

### TECHNICAL SPECIALTIES

Mr. Weststad is licensed Professional Engineer in the State of California and practices within Roux Associates' Industrial, Litigation Support, Insurance, Petroleum and Brownfields Practice Groups. Mr. Weststad has 12 years of experience performing environmental site investigations, fate and transport analyses, and implementing effective remedial and mitigative measures at complex site in the State of California and New York. His experience also includes providing expert litigation support, environmental insurance claim analysis, and design and implementation of mitigative measures for the development of Brownfields sites.

### EXPERIENCE SUMMARY

Senior Engineer with Roux, California & New York Offices. Staff Engineer with Canger Engineering Associates, Fair Lawn, New Jersey.

### CREDENTIALS

B.S. Civil and Environmental Engineering, Rowan University, 2006

California Civil Engineer (P.E.), Number C82910 Oregon Civil Engineer (P.E.), Number 93215

40-Hour OSHA HAZWOPER

10-Hour OSHA Construction Safety and Health LPS Awareness 8-Hour Certified

First Aid and CPR Trained

American Society of Civil Engineers – member

### KEY PROJECTS

#### Dry Cleaners Sites

- **Design of Groundwater and Indoor Air Mitigation Programs at a Former Dry Cleaner Facility in Redwood City, California. Oversight Agency: Regional Water Quality Control Board (RWQCB).** Enhanced Reductive Dechlorination (ERD) injection program for the remediation of groundwater containing chlorinated volatile organic compounds (VOCs) at a former dry-cleaning facility in Fremont, California. Project tasks included the design of an emulsified oil and sodium lactate substrate injection scheme, subcontractor coordination, the implementation of the injection activities in the field, and ERD performance monitoring and reporting. Additional project tasks included the development of indoor air mitigation plan to address indoor air impacts within the Site Building. Mitigation plan activities included the application of a Retro-Coat vapor barrier system and modifications to the building ventilation system.
- **Design of Groundwater and Soil Vapor Remediation Programs at a Former Dry Cleaner Facility in Fremont, California. Oversight Agency: RWQCB/Alameda County Water District (ACWD).** Enhanced Reductive Dechlorination (ERD) injection program for the remediation of groundwater containing chlorinated volatile organic compounds (VOCs) at a former dry-cleaning facility in Fremont, California.

Project tasks included the design of an emulsified oil and sodium lactate substrate injection scheme, subcontractor coordination, the implementation of the injection activities in the field, and ERD performance monitoring and reporting. Additional project tasks included the development of a soil vapor extraction (SVE) pilot test workplan to address soil vapor impacts within the vadose zone as well as sub-slab soil vapor, implementation of the pilot test, analysis of results, and the development of recommendations for a full-scale SVE system and additional pilot testing activities.

- **Preparation of Expected Remediation Costs beneath and emanating from a former Dry-Cleaner Facility in San Jose, California.** Analysis of subsurface chemical impacts, development of a remedial approach and the preparation of a remedial cost estimate to address soil, soil vapor, and groundwater impacts in San Jose, California.
- **Preparation of Expected Remediation Costs beneath and emanating from a former Dry-Cleaner Facility in Santa Barbara, California.** Analysis of subsurface chemical impacts, development of a remedial approach and the preparation of a remedial cost estimate to address soil, soil vapor, and groundwater impacts for a large-scale VOC plume in Santa Barbara, California.
- **Evaluation of Past Environmental Activities at a former Dry-Cleaner Facility in Hawthorne, California.** Analysis of past environmental activities conducted by others and their associated investigative value in determining the timing of a chemical release(s) from a former dry-cleaner facility in Hawthorne, California. Project activities included an analysis of past investigation and remediation activities and an assessment of each activity to determine whether the activity or data generated from each activity could be used assess the timing of a chemical release from the dry-cleaning operations at the Site.
- **Evaluation and Categorization of Past Site Activities at a former Dry-Cleaner Facility in Foster City, California.** Analysis of subsurface chemical impacts at a former dry-cleaning facility in Foster City, an analysis of past environmental activities conducted at the site, and the categorization of past environmental activities as either investigative or remedial in nature.
- **Evaluation of Proposed Remediation Activities at a former Dry-Cleaner Facility in San Jose, California.** Analysis of subsurface chemical impacts and an evaluation of proposed remedial measures for a former dry cleaner facility in San Jose, California. Project activities included an assessment of chemical impacts at the Site, soil vapor extraction pilot testing results, and the proposed full-scale system to address chemical impacts at

the Site. Additional activities included the transmission of modifications to the full-scale system to client to enhance the effectiveness of the system to target chemical impacts at the Site.

- **Evaluation of Proposed Remediation Activities at a former Dry-Cleaner Facility in San Mateo, California.** Analysis of subsurface chemical impacts and an evaluation of proposed remedial measures for a former dry cleaner facility in San Mateo, California. Project activities included an assessment of chemical impacts at the Site, soil vapor extraction pilot testing results, and the proposed full-scale system to address chemical impacts at the Site.
- **Design of Groundwater and Soil Vapor Remediation Programs at a Former Dry Cleaner Facility in Fremont, California. Oversight Agency: RWQCB/Alameda County Water District (ACWD).** Enhanced Reductive Dechlorination (ERD) injection program for the remediation of groundwater containing chlorinated volatile organic compounds (VOCs) at a former dry-cleaning facility in Fremont, California. Project tasks included the design of an emulsified oil and sodium lactate substrate injection scheme, subcontractor coordination, the implementation of the injection activities in the field, and ERD performance monitoring and reporting. Additional project tasks included the development of a soil vapor extraction (SVE) pilot test workplan to address soil vapor impacts within the vadose zone as well as sub-slab soil vapor, implementation of the pilot test, analysis of results, and the development of recommendations for a full-scale SVE system and additional pilot testing activities.

#### Sediment Sites

- **Development of Allocation Methodology for Apportioning Future Remediation Costs Associated with a Major Navigable Waterway in Washington State.** Developed and recommended allocation methodologies for the apportionment of future remediation costs associated with PCB, carcinogenic polycyclic aromatic hydrocarbon (cPAH), metal and dioxin/furan impacts in sediment within a major navigable waterway in Washington.

#### Industrial Sites

- **Design and Implementation of Groundwater Remediation Program at a Former Printed Circuit Board Manufacturing Facility in Santa Rosa, California. Oversight Agency: Department of Toxic Substance Control (DTSC)/Regional Water Quality Control Board (RWQCB).** Enhanced Reductive Dechlorination (ERD) injection program for the remediation of groundwater containing chlorinated volatile organic compounds (CVOCs) at a former circuit-board manufacturing facility in Santa Rosa, California.

Project tasks included the design of an emulsified oil and sodium lactate substrate injection scheme, subcontractor coordination, the implementation of the injection activities in the field, and ERD performance monitoring and reporting. Following the successful implementation of the ERD Program at the Site, a Groundwater Remedial Action Completion Report was prepared for Site certification and an Operation and Maintenance Plan were prepared for long-term groundwater monitoring at the Site. Additional activities conducted as part of the O&M Plan include monitoring and evaluation of sub-slab soil vapor and indoor air analytical data. Project tasks include the evaluation of chemicals used within the existing building and correlation analysis of constituents of concern.

- **Resource Conservation and Recovery Act (RCRA) Corrective Measure Study (CMS) for a Former Pesticide Manufacturer in San Jose, California. Oversight Agency: DTSC.** Preparation of a Corrective Measure Study (CMS) to address groundwater, soil, and soil vapor impacts at a former pesticide manufacturing facility in San Jose, CA. Project tasks included screening corrective measure technologies and developing and evaluating corrective measures alternatives for industrial and residential scenarios to manage risk for pesticide, metals and VOC impacts to soil and groundwater.
- **Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Feasibility Study (FS) for a Former Pesticide Manufacturing Facility in San Jose, California. Oversight Agency: DTSC.** Preparation of a FS Report to address groundwater, soil, and soil vapor impacts at a former pesticide manufacturing facility in San Jose, CA. Project tasks included screening remedial technologies and developing and evaluating remedial alternatives for industrial and residential land use scenarios to manage risk associated with pesticide and VOC impacts to soil and groundwater.
- **Evaluation and Categorization of Past Site Activities and Costs for an Aerospace Parts Manufacturer in Torrance, California.** Evaluation of a multimillion-dollar environmental insurance claim for costs incurred at a aerospace manufacturing facility in Torrance, California. Project tasks included an analysis of environmental conditions at the site, the review of approximately 70 invoices, the preparation of an invoice database, the categorization of invoice costs, and an assessment of the reasonableness and appropriateness of the claimed costs. Additional project tasks included developing a remedial action plan and associated cost estimate to assess future environmental liabilities beneath, and emanating from, the Site.

- **Evaluation and Categorization of Past Site Activities and Costs for a Former Aerospace and Aviation Parts Manufacturing Facility in Chula Vista, California.** Evaluation of a multimillion-dollar environmental insurance claim for costs incurred at a former aerospace and aviation parts manufacturing facility in Chula Vista, California. Project tasks included the review of 68 invoices, the preparation of an invoice database, categorization of invoice costs, and an assessment of the reasonableness and appropriateness of the claimed costs.
- **Evaluation and Categorization of Past Site Activities and Costs for a landfill in Modesto, California.** Evaluation of a multimillion-dollar environmental insurance claim for costs incurred at a landfill in Stanislaus County, California in support of a mediation between the landfill owner and the insurer. Project tasks included the review of approximately 300 invoices, the preparation of an invoice database and the categorization of invoice costs.
- **Evaluation and Categorization of Past Site Activities and Costs as well as a Future Cost Assessment for a Landfill Operator with multiple former landfills within a large superfund site in Southern California.** Analysis and allocation of potential future remedial costs to a former landfill operator for work activities related to a large groundwater pump and treat remediation project to address contaminated groundwater in North Hollywood, California. Project tasks included an analysis of technical documentation and the development of an allocation of future remedial costs between potentially responsible parties (PRPs) to address impacted groundwater at the site. Additional project tasks included the review of past cost invoices, the preparation of an invoice database, categorization of invoice costs, and an assessment of the reasonableness and appropriateness of the claimed costs.
- **Evaluation of Past and Future Site Activities and associated Future Costs for multiple former landfills within Arizona.** Analysis of subsurface environmental impacts at and emanating from two former landfills within Arizona and associated future remediation costs associated with impacts at, and emanating from, each landfill.
- **Drinking Water Well Facility Site Plan Preparation and Well Blowoff Management System for a Water Utility Company in San Jose, California.** Preparation of Site Plans for the development of a former vacant lot into a drinking water well facility in San Jose, CA. Specific Site Plans developed for the Site included a Grading and Drainage Plan, a Stormwater Control Plan (SCP), including the preparation of an on-site stormwater conveyance system to manage stormwater runoff from a 10-year, 24-hour storm. The Grading and Drainage and

SCP were prepared in accordance with Santa Clara Valley Urban Runoff Pollution Prevention Program low impact development (LID) criteria. Additional Site Plans were prepared for the construction of an infiltration basin and off-site storm drain discharge line to the City storm drain to manage blowoff water as part of the operations at the Site.

- **Design of Improvements to an Existing Well Blowoff Water and Stormwater Management Sump at a Water Utility Company in San Jose, California.** Design of improvements to an existing blowoff water and stormwater runoff management system at a water utility company in San Jose, California. Improvements to the existing sump included the removal historical sump sediments to enhance blowoff water and stormwater infiltration at the Site. Additional activities included the installation of a Cultec chamber water distribution system, the placement of gravel media a Constructed Treatment Wetland (CTW) to provide treatment for stormwater runoff at the Site.
- **Design and Oversight of a Soil Cap Maintenance Project in Glen Cove, New York.** Preparation of a soil cap maintenance plan for a former municipal landfill in Glen Cove, New York. Project activities included the dewatering of two large ponded areas formed on the surface of the soil cap, re-grading of earthwork and the implementation of drainage controls to address stormwater runoff. Performed field survey to create an existing conditions map and prepared a proposed grading plan with stormwater runoff drainage controls. Additional project tasks included the preparation of technical specifications, bid documents and a cost estimate. Field activities included construction oversight.
- **Design of Grading Plan at a Former Manufacturing Facility in Rensselaer, New York.** Preparation of a grading plan at former manufacturing plant in Rensselaer, New York with limited volume of stockpiled soil to address future site drainage.

#### Petroleum Sites

- **Stations in Maryland.** Performed fate, transport, and degradation analysis to determine the timing of petroleum releases at 2 gasoline stations in Maryland.
- **Future Remediation Cost Evaluation for a former fuel storage and distribution facility in El Centro, California.** Analysis of future expenditures for remediation of soil and groundwater contamination from multiple leaking underground storage tanks (LUSTs) at a former storage and distribution facility in El Centro, California. Project tasks included an analysis of existing site conditions, the development of several remedial alternatives to address soil and groundwater

contamination, and the preparation of cost estimates for each developed remedial alternative.

- **Remediation Design, Construction, Operation & Maintenance at a Large-Scale Petroleum Remediation Project in Brooklyn, New York. Oversight Agency: New York Department of Environmental Conservation (NYDEC).** Provided engineering services and operations and maintenance (O&M) management for two multi-phase (product and water) remediation systems and two groundwater treatment systems (1.1 MGD) addressing an 18 million-gallon release of petroleum hydrocarbon product from a former refinery and petroleum storage terminal in Brooklyn, New York for approximately 5 years. The operations and maintenance management involved the oversight of system technicians, compliance requirements, reporting activities with NYSDEC and the preparation of and Operation and Maintenance Manual for two groundwater treatment systems and twenty dual pump liquid extraction recovery well systems. Performed a three-month long waterflooding and pressure-pulsed waterflooding pilot studies to enhance LNAPL recovery at a former refinery and petroleum storage terminal in Brooklyn, New York. Pilot Study tasks included the design of a water supply pipe network to feed injection wells and water supply manifolds at each injection well for monitoring and control of water supply. Field activities included injection well monitoring, monitoring well gauging, and recovery well monitoring to assess the effectiveness of the injected groundwater. Prepared summary report for submission to NYSDEC. Designed of sand filter backwash treatment system to be implemented within a groundwater treatment facility in Brooklyn, New York. Project tasks included the preparation of a NPDES modification package for submission to the NYSDEC. Additional project tasks also included the evaluation of several treatment technologies and preparation of feasibility report for submission to the NYSDEC and pilot testing of the selected treatment system. Designed a temporary groundwater treatment system and sampling plan for dewatering activities associated with a sanitary sewer construction project in Brooklyn, New York. Project tasks included the design and installation of two bag filtration systems, four liquid phase GAC units, an effluent tank and a gravity effluent pipe. Field activities included construction oversight of the treatment system and management of the operations and maintenance of the treatment system. Operation and maintenance of a multi-year pretreatment system involving the reduction of elevated MTBE concentrations in groundwater from two recovery wells prior to being conveyed to the groundwater treatment facility for primary treatment. Field activities included system sampling and monitoring

for breakthrough of MTBE. Additional activities included carbon sampling and characterization for transportation to an off-site facility. Construction oversight of ten dual pump liquid extraction recovery well systems to address the release of petroleum product in Brooklyn, New York. Field activities included engineering support, coordination between multiple contractors, soil waste characterization and disposal and preparation of as-built drawings. Construction oversight for the installation of 2,400 feet of groundwater and soil vapor force mains, free-product conveyance piping and signal conduits beneath New York City streets associated with recovery well system expansion activities to address the release of petroleum hydrocarbon product in Brooklyn, New York.

#### **Brownfields Development Projects**

- **Passive Sub-Slab Depressurization System (SSDS) Design and Oversight for Four Residential Apartment Buildings in Santa Clara, California. Oversight Agency: BAAQMD.** Designed a passive sub-slab depressurization system (SSDS) and a spray-applied vapor barrier (Liquid Boot) for four (4) residential apartment complexes in Santa Clara, California to mitigate any potential vapor intrusion from historical contamination within the vicinity of the Site. Project tasks included preparation of design drawings and construction details, and technical specifications associated with the design of the SSDS and vapor barrier. Additional project tasks included the preparation and implementation of a Construction Quality Assurance Plan for construction of the SSDS and vapor barrier and permitting with the Bay Area Air Quality Management District (BAAQMD).
- **Active SSDS Design, Oversight for Two Residential Apartment Complexes in San Jose, California. Oversight Agency: BAAQMD.** Designed an active sub-slab depressurization (SSDS) and a spray-applied vapor barrier (E-Pro System III) for two (2) residential apartment complexes in San Jose, California (approximately 150,000 square feet) to mitigate any potential vapor intrusion from historical groundwater contamination at the Site. Project tasks included preparation of design drawings and construction details, technical specification and engineering calculations to design the active SSDS. Additional project tasks included the preparation and implementation of a Construction Quality Assurance Plan for construction of the vapor barrier and vapor extraction system. Additional activities included the operation and maintenance of an active SSDS in San Jose, California. Project tasks include the collection of air emission samples, reporting of results, monitoring the performance of the SSDS, and interacting with the BAAQMD.

- **Underground Storage Tank (UST) Removal for Future Development Activities at 1540 Market Street, San Francisco, California. Oversight Agency: San Francisco Department of Public Health (SFDPH).** Oversight of the removal of a 1,500- gallon underground storage tank (UST) in San Francisco, California. Project tasks included the contractor oversight, soil and groundwater sampling and analysis, and reporting activities. Project tasks also included interactions with the San Francisco Department of Public Health (SFDPH).
- **Soil Management Plan for the Redevelopment of a Former Steel Factory in South San Francisco, California. Oversight Agency: RWQCB.** Preparation of a soil management plan for the redevelopment of a former US steel factory into a Life Science Campus. Project tasks included the preparation of soil management plan to manage onsite soil during redevelopment activities. Additional tasks included the specification of import fill testing requirements and the preparation of a site-specific health and safety plan to mitigate construction worker exposure and risk from chemicals of concern at the Site.
- **Subsurface Investigations for the Development of Two Residential Apartment Complexes in San Francisco, California. Oversight Agency: SFDPH.** Oversight of multiple soil and groundwater investigations within San Francisco, California for compliance with the Maher Ordinance (San Francisco Health Code Article 22A). Project tasks include overall project management, analysis of sampling data to assess subsurface site conditions for residential development and reporting. Additional activities included the characterization of soils for off-site transport and disposal and interactions with the SFDPH.