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MEMORANDUM

To:	Tierra del Sol Solar Farm LLC; Rugged Solar LLC
From:	Glenna McMahon, Dudek
Subject:	Response to Selected Comments (Energy Storage): Volker / Backcountry Against Dumps, January 15, 2015
Date:	January 28, 2015
Attachment:	Attachment A, Resume

On January 15, 2015, Stephan C. Volker submitted comments on behalf of Backcountry Against Dumps and Donna Tisdale to the San Diego County Planning Commission on the Final Programmatic Environmental Impact Report for Soitec Solar Development Project, SCH No. 2012-121-018.

With respect to hazards related to the optional energy storage system component of the proposed Rugged solar farm, Mr. Volker provides the following comment on Page 12:

> *The FPEIR's addition of battery storage at the Rugged site includes an enormous increase in onsite hazardous materials. Yet the FPEIR's additional information on battery storage makes no attempt to address whether the increased battery storage and associated HVAC systems could introduce contaminants to the local surface and groundwater supply at the Project site. For all these reasons, the FPEIR fails to present an accurate accounting of the Project's significant impacts on groundwater resources.*

Response: As indicated in the Additional Information Statement prepared as part of the Final Program Environmental Impact Report (FPEIR) for the optional energy storage component of the proposed Rugged solar farm, the battery units contain both hazardous and non-hazardous components. The composition of battery units may vary between manufacturers, but the generic constituents of a Lithium-Ion battery that may be considered hazardous materials include lithiated metal oxide, organic electrolyte, and inorganic salt in the electrolyte. As indicated in the Additional Information Statement, Attachment AIS 4, Section 5.0, the energy storage system would include a number of design features that would ensure fire impacts associated with the energy storage system remains at a level below significance. Many of these design measures also address risks related to hazardous materials, and are listed as follows:

- Available Battery Management Modules (BMMs) continuously monitor the state of charge, battery health, temperature, and other important information. Also available are

Mastery Battery Management Modules (MBMMs) to ensure charge uniformity throughout each string of Li-ion batteries.

- Custom grate or fiberglass t-bar flooring to cover corrosion resistant secondary containment.
- EPA Compliant Spill Containment and Access
- Seismic engineering and restraint shall be incorporated in the containers and the battery racks. The proposed system comes with a seismic rating.
- Spill control and secondary containment shall be provided for transformers containing any appreciable amount of oil.

Through implementation of these design measures, the energy storage system would include added layers of protection to prevent hazardous materials from entering the subsurface. Additionally, in the rare event that a rupture to a battery unit may occur, each battery unit has a protective casing, as shown in Figure 5, Lithium Ion Battery Pack (Typical) of Attachment AIS 4, which would contain the materials. The storage trailers would be an additional level of protection.

As indicated in Section 3.1.4.3.1 of the FPEIR, during construction, operation and maintenance, and demolition of the Rugged solar farm, federal, state, and local regulations exist that require strict adherence to specific guidelines regarding the use, transportation, and disposal of such hazardous materials. Regulations include RCRA, CERCLA, the Hazardous Materials Transportation Act, IFC, Title 22, CCR Title 27, and the County Consolidated Fire Code. These regulations would apply to the entire Rugged solar farm site, including the optional energy storage system and HVAC systems, if constructed.

Therefore, the energy storage system and associated HVAC systems would not introduce contaminants to the subsurface at the Rugged solar farm site that would in turn cause significant impacts.

Sincerely,

Glenna McMahon, P.E.
Senior Environmental Engineer

ATTACHMENT A

Resume

Glenna McMahon – Environmental Engineer

Glenna McMahon has 13 years' environmental engineering and hydrogeology experience. She has performed numerous tasks dealing with hazardous waste investigation and remediation projects. Responsibilities include managing sampling events; preparing budgets and performing soil and groundwater investigations at existing contaminated field sites; preparing groundwater monitoring reports and documents for regulatory agencies; Phase I and II Environmental Site Assessments (ESAs); third-party analysis of remediation progress and budget utilization; and design, implementation, operation, and maintenance of environmental remediation systems.

EDUCATION

University of Vermont
BS Civil and Environmental Engineering, 1998

LICENSES

Professional Engineer
California, No. 79742

Certified Environmental Manager
Nevada, No. 1974

PROJECT EXPERIENCE

Environmental Compliance and Monitoring, San Diego Association of Governments (SANDAG), San Diego County, California. Provided oversight, consultation, monitoring and sampling for SANDAG construction redevelopment projects in San Diego County. Attended project meetings. Reviewed and provided feedback on asbestos management plans and impacted soil reports. Oversaw field inspections, monitoring, and sampling.

Phase I Environmental Site Assessments and Preliminary Environmental Site Assessments, San Diego County, Kern County, Riverside County, and Monterey County, California and Clark County, Nevada. Performed numerous Phase I ESAs and preliminary environmental site assessments throughout Southern and Central California and Southern Nevada for sites ranging in size from a few acres to hundreds of acres. Sites included former residences, schools, agricultural operations, undeveloped lands and hotels and casinos.

Phase II Environmental Site Assessments, San Diego County and Monterey County, California. Evaluated, sampled, and oversaw removal of hydrocarbon impacted soil at sites in Southern and Central California.

Former Kearney-KPF Facility, Stockton, California. Managed installation, start-up and 24-hour operation of ultraviolet/oxidation groundwater treatment system in Stockton, California. Maintained regulatory compliance with RWQCB and EPA DTSC requirements concerning prove-out process and full-scale operation. Maintained treatment system operations remotely from Encinitas, California. Coordinated with subcontractors including drillers, electricians, construction companies and systems designers regarding estimates, scheduling, and invoicing.

Campus Master Plan Update 2005 and Campus Master Plan Update 2007, San Diego State University, City of San Diego, California. Prepared hazards assessment (2005) and Phase I ESA (2007) for project/program EIR for the SDSU Campus Master Plan Update 2005 and Campus Master Plan Revision 2007. Reviewed regulatory agency files pertaining to the Campus and surrounding business for potential environmental impacts. Researched local files held on properties in vicinity of project and discussed with Department of Environmental Health.

Former Marley Cooling Towers Facility, Stockton, California. Researched remediation technologies including in situ redox manipulation for use at a Stockton, California site contaminated with metals such as hexavalent chromium.

Monitored Natural Attenuation, Stockton and Newport Beach, California and Las Vegas, Nevada. Scheduled and performed quarterly groundwater monitoring at chlorinated solvent-, 1,4-dioxane-, and hydrocarbon-impacted sites in Stockton and Newport Beach, California and Las Vegas, Nevada. Performed QA/QC review of field data. Prepared quarterly groundwater monitoring reports.

Former Kaiser Steel Mill Facility, San Bernardino, California. Conducted third-party review of environmental documents and evaluation of remediation progress and utilization of budget for Real Estate Environmental Policy for Former Kaiser Steel Mill Facility in San Bernardino County, California.

Baldwin Park Operable Unit/San Gabriel Valley Superfund Engineering Cost Analyses. Researched data for a potential responsible party in Baldwin Park Operable Unit of the San Gabriel Valley Superfund Sites for allocation proceedings. Assisted in data submission preparation, identifying highest chlorinated solvent concentrations, and defending portions of contamination for which the site was responsible based on allocation stipulations.

Landslide Evaluation, Encinitas and Laguna Niguel, California. Researched water level and rainfall data for landslides in Encinitas and Laguna Niguel, California. Prepared data for litigation support.

Cost Allocation, Various Projects in California. Prepared and maintained yearly budget for groundwater remediation site in Stockton, California. Researched costs and prepared estimates for out-of-scope work such as installation of new effluent pipeline from groundwater treatment system and rehabilitation of groundwater wells. Prepared cost estimates for Phase I and II ESAs.

Nevada Petroleum Fund, Las Vegas, Nevada. Prepared Not-to-Exceed Proposals and claim submittals for reimbursement from Petroleum Fund for hydrocarbon-impacted site in Las Vegas, Nevada.