

TECHNICAL SPECIALTIES

Environmental Forensics and Fingerprinting;
Allocation and Evaluations of Environmental Response Costs;
BNSF-style Apportionment Methods;
Estimating Costs to Closure;
State of Environmental Knowledge Related to Waste Disposal;
Environmental Investigations of Industrial and Military Facilities;
Fate and Transport Analyses;
Natural Resource Damages/Habitat Equivalency Analyses.
NCP Compliance.

CREDENTIALS

M.S., West Virginia University, 1983, Geology
B.S., Hofstra University, 1980, Geology
Professional Geologist: North Carolina, Virginia, Kentucky, Indiana, Missouri, New York

PAPERS AND PRESENTATIONS

USEPA Underground Injection Control Policies
USEPA Ground-Water Guidance Documents
USEPA Hazardous Site Investigation Guidances
US Department of Energy Environmental Cost Estimating Guide and Training Program (Author and Instructor)
Instructor at various environmental training programs, including RCRA Orientation, Superfund Orientation, Ground Water Hydrology, Ground Water Sampling and Monitoring, Environmental Cost Estimates, Environmental Remediation Technologies

TESTIFYING EXPERT – EXAMPLE CASES

- Cost Allocation: Evaluated and allocated more than \$128 million in alleged environmental response costs at six Conrail rail yards in Pennsylvania, Indiana, and Massachusetts, and allocated costs according to various technical and insurance-related categories, as well as among various other potential responsible parties according to several theories of liability.
- Cost Allocation: Evaluated potential environmental liabilities associated with the \$1 Billion+ Portland Harbor Superfund Site for several upland source contributors using “reasonable” BNSF-style. The allocation scenarios were based on waste chemistry, toxicity, known extent of contamination, distinguishability, and contaminant transport. Sites included a truck manufacturer, high-tech manufacturer, MGP plant, several ship yards, and a rail yard.
- State of Knowledge Regarding Waste Disposal Methods: Provided opinions regarding historical knowledge of potential contamination associated with landfills and lagoons from the turn of the 1900s through the present time. Unlike most environmental professionals of my generation, I have first-hand

knowledge of waste disposal and landfilling practices dating to the mid-1960s.

- Estimating Life-Cycle Closure Costs: Provided opinions regarding estimated life-cycle environmental closure costs for dozens of contaminated sites based on ASTM methods outlined in Standard E2137-06 (Estimating Monetary Costs and Liabilities for Environmental Matters). Cost estimates are based on real-world experience rather than mathematical constructs. Evaluated and critiqued estimates and opinions provided by opposing experts. Sites have included oil refineries, MGP sites, chemical plants, manufacturing plants, military facilities, chemical plants, landfills, gas stations, mining sites, and others.
- Remediation: Provided opinions on the selection, design, and implementation of environmental investigations and remediation systems to address soil, groundwater, and sediment contamination at sites throughout the United States.
- RCRA/CERCLA/State Environmental Programs: Provided opinions regarding the necessity and appropriateness of response actions under both Federal and state environmental statutes, based in part on my experience as a USEPA RCRA/CERCLA enforcement inspector. Provided expert opinions regarding compliance with the National Contingency Plan (40 CFR 300)
- Hydrogeology/Chemical Fate and Transport: Provided opinions on the timing of contaminant releases using environmental forensics, ground water modeling, aerial photography, and historical records. Provided opinions regarding the extent of contaminant movement (i.e., off-site and on-site) and the potential for exposure to third-parties.
- Mega-Sediment Sites: Have assisted counsel in non-testifying roles with matters involving the Fox River, Passaic River, Hudson River, Housatonic River, Commencement Bay, Portland Harbor, San Diego Harbor, Calumet River, Ashtabula River, Bound Brook, and other \$100 million to \$2 billion matters.
- Environmental Forensics: Provided opinions regarding the timing of releases of contaminants based upon environmental forensic tools. Typically, these sites have had multiple owners, multiple operations, and multiple contaminant releases which must be allocated. Technical approaches have included chemical markers and additives, chemical component ratios, degradation analyses, isotope analysis, ground water modeling, aerial photography, and historical documentation. Sites have included MGP sites, manufacturing sites, gas stations, truck depots, and others.
- Natural Resource Damages: Evaluated and contested numerous \$100 million NRD claims by resource trustees. Prepared alternative Habitat Equivalency

Analyses (HEAs) for sites as varied as mining sites, wood treater sites, PCB-impacted streams, train wrecks, and oil refineries. Testified with regard to actual resource injury and reasonable costs to public compensation.

INVESTIGATION AND REMEDIATION

- Principal-in-Charge and project manager for a private redevelopment of property that was formerly used by the US Navy as an ammunition disposal area and landfill. Project required site investigations, multi-media sampling, historic research regarding waste operations, and preparation of an in-depth Environmental Impact Study, performed in compliance with NYSDEC's requirements.
- Principal-in-Charge of a groundwater and landfill investigation for a landfill owned by a New York municipality. This investigation and remedial design was triggered by litigation instigated by nearby residents whose pond and stream had been impacted by landfill leachate. Roux Associates evaluated the groundwater/surface water relationships in the area and developed a remedial plan to address groundwater, surface water, and the landfill cap.
- Program Manager of a spill response program for several insurance companies. Manages the response to petroleum and chemical spills in the eastern U.S. at service stations, commercial facilities, dry cleaners, and residential properties.
- Principal-in-Charge of a site investigation and remedial response associated with a chlorinated solvent spill in Florida. Purpose of the investigation was to determine the extent of PCE/TCE impacts to groundwater and develop data needed to design a remedial system, if necessary. Florida DEP accepted Roux Associates' proposal for a monitored natural attenuation program instead of active groundwater remediation.
- Principal-in-Charge and project manager for a site investigation at a landfill in New York associated with unregulated disposal in the 1960s and 1970s. Conducted soil gas, soil, and groundwater sampling to identify the location of the waste burial areas and their effects on surrounding properties. Conducted a landfill gas extraction pilot test and analysis.
- Managed a site investigation at a series of wastewater/stormwater treatment ponds at Fairchild Republic Airport in New York. Contaminants of concern included petroleum products, solvents, and metals. Evaluated the extent of an off-site plume and its impacts to neighboring properties. Developed a remedial strategy for re-development as a shopping center complex.
- Managed and conducted a Superfund RI/FS at the ANC-9 Landfill at Fort Dix, NJ, which is listed on the CERCLA National Priority List. This project involved

planning and implementing field sampling programs, geophysical surveys, drilling, monitoring well installation, test pits, wetlands delineation, and ecological and human health risk assessments. Contaminants assessed included chlorinated and non-chlorinated solvents, PCBs petroleum products, heavy metals, and explosives.

- Managed and conducted a Superfund RI/FS at the Fire Training Area at Fort Dix, NJ, which is listed on the CERCLA National Priority List. This project involved planning and implementing field sampling programs, mobile laboratories, drilling, monitoring well installation, test pits, wetlands delineation, and ecological and human health risk assessments. Contaminants assessed included chlorinated and non-chlorinated solvents, PCBs, petroleum products, heavy metals, and explosives.
- Managed and conducted a Superfund RI/FS at the Boiler-Blowdown Area in Fort Dix, NJ, which is listed on the CERCLA National Priority List. This project involved planning and implementing field sampling programs, monitoring well installation, wetlands delineation, and ecological and human health risk assessments. Contaminants assessed included chlorinated and non-chlorinated solvents, PCBs petroleum products, heavy metals, and explosives.
- Planned, managed, and directed a long-term monitoring program for a former hazardous waste disposal area and metal plating shop at Fort Monmouth, New Jersey. Contaminants at this site included chlorinated and non-chlorinated solvents and heavy metals.
- Program Manager for operation and maintenance for an interim remedial action at an UST release site at Fort Dix, New Jersey. Managed a pilot test of an innovative low-cost technology suitable for use at the site and obtained NJDEP approval for its implementation.
- Managed groundwater biotreatment operations and maintenance activities for a major railroad freight company at two former railyard facilities. At one of the sites, constructed a landfarm facility and performed oversight of an aeration system and sampling to ensure continued progress towards a risk-based closure. At the other site, maintained two mobile bioremediation systems including a subsurface network of wells and infiltration pipes. The systems successfully treated petroleum contamination to state-approved risk-based closure levels and are currently in stand-by mode awaiting results of one year of monitoring data before final decommissioning.
- As part of a fast-paced, multi-hundred-million-dollar corporate acquisition, managed and led a field team in evaluating historical subsurface contamination at a landfill and manufacturing areas associated with a pre-

World War II aluminum manufacturing facility in central Pennsylvania. Contaminants identified at the site included chlorinated solvents, PCBs, and petroleum products.

- Managed an UST removal program for six automotive service centers in the metro-Philadelphia area. Twenty-four tanks were removed and reports were prepared in accordance with PADER guidelines. Remedial activities addressing oil and waste oil releases to soil were carried out at three centers.
- Principal investigator for multi-media enforcement investigation performed by USEPA under RCRA authorities at the BHS Landfill in Jefferson County, Missouri. Investigation included groundwater and hydrogeologic evaluation, groundwater modeling, soil sampling, air monitoring and overall compliance evaluation. This six-month evaluation resulted in a USEPA Region VII enforcement action.
- Principal investigator for multi-media enforcement investigation performed by USEPA under RCRA authorities at the Four County Landfill in Rochester, Indiana. Investigation included groundwater and hydrogeologic evaluation, groundwater modeling, soil sampling, air monitoring and overall compliance evaluation. This six-month evaluation resulted in a USEPA Region V enforcement action.
- Principal investigator for multi-media enforcement investigation performed by USEPA under RCRA authorities at the Fondessey Landfill in Toledo, Ohio. Investigation included groundwater and hydrogeologic evaluation, groundwater modeling, soil sampling, air monitoring and overall compliance evaluation. This six-month evaluation resulted in a USEPA Region V enforcement action.
- Principal investigator for multi-media enforcement investigation performed by USEPA under RCRA authorities at the US Ecology Landfill in Beatty, Nevada. Investigation included groundwater and hydrogeologic evaluation, groundwater modeling, soil sampling, air monitoring and overall compliance evaluation. This six-month evaluation resulted in a USEPA Region IX enforcement action.
- Principal investigator for multi-media enforcement investigation performed by USEPA under RCRA authorities at the IT Benecia Landfill and Liquid Waste Disposal facility in Benicia, California. Investigation included groundwater and hydrogeologic evaluation, groundwater modeling, soil sampling, air monitoring and overall compliance evaluation. This six-month evaluation resulted in a USEPA Region IX enforcement action.
- Principal investigator for multi-media enforcement investigation performed by USEPA under RCRA authorities at the Chevron refinery in Barber's Point,

Oahu, Hawaii. Investigation included groundwater and hydrogeologic evaluation, groundwater modeling, soil sampling, air monitoring and overall compliance evaluation. This six-month evaluation resulted in a USEPA Region IX enforcement action.

- Principal investigator for multi-media enforcement investigation performed by USEPA under RCRA authorities at the GSX Landfill in Pinewood, South Carolina. Investigation included groundwater and hydrogeologic evaluation, groundwater modeling, soil sampling, air monitoring and overall compliance evaluation. This six-month evaluation resulted in a USEPA Region IV enforcement action.
- Principal investigator for multi-media enforcement investigation performed by USEPA under RCRA authorities at the Peoria Disposal Landfill in Peoria, Illinois. Investigation included groundwater and hydrogeologic evaluation, groundwater modeling, soil sampling, air monitoring and overall compliance evaluation. This six-month evaluation resulted in a USEPA Region V enforcement action.
- Principal investigator for multi-media enforcement investigation performed by USEPA under RCRA authorities at the Sunflower Army Ammunition Plant in Johnson County, Kansas. Investigation included groundwater and hydrogeologic evaluation, groundwater modeling, soil sampling, air monitoring and overall compliance evaluation.
- Provided technical support to USEPA program offices and enforcement attorneys regarding settlements of high-profile CERCLA actions with potentially responsible parties. Sites at issue included:
 - Aerojet;
 - Operating Industries Landfill;
 - Jiboom Junkyard;
 - San Fernando Valley;
 - San Gabriel Valley;
 - Stringfellow Landfill;
 - Fairchild Semiconductors;
 - Intel Mountain View Plant; and
 - MGM Brakes, and others.
- Performed more than 130 environmental assessments of commercial properties. These assessments were tailored to the needs of the clients and ranged from compliance assessments performed for USEPA to liability assessments conducted as part of real estate transfers. The facilities assessed included an air conditioning manufacturing plant, two U.S. Army ammunition plants, a U.S. Air Force Base, more than a dozen commercial hazardous waste disposal facilities, five manufactured gas plants, several oil refineries, a wire-coating manufacturing plant, oil terminals, gas

stations, telephone company facilities, shopping centers and others. Managed Phase I and Phase II environmental assessments at more than 150 telephone company properties including manufacturing areas, storage spaces, vehicle maintenance facilities, office space, pole yards and central offices. Designed and implemented groundwater monitoring systems in order to identify the extent of contamination beneath several hazardous waste and solid waste landfills in New York, Indiana, Ohio, and Alaska. Designed and installed groundwater monitoring systems at more than a dozen other commercial properties in Virginia, West Virginia, Pennsylvania, New York, North Carolina, and South Carolina.

- Managed and participated on teams of technical experts that evaluated over 20 RCRA Part B applications for USEPA. Managed and participated in projects that provided evaluations of closure plans under both 40 CFR 265 and 264 for landfills, waste piles and surface impoundments.
- Managed projects that provided oversight to RCRA facility owners as they performed RCRA facility investigations and implemented RCRA corrective measures at federal facilities, industrial facilities, oil refineries, and commercial landfills. Sites included the Tesoro Refinery in Kenai, Alaska; and the Badger Army Ammunition Plant in Wisconsin.

UNDERGROUND INJECTION OF WASTES

- Developed USEPA regulatory interpretations and guidance documents related to the maximum allowable injection pressure for Underground Injection of waste into deep geologic formations.
- Assisted in enforcement actions against operators of wells used to inject hazardous and non-hazardous liquid wastes into deep geologic formations, in Pennsylvania, Texas, Louisiana, and Nebraska.
- Contributing author and hydrogeologic lead for national inventory of hazardous and non-hazardous liquid waste disposal wells. Project evaluated geologic formations used to receive waste, volumes and types of waste, injection pressures, and other key factors associated with successful long-term isolation of liquids in the deep subsurface.
- Participated in USEPA inter-agency working groups associated with the implementation of the Hazardous and Solid Waste Amendments (HSWA) of 1984 particularly to the extent that the amendments required new regulations and changes to the existing Underground Injection Control Program for hazardous and non-hazardous liquid wastes.

ADDITIONAL ENVIRONMENTAL PROJECTS OF INTEREST

- Conducted an environmental compliance assessment of all operations associated with the construction and potential operation of the High Level Nuclear Waste Disposal facility at Yucca Mountain, Nevada.
- Managed National Environmental Policy Act support program for the U.S. Coast Guard, Air National Guard, and Strategic Air Command. Included the preparation of Environmental Assessments for base closures, base consolidations, construction projects, office relocations, and airspace requirements of NEPA. Managed and participated in more than 200 additional environmental response cost allocation projects involving more than 1,000 sites. These allocations were developed to support insurance carriers as they attempted to settle claims made against them by various Fortune 500 companies, including automotive manufacturers, utilities, oil companies, mining companies and consumer products manufacturing companies. Typically, environmental response costs are allocated by defense or indemnity; on-site or off-site; necessary or unnecessary; reasonable or unreasonable; remediation costs or compliance costs; costs associated with other releases not covered by the policy; and other allocation categories identified by counsel.
- Provided hydrogeologic technical support and expert testimony for enforcement cases and advised USEPA enforcement actions.
- Reviewed CERCLA enforcement cases and advised EPA enforcement attorneys on the technical feasibility and suitability of remediation strategies and proposals made by responsible parties on issues pertaining to groundwater contamination.

ESTIMATES OF PAST AND FUTURE REMEDIAL COSTS

- Provided technical reviews and remedial cost estimates for more than 500 sites impacted by various contaminants. These sites were located around the country and included Manufactured Gas Plant sites, landfills, manufacturing sites, oil refineries, chemical plants, power plants, spill areas, and others. Estimates have ranged from less than \$100,000 to more than \$1 billion.

ENVIRONMENTAL POLICY AND STRATEGY DEVELOPMENT

- Developed USEPA regulatory interpretations and guidance documents related to the maximum allowable injection pressure for Underground Injection of waste into deep wells.
- Participated in USEPA inter-agency working groups associated with the implementation of the Hazardous and Solid Waste Amendments (HSWA) of 1984 particularly to the extent that the amendments required new regulations and changes to the existing

Underground Injection Control Program for hazardous and non-hazardous liquid wastes.

- Project Manager in the development of USEPA’s “*Presumptive Remedy*” strategy for remediating municipal and industrial waste landfills under the CERCLA/Superfund process.
- Project Manager for the development of USEPA’s RCRA Corrective Action Stabilization Strategy for remediation of RCRA permitted landfills, waste impoundments, and other waste disposal or storage units that required corrective action to clean –up releases to the environment.
- Participated in the development of technical guidance documents related to the implementation of the RCRA groundwater monitoring requirements at hazardous waste landfills, surface impoundments, waste piles, and storage facilities. These guidances became the governing documents for all types of groundwater monitoring programs, including those under RCRA Corrective Action programs, Superfund (CERCLA) investigations and remediations, Safe Drinking Water Act investigations, Toxic Substances Control Act, Underground Storage Tank programs, and numerous state environmental programs.

PUBLICATIONS

Sullivan, D., 2017. Seven Government Assumptions to Challenge Regarding Natural Resource Damage Claims. *Environmental Claims Journal*, Vol. 29(3), 222-243.

Sullivan, D., et al., 2015. Proactive Evaluation of PRP Status at Hazardous Waste Disposal Sites. *Environmental Claims Journal*, Vol. 27(2): 140-148.

Bartenfelder, D. and D.G. Sullivan, 1992. *Stabilization: A Strategy for RCRA Corrective Action*. USEPA Proceedings: RCRA Corrective Action Stabilization Technologies, EPA/625/R-92/014, October 1992.

Kovalik, W., J. Kingscott and D.G. Sullivan, 1990. *Selecting Innovative Treatment Technologies: A Practitioner’s Guide*. Proceedings of the Hazardous Materials Control Research Institute’s 11th Annual National Conference: Superfund ‘90, November 26-28, 1990, Washington, DC.

Sullivan, D.G., 1993. Factsheet: *Focusing RCRA Facility Investigation Data Collection for RCRA Stabilization*. United States Environmental Protection Agency, Office of Solid Waste.

Sullivan, D.G., 1993. Factsheet: *Stabilizing Ground Water Contamination*. United States Environmental Protection Agency, Office of Solid Waste.

Sullivan, D.G., 1993. Factsheet: *Stabilizing Soil and Debris Contamination*. United States Environmental Protection Agency, Office of Solid Waste.

Sullivan, D.G., 1993: Factsheet: *RCRA Permitting Requirements for Treatment Units During Corrective Action and Stabilization*. United States Environmental Protection Agency, Office of Solid Waste.

Sullivan, D.G. (editor), 1992. *Assessing Federal Data Bases Regarding Innovative Hazardous Waste Treatment Technologies*. United States Environmental Protection Agency, EPA/542/8-92/002, August 1992.

Sullivan, D.G. (editor), 1992. *Federal Publications on Alternative Techniques for Treating Hazardous Waste*. United States Environmental Protection Agency, EPA/542/8-92/001, August 1992.

Sullivan, D.G. (editor), 1992. *Synopses of Federal Demonstrations of Innovative Technologies for Hazardous Waste Remediation*. United States Environmental Protection Agency, EPA/542/8-92/002, August 1992.

Sullivan, D.G., 1991. *Bioremediation in the Field No. 2*. United States Environmental Protection Agency, EPA/540/2-91/007, March 1991.

Sullivan, D.G., 1990. *Bioremediation in the Field No. 1*. United States Environmental Protection Agency, EPA/540/2-90/004, November 1990.

Sullivan, D.G., 1990. *Ground Water Almanac* (Software and Reference Book). United States Environmental Protection Agency, Technology Innovation Office, Washington, DC.

Sullivan, D.G., 1990. *Ground Water Sampling and Analysis Plan Advisor* (Software and Reference Book). United States Environmental Protection Agency, Technology Innovation Office, Washington, DC.

United States Department of Energy, 1993. *Office of Waste Management (EM-30) Cost and Schedule Estimating Guide* (Contributing Author).

United States Environmental Protection Agency, 1986. *RCRA Ground-Water Monitoring Technical Enforcement Guidance Document Technical Directive OSWER 9950.1* (Contributing Author).

United States Environmental Protection Agency, 1986. *Hazardous Waste Ground Water Task Force Protocol for Ground Water Evaluations, Technical Directive 9080.0-1* (Contributing Author).