery storage system was included as part of a project alternative. It is understood that 160 cargo ship-sized containers containing lithium ion batteries are now proposed to serve as an electrical storage system on the Rugged site. Concerns associated with the storage of the batteries are two-fold. First, there is concern that if the batteries were to leak, chemicals might be released into the environment in an area containing a sensitive habitat (Tule Creek) and where residents rely solely on groundwater for their water supply, making protection of that water quality paramount. Second, should the battery system catch fire, there can be a domino effect that could then ignite adjacent batteries and adjacent storage containers. The potential environmental impact of this scenario, as well as the fire suppression system chemicals used to control such a scenario, have not been addressed.

Tule Wind Groundwater Demand

The Tule Wind Farm project has also been reviewed by Snyder Geologic and is discussed here with regard to cumulative impacts. There were several concerns raised during our review of Tule Wind which included but were not limited to the issue of groundwater storage calculations, where the consultant considered that residential well users would only use 0.5 AFY of groundwater for their properties. We have discussed in previous sections of this report that it is our opinion that a 0.5 AFY estimate inadequately characterizes the amount of groundwater that is used by these residences.

The aquifer tests conducted by the consultant for Tule Wind contained irregularities in both the testing and interpretation of the tests, which could result in a flawed analysis of the availability of groundwater resources.

The Tule Wind project relies solely on groundwater to supply water for both construction and ongoing O&M for the life of the project. However, the available groundwater re-

sources for Tule Wind are inadequate on a gallon per minute basis, which puts the sustainability of the project's long term supply in question. Groundwater storage and peak demand issues have not been addressed or resolved for the project and could ultimately result in significant groundwater impacts and possibly overdraft, that may be further exacerbated by the Soitec project's use of groundwater in the Tule Creek watershed.

Soitec Desert Green Water Demand vs. TDS/Rugged Demand

We reviewed information regarding a similar CPV project constructed by Soitec in Borrego Springs, California, known as the Desert Green Solar Farm (MUP 330-09-012). The project constructed CPV trackers on a parcel of land that is relatively flat, has soils with similar available water holding capacity and optimum moisture content compared to TDS and Rugged (Soil Survey of San Diego County, 1973), and the evapotranspiration rates are similar (62 inches per year compared to 71 inches per year [California Irrigation Management and Information System website]) to the TDS and Rugged sites.

The objective of our analysis was to use documented actual water usage for such a similar project as a comparison to the projected water rates for the TDS and Rugged sites. To conduct the evaluation of water demand for the completed project, we took the amount of water used for the project (according to the Desert Green Solar Farm's EIR water was only used for clearing/grading, application of a soil binding agent, and a 30% contingency) and divided it by the disturbed acreage, resulting in a figure representing water used per acre. We then applied that figure to the number of disturbed acres for both the TDS and Rugged sites and compared it with the amount of water proposed for the same activities (clearing/grubbing and soil binding agent application).

According to the Desert Green EIR, the project planned to use 14.86 AF of water over a 66.9 acre site, which included a 30% contingency. The actual usage was 16.15 AF, or a 9% increase over the projected use, including the 30% contingency. The actual water used was 78,675 gallons per acre for the Desert Green Project.

The TDS project originally proposed to use 15,933,000 gallons for dust control and mass grading (Dudek 2013 GRIR). After public comment on the Draft EIR, the water demand for the same items increased to 20,929,800 gallons (64.2 AF) over a 430 acre project site (including the gen-tie line [2014 FEIR, Table 9-2]). This would result in a water budget of 48,675 gallons per acre. Based on the calculations from the Desert Green project, we estimate the project will actually use 33,830,000 gallons (103.8 AF), more than double their original estimate and 61% more water than they have currently projected.

The Rugged project originally proposed to use 17,656,340 gallons for dust control and mass grading (2013 Dudek GRIR). After public comment on the Draft EIR, the water demand for the same items increased to 25,493,100 gallons (78.2 AF) over a 516 acre project site (2014 FEIR, Table 9-2). This would result in a water budget of 49,405 gallons per acre. Based on the calculations from the Desert Green project, we estimate the pro-

ject will actually use 33,830,000 gallons (124.6 AF), nearly double the original estimate and 59% more water than they have projected.

Soitec Desert Green Water Demand vs. TDS/Rugged Grading

While the Desert Green site was constructed on mostly level farmland consisting of 66.9 disturbed acres, the amount of grading was to include 90,000 cubic yards. This is contrasted with the TDS/Rugged site of 1,185 acres that is located in a mountainous region with rolling topography, yet is only requiring 40,000 cubic yards of grading. It seems unlikely that the TDS/Rugged site, which is nearly 17 times larger than the Desert Green site, will require less than half as much grading as Desert Green.

SUMMARY/RECOMMENDATIONS

Based on the review of the GRIRs and GMMPs, we make the following recommendations:

- The 50% reduction in storage calculations should be reanalyzed using a 22.4 AFY demand for residential lots.
- The County should require Soitec to provide monitoring, in the form of a downhole datalogger for any and all residences that request monitoring, within a two-mile radius of the pumping wells for the duration of the project.
- Water levels in residential wells should be monitored daily for the first week of extraction at each location.
- Groundwater extraction and water levels should be reported weekly for all extraction areas and any exceedances should be reported within 3 working days.
- The County should conduct routine, unannounced, random inspections of the groundwater extraction activities at all of the locations during peak construction and for the first year of the project. This will serve to check the accuracy and reliability of the imposed groundwater flow rate restrictions recommended below, as well as the accuracy of the monitoring with regard to drawdown of the monitoring wells and adherence to the shut down criteria. We also request that a consultant selected by the BPG also be permitted to conduct similar random, unannounced inspections of the same with the cost to be borne by Soitec.

- Flow Rate Restriction (TDS and Rugged)
    - Total AF restrictions placed on the TDS and Rugged areas may be effective at minimizing the impact to long-term groundwater in storage; however, they are ineffective at limiting the localized impacts that can be produced by overpumping, especially in the short term. The only method of minimizing well interference effects is to limit the rate of groundwater withdrawal. Given that the well interference calculations performed in the GRIRs were based upon tested and/or calculated flow rates (17 gpm at Well B [TDS], 49 gpm at Well 6a [Rugged], 39 gpm at Well 6b [Rugged], and 27 gpm at Well 8 [Rugged]), it is ineffective to limit

overall groundwater withdrawal volumes, while not placing any limitation on groundwater withdrawal rates that would protect nearby well users from draw-down impacts. If the project proponent can withdraw at an excessive rate, greater than that tested, there could and likely will be drawdown impacts to off-site wells in a short period of time.

As the example for Well B at TDS showed (Well Interference Calculation section), a flow rate of 17 gpm was calculated to produce a drawdown of less than 20 feet; however, if there is no flow restriction placed on Well B, and the project owner pumps the well at its maximum tested rate of 61 gpm, there is a predicted drawdown of 20 feet within 20 days, and the County-imposed drawdown cap of 10 feet is exceeded in 15 days.

- Based on the factors above, we recommend that the County impose a flow rate cap of 15 gpm on Well B during the 90-day construction period, in addition to a commensurate 6 AF total extraction cap. Similarly, we recommend that a flow rate cap of 10 gpm be placed on Well B for the nine month time period following peak construction.
- All wells tested at Rough Acres Ranch should have flow rate caps placed on them. For Well 6a the flow rate cap should be 49 gpm, for Well 6b the flow rate cap should be 39 gpm, and for Well 8 the flow rate cap should be 27 gpm. These are the rates at which the wells were tested and the conclusions drawn with respect to significant impacts.

- Planning Commission Hearing Report
  - The groundwater conditions established will provide some protections for groundwater resources; however, it is our opinion that some of the monitoring program conditions, and groundwater use restrictions should be modified. The following are recommended changes to the groundwater conditions imposed on the project.
    - Tierra Del Sol Conditions

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      - 26.b. Any residential well within a two-mile radius should be monitored by Soitec at no cost to the well owner.
      - The baseline water levels will be selected by the County Groundwater Geologist in consultation with the consultant for the project. As the EIR was a public document that solicited public input, the baseline water levels that will be part of the groundwater conditions should be made public, and input should be solicited from the public.

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- 42.a. A flow rate cap of 15 gpm should be imposed on Well B. (This rate is expected to result in less than 20 feet of off-site drawdown per the Dudek analysis.) Groundwater flow rates for Well B should be recorded daily.
- 42.e. Any residential well within a 2-mile radius should be able to have well monitoring provided by Soitec at no cost to the property owner. Water levels in residential wells should be monitored daily for the first week of extraction at each location in order to better understand potential impacts during groundwater use. Should unanticipated drawdown occur, these changes could be documented and acted upon early in the project.
- 42.a. Documentation: Groundwater data should be provided to the County Groundwater Geologist weekly.
- 42.b. Documentation: If baseline levels are exceeded by 5 feet, the notification to the County Groundwater Geologist there should be 1 working day notification.

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- 42.c. Documentation: If water production or water level thresholds are exceeded, the notification to the County Groundwater Geologist there should be 1 working day notification.
- 43.a. Groundwater production should be limited to 80,000 gpd.

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- 43.i. Water level thresholds and groundwater production limits should not be considered "minor alterations" and may not be altered.
- 43. Documentation: Groundwater production and levels must be reported on a weekly basis. Groundwater and level threshold exceedances must be reported within 1 working day.

- Rugged Conditions

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- 22. The Walker Residence Well and any residential well within a 2-mile radius should have well monitoring provided by Soitec at no cost to the property owner.

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- 37.a. Well 6a flow rate should be capped at 49 gpm, as tested. Well 6b flow rate should be capped at 39 gpm, as tested. Flow rates for each well should be recorded daily.
- 37.b. Well 8 flow rate should be capped at 39 gpm as tested. Flow rates for Well 8 should be recorded daily.
- 37.d. The Walker Residence Well should be subject to the same 10 foot drawdown criteria.

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- 37.h.3. The Walker Residence Well and any residential well within a two mile radius should be able to have well monitoring provided by Soitec at no cost to the property owner. Water levels in residential wells should be monitored daily for the first week of extraction at each location.

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- 37.a. Documentation: Groundwater production data and water level data should be reported to the Groundwater Geologist on a weekly basis.
- 37.b. Documentation: Exceedances should be reported within 1 working day
- 37.c. Documentation: Exceedances should be reported within 1 working day.
- 38.a. Production should be limited to 80,000 gpd

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- 38. Documentation: Groundwater production and water levels should be reported weekly during peak construction (first 90 days). Exceedances should be reported within 1 working day.
- Page 1-237
- 39. Documentation: Groundwater production and water levels should be reported weekly during peak construction (first 90 days). Exceedances should be reported within 1 working day.

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- 58.a. Groundwater production rates in each well should be limited to Well 6a-49 gpm; Well 6b-39 gpm; Well 8-27 gpm.
- 58.b. Add Walker Residence Well for monitoring
- 58.f. Add Walker Residence Well for monitoring

- The groundwater demand for the construction portion of the Rugged and TDS projects should be reanalyzed by using actual water use per acre by the Soitec Desert Green project as a proxy.

  The Soitec Desert Green project has many project features in common and provides actual water use for a completed project using CPV trackers and requiring limited grading for a relatively flat site. The initial indications are that the Rugged and TDS sites have underestimated groundwater demand for dust control, clearing and grubbing, and road construction by approximately 60%. The grading proposed for the site should also be reviewed in the context of the Desert Green project. It seems unlikely that a site that is 17 times larger than Desert Green will required less than half of the amount of grading in a mountainous region.

- At a minimum, a secondary containment system should be required for the battery storage system that would be sufficient to hold any accidentally released chemicals, to prevent a release to the soil and groundwater at the site.

These changes and additional analyses will provide substantially more protection for the groundwater dependent communities in the area of the project. Some of the changes and reanalysis will also further clarify the use of groundwater during the project.

Respectfully submitted,
SNYDER GEOLOGIC

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Principal Hydrogeologist