

PATRICIA M. HARTSHORNE, RG

Education

BS – Geology, University of Wisconsin, Madison, 1985

MS – Geology, University of Arizona, 1988



Patricia Hartshorne, RG

Professional Licenses

Registered Geologist (RG) – Arizona (No. 31004)

Specialty Certifications

AHERA Certified Asbestos Building Inspector and Contractor/Supervisor

EPA Certified Lead Inspector and Risk Assessor

Professional Affiliations

Arizona Geological Society (AGS)

Association for Women Geoscientists (AWG)

ASTM Voting Member for Committee E50 on Environmental Assessment, Risk Management, and Corrective Action

National Ground Water Association (NGWA)

Society of American Military Engineers (SAME)

Southern Arizona Environmental Management Society (SAEMS) – Executive Board

Urban Land Institute (ULI)

Professional Experience

Ms. Hartshorne has been performing environmental and solid waste management projects for SCS for 28 years, and opened the SCS Tucson office in 1996. Her qualifications include management, interpretation, and presentation of data generated by small and large multi-task projects. She has extensive experience with Phase I and II Environmental Site Assessments (ESAs) of vacant, residential, industrial, commercial, and agricultural sites; underground storage tank (UST) investigations; remedial activities; and landfill investigations. This includes historical and regulatory research; collection of soil, groundwater, landfill gas (LFG), air, and suspect asbestos or lead-containing material samples; supervision of subcontractors; health and safety (H&S) compliance; data management; interpretation of results; remediation oversight; and technical report preparation. She has performed, managed, and assisted with hundreds of ESAs, remedial investigations, and landfill investigations in Arizona and other states.

Ms. Hartshorne is certified in accordance with federal Asbestos Hazard Emergency Response Act (AHERA) regulations to conduct inspections and provide oversight of asbestos abatement projects. This includes collection of bulk samples of suspect asbestos-containing materials (ACMs) for Comprehensive Asbestos Surveys of residential, commercial, and other structures; documentation and air sampling during abatement activities; and technical reporting. She is also certified by the U.S.

Environmental Protection Agency (U.S. EPA) to perform sampling and risk assessment of lead-based paint (LBP) in residences and other structures.

Her experience in landfill investigations includes Construction Quality Assurance (CQA); waste characterization investigations; groundwater monitoring; preparation of landfill operations plans, Aquifer Protection Permit (APP) documents, Solid Waste Facility Plans (SWFPs), Storm Water Pollution Prevention Plans (SWPPPs) and Spill Prevention, Control, and Countermeasure (SPCC) Plans; and performance of LFG monitoring and Tier 2 landfill investigations.

Phase I ESAs/Due Diligence/All Appropriate Inquiry

Office Building, Downtown Phoenix, AZ. Ms. Hartshorne performed and managed a Phase I ESA for an 18-story office building in downtown Phoenix, AZ. The building contained numerous offices, retail and restaurant spaces, and unoccupied spaces. Numerous businesses occupied the property prior to the existing office building, including a dry cleaner. In addition, the site was located within the boundaries of a National Priority List (NPL) site.

Phase I ESA for Commercial Development, South San Francisco, CA. Ms. Hartshorne assisted with the preparation of the Phase I ESA report addendum for this property, which had formerly been occupied by a smelting plant, a metals reclamation and recycling facility, and a trucking facility. The investigation included review of numerous previous investigation documents and preparation of a chronology of site investigation events, a compilation of a table listing the soil and groundwater samples collected during the investigations, and a map showing the approximate sample locations. Documented heavy metal and petroleum hydrocarbon soil and groundwater impacts were attributed to the property from the former industrial uses and from a leaking UST.

Phase I ESA for Vacant Land, Foster City, CA. Ms. Hartshorne prepared a Phase I ESA report for a vacant property that had previously been occupied by commercial/light industrial structures. Potential sources of groundwater contamination were identified hydrogeologically upgradient of the site. SCS also performed a Phase II subsurface investigation of the site, including collection of soil and soil vapor, and groundwater samples.

Phase I ESA for Inactive Power Plant, Bakersfield, CA. Ms. Hartshorne assisted with the preparation of a Phase I ESA of an inactive power plant property that was formerly occupied by ASTs and chemical storage container areas, as well as oil production wells and associated equipment and tanks.

Environmental Due Diligence Audit (EDDA) for Tucson International Airport, Tucson, AZ.

Performed the EDDA to be included in the Environmental Impact Statement for the Proposed Airfield Safety Enhancement Project and Land Transactions for the Tucson International Airport. The study area included runways, taxiways, and roads in the airport area; some fixed-base operations areas; vacant parcels; a former fire station; and portions of military property.

Nature Conservancy for Maricopa County Risk Management, Phase I ESA for Hassayampa River Preserve, Wickenburg, AZ.

Ms. Hartshorne performed and managed a Phase I ESA for approximately 600 acres of partially developed property owned by the Nature Conservancy for Maricopa County Risk Management. The site contained natural preserved land, a river, visitor's center, conference room, living quarters, parking areas, and outbuildings (spring house, maintenance buildings, and sheds). The property was scheduled for inclusion in the Maricopa County Vulture Mountains Recreation Area.

Phase I ESA for El Coronado Ranch, Chiricahua Mountains, AZ. Ms. Hartshorne performed and managed a Phase I ESA for a privately owned ranch located in the remote Chiricahua Mountains for The Trust for Public Land in preparation for a conservation easement. The property consisted of approximately 1,908 acres of undeveloped ranch land, 3 miles of Turkey Creek, and six “building envelope” disturbance areas containing the ranch headquarters, caretaker area, multiple residences, offices, barns, corrals, recreation areas, kennels, ponds, septic tanks, wells, disposal areas, etc.

Phase I ESA for Part of Colossal Cave Mountain Park and La Posta Quemada Ranch, Pima County, AZ. Ms. Hartshorne performed and managed a Phase I ESA for a private company bidding on a contract for Pima County for the rehabilitation, operation, and development of a show cave and nature park attractions. The portions of the park covered by the site assessment totaled approximately 40 acres, and included the toll booth entrance, Colossal Cave facilities (cave entrance, administration buildings, gift shop, snack bar, storage areas, laundry building, etc.), and La Posta Quemada Ranch facilities (gift shop, museum, offices, library, arena, barn, animal pens, picnic areas, trails, residences, special events area, water tanks, wells, septic tanks, storage areas, etc.).

Phase I and Phase II ESAs and Asbestos Surveys Annual Contracts. Ms. Hartshorne performed numerous Phase I and Phase II ESAs and asbestos surveys for the City of Phoenix, City of Chandler, City of Mesa, City of Tucson, Pima County, and Arizona Department of Transportation (ADOT) to evaluate risks associated with acquisition of all or portions of commercial, industrial, residential, agricultural, and vacant land for street construction, urban renewal, floodplain and open space acquisitions, and other types of projects. She performed site reconnaissances, extensive history searches, and regulatory records reviews in addition to preparing and reviewing technical reports. Phase II ESA tasks included collection and analysis of soil samples, excavations at a former railroad yard, and oversight during removal of various solid and hazardous waste materials from a property. Asbestos surveys and abatement oversight were performed at properties prior to demolition of structures.

Phase I ESA for Office Building, Tempe, AZ. Ms. Hartshorne performed and managed a Phase I ESA of a four-story office building, a two-story parking garage, landscaped areas, and parking areas in a business park in Tempe for a private client. In addition to offices, there were three hydraulic elevators; two cooling towers, motors, a boiler, and related HVAC equipment; and two emergency generators.

Phase I ESA for Hotel Under Renovation, Tucson, AZ. Ms. Hartshorne performed and managed a Phase I ESA of a two-story hotel building with a basement that had ground floor commercial spaces in Downtown Tucson for a private client. The building had been gutted and was undergoing renovations at the time of the investigation, except for one commercial space occupied by a restaurant.

Phase I ESA for Hotel, Tucson, AZ. Ms. Hartshorne performed and managed a Phase I ESA of a seven-story hotel building that was built over a landfill for a private client. The property contained guest rooms, atrium lobby, elevators, restaurant, gift shop, banquet room/ballroom, conference rooms, fitness room, business center, and pool and spa area.

Pima County, Phase I and II ESA, AZ. Ms. Hartshorne performed 56 projects for Pima County for street construction, floodplain and open space acquisitions, and other projects. This included almost 50 Phase I ESAs of residential, commercial, and agricultural properties, a former mine ore rail site, and vacant land; pre-demolition asbestos surveys of 12 structures along Wetmore Road prior to roadway realignment; sampling of soil piles potentially contaminated by metals; and a Phase II ESA investigation of a former service station property.

Arizona and New Mexico, Phase I ESAs for Large Rural Properties. Ms. Hartshorne performed Phase I ESAs of more than 20 large properties in Arizona and New Mexico for Pima County, private land trusts, and other clients to evaluate risks associated with acquisition of the properties. The properties ranged in size from 22 acres to more than 6,600 acres, and included ranch land and ranch operations, residences, undisturbed vacant desert, mining prospects, an old underground mine, tailings piles, and old drill pads. She performed aerial surveys in small planes, aerial photograph reviews, on-ground site reconnaissances of suspect areas, extensive history searches, and regulatory records reviews. Lastly, Ms. Hartshorne prepared and reviewed the technical reports.

City of Phoenix, Phase I and II ESAs for Right-of-Way Projects, Phoenix, AZ. Ms. Hartshorne performed technical review of many Phase I and Phase II ESAs for the City of Phoenix to evaluate risks associated with acquisition of portions of commercial, residential, and vacant parcels for street construction and urban renewal projects, including light rail and community noise reduction projects. Site reconnaissances, site history searches, and regulatory records reviews were performed and reports were prepared for numerous separate projects. Phase II ESA investigations included soil gas surveys, evaluation of the potential presence of contamination from solid waste disposal sites, collection and analysis of soil samples, etc.

City of Tucson, Phase I and II ESAs for Redevelopment, Tucson, AZ. Ms. Hartshorne performed and managed Brownfields redevelopment projects for the City of Tucson, including a former railroad depot, Ronstadt Transit Center, Fox Theatre, Cherry Field, Presidio Terrace, Congress Landfill, MLK Depot Plaza, Arroyo Chico, Rio Nuevo, El Campo Tire, Old Fort Lowell, and Flint Oil (bulk oil storage), among others. Various tasks performed for the projects included Phase I ESAs, Phase II ESAs, UST investigations, and/or comprehensive asbestos surveys prior to building demolition. The Ronstadt Transit Center property previously contained 10 separate parcels and numerous different addresses in downtown Tucson, requiring extensive historical research and compilation of historical data. The El Campo Tire project included preparation of a Sampling and Analysis Plan (SAP) and submittal to the U.S. EPA, a geophysical survey, closure and assessment of on-site USTs, investigation of contamination associated with off-site USTs, excavation of exploratory test pits, drilling of soil borings, collection and analysis of soil samples, data validation of laboratory reports, and preparation of technical reports.

City of Tucson, Phase I ESA for Nine Former Commercial and Industrial Properties, Tucson, AZ. Ms. Hartshorne performed a Phase I ESA for a vacant property occupied by nine former commercial and industrial facilities for the City of Tucson. Previous occupants of the site included railroad, asphalt, tire, and trucking companies, and a flour mill, an auto wrecking yard, a recycling facility, and gas stations, among others. Several properties had previously contained aboveground storage tanks (ASTs), USTs, and/or sumps, and three of the facilities had UST release cases that had been closed by the Arizona Department of Environmental Quality (ADEQ). Adjoining properties included commercial and industrial businesses, such as bulk oil and asphalt distribution facilities, trucking companies, and a gas station. Ms. Hartshorne summarized the large amount of data obtained from review of numerous records and previous reports into a coherent and concise report.

Arizona School Facilities Board (ASFB), Phase I ESA for Proposed School, Sahuarita, AZ. Ms. Hartshorne performed a Phase I ESA for the ASFB for an approximately 66-acre proposed school site in Sahuarita, AZ. She also performed additional environmental services, including an assessment of potential impacts to endangered flora and fauna, a brief noise level survey, an investigation of the physical characteristics of the soil and drainage conditions of the site, and collection and analysis of soil samples to evaluate whether residual pesticides and herbicides were present.

Phase I ESA for Vacant Desert, Bullhead City, AZ. Ms. Hartshorne a Phase I ESA of multiple parcels of land located in Bullhead City, AZ. The site consisted of 590 acres of vacant and undeveloped

native desert that contained wildcat dumping of solid waste materials in areas that were readily accessible by vehicles, including at least five wrecked and partially burned motor vehicles and several containers with hazardous or unidentified substances.

Yuma Area Service Highway for ADOT, Environmental Baseline Survey, Yuma, AZ. Ms. Hartshorne performed an Environmental Baseline Survey (EBS) of a portion of the proposed alignment for the Yuma Area Service Highway. The site portion of the proposed alignment extended approximately 9 miles across a vacant portion of the Barry M. Goldwater Range (BMGR) east of Yuma. Because no vehicles were allowed in the BMGR, she performed an aerial reconnaissance of the area by flying over the route and adjoining areas in a small plane, and then performed a site reconnaissance by walking through selected areas of the site. Additional tasks included a regulatory database search, interviews, review of previous reports, and preparation of the technical report.

Phase I ESA for Traffic Interchanges, North Phoenix, AZ. Ms. Hartshorne performed a Phase I ESA of two planned highway traffic interchanges in northern Phoenix. The site area included all or portions of approximately 42 parcels, and was occupied by residences, a roofing company, plant nurseries, a landscaping company, a commercial garage, a municipal well property, a cell tower, river channels, and vacant undeveloped land.

Phase I ESAs for Trust Parcels, AZ. Ms. Hartshorne coordinated and performed Phase I ESAs of over 100 parcels of land owned by a trust that were located throughout Arizona. The parcels were assessed and grouped according to potential environmental risks, and the findings were combined into two reports and a project summary. The parcels included residential, agricultural, commercial, and mining properties, and vacant land.

Phase I ESA for Ranch Land, NM. Ms. Hartshorne performed a Phase I ESA of an approximately 64,000-acre ranch in New Mexico located in Catron County. The assessment was facilitated by conducting an aerial survey of the property in a small plane prior to performing the on-ground reconnaissance in order to focus on areas of potential environmental concern.

Phase I and II ESAs for Vacant Land, Casa Grande, AZ. Ms. Hartshorne performed Phase I ESAs of vacant former agricultural land totaling more than 4,000 acres. The properties contained gravel pits and abandoned mining areas. She oversaw the excavation of backhoe test pits throughout and around former waste disposal areas to characterize waste types and the extent of waste disposal, and to evaluate whether hazardous wastes had been disposed.

Third-Party Review of Phase I and II ESA Reports. Ms. Hartshorne performed over 50 third-party reviews of Phase I and II ESA reports for a Resolution Trust Corporation asset management firm. Property types included industrial, commercial, residential, and agricultural land. She evaluated the validity of conclusions and recommendations and conformance of projects to the contracted scope of work. Ms. Hartshorne also performed site reconnaissance for selected properties, including several in the New Orleans, LA, and San Antonio, TX, areas.

PISAs and Asbestos Surveys for Roadways, AZ. Ms. Hartshorne performed and managed Preliminary Initial Site Assessments (PISAs) along roadways and asbestos surveys of bridges and culverts for ADOT road improvement projects in various locations in Arizona, including Fort Huachuca, Picacho, Mammoth, Tucson, and Benson. She collected bulk samples of suspect ACMs and prepared technical reports.

Phase II ESAs/Brownfields

Soils Investigation for Pennington Realignment, Tucson, AZ. Ms. Hartshorne managed and performed a soils investigation at a vacant parking lot in downtown Tucson for the City of Tucson. Discolored soils were discovered during construction and archaeological clearance at this property and were suspected to be associated with a historic assayer located nearby. She collected two initial soil samples to determine whether soil was impacted by metals and polynuclear aromatic hydrocarbons (PAHs). Based on the results, two phases of soil borings were performed and soil samples were collected to determine the extent of contamination by arsenic, lead, mercury, and cadmium. Based on the results, remediation of metals-contaminated soil were performed.

Phase II ESAs for Downtown Links, Tucson, AZ. Ms. Hartshorne managed and performed investigations of six parcels of land in a planned roadway realignment area. Soil borings were drilled to collect soil and soil vapor extraction (SVE) samples to investigate potential impacts from former dry cleaners, auto service businesses, railroads, diesel and dry cleaning solvent USTs, and bulk oil ASTs. In addition, SVE samples were collected to investigate potential impacts from vapor migration onto the parcels from a groundwater contamination plume caused by releases from an upgradient dry cleaner. The SVE results were evaluated using the available U.S. EPA screening models that are based on the analytical solutions of Johnson and Ettinger (1991) in order to estimate indoor air concentrations and associated health risks from subsurface vapor intrusion into buildings.

Phase II ESA for Former Ranch Property, Glendale, AZ. Ms. Hartshorne managed and performed a Phase II ESA for Maricopa County Risk Management (MCRM) for 17 acres of an agricultural property. She performed a site reconnaissance, interviews, document reviews, and historical aerial photograph reviews. In order to confirm previous illegal disposal of materials were removed and contaminating the site, backhoe excavations, soil borings, and soil, water, and sediment sampling and analyses were performed. Ms. Hartshorne prepared the technical report documenting the investigation findings and conclusions.

Municipal and Private Clients, Phase I and II ESAs and Additional Services. Ms. Hartshorne managed and performed numerous Phase I and II ESAs to evaluate environmental liability for municipal and private clients. She performed more than 600 Phase I and II ESAs, Brownfields, and remediation projects for Pima County; the Cities of Tucson, Phoenix, and Chandler; the State of Arizona; and other municipal and private clients under on-call contracts or as single or multiple project awards. Her investigations evaluated environmental risks prior to acquisition of all or portions of commercial, industrial, residential, agricultural, and vacant parcels for street construction, urban renewal, and other types of projects, including the Phoenix Light Rail and Community Noise Reduction Projects. Ms. Hartshorne performed site reconnaissance, extensive history searches, and regulatory records reviews. Phase II ESA tasks included soil borings, excavations, UST investigations, soil and groundwater sample collection, air monitoring, remediation of contaminated soil, etc. Lastly, Ms. Hartshorne prepared the technical reports and performed report reviews.

Landfill Redevelopment Declaration of Environmental Use Restriction (DEUR) Inspections, Tucson, AZ. Ms. Hartshorne managed and prepared a DEUR application and an Engineering Control Plan (ECP) for the inspection and monitoring of the soil cover and planned improvements for a property containing a closed landfill in Tucson, AZ. When the property was split and one parcel was acquired by the owner of a planned restaurant, she prepared new and amended DEUR applications and ECPs for the two parcels. In addition, she performed and managed a soil cover thickness investigation over the landfill portion of the property. She also performed CQA observations during construction of the sub-slab methane mitigation piping system. Since 2007, she has performed the annual DEUR inspections and prepared the reports for submittal to ADEQ.

Soils Investigation for Former Fiberglass Fabrication Facility, Tucson, AZ. Ms. Hartshorne performed and managed an investigation consisting of collection and analysis of samples at 30 locations throughout the yard areas and beneath the building concrete slabs; locations were selected by review of historical aerial photographs for drums or similar material storage areas or discolored soil, review of site plans, discussion with personnel knowledgeable about the site, and by observation of existing site conditions. A technical report was prepared and remediation of selected areas was recommended.

Federal General Services Administration, Soils Investigation of Former Helipad Site, Yuma, AZ. Ms. Hartshorne managed and performed a soils investigation at the former Yuma Air Branch Facility at the Yuma International Airport, to evaluate whether soils at the former helipad, which was used by the U.S. Customs and Border Protection Office of Air and Marine, were impacted by petroleum constituents. Fifteen borings were drilled using a direct-push drilling rig in a pre-planned systematic grid at the former helipad and at a former tanker parking area. Ms. Hartshorne observed the soil for visual and olfactory evidence of contamination, screened soil cores and samples for VOCs using a photoionization detector (PID), and collected soil samples. Lastly, she prepared a technical report documenting the investigation.

Phase I and II ESAs for Helicopter Maintenance Facility, Pinetop, AZ. Ms. Hartshorne performed a Phase I ESA and managed investigation of two properties occupied by a helicopter repair and maintenance company. Soil borings were drilled and soil samples were collected and analyzed for metals, PAHs, and VOCs, to determine if there were impacts above the respective Arizona residential soil remediation levels (RSRLs) or groundwater protection levels (GPLs) in the samples. Samples were also collected and analyzed from the taps of two groundwater wells on the site parcels. Ms. Hartshorne prepared the technical report to document the findings.

Phase I and II ESAs for Former Railroad Corridor, Tucson and South Tucson, AZ. Ms. Hartshorne performed Phase I ESAs for the City of Tucson and a land trust for two segments of a former railroad corridor in Tucson and South Tucson. Portions of the railroad adjoined industrial properties, including several bulk oil storage facilities. In addition, she managed the collection and analysis of samples from the railroad corridor in South Tucson, to evaluate whether uses of the railroad corridor had affected subsurface soil. Ms. Hartshorne prepared the technical reports documenting the findings of the investigations.

Phase I and II ESAs for Agricultural Land Near Arlington, AZ. Ms. Hartshorne performed a Phase I ESA for 240 acres of agricultural land near Arlington, AZ, including agricultural fields, riparian areas, a former residence, and former weed spraying business. Limited soil sampling was performed in an area of yellow-stained soil at the former weed spraying business, and remediation of soils exceeding pesticide cleanup levels was recommended.

Lease Termination ESA for Cement Batch Plant, Avra Valley, AZ. Ms. Hartshorne performed a Lease Termination ESA for a cement batch plant, including collection and analysis of soil samples in areas of potential concern, including a former AST, an admixture storage area, and a wastewater retention basin. She prepared the technical reports documenting the results of the investigations.

Brownfields Redevelopment for Former Pioneer Paints and Associated Properties, Tucson, AZ. Ms. Hartshorne managed and performed the Phase I and II ESA investigations of the former Pioneer Paints property, part of a former gas station, and other associated properties for the City of Tucson. The Phase I ESA, which included review of numerous historical documents, identified known and potential areas of concern at the site. The Phase II ESA investigation included drilling soil borings at various locations throughout the properties at locations of potential concern that were identified by the Phase I ESA, such as the former location of solvent USTs, collection and analysis of soil and

groundwater samples, installation of a groundwater monitoring well, and preparation of the technical reports. The data from investigation of contaminated perched groundwater resulted in closure of the case file by ADEQ.

Brownfields Redevelopment for Former Flint Oil Property, Tucson, AZ. Ms. Hartshorne performed and managed investigations at a former bulk fuel and oil distribution facility for the City of Tucson under a U.S. EPA Brownfields Grant. She performed several phases of environmental investigations in order to evaluate the site for potential impacts from 80 years of storage and/or use of oil, fuel, solvents, and other materials. She prepared a Phase I ESA, performed several phases of surface and subsurface soil sampling investigations, observed a geophysical survey, and managed an asbestos survey and waste characterization of concrete pads. She observed demolition of buildings on the site. She also provided recommendations for future investigation and prepared a summary document for U.S. EPA Region IX Brownfields.

Potentially Responsible Party Support Services, Phoenix, AZ. Ms. Hartshorne performed various project tasks for a firm identified as a potentially responsible party (PRP) within a Superfund site in Phoenix, AZ, including historical research and review of previous investigation reports and facility documents to establish the conditions at the time the firm occupied the property. She prepared the health and safety (H&S) plan for project fieldwork and performed technical review of the work plan and SAP, which were approved by the ADEQ. Ms. Hartshorne performed data verification of the soil vapor survey laboratory analytical reports, and quality assurance review of technical reports. Comparison of the results with the specified action levels indicated that none of the contaminants of concern (COCs) exceeded these action levels at the sampled locations, and it was concluded that the site was not a continuing source of contamination.

Phase II ESAs for Aviation Facilities, Phoenix, AZ. Ms. Hartshorne performed a Phase II ESA for the Swift Aviation Lease Sites at Sky Harbor International Airport, including file reviews, third-party oversight of UST closures and split sample collection and analysis, regulatory database searches, site reconnaissance, interviews, and visual inspection of oil-water interceptors and sand traps.

Brownfields Assessment for El Campo Tire Property, Tucson, AZ. Ms. Hartshorne managed and performed a Phase II ESA for the City of Tucson under the U.S. EPA Brownfields program that included investigation of contamination associated with off-site USTs, soil staining near an automotive maintenance area and a former salvage yard area, and closure and assessment of on-site USTs. She prepared an SAP for submittal to the U.S. EPA. Tasks included a geophysical survey, exploratory test pits, soil borings, collection and analysis of soil samples, data validation of laboratory reports, and preparation of technical reports. Ms. Hartshorne also managed and performed a comprehensive asbestos survey at the site and the adjoining property, which included a visual inspection of the tire shop and garage structure, two office trailers, a boiler, piping, and concrete pads, and collection and laboratory analysis of 206 bulk samples of suspect ACMs.

Golf Links Sports Park, Tucson, AZ. Ms. Hartshorne performed and coordinated an emergency investigation of an unidentified buried metal object at the City of Tucson Golf Links Sports Park. She observed excavation activities, removal of the object (an apparent airplane part) for disposal, and collected soil samples for verification that impacted soil had been removed and for characterization and disposal of soil and waste materials.

City of Tucson and County of Pima, Arroyo Chico Detention Basin, Tucson, AZ. Ms. Hartshorne managed and performed an investigation of the proposed Arroyo Chico storm water detention basin area for the City of Tucson and Pima County. Phases of the investigation included collection of surface soil samples, drilling and sampling of soil borings, percolation testing, installation and sampling of groundwater monitoring wells, sampling of surface water, long-term continuous

monitoring of groundwater levels, groundwater modeling, and preparation of technical reports. She coordinated different phases of the investigation with subcontractors and County and City personnel. She also prepared a final technical report that encompassed all phases of the investigation.

Phase I and II ESAs for Chase Field (Formerly Bank One Ballpark), Phoenix, AZ. Ms. Hartshorne performed Phase I ESAs for 20 parcels within the project area, including extensive historical research and compilation of findings, management of large amounts of data, review and summarization of groundwater contamination issues in that area, and preparation of technical reports for each parcel. She also performed Phase II ESA investigations for historical features of concern, including collection of soil samples, and oversight of geophysical surveys, soil vapor surveys, soil borings, and excavations.

Phase II ESA for Maricopa County Criminal Justice Facilities Development, Phoenix, AZ. Ms. Hartshorne performed separator/sump closure investigations and assisted with extensive asbestos inspections during assessment and remedial projects associated with the redevelopment of industrial areas in the project area. Historical occupants of the redeveloped areas included a railroad freight depot, a bakery, a milk and ice cream processing plant, and various commercial properties.

Phase II ESAs for Sand and Gravel Mining Facility Investigations, AZ. Ms. Hartshorne performed Phase II ESAs of seven sand and gravel mining and processing plants located throughout Arizona. She performed oversight of drilling and backhoe excavations and collected samples to characterize contamination associated with waste storage areas, ASTs and USTs, equipment wash and maintenance facilities, and spills from routine operations. She also prepared technical summaries of the results of the fieldwork for the site investigation reports.

Arizona State Land Department (ASLD), Phase I and II ESAs for Former Cattle Feedlot, Arlington, AZ. Ms. Hartshorne performed Phase I and II ESA investigations of an inactive 40-acre cattle feedlot for the ASLD. The Phase II ESA investigation included groundwater sampling for nitrates, collection of samples from surface soil and soil borings, asbestos sampling, characterization of the nature and volume of veterinary and solid wastes, and evaluation of cleanup alternatives for solid waste and pesticide-contaminated soils.

Phase I and II ESAs for Auto Reclamation Facility, Phoenix, AZ. Ms. Hartshorne performed Phase I and II ESA investigations to evaluate the potential presence of contaminants at a former auto reclamation facility. Tasks performed during the Phase II ESA investigation included excavation of test pits, collection of soil samples, and evaluation and reporting of findings.

Remediation

Site Characterization and Remediation for Old Fort Lowell Brownfields, Tucson, AZ. Ms. Hartshorne assisted with the redevelopment activities for a former steel tank manufacturing property for the City of Tucson. The work was required before historic features at the property could be fully stabilized, protected, and restored. During site characterization, she managed and performed hazardous and solid waste removal, a Phase I ESA, two UST closures, and soil sampling investigations. She also assisted with the Brownfields cleanup grant application and prepared the work plan, SAP, Storm Water Pollution Prevention Plan (SWPPP), and Construction General Permit (CGP) and fugitive dust permit applications. She also attended monthly and quarterly planning and community advisory board meetings. During remediation, Ms. Hartshorne managed and performed excavation of over 1,300 tons of soil contaminated by arsenic, lead, and PAHs; verification soil sampling; six septic tank investigations; and three water well abandonments. The presence of significant prehistoric and historic features required close coordination with several federal, state, and local agencies, and subsurface excavation work was monitored by an archaeologist. Ms.

Hartshorne prepared the remediation report and request for no further action (NFA) determination, both approved by the ADEQ Voluntary Remediation Program (VRP), and the project summary report for submittal to the U.S. EPA Region IX Brownfields Program.

ADOT, Remediation Oversight for I-10 Construction, Tucson, AZ. Ms. Hartshorne observed and documented soil remediation activities associated with a portion of an Interstate 10 road construction project for ADOT. Tasks included attending meetings with ADOT and other project participants, providing technical opinions, observing excavation activities, collecting remediation verification samples to document removal of the impacted soils, and preparing a technical report documenting the field work and sampling results. Coordination with ADOT and contractors was critical due to highway construction deadlines and restrictions.

Phase II ESAs and UST Closures for Agricultural Airstrip Sites, AZ. Ms. Hartshorne performed pesticide investigations and UST closures for ASLD and the Arizona Department of Administration (ADOA) at several inactive agricultural airstrips. Tasks performed included review of lease records and historical aerial photographs; coordination of archaeological surveys; collection of surface and subsurface samples in areas of concern and at random locations, including runways, UST locations, waste burial areas, septic systems, leach fields, and aircraft washing and maintenance areas; interpretation of data; preparation of technical reports, remedial action plans (RAPs), and specifications; and oversight of remedial activities. Investigations included an evaluation of field screening methods for toxaphene in soils, collection of hundreds of characterization and closure soil samples, and management and interpretation of large volumes of data.

Olive Grove Neighborhood Aluminum Dross Site, Tucson, AZ. Ms. Hartshorne performed site characterization and remediation oversight of buried aluminum dross deposits within a neighborhood for the City of Tucson, including historical research, geophysical surveys, push-probe sampling, interpretation of laboratory analytical results of soil and dross samples, waste characterization, oversight of remediation activities, and reporting of findings. Investigation and remedial methods were selected and coordinated to minimize disruption to surveyed areas and maintain favorable relations with homeowners.

Pesticide Contamination Thermal Treatment Remediation, Phoenix, AZ. Ms. Hartshorne performed field and data management tasks for a pesticide-contaminated site project involving remedial investigation, risk assessment, a feasibility study, preparation of a RAP, thermal soil treatment, remediation oversight, and preparation of site closure reports. Soil contaminants included dichlorodiphenyltrichloroethane (DDT), toxaphene, and parathions. She collected soil samples using Level C personal protection equipment (PPE), and was responsible for the organization and analysis of project data (more than 1,300 samples were collected and analyzed) and preparation of closure reports. The voluntary cleanup of the site was approved and the case was closed by ADEQ.

USTs

CQA for SVE System Installation, LUST Remediation, Kayenta, Navajo Nation, AZ. Ms. Hartshorne performed CQA services for an SVE system designed by SCS and being installed at a former gas station where leaking USTs had been removed. Piping was connected to 9 SVE wells that had previously been installed and a manifold was constructed connecting the 9 pipelines together.

UST Closure for Inactive Gas Station, Tucson, AZ. Ms. Hartshorne performed oversight for removal of four fiberglass USTs and associated piping and pumps and for subsequent site restoration activities at an inactive gas station for a private client. She collected soil samples from the excavations during the site assessment activities for analysis of VOCs, PAHs, and tetraethyl lead. She prepared the technical report containing the required forms, laboratory reports, photographs, and other documents.

Tohono O'odham Nation (TON), UST Closures for Sells and Tracy, AZ. Ms. Hartshorne managed closure of three USTs for the TON Environmental Protection Office (TONEPO), TON Pisinemo District, and ADOT at Sells, AZ, and at the Tracy Maintenance Yard and Tracy Trading Post on the Tohono O'odham Nation. She also prepared the closure reports for submittal to U.S. EPA Region IX.

UST Release Investigations for Tucson International Airport and Ryan Airfield, Tucson, AZ. Ms. Hartshorne managed and performed three investigations to characterize the extent of potential soil contamination associated with active 12,000-gallon USTs containing unleaded gasoline or Avgas fuel at vehicle fueling facilities. During each investigation, one soil boring was drilled as close as possible to the release location to depths of 20 to 40 feet below grade. SCS collected four to eight soil boring samples during each investigation for laboratory analysis. Ms. Hartshorne prepared the site characterization reports, which were submitted to the ADEQ UST Section for case closure.

Leaking UST Site Characterization and Remediation for Sun Tran Bus Maintenance Facility Tucson, AZ. Following removal of four 20,000-gallon UST systems by a contractor at the Sun Tran Bus Maintenance Facility, Ms. Hartshorne managed the collection of soil samples from beneath the USTs, piping systems, and fuel dispensers for site characterization. She prepared the UST closure reports for submittal to the ADEQ UST Section. She also managed and performed several subsequent phases of subsurface investigation in order to characterize releases identified from older generation UST system piping and dispensers. This consisted of direct push and restricted clearance TUBEX air rotary drilling rig soil boring investigations that resulted in closure of two of the release locations by ADEQ. In situ chemical oxidation of impacted soil was performed at the third release location. Based on the results of the verification soil samples collected following completion of the remediation, the technical report was prepared for submittal to the ADEQ UST Section requesting case closure for the final release location.

ADEQ, UST Closure and Release Investigation for Former Gas Station, Bisbee, AZ. Ms. Hartshorne managed and performed oversight of removal of three USTs and collected soil samples below USTs and dispensers at a former gas station for ADEQ. Due to evidence of a release, three soil borings were drilled to visually observe soil cuttings and to collect a groundwater sample from the base of each boring. Three groundwater monitoring wells were installed near the soil boring locations and two rounds of groundwater sampling were performed. She prepared the technical report documenting the findings of the investigations. Based on the analytical results, the groundwater wells were subsequently abandoned.

UST Closure for Vehicle Service Center, Tucson, AZ. Ms. Hartshorne managed the removal, closure, and assessment of three 10,000-gallon UST systems for the City of Tucson, which included collection of soil samples from beneath the USTs, piping systems, and fuel dispensers for site characterization. She prepared technical reports for submittal to the ADEQ UST Section. Site closure was obtained from ADEQ for the UST systems.

UST Closure Sampling for Davis-Monthan Air Force Base (DMAFB), Tucson, AZ. Ms. Hartshorne performed UST closure soil sampling for a contractor at the base, following removal of twenty-five 50,000-gallon USTs at three inactive aircraft fueling facilities, and prepared technical reports for each facility.

Leaking UST Site Investigation, Williams, AZ. Ms. Hartshorne supervised an SVE investigation of a UST release at a former service station located on Route 66 for ADEQ. A direct-push rig was used to collect soil samples from eight boring locations in the release area and SVE samples from three of the borings. A background SVE sample was also collected from a boring placed in an area of the site that appeared to be undisturbed and not used for service station operations. The soil and vapor

samples were analyzed for VOCs and compared to Arizona Soil Remediation Levels (SRLs). Ms. Hartshorne prepared a technical report that summarized the field investigation.

UST Closure Investigation for Pennington Triangle Parking Lot, Tucson, AZ. Ms. Hartshorne managed exploratory excavations at the location of geophysical anomalies at a parking lot for the City of Tucson. A UST was identified and removed, and two small tanks containing gasoline were also found and removed. Overexcavation was performed to remove residual gasoline spilled from the smaller tanks. She collected soil samples from beneath the UST, small tanks, and piping, and prepared a UST closure report for submittal to ADEQ. No evidence of a release was identified from the UST system, and the UST file was closed by ADEQ.

UST Closure for Medical Center, Tucson, AZ. Ms. Hartshorne performed sampling for closure of a UST located at a medical center during building construction activities. The closure activities were performed under a short time frame so as to allow construction to continue with as little delay as possible. She prepared the UST closure report for submittal to ADEQ.

UST Closures for Rio Nuevo, Tucson, AZ. Ms. Hartshorne managed closure of three USTs found at a planned residential development during construction activities. She performed and managed the closure and site characterization activities under a short time frame so as to allow construction to continue with as little delay as possible. Soil was excavated to meet Arizona SRLs. Ms. Hartshorne prepared the site characterization and closure documents.

UST Closures for Wastewater Treatment Plant, Tucson, AZ. Ms. Hartshorne managed and performed closure of two USTs at a wastewater treatment plant for the City of Tucson. The USTs were closed in place due to excessive caving of backfill material and proximity to buildings. She performed oversight of excavation and push-probe soil boring activities, collected soil samples for analysis, and prepared site characterization and closure documents.

Automatic People Mover for Sky Harbor International Airport, Phoenix, AZ. Ms. Hartshorne performed extensive file and historical aerial photograph reviews of former and current AST and UST systems and other issues of potential environmental concern within the planned Automatic People Mover Phase I Project Site Study Area for the City of Phoenix. She prepared a report documenting each of the tanks, other features, and environmental issues identified within the study area, and the potential concerns associated with each feature and environmental concern.

Former UST Location Investigations, Tucson, AZ. Ms. Hartshorne performed an investigation of the former location of three USTs at a facility in Tucson. Tasks performed included drilling four soil borings to depths of 90 feet below ground surface, collection of soil samples at 5-foot intervals, installation of one groundwater monitoring well, collection of groundwater samples, and analysis of findings. She prepared a site characterization report for the site under the State Assurance Fund.

Drinking Water

Drinking Water Compliance, Petroleum Company, Multiple States. SCS assisted a petroleum company with compilation of data for many of their sites to determine which of the facilities had wells or water systems that should be sampled to determine existing drinking water quality. Ms. Hartshorne assisted with the preparation of a questionnaire to be provided to the managers of the different facilities, compilation of the data received from the facilities into a spreadsheet arranged by state, and meetings with the company to determine which facilities would undergo drinking water sampling based on the source of water, number of employees, and other factors. Ms. Hartshorne contacted the laboratory contracted with the facility and participated in a conference call to establish which constituents would be sampled and to discuss training options for employees.

Drinking Water Compliance, Silver Bell Army Heliport, Marana, AZ. Ms. Hartshorne performed monitoring of the drinking water system at the heliport as required by the Safe Drinking Water Act in accordance with the Compliance Evaluation Report. She performed routine sampling and analysis for inorganics, VOCs, synthetic organics, nitrate and nitrite, gross alpha, lead, copper, and coliform. She also performed an update of the drinking water compliance document for the heliport.

Asbestos/Lead-Based Paint

Asbestos Surveys for Downtown Links, Tucson, AZ. Ms. Hartshorne managed and performed pre-demolition asbestos surveys for structures on nine parcels of land in a planned roadway realignment area. More than 500 bulk samples of suspect ACMs were collected and analyzed. She prepared technical reports for each parcel documenting the findings and conclusions.

Limited Asbestos Surveys for Fabrication Facility, Tucson, AZ. Ms. Hartshorne performed and managed limited asbestos surveys of areas planned for renovation in buildings at this facility. This included the roof of one building, three separate room areas in two buildings, and four restrooms in two buildings. She collected 107 bulk samples of those suspect ACMs planned to be disturbed during renovation activities. She also prepared technical reports documenting the findings and conclusions.

Asbestos Surveys for DMAFB, Tucson, AZ. Ms. Hartshorne performed and managed asbestos surveys of three structures that were planned for demolition for a contractor at the base. She collected 87 bulk samples of suspect ACMs for analysis, and prepared technical reports for each structure documenting the findings and conclusions.

Asbestos Surveys for Roadways, AZ. Ms. Hartshorne performed and managed asbestos surveys of bridges and culverts for ADOT road improvement projects in various locations in Arizona. She collected bulk samples suspected ACMs and prepared technical reports.

Asbestos Surveys for Vacant Structures, Tucson, AZ. Ms. Hartshorne performed pre-demolition asbestos surveys for the City of Tucson for properties that included a 14,400-square-foot tire shop and garage; two approximately 780- and 925-square-foot office trailers, boiler, piping, and concrete pads; a 1,900-square-foot restaurant; a 4,700-square-foot commercial structure; a 7,000-square-foot warehouse; and residences ranging from 1,092 to 2,100 square feet in size. The surveys included visual inspections of the interior and exteriors of the structures. The total number of bulk samples of suspect ACMs collected from structures at each property ranged from 73 to 206 samples. She prepared technical reports for each property summarizing the results.

Asbestos Survey for Maintenance Facility Buildings, Chandler, AZ. Ms. Hartshorne performed a remodeling/demolition asbestos survey of six shop, maintenance, and office structures ranging from 1,200 to 6,740 square feet in size and an AST compound for the City of Chandler. The survey included a visual inspection of the interior and exterior of the structures, and collection and laboratory analysis of 188 bulk samples of suspect ACMs from the structures.

Asbestos Survey for Maricopa County Criminal Justice Facilities, Phoenix, AZ. Ms. Hartshorne performed separator/sump closure investigations and assisted with a comprehensive asbestos survey of buildings associated with the redevelopment of industrial areas for Maricopa County's Criminal Justice Facilities Development Department. Historical occupants of the redeveloped areas included a railroad freight depot, a bakery, a milk and ice cream processing plant, and various commercial properties. This project included the collection and analysis of over 500 bulk samples of suspect ACMs.

Asbestos Abatement Oversight for Two Vacant Residences, Chandler, AZ. Ms. Hartshorne performed oversight for asbestos abatement activities at two vacant residences for the City of Chandler. Tasks included oversight of the abatement contractor activities, visual clearance of abated areas, collection of perimeter air samples and clearance samples, documentation of site activities, and preparation of a technical report upon completion of the project.

Asbestos Abatement Oversight for 19th Avenue, Phoenix, AZ. Ms. Hartshorne performed oversight for asbestos abatement activities at five structures located on North 19th Avenue for the City of Phoenix. Tasks included oversight of abatement contractor activities, visual clearance of abated areas, collection of perimeter and area air samples and clearance samples, documentation of site activities, and preparation of a technical report upon completion of the project.

LBP Water Tanks, Pima County, AZ. Ms. Hartshorne performed and managed an LBP inspection of two water storage tanks for a water company near Tucson, AZ, prior to demolition of the tanks. The survey included visual inspection of the tanks and collection and laboratory analysis of paint chip samples.

Landfills

CQA Services for Installation of Landfill Gas (LFG) Piping, Apache Junction and Southwest Regional Landfills, AZ. Ms. Hartshorne observed and performed CQA services for the installation of the header and lateral piping at these two landfills by SCS Field Services for expansion of the existing LFG system.

LFG Probe Installation for Los Reales Landfill, Tucson, AZ. Ms. Hartshorne managed the installation of two replacement nested LFG monitoring probes near the location of abandoned probes at the landfill for the City of Tucson. The probes were constructed in accordance with the specifications provided by the City, consisting of an upper probe that was 10 feet long and a lower probe that was 20 feet long. She prepared a technical report documenting the probe installations.

Groundwater and LFG Monitoring, Rio Rico Sanitary Landfill (RRSL) and Sonoita-Elgin Landfill (SELF), Santa Cruz County, AZ. Ms. Hartshorne performed and managed collection of groundwater from five monitoring wells at two landfills, and prepared technical reports since 1999. The list of required analytes monitored was revised based on statistical analysis and approved by ADEQ. Other tasks included installation of one downgradient well, replacement or removal of groundwater pumps, and other well maintenance activities. She also collected samples and prepared reports as part of a seepage investigation, prepared a Spill Prevention Control and Countermeasure (SPCC) Plan, assisted with location restriction documentation and facility operational and contingency plans as part of the permitting for the two landfills, and prepared quarterly LFG reports for the SELF.

CQA Services and Subsurface Landfill Investigation for Road Realignment, Tucson, AZ. Ms. Hartshorne performed borings at the Vincent Mullins Landfill, which is a closed municipal solid waste landfill, for the proposed alignment of Kolb Road. The borings investigated the depth and thickness of buried waste, and identified the types and condition of waste beneath the proposed alignment. During construction of the realignment, she performed CQA services for construction of new LFG header and lateral lines, two condensate sumps, and one extraction well, and abandonment of the old lines in the path of the new road.

Environmental Status Summary for Closed Landfill, Los Angeles, CA. Ms. Hartshorne prepared an executive summary documenting the current environmental status of a closed landfill, which was partially developed with a commercial property and a mobile home park property. The tasks performed included review of numerous site documents to identify those most relevant to due

diligence investigations; creation of a bibliography of those documents that were identified; and preparation of a detailed executive summary of the environmental status of the property.

Los Reales Landfill West Side Closure, Tucson, AZ. Ms. Hartshorne performed closure investigations for the west side of this City of Tucson landfill, including extensive file review and historical research; installation and sampling of groundwater monitoring wells; excavation of numerous exploratory test pits; oversight of geotechnical borings, geophysical surveys, and soil vapor investigations; SVE system pilot testing; and preparation of technical reports. She managed and performed excavation and test boring investigations to evaluate a former industrial waste burial area for proposed clean closure. She also prepared a detailed site characterization report for work performed to date and a RAP for the clean closure area.

County of Pima, Sahuarita Landfill New Cell Investigations, Sahuarita, AZ. Ms. Hartshorne performed soil borrow and geotechnical investigations at this landfill for Pima County to characterize soils beneath the new cell location and around the perimeter of the landfill. Field activities were performed to protect native plants and drainage areas. She assisted in groundwater monitoring well and LFG probe construction activities and prepared HASPs.

Septage Pond Closure, Safford and Page, AZ. Ms. Hartshorne prepared the sampling plan and managed the collection of waste characterization and verification samples for clean closure of a septage pond at the Page Landfill. She collected samples of dried septage for waste characterization, and collected verification soil samples for clean closure of a septage pond at the Safford Landfill. She also prepared the closure reports for the septage ponds, and the APP application for closure of the four septage ponds at the Page Landfill.

Private Landfill Sampling Investigation, Sun Lakes, AZ. Ms. Hartshorne performed field investigations of the vadose zone for a private landfill in central Arizona. Responsibilities included the collection of soil samples for analysis for tannins and lignins from excavated landfill materials, and sampling of LFG probes around the landfill.

Page-Trowbridge Ranch Landfill, ADOA Risk Management Division, Near Oracle, AZ. Ms. Hartshorne performed an extensive review of University of Arizona files for the landfill, which is a low-level radioactive and hazardous waste disposal facility. She collected soil from five test pits at four intervals from a potential borrow area for geotechnical analysis. She performed some CQA observations during landfill cap construction activities. She also reviewed and gathered relevant information for Resource Conservation and Recovery Act (RCRA) Part A and Part B permits. Lastly, she performed a sprig count at the site to evaluate whether seeding of the landfill cap was adequate.

Preparation of APP Applications, Facility Plans, and SWPPPs for Various Landfills, AZ. Ms. Hartshorne assisted in the preparation of APP applications, SWFPs, SWPPPs, and SPCC Plans for various municipal solid waste landfills located in Maricopa, Cochise, Gila, and Santa Cruz Counties, AZ. Tasks performed included assisting with updating the existing facility operational plans and preparation of closure and post-closure maintenance plans, location restriction documentation, and hydrogeological monitoring sections, and management of petroleum hydrocarbon contaminated soils and other special waste materials.

Landfill Gas

City of Tucson, Air Permitting Compliance Services for Los Reales and Harrison Landfills, Tucson, AZ. Ms. Hartshorne prepared the annual emissions inventory report for the Los Reales Landfill (LRLF); the combined semi-annual New Source Performance Standards (NSPS) and semi-annual Startup, Shutdown, and Malfunction (SSM) report for the LRLF; and greenhouse gas (GHG) reports for the City of Tucson LRLF and Harrison Landfills.

LFG Piping and Well Installation CQA, Southwest Regional Landfill, Buckeye, AZ. Ms. Hartshorne performed CQA services during installation of two LFG extraction wells that were tied into the existing gas collection and control system (GCCS) header and lateral piping. She observed key elements of the construction project, including construction of the new wells, control and handling of well boring tailings assumed to be regulated asbestos-containing material (RACM), and pressure testing to ensure the lateral piping was installed per specifications.

Emissions Inventories and Title V Permit Applications for Denver Regional Landfills, Denver, CO. Ms. Hartshorne assisted with emission inventories and Title V permit applications for Allied Waste's Denver Regional North and South Landfills. The project involved completing a comprehensive emission inventory and subsequent permit application, and meeting and negotiating with representatives of the Colorado Department of Public Health and Environment (CDPHE) for site-specific permit terms.

Emissions Inventories and Title V Permit Applications for Various Landfills. Ms. Hartshorne reviewed emission inventory and Title V permit application submittals for Allied Waste, Waste Management, BFI, and the City of Phoenix. Tasks included confirming emission estimates accuracy prior to submittal to regulatory agency for review.

NSPS Tier 2 Landfill Investigations, Various Landfills. Ms. Hartshorne performed NSPS Tier 2 landfill investigations in Arizona, Montana, Ohio, Missouri, and California. Tasks performed included planning and completing field programs, collection of LFG samples from gridded landfill surface locations and an LFG collection system, and evaluation of analytical laboratory results.

Stormwater

SWPPP for Power Plant Demolition, Phoenix, AZ. Ms. Hartshorne prepared an SWPPP for demolition activities at a power plant in Phoenix for a demolition company. The activities covered by the SWPPP were those associated with demolition of the old steam plant with related structures, petroleum tank piping systems, piping associated with a lube oil reservoir system, piping associated with gas turbines, and a rail spur into the old steam plant. The SWPPP was prepared under the 2013 Arizona Pollutant Discharge Elimination System (AZPDES) General Permit for Storm Water Discharges Associated with Construction Activity to Waters of the United States, also called the CGP.

SWPPPs for Industrial Facilities, Tucson and Phoenix Areas, AZ. Ms. Hartshorne prepared five SWPPPs under the AZPDES Multi-Sector General Permit (MSGP) for industrial manufacturing facilities in the Tucson and Phoenix metropolitan areas. She performed one facility inspection, conducted an interview with the key facility personnel regarding facility operations, and prepared or performed technical reviews of SWPPPs that were specific to the facility industrial sectors.

Construction SWPPPs, Fort Huachuca, AZ. Ms. Hartshorne prepared two SWPPPs for an Army contractor prior to construction and installation of an antenna test facility track and for a proposed buried fiber optic cable and associated facilities designed to serve a variety of fiber optic clients. The proposed cable installation route crossed or followed dirt roads, paved roads, and washes, and extended to buildings on the base. The total length of the installation was approximately 7.5 miles, and approximately 30 acres would be disturbed. The SWPPPs were prepared under the AZPDES CGP.

Construction SWPPPs, AZ. Ms. Hartshorne prepared SWPPPs for construction activities that were going to disturb more than 1 acre of land, including a repaving project at a truck terminal and several sites where remediation activities were performed that consisted of the excavation and removal of impacted soil, backfilling of imported soil, and grading. The SWPPPs were prepared under the AZPDES CGP.

Landfill SWPPPs, Various Landfills, AZ. Ms. Hartshorne prepared SWPPPs for various landfills, transfer stations, and a vehicle and equipment management facility as part of the preparation of facility plan documents for municipal solid waste landfills located in Maricopa, Cochise, Gila, and Santa Cruz Counties, AZ.

Newspaper Facility SWPPP, Tucson, AZ. Ms. Hartshorne prepared an SWPPP for a newspaper facility under the U.S. EPA MSGP. The facility contained the main facility structure, a small vehicle maintenance structure, material and newspaper loading and unloading areas, parking and driveway areas, landscaping, loading areas, waste bins, and outdoor storage areas.

Mining

Mined Land Reclamation Oversight for Sand and Gravel Pit, Huachuca City, AZ. Ms. Hartshorne is currently performing oversight activities to confirm that reclamation of a former sand and gravel pit and former asphalt plant location will be performed in conformance with the lease agreement, with existing reclamation plans for the activities, and with Arizona regulatory requirements. Tasks will include review of existing lease agreements, reclamation plans, and Arizona regulations; an estimated four quarterly site visits to observe reclamation; and brief letter reports documenting the progress.

Mined Land Reclamation Plan for Sand and Gravel Pit, Tucson, AZ. Ms. Hartshorne prepared a reclamation sequence map, post-mining/pre-reclamation map, post-mining final reclamation map, and itemized reclamation costs as requested by the Arizona State Mine Inspector's (ASMI's) office to complete the mined land reclamation plan. She performed a site visit to observe current conditions and assisted with decisions regarding the planned optimum slope and fill for the final reclamation.

Oracle Ridge Mine APP Application Technical Review. Ms. Hartshorne performed a substantive (technical) review of hydrological information in the Oracle Ridge Mine APP application for ADEQ under the Accelerated Permits Contractor Utilization Program. She reviewed the APP application documents to evaluate the groundwater point of compliance wells, alert levels, monitoring program, and reporting sections for data gaps, and prepared the findings for the technical memorandum. She also reviewed subsequent submittals to evaluate any data gaps, and attended meetings with ADEQ and the mine representative.

Former Mine, Peoria, AZ. Ms. Hartshorne collected background soil samples and mine tailings samples to determine background concentrations of arsenic and for waste characterization purposes at a former mining and ore processing site in Peoria, AZ.

Seasonal Field Geologist for ASARCO in Nevada and California. Prior to working for SCS, Ms. Hartshorne worked on a geologic exploration team searching for gold deposits in remote areas of Nevada and California. She collected surface soil samples and rock samples from outcrops and adits for assaying, staked mining claims, located stakes for existing mining claims, and performed geologic mapping.

Other

SPCC Plan for Military Facility, Florence, AZ. Ms. Hartshorne prepared an SPCC Plan for the Florence Military Reservation (FMR) for Arizona Army National Guard (AZARNG), a division of the Arizona Department of Emergency and Military Affairs (ADEMA). The Plan identified oil-handling practices and storage systems, control procedures, and spill procedures for tanker vehicle storage, aboveground storage tanks, bulk storage containers, hazardous material storage areas, generators, and other applicable equipment at three locations affiliated with the FMR.

Industrial Hygiene Assessment Services, Fish Hatchery, AZ. Ms. Hartshorne monitored exposure of employees to formaldehyde, methanol, and hydrogen peroxide during application of these products at the Canyon Creek Hatchery for Arizona Game and Fish Department (AZGFD). The laboratory-provided personal diffusive sampling badges were distributed by Ms. Hartshorne to the two workers and collected at the end of the monitoring periods, which included full 8-hour work day and 15-minute sampling periods. The results of the monitoring were reviewed by an industrial hygienist and Ms. Hartshorne prepared the technical report.

Well Abandonments, near Buckeye and Chino Valley, AZ. Ms. Hartshorne managed and/or performed oversight of five wells abandoned in accordance with Arizona Department of Water Resources (ADWR) standards for ADOT. This included video logs of the well casings/borings, removal of well casings to 5 feet below existing grade, filling with sand-cement or cement-bentonite grout, and restoration of the ground surface around the wells. Dirt that filled one well casing was removed using a vacuum truck to a depth of about 25 feet below grade prior to filling with grout. She also prepared technical reports upon completion of the abandonments.