STATE OF CALIFORNIA — THE RESOURCES AGENCY

CALIFORNIA ENERGY COMMISSION
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GRAY DAVIS, *Governor*

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REQUEST FOR REVIEW OF THE ENERGY COMMISSION STAFF'S DRAFT KFAX RADIO TOWER RELOCATION ANALYSIS FOR THE RUSSELL CITY ENERGY CENTER (RCEC) PROJECT (01-AFC-07)

Enclosed is a copy of the Energy Commission staff's draft KFAX RadioTower Relocation Analysis for the Russell City Energy Center project. The final version will be included as an appendix to the staff's final Staff Assessment (SA Addendum) which is expected to be issued during March, 2002.

We request that you review the enclosed draft analysis and provide any written comments to Kae C. Lewis, the Energy Commission's Project Manager, by February 22, 2002 so that staff can use your comments in their preparation of the SA Addendum.

Background and Purpose of Analysis

The Russell City Energy Center (RCEC) project description as submitted in the Application for Certification (AFC) did not include the relocation of four radio transmission towers for the station KFAX, which currently occupy the western portion of the project site. The City of Hayward approved a Mitigated Negative Declaration and on May 24, 2001, granted a Conditional Use Permit for the relocation of the KFAX towers from the RCEC project site to a site owned by the City. The City, in its review, identified multiple conditions (19) to address potential issues of concern. The tower relocation also requires approvals from the Regional Water Quality Control Board (RWQCB), Federal Aviation Administration (FAA), and the Federal Communication Commission (FCC). A determination of No Hazard to Air Navigation was issued to the Golden Gate Broadcasting Company by the FAA on January 17, 2002. FAA approval of the proposed tower height is required by the FCC for the evaluation of health, safety, environmental, and communications systems impact protections.

The Energy Commission has no approval authority related to the relocation of the radio towers. However, because the relocation of the tower is being undertaken to make way for the power plant project, the radio tower relocation is part of the "whole of an action, which has a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change" (CEQA Guidelines Section 15378). The attached draft report describes the project and assesses the potential environmental issues associated with the tower relocation.

Summary of Conclusions

Energy Commission staff have evaluated the environmental effects of relocating four radio transmission towers from the proposed RCEC site to a new location atop the Old West Winton landfill. Staff believe that relocation of the towers should not have a

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significant impact on biological resources, but recommends that preconstruction surveys be conducted for nesting burrowing owls in light of RWQCB's recommendations that disking of the site be discontinued. In addition, staff recommend that facility lighting be directed away from open spaces. The radio towers are not expected to pose a public health, safety or nuisance risk. Similarly, no adverse impacts to geological, paleontological, or water resources are expected. While the new site is not considered ideal based on the general intent of the Hayward Area Shoreline Planning Program, no specific land use conflicts were identified. No traffic or aviation safety impacts are expected. However, due to the project's potential to create glare and its visual contrast and dominance from near foreground viewpoints from within the Hayward Regional Shoreline, the relocated towers could cause significant and unmitigable visual impacts.

Further Information

If you want information on how to participate in the Energy Commission's review of the project, please contact Ms. Roberta Mendonca, the Energy Commission's Public Adviser, at (916) 654-4489 (toll free in California at (800) 822-6228), or by email at pao@energy.state.ca.us. Technical or project schedule questions should be directed to Kae C. Lewis, Siting Project Manager, in the Systems Assessment and Facility Siting Division, at (916) 654-4167, or by email at klewis@energy.state.ca.us. A copy of the report, the status of the project, copies of notices and other relevant documents are also available on the Energy Commission's Internet web page at **www.energy.ca.gov/sitingcases/russellcity**. News media inquiries should be directed to Assistant Executive Director, Claudia Chandler, at (916) 654-4989.

Sincerely,

PAUL RICHINS, JR.
Energy Facilities Licensing Manager

Enclosure

KFAX RADIO TOWER RELOCATION ENVIRONMENTAL ANALYSIS

INTRODUCTION

The Russell City Energy Center (RCEC) project description as submitted in the Application for Certification (AFC) did not include the relocation of four radio transmission towers for the station KFAX, which currently occupy the western portion of the project site. On May 24, 2001, the City of Hayward granted a Conditional Use Permit (CUP) for the relocation of the KFAX towers from the RCEC project site to a site owned by the City and approved a Mitigated Negative Declaration. The tower relocation also requires approvals from the Federal Aviation Administration (FAA) and the Federal Communication Commission (FCC). Applications were filed by the station owner, Golden Gate Broadcasting Company, to the FAA on July 6, 2001 and to the FCC on August 16, 2001. A determination of No Hazard to Air Navigation was issued by the FAA on January 17, 2002. FAA approval of the proposed tower height is required by the FCC for the evaluation of health, safety, environmental, and communications systems impact protections.

The Energy Commission has no approval authority related to the relocation of the radio towers. However, because the relocation of the towers is being undertaken to make way for the power plant project, the radio tower relocation is part of the "whole of an action, which has a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change" (CEQA Guidelines Section 15378). It is therefore assessed here for its environmental impacts.

The following sections describe the project and potential environmental issues associated with the tower relocation. The staff has reviewed the City of Hayward's Initial Study and Mitigated Negative Declaration, correspondence from the East Bay Regional Parks District, and project information supplied by the RCEC Applicant (Calpine/Bechtel) and Golden Gate Broadcasting Company to focus the analysis on potential issues of concern.

The City, in its review, identified multiple conditions (19) to address potential issues of concern. In addition, the radio tower project will be subject to the requirements of a number of agencies (Regional Water Quality Control Board, FAA, and FCC, at a minimum) and has been reviewed by a number of additional agencies.

PROJECT DESCRIPTION

The KFAX-AM radio station transmitter currently located at 3636 Enterprise Avenue will be taken down and removed to enable construction of the RCEC project on the site. The existing transmitter will be replaced by a new 50,000-watt transmitter, constructed on the eastern panhandle of the City of Hayward's Old West Winton landfill approximately 1.25 miles northwest of the RCEC project site **(Project Description Figure 1)**. Four 228-foot-high (above ground) self-supporting AM radio transmitter towers and associated transmitter facilities will occupy approximately 14 acres at the

new site (see **Project Description Figure 2).** While the existing towers are supported by "guy" wires, the proposed new towers will be self-supporting monopoles. The radio tower relocation site is located adjacent to the parking lot and trailhead for trails to the bay shore and Hayward Regional Park. East Bay Regional Parks District (EBRPD) Headquarters are a short distance away. The towers are approximately 1.3 miles from the nearest runway at the Hayward Municipal Airport.

BIOLOGICAL RESOURCES

Before construction of the proposed RCEC can begin, four radio transmission towers owned by radio station KFAX must be removed and replacement towers constructed. Four small support buildings, to be located at the base of each tower, have also been proposed. Acting as the lead agency for the project, the City of Hayward conducted an Initial Study to assess the environmental impacts associated with tower removal and relocation. Based on the results of their Initial Study, the City of Hayward found bird collisions with the radio transmission towers to be a potentially significant impact and a Mitigated Negative Declaration was prepared.

SETTING

The proposed location for the KFAX radio towers is located at the end of West Winton Avenue. The proposed site is approximately 1.2 miles from the present location off Enterprise Avenue. The parcel is owned by the City of Hayward and is the location of the old West Winton Landfill. To the south of the proposed site are sewage treatment settling ponds once used by the City of Hayward for wastewater treatment. These ponds are now used for loafing and foraging by a variety of waterfowl and shorebirds such as the Canada goose (*Branta canadensis*), northern shoveler (*Anas clypeata*), mallard (*Anas platyrhynchos*), ruddy duck (*Oxyura jamaicensis*), black-necked stilt (*Himantopus mexicanus*), and greater yellowlegs (*Tringa melanoleuca*). Bordering the northern and eastern edges of the site is a brackish slough, which drains into Hayward Landing. Beyond the slough, to the north, lie facilities occupied and maintained by the East Bay Regional Park District (EBRPD). These facilities include park offices, an EBRPD residence, visitor parking area, and trailhead. Further north, in close proximity to the proposed site, are the transmission facilities (including five radio transmission towers) of radio station KTCT. To the west lies the majority of the old West Winton Landfill. To the east are areas of commercial/industrial development.

Although the area is zoned industrial, open space areas dominate the landscape to the north, south, and west of the proposed site, and there are several wetland restoration projects in the area. The area is within the Pacific Flyway and is used by migratory birds. Sensitive vertebrate species utilizing habitats in the project area include the federally threatened western snowy plover (*Charadrius alexandrinus nivosus*), the state and federally endangered salt marsh harvest mouse (*Reithrodontomys raviventris*), California clapper rail (*Rallus obsoletus*) and California least tern (*Sterna antillarum browni*).

The proposed site will occupy 14 acres of the 40-acre former West Winton Avenue landfill. After closure, the landfill was covered with a clay cap to prevent water seepage into the landfill. To preserve the integrity of this cap, it was overlain with topsoil. The

site is flat on top, with an elevation of approximately 25 feet and sloping sides. Survey results submitted by Foster Wheeler (Foster Wheeler, 2001) and LSA Associates (LSA Associates, 2001) indicated no sensitive species were observed on the proposed project site. Energy Commission staff visited the site on November 7, 2001, and noted it had been recently disked. Vegetation was restricted to the sloping sides of the site and consisted mainly of coyote brush (*Baccharis pilularis*). No wildlife was observed. Fill material is added to the site periodically, and the site is disked and seeded on an annual basis for several reasons: (1) erosion control; (2) aesthetics; and (3) prevention of plants and animals from penetrating the cap. Prior to disking, surveys indicated on-site vegetation consisted of mainly non-native species such as Italian rye grass (*Lolium perenne*) and Mediterranean barley (*Hordeum marinum* ssp. *Gussoneanum*). Coyote brush was the only native species observed. Red-winged black birds (*Agelatus phoeniceus*), barn swallows (*Hirundo rusitca*), and Canada geese (*Branta canadensis*) were observed at the proposed site. Sensitive bird species observed near the site included: the California Department of Fish and Game (DFG) fully protected peregrine falcon (*Falco peregrinus*); federal and state species of concern Alameda song sparrow (*Melospiza melodia pusillula*); DFG fully protected California black rail (*Laterallus jamaicensis coturniculus*); state species of concern saltmarsh common yellowthroat (*Geothlypis trichas sinuosa*); and the federal and state species of concern western burrowing owl (*Athene cunicularia*).

POTENTIAL IMPACTS

The U.S. Fish and Wildlife Service, California Department of Fish and Game, the Energy Commission, and EBRPD are concerned that permitting new projects in the proposed project area will provide new perch sites for avian predators of the salt marsh harvest mouse, California clapper rail, western snowy plover, and the California least tern. Bird collisions are also a concern. The conclusion reached in the City of Hayward Mitigated Negative Declaration was that relocation of the KFAX transmission facilities to the West Winton location would not result in significant impacts to sensitive species because:

- The distance between the towers and good salt marsh (harvest mouse, clapper rail) or mud flat (least tern) habitat is too great for the towers to serve as effective "perching points."
- The diagonal latticework of the towers would discourage raptor perching, partially because there are horizontal perches nearby.
- Mitigation measures would be incorporated to reduce the risk of bird collisions with radio towers.

Perch Sites

The present location of the KFAX radio transmission towers off Enterprise Avenue is within approximately one-quarter mile of salt marsh harvest mouse habitat and within approximately one-mile of other sensitive species habitat including the western snowy plover, California least tern, and the clapper rail. Within approximately one-quarter mile are black-crowned night heron (*Nycticorax nycticorax*) and snowy egret (*Egretta thula*) rookeries (considered sensitive by state of California). The distance from the proposed West Winton Avenue location to these same sensitive species habitats is over one-mile;

however, the proposed towers would be within approximately one-quarter mile of California black rail habitat.

Avian predators such as raptors and corvids have excellent vision, and relatively long distances would not necessarily preclude their use of the current or proposed towers as hunting perches; however, these distances would likely increase energetic costs associated with traversing long distances between perch sites and foraging areas. Habitats near the existing towers support a greater diversity of sensitive species than habitats near the proposed tower location. Although avian predators could use towers at the proposed location as perch sites from which to locate and hunt sensitive species, it is staff's opinion that there are greater opportunities for avian predators to locate and take sensitive species at the current site. Staff concludes that construction of new towers at the proposed site would probably not result in a significant increase in predation of sensitive species by raptors using the proposed towers as perch sites.

For birds, perching on diagonal latticework towers possibly is more difficult and a less desirable alternative than perching on horizontal structures. However, on a November 7, 2001 site visit to the proposed West Winton Avenue location, staff observed an American crow (*Corvus brachyrhynchos*) perched in a diagonal latticework transmission tower (Itoga, pers. obs.) belonging to radio station KTCT (transmission facilities of station KTCT are adjacent to the proposed site). It seems likely that other birds (including raptors) could also use the KTCT towers as perch sites. Furthermore, the KFAX towers (in their present location) could serve as perch sites for birds and could continue to do so at the proposed relocation site. The use of diagonal lattice towers could deter some birds from using them for perching; however, it is staff's opinion that replacing diagonal latticework towers at the existing site, with new diagonal latticework towers at the proposed location, would not significantly increase the number of perch sites in the project area.

In Conditions of Approval, Use Permit Application 01-160-11 (City of Hayward, 2001), Condition #5 states: "horizontal elements which may extend out from the radio transmission towers, such as to support light fixtures or the fixtures themselves, shall be designed to deter raptors from perching on them." Staff is in agreement with the need for this condition, but would modify Condition #10 (City of Hayward, 2001), which states: "Fencing shall consist of decorative metal fencing (such as wrought iron or tubular metal) which shall be installed and maintained in a damage free condition around each radio tower." Such fencing could provide new perching opportunities for raptors and therefore should be designed to deter raptors from perching.

Bird Collisions

The City of Hayward has indicated that the proposed towers will extend to an elevation of approximately 260 feet (228 feet plus 30 feet base elevation). Further, as stated in Use Permit Application 01-160-11, Conditions of Approval (City of Hayward, 2001): "guy wires will not be used; security lighting at the transmission facilities will be directed downward; structures will be non-reflective; and no red, aircraft warning lights will be used." It is staff's opinion that these measures would have helped reduce the potential for bird collisions with the proposed towers. However, the FAA, in a recent communication to Golden Gate Broadcasting (FAA 2002), indicated that they would require red, aircraft warning lights and the towers be painted with alternating orange and

white bands. Further, it appears that the paint required by the FAA is high gloss (Knight 2002).

Some literature indicates (Cochran and Grabber, 1958; Herbert, 1970; Heye, 1963; Kemper, 1964; Olsen and Olsen, 1980) that bird collisions are usually associated with:

- towers taller than 1,000 feet (usually taller than 2,000 feet)
- periods of inclement weather (heavy rain/fog) or darkness
- guy wires supporting the towers, not the towers themselves
- towers equipped with red, steady or pulsating warning lights
- brightly lit or highly reflective structures

Staff believes the projected elevation for the towers seems somewhat low to be a significant collision hazard as most communication towers associated with bird collisions are considerably taller. In addition, guy wires, which support the existing towers, and are considered to be the greatest collision risk for birds, will not be used with the new towers. Furthermore, existing towers with supporting guy wires will be removed.

The proposed site would place towers closer to wetlands and the Hayward Shoreline and could place towers in the flight paths of birds traversing wetlands and shorelines in the project area. Painting the proposed towers with alternating orange and white bands might increase tower visibility during daylight hours (Maehr et. al. 1983). However, most collisions occur at night, or during adverse weather conditions, and use of high gloss paints and steady or pulsating, red warning lights on the proposed towers could attract night-migrating birds. Birds attracted to the lights, or light reflected from high gloss paints, could become disoriented and collide with the towers (Hebert and Reese 1995).

Staff concludes that guy wires supporting existing towers are the greatest collision hazard to birds in the area. Guy wires can be difficult for birds to detect, and replacement of guy wire supported towers with self-supporting towers should significantly decrease the potential for bird collisions in the area. However, it is possible that use of red, steady or pulsating warning lights, and high gloss paints, could increase the potential for night-migrating bird collisions with the proposed towers.

Burrowing Owl and Sensitive Plants

EBRPD has described the burrowing owl as a casual species (seen more than four times since 1983), but less often than rare (seen at least every two years), known to occur in the proposed project area (Taylor, 2001). Suitable burrowing owl habitat exists in the project area and on the proposed site. However, the proposed towers will occupy a relatively small portion of the 14-acre site. It is staff's opinion that use of the site for radio transmission towers, and associated facilities, would not significantly affect the site's potential to provide habitat for burrowing owls.

The San Francisco Bay Regional Water Quality Control Board (RWQCB) is concerned that disking of the site increases the amount of particulate matter in the site's stormwater runoff. To address this concern, the RWQCB is preparing a Notice of Violation prohibiting the City of Hayward from further disking of the site (Ganguli, 2001).

This notice would also require the City of Hayward to use an alternative to disking. Mowing of on-site vegetation would be the likely alternative. Surveys conducted by LSA Associates (2001) indicated two California ground squirrel (*Spermophilus beecheyi*) burrows were observed during June 2001 surveys, and numerous ground squirrels were observed by Energy Commission staff in areas adjacent to the proposed site (Itoga pers. obs). Burrowing owls often use ground squirrel burrows for roosting and nesting (California Department of Fish and Game, 1990), and a greater abundance of ground squirrel burrows on the proposed site could provide microhabitat for burrowing owls. Staff concludes that termination of on-site disking could increase the potential of the site to support burrowing owls.

EBRPD has expressed concern over possible impacts to sensitive plants that may occur in the project area. Sensitive plant species with potential to occur in the proposed project area include: Alkali milk-vetch (*Astragalus tener* var. *tener*); hispid bird's beak (*Cordylanthus mollis* ssp. *Hispidus*), Point Reyes bird's beak (*Cordylanthus maritimus* ssp. *palustris*), delta tule pea (*Lathyrus jepsonii* var. *jepsonii*); Mason's lilaeopsis (*Lilaeopsis masonii*), hairless popcorn flower (*Plagiobothrys glaber*) and California seablite (*Suaeda californica*). Species-specific sensitive plant surveys were conducted by Foster Wheeler on February 27, March 25, and April 24, 2001 and by LSA Associates on June 5, 2001. No sensitive plant species were reported. It is staff's opinion that suitable sensitive plant habitat (suitable soil type) does not exist on the proposed project site and that sensitive plant surveys were conducted over a sufficient period of time to allow the identification of sensitive plants with the potential to occur in the area.

CONCLUSION

It is staff's opinion that replacing existing, guy wire supported, latticework towers with new, self-supporting diagonal latticework towers at the proposed West Winton site is not likely to significantly impact sensitive biological resources in the proposed project area. Although use of the site for radio tower relocation probably will not have a significant impact on sensitive biological resources, staff recognizes that facility and aircraft obstruction lighting, as well as light reflected from the towers, may attract some night-migrating birds. Birds attracted by the aforementioned lighting could collide with the towers. To minimize potential for bird collisions, staff recommends directing facility lighting down and away from open-space areas. Staff also recommends the use of white or red strobe lights for aviation obstruction lighting.

It is possible that termination of on-site disking may increase the site's potential to provide burrowing owl microhabitat, but use of the site for radio tower relocation probably will not have a significant impact on the site's potential to provide burrowing owl habitat. However, if burrowing owls are present, activities associated with construction of the new towers (e.g. pile driving, grading) could adversely impact (disturbance or harassment within 50 meters of occupied burrows, destruction of burrows and burrow entrances, degradation of foraging habitat adjacent to burrows) nesting/fledging burrowing owls. Pre-construction surveys for nesting burrowing owls should be conducted, by a qualified biologist, no more than 30 days prior to on-site ground disturbance activities. If surveys indicate burrowing owls are active on-site, staff

recommends consulting the California Department of Fish and Game before beginning any ground disturbing activities.

PUBLIC HEALTH, SAFETY AND NUISANCE

Staff has reviewed the City of Hayward's Initial Study and Mitigated Negative Declaration (July 10, 2001), a general environmental analysis prepared by Calpine (undated), and a more detailed assessment of health and safety impacts prepared by Foster Wheeler Environmental Corporation (June 21, 2001). Staff has found these documents to be scientifically accurate in their description of the state of knowledge about the biological effects of electromagnetic fields (EMF) and more specifically, radio frequency (RF) radiation.

Staff also conducted an independent search and review of published abstracts and articles in the scientific literature, focusing on the most recent articles from 1994 to the present. Most scientific research suggests that RF towers pose little to no risk to humans unless one actually climbs a tower and is within several feet of the transmitter. As part of relocation process, the owner must obtain a permit from the Federal Communications Commission (FCC) and as such, must comply with the FCC's rules regarding human exposure to RF radiation. These rules are designed to ensure that FCC-regulated transmitters do not expose the public or workers to levels of RF radiation that are considered by expert organizations to be potentially harmful (FCC OET Bulletin 56).

Below is a discussion of the basis for staff's finding.

ELECTROMAGNETIC SPECTRUM

Electromagnetic radiation can be described as a series of waves of energy composed of oscillating electric and magnetic fields that travel through space at the speed of light. The electromagnetic spectrum is a continuum of different electromagnetic radiation energies that are listed from longest to shortest wavelength (lowest to highest energy and frequency). Power lines (standard electrical power distribution) operate at a frequency of 60 Hz and a wavelength greater than 10^6 meters. RF radiation is in the range of 300 Hz - 300 MHz and includes frequencies of CB, cordless, cellular and PCS phones. AM radio has a frequency of around 1 MHz, FM radio has a frequency of around 100 MHz, microwave ovens have a frequency of 2450 MHz, and X-rays have frequencies above one million MHz. Cellular (mobile) phones operate at a variety of frequencies between about 800-2200 MHz.

Power line and radio frequencies occur in the non-ionizing radiation part of the electromagnetic spectrum where the energy of the particles is much too low to break chemical bonds. UV and X-rays occur in the ionizing part, where broken bonds and DNA damage can occur as a result of exposure to these energy forms.

HEALTH EFFECTS OF RADIO-FREQUENCY RADIATION

Mobile phones and their base stations produce radio-frequency radiation. The consensus of the scientific community is that the power from mobile phone base station antennas is too low to produce health hazards as long as people are kept away from

direct access to the antennas (Moulder, 2001a). It is unlikely that RF radiation has a strong causal influence on cancer based on the lack of association shown between exposure to RF radiation and total cancer and the lack of consistent associations shown between exposure to RF radiation and any specific type of cancer (Moulder, 2001a).

Seven of 35 literature abstracts on radio frequency radiation chosen for further review from an extensive literature search are summarized in Table 1. Four of these studies presented reviews of the scientific literature and concluded that there was no conclusive evidence that radio frequency radiation can be linked with cancers or reproductive effects. One report identified an excess risk for breast cancer in female Norwegian radio and telegraph operators. Health effects have been observed in animals exposed to RF radiation when the exposure has caused an increase in the organism's temperature; however, RF radiation from this project are unlikely to cause temperature increases.

Table 1
Results of Review of RF Abstracts

#	Year	Type of Study		Type of EMF	Conclusions	Association (+/-)
1	1999	Review of Sci Literature	Repro	RF	Gross developmental anomalies were associated with significant increases above normal in embryonic or fetal temp; there is no convincing, independently verified evidence that exposures to RFR from current mobile telecommunications technology presents a serious health risk to human prenatal development	-
2	1996	Human Epi Study	Cancer	RF 405kHz-25MHz	Excess risk seen for breast cancer in Norwegian radio and telegraph operators	+
21	1998	Review of Sci Literature	Cancer	RF	RF fields, mobile telephone frequencies in particular, are not genotoxic, do not seem to be teratogenic or to induce cancer	-
23	1998	Review of Sci Literature	Cancer	RF 10 MHz-300GHz	No known health hazards were associated with exposure to RF sources emitting fields too low to cause a significant temperature rise in tissue	-
26	1999	Rat Study	CV	RF 94 GHz	Extreme peripheral heating occurred without similar levels of core heating	-
34	2000	Rat Study	CNS	RF 900 MHz	In-utero exposure did not induce any measurable cognitive deficits	-
36	1999	Review of Sci Literature	Cancer	RF	The epidemiologic evidence falls short of the strength and consistency of evidence that is required to come to a reasonable conclusion that RF emissions are a likely cause of one or more types of human cancer	-

HEALTH EFFECTS OF POWER LINES

Although the proposed relocation of the towers does not involve power lines (which emit at a very different frequency than radio towers), health information is provided on power lines since there is often confusion among the general public regarding these types of emissions. Power lines produce no significant non-ionizing radiation; they produce electric and magnetic fields. In contrast to non-ionizing radiation, these fields do not radiate energy into space, and they cease to exist when power is turned off. It is not clear how, or even if, power line fields produce biological effects; but if they do, it is not in the same way that higher power RF radiation produces biological effects. There

appears to be no similarity between the biological effects of power line "EMF" and the biological effects of RF radiation (Moulder, 2001b).

According to Moulder, some studies appear to show a weak association between exposure to power-frequency magnetic fields and the incidence of cancer. However, epidemiological studies done in recent years show little evidence that power lines are associated with an increase in cancer, laboratory studies have shown little evidence of a link between power-frequency fields and cancer, and a connection between power line fields and cancer remains biophysically implausible (Moulder, 2001b).

Reviews conducted by the U.S. National Academy of Science, the U.S. National Institutes of Health, and the U.K. National Radiation Protection Board have concluded that conclusive evidence does not exist linking power-frequency EMF or extremely low frequency EMF to cancer or other health effects (Moulder, 2001b).

Following six years of Congressionally mandated research, the NIEHS published a report in 1999, which stated that the scientific evidence suggesting that power-frequency EMF exposures pose any health risk is "weak" (NIEHS, 1999). The report applies to extremely low frequency electric and magnetic fields surrounding both the big power lines that distribute power, as well as the smaller but closer electric lines in homes and appliances. The strongest evidence for health effects comes from associations observed in human populations with two forms of cancer: childhood leukemia and chronic lymphocytic leukemia in occupationally exposed adults. Epidemiological studies demonstrate (for some methods of measuring exposure) a fairly consistent pattern of a small increased risk with increasing exposure that is somewhat weaker for chronic lymphocytic leukemia than for childhood leukemia. NIEHS also found inadequate evidence of any link to such non-cancer diseases as Alzheimer's, depression, and birth defects. The NIEHS report also recommends that the fields continue to be recognized as a "possible" cancer hazard, but emphasizes the weakness of the data and the low risk that may be involved.

Overall, most scientists consider the evidence that power line fields cause or contribute to cancer to be weak. Laboratory evidence does not suggest a link between power-frequency magnetic fields and cancer.

NUISANCE EFFECTS OF RADIO-FREQUENCY RADIATION

RF radiation may potentially interfere with telecommunications and other equipment in the near vicinity (typically within a few hundred yards) of the proposed relocation site. Potential effects would most likely be within the one volt per meter contour (**Public H alth, Safety and Nuisance Figure 1**). Potential interference may not be identifiable until the towers are in a test or operational mode. The owner of the towers is required by the FCC to mitigate all interference within the one volt per meter contour. In addition, the tower owner has indicated that they have a "good neighbor" policy at all their radio tower locations and will rectify any problems that arise.

The East Bay Regional Parks District and local businesses at the end of West Winton Avenue have expressed concern about the potential for interference with selected equipment. The City of Hayward has imposed Conditions of Approval on the tower

relocation which include the requirement for the owner to respond to and address all complaints regarding RF interference as required by FCC regulations and to maintain records of all such notices or correspondence. In order to preempt any potential issues or concerns, Calpine and Golden Gate Broadcasting Company have met with local businesses and the Parks District to identify what, if any, potential interferences could arise. No major compliance problems were identified.

CONCLUSION

Based on a review of the scientific data, staff concludes that radio frequency emissions from the KFAX towers pose little or no risk to humans. The towers will be fenced to preclude exposure and will be subject to FCC rules designed to avoid human exposure to RF radiation. The potential for nuisance impacts to equipment will be reduced by: ongoing meetings between Golden Gate Broadcasting and nearby entities; by requirements of the FCC; and by the "good neighbor" commitment of Golden Gate Broadcasting.

GEOLOGY AND PALEONTOLOGY

INTRODUCTION

The new KFAX Radio transmitter facilities will be located on the northern panhandle of the Old West Winton Landfill. The entire site is mantled by more than 20 feet of fill, including cover material and landfill debris. The foundations for the new radio transmitter facilities would be constructed by driving piles through the landfill and into the underlying bay deposits.

Younger bay mud deposits underlie the landfill. The younger bay mud typically consists of plastic, organic-rich clay and silty clay, with interbedded thin beds of sorted silt, sand, and fine gravel. The Applicant speculates that the young Bay mud may be between 20 and 60 feet thick beneath the landfill, and that it is underlain by more consolidated older Bay mud deposits. Young Bay mud deposits beneath the City of Hayward's Wastewater Treatment Plant, immediately east of the landfill, are generally less than 15 feet thick (Cooper Clark and Associates, 1959 and 1972).

GEOLOGIC HAZARDS

Faulting and Seismicity

No active or potentially active faults are known to cross the proposed radio transmitter facilities site. The closest known active fault is the Hayward fault, which is located five kilometers east of the project site. Therefore, the potential for fault rupture beneath the facilities is considered to be very low.

The ground shaking impacts at the proposed site are similar to the impacts at the RCEC site. The California Division of Mines and Geology (CDMG) Map Sheet 48 (Petersen et al., 1996) predicts a peak ground acceleration with a 10 percent probability of exceedance in 50 years of between 0.5 and 0.7g for the project area. However, since the site will overlie younger Bay mud (CBC Soil Profile Type S_f), the site will likely

experience amplification of seismic shaking and potential liquefaction during an earthquake.

Liquefaction, Hydrocompaction, and Expansive Soils

The combination of saturated soils of varying density and a potential for a moderately high peak horizontal ground acceleration points to a moderate potential for liquefaction at the site. Potentially liquefiable soils are expected to occur in the bay deposits beneath the landfill. Localized subsidence due to seismically induced densification of loose granular zones of fill is considered the most likely expression of liquefaction at the project site. However, liquefaction beneath the landfill may also lead to lateral spreading. This conclusion is supported by the findings of a geotechnical investigation at the City of Hayward's Wastewater Treatment Plant (Judd Hill and Associates, 1979). Liquefaction will be accounted for during the final design of the project's foundation by the Applicant's proposed use of pile foundations driven through any potentially liquefiable zones and into the older Bay mud.

Landslides

Landsliding potential at the radio transmitter site is considered to be low, since the project is located on a fill pad with relatively gentle slopes.

GEOLOGICAL AND PALEONTOLOGICAL RESOURCES

The Old West Winton landfill does not contain any geological or paleontological resources since, as a landfill, it received only waste materials.

CONCLUSION

The Applicant will likely be able to comply with applicable laws, ordinances, regulations and standards (LORS). The project should have no adverse impact with respect to geologic and paleontologic resources if it complies with these LORS.

Design and construction of the project to conform to applicable California Building Code (1998) requirements outlined and the standards adopted by the City of Hayward Public Works Department will reduce the impacts of strong seismic ground shaking, liquefaction, and lateral spreading to less than significant.

SOILS, HYDROLOGY AND WATER QUALITY

SETTING

The relocation of the KFAX Radio towers will occur on a 14-acre site consisting of the Old Winton Landfill, located in the bayshore floodplain in the southern part of the City of Hayward in Alameda County. The landfill, which operated from 1939 – 1974, raised the elevation of this parcel of land by 25 to 30 feet above neighboring properties of bayshore floodplain, and was closed after 1974. Closure activities included placement of a clay cap and protective soil layer over the surface of the landfill, to prevent precipitation from infiltrating into the landfill. Construction of the four monopole type towers will consist of driving piles through the soil and clay surface layer, through the landfill zone, and into the bay mud consisting of Reyes Clay. A concrete foundation near the ground surface will tie-into the deep driven piles and provide the base support

for the free-standing lattice towers, which develops a system that avoids the need to require guy wires for tower support. The four towers will be approximately 228 feet high. A ground wire system will also be installed as part of the electrical system protection. The type of grounding system and its design is unspecified. Associated transmitter facilities will be constructed on the site. A previously conducted Environmental Site Assessment (ESA) revealed two materially recognized conditions of concern:

- Potential for on-site soil and groundwater contamination due to landfill use at the site;
- Volatile Organic Compounds (VOC's) were detected above the reporting limit in leachate return samples;

STORM WATER

In planning for construction, a General NPDES Permit for Discharge of Storm Water Associated with Construction Activity would not normally be considered necessary if the extent of land disturbance is less than 5 acres. However, because the land disturbance is being conducted on a closed landfill, the potential for water quality impairment from storm water runoff is greater, and the RWQCB should be consulted as to whether an NPDES Permit for construction activity is necessary in this particular case. Excavation for the tower foundations will disturb the existing soil cover and clay cap on the surface of the landfill, exposing the landfill to surface water infiltration or creating potential for contaminated runoff from direct contact of storm water with landfill material or leachate. In addition, placement of the piles through the landfill zone and into the bay mud will penetrate any seal developed between the two, and potentially develop a conduit for transfer of leachate into the bay mud and groundwater, or else a means for groundwater to surcharge the landfill under flood or high tidal conditions. Best Management Practices (BMPs) specified under a Storm Water Pollution Prevention Plan (SWPPP) would avoid such exposure and potential effects to water quality. The ESA has identified the potential for soil and groundwater contamination from the landfill, and in particular, the leachate within the landfill has been tested to confirm VOCs higher than the reporting limit. The potential for contamination to soil, groundwater or surface water exists, and would be avoided by including proper BMPs during the course of construction.

In planning and performing modifications to the closed landfill, staff recommends that the Integrated Waste Management Board be consulted regarding planned disturbance to the soil and clay cap over the surface of the landfill, and the San Francisco Bay RWQCB be consulted regarding planned disturbance to the landfill/bay mud interface. Consultations should address potential impacts from all phases of planned construction disturbing the surface protection and/or landfill zone, and should include effects from the tower foundations, ground wire system, and the associated transmitter facilities. In addition, the SWPPP associated with storm water management should include an Erosion Control and Sedimentation Plan with specific BMPs listed and shown on a site plan. A Drainage Plan is required to be submitted to the City of Hayward.

For activities during construction and during operations of the radio transmitter, the San Francisco Bay RWQCB should be consulted as to whether storm water should be

managed under an NPDES Permit. Although the RWQCB terminated coverage for the site under the General Permit for Industrial Activity approximately five years ago, new disturbance to the site for construction of the radio towers may initiate interest for ongoing management and monitoring oversight of storm water by the RWQCB considering the potential for water quality degradation from the landfill.

CONCLUSION

The proposed relocation of the KFAX radio towers should have no significant adverse impact to soils and water resources subject to implementation of BMP's and conditions specified by the San Francisco Bay RWQCB, Integrated Waste Management Board, and City of Hayward.

LAND USE

In evaluating whether a project has the potential to result in significant impacts related to land use and planning, Energy Commission staff uses the criteria presented in Appendix G of the CEQA Guidelines, which are the same criteria utilized by the City of Hayward in evaluating the potential impacts of the relocation of the KFAX radio towers. Each of these criteria is discussed below.

The first significance criteria for land use considers whether a project would "physically divide an established community." Typically, a project considered capable of dividing a community would consist of a substantial linear physical barrier, such as a freeway or a large flood control channel. The radio towers do not represent such a potential barrier. Also, location is an important consideration in the potential to divide an established community. Projects located at the periphery of a community, such as the proposed radio tower site, have little potential to physically divide the community. As a result, staff agrees with the City's determination that the relocation of the radio towers would not physically divide the community.

The second significance criteria for land use considers whether a project would conflict with applicable land use plans, policies, or regulations that have been adopted for the purpose of avoiding or mitigating an environmental effect. The City of Hayward is the agency with land use jurisdiction over the radio tower relocation. Therefore, it is the City's General Plan and zoning regulations that must be evaluated. The proposed relocation site is located in an area designated for Industrial and Open Space uses by the Hayward General Plan. The City determined that the radio towers are an appropriate use for an Industrial area. The City also determined that the radio towers would be appropriate in an area designated Open Space because such uses are not specifically precluded in such an area by the General Plan and due to the precedent of allowing similar uses in Open Space areas. The proposed relocation site is located across two zoning districts: the Industrial District and the Flood Plain District. The City determined that their zoning regulations would allow radio broadcast facilities in these zones with the approval of a CUP. The Hayward City Council approved a CUP in July 2001 allowing the KFAX radio towers and associated broadcast facilities to be located on the proposed site. The CUP imposes 19 conditions of approval on the project. Staff finds the City's determination reasonable and finds no reason to dispute the City's

conclusions regarding the project's consistency with the its land use policies and regulations.

The third significance criteria for land use considers whether a project would conflict with any applicable habitat conservation plan or natural community conservation plan. There are no such plans in effect at the proposed site for the relocation of the KFAX radio towers. However, the planning area for the Hayward Area Shoreline Planning Program prepared by the Hayward Area Shoreline Planning Agency (HASPA) includes the radio tower relocation site. HASPA's purpose is long-range planning of the shoreline area and the enhancement and environmental restoration of wetlands in public ownership near the shoreline. HASPA is an advisory body in land use matters and does not have land use authority over the project or the project site. The radio tower relocation site is located in an area that is targeted for possible upland habitat restoration in the Hayward Area Shoreline Planning Program. In reviewing the Hayward Area Shoreline Planning Program, staff did not identify any specific policies or statements that represented a direct conflict between the radio tower relocation project and the Planning Program. However, staff acknowledges that the installation of the radio towers would not be ideal considering the general intent of the Hayward Area Shoreline Planning Program to enhance the habitat and recreational values of the area. Please see the discussions of **Biological Resources** and **Visual Resources**.

In preparing the Mitigated Negative Declaration for CUP for the KFAX radio tower relocation, the City of Hayward determined that the San Francisco Bay Conservation and Development Commission (BCDC) did not have jurisdiction over the project due the fact that the project site was located outside the BCDC's jurisdictional shoreline band that extends 100 feet inland from the line of highest tidal action along the Bay, and that the site is not influenced by tidal action due to its elevation.

CONCLUSION

The construction of new radio transmission towers at the approved City-owned site would not create a physical barrier capable of dividing the community and would not violate applicable land use plans, policies, or regulations. The installation of the radio towers at the approved location would not be ideal considering the general intent of the Hayward Area Shoreline Planning Program; however, staff did not identify any specific conflicts between the radio tower relocation project and the Planning Program.

TRAFFIC AND TRANSPORTATION

Construction of the new KFAX radio towers will take approximately 12 to 16 weeks to complete. The peak traffic generation from radio transmitter construction will occur between weeks 5 and 14, with approximately 18 vehicle trips per day and 3 vehicle trips during both morning and evening peak hour conditions. After completion of the new radio tower, there will not be regular daily traffic, with only occasional site visits by maintenance personnel (on average, a few trips per week during non-peak hour conditions). Therefore, project generated traffic will not cause any significant changes in either local or regional traffic conditions and would result in a less than significant impact.

The movement of equipment necessary to erect the new KFAX radio tower may cause short-term inconveniences to users of the Hayward Shoreline Regional Park and its trailhead parking lot. However, the Applicant will implement standard construction practices to minimize such effects, thereby resulting in a less than significant impact.

The construction of the new radio towers will require a Federal Aviation Administration (FAA) permit since the project site is located 4,900 feet from the nearest runway to the Hayward Executive Airport and could affect air traffic approaching Oakland International Airport. The FAA will conduct an airspace analysis and impose conditions to ensure that the new towers will not result in significant impacts to aviation safety.

CONCLUSION

The new KFAX radio towers are not expected to create significant traffic or aviation safety impacts.

VISUAL RESOURCES

INTRODUCTION

Visual resources are the natural and cultural features of the environment that can be viewed. This analysis focuses on whether the relocation of the four KFAX radio towers (project) currently occupying the proposed Russell City Energy Center (RCEC) site would cause visual impacts. The determination of the potential for visual impacts resulting from the proposed project is required by the California Environmental Quality Act (CEQA).

PROJECT DESCRIPTION

The following section describes the aspects of the proposed project that may have the potential to cause adverse impacts to visual resources.

Radio Transmitters

The four radio towers would be self-supporting, 228-foot-tall lattice steel structures. The towers would be 6.5-feet square at the base and taper up to a point at the top.

Ancillary Equipment

A transmitter equipment enclosure and small electronics enclosure would be located at the base of each radio tower.

Lighting

Aircraft warning lights would be required to alert aircraft of the location of the radio towers. Exterior lighting for operational safety and security would be required at the transmitter buildings.

SETTING

Regional Setting

The proposed radio towers would be located in the City of Hayward along the east shore of San Francisco Bay within an area referred to as the "baylands." The regional setting of the project includes the East Bay Hills to the north and east and San Francisco Bay to the west. The surrounding baylands constitute a vast open space area that includes saltwater, brackish, and fresh water marshlands and mudflats supporting stands of tall cord grass. Much of the area in the baylands is managed for wildlife protection and public access (Hayward Regional Shoreline) by the East Bay Regional Park District (EBRPD) and the Hayward Area Recreation and Park District (HARD). Visitor facilities include the Hayward Shoreline Interpretive Center (managed by HARD), located on Breakwater Avenue immediately north of State Route 92, and a system of trails through the area, including a portion of the San Francisco Bay Trail. The Hayward Shoreline Interpretive Center and the trail system provide highly scenic vista views of San Francisco Bay, the Coast Range, the baylands, and the East Bay Hills.

Project Area Setting

The radio towers now located on the proposed RCEC site would be relocated to a 14-acre piece of land located over 1 mile to the northwest at the western end of West Winton Avenue. The proposed site is located immediately south of the parking area and entrance to the Hayward Regional Shoreline trail system. **Visual Resources Figure 1** shows the location of the project relative to the entrance to the Hayward Regional Shoreline. The project site is a small portion of the former West Winton Avenue Landfill, which was operated until 1974. The landfill is now capped and revegetated, and appears as a large 25- to 30-foot tall mound with a flat top (Calpine/Bechtel, 2001). There are small trees growing along portions of the base of the mound and on its sides. The earth on top of the landfill is disked yearly to prevent plants from compromising the integrity of the clay cap, and then seeded yearly with grasses to prevent erosion. The site is in close proximity to several segments of the shoreline trail (see **Visual Resources Figure 1**). Although the landfill is not part of the trail system, it is currently accessible to the public and provides a viewing point for the surrounding area (City of Hayward, 2001a). Except for the fenced areas around the base of the proposed towers, the area would continue to be accessible to the public. From atop the elevated landfill, San Francisco Bay, oxidation lagoons for the Hayward Water Pollution Control Facility, and the Hayward Industrial Corridor are visible. Visible to the north approximately 0.3 mile north of the site are the five, KTCT radio towers that are located on the closed All Cities Landfill.

VIEW AREAS AND KEY OBSERVATION POINTS

Calpine/Bechtel selected three key observation points (KOPs) to characterize the existing visual setting within which the proposed project would be evaluated. **Visual Resources Figure 1** shows the location and view direction of the three KOPs. The following discussion provides an assessment of the overall visual sensitivity at each KOP. Overall visual sensitivity takes into account existing landscape visual quality,

viewer concern, and overall viewer exposure, which considers visibility, distance zone, number of viewers, and duration of view.

KOP 1: West Winton Avenue

KOP 1 was established at a viewpoint along West Winton Avenue approximately 1,000 feet northeast of the proposed radio tower site. This view was selected to represent views of the site available to the public as they drive along West Winton Avenue toward the entrance to the Hayward Regional Shoreline. On an average day, 200 to 250 people visit the shoreline area for hiking, biking, jogging, dog walking, bird watching, and fishing (Calpine/Bechtel, 2001). **Visual Resources Figure 2** depicts the existing view of the project site from KOP 1. Visible in the view toward the site from KOP 1 are an open, grassy field, trees along West Winton Avenue, utility poles, cell tower, and electric transmission towers (not visible in the photograph). The shed-like structures in the center of the photograph are located in an EBRPD service yard. To the right of the large EBRPD shed is the trailhead to the San Francisco Bay Trail. The trailhead is located about 350 feet north of the nearest proposed radio tower. **Visual Resources Figure 3** shows other views toward the site in the area of KOP 1, including views from the park entrance and parking/staging area.

Visual Quality, Viewer Concern, and Viewer Exposure

Due to the presence of the utility poles and sheds, visual quality of views toward the site from KOP 1 is rated low to moderate. However, from the parking area the utility poles and sheds are screened by trees and shrubs, so visual quality of views from the parking area toward the site is rated moderate. Viewer concern is rated high because recreational users entering the Hayward Regional Shoreline primarily use the area. Viewer exposure would be moderate to high in spite of the low to moderate duration of view since the site is located in the near foreground distance zone, visibility of the towers would be high, and the number of potential viewers would be high.

Overall Visual Sensitivity

Although visual quality ranges from low to moderate to moderate, the overall visual sensitivity of the setting viewed from the area of KOP 1 is moderate to high primarily as a result of the high viewer concern and moderate to high viewer exposure.

KOP 2: Shoreline Trail at Cogswell Marsh Footbridge

KOP 2 was established at a viewpoint located on the Cogswell Marsh footbridge, located approximately 0.5 mile south of the relocated radio tower site. The existing KFAX radio towers are visible from this viewpoint in their present location about 1 mile to the east. KOP 2 was selected to represent views toward the relocated tower site available to the public using the trail system along the western edge of the Hayward Regional Shoreline. The trails in this portion of the shoreline are used by about 200 people daily (Calpine/Bechtel, 2001). **Visual Resources Figure 4** depicts the existing view toward the proposed site from KOP 2. Visible in the near foreground are the footbridge and Cogswell Marsh. In the middleground are mudflats, the capped landfill, and warehouses in the industrial area along Cabot Boulevard. Faintly detectable in the left middleground are the existing KTCT radio towers. The East Bay Hills and Mt. Diablo are visible in the background.

Visual Quality, Viewer Conc rn, and Viewer Exposure

Although visual quality is reduced somewhat by the industrial structures in the middleground, the area provides views of the marsh, East Bay Hills, and Mt. Diablo. Visual quality is rated moderate to high. Because the area is used for recreation, viewer concern is high. The City of Hayward Use Permit Conditions of Approval require the relocated radio towers to be finished in a non-reflective, anodized metal color, unless otherwise directed by the FAA (Hayward 2001b). According to the Determination of No Hazard to Air Navigation recently issued by the FAA, the relocated towers, similar to the existing KFAX towers, would need to be painted in alternating orange and white bands. Although the towers would have a slim profile, the white color bands as seen against the backdrop of the East Bay Hills and sky would increase their visibility. Therefore, the visibility of the towers would be moderate at middleground distances such as at the Cogswell Marsh footbridge (KOP 2). Because the visibility of the towers would be moderate, the number of viewers would be high, and the duration of view would be moderate, overall viewer exposure would be moderate.

Overall Visual Sensitivity

The overall visual sensitivity of the setting viewed from the area of KOP 2 is moderate to high as a result of the moderate to high visual quality, high viewer concern, and moderate viewer exposure.

KOP 3: Shoreline Trail at Sulphur Creek

KOP 3 was established on the hiking and biking trail along the west side of the Hayward Regional Shoreline just north of the trail's crossing of Sulphur Creek, a viewpoint located about 1 mile to the northwest of the proposed radio tower site. The approximately 200 to 250 people who use this portion of the shoreline area for hiking, biking, jogging, bird watching, and fishing see this view of the site. **Visual Resources Figure 5** depicts the existing view toward the project site from KOP 3. Natural elements visible in the view include water in the foreground and the East Bay Hills in the background. Visible in the middleground are debris piles at the Landfill Management concrete recycling facility located on West Winton Avenue, the closed All Cities Landfill in the process of being capped, and the five KTCT radio towers.

Visual Quality, Viewer Concern, and Viewer Exposure

Although visual quality is reduced somewhat by the disturbed character of the middleground, visual quality is rated moderate to high. Because the KOP 3 area is used for recreation, viewer concern is high. Although the number of viewers would be high, overall viewer exposure would be moderate primarily because the moderate view duration and the low to moderate visibility of the towers given their slim profile and middleground distance from KOP 3 (about 0.85 mile).

Overall Visual Sensitivity

The overall visual sensitivity of the setting viewed from the area of KOP 3 is moderate to high as a result of the moderate to high visual quality, high viewer concern, and moderate viewer exposure.

IMPACTS ANALYSIS

Scenic Vistas

The Hayward Shoreline Interpretive Center and the Hayward Regional Shoreline trails provide highly scenic vista views of San Francisco Bay, the Coast Range, the baylands, the East Bay Hills, and Mt. Diablo. Views of the baylands and the East Bay Hills are available to eastbound motorists on SR 92 and the Hayward-San Mateo Bridge, which is formally recognized as a "gateway" in the General Plan. The four existing 228-foot tall KFAX radio towers are visible from SR 92, the Interpretive Center, and the shoreline in their current location. The Mitigated Negative Declaration prepared by the City of Hayward concluded that "...replacing [the existing KFAX radio towers] with new towers at another location that is similarly visible from the shoreline will not have a significant negative visual impact as viewed from strategic viewpoints." The relocated towers would be sited farther from the Interpretive Center and SR 92 than their present location, a beneficial impact. However, in the proposed location the towers would be adjacent to the entrance to the Hayward Regional Shoreline, and, from near foreground views from the parking area and trail, would cause a high level of contrast and dominance, resulting in a potentially significant impact on a scenic vista. This potential impact is discussed in more detail below under Visual Character or Quality.

Scenic Resources

There are no state-designated scenic highways within the project viewshed. Furthermore, the project would be located on a capped, former landfill that is disked and seeded yearly and contains no scenic resources such as trees, rock outcroppings, and historic buildings. Thus, the project would not have a significant adverse effect under this criterion.

Visual Character or Quality

KOP 1: West Winton Avenue

Visual Resources Figure 6 is a simulation of the radio towers, as they would be seen from KOP 1, at a distance of about 1,000 feet. The proposed radio towers would be very noticeable at this foreground viewing distance. While the vertical form of the towers would cause high contrast with the horizontal form of the landforms and the irregular form of the vegetation, the towers would appear similar to the form and line of the utility poles and cell tower in the view from KOP 1. Because there are existing vertical elements in the view from KOP 1, the additional visual contrast due to the project would be moderate. The towers are depicted in a gray color in the simulation. However, according to the Determination of No Hazard to Air Navigation issued by the FAA, the relocated towers, similar to the existing KFAX towers, would need to be painted in alternating orange and white bands. The alternating bands of orange and white would increase the visibility of the towers against the backdrop of the sky, causing high color contrast. As viewed from the viewpoint depicted in **Visual Resources Figure 6**, the towers would appear much taller than the shed structures and vegetation in the middleground but similar in apparent height to the utility poles, so scale contrast would be moderate. However, as viewed from the park entrance and parking area, the towers would appear much taller than the existing structures and vegetation, causing high scale contrast. As viewed from the park entrance and parking area, the radio

towers would occupy a large part of the field of view, which is somewhat confined by the shrubs and few large trees located in the area. Therefore, at near foreground distances scale dominance would be co-dominant. The towers would be prominent because they would be silhouetted against a backdrop of sky. As viewers enter the parking area and trailhead, due to their height and elevated position atop the landfill, the towers would loom over viewers and would be highly prominent. Therefore, at near foreground distances spatial dominance would be dominant. The towers would block a small part of the sky, so the severity of view blockage would be low.

For near foreground views from the area of KOP 1, the project would cause high overall visual change due to the high levels of color and scale contrast and dominance. Considering the moderate to high overall visual sensitivity of the setting viewed from the area of KOP 1, the resulting visual impact would be significant.

KOP 2: Cogswell Marsh Footbridge

Visual Resources Figure 7 is a simulation of the radio towers, as they would be seen from KOP 2. While the vertical form of the towers would cause high contrast with the horizontal form of the landforms, their vertical form and straight line would appear similar to the form and line of the KTCT radio towers and electrical transmission towers. Because there are existing vertical elements visible in the view from KOP 2, the additional form and line contrast due to the project would be moderate. The white color bands on the towers would be noticeable against the backdrop of the East Bay Hills and sky, so color contrast would be high. The towers would appear much taller than the warehouses in the middleground and the East Bay Hills in the background, but similar in height to the KTCT towers, so scale contrast would be moderate. Although the towers would be tall, they would occupy a very small part of the overall landscape setting (which is panoramic), so scale dominance would be negligible. Due to substantial skylining, spatial dominance would be co-dominant. The towers would block a very minor portion of the sky, so the severity of view blockage would be low.

The overall visual change as viewed from the area of KOP 2 would be moderate. Combined with the moderate to high overall visual sensitivity of the setting viewed from the KOP 2 area, the resulting visual impact would be adverse but less than significant.

KOP 3: Shoreline Trail at Sulphur Creek

Visual Resources Figure 8 is a simulation of the radio towers, as they would be seen from KOP 3. While the vertical form of the towers would cause high contrast with the horizontal form of the landforms, their vertical form and straight line would appear similar to the form and line of the existing, five KTCT radio towers. Because there are existing vertical elements in the view from KOP 3, the additional visual contrast due to the project would be low. The proposed towers would appear taller than the East Bay Hills but shorter than the existing KTCT towers, so scale contrast would be moderate. The white color bands on the towers would contrast moderately with the sky at this distance. The towers would occupy a very small part of the overall landscape setting (which is panoramic), so scale dominance would be negligible. Due to substantial skylining, spatial dominance would be co-dominant. The towers would block a very minor portion of the sky, so the severity of view blockage would be low.

The proposed RCEC would also be visible from KOP 3. At this distance, the arched form and curved lines of the RCEC relate fairly well with the form and line of the East Bay Hills. The RCEC would be a small object and would occupy a very small part of the setting, so scale dominance would be negligible. Due to skylining, spatial dominance would be co-dominant. The RCEC would block a very minor portion of the sky, so the severity of view blockage would be low.

The relocated radio towers and RCEC would cause moderate overall visual change as viewed from the area of KOP 3. Combined with the moderate to high overall visual sensitivity of the setting viewed from KOP 3, the resulting visual impact would be adverse but less than significant.

Light or Glare

According to the City of Hayward Use Permit Conditions of Approval (City of Hayward, 2001b), aircraft warning lights on the radio towers would be white strobe lights, unless otherwise directed by the FAA, and would be as few in number as allowed by FAA rules. According to the Determination of No Hazard to Air Navigation recently issued by the FAA, warning lights on the relocated towers would need to be red. The red warning lights on the existing KFAX radio towers are visible at night from State Route (SR) 92, so relocating the towers to the proposed location would not create a new source of substantial light that could adversely affect nighttime views from SR 92. Since the Hayward Regional Shoreline Park is closed after sunset, locating towers equipped with aircraft warning lights near the park entrance would not cause a significant visual impact.

Exterior lighting on the ancillary structures if needed for operational safety and security would be shielded from public view, and non-glare fixtures and the use of switches, sensors, and timers would be used to minimize the time that lights not needed for safety and security are on. Prior to issuance of a building permit, a lighting plan would be reviewed and approved by the City of Hayward. In addition to the measures specified, Energy Commission staff would recommend that exterior light fixtures are hooded and lighting is directed downward or toward the area to be illuminated to minimize backscatter to the night sky and uplighting of the towers. With proper implementation of the lighting controls specified by the City, and the additional measures recommended by Energy Commission staff, lighting for operational safety and security would not create a new source of substantial light that could adversely affect nighttime views.

The City of Hayward use permit conditions require the relocated radio towers to be finished in a non-reflective, anodized metal color. However, according to the FAA Determination of No Hazard to Air Navigation, the relocated towers would need to be painted in alternating orange and white bands. FAA Advisory Circular (AC) 70/7460-1K, Obstruction Marking and Lighting, specifies the paint standards for the orange and white paint. Based on a telephone conversation with an individual in the industrial paint industry, Energy Commission staff understands that the paints identified in the FAA circular are high gloss paints. The high gloss, white bands of paint on the four radio towers so close to park users would cause substantial glare impacts, increasing the prominence of the towers. Thus, the radio towers would create a new source of substantial glare that would adversely affect daytime views.

The transmitter equipment enclosures at the base of the towers would be constructed of concrete masonry units using a decorative finish such as slumpstone, would use non-glare roof materials, and would be finished with earth tone paint. The small electronics cabinets would be constructed of metal and also would be finished in earth tone paint. Fencing surrounding the towers would be decorative metal fencing (such as wrought iron or tubular metal). The final design and color of the ancillary structures and design and height of the fencing would be reviewed and approved by the City prior to issuance of a building permit. Energy Commission staff recommends that fencing material and the paint used on the transmitter equipment enclosures should be non-reflective to reduce daytime glare impacts. With proper implementation of the measures specified by the City, and the additional measures recommended by Energy Commission staff, the ancillary equipment and fencing would not create a new source of substantial glare that would adversely affect daytime views.

CUMULATIVE IMPACTS

No reasonably foreseeable planned projects that would contribute to cumulative visual impacts were identified.

CONCLUSIONS

Due to the project's high level of visual contrast and both scale and spatial dominance from near foreground viewpoints from within the Hayward Regional Shoreline (park entrance, parking/staging area, and trailheads), the relocated radio towers would cause significant adverse visual impacts. Additional trees planted along the base of the landfill would reduce the scale dominance of the towers from the area of KOP 1; however, visual contrast and project dominance would not be substantially reduced. Similar to landscaping on the RCEC site, staff assumes that any trees proposed in this area would need to be approved by the U.S. Fish and Wildlife Service as unattractive to perching by raptors. The approved tree species would not screen the towers sufficiently to reduce within a reasonable timeframe (5 years), the visual impacts to a less than significant level. Staff understands that the landfill must be protected from root intrusion by any trees proposed along the berm of the landfill (Ameri 2002). If it is feasible to plant trees along the base of the landfill without compromising the integrity of the landfill, staff recommends condition of certification VIS-9 requiring Calpine/Bechtel (or current project owner) to install trees to screen views of the towers from the area of KOP 1 to the greatest extent possible. (Other conditions of certification (VIS-1 to VIS-8) are listed in the Staff Assessment issued on October 30, 2001.)

VIS-9 Prior to the first turbine roll, the project owner shall prepare and implement a landscape plan to partially screen views of the KFAX radio towers from the entrance (West Winton Avenue) to the Hayward Regional Shoreline Park and parking area to the greatest extent possible. Fast growing, evergreen species shall be used, and of sufficient height and density, to achieve maximum effective screening of the radio towers as soon as possible. Suitable irrigation shall be installed to ensure survival of the plantings.

Protocol: The project owner shall submit the landscape plan to the City of Hayward and the U.S. Fish and Wildlife Service for review and comment, and to

the Compliance Project Manager (CPM) for review and approval. The plan shall include:

a) A detailed landscape and irrigation plan, at a reasonable scale, which includes a list of proposed tree species, installation sizes, and growth rates, and a discussion of the suitability of the plants for the site conditions. A list of potential tree species that would be viable in this location shall be prepared by a qualified professional arborist familiar with local growing conditions (in consultation with the U.S. Fish and Wildlife Service), with the objective of providing the widest possible range of species from which to choose.

b) 11" x 17" color simulations of the proposed landscaping at 5 years as viewed from the entrance to the Hayward Regional Shoreline and the parking area;

c) Maintenance procedures, including any needed irrigation and a plan for routine annual or semi-annual debris removal for the life of the project; and

d) A procedure for monitoring for and replacement of unsuccessful plantings for the life of the project.

The project owner shall not implement the plan until the project owner receives approval of the plan from the CPM.

Verification: Prior to the first turbine roll and at least sixty (60) days prior to installing the landscaping, the project owner shall submit the plan to the CPM for review and approval.

If the CPM notifies the project owner that revisions of the submittal are needed before the CPM will approve the submittal, within thirty (30) days of receiving that notification, the project owner shall prepare and submit to the CPM a revised submittal.

The project owner shall notify the CPM within seven (7) days after completing installation of the landscaping that the plantings and irrigation system are ready for inspection.

The project owner shall report landscape maintenance activities, including replacement of dead vegetation, in the Annual Compliance Report.

SUMMARY

Energy Commission staff have evaluated the environmental effects of relocating four radio transmission towers from the proposed RCEC site to a new location atop the Old West Winton landfill. The towers have been granted a Conditional Use Permit by the City of Hayward. Staff believe that relocation of the towers should not have a significant impact on biological resources, but recommend that preconstruction surveys be conducted for nesting burrowing owls in light of RWQCB's recommendations that disking of the site be discontinued. Staff also recommend that facility lighting be directed down and away from open-space areas. The radio towers are not expected to

pose a public health, safety or nuisance risk. Similarly, no adverse impacts to geological, paleontological, or water resources are expected.

While the new site is not considered ideal based on the general intent of the Hayward Area Shoreline Planning Program, no specific land use conflicts were identified. No traffic or aviation safety impacts are expected. However, due to the project's potential to create glare and its visual contrast and dominance from near foreground viewpoints from within the Hayward Regional Shoreline, the relocated towers could cause significant and unmitigable visual impacts.

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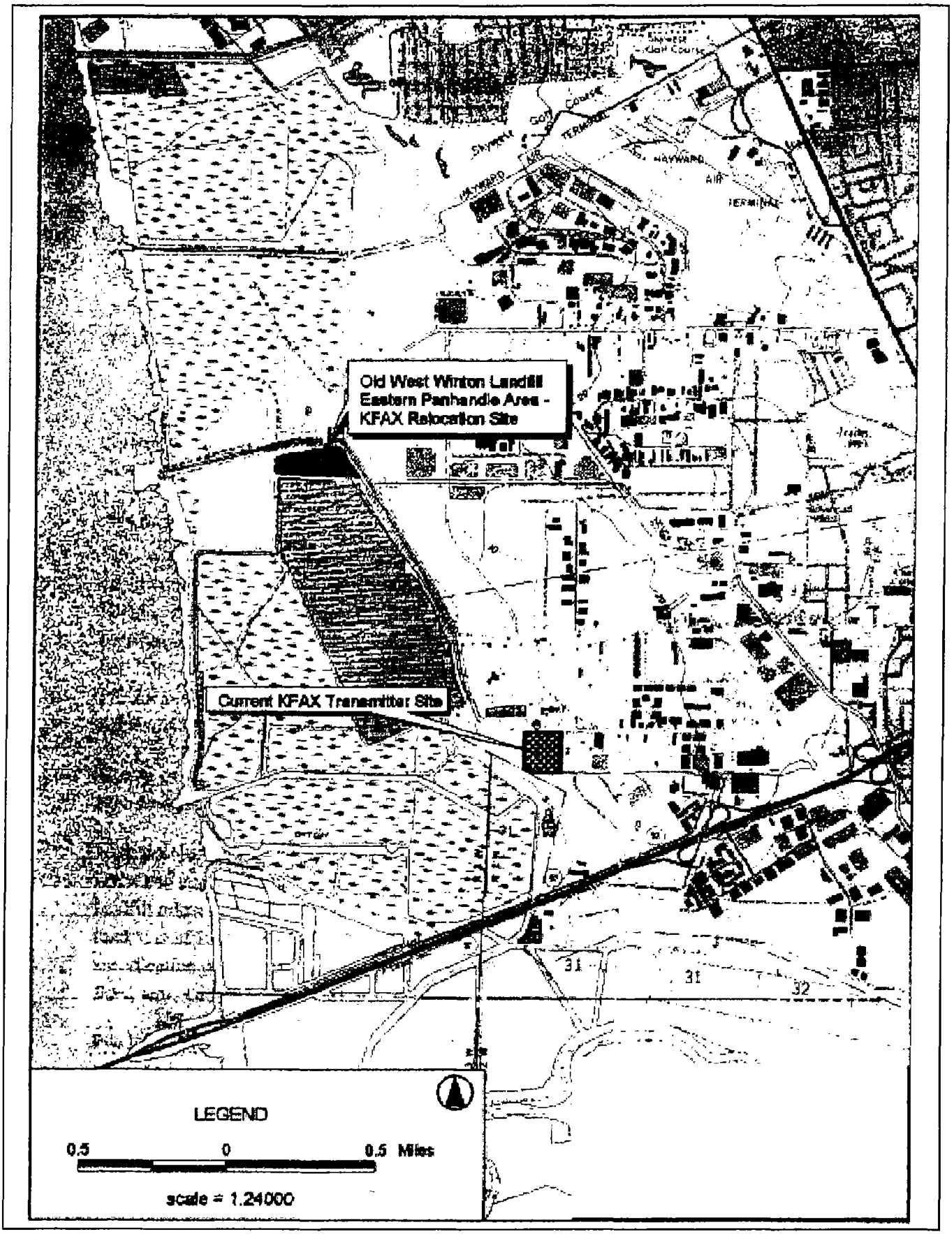
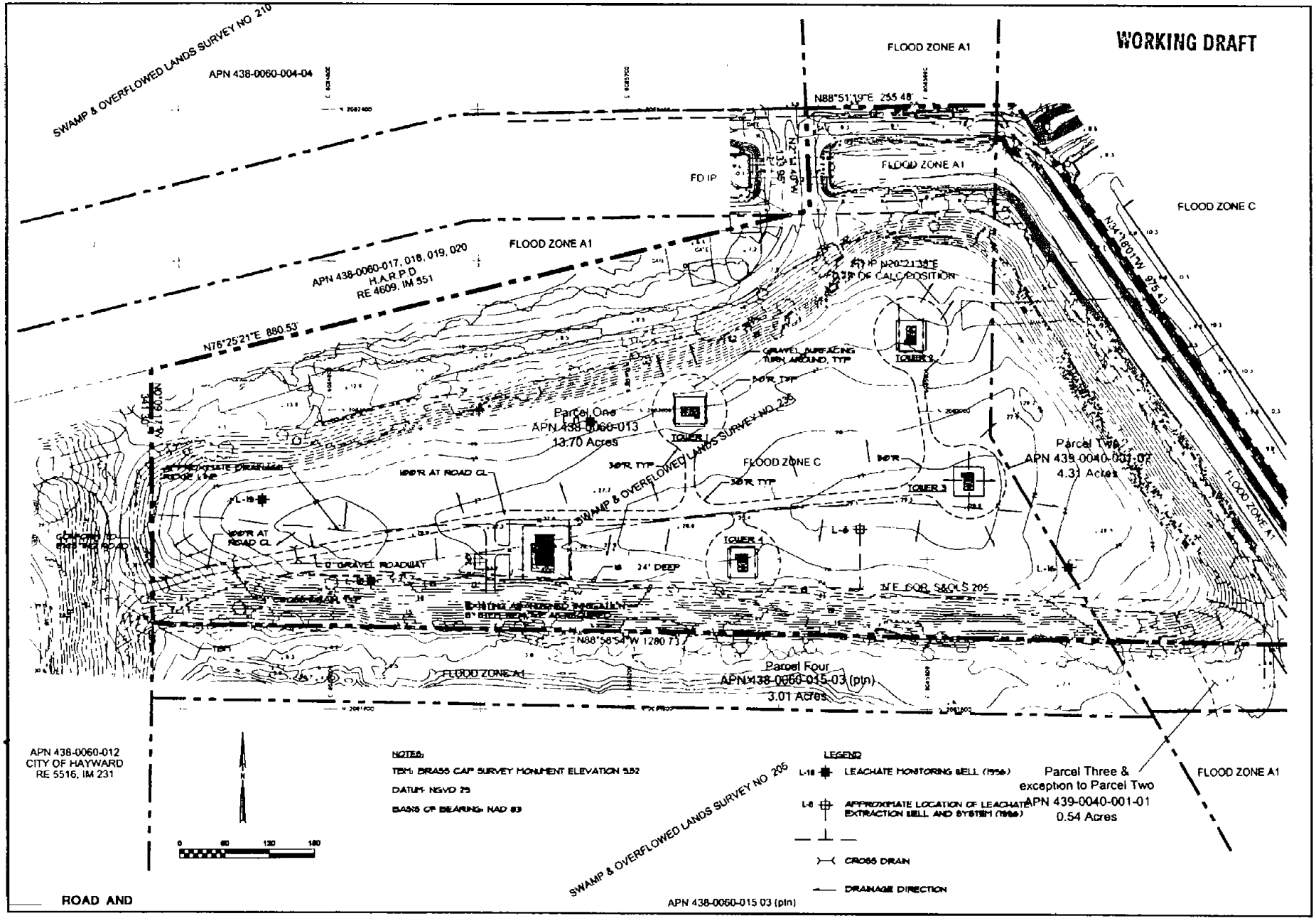
PROJECT DESCRIPTION - Figure 1
Russell City Power Project - Project Site Location Map



CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, JANUARY 2002
SOURCE: Calpine/Bechtel

PROJECT DESCRIPTION - FIGURE 2

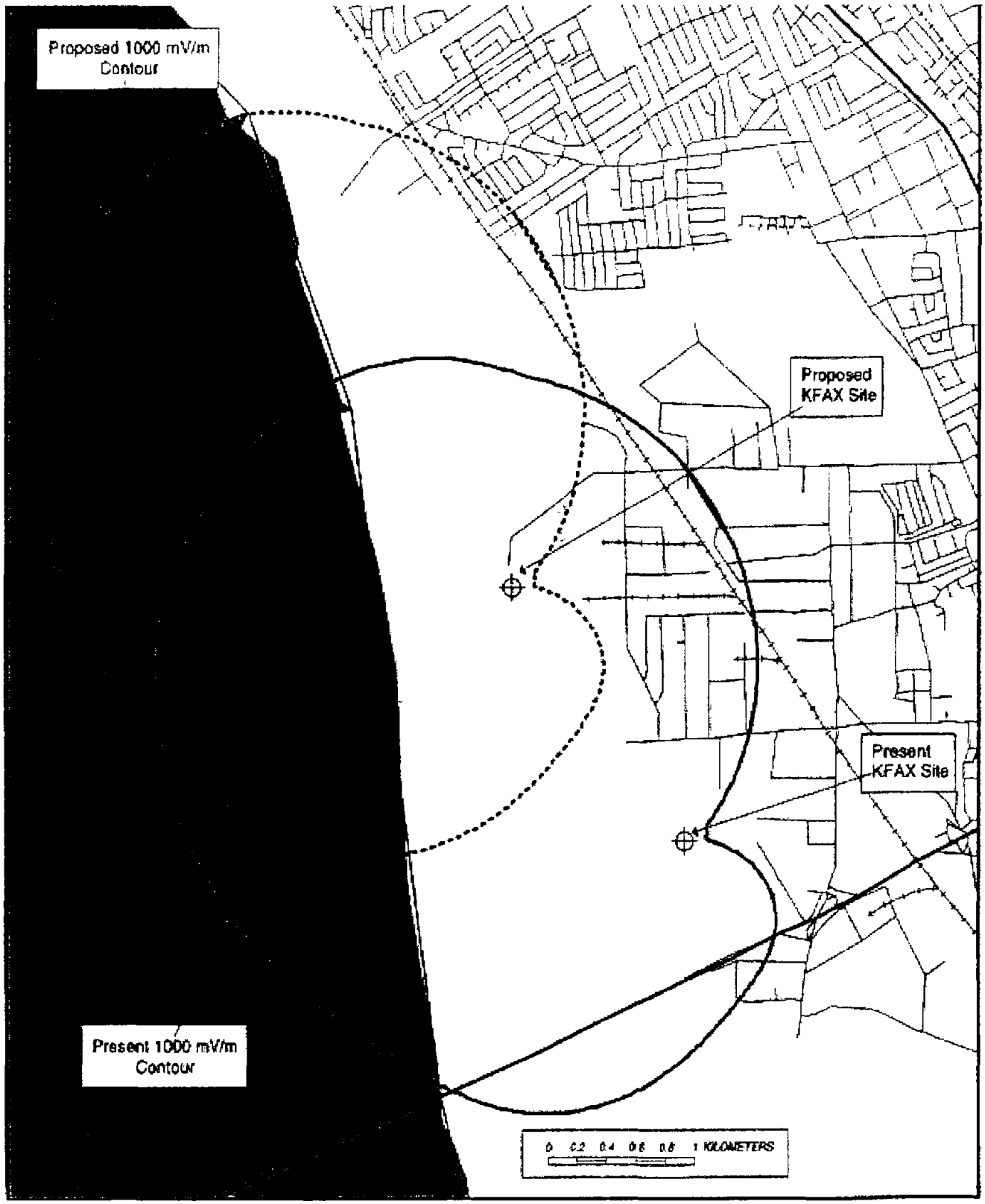
Russell City Energy Center - Location of Radio Towers on Project Site



CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, JANUARY 2002

SOURCE: Calpine/Bechtel

Russell City Power Project - One Volt Per Meter Contour

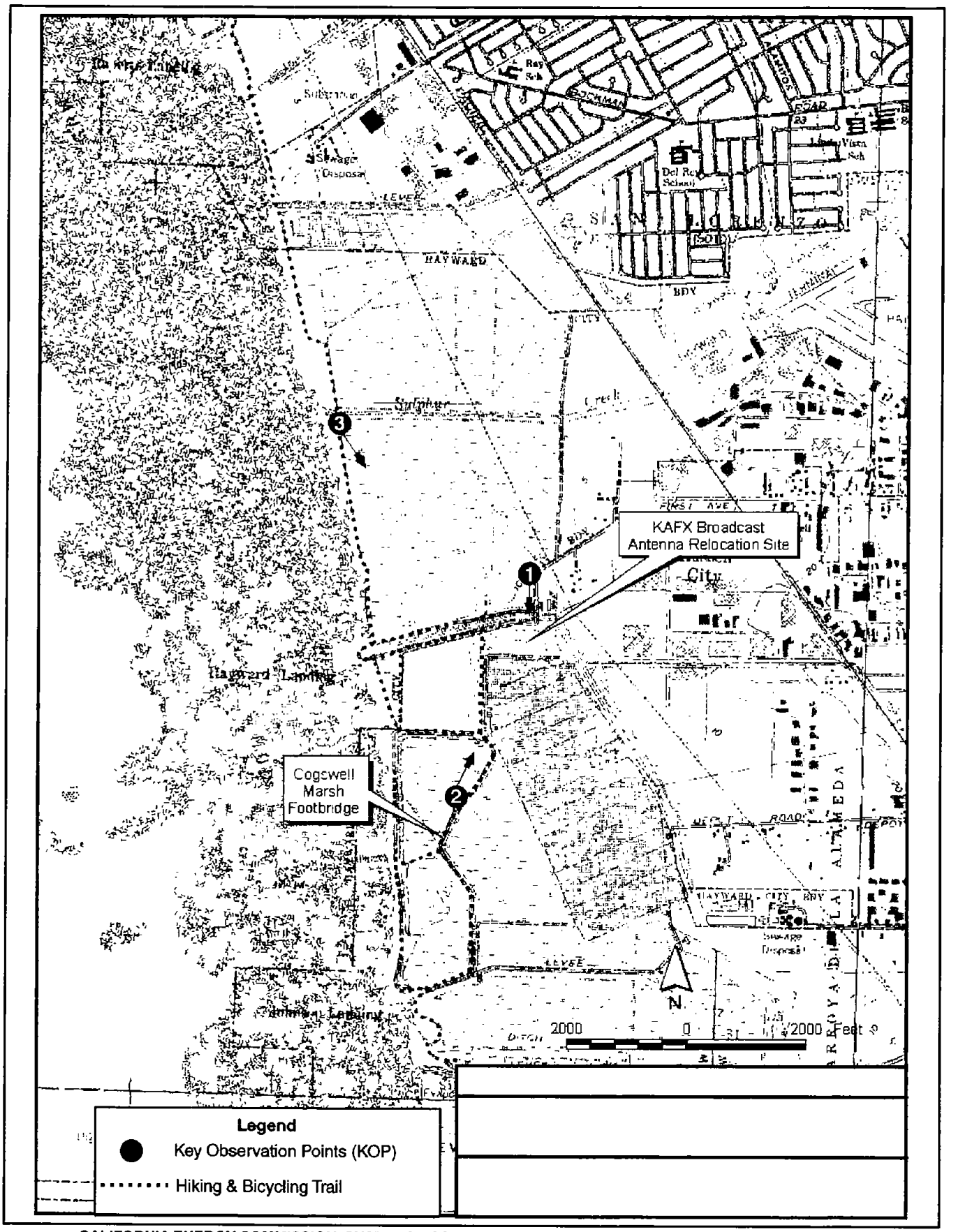


CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, JANUARY 2002

SOURCE: Carl T. Jones Corporation

VISUAL RESOURCES - Figure 1

• Russell City Power Project - Project Setting and Key Observation Points



CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, JANUARY 2002

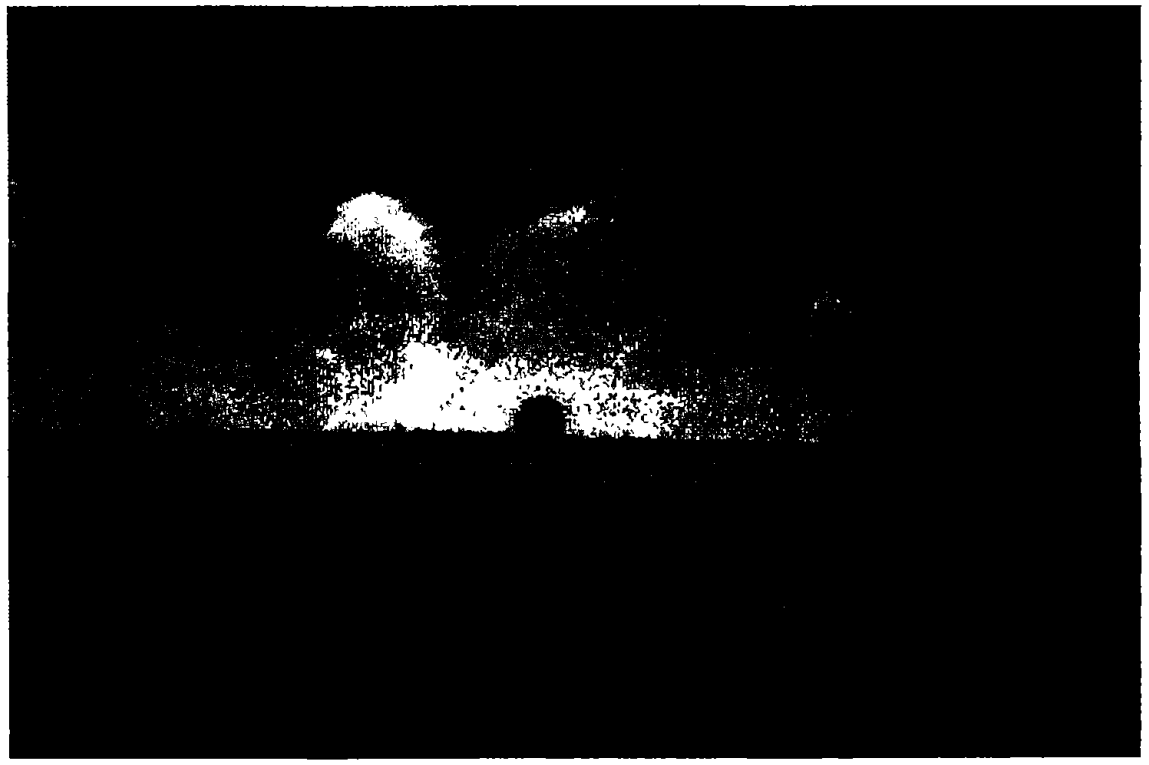
SOURCE: Base Image Calpine/Bechtel 2001, modified by CEC Cartography Unit

VISUAL RESOURCES - FIGURE 2
Russell City Power Project - West Winton Avenue (KOP 1)

CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, JANUARY 2002
SOURCE Calpine/Bechtel 2001

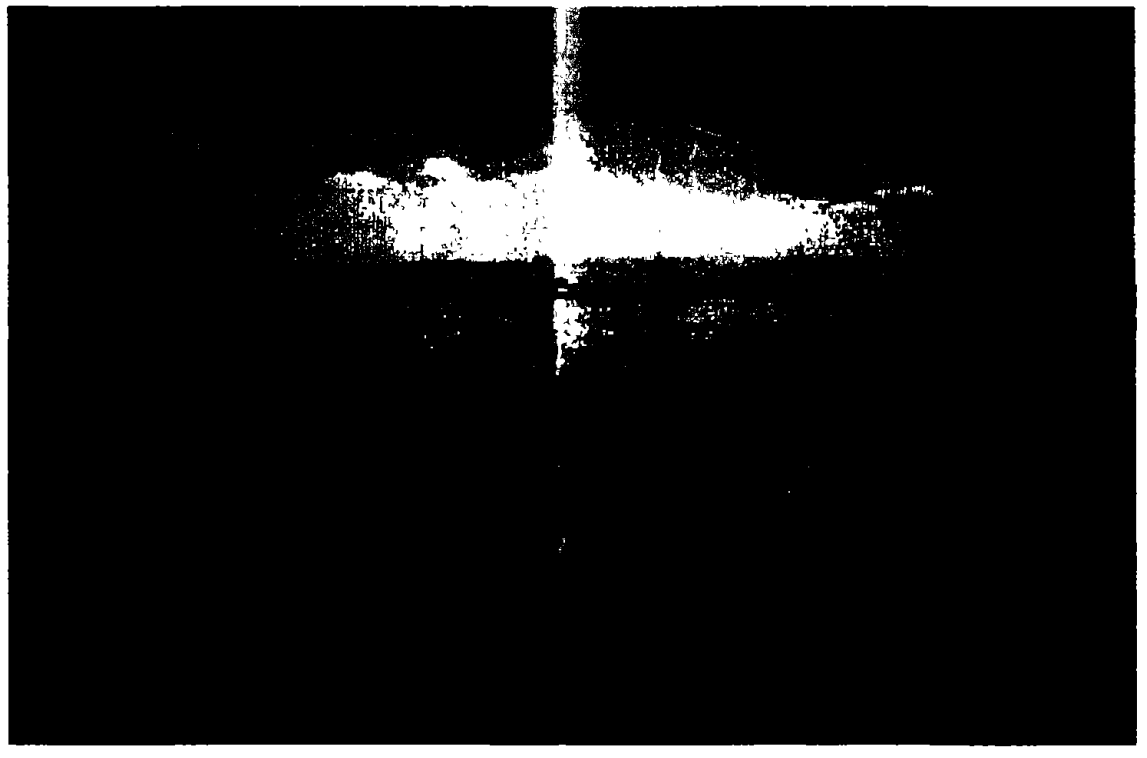
VISUAL RESOURCES - FIGURE 3

Russell City Power Project - West Winton Avenue Entrance to Hayward Regional Shoreline (Parking and Trailhead Area)



1. Park Entrance - Radio towers would be visible atop elevated landfill.

2. Parking Area - Looking southeast toward radio tower site. Towers visible above small shrubs.



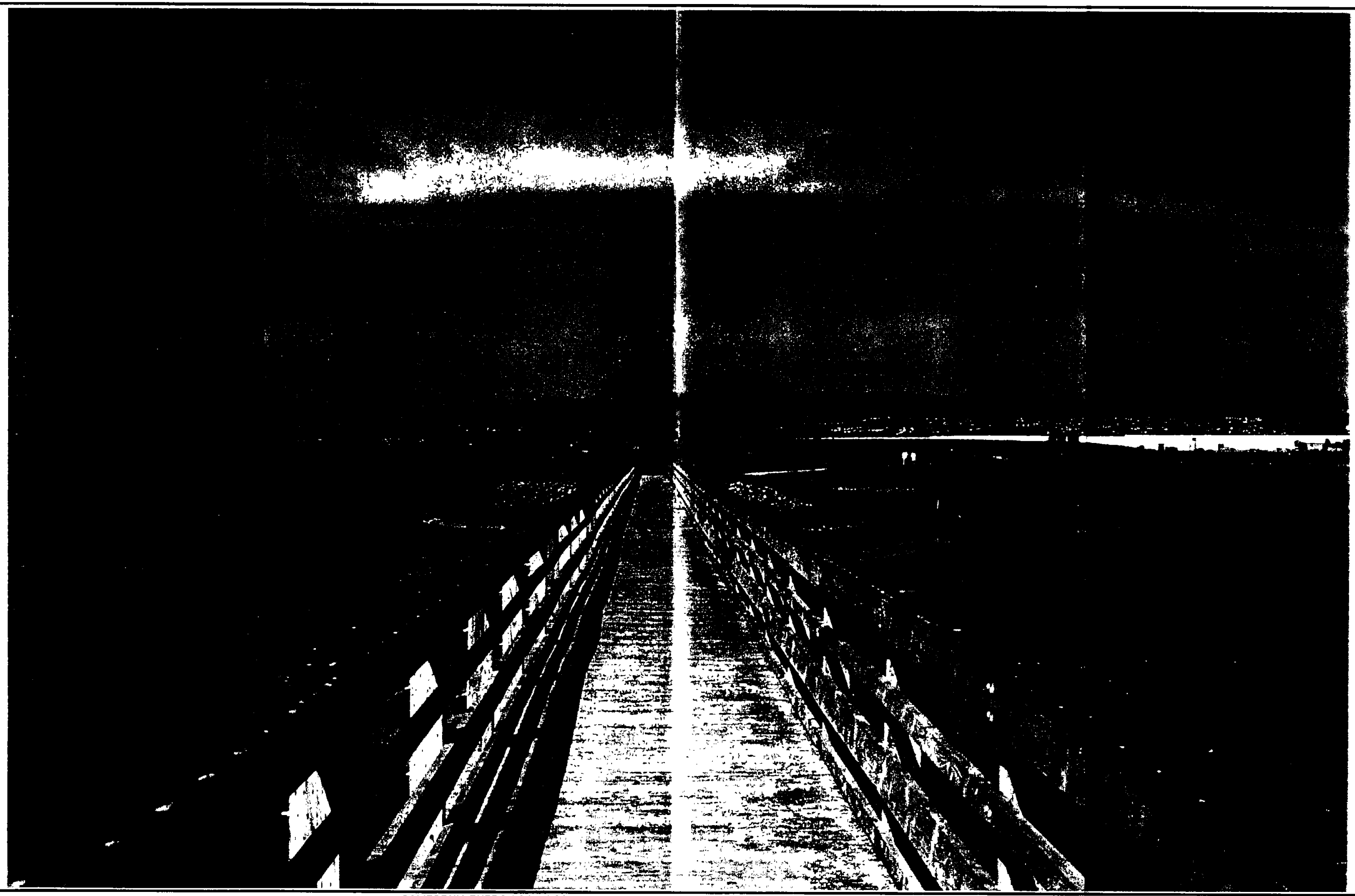
3. Looking east toward radio tower site (area covered with dry weeds). West end of parking area on left side of photo.

CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, JANUARY 2002

SOURCE: Photographs provided by Shelia G Junge

VISUAL RESOURCES - FIGURE 4

Russell City Power Project - Shoreline Trail at Cogswell Marsh Footbridge (KOP 2)



CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, JANUARY 2002

SOURCE: Calpine/Bechtel 2001

VISUAL RESOURCES - FIGURE 5
Russell City Power Project - Shoreline Trail at Sulphur Creek (KOP 3)

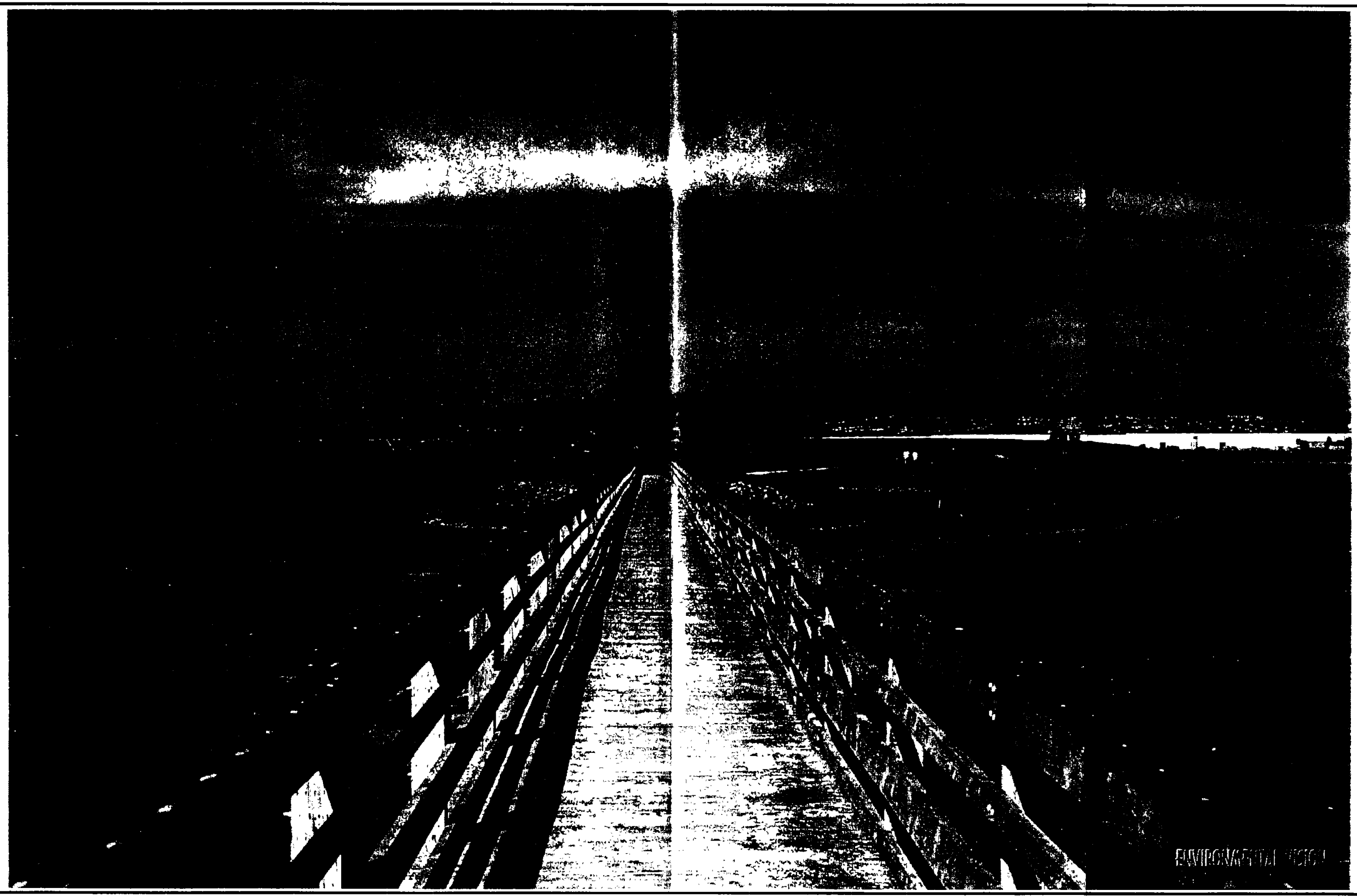
CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, JANUARY 2002
SOURCE: Calpine/Bechtel 2001

VISUAL RESOURCES - FIGURE 6
Russell City Power Project - West Winton Avenue (KOP 1) - Visual Simulation

CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, JANUARY 2002
SOURCE: Calpine/Bechtel 2001

VISUAL RESOURCES - FIGURE 7

Russell City Power Project - Shoreline Trail at Cogswell Marsh Footbridge (KOP 2) - Visual Simulation



CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, JANUARY 2002

SOURCE: Calpine/Bechtel 2001

VISUAL RESOURCES - FIGURE 8
Russell City Power Project - Shoreline Trail at Sulpher Creek (KOP 3) - Visual Simulation

CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, JANUARY 2002
SOURCE: Calpine/Bechtel 2001

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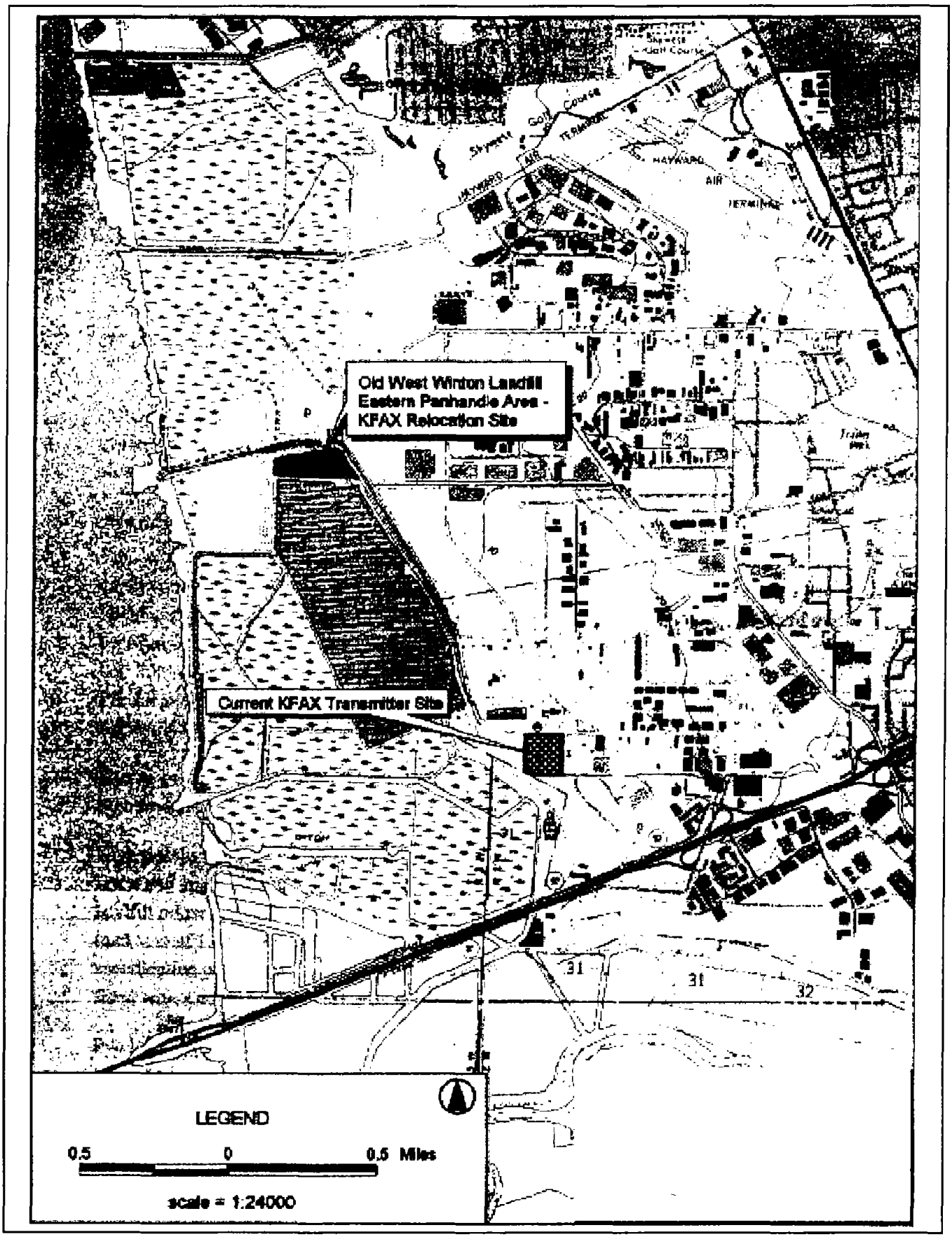

CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, JANUARY 2002
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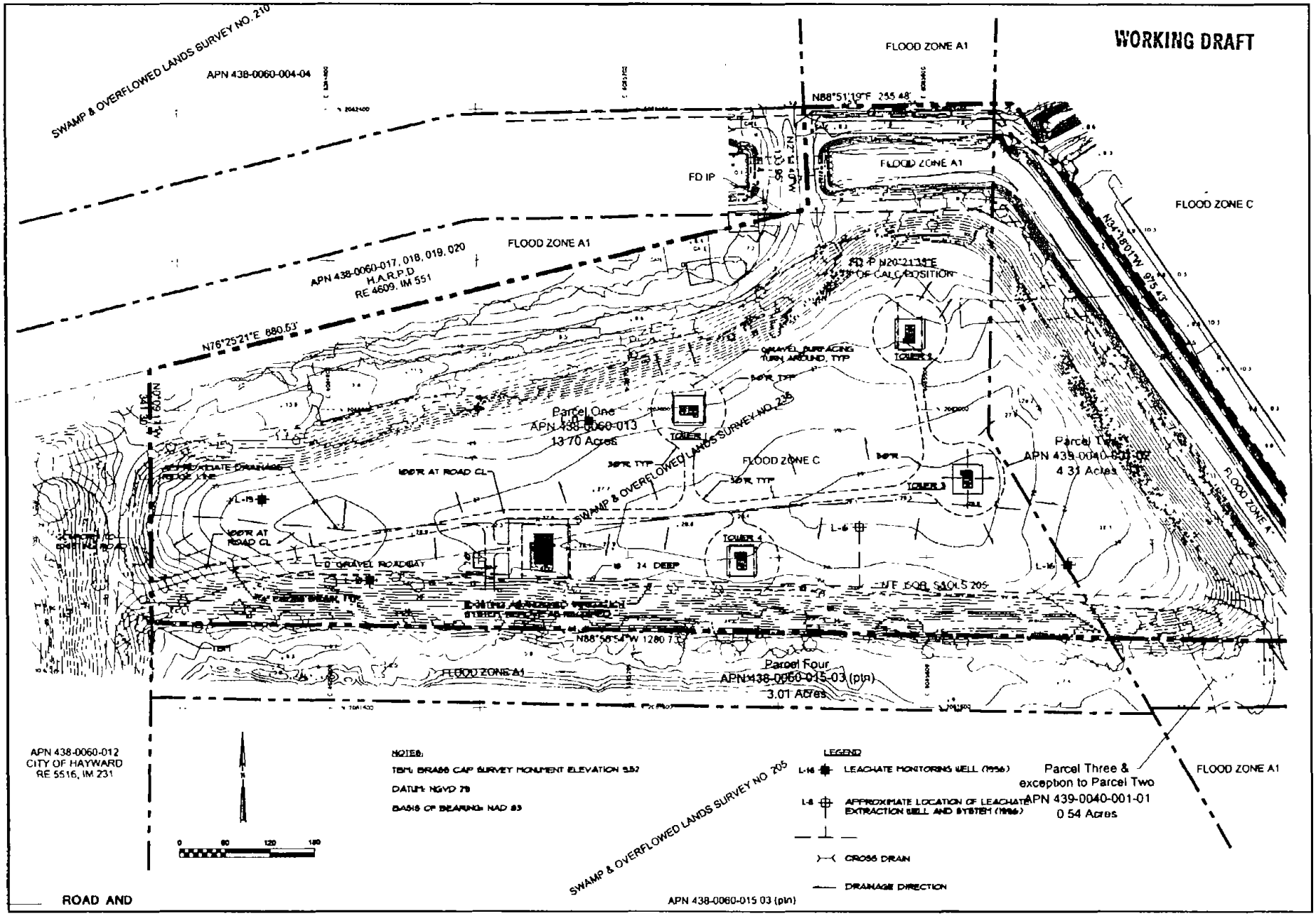

CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, JANUARY 2002

SOURCE: Calpine/Bechtel

PUBLIC HEALTH, SAFETY and NUISANCE - Figure 1
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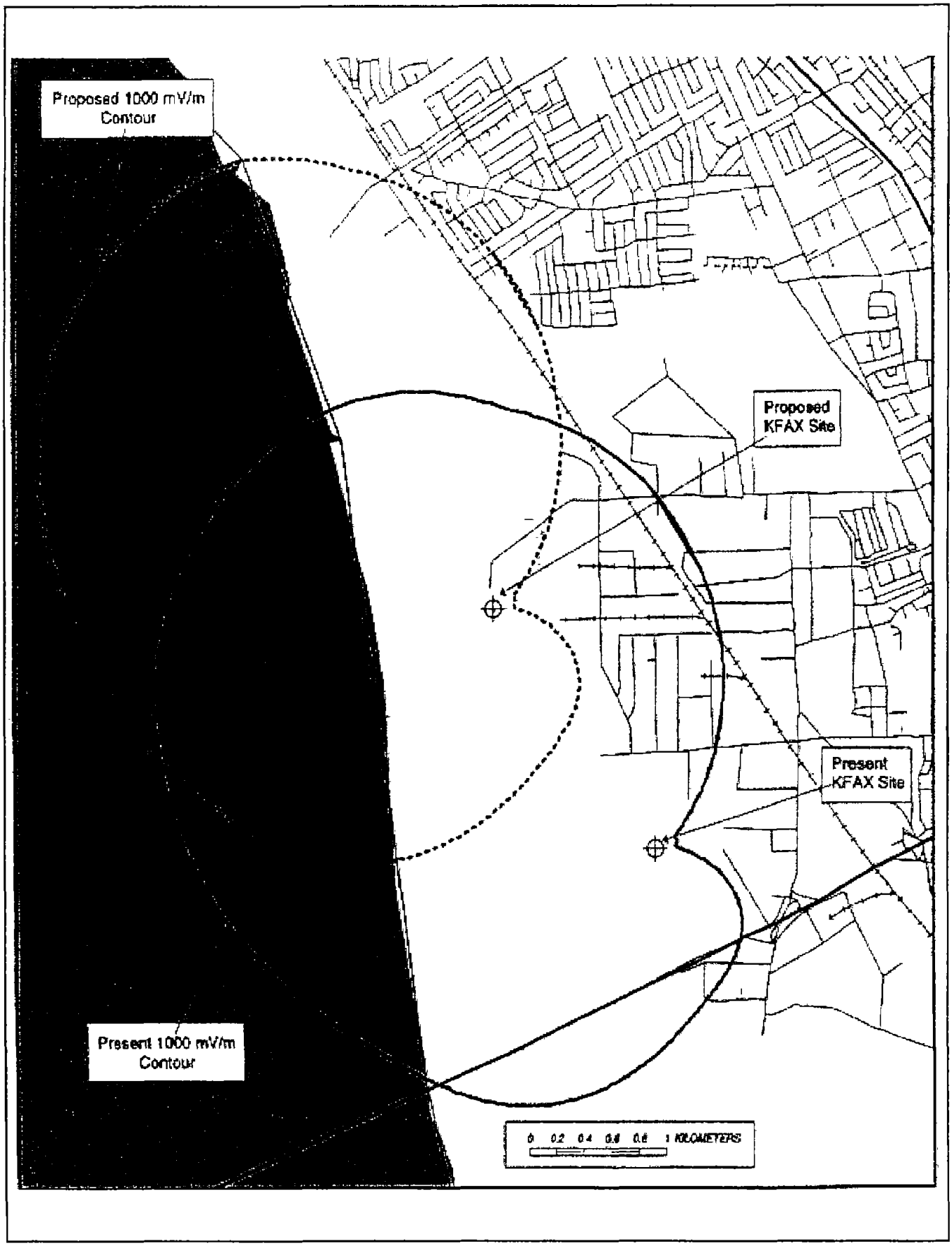

CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, JANUARY 2002
SOURCE: Carl T. Jones Corporation

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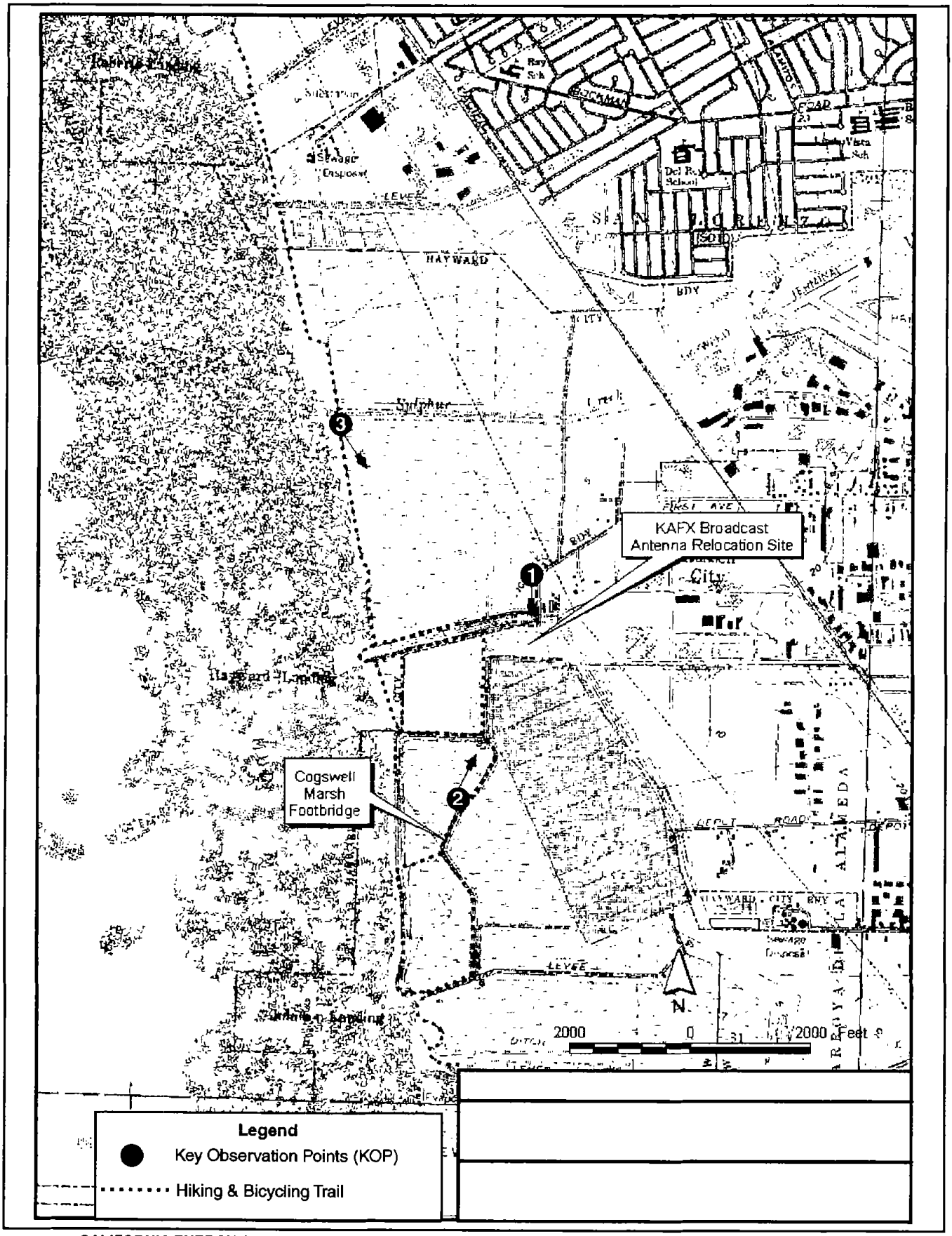

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SOURCE: Base Image Calpine/Bechtel 2001, modified by CEC Cartography Unit

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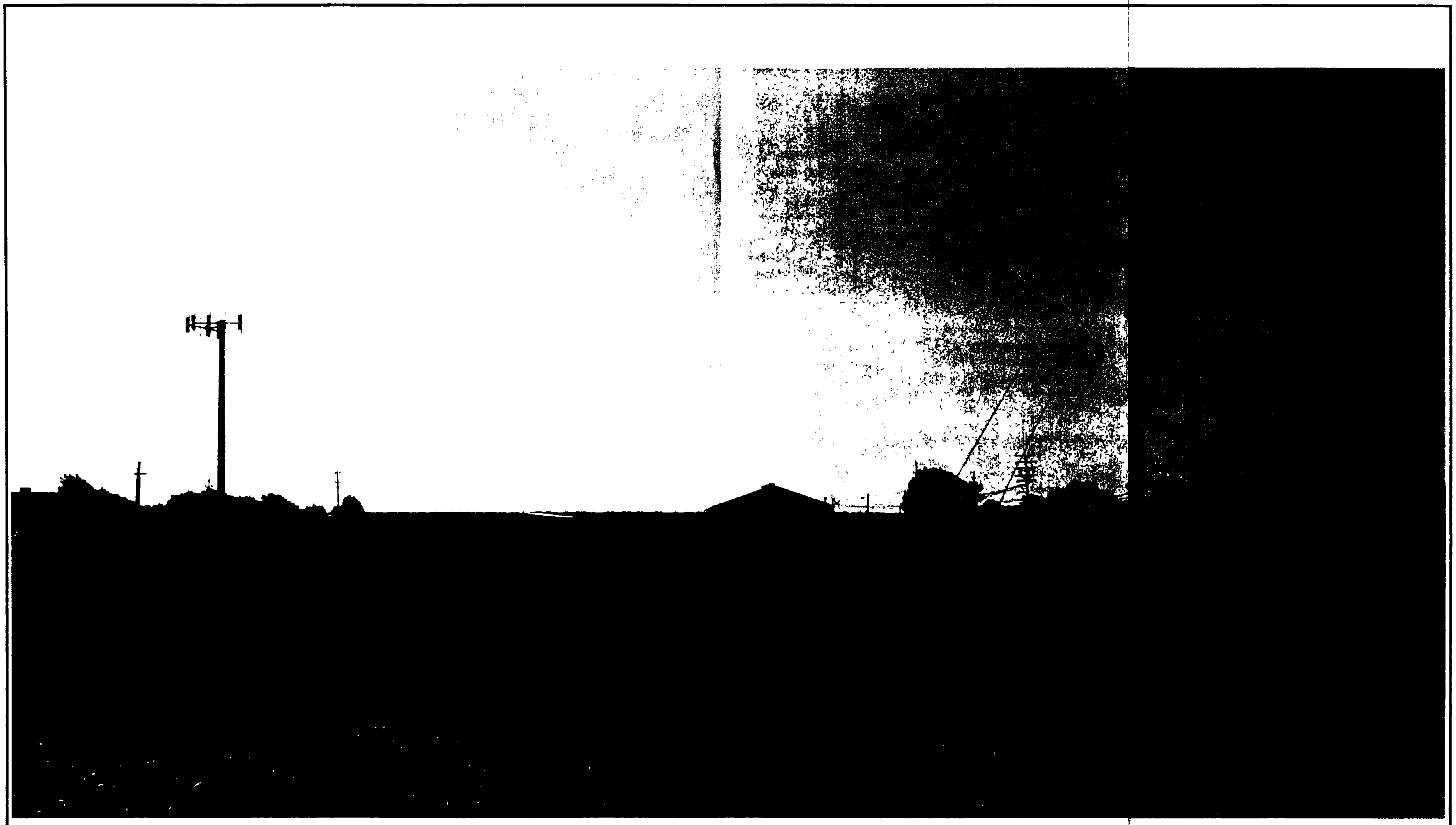

CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, JANUARY 2002
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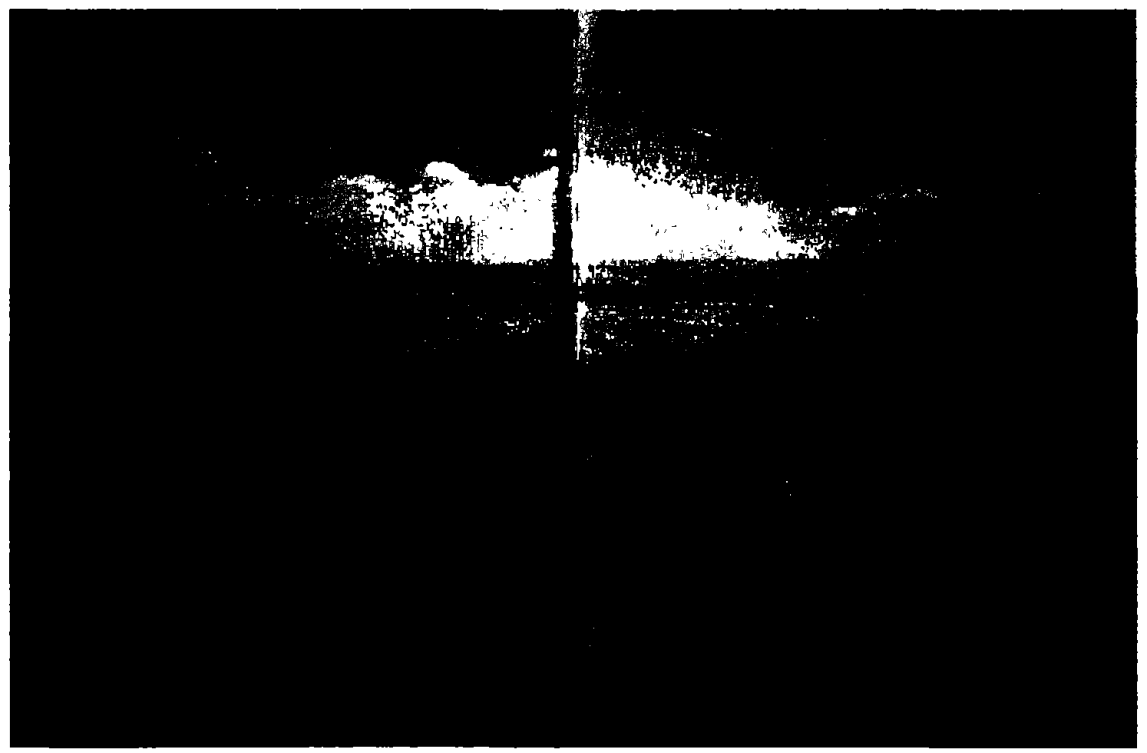

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CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, JANUARY 2002

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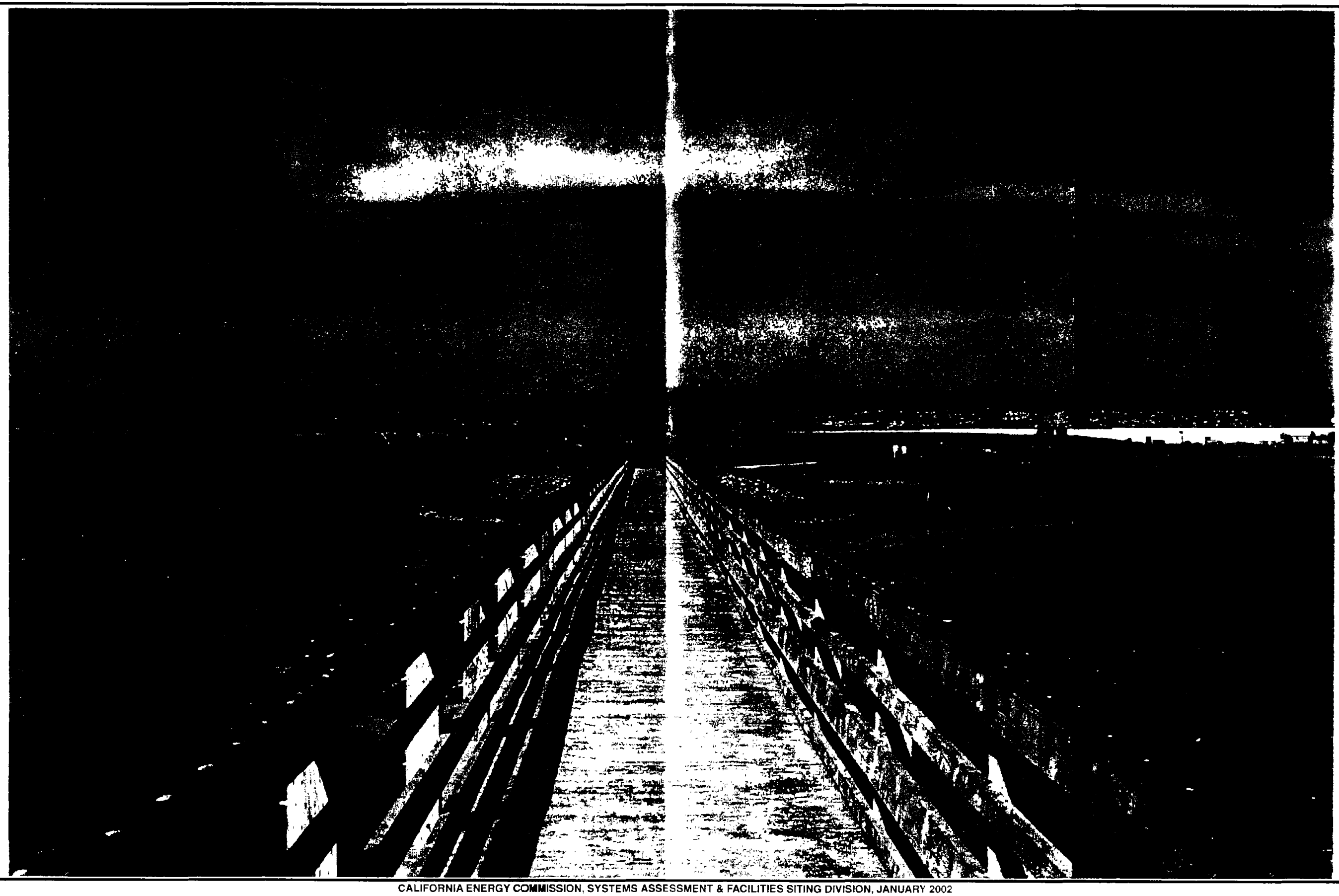
Russell City Power Project - Shoreline Trail at Cogswell Marsh Footbridge (KOP 2)



CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, JANUARY 2002

SOURCE Calpine/Bechtel 2001

VISUAL RESOURCES - FIGURE 5
Russell City Power Project - Shoreline Trail at Sulphur Creek (KOP 3)

CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, JANUARY 2002
SOURCE: Calpine/Bechtel 2001

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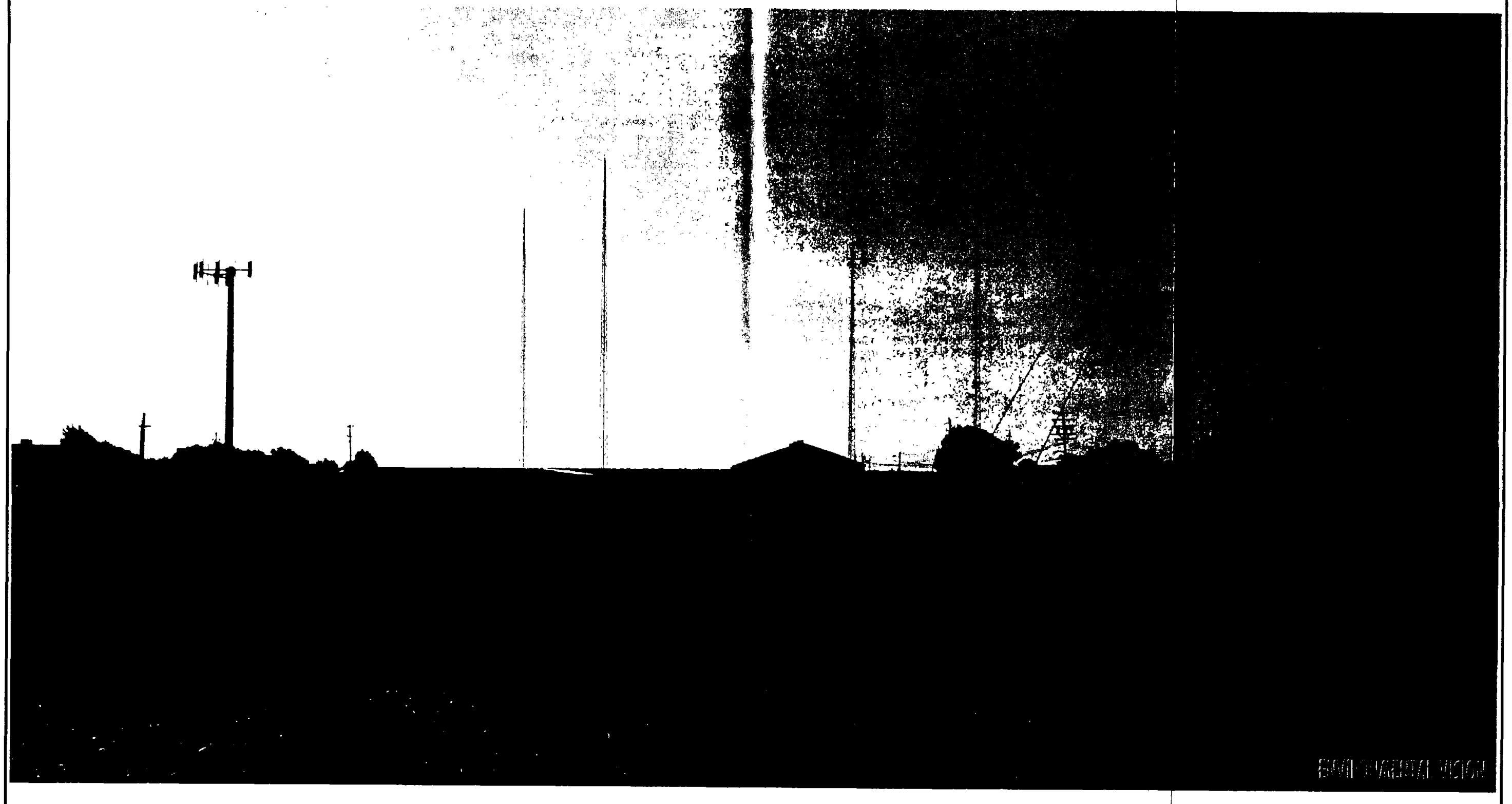

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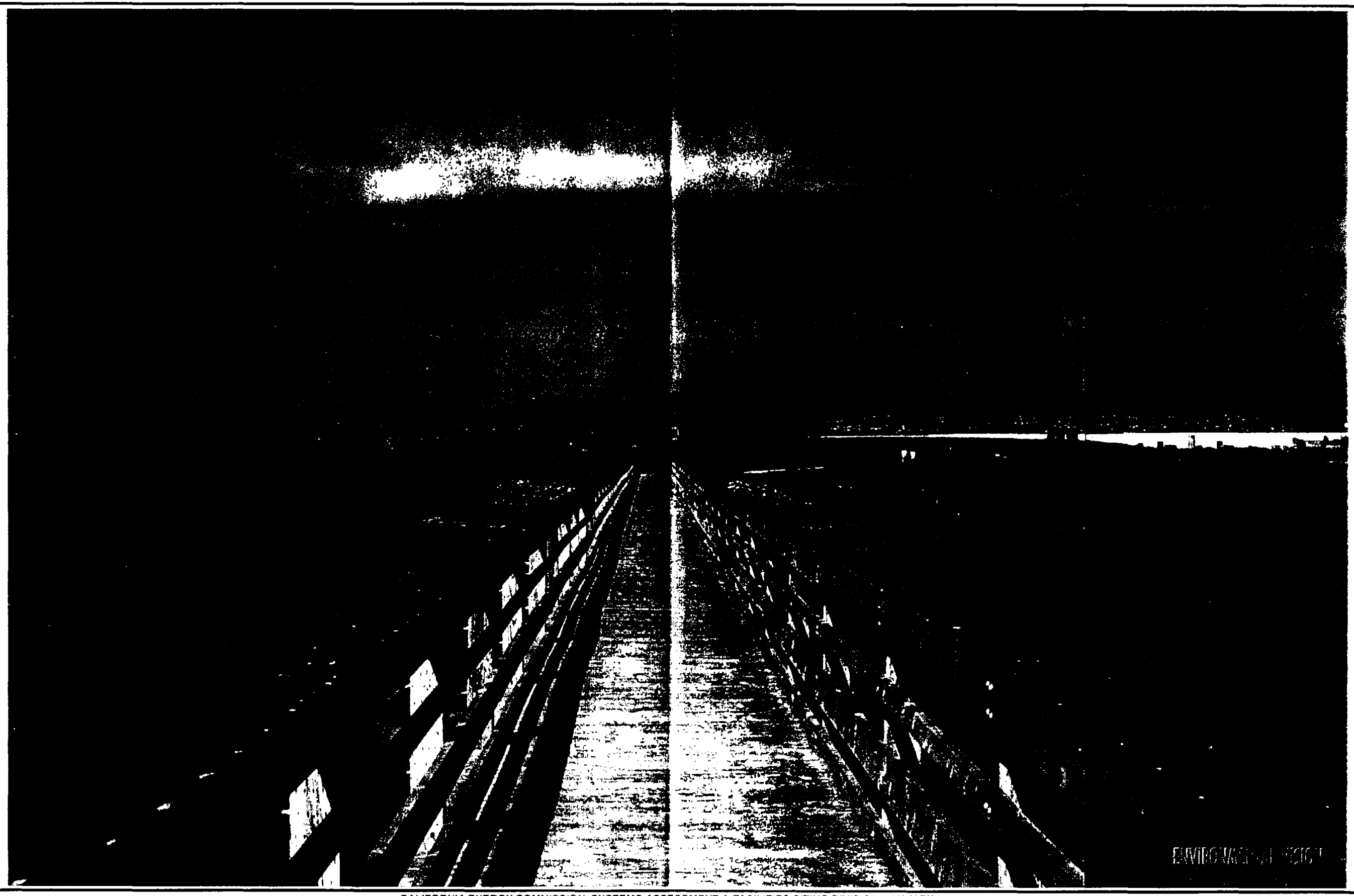

CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, JANUARY 2002

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VISUAL RESOURCES - FIGURE 8
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CALIFORNIA ENERGY COMMISSION, SYSTEMS ASSESSMENT & FACILITIES SITING DIVISION, JANUARY 2002
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