

**Sunrise Powerlink PPH comments 2-25-08**  
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- I have lived in Boulevard for over 30 years and have chaired the Boulevard Planning Group for almost 20 years. Our group has joined with other groups to oppose the entire Sunrise Powerlink project, not just the I-8 alternative that impacts us. There is a better way to deal with regional energy needs than by bulldozing and industrializing our vulnerable rural communities and public lands. None of us welcome or deserve to become regional sacrifice areas to support unbridled growth elsewhere. With this massive DEIS/EIR, which rejects the proposed project, with their Energy Action Plan and other actions and goals, the CPUC is on the right track to move us all away from the old school mentality in a new more sustainable direction. We thank them for that change.
- The 50 MW Kumeyaay Wind facility exists on the tribal lands of the Campo Reservation abutting our Boulevard planning area. It produces enough energy for 30,000 homes, 19 times our own population of 1,600, and saves 110,000 tons a year in GHG emissions. The existing Southwest Powerlink already runs through our communities along the border. More tribal wind projects are forthcoming. According to tribal representatives and SDG&E, they can tap into the existing SWPL and do not need Sunrise. It is neither fair nor justified that we, or other communities, be expected to take on the additional burden of even more transmission lines, fuel lines, and industrial energy parks at the expense of our rural community character, property values, and quality of life.
- Sunrise is not the only way to move renewable energy from the Imperial Valley to LA and then back down to San Diego.
- In October 2007, the Imperial Irrigation District (IID) adopted two resolutions intended to *“facilitate the development and export of renewable energy from the Imperial Valley to the Southern California coastal plain”* without Sunrise. The program includes construction of new 230 kV lines and performing system upgrades at key interconnection facilities to accommodate up to 1,600 megawatts of renewable energy export capacity from the Salton Sea area (IID press release 10-11-07)
- In November 2007 the IID broke off negotiations with SDG&E on the Sunrise Powerlink saying, *“We believe we can provide you and your ratepayers with an environmentally sound and lower-cost service alternative(to the Sunrise line)...”* (San Diego UT 11-17-07)
- Last week, the IID Board of Directors unanimously approved construction of Phase I, an eight mile portion of a planned 35 mile transmission project near the Salton Sea. They also approved funding for Phase 2-4 to finalize the remaining 27 miles of transmission, part of IID’s overall transmission expansion plans.(IID press release 2-19-08)
- In December 2007 Sempra Generation filed an application with the DOE for a cross border transmission line and a loop substation near Jacumba in the southeast corner of San Diego County. The line is proposed to move up to 1250 MW of wind power from the proposed Baja Wind project owned by a Sempra subsidiary near La Rumarosa, Baja California. *According to the Federal Register notice, the new line will connect with Sempra’s existing Southwest Powerlink.* (Federal Register-Feb 22, 2008 (Vol.73, No. 36 page 9782). The Sunrise Powerlink is not mentioned in the notice.
- If the unneeded and unwarranted Sunrise Powerlink project is allowed to move forward it could seriously impede some of the critical “next steps” outlined in the CPUC’s Energy Action Plan 2008

Update and the local Regional Energy Strategy which, among other important goals, calls for increasing in-basin generation to 75% in 2020.

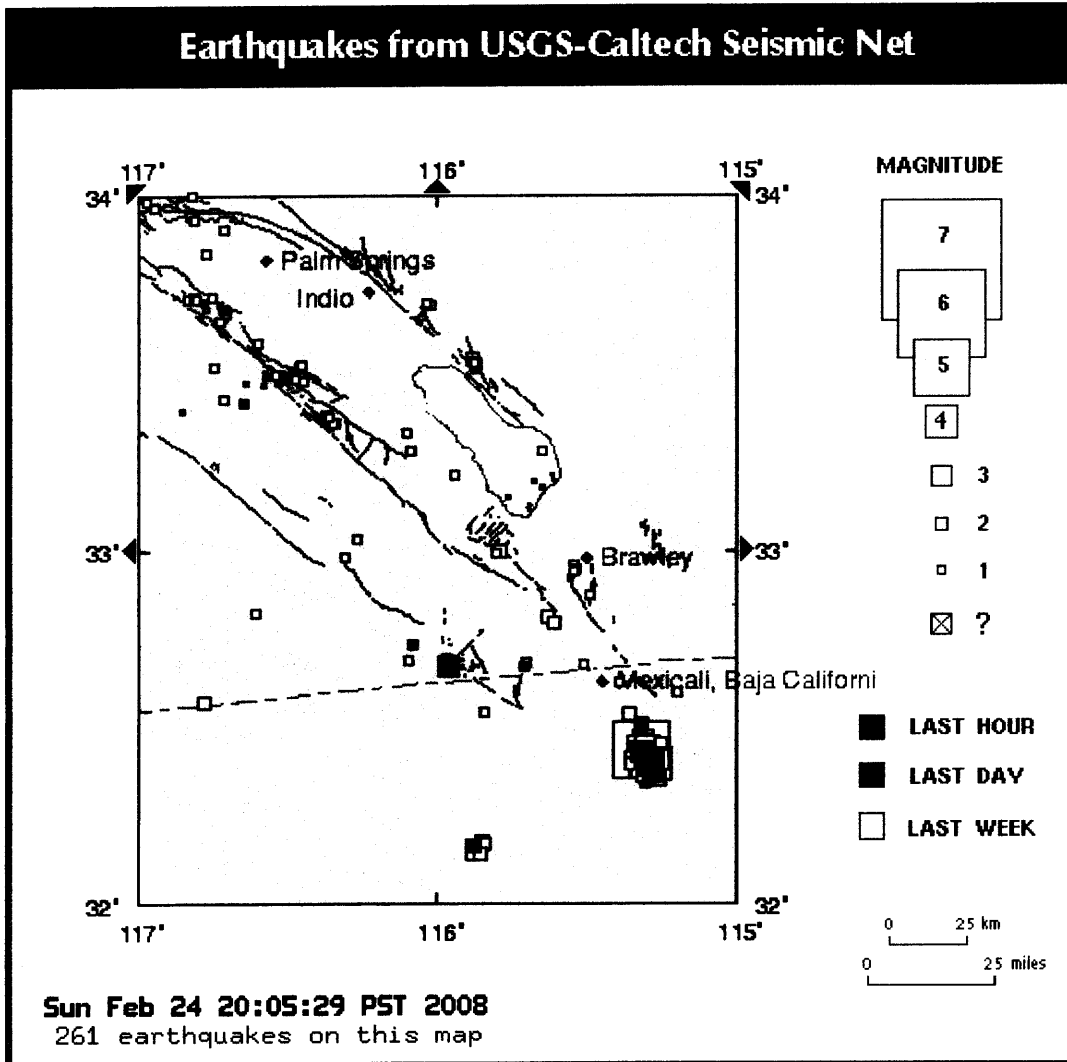
- With Sunrise in place, there will be less interest or incentive for investment in alternative projects. History will repeat itself. The promise in the early 80's that SWPL would be used for renewable energy importation fell by the wayside when oil prices fell, renewable energy projects were abandoned, and utilities successfully lobbied to eliminate the then required buy-back of electricity fed onto the grid from on-site producers, including residential.
- The CPUC is definitely on the right track with their rejection of the *proposed* Sunrise Powerlink transmission project in the DEIR/EIS. The # 1 environmentally superior alternative is much preferred to the proposed project and the alternate routes, all of which have significant impacts. However we would encourage less reliance on large scale and intrusive wind farms, and more reliance on micro wind turbines designed to be installed on roofs in the urban use basins, and more large-scale solar parking structures and solar panel arrays on commercial, industrial and public buildings, old landfills and brownfields. As well as more combined heat and power projects like the UK's tallest residential building going up next to London's Canary Wharf which will generate its own heat and electricity on-site (Cogeneration On-Site Power Production at [www.cospp.com](http://www.cospp.com)). This would result in less environmental damage and destruction at the expense of rural and desert communities and lands while creating local jobs and enough energy to support sustainable urban growth patterns.
- Companies like San Jose based Nanosolar, Inc and their new PowerSheet product line, and G24 Innovations Limited and their production of commercial grade Dye-Sensitized thin film are helping to drive the cost efficiency of solar electric systems and to allow utility-scale power generation.(nanosolar.com press release 1-18-07)(renewable-energy-world.com 10-23-07)
- Last year SDG&E honored six businesses for energy efficiency recognizing their saving of millions of kw hours and tens to hundreds of thousands of dollars in energy costs. If hundreds of local companies and agencies became involved in these types of projects the reduced energy consumption would help negate the need for more fossil fueled generators and projects like Sunrise. While this approach may be adverse to SDG&E's goals to engorge their coffers, and beyond the scope of many narrow-minded folks, it would much better suit the public convenience, need, and overall well being.
- There are many other examples to follow such as: Lily Development LLC's 38 story environmentally friendly Aquarius Tower condo complex in Georgia which along with solar panels will include 60 state-of-the-art wind turbines (Next Energy News 1-10-08). The proposed 12-story San Francisco Civic Center will include wind turbines on the roof, a venting system using "thermal Chimneys" to pull hot air out of the building, solar panels embedded in the outer walls and a water recycling system in the basement. (SF Chronicle 4-13-07). The Mayor of Boston also has plans to build small-scale roof mounted wind turbine at City Hall and is studying the possibility of building larger turbines at up to six Boston Public Schools.(WCSH6.com 1-15-08).
- We are at major crossroads in how we generate and transmit our electricity, how we reduce our carbon footprint and whether or not we seize the initiative to take our fledgling solar and other renewable energy industries to their multi-billion dollar potential, creating high-paying jobs and infusing local economies with millions of dollars. Requiring feed in tariffs for all excess energy produced on-site will be a big piece of success or failure. Do we move forward onto the new path or do we stay bogged down on the same old steel in the ground path as proposed by SDG&E and their Sunrise Powerlink?

###



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- White lines represent roads.

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**Most Recent Event**

Location	Date	Time	Magnitude
19.4 mi SE of Calexico, CA (ID 14352292)	Feb 23 2008	13:51:33 PST	3.7

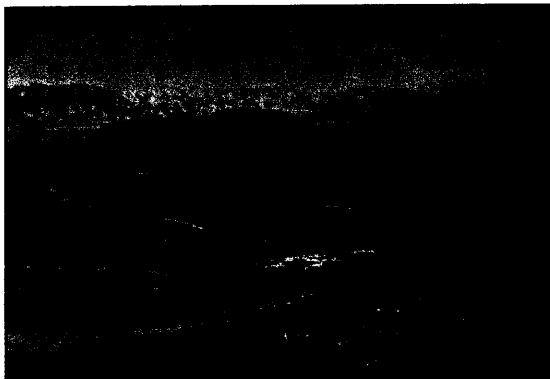
**Maps of Recent Significant Events**

Location	Date	Time	Magnitude
22.7 mi SE of Calexico, CA (ID 14352020)	Feb 22 2008	11:33:52 PST	4.4
21.0 mi SE of Calexico, CA (ID 14352012)	Feb 22 2008	11:31:18 PST	4.8
20.0 mi SSE of Calexico, CA (ID 14351300)	Feb 19 2008	17:28:55 PST	4.7
19.9 mi SE of Calexico, CA (ID 14351144)	Feb 19 2008	14:47:32 PST	3.6
19.4 mi SSE of Calexico, CA (ID 14351140)	Feb 19 2008	14:41:29 PST	5.0
2.4 mi ESE of Lone Pine, CA (ID 14350776)	Feb 18 2008	07:15:31 PST	3.7
41.0 mi S of Ocotillo, CA (ID 14350616)	Feb 17 2008	14:10:07 PST	3.7
13.9 mi ESE of Coso Junction, CA (ID 14350304)	Feb 16 2008	03:56:35 PST	3.5
18.3 mi SE of Calexico, CA (ID 14349664)	Feb 13 2008	18:36:43 PST	3.8
20.8 mi SE of Calexico, CA (ID 14349400)	Feb 12 2008	23:14:26 PST	4.0
20.1 mi SE of Calexico, CA (ID 14348944)	Feb 12 2008	02:39:45 PST	3.5
17.9 mi SE of Calexico, CA (ID 14348840)	Feb 12 2008	01:27:19 PST	4.4
18.9 mi SE of Calexico, CA (ID 14348824)	Feb 12 2008	01:20:11 PST	4.2
19.3 mi SE of Calexico, CA (ID 14348760)	Feb 11 2008	23:34:53 PST	3.5



**Global Volcanism Program**

Cerro Prieto » Summary

Smithsonian  
National Museum of Natural History**Cerro Prieto**

<b>Country:</b>	México	
<b>Subregion Name:</b>	México	
<b>Volcano Number:</b>	1401-00-	
<b>Volcano Type:</b>	Lava dome	
<b>Volcano Status:</b>	<i>Holocene?</i>	
<b>Last Known Eruption:</b>	Unknown	
<b>Summit Elevation:</b>	223 m	732 feet
<b>Latitude:</b>	32.418°N	32°25'6"N
<b>Longitude:</b>	115.305°W	115°18'18"W

The Cerro Prieto geothermal field is located at the head of the Gulf of California, 35 km south of the city of Mexicali. Cerro Prieto lies in an active continental rift that is transitional between the transform San Andreas fault system to the north and a spreading ridge of the East Pacific Rise in the Gulf of California to the south. The only surficial volcanic feature at Cerro Prieto, which is located near sea level on the Colorado River delta, is a small, 223-m-high compound dacitic lava dome. A 200-m-wide crater is located at the summit of the NE-most dome. The Cerro Prieto dome was roughly estimated from paleomagnetic evidence to have formed during a series of events between 100,000 and 10,000 years ago. Cucupas Indian legends described a monster that covered the land with hot rocks, which grew through the soil and emitted fire tongues, a possible reference to the growth of the volcano.

*Global Volcanism Program — Department of Mineral Sciences — National Museum of Natural History — Smithsonian Institution*

**DEPARTMENT OF ENERGY****[OE Docket No. PP-334]****Application for Presidential Permit;  
Baja Wind U.S. Transmission, LLC****AGENCY:** Office of Electricity Delivery and Energy Reliability, DOE.**ACTION:** Notice of Application.

**SUMMARY:** Sempra Generation, on behalf of Baja Wind U.S. Transmission, LLC (Baja Wind), has applied for a Presidential permit to construct, operate, maintain, and connect an electric transmission line across the U.S. border with Mexico.

**DATES:** Comments, protests, or requests to intervene must be submitted on or before March 24, 2008.

**ADDRESSES:** Comments, protests, or requests to intervene should be addressed as follows: Office of Electricity Delivery and Energy Reliability (OE-20), U.S. Department of Energy, 1000 Independence Avenue, SW., Washington, DC 20585-0350.

**FOR FURTHER INFORMATION CONTACT:** Ellen Russell (202-586-9624) (Program Office) or Michael T. Skinker (Program Attorney) 202-586-2793.

**SUPPLEMENTARY INFORMATION:** The construction, operation, maintenance, and connection of facilities at the international border of the United States for the transmission of electric energy between the United States and a foreign country is prohibited in the absence of a Presidential permit issued pursuant to Executive Order (EO) 10485, as amended by EO 12038.

On December 20, 2007, Sempra Generation, on behalf of Baja Wind, a Delaware limited liability corporation and wholly-owned subsidiary of Sempra Generation, filed an application with the Office of Electricity Delivery and Energy Reliability of the Department of Energy (DOE) for a Presidential permit. Baja Wind requests authority to construct, own, operate, and maintain the U.S. portion of a single-circuit 500-kilovolt (500-kV) electric transmission line that crosses the U.S.-Mexico international border in the vicinity of Jacumba, San Diego County, California.

The proposed transmission line project would connect up to 1,250 megawatts of electric power produced from wind turbines to be located in the vicinity of La Rumorosa, Baja California, Mexico, to San Diego Gas and Electric Company's (SDG&E) existing Southwest Powerlink (SWPL) 500-kV transmission line. The proposed facilities would be approximately one mile long inside the United States and two miles long inside Mexico (total length of the facilities

would be three miles) and consist of a single circuit 500-kV transmission line on either lattice towers or steel monopoles. The proposed facilities would include a loop-in substation on the SWPL. The proposed loop-in substation would be owned and operated by SDG&E. From the U.S.-Mexico border, the proposed transmission line would continue south approximately two additional miles to its origination point at a future 230/500-kV substation. The proposed transmission line located in Mexico and the 230/500-kV substation would be constructed, owned, operated, and maintained by a subsidiary of Sempra Energy Mexico.

The proposed transmission line would be used to transmit the entire electrical output of the La Rumorosa wind generators from Mexico to the United States. Energy will not be exported from the United States to Mexico, except for the small amount of electric energy needed for wind turbine lubrication, hydraulic, and control systems when the wind generators are not operating. Any entity exporting such electric energy from the United States would require an electricity export authorization issued by DOE under section 202(e) of the Federal Power Act (16 U.S.C. 824a(e)).

**Procedural Matters:** Any person desiring to become a party to this proceeding or to be heard by filing comments or protests to this application should file a petition to intervene, comment, or protest at the address provided above in accordance with §§ 385.211 or 385.214 of the FERC's Rules of Practice and Procedures (18 CFR 385.211, 385.214). Fifteen copies of each petition and protest should be filed with the DOE on or before the date listed above.

Additional copies of such petitions to intervene, comments, or protests should also be filed directly with Ms. Joan Heredia, Permitting Manager, Sempra Global, 101 Ash Street, HQ 8B, San Diego, California 92101.

Before a Presidential permit may be issued or amended, DOE must determine that the proposed action is in the public interest. In making that determination, DOE considers the environmental impacts of the proposed project pursuant to the National Environmental Policy Act (NEPA) of 1969, determines the project's impact on electric reliability by ascertaining whether the proposed project would adversely affect the operation of the U.S. electric power supply system under normal and contingency conditions, and any other factors that DOE may also consider relevant to the public interest.

Also, DOE must obtain the concurrence of the Secretary of State and the Secretary of Defense before taking final action on a Presidential permit application.

Copies of this application will be made available, upon request, for public inspection and copying at the address provided above. In addition, the application may be reviewed or downloaded electronically at [http://www.oe.energy.gov/permitting/electricity\\_imports\\_exports.htm](http://www.oe.energy.gov/permitting/electricity_imports_exports.htm). Upon reaching the Electricity Import/Exports page, select "Pending Proceedings."

Issued in Washington, DC., on February 15, 2008.

**Ellen Russell,***Acting Director, Siting and Permitting, Office of Electricity Delivery and Energy Reliability.*

[FR Doc. E8-3333 Filed 2-21-08; 8:45 am]

BILLING CODE 6450-01-P

**DEPARTMENT OF ENERGY****Federal Energy Regulatory  
Commission****[Docket No. OR078-18-000, Docket No. OR07-19-000]****America West Airlines, Inc., Chevron Products Company, Continental Airlines, Inc., Northwest Airlines, Inc., Southwest Airlines, Co., US Airways, and Valero Marketing and Supply Company v. Calnev Pipe Line, L.L.C.; ConocoPhillips Co. v. Calnev Pipe Line, L.L.C. (Not Consolidated); Notice of Amended Complainant**

February 14, 2008.

Take notice that on February 11, 2008, America West Airlines, Inc., Chevron Products Company, Continental Airlines, Inc., Northwest Airlines, Inc., Southwest Airlines Co., U.S. Airways, Inc., and Valero Marketing and Supply Company (collectively, Joint Complainants), tendered for filing an amendment to the Joint Complaint filed by Joint Complainants on August 20, 2007, against Calnev Pipe Line, L.L.C. Joint Complainants state that, except as modified and supplemented by this amendment, the allegations and supporting evidence contained in the original complaint remain unchanged. In the instant filing, Joint Complainants amend their complaint to include supplemental analysis.

Any person desiring to intervene or to protest this filing must file in accordance with Rules 211 and 214 of the Commission's Rules of Practice and Procedure (18 CFR 385.211, 385.214). Protests will be considered by the Commission in determining the appropriate action to be taken, but will

**Boulevard Planning Group  
P.O. Box 1272  
Boulevard, CA 91905**

CPUC/BLM  
2008  
Co/Aspen Environmental Group  
235 Montgomery Street, Suite 935  
San Francisco, CA 94104

April 10,

**COMMENTS ON THE SUNRISE POWERLINK DEIR/EIS (CALIFORNIA SCH  
#2006091071, DES CONTROL NO. DES-07-58)**

Dear CPUC and BLM,

The Boulevard Planning Group (previously known as the Boulevard Sponsor Group) is an elected body which advises San Diego County on local land use issues, it also serves as a forum for issues of local concern. Our planning group has been actively involved and has participated from the beginning of the public review process for this highly controversial project. We have also gone on record numerous times as opposing the project in its entirety. We hereby incorporate our previous comments. Our Boulevard neighborhood will be physically impacted by the I-8, BCD, Modified Route D Alternatives, the New In Area All source Generation, and the New In-Area Renewable Generation Alternatives, all of which placed in the top four overall environmentally superior alternatives as identified by the DEIR/EIS. We stand together with other communities, both human and natural, that will be negatively impacted by the Sunrise Powerlink project and other projects integrally connected to it, both directly and indirectly. As ratepayers we will all be negatively impacted by this shortsighted and wrongheaded project.

Those who have labored over this massive EIR process are commended for their in-depth review and amazing organizational skills. However, those of us who live in the impacted areas believe that this DEIR/EIS document contains material factual inaccuracies and deficiencies. It does not fully portray the legacy of impacts that we will be forced to live with day in and day out into the future.. At our regular meeting, held on April 3, 2008, our group reviewed my draft comments and voted 6-0-0, (one member absent), to have me complete them and submit them on behalf of the group. The majority of these comments are focused on our Southeastern San Diego County area and the Imperial Valley because that is where we have the most knowledge.

**Summary:**

It is our strong opinion that the Sunrise Powerlink *transmission only* project is not needed , nor has it proven itself to be a cost effective way, to provide renewable energy to San Diego. We believe the

project will actually increase costs and Green House Gas impacts associated with the importation of dirty LNG, and the potential use of the line for transmission of fossil fuel generated power. There are also unknown costs related to remote renewable energy projects such as massive amounts of water for remote geothermal and solar projects. The cost and availability of water and fossil fuels is expected to escalate considerably in coming years. We believe the project will actually reduce reliability based on multiple connections and projects reliant on one remote and vulnerable substation in Imperial Valley. The Imperial Valley Substation is located near the US/Mexico border in an area of active faults subject to earthshaking and ruptures. This area is also known to be frequented by criminal smuggling syndicates, making it a viable and vulnerable target for acts of terrorism/sabotage.

The San Diego region would be better served to follow the Southern California Edison example and produce their own in-basin energy on the rooftops of commercial, industrial and public facilities, as well as on parking structures, closed landfills, and military bases. To backup in-basin renewable energy generation, and for better distribution and added reliability, follow-up on energy efficiency initiatives, in addition to increased self generation and combined heat and power projects, will be needed. There is no need to desecrate and scar the wild and rural heritage and resources of Imperial and San Diego counties to tap into renewable resources that are available close-in. There is no need to add to the already elevated fire danger of the region by installing multiple overhead transmission lines and industrial turbines (which can ignite wild fires through malfunctions) in areas with high fuel loads and high winds. The October 2007 firestorms, some reportedly started by power lines, demonstrate that wildland fires threaten rural, suburban and urban neighborhoods. Sunrise Powerlink is not the way to achieve long-term, low-cost, or reliable sustainable energy for San Diego's future.

### **Purposes of the Proposed Project (CPUC and BLM Objectives)**

#### **1) Maintain Reliability:**

**Maintaining reliability with all your eggs in one basket is risky at best. The Imperial Valley Substation is that one basket. Earthquakes, were erroneously dismissed as Class III impacts and insignificant. In D.13 Geology, the DEIS/EIR discusses potential earthquake impacts on the proposed transmission line and various substations but it does *not* address the impacts on the main Imperial Valley Substation itself (D.13-47-48). The document is deficient in analyzing this major reliability issue which represents a significant error of omission**

#### **All of the following projects are rooted and/or connected at the IV Substation:**

- **The existing 500 kV Southwest Powerlink (SWPL).**
- **Sempra's two existing Mexican gas-fired power plants near Mexicali.**
- **All of the potential routes for the Sunrise Powerlink (SPL).**
- **Stirling Solar's separate 230 kV line connection.**
- **Sempra's Baja Wind at LaRumarosa proposes to connect up to 1,240 MW via the**

**proposed Jacumba 500 kV Substation and SWPL.**

- **New wind projects in the Boulevard area are proposed to connect to SWPL and the IV substation through the Jacumba Substation.**

**With the close proximity to the Imperial Valley Substation (see Figure D.13.2) to the San Andreas Fault, the Laguna Salada Fault, the Elsinore Fault, the Imperial Valley/Brawley Seismic Zone, the San Jacinto Fault Zone, the Superstition Fault, the Superstition Mountain Fault, the Yuha Wells Fault, and others, disruption of service due to severe earth shaking or rupture is a very real possibility. There is also a concern for liquefaction in the general area.**

**In addition to the potential for both 500 kV lines being knocked out of service at the same time, the Semptra gas fired power plants at Mexicali and La Rosita, and the Baja pipeline that feeds them, which currently provide cross border power via SWPL, would also be subject to disruption/destruction by the same or different earthquakes, land ruptures and liquefaction.**

On the Mexican side of the border is the Cerro Prieto geothermal field. It is our understanding that Mexico does not fully require reintroduction of fluid to replace the geothermal fluid that is withdrawn from the underground resource. This has caused some cases of severe ground subsidence. Some believe that this change in underground dynamics may be contributing to the recent swarm of earthquakes felt throughout the Mexicali and Imperial Valleys as well as Eastern San Diego County. I personally experienced the 1968 and 1979 earthquakes in Imperial Valley and land ruptures that occurred. I have spoken directly to those who experienced the 1940 quake which was more even destructive with more extensive land ruptures. As recently as March 29<sup>th</sup> another 4.2 earthquake rattled that area. California passed SB-1953 in response to the Northridge quake that made hospitals a target for retrofitting. **It is my understanding that there are no current laws mandating the retrofitting of existing power plants to that same stringent code.**

**Acts of Terror/sabotage were also erroneously dismissed as an insignificant Class III impacts (D.10.25, E.4.10-5, Impact PS-4 & PS-5 for Connected Actions). Again the DEIR/EIS is deficient in analyzing the co-location issue for both 500 kV lines, and multiple generation sources, at one vulnerable substation which represents a major Achilles' Heel for the project.** Connecting both the Southwest Powerlink (SWPL) and the Sunrise Powerlink (SPL) to the IV Substation could impact reliability based on the substation's location in a remote, isolated, and vulnerable area of the US/Mexico border (see Fig. ES-5, ES-10, ES-12, Ap. 1-27a & B-30). The area is known to be frequented by organized criminal smuggling syndicates, as is the Eastern San Diego sector of the border where the Jacumba Substation is proposed. According to agents that work the border in Imperial and San Diego Counties, aliens, and criminal aliens, associated with known and suspected terror groups, and countries of interest, have been apprehended in both the Imperial and San Diego County, and other, border regions. Those of us who live here have to deal with numerous federal checkpoints on our local and regional byways and highways: Historic Route 80, I-8, Hwy 94, S-2, Hwy 86, and more. We also deal with criminal human and drug smuggling activities in our communities and across our own properties. The lack of control at the

Boulevard Planning Group comments on Sunrise Powerlink 4-10-08

US/Mexico border has permeated our every day lives. The threat level in our area is chronically rated as "Elevated". (Exh. 1: Illegals From Terror-Sponsoring Nations at Large in US, cnsnesw.com, 8-8-06 & US-Mexico Border As A Terror Risk, Christian Science Monitor 3-22-05).

**The primary mission of the Department of Homeland Security and the US Border Patrol is to "prevent terrorists and terrorist weapons from entering the country".** According to the Governor's Office of Homeland Security ( ), since 2002 the San Diego region has received numerous federal grants, totaling \$85,084,758, to address homeland security issues based on elevated terror threats. The Imperial Valley has received \$2,765,533.. Various public officials and elected representatives have repeatedly demanded more federal aid to address the threat of terrorism. Based on these figures, and the actions of public agencies and officials, the threat of terrorism is very real. The IV Substation, and the main transmission line(s) for the San Diego region, SWPL and the proposed Sunrise Powerlink and the Jacumba Substation, are all viable and valuable targets for terrorist groups or individuals wishing to inflict harm to critical infrastructure and key assets. **How much money has been requested or invested in protecting the IV Substation and the remote transmission lines? What would be the cascading effect of that main junction being taken out? To dismiss this issue as a Class III impact is not only a major error, it is dangerous.**

## **2)Promote Renewable Energy.:**

**The Sunrise Powerlink is a bait and switch project which proposes to import renewable energy from numerous speculative remote projects, few of which have materialized. On the other hand, the recent announcement of Southern California Edison's (SCE) plan to install up to 250 MW of advanced solar on 65 million square feet of roofs on commercial buildings (Exh. 2: Renewable Energy World.com 3-28-08 & North County Times 4-9-08) gives credence to the DEIR/EIS's top two environmentally superior alternatives and to the San Diego Smart Energy 2020 plan authored by Bill Powers, P.E. (October 2007), as the 21<sup>st</sup> century alternative to the old school Sunrise Powerlink proposal.** The SCE project was prompted by recent reductions in the cost of installed solar photovoltaic (PV) generation. The estimated cost is \$875 million. When combined with the size of SCE's investment the resulting costs per unit are projected to be half that of common PV. SDG&E has disingenuously ridiculed this type of urban based solution as impractical and infeasible. If approved and built, Sunrise will destroy the incentive to follow SCE's forward looking direction and condemn our area to more steel in the ground and ever expanding and destructive large scale projects and transmission corridors through sensitive natural and human communities in rural areas. As demonstrated by SCE, renewable energy options are best pursued in the close in urban-suburban use basin to ensure better distribution, more reliability, and less reliance on vulnerable and remote industrial scale wind and solar farms with their miles and miles of vulnerable transmission lines needed to move the energy. This would also eliminate a significant amount of line loss and, and placing full reliance on the at-risk IV substation.

Boulevard Planning Group comments on Sunrise Powerlink 4-10-08

### **3)Reduce Energy Costs:**

How can investing in a boondoggle transmission *only* project, that will cost ratepayers in excess of \$1.5 billion, be legitimately portrayed as reducing energy costs? There are no guarantees that fossil fuel generation will not be the main source of energy transmitted. Fossil fuel prices and availability are highly volatile and subject to many unpredictable geo political influences. There are no guarantees that proposed remote renewable energy facilities will succeed or continue to be supported with federal subsidies, tax credits, and more. Nor is the cost or availability of massive volumes of water needed for remote geothermal and solar projects known. Following in SCE's footsteps to install 250 MW of rooftop solar projects in basin appears to be a prime example of insuring sustainable energy at reduced costs.

### **New In-Area Renewable Generation Alternative**

**E-S-64:** This alternative is correctly reported to *"create significant impacts as a result of the extensive ground disturbance, habitat loss, and visibility of large wind and solar thermal components"* However, The DEIR/EIS is deficient in analyzing the cumulative negative impacts of numerous large scale and highly visible industrial-scale wind components in the Crestwood/Boulevard/Jucumba/La Rumarosa area, in combination with multiple 230 and 500kV transmission lines and substations. **Turbines also represent ignition sources for wildfire, in areas known for their howling Santa Ana winds. Turbines can also cause groundwater contamination through malfunctions and explosions of turbines and transformers.** A transformer explosion at a wind turbine facility released over 400 gallons of oil which contaminated a residential well (Watertown Daily News 12-29-07). Just Google wind turbine fires/explosions and volumes of articles, pictures, videos and commentary and will pop up (Exh. 4). The change in location for the Jacumba Substation further to the east, also increases the length and impacts of the necessary transmission line connection for wind proposals on BLM lands in the McCain Valley/Crestwood area. **These issues represent deficiencies, significant errors of omission, and significant new information. Pursuing projects like SCE's 250 MW of rooftop solar, and smaller rooftop turbines, along with renewable energy projects located on closed landfills and military bases makes much more sense. A local representative for Allied Waste stated to me that they would be interested in hosting solar or other renewable projects on the closed sections of their San Diego landfills which include Otay, Sycamore, and Ramona. Military bases are now being made available for renewable energy projects with 50 year leases(Renewable Energy Transmission Initiative minutes for January 2008 ).**

**ES -3, Figure ES-1, ES-56: The Campo North Option of the I-8 Alternative:** This route is no longer available: is no longer viable due to the opposition of the Campo Kumeyaay Nation as relayed to SDG&E in letter form and verbally, by Chairman H. Paul Cuero, Jr., at the CPUC PPH held at Mountain Empire High School on February 25, 2008. Some have argued that tribal opposition is not a show stopper. To find an answer to that question, I spoke directly to

Boulevard Planning Group comments on Sunrise Powerlink 4-10-08

John Rydzik, the regional Chief of Environmental and Cultural Resources for the Bureau of Indian Affairs, at the February 25<sup>th</sup> hearing and again over the phone on March 27, 2008. Mr. Rydzik confirmed to me that it would be highly unlikely for the Bureau, or the Department of Interior, to approve an easement for the Sunrise Powerlink, or other related projects, over the objections of the host tribal government. He also stated that, due to their sovereign status, tribal trust lands are treated differently than other federal lands and the federal government would not force the granting of an easement. **This is significant new information that renders the Environmentally Superior Southern Route no longer feasible, and places new focus the BCD South option.**

**B-54: Install Structure Foundations: This section is deficient: It fails to recognize or analyze numerous impacts related to blasting and drilling for tower foundations.** At the February 25<sup>th</sup> CPUC's PPH hearing held at Mountain Empire High School, Campo resident Jack White, testified that he works for a major industrial drilling firm and raised the fact that chemical drilling fluids and dewatering processes can contribute to groundwater contamination. Mr. White also stated that they would need huge cleared staging areas for preparing each and every tower foundation, in order to accommodate the drilling rigs, numerous generators, and all the other associated construction equipment. (see Exh. 5 for photo of similar construction site on I-15) Mr. Chris Noland, a licensed geologist, also testified at that same hearing regarding the seismic waves created by blasting which can damage private wells. Noland testified that backcountry residents are reliant on wells and that many times those wells are open, with no outer casings, making them vulnerable to cave-ins or fouling by sediments caused by blasting and the seismic waves. They are drilled to varying depths in fractured rock, and at great expense to the owners. Blasting can also alter the flow of water through fractures which may have adverse impacts on a wider area of influence. **This issue was not raised in the DEIS/EIR and is a serious deficiency and error of omission (see E.4.10.3, Impact P-1& P-5).** Especially, due to the reliance on vulnerable at-risk groundwater resources for the majority of the proposed project and alternate routes through eastern San Diego County. All of the southern route alternatives pass through the federally designated Campo/Cottonwood Creek Sole Source Aquifer and the Ocotillo/Coyote Wells Sole Source Aquifer. This means that the federal government has already confirmed that there is no economically viable alternate supply of water available to replace those groundwater resources. **SDG&E needs to ensure that adequate alternate water supplies will be provided to affected landowners in the event a supply well or springs dry up in response to project activities, and demonstrating how that will be accomplished in light of our sole source aquifer status. SDG&E should be required to respond immediately by either rehabilitating or reconstructing a new water supply well for the landowner at SDG&E's expense.**

**B-96: Removal of Facilities and Solid Waste: The DEIR/EIS fails to discuss San Diego County's mandatory construction and demolition debris recycling ordinance. This is a deficiency and significant error of omission.** Effective April 21, 2007, debris from construction and demolition projects, 40,000 square feet or greater, must be diverted away from landfill disposal in the San Diego County Ordinance 120000. The ordinance requires that 90% of inerts and 50% of all other



Boulevard Planning Group comments on Sunrise Powerlink 4-10-08

materials must be recycled from a project. In order to comply with the ordinance, applicants must submit a Construction and Demolition Debris Management Plan and a fully refundable Performance Guarantee prior to building permit issuance.

Revised 4/10/08

**B-99 Vegetation Management the use of chemical herbicides:** Occasional chemical herbicide use is mentioned to remove vegetation from around foundation of transmission towers. In the aftermath of the 2007 firestorms, much more extensive vegetation management may be required. It is our concern that this may result in a much wider and increased application of herbicides which can lead to an increase in the potential for groundwater contamination (see comment on B-54 above). The March 28<sup>th</sup> Phase II Testimony of Richard Halsey on behalf of the Center for Biological Diversity, and his comments regarding new and significant increased fire risks is hereby incorporated. **This also represents potentially new and significant impacts to, groundwater quality, habitat, wildlife, landscape scarring, fugitive herbicide emissions, greater dust generation from denuded soil, and more.**

**B-103 and B-111: Stirling Technology** is discussed but the potential for negative impacts to the mirrored surfaces from damaging sand storms and dust accumulation from adjacent off-highway vehicle activities, and emissions from the US Gypsum wallboard factory at Plaster City is not. There are also concerns with the proximity to the Laguna Salada and other faults and the potential for earthquake damage. There is a lack of discussion or analysis on how much water would be needed, and the source of that water, to keep the plant operating and the mirrored surfaces clean and receptive. There is an ongoing court battle underway between the Sierra Club and the County of Imperial over US Gypsum's excessive and perhaps illegal usage of groundwater resources from the federally designated Ocotillo/Coyote Wells Sole Source Aquifer. A new hearing has been scheduled in June 2008. All of these represent deficiencies significant errors of omission. According to farmers in the Imperial Valley, the IID has advised them of cutbacks in water availability to comply with Colorado River water allocations. IID has also discussed the potential to require renewable energy projects to use recycled rather than potable water supplies. This issue needs to be addressed for both solar and geothermal projects. This requirement would add significant new costs for infrastructure to move recycled water as well as an EIR to determine the source of the recycled water and any environmental impacts associated with the rerouting of that recycled water from its current usage. Especially, if that water currently replenishes the Salton Sea.

**B-112: The IID: transmission system upgrades are discussed.** As noted in numerous letter/documents from the IID there is new information regarding those upgrades. IID has expressed concerns that those tens of millions in investments will be stranded if Sunrise Powerlink is allowed to move forward as proposed causing economic harm to their district and ratepayers.

**Jacumba Substation and SCE La Rumarosa projects: These are now 4-6 times**

Boulevard Planning Group comments on Sunrise Powerlink 4-10-08

**bigger than estimated in the DEIR/EIS. They are also in different locations with greater impacts on Big Horn Sheep, Quino Checkerspot Butterfly Habitat and Visual Resources. There is new information from Sempra's DOE filing regarding the changes in location and the size of both the substation and the wind facility, which translates into a four-six fold increase in impacts and a significant increase in cumulative impacts.** As for the La Rumarosa Baja Wind US Transmission, LLC, site in Mexico, referred to in the DEIR/EIS as Rumarosa Wind Developers II, new information is available in Sempra's December 2007 filing with DOE, and noticed in the February 22, 2008 Federal Register (Exh. 6: OE Docket No PP-334) increases the size of the project, substation, and cross-border transmission capacity. The location of the Jacumba substation as well as the apparent location of the wind generation site (Fig. B-48) have also changed.

The proposed project increased from 250 MW (pg. B-123) to 1,250 MW. The generation location changed from Eastern side of the Sierra Juarez Mountains (pg. B-124) to what appears to be a more westerly location. The proposed substation location changed from northwest of Jacumba (Fig. B-47) to the east of Jacumba, closer to the Jacumba Wilderness Area and Big Horn Sheep habitat. The size of the substation has increased from 20 acres (pg D.2-236) to 80 acres. The proposed transmission line has increased from 230kV (pg. D.2-244) to one 500 kV or two 230 kV transmission lines per the Sempra DOE application for a Presidential Permit.

Due to the size, scale, and location of this project it will also be highly visible from Tierra Del Sol Road, Ribbonwood Road, and homes located on higher elevation locations throughout the Boulevard area, as well as from Historic Route 80, adding significant Visual Resource impacts as well as additional cumulative impacts. These impacted viewing points were not included on the list of significant impacts at page D.3-205, or at D.3-202 under Long term visibility or under cumulative Visual Resources impacts at page G-39. At D3-202 it wrongly states that there is "no impact for the United States". At D.3-205 it is noted that there will be impacts from La Rumarosa and Jacumba, but I-8 and Historic Route 80 were erroneously left out. While Figure B-50 shows views *from* La Rumarosa, there is no figure showing views *of* La Rumarosa from these impacted viewing points. Impacts to the views on the I-8 and Historic Route 80 corridor will also be significantly impacted with the potential combination of the Jacumba Substation, the I-8 Alternate Route 500 kV line, the existing SWPL 500 kV line, and the much expanded Baja Wind Project all crammed into a very scenic and sensitive area. If you go to the link below, for a slide show (unrelated to this project) of aerial views of the Jacumba/Jacume general area, you will be able to see the ridge line of the Sierra Juarez Mountains (not identified in the slide show) to the southeast of Jacumba. A Sempra representative confirmed that the Baja Wind project would include lighting similar to that at the existing Kumeyaay Wind facility. Day time strobe lighting and night time red blinking lights atop the turbines will have major visual and dark sky impacts as well. Turbines placed in that area could not be camouflaged or hidden. <http://www.fishbase.org/abstract.asp?docId=3095&base=slideshow2008>

**There are long-term cross-border efforts and investments to protect and conserve important**

Boulevard Planning Group comments on Sunrise Powerlink 4-10-08

**binational wildlife corridors such as the Las Californias and Parque to Park** as discussed in the Phase II Testimony of Esther Rubin and Jerre Ann Stallcup submitted on behalf of the Center for Biological Diversity and the Sierra Club. The Jacumba Substation, the Baja Wind proposal, and all of the Southern route alternatives for the Sunrise Powerlink would cause significant impacts to those binational efforts and investments. See the attached March 2008 La Rumarosa Baja Wind protest letters, and attachments, from the Boulevard Planning Group and the Center for Biological Diversity on Sempra's Baja Wind application (Exh. 7). Those letters and attachments are hereby incorporated.

### C. Alternatives:

**Table C-1, Summary of Potential Impacts: Sunrise Powerlink, does not address groundwater contamination and/or collapse or dewatering of wells due to construction, blasting, drilling, fuel spills. We are groundwater dependent with no access to imported/alternate water supplies. Air Quality and Soils sections do not mention the potential for increased exposure to crystalline silica dust and the potential for silicosis a serious lung disease which can lead to lung cancer. Both construction and bystanders (residents) are at risk ( The noise section does not mention the low level groaning or vibration noise emitted from industrial scale wind turbines. The cumulative impacts of the groaning turbines and corona noise from the transmission lines needs to be addressed.**

**C-73 Biomass/biogas. In November 2007 SDG&E announced power purchase agreements for an additional 10 MW of biomass. One project will be on the Los Coyotes Reservation and another will be located in Ramona. This appears to be new information.**

**C-73 Wind**: The DEIR/EIS document references the potential use of tribal, public and private lands. San Diego County has zoning ordinance regulations (Exh. 8) which apply to small, medium and large turbines, restricting the height of turbines on private lands and requiring significant set-back requirements from property lines, residences, public buildings, and public roads. These projects must also go through the Major Use Permit process and must make findings showing compliance with issues of community character and bulk and scale. Under the County zoning ordinance, the tallest turbine allowed, including blades, is 80 feet with a set-back requirement from public roads and property lines of four times the height. Most industrial scale turbines are between 325' and 425' in height. Those proposed for tribal and/or public lands, where the County has no authority, conflict with what would be potentially allowed on private property. Although, we believe it will be incredibly difficult to show that industrial scale turbine projects on private lands meet community character and scale. These industrial projects will have negative and cumulative impacts on property values based on transforming open rural vistas to invasive, cluttered, and whirling, industrial skylines.

### Biological Resources

Boulevard Planning Group comments on Sunrise Powerlink 4-10-08

**East San Diego County Multiple Species Conservation Plan is now in the works.** As the Chair of the Boulevard Planning Group, I sit on the Steering Committee for this project. The goal is to create large connected preserve areas addressing regional habitat needs for numerous species. Fragmentation and destruction of habitat is to be avoided. The separate and cumulative impacts from the various aspects of the proposed project, alternate routes, various wind proposals with separate transmission lines, quadrupling the size of the Jacumba Substation from 20 acres to 80 acres and moving it to a location on top of and next to Quino Checkerspot Butterfly Habitat and Big Horn Sheep Habitat, and miles and miles of access roads, is counterproductive to those goals of conservation and protection. **Please see comments below under E.1.12. In addition to the other sensitive habitat noted under comments on E.1.12, the 2001 Specific Plan for Big Country Ranch, located in Western McCain Valley, which will be impacted by the BCD Route , reports the 2,276 acre property contains 895.5 acres of Southern Mixed Chaparral, 501.6 acres of Red Shank Chapparral, 342.6 acres of Desert Transition Chaparral, 221.6 acres of Great Basin Scrub and 7.2 acres of Tamarisk Scrub. Species noted on-site included the San Diego Horned Lizard, Cooper's Hawk, and the Black-tailed Jack Rabbit, the tricolored black bird, the western spadefoot toad, and the two-striped garter snake, Jacumba milk vetch, desert beauty, Higgins' barber, Parish's Larkspur, and sticky geraea.**

### Visual Resources

**The overall negative impacts from the 500 kV transmission towers and lines, land scarring, skylining, and stark visual contrast will be devastating regardless of which route is chosen.** However, in combination with La Rumarosa, the existing Kumeyaay Wind Facility and more industrial wind generation proposed at McCain Valley and Crestwood, there will be no way to turn to get away from the obnoxious industrial scale and skylining, blinking lights day and night , and the added transmission lines and towers, the impacts will be even greater and more geographically extensive. The loss of significant visual resources will be compounded with no viable mitigation. The Class I impacts recognized in the DEIR/EIS will be exacerbated. At page E.5-103 under the header Key Viewpoint 60-McCain Valley North (VRM) the DEIR/EIS states that "the existing Management Plan is currently being revised and VRM Class for McCain Valley West area is proposed to be changed to VRM Class IV. For the record, both the non-profit group Backcountry Against Dumps (BAD) and the Boulevard Planning Group filed protest letters opposing the unjustified downgrading of our VRM classifications simply to accommodate for-profit wind generation in our area.

**On January 7, 2008, Stephan C. Volker, the attorney for BAD, filed a protest letter appealing the BLM's proposed Resource Management Plan/FEIR, and the downgrading of the VRM Classification, listing violations of the Endangered Species Act, the Federal Land Policy Management Act, and various NEPA violations including "...understating the management plans significant adverse impacts on the visual resource of McCain Valley contrary to their long-standing classification as high value resources, solely to accommodate unsightly windpower development that**

Boulevard Planning Group comments on Sunrise Powerlink 4-10-08

*would otherwise be impermissible in an area of such scenic importance*". These cumulative negative visual resource impacts from multiple wind generation and multiple transmission infrastructure were not analyzed in the DEIR/EIS and is an error of omission.

**Table B-19 at B-145 Applicant Proposed Measures (APM) for Hydrology and Water Quality: WO-APM-6 # 4** states that *SDG&E will negotiate with affected landowner to provide alternative water supplies in the event a supply well or springs dry up directly caused by project activities*. As stated above, all of the southern route proposals pass through the Campo/Cottonwood Creek Sole Source Aquifer. There was a federal public process to get that designation which confirmed there is no economically viable alternate source. In reality all of the Eastern San Diego County area between the County Water Authority Boundary to the west and the areas served by the Imperial Irrigation District to the East are reliant on groundwater resources with no viable alternate sources of water available. SDG&E needs to held accountable with legitimate and enforceable measures to address this issue in a manner that is acceptable to the impacted property owners.

**WO-APM-9** states that **storage of fuels and hazardous materials will be prohibited within 200 feet of groundwater supply wells and 400 feet of community or municipal wells**. In our area of the backcountry our groundwater moves through highly fractured bedrock which can result in contamination traveling great distances in a relatively short period of time. Related to review of the proposed Campo Landfill, on the Campo Reservation, Dr. David Huntley of SDSU wrote several letters concerning the potential for contamination to leave the landfills site, reaching adjacent private wells, at a rapid rate of travel due to highly conductive fracture systems in the bedrock. There is also a May 2006 report available from Dr. Victor M. Ponce, another SDSU professor, regarding the hydrology /hydroecology of the Tierra Del Sol area. It is available at (Exh. 9)The report resulted from Dr. Ponce's study of the potential impacts of the proposed Campo Landfill on local water supplies

**C-53 Transmission Line Route Alternatives: Southwest Powerlink (SWPL) Fire and Transmission Line Reliability** fails to adequately address the potential for co-location of Route BCD with hundreds of proposed wind generation turbines on tribal and BLM lands near McCain Valley and Crestwood. According to company representatives for Invenergy, they have also offered an agreement to investigate industrial wind energy potential to the owner of several thousand acres of private property in the same area(Lansing Industries Big Country Ranch). By just Googling wind turbine fires hundreds of photos, articles and videos are available showing blazing turbines, collapsed turbines, and blade-shedding turbines ,and more. **No where in the DEIR/EIS did we see any mention of the potential for wind turbines to be an ignition point for a wildfire. The potential for towers collapsing onto adjacent transmission lines/towers, or for throwing blades, or pieces of blades that could inflict damage on adjacent transmission lines, is also not**

Boulevard Planning Group comments on Sunrise Powerlink 4-10-08

**adequately analyzed (See Exh. 4).**

**In late January 2008 a massive blade shattered on the number two turbine north of I-8 at the Kumeyaay Wind Facility located on the Campo Reservation(see photo in Exh. 4)** This is immediately adjacent to the proposed route for the Campo North Option for the I-8 Alternative ( See Figure E.1.3-16A /16B where the number two turbine is visible behind the simulated tower in the foreground). With the Campo tribe now opposing an easement across their tribal lands there is more pressure to use the BCD alternative which would route the transmission lines into another area of high fire risk(See Figure E.2.15-2). During Santa Ana wind events (See Figure E.2.15-4 which appears to have the maps reversed for normal and extreme conditions) the BCD route would be downwind of the proposed McCain Valley wind energy site. In the event the BCD south option is used, then the route would *also* be downwind of Kumeyaay Wind facility and other potential tribal wind projects on the La Posta, and Manzanita Reservation. The Cuyapaipe are also pursuing wind projects. This compounds the potential for a major fire event to take out multiple generation facilities and transmission lines.

**D.4-12 -13: The San Diego County General Plan update was mentioned, along with other plans like the North Mountain Subregional Community Plan. The Mountain Empire Subregional Plan (MESP)was only mentioned in passing and this is viewed as a deficiency in the DEIR/EIS.** It covers the communities of Jacumba, Boulevard, Campo, and Potrero, which will be impacted by the various southern alternative routes identified in the DEIS/EIR. including those identified as environmentally superior to the proposed route, wind generation projects identified as part of environmentally superior project alternatives , connected action substations, and more. Many of the project related impacts conflict with our MESP.

**MESP Page 3, under the header of Findings for Land Use Element** states: *“All residents of the Mountain Empire Subregion are aware of the importance that must be given to protecting the unique quality of the area’s natural resources. Existing trees, rock outcroppings, hillsides, and meadows are significant resources that contribute to the character and beauty of the region.”*

**MESP Page 4, under the header of Findings for Residential Goals** states that, *“ The Mountain Empire Subregion is generally characterized by large lot single family residential development outside the Country Towns, and generally undeveloped meadows, open spaces, and hillsides. The ability to experience large open spaces with views to distant hills is essential to preserving the Subregion’s present quality of life.”*At page 5,under Policies and Recommendations it states: *“#12. Buffer residential areas from incompatible activities which create heavy traffic, noise, lighting, odors, dust and unsightly views.”*

**MESP Page 8, under Findings for Industrial Goal:** it states that: *“Additional industrial*

Boulevard Planning Group comments on Sunrise Powerlink 4-10-08

*development is not compatible with the goal of maintaining the rural character of the Subregion...*”At page 8, under Industrial Goal Policies and Recommendations it states: “ *New industrial development should consider all views into the property from public streets, adjacent properties and residences on nearby hills.*”At page 9 it states; “# 11. *Deny future industrial or commercial development which adversely impacts the Mountain Empire Subregional area, such as wind turbine generators, for all of the following reasons: a) Safety of the general public; b)Unmitigated visual impacts on the rural environment; c) Noise pollution emanating from the site exceeding 65 (decibels) dbs at the property line, as it creates human discomfort and adversely affects the tranquility of the rural environment; d) Such development may lead to the economic devaluation of contiguous properties.*”

**D.5-68 the DEIR/EIS reports that the Esmeralda-San Felipe Geothermal Project would develop 20 MW.** :In a February 4, 2008 press release, SDG&E announced that their latest Power Purchase Agreement boosted their geothermal energy supply from the Esmeralda facilities in Imperial Valley to 60 MW. This is new information that did not appear in the DEIR/EIS. Again, we note the need to substantiate the water resources or the connected geothermal and solar projects.

**D.5-70-75 Wilderness and Recreation:** references to the Jacumba Substation and SCE La Rumarosa Wind Project all need to be changed based on new information contained in Sempra’s December 2007 filing with the DOE.(see section and references noted above). The La Rumarosa project is being built to export 100% of the energy generated in Mexico to the US. The Jacumba Substation is being built to accommodate the La Rumarosa site. The new location is adjacent to the Jacumba Wilderness Area and the Sierra Juarez recreation area. Recreationists may be deterred or prevented from using those remote and beautiful locations in the event massive wind turbine facilities are built there. Even though the impacts were noted as significant and unmitigable, this entire section needs to be re written to account for the 4-6 fold increase in the project size and the relocation of both the substation and the wind project. Recreational value, in both countries, will be significantly reduced. The same is true for the McCain Valley recreation area located on BLM lands.

**Table D.7-1:** the amount of potential land affected for substations need to be changed to address the increase in acreage for the Jacumba Substation from 20 acres to 80 acres.

**D.10-168, Impact PS-5, under Connected Actions and Indirect Effects:** **The Jacumba Substation and the La Rumarosa Wind Project are also subject to acts of terrorism and/or sabotage due to their close proximity to the US/Mexico and transborder locations,** in an area frequented by known criminal smuggling syndicates run by Mexican cartels. See comments on page 2-3 of this letter. Discussion of this issue was omitted from the DEIR/EIS and is a deficiency and error of omission.

**D.10-28 Overall Impacts of the Proposed Project- EMF and Field Related**

Boulevard Planning Group comments on Sunrise Powerlink 4-10-08

**Concerns:** The known radio and radar interference from industrial wind turbines was not addressed for the La Rumarosa wind project or those proposed in the Crestwood/ Boulevard area. This represents a deficiency in the analysis and an error of omission. According to the US Department of Energy Energy Efficiency and Renewable Energy website (<http://www.eere.energy.gov/wind/tech/interference.html>), wind turbines can interfere with communication or radar signals by turbine structures or rotor plane. Turbines can also cause electromagnetic interference affecting TV and radio reception. Navigation and defense radar interference also needs to be addressed. The Federal Aviation Administration (FAA) has oversight of any object that could have an impact on the navigable airspace or communications/navigation technology of aviation (commercial or military) or Department of Defense operations. The FAA requires a Notice of Proposed Construction (Form 7460-1) be filed for any object that would extend more than 200 feet above ground level, or less in certain circumstances. For any project filed, the FAA undertakes an initial aeronautical study and issues either a Determination of No Hazard to Air Navigation (DNH) or a Notice of Presumed Hazard (NPH). The Department of Defense also studies the effects of wind projects on military readiness. Military flight paths do run east west through the Crestwood/Boulevard/Jacumba/Ocotillo area.

**E.1-1-7 Future Transmission System Expansion:** The potential for future expansion in our fragile area is highly objectionable.

**E.1.2-7 Impacts Common to All Alternatives:** We again raise the lack of discussion and analysis for the potential cumulative impacts, in the southeast corner of the County, from multiple wind generation projects at Crestwood, McCain Valley, and La Rumarosa, multiple transmission line routes (both 500 kV and 230 KV), including numerous wind connections to SWPL, and multiple substations, for all those impacts noted in this section. We also have the cumulative fire threat and radio communications interference from multiple transmission lines and wind turbine projects. This represents a deficiency and error of omission.

**Figure E.1.3-1, on the Visual Resources SWPL Alternatives map,** Even though the impacts for Key View Point # 58 are considered Class I for increased structure contrast, industrial character, structure prominence, and view blockage, the View Point should have been just a little further to the East on I-8 where there are expansive views to the north into the McCain Valley area and to the North east towards the Corizzo Wilderness Area. At the Key View Point 48 section the DEIR/EIS states that the VRM Class is proposed to change from Class II to Class III in the BLM's Eastern San Diego County Management Plan. As noted before, the Boulevard Planning Group and the attorney for Backcountry Against Dumps have filed protest letters opposing the VRM downgrading. Also, with the now increased size and changed location for the Jacumba Substation, and La Rumarosa Wind project, there will be a significant increase in visual contrast and negative impacts on visual resources, including light pollution on dark sky resources.

**The March 28, 2008 motion from the California Botanical Habitat to become a**



Boulevard Planning Group comments on Sunrise Powerlink 4-10-08

**party in the Sunrise Powerlink CPCN process** : The CBI expressed concern for southeastern San Diego County stating, *“As an Anthropological Nature Reserve with viewshed and boundaries which are visible by over 6 million people each year, over 3.25 miles along Interstate 8 and 4.25 miles along Old Highway 80, which is adjacent to the Southern boundary of the Anza Borrego Desert State Park, we are concerned with the impacts proposed by San Diego Gas and Electric (SDGE) which would place 160 tall pylons on top of our mountains and an array of hot sagging 500,000 volt power lines across our valley, as well as bulldoze several access roads through an extraordinary and vulnerable landscape, severely and permanently devastating our wilderness, research, construction and recreational areas, all in violation of the California Environmental Quality Act (CEQA) particularly when there are several easier to implement, lower cost alternatives that cause no damage, which have not been reviewed or considered by the CPUC or SDGE. We are also concerned that if new environmental data and alternatives are not considered and that existing choices, particularly along the southern route, which have not been well researched or considered, are then implemented, that the results will be devastating to the region...”*

**E.1.3-Key Viewpoint 50 West I-8 Near La Posta Reservation (VS-VC)**: Even though this is already rated as a Class I impact due to increased structure contrast, industrial character, and view blockage, this view will now most likely change due to the potential for the more westerly BCD South Option to replace the I-8 Campo North Option. The BCD South route appears to be visible from a geographically extensive area.

**E.1.12 Water Resources I 8 Alternatives**: The DEIR/EIS jumps from the Jacumba Valley over the Boulevard area to the Campo Valley. There are numerous locations in the Bankhead Springs, Boulevard, Manzanita, McCain Valley, Live Oak Springs, La Posta area where mountain meadows, seeps, springs, wetlands, and shallow groundwater levels exist. The Campo/Cottonwood Creek Sole Source Aquifer starts at the Tecate Divide and is impacted by various I-8, Modified Route D and BCD Routes. In reality, everything between the Campo/Cottonwood Creek and the Ocotillo/Coyote Wells Sole Source Aquifers qualify for the designation as well, we have just not had the money to pursue it.

**The Lansing Industries, Inc., developers for approximately 2,200 acre Big Country Ranch in the McCain Valley area, at the northern end of Ribbonwood Road, will be impacted by the BCD route.** Their consultants have reportedly determined they have abundant groundwater resources. Their property contains a major drainage area and a 100 year flood plain. During the El Nino years, there was major flooding and ponding in the area. The subdivision of Big Country Ranch, under previous owner, Bluegreen West Corporation, was being processed under Case # SP98-02 TM5133 RPL. **The 2001 Specific Plan for Big country at page 9 noted biological resources which included 120.5 acres of Fresh water Seep (wet meadow), 4.5 acres of Open Water, 3.2 acres of Freshwater Marsh, and 3.5 acres of waters of the US. It also includes 86.6 acres of Coast Live Oak Woodland and 6.0 acres of Southern Riparian Forest. All of which were considered sensitive habitats at the time.**

Boulevard Planning Group comments on Sunrise Powerlink 4-10-08

**Documentation from the County of San Diego on Tentative Parcel Map No 20719/Grizzle show an Open Space Easement on file with the Department of Planning and Land Use as Environmental Review Number 03-21-001.** The easement is required, as part of the subdivision approval, to protect biological resources, some of which rely on the shallow groundwater and wetlands that exist on the property. **The Grizzle subdivision site (now owned by Lansing Industries, Inc) which straddles McCain Valley between Historic Route 80 and I-8, on the I-8 and BCD Alternate Routes, contains wetlands, and cultural and historical resources in the area transected by the I-8 route. The Lansing private parcel (APN # 61303035) is shown on Sheet 42 of 95 of the I-8 Alternative at I8-40 and BCD-0.**

**Another private parcel on Rocky Knoll Road in the I-8 Route, owned by William Erdman (APN# 61203025), also has an Open Space Easement to protect biological resources as part of TPM 20698RPL.** It is on file with San Diego County under Environmental Review Number ER-02-21-006. The aerial photo on Sheet 43 of 95 of the I-8 Alternative shows what appears to be pond on the Erdman property. **The environmental review for the project discussed wetlands and the need for protection under the County's Resource Protection Ordinance.**

Modified Route D would negatively impact the Miller Valley drainage, watershed, and the old Stage Coach Springs watering pond on the Rancho Finistierra Subdivision which flows into Campo Creek. The BCD South would impact the La Posta Creek watershed which flows through the Cameron Valley and into Lake Morena. There are wetlands, springs, and seeps in all of those areas that would be impacted along with private wells and the well serving the new US Customs and Border Patrol at La Posta.

**Figure E.2.15-4:** Boulevard Fireshed BCD Alternative Fire Behavior Trend Model appears to have the maps reversed for normal and extreme weather conditions.

**E.2.15-13 Impact F-3; Presence of overhead line would reduce the effectiveness of firefighting (Class III):** **The cumulative impact of the presence of overhead lines for the BCD Route, and the presence of the existing Kumeyaay Wind facility and the proposed wind facility on approximately 7,000 acres of BLM land at McCain Valley was not addressed.** There is also the potential for more overhead transmission lines to accommodate the interconnection of the proposed BLM wind project and the potential for new and expanded wind projects on Campo, La Posta, Manzanita Reservations. There is also a concern that the wind turbines could generate electromagnetic interference with emergency services radio communications in and around the wind turbines. This radio interference could also impact the effectiveness of firefighting by disrupting their communications. Aerial firefighting will also be physically inhibited/restricted due to multiple towering turbine facilities. **All of the above would greatly reduce the effectiveness of firefighting and should raise the significance level to Class I. The absence of this information is an error of omission.**



Boulevard Planning Group comments on Sunrise Powerlink 4-10-08

require review and verification of availability of water supplies prior to construction of large subdivisions. That same concept should apply to the Sunrise Powerlink project and its direct and indirect connected actions.

**Figure E./5.1-6a New In-Area renewable Generation Alternative, Wind**

**Component:** This map shows the Campo wind component substation which may no longer viable due to the Campo tribe's opposition. And the Jacumba Substation will now be located much further to the east based on Sempra's December 2007 Baja Wind application with the DOE. This will increase the length of the wind component transmission line project and all the related impacts and cumulative impacts.

**E.5.1.4 at E.5-25: Wind component area siting:** This section is deficient based on conflict with the Mountain Empire Subregional Plan which includes the policy to "Deny future industrial or commercial development which adversely impacts the Mountain Empire Subregional area, such as wind turbine generators, for any of the following reasons: a) Safety of the general public, b) Unmitigated visual impacts on the rural environment, c) Noise pollution ....d) Such development may lead to the economic devaluation of contiguous properties

**E.5-27 Wind Facility Design, required facilities:** **New information regarding opposition from the Campo tribe may negate the potential location of a substation on the Campo Reservation. And the Jacumba Substation location has moved further to the southeast to accommodate Sempra's Baja Wind project.** In regards to access roads, PPM Energy has reported to me personally, that they are trying to obtain easements across various tribal and private lands to access their potential wind turbine site on BLM lands in McCain Valley. It had been pointed out to PPM that their construction equipment and turbine components will not fit under the I-8 overpass on McCain Valley Road. It is reported in the DEIR/EIS that roads would need to be 30-40 feet in width during construction and then restored to widths of 16-24 feet. This will create land scarring that will be difficult to reseed and restore to pre construction native vegetated conditions.

**E.5-28 Construction and Grading:** The grading of existing roads, beyond their current width, the new access roads, the reported 1,600 square feet of soil, grade, and vegetation disturbance required for each turbine pad, along with the 6,000 gallons of water, and 18 to 20 concrete hauling trips per pad, the required excavation of up to 40 feet below grade for the foundations, and the necessary lay-down areas for equipment and material staging, all add up to some significant cumulative impacts including groundwater impacts. Especially if the all the proposed wind components move forward on tribal lands, BLM lands and at the transborder region of Jacumba/Jacume. **The failure to analyze the cumulative impacts of all these wind projects together and in addition to the potential I-8 BCD South route selection, is viewed as a deficiency in DEIR/EIS**

**E.5-31 & E.5-82:** **There is a material factual inaccuracy in the statement that a "switch yard**

Boulevard Planning Group comments on Sunrise Powerlink 4-10-08

would be located near the southern end of the Campo Reservation, north of Interstate 8.”The southern end fo the Campo Reservation is in fact several miles south of I-8 and just 1/4 mile north of the US/Mexico border—not north of I-8.

**E.5-102 Visual Resources Setting for Wind:** Please see Visual Resources comments above. There is a material factual inaccuracy in this section based on the failure to recognize that these towering industrial wind turbines will be highly visible from Historic Route 80, Tierra Del Sol Road, Ribbonwood Road, and from homes on elevated locations throughout the community of Boulevard and Bankhead Springs, as well as from tribal homes on the Campo, Manzanita, and La Posta Reservations

**E.5-103: The proposed change to Visual Resource Management Classification for BLM land.** The VRM change proposed for McCain Valley West has been protested by the Boulevard Planning Group and Backcountry Against Dumps. PPM Energy has protested the reduced number of acres down from the over 17,000 acres they have a Right of Way on for wind testing.

**E.5-117 Land Use Setting for Wind:** The exclusion of the adjacent Carrizo Gorge Wilderness Area from the surrounding land uses is a material factual inaccuracy.

**E5.134 Impact WR 1 Construction activities:** New information from verbal conversations with PPM Energy confirms that McCain Valley Road cannot be used for access for construction due to the height limitations of the I-8 overpass over McCain Valley Road. They are looking for access agreements from various tribal and private property owners from I-8 at Crestwood to the north and east.

**E.5-180 Overall Impacts of Renewable Generation Alternative for Noise:** This section is deficient due to the lack of analysis of noise related to the wind turbines themselves. Information found on the web indicates that communities with existing turbines have complaints of a low groaning, humming, or vibrations which can reportedly cause negative health impacts.

**E.5-190 Transportation and Traffic Setting for Wind:** Once again, new opposition form the Campo tribe may negate the location of wind substation on the Campo Reservation and the location of the Jacumba Substation has moved several miles to the southeast to accommodate Sempra’s Baja Wind project.

**Table E.5.9-1 Public Roadways Along the Alternate Route Wind Component:** Crestwood Road, Corrizo gorge Road, and Historic Route 80 need to be added to this list due to the elimination of McCain Valley Road due to overpass height limitations and the moving of the Jacumba Substation to the southwest.

Boulevard Planning Group comments on Sunrise Powerlink 4-10-08

**E.5-204 Public Health and Safety for Wind:** This section is deficient based on the lack of analysis of groundwater interference from drilling for the turbine footings which may entail the use of chemical drilling muds, and/or a change in groundwater flow dynamics which may result in negative impacts to springs, seeps, and wells in the area. The change in surface water runoff due to grading and access roads may also negatively impact groundwater recharge to springs, seeps, and wells. Due to the highly fractured nature of our bedrock any contamination could move off-site at a rapid rate and be difficult if not impossible to remediate. An explosion at the Maple Ridge Wind Farm in July 2006, led to 491 gallons of oil leaking from the damaged transformer. In December 2007 it was determined that the leak had contaminated a residential well (Exh. 3:Watertown Daily News 12-29-07). Due to the fact that the area is completely dependent on groundwater resources, any contamination should be viewed as a Class I impact. (See comments above at WQ-APM-9).

This section is also deficient based on the lack of recognition and analysis regarding wind turbines as an ignition point for wild fires. Turbines are known to malfunction, explode, collapse, shed blades and create shadow flicker. All can result in significant threats to public health and safety. Two violent wind turbine collapses occurred in Copenhagen in February 2008. One windmill began spinning out of control during high winds. A video on YouTube shows the explosion-like collapse after one blade flew off, casting debris into the three other blades and shearing the 60-meter tower nearly in half (Exh. 11:The Copenhagen Post 2-25-08). Other YouTube videos show flaming turbines in various locations. Numerous melted turbines were viewed by me personally on a recent trip along the I-10 corridor near Palm Springs. There were also turbines with missing blades, and blades scattered on the ground.

**E.5-231-23 Impact H-3, H-4 contains material factual inaccuracies.** The Jacumba Substation is located in the Jacumba Valley Groundwater Basin Number 7-47 *not* in the Coyote Wells Valley basin as stated in the DEIR/EIS. However, both are located in the Colorado River hydrologic region. Due to lack of information the Jacumba Valley East, Basin Number 7-60 was deleted from the California's Ground water Bulletin. The Jacumba Valley groundwater levels are much higher than the Coyote Wells Valley. The claim that the depth to groundwater exceeds 50 feet and poses no possibility of encountering groundwater appears inaccurate. Developers for the 2,000 plus acre Ketchum Ranch subdivision in Jacumba claim that their consultants have determined they have abundant groundwater resources. In deed, the Kethcum Ranch (previously known as the Jacumba Valley Ranch) is currently being farmed with groundwater resources only. The I-8 route crosses the Ketcham Ranch, as does the existing SWPL.

**E.5-233 Impact H-7 Accidental releases of contaminants from project facilities could degrade water quality is erroneously listed as a Class III impact:** Again we challenge the erroneous conclusion that the depth to groundwater in the wind component area makes contamination/degradation of groundwater unlikely. The depth to groundwater varies throughout the

Boulevard Planning Group comments on Sunrise Powerlink 4-10-08

region and varies with the rainfall and recharge rates. As noted in the comment above, there are many areas with very shallow groundwater. Due to the highly fractured nature of our crystalline bedrock, the risk of contamination is elevated due to the potential for rapid transport of contamination through highly conductive water bearing fractures. These fractures can carry contamination off-site long distances and can prevent easy cleanup and mitigation. **See comments on ES-64 above regarding well contamination from a wind facility and at WQ-APM-9.**

**E-5-233-234 Overall Impacts of Wind For Water Resources:** The DEIR/EIS is deficient in its recognition and analysis of groundwater impacts from the wind component. The wind projects on tribal and BLM lands in the Crestwood /McCain Valley area of Boulevard will include disturbed soils from expanding existing roads to accommodate construction equipment and turbine components, miles of newly graded turbine pads (1600 Sq Ft per pad), connecting easement roads, trenching for on-site burial of lines, the installation of miles of new 230 KV lines, with their own access roads, to connect to the new 80 acre Jacumba Substation. During El Nino years and heavy storm events, such as Hurricane Kathleen in the mid-70's which washed out sections of I-8 and the rail line, severe erosion from the wind components has the potential to alter the surface flow, redirect groundwater recharge, inundate ponds, streams, and wetlands with sediment. There is also the increased potential for contamination from runoff and infiltration of herbicides, soil stabilizers used for dust suppression, and oils and fuels used by the turbines themselves and related equipment including transformers.

**E.5-263 Impact S-1 Project construction would disrupt the existing utility systems or cause a co-location accident (Class II).** During the reconductoring of the existing 69kV line to accommodate the new energy generated by the Kumeyaay Wind facility, the towns of Boulevard and Jacumba, and several tribal neighborhoods, were taken off the grid and had to rely on SDG&E's emergency generators for weeks. This issue was reportedly not fully disclosed to the CPUC prior to approval. We experienced numerous power outages and brownouts. Locals complained of damaged equipment and economic losses. Due to the location of the proposed wind projects, and our end of the line situation, we would expect the same situation to occur with an even greater impact based on the increased size of the proposals.

**E.5-265 Impact S-3 Project would increase the need for public services:** This section is deficient because it does not recognize or analyze the potential for wind turbines to be an ignition source for wildfires. **See comments above at E-S-64 and E.2.15-13.** Boulevard currently relies on an understaffed and underfunded volunteer fire department (Exh. 12: Backcountry Messenger 4-08). Cal-Fire currently has a contract with the County to provide some local coverage. However, due to a lack of dedicated funding, there is no guarantee of annual contract renewal. We do not know where ladder trucks would come from to fight turbine fires when the motor catch fire at the top of the 200-300 foot towers. In many places the fires are allowed to burn themselves out. That would not be advisable in this area of high fire hazard and old growth fuel loads which is subject to extended high wind events often

Boulevard Planning Group comments on Sunrise Powerlink 4-10-08

exceeding 70 MPH.

**E.5-273: Fire and Fuels Management for Wind:** It appears that a portion of the PPM Energy wind energy proposal for BLM lands in McCain Valley, and the Table Mountain area in their ROW to study wind, may be located in the Boulevard Fireshed not just the La Posta Fireshed.

**E.8-47: Impact N-3 Wind generation in Crestwood area:** This section is deficient based on the lack of recognition and analysis of noise generated by the wind turbines themselves. Some have described it as a groaning, or low vibration which is irritating and potentially damaging to the health of those impacted. This could also impact wildlife.

**E.8-49: Impact T-4 Construction would cause temporary road and lane closures:** Boulevard has only two I-8 on and off-ramps(Crestwood and Boulevard), and only two east-west two lane roads (Historic Route 80 and S 94). Any lane or road closures can cause extended delays as we experienced when Route 80 was impacted by the trenching and burial of fibre optic lines through town several years ago. It was a nightmare. Now we have two tribal casinos located at the I-8/Crestwood location. The casino patrons use the same route that will be needed for construction of the wind projects on tribal lands and at the McCain Valley location.

**Figure G-8 Cumulative Projects SWPL Alternatives Eastern Portion:** This section is deficient because it does not show all of the wind proposals at Crestwood, McCain Valley, Table Mountain, La Rumarosa, the Jacumba Substation, or the Campo Landfill proposal on the Campo Reservation

**G-117 Cumulative Impact Analysis -temporary and permanent losses of native vegetation (Class I):** The cumulative impacts will be even greater with the increased size and scale of the La Rumarosa Wind project and the potential for increased vegetation/fuels management around transmission towers and turbine towers in response to the 2007 fire storms.

**G-120 Cumulative Impact B-9-wildlife movement corridors:** See comments above under the header Jacumba Substation and SCE La Rumarosa Project. The Jacumba Substation and Sempra's new and much expanded La Rumarosa Baja Wind project, as well as the BCD South I-8 Alternative, will impact Los Californias wildlife corridors which have been the subject of extended bi-national scientific and conservation efforts, as documented in Phase II testimony by Center for Biological and others.

**G-121 Geographic extent visual resources:** We challenge this section which says there will be nothing visible beyond the two mile limit. High elevation and other viewing points along Tierra Del Sol Road, Ribbonwood Road, McCain Valley Road, Canebrake Road, Historic Route 80, I-8, Jewel



Boulevard Planning Group comments on Sunrise Powerlink 4-10-08

Valley Court, Tierra Heights, Lillie Lane, and more, would have extended views into the wind components at McCain Valley, Crestwood, and La Rumarosa. Depending on the exact location of the La Rumarosa wind facility it may also be highly visible from the Ocotillo, I-8 and recreational areas in the Ocotillo, and the Table Mountain ACEC, Jacumba Wilderness and Corrizo Gorge Wilderness areas

**G-123 Impact V-2 Long term visibility of land scars in arid and semi-arid landscapes (Class I):** See comment G-117 above.

**G-137 Cumulative- Related Concerns:** See comments above at D.10-28 regarding interference with aviation communications and military readiness.

**G-144 Impact H-4, Groundwater dewatering for project construction could deplete local water supplies.** See comments above at Table B19 WQ-AMP-6 regarding the deficiency of these sections regarding the availability of alternate sources of groundwater, and only vague and inadequate and unenforceable mitigation measures.

**G-153 Cumulative Impact F-2 Presence of overhead transmission lines would significantly increase the probability of a wildfire (Class I):** See comment above at E.2.15-13 regarding the failure to include the cumulative impacts of turbines, their related transmission lines and equipment being ignition points for wildfires fires, compounded by multiple projects.

**G-159 Table G-11 BCD and BCD South incremental effects on Class 1 Cumulative Impacts identified for I-8 alternatives:** The BCD route passes through or adjacent to 2,276 acre the Big Country Ranch at the north end of Ribbonwood Road. The current owner, Lansing Industries, Inc, has informed the Boulevard Planning Group and others that they plan to pursue a general plan amendment for a planned community development with commercial, industrial, and residential densities at 2 dwelling units per acre. The wind projects at Crestwood and McCain Valley will also increase the cumulative impacts. The BCD South route will share the same cumulative impacts due to location in the same viewshed from various vantage points, with the Crestwood wind proposals.

**G-162 Table G-13 Significant Unavoidable(Class I) Impacts of New in Area Renewable Generation Alternative:** Once again the increased threat of fire related to wind turbine malfunction/explosion was left out of this table.

**H-138 Table H-26 Class I Impacts created or eliminated by Non-wires Alternative:** Again, the increased threat of fire related to malfunction/explosion of wind turbines and or their related switchyards and transmission lines, and cumulative impacts, was omitted.

Boulevard Planning Group comments on Sunrise Powerlink 4-10-08

**H-142 Table H-27 Summary of Impacts of New In Area Renewables Generation**

**Alternative:** Under Public Health and Safety, the impact should be changed to Class I due to the fact that “Construction could cause soil and groundwater contamination from hazardous materials”, and the total reliance on groundwater resources in the backcountry areas. **See comment above for ES-64 and WQ-AMP-6.**

**Ap.1-323 Wind Feasibility and Disadvantages:** See comments above at E.5-204 regarding wind turbines, and their related equipment, as ignition sources for wildfires

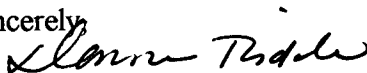
**Ap.11C-45 I-8 Alternative Overhead Portion Detail:** The location of the staging area-fly yard is located on a sensitive wetland area which was noted in comments above at E.1.12: **The Grizzle subdivision site (now owned by Lansing Industries, Inc) which straddles McCain Valley between Historic Route 80 and I-8, on the I-8 and BCD Alternate Routes, contains wetlands, and cultural and historical resources in the area transected by the I-8 route. The Lansing private parcel (APN # 61303035) is shown on Sheet 42 of 95 of the I-8 Alternative at I8-40 and BCD-0.** This photo detail shows the BCD route extremely close to the old McCain family ranch house, located adjacent to McCain Valley Road, on State land near the McCain Valley Conservation Camp. The house does not have historic designation that I am aware of but it should. **These impacted meadow/marshy areas are frequented by wildlife, including raptors and bats, due to the more abundant grasses, small prey and insects.**

**Figure Ap. 11C-47, 75,76:** These overhead details of the I-8 & Modified Route D alternatives also show staging area-fly yards in meadow areas—most of which are highly visible . See comments directly above.

**Ap 12-109 ground based Herbicidal treatments:** This section states that a colorant or dye shall be added to the herbicide mixture and that a surfactant shall be added to the herbicide mixture to facilitate targeted absorption. Surfactants can cause contaminants to move more rapidly through the vadose zone and reach the water table more quickly than if no surfactant was present. This raises further concerns with negative impacts to groundwater quality. As noted numerous times above, negative impacts to our sole source groundwater should be considered as Class I Impacts.

This concludes our comments.

Sincerely,



Donna Tisdale, Chair

cc: interested parties

Attachments: Exhibits 1-12

**Sunrise Powerlink DEIS/EIR  
Exhibit List Index for  
Boulevard Planning Group  
Comments dated 4-10-08**

1. Illegals From Terror-Sponsoring Nations at Large in US (cnsnews.com 8-8-06 )  
US-Mexican Border As A Terror Risk (Christian Science Monitor 3-22-05)
2. Edison initiative adds twist to power-line debate (North County Times 4-8-08)  
SCE Launches 250-MW Solar Project (RenewableEnergyWorld.com 3-28-08)
3. Wind Farm Oil Taints West Martinsburg Well (Watertown Daily News 12-29-07)
4. Various photos downloaded from web re: turbine fires, collapse, blade shredding/shedding, transport difficulties. Three photos marked "Campo" show shattered turbine blade taken at Campo's Kumeyaay Wind facility.
5. Two photos of industrial drilling rig along I-15 showing comparative destruction needed for installation of transmission tower footings.
6. Sempra's December 2007 DOE Application Filing for Baja Wind at La Rumarosa
7. Baja Wind protest letters from Boulevard Planning Group (3-21-08) and Center for Biological Diversity (3-24-08). Attachments to letters were not included as they are already part of the Sunrise Powerlink record through Phase II Testimony for CBD.
8. Turbine regulations for San Diego County
9. Tierra Del Sol watershed study by Dr. Victor Miguel Ponce (May 2006)
10. Campo/Cottonwood Creek Sole Source Aquifer map showing Designated Area (USEPA 2001)
11. Minister demands explanation for windmill collapse (The Copenhagen Post(2-25-08)
12. Boulevard Fire Department News (Backcountry Messenger April 2008)



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## Special Report

### Illegals From Terror-Sponsoring Nations at Large in US

By Kevin Mooney  
 CNSNews.com Staff Writer  
 August 08, 2006

**(CNSNews.com)** - Almost half of the illegal aliens arriving in the U.S. from terrorist-sponsoring or "special interest" nations in the past few years have been released into the American population following their apprehension. This key finding is published in an internal audit of the Department of Homeland Security (DHS) obtained by **Cybercast News Service** .

The so-called "catch and release" policies have allowed more than 45,000 illegal aliens from countries that are well known for their anti-American views or considered "hotbeds of Islamic fundamentalism" to be freed.

U.S. Rep. Ted Poe (R-Texas), in conversations with sheriffs operating along the Texas-Mexico border, learned that illegal aliens of Middle Eastern descent have been able to blend into the culture south of the U.S. border and pass themselves off as Mexicans.

"They learn Spanish and assimilate into the population," Poe said. "Coming across the Canadian border they would be more conspicuous."

The U.S. State Department's list of [State Sponsors of Terrorism](#) (SSTs), currently includes five countries -- Syria, Cuba, Iran, North Korea and Sudan. However, the DHS audit lists another category called Special Interest Countries (SICs).

At the moment there is no public list of SICs, however, information made available through the office of U.S. Rep. Tom Tancredo (R-Colo.) indicates that countries with large Islamic fundamentalist populations such as the U.S.-liberated Afghanistan, Yemen and Saudi Arabia, are included on the State Department's SIC list.

Between the beginning of Fiscal Year 2001 and the mid-way point of Fiscal Year 2005, the [DHS audit](#) revealed that 605,210 individuals from countries "other than Mexico" (OTMs) were apprehended and 309,733 of that total were eventually released.

A [total of 91,516 illegal aliens](#) from SST and SIC countries were apprehended over the same time period and 45,008 were released, the audit showed.

The audit was produced by the DHS Office of Inspector General and

[UK Teachers' Union Critical of Military Recruiting Efforts](#)

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focuses on the Detention and Removal Program, which is operated by the Immigration and Customs Enforcement Bureau (ICE). The audit was produced in April, but when completed in May, it "was made public on a Friday night with no press release," said Connie Hair, a spokeswoman for the group of citizen volunteers committed to fighting illegal immigration known as the [Minuteman Civil Defense Corps](#).

The audit report, Hair said "was buried in an obscure corner of the DHS website," and discovered only as a result of her group's research.

The Detention and Removal Program (DRO) anticipates over 600,000 foreign-born individuals will be incarcerated in state correctional facilities during Fiscal Year 2007. Current estimates show that at least half of these criminal aliens - 300,000 - will be released or removed due to a lack of resources, according to the DHS audit.

Jamie Zuieback, a spokeswoman for ICE, advised against making "radical assumptions" about the individuals involved in the DRO simply because they come from a certain country. She also said that as a result of new programs, ICE is "making rapid progress" toward ending the practice of "catch and release."

During the month of July ICE added 1,500 inmate beds nationwide, Zieback said. She also pointed out that over 90 percent of the non-Mexican illegal aliens being apprehended are being detained. "No aliens are being released because of a lack of bed space," she said.

Zuieback cited statistics that show ICE fugitive teams are averaging 1,000 arrests a week. But agency officials admit that the available data only points to illegal aliens who have been detected. The DHS audit does not address the influx of illegal aliens who elude apprehension.

"The data is incomplete," cautions T.J. Bonner, president of the National Border Patrol Council, the union representing over 10,000 "front line" border agents and part of the American Federation of Government employees. "We only know of the ones we apprehend. For every person caught there are two or three that slip by."

Bonner said he believes front line border control agents apprehend roughly 25 percent of the aliens entering the U.S. illegally. He also expects that "catch and release" policies will continue as long as there is insufficient funding.

Poe pointed to "a lack of will" on the part of the federal government, which he said translates into a paucity of "inner heartland enforcement."

The Texas congressman has some specific proposals. He would like to see abandoned military bases and Federal Emergency Management Agency trailers used for the purposes of detention. Poe is also calling for more federal funding for the hiring of immigration judges so the legal hearings of illegal aliens can be better managed.

The DHS audit pointed to a number of factors, in addition to funding shortages that are responsible for "catch and release."

It cites the "propensity of illegal aliens to disobey court orders to appear in immigration court" and "the penchant of released illegal aliens with final orders to abscond."

Recent U.S. Supreme Court decisions also mandate the release of criminal aliens and even "high risk aliens" 180 days after the issuance of

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the final removal order. Finally, the report states that some countries "block" the repatriation of their citizens.

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from the March 22, 2005 edition



**THE BOUNDARY:** A US border patrol vehicle rolls down the road in Douglas, Ariz. Border issues will be a central subject during Bush's summit Wednesday in Texas.  
MATT YORK/AP/FILE

# US-MEXICAN BORDER AS A TERROR RISK

Recent intelligence gives the most evidence yet of terrorist plans. Lawmakers push for tighter security.

By [Faye Bowers](#) | Staff writer of *The Christian Science Monitor*

WASHINGTON –

Concern is growing at the top levels of government about the US-Mexican border becoming a back door for terrorists entering the United States. While Al Qaeda infiltration across the nation's southern border has been a constant concern since 9/11, US officials cite recent intelligence giving the most definitive evidence yet that terrorists are planning to use it as an entry point - if they haven't already.

As a result, a number of Republican and Democratic lawmakers - mainly from border states - are pushing to tighten checkpoints and other ways of monitoring the porous 1,400-mile boundary. The subject will also be central to President Bush's summit in Texas Wednesday with Mexican President Vicente Fox and Canadian Prime Minister Paul Martin.

"I'm worried about our border," Sen. John McCain (R) of Arizona said at a March 17 Senate hearing on threats facing the US.

"We have now hundreds of thousands, if not millions, of people who are crossing illegally every year. And we are now seeing a larger number of people cross our southern border who are from countries of interest as opposed to just Latin American [countries]."

The "countries of interest" that Senator McCain refers to are those so designated by the US government as known to house radical, if not terrorist, groups.

One of the biggest concerns is that terrorists may exploit the current crossing procedures to make their way into the US. One way they might do this - and members of Congress say evidence is mounting that terrorists are trying this - is by paying smuggling networks, especially organized gangs.

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(04/14/2008)



The other is through a loophole in the system to separate the large number of illegal Mexican migrants, who are automatically turned back at the borders, from citizens of other countries who are allowed in, pending immigration hearings. These others are referred to as "other than Mexicans," or OTMs, by the Department of Homeland Security (DHS). They come from other Latin American countries as well as other parts of the world, many of them designated by the government as countries of "special interest." In 2004, some 44,000 OTMs were allowed into the US.

It's not clear how many terrorists or people having connections to terror groups may have entered the US as OTMs. But FBI Director Robert Mueller, in a House Appropriations Committee hearing March 9, said he was aware that individuals from countries with known Al Qaeda ties had entered the US under false identities.

Furthermore, in a Feb. 16 Senate hearing, Mr. Mueller cited the case of Mahmoud Youssef Kourani, who paid to be smuggled across the US-Mexico border in 2001. He pleaded guilty on March 1 to providing material support to Hizbullah and was sentenced to no more than five years in prison.

The most recent sign, though, that terrorists may be thinking of entering the US from the south came from the mastermind of many of the terror attacks in Iraq, Abu Musab al-Zarqawi. Last week, US officials revealed that Mr. Zarqawi may be planning to broaden his campaign to include strikes in the US - and suggested it would be easy to infiltrate the US through the southern border.

Of the 44,000 OTMs who entered the US last year, it is not known how many were detained and how many remain free. Members of Congress are continuing to lean on government officials, asking for clear assessments of numbers as well as policies intended to thwart the entry of those who would harm the US.

Sen. Dianne Feinstein (D) of California asked the DHS's Adm. James Loy at a hearing last month about the numbers of OTMs detained and those set free. He replied that he didn't have the numbers, and as of the end of last week, the senator's office said the DHS still hadn't provided her those numbers.

But in response to a request from Rep. Solomon Ortiz (D) of Texas, the DHS supplied numbers of OTMs registered, by country of origin, who had been released on their own recognizance for fiscal years 2002, 2003, and 2004. The totals were 5,775, 9,139, and 30,756 respectively.

Some countries, such as those known to export gang members, showed dramatic increases in numbers entering the US. The DHS document, for instance, shows 1,463 OTMs entering the US from El Salvador in 2002. That number increased to 7,963 in 2004. Some 2,539 OTMs entered the US from Honduras in 2002, and that number increased to 12,549 in 2004.

Representative Ortiz, though, disputes many of the DHS numbers. He says he regularly hears reports of much higher figures from border patrol officials from his district in Texas, which includes the border-crossing area of Brownsville.

"In the Brownsville sector alone, border patrol officials reported they caught 23,178 OTMs crossing through August 2004," Mr. Ortiz says. "Of those, 16,616 were released."

Ortiz also points out that another loophole is entering Mexico through Brazil, where a visa is not required to travel to Mexico.

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"We believe there is an international Salafist jihadi movement with a goal to attack the near enemy and far enemy - the US," says Richard Shultz, an international security expert at Tufts University's Fletcher School in Medford, Mass. "These terrorists are smart. They study these issues and learn from one other. And one way in is right through the southern security perimeter."

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Editions of the North County Times Serving San Diego and Riverside Counties

Tuesday, April 15, 2008

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Last modified Wednesday, April 9, 2008 1:17 PM PDT

REGION: Edison  
initiative adds  
twist to power-line  
debate

By DAVE  
DOWNEY - Staff  
Writer



SAN DIEGO ----  
When Southern  
California's  
largest utility said  
it was going to

*UC San Diego's Russell Thackston sits next to photovoltaic solar panels on the roof of the Powell Structure Lab on the La Jolla campus. Thackston, the university's director of facility management, says UCSD is planning to install more solar panels atop its buildings, a move solar energy supporters say is should be done on large rooftops throughout the county. / HAYNE PALMOUR IV Staff Photographer*

generate 250 megawatts of electricity from solar panels on warehouse rooftops, it injected a new element into the debate over a proposed power line in San Diego County.

Southern California Edison's recent announcement has implications for San Diego Gas & Electric Co.'s proposed \$1.5 billion Sunrise Powerlink transmission line.

A power line opponent has proposed a similar project in place of wires to power the county's future: solar panels on the roofs of large commercial buildings and over sprawling parking lots.

That opponent, engineer and activist Bill Powers of San Diego, took the stand briefly Tuesday during the courtlike proceeding examining the merits and environmental impacts of the power line.

Powers may be questioned again Wednesday afternoon.

The California Public Utilities Commission says it intends to rely on mountains of reports, as well as testimony from hearings this week in San Diego and next week in San Francisco, to decide whether to license the project.

A decision is anticipated by August.

The third day of hearings is scheduled for Wednesday at the California Center for Sustainable Energy.

SDG&E is proposing to string a 150-mile high-voltage line from El Centro to Carmel Valley by 2011, if given the green light by either state or regulators.

If denied by the state, the utility could appeal, as early as October, to the Federal Energy Regulatory Commission.

The line would pass through Anza-Borrego Desert Park, Santa Ysabel, Ramona and Rancho Penasquitos. Many residents of the communities and environmentalists oppose the project; business leaders and a number of prominent politicians support it.

In previously filed testimony, SDG&E dismissed Powers' vision for 920 megawatts of rooftop solar energy as "hypothetical and not feasible," saying nowhere near that amount could be developed.

The company expressed strong skepticism of Powers' suggestion that solar panels could be installed at a cost of approximately \$5 per watt, saying more than \$7 was more realistic.

But Powers maintained in a recent interview that Edison's March 27 announcement lends credence to his vision.

"To have the biggest utility in Southern California embrace this changes the dynamic of the discussion," Powers said last week in a telephone interview. "What it does is, it shifts the discussion of major photovoltaic deployment into the mainstream. Until (March 27), it could be categorized by our local utility as an unworkable pipe dream."

During cross-examination Tuesday, SDG&E attorney Richard Raushenbush, in an exchange that turned testy at times, repeatedly asked Powers to state how much it would cost to build solar panels that generate 920 megawatts.

Powers did not provide a figure, saying overall cost was not an issue because it would be borne by entrepreneurs who would be entitled to state solar rebates.

In proposing to build its own 250-megawatt network of solar panels, Edison said it was preparing to spend \$875 million. And company officials said they would expand the system to 500 megawatts if the first phase is successful.

Powers said Edison is showing that rooftop sun power can be used on a large and affordable scale to meet the San Diego area's needs. SDG&E is seeking to increase its supply by 1,000 megawatts, about 20 percent of its current supply.

Gil Alexander, a spokesman for Edison in the Los Angeles area, said his company had found a way to install the solar panels for \$3.50 per watt.

Edison's first solar installment will be on a warehouse in San Bernardino County and it is expected to be operating by August, Alexander said.

SDG&E spokeswoman Jennifer Briscoe said the San Diego-based utility was "intrigued" by the project. "It is a new model," she said.

However, Briscoe said it would be hard to replicate the Edison example because there are fewer warehouses in San Diego County.

Powers dismissed Briscoe's conclusion.

"What's a Wal-Mart? What's a Costco? They are big and flat," Powers said. "And they are ready to go."

Starting with a 600,000-square-foot distribution center owned by ProLogis in Fontana, Edison proposes to pave rooftops throughout its service territory, which spans northern Orange, Los Angeles, Riverside, San Bernardino and several other counties.

Edison estimates the project will cost \$875 million, a figure that includes charges for leasing rooftop space from building owners.

When completed in 2013, the rooftop network will negate the need for a new power plant, Alexander said in an interview last week.

"What we are doing essentially is building a 2-square-mile solar utility power plant," he said. "And the wires that come off these roofs will go right into neighborhood distribution circuits."

Because panels produce the most electricity when the sun is high in the sky, this project will help keep air conditioners humming on hot August and September afternoons.

"It's a type of generation that matches almost exactly the peak needs of our customers," Alexander said.

In other testimony Tuesday morning addressing fire threat, Ramona's Joseph Mitchell said San Diego County has had more fires sparked by power lines in recent years than other Southern California counties.

He acknowledged, however, that precise causes for the October 2007 fires have not been determined.

Still, Mitchell said he found through his own analysis of SDG&E data that on three occasions between February 2004 and November 2007, 230-kilovolt lines caused fires in San Diego County. Between Warner Springs and Carmel Valley, Sunrise would be a 230-kilovolt line.

Mitchell surmised there would be a 10 percent chance of Sunrise sparking a fire in its first 40 years of operation, a point SDG&E vigorously disputed.

Contact staff writer Dave Downey at (760) 745-6611, Ext. 2623, or [ddowney@nctimes.com](mailto:ddowney@nctimes.com).



March 28, 2008

# SCE Launches 250-MW Solar Project

California, United States [RenewableEnergyWorld.com]

Southern California Edison (SCE) has launched one of the largest solar installations in the U.S. SCE plans to install up to 250 megawatts (MW) of advanced solar photovoltaic (PV) generating technology on 65 million square feet of roofs on Southern California commercial buildings.

This project was prompted by recent reductions in the cost of installed PV generation, according to SCE. When combined with the size of [SCE's](#) investment, the resulting costs per unit are projected to be half that of common photovoltaic installations in California. SCE asked the CPUC for approval to install the solar cell technology during the next five years. The request estimates the total project cost will be US \$875 million.

“This project will turn two square miles of unused commercial rooftops into advanced solar generating stations,” said John Bryson, Edison International's CEO. “We hope to have the first solar rooftops in service by August. The sunlight power will be available to meet our largest challenge – peak load demands on the hottest days.”

null

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## **Wind Farm Oil Taints West Martinsburg Well**

*December 29, 2007 by Steve Virkler in Watertown Daily Times*

A mineral oil spill caused by an Independence Day transformer explosion at the Maple Ridge Wind Farm has apparently contaminated a residential well. However, it doesn't appear to have affected neighboring wells according to state Department of Environmental Conservation officials.

**The July 4 explosion at the wind farm substation up the hill from the hamlet on Rector Road – which caused a temporary shutdown of the facility – led to 491 gallons of oil leaking from the damaged transformer said DEC spokesman Steven W. Litwhiler. “They reported the spill and they were quick-acting at commencing the cleanup” Mr. Litwhiler said.**

However, a West Martinsburg resident in late November reported the presence of oil in his well water and tests ultimately determined that contaminant had the characteristics of oil used in the electrical transformers, he said. Wind farm officials have been notified of the findings which suggest the contaminants are remnants of the July 4 spill.

Neighboring wells were also tested for contaminants, with negative results, Mr. Litwhiler said.

Future testing is planned, he said.

DEC provided all residents with bottled water until confirming their wells were not contaminated, Mr. Litwhiler said. Agency officials are also working with the state Department of Health to determine potential long-term solutions like installation of a filtering system for the affected home he said.

DEC has taken no action against the wind farm, but the file on the spill hasn't yet been closed. Wind farm officials have been cooperating thus far, Mr. Litwhiler said.

Tod W. Nash, the wind farm's operations manager was unavailable for comment Friday afternoon.

Wind farm officials were planning soon to change the transformer that malfunctioned and had a replacement part on hand, PPM Atlantic Renewable's William M. Moore who developed the 195-turbine wind farm in the towns of Martinsburg and Lowville said in July.

The transformers' insulation system consists of insulating oil and cellulous materials and that mixture generates small amounts of combustible and non-combustible gases under normal use, Mr. Nash said last month in an e-mail.

According to Mr. Nash, wind farm officials – as part of their routine maintenance schedule – in August and September took oil samples from randomly selected transformers and found that some had higher-than-normal levels of gases and subsequently tested the rest of them. Less than one-third were identified as having above-normal levels.

While the July 4 explosion was caused by equipment failure, not gas build-up, wind farm officials still decided to implement a 17-day around-the-clock “de-gassing effort” to avoid any potential incidents, Mr. Nash said. Two tractor trailers were used to filter gases from oil in the targeted transformers.

B0002



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posted: March 28, 2008 • [Minnesota](#)

## Wind turbine fire

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Smoke pours from the top and bottom of one of the wind turbines at the Ewington Wind Farm near the Heron Lake exit north of Interstate 90 Wednesday morning. The Brewster and Okabena Fire Departments responded to the scene, but upon the advice of Suzlon Wind Energy officials, the fire was allowed to burn itself out. (Brian Korthals/Daily Globe)

[Worthington Daily Globe](#)

27 March 2008

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# COMMON WIND TURBINE ACCIDENTS

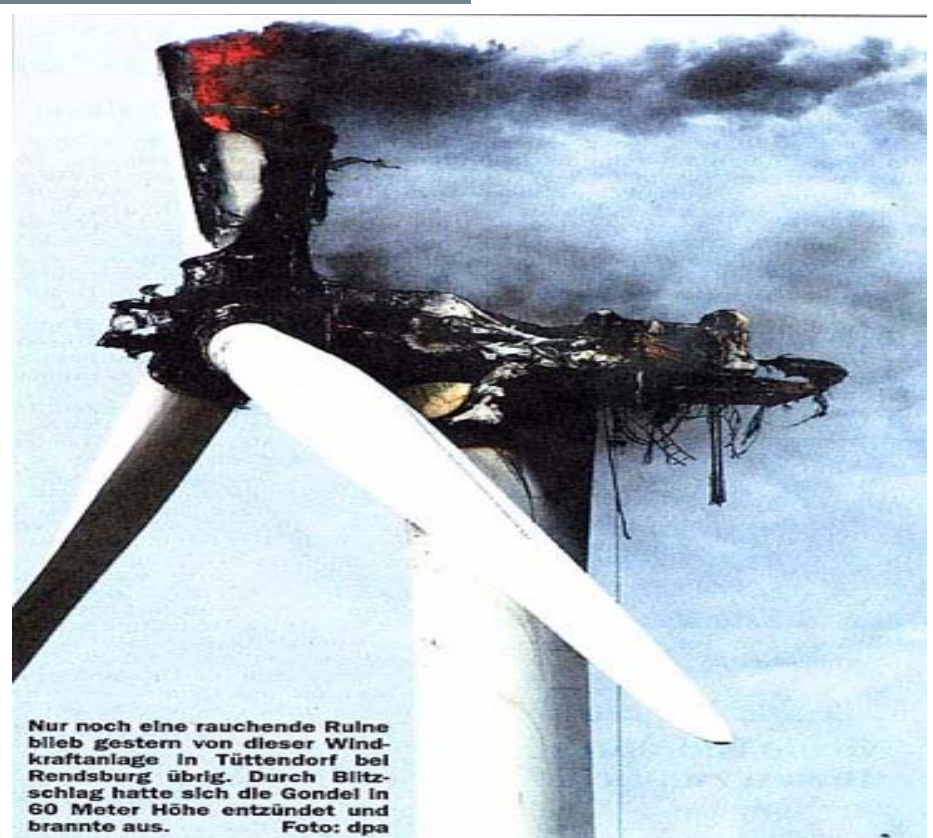


Who would ever think those huge towers could crinkle and fall?

Or catch on fire!



Do the companies provide appropriate ladders for local fire departments?





Or come apart.

**B0002**



**B0002**

**Blades twist,  
fold, and  
fall off.**



But I bet those cattle  
often pictured in  
industry shots  
under the turbines,  
wouldn't even notice!

**B0002**

And then there are the bigger, heavier parts that hit the ground.



Bet they'd even heard that thud in town!

What about transporting those huge parts...



Niederkirchen ist einfach zu eng: Links passt zwischen den 45-Meter-Mast und der Hauswand kein Stück Papier mehr. Rechts hat der Mast bereits Teile aus dem Mauerwerk herausgebrochen. Geplant ist, weitere Teile der Hauswand zu entfernen, damit der Lkw weiter fahren kann. Foto: ab

## 45-Meter-Mast rammt Haus

Saarbrücker Zeitung  
St. Wendeler Zeitung  
26. Nov. 2004



Das zerstörte Mauerwerk. Vor dem Straßenschild erkennt man die rausgebrochenen Steine.

Der Vorderteil des dänischen Lkw, der sich gestern in Niederkirchen verkeilt.

Guess those homes have to go!

For actual pictures and more information visit:\*

<http://ventdubocage.net/accident.htm>

<http://ventdubocage.net/accident2.htm>

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<http://ventdubocage.net/accident5.htm>

<http://ventdubocage.net/accident-allemanne1.htm>

<http://ventdubocage.net/accident4.htm>

Thanks to:

Mark Duchamp" [save-the-eagles@madrid.com](mailto:save-the-eagles@madrid.com)

Windfarm/Bird Research Manager

Proact International <http://www.proact-campaigns.net>

\*For translation help, go to --- [http://www.google.com/language\\_tools?hl=en](http://www.google.com/language_tools?hl=en)



B0002









US Department of Energy

DEC 20 2007

Electricity, Delivery and Energy Reliability

December 18, 2007

Anthony Como, Director  
Permitting and Siting, U.S. Department of Energy  
1000 Independence Avenue  
Room 6H-050, OE-20  
Washington, DC 20585

Subject: Submittal of Baja Wind U.S. Transmission, LLC Application for Presidential Permit

Dear Mr. Como:

Sempra Generation on behalf of Baja Wind U.S. Transmission, LLC hereby submits the enclosed Application for a Presidential Permit. The proposed project is a 500-kV transmission line that will electrically interconnect up to 1250 MW of energy from renewable energy generators to be located in the vicinity of La Rumorosa, Baja California, Mexico (La Rumorosa) with the Imperial Valley-Miguel segment of the Southwest Powerlink (SWPL) 500-kV transmission line. The proposed transmission line will have a total length of approximately 3 miles within both the U.S. and Mexico. The proposed transmission line will consist of a new, single-circuit 500-kV transmission line on lattice towers, extending south from the point of interconnection with SWPL about one mile to the U.S.-Mexico international border. From the international border, the proposed transmission line will continue south approximately two more miles to its origination point at a new 230/500-kV transformer substation. The portion of the proposed transmission line located in the U.S. (approximately one mile) will be constructed, owned, operated, and maintained by Baja Wind U.S. Transmission, LLC, a wholly owned subsidiary of Sempra Generation.

Also enclosed is an application filing fee of \$150. Should you have any questions or comments on the application please contact Ms. Joan Heredia at 619-696-1824. We look forward to working with on this project.

Sincerely,

A handwritten signature in black ink that reads "Joseph H. Rowley".

Joseph H. Rowley  
Vice President – Project Development

Enclosure

cc: Tom Jennings  
Joan Heredia



UNITED STATES OF AMERICA  
BEFORE THE  
DEPARTMENT OF ENERGY  
OFFICE OF FOSSIL ENERGY

BAJA WIND U.S. TRANSMISSION, LLC

DOCKET NO.

APPLICATION  
FOR PRESIDENTIAL PERMIT

**I. INTRODUCTION**

Pursuant to Executive Order (EO) No. 10485, as amended by EO 12038, and 10 CFR § 205.320 *et seq.* (2000), Baja Wind U.S. Transmission, LLC (Baja Wind U.S.), a Delaware limited liability corporation and wholly owned subsidiary of Sempra Generation (SG), hereby applies for a Presidential Permit authorizing Baja Wind U.S. to construct, own, operate, and maintain the U.S. portion of an electric power transmission line crossing the international border between the United States and Mexico. This proposed 500-kV transmission line will have the capacity to interconnect up to 1250 MW of future renewable energy generators located in northern Baja California, Mexico with the Imperial Valley-Miguel segment of the Southwest Powerlink (SWPL) 500-kV transmission line located in San Diego County, California, USA. The La Rumorosa Wind Energy Projects (La Rumorosa Projects), which are planned for locations in the vicinity of the town of La Rumorosa, in the Municipality of Tecate, northern Baja California, Mexico, will be connected to the proposed transmission line. The La Rumorosa Projects are wind power generation facilities to be constructed, owned, operated, and maintained by subsidiaries of Sempra Energy Mexico. The SWPL is owned and operated by the public utility, San Diego Gas and Electric (SDG&E).

The proposed transmission line will have a total length of approximately 3 miles within both the U.S. and Mexico. The proposed transmission line will consist of a new, single-circuit 500-kV transmission line on lattice towers, extending south from the point of interconnection with SWPL about one mile to the U.S.-Mexico international border. From the international border, the proposed transmission line will continue south approximately two more miles to its origination point at a new 230/500-kV transformer substation.

The portion of the proposed transmission line located in the U.S. (approximately one mile) will be constructed, owned, operated, and maintained by Baja Wind U.S. At the interconnection point with the SWPL in the U.S., a loop-in substation will be constructed, owned, operated, and maintained by the public utility, SDG&E. Currently there are two other parties requesting interconnection with the SWPL that could utilize the loop-in substation (in addition to Sempra Generation), which parties propose to construct wind generation projects in the U.S.

The portion of the proposed transmission line located in Mexico (approximately two miles) and the 230/500-kV transformer substation located in Mexico will be constructed, owned, operated, and maintained by a subsidiary of Sempra Energy Mexico.

A general area map is shown in Exhibit A (Figure 1). A map showing the proposed transmission line originating at the new 230/500-kV transformer substation, crossing the international border into the U.S., and terminating at the proposed SWPL loop-in substation is provided in Exhibit B (Figure 2).

The portion of the proposed transmission line within the U.S. will be constructed in accordance with all applicable U.S. laws, standards, rules, and regulations. The agencies in the U.S. with potential jurisdiction over the activities proposed within the U.S. include the Federal Energy Regulatory Commission (FERC), Department of Energy (DOE), Bureau of Land Management (BLM), International Boundary and Water Commission (IBWC), California Independent System Operator (CAISO), U.S. Army Corps of Engineers (USACE), U.S. Fish & Wildlife Service (USFWS), and the County of San Diego. The portion of the proposed transmission line within Mexico will be constructed in accordance with all applicable Mexican laws, standards, rules, and regulations. The agencies in Mexico with potential jurisdiction over the activities proposed within Mexico include the Comisión Federal de Electricidad (CFE), Comisión Reguladora de Energía (CRE), Secretaría de Medio Ambiente y Recursos Naturales (SEMARNAT), and Instituto Nacional de Ecología (INE).

The La Rumorosa Projects will be constructed in multiple phases as described below.

As an initial activity, Baja Wind, S. de R.L. de C.V. (Baja Wind), a wholly owned subsidiary of Sempra Energy Mexico, will install up to 10 MW of wind generation, consisting of up to five wind turbines interconnected locally to the CFE electrical grid (the Jacume Project). Construction will start as soon as all required permits are obtained from the appropriate Mexican regulatory agencies, estimated to be 1<sup>st</sup> quarter 2008. These generators will not interconnect to the proposed 230/500-kV transformer substation in Mexico or to any transmission lines connected to the United States transmission system, and therefore, the Presidential Permit is not required for the Jacume Project.

During Phase I of the La Rumorosa Projects, Baja Wind will install up to 250 MW of wind generation, consisting of 96 to 167 wind turbines, depending on the selected manufacturer and model selected. The proposed transmission line will be used to export 100 percent of the net generating capacity from Phase I to the U.S. Energy will not be exported from the U.S. to Mexico, except for the small amount used by wind turbine lubrication, hydraulic, and control systems when the generators are not operating. It is understood that an Export Authorization will be required for the export of such energy from the USA to Mexico. Phase I will start construction as soon as all permits are obtained from the appropriate U.S. and Mexican regulatory agencies. The target date for commencing construction activities is 4<sup>th</sup> quarter 2008, and full commercial operation of Phase I is planned to begin 3<sup>rd</sup> quarter 2010.

The exact location for installation of subsequent phases of the La Rumorosa Projects is yet to be determined, and SG is currently arranging for additional wind resource properties in the vicinity of La Rumorosa. It is anticipated that construction of the subsequent phases would consist of three or more increments of approximately 200 to 250 MW with each increment being constructed approximately one year apart. The anticipated completion date for three phases subsequent to Phase I is December 2013.

This application is for a new, single circuit 500 kV transmission line capable of transmitting up to 1250 MW of electrical generation. On the U.S. side, the proposed transmission line will include approximately four or five, 180-foot tall, steel lattice towers, similar to the existing 500-kV SWPL structures. However, the structures for the proposed transmission line could be steel monopoles. If steel monopoles are employed, the spacing between structures may be reduced, which would require the installation of additional structures.

The SWPL loop-in substation is anticipated to be either a ring-bus that would allow one or two interconnection positions, or a parallel bus arrangement that would allow three or more interconnection positions. The design of the loop-in substation will be determined by SDG&E. SDG&E has indicated a preference (but not a requirement) for Baja Wind U.S. to interconnect at 230 kV instead of 500 kV, with SDG&E providing the 230/500 kV transformation as part of the SWPL loop-in substation. Should Baja Wind U.S. agree to make such a change, the new transmission line crossing the international border would be double circuit 230 kV instead of single circuit 500 kV, and this application would be amended accordingly. In such case, the total line capacity of 1250 MW would be unchanged, and the maximum structure heights would be equal to or less than as described herein. One 500 kV or two 230 kV termination positions in the SWPL loop-in substation will be dedicated to the transmission line of Baja Wind U.S., and the other termination positions will be made available by SDG&E to other projects in the CAISO Interconnection Queue that are also requesting interconnection into SWPL. Other such projects are independent of the La Rumorosa Projects. The SWPL loop-in substation will encompass a graded area of approximately 85 acres.

Baja Wind is in the process of preparing the necessary Mexican environmental permit application (Autorización en Materia de Impacto Ambiental, or MIA) and land use permit application (Permiso de Cambio de Uso de Suelo) for Phase I of the La Rumorosa Projects, the 230/500-kV transformer substation, and the portion of the proposed transmission line located in Mexico. Copies of the Mexican permits and approvals will be provided to DOE.

The proposed transmission line will be operable year round. The transfer of electricity on the proposed transmission line is expected to reduce the region's dependence upon conventional fossil fuel fired generation plants, and improve the region's ability to meet future electrical energy requirements. The La Rumorosa Projects will also help California utilities meet the renewable portfolio standards specified in state legislation (Senate Bill 107), which requires that by the end of 2010, 20% of retail electricity sales be generated from renewable energy sources. To meet the requirements set forth in Senate Bill 107, California utilities such as SDG&E, Southern California Edison (SCE) and Pacific Gas and Electric (PG&E) have solicited proposals for renewable resources.

Phase I of the La Rumorosa Projects was selected by SCE through a request for proposals process, and a power purchase agreement has been signed between SCE and Baja Wind. The electrical generation from subsequent phases of the La Rumorosa Projects is currently being discussed with other California utilities.

The preferred route (Route A) for the one-mile portion of the proposed transmission line within the U.S. is entirely within private property in eastern San Diego County near the town of Jacumba. An alternative Route B runs to the west of Route A and would cross portions of Bureau of Land Management (BLM) land. An alternative Route C is the western most route and is entirely on private land. SDG&E has preliminarily agreed to a SWPL loop-in substation location that would support the preferred Route A. Baja Wind U.S. intends to obtain a 214-foot wide permanent right-of-way and a 314-foot wide temporary construction easement for the proposed transmission line. Baja Wind U.S. has initiated biological and cultural resource studies in support of an anticipated Environmental Assessment (EA) under the National Environmental Policy Act (NEPA). It is anticipated that DOE would have lead agency status for NEPA purposes.

## II. PRESIDENTIAL PERMIT APPLICATION

### (a) INFORMATION REGARDING THE APPLICANT

- (1) **Applicant's Legal Name.** Baja Wind U.S. Transmission, LLC
- (2) **Partners.** None
- (3) **Correspondence.** Joan Heredia  
Permitting Manager  
Sempra Global  
101 Ash Street, HQ 8B  
San Diego, CA 92101  
Telephone: (619) 696-1824
- (4) **Foreign Ownership.** Neither SG nor Baja Wind U.S. is owned wholly or in part by a foreign government. SG and Baja Wind U.S. currently do not own distribution transmission lines (through subsidiaries, SG does own generation interconnection lines). SG and Baja Wind U.S. are not directly or indirectly assisted by a foreign government or instrumentality thereof in the construction or financing of the facilities within the U.S.
- (5) **List of Existing Contracts with Foreign Governments or Foreign.** Neither SG nor Baja Wind U.S. has contracts with a foreign government or foreign private concerns relating to the purchase, sale, or delivery of electrical energy.
- (6) **Corporate Authority and Compliance with Laws.** Attached as Exhibit C is an opinion of counsel to the effect that the construction, connection, operation, and maintenance of the proposed transmission line is within the Applicant's (Baja Wind U.S.'s) corporate powers, and that the proposed facilities comply with all pertinent Federal and State laws.

**(b) INFORMATION REGARDING THE TRANSMISSION LINE TO BE COVERED BY THE PRESIDENTIAL PERMIT**

**(1) Number of Circuits and Placement.** Baja Wind U.S. proposes to construct a single-circuit, 500-kV overhead transmission line supported on approximately four or five, 180-foot tall lattice steel towers located between the existing SWPL 500-kV transmission line and the U.S.-Mexico border. The total length of the U.S. portion of the proposed transmission line is approximately one mile. The anticipated border crossing is located near Jacumba.

**(2) Operation Voltage and Frequency.** The nominal operating voltage will be 500-kV, three-phase, at a frequency of 60 Hz. The maximum operating voltage will be 525-kV.

**(3) Conductors.** The type of conductor (wire) proposed is a bundled, 2 x 2156 kcmil, aluminum conductor, steel reinforced (ACSR). Alternatives, with the choice to be determined during detailed design, include aluminum conductor, steel supported (ACSS), and aluminum conductor, composite core (ACCC). These alternatives employ technology that may reduce weight, sag, and line losses.

**(4) Additional Information Regarding Overhead Lines**

**(A) Wind/Ice Loading Design Parameters.** The transmission line will be designed for an anticipated wind loading of 200 kilometers per hour (125 miles per hour). No ice loading criteria are necessary.

**(B) Description of Typical Supporting Structures.** A typical steel lattice tower is shown in Exhibit D1. Typical steel monopoles are shown in Exhibits D2 and D3. Lattice towers would be approximately 180 feet in height and approximately 60 feet by 60 feet at the base. Lattice towers would be anchored to a concrete foundation approximately 3 to 6 feet in diameter at each of the four corners of the base. Steel monopoles would be approximately 200 feet in height, 4 to 6 feet in diameter at the base, and tapering to 1 to 2 feet in diameter at the top. Steel monopoles would be anchored to a concrete foundation approximately 7 to 11 feet in diameter. The arms of the lattice towers or steel monopoles will support double insulators that in turn support the bundled conductors. The lattice towers or steel monopoles will support an overhead static ground wire running above the conductors. The overhead static ground wire will have a fiber optic core for communications between the 230/500-kV transformer substation and the SWPL loop-in substation, including communications for system protection and monitoring.

**(C) Structure Spacing.** The supporting structures will be constructed along the center of a 214-foot wide right-of-way and spaced approximately 1,300 feet (400 m) apart. Spacing of the structures could vary in order to avoid or minimize impacts to sensitive biological or cultural resources.

**(D) Conductor Spacing.** Horizontal spacing between phases will be approximately 32 feet.

**(E) Line to Ground and Conductor Side Clearances.** The horizontal distance between each phase and the supporting structure will be approximately 17 feet. Each conductor bundle will be supported by two insulators to prevent lateral sway at the



structure. Minimum ground clearance for the conductors will be 30 feet, with a design margin of 3 to 5 feet.

(5) **Additional Information Regarding Underground and Underwater Lines.** No underground or underwater lines are proposed.

(6) **General Area and Detailed Border Area Maps**

A general area map showing the overall facilities is attached as Exhibit A. A detailed map of the facilities crossing the international border showing their physical location, specifying longitude and latitude, and identifying the ownership of the facilities at or on each side of the border, is attached as Exhibit B.

(7) **Bulk Power System Information**

(A) **Expected Power Transfer Capability.** The maximum power transfer capability will be determined during detailed design, but in general is limited by the maximum thermal capability of the proposed transmission line. The normal thermal capability will be approximately 1400 MVA at a 0.90 power factor. The estimated short-time emergency thermal capability will be approximately 1500 MVA at a 0.90 power factor.

(B) **System Power Flow.** The two attached power flow plots from an approved WECC 2009 Heavy Summer case depict the interconnection of the La Rumorosa Projects with SWPL and system flows on the interconnected buses and lines with and without the projects. Note that the plots only include 400 MW of the ultimate build-out of the projects. Additional power flow plots corresponding to maximum loading of the proposed transmission line are expected to be available 1<sup>st</sup> quarter 2008 and will be provided to DOE.

(C) **Interference Reduction Data.** A 500-kV line normally does not present radio or television interference problems. The transmission line design will mitigate possible interference by providing corona rings on the insulators and corona free hardware.

(D) **Relay Protection.** The proposed transmission line will connect the 230/500-kV transformer substation to SDG&E's SWPL loop-in substation and will comply with SDG&E utility practices for relay protection. The proposed transmission line will not be interconnected with CFE's grid and therefore additional relay protection will not be required.

(E) **System Stability Analysis.** This information will be provided by SG if requested after review of the system power flow plots.

### (c) POTENTIAL ENVIRONMENTAL IMPACTS

#### (1) Assessment of Environmental Impacts.

SG has begun an assessment of potential environmental impacts of the proposed facilities, including biological and cultural resource field surveys. The environmental and cultural resource information provided herein will be updated once all of the surveys are complete and a Draft Environmental Assessment (EA) is prepared. The draft EA will address potential impacts to all resource areas, including visual and other potential project impacts.

Three potential routes for the proposed transmission line, corresponding to three potential locations for the SWPL loop-in substation, have been identified and are shown in Exhibit B. For purposes of assessing potential environmental impacts, the "project area" comprises all three routes and substation locations, even though only one route and substation site will be selected. The specific location of the SWPL loop-in substation will be selected in consultation with SDG&E and is anticipated to support the preferred route. Route A (Preferred Route) is the farthest east, near the border of San Diego and Imperial Counties. The two alternative routes are located to the west of the preferred route. All property in the required right-of-way for the approximately one-mile long U.S. portion of the preferred route is owned by private entities and is entirely within the jurisdiction of San Diego County. However, Route B is partially located on BLM land and Route C is on private land. None of the routes or substation sites is located within American Indian reservation lands.

There are no wetlands or navigable waters in the project area, but there is an intermittent desert wash, potentially regulated by the U.S. Army Corps of Engineers as non-wetland jurisdictional water, that crosses the southern portion of the proposed project area. After crossing Route A, the wash turns northwest where it crosses the Route B and Route C alternatives. The wash is not listed as a flood hazard area in the project area according to the FIRMette Flood Insurance Map database maintained by FEMA (FEMA 2007). Placement of the transmission towers will avoid non-wetland waterways that could be regulated by the Corps of Engineers. However, it is possible that use of existing or new access roads could impact the non-wetland jurisdictional waterways identified in the project area. Grading and filling for the substation in Route B and Route C could impact the desert wash described above.

The study area for the proposed transmission line lies in the high desert country on the southeastern border of the Peninsular Ranges within the Colorado Desert, and spans several habitat types. No plant species listed as threatened or endangered by the USFWS are documented to occur within the project area. However, one plant listed by the state as rare, the Mount Laguna aster, has been documented in the project area. Initial visual inspections of the project area reveal that vegetation is highly disturbed sage brush, and the area is frequently traversed by Border Patrol all-terrain vehicles and by other vehicles.

Two wildlife species listed federally as threatened or endangered, as well as one species of concern, have the potential to occur in the general vicinity of the project area: the

peninsular bighorn sheep (Endangered), the Quino checkerspot butterfly (Threatened), and the flat tailed horn lizard (Species of Concern). Because of the nature of the habitat in the project area, the probability of these species being found in the project area is moderate. In consultation with DOE, additional field studies may be conducted to further define the potential for these species to be found along the preferred and alternative routes.

**(2) Cultural Resources.**

A record search at the South Coastal Information Center in San Diego and at the Southeast Information Center in Ocotillo revealed no sites listed on the National Register of Historic Places within the project area. However, within a 1-mile radius of the preferred Route A, 39 archaeological sites have been identified. Cultural field surveys will be required to determine if cultural resources are present in the project area. Baja Wind U.S.'s environmental consultant (Ecology and Environment, Inc.) will apply for permission to conduct cultural field surveys along the preferred Route A and possibly the alternative routes, if required by DOE or other agencies. Project attributes that could affect historic places include permanent footings for lattice towers or steel monopoles, permanent access roads for maintenance, temporary construction work areas at each tower or monopole location, and one wire stringing site. Locations of these impact areas have not yet been determined, and since there is some flexibility in where individual tower or monopole structures are located, it is anticipated that any potential impacts can be avoided or minimized. Cultural resource field surveys will establish the location of all historic sites in the potential areas of impact, and to the extent feasible, Baja Wind U.S. will locate work areas and areas of permanent impact so as to reduce or avoid cultural resource impacts.

**(3) Proposed Minimum Right-of-Way Width.**

Baja Wind U.S. proposes to acquire a 214-foot wide permanent right-of way, which would be located in close proximity to existing access roads. Baja Wind U.S. anticipates that these existing roads may be used for practical routes of ingress and egress for construction and maintenance. Temporary easements will be acquired for use of additional lands for construction, storage, and staging outside the permanent right-of-way during construction of the transmission line. The proposed right-of-way width of 214 feet is sufficient to ensure that transmission line conductor swing remains within the right-of-way even under extreme wind conditions.

**(4) Transmission Towers.**

Lattice towers would be approximately 180 feet in height and approximately 60 feet by 60 feet at the base. Lattice towers would be anchored to a concrete foundation approximately 3 to 6 feet in diameter at each of the four corners of the base. Steel monopoles would be approximately 200 feet in height, 4 to 6 feet in diameter at the base, and tapering to approximately 1 to 2 feet in diameter at the top. Steel monopoles would be anchored to a concrete foundation approximately 7 to 11 feet in diameter.

Grading will be done around the lattice tower or steel monopole locations as necessary to accommodate construction and access, but due to the flat nature of the preferred Route A, limited grading is expected. Due to the length of the alternative routes, clearing and grading would be more extensive along the alternative routes. The amount of temporary

land disturbance anticipated during construction is 150 by 200 feet (0.69 acre) at each tower or monopole location for a total of approximately 3.45 acres of temporary disturbance based on the construction of a total of 5 towers or monopoles. Permanent disturbance beneath the base of each lattice tower or monopole would not exceed 60 feet by 60 feet, or approximately 3600 square feet.

It is anticipated that one wire stringing site will be needed for construction. The area of temporary land disturbance anticipated during wire stringing operations is approximately 120 feet by 250 feet (0.69 acre) at the stringing site. It is anticipated that most areas of temporary construction disturbance will be adjacent to the access roads. With the exception of permanent access roads required for ongoing operation and maintenance, all temporarily disturbed areas will be restored and/or revegetated as required following completion of construction.

Access roads will be needed to construct, operate, and maintain the proposed transmission line. There are existing access roads in close proximity to the preferred Route A; however, it may be necessary to construct short, unpaved access spurs from the existing roads to the base of the transmission structures. No road improvements to the existing roads are anticipated.

Storage and staging will be along the proposed 214-foot wide permanent right-of-way. Baja Wind U.S. will seek an additional 100-foot wide temporary construction easement, providing a total width of 314 feet during construction. With some flexibility in tower or monopole locations, the wire stringing site, and the staging and storage area, Baja Wind U.S. will avoid or minimize impacts to environmental resources to the extent feasible.

**(5) Threatened or Endangered Wildlife or Plant Life.**

The information provided below is applicable to all the proposed alternative routes.

Searches of Federal and state databases identified no listed threatened or endangered plant or animal species on the project site. However, based on the type of habitat in the project area there are several threatened and endangered plant and wildlife species that could potentially occur within the project area. Two wildlife species listed federally as threatened and endangered have the potential to occur in the project area, as well as one species of concern: the peninsular bighorn sheep (Endangered), the Quino checkerspot butterfly (Threatened), and the flat tailed horn lizard (Species of Concern).

In addition, there are numerous plant and animal species listed on the California Natural Diversity Database (CNDDB) that could potentially occur in the project area. One plant listed by the state as rare, the Mount Laguna aster, has been documented in the vicinity. Other plant species that could potentially be found in the area include slender leaved ipomopsis (*Ipomopsis tenuifolia*), Parry's tetraococcus (*Tetraococcus dioicus*), sticky geraea (*Geraea viscida*), rayless ragwort (*Senecio aphanactis*), Mountain Springs bush lupine (*Lupinus excubitus* var. *medius*), Jacumba milk-vetch (*Astragalus douglasii* var. *perstrictus*), desert beauty (*Linanthus bellus*), and Mexican hulsea (*Hulsea mexicana*). Ground surveys will be conducted to determine the vegetation and habitat types and the presence or absence of threatened, endangered, or sensitive plant species within the project area.

**(d) ALTERNATIVES TO THE PROPOSED FACILITY**

Three alternatives were identified during the planning process, including two route alternatives and the alternative of an underground transmission line.

(1) **Alternative Route B.** Alternative Route B is located parallel to and west of the preferred route. Route B extends approximately one mile across U.S. land and slightly longer than the preferred route across land in Mexico. Route B passes through BLM land near the U.S./Mexican border and would thus potentially result in impacts to environmental resources on federal lands. As in the case of the preferred route, Route B would cross an intermittent desert wash potentially regulated by the U.S. Army Corps of Engineers as non-wetland jurisdictional water, and the SWPL loop-in substation site associated with Route B would also likely impact the wash. In addition, the substation site has rocky and uneven terrain that would require greater cut and fill during construction as compared with the substation site associated with the preferred route. Route B would also require the crossing of Old Highway 80. Route B would be in nearby proximity to existing access roads, but would require short access spurs from the existing roads to the transmission line right-of-way.

(2) **Alternative Route C.** Alternative Route C is located parallel to and further west of the preferred route than Route B. Route C extends approximately one-mile across U.S. land and approximately three miles across land in Mexico. Route C is in close proximity to the Jacumba airstrip and would thus potentially result in aviation impacts. The SWPL loop-in substation site associated with Route C would be constructed within the intermittent desert wash described previously. Route C would also require the crossing of Old Highway 80. There are limited existing access roads near Route C, and therefore the construction of new roads would be required. Route C would cross only private lands.

(3) **Underground Transmission Line.** Underground transmission lines are normally reserved for dense urban areas where overhead routes are not feasible. This alternative would require significantly greater ground disturbance and environmental impacts, as underground construction would require trenching throughout the entire length of the transmission line. This would result in a much larger and extensive area of environmental impacts during construction than an overhead transmission line and would afford less opportunity to avoid sensitive resources. In addition, labor, operation, and maintenance costs would be significantly higher.

**(e) VERIFICATION**

This application has been verified under oath by an officer of the Applicant having knowledge of the matters set forth above. This verification is attached as Exhibit F.

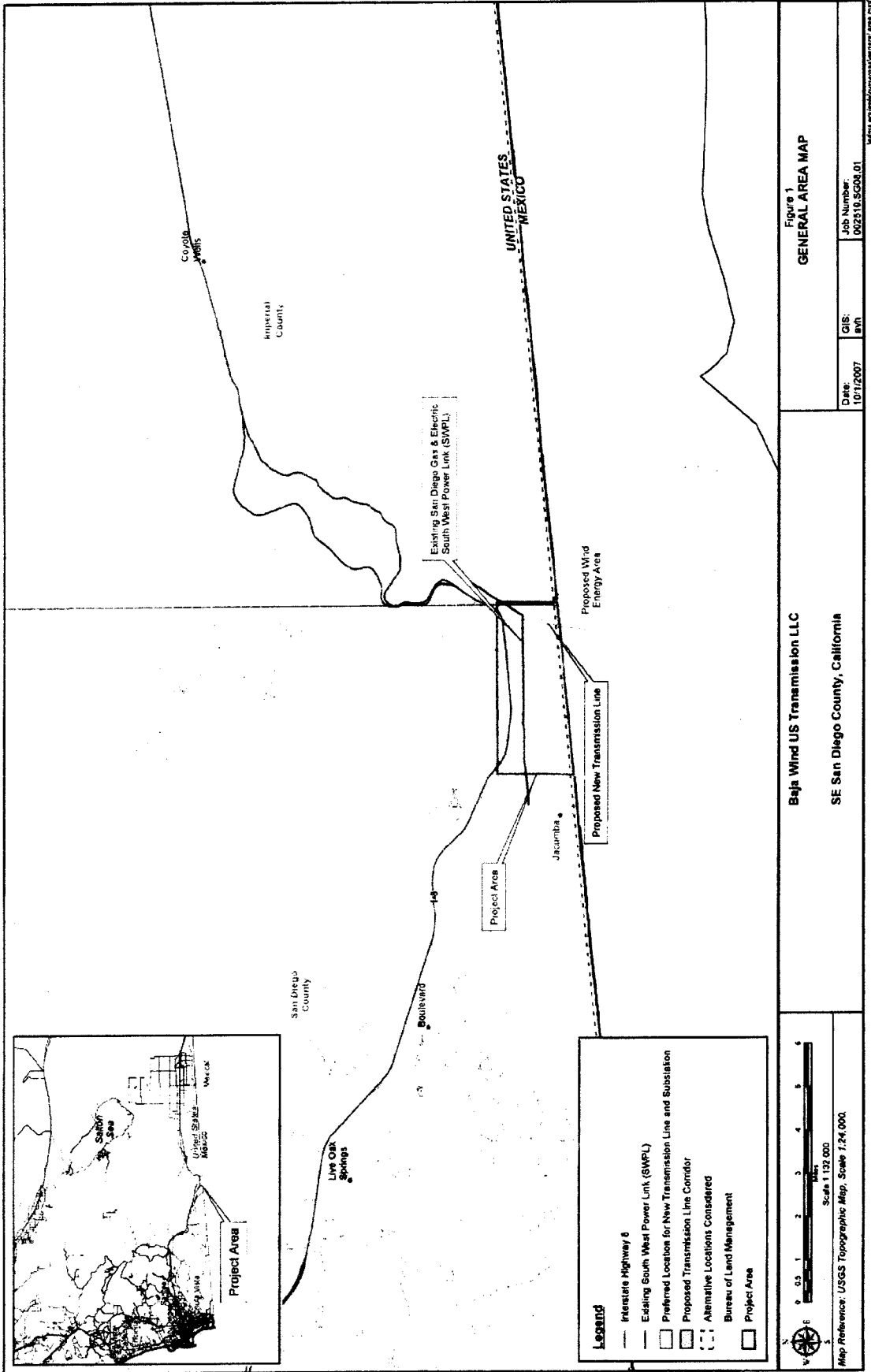
**LIST AND SUMMARY OF ATTACHED EXHIBITS**

Following are summaries of the exhibits required in 10 CFR 205.322 to complete this Application and that SG believes to be applicable in the circumstances described herein:

- Exhibit A Overall general area map
- Exhibit B Crossing location at the international border
- Exhibit C Opinion of counsel that the construction, connection, operation, or maintenance of the proposed facility is within the corporate powers of the Applicant, and that the Applicant has complied with or will comply with all pertinent state and federal laws. [ Joan/Estela to provide]
- Exhibit D1 Typical steel lattice tower (tangent structure)
- Exhibit D2 Typical steel monopole (tangent structure - 0 to 2 degrees)
- Exhibit D3 Typical steel monopole (tangent structure - 2 to 8 degrees)
- Exhibit E System power flow plots (400 MW case)
- Exhibit F Verification under oath by an officer of the Applicant having knowledge of the matters set forth herein.

**EXHIBIT A**

Overall general area map



- Legend**
- Interstate Highway 8
  - Existing South West Power Link (SWPL)
  - Preferred Location for New Transmission Line and Substation
  - Proposed Transmission Line Corridor
  - ⋯ Alternative Locations Considered
  - Bureau of Land Management
  - Project Area

Scale 1:132,000  
 Map Reference: USGS Topographic Map, Scale 1:24,000

Baja Wind US Transmission LLC  
 SE San Diego County, California

Figure 1  
**GENERAL AREA MAP**

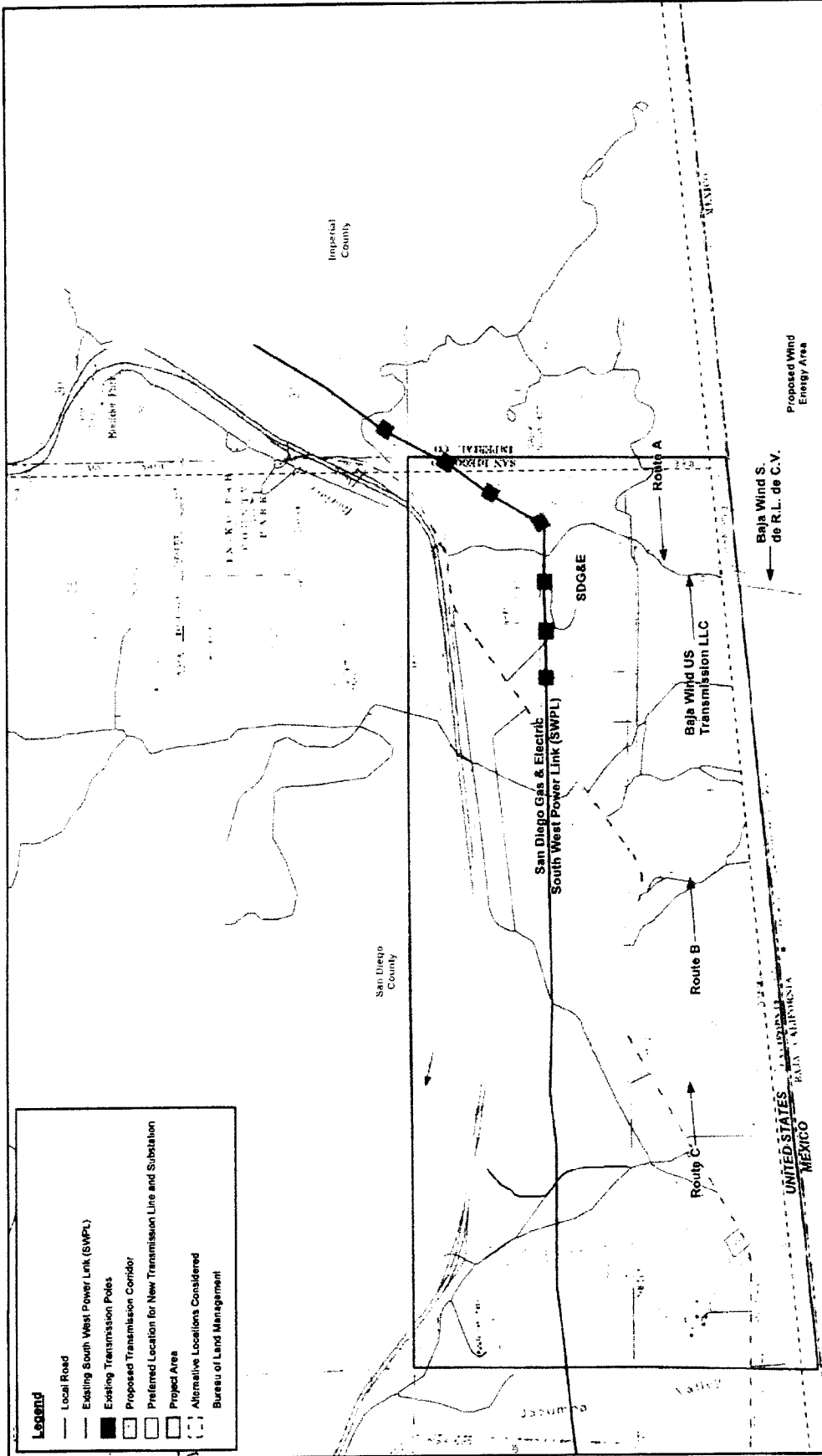
Date:	10/12/2007	GIS:	BWH	Job Number:	022319.5C02.01
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Figure 1: Baja Wind US Transmission LLC - SE San Diego County, California. Date: 10/12/2007. GIS: BWH. Job Number: 022319.5C02.01. Map Reference: USGS Topographic Map, Scale 1:24,000.



**EXHIBIT B**

Detailed area map



**Legend**

- Local Road
- Existing South West Power Link (SWPL)
- Existing Transmission Poles
- Proposed Transmission Corridor
- ▭ Preferred Location for New Transmission Line and Substation
- ▭ Project Area
- ▭ Alternative Locations Considered
- Bureau of Land Management

Scale: 1.5 Miles  
 Scale 1:24,000  
 Map Reference: USGS Topographic Map, Sheet T.24.000

Baja Wind US Transmission LLC  
 SE San Diego County, California

**Figure 2  
 DETAILED AREA MAP**

Date: 10/17/2007  
 GIS: avh  
 Job Number: 002510.SG008.01

**EXHIBIT C**

Opinion of counsel

December 18, 2007

U.S. Department of Energy  
1000 Independence Ave., SW  
Washington, DC 20585

Ladies and Gentlemen:

This opinion is rendered in connection with the application ("Application") of Baja Wind U.S. Transmission, LLC, a Delaware limited liability company ("Baja Wind U.S.") for authority to construct, connect, operate, and maintain a new electric transmission facility crossing the border of the United States for the transmission of electricity between the United States and Mexico to be filed with the Department of Energy ("DOE") pursuant to Executive Order No. 10485, as amended, and 10 CFR Sections 205.320 *et seq.* (1998).

Based on my understanding of Baja Wind U.S.'s proposal and my examination of such documents, records, and matters of law as I have considered to be relevant in the premises, it is my opinion that:

1. The construction, connection, operation, and maintenance of the proposed facilities, as contemplated by the Application, are within the corporate power of Baja Wind U.S.
2. Based on information provided by representatives of Baja Wind U.S., the proposed facilities comply with all pertinent Federal and State laws.

I am opining herein as to the effect on the subject transaction only of the federal laws of the United States and the internal laws of the State of California, and I express no opinion with respect to the applicability thereto, or effect thereon, of the laws of any other jurisdiction or as to any matters of municipal law or the laws of any other local agencies within any state. This opinion is issued as of the date hercof and is necessarily limited to the laws now in effect. I am not assuming any obligation to review or update this opinion should applicable law or the existing facts and circumstances change. This opinion is provided by me as counsel for Baja Wind U.S. solely to you for your exclusive use and is not to be made available to or relied upon by any other persons or entities without my prior written consent.

Very truly yours,



Kevin Sagara  
Vice President and Associate General Counsel

**EXHIBIT D1**

Typical steel lattice tower (tangent structure)

500KV TRANSMISSION LINE SINGLE CIRCUIT

SEMIRA ENERGY Semptra Sheet  
LA 480000-0000

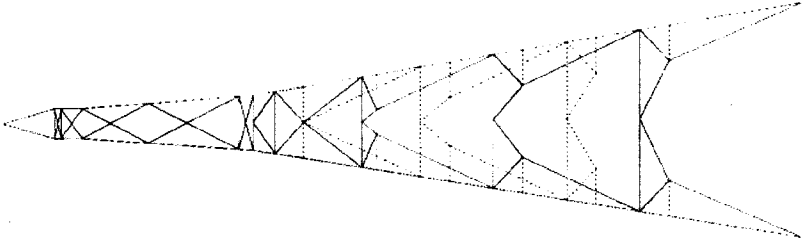
Latifica Tower type 4BC1 500KV and foundation

DATE: 02/20/2017  
DRAWN: J. PEREZ  
CHECKED: J. PEREZ  
SCALE: 1:1000

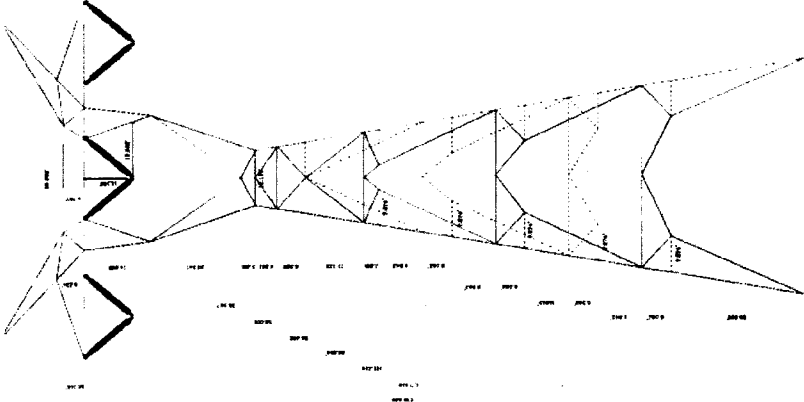
**DISTANCES**

LEVEL	h (mm)	a (mm)	b (mm)	c (mm)	d (mm)	e (mm)	f (mm)
-10	1000	1000	1000	1000	1000	1000	1000
-5	1500	1500	1500	1500	1500	1500	1500
0	2000	2000	2000	2000	2000	2000	2000
+5	2500	2500	2500	2500	2500	2500	2500
+10	3000	3000	3000	3000	3000	3000	3000
+15	3500	3500	3500	3500	3500	3500	3500

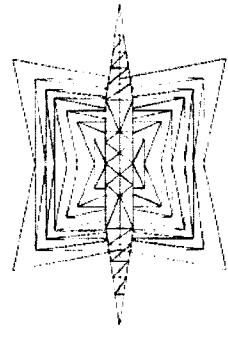
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11	12	13	14	15	16	17	18	19	20
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41	42	43	44	45	46	47	48	49	50



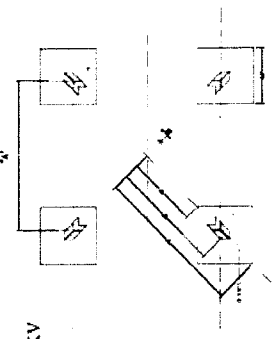
LATTICE TOWER TYPE 4BC1 500KV  
SIDE VIEW



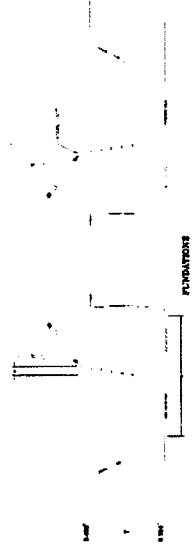
LATTICE TOWER TYPE 4BC1 500KV  
FRONT VIEW



LATTICE TOWER TYPE 4BC1 500KV  
TOP VIEW



FUNDATIONS TOP VIEW



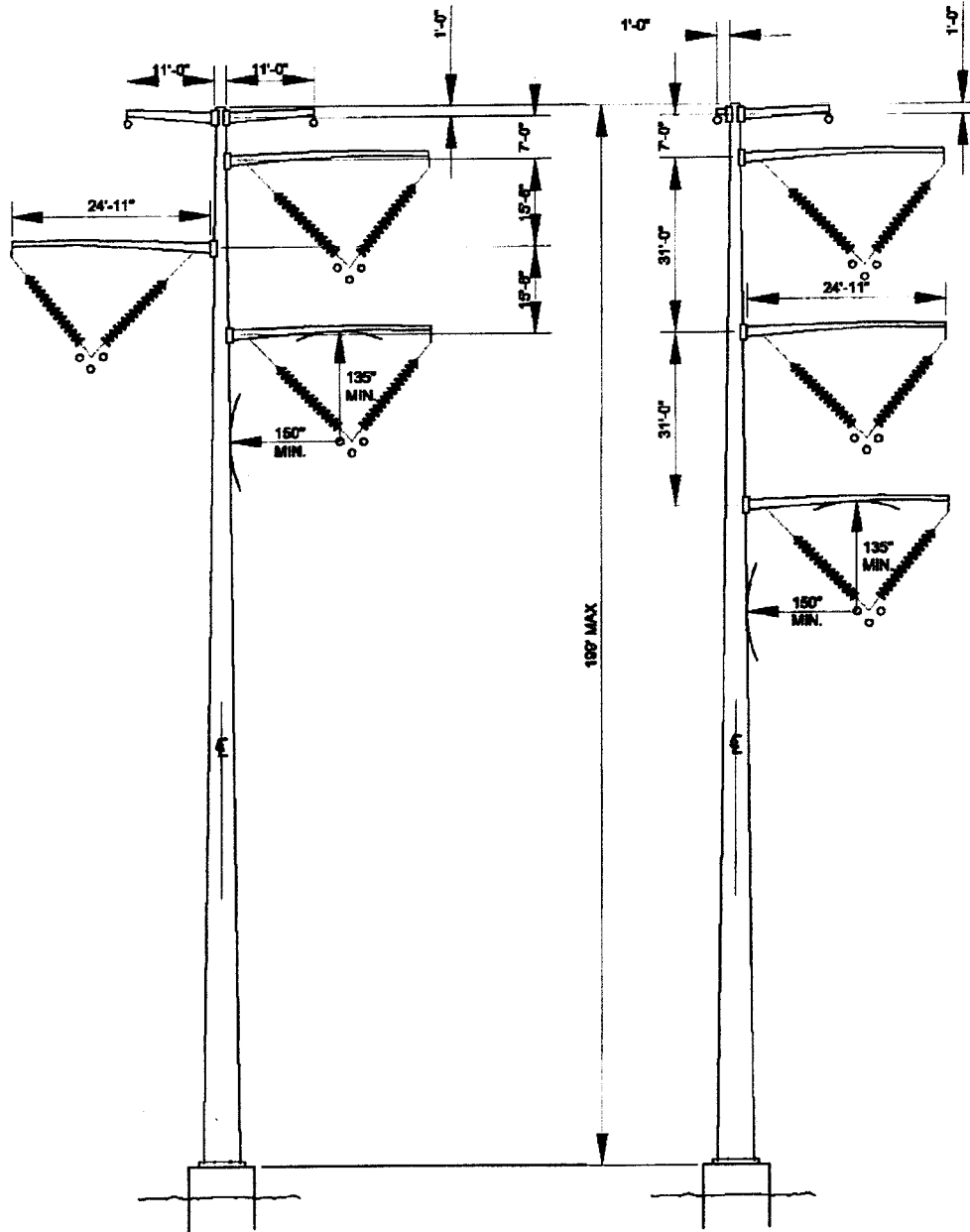
PLAN VIEW

**EXHIBIT D2**

Typical steel monopole (tangent structure - 0 to 2 degrees)

# Tubular Steel Pole Structures

Tangent - 2 Degrees



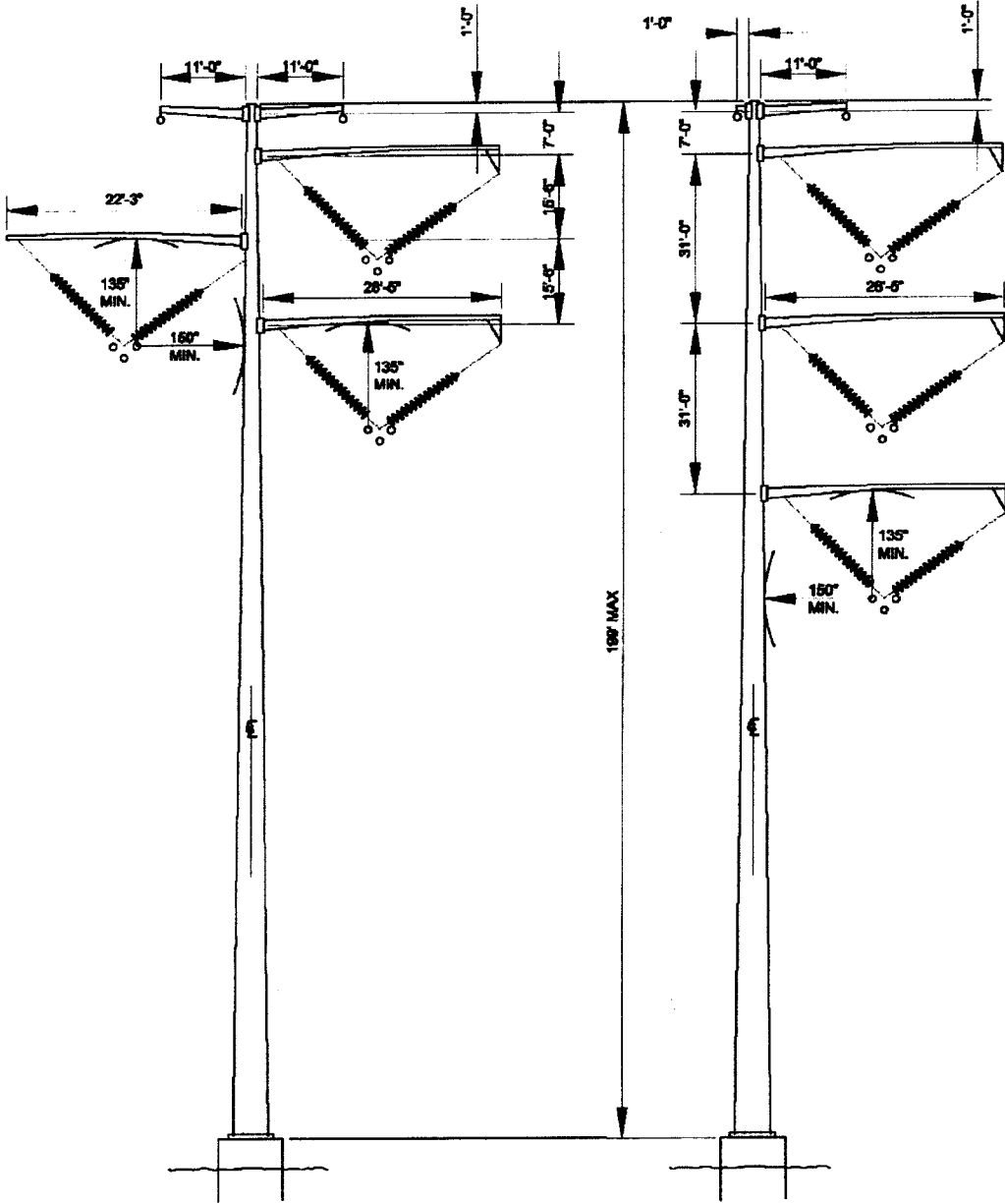


**EXHIBIT D3**

Typical steel monopole (tangent structure - 2 to 8 degrees)

# Tubular Steel Pole Structures

Tangent - 2 to 8 Degrees



**EXHIBIT E**

The two attached power flow plots from a WECC 2009 Heavy Summer case depict the interconnection of the La Rumorosa Projects with SWPL and system flows on the interconnected buses and lines with and without the projects. Note that the plots only include 400 MW of the ultimate build-out of the projects. Additional power flow plots corresponding to maximum loading of the proposed transmission line are expected to be available 1<sup>st</sup> quarter 2008 and will be provided to DOE.





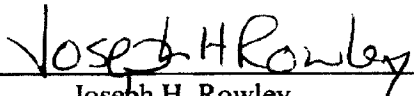
**EXHIBIT F**

Verification



AFFIDAVIT OF JOSEPH H. ROWLEY – VICE PRESIDENT

The undersigned, Joseph H. Rowley, being first duly sworn, attests that he is the Vice President of Baja Wind U.S. Transmission, LLC, a Delaware limited liability company; that as such he is legally authorized to bind Baja Wind U.S. Transmission, LLC; that he has read the foregoing Application of Baja Wind U.S. Transmission, LLC for a Presidential Permit and knows the contents thereof; and that the facts and representations set forth in the Application are true and correct to the best of his knowledge, information and belief.

  
\_\_\_\_\_  
Joseph H. Rowley

Subscribed and sworn before me, a Notary Public in and for the State of California,  
County of San Diego, this 15<sup>th</sup> day of December, 2007.

**CALIFORNIA JURAT WITH AFFIANT STATEMENT**

State of California

County of San Diego } ss.

- See Attached Document (Notary to cross out lines 1-6 below)
- See Statement Below (Lines 1-5 to be completed only by document signer[s], *not* Notary)

\_\_\_\_\_  
 Signature of Document Signer No. 1

\_\_\_\_\_  
 Signature of Document Signer No. 2 (if any)

Subscribed and sworn to (or affirmed) before me on this

18<sup>th</sup> day of December, 2007, by

(1) Joseph H Rowley  
Name of Signer

- Personally known to me
- Proved to me on the basis of satisfactory evidence to be the person who appeared before me (.) (.)

(2) \_\_\_\_\_  
Name of Signer

- Personally known to me
- Proved to me on the basis of satisfactory evidence to be the person who appeared before me.)

Harper E. Wells  
Signature of Notary Public



Place Notary Seal Above

**OPTIONAL**

*Though the information below is not required by law, it may prove valuable to persons relying on the document and could prevent fraudulent removal and reattachment of this form to another document.*

**Further Description of Any Attached Document**

Title or Type of Document: Application for Presidential Permit w/ Affidavit

Document Date: December 18, 2007 Number of Pages: 2

Signer(s) Other Than Named Above: Kevin Sagara

RIGHT THUMBPRINT OF SIGNER #1  
Top of thumb here

RIGHT THUMBPRINT OF SIGNER #2  
Top of thumb here



Baja Wind comments (OE #PP-334) 3/21/08

**Boulevard Planning Group  
619-766-4170 P.O. Box 1272  
Boulevard, CA 91905**

Office of Electricity Delivery and Energy Reliability (OE-20)  
US Department of Energy  
1000 Independence Avenue, SW  
Washington DC 20585-0350

March 21, 2008

VIA e-mail and certified mail

**RE: APPLICATION FOR PRESIDENTIAL PERMIT; BAJA WIND US TRANSMISSION, LLC  
(OE Docket No. PP-334)**

Dear Sir or Madam,

We hereby protest/oppose the proposed SEMPRA's cross-border Baja Wind project near Jacumba and La Rumarosa which will impact our rural community in numerous ways creating concern and controversy. Our community planning group advises the County of San Diego on local land use issues and impacts. At our regular meeting, held on March 6, 2008, we voted 6-0-0 to submit these comments by the March 24<sup>th</sup> deadline.

The proposed project appears to be integrally related to the Sunrise Powerlink (SPL) project, proposed by SEMPRA's subsidiary, San Diego Gas and Electric, which is currently in the DEIR/EIS phase of review by the California Public Utilities Commission and the Bureau of Land Management (Application A.05-12-014 and A.06-08-010). The DEIR/EIS, prepared by Aspen Environmental, was released for public review and comment on January.03, 2008. The comment deadline is April 11<sup>th</sup>. The entire document is available at:

[www.cpuc.ca.gov/environment/info/aspen/sunrise/sunrise.htm](http://www.cpuc.ca.gov/environment/info/aspen/sunrise/sunrise.htm)

In that document, a much smaller variation (250 MW) of the current proposed Baja Wind project (1,250 MW) is referred to as **Rumarosa Wind Developers. II and the Jacumba Substation**. SEMPRA's DOE application for Baja Wind, noticed in the Federal Register on February 22, 2008, almost two months after the SPL DEIR/EIS was released to the public, identifies the Southwest Powerlink (SWPL) as the grid connection for Baja Wind. SDG&E has stated that their proposed SPL is needed to create more transmission capacity on the SWPL to move more energy from La Rumarosa and other potential generators on the US side including wind proposals on BLM land in the McCain Valley and Table Mountain area and included in the SPL DEIR/EIS. The I-8 Alternative and the Modified Route D Alternative for SPL runs in the same transmission corridor and is listed as the fourth of seven environmentally superior alternatives to the proposed SPL project.

For reasons noted above, we hereby incorporate every review comment, reference, significant unavoidable impact, cumulative impacts, and backup documentation, et al, associated with the proposed Baja Wind and other proposed wind energy /transmission projects, as reported/referenced in the SPL DEIR/EIS. We also hereby incorporate the attached Phase II testimony for Jerre Ann Stallcup and for Esther Rubin, submitted on behalf of the Center for Biological Diversity (3/12/08), as part of the SPL application for the Certificate of Public Convenience and Necessity. Their testimonies discuss the much smaller La Rumarosa proposal and the negative impacts on wildlife, wildlife corridors, cross-border linkages, and investments of public monies for conservation purposes, and more. Therefore, the impacts they discuss will multiply in scale along with the six fold increase in the size and scale of the proposed Baja Wind project.

**There are many concerns including, but not limited to, the following:**

- There will be a substantial and significant increase in industrial character, industrialization of the landscape,
  - increased visual contrast and structure prominence, skylining, view blockage, diminution of visual quality and resources.
- There will be a significant increase in the probability of wildfire based on increased power generation and infrastructure and increased human activities and access to remote sites via new easement roads
- There will be significant negative impacts to rural community character, property values, quality of life, open space, wildlife and their cross-border corridors, natural and cultural resources.
- There will be significant negative impacts on adjacent Peninsular Big Horn Sheep and Quino Checkerspot Butterfly habitat, the Jacumba Wilderness Area, Table Mountain ACEC, as well as impacts on sensitive and protected lands, habitats, wildlife, and cultural resources that straddle the US/Mexico border including the Los Californias Binational Conservation Initiative, which also includes Bighorn Sheep and Quino Checkerspot Habitat, and vernal pools in Baja California Norte in the Sierra Jaurez Mountains. (See attached South Coast Wildlands Linkage tour: Jacumba Mountains to Sierra De Juarez)
- The Los Californias Binational Conservation Initiative (LCBCI) is a collaborative effort of the Conservation Biology Institute, The Nature Conservancy, Terra Peninsular, and Pronatura, striving to protect the ecological integrity and connectivity for the full complement of natural communities, processes and wide-ranging species in the Los Californias region. It has been adopted by the US Bureau of Land Management, California State Parks, and the California Biodiversity Council, among others and is part of their planning agency planning vision.(see attached testimony of Esther Rubin on behalf of Center for Biological Diversity).
- As part of the LCBCI, a trans-boundary park has been proposed which would link the Anza-Borrego Desert State Park with Parque Constitucion de 1857 in Baja California, near La Rumarosa (see attached testimony of Esther Rubin on behalf of Center for Biological Diversity).
- As part of LCBCI objectives and conservation targets, California State Parks just acquired the cornerstone for the Parque-to-Park binational linkage. Conservation efforts are also underway in the Sierra Juarez as part of the Parque-to-Park. (Eade-Jacumba property, see text and Map two in the attached Jerre Ann Stallcup testimony on behalf of the Center for Biological Diversity)
- Potential negative impacts on other in process conservation efforts including the County of San Diego's Multiple Species Conservation Plan for East County. Go to [www.msccp-sandiego.org](http://www.msccp-sandiego.org) or contact Kimberly.Zuppiger@sdcounty.ca.gov.
- Negative impacts on the long term efforts and investments by multiple conservation, environmental and governmental agencies on both sides of the US/Mexico border.

**Baja Wind comments (OE #PP-334) 3/21/08**

- Environmental Justice issues/impacts on the low income communities of Jacumba, Boulevard, Jacume and LaRumarosa.
  - Increased potential for future expansion of transmission, generation facilities, pipelines, and other corridors in immediate area on both sides of the US/Mexico.
  - SEMPRA's Gasoducto Bajanorte Pipeline crosses Baja Norte east to west in close proximity to La Rumarosa (see attached map from the Gasoducto Bajanorte website.). Along with the Department of Energy's recent 368
  - West Wide Energy Corridor (DOE/EIS 0386) designation for the existing Southwest Powerlink corridor, and the connection between the proposed Baja Wind project and the existing Southwest Powerlink, there is the potential for a cross-border LNG or other fuel pipeline(s) at this location in a groundwater dependent area with no access to imported water.
  - Any LNG or other fuel pipeline would represent the potential for more gas-fired power plants to be built on Mexican side of the border with less restrictive environmental standards, such as those gas-fired power plants located near Mexicali and La Rosita, exporting energy via the Southwest Powerlink and other connections.
  - Drilling/blasting for turbine and tower footings can disrupt and/or redirect groundwater flow as well as cause contamination through the introduction of chemical drilling fluids, fuel spills and more. Erosion from construction can also cause a rerouting of surface water flow and groundwater recharge. Locals are totally reliant on fragile and vulnerable groundwater resources.
  - Negative impacts on cross-border air quality due to construction activities and equipment.
  - Disturbed soils, graded areas, new access roads, all create the potential for increased air quality impacts, erosion issues related to both wind and water.
  - Why does SEMPRA need the proposed cross-border 500kV line or two 230 kV lines to connect with the existing 500kV Southwest Powerlink? Where and how will the excess transmission capacity be connected?
  - Blinking aviation warning lights, both day and night, on geographically elevated ridge lines, will result in significant negative impacts to our treasured panoramic visual resources and to our dark sky resources which are some of the last remaining dark sky resources in the Southwest. The San Diego Astronomy Association's Tierra Del Sol Observatory is located in Boulevard near the US/Mexico border and attracts astronomers and scientists from around the world.
  - Significant Cumulative Impacts will result from the proposed Baja Wind project, the existing Southwest Powerlink the proposed Sunrise Powerlink Route8 and /or Modified RouteD alternative, the West Wide Energy Corridor, other wind energy proposals in the area, as referenced in Sempra's Baja Wind application, and the DEIR/EIS for the Sunrise Powerlink project.
- page 4 of 4
- How do the local Mexican communities feel about the negative impacts to their communities, both human and natural, to export 100% of the power to the US? How involved is the local Municipality of Tecate, Mexican ejido, community, conservation, and environmental groups?

**Baja Wind comments (OE #PP-334) 3/21/08**

- How do they feel about the negative impacts on the binational efforts for the Pargue-to-Park?
- What outreach has been conducted on both sides of the US/Mexico border? How in-depth was the project information and where was it made available? Was it done in a timely manner, and in both English and Spanish ?

**Conclusion:**

The Baja Wind proposal is too massive and industrial in scale to fit in with the existing rural community character. It is wrongly proposed in an area of almost unblemished rugged beauty and sensitive habitat. It is proposed for an area that is of significant cross-border concern with ongoing in-depth efforts at conservation and protection. It represents significant and virtually unmitigable impacts to visual resources, wildlife habitat, quality of life, property values, public efforts and investments in conservation, and more. Please deny the Presidential Permit for this project. For more information, contact me at 619-766-4170 or donnatisdale@hughes.net

Sincerely,

Donna Tisdale, Chair

cc: Interested Parties

Attachments: Sunrise Powerlink Phase II Testimony of Esther Rubin

Sunrise Powerlink Phase II Testimony of Jerre Ann Stallcup, with 4 attachments  
Gasoducto Bajanorte map South Coast Wildlands Linkage tour: Jacumba Mountains  
to Sierra De Juarez San Diego Union Tribune Article (3-20-08) Local Wilderness  
Corridors help



CENTER for BIOLOGICAL DIVERSITY

March 24, 2008

Ms. Ellen Russell, Acting Director  
Office of Electricity Delivery and Energy Reliability (OE-20)  
U.S. Department of Energy  
1000 Independence Avenue, SW  
Washington, DC 20585-0350

Re: Protest of Application for Presidential Permit; Baja Wind U.S. Transmission, LLC

Dear Ms. Russell:

On February 22, 2008, the Department of Energy (Department) published notice in the Federal Register of the application of Sempra Generation for a Presidential Permit to construct and operate an electric transmission line across the U.S. border with Mexico. Our organizations support the development of wind power in an environmentally appropriate way and offer the following suggestions to help ensure appropriate measures are taken to minimize the environmental impact of the proposed transmission line, if a permit is issued. Measures include undertaking an environmental impact statement and ensuring the permit, if issued, identifies and requires specific and enforceable mitigation measures.

The Center for Biological Diversity is a national membership organization with over 40,000 members in the United States. The Center's mission is to ensure the preservation, protection, and restoration of biodiversity, native species, ecosystems, public lands and waters, and public health. Because climate change from society's production of greenhouse gases is one of the foremost threats to the earth's biodiversity, the environment, and public health, the Center works to reduce greenhouse gas emissions in order to protect these resources. The Sierra Club is a non-profit advocacy organization whose mission is to explore, enjoy, and protect the wild places of the Earth; to practice and promote responsible use of the Earth's ecosystems and resources; to educate and enlist humanity to protect and restore the quality of the natural and human environment; and to use all lawful means to carry out these objectives.

### NEPA REVIEW

The permit application submitted by Sempra Generation on December 18, 2007, suggests that an environmental assessment will provide sufficient review under the National Environmental Policy Act (NEPA).<sup>1</sup> The application provides virtually no information about the wind farms that are the stated reason for constructing the transmission project. The

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<sup>1</sup> Application, page 8.

application also does not mention that the Bureau of Land Management (BLM), in partnership with the California Public Utilities Commission (PUC), released on January 3, 2008, a draft environmental impact statement and environmental impact report (DEIS/DEIR) for the proposed Sunrise transmission project (STP). The DEIS/DEIR for the STP provides a foundation for the necessary NEPA review required in considering the request for a Presidential Permit and we hereby incorporate into these comments, by reference, the DEIS/DEIR.<sup>2</sup> The environmental impacts of the transmission line subject to the pending application for a Presidential Permit are described in the DEIS/DEIR because the BLM and PUC determined in the DEIS/DEIR that the La Rumorosa wind developments and connected transmission line described in the pending application are unlikely to occur unless the STP is approved.<sup>3</sup> The Commission therefore is considering the impacts of the wind development, including the construction of transmission lines and a substation, as indirect effects of the STP.<sup>4</sup> The analysis in the DEIS/DEIR is directly applicable to the pending application for a Presidential Permit.

The application for a Presidential Permit is connected to the La Rumorosa wind projects<sup>5</sup> and therefore must be analyzed in conjunction with the permit request. Sempra Generation and Cannon have not, according to the DEIS/DEIR, provided the BLM and PUC with the specific location of the wind developments necessary to delivery power under the Baja Wind contract.<sup>6</sup> Specific information must be provided, or the Department will only be able to guess at the environmental impacts of the project, a result clearly contrary to the requirements of NEPA. The agencies preparing the DEIS/DEIR were not given specific location maps.<sup>7</sup> The project is

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<sup>2</sup> The DEIS/DEIR is found online at

<sup>3</sup> DEIS/DEIR page B-118. The project, although not named specifically, appears to be one of the projects referred to in testimony of San Diego Gas & Electric (SDG&E) officials in the STP hearing. This testimony was highlighted in the Assigned Commissioners Ruling (ACR) of July 24, 2007, at page 10. A.06-08-010. The testimony identifies wind generation projects that would connect to the Southwest Powerlink but would be unable to do so according to SDG&E officials unless there was the additional capacity of the STP. SDG&E and Sempra Generation are both subsidiaries of Sempra Energy. We note, however, that statements made by SDG&E officials linking renewable energy projects to construction of the STP are not to be relied upon. For example, SDG&E has linked its purchase of solar energy from Stirling Energy Systems to construction of the STP, though SDG&E officials and representatives of the California Independent Systems Operator testified that the STP is not needed to deliver the 300 megawatts of power contracted with Stirling for delivery by 2010. In addition, Department officials should investigate the new capacity that will become available on the Southwest Powerlink when current contracts expire in 2011.

<sup>4</sup> DEIS/DEIR, pages B-118 and B-125.

<sup>5</sup> Application, page 1.

<sup>6</sup> DEIS/DEIR, page B-129. The Baja Wind contract has been proposed by Southern California Edison for approval by the PUC in PUC Advice Letter 2143. The contract is to purchase wind power that would be delivered from La Rumorosa, Mexico, through the transmission lines subject to the Presidential Permit application.

<sup>7</sup> DEIS/DEIR figure B-48 identifies a "potential site."

estimated to require between 750 and 2,125 acres of land.<sup>8</sup> A 230 kV transmission line would be placed above ground for approximately 20 miles along an existing right of way (ROW), and approximately 8.7 miles along a new ROW.<sup>9</sup> 1.7 miles of the ROW would be in the United States,<sup>10</sup> running through critical habitat of the quino checkerspot butterfly.<sup>11</sup> A new substation near Jacumba would be constructed to support the project,<sup>12</sup> possibly on top of the known Jacumba quino checkerspot butterfly population. It appears that appropriate site testing has not been completed, including data gathering on wind speed and direction, wind shear, temperature and humidity.<sup>13</sup> In addition, critical species surveys have not been undertaken.<sup>14</sup> Despite the sparse information provided, the BLM and PUC were able to identify significant environment impacts from the project. These impacts require the Department to look at the proposed request with more specificity than contained in the DEIS/DEIR through preparation of an environmental impact statement.

### **ENVIRONMENTAL IMPACTS OF THE PROPOSED TRANSMISSION PROJECT AND CONNECTED WIND DEVELOPMENTS IDENTIFIED IN THE DEIS/DEIR**

The DEIS/DEIR describes a number of potential impacts of the La Rumorosa Wind project and associated transmission lines subject to the request for a Presidential Permit. The DEIS/DEIR also identifies potential mitigation measures to reduce those impacts.<sup>15</sup> We refer the

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<sup>8</sup> DEIS/DEIR, page B-129.

<sup>9</sup> Sempra claims in its Presidential Permit Application the proposed transmission line will have a total length of approximately 3 miles. It appears this is a subset of the larger transmission line described in this paragraph and in the DEIS/DEIR. NEPA prohibits piecemealing the analysis of the project.

<sup>10</sup> DEIS/DEIR, pages B-129-131.

<sup>11</sup> DEIS/DEIR page D.2-245.

<sup>12</sup> DEIS/DEIR page B-131.

<sup>13</sup> DEIS/DEIR B-129. Such data can be important in siting turbines to minimize harm to birds. As discussed more fully in the STP hearing, particularly through the testimony of the Mussey Grade Road Alliance, the information may be critical in reducing fire risks associated with transmission lines. The information may be especially important to reduce risk of catastrophic fire in a project like the one proposed by Sempra and Cannon in La Rumorosa, where the transmission lines will run through remote areas and only a minimal staff will be available for operation and maintenance.

<sup>14</sup> DEIS/DEIR page D.2-253 (plant species); D.2-256 (quino checkerspot butterfly). These references are intended only as examples and not as a complete listing.

<sup>15</sup> The DEIS/DEIR is an official CPUC document. The following list includes only some of the impacts identified in the document and is not intended to be a detailed or all-inclusive list of the environmental impacts of the La Rumorosa/Baja Wind project. For purposes of this letter, the Center and the Sierra Club have not independently evaluated the findings made by the CPUC in the DEIR.

Department to the DEIS/DEIR to view all of the environmental impacts identified by the BLM and PUC. Among those impacts are:

1. The impact of adding industrial features to an otherwise natural landscape would permanently change the character of the La Rumorosa area and the Sierra Juarez Mountains. The impacts would be significant and cannot be mitigated to less than significant levels. The DEIR/DEIS identifies mitigation measures that can be implemented to reduce the impact.<sup>16</sup>
2. The 1.7 mile right of way required for the project in the United States is within quino checkerspot butterfly designated critical habitat. The butterfly is protected as an endangered species pursuant to the federal Endangered Species Act and has a high potential to occur in the ROW.<sup>17</sup> In fact, the proposed ROW and the new Jacumba Substation appear to be located on the documented Jacumba quino checkerspot butterfly population.
3. Construction of the access roads for the 1.7 mile transmission line in the United States would result in the permanent loss of vegetation in sensitive plant communities. The impact cannot be reduced to less than significant levels because there may not be mitigation land available to compensate for the loss of this habitat.<sup>18</sup>
4. Construction in Mexico of the project would result in the permanent loss of vegetation in sensitive plant communities. As in #3 above, this loss cannot be reduced to less than significant levels because there may not be mitigation land available to compensate for the loss of this habitat.<sup>19</sup>
5. Tree trimming required for the project would likely lead to violations of the Migratory Bird Treaty Act in both the United States and Mexico. The loss of habitat cannot be reduced to less than significant levels because there may not be mitigation land available to compensate for the loss of this habitat. Mitigation measures are identified to reduce impacts.<sup>20</sup>
6. The increased risk of wildfire from transmission lines can lead to “type conversion” of the area habitat, increased fires, and reduced ability to fight fires. Impacts are significant

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<sup>16</sup> DEIS/DEIR pages D.573 – D.5-75.

<sup>17</sup> DEIS/DEIR page D.2-245.

<sup>18</sup> DEIS/DEIR page D.2-249.

<sup>19</sup> DEIS/DEIR page D.2-249.

<sup>20</sup> DEIS/DEIR page D.2-250.



because of the severity of potential habitat loss and are not mitigable to less than significant levels.<sup>21</sup>

7. Impacts during construction to jurisdictional waters of both the United States and Mexico are identified as significant but mitigable to less than significant levels with implementation of mitigation measures.<sup>22</sup>
8. Construction and operation and maintenance in the United States and Mexico could introduce invasive species that would have a substantial adverse effect on sensitive vegetation communities. The impact would be significant but mitigable to less than significant levels.<sup>23</sup> The introduction of exotic invasive plant species would also have a significant negative effect on the quino checkerspot butterfly.
9. Construction activities in the United States and Mexico would cause dust that could have a significant adverse impact on vegetation but is mitigable to less than significant levels.<sup>24</sup>
10. Direct and indirect loss of plants and habitat from construction in the United States and Mexico is considered significant and unmitigable to less than significant levels.<sup>25</sup>
11. Construction activities in the United States and Mexico would result in direct or indirect loss of threatened and endangered wildlife species and/or their habitat, including the Peninsular bighorn sheep, quino checkerspot butterfly, and barefoot banded gecko. The impact is considered significant and unmitigable to less than significant levels.<sup>26</sup>
12. Construction activities would result in the potential loss of nesting birds in violation of the Migratory Bird Treaty Act. This impact is significant but mitigable to less than significant levels.<sup>27</sup>

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<sup>21</sup> DEIS/DEIR pages D.2-250-251. The DEIR on the whole devotes over 300 pages to examining the relationship between fire and power lines. We do not try and summarize these risks in this letter other than to highlight the importance of this issue and its impact on the environment and public safety.

<sup>22</sup> DEIS/DEIR page D.2-251.

<sup>23</sup> DEIS/DEIR page D.2-252.

<sup>24</sup> DEIS/DEIR pages D.2-252 - 253.

<sup>25</sup> DEIS/DEIR page D.2-253.

<sup>26</sup> DEIS/DEIR page D.2-254 - 257.

<sup>27</sup> DEIS/DEIR page D.2-257-258.

13. Bat nursery colonies would be significantly impacted by the project, but the impact is mitigable to less than significant levels.<sup>28</sup>
14. Federal or state listed migratory birds, or other sensitive species, are anticipated to collide with transmission lines. Their mortality is significant and not mitigable to less than significant levels.<sup>29</sup>
15. There is the potential for California condors to bridge the gap between transmission line conductors and electrocute themselves. Mitigation measures are recommended to reduce this risk.<sup>30</sup> California condors have been reintroduced in northern Baja California and at least one bird flew into San Diego County in 2007.
16. Maintenance activities could disturb or kill protected wildlife. The impact would be significant but mitigable to less than significant levels.<sup>31</sup>
17. Operation of the facility would result in mortality to birds due to collision with wind turbines. This impact is significant and not mitigable to less than significant levels and would violate the Migratory Bird Treaty Act.<sup>32</sup>
18. Operation of the facility would result in mortality to bats due to collision with wind turbines. This impact is significant and not mitigable to less than significant levels.<sup>33</sup>

**TESTIMONY SUBMITTED IN THE SUNRISE TRANSMISSION HEARING  
APPLICABLE TO THE PRESIDENTIAL PERMIT REQUEST**

Environmental impacts of wind development and associated transmission lines related to the subject request for a Presidential Permit are also the subject of testimony submitted in the STP hearing. Applicable testimony presented by the Center for Biological Diversity and the Sierra Club and distributed to the parties in the STP hearing in June 2007 and on March 12, 2008, includes the testimony of Jerre Ann Stallcup, Dr. Esther Rubin, Dr. Travis Longcore, and Richard Halsey. Testimony of Donna Tisdale of Boulevard, California, was submitted by the Mussey Grade Road Alliance. The prepared testimony of each of these witnesses is attached and briefly described below.

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<sup>28</sup> DEIS/DEIR page D.2-259.

<sup>29</sup> DEIS/DEIR page D.2-259 -260.

<sup>30</sup> DEIS/DEIR page D.2-260.

<sup>31</sup> DEIS/DEIR page D.2-261.

<sup>32</sup> DEIS/DEIR page D.2-262.

<sup>33</sup> DEIS/DEIR page D.2-263.

The political boundary that separates California and Mexico divides a single, functioning ecosystem. Representatives from the United States and Mexico, as well as California and various local governments and non-profits, have recognized the area as an especially rare and ecologically sensitive, interdependent ecosystem with a broad variety of sensitive, threatened, and endangered plant and animal species. The testimony of Jerre Stallcup and Dr. Esther Rubin describe the importance of the *Las Californias Binational Conservation Initiative* and the potential impact the wind facilities and associated transmission lines subject to the Presidential Permit request may have on the initiative. Ms. Stallcup describes this initiative as:

“...embraced by federal, state, and local governments and nongovernmental organizations on both sides of the U.S.-Mexico border. A subcommittee of the California Biodiversity Council (CBC) (Attachment E) continues to meet on conservation issues in this area, because continued development in the border region threatens to bisect this globally unique ecosystem.”<sup>34</sup>

The BLM and PUC describe the project area in similar terms, highlighting that it contains many native species that only occur there due to its geologic history.<sup>35</sup> The uniqueness of this sparsely populated natural area also makes it appealing to ecotourists.<sup>36</sup>

Dr. Rubin states the project would also impact the *Las Californias Binational Conservation Initiative* and may cause extensive habitat loss to Peninsular Bighorn Sheep, may be inconsistent with the recovery plan for this Federally endangered species, and may destroy a crucial link between sheep populations.

Dr. Longcore’s testimony is applicable to the construction of power lines in general, with specific references to the proposed STP that are also applicable to the Presidential Permit request. Dr. Longcore discusses industry and government approved guidelines to reduce risks to birds prior to and in the construction of power lines and notes that claims to implement these guidelines may not be reflected in the actual construction specifications for the lines, or in the necessary wildlife surveys prior to construction that are necessary to ensure that a transmission line route is chosen to minimize impacts to birds. Prior surveys of wildlife and habitat are also crucial in choosing a route that minimizes harm to other species.

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<sup>34</sup> Testimony of Jerre Anne Stallcup, June 1, 2007, page 10. The STP hearing is identified within the California Public Utilities Commission docket system as Application number 06-08-010. Attachments D and E of Ms. Stallcup’s testimony are attached to this letter. These attachments include a map of the conservation initiative area and identify California, U.S. federal, and Mexican authorities working on the *Las Californias Binational Conservation Initiative*.

<sup>35</sup> DEIS/DEIR page D.2-246.

<sup>36</sup> DEIS/DEIR page D.5-72.

Ms. Tisdale's testimony describes the substantial impact to residents of her community in California from light pollution from wind farms in Mexico and additional negative impacts of the project.

We also highlight here that the DEIS/DEIR includes over 300 pages of analysis related to the risk of fire from transmission lines and testimony was submitted on this subject as well. Testimony from Rick Halsey on behalf of the Center for Biological Diversity and the Sierra Club emphasizes that fire risks from transmission lines are both direct and indirect, and the DEIS/DEIR underemphasizes the indirect risks. Southern California is identified in the document as the area most fire prone in the country. SDG&E has highlighted this point by filing a petition to the PUC stating there is an unacceptable risk of fire from power lines of all types, and is seeking new safety reviews. SDG&E's witness in the STP proceeding has presented testimony that states of the areas within Southern California, "fire risk is greater in the south county and in the border area in general. Campfires, transient traffic, and wildfires moving into the United States from Mexico are responsible for a disproportionately large number of fires in or adjacent to the border area."<sup>37</sup> As Ms. Stallcup highlights in her testimony, access roads associated with power lines are likely to increase human activity where they are built, and become an indirect source of both environmental degradation and wildfire risk. An above ground power line in the areas described in the Presidential Permit may increase fire risk on both sides of the border.

### **PRELIMINARY RECOMMENDED PERMIT CONDITIONS**

As the Department proceeds with environmental review of the proposed project, we ask that it consider the following permit conditions measures as well as other measures identified through the preparation of an environmental impact statement:

1. The permit, if issued, should explicitly limit use of the transmission line to the purposes stated in the published notice of application: for importing renewable energy from Mexico, with the only exception being the export of power necessary to maintain and operate wind turbines. Sempra Energy is currently developing significant fossil fuel natural gas infrastructure in northern Baja California. These new transmission lines should encourage renewable energy and in no way facilitate the delivery of energy releasing additional green house gas emissions.
2. Sempra Generation's sister company, San Diego Gas & Electric, is currently under investigation by Federal and state agencies to determine how its operation of electric power lines caused at least three of the fires that swept through Southern California in October 2007. SDG&E subsequently petitioned the California Public Utilities Commission for a rulemaking, asserting that there is an unacceptable level of risk

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<sup>37</sup> Testimony of SDG&E witness Hal Mortier, Chapter 5, page 5.13 of SDG&E's prepared testimony of March 12, 2008.

associated with overhead electric lines of all types.<sup>38</sup> Issuance of the permit should await the findings of the investigation and rulemaking requested by SDG&E, consider lessons learned from the investigation, and incorporate all safety recommendations.

3. The release of sulfur hexafluoride from transmission line operations is a significant greenhouse gas emission. The U.S. EPA has established a voluntary program to monitor and reduce the release of this greenhouse gas pollutant. Investor owned utilities in California, including Southern California Edison and Pacific Gas & Electric, participate in this program.<sup>39</sup> Issuance of a permit should be conditioned on Sempra's participation in the program and full implementation of the program in both the United States and Mexico.
4. Operation of the wind energy development is likely to violate the Migratory Bird Treaty Act, the Migratory Bird Treaty with Mexico, and possibly the Endangered Species Act. The permit should be conditioned on incorporating the California Energy Commission's *Statewide Guidelines for Reducing Impacts to Birds and Bats from Wind Energy Development*,<sup>40</sup> as well as additional measures recommended by the U.S. Fish and Wildlife Service.
5. Construction, operation, and maintenance of the transmission line are likely to violate the Migratory Bird Treaty Act and possibly the Endangered Species Act. The permit should identify the appropriate mitigation measures recommended in the APLIC guidelines and require construction, operation, and maintenance implementing, at a minimum, the standards endorsed by APLIC.
6. The presence of Federally threatened and endangered species, including the Quino checkerspot butterfly and Peninsular bighorn sheep, will require consultation with the U.S. Fish and Wildlife Service pursuant to Section 7 of the Endangered Species Act. Compliance with the Endangered Species Act requires that mitigation and minimization measures identified through the consultation must be incorporated into the terms of the permit. At the very least, surveys should be done to ensure the line is located outside of habitat needed by bighorn sheep, is located outside of quino checkerspot butterfly designated critical habitat, and away from any documented populations of these species.

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<sup>38</sup> SDG&E's petition to the PUC is identified in the PUC docket as number P.07-11-007 and applies to overhead electric lines of all types. November 6, 2007, petition, page 1. SDG&E highlights the unacceptable level of risk of electric lines and fire safety in its reply brief in P.07-11-007, January 7, 2008, at page 8. An example of possible fire risks from existing equipment used by SDG&E is discussed in a February 10, 2008, story of the San Diego Union Tribune, quoting CPSD director Richard Clark on the possible need for fire-safety rule changes. The article is found at [http://www.signonsandiego.com/uniontrib/20080210/news\\_1n10sdge.html](http://www.signonsandiego.com/uniontrib/20080210/news_1n10sdge.html)

<sup>39</sup> DEIS/DEIR pages D.11-53 and D.11-54.

<sup>40</sup> The guidelines were approved on September 26, 2007, and are found at

[http://www.energy.ca.gov/publications/energy\\_guidelines\\_for\\_wind\\_energy\\_development.pdf](http://www.energy.ca.gov/publications/energy_guidelines_for_wind_energy_development.pdf)

7. Measures to reduce light pollution to the maximum extent possible should be part of the construction design of the wind energy and transmission projects.
8. The long term ecological planning vision of the BLM and other agencies should be considered to allow the *Las Californias Binational Conservation Initiative* to move forward unimpaired.

### Conclusion

The Presidential Permit application of Sempra Generation, submitted on December 18, 2007, is dependent on a development near La Rumorosa, Mexico, the construction of a new substation, and the construction of transmission facilities in California and Mexico. The transmission line on both sides of the border will have a significant impact on the environment in the United States, as will the operation of the wind facility and construction of the substation. We urge the Department to prepare an environmental impact statement that examines the impact of the transmission line, substation, and wind energy facility, and to include in any permit enforceable measures to minimize the impact of the proposed project, mitigate for impacts that cannot be minimized, and ensure measures are taken to protect human health and safety, and the environment, by implementing fire safety measures appropriate for the most fire-prone region of the United States and the border region with Mexico. Thank you for considering these comments.

Sincerely,

/s/

Steven Siegel  
Staff attorney, on behalf of the Center  
for Biological Diversity and the Sierra Club

#### Attachments:

Donna Tisdale testimony at pages 15 -22, Mussey Grade Road Alliance, March 12, 2008  
Jerre Ann Stallcup testimony, June 1, 2007, pages 1-3, 10, and attachments D and E  
Jerre Ann Stallcup testimony, March 12, 2008, pages 1-14 and maps 3 and 4  
Dr. Esther Rubin testimony, March 12, 2008, pages 1 and 8-9  
Dr. Travis Longcore testimony, March 12, 2008, pages 1-17, 22-23  
Rick Halsey testimony, March 12, 2008, pages 1-12.

cc: Bill Corcoran, Sierra Club

Ms. Joan Heredia  
Permitting Manager  
Sempra Global  
101 Ash Street  
HQ 8B  
San Diego, CA 92101

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1380 WIND TURBINE PROJECT.

The wind turbine system (medium sized) use type refers to the production of electric power two wind turbines, or systems in which the total blade swept area is greater than 220 square feet but no more than 850 square feet. The blade swept area shall be measured in the vertical plane perpendicular to the wind direction. This use type is permitted in all zones (except those having the S81 Ecological Resource Area Use Regulations) upon issuance of an administrative permit. This use type does not include uses classified as Major Impact Services and Utilities. Typical uses include wind turbine installation of medium size for residential or small scale commercial use.

(Added by Ord. No. 6857 adopted on 10-10-84. Opr. 1-1-85)  
(Amended by Ord. No. 7117 (N.S.) adopted 4-23-86)

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6156

z. Wind Turbine Systems, Small. A small wind turbine system, shall be permitted on a parcel of at least one acre and in compliance with the following conditions:

1. **Setback.** The system shall be set back from property lines and roads at least two times the height of the wind system (to the top of the blade in vertical position) and shall meet the applicable setback requirements of the zone. No part of the system, including guy wire anchors, shall extend closer than 30 feet to the property boundary. The system must also meet fire setback requirements. See Subsection 7 for the exception to this setback requirement.
2. **Fencing.** Public access to the wind turbines shall be restricted through the use of a fence with locked gates, non-climbable towers or other suitable methods.
3. **Signs.** Suitable warning signs containing a telephone number for emergency calls shall face all approaches to the system. Individual signs shall be between 5 and 16 square feet.
4. **Noise.** The wind turbine shall be operated in such manner that it does not exceed the sound level limits of Title 3, Division 6, Chapter 4 of the San Diego County Code (Noise Abatement and Control). See Subsection 7 for the exception to this noise standard.
5. **Height.** For the purposes of calculating height, the height of the wind turbines shall mean the distance from ground to the top of the blade in vertical position. Height of a small wind turbine system shall not exceed 60 feet. See Subsection 7 for the exception to this height standard.
6. **Any non-operational wind turbines shall be removed within 12 months after becoming non-operational.**



- 7. For any Wind Turbine System that meets the definition of "Small Wind Energy System" as defined by Government Code Section 65892.13 (c)(1), the requirements for setbacks, noise and height are reduced as follows:
  - (a) The system shall be set back from property lines at least the height of the wind system. The system must also comply with any applicable fire setback requirements pursuant to Section 4290 of the Public Resources Code.
  - (b) Decibel levels for the system shall not exceed the lesser of 60 decibels or the sound limits of the Noise Element of the San Diego County General Plan, as measured at the closest neighboring inhabited dwelling, except during short-term events such as utility outages and severe wind storms.
  - (c) Height. Height of a small wind turbine system shall not exceed either of the following:
    - (1) Up to 65 feet on parcels less than 5 acres in size, and up to 80 feet on parcels 5 acres or more.
    - (2) Height cannot exceed manufacturer's recommendations.

Any waiver or modification of the above requirements shall be allowed only in accordance with the Variance Procedure commencing at Section 7100.

\*\*\*\*\*  
6158

- b. Wind Turbine System, Small. A wind turbine system, small shall be permitted as an accessory use in all zones where the Civic, Commercial, Industrial or Extractive use types are permitted provided the system complies with the conditions specified in Section 6156z.

6950 WIND TURBINE SYSTEM, MEDIUM.

A medium wind turbine system, shall be permitted on a parcel of at least one acre and require an Administrative Permit approved in accordance with the Administrative Permit Procedure commencing at Section 7050 and the following requirements:

- a. Notification. Notification shall be in accordance with paragraph c of Section 7060.
- b. Setback. The wind turbines shall be set back from property lines and roads at least three times the height of the wind turbine (to the top of blade in vertical position) and shall meet the applicable setback requirements of the zone. The system must also meet fire setback requirements. See paragraph i below for the exception to this setback requirement.
- c. Fencing. Public access shall be restricted through the use of a fence with locked gates, non-climbable towers or other suitable methods.
- d. Signs. Suitable warning signs containing a telephone number and an address for emergency calls and informational inquiries shall face all approaches to the project. Individual signs shall be between 5 and 16 square feet.

- e. **Review.** Review shall include an assessment of the impact on adjacent property with regard to:
  - 1. Location of installation in its relation to topographic features which would constitute an unusual safety hazard.
  - 2. Sensitivity of adjacent uses to noise and electrical interference and visual impact.
- f. **Noise.** The system shall meet the sound level limits of Title 3, Division 6, Chapter 4 of the San Diego County Code (Noise Abatement and Control). See paragraph i below for the exception to this noise standard.
- g. **Height.** For the purpose of calculating height, the height of the wind turbines shall mean the distance from ground to the top of the blade in vertical position. The system shall not exceed 60 feet. See paragraph i below for the exception to this height standard.
- h. It shall be a condition of the permit that non-operational wind turbines shall be removed within 12 months after becoming non-operational.
- i. For any Wind Turbine System that meets the definition of "Small Wind Energy System" as defined by Government Code Section 65892.13(c)(1), the requirements for setbacks, noise and height are reduced as follows:
  - 1. The system shall be set back from property lines at least the height of the wind system. The system must also comply with any applicable fire setback requirements pursuant to Section 4290 of the Public Resources Code.

- 2. Decibel levels for the system shall not exceed the lesser of 60 decibels or the sound limits of the Noise Element of the San Diego County General Plan, as measured at the closest neighboring inhabited dwelling, except during short-term events such as utility outages and severe windstorms.
- 3. Height of a small wind turbine system shall not exceed either of the following:
  - (a) Up to 65 feet on parcels less than 5 acres in size, and up to 80 feet on parcels 5 acres or more.
  - (b) Height cannot exceed manufacturer's recommendations.

Any waiver of modification of the above requirements shall be allowed only in accordance with the Variance Procedure commencing at Section 7100.

(Added by Ord. No. 6857 (N.S.) adopted 10-10-84. Opr. 1-1-85)  
(Amended by Ord. No. 7117 (N.S.) adopted 4-23-86)  
(Amended by Ord. No. 9596 (N.S.) adopted 9-17-03)

\*\*\*\*\*

6951 WIND TURBINE SYSTEM, LARGE.

Large wind turbine systems, shall be permitted on a parcel of at least five acres and considered a Major Impact Services and Utilities use type requiring a major use permit approved in accordance with the Use Permit Procedure commencing at Section 7350 and the following requirements:

- a. Setbacks. The wind turbines shall observe the following setbacks measured from the closest point on the base or support structure. For purposes of calculating setbacks, height of the wind turbines shall mean the distance from ground to the top of blade in vertical position:
  - 1. From property lines or public road setback 4 times the height.
  - 2. From all existing residences or buildings occupied by civic use types setback 8 times the height.
  - 3. From the furthestmost property line of adjacent parcels which are vacant setback 9 times the total height.
  - 4. Setbacks for experimental wind turbines (those which are not produced by an established wind turbine manufacturer on a production basis) may be greater than those specified above based on the discretion of the permit granting authority.
  - 5. Setbacks may be reduced up to a maximum of 50% with the written consent to the granting of a setback reduction signed by the owner or owners of each lot or parcel affected by the proposed setback reduction.

See paragraph k below for the exception to this setback requirement.

6951

- b. **Fencing.** Public access shall be restricted through the use of a fence with locked gates, non-climbable towers or other suitable methods.
- c. **Signs.** Suitable warning signs containing a telephone number and an address for emergency calls and informational inquiries shall face all approaches to the project. Individual signs shall be between 5 and 16 square feet.
- d. **Noise.** The project shall meet the sound level limits of Title 3, Division 6, Chapter 4 of the San Diego County Code (Noise Abatement and Control). See paragraph k below for the exception to this height requirement.
- e. **Height.** For the purposes of calculating height, the height of the wind turbines shall mean the distance from ground to the top of the blade in vertical position. The system shall not exceed 80 feet. See paragraph k below for the exception to this height requirement.
- f. **Visual.** The following measures should be followed whenever possible in order to minimize the visual impact of the project:
  - 1. Removal of existing vegetation should be minimized.
  - 2. Internal roads should be graded for minimal size and disruption.
  - 3. Any accessory buildings should be painted or otherwise visually treated to blend with the surroundings.
  - 4. The turbines and towers should be painted with non-reflective paint to blend with the surroundings.
- g. **Turbine Description.** The following information shall be specified as part of the permit:
  - 1. The wind turbine manufacturer, model, power rating and blade dimensions.
  - 2. The tower manufacturer and model.
- h. **Non-Operational Wind Turbines.** It shall be a condition of the permit that non-operational wind turbines shall be removed:
  - 1. The project owner shall insure that a copy of all prospectuses shall be placed in the County's permit file.
  - 2. County staff may, at any time in the future, compare the amount of power stated (in kilowatt hours) in the appropriate prospectus with the actual power sold to the utility (as reported in the California Energy Commissions' "Wind Project Performance Reporting System") and determine if any wind turbine systems meet the definition for "wind turbine non-operational."
  - 3. County staff may collect other data as necessary to determine if any wind turbine systems meet the definition for "wind turbine non-operational."

4. Applicant may propose alternate methods to monitor the "non-operational" status of wind turbines.
  - i. **Removal Surety.** The project owner shall post a bond, lien contract agreement, cash deposit, or other form of surety acceptable to the Director of Planning and Land Use, sufficient to allow for the removal of non-operational wind turbines. If a bond surety is provided, such bond shall comply with Section 7612, and shall be for a minimum of 10 years (unless the permit is for a shorter period of time). Posting of bond(s) and/or other surety may be phased with the installation of wind turbines.
  - j. **Existing Administrative Permits for Wind Turbine Projects - Modification or Revocation.** Administrative permits for wind turbine projects granted pursuant to Section 7060 prior to January 1, 1986, shall be treated for all purposes as if they are major use permits shall be subject to all the provisions of the Zoning Ordinance which apply to Major Use Permits for purpose of modification or revocation.
  - k. **For any Wind Turbine System that meets the definition of "Small Wind Energy System" as defined by Government Code Section 65892.13(c)(1), the requirements for setbacks, noise and height are reduced as follows:**
    1. The system shall be set back from property lines at least the height of the wind system. The system must also comply with any applicable fire setback requirements pursuant to Section 4290 of the Public Resources Code.
    2. Decibel levels for the system shall not exceed the lesser of 60 decibels or the sound limits of the Noise Element of the San Diego County General Plan, as measured at the closest neighboring inhabited dwelling, except during short-term events such as utility outages and severe windstorms.
    3. Height of a small wind turbine system shall not exceed either of the following:
      - (a) Up to 65 feet on parcels less than 5 acres in size, and up to 80 feet on parcels 5 acres or more.
      - (b) Height cannot exceed manufacturer's recommendations.

(Added by Ord. No. 7117 (N.S.) adopted 4-23-86)  
(Amended by Ord. No. 9596 (N.S.) adopted 9-17-03)  
(Amended by Ord. No. 9676 (N.S.) adopted 9-22-04)

[Introduction] [Scope] [Hydrology] [Hydrogeology] [Hydroecology]  
[Stream morphology] [Groundwater hydraulics] [Synthesis] [Conclusions] [Summary]  
[Endnotes] [References] [Reviewers] •



Fig. 1 Closeup of fracture in rock outcrop in the Tierra del Sol watershed.

**IMPACT OF THE PROPOSED CAMPO LANDFILL  
ON THE HYDROLOGY OF THE TIERRA DEL SOL WATERSHED  
A REFERENCE STUDY**

**Victor M. Ponce**

**May 2006**

**EXECUTIVE SUMMARY**

The impact that the proposed Campo landfill will have on the hydrology of the Tierra del Sol watershed is examined using an interdisciplinary perspective. Analysis of precipitation and well data suggests the presence of an effective hydraulic connection between surface water and groundwater in the region. Existing fracture maps and other geologic evidence reveal the extent to which the underlying aquifer is fractured. The presence of numerous springs and photogeologic lineaments indicates that water flows readily from the fractured-rock aquifer to the creeks, streams, and wells of the Tierra del Sol watershed.

Selected vegetative species with an established moisture affinity are documented in the Tierra del Sol watershed. Specimens of blue elderberry (*Sambucus mexicana*) appear to be aligned along fractures, where moisture can be sustained for long periods. Thick stands of red shank (*Adenostoma sparsifolium*) constitute the predominant species in several of the lineaments identified in aerial images. Unlike the chamise (*Adenostoma fasciculatum*), its closely related and more widely distributed chaparral species, the red shank is a tall arborescent shrub which thrives on moist sites. The spatial distribution of blue elderberry and red shank points to the existence of local moisture gradients which could be tied to the rock fractures.

In fractured-rock aquifers, a leachate plume will move preferentially along the fractures. Advection is likely to be the predominant physical mechanism, with travel times from capture zone to nearby wells measured in days, rather than in years as would be the case in more traditional diffusion-dominated settings. Given the complexity of the fractured-rock system, the probability that leachate plumes will be missed by the system of monitoring wells is high. Thus, placing a major landfill on top of a fractured-rock aquifer such as Tierra del Sol's significantly compromises the health and welfare of the local population on both sides of the U.S.-Mexico border. Moreover, Tierra del Sol is part of the federally designated Campo-Cottonwood Sole Source Aquifer, i.e., it has been determined that, should this aquifer become contaminated, there are no reasonably available alternative sources of drinking water.

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• **INTRODUCTION** •

[\[Scope\]](#) [\[Hydrology\]](#) [\[Hydrogeology\]](#) [\[Hydroecology\]](#) [\[Stream morphology\]](#)  
[\[Groundwater hydraulics\]](#) [\[Synthesis\]](#) [\[Conclusions\]](#) [\[Summary\]](#) [\[Endnotes\]](#) [\[References\]](#)  
[\[Reviewers\]](#) • [\[Top\]](#)

The impact that the proposed Campo landfill will have on the hydrology of the Tierra del Sol watershed is examined herein. The Campo landfill site is located within the Campo Indian reservation in East San Diego County, California, in the headwaters of Lower Campo Creek. The Tierra del Sol watershed is located in the community of Boulevard, adjacent to the landfill site and immediately east of it. The landfill project has been under planning and engineering since the early 1990s. Construction, however, has not occurred due to legal, regulatory, market, and other issues. Currently, a revised landfill project on the same site is being developed by the Campo Indian reservation in partnership with commercial landfill operators.

At issue is the impact that leakage through the landfill liner and the resulting groundwater contamination will have on the hydrology of the Tierra del Sol watershed. The latter is located "right in the landfill's backyard," to use a phrase which is common among environmental professionals.

Questions about the effect that a leakage plume will have on the surface water and groundwater of the vicinity remain without a clear answer. It is noted that the landfill site sits on top of a fractured-rock aquifer. Moreover, this aquifer is part of the federally designated Campo-Cottonwood Sole Source Aquifer.<sup>1</sup> This means that the U.S. Environmental Protection Agency (EPA) has established that this aquifer is the main source of drinking water in the area, and that should it become contaminated, there are no reasonably available alternative sources.

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**At issue is the impact that leakage through the landfill liner and the result resulting groundwater contamination will have on the hydrology of the del Sol watershed.**

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Geologic and other physical evidence indicates that a complex system of fractures underlies the landfill site. This fact alone would tend to invalidate flow downgradient assumptions based solely on surface topography. Under the geologic conditions prevalent at the Campo landfill site, the groundwater flow direction may not coincide with the surface-water flow direction. Thus, contaminated leachate plumes may flow from one catchment to another based on fracture location, extent and connectivity, rather than on the local surface topography.

The site engineering of the Campo landfill has ensured that at least on the surface, the drainage will flow in the northwestern direction and will eventually drain into Lower Campo Creek, and away from Tierra del Sol. However, the documented existence of the fractures, including their location, extent, and patterns of connectivity, raises a serious "red flag" regarding the technical viability of the project.



Normally, a landfill can be placed on a thick sedimentary geologic formation, where a contaminated plume would be slowly diffused on the adjoining porous media. It is more risky to place it on an extensively fractured rock formation, where the plume would be advected, through the fractures to downgradient locations, while undergoing very little diffusion.

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• SCOPE •

[\[Hydrology\]](#) [\[Hydrogeology\]](#) [\[Hydroecology\]](#) [\[Stream morphology\]](#) [\[Groundwater hydraulics\]](#)  
[\[Synthesis\]](#) [\[Conclusions\]](#) [\[Summary\]](#) [\[Endnotes\]](#) [\[References\]](#) [\[Reviewers\]](#) • [\[Top\]](#) [\[Introduction\]](#)

This study examines the impact that a leakage in the Campo landfill liner will have on the surface and groundwater hydrology of the Tierra del Sol watershed. The study, which is interdisciplinary in nature, examines the hydrology, hydrogeology, hydroecology, stream morphology, and groundwater hydraulics of the proposed landfill site and the watershed immediately east of it.

The focus is the general direction and velocity of transport of water and contaminants through the fractured rock. The specific emphasis is on the difference between the matrix velocity and the fracture velocity. The latter may be several orders of magnitude greater than the matrix velocity (Davis and DeWiest, 1966).

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**The focus is the general direction and velocity of transport of water and contaminants through the fractured rock.**

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At issue is the speed at which contaminants can travel through the individual fractures. Through a breach in the liner system and/or leachate collection and removal system, the contaminant plume would leave the landfill site and flow readily to offsite locations. High flow speeds will lead to short travel times and challenge the argument that failure can be effectively controlled.

The impact of the landfill extends beyond the Tierra del Sol watershed, to other neighboring areas including the Lower Campo Creek watershed. This study focuses on the Tierra del Sol watershed for the following reasons: (1) many private wells are located in Tierra del Sol, in relatively close proximity to the landfill site, and (2) there is long-term rainfall and well data in Tierra del Sol to support the analysis.

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• HYDROLOGY •

[\[Hydrogeology\]](#) [\[Hydroecology\]](#) [\[Stream morphology\]](#) [\[Groundwater hydraulics\]](#)  
[\[Synthesis\]](#) [\[Conclusions\]](#) [\[Summary\]](#) [\[Endnotes\]](#) [\[References\]](#) [\[Reviewers\]](#) • [\[Top\]](#)  
[\[Introduction\]](#) [\[Scope\]](#)

The focus of this study is the Tierra del Sol watershed, located immediately east of the proposed Campo landfill site, with a surface area of 1760 acres, or 2.75 square miles (Fig. 2). The watershed drains gentle slopes and foothills of California's Peninsular Range, at an average elevation of 3,600 feet, in a predominantly southern direction. The watershed features numerous rock outcrops and springs.

The main watercourse, hereafter named Tierra del Sol Creek, crosses the U.S.-Mexico border at N 32° 35' 57" and W 116° 20' 49". Once in Mexico, Tierra del Sol Creek flows past Roca Magisterial,

about one kilometer west of the community of Jardines del Rincón. The creek is in the watershed of Arroyo Las Palmas, which joins Arroyo Amar in East Tijuana to form the Tijuana River. In turn, the Tijuana River flows past Imperial Beach, in South San Diego County, to enter the Pacific Ocean.

The Tierra del Sol watershed land use is a mixture of the native chaparral ecosystem, albeit with a substantial presence of phreatophytes along well defined moisture paths, a few mesophytes, and anthropogenic land uses such as ranch clearings and rural housing.

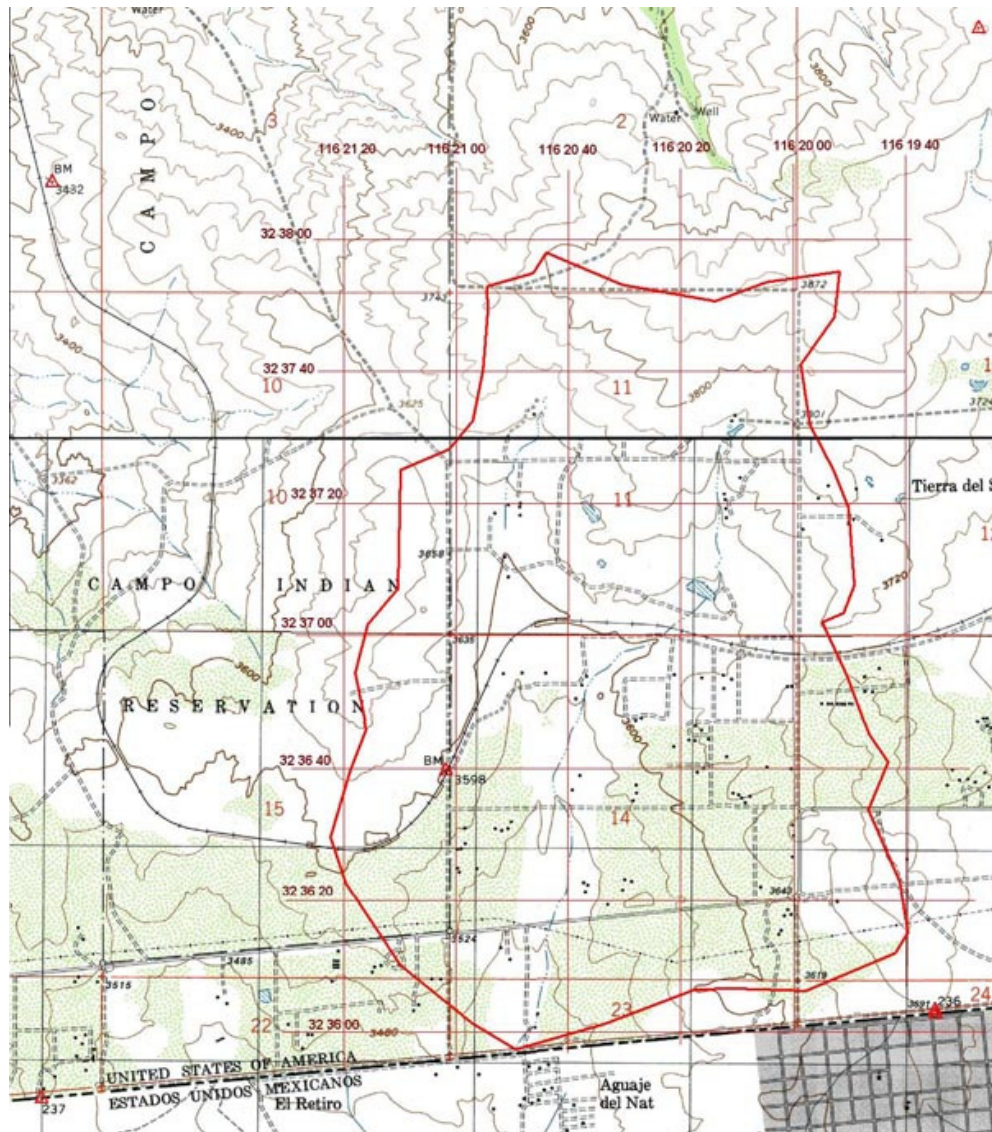


Fig. 2 The Tierra del Sol watershed.

**Precipitation data.** Precipitation in the Tierra del Sol watershed has been measured at the Morning Star Ranch from 1990 to the present. The raingage is located at N 32° 37' 27" and W 116° 21' 04". The record of monthly precipitation is shown in Fig. 3. The rainy season is from November to April (winter rains), although there are some documented instances of summer rain. February is the wettest month of record, with 4.09 inches of average precipitation.

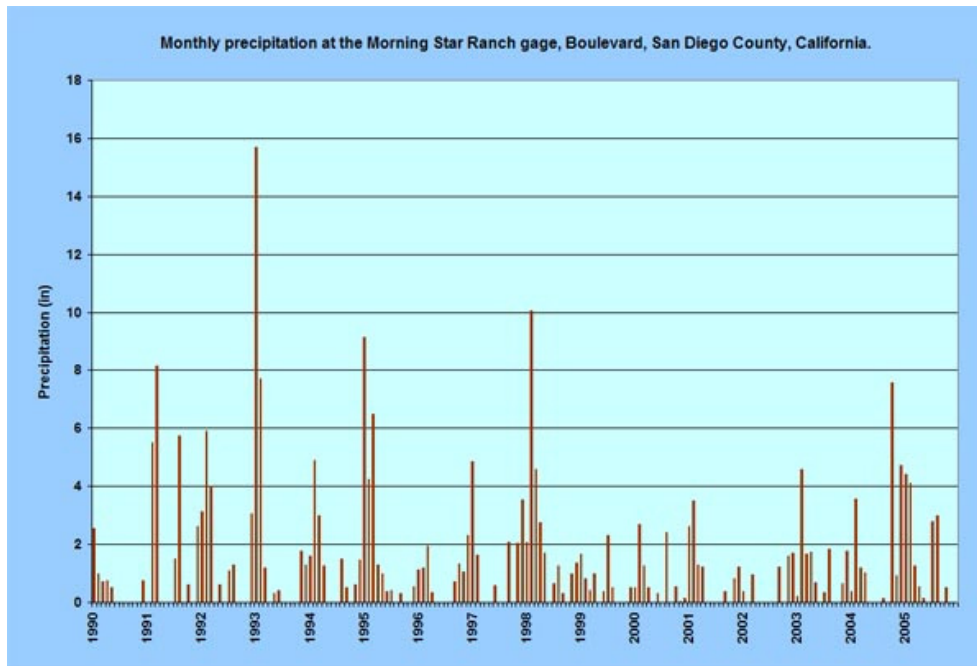


Fig. 3 Monthly precipitation record at the Morning Star Ranch (1990-2005).

The record of annual precipitation, with the water year defined from July to June, is shown in Fig. 4. The average precipitation for the 15-year period is 15.84 inches. The record shows two very wet years, 1992-93 and 1997-98; and three other significantly wet years, 1991-92, 1994-95, and 2004-05. The years 1991-92, 1992-93, 1994-95, and 1997-98 were El Niño years. In the year 2004-05, monthly and annual precipitation were near record highs.

The years 1995-96 and 1998-99 were La Niña years, showing substantially below average precipitation. A La Niña event is the opposite of an El Niño, leading to cooling, instead of warming, of the sea-surface temperatures (SST) in the Pacific Ocean along the equator.

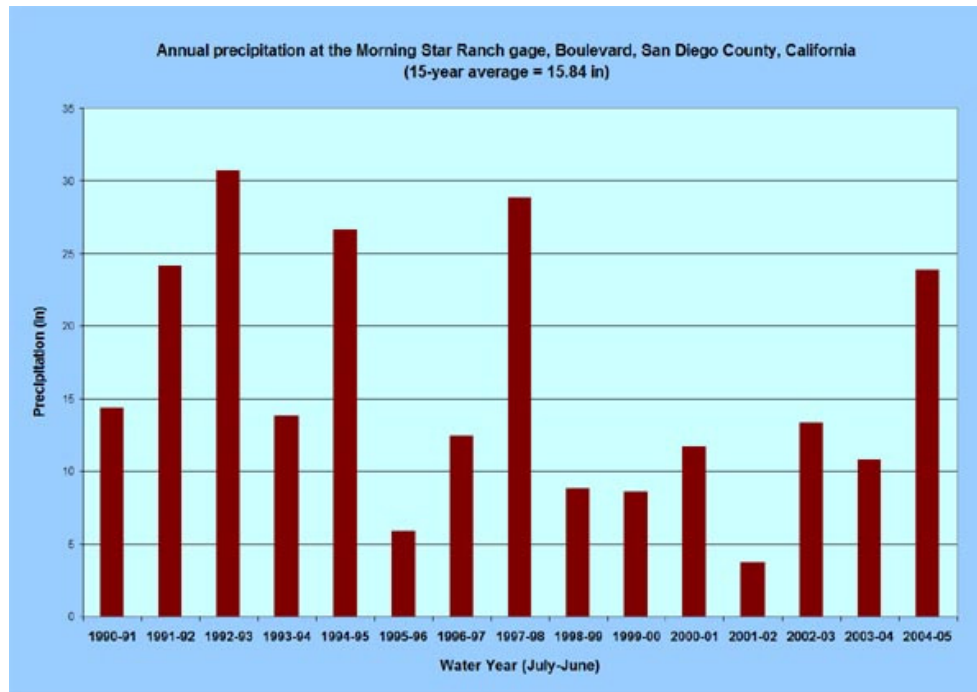


Fig. 4 Annual precipitation at the Morning Star Ranch, 1990-91 to 2004-05.

In summary, the precipitation record shows two very wet years (1992-93 and 1997-98), and one significantly wet year (2004-05), the latter following at the end of a persistent six-year drought (1998-99 to 2003-04).

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## • HYDROGEOLOGY •

<a href="#">[Hydroecology]</a> <a href="#">[Stream morphology]</a> <a href="#">[Groundwater hydraulics]</a> <a href="#">[Synthesis]</a> <a href="#">[Conclusions]</a> <a href="#">[Summary]</a> <a href="#">[Endnotes]</a> <a href="#">[References]</a> <a href="#">[Reviewers]</a> <a href="#">• [Top]</a> <a href="#">[Introduction]</a> <a href="#">[Scope]</a> <a href="#">[Hydrology]</a>
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Water level data from three wells located in the Tierra del Sol watershed were compiled and analyzed for this study. These wells are named: (1) Handdug, (2) Playhouse, and (3) Utz. The well locations are shown in Fig. 5.



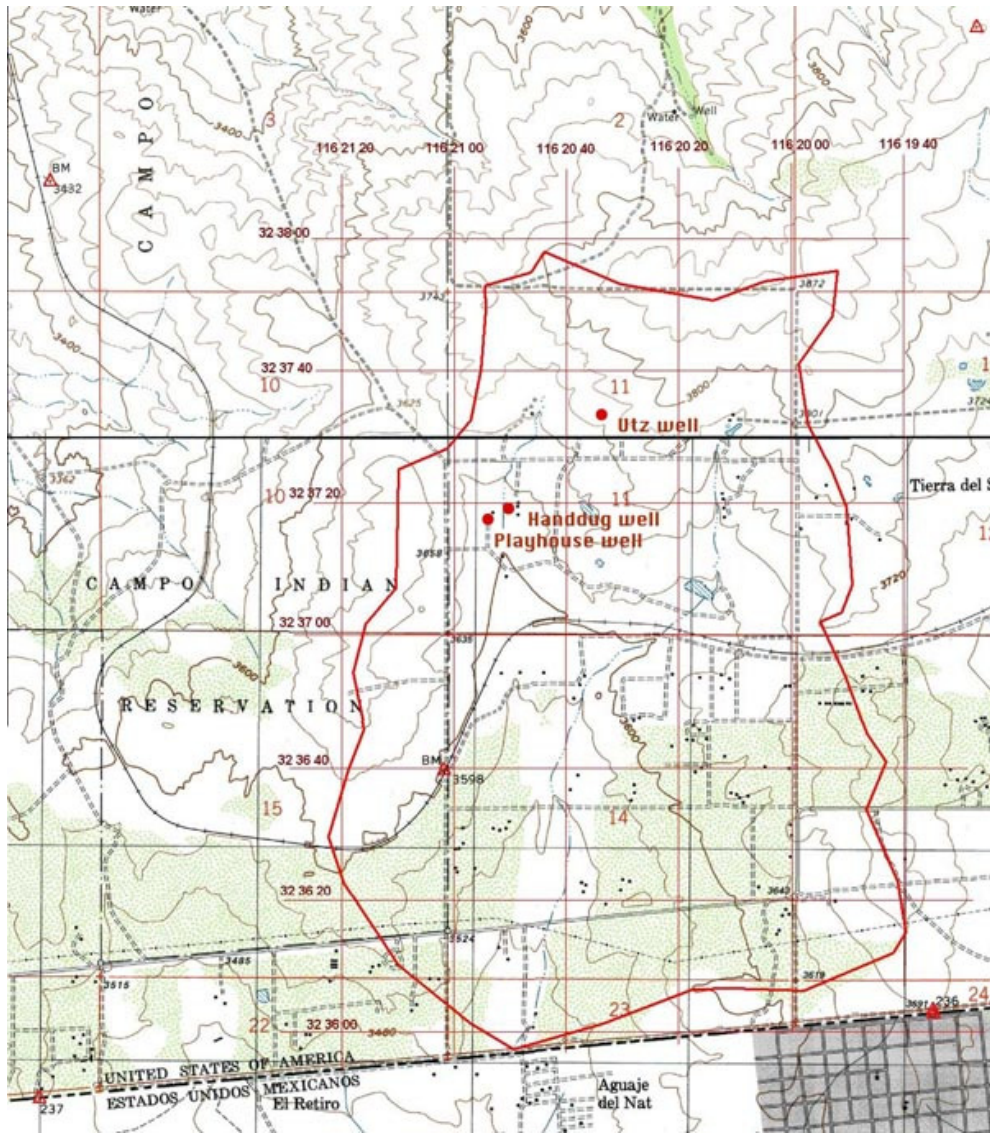


Fig. 5 Location of wells at the Morning Star Ranch, Tierra del Sol.

**Well data.** Well data spanning the 12-year period from 1993 to 2005 is shown in Figs. 6 to 8. Fig. 6 shows the Handdug well, Fig. 7 shows the Playhouse well, and Fig. 8 shows the Utz well. The measurements were performed by San Diego County personnel as part of the county's groundwater monitoring program. The elevations shown are the water surface in the well, above mean sea level.

The records shows a clear recovery of the groundwater levels in the years 1995, 1998, and 2005, indicating the effect that these three wet years had on aquifer replenishment. Significantly, all three wells show water table drawdown during the six-year drought period ranging from 1999 to 2004. Furthermore, the two dry years of 1995-96 and 1996-97 also show some degree of water table drawdown.

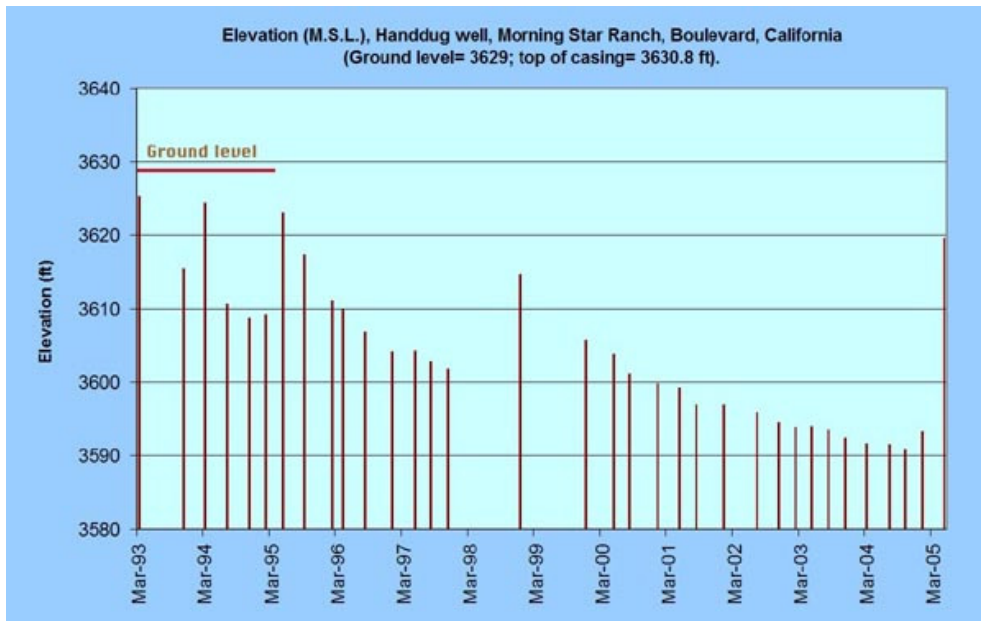


Fig. 6 Water-surface elevation at Handdug well.

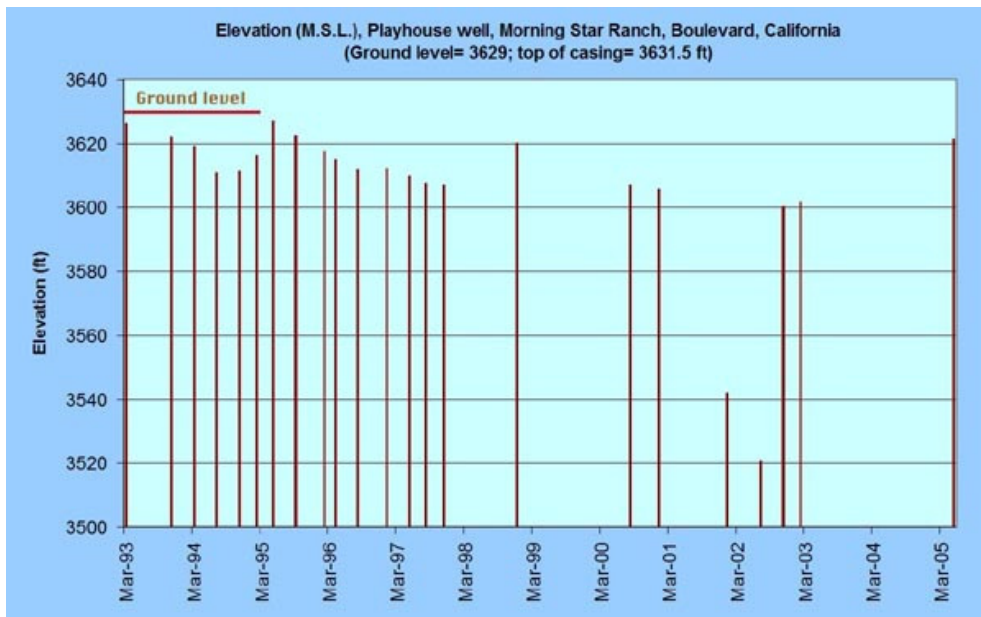


Fig. 7 Water-surface elevation at Playhouse well.

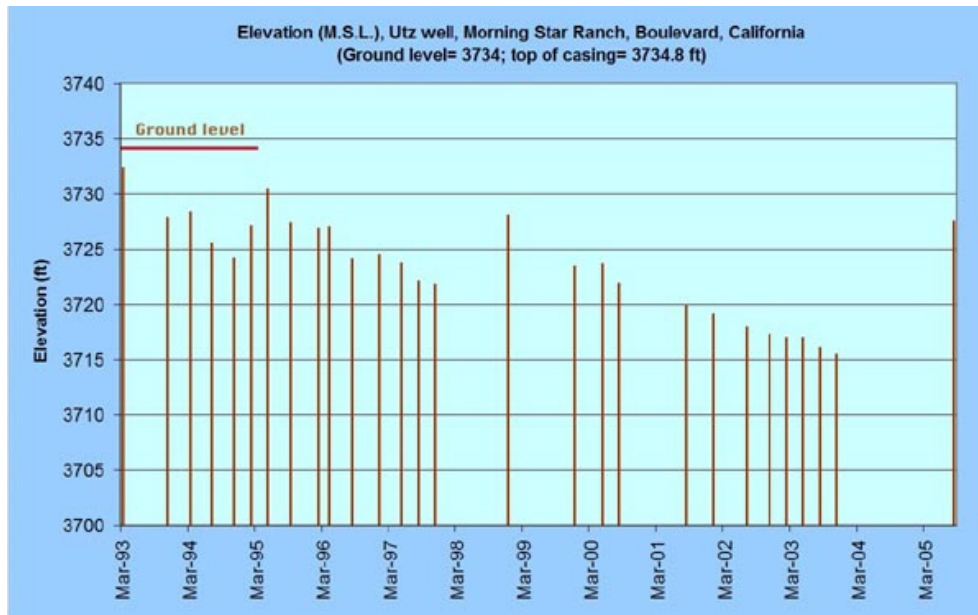


Fig. 8 Water-surface elevation at Utz well.

**Relation between precipitation and well data.** Analysis of the precipitation and well data reveals an effective hydraulic connection between surface water and groundwater in the Tierra del Sol watershed. A fraction of the precipitation percolates into the ground; in turn, a fraction of this percolated water joins the groundwater, increasing the water-surface elevation in the wells. The remaining portion (of the percolated water) eventually returns to the atmosphere as evaporation and/or evapotranspiration. The timing of the groundwater level response is relatively fast, not exceeding a half season (six months). The paucity of well data precludes a more precise assessment of the response time; however, the existence of an effective connection between surface and groundwater is clearly borne out by the data.

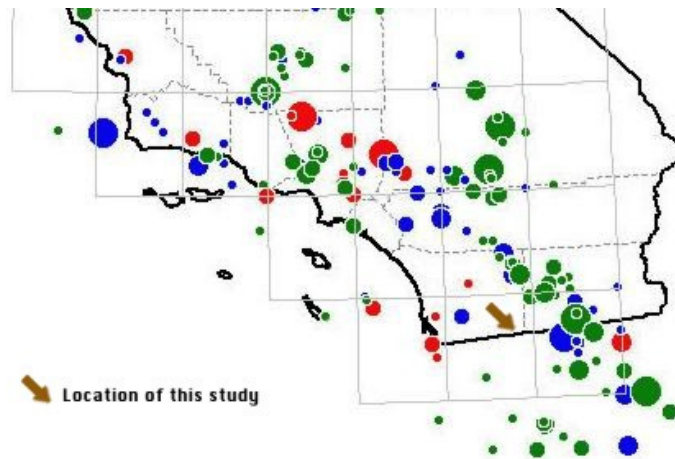
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**Analysis of the precipitation and well data points to an effective hydraulic connection between surface water and groundwater in the Tierra del Sol watershed.**

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**Geologic characteristics.** The Tierra del Sol region is underlain by the Peninsular Range batholith, which straddles the mountains of central Southern California. The region lies within the La Posta pluton, a deep-seated igneous intrusion (Walawender *et al.*, 1990). This pluton varies inward from rim to core, from a sphene-hornblende-biotite tonalite rim to a muscovite-biotite granodiorite core.<sup>2</sup> In the early 1990s, the landfill's engineering consultants classified the rocks of the Campo landfill as tonalites. However, many of the rocks in Tierra del Sol and vicinity may actually be granodiorites.<sup>3</sup>

The rocks are extensively fractured, due either to batholith cooling or tectonic uplift. There is substantial tectonic activity east of Tierra del Sol, near El Centro (Fig. 9). In addition, the site is within the area of influence of the Elsinore fault system (at a distance of less than 22.5 miles) in San Diego County and other faults in Imperial County and neighboring northern Baja California. Thus, the region has a potential for earthquake-generated strong ground shaking. Anecdotal evidence suggests that ground tremors of varying intensities are not uncommon in the immediate vicinity of Tierra del Sol.<sup>4,5,6</sup> Also, well cave-ins have been reported as a direct result of earthquake shaking.<sup>7</sup>



Source: California Geological Survey.

Fig. 9 Magnitude of earthquakes in Southern California (Magnitudes: small 5.5-5.9; medium 6.0-6.4; large 6.5-6.9; very large 7+). (Data sets: red 1769-1868; blue 1869-1931; green 1932-2000).

A striking geological feature of Tierra del Sol, and one possibly related to the fractures, is the significant number of white, mostly pegmatitic, seemingly vertical dikes that cut across the study area. These dikes are formed by quartz and feldspar-rich magmas left over in the final stages of crystallization of the granitic rocks. Since the age of the fractures is not known with certainty, the relation between the dikes and the fractures is not readily discernible. One possibility is that the dikes were injected into the fractures which formed in the initial stages of crystallization and cooling of the granitic rocks. This would place the age of [at least] some of the fractures at about 90-140 million years old (Deméré, 2006). Another possibility is that the fractures formed as a result of stresses produced during the [later] uplift of the Peninsular Ranges. In this case they would be only a few million years old.

It is not immediately apparent which one of the above two scenarios is more plausible. If the fractures preceded the dikes, an east-west preference in dike orientation would suggest that less energy was required to shoulder aside the rock in an orthogonal (i.e., north-south) direction. In turn, this would imply denser fracture spacing and/or greater fracture lengths and widths in the east-west direction. One significantly major dike located on the Turner Ranch in Tierra del Sol, is about 5-ft wide and 1,465-ft long (Fig. 10). Notably, this dike trends east-west almost exactly (Fig. 20). A geologic fault crosses this dike near its eastern edge, in an approximate NE-SW direction. Significantly, the Turner Ranch's well is located at or near this fault.





Fig. 10 Major dike in Turner Ranch, Tierra del Sol.<sup>8</sup>

**Photogeologic lineaments.** Existing studies have revealed the considerable extent of the fractures in the vicinity of the proposed landfill site. Figure 11 shows an excerpt of a geologic map prepared in the early 1990s by the landfill project's engineering consultants. The proposed landfill site is shown with a light-brown background, immediately west of the Tierra del Sol watershed, the latter with its boundary highlighted in red. The photogeologic lineaments, which are highlighted in green, depict alignments of resistant rock outcrops and variations in the density of vegetation and subtle tonal texture or color variations. Many of these lineaments are known to be the expression of fractures and other discontinuities in the weathered and unweathered rocks.

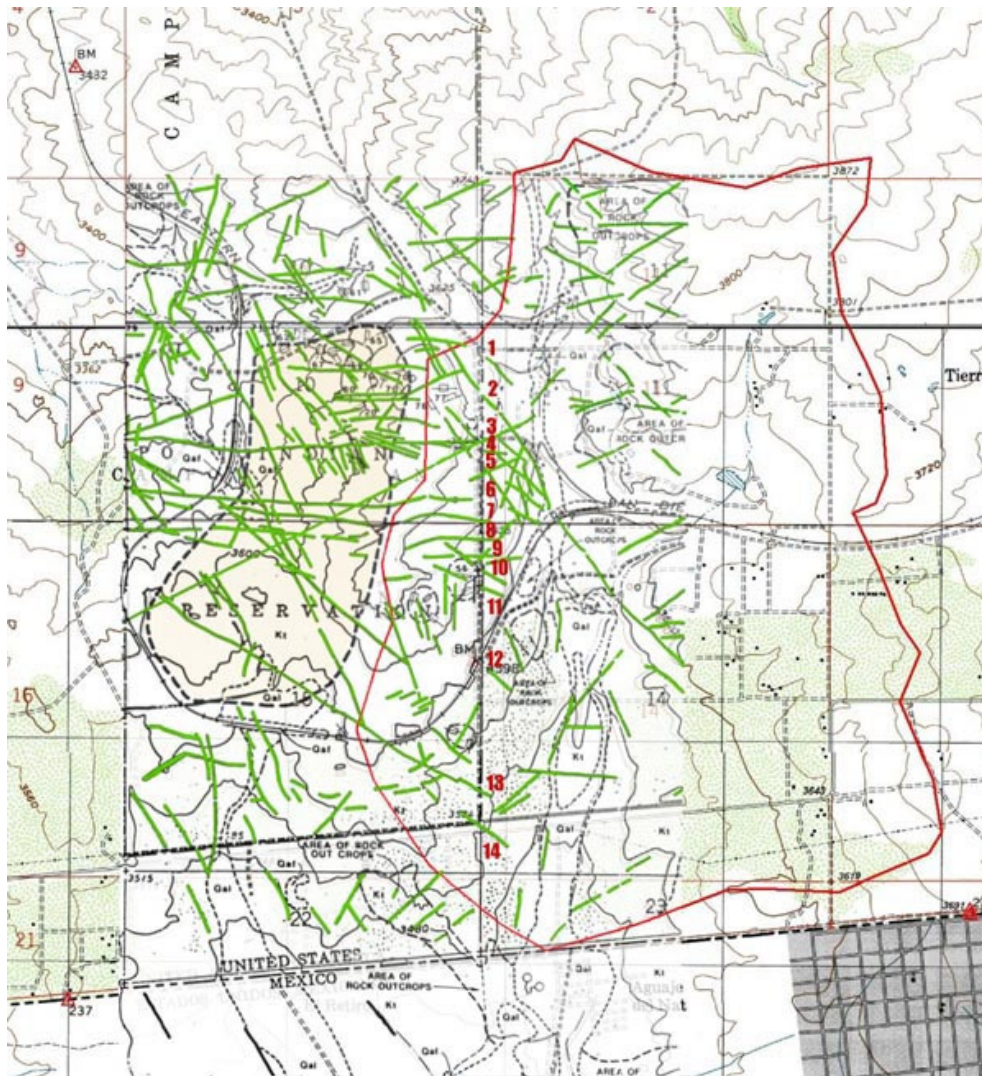


Fig. 11 Geologic fractures identified on the Campo landfill site and vicinity.<sup>9</sup>

A narrow buffer zone, varying from 212 ft to 688 ft in width, separates the landfill site from the Tierra del Sol watershed. The landfill's footprint has been selected to ensure that drainage should proceed in the northwestern direction, toward Lower Campo Creek, and not in the eastern direction, toward the Tierra del Sol watershed. Limiting the landfill site drainage to the surface drainage assumes that there is no connectivity between surface water and groundwater. However, as Fig. 11 shows, this is most likely not the case.

Many of the identified fracture alignments cross the landfill site in a predominantly west-east direction. At least fourteen (14) fracture alignments cross the boundary between the Campo Indian reservation and privately owned land immediately east of it (Fig. 11).

**Advection vs. diffusion.** In fluid mechanics, as well as in groundwater flow, the difference between advection and diffusion is largely one of scale. Advection is a first-order process, governed by the advective term in the differential equation of fluid motion; diffusion, on the other hand, is a second-order process, governed by the diffusive term. The terms consist of constant or variable coefficients and partial differential terms; for instance, the advective term  $[u \partial u / \partial x]$ , in which  $u$  is the advective

velocity; likewise, the diffusive term [ $v \partial u^2 / \partial x^2$ ], in which  $v$  is the diffusivity coefficient.

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**Flow in fractured-rock aquifers is not typical of groundwater flow. Velocities are higher and travel times shorter than those prevalent in more traditional [diffusive] hydrogeological settings.**

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In general, an advection-dominated process is much faster than a diffusion-dominated process. This is because the first derivative (the gradient) is much larger than the second derivative (the square of the gradient). While diffusion is the governing process in flow through porous media, advection is the dominant process for flow in open channels (Ponce, 1989). Therefore, flow in fractured-rock aquifers is not typical of groundwater flow. Velocities are higher and travel times shorter than those prevalent in more traditional [diffusive] hydrogeological settings.

**Hydraulic conductivity.** In hydrogeology, the hydraulic conductivity expresses the ease with which a fluid is transported through a porous medium (Bear, 1979). According to Darcy's law, the hydraulic conductivity is a specific discharge (i.e., a flux, or discharge per unit of area) per unit of hydraulic gradient, with applicable units  $L^3 L^{-2} T^{-1}$  (Ponce, 1989). It characterizes the bulk, or macroscopic, velocity ( $L T^{-1}$  units) and not the microscopic velocity, which may be real but it is much more elusive.

The hydraulic conductivity is commonly expressed in cm/s, or alternatively, in m/day, where 1 cm/s is equivalent to 864 m/day. In practice, the hydraulic conductivity varies within a very wide range, thirteen (13) orders of magnitude, from  $10^2$  cm/s for the most pervious cases, to  $10^{-11}$  for the most impervious. In gravel, the variability of hydraulic conductivity is three (3) orders of magnitude, from  $10^2$  cm/s for coarse gravels to  $10^{-1}$  for fine gravels; in fractured rock, the variability is four (4) orders of magnitude, from  $10^{-2}$  to  $10^{-6}$  cm/s (Freeze and Cherry, 1979).

In fractured-rock aquifers, porosity is typically much smaller than that of unconsolidated quaternary aquifers. While the porosity of sand and gravel deposits varies in the range 25-50%, that of fractured rock is less than 10% (Freeze and Cherry, 1979). The smaller the porosity, the greater the difference between the matrix velocity and the fracture velocity. This difference is particularly marked if the porosity is less than 2%. In contaminant transport through fractured rock, actual solute velocities, dominated by advection, may be at least two orders of magnitude greater than the values of bulk hydraulic conductivity (Muldoon, 1994). Thus, at the upper limit, values of solute velocities in fractured rock may approach  $10^{-2} + 2 = 10^{-0}$  cm/s, i.e., 1 cm/s, which is roughly equivalent to the hydraulic conductivity of medium-sized gravel.

**Variability in well yield.** Well yield is a function of hydraulic conductivity. In fractured rock, water-bearing fractures are responsible for most of the yield, with very little of it originating from matrix flow. Thus, well yield is directly related to the number, size, and orientation of existing fractures. To put it concisely, where there is a significant presence of fractures, generally there is ample water; conversely, where there is ample water, its presence may be attributed to a significant number/size of fractures. In general, very little yield could be expected from the rock matrix (Fig. 12).





Fig. 12 Closeup of matrix structure in rock outcrop at Tierra del Sol.

Well yields in fractured-rock aquifers can vary widely. Well drilling experience in the Tierra del Sol watershed supports this statement, with the variability explained in terms of whether the wells intersect water-bearing fractures or not. Success in well drilling is heavily dependent on the size and orientation of the fractures tapped by the well. One experienced well driller reports wells in the vicinity being as shallow as 5 to 10 ft, and as deep as 600 ft, both yielding water of excellent quality.<sup>10</sup> Another well driller reports yields varying from a few gallons per minute to 400 gpm, with well yield varying drastically between wells that are only a few feet apart.<sup>7</sup>

Several examples attest to the variability in well yield and depth in the Tierra del Sol watershed. In the Morning Star Ranch, the Playhouse well, drilled in 1978 at the end of a severe drought, found water at 4 ft, drilled through rock for 270 ft of its 300-ft depth, and yielded 100 gpm,<sup>4</sup> a substantial yield by established standards (Davis and DeWiest, 1966; Freeze and Cherry, 1979). This same well (Playhouse well) experienced a substantial cave-in and a significant reduction in yield following a strong earthquake in the 1980s.<sup>4</sup> The Utz well, also in the Morning Star Ranch, yielded 22 gpm at the depth of 200 ft.<sup>4</sup> The Madsen well yielded 25 gpm at a depth of 480 ft.<sup>5</sup> The Jeffries well found water at less than 10 ft below the surface, and yielded 30 gpm at a depth of 140 ft.<sup>6</sup> The Hucker well found water at a depth of 10 ft, and yielded 14 gpm, with a total well depth of 50 ft.<sup>11</sup>

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• **HYDROECOLOGY** •

<a href="#">[Stream morphology]</a> <a href="#">[Groundwater hydraulics]</a> <a href="#">[Synthesis]</a> <a href="#">[Conclusions]</a> <a href="#">[Summary]</a> <a href="#">[Endnotes]</a> <a href="#">[References]</a> <a href="#">[Reviewers]</a> <a href="#">• [Top]</a> <a href="#">[Introduction]</a> <a href="#">[Scope]</a> <a href="#">[Hydrology]</a> <a href="#">[Hydrogeology]</a>
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Hydroecology is a relatively new and evolving interdisciplinary science dealing with the structure and function of natural and human-impacted water-dependent habitats and environments. Hydroecology is used here to study selected vegetative species present in the Tierra del Sol watershed in terms of their affinity for water. The aim is to document a potential dependence of the spatial distribution of vegetation on [subsurface] local moisture gradients which may be linked to the rock fractures.

**The chaparral ecosystem.** The ecosystem of the Tierra del Sol watershed consists of mediterranean chaparral on gentle slopes and foothills, and is complemented with woody riparian vegetation near springs and watercourses, and certain selected mesophytes. The California chaparral has been studied extensively (Keeley and Keeley, 1988). It is a community of largely taxonomically unrelated shrubs, albeit with similar ecological characteristics. These include a relatively extensive root system, a dense canopy, and sclerophyllous (hard) evergreen leaves (Delgado, 1992).

**Chamise and red shank.** Two closely related chaparral species, chamise (*Adenostoma fasciculatum*) and red shank (*Adenostoma sparsifolium*) are significantly represented in the Tierra del Sol watershed. Notably, these two shrubs are the only species in their genus. Chamise is widely distributed throughout California and Baja California, with a range of nearly 800 miles. In contrast, red shank occurs only in four isolated places in Central California, Southern California, and Baja California as a co-dominant with chamise, with a range of only 300 miles (Marion, 1943; Sampson, 1944; Hanes, 1965).

Although chamise and red shank have overlapping geographical distributions, Beatty (1984) has noted that they do not grow in close association within a given stand. Red shank is commonly found on all aspects of gentle slopes and foothills of inner mountain ranges. Pure stands of red shank can be found in only 3% of the area in which red shank is the dominant species (Marion, 1943).

Chamise and red shank, although congeners, are not at all alike in appearance. Stands of chamise chaparral are dull, of dark-green color and uniform in appearance. The mature chamise plant is a medium-sized shrub 2 to 8 feet tall, with sparse leaf litter. In contrast, stands of red shank are distinctive, spreading above the general level of the chaparral. Red shank is a tall, round-topped arborescent plant 6 to 20 feet high, with thick naked stems and considerable leaf litter, 0.5 to 2 inches in depth (Hanes, 1965).

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**Red shank dominates over chamise on sites with higher moisture content, organic matter, and nutrient availability.**

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There is a substantial difference in the rooting habits of the two species. Chamise, even though less than half the average size of red shank shrubs, has a more aggressive root system, possessing stronger roots with greater length and vertical penetration. On the other hand, the roots of red shank are massive, smaller, weaker, and are more likely to spread laterally rather than vertically. Chamise blooms and sets seed best, with low seed viability, following winters of ample rainfall. In contrast, red shank blooms well, with low seed set and viability, regardless of the amount of rainfall the previous winter (Hanes, 1965). Red shank dominates over chamise on sites with higher moisture content, organic matter, and nutrient availability (Beatty, 1984).

Hanes (1965) noted that though both *Adenostoma* species resumed growth in early winter, chamise displayed a sudden flush of growth in the spring, whereas red shank grew more steadily, with continued growth throughout the summer and fall. Chamise flowered in April and May, whereas red shank flowered abundantly in August. While chamise has an apparent enforced dormancy in the fall, red shank has been known to experience substantial autumnal growth, suggesting a sustained moisture source.

It is noted that red shank violates several definitions of sclerophyllous plants. First, it remains physiologically active during summer drought; thus, it is drought tolerant without being drought dormant (Hanes, 1965). Secondly, its root morphology is unique among the chaparral. Its shallow root system suggests that its moisture for summer growth must come from the top layers of the substrate. Red shank seems to be a type of shrub well adapted to drought conditions, but lacking the obvious morphological characteristics suggesting such adaptability (Shreve, 1934). Thus, the water affinities of red shank appear to lie in between those of the xerophytes, which are well adapted to drought, and those of the mesophytes, which habitually require a more sustained moisture source. The spatial distribution of red shank and its possible connection to local moisture gradients associated with rock

fractures merits further study.

**Blue elderberry.** Under moist conditions, such as near the bottom of ravines or small canyons, the chaparral coexists with the small woody winter-deciduous *Sambucus* species and the flowering ash (*Fraxinus dipetala*) (Keeley and Keeley, 1988). One *Sambucus* species, the blue elderberry (*Sambucus mexicana*) is present in the flood plains and other mesic locations of the Tierra del Sol watershed (Fig. 13).



Fig. 13 Specimen of blue elderberry, Morning Star Ranch, Tierra del Sol watershed.<sup>12</sup>

The water affinities of the blue elderberry and its preeminent role as an indicator of the presence of groundwater have been known for almost one hundred years. Early references to the blue elderberry's moisture habits are scattered throughout the literature. Ball (1907) has stated that in Southwestern Nevada and Eastern California, the elderberry tree is unknown, except in the vicinity of water. Spalding (1909) has noted that the blue elderberry, while being structurally a flood-plain mesophyte, it is nevertheless very limited in its range, growing where there is an ample supply of moisture, such as near irrigation ditches. In the Southwestern United States, particularly in Southern California's inland hillslopes, the blue elderberry may be thought of as a meso-hygrophyte, to indicate that while structurally a mesophyte (Meinzer, 1927), its water habits resemble those of a hygrophyte, which thrives on wet soil and is more or less restricted to wet sites.

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**In Southern California's inland hillslopes, the water affinities of the blue elderberry range between those of mesophytes and hygrophytes.**

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The presence of all the specimens of blue elderberry in a selected portion of the northwestern edge of the Tierra del Sol watershed was mapped with the aid of a global positioning system. The location of forty-three (43) elderberry trees are shown in Fig. 14.<sup>13</sup> At least three alignments are clearly distinguished from the data, indicating the potential presence of moisture-laden fractures in the underlying rock. The presence of other specimens of blue elderberry elsewhere in the Tierra del Sol watershed point to the existence of sustained moisture sources, possibly fractures, throughout the



study area.

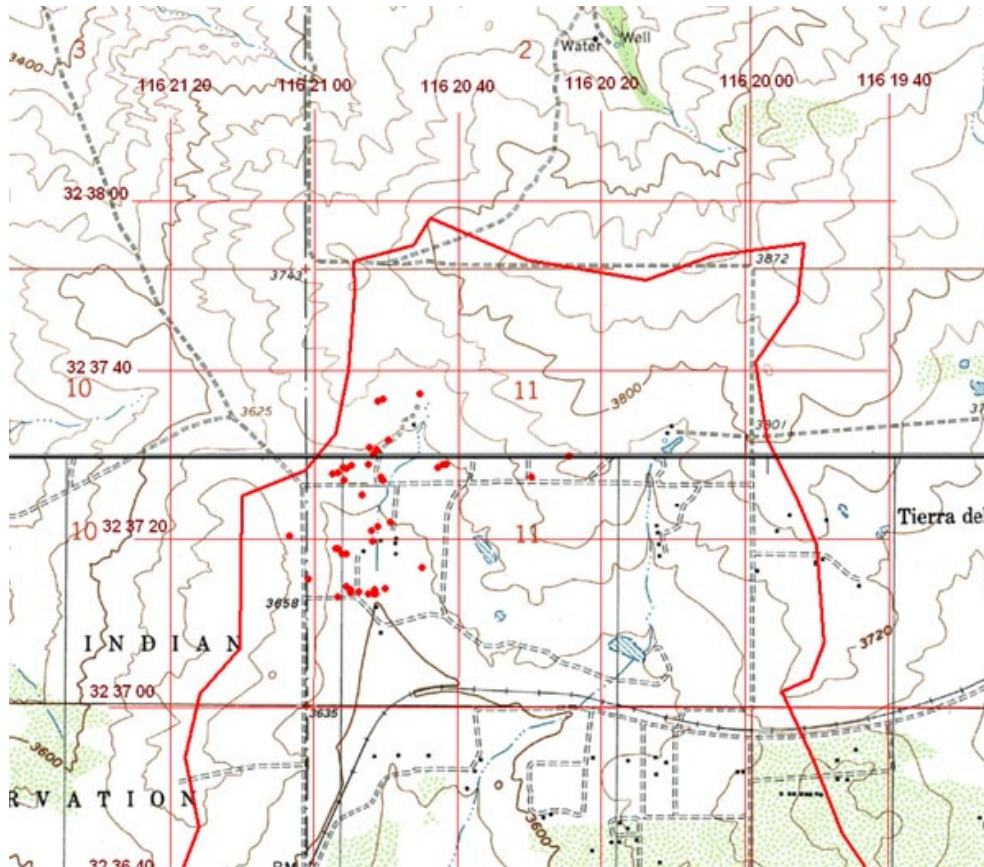


Fig. 14 Presence of blue elderberry (*S. mexicana*) near the northwest edge of the Tierra del Sol watershed.

**Remote sensing.** Figures 15 to 17 show color images of the proposed landfill site at three different spatial scales, from larger (Fig. 15) to midsize (Fig. 16) to smaller (Fig. 17). These images show the presence of darker spots of approximate longitudinal orientation, referred to as lineaments. They appear as such or are evident due to contrasts in terrain or ground cover on either side. If they are of geological origin, the lineaments are usually traced to faults, joints, or boundaries between stratigraphic formations. When they are related to bedrock features, they are most readily observed in areas where the surficial material is thin (Moore *et al.*, 2002). This is certainly the case in the Tierra del Sol watershed.



Source: GIS, Department of Public Works, San Diego County.

Fig. 15 Larger-scale image of the study site.<sup>14</sup>





Source: GIS, Department of Public Works, San Diego County.

Fig. 16 Medium-scale image of the study site.<sup>14</sup>



Source: GIS, Department of Public Works, San Diego County.

Fig. 17 Smaller-scale image of the study site.<sup>14</sup>

A substantial number of major lineaments can be observed at all three image scales. Figure 16, in particular, shows a clearly defined lineament located east of Tierra del Sol Creek, close to the bottom right-hand corner of the figure, with a predominant northwest to southeast direction. Field inspection showed that this lineament is constituted by thick stands of red shank (*Adenostoma sparsifolium*), in association with specimens of scrub oak (*Quercus dumosa*), some of which are distinctively large. This observation confirms that red shank prefers a more mesic (i.e., humid) environment than its congener the chamise (Beatty, 1984). Several other red-shank dominated lineaments crossing the boundary between the landfill site to the west and the Tierra del Sol watershed to the east have been observed.

Figure 18 is the same as Fig. 16, but with readily identifiable lineaments, from photo inspection and field verification, highlighted in red. The interpretation of this image is that it is underlain by an extensive system of fractures. There appears to be no other sensible explanation for the presence of the lineaments. Field observations and local experience support this statement.





Image source: GIS, Department of Public Works, San Diego County.

Fig. 18 Readily identifiable lineaments in the Campo landfill-Tierra del Sol site.<sup>14</sup>

Figure 19 shows an infrared image covering the same area as Fig. 18. Many of the lineaments highlighted in Fig. 18 can be observed in Fig. 19. Predictably, the major drainage courses (Tierra del Sol Creek and tributaries) feature riparian forests, which draw their moisture from the groundwater (vadose and phreatic zones). The lineament in the bottom right-hand corner is located upland, i.e., it does not follow any clearly defined watercourse. Yet it is seen to consist of large shrubs (red shank) and trees (oak species) with a demonstrated water affinity.



Source: Geography Department, San Diego State University.

Fig. 19 Infrared image of the Campo landfill-Tierra del Sol site.<sup>15</sup>

Figure 20 shows a digitally enhanced image of the central portion of the Campo landfill-Tierra del Sol site. To obtain this figure, Fig. 19 was processed with the NDVI<sup>16</sup> feature of the ERMapper image-processing software, and cropped to the region of interest. Many of the lineaments depicted in Fig. 18 are clearly visible in Fig. 20.





Image processed with ERMapper ©

Fig. 20 Digitally enhanced image of the Campo landfill-Tierra del Sol watershed boundary. <sup>15</sup>

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• **STREAM MORPHOLOGY** •

[\[Groundwater hydraulics\]](#) [\[Synthesis\]](#) [\[Conclusions\]](#) [\[Summary\]](#) [\[Endnotes\]](#) [\[References\]](#)  
[\[Reviewers\]](#) • [\[Top\]](#) [\[Introduction\]](#) [\[Scope\]](#) [\[Hydrology\]](#) [\[Hydrogeology\]](#) [\[Hydroecology\]](#)

The existence of springs in upland areas is a reliable indicator of an effective hydraulic connection between groundwater and surface water. The Tierra del Sol watershed is an upland watershed that has its highest point at elevation 3,880 ft, borders with the headwaters of Campo Creek immediately to the north and northwest, and it is within a few miles of the Tecate Divide to the northeast. Its lowest point is at its mouth on the Mexican border, at elevation 3,440 ft. The total watershed relief is 440 ft.

Figure 21 shows the location of eleven (11) springs in the Tierra del Sol watershed. Most of these springs drain northern slopes at elevations above 3,700 ft. The lack of a substantial number of springs along the western boundary of the Tierra del Sol watershed appears to indicate that the local drainage is primarily through the subsurface, from the fractures, downgradient, west to east, to be intercepted by the Tierra del Sol drainage. The latter flows in a predominant north-south direction.

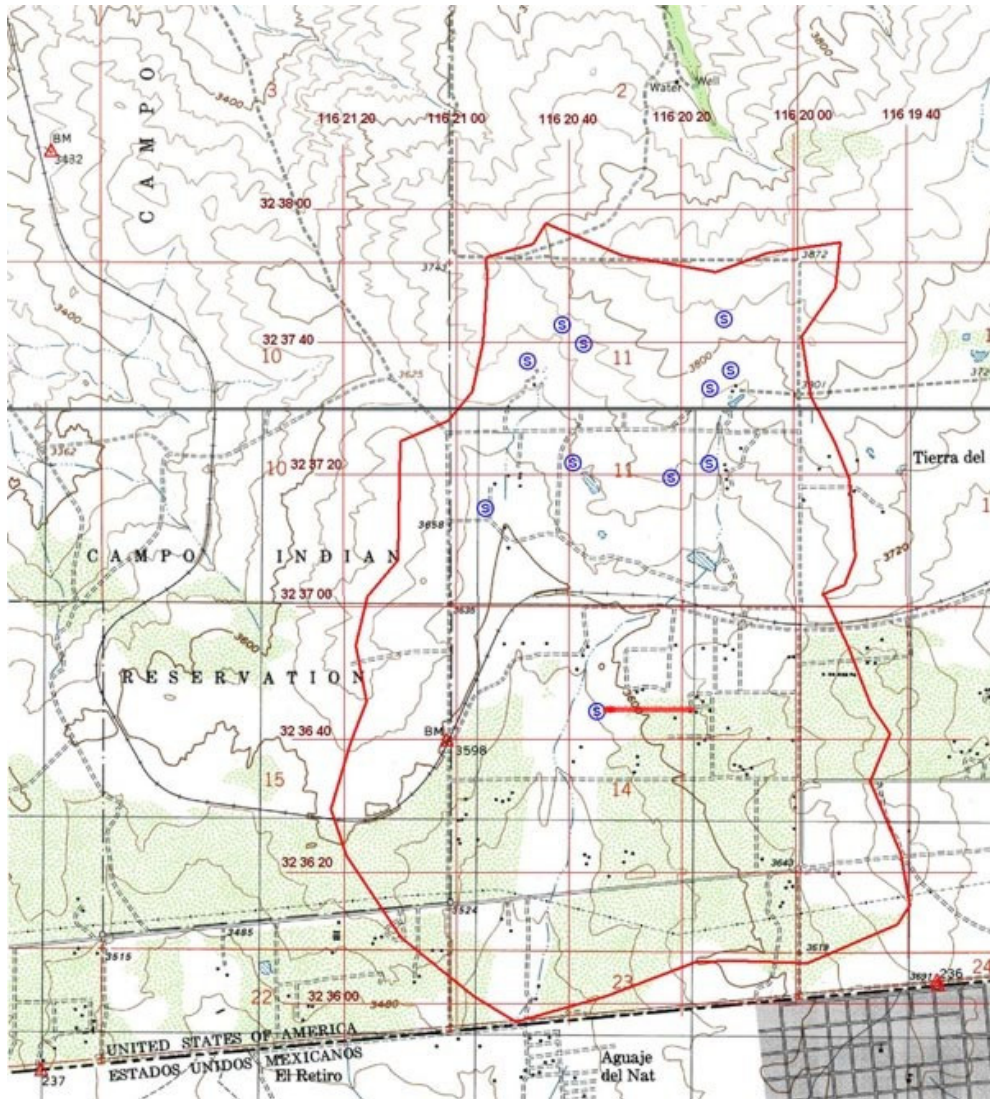


Fig. 21 Location of springs (S) in the Tierra del Sol watershed, with east-west trending major dike shown in red.

In Fig. 20, note that the southernmost spring is located precisely at the western extremity of the 1,465-ft dike shown in Fig. 10. This spring sustains a rather large isolated specimen of coast live oak (*Quercus agrifolia*), shown in Fig. 22. This tree appears in Fig. 19, at the western edge of the dike (compare Figs. 19 and 20). Although drought tolerant, a coast live oak requires some moisture for its normal development. Thus, the presence of an oak specimen near a spring in the Tierra del Sol watershed is further evidence of a hydraulic connection between surface water and groundwater.





Fig. 22 A coast live oak near west end of southernmost spring in the Tierra del Sol watershed. Note the presence of substantial moisture on the ground.<sup>17</sup>

The springs lead to a network of small streams which collect to form two major tributary drainages. Eventually, the latter join to form the main channel of Tierra del Sol Creek, which flows southward to the Mexican border. The existing metallic fence along the border acts as an effective impediment to the flow, which results in considerable water ponding on the U.S. side during floods.

On the Mexican side of the border, within the confines of Roca Magisterial, there is physical evidence that prior to the late 1990s, before the installation of the metallic border fence, the infrequent floods were large enough to carve two gullies. Several springs originate in these gullies, and there is physical evidence (a well and a small concrete dam and associated pond) that this water has been or it is being utilized for human and animal consumption.<sup>18</sup>

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• **GROUNDWATER HYDRAULICS** •

[\[Synthesis\]](#) [\[Conclusions\]](#) [\[Summary\]](#) [\[Endnotes\]](#) [\[References\]](#) [\[Reviewers\]](#) • [\[Top\]](#)  
[\[Introduction\]](#) [\[Scope\]](#) [\[Hydrology\]](#) [\[Hydrogeology\]](#) [\[Hydroecology\]](#) [\[Stream morphology\]](#)

The siting of a landfill on top of a fractured-rock aquifer poses a serious threat to groundwater quality. Typically, fractured-rock aquifers are heterogeneous and anisotropic, i.e., their physical properties vary not only with location but also with direction, rendering the aquifer difficult to characterize (Fig. 23). Among hydrogeologic properties, the hydraulic conductivity and permeability describe the rate of groundwater movement. A number of case studies serves to illustrate the wide range of variability in hydraulic conductivity.

**Hydraulic conductivity in fractured-rock aquifers.** A comprehensive study of a fractured-rock aquifer in the Clare Valley, South Australia, revealed a variability in hydraulic conductivity of ten (10)

orders of magnitude, from  $10^2$  m/day in aquifer pump tests to  $10^{-8}$  m/day in tests on the rock cores (matrix flow) (Love *et al.*, 2001).

In Door County, Wisconsin, measurements of bulk hydraulic conductivity of a fractured-rock aquifer, using multiwell pumping tests, showed a narrow range of variability, less than two (2) orders of magnitude, from  $1.7 \times 10^{-4}$  ft/s to  $4.9 \times 10^{-5}$  ft/s, with a geometric mean of  $7.5 \times 10^{-5}$  ft/s (Muldoon, 1994). However, short-interval packer tests conducted over the fracture and matrix portions of the aquifer yielded a much wider range, in excess of six (6) orders of magnitude, from  $1.4 \times 10^{-2}$  ft/s to  $2.3 \times 10^{-8}$  ft/s, with a geometric mean of  $9.5 \times 10^{-6}$  ft/s, or 0.82 ft/day. Moreover, tracer tests yielded groundwater velocities on the order of  $2.0 \times 10^{-3}$  ft/s (173 ft/day), which is 211 times greater than the geometric mean of the packer tests. According to Muldoon (1994), the tracer results are consistent with the hydraulic conductivities derived from the packer tests and not with those derived from the pumping tests. Thus, the measured difference between fracture and matrix velocities in this fractured-rock aquifer was in excess of two (2) orders of magnitude.



Fig. 23 Closeup of fracture in rock outcrop at Tierra del Sol.

In Manitoba, Canada, an extensive study of several fracture zones in crystalline rock at the Lac Du Bonnet batholith revealed a complex pattern of permeability within the fracture zone at the regional scale. Permeabilities ranged over six (6) orders of magnitude, with the higher permeabilities appearing to form distinctive large-scale channel-like patterns that were sized up to 1 km in areal extent. At the local scale, permeabilities were observed to change by as much as six (6) orders of magnitude over distances of a few meters within the fracture zone, and isolated pockets of high permeability were shown to reside within larger regions of low permeability. This case study highlights the difficulties that may arise in trying to interpret the hydrogeologic characteristics of fracture zones in situations where the exploratory boreholes are sparse (Davidson and Kozak, 1988).

These and other similar studies have shown conclusively that hydraulic conductivities are likely to vary over a wider range in fractured-rock aquifers than in comparable sedimentary or unconsolidated quaternary aquifers. In addition, anisotropy prevails in fractured rock, resulting in fracture velocities that could be two to three orders of magnitude greater than the matrix velocities (Davis and DeWiest, 1966; Muldoon, 1994).



A wide range of variability in hydraulic conductivity is likely to be the case in the Campo landfill-Tierra del Sol watershed. Local experience confirms the extreme anisotropy of the Campo-Tierra del Sol aquifer. As an example, during the Campo landfill site work in the early 1990s, a local well driller reported the following:

"...When we were washing wells on the northwest side, just north of the road and east of the railroad tracks, we dumped about 3,000 gallons of water down the well closest to the road. The water never came back and did not show up in the other two wells that were less than 20 ft away! We had another well on the West side that did the same thing..."<sup>19</sup>

**Solute travel time.** Fractures can cause markedly anisotropic behavior, particularly with regard to contaminant transport, which tends to be dominated by advection, with little diffusion of pollutant concentration (National Research Council, 2000). In principle, the flow direction in fractured-rock aquifers can differ from the direction of the prevailing hydraulic gradient by up to 90° (Love *et al.*, 2001). Therefore, preferred flow paths in fractured-rock aquifers may cross surficial watershed boundaries, defying conventional hydrological characterization.

Fractured-rock aquifers are particularly sensitive to contamination due to the rapid and somewhat unpredictable movement of contaminants through fractures. In sedimentary aquifers, strategies to protect water-supply wells usually employ a capture zone, the boundary of which is monitored for contamination. The travel time from the boundary of the capture zone to the well is usually taken as a constant, for example, 10 years (National Research Council, 1996).

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**Travel times from capture zone to nearby wells in the Tierra del Sol watershed, a distance of about 600 m, could be less than 1 day.**

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With estimated fractured-rock solute velocities comparable to the hydraulic conductivity of medium-sized gravel, estimated at 1 cm/s (864 m/day), advection-dominated travel times from capture zone to nearby wells in the Tierra del Sol watershed, a distance of about 600 m (2,000 ft), could be less than 1 day.

The potential for such a fast hydraulic connection is supported by accounts from local property owners, who describe the effects on their wells from extensive drilling, borehole washing, packer testing and other activities conducted on the landfill site in the early 1990s. Within a short time after the tests, water pumped from local wells was contaminated with sand and well-drilling debris. According to eyewitness accounts, the sand appeared (or disappeared) with concurrent activity (or nonactivity) on the landfill wells, suggesting the existence of an effective hydraulic connection between the landfill site and private domestic local wells.<sup>20</sup>

**Risk of groundwater contamination.** Landfill monitoring to control contaminated plumes resulting from liner failure is difficult at best. This is due to the practical impossibility of accurately characterizing a complex fractured-rock aquifer system. Fracture size, density and orientation may vary spatially, and no reasonable monitoring well system may be able to account for the spatial variability.

Certain design features attempt to mitigate the difficulties inherent in monitoring landfills built on top of fractured-rock aquifers. For instance, a double-liner system is considered to be safer than a single-liner system. However, a double-liner system does not completely eliminate the possibility of groundwater contamination. The rationale for the double-liner system assumes that the primary liner, i.e., that closest to the landfill, will fail first, and the leachate will be recovered subsequently, before it is able to reach the secondary liner. However, there is the possibility that the secondary liner will fail first, with the breach remaining inactive until the primary liner fails.

The probability that the contaminant plumes will be missed by monitoring wells is high, since typically these wells are spaced at distances far exceeding the width of the plume (Note that the original design

for the Campo landfill called for monitoring wells at an average distance of 500 ft apart). Haitjema (1991) has placed the matter in the proper perspective by observing that the design of monitoring-well systems in fractured-rock aquifers "is a nightmare and usually not more than a blind gamble." Although it is technically feasible to reduce the distance between monitoring wells to implement a line of defense resembling a picket fence, the cost would be prohibitively high. Moreover, such a high well density, if implemented, is likely to change the local hydraulics and do more harm than good in the long run. This is because a borehole acts as a high-permeability pathway that connects fractures which previously were unconnected (Shapiro, 2001).

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**The probability that the contaminant plumes will be missed by monitoring wells is high, since typically these wells are spaced at distances far exceeding the width of the plume.**

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By most accounts, the water pumped from wells in Tierra del Sol is of excellent quality.<sup>4,10</sup> Thus, the landfill's presence will constitute a potential risk to this scarce natural resource. In the event of aquifer contamination, the spatial heterogeneity and anisotropy of the fractured-rock aquifer may render cleaning and/or remediation efforts impractical. It is noted that the Southwestern United States, and particularly the state of California, are poised to face significant water shortages as the 21st century sets in.

Solid-waste dry-tomb landfills lying on top of fractured-rock aquifers represent a significant threat to groundwater quality, particularly in areas where these aquifers have been designated as sole source. Given enough time, the plastic sheeting used in composite liners may deteriorate. Landfill covers may be unable to keep moisture out of the landfill for as long as the wastes represent a threat.

The crucial issue remains as to whether an effective leakage-monitoring system can be designed and implemented for a landfill lying on top of a fractured-rock aquifer such as Tierra del Sol's. A related concern is whether it is possible to operate and maintain the landfill facility for an indefinite period. The operation of the leakage-monitoring system would have to be guaranteed for a long time, since the mere closure of the landfill does not preclude the possibility of an eventual failure of the liner system.

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• **SYNTHESIS** •

[Conclusions] [Summary] [Endnotes] [References] [Reviewers] • [Top] [Introduction]  
 [Scope] [Hydrology] [Hydrogeology] [Hydroecology] [Stream morphology] [Groundwater hydraulics]

The surface and groundwater hydrology of the Tierra del Sol watershed are shown to be connected through major fractures, springs, streams and wells. Annual pulses in precipitation are linked to annual pulses in well data, which confirms the existence of an active connection between surface water and groundwater. The underlying fractured-rock aquifer is heterogeneous and anisotropic, thereby defying hydrogeological characterization. Flow through fractured rock is dominated by advection, resulting in travel times that are typically several orders of magnitude greater than diffusion-dominated matrix flows.

The project seeks to place a major landfill on top of a fractured-rock aquifer. The rock is extensively fractured, as confirmed by geologic, photogeologic, ground, and other evidence. Unlike sedimentary aquifers, where diffusion is likely to prevail, in fractured-rock aquifers advection is the dominant mechanism. Therefore, the transport of flow and contaminants in the event of liner failure will be relatively fast, downgradient, through the fractures, and directly into adjacent surface-water and groundwater bodies. Solute travel times from capture zone to nearby wells could be less than one (1) day, counteracting the argument that leakage can be effectively controlled.

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**In a properly sited landfill, the transport of water and contaminants occurs primarily by diffusion, rather than by advection.**

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Landfill monitoring to prevent and control leachate leaks and groundwater contamination is difficult at best. Since liner failure can occur randomly at any place and at any time, a reasonable monitoring well density cannot completely eliminate the possibility of a leak gone undetected for a sufficiently long time. It is noted that in a properly sited landfill, the transport of water and contaminants occurs primarily by diffusion, rather than by advection. Diffusion serves to attenuate and mitigate the negative effects of contaminant plumes on nearby water supplies.

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**• CONCLUSIONS •**

[Summary] [Endnotes] [References] [Reviewers] • [Top] [Introduction] [Scope]  
 [Hydrology] [Hydrogeology] [Hydroecology] [Stream morphology] [Groundwater hydraulics]  
 [Synthesis]

The following conclusions are derived from this study:

1. **Hydrology.** Based on the available evidence, it appears that the groundwater and surface water of the Tierra del Sol watershed are hydraulically connected. The presence of several springs and numerous rock fractures indicates that water flows readily from the fractured-rock aquifer to the wells, springs, creeks, and streams of Tierra del Sol watershed. The record of fifteen (15) years of precipitation and well data supports this statement.
2. **Hydrogeology.** Existing fracture maps reveal the extent to which the underlying aquifer is fractured. At least fourteen (14) major fractures cross the boundary between the Campo Indian reservation and adjacent private property in the Tierra del Sol watershed. Local well-drilling experience confirms the well yield and depth variability typical of fractured-rock aquifer systems. Eyewitness accounts provide anecdotal evidence of an effective and fast hydraulic connection between landfill capture zone and nearby wells.
3. **Hydroecology.** Specimens of blue elderberry (*Sambucus mexicana*) seem to align themselves along major fractures, where moisture can be potentially sustained for long periods. Thick stands of red shank (*Adenostoma sparsifolium*) constitute the predominant species in several of the lineaments identified in aerial images and confirmed by field inspection. Unlike the chamise (*Adenostoma fasciculatum*), its closely related and more widely distributed chaparral species, red shank is a tall arborescent shrub which thrives on more humid and fertile sites such as those that most likely prevail in the vicinity of the fractures. The spatial distribution of blue elderberry and red shank points to the existence of local subsurface moisture gradients which could be tied to the rock fractures.
4. **Stream morphology.** Springs in the Tierra del Sol watershed drain primarily slopes along its northern boundary. The lack of a substantial number of springs along the western boundary appears to indicate that the local drainage is primarily through the subsurface, from the fractures, downgradient to the Tierra del Sol drainage. The existence of a spring at the downstream end of a major geologic dike points to an effective hydraulic connection between surface water and groundwater.
5. **Groundwater hydraulics.** With estimated fractured-rock solute velocities comparable to the hydraulic conductivity of medium-sized gravel (1 cm/s, or 864 m/day), travel times from the landfill's capture zone to private domestic wells nearby in Tierra del Sol, which is a distance of

approximately 600 m, could be less than 1 day. Anecdotal evidence indicates that the actual travel time may not be too far from this value.<sup>20</sup>

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• **SUMMARY** •

[Endnotes] [References] [Reviewers] • [Top] [Introduction] [Scope] [Hydrology]  
[Hydrogeology] [Hydroecology] [Stream morphology] [Groundwater hydraulics]  
[Synthesis] [Conclusions]

The impact that the proposed Campo landfill will have on the surface water and groundwater of the Tierra del Sol watershed is examined from an interdisciplinary perspective. The proposed Campo landfill is located within the Campo Indian reservation, in East San Diego County, California, in the headwaters of Lower Campo Creek. The Tierra del Sol watershed is adjacent to the landfill site, immediately east of it. This study has examined the hydrology, hydrogeology, hydroecology, stream morphology, and groundwater hydraulics of the site and its vicinity.

The effectiveness of the connectivity between surface water and groundwater is assessed by documenting the timing response of the water-table elevation to precipitation. It is shown that annual upward pulses in precipitation produce corresponding annual upward pulses in groundwater level, confirming the existence of an active connection between surface water and groundwater in the vicinity of Tierra del Sol.

Existing fracture maps show the extent to which the underlying aquifer contains fractured rock that would render the aquifer difficult to characterize (Fig. 24). Fractured-rock aquifers of the type found in the Campo-Tierra del Sol site are heterogeneous and anisotropic. Hydraulic conductivities in fractured-rock aquifers can vary greatly, typically six (6) orders of magnitude, but could be vary up to ten (10) orders of magnitude in some instances.



Fig. 24 Fracture in rock outcrop in Tierra del Sol watershed.<sup>21</sup>



Flow velocities and contaminant-transport rates in fractured rock can be high, resulting in early contaminant appearance at neighboring wells, springs, and streams. The flow direction in fractured-rock aquifers can differ from the direction of the prevailing hydraulic gradient by up to 90°. Thus, preferred flow paths in fractured-rock aquifers may cross surficial watershed boundaries.

Field inspections show that certain types of woody vegetation, especially those with documented moisture affinities, such as the blue elderberry tree (*Sambucus mexicana*), align themselves along seemingly longitudinal paths. In particular, the blue elderberry has a peculiar ecology; while structurally resembling a mesophyte, its water habits are similar to those of a hygrophyte. This fact strongly implies the existence of local moisture gradients, and, in the present context, fracture zones, which sustain the blue elderberries.

Observation of aerial images show that the Campo-Tierra del Sol site is transversed by several major lineaments. Ground-truth inspections have confirmed that many of these longitudinal vegetative associations are constituted by dense stands of red shank (*Adenostoma sparsifolium*). This is a chaparral-type arborescent tall shrub which thrives on more humid and mesic locations than its more common congener, the chamise (*Adenostoma fasciculatum*). The apparent connection between red shank and a sustained moisture source merits further study.

Springs in the Tierra del Sol watershed primarily drain its northern slopes (Fig. 25). The absence of major spring presence on the western slopes would seem to indicate that drainage across the Campo-Tierra del Sol watershed boundary is primarily through the subsurface, from the fractures to the streams. The presence of a large coast live oak (*Quercus agrifolia*) in the immediate vicinity of a spring (Fig. 21) is live evidence of an effective hydraulic connection between surface water and groundwater.



Fig. 25 Spring in rock outcrop in northern slope of Tierra del Sol watershed at N 32° 37' 21.6" and W 116° 20' 39".<sup>21</sup>

Siting a major landfill project on top of a fractured-rock aquifer such as Tierra del Sol's constitutes a veritable risk to the local population, on both sides of the U.S.-Mexico border. Moreover, it is a public-health hazard, since the Tierra del Sol aquifer is part of the federally designated Campo-Cottonwood

Creek Sole Source Aquifer.<sup>1</sup> No reasonable mitigation program can substitute for the degradation of water quality in the event of liner failure.

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## ENDNOTES

[References] [Reviewers] • [Top] [Introduction] [Scope] [Hydrology] [Hydrogeology]  
[Hydroecology] [Stream morphology] [Groundwater hydraulics] [Synthesis] [Conclusions] [Summary]

- 1 The Campo-Cottonwood Sole Source Aquifer was designated as such on May 5, 1993, under the authority of Section 1424(e) of the Safe Drinking Water Act (Federal Register Citation-49 FR 2948, January 24, 1984). An aquifer can be named a Sole Source Aquifer by the Administrator of the Environmental Protection Agency if the aquifer supplies 50% or more of the drinking water for an area and there are no reasonably available alternative sources should the aquifer become contaminated.
- 2 Tonalites and granodiorites are similar in mineral composition. A tonalite is a plutonic (intrusive) rock where the percentage of plagioclase feldspar, relative to the combined content of alkali and plagioclase feldspars, is greater than 90; in a granodiorite, the percentage varies between 65 and 90 (American Geological Institute, 1997).
- 3 A geologic map of the La Posta pluton classifies the rocks of Tierra del Sol and vicinity as sphene-biotite granodiorites with both large- and small-biotite facies. The large-biotite facies is characterized by an abundance of large (up to 1 cm) pseudo-hexagonal books of biotite, which impart a distinct "salt and pepper" appearance to the outcrops (Walawender *et al.*, 1990).
- 4 Interview with Ed Tisdale, Tierra del Sol, February 9, 2006.
- 5 Interview with Sharon Madsen, Tierra del Sol, March 24, 2006.
- 6 Interview with Lorna Jeffries, Tierra del Sol, April 8, 2006.
- 7 As written by James W. McGuffie (General Engineering "A", Water Well Development C-57, License #312853) in a letter to Mr. Harry Seraydarian, Director, Water Management Division, Environmental Protection Agency, San Francisco, California, dated February 26, 1992.
- 8 Photo date: April 25, 2006.
- 9 The lineaments shown in this figure are based on a preliminary fracture map prepared by Dames and Moore, Inc., the landfill's engineering consultant. This fracture map was released by Kent Atkins, Mid-American Waste Systems hydrogeologist, in a letter to Donna Tisdale dated March 11, 1991. It is noted that the fracture map included in the Final Environmental Impact Statement (FEIS), dated November 1992 (Fig. 3.1-10), shows only the longer or major lineaments. After inquiring about the difference between the two maps, Donna Tisdale was told that the preliminary fracture map had been "edited" by the Bureau of Indian Affairs for the FEIS release.
- 10 As written by Frank A. Murphy, of Murphy's Well Drilling (California Waterwell Drilling License #505834), in a letter to Mr. Harry Seraydarian, Director, Water Management Division, Environmental Protection Agency, San Francisco, California, dated March 4, 1992.
- 11 Interview with JoEllen Hucker, Tierra del Sol, April 5, 2006.
- 12 Photo date: May 11, 2006.
- 13 The position accuracy of the GPS Garmin model 76S used here is less than 3 m when receiving WASS corrections, i.e., in open land or marine applications. Accuracy can be reduced when trees and mountains obstruct the view of the horizon.
- 14 Image date: November 2004.
- 15 Image date: April 2000.
- 16 The Normalized Difference Vegetation Index (NDVI) enhances the contrast between vegetation and soil/rock. It is defined as  $NDVI = (r_4 - r_3) / (r_4 + r_3)$ , in which  $r_3$  is the reflectance in the red (630 to 690 nanometers) and  $r_4$  is the reflectance in the near visible infrared (760 to 900 nanometers).
- 17 Photo date: March 3, 2006.
- 18 On April 13, 2006, a field inspection revealed that there are two gullies just south of the border fence, a larger one averaging 4 ft deep and 16 ft wide, and a smaller one, about 3 ft deep and 6 ft wide. Each gully has at least one spring. At a short distance downstream, the gullies join to form a small stream. On the day of the inspection, the flow of this stream was estimated at 3-5 gpm.
- 19 As written by Ken Alquire, well drilling worker, in a letter to Mr. Harry Seraydarian, Director, Water Management Division, Environmental Protection Agency, San Francisco, California, dated March 30, 1992.

<sup>20</sup> As reported in the *Alpine Sun* ("Landfill neighbors complain sand clogs their wells"), Alpine, San Diego County, on September 16, 1992.

<sup>21</sup> Photo date: March 24, 2006.

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## REFERENCES

<a href="#">[Reviewers]</a> • <a href="#">[Top]</a> <a href="#">[Introduction]</a> <a href="#">[Scope]</a> <a href="#">[Hydrology]</a> <a href="#">[Hydrogeology]</a> <a href="#">[Hydroecology]</a> <a href="#">[Stream morphology]</a> <a href="#">[Groundwater hydraulics]</a> <a href="#">[Synthesis]</a> <a href="#">[Conclusions]</a> <a href="#">[Summary]</a> <a href="#">[Endnotes]</a>
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Fig. 26 Fractured rock outcrop, Tierra del Sol watershed.

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## REVIEWERS

<ul style="list-style-type: none"><li>• <a href="#">[Top]</a> <a href="#">[Introduction]</a> <a href="#">[Scope]</a> <a href="#">[Hydrology]</a> <a href="#">[Hydrogeology]</a> <a href="#">[Hydroecology]</a> <a href="#">[Stream morphology]</a> <a href="#">[Groundwater hydraulics]</a> <a href="#">[Synthesis]</a> <a href="#">[Conclusions]</a> <a href="#">[Summary]</a> <a href="#">[Endnotes]</a></li></ul>
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This web document was peer reviewed by Timothy Cass (hydroecology), Robert Curry (hydrology, stream morphology), and C. Monte Marshall (geology, geophysics).

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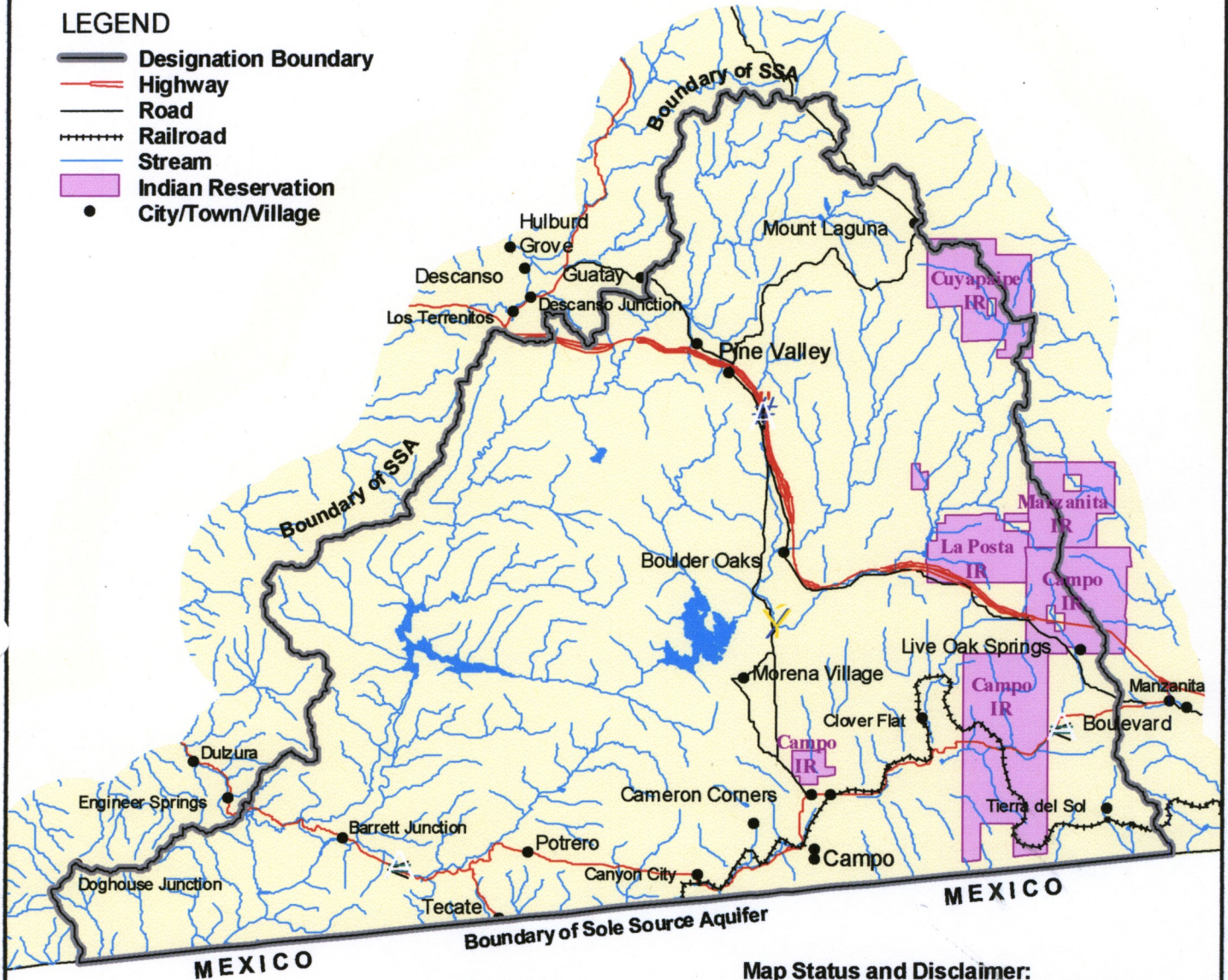


# Campo-Cottonwood Sole Source Aquifer Designated Area



## LEGEND

- Designation Boundary
- Highway
- Road
- Railroad
- Stream
- Indian Reservation
- City/Town/Village



### Notes and Explanation:

The Campo-Cottonwood Sole Source Aquifer was designated under the authority of Section 1424(e) of the Safe Drinking Water Act Federal Register Citation- 49 FR 2948, Publication Date- 01.24.84. Please contact US EPA Region IX (John Ungvarsky, 415.972.3963) for assistance in determining place locations with respect to the project review area.

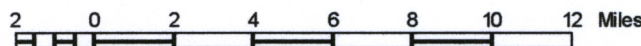


Campo-Cottonwood SSA

### Map Status and Disclaimer:

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Updated by:  
Michael Klatt, Indus Corp.  
December, 2001



# Minister demands explanation for windmill collapse

The climate minister will begin an investigation into two separate cases of Vestas wind turbines collapsing within the past week

The climate minister, Connie Hedegaard, is calling for an investigation to determine the cause of two violent wind turbine collapses in Denmark in the past week.

Both of the windmills were produced by Vestas, and Hedegaard's request to the Energy Board comes after other breakdowns both here and abroad have been reported in the past two months.

'The problems with the turbines abroad have had to do with poor maintenance, and if that's the case here, then I expect a clear report on how we can ensure this problem is rectified,' Hedegaard told Berlingske Tidende newspaper.

Her comments come on the heels of the government's new energy agreement ratified by parliament last week, which calls for the country to have 20 percent of its energy produced by sustainable sources by 2011.

In first of the two collapses, near the city of Århus, a 10-year-old windmill began spinning out of control during high winds. A recording of the explosion-like collapse shows one of the wing blades breaking off, casting debris into the three other wings and shearing the 60- metre tower nearly in half.

Vestas itself will also now conduct an internal investigation to determine why the wind turbines have been breaking down.

'We've still got about 35,000 wind turbines across the globe that are operating fine,' said Peter Wenzel Kruse, Vestas's spokesperson. 'But they're not infallible. We're doing what we can and learning from our mistakes.'

Farmer Keld Boye, who lives in Vig where the latest incident occurred on Sunday, was clearly shaken by the wind turbine's implosion.

'I drive my tractor and my wife rides horses out there,' he said. 'Just think if we'd been out there when it happened.'

A recording of the collapse can be seen on [YouTube](#).

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By The Copenhagen Post  
Offentliggjort 25.02.08 kl. 00:00  
<http://jp.dk/uknews/article1277616.ece>



## BOULEVARD - JACUMBA

## Boulevard Fire Department News



By MICHELLE STRAND

## Boulevard Seeks New Fire Chief

The search is on for a new Fire Chief to take the reins

of Boulevard Fire Department. We are a 100% volunteer fire department serving the backcountry community of Boulevard. Together, the current fire fighters, the Auxiliary, and the Board of Directors have worked very hard in the last year to improve many aspects of the fire department. Our biggest hurdle now is fire fighter staffing. A plan has now been implemented to recruit and retain fire fighters. If you know anyone, or if you have the ambition, experience, and desire to volunteer some time for this backcoun-

try fire department, please contact us immediately at 619-766-4633. You may also contact us via email at blvdfire91905@yahoo.com.

The Board of Directors wants to thank local fire fighter Bill Ybarra for stepping up to the plate to become the "Acting Chief". It's a big responsibility and we know Bill will do a fine job.

We would like to welcome Ed Wood to the Board of Directors. Ed attended the Board Meeting on March

15th and was appointed liaison officer by Chairman Carl Walker. Ed Wood and Carl Walker turned in their "letter of intent" to run officially on the ballot for the upcoming elections.

The CPR and first aid classes held by local fire fighter Ken Daubach were very well attended. If you are interested in attending a future class, please contact Judy Cochran at 619-808-5300. The fee is less than \$10 for materials and an official CPR card. It's a super value and could save someone's life.

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## In The Know With Arlene



By ARLENE LENHART

First of all thank you to all who have sent me get well cards and for the prayers for healing. All are appreciated. I return to work March 31st at the conclusion of Spring break, and continue to heal daily.

Our prayers are with the family and friends of Don Jon. He will be missed by many.

Friends of Jacumba Library thank all who baked and bought at their annual bake sale.

Continued get well wishes, too, to Pastor Dan Meier-Abbott. Despite the crutches, he still conducted sunrise services in Jacumba on Easter Sunday.

Jacumba Community Women's Club will celebrate their 60th anniversary in April with an anniversary tea during their regular meeting. Although inactive, Jen Severance is our only remaining charter member. Anne Woempner has been a member since 1967 and I am the 2nd "oldest" remaining member on the club with just 14 years under my belt.

The Women's Club is not a well known organization, but for being a small club, the volunteer service hours and the program assistance provided by these less than 25 ladies is awesome.

We meet the 2nd Tuesday of each month, September through June, 11:30 at the Highland Seniors Building in Jacumba. If you'd like to know more about Women's Clubs and their role in service, and are computer lit, go to [www.cfwc.org](http://www.cfwc.org) for California info and [www.gfwc.org](http://www.gfwc.org) for information about the entire federation of Women's Clubs. There is a lot of great history!

Honored at the Feb & March Clover Flat awards assemblies for perfect homework and perfect attendance: Names will be followed by a H for homework and/ or A for attendance.

Mrs. Clifton 2nd & 4th grade  
Kenia Acevedo (A), Megan Breckenridge (H), Wyatt Collins (A), Jasmine Ramirez (A), Vinnie Torres (H), Alexis Troy (H/A), Sandra Bell (H), Trent Willson (A), Jackie Luquin (H), Thomas Taylor (H/A), Savannah Swafford (A), Sierra M. (H)& Alyssa (H).

Mr. Ferguson 3rd grade  
Hector Valencia (H/A), Melissa and Marissa Ramirez (H/A), Diana Ibarra (H/A), Amanda Fish (H/A), Anna Cruz (A), Daniel Alvarado (H), James Akintonde (H/A), Noelia Acevedo (H/A), Andrew Jones (H), Xalli Caldwell (H/A), Hailey Augustine (A), Cristina Rosado-Contreras (H/A), Mary Fisher (H), Ryan Willis (H).

Kody DeRagon (H), Casey Poare (A) & Kaitlyn Flores (H/A).

Miss Macrorie 5th grade:  
Maribel and Mayra Regalado (H/A), Carlee Roberts (H), Lance Jacquot (H/A), Heather Bateman (H), Austin Frey (H/A), Jovan Parnell (H/A), Cailce Gaskill (H), Jacob Willson (H/A), Anthony Phifer (H/A), Jennifer Humphries (H), Sabrina Weakland (A), Mariah Gomez (A), Mackenzie Briel (H/A), Woody Watkins (H).

Mrs. Wheaton 6th grade  
Zabrina Weisiger (H), Brian Terry (H), Jonathan Parnell (H/A), Sierra Momborg (H/A), Nick Flores-Blanks (H/A), Alisha Fish (H), Johana Ibarra (A), Lucero Regalado (H/A), Eddie Nocita (H/A), Amanda Kennum (A), Joaquin Giles (H), Giselle Linares (A).

Students of the Month :  
Xalli Caldwell, Sierra M. (2nd grade), Melissa Rameriz, Amanda Kennum, Megan Breckenridge, Kaitlyn Flores and Heather Bateman.

Spotlight student awards were presented to Diana Ibarra, Ryan Willis, Hector Valencia, Jacob Willson, Alisha Fish, Jacquie Luquin, Hailey Augustine & Mariah Gomez.

I was both honored and completely taken aback, when the first spotlight award presented to an employee rather than a student was presented to yours truly, by Mrs. Wheaton, sixth grade teacher. I wish I wasn't so tearful! The certificate says " Thank you

for going the extra mile to make a difference in all of the students lives at Clover Flat Elementary."

A second award, and much deserved, was given to Susan Briel. Remember the Valentines Day storm? I was supposed to work split shift that day, and couldn't even get back down the hill after lunch. Our ASP coordinator, Erin, lives in Pine Valley, so you know what that commute was like. Susan not only stayed at the school until after 5 p.m. waiting for students to be picked up, but took 2 home with her, whose parents and grandparent were stuck on the highway. Special Kudos to Susan!

KEEP UP THE GOOD WORK EVERYONE!!

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