

EVALUATION OF SUNRISE POWERLINK APPLICATION FOR 401 CERTIFICATION

Robert R. Curry, RPG - December 12, 2009

Introduction:

I am a Registered Professional Geologist with 40 years' experience evaluating the impacts of proposed land uses on wetlands and water courses in California and other states. I am certified by both the U.S. Environmental Protection Agency and California Regional Water Quality Control Boards to delineate wetlands. I have been asked to review San Diego Gas & Electric Company's (SDG&E's) application for CWA Section 401 certification by the State Water Resources Control Board (SWRCB). Previously I have been unable to address with specificity many of the issues of soil stability and erosion, revegetation success probabilities, and watercourse and wetland impacts for this project because the EIR omitted the precise location of the proposed structures and roads. Now we are finally presented with a specific transmission line alignment, specific tower locations and construction designs, and somewhat more specific information on soils and watercourse locations and impacts. With the new route maps and more detailed discussions, we can now more accurately address the many geotechnical and hydrologic issues that could not be evaluated in the prior documentation on this powerline project. Because the SWRCB has been unable to provide me with Appendix A to SDG&E's Hydrologic Methodology report (Attachment 9 to its application), this Evaluation is preliminary, and will be supplemented as soon as possible.

Waters of the United States:

We are now presented with documents that purport to address potential impacts on jurisdictional Waters of the United States, and the special subset of those waters defined as wetlands (hereafter *waters and wetlands*). The detailed maps presented to the State Water Resources Control Board (SWRCB) as *Attachment 2: Mapbook containing project overview and detailed map sheets* now allow a reviewer to review both location data and some of the rationale for mitigations or non-mitigations of impacts to *waters and wetlands*. This is an area of my specialized study and training throughout California where I conduct training programs for State, local, and federal regulators.

The Attachment 2 Mapbook reveals that there appears to be a systematic misinterpretation of the guidelines for delimiting Waters of the United States. This work is somewhat more difficult along the southern border of California and Arizona because the standards for defining *waters and wetlands* is not directly applicable to geographic areas where the storms that form the landscape features are infrequent and may cause catastrophic flooding. Specifically map-sheets MS-04 and MS-05 show Yuba Wash¹ and another similar dry desert intermittent watercourse immediately northwest. While some of the areas to be crossed by the powerlines and their construction support vehicles are delimited on the maps as "surveyed ephemeral stream" and "dry wash", the primary washes or large ephemeral watercourses and intermittent streams are not so identified.

¹ Names of the washes are based on the Federal Emergency Management Agency's floodplain mapping sheet. Yuba Wash is defined on sheet 42-FEMA-975 where the existence of bed and banks helps define Flood Zone A. It would thus be a statutory Water of the United States.

Sheets MS-18, MS-19, and MS-21 indicate that towers will be located within or immediately adjacent to other watercourses, and in these cases the fact that the activities are to take place in *waters and wetlands* is noted on the maps. It thus appears that the criterion that drives identification of these sites is a judgment about the potential impact of construction on the watercourse, and not simply their statutory definitions.

I must conclude from this that the summary of impacts presented in Attachment 8 and 15 “Project Impacts” is incomplete. That is, the number of watercourse crossings and miles of powerline impacting watercourses, does not tabulate the primary crossings in the eastern desert areas of the Sunrise project. Careful review or enlargements of sheets MS4 and MS-5, for example, shows that a primitive track crossing the washes is to be used to install and maintain the proposed new towers. After each runoff event that track will have to be reconstructed or newly created when maintenance is needed for the regular washing of insulators and inspections.

When the proposed powerline route climbs out of the lowland Imperial Valley desert washes and enters the rocky granitic ridges of the eastern San Diego County mountains, the degree of detail and evidence of care taken in preparing the Attachment 2 Mapbook sheets improves, but is still deficient. We are shown yellow lines and points to indicate that someone visited a drainage swale or site and determined that it was non-statutory. We are told in an introductory page to the Mapbook that:

NOTE: Generic Lines and Generic Points are used throughout this Mapbook to document all drainage features that were surveyed in the field. These represent non-jurisdictional waters surveyed (i.e. negative data- no field indicators of hydrology or Ordinary High Water Marks were consistently observed).

This Note does not explicate the criteria used by the preparers to define and identify jurisdictional *water and wetlands*. It is not clear whether the authors assumed sites were not jurisdictional waters of the U.S. whenever they did not see evidence of water flows in a channel or marks on the side of a channel that indicate high-water flow or utilized some other criteria or previous mapping. For headwater swales or topographic depressions that do not appear to carry water under today’s precipitation regime, the yellow “generic line” designations in the Mapbook are helpful, but again the mapping criteria are not delineated. The photos of such features shown in Attachment 10 at pp 12 & 13 are clear and indicate correct interpretation. But when we look at aerial photos, such as shown on MS-54, and MS 64 thru MS-66, the criteria for determining that the channel is not statutory is much less clear. In sites like the streambank in MS-20, a cut bank is clearly seen just downstream from the yellow line, while in MS-66 at 66 GL-2 the channel that leads to a statutory watercourse does not appear significantly different above and below the point where the demarcation begins. Lacking our own field reconnaissance, we must accept the opinions of the preparers of the Mapbook except where they apparently simply ignored the obvious large-scale features as at MS-4 and MS-5.

Statutory Waters of the United States:

These are defined in 40 CFR 230.3(s) and are the subject of some confusion and regulatory imprecision. In the case of eastern San Diego County and Imperial County, the Salton Sea establishes a navigable water body to which the mapped washes are tributary. Farther west, in the watersheds of the Tijuana River and other ocean-going streams, the Pacific Ocean is navigable. The key issue is called hydrologic connectivity. One must address the question of if and how an action in a water course, even an intermittent watercourse, may affect downstream receiving waters. The actual language

of the definitions is somewhat inconclusive but current EPA and Corps of Engineers guidance documents attempt clarification:

40 CFR 230.3(s) *The term waters of the United States means:*

1. All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;

2. All interstate waters including interstate wetlands;

3. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:

(i) Which are or could be used by interstate or foreign travelers for recreational or other purposes; or

(ii) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or

(iii) Which are used or could be used for industrial purposes by industries in interstate commerce;

4. All impoundments of waters otherwise defined as waters of the United States under this definition;

5. Tributaries of waters identified in paragraphs (s)(1) through (4) of this section;

6. The territorial sea;

7. Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (s)(1) through (6) of this section; waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 CFR 423.11(m) which also meet the criteria of this definition) are not waters of the United States.

Waters of the United States do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with EPA.

Source: <http://www.epa.gov/wetlands/guidance/CWAwaters.html>

It is clear that both bed and bank can be defined in the primary washes such as those seen on MS-04 and MS-05. These are clear on the aerial photos. On the detailed ground photos that are included as Attachment 10, some of the washes when viewed from the ground may not appear to have a bank, but that is primarily a matter of scale. When these washes carry water, they may extend more than one-quarter mile from bank to bank. The tropical storm of September 7-12, 1976, for example, generated a broad, braided wash extending over one-eighth mile in width. An overview of the effects of that storm is available with contemporaneous photographs at <http://www.scribd.com/doc/9354989/Tropical-Storm-Kathleen> and a photograph of the town of Ocotillo is attached on the next page as Figure 1.



The path taken by the runaway waters

Credit: Rick McCarthy, Union-Tribune

Fig 1. Ocotillo Flooding, Tropical Storm Kathleen, September, 1976

The documents in Attachment 9, Hydrologic Discharge Methodology (with the notable exception of Appendix A, which was omitted) reveal the bases of determinations of the actual volumes of water that are expected to flow in the defined channels. While these are useful for sizing culverts and other basic hydrologic engineering evaluations, they also reveal that the methodology for projecting local rainfall-runoff-frequency is flawed. Curves for San Diego County are referenced and those for Imperial County are included. The Imperial County curves (Imperial County 1 and Imperial County 2) are based on limited data published by the State before September, 1976 and thus missing two of the larger recorded local storms. Storms that serve to define channels and establish watercourses have been recorded in Southern California since the 1850's with the most notable in the powerline route being September 1939, September 1976, and September 1997.

The Sunrise Powerlink project has chosen to use the published runoff intensity values based on the respective county's published 100-year magnitude volumes. This decision is not prudent. Because jurisdictional watercourse channels are established by observation of bed and banks with indication of flow of water, the rare tropical storms that tend to define the magnitude of large events may be overlooked. The landforms will still reflect the activity of the channels but marks made by high stream flow on channel banks may be absent. Thus, calculations should err on the side of assumed larger storm and runoff events. The dry porous soils of San Diego and Imperial counties will absorb several inches of rainfall before significant runoff is generated. Thus, it is the larger storms that serve to define hydrologic impacts of the Sunrise Powerlink Project.

Erosion and sedimentation:

The application to the SWRCB for certification includes this statement:

Attachment 5: A copy of Notification of exercise of Nationwide Permit 12 to the U.S. Army Corps of Engineers is not included in this CD. These documents are available from USACE.

Nationwide 12 includes the following language about access roads:

Access roads: This NWP authorizes the construction of access roads for the construction and maintenance of utility lines, including overhead power lines and utility line substations, in non-tidal waters of the United States, provided the total discharge from a single and complete project does not cause the loss of greater than 1/2-acre of non-tidal waters of the United States.

This NWP does not authorize discharges into non-tidal wetlands adjacent to tidal waters for access roads.

Access roads must be the minimum width necessary (see Note 2, below). Access roads must be constructed so that the length of the road minimizes any adverse effects on waters of the United States and must be as near as possible to pre-construction contours and elevations (e.g., at grade corduroy roads or geotextile/gravel roads). Access roads constructed above preconstruction contours and elevations in waters of the United States must be properly bridged or culverted to maintain surface flows.

Note 2: Access roads used for both construction and maintenance may be authorized, provided they meet the terms and conditions of this NWP. Access roads used solely for construction of the utility line must be removed upon completion of the work, accordance with the requirements for temporary fills.

Concerns about erosion and sedimentation into *waters and wetlands* arise from the highly erodible soils formed in decomposed granitic bedrock that characterizes the central half of the transmission line route. The route maps in Attachment 2 provide information on access roads and tower locations as well as support and construction

facilities. From these we can evaluate the accuracy of the summary of impacts presented in Attachment 8 and totaled by habitats for mitigation in Attachment 15.

Many map sheets indicate new access road construction requirements (cf, MS-51&52, MS-55&56). Looking, for example, at the information provided in the various attachments as it relates to a new road crossing of an ephemeral watercourse (66-S-1) on MS-66 we learn that a permanent road crossing is to be constructed on a tributary of La Posta Creek that flows into Cottonwood Creek and thence to the Tijuana River. The crossing is to be achieved with a 75 ft-long 24-inch corrugated metal culvert and is associated with 60 cubic yards of earthwork and 29 cubic yards of rip-rap. We cannot, however, determine how much grading is required for the access road itself, nor can we establish that the grading follows the requirements of Nationwide Wetland Permit 12. The information provided by the applicants is detailed enough to show the access road routes, alignments, and associated watercourse crossings, but we cannot determine the areas of new roads and standards for construction and maintenance. We must fall back to the previous EIR that assures us that impacts will be mitigated "where feasible". The new roads as for example demarcated on MS-51, MS-52, MS-55, and MS-56 will generate runoff that will carry sediment to watercourses. The applicants provide generic examples of road construction practices in Attachment 4, Details, including water-bars and dips, but these all appear to be designed to accommodate only a 10-year storm runoff event.

In this geographic region that is subject to infrequent large tropical hurricanes and tropical storms, the magnitude of runoff from storms of less than a 20-year return frequency is not proportional to the magnitude of runoff from larger, less-frequent tropical storms. The 10-year storm event is usually associated with standard Pacific frontal wintertime rainfall, while the late summer tropical storms generate the 25-year and larger events. This means that the standard statistical methods that can be used to determine storm runoff should not be used to lump all storms into the same time series. Tropical storms have a distinct set of characteristics and Pacific frontal storms have a different set of characteristics, and the two are not related to each-other in terms of magnitude-frequency-duration relationships. What this means is that designs for a 10-year storm will not withstand the 25-year events nor can they be scaled-up using the design criteria of San Diego County or Imperial County. The hydrologic design manuals cited by applicants all seem to be based on statistically scaled design criteria based on Pacific frontal storms. That is logical for the urban western parts of San Diego County, but not for the eastern mountainous areas or for Imperial County. The result of this miscalculation will be infrequent major wash-out damage to access roads and critical periods of inaccessibility for repairs.

The San Diego County soil surveys² explain that the soils of the arid granitic bedrock areas such as the La Posta soils and La Posta –Sheephead Complex that characterize the areas of extensive new access road construction on the MS-50's sheet areas are extremely erodible (erodibility class *severe*). The proposed site revegetation is not applicable for the permanent access roads and will not mitigate the water quality impacts of these many roads. While there are proposed mitigation sites and areas for the Imperial County washes that are not accurately tabulated and are merely to be replaced at a ratio of 1:1, the real impacts are in the mountainous areas where mitigation ratios of 2:1 and 3:1 are anticipated but may not, in fact, be feasible. For example, Sheet 53 covers an area of large granitic boulders that are apparently used recreationally on this

² Soil Survey, San Diego County, Pt II, 1973, U.S.D.A. Soil Conservation Service includes the eastern county and granitic soils of the Sunrise Powerlink route.

Bureau of Land Management site. The proposed transmission line towers are to be installed using heavy equipment for which approximately 2300 feet of new roads are required for the area of this map sheet. The construction of towers in this highly erodible area might require spur roads to each tower or group of towers unless they were placed directly along the McCain Valley Road. This would create unnecessary erosion and might not be readily mitigated. Indeed Sheet 53, for example, does not show any proposed mitigation sites on or near these areas of extensive new road construction in highly erodible soils.

For the area of proposed new roads, one would have to develop sediment retention basins and reclaim existing eroded and disturbed lands that simply do not exist in sufficiently large areas to compensate for the anticipated disturbance. That is, the mitigation ratios of 3:1 are ineffectual where the aridity of the sites such as those along the La Posta Truck Road and McCain Valley Road tower sites simply preclude on-site in-kind mitigation. The documents we have reviewed do not demonstrate the feasibility of the proposed water quality protection for a project of this magnitude. This application should be revised to include tables that accurately outline areas of permanent and temporary disturbances that are linked to proposed mitigation site restoration plans, so that the reader may evaluate the probabilities of success of the proposed mitigations. These essential data are not presented and must be provided to assure informed agency and public review.

Conclusions:

The application's description of the project's impacts to statutory Waters of the United States is understated.

The application misinterprets and misuses applicable criteria for streambed and streambank indicators for washes and arroyos. Consequently, it understates the number and width of potentially impacted streambeds and streambanks. As a result, the application's estimate and assessment of the acres and linear distances of impacted wetlands and waters of the United States substantially understates the actual impacts. For the same reason, the application's proposed mitigations to protect water quality, including restoration and/or mitigation banking both on-site and in-kind, are insufficient to mitigate the project's adverse impacts on wetlands and waters of the United States.

The water quality impacts of the proposed activities in the mountainous areas of eastern San Diego County are not clearly explicated because the access road impacts are not covered.

A handwritten signature in black ink, appearing to read "Robert R. Cunningham", with a horizontal line underneath.