

APPENDIX B

BIOLOGICAL RESOURCES

Areas of Expertise	Aquatic, Terrestrial, and Wetland Biology/Ecology Plant Physiological Ecology Habitat Restoration
Total Years of Experience	1
URS	<1
Other Firms	0
Education	BS/2003/Biology/Loyola University Chicago MS/2007/Environmental Health Sciences; Environmental Biology/UCLA
Overview	Shanti Abichandani has an education and research background in aquatic and plant ecology. Recent research and work experience include determining the water loss due to transpiration of the invasive species <i>Arundo donax</i> along the Santa Clara River. Shanti also has experience in technical report production and statistical analysis. She is currently a staff biologist in the San Diego Office.
Project Experience	<p>M.S. Thesis Project: UCLA. “The Potential Impact of the Invasive Species <i>Arundo donax</i> on Water Resources along the Santa Clara River: Seasonal and Diurnal Transpiration.” Field study determining the water loss due to transpiration of <i>Arundo donax</i> for each season in two different soil moisture regimes. Statistical analysis of results. In preparation for publication. Advisor: Richard Ambrose, Ph.D. (2004 – present)</p> <p>Field studies on the invasive species, <i>Arundo donax</i>, along the Santa Clara River under the direction of Gretchen Coffman, Ph.D. candidate at UCLA. Research methods: soil sampling, measuring plant growth and biomass, soil grain analysis, observing competition with native species. (2004 – 2005)</p> <p>Data entry, figure and table production, and statistical analysis for: Ambrose, R.F., R.R. Vance, N. Wenner. 2006. Wetland Restoration Monitoring Report for Navy Base Ventura County, Mugu Lagoon: July 2001 to September 2005. Report to the Naval Station Ventura County, Point Mugu. (2006)</p> <p>Undergraduate Research: Loyola University Chicago. “Elevated Atmospheric CO₂ Effects on Predatory Fish in Detritus Based Ecosystems.” Advisor: Nancy Tuchman, Ph.D. (2001 – 2003)</p>
Awards	2002 and 2003 Loyola University Chicago Department of Biology Certificate of High Achievement for the presentation of the Research Project entitled “Elevated CO ₂ Effects on Predatory Fish in Detritus Based Ecosystems.”
Publications	Abstract: Tuchman, N.C., B. Swedo, S. Abichandani, S.T. Rier, and R.G. Wetzel. 2002. Elevated atmospheric CO ₂ alters leaf nutritional quality: Impacts on three trophic levels in detritus based aquatic food webs. Abstract for 50th Annual meeting, North American Benthological Society, Pittsburgh, Pennsylvania. (06/2002)

Areas of Expertise	<p>Listed Species Surveys, Monitoring, Habitat Assessment and Research Knowledge of native fauna and flora of southern California Technical Report Writing Wetland Delineation of rivers and tributaries in the arid southwest Vegetation Mapping and Botanical Surveys Permitting and Environmental Analysis Risk Assessment and Hazard Mitigation Planning Task Management</p>
Total Years of Experience	9.5
URS	7
Other Firms	2
Education	<p>BA/1999/Biology/University of San Diego California Fairy Shrimp Identification Class Southwest Willow Flycatcher Survey Workshop Desert Tortoise Survey and Handling Workshop Wetland Delineation Training Federal Wetland/Waters Regulatory Policy Training ESRI Training: Migrating from ArcView GIS 3.x to ArcGIS 8.x ESRI ArcView Training: Conservation Biology using ArcView GIS</p>
Registration/Certification	
Overview	<p>Ms. Theresa Miller is a Wildlife Biologist and GIS Specialist with more than 7 years of experience and expertise in California sensitive species, especially in San Diego County. She conducts biological surveys with a focus on birds, reptiles, and amphibians, and develops technical reports and planning documents. Specializing in environmental projects, she has written many biological resources evaluations and been involved in many major environmental impact reports (EIRs), environmental assessments (EAs), environmental impact statements (EISs), biological assessments (BAs), biological technical reports, and hazard mitigation plans. Her project experience has involved task management, GIS/GPS analyses, GIS modeling, database development, and risk assessments for hazard mitigation planning for numerous public and private agencies.</p>
Project Experience	<p>BIOLOGY/ ENVIRONMENTAL PLANNING PROJECTS Larkspur</p> <p>SANDAG On-Call Environmental Services/I-805 Widening Project, San Diego County, CA. 2005-ongoing. Ms. Miller conducted wildlife and sensitive species surveys (including least Bell’s vireo, California gnatcatcher) and wetland delineations along a 1000-foot buffer of the alignment for expansion of I-805 from the Mexican Border to the 805/I-5 merge. Co-coordinated team effort for sensitive species surveys and wetland delineations, and prepared wetland delineation report and mapping of delineated jurisdictional waters. (<i>approx \$4M</i>)</p> <p>Metropolitan Water District, Upper Feeder-Santa Ana River Embankment Protection. 2006. Biology task leader to assist FEMA with CEQA/NEPA compliance. Conducted least Bell’s vireo surveys along the Santa Ana River in Riverside County to determine impacts from project implementation as part of FEMA HMGP mitigation/restoration project.</p>

Whitewater Mutual Water Company, Irrigation Water Intake / Storage Structure Repair. 2006. Biology task leader to assist FEMA with CEQA/NEPA compliance. Conducted arroyo southwestern toad and southwestern willow flycatcher surveys to determine biological impacts of restoring the irrigation water intake and water storage facilities to pre-disaster condition. Part of FEMA HMGP program.

Cavallo Farms Wildlife Corridor Study, City of San Diego, CA. 2006. –Field team leader for a wildlife corridor assessment of an 8-acre horse farm/training property located within an existing MSCP wildlife corridor linkage in Del Mar, California. Checked and maintained 24 passive tracking stations and 5 camera stations within and surrounding the property for 8 weeks in August and September 2006 to identify tracks and scat of large mammal species, including mountain lion (*Felis concolor*), bobcat (*Felis rufus*), coyote (*Canis latrans*), and southern mule deer (*Odocoileus hemionus fuliginata*). Managed database and directed GIS logistics. Prepared report and GIS mapping of results. Conducted California gnatcatcher protocol surveys and identified territories throughout study area.

Colorado River Aqueduct Operations and Management Habitat Conservation Plan, MWD of Southern California 2004-2006. - GIS Specialist, field coordinator and field biologist on team performing 2 seasons of desert tortoise and rare plant surveys along the length of the Colorado River Aqueduct from western Riverside County, California to Parker, Arizona. Created GIS field maps and species locations maps for use in determining conservation areas for the HCP within MWD ownership. Field coordinator for 12 biologists and subcontractors from several offices during second year of surveys which focused on rare plant surveys for 41 sites. Observed tortoise and identified tortoise burrows and sign. Compiled and analyzed several years of data collection including 2 years of survey data, and prepared HCP document and appendices.

State Route 56/Interstate 5 Interconnections, City of San Diego, California. 2005-ongoing. Conducted least Bell's vireo surveys and vegetation mapping of study site for the "connectors" project for Interstate 5 and State Route 56. Prepared biotechnical report. Connections from southbound Interstate 5 to eastbound State Route 56 as well as the connection from westbound State Route 56 to northbound Interstate 5 were not completed as part of the initial State Route 56 project. *(Ongoing) (approx \$300k)*

Nursery Products Composting Facility Initial Study (IS)/Mitigated Negative Declaration (MND)/Environmental Impact Assessment (EIR), San Bernardino, CA. 2006. Biology Task Manager for the proposed development of a 160-acre biosolids/green waste composting facility in San Bernardino County. Coordinated and lead field team for USFWS protocol desert tortoise surveys and rare plant surveys, and prepared biotechnical report as well as biology section of EIR.

Dana Point Headlands, California Gnatcatcher Monitoring. Assisted in the monitoring of gnatcatcher nest sites throughout territory located within and adjacent the project site.

Viejias Band of Kumeyaay Indians, Debris Removal from Pond at Mar-Tar-

Awa Campground. 2006. Biology task leader to assist FEMA with CEQA/NEPA compliance. Evaluated biological impacts of removal of silt, sediment, and debris from the pond to restore pond to its pre-disaster size, shape, and depth. Determined need for USFWS Section 7 consultation because the project was a post-disaster hazard mitigation project funded through the FEMA Public Assistance program.

County of San Diego, Central Avenue Flood Control Improvement Project, National City, CA. 2006. Biology task leader to assist FEMA with CEQA/NEPA compliance. Conducted biological evaluation to determine biological impacts and need for Section 7 Consultation with USFWS for FEMA HMGP- related project to upgrade the drainage facilities in Central Avenue and to alleviate flooding up to and including a 100-year runoff event.

Big Tujunga Dam Seismic Retrofit Biological Assessment, Big Tujunga, CA. 2006 - Biologist assisting FEMA and Los Angeles County Department of Public Works in the CEQA/NEPA compliance for the proposed seismic retrofit of Big Tujunga Dam, near Sunland, Los Angeles County. Prepared Biological Assessment as part of the CEQA/NEPA and Section 7 documents. Worked closely with USFWS to achieve completion an approved BA. Key issues included construction and dam operational impacts to Santa Ana Sucker and Arroyo Toad Designated Critical Habitat.

SR-52 Widening Project. San Diego, CA. 2006. - Conducted least Bell's vireo surveys along SR-52 right-of-way and identified several territories. Also observed several California gnatcatcher territories. Prepared biological technical report on sensitive species.

Oak Valley Substation & Transmission Line Project, Southern California Edison, Riverside County, California. 2006. Conducted sensitive species surveys (including least Bell's vireo and southwestern willow flycatcher) of project area for the installation of a new substation, re-conductoring of several transmission lines and new installation of several transmission lines in Riverside County (including the cities of Beaumont, Banning, and Calimesa).

Mira Sorrento Place Road Extension, City of San Diego, California. 2005. Conducted biological construction monitoring of during implementation of road extension.

Range Management Plan Amendment/EIS, McGregor Range, Socorro, New Mexico. 2005. - Technical writer responsible for alternatives and environmental consequences analyses for special status species, vegetation, wildlife, and livestock grazing sections for an EIS for the McGregor Range Management Plan Amendment. The RMPA/EIS determined impacts based on a forecast of 15 years of range management and improvements.

EIS and Biological Assessment, Resource Management Plan Revision and EIS, Socorro, New Mexico. 2006. - Technical writer responsible for impacts analyses on special status species, vegetation, wildlife and livestock grazing sections for an EIS and BA for the Socorro BLM Field Office Resource Management Plan Revision.

Canyon Crest, City of Brea, California. 2002. - Field Coordinator for field surveys with a particular emphasis on identification of the local movement patterns of large mammals (*i.e.*, coyote, mule deer, gray fox, bobcat, and mountain lion). Field activities included construction and maintenance of tracking stations and identification of mammal scat, tracks, and game trails. Prepared wildlife corridor assessment.

San Mateo Creek and Lagoon, San Onofre, CA. 2005. - Biologist on team to perform an exotic predator control program at San Mateo Creek in San Diego County. Removed exotic species including bullfrogs, crayfish, and mosquito fish using gigs and seines to benefit native rare tidewater gobies and arroyo toads. Conducted diurnal and nocturnal eradication with the aid of seine nets, dip nets, and frog gigs.

Avian Surveys, Cal Energy Power Plant, California Energy Commission, California, Salton Sea, CA. 2004. - Field coordinator and team leader for shorebird flyover and wildlife diversity/abundance surveys at the Salton Sea, for expansion of a Geothermal Power Plant. This included several seasons of data collection and analysis. Over 90 species of birds were identified during the surveys.

Meadow Valley Generating Plant EIS, Southern Nevada. 2003. - Field biologist conducting desert tortoise and rare plant surveys for a 1,000 MW, gas-fired combined cycle power plant proposed in Southern Nevada. Identified tortoise burrows and sign.

FEMA/CDF and FEMA/City of San Bernardino Prescribed Burn Program - Prepared Programmatic Biological Assessments for proposed prescribed burns in San Bernardino County. Updated GIS mapping for project.

CSS Monitoring Program, City of San Diego, CA - Coordinated team effort and performed protocol sensitive species surveys for the coastal California gnatcatcher MSCP Reserve Habitat Monitoring project. Supplied City of San Diego with updated sensitive species location data to use in updating the MSCP.

San Elijo Hills Development Project, San Diego, CA. 2001 - Assisted in protocol California gnatcatcher surveys. Construction monitoring during brushing of property.

Questhaven Road Realignment, San Diego, CA. 2001. - Performed wetland delineation and protocol California gnatcatcher surveys.

Melrose Drive Extension Project, San Diego, CA. 2000. - Assisted in protocol California gnatcatcher surveys, prepared Biological Resources Technical Report and regional vegetation map.

Otay Land Co. Proctor Valley Project, San Diego, CA - Performed sensitive species, vegetation and Waters of the U.S. surveys for the proposed Otay Land Co. project in Proctor Valley. It was a large residential development to construct 821 "urban units" on approximately 325 acres. The project area included large areas of sensitive habitat and supported several threatened or endangered species.

GIS ANALYSIS/MODELING/DATABASE DEVELOPMENT PROJECTS

McClellan Palomar Airport Noise Compatibility Study, County of San Diego, CA. 2005. - GIS Specialist responsible for creating existing, 5-year, and 10-year projected GIS land use databases. The databases were then used to help evaluate noise conditions and help in GIS/noise modeling efforts. Over 400 GIS man-hours were used to create, update, and generate these all-encompassing databases and complete analysis for preparation of the supporting Part 150 FAA document. The final product was also converted to Global Environment Management System format for use at the airport facility. GIS models, exhibits, and materials were focal points for community planning meetings/forums.

Otay/Kuchamaa GIS Database Development, Biological Monitoring Plan, and Cultural Resource Study, Bureau of Land Management, California. 2003. - GIS Specialist responsible for creating a geospatial, FGDC-standard GIS database. GIS data from over 30 private and public agencies were integrated. Over 130 data layers were compiled, reviewed, corrected, and integrated to form one consolidated, easy-to-use database for planners, biologists, archaeologists, and other specialists within the Bureau of Land Management (BLM). A complete data dictionary, including complete FGDC standard metadata, was completed for the project. Also managed installation and training for all staff at three BLM offices. Following completion of the database, a biological monitoring plan and cultural resource document were prepared. This project won the Association of Environmental Professionals' 2002 "Outstanding Environmental Solution" award.

Western Riverside HCP, Castle and Cook. 2002. - Provided review of document, data, and the GIS modeling process used in the preparation of the Western Riverside MSHCP. Also provided GIS analysis, vegetation mapping and graphics for comparison with previous vegetation and corridor linkage information.

Coastal Rail Trail, City of San Diego, CA. 2002. - GIS Specialist/Planner in support of development of the second-half of the Coastal Rail Trail. The project is tasked with completing a bicycle/pedestrian multi-use trail from Del Mar south to the Santa Fe Depot. The project was later condensed, due to funding limitations to segments from Carmel Valley Road near Del Mar south to Gillman Drive. SANDAG, Caltrans, FHWA, City of San Diego, San Diego Bicycle Coalition, San Diego Mountain Bikers Association, Friends of Rose Park, Audubon Society, Native Plant Society, the University Community Planning Group, and the Council District Office were all key players involved with the project. An environmental assessment and 30% engineering were the products of Phase I of the project. Phase II will consist of Final engineering and Design, slated for 2006, once funding becomes available.

Soil Erosion Surveys, GIS/GPS Database Collection and Plan Development, Naval Air Station, Miramar, San Diego, CA. 2004. - GIS Specialist in support of creating a complete geospatial GIS database of soil/erosion/restoration areas for the undeveloped portions of NAS Miramar. After being devastated by the 2003 San Diego Wildfires, the Base was concerned with erosion, runoff and potential for restoration for the lands burned. The project included surveying 14,000ac. of

soil, using hand-held PDAs equipped with maps and soil information for field crews. Teams used GPS/GIS technologies to record and map data collected. A complete Work Plan and Final Report were generated as part of this project.

GIS Database Development and Support, San Diego Unified School District, California. 2004. - Provided GIS support in creating a complete geospatial GIS database for ongoing analysis and Phase I environmental site assessments for 30 proposed school sites. Over 30 environmental and manmade constraint layers were incorporated. A complete historical survey of potential hazardous sites was also researched and mapped into the GIS. Over 120 exhibits were generated for ongoing environmental, Phase I, and public-outreach efforts.

County Trails Assessment, County of San Diego, CA. 2003. - Provided GIS and technical writing support for the San Diego Trails Assessment assisting the County of San Diego (County) with preparation of a long-range strategy for non-motorized recreational trails. The effort included completion of a comprehensive trails system assessment. The County's existing, planned, and proposed trails were documented, along with types of trails (hiking, equestrian, and biking), user groups, and frequency of use. An evaluation was conducted to determine future trail demand, public attitudes and level of support, types of trails required, and design criteria. An opportunities and constraints analysis was conducted documenting existing physical and environmental constraints, including land uses, recreation, Multiple Species Conservation Program (MSCP) lands, sensitive ecosystems, and public lands. The environmental approach describing required National Environmental Policy Act and California Environmental Quality Act documentation was also included. Alternative trail systems were evaluated with regard to environmental, public demand, and financial conditions. All conditions were mapped with GIS.

Cal Energy Power Plant, California Energy Commission, California. 2003. - Served as GIS Specialist for preparation of an application for certification (AFC) for submittal to the California Energy Commission (CEC) for construction and operation of the Salton Sea Unit 6 (SSU6) geothermal plant power-generation facility in Imperial County, California. The SSU6 is a proposed, nominally rated, 175-megawatt (MW) merchant power plant. Ancillary facilities and three transmission line alternatives were analyzed. Over 120 GIS exhibits analyzing over a dozen technical disciplines were also created.

OTHER GIS ANALYSIS/MODELING/DATABASE DEVELOPMENT PROJECTS

Meadow Valley Generating Project EIS, Southern Nevada - GIS Specialist for 1,000 MW, gas-fired combined cycle power plant proposed in Southern Nevada. Generated GIS exhibits of impacts analysis.

GIS Specialist, CSS Monitoring Program, City of San Diego, CA - Provided GIS analysis, vegetation mapping and sensitive species location digitizing for the California gnatcatcher MSCP Reserve Habitat Monitoring project. Developed vegetation and sensitive species location graphics for each of nine study areas located throughout San Diego County. Supplied City of San Diego with updated sensitive species location data to use in updating the MSCP.

GIS Specialist, Otay Land Co. Proctor Valley Project, San Diego, CA -

Provided GIS analysis and vegetation/Waters of the U.S. digitizing for the proposed Otay Land Co. project in Proctor Valley. It was a large residential development to construct 821 "urban units" on approximately 325 acres. The project area included large areas of sensitive habitat and supported several threatened or endangered species.

FLOOD MODELING PROJECTS

Federal Emergency Management Agency Post-Fire Floodplain Mapping, San Diego, Riverside, San Bernardino, Los Angeles, and Ventura Counties, California - GIS Specialist supporting floodplain assessment, database generation of reaches affected, and mapping of approximately 770,000 acres of presidential declared disaster burn areas in Southern California. Emergency reaches were identified and tabulated. HEC-GEORAS hydraulic models were then generated and incorporated into GIS for 5- and 100-year flood zones. Data for over 5 counties were analyzed, field verified, H&H modeled, and mapped for upload onto the Federal Emergency Management Agency website in 3 weeks. Over 100 maps were generated in only 2 days.

Floodplain Management Study and Plan, Viejas Indian Reservation, California - GIS Specialist responsible for floodplain modeling, mapping, and drainage system assessment. The contract also required stormwater management support, reporting, and data presentation. Floodplain modeling included historical flood information, complete topographic survey, and computer simulations/models of studied flood classes, calibrating and verifying the hydrological model to historic floods, and establishing a design flood behavior. HEC-GEORAS hydraulic models were generated through GIS.

Technical Assistance Assessment of Disaster Related Infrastructure – Santa Clara & San Ildefonso Pueblos, FEMA - Performed GIS hydrologic modeling for Santa Clara and San Ildefonso Pueblos, located in Northern New Mexico, after the Cerro Grande Fire of 2000. ACOE's HEC-GeoHMS was integrated with ArcView GIS to delineate watersheds based on GPS point-locations. Stream networks were also determined using this program with 3-D Analyst. Utilized Spatial Analysis to determine percent slope and future potential for fire in areas that were burned. Digitized streams into project area determined from aerial surveys. Provided several graphics for each task.

Chollas Creek Wetlands Management Plan, San Diego County, California - GIS Specialist responsible for obtaining GIS data overlays, including data mapped for the MSCP study purpose and updated information. Worked with biologists to create a GIS database that included creek conditions, existing wetlands and sensitive biological resources, parcels and ownership, and planned development projects. With a HEC2 model created for this project and through intensive GIS modeling, sites along the creek needing wetlands management were identified. Also participated in development of presentation material for three community meetings using GIS/HEC-RAS three-dimensional models and information.

ROADWAY PROJECTS

State Route 56/Interstate 5 Interconnections, City of San Diego, California -

Staff Biologist/Planner responsible for technical reports in environmental and preliminary engineering tasks relating to the “connectors” project for Interstate 5 and State Route 56. Connections from southbound Interstate 5 to eastbound State Route 56 as well as the connection from westbound State Route 56 to northbound Interstate 5 were not completed as part of the initial State Route 56 project. These two key connectors are needed to handle increased travel demand and increased development in the vicinity. The project is highly publicized due to the fact that the proposed southbound Interstate 5 to eastbound State Route 56 connector would be a four-story “flyover” ramp adjacent to an environmentally sensitive lagoon and several residential communities.

Interim Improvements for the Interstate 5-State Route 56 Interconnections, City of San Diego, California - Staff Biologist/Planner and GIS Specialist for initial environmental clearance and preliminary engineering for the Interim Improvements relating to the interconnection project for Interstate 5 and State Route 56. Interim Improvements included road widening, restriping, retaining wall, additional drainage/bioswale installation, and replantings. This project was key to interim traffic congestion problems arising from the opening of State Route 56.

Sorrento Valley Road EIR, City of San Diego, California - GIS Task Manager for the equal evaluation of three distinct alternatives for a 3-mile segment of Sorrento Valley Road which is closed and in disrepair since 1994, while a new pump station and a major Caltrans intersection at I-5 was constructed. The project borders the Los Peñasquitos Lagoon, which is managed by State Parks and under the joint coastal jurisdiction of the City of San Diego and the State Coastal Commission. All CEQA issues were evaluated and mapped in GIS with special emphasis on traffic and noise impacts as well as biological permitting and mitigation.

Mira Sorrento Place Road Extension, City of San Diego, California - Staff Biologist for the civil design and environmental compliance studies associated with this road extension. Principal issues for evaluation included soils and slope stability, surface water hydrology, construction impacts, and cultural resources. Also helped prepare land use analysis technical report.

EMERGENCY RESPONSE/EMERGENCY PLANNING PROJECTS

Federated States of Micronesia (FSM) Multi-State Hazard Mitigation Plan, Federal Emergency Management Agency (FEMA), Government of FSM/National Emergency Management Office (NEMO). 2005. - GIS Specialist/Planner for the multi-state FSM Hazard Mitigation Plan. As a recognized jurisdiction that is eligible under compact with the U.S. for FEMA funding, the FSM government hired URS to help prepare the Plan. The FSM is made up of four states, Pohnpei, Kosrae, Chuuk, and Yap covering over 1,000,000 miles of ocean including over 605 islands. Assisted with extensive public outreach efforts held throughout the islands during the project. Prepared Hazard Mitigation Plan including public meeting materials and preparation, working group participation and data collection, agency and interested-party site visits and interviews and more. Prepared hazard maps using GIS and data collected from FSM and websites. The Plan included a complete risk assessment, vulnerability

analysis, and separate mitigation strategies for each State.

Multi-Jurisdictional Hazard Mitigation Plan, Federal Emergency Management Agency (FEMA), Office of Emergency Services (OES), County of San Diego, CA. 2004. - GIS Specialist and Planner for San Diego County's Multi-Jurisdictional Multi-Hazard Mitigation Plan. Plan preparation, GIS analysis and HAZUS-99/HAZUS-MH modeling, public outreach efforts, and individual jurisdiction support. The Plan (including a separate "For Official Use Only" attachment for manmade hazards) was over 750 pages, included production of over 100 maps for 18 jurisdictions and the County, and covered 4,264 square miles. Risk assessment, vulnerability analysis, and mitigation strategies were generated for each jurisdiction. Participated in and prepared maps and materials for all working group meetings, encompassing public officials/staff, fire/police/emergency personnel, public/private organizations and citizens; over two dozen individual jurisdictional meetings, and all public meetings held over the two-year project life. Prepared hazard maps and performed loss estimation analysis for Risk Assessment. *This project won the Association of Environmental Professionals' 2004 "Outstanding Environmental Document" award.*

Viejas Band Hazard Mitigation Plan, Federal Emergency Management Agency (FEMA), State of California. 2005. - GIS Specialist and Planner in charge of planning and GIS-related efforts for developing the Viejas Band Multi-Hazard Mitigation Plan. Performed GIS analysis and HAZUS-99/HAZUS-MH modeling, participated in and prepared maps and materials for all working group meetings. The Plan included a complete risk assessment, vulnerability analysis, and mitigation strategy.

Twenty-seven (27) Single Jurisdiction Hazard Mitigation Plans, Federal Emergency Management Agency (FEMA)/Office of Emergency Services (OES), Individual Jurisdictions within County of Maricopa, AZ. 2004. - Provided peer review for the twenty-seven (27) separate single-jurisdictional DMA 2000 plans for the cities within Maricopa County, Arizona. GIS review included analysis of GIS HAZUS 99/HAZUS-MH modeling results. Reviewed compilation of results for risk analysis/loss estimation portions of document.

Concow Maidu of Mooretown Rancheria Hazard Mitigation Plan, Federal Emergency Management Agency (FEMA)/Office of Emergency Services (OES), State of California. 2005. - Provided peer review and assistance in development of the Hazard Mitigation Plan. GIS support included GIS HAZUS 99/HAZUS-MH modeling and risk assessment. Peer reviewed compilation of all results for risk assessment and mitigation portions of document preparation.

Statewide Hazard Mitigation Plan, Federal Emergency Management Agency (FEMA)/Office of Emergency Services (OES), State of Arizona. 2004. - Provided peer review for the State-wide Plan. GIS Peer review included GIS HAZUS 99/HAZUS-MH modeling results. Peer reviewed compilation of all results for risk analysis/loss estimation portions of document preparation.

Ventura County Hazard Mitigation Plan, Federal Emergency Management Agency (FEMA)/Office of Emergency Services (OES), State of California - Provided GIS support for the county-wide Plan. GIS support included hydrologic and GIS HAZUS 99/HAZUS-MH modeling.

Urban Area Security Initiative, City of San Diego/Federal Emergency Management Agency (FEMA). 2005. - Provided GIS support in the analysis and compilation of a wide-variety of complex, highly confidential source data for the completion of the Urban Area Security Initiative (UASI). This project included analysis of potential hazardous materials release/weapons of mass destruction analysis, including morbidity, mortality, and damage assessments.

California Firestorm 2003 Modeling/Mapping, Federal Emergency Management Agency (FEMA)/California Office of Emergency Services (OES), Los Angeles, San Bernardino, Ventura, Riverside, San Diego Counties; California - GIS Specialist in support of floodplain assessment, database generation of reaches affected, and mapping of approximately 770,000 acres of presidential declared disaster burn areas in Southern California. Emergency reaches were identified and tabulated. HEC-GEORAS hydraulic models were then generated and incorporated into GIS for 5- and 100-year flood zones. Data for over 5 counties were analyzed, field verified, H&H modeled, and mapped for upload onto the Federal Emergency Management Agency website in 3 weeks. Over 100 maps were generated in only 2 days.

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Professional Associations

Association of Environmental Professionals, Member, (2000–Present)
Women's Environmental Council, Member, (2002 Present)
Wildlife Society Member, (2001 – Present)
California Geographic Information Association, Member, (2001-Present)
ESRI Regional Arc User Group, (2001-Present)
Desert Tortoise Council Member, (2002-Present)