

ADAMS BROADWELL JOSEPH & CARDOZO

A PROFESSIONAL CORPORATION

ATTORNEYS AT LAW

601 GATEWAY BOULEVARD, SUITE 1000
SOUTH SAN FRANCISCO, CA 94080-7037

TEL: (650) 589-1660
FAX: (650) 589-5062
lmiles@adamsbroadwell.com

SACRAMENTO OFFICE

520 CAPITOL MALL, SUITE 350
SACRAMENTO, CA 95814-4715

TEL: (916) 444-6201
FAX: (916) 444-6209

DOCKET
08-AFC-5

DATE MAR 24 2010

RECD. MAR 25 2010

DANIEL L. CARDOZO
THOMAS A. ENSLOW
TANYA A. GULESSERIAN
MARC D. JOSEPH
ELIZABETH KLEBANER
RACHAEL E. KOSS
LOULENA A. MILES
ROBYN C. PURCHIA

OF COUNSEL
THOMAS R. ADAMS
ANN BROADWELL
GLORIA D. SMITH

March 24, 2010

California Energy Commission
Attn: Docket No 08AFC5
1516 Ninth Street
Sacramento, CA 95814

Re: Docket No. 08-AFC-5, Imperial Valley Solar Project (formerly, SES Solar Two)

Dear Docket Clerk:

Enclosed are an original and copy PREHEARING CONFERENCE STATEMENT OF CALIFORNIA UNIONS FOR RELIABLE ENERGY. Please docket the document, conform the copy and return the copy in the envelope provided.

Thank you for your assistance.

Sincerely,

/s/

Loulena A. Miles

LAM:bh
Enclosures

2218-087a

**STATE OF CALIFORNIA
California Energy Commission**

In the Matter of:

The Application for Certification for the
Imperial Valley Solar Project
(formerly known as SES Solar Two)

Docket No. 08-AFC-5

**PREHEARING CONFERENCE STATEMENT
OF
CALIFORNIA UNIONS FOR RELIABLE ENERGY**

March 24, 2010

Loulena A. Miles
Marc D. Joseph
Adams Broadwell Joseph & Cardozo
601 Gateway Boulevard, Suite 1000
South San Francisco, CA 94080
(650) 589-1660 Voice
(650) 589-5062 Facsimile
lmiles@adamsbroadwell.com
mdjoseph@adamsbroadwell.com

Attorneys for the CALIFORNIA
UNIONS FOR RELIABLE ENERGY

Pursuant to the March 9, 2010 Revised Notice of Prehearing Conference and Evidentiary Hearing, California Unions for Reliable Energy (“CURE”) submits this prehearing conference statement. Each informational item requested by the Committee is discussed below.

To say there are significant unresolved issues regarding this Project is an understatement. There are gaping holes. The Applicant is so far behind in providing fundamental information it calls into question whether it has seriously considered the level of effort needed to present a credible application to this Commission. There is no question that this Project cannot be permitted by this Commission and the various federal agencies before the end of this year. The failure of the Applicant to provide information is not in minor or tangential areas. Rather, it is in essentially every core issue in the case: soil and water resources, cultural resources, biological resources, air quality, alternatives, and visual resources. Perhaps the most significant unresolved issue is the Applicant’s failure to provide a firm water supply. More than 20 months after submitting its AFC, the Applicant has still not provided a firm water supply for the Project.

Additionally, the Applicant has not provided a valid description of the environmental setting for the Project. The Applicant and outside agencies are still preparing a number of documents to fill critical data gaps about the Project’s existing environmental conditions at the site. Until this threshold information is provided, it would be unreasonable for the Applicant to expect the Commission,

Staff, and other parties to expend valuable resources on evidentiary hearings for any of these topic areas.

The Commission has more than enough work to do on projects that have the potential to begin construction by the end of this year to qualify for support from the American Recovery and Reinvestment Act of 2009. It should not waste the time of Commissioners, Hearing Officers, Staff or other parties on projects that have no chance to access those funds.

1. Topic Areas That Are Complete and Ready to Proceed to Evidentiary Hearing

Aside from soil and water resources, cultural resources, biological resources, air quality, alternatives, and visual resources, the remaining minor topic areas could proceed to evidentiary hearings. However, it would be more efficient to wait until the major resource areas are resolved so that consideration of all topics is not fragmented and disjointed, since so many of the issues are interconnected and dependent upon unknown information and analyses in related areas that are not ready to proceed to hearings.

2. Topic Areas That Are Not Complete and Not Ready to Proceed to Evidentiary Hearing

There are fundamental unresolved issues in the areas of soil and water resources, cultural resources, biological resources, air quality, alternatives, and visual resources.

I. Water Supply

As with all projects proposed in the desert, water is a pivotal issue. Amazingly, at this late date, this Project does not have a viable water supply for either construction or operation. The Applicant's identified preferred water supply, recycled water from the Seeley Waste Water Treatment Facility ("SWWTF"), poses a host of potentially significant impacts to endangered species, an adjacent wetland, the New River, and the Salton Sea. In order for the SWWTF to serve as the Project's water supply, the water would need to be diverted from its current outfall near the New River to a pipeline that would lead to the Project site.

The Applicant attempted to bypass the Commission's review of this part of the Project by funding the Seeley County Water District to prepare a Negative Declaration under CEQA. Of course, it is this Commission's responsibility as the CEQA lead agency to study the environmental impacts of the 'whole of the action,' which includes the Project's water supply. In any event, after receiving critical comments from many parties, including many agencies, the Water District has withdrawn its proposed Negative Declaration. The Applicant is now funding the Water District to prepare an Environmental Impact Report. However, the Commission must independently analyze the impacts from upgrading the SWWTF to serve as the Project's water supply.

To prepare a valid analysis of the effects of diverting water, surveys must be conducted to study the potential biological impacts and a hydrological analysis must be completed. No matter which agency prepares the CEQA analysis, the State

Water Resources Control Board (“SWRCB”) would have to authorize a “Petition for Change of Use” pursuant to California Water Code § 1211 in order to divert this outfall away from the New River and to the Project site. The typical review time for this petition is 8 to 12 months but can take as long as three years.¹ No application has been filed with the SWRCB for this Change of Use permit.

Finally conceding the uncertainty associated with the SWWTF water supply, the Applicant’s opening testimony announced a completely new source of water for the Project, the Dan Boyer Water Company.² The Applicant provided no data or analysis of this water source other than stating that this is a permitted private water supply source with a delivery limit of 40 acre-feet per year. The Applicant provided no information about the quality and source of the water, or the potential environmental impacts associated with this new water supply. Much of the analysis in the Staff Assessment/Draft EIS regarding the water supply for the Project will need to be entirely replaced. Even if all of the analysis were performed, 40 acre-feet per year is insufficient for the construction water needs of the Project. Thus, the Project still does not have an adequate, firm water supply.

The Applicant has had more than two years since it began preparing the AFC to secure a firm water supply for the Project. Without a water supply, this Project is not viable. A serious, prepared applicant would not have put the Commission in this position. Unless and until the Applicant identifies a reliable source of water for the Project and provides an analysis of the environmental impacts associated with

¹ State Water Resources Control Board, Division of Water Rights, accessed on 2/10/2010 at www.swrcb.ca.gov.

² Applicant’s Opening Testimony of Marc Van Patten, March 16, 2010.

that water, and all parties are given an opportunity to review this analysis, this Project is not viable and hearings should not be held.

II. Soil and Water Resources

The Applicant is proposing to put SunCatcher units directly into 840 acres of ephemeral washes that have been determined to be waters of the United States subject to U.S. Army Corps of Engineers' ("USACE") jurisdiction under Section 404 of the Clean Water Act ("CWA").³ Under Section 404 of the CWA, the Applicant must submit an application to USACE for the discharge of dredged or fill material into waters of the United States.⁴ Guidelines implementing Section 404 of the CWA state "no discharge of dredged or fill materials shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences."⁵ An alternative is practicable if "it is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes."⁶ Practicable alternatives include activities which do not involve a discharge of dredged or fill material into the waters of the United States.⁷ This analysis is commonly referred to as a CWA Section 404(b)(1) analysis, or a LEDPA (least environmentally damaging practicable alternative) analysis.

³ SA/DEIS p. C.7-2.

⁴ 33 U.S.C. §1344(a).

⁵ 40 C.F.R. § 230.10.

⁶ *Id.*

⁷ 40 CFR § 230.10

Commission regulations specifically state that an applicant must provide in its Application for Certification “[a]ll the information required to apply for Section 404 Permits from the U.S. Army Corps of Engineers.”⁸ The Applicant has not docketed an application to USACE. Nor has the Applicant docketed a Section 404(b)(1), or LEDPA, analysis. According to the Applicant’s most recent status report, the USACE directed the Applicant to provide more data regarding the ephemeral washes on the Project site, and the Applicant is preparing a 404(b)(1) alternatives analysis that will be submitted in April/May. The Applicant is also developing an analysis of the existing riparian environment on the Project site.⁹ According to the SA/DEIS: “Staff is awaiting the USACE draft 404(b)(1) analysis, which will identify the least environmentally damaging project alternative (LEDPA) and establish the need for mitigation for unavoidable impacts.”¹⁰ The Staff Assessment concludes that Staff cannot determine at this time whether the Project would comply with Section 404 of the Clean Water Act.¹¹ Of course, complying with federal law is a prerequisite to the Commission approving the Project.

And importantly, this significant new information must be made available for review by all parties prior to evidentiary hearings on soil and water resources.

III. Alternatives

The development of a legally adequate alternatives analysis for this Project is dependent upon the Applicant submitting a 404(b)(1) alternatives analysis for

⁸ Appendix B, Informational Requirements for an Application, Water Resources section.

⁹ Applicant’s Status Report, dated March 9, 2010.

¹⁰ SA/DEIS p. C.2-34.

¹¹ *Id.*

consideration by the USACE. As noted, the Applicant indicated it will submit a CWA Section 404(b)(1) analysis in April/May 2010. Once the Applicant submits an adequate CWA Section 404(b)(1) application, close coordination between the Commission, the BLM and the USACE will be needed to further refine the alternatives analysis. This is because each agency has distinct, yet related, obligations to meet in fulfilling the alternatives analysis requirements of CEQA, NEPA and the Clean Water Act.

CEQA requires the Commission to develop "...a range of reasonable alternatives to the project, or to the location of a project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives."¹² NEPA requires that the BLM "study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources" and prepare an environmental impact statement with its findings.¹³ The CWA imposes yet a third framework for studying the alternatives of this Project to avoid impacts to waters of the United States. In order to avoid conflicting analyses among the various agencies, each agency must coordinate the analysis of alternatives.

Because the Applicant still has not submitted an alternatives analysis to the USACE, the process of developing an alternatives analysis that will meet the needs

¹² CEQA Guidelines § 15126.

¹³ 42 U.S.C. §§ 4332(2)(C),(E).

of all agencies cannot proceed. Thus, this Project is simply not ready for evidentiary hearings until the alternatives analysis is complete.

Clearly, the alternatives analysis will have a profound effect on the determination of the impacts and mitigation in the biological and soil and water sections of the SA/DEIS. It may also have ramifications for the analysis of cultural resource mitigation. Thus, the SA/DEIS does not (and simply cannot at this point) provide an adequate alternatives analysis and basis for the Committee to make the findings required for certification of the Project (e.g., compliance with all laws and regulations, and adequate mitigation of impacts).

IV. Cultural Resources

At the Staff Assessment workshop earlier this week, Energy Commission staff unequivocally stated that the process to identify the impacts to cultural resources is still ongoing and additional surveys may be required because the Applicant failed to follow Staff's guidance in developing survey methodologies. Therefore, for the purposes of CEQA, the identification of significant impacts to cultural resources is far from resolved.

Additionally, the BLM has not yet provided a mitigation plan for impacts to cultural resources. The Staff Assessment concluded that the formulation of *all* mitigation for the Project's cultural resources impacts is dependent upon the development of a Programmatic Agreement ("PA"). A PA will govern the identification and evaluation of historic properties and historical resources and

resolve Project effects on those resources.¹⁴ The BLM will prepare the PA for this Project in consultation with the Advisory Council on Historic Preservation, the State Historic Preservation, the Commission, interested tribes and other consulting parties. Clearly, an evidentiary hearing on any part of the cultural resources analysis is premature until the Applicant has provided sufficient surveys, and the Commission has had time to review the data and develop an analysis.

Further, CURE has petitioned to inspect and copy the draft cultural resources technical report docketed with the Commission. This report is a compilation of the data gathered so far regarding the Project's cultural resource impacts. The Applicant did not oppose this motion and directed its consultant to make these materials available to CURE upon the execution of a valid nondisclosure agreement. When CURE contacted the Applicant's consultant, URS Corporation, URS refused to release the documents without the consent of the BLM because BLM was the owner of the documents. In response to a request from CURE to release the documents, BLM then stated that it would not release the documents until the Energy Commission reviewed CURE's petition. CURE has not received any response from the Commission. This has precluded CURE from reviewing the Project's cultural resource impacts and preparing testimony on this issue. This issue is therefore not ready for hearings.

¹⁴ Under the National Historic Preservation Act, 36 CFR 800.14(b), a PA can be used to resolve adverse impacts for complex projects and effects on historic properties that cannot be fully determined prior to approval of an undertaking.

V. Biological Resources

There are also many significant, unresolved issues related to the impacts and proposed mitigation for biological resources.

a. Rare Plants

The SA/DEIS explains that the Applicant's rare plant survey effort does not provide an adequate basis for determining impacts to rare plants on the Project's impact area. The SA/DEIS makes clear that the Applicant's survey team was not qualified to conduct botanical surveys and was distracted with trying to conduct simultaneous wildlife surveys. Therefore, due to the inadequacy of the Applicant's botanical survey effort, Staff requested that the Applicant complete new spring and fall surveys. Although the SA/DEIS attempts to analyze the impacts and formulate mitigation measures, this analysis may bear little resemblance to the analysis and mitigation that will be required after significant impacts to rare plants are actually identified through an adequate survey effort. Hence, the SA/DEIS does not (and simply cannot at this point) provide an adequate description of the environmental setting.

The environmental setting is the "physical environmental conditions in the vicinity of the Project, as they exist at the time the notice of preparation is published."¹⁵ "The environmental setting will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant."¹⁶ In order for the Committee to make the findings required for

¹⁵ CEQA Guidelines § 15125.

¹⁶ *Id.*

certification of the Project (e.g., compliance with all laws and regulations, and adequate mitigation of impacts), the results of the surveys must be analyzed and any significant impacts that are identified must be avoided or mitigated, as feasible. Testimony and evidentiary hearings on impacts to rare plants cannot occur at least until the Applicant submits the results of the two spring rare plant surveys and all parties have an opportunity to review this analysis. Additional opportunities for testimony may be required after the Applicant submits fall surveys.

b. Flat-tailed Horned Lizard

The Project site is currently home to an estimated 2,000 to 5,000 flat-tailed horned lizards (“FTHL”).¹⁷ The FTHL is a candidate species, proposed for listing under the federal Endangered Species Act. The BLM and Commission Staff have determined that the entire Project footprint contains FTHL habitat and therefore the Applicant will be required to mitigate for the loss of 6,063 acres on the Project site. Although efforts will be made to avoid or minimize harm to the FTHL, there is no evidence that these efforts will be successful.

The Applicant has not submitted a mitigation plan to mitigate this significant environmental impact. The Applicant has not described where the mitigation land would be purchased, whether there are willing sellers and importantly how many months or years it will take to acquire the land and therefore mitigate this significant impact. Compensation funds placed in a bank account is not a valid mitigation strategy under CEQA. Deferral of the formulation of mitigation measures to some future time is generally impermissible under

¹⁷ SA/DEIS p. C.2-22.

CEQA.¹⁸ A lead agency is prohibited from making CEQA findings that rely on mitigation measures of uncertain efficacy or feasibility.¹⁹ Mitigation measures must be fully enforceable through permit conditions, agreements or other legally binding instruments.²⁰ This approach helps “insure the integrity of the process of decision by precluding stubborn problems or serious criticism from being swept under the rug.”²¹

Staff could not conclude whether a fee payment reduces impacts to less than significant levels under CEQA and is in the process of evaluating if the use of compensation funds is sufficient for CEQA mitigation.²² Until the FTHL mitigation strategy is sufficiently concrete so that it is clear what the proposed mitigation is and when it will be implemented, this issue area is not ready for evidentiary hearings.

c. Golden Eagles

The SA/DEIS also provides an inadequate analysis of impacts to golden eagles, a species protected under the Bald and Golden Eagle Protection Act.²³ The SA/DEIS states that the Project site provides suitable foraging habitat, and as a result, a take permit might be needed from the USFWS.²⁴ The SA/DEIS does not make a finding of consistency with the Bald and Golden Eagle Protection Act, because it cannot. No information is provided regarding whether the Applicant is in

¹⁸ CEQA Guidelines § 15126.4(a)(1)(B).

¹⁹ *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 727-728.

²⁰ CEQA Guidelines § 15126.4(a)(2).

²¹ *Concerned Citizens of Costa Mesa, Inc. v. 32nd Dist. Agricultural Assn.* (1986) Cal.3d 929, 935.

²² SA/DEIS p. C.2-101.

²³ 50 C.F.R. 22.26

²⁴ SA/DEIS p. C.2-57.

communication with USFWS and the timeline for this permitting process. At the Staff Assessment workshop on March 22, 2010, USFWS specified that the Applicant must make every effort to mitigate impacts to golden eagles from Project development. Additional analysis is needed regarding the Project's impacts to golden eagles and required mitigation before this issue can proceed to evidentiary hearings.

d. SWWTF Biological Impacts

Even if the Applicant were able to secure water from the SWWTF, no conclusions can be made regarding potential impacts or mitigation for biological impacts associated with the construction and operations of the Project's proposed upgrades to the SWWTF. If water from the SWWTF is used for the Project, it would come from water diverted from its current use, which is supplying water to wetland habitat, the New River and the Salton Sea. A hydrologic study is necessary to quantify how withholding water from an emergent wetland will affect the wetland habitat and the habitat of the regional watershed. The Seeley County Water District has agreed to conduct focused surveys for sensitive bird species, including the Yuma clapper rail, black rail, least Bell's vireo, southwestern willow flycatcher, vermilion flycatcher and burrowing owl in the spring/summer survey periods. Testimony and evidentiary hearings on this topic is pointless before Commission Staff has independently evaluated this survey and hydrologic data, and it has been reviewed by all parties.

VI. Air Quality

The Applicant's failure to provide a water supply for the Project has rendered the air quality analysis incomplete and inadequate. If and when the SWWTF upgrades are completed, water may have to be trucked in until the water pipeline is built to the Project site. The trucking of the water and the construction of the pipeline result in air emissions. Additionally, since the SWWTF is an unreliable water source, air impacts resulting from a new, as yet unexamined, water supply must also be incorporated into the air quality analysis. These unknowns make it impossible to accurately evaluate the Project's air quality impacts.

The Applicant is preparing a supplemental analysis that will purportedly address the impacts related to the need to transport water via truck from the SWWTF and the new back-up water supply.²⁵ The Applicant has estimated that the Project will require between 7 and 13 trucks carrying 7,000 gallon each per day during construction.²⁶ That is up to 26 truck trips per day coming from an unknown location in a portion of the Salton Sea Air Basin that is designated non-attainment for the federal and state ozone standards, the federal PM10 standard and the state PM10 standard. This additional study must be completed, and all parties and the Imperial County Air Pollution Control District should have an opportunity to review the study before proceeding to evidentiary hearings.

²⁵ Testimony of Julie Mitchell, URS Corporation, filed March 16, 2010.

²⁶ Testimony of Matthew Moore, URS Corporation, filed March 16, 2010.

VII. Visual Resources

The Applicant is now preparing a study to shed light on the impacts of glint and glare from the SunCatcher units.²⁷ This study will provide an analysis of the impacts likely to be expected over the course of the year and evaluate the effectiveness of proposed mitigation measures. At the March 22, 2010 Staff Assessment workshop, Staff informed the Applicant that the study may have to be changed to ensure that a correct methodology is used. The Applicant proposed that Staff visit the Applicant's Maricopa site where the SunCatcher units have recently begun operating. The information in this study and the analysis gathered from a potential site visit is directly relevant to the testimony on the significance of the visual resource impacts and proposed mitigation. It is premature to hold hearings on this topic until the results of the study and information gained from a visit to the Maricopa site are submitted to the Commission and all parties.

3. Topic Areas That Remain Disputed and Require Adjudication

The following areas are still in dispute: soil and water resources, alternatives, cultural resources, biological resources, air quality resources and visual resources.

4. Witnesses, Topic Areas, Testimony

For most of the critical issues in this case, there is too little information for the Commission to proceed. There is also too little information upon which any party could prepare testimony. Trying to prepare testimony now will simply be an exercise in explaining the Applicant's failure to provide basic information. To the extent that CURE has information upon which to base testimony, CURE's

²⁷ Testimony of Jason Pfaff, Power Engineers, filed March 16, 2010.

testimony will be filed with the Commission and served to all parties on April 1, 2010.

Each of CURE's proposed witnesses and a summary of their testimony is discussed below. A copy of their qualifications is attached as Exhibit A. CURE reserves the right to submit additional testimony at the evidentiary hearings.

A. Scott Cashen (*Time estimate for direct testimony: 3 hours*)

Scott Cashen will testify on the topic area of biological resources, alternatives, and soil and water resources. Mr. Cashen will testify regarding significant impacts, required analyses and mitigation for the IVSP Project on FTHL, burrowing owl, golden eagles, special status plant species, waterways, and other biological resources associated with the Project.

B. Vern Bleich (*Time estimate for direct testimony: 1 hour*)

Vern Bleich will testify on the topic areas of biological resources and alternatives. Mr. Bleich will testify regarding significant impacts and mitigation for biological resources and alternatives for to those impacts.

C. Claudia Nissley, P.G. (*Time estimate for direct testimony: 1 hour*)

Claudia Nissley will testify on the topic areas of cultural resources and Alternatives. Ms. Nissley will testify regarding significant impacts, required analyses and mitigation for impacts to cultural resources.²⁸

D. Gerald Quindry (*Time estimate for direct testimony: 1 hour*)

Gerald Quindry will testify on the topic areas of soil and water resources.

²⁸ Some of this testimony will be based upon confidential information and special considerations should be provided for this during the evidentiary hearings.

5. Topic Areas for Cross-Examination

CURE requires time to cross-examine each of the Applicant's and Staff's witnesses presenting testimony in the following areas: water resources, hydrology and soil resources, alternatives analysis, cultural resources, biological resources, air quality impacts and visual resources.

CURE also reserves the right to cross-examine witnesses in any of the other topic areas at the evidentiary hearing.

6. List of Exhibits and Declarations

At this time, CURE's testimony has not been prepared so declarations and an exhibit list are not available.

7. Proposals for Briefing Deadlines and Scheduling Matters

Because the Project cannot proceed without a firm water supply, the testimony and evidentiary hearings should not move forward until the Applicant has provided a firm water supply for all of the Project's water needs and a supplemental analysis of the impacts of that water supply, and Staff has had an opportunity to provide an analysis in a revised SA/DEIS.

Additionally, the Staff should issue a Revised SA/DEIS that considers the following documents in its analysis: SWWTF biological surveys, a hydrological study, a petition for change of use filed at the State Water Resources Control Board; supplemental data regarding impacts and mitigation related to the changed water supply to the Dan Boyer Water Company; riparian modeling and the Applicant's 404(b)(1) analysis of impacts to waters of the U.S.; the USACE alternatives

analysis; the draft Programmatic Agreement for cultural resources and a finalized cultural resources technical report; spring rare plant surveys; a flat-tailed horned lizard mitigation plan; response from USFWS regarding golden eagle surveys; a supplemental air quality analysis and a glint and glare study for visual resources. All of these studies, reports and determinations relate to potentially significant environmental impacts of the Project and or the validity and feasibility of mitigation measures. Without this information, the SA/DEIS is incomplete. The Staff should issue a revised SA/DEIS and recirculate it prior to testimony and evidentiary hearings.

PROPOSED SCHEDULE

Event	Date
Prehearing Conference	March 25, 2010
Revised SA/ DEIS is Released	TBD
Parties File Testimony on Revised SA/DEIS	4 weeks after release of Revised SA/DEIS
Parties File Rebuttal Testimony on Revised SA/DEIS	6 weeks after release of Revised SA/DEIS
Evidentiary Hearing on Revised SA/DEIS	8 weeks after release of Revised SA/DEIS
Parties File Post-Hearing Briefs	12 weeks after release of Revised SA/DEIS for Opening Brief and 14 weeks after release of Revised SA/DEIS for Reply Brief
PMPD Issued	18 weeks after release of Revised SA/DEIS
Comments Due on PMPD	30 days after PMPD is issued
Revised PMPD Issued Responding to Comments	10 days after PMPD released
Comments Due on Revised PMPD	TBD
Final Commission Decision	TBD

8. Proposed Modifications to the Proposed Conditions of Certification

It is premature to consider this issue, since Conditions of Certification in most of the major topic areas cannot be prepared until the Applicant has provided the outstanding information.

Dated: March 24, 2010

Respectfully submitted,

_____/s/_____
Loulena A. Miles
Marc D. Joseph
Adams Broadwell Joseph & Cardozo
601 Gateway Boulevard, Suite 1000
South San Francisco, CA 94080
(650) 589-1660 Voice
(650) 589-5062 Facsimile
lmiles@adamsbroadwell.com

STATE OF CALIFORNIA
California Energy Commission

In the Matter of:

The Application for Certification for the
Imperial Valley Solar Project
(formerly known as SES Solar Two)

Docket No. 08-AFC-5

PROOF OF SERVICE

I, Bonnie Heeley, declare that on March 24, 2010 I served and filed copies of the attached **PREHEARING CONFERENCE STATEMENT OF CALIFORNIA UNIONS FOR RELIABLE ENERGY**. The original document, filed with the Docket Unit, is accompanied by a copy of the most recent Proof of Service list, located on the web page for this project at www.energy.ca.gov/sitingcases/solartwo. The document has been sent to both the other parties in this proceeding as shown on the Proof of Service list and to the Commission's Docket Unit via email and by U.S. Mail with first-class postage thereon, fully prepaid and addressed as provided on the Proof of Service list to those addresses NOT marked "email preferred." An original paper copy and one electronic copy, mailed and emailed respectively, was sent to the Docket Office.

I declare under penalty of perjury that the foregoing is true and correct. Executed at South San Francisco, CA on March 24, 2010.

_____/s/_____
Bonnie Heeley

CALIFORNIA ENERGY
COMMISSION
Attn: Docket No. 08-AFC-5
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512
docket@energy.state.ca.us

California ISO
e-recipient@caiso.com
VIA EMAIL ONLY

JEFFREY D. BYRON
Commissioner and Presiding Member
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814-5512
jbyron@energy.state.ca.us

RICHARD KNOX
Project Manager
SES Solar Two, LLC
4800 N Scottsdale Rd, Ste 5500
Scottsdale, AZ 85251
richard.knox@tesseractosolar.com

Daniel Steward, Project Lead
BLM-El Centro Office
1661 S. 4th Street
El Centro, CA 92243
daniel_steward@ca.blm.gov

ANTHONY EGGERT
Commissioner and Associate Member
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814-5512
aeggert@energy.state.ca.us

ANGELA LEIBA, Sr. Project
Manager URS Corporation
1615 Murray Canyon Road
Suite 1000
San Diego, CA 92108
Angela_Leiba@urscorp.com

JIM STOBAUGH
Proj Mgr and Nat'l Proj Mgr Bureau of
Land Management
BLM Nevada State Office
P.O. Box 12000
Reno, NV 89520-0006
Jim_stobaugh@blm.gov

RAOUL RENAUD
Hearing Officer
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814-5512
rrenaud@energy.state.ca.us

ALLAN J. THOMPSON
Attorney at Law
21 C Orinda Way #314
Orinda, CA 94563
allanori@comcast.net

CURE
c/o Tanya A. Gulesserian
Loulena Miles, Marc D. Joseph
Adams Broadwell Joseph & Cardozo
601 Gateway Blvd, Ste. 1000
South San Francisco, CA 94080
tgulesserian@adamsbroadwell.com
lmiles@adamsbroadwell.com
Via Email Only

KRISTY CHEW, Adviser to
Commissioner Byron
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814-5512
kchew@energy.state.ca.us

ELLA FOLEY GANNON,
PARTNER
Bingham McCutchen, LLP
Three Embarcadero Center
San Francisco, CA 94111
ella.gannon@bingham.com

CARYN HOLMES, Staff Counsel
Christine Hammond,
Co-Staff Counsel
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814-5512
cholmes@energy.state.ca.us
chammond@energy.state.ca.us

CHRISTOPHER MEYER
Project Manager
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814-5512
cmeyer@energy.state.ca.us

Jennifer Jennings
Public Adviser
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814-5512
publicadviser@energy.state.ca.us

JONATHAN BLEES
Acting Chief Counsel
Office of Chief Counsel
California Energy Commission
1516 Ninth Street, MS-14
Sacramento, CA 95814
jblees@energy.state.ca.us

EXHIBIT A

Scott Cashen, M.S.

Senior Biologist / Forest Ecologist

3264 Hudson Avenue, Walnut Creek, CA 94597. (925) 256-9185. scottcashen@gmail.com

In his 17 years in the profession, Scott Cashen has consulted on projects pertaining to wildlife and fisheries ecology, avian biology, wetland restoration, and forest management. Because of his varied experience, Mr. Cashen is knowledgeable of the link between the various disciplines of natural resource management, and he is a versatile scientist.

Mr. Cashen's employment experience includes work as an expert witness, wildlife biologist, consulting forester, and instructor of Wildlife Management. He has worked throughout California, and he is knowledgeable of the different terrestrial and aquatic species and habitats present in the state.

Mr. Cashen is an accomplished birder and is able to identify bird species by sight and sound. His knowledge has enabled him to survey birds throughout the United States and instruct others on avian identification. Mr. Cashen's research on avian use of restored wetlands is currently being used by the United States Fish and Wildlife Service to design wetlands for specific "target" species, and as a model for other restored wildlife habitat monitoring projects in Pennsylvania. In addition to his bird experience, Mr. Cashen has surveyed for carnivores, bighorn sheep, and other mammals; special-status amphibian species; and various fish species.

PROFESSIONAL EXPERIENCE

Litigation Support / Expert Witness

Mr. Cashen serves as the biological resources expert for the San Francisco law firm of Adams Broadwell Joseph & Cardozo. He is responsible for reviewing CEQA/NEPA documents, assessing biological resource issues, preparing written comments, providing public testimony, and interfacing with public resource agencies.

REPRESENTATIVE EXPERIENCE

- Victorville 2 Solar-Gas Hybrid Power Project: Victorville, CA (338-acre natural gas and solar energy facility) – Review of CEQA equivalent documents and preparation of written documents.
- Avenal Energy Power Plant: Avenal, CA (148-acre natural gas facility) – Review of CEQA equivalent documents and preparation of written documents.
- Ivanpah Solar Electric Generating System: Ivanpah, CA (3700-acre solar facility) – Review of CEQA equivalent documents and preparation of written documents.
- Carrizo Energy Solar Farm: San Luis Obispo County, CA (640-acre solar energy facility) – Review of CEQA equivalent documents. Preparation of data requests, comments on Preliminary Staff Assessment, comments on wildlife corridor model

(CEQA equivalent documents).

- Live Oak Master Plan: Hanford, CA (390-acre housing development) – Review of CEQA documents and preparation of comment letter.
- Rollingwood: Vallejo, CA (214-unit housing development) – Review of CEQA documents and preparation of comment letter.
- Columbus Salame: Fairfield, CA (430,000 ft² food processing plant) – Review of CEQA documents and preparation of comment letter.
- Concord Naval Weapons Station: Concord, CA (5028-acre redevelopment) – Review of CEQA documents, preparation of comment letters, and provision of public testimony at County hearings.
- Chula Vista Bayfront Master Plan: Chula Vista, CA (556-acre development) – Review of CEQA documents and preparation of comment letter.
- Beacon Solar Energy Project: California City, CA (2012-acre solar facility) – Review of CEQA equivalent and NEPA documents. Preparation of data requests, comments on Preliminary Staff Assessment, comments on Incidental Take Permit Application. Expert witness providing testimony at California Energy Commission hearings.
- Solar One Power Project: San Bernardino County, CA (8230-acre solar facility) – Review of CEQA equivalent and NEPA documents and preparation of data requests. Expert witness providing testimony at California Energy Commission hearings.
- Solar Two Power Project: Imperial County, CA (6500-acre solar facility) – Review of CEQA equivalent and NEPA documents. Preparation of data requests and other documents for case record. Expert witness providing testimony at California Energy Commission hearings.
- Alves Ranch: Pittsburg, CA (320-acre housing development) – Review of CEQA documents.
- Roddy Ranch: Antioch, CA (640-acre housing and hotel development) – Review of CEQA documents and preparation of comment letter.
- Aviano: Antioch, CA (320-acre housing development) – Review of CEQA documents.
- Western GeoPower Power Plant and Steamfield: Geyserville, CA (887-acre geothermal facility) – Review of CEQA documents and preparation of comment letter.
- Sprint-Nextel Tower: Walnut Creek, CA (communications tower in open space preserve) - Review of project documents and preparation of comment letter.

Project Management

Mr. Cashen has managed several large-scale and high profile natural resources investigations. High profile projects involving multiple resources often require consideration of differing viewpoints on how resources should be managed, and they are usually subject to intense scrutiny. Mr. Cashen is accustomed to these challenges, and he

is experienced in facilitating the collaborative process to meet project objectives. In addition, the perception of high profile projects can be easily undermined if inexcusable mistakes are made. To prevent this, Mr. Cashen bases his work on solid scientific principles and proven sampling designs. He also solicits input from all project stakeholders, and provides project stakeholders with regular feedback on project progress. Mr. Cashen's educational and project background in several different natural resource disciplines enable him to consult on multiple natural resources simultaneously and address the many facets of contemporary land management in a cost-effective manner.

REPRESENTATIVE EXPERIENCE

- Forest health improvement projects – Biological Resources (*CDF: San Diego and Riverside Counties*)
- San Diego Bark Beetle Tree Removal Project – Biological Resources, Forestry, and Cultural Resources (*San Diego Gas & Electric: San Diego Co.*)
- San Diego Bark Beetle Tree Removal Project - Forestry (*San Diego County/NRCS*)
- Mather Lake Resource Management Study and Plan – Biological Resources, Hydrology, Soils, Recreation, Public Access, CEQA compliance, Historic Use (*Sacramento County: Sacramento*)
- “KV” Spotted Owl and Northern Goshawk Inventory (*USFS: Plumas NF*)
- Amphibian Inventory Project (*USFS: Plumas NF*)
- San Mateo Creek Steelhead Restoration Project – TES species, Habitat Mapping, Hydrology, Invasive Species Eradication, Statistical Analysis (*Trout Unlimited and CA Coastal Conservancy: Orange County*)
- Hillslope Monitoring Project – Forest Practice Research (*CDF: throughout California*)
- Placer County Vernal Pool Study – Plant and Animal Inventory, Statistical Analysis (*Placer County: throughout Placer County*)
- Weidemann Ranch Mitigation Project – Mitigation Monitoring and Environmental Compliance (*Toll Brothers, Inc.: San Ramon*)
- Delta Meadows State Park Special-status Species Inventory – Plant and Animal Species Inventory, Special-status Species (*CA State Parks: Locke*)
- Ion Communities Biological Resource Assessments – Biological Resource Assessments (*Ion Communities: Riverside and San Bernardino Counties*)
- Del Rio Hills Biological Resource Assessment – Biological Resource Assessments (*The Wyro Company: Rio Vista*)

Biological Resources

Mr. Cashen has a diverse background in biology. His experience includes studies of a variety of fish and wildlife species, and work in many of California's ecosystems. Mr. Cashen's specialties include conducting comprehensive biological resource assessments, habitat restoration, species inventories, and scientific investigations. Mr. Cashen has led investigations on several special-status species, including ones focusing on the foothill yellow-legged frog, mountain yellow-legged frog, steelhead, burrowing owl, California spotted owl, northern goshawk, willow flycatcher, and forest carnivores. Mr. Cashen was responsible for the special-status species inventory of Delta Meadows State Park, and for conducting a research study for Placer County's Natural Community Conservation Plan.

REPRESENTATIVE EXPERIENCE

Avian

- Study design and Lead Investigator - Delta Meadows State Park Special-status Species Inventory (*CA State Parks: Locke*)
- Study design and lead bird surveyor - Placer County Vernal Pool Study (*Placer County: throughout Placer County*)
- Surveyor - Willow flycatcher habitat mapping (*USFS: Plumas NF*)
- Independent surveyor - Tolay Creek, Cullinan Ranch, and Guadacanal Village restoration projects (*Ducks Unlimited/USGS: San Pablo Bay*)
- Study design and Lead Investigator - Bird use of restored wetlands research (*Pennsylvania Game Commission: throughout Pennsylvania*)
- Study design and surveyor - Baseline inventory of bird species at a 400-acre site in Napa County (*HCV Associates: Napa*)
- Surveyor - Baseline inventory of bird abundance following diesel spill (*LFR Levine-Fricke: Suisun Bay*)
- Study design and lead bird surveyor - Green Valley Creek Riparian Restoration Site (*City of Fairfield: Fairfield, CA*)
- Surveyor - Burrowing owl relocation and monitoring of artificial habitat (*US Navy: Dixon, CA*)
- Surveyor - Pre-construction raptor and burrowing owl surveys (*various clients and locations*)
- Surveyor - Backcountry bird inventory (*National Park Service: Eagle, Alaska*)
- Lead surveyor - Tidal salt marsh bird surveys (*Point Reyes Bird Observatory: throughout Bay Area*)

Amphibian

- Crew Leader - Red-legged frog, foothill yellow-legged frog, and mountain yellow-legged frog surveys (*USFS: Plumas NF*)
- Surveyor - Foothill yellow-legged frog surveys (*PG&E: North Fork Feather River*)
- Surveyor - Mountain yellow-legged frog surveys (*El Dorado Irrigation District: Desolation Wilderness*)
- Crew Leader - Bullfrog eradication (*Trout Unlimited: Cleveland NF*)

Fish and Aquatic Resources

- Surveyor - Hardhead minnow and other fish surveys (*USFS: Plumas NF*)
- Surveyor - Weber Creek aquatic habitat mapping (*El Dorado Irrigation District: Placerville, CA*)
- Surveyor - Green Valley Creek aquatic habitat mapping (*City of Fairfield: Fairfield, CA*)
- GPS Specialist - Salmonid spawning habitat mapping (*CDFG: Sacramento River*)
- Surveyor - Fish composition and abundance study (*PG&E: Upper North Fork Feather River and Lake Almanor*)
- Crew Leader - Surveys of steelhead abundance and habitat use (*CA Coastal Conservancy: Gualala River estuary*)
- Crew Leader - Exotic species identification and eradication (*Trout Unlimited: Cleveland NF*)

Mammals

- Principal Investigator – Peninsular bighorn sheep resource use and behavior study (*California State Parks: Freeman Properties*)
- Scientific Advisor – Red Panda survey and monitoring methods (*The Red Panda Network: CA and Nepal*)
- Surveyor - Forest carnivore surveys (*University of CA: Tahoe NF*)
- Surveyor - Relocation and monitoring of salt marsh harvest mice and other small mammals (*US Navy: Skagg's Island, CA*)

Natural Resource Investigations / Multiple Species Studies

- Scientific Review Team Member – Member of the science review team assessing the effectiveness of the US Forest Service's implementation of the Herger-Feinstein Quincy Library Group Act.

- Lead Consultant - Baseline biological resource assessments and habitat mapping for CDF management units (*CDF: San Diego, San Bernardino, and Riverside Counties*)
- Biological Resources Expert – Peer review of CEQA/NEPA documents (*Adams Broadwell Joseph & Cardoza: California*)
- Lead Consultant - Pre- and post harvest biological resource assessments of tree removal sites (*SDG&E: San Diego County*)
- Crew Leader - T&E species habitat evaluation for BA in support of a steelhead restoration plan (*Trout Unlimited: Cleveland NF*)
- Lead Investigator - Resource Management Study and Plan for Mather Lake Regional Park (*County of Sacramento: Sacramento, CA*)
- Lead Investigator - Wrote Biological Resources Assessment for 1,070-acre Alfaro Ranch property (*Yuba County, CA*)
- Lead Investigator - Wildlife Strike Hazard Management Plan (*HCV Associates: Napa*)
- Lead Investigator - Del Rio Hills Biological Resource Assessment (*The Wyro Company: Rio Vista, CA*)
- Lead Investigator – Ion Communities project sites (*Ion Communities: Riverside and San Bernardino Counties*)
- Surveyor – Tahoe Pilot Project: CWHR validation (*University of California: Tahoe NF*)

Forestry

Mr. Cashen has five years of experience working as a consulting forester on projects throughout California. During that time, Mr. Cashen has consulted with landowners and timber harvesters on best forest management practices; and he has worked on a variety of forestry tasks including selective tree marking, forest inventory, harvest layout, erosion control, and supervision of logging operations. Mr. Cashen’s experience with many different natural resources enable him to provide a holistic approach to forest management, rather than just management of timber resources.

REPRESENTATIVE EXPERIENCE

- Lead Consultant - CDF fuels treatment projects (*CDF: San Diego, Riverside, and San Bernardino Counties*)
- Lead Consultant and supervisor of harvest activities – San Diego Gas and Electric Bark Beetle Tree Removal Project (*SDG&E: San Diego*)
- Crew Leader - Hillslope Monitoring Program (*CDF: throughout California*)
- Consulting Forester – Inventory and selective harvest projects (*various clients throughout California*)

EDUCATION / SPECIAL TRAINING

M.S. Wildlife and Fisheries Science, The Pennsylvania State University (1998)

B.S. Resource Management, The University of California-Berkeley (1992)

Forestry Field Program, Meadow Valley, California, Summer (1991)

PERMITS

U.S. Fish and Wildlife Service Section 10(a)(1)(A) Recovery Permit for the Peninsular bighorn sheep

CA Department of Fish and Game Scientific Collecting Permit

PROFESSIONAL ORGANIZATIONS / ASSOCIATIONS

The Wildlife Society

Society of American Foresters

Mt. Diablo Audubon Society

OTHER AFFILIATIONS

Scientific Advisor and Grant Writer – *The Red Panda Network*

Scientific Advisor – *Mt. Diablo Audubon Society*

Grant Writer – *American Conservation Experience*

Land Committee Member – *Save Mt. Diablo*

TEACHING EXPERIENCE

Instructor: Wildlife Management, The Pennsylvania State University, 1998

Teaching Assistant: Ornithology, The Pennsylvania State University, 1996-1997

Curriculum Vitae

VERNON C. BLEICH

Eastern Sierra Center for Applied
Population Ecology (ESCAPE)

11537 36 X St. SW
Dickinson, ND 58601
760/937-5020
701/225-7834
vbleich@ndsupernet.com



Personal Interests:

Hockey (I am a former goaltender), family life, banjo, gardening, hunting, and fishing.

Professional Goals:

To help ensure the persistence of populations of large mammals and their habitats through the study of their ecology and behavior, to apply that knowledge in meaningful conservation efforts, and to impart that knowledge through professional activities including publications, teaching, and other public contacts.

Education:

Ph.D. University of Alaska Fairbanks (Wildlife Biology, 1993). Thesis: "Sexual Segregation in Desert-Dwelling Mountain Sheep."

M.A. California State University, Long Beach (Biology, 1973). Thesis: "Ecology of Rodents at the Seal Beach Naval Weapons Station, Fallbrook Annex, San Diego County, California."

B.S. California State University, Long Beach (Zoology, 1970).

Professional Background:

Senior Conservation Scientist, Eastern Sierra Center for Applied Population Ecology (2007 – present). I provide expertise on natural resource conservation issues, particularly as they relate to large mammals in desert, mountain, and plains environments.

Senior Environmental Scientist, California Department of Fish and Game (2001 – 2007; now retired). I served as the project leader for the Sierra Nevada Bighorn Sheep Recovery Program, a project to conserve mountain sheep in that range and restore them to formerly occupied habitats. I continued to function as the Regional Large Mammal and Desert

specialist, with an emphasis on mountain sheep and mule deer in southeastern California. I also served as chair of the Sierra Nevada Bighorn Sheep Scientific Advisory Group, and continued to serve as a member of the Peninsular Bighorn Sheep Recovery Team.

Senior Wildlife Biologist, California Department of Fish and Game (1999 - 2001). I served as the Regional Large Mammal and Desert Specialist, with an emphasis on mountain sheep and mule deer in southeastern California. At the request of the U.S. Fish and Wildlife Service I was appointed by the Department of Fish and Game to serve on the Peninsular Bighorn Sheep Recovery Team.

Senior Wildlife Biologist, California Department of Fish and Game (1993 - 1999). I served as the Regional Large Mammal Specialist and supervised the activities of 5 journeyman wildlife biologists in eastern California. Emphasis species included mountain sheep, mule deer, pronghorn, tule elk, and sage grouse in eastern California.

Associate Wildlife Biologist, California Department of Fish and Game (1986 - 1993). I served as the Regional mountain sheep specialist, and supervised the activities of 5 journeyman wildlife biologists in eastern California. Emphasis species included mountain sheep, mule deer, pronghorn, tule elk, and sage grouse in eastern California.

Project Leader, California Department of Fish and Game, Federal Aid in Wildlife Restoration Project W-26-D (1978 - 1986). I supervised 2 technicians, and planned and implemented habitat management projects designed to benefit waterfowl, sage grouse, mule deer, and mountain sheep in eastern California.

Assistant Wildlife Biologist, California Department of Fish and Game (1975 - 1978). I was an Area Biologist responsible for management of mule deer, mountain sheep, and the Endangered Stephens' kangaroo rat, as well as for environmental review activities in Riverside and San Bernardino counties, California.

Junior Aquatic Biologist, California Department of Fish and Game (1974 - 1975). I was responsible for fisheries management activities, with an emphasis on wild trout and the Endangered unarmored three-spined stickleback in Los Angeles and San Bernardino counties, California.

Park Ranger, Department of Recreation, City of Long Beach, California (1970 - 1973). I was responsible for public education activities, routine patrol, and coordination with other law enforcement agencies in El Dorado Regional Park, Long Beach, California.

Academic Appointments:

Research Professor, Department of Natural Resources and Environmental Science, University of Nevada, Reno (2007 - Present).

Affiliate Faculty, Department of Biological Sciences, Idaho State University, Pocatello, Idaho (2005 – Present)

Senior Research Associate, Institute of Arctic Biology, University of Alaska Fairbanks, Fairbanks, Alaska (1998 - Present).

Affiliate Assistant Professor of Wildlife Ecology, Department of Biology and Wildlife, University of Alaska Fairbanks, Fairbanks, Alaska (1993 - 1998).

Research Associate, Institute of Arctic Biology, University of Alaska Fairbanks, Fairbanks, Alaska (1993 - present).

Adjunct Assistant Professor of Natural Resource Science, Department of Natural Resource Science, University of Rhode Island, Kingston (1992 - 1994).

Instructor, Mt. San Jacinto College, San Jacinto, California. I instructed an introductory course entitled, "Wildlife Management" (1976 - 1986).

Assistant Professor, Department of Biology, Rio Hondo College, Whittier, California. I instructed lecture and laboratory sections of General Zoology (biology major emphasis), General Biology (general education emphasis), and Marine Biology (1973 - 1974).

Teaching Assistant, California State University, Long Beach. I instructed laboratory sections of General Biology (for non-majors) and General Zoology (for majors) (1972 - 1973).

Graduate Research Assistant, California State University, Long Beach. I prepared specimens and curated the collection of mammals (> 10,000 specimens) in the Bird and Mammal Museum, and instructed laboratory sections of General Ecology (for majors), General Mammalogy (for majors), and Advanced Mammalogy (1970-1972).

Graduate Student Supervision:

Chair of Graduate Committee:

Kevin L. Monteith (Ph.D.), Reproductive ecology of migratory and resident mule deer in the eastern Sierra Nevada, California. Idaho State University, Pocatello. Graduation expected June, 2010. Co-chair with Dr. R. T. Bowyer.

Michael W. Oehler (M.S.), Ecology of mountain sheep: effects of mining and precipitation. University of Alaska Fairbanks. *Graduated December 1999*. Current position: Wildlife Biologist, National Park Service, Theodore Roosevelt National Park, Medora, North Dakota. Co-chair with Dr. R. T. Bowyer.

Becky M. Pierce (Ph.D.), Predator-prey dynamics between mountain lions and mule deer: effects on distribution, population regulation, habitat selection and prey selection. University of Alaska Fairbanks. *Graduated May 1999*. Current position: Associate Wildlife Biologist, California Department of Fish and Game. Co-chair with Dr. R. T. Bowyer.

Graduate Committee Membership:

Cody J. McKee (M.S.), Ecology of mule deer in the eastern Mojave Desert, California. University of Nevada, Reno (Graduation expected June 2011).

Jeffrey T. Villepique (Ph.D.), Interactions between mountain lions and mountain sheep: an assessment of forage benefits and predation risk. Idaho State University, Pocatello (Graduation expected December 2010).

Sabrina Morano (Ph.D.), Reproductive biology of mule deer in the White Mountains, Inyo and Mono counties, California. University of Nevada, Reno (Graduation expected June 2011).

Jericho C. Whiting (Ph.D.), Behavior and ecology of reintroduced Rocky Mountain bighorn sheep. Idaho State University, Pocatello. *Graduated December 2008*. Current position: Wildlife Biologist, Idaho National Laboratory, Twin Falls.

Cody A. Schroeder (M.S.), Habitat selection by mountain sheep: forage benefits or risk of predation? Idaho State University, Pocatello. *Graduated September 2007*. Current position: Doctoral Student, University of Nevada, Reno.

Jason P. Marshal (Ph.D.), Foraging ecology and water relationships of mule deer in a Sonoran Desert environment. University of Arizona, Tucson. *Graduated May 2005*. Current position: Lecturer, University of the Witwatersrand, South Africa.

Heather E. Johnson (M.S.), Antler breakage in tule elk in Owens Valley, California: nutritional causes and behavioral consequences. University of Arizona, Tucson. *Graduated January 2004*. Current position: Doctoral Student and Research Associate, University of Montana, Missoula.

Jennifer L. Rechel (Ph.D. [Geography]), Influence of neighborhood effects and friction surfaces on the spatial distribution and movement strategies of desert-dwelling mountain sheep (*Ovis canadensis*). University of California, Riverside. *Graduated August 2003*. Current position: Wildlife Biologist, U.S. Forest Service, Pacific Southwest Forest and Range Experiment Station, Riverside, California.

Holly B. Ernest (Ph.D.), Ecological genetics of mountain lions (*Puma concolor*) in California. University of California, Davis. *Graduated December 2001*. Current position: Research Geneticist, School of Veterinary Medicine, University of California, Davis.

Esther S. Rubin (Ph.D.), The ecology of bighorn sheep (*Ovis canadensis*) in the peninsular ranges of California. University of California, Davis. *Graduated December 2000*. Current position: Conservation Biologist, The Conservation Biology Institute, Borrego Springs, California.

Nancy G. Andrew (M.S.), Demography and habitat use of desert-dwelling mountain sheep in the East Chocolate Mountains, Imperial County, California. University of Rhode Island, Kingston. *Graduated May 1994*. Current position: Staff Environmental Scientist, California Department of Fish and Game.

Awards and Honors:

Honorary Lifetime Membership, 2010 (in recognition of long and continuing service to the Society for the Conservation of Bighorn Sheep)

Wild Sheep Biologist Wall of Fame Award, 2009 (in recognition of significant contributions to the conservation of wild sheep in North America) (Wild Sheep Foundation)

Lifetime Achievement Award, 2008 (In recognition of contributions toward the conservation of mountain sheep in California) (California Chapter of the Foundation for North American Wild Sheep)

Honor Plaque 2007 (Group Award, in recognition of outstanding contributions toward the recovery of mountain sheep in the Sierra Nevada) (Desert Bighorn Council)

State Statesman Award, 2006 (In recognition of outstanding contributions to the wild sheep of California) (Foundation for North American Wild Sheep)

Trail Blazer Award, 2004 (In recognition of efforts on behalf of mountain sheep conservation in California) (California Chapter of the Foundation for North American Wild Sheep)

Director's Achievement Award, 2004 (In recognition of editorial services for *California Fish and Game* (California Department of Fish and Game)

Annual Achievement Award, 2004 (In recognition of conservation of mule deer and their habitats) (Southern California Chapter, California Deer Association)

Alumni Achievement Award for Professional Excellence, 2002 (University of Alaska Alumni Association)

Outstanding Alumnus Award, 2002 (College of Science, Engineering, and Mathematics, University of Alaska Fairbanks)

Sustained Superior Accomplishment Award, 2002 (California Department of Fish and Game)

The Desert Ram Award, 2001 (Desert Bighorn Council)

Outstanding Publication Award for a Monograph, 1998 (The Wildlife Society)

Award of Appreciation, 1998 (San Fernando Valley Chapter of Safari Club International, CA)

Professional Membership, Boone and Crockett Club, 1998 (Boone and Crockett Club)

Certificate of Appreciation, 1997 (Society for the Conservation of Bighorn Sheep)

"Ol' Irongut" Award, 1996 (California Department of Fish and Game, Division of Air Services)

Resources Agency/University of California Fellowship, 1996 (Sponsored jointly by the California Resources Agency and the University of California, Davis)

Director's Achievement Award, 1992 (California Department of Fish and Game)

Outstanding Biology Department Alumnus, 1988 (California State University, Long Beach)

Professional of the Year, 1985 (Western Section of The Wildlife Society)

California Wildlife Officer of the Year, 1984 (Shikar-Safari Foundation)

Award of Honor, 1984 (Society for the Conservation of Bighorn Sheep)

Honorary Lifetime Membership, 1984 (Banning [California] Sportsman's Club)

Professional and Fraternal Memberships:

American Society of Mammalogists (Life Member)
The Boone and Crockett Club (Professional Member)
The Wildlife Society
Society for Conservation Biology
Southwestern Association of Naturalists
Wild Sheep Foundation
National Rifle Association
California Chapter, Foundation for North American Wild Sheep
Society for the Conservation of Bighorn Sheep
Minnesota-Wisconsin Chapter, Foundation for North American Wild Sheep

Licenses and Certifications:

California Community College Credential (# 45476, Lifetime)
State of California Blaster's License (# 2087)
Certified in Wildlife Capture Techniques (California Department of Fish and Game)
Certified Wildlife Biologist (1981 - The Wildlife Society)
California Hunter Safety Instructor (# 1984)

Other Professional Activities:

Editorial Activities:

Editor-in-Chief, *California Fish and Game* (2009 – present)

Associate Editor, *California Fish and Game* (1995 - 2009)

Editor, *Transactions of the Western Section of The Wildlife Society* (1988)

Associate Editor, *Transactions of the Western Section of The Wildlife Society* (1986-87)

Reviewer for Journals:

Conservation Biology, Journal of Wildlife Management, Wildlife Society Bulletin, Journal of Mammalogy, The Condor, California Fish and Game, Transactions of the Western Section of the Wildlife Society, Western North American Naturalist, Desert Bighorn Council Transactions, Southwestern Naturalist, Proceedings of the Northern Wild Sheep and Goat Council, Journal of Wildlife Diseases, Great Basin Naturalist, Bulletin of the Southern California Academy of Sciences, Journal of Zoology (London), Vida Silvestre Neotropical, Wildlife Biology, Wildlife Monographs, European Journal of Wildlife Research, Biological Conservation, Journal of Arid Environments (An average of about 12 reviews per year).

Other Activities:

2008 - Present: Member, Big Game Records Committee, Boone and Crockett Club

2007 - Present: Advisory Board Member, Texas Bighorn Society

2007 - Present: Science Advisor, Society for the Conservation of Bighorn Sheep

2006 - Present: Member, Ad Hoc Committee on Professional Membership, Boone and Crockett Club.

1998 - 2002: Coach and member of Board of Trustees, Sierra Roller Hockey League.

1995-96: Vice Chairman, The Desert Bighorn Council.

1994-98: Member, Board of Directors, The Wildlife Forensic DNA Foundation.

1993 - Present: Member, Wildlife Management Professional Advisory Committee, Foundation for North American Wild Sheep.

1991: Member, Committee on Support of Symposia and Conferences, The Wildlife Society.

1989-1993: Member, Board of Trustees, Friends of the Eastern California Museum; Vice-chairman, 1991-1992; Chairman, 1993.

1987-1988: Chairman, The Desert Bighorn Council.

1988: Co-chairman, Wildlife Water Development Symposium, Western Section of The Wildlife Society.

Refereed Publications:

Bleich, V. C. *In review.* Perceived threats to mountain sheep: levels of concordance among western states, provinces, and territories. Desert Bighorn Council Transactions.

Marshal, J. P., and **V. C. Bleich.** *In review.* Geographic variation in relationships between El Nino Southern Oscillation and mule deer harvest in California, USA. Canadian Journal of Zoology.

Holl, S. A., and **V. C. Bleich.** *In review.* Responses of large mammals to fire and rain in the San Gabriel Mountains, California. Southwestern Naturalist.

Marshal, J. P., **V. C. Bleich,** P. R. Krausman, A. Neibergs, M. L. Reed, and N. G. Andrew. *In review.* Habitat use and diets of mule deer and feral ass in the Sonoran Desert. Journal of Arid Environments.

Whiting, J. C., R. T. Bowyer, J. T. Flinders, **V. C. Bleich,** and J. G. Kie. *In press.* Sexual segregation and use of water by bighorn sheep: implications for conservation. Animal Conservation.

Villepique, J. T., B. M. Pierce, **V. C. Bleich,** and R. T. Bowyer. *In press.* Diets of mountain lions following a decline in mule deer numbers. Southwestern Naturalist.

Bleich, V. C. *In press.* Considerations for re provisioning wildlife water developments: mountain sheep in desert ecosystems. California Fish and Game.

Gibson, R. M., **V. C. Bleich,** C. W. McCarthy, and T. L. Russi. *In press.* Recreational hunting can lower population size in Greater Sage-grouse. Studies in Avian Biology.

Schroeder, C. A., R. T. Bowyer, **V. C. Bleich,** and T. R. Stephenson. *In press.* Ramifications of sexual segregation for an endangered alpine ungulate: Sierra Nevada bighorn sheep, *Ovis canadensis sierrae*. Arctic, Antarctic, and Alpine Research.

Bleich, V. C., J. P. Marshal, and N. G. Andrew. 2010. Habitat use by a desert ungulate: predicting effects of water availability on mountain sheep. Journal of Arid Environments 74:638-645.

Krausman, P. R., D. E. Naugle, M. R. Frisina, R. Northrup, **V. C. Bleich,** W. M. Block, M. C.

- Wallace, and J. D. Wright. 2009. Livestock grazing, wildlife habitat, and rangeland values. *Rangelands* 31(5):15-19.
- Holl, S. A., and **V. C. Bleich**. 2009. Reconstructing the San Gabriel Mountains bighorn sheep population. *California Fish and Game* 95:77-87.
- Clifford, D. L., B. A. Schumaker, T. R. Stephenson, **V. C. Bleich**, M. Leonard-Cahn, B. J. Gonzales, W. M. Boyce, and J. A. K. Mazet. 2009. Assessing disease risk at the wildlife-livestock interface: a study of Sierra Nevada bighorn sheep. *Biological Conservation* 142:2559-2568.
- Bleich, V. C.**, J. H. Davis, J. P. Marshal, S. G. Torres, and B. J. Gonzales. 2009. Mining activity and habitat use by mountain sheep. *European Journal of Wildlife Research* 55:183-191.
- Pease, K. M., A. H. Freedman, J. P. Pollinger, J. E. McCormack, W. Buermann, J. Rodzen, J. Banks, E. Meredith, **V. C. Bleich**, R. J. Schaefer, K. Jones, and R. K. Wayne. 2009. Landscape genetics of California mule deer (*Odocoileus hemionus*): the roles of ecological and historical factors in generating differentiation. *Molecular Ecology* 18:1848-1862.
- Duffy, L. K., M. W. Oehler, R. T. Bowyer, and **V. C. Bleich**. 2009. Mountain sheep: an environmental epidemiological survey of variation in metal exposure and physiological biomarkers following mine development. *American Journal of Environmental Sciences* 5:296-303.
- Marshal, J. P., J. W. Cain III, **V. C. Bleich**, and S. S. Rosenstock. 2009. Intrinsic and extrinsic sources of variation in the population dynamics of an arid-environment large herbivore. *Canadian Journal of Zoology* 87:103-111.
- Villepique, J. T., **V. C. Bleich**, R. A. Botta, B. M. Pierce, T. R. Stephenson, and R. T. Bowyer. 2008. Evaluating GPS collar error: a critical evaluation of Televilt POSREC-Science™ Collars and a method for screening location data. *California Fish and Game* 94:155-168.
- Bleich, V. C.**, H. E. Johnson, S. A. Holl, L. Konde, S. G. Torres, and P. R. Krausman. 2008. Fire history in a chaparral ecosystem: implications for conservation of a native ungulate. *Rangeland Ecology and Management* 61:571-579.
- Marshal, J. P., P. R. Krausman, and **V. C. Bleich**. 2008. Body condition of desert mule deer is related to rainfall. *Southwestern Naturalist* 53:311-318.
- Marshal, J. P., **V. C. Bleich**, and N. G. Andrew. 2008. Evidence for interspecific competition between feral ass and mountain sheep in a desert environment. *Wildlife Biology* 14:228-236.
- Bleich, V. C.**, and R. A. Weaver. 2007. Status of mountain sheep in California: comparisons between 1957 and 2007. *Desert Bighorn Council Transactions* 49:55-67.

- Wehausen, J. D., and **V. C. Bleich**. 2007. Influence of aerial search time on survey results. *Desert Bighorn Council Transactions* 49:23-29.
- Bowyer, R. T., **V. C. Bleich**, X. Manteca, J. C. Whiting, and K. M. Stewart. 2007. Sociality, mate choice, and timing of mating in American bison (*Bison bison*): effects of large males. *Ethology* 113:1048-1060.
- Epps, C. W., J. D. Wehausen, **V. C. Bleich**, S. G. Torres, and J. S. Brashares. 2007. Optimizing dispersal and corridor models using landscape genetics. *Journal of Applied Ecology* 44:714-724.
- Bleich, V. C.**, T. R. Stephenson, B. M. Pierce, and M. J. Warner. 2007. Body condition of mule deer while injured and following recovery. *Southwestern Naturalist* 52:164-167.
- Johnson, H. E., **V. C. Bleich**, and P. R. Krausman. 2007. Mineral deficiencies in tule elk, Owens Valley, California. *Journal of Wildlife Diseases* 43:61-74.
- Johnson, H. E., **V. C. Bleich**, P. R. Krausman, and J. L. Koprowski. 2007. Effects of antler breakage on mating behavior in male tule elk (*Cervus elaphus nannodes*). *European Journal of Wildlife Research* 53:9-15.
- Bleich, V. C.** 2006. Mountain sheep in California: perspectives on the past, and prospects for the future. *Biennial Symposium of the Northern Wild Sheep and Goat Council* 15:1-13.
- Marshal, J. P., **V. C. Bleich**, P. R. Krausman, M. L. Reed, and N. G. Andrew. 2006. [Invited paper] Factors affecting habitat use and distribution of mule deer in an arid environment. *Wildlife Society Bulletin* 34:609-619.
- Bleich, V. C.**, N. G. Andrew, M. J. Martin, G. P. Mulcahy, A. M. Pauli, and S. S. Rosenstock. 2006. [Invited paper] Quality of water available to wildlife: comparisons among artificial and natural sources. *Wildlife Society Bulletin* 34:627-632.
- Bleich, V. C.**, S. Nelson, P. J. Wood, H. R. Wood, and R. A. Noles. 2006. [Invited paper] Retrofitting gallinaceous guzzlers: enhancing water availability and safety for wildlife. *Wildlife Society Bulletin* 34:633-636.
- Marshal, J. P., P. R. Krausman, **V. C. Bleich**, S. S. Rosenstock, and W. B. Ballard. 2006. [Invited paper] Gradients of forage biomass and ungulate use near wildlife water developments. *Wildlife Society Bulletin* 34:620-626.
- Rominger, E. M., **V. C. Bleich**, and E. J. Goldstein. 2006. [Letter] Bighorn sheep, mountain lions, and the ethics of conservation. *Conservation Biology* 20:1041.
- Marshal, J. P., L. M. Lesicka, **V. C. Bleich**, P. R. Krausman, G. P. Mulcahy, and N. G. Andrew. 2006. Demography of desert mule deer in southeastern California. *California Fish and Game* 92:55-66.

- Bleich, V. C.**, B. M. Pierce, J. Jones, and R. T. Bowyer. 2006. Variance in survival rates among young mule deer in the Sierra Nevada, California. *California Fish and Game* 92:24-38.
- Johnson, H. E., **V. C. Bleich**, and P. R. Krausman. 2005. Antler breakage in tule elk, Owens Valley, California. *Journal of Wildlife Management* 69:1747-1752.
- Rosenstock, S. S., **V. C. Bleich**, M. J. Rabe, and C. Reggiardo. 2005. Water quality at wildlife water sources in the Sonoran Desert, United States. *Rangeland Ecology and Management* 58:623-627.
- Marshal, J. P., P. R. Krausman, and **V. C. Bleich**. 2005. Rainfall, temperature, and forage dynamics affect nutritional quality of desert mule deer forage. *Rangeland Ecology and Management* 58:360-365.
- Bleich, V. C.**, J. T. Villepique, T. R. Stephenson, B. M. Pierce, and G. M. Kutliyev. 2005. Efficacy of aerial telemetry as an aid to capture specific individuals: a comparison of two techniques. *Wildlife Society Bulletin* 33:332-336.
- Bleich, V. C.** 2005. [Invited paper] In my opinion: politics, promises, and illogical legislation confound wildlife conservation. *Wildlife Society Bulletin* 33:66-73.
- Wehausen, J. D., **V. C. Bleich**, and R. R. Ramey II. 2005. Correct nomenclature for Sierra Nevada bighorn sheep. *California Fish and Game* 91:216-218.
- Oehler, M. W., **V. C. Bleich**, R. T. Bowyer, and M. C. Nicholson. 2005. Mountain sheep and mining: implications for conservation and management. *California Fish and Game* 91:149-178.
- Marshal, J. P., P. R. Krausman, and **V. C. Bleich**. 2005. Dynamics of mule deer forage in the Sonoran Desert. *Journal of Arid Environments* 60:593-609.
- Bleich, V. C.**, and S. G. Torres. 2004. [Guest Editorial] International involvement in wildlife conservation. *Wildlife Society Bulletin* 32:1013-1014.
- Krausman, P. R., **V. C. Bleich**, J. W. Cain III, T. R. Stephenson, D. W. DeYoung, P. W. McGrath, P. K. Swift, B. M. Pierce, and B. D. Jansen. 2004. Neck lesions in ungulates from collars incorporating satellite technology. *Wildlife Society Bulletin* 32:987-991.
- Marshal, J. P., **V. C. Bleich**, N. G. Andrew, and P. R. Krausman. 2004. Seasonal forage use by desert mule deer in southeastern California. *Southwestern Naturalist* 49:501-505.
- Holl, S. A., **V. C. Bleich**, and S. G. Torres. 2004. Population dynamics of bighorn sheep in the San Gabriel Mountains, California, 1967-2002. *Wildlife Society Bulletin* 32:412-426.
- Pierce, B. M., R. T. Bowyer, and **V. C. Bleich**. 2004. Habitat selection by mule deer: forage benefits or risk of predation? *Journal of Wildlife Management* 68:533-541.

- Bleich, V. C.**, E. F. Cassirer, L. E. Oldenburg, V. L. Coggins, and D. L. Hunter. 2004. Predation by a golden eagle, *Aquila chrysaetos*, on a juvenile mountain sheep, *Ovis canadensis*. California Fish and Game 90:91-93.
- Epps, C. W., D. R. McCullough, J. D. Wehausen, **V. C. Bleich**, and J. L. Rechel. 2004. Effects of climate change on population persistence of desert-dwelling mountain sheep in California. Conservation Biology 18:102-113.
- Long, E. S., D. M. Fecske, R. A. Sweitzer, J. A. Jenks, B. M. Pierce, and **V. C. Bleich**. 2003. Efficacy of photographic scent stations to detect mountain lions. Western North American Naturalist 63:529-532.
- Bleich, V. C.** 2003. The potential for botulism in desert-dwelling mountain sheep. Desert Bighorn Council Transactions 47:2-8.
- Epps, C. W., **V. C. Bleich**, J. D. Wehausen, and S. G. Torres. 2003. Status of bighorn sheep in California. Desert Bighorn Council Transactions 47:20-35.
- Oehler, M. W., Sr., R. T. Bowyer, and **V. C. Bleich**. 2003. Home ranges of mountain sheep: effects of precipitation in a desert ecosystem. Mammalia 67:385-402.
- Weckerly, F. W., **V. C. Bleich**, C.-L. B. Chetkiewicz, and Mark A. Ricca. 2003. Body weight and rumen-reticulum capacity in tule elk and mule deer. Journal of Mammalogy 84:659-664.
- Ernest, H. B., W. M. Boyce, **V. C. Bleich**, B. M. May, S. J. Stiver, and S. G. Torres. 2003. Genetic structure of mountain lion (*Puma concolor*) populations in California. Conservation Genetics 4:353-366.
- Bleich, V. C.**, T. R. Stephenson, N. J. Holste, I. C. Snyder, J. P. Marshal, P. W. McGrath, and B. M. Pierce. 2003. Effects of tooth extraction on selected biological parameters of female mule deer. Wildlife Society Bulletin 31:233-236.
- Marshal, J., P. R. Krausman, **V. C. Bleich**, W. B. Ballard, and J. S. McKeever. 2002. Rainfall, el Nino, and dynamics of mule deer in the Sonoran Desert, California. Journal of Wildlife Management 66:1283-1289.
- Stephenson, T. R., **V. C. Bleich**, B. M. Pierce, and G. P. Mulcahy. 2002. Validation of mule deer body composition using *in vivo* and post-mortem indices of nutritional condition. Wildlife Society Bulletin 30:557-564.
- Swift, P. K., **V. C. Bleich**, T. R. Stephenson, A. E. Adams, B. J. Gonzales, B. M. Pierce, and J. P. Marshal. 2002. Tooth extraction from mule deer in the absence of chemical immobilization. Wildlife Society Bulletin 30:253-255.
- Bleich, V. C.**, C. S. Y. Chun, R. W. Anthes, T. E. Evans, and J. K. Fischer. 2001. [Invited

- Paper] Visibility bias and development of a sightability model for tule elk. *Alces* 37:315-327.
- Drew, M. L., **V. C. Bleich**, S. G. Torres, and R. G. Sasser. 2001. Early pregnancy detection in mountain sheep using a pregnancy-specific protein B assay. *Wildlife Society Bulletin* 29:1182-1185.
- Rosenstock, S. S., J. J. Herver, **V. C. Bleich**, and P. R. Krausman. 2001. Muddying the water with poor science: a reply to Broyles and Cutler. *Wildlife Society Bulletin* 29:734-738 [peer edited].
- Bleich, V. C.** 2001. On wildlife management in national monuments. *The Wildlifer* 306:59 [letter].
- Andrew, N. G., **V. C. Bleich**, A. D. Morrison, L. M. Lesicka, and P. Cooley. 2001. Wildlife mortalities associated with artificial water sources in the Sonoran Desert. *Wildlife Society Bulletin* 29:275-280.
- Thompson, J. R., **V. C. Bleich**, S. G. Torres, and G. P. Mulcahy. 2001. Translocation techniques for mountain sheep: does the method matter? *Southwestern Naturalist* 46:87-93.
- Bleich, V. C.**, and B. M. Pierce. 2001. Accidental mass mortality of migrating mule deer. *Western North American Naturalist* 61:124-125.
- Chao-chin, C., B. B. Chomel, R. W. Kasten, R. Heller, K. M. Kocan, H. Ueno, K. Yamamoto, **V. C. Bleich**, B. M. Pierce, B. J. Gonzales, P. K. Swift, W. M. Boyce, S. S. Jang, H.-J. Boulouis, and Y. Piemont. 2000. *Bartonella* spp. isolated from domestic and wild ruminants in North America. *Emerging Infectious Diseases* 6:306-311.
- Singer, F. J., **V. C. Bleich**, and M. A. Gudorf. 2000. [Invited Paper] Restoration of bighorn sheep metapopulations in and near western national parks. *Restoration Ecology* 8(4S):14-24.
- Bleich, V. C.**, and M. W. Oehler. 2000. [Invited paper] Wildlife education in the United States: thoughts from agency biologists. *Wildlife Society Bulletin* 28:542-545.
- Rubin, E. S., W. M. Boyce, and **V. C. Bleich**. 2000. Reproductive strategies of desert bighorn sheep. *Journal of Mammalogy* 81:769-786.
- Schaefer, R. J., S. G. Torres, and **V. C. Bleich**. 2000. Survivorship and cause-specific mortality in sympatric populations of mountain sheep and mule deer. *California Fish and Game* 86:127-135.
- Pierce, B. M., **V. C. Bleich**, and R. T. Bowyer. 2000. Prey selection by mountain lions and coyotes: effects of hunting style, body size, and reproductive status. *Journal of Mammalogy* 81:462-472.

- Swift, P. K., J. D. Wehausen, H. B. Ernest, R. S. Singer, A. M. Pauli, H. Kinde, T. E. Rocke, and **V. C. Bleich**. 2000. Desert bighorn sheep mortality due to presumptive type C botulism in California. *Journal of Wildlife Diseases* 36:184-189.
- Pierce, B. M., **V. C. Bleich**, and R. T. Bowyer. 2000. Social organization of mountain lions: does a land-tenure system regulate population size? *Ecology* 81:1533-1543.
- Bleich, V. C.** 1999. Wildlife conservation and wilderness management: uncommon objectives and conflicting philosophies. *North American Wild Sheep Conference Proceedings* 2:195-205.
- Bleich, V. C.**, and A. M. Pauli. 1999. Distribution and intensity of hunting and trapping activity in the East Mojave National Scenic Area, California. *California Fish and Game* 85:148-160.
- Pierce, B. M., **V. C. Bleich**, J. D. Wehausen, and R. T. Bowyer. 1999. Migratory patterns of mountain lions: implications for social regulation and conservation. *Journal of Mammalogy* 80:986-992.
- Bleich, V. C.** 1999. Mountain sheep and coyotes: patterns of predator evasion in a mountain ungulate. *Journal of Mammalogy* 80:283-289.
- Bleich, V. C.**, and B. M. Pierce. 1999. Expandable and economical radio collars for juvenile mule deer. *California Fish and Game* 85:56-62.
- Hill, S. D., and **V. C. Bleich**. 1999. Monitoring wildlife water sources using low Earth orbiting satellites (LEOS). *Wildlife Society Bulletin* 27:25-27.
- Andrew, N. G., **V. C. Bleich**, and P. V. August. 1999. Habitat selection by mountain sheep in the Sonoran Desert: implications for conservation in the United States and Mexico. *California Wildlife Conservation Bulletin* 12:1-30.
- Grigione, M. M., P. Burman, **V. C. Bleich**, and B. M. Pierce. 1999. Identifying individual mountain lions (*Felis concolor*) by their tracks: refinement of an innovative technique. *Biological Conservation* 88:25-32.
- Bleich, V. C.** 1998. Importance of observer experience in determining age and sex of mountain sheep. *Wildlife Society Bulletin* 26:877-880.
- de Ropp, J. S., J. H. Theis, J. I. Mead, and **V. C. Bleich**. 1998. Limitations of nuclear magnetic resonance (NMR) analysis of fecal bile for taxonomic identification of contemporary and extinct mammals. *California Fish and Game* 84:112-118.
- Bleich, V. C.**, and T. J. Taylor. 1998. Survivorship and cause-specific mortality in five populations of mule deer. *Great Basin Naturalist* 58:265-272.

- Pierce, B. M., **V. C. Bleich**, C. L.-B. Chetkiewicz, and J. D. Wehausen. 1998. Timing of feeding bouts of mountain lions. *Journal of Mammalogy* 79:222-226.
- Bleich, V. C.**, R. T. Bowyer, and J. D. Wehausen. 1997. Sexual segregation in mountain sheep: resources or predation? *Wildlife Monographs* 134:1-50.
- Andrew, N. G., **V. C. Bleich**, P. V. August, and S. G. Torres. 1997. Demography of mountain sheep in the East Chocolate Mountains, California. *California Fish and Game* 83:68-77.
- Andrew, N. G., L. M. Lesicka, and **V. C. Bleich**. 1997. An improved fence design to protect water sources for native ungulates. *Wildlife Society Bulletin* 25:823-825.
- Bleich, V. C.**, S. G. Torres, J. D. Wehausen, and T. A. Swank. 1996. [Invited paper] History of transplanting mountain sheep - California. *Proceedings of the Biennial Symposium of the Northern Wild Sheep and Goat Council* 10:164-166.
- Torres, S. G., **V. C. Bleich**, and J. D. Wehausen. 1996. Status of bighorn sheep in California, 1995. *Desert Bighorn Council Transactions* 40:27-34.
- Oehler, M. W., **V. C. Bleich**, and R. T. Bowyer. 1996. Error associated with LORAN-C: effects of aircraft altitude and geographic location. *Desert Bighorn Council Transactions* 40:19-21.
- Bleich, V. C.** 1996. Interactions between coyotes (*Canis latrans*) and mountain sheep (*Ovis canadensis*). *Southwestern Naturalist* 41:81-82.
- Davis, J. L., C. L.-B. Chetkiewicz, **V. C. Bleich**, G. Raygorodetsky, B. M. Pierce, J. W. Ostergard, and J. D. Wehausen. 1996. A device to safely remove immobilized mountain lions from trees and cliffs. *Wildlife Society Bulletin* 24:537-539.
- Bleich, V. C.**, B. M. Pierce, J. L. Davis, and V. L. Davis. 1996. Thermal characteristics of mountain lion dens. *Great Basin Naturalist* 56:276-278.
- Main, M. B., F. W. Weckerly, and **V. C. Bleich**. 1996. [Invited Paper] Sexual segregation in ungulates: new directions for research. *Journal of Mammalogy* 77:449-461.
- Cronin, M. A., and **V. C. Bleich**. 1995. Mitochondrial DNA variation among populations and subspecies of mule deer in California. *California Fish and Game* 81:45-54.
- Bleich, V. C.**, and M. V. Price. 1995. Aggressive behavior of *Dipodomys stephensi*, an endangered species, and *Dipodomys agilis*, a sympatric congener. *Journal of Mammalogy* 76:646-651.
- Torres, S. G., **V. C. Bleich**, and J. D. Wehausen. 1994. Status of bighorn sheep in California, 1993. *Desert Bighorn Council Transactions* 38:17-28.
- Bleich, V. C.**, and S. G. Torres. 1994. [Invited Paper] California's mountain sheep management

- program. Proceedings of the Biennial Symposium of the Northern Wild Sheep and Goat Council 9:186-195.
- Bleich, V. C.**, R. T. Bowyer, A. M. Pauli, M. C. Nicholson, and R. W. Anthes. 1994. [Lead Article] Responses of mountain sheep *Ovis canadensis* to helicopter surveys: ramifications for the conservation of large mammals. *Biological Conservation* 45:1-7.
- Jaeger, J. R., J. D. Wehausen, **V. C. Bleich**, and C. L. Douglas. 1993. Limits in the resolution of LORAN-C for aerial telemetry studies. *Desert Bighorn Council Transactions* 37:20-23.
- Torres, S. G., **V. C. Bleich**, and A. M. Pauli. 1993. Status of bighorn sheep in California, 1992. *Desert Bighorn Council Transactions* 37:47-52.
- Torres, S. G., **V. C. Bleich**, and A. M. Pauli. 1993. An analysis of hunter harvest of mountain sheep in California, 1987-1992. *Desert Bighorn Council Transactions* 37:37-40.
- Jessup, D. A., W. L. Goff, D. Stiller, M. N. Oliver, **V. C. Bleich**, and W. M. Boyce. 1993. A retrospective serologic survey for *Anaplasma* spp. infection in three bighorn sheep (*Ovis canadensis*) populations in California. *Journal of Wildlife Diseases* 29:547-554.
- Thompson, J. R., and **V. C. Bleich**. 1993. A comparison of mule deer survey techniques in the Sonoran Desert of California. *California Fish and Game* 79:70-75.
- Bleich, V. C.** 1993. Comments on research, publications, and California's longest continuously published journal. *California Fish and Game* 79:42-43.
- Bleich, V. C.**, M. C. Nicholson, A. T. Lombard, and P. V. August. 1992. Preliminary tests of mountain sheep habitat models using a geographic information system. Proceedings of the Biennial Symposium of the Northern Wild Sheep and Goat Council 8:256-263.
- Bleich, V. C.**, R. T. Bowyer, D. J. Clark, and T. O. Clark. 1992. Quality of forages eaten by mountain sheep in the eastern Mojave Desert, California. *Desert Bighorn Council Transactions* 36:41-47.
- Bleich, V. C.**, S. G. Torres, D. A. Jessup, and G. P. Mulcahy. 1992. Status of mountain sheep in California, 1991. *Desert Bighorn Council Transactions* 36:76-77.
- Krausman, P. R., **V. C. Bleich**, J. A. Bailey, D. Armentrout, and R. R. Ramey II. 1992. What is a minimum viable population? *Desert Bighorn Council Transactions* 36:68-75.
- Jaeger, J. R., J. D. Wehausen, and **V. C. Bleich**. 1991. Evaluation of time-lapse photography to estimate population parameters. *Desert Bighorn Council Transactions* 35:5-8.
- Bleich, V. C.**, and D. A. Jessup. 1991. Status of bighorn sheep in California, 1990. *Desert Bighorn Council Transactions* 35:11-12.
- Bleich, V. C.**, and D. Racine. 1991. Mountain beaver (*Aplodontia rufa*) from Inyo County,

California. California Fish and Game 77:153-155.

Bleich, V. C., J. G. Stahmann, R. T. Bowyer, and J. E. Blake. 1990. Osteoporosis, osteomalacia, and cranial asymmetry in a mountain sheep (*Ovis canadensis*). Journal of Wildlife Diseases 26:372-376.

Bleich, V. C. 1990. On Calcium deficiency and brittle antlers. Journal of Wildlife Diseases 26:588.

Bleich, V. C., J. D. Wehausen, and S. A. Holl. 1990. Desert-dwelling mountain sheep: conservation implications of a naturally fragmented distribution. Conservation Biology 4:383-390.

Bleich, V. C., R. T. Bowyer, A. M. Pauli, R. L. Vernoy, and R. W. Anthes. 1990. Responses of mountain sheep to aerial sampling using helicopters. California Fish and Game 76:197-204.

Bleich, V. C., J. D. Wehausen, J. A. Keay, J. G. Stahmann, and M. W. Berbach. 1990. Radiotelemetry collars and mountain sheep: a cautionary note. Desert Bighorn Council Transactions 34:6-8.

Bleich, V. C., J. D. Wehausen, K. R. Jones, and R. A. Weaver. 1990. Status of bighorn sheep in California, 1989 and translocations from 1971 through 1989. Desert Bighorn Council Transactions 34:24-26.

Pauli, A. M., and **V. C. Bleich.** 1988. Additional records of the spotted bat (*Euderma maculatum*) from California. Great Basin Naturalist 48:563.

Wehausen, J. D., **V. C. Bleich**, B. Blong, and T. L. Russi. 1987. Recruitment dynamics in a southern California mountain sheep population. Journal of Wildlife Management 51:86-98.

Holl, S. A., and **V. C. Bleich.** 1987. Mineral lick use by mountain sheep in the San Gabriel Mountains, California. Journal of Wildlife Management 51:381-383.

Wehausen, J. D., **V. C. Bleich**, and R. A. Weaver. 1987. Mountain sheep in California: a historical perspective on 108 years of full protection. Western Section of The Wildlife Society Transactions 23:65-74.

Schwartz, O. A., **V. C. Bleich**, and S. A. Holl. 1986. Genetics and the conservation of mountain sheep *Ovis canadensis nelsoni*. Biological Conservation 37:179-190.

Bleich, V. C. 1986. Early breeding in free-ranging mountain sheep. Southwestern Naturalist 31:530-531.

Schwartz, O. A., and **V. C. Bleich.** 1985. Optimal foraging in Barn Owls? Rodent frequencies in diet and fauna. Bulletin of the Southern California Academy of Science 84:41-45.

- Bowyer, R. T., and **V. C. Bleich**. 1984. Distribution and taxonomic affinities of mule deer, *Odocoileus hemionus*, from Anza-Borrego Desert State Park, California. *California Fish and Game* 70:53-57.
- Bowyer, R. T., and **V. C. Bleich**. 1984. Effects of cattle grazing on selected habitats of southern mule deer. *California Fish and Game* 70:240-247.
- Bleich, V. C.**, and R. A. Weaver. 1983. "Improved" sand dams for wildlife habitat management. *Journal of Range Management* 36:130.
- Bleich, V. C.** 1983. Comments on helicopter use by wildlife agencies. *Wildlife Society Bulletin* 11:304-306.
- Bleich, V. C.** 1982. Additional notes on species richness of mammals at Bodie, California. *Southwestern Naturalist* 27:121-122.
- Bleich, V. C.**, L. J. Coombes, and J. H. Davis. 1982. Horizontal wells as a wildlife habitat improvement technique. *Wildlife Society Bulletin* 10:324-329.
- Bleich, V. C.** 1982. An illustrated guide to aging the lambs of mountain sheep. *Desert Bighorn Council Transactions* 26:59-62.
- Bleich, V. C.**, L. J. Coombes, and G. W. Sudmeier. 1982. Volunteers and wildlife habitat management: twelve years together. *CAL-NEVA Wildlife Transactions* 1982:64-68.
- Bleich, V. C.** 1982. Horizontal wells for mountain sheep: desert bighorn "Get the shaft". *Desert Bighorn Council Transactions* 26:63-64.
- Bleich, V. C.**, L. J. Coombes, and G. W. Sudmeier. 1982. Volunteer participation in California wildlife habitat management projects. *Desert Bighorn Council Transactions* 26:56-58.
- Paysen, T. E., J. A. Derby, H. Black, **V. C. Bleich**, and J. W. Mincks. 1980. A vegetation classification system applied to southern California. *USDA Forest Service General Technical Report PSW-45:1-33*.
- Bleich, V. C.** 1979. *Microtus californicus scirpensis* not extinct. *Journal of Mammalogy* 60:851-852.
- Bleich, V. C.**, and B. Blong. 1978. A magnificent frigatebird in San Bernardino County, California. *Western Birds* 9:129.
- Bleich, V. C.** 1978. Breeding bird census: annual grassland. *American Birds* 32:121.
- Bleich, V. C.** 1977. *Dipodomys stephensi*. *Mammalian Species* 73:1-3.
- Schwartz, O. A., and **V. C. Bleich**. 1976. The development of thermoregulation in two species

of woodrats, *Neotoma lepida* and *Neotoma albigula*. *Comparative Biochemistry and Physiology* 54A:211-213.

Bleich, V. C. 1975. Roadrunner predation on ground squirrels in California. *Auk* 92:147-149.

Bleich, V. C., and O. A. Schwartz. 1975. Water balance and fluid consumption in the southern grasshopper mouse, *Onychomys torridus*. *Great Basin Naturalist* 35:62-64.

Bleich, V. C., and O. A. Schwartz. 1975. Observations on the home range of the desert woodrat, *Neotoma lepida intermedia*. *Journal of Mammalogy* 56:518-519.

Bleich, V. C. 1975. Diving times and distances in the Pied-billed Grebe. *Wilson Bulletin* 87:278-280.

Bleich, V. C., and O. A. Schwartz. 1975. Parturition in the white-throated woodrat. *Southwestern Naturalist* 20:271-272.

Schwartz, O. A., and **V. C. Bleich**. 1975. Comparative growth in two species of woodrats, *Neotoma lepida intermedia* and *Neotoma albigula venusta*. *Journal of Mammalogy* 56:653-656.

Bleich, V. C. 1974. Muskrats (*Ondatra zibethicus*) in Amargosa Canyon, Inyo and San Bernardino counties, California. *Murrelet* 55:7-8.

Bleich, V. C. 1974. Abnormal dentition in a grizzly bear. *Murrelet* 55:11.

Bleich, V. C., and O. A. Schwartz. 1974. Interspecific and intergeneric maternal care in woodrats (*Neotoma*). *Mammalia* 38:381-387.

Bleich, V. C., and O. A. Schwartz. 1974. Western range extension of Stephens' Kangaroo rat (*Dipodomys stephensi*), a threatened species. *California Fish and Game* 60:208-210.

Book Chapters and Proceedings of Symposia:

Bleich, V. C., and B. M. Pierce. 2005. [Invited contribution] Management of mountain lions in California. Pages 63-69 in E. L. Buckner and J. Reneau, editors. *Records of North American big game*. 12th edition. Boone and Crockett Club, Missoula, Montana, USA.

Rubin, E. S., and **V. C. Bleich**. 2005. [Invited contribution] Sexual segregation: a necessary consideration in wildlife conservation. Pages 379-391 in K. E. Ruckstuhl and P. Neuhaus, editors. *Sexual segregation in vertebrates: ecology of the two sexes*. Cambridge University Press, Cambridge, United Kingdom.

Bleich, V. C., J. G. Kie, E. R. Loft, T. R. Stephenson, M. W. Oehler, Sr., and A. L. Medina. 2005. [Invited contribution] Managing rangelands for wildlife. Pages 873-897 in C. E. Braun, editor. *Techniques for wildlife investigations and management*. Sixth edition. The Wildlife Society, Bethesda, Maryland, USA.

- Pierce, B. M., and **V. C. Bleich**. 2003. [Invited Contribution] Mountain lion. Pages 744-757 in G. A. Feldhamer, B. C. Thompson, and J. A. Chapman, editors. Wild Mammals of North America. Second Edition. The Johns Hopkins University Press, Baltimore, Maryland.
- Torres, S. G., and **V. C. Bleich**. 1999. [Invited Contribution] Desert bighorn sheep: California. Pages 170-173 in D. E. Toweill and V. Geist, editors. Return of royalty: a celebration of success. Boone and Crockett Club, Missoula, Montana.
- Bleich, V. C.**, and S. G. Torres. 1999. [Invited Contribution] California bighorn sheep: California. Pages 130-133 in D. E. Toweill and V. Geist, editors. Return of royalty: a celebration of success. Boone and Crockett Club, Missoula, Montana.
- Bleich, V. C.** 1998. [Invited Contribution] *Microtus californicus* (Peale 1848). Pages 90-92 in D. J. Haffner, E. Yensen, and G. L. Kirkland, Jr., editors. North American rodents: status survey and conservation action plan. International Union for the Conservation of Nature, Gland, Switzerland.
- Kie, J. G., **V. C. Bleich**, A. L. Medina, J. D. Yoakum, and J. W. Thomas. 1996. [Invited Contribution] Managing rangelands for wildlife. Pages 663-688 in T. A. Bookhout, editor. Research and management techniques for wildlife and habitats. Fifth edition. The Wildlife Society, Bethesda, Maryland.
- Bleich, V. C.**, J. D. Wehausen, R. R. Ramey II, and J. L. Rechel. 1996. [Invited Contribution] Metapopulation theory and mountain sheep: implications for conservation. Pages 353-373 in D. R. McCullough, editor. Metapopulations and wildlife conservation. Island Press, Covelo, California.
- Bleich, V. C.**, J. D. Wehausen, and S. A. Holl. 1995. Desert-dwelling mountain sheep: conservation implications of a naturally fragmented distribution. Pages 102-109 in D. Ehrenfeld, editor. Readings from Conservation Biology: wildlife and forests. The Sheridan Press, Hanover, Pennsylvania. [Reprinted from Conservation Biology 4:383-390].
- Bleich, V. C.**, J. D. Wehausen, and S. A. Holl. 1995. Desert-dwelling mountain sheep: conservation implications of a naturally fragmented distribution. Pages 71-78 in D. Ehrenfeld, editor. Readings from Conservation Biology: the landscape perspective. The Sheridan Press, Hanover, Pennsylvania. [Reprinted from Conservation Biology 4:383-390].
- Bleich, V. C.** 1992. History of wildlife water developments, Inyo County, California. Pp. 100-106 in C. A. Hall, V. Doyle-Jones, and B. Widawski, editors. The history of water: eastern Sierra Nevada, Owens Valley, White-Inyo Mountains. University of California White Mountain Research Station, Bishop.
- Bleich, V. C.**, and D. B. Koch. 1992. [Abstract] Tule elk on private lands: species preservation, habitat protection, or wildlife commercialization? Page 78 in R. D. Brown, editor. The

biology of deer. Springer-Verlag, New York, New York.

- Bleich, V. C.,** C. D. Hargis, J. A. Keay, and J. D. Wehausen. 1991. Interagency coordination and the restoration of wildlife populations. Pages 277-284 *in* J. Edelbrock and S. Carpenter, editors. Natural areas and Yosemite: prospects for the future. U.S. National Park Service, Denver Service Center, Denver, Colorado.
- Bleich, V. C.** 1990. [Invited Paper] Horizontal wells for wildlife water development. Pages 51-58 *in* G. K. Tsukamoto and S. J. Stiver, editors. Wildlife water development. Nevada Department of Wildlife, Reno.
- Bleich, V. C.,** and A. M. Pauli. 1990. Mechanical evaluation of artificial watering devices built for mountain sheep in California. Pages 65-72 *in* G. K. Tsukamoto and S. J. Stiver, editors. Wildlife water development. Nevada Department of Wildlife, Reno.
- Bleich, V. C.** 1990. Affiliations of volunteers participating in California wildlife water development projects. Pages 187-192 *in* G. K. Tsukamoto and S. J. Stiver, editors. Wildlife water development. Nevada Department of Wildlife, Reno.
- Bleich, V. C.** 1990. Costs of translocating mountain sheep. Pages 67-75 *in* P. R. Krausman and N. S. Smith, editors. Managing wildlife in the southwest. Arizona Chapter of The Wildlife Society, Phoenix.
- Bleich, V. C.,** and S. A. Holl. 1982. [Invited Paper] Management of chaparral habitat for mule deer and mountain sheep in southern California. Pages 247-254 *in* C. E. Conrad and W. C. Oechel, Technical Coordinators. Proceedings of the symposium on the dynamics and management of Mediterranean-type ecosystems. USDA Forest Service, General Technical Report PSW-58.
- Bleich, V. C.** 1982. [Invited Paper] Review comments. Pages 567-568 *in* C. E. Conrad and W. C. Oechel, Technical Coordinators. Proceedings of the symposium on the dynamics and management of Mediterranean-type ecosystems. USDA Forest Service, General Technical Report PSW-58.
- Bowyer, R. T., and **V. C. Bleich.** 1980. Ecological relationships between southern mule deer and California black oak. Pages 292-296 *in* T. R. Plumb, Technical Coordinator. Proceedings of the Symposium on the ecology, management, and utilization of California oaks. USDA Forest Service, General Technical Report PSW-44.

Agency Reports:

- Hurley, K. et al. 2007. Recommendations for domestic sheep and goat management in wild sheep habitat. Western Association of Fish and Wildlife Agencies, Cheyenne, Wyoming. Available at <http://www.mwvrc.org/bighorn/wafawildsheepreport.pdf>

Sierra Nevada Bighorn Sheep Recovery Program [**V. C. Bleich,** H. E. Johnson, B. M. Pierce, C.

- R. Schroeder, T. R. Stephenson, and J. T. Villepique]. 2006. Sierra Nevada bighorn sheep in 2006. *Outdoor California* 67(2):10-17.
- Bleich, V. C.** 2005. Sierra Nevada bighorn sheep. Pages 226-227 *in* California Department of Fish and Game (compiler). The status of rare, threatened, and endangered plants and animals of California 2002-2004. California Department of Fish and Game, Sacramento, California, USA.
- Bleich, V. C.** 2005. Peninsular bighorn sheep. Pages 228-230 in California Department of Fish and Game (compiler). The status of rare, threatened, and endangered plants and animals of California 2002-2004. California Department of Fish and Game, Sacramento, California, USA.
- Sierra Nevada Bighorn Sheep Recovery Program [**V. C. Bleich**, B. M. Pierce, T. R. Stephenson, J. T. Villepique, and J. D. Wehausen]. 2004. Sierra Nevada Bighorn Sheep Progress Report 2003. *Outdoor California* 65(1):4-17.
- U.S. Fish and Wildlife Service [C. Benz, **V. Bleich**, W. Boyce, D. Craig, D. Graber, H. Quigley, P. Stine, S. Torres, and J. Wehausen]. 2003. Draft recovery plan for the Sierra Nevada bighorn sheep. U.S. Fish and Wildlife Service, Portland, Oregon.
- U.S. Fish and Wildlife Service [D. Armentrout, **V. Bleich**, W. Boyce, T. Davis, J. DeForge, D. Freeman, M. Jorgensen, S. Ostermann, E. Rubin, O. Ryder, P. Sorensen, S. Torres, and J. Wehausen]. 2000. Recovery plan for bighorn sheep in the peninsular ranges, California. U.S. Fish and Wildlife Service, Portland, Oregon.
- Singer, F., W. Adrian, F. Allendorf, J. Bailey, J. Berger, **V. Bleich**, M. Bogan, P. Brussard, S. Buskirk, N. T. Hobbs, T. Smith, D. Stevens, C. Van Riper III, E. Vyse, and G. White. 1996. Bighorn sheep in the Rocky Mountain region. National Biological Service, Ft. Collins, Colorado. 55 pp.
- Gudorf, M., P. Y. Sweanor, F. J. Singer, A. Blankenship, **V. Bleich**, T. Easterly, J. Emmerich, C. Eustace, L. Irby, D. Jaynes, B. Jellison, R. Kissell, J. Lindsay, J. Parks, T. Peters, K. Reid, S. Stewart, and T. Voss. 1996. Bighorn sheep habitat assessment of the greater Bighorn Canyon National Recreation Area. National Park Service and National Biological Service Cooperative Report, Bighorn Canyon National Recreation Area, Lovell, Wyoming. 43 pp.
- Gudorf, M., P. Sweanor, F. Singer, **V. Bleich**, J. Cordova, C. Hake, L. Lee, T. Lytle, P. Perrotti, S. Petersburg, and B. Sloan. 1995. Bighorn sheep habitat assessment of the greater Colorado National Monument area. National Park Service and National Biological Service Cooperative Report, Colorado National Monument, Fruita, Colorado. 52 pp.
- Holl, S. A., and **V. C. Bleich**. 1983. San Gabriel mountain sheep: biological and management considerations. USDA Forest Service, San Bernardino National Forest, San Bernardino, California. 136 pp.

Bleich, V. C. 1980. Amargosa vole study. California Department of Fish and Game, Nongame Wildlife Investigations Job Final Report W-54-R-10. 8 pp.

Gould, G. I., Jr., and **V. C. Bleich.** 1977. Amargosa vole study: progress report. Nongame Wildlife Investigations Job Progress Report W-54-R-10 California Department of Fish and Game, Sacramento. 4pp.

Bleich, V. C. 1975. Wildlife section including habitat and vegetation types in the Lake Mathews study area. Pages 84-130 *in* A study of the fish and wildlife resources of the Metropolitan Water District property at Lake Mathews with habitat improvement recommendations. California Department of Fish and Game, Long Beach.

Bleich, V. C. 1972. An annotated checklist of the mammals occurring in the Tecopa-Dumont Sand Dunes Study Area. Pages 75-77, appendix *in* M. A. Romero, editor. Amargosa Canyon-Dumont Dunes Proposed Natural Area. House of Impressions, Sun Valley, California.

Bleich, V. C. 1972. Checklist of the terrestrial vertebrates of the Seal Beach Naval Weapons Station, Fallbrook Annex, San Diego County, California. U.S. Navy, WPNSTAFBAINST 11015.2:7-13.

Book Reviews and Obituaries:

Weaver, R. A., and **V. C. Bleich.** *In press.* Bonnar Blong. Desert Bighorn Council Transactions.

Bleich, V. C. 1994. Marvin Wood, 1909-1994. *Wild Sheep* 17(4):8.

Bleich, V. C. 1992. [Review of] *Midnight wilderness: journeys in Alaska's Arctic National Wildlife Refuge*, by D. S. Miller. *California Fish and Game* 78:85-86.

Bleich, V. C. 1992. [Review of] *Natural history of the White-Inyo Range, eastern California*, edited by C. A. Hall, Jr. *California Fish and Game* 78:84-85.

Bleich, V. C. 1987. James C. Bicket, 1947-1986. *Wildlife Society Bulletin* 15:477-478.

Bleich, V. C. 1987. J. D. "Don" Landells, 1926-1986. *Western Section of The Wildlife Society Transactions* 22:iv.

Bleich, V. C. 1987. James C. Bicket, 1947-1986. *Western Section of The Wildlife Society Transactions* 22:v.

Bleich, V. C. 1979. [Review of] *Wild geese*, by M. A. Ogilvie. *California Fish and Game* 66:282-283.

Bleich, V. C. 1977. [Review of] *Mammals of the world*, by E. P. Walker. *California Fish and Game* 63:73.

Bleich, V. C. 1975. [Review of] The carnivores, by R. F. Ewer. California Fish and Game 61:255-256.

Popular Articles:

Bleich, V. C. 2009. A brief history of the CDFG bighorn sheep habitat enhancement program. California Wild Sheep, Winter 2009:8-10.

Bleich, V. C. 2009. Some thoughts on “Water dispensaries keep mountain bighorn sheep alive. California Wild Sheep, Fall 2009:28-30.

Bleich, V. C. 2009. Parting shots [letter]. Bighorn (The Official Magazine of the Texas Bighorn Society), Spring 2009:30.

Bleich, V. C. 2009. Implications of fire history for conserving bighorn sheep. Boone and Crockett Club Trophy Points 3 (July 2009). Available at:
http://www.boone-crockett.org/news/featured_story.asp?area=news&ID=52

Darby, N., J. Dungan, K. Stewart, **V. Bleich**, and D. Hughson. 2009. Responses of mule deer to experimental manipulation of water sources: preliminary results from the first year. Mojave National Preserve Science Newsletter 1:1-3.

Bleich, V. C., H. E. Johnson, S. A. Holl, L. Konde, S. G. Torres, and P. R. Krausman. 2009. Implications of fire history for conserving bighorn sheep. California Wild Sheep, Summer 2009:29.

Bleich, V. C. 2009. Some thoughts on water development in wilderness. California Wild Sheep, Spring 2009:8-9.

Bleich, V. C. 2008. Mountain sheep in California: some perspectives on the past, and prospects for the future (Part IV). California Wild Sheep, Fall 2008:14-15.

Bleich, V. C. 2008. Mountain sheep in California: some perspectives on the past, and prospects for the future (Part III). California Wild Sheep, Summer 2008:10-11.

Bleich, V. C. 2008. Mountain sheep in California: some perspectives on the past, and prospects for the future (Part II). California Wild Sheep, Spring 2008:12-13.

Bleich, V. C. 2007. Mountain sheep in California: some perspectives on the past and some prospects for the future (Part I). California Wild Sheep, Winter 2007:12-13.

Bleich, V. C. 2007. The Sierra Nevada bighorn sheep recovery program. Conservation Connection 16:11.

Bleich, V. C. 2007. The Sierra Nevada bighorn sheep recovery program. California Wild Sheep, Fall 2007:16-17.

- Bleich, V. C.,** and B. M. Pierce. 2007. Management of mountain lions in California: history, basic biology, and citizen initiatives [part II]. Conservation Connection 15:12. Reprinted with permission from Records of North American Big Game, 12th Edition)
- Monteith, K. L., and **V. C. Bleich.** 2007. Mule deer fawn survival in central Sierra Nevada. Outdoor California 6(3):26-29.
- Bleich, V. C.,** and B. M. Pierce. 2007. Management of mountain lions in California: history, basic biology, and citizen initiatives [part II]. California Wild Sheep, Summer 2007:8-9. Reprinted with permission from Records of North American Big Game, 12th Edition)
- Bleich, V. C.,** and B. M. Pierce. 2007. Management of mountain lions in California: history, basic biology, and citizen initiatives [part I]. Conservation Connection 14:18-19. Reprinted with permission from Records of North American Big Game, 12th Edition)
- Bleich, V. C.,** and B. M. Pierce. 2007. Management of mountain lions in California: history, basic biology, and citizen initiatives [part I]. California Wild Sheep, Spring 2007:18-19. Reprinted with permission from Records of North American Big Game, 12th Edition)
- Monteith, K. L., and **V. C. Bleich.** Mule deer fawn survival in the central Sierra Nevada. California Deer, Winter 2007:6-8.
- Bleich, V. C.** 2006. The potential for death at the waterhole. Conservation Connection 12:13. [Reprinted from California Wild Sheep, Fall 2006:8-9].
- Monteith, K. L., and **V. C. Bleich.** 2006. Fawn survival: central Sierra Nevada. Mule Deer Foundation Magazine 9:16-18.
- Bleich, V. C.,** and N. G. Andrew. 2006. Bighorn sheep in California: how many are there, and how are they doing? Foundation for North American Wild Sheep Conservation Connection 11:5-6. [Reprinted from California Wild Sheep, Summer 2006:4-5].
- Bleich, V. C.** 2006. The potential for death at the waterhole. California Wild Sheep, Fall 2006:8-9.
- Bleich, V. C.,** and N. G. Andrew. 2006. Bighorn sheep in California: how many are there, and how are they doing? California Wild Sheep, Summer 2006:4-5.
- Bleich, V. C.** 2002. Restoring bighorn sheep to the Sierra Nevada: a project of interest to the Boone and Crockett Club. Fair Chase 17(1):22-26.
- Bleich, V. C.** 2001. Restoring bighorn sheep to the Sierra Nevada: a new challenge for wildlife biologists. Wild Sheep 24(4):47-50,52.
- Bleich, V. C.** 2001. Summer ranges, winter ranges, and migratory mule deer: putting the parts of a puzzle in place. Outdoor California 62(4):20-23.

- Anderson, L. A., and **V. C. Bleich**. 2000. Desert bighorns in California: a success story for wildlife biologists and sheep hunters. *Fair Chase* 15(4):13-15.
- Bleich, V. C.**, B. M. Pierce, S. G. Torres, and T. Lupo. 2000. Using space age technology to study mountain lion ecology. *Outdoor California* 61(3):24-25.
- Torres, S. G., and **V. C. Bleich**. 2000. Mountain lions — California's elusive predator. *Outdoor California* 61(3):4-6.
- Bleich, V. C.**, and N. G. Andrew. 2000. Mountain sheep, mule deer, and burros in the brush: flourishing wild burros impact habitats and native big game. *Tracks* 17:10-12.
- Pauli, A. M., and **V. C. Bleich**. 1999. Gambel's quail hunting opportunities abundant within Mojave National Preserve. Pages 8-9,14 *in* A. J. Kenward, editor. *Upland Game California*. California Department of Fish and Game, Sacramento.
- Bleich, V. C.** 1999. Desert deer investigation launched. *Outdoor California* 60(5):13-15.
- Bleich, V. C.** 1999. [Letter] America's wilderness. *National Geographic Magazine* 195(3):xv.
- Bleich, V. C.** 1997. Securing large carnivores. *Wildlife Control Technology* 4(2):39.
- Bleich, V. C.** 1996. Assisting researchers can augment your income. *Wildlife Control Technology* 3(6):4.
- Pierce, B. M., and **V. C. Bleich**. 1996. Round Valley deer study. *Mule Deer* 2(4):10-13.
- Bleich, V. C.** 1995. California's newest sheep hunting opportunity: the East Chocolate Mountains. *Wild Sheep* 18(4):19-22.
- Pierce, B. M., and **V. C. Bleich**. 1995. California deer management: the Round Valley investigation. *California Hunter Magazine* 4(4):32-33.
- Bleich, V. C.**, and S. G. Torres. 1995. The "book" rams are still out there. *Tracks* 12:9.
- Bleich, V. C.**, and S. G. Torres. 1993. History and current status of mountain sheep in California. *Wild Sheep* 16(4):15-19.
- Bleich, V. C.** 1993. Sexual segregation in desert-dwelling mountain sheep. *Wild Sheep* 16(4):13-14.
- Bleich, V. C.** 1993. Mountain sheep habitat: using a geographic information system. *Boone and Crockett Club News Journal* 8(4):39-40.
- Bleich, V. C.** 1992. Round Valley deer facing long comeback trail. *Tracks* 9:9,15.

- Bleich, V. C.** 1990. Status of bighorn sheep in California: a brief synopsis. *Wild Sheep* 13(2):55.
- Bleich, V. C.** 1988. Distribution and early history of mountain sheep in California. Pages 1-3 *in* B. W. Wilson, editor. *California desert bighorn sheep: a guidebook for the hunter*. Society for the Conservation of Bighorn sheep, Los Angeles, California.
- Bleich, V. C.** 1988. Modern management of mountain sheep in California. Pages 4-6 *in* B. W. Wilson, editor. *California desert bighorn sheep: a guidebook for the hunter*. Society for the Conservation of Bighorn sheep, Los Angeles, California.
- Bleich, V. C.** 1983. Big game guzzlers and mountain sheep. *Outdoor California* 44(6):10.
- Davis, J. H., and **V. C. Bleich.** 1980. Time-lapse photography: a new focus on wildlife. *Outdoor California* 41(4):7-9.
- Coombes, L. J., and **V. C. Bleich.** 1979. Horizontal wells: the DFG's new slant on water for wildlife. *Outdoor California* 40(3):10-12.

Presentations at Professional Meetings

From 1972 to the present, I have been an author or coauthor of more than 100 presentations at professional meetings. I was selected to present a keynote address, "Ecology of mountain sheep: Ramifications for disease transmission and population persistence" at the April 2007 Workshop on Respiratory Disease in Mountain Sheep: Knowledge Gaps and Future Research which was held at the University of California, Davis. Details pertaining to these presentations are available upon request.

Grants and Fellowships

During 1973 through 2007, I competed successfully for and received project-specific funding in the amount of \$1,636,247 from internal and external sources. Details of grants and other funding received are available upon request.

Claudia Nissley
11623 Wasatch Road, Longmont, CO 80504
Email: cnissleyenviro@gmail.com phone: 303 776 7603
Website: c nec-inc.com

Present Positions

President - Nissley Environmental Consultants, Inc. 1999 to Present

Consultant in environmental review and cultural resource management. Provide practical strategies and solutions for federal, state and delegated local governments, tribes, Non Government Organizations and industry to navigate federal environmental requirements. Analyze and develop documents with recommendations for mitigation. Bring community consensus and mediate cross-cultural discussions for integration of environmental and cultural heritage laws. Identify potential issues under the National Environmental Policy Act (NEPA), Section 106 of National Historic Preservation Act (NHPA), Native American Graves Protection and Repatriation Act (NAGPRA), Archaeological Resources Protection Act (ARPA) and Comprehensive Environmental Response, Compensation and Liability Act (Superfund). Oversight to bring legal processes to final decision and closure.

Contract projects for state and federal governments, institutions and private companies. Professional analysis of data, preparation of reports (EIS, EA, NOI, RODs, CIA, SIA) and final manuscripts for publication. Special custom training for clients in NEPA process, regulations and compliance requirements.

Clients include U.S. Army Corps of Engineers, Environmental Protection Agency, U.S. Fish and Wildlife, U.S.D.A. Forest Service, Bureau of Land Management, General Services Administration, U.S. Department of Justice, University of Colorado, State of Wisconsin and South Dakota, private companies and not-for-profit organizations.

Instructor – National Preservation Institute, 1999 to Present

Design and teach classes for national audiences on federal environmental and heritage laws and their implementing regulations. Classes targeted for professional practitioners, Continuing Legal Education (CLE), American Indian Tribes, federal and state employees and advocacy groups. Customized classes developed for Army National Guard, federally recognized Tribes, California and Texas State Departments of Transportation, U.S. Housing and Urban Development.

Classes include Introduction to Section 106, Integrating Cultural Resources in NEPA Compliance, Consultation with Indian Tribes on Cultural Resource Issues, Section 106 – How to Negotiate and Write Agreements, CERCLA and NHPA Coordination for Superfund Sites, Identification and Management of Traditional Cultural Properties, NAGPRA and ARPA: Applications and Requirements (www.npi.org)

Courses taught throughout U.S., including Alaska and Hawaii. Over 2200 participants in previous six years of classes.

Professional Employment History

State Historic Preservation Officer, Wyoming

Oversight for State Historic Preservation Office. Manage and allocate \$1 million program with 60 employees. Ensure compliance with federal laws and federal Historic Preservation Fund Grant. Program include statewide data base in the Cultural Records Office, State Archaeologist, State Curation facility, Review and Compliance Division for federal statutes and regulations under NHPA, NEPA and in conjunction with NAGPRA, National Register Program, Tax Act Incentives, Certified Local Government grants, and statewide contexts and planning projects. Majority of projects related to Congressional and Presidential Energy Development including oil and gas, coal, coal bed methane, wind and the associated infrastructure.

Director, Western Office, Advisory Council on Historic Preservation

Responsible for federal agencies' Section 106 compliance with the National Historic Preservation Act in the western half of the U.S. and the Pacific. Manage the Western Office, supervise staff of 10. Respond to Congressional inquiries, comment on proposed draft legislation and regulations. Develop preservation policy for land management issues and encourage its implementation. Focus on retention of historic

components in new development. Ensure integration of cultural diversity, with particular emphasis on Native Americans, including Native Hawaiians. Work with citizen coalitions and special interest groups to achieve more desirable outcomes for preservation concerns. Mediate with all involved parties and negotiate resolutions to development/preservation conflicts. Sole media contact. Taught course, "Federal Preservation Law" for groups up to 45 participants, four times per year.

Colorado State Museum and Museum of Northern Arizona

Inventory federal and tribal lands in New Mexico, Arizona and Utah for cultural resources to enhance research efforts. Supervised field and lab teams to ensure accuracy and consistency in acquisition and analysis of cultural material. Write reports and recommendations for future treatment and preservation. Collaborate and assist Department of Collections for annual Pueblo festivals, education and markets.

Integrate historic preservation concerns into comprehensive statewide planning, survey and National Register of Historic Places programs; develop and teach statewide training courses in cultural resource management, Colorado history and prehistory, archaeological field techniques and compliance with preservation legislation. Initiate statewide program of Avocational Archaeological Certification based on Arkansas model; conducted instruction in major modules throughout state. Develop international network for avocational organizations at Society for American Archaeology meeting, Vancouver, B.C. Assist Office of State Archaeologist in technical assistance to other state units, agencies and the public.

Forest Archaeologist, Willamette National Forest, U.S. Department of Agriculture, Eugene, OR

Primary responsibility for development, administration, and professional recommendations for a new forest-wide program for recognition and assessment of significant cultural resources on National Forest Land. Technically trained and supervised 10 archaeologists and 35 technicians. Solicited and reviewed requests for proposals, evaluated contracts and contract bids and served as Contracting Officer's Representative for contract projects. Scheduled annual work plans. Coordinated with Timber Sale Program for five-year sale plans.

Education

MS, JD	Environmental Law - In Progress	Vermont Law School
ABD	Anthropology/Statistics	University of Oregon, Eugene
MA	Anthropology/Geology/Paleontology	University of Colorado, Boulder
BA	Anthropology/Philosophy	California State University, Long Beach

Recent Presentations

- 2008 Multi-Jurisdictional Energy Projects: Federal & Tribal Consultation Requirements, Continuing Legal Education, Denver, CO (2 day workshop)
- 2005 Petroleum Association of Wyoming, American Institute of Petroleum, Jackson, WY
- 2004 Environmental & Natural Resources Law on the Reservation, Phoenix, AZ
"Ethnographic Landscapes, Traditional Cultural Properties, and the National Historic Preservation Act – What You Need to Know." Continuing Legal Education
- 2004 Public Interest Environmental Law Conference, University of Oregon Law School
"The National Historic Preservation Act – The Art of Consultation "
- 2004 Wyoming Bureau of Land Management Protocol Meeting
"Cultural Landscapes and Historic Trails Context and Evaluation "
- 2003 Society for American Archaeology Meeting, Milwaukee, Wisconsin
"Traditional Cultural Properties and Case Law "
- 1997 Native American Consultation: Protocol and Process. SAA Annual Meeting.

New Publication

- 2010 Consultation and Negotiation. *In A Companion for Cultural Resource Management*, ed. Thomas F. King, Wiley-Blackwell, Malden, MA

Expertise Specific to Traditional Cultural Properties, Ethnographic and Ethnohistoric Landscapes

For the last 20 years, my work has focused on the dynamic and growing areas of concern related to those places and landscapes that are valued by communities and American Indian tribes called traditional cultural properties or culturally significant landscapes. Below are enumerated some of the more significant cases I have worked on, either on behalf of the tribe, a state, a corporation or an agency in the federal government. Some specific information is intentionally left out due to a client's position that the information is privileged and confidential.

U.S. Army Corps of Engineers and Environmental Protection Agency, New England Districts; VT Abenaki tribe (not federally recognized); private land – federal oversight; identified and consulted with tribe to determine traditional areas of significance; coordinated consultation and on-site meetings for with all mentioned parties to determine if any mitigation would work for protection of special areas.

Private utility company, Bureau of Land Management, U.S. Fish and Wildlife Service, Bureau of Reclamation, CA State Department of Toxic Substances, and 12 federally recognized tribes of the Lower Colorado River; CA; private and federal land; proposed and facilitated consultation between and among above-listed parties to identify and recognize a sacred landscape, a portion of which is already listed on the National Register of Historic Places as an archaeological district. This project is still on-going and consultation is continuing on what effects of the proposed project might be on the traditional cultural landscape. One tribe pursued litigation prior to my being hired. An agreement settlement was reached between the utility company and the tribe, however, it remains a contentious issue today.

U.S. Forest Service, Medicine Wheel Alliance, Medicine Wheel Coalition, federal land; a medicine wheel over 60 feet in diameter at 10,000 feet elevation in WY; traditional practitioners ascribing cultural and religious values; developed an agreement among all parties to prevent additional environmental and cultural degradation; monitoring system and interpretative text according to tribal members for the general public; by 2009, over 81 federally recognized tribes ascribe value to the area. A new twist to the issues was added in 2005 during a meeting of traditional ranchers and fifth generation families of the area also ascribing cultural value for traditional hunting, family camping and gathering areas.

U.S. Forest Service, federally recognized tribe, rock climbers; USFS developed a land management plan for Cave Rock, a cave ascribed traditional and religious significance by the tribe and a noted popular place for rock climbing adjacent to Lake Tahoe, CA. The plan eliminated climbing completely from the outcrop and cave as it was unacceptable to the tribe. Access Fund, a national climbing organization pursued litigation but did not gain access again. Cave Rock has a four-lane highway through the middle of the rock outcrop and one has to cross the highway to gain access to the cave. I provided expertise in reviewing the traditional cultural properties, the tribe's position and an analysis of the land management plan and accompanying environmental assessment.

Bureau of Land Management, federally recognized tribe, 65 miles of California coastline with ancestral lands and human remains with ascribed traditional significance and important for the tribe's cultural continuity. Over a number of years, the BLM was not responsive to the tribe's request under several federal laws. My role was to write an overview of the situation based on existing documents, make recommendations and facilitate in meetings with BLM State Director, Department of Interior solicitors, and the tribe's governor, attorney and tribal historic preservation officer. We were successful in reaching agreement and ultimately the tribe was able to fulfill their requests for specific actions to occur on federal lands.

Other issues of traditional culture and places of ascribed significance that I have participated in facilitation of various resolutions include the Pueblo of Sandia and the Rio Grande, NM; a traditional AK native village also an archaeological site; the State of SD and state and federal lands ascribed significance by multiple tribes; USFS Mt. Graham in AZ and multiple tribes; and other considerably less contentious issues on private and federal lands.

GERALD E. QUINDRY, Ph.D., P.E.
Senior Water Resources Engineer

Education

Ph.D. in Environmental Engineering in Civil Engineering
University of Illinois at Urbana-Champaign

M.S. in Environmental Engineering in Civil Engineering
University of Illinois at Urbana-Champaign

B.S. in Civil Engineering
University of Illinois at Urbana-Champaign

Registrations

Registered Professional Civil Engineer, California, No. 33454
OSHA 40-hour HazWoper and 8-hour Site Manager Training
Microsoft Certified Systems Engineer

***Professional
Responsibilities***

As Senior Water Resources Engineer for Mission Geoscience, Dr. Quindry:

- Supervises investigations, planning and engineering design projects related to water supply, water resources management, watershed hydrology & development and water treatment alternatives.
- Assists clients with long-term water resources management issues such as water recycling and reuse, water banking & recharge project siting and design, desalination, water distribution and storage systems, system vulnerability assessment, and drought planning.
- Performs analyses of water supply adequacy and proposed watershed developments for CEQA and NEPA planning & permitting of large commercial & residential projects.
- Analyzes water supply pipeline networks for network expansion to meet growing demand, and to assess dead zones and seasonal variations which create water quality issues.
- Provides technical expertise in the areas of emerging and trace water contaminants, and treatment technologies such as activated carbon, ion exchange, membranes and U/V oxidation.
- Supports attorneys in litigation matters related to site contaminants, remedial technology, and water supply
- Manages site restoration efforts and regulatory interface to achieve environmental closure of both operating and abandoned industrial sites and bulk fuel terminals.
- Designs data management programs to assist in developing water supply and contaminant treatment options, to optimize and automate treatment operations, and to comply with regulatory reporting requirements.

GERALD E. QUINDRY (Cont'd)

Professional History

- Principal Engineer, McGuire Environmental Consultants
- Principal Engineer, Integrated Environmental Services
- Principal Engineer, Sigma Plus Environmental Consultants
- Engineering Department Manager, Delta Environmental Consultants
- Environmental Group Manager Engineer, Levine-Fricke Consultants
- Senior Project Engineer, Marmac Engineering
- Senior Project Engineer, SCS Engineers

Professional Experience

Dr. Quindry has provided technical expertise and leadership for over 30 years on a variety of multidisciplinary water resource management projects, including:

- **Water Recycling & Recharge Study:** A Southern California water district had proposed to use recycled water to recharge a local aquifer for indirect potable reuse. The proposal had been rejected on the basis of widespread public pressure, but the client's desire to complete the project lead to a study of the technologies that would be required to produce higher quality water that could potentially overcome public resistance. A preliminary design and cost estimate was developed for a highly treated wastewater facility, based on the likely contaminants that were present in the source wastewater after conventional treatment.
- **Water Supply Analysis For Development:** A large national retail corporation required independent analysis of water supply adequacy for planned large commercial project in Sacramento County. Analysis involved critique of draft Urban and Regional Water Management Plans prepared by other consultants, plus independent water supply study for compliance with CEQA and SB 610 provisions. Analysis considered contrasting population growth projections and consumptive use estimates for urban and agricultural users, plus consideration of existing basin overdraft conditions and proposed water transfers.
- **Mapping of Groundwater Resources on Indian Lands:** Groundwater resources beneath Indian lands in Arizona, Nevada, and Utah were mapped as part of EPA's Underground Injection Control Program. The objective of the study was to provide a basis for evaluating potential hazardous waste injection sites, and their relationship to potable water resources.

- **Regional Water Systems Vulnerability Assessment** For Southern California Water Company (now Golden State Water Company) Regulations developed after the terrorist attacks in 2001 required all but the smallest water systems to examine their potential vulnerabilities and to identify measures to reduce them. The required assessments were conducted for 15 different systems in California and Arizona.
- **Source Water Sanitary Survey:** A Source Water Sanitary Survey was conducted for a proposed seawater desalination facility at Carlsbad, California. The proposed 50 MGD reverse osmosis treatment plant will receive seawater through an existing electrical power generation plant's cooling water supply system. Potential sources of contaminants range from the open ocean to upland areas of the lagoon's watershed where agricultural production introduces pesticides and herbicides to the water that runs into the lagoon during the rainy season.
- **Water Recycling Feasibility Study:** In an effort to reduce the demand for potable water and eliminate wastewater discharge permitting requirements, a California oil refinery requested a study to assess the feasibility and cost of becoming a "zero-discharge" facility with respect to industrial wastewater. A detailed study of the refinery's water uses and discharge, water quality requirements, and potential 'sinks' for reclaimed wastewater was completed.
- **Pipeline Study – Water Integration Plan** Project Manager: The proposed seawater desalination plant at Carlsbad, California will change the water quality provided to many consumers in northern San Diego County. These differences present a host of challenges to the local water distributors, including the possibility of increased customer complaints, corrosion, scaling, and discoloration. The study was conducted for the San Diego County Water Authority, and identified the potential issues and the means to minimize their negative impact.
- **Perchlorate Removal Technology Assessment:** The developer of a novel ion exchange technology for the removal of perchlorate from drinking water requested assistance in presenting technical information to the California Department of Health Services. DHS approval of the technology was essential to consideration of the technology by water agencies.

Publications

- *Optimization of Water Distribution Systems*, Journal of the Environmental Engineering Division, ASCE, Vol. 107, No. EE4, August, 1981.
- *Biological Conversion of Biomass to Methane*, Fuel Gas Production from Biomass, Vol. 2, (Donald L. Wise, Ed.) CRC Press, 1981.
- *Water Distribution System Design Criteria*, Final Report, NSF Grant APR-7619120, Department of Civil Engineering, University of Illinois at Urbana-Champaign, 1979.
- *Biological Conversion of Organic Refuse to Methane, Final Report, Vol. II*, NSF Grant GI-39191, Department of Civil Engineering, University of Illinois at Urbana-Champaign, 1976.