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## PAUL A. MANDEVILLE, PE

### Education

M.S. - Civil (Geotechnical) Engineering, University of Maryland, 1987  
B.S. - Civil Engineering, Worcester Polytechnic Institute, 1980

### Professional Licenses

Registered Professional Engineer - Virginia, Maryland, District of Columbia, and South Carolina  
Class II Waste Management Facility Operator - Virginia  
Certified Value Engineer

### Professional Affiliations

Solid Waste Association of North America  
National Society of Professional Engineers  
Virginia Society of Professional Engineers

### Professional Experience

As a Senior Vice President and office director of the Reston, VA office, Mr. Mandeville is responsible for directing the firm's mid-Atlantic region projects. Since joining SCS in 1987, he has completed solid waste, storage tank, and other environmental service type projects. His 30+ years of diversified experience in civil and geotechnical engineering includes design and management of large, complex projects for the private sector, local governments, and the federal government. Examples of his project experience include:

#### Landfill Engineering

**Frederick County, VA, MSW and C&D Landfill Permitting and Cell Design/Construction Bid Document Preparation.** Project Director for major permit amendments for the MSW landfill for an alternate (to the Subtitle D) liner system and for vertical expansion. Preparation of construction bid documents (plans and specifications) for lateral expansion of the MSW landfill and for two phases of the C&D landfill. The alternate bottom liner for the MSW landfill requires only a geosynthetic clay liner (GCL) overlain with a 60 mil HDPE geomembrane.

**Shenandoah County, VA, Construction Bid Documents, Construction Engineering and Certification for New Landfill Cell and for Capping of Old Landfill.** Project Director for preparation of a major permit amendment for steepening the sideslopes from 4H:1V to 3H:1V and for construction bid documents for two landfill cell bid packages. SCS also provided full-time construction oversight during construction and prepared the certification report. SCS also oversaw the closure construction capping for the old landfill and prepared the closure certification report.

**Brunswick County, VA, Part B Permit Application Preparation, Private Landfill.** This project included development of both a sanitary disposal area and an industrial disposal area. The Part B Permit Application was completed in six weeks and subsequently approved by the Virginia DEQ. SCS completed construction documents, prepared VPDES and erosion/sediment control permit applications, and a stormwater pollution prevention plan for the Phase 1 construction; conducted a geotechnical evaluation of on-site soils for liner borrow, and a wetlands delineation with COE confirmation coordination.

**Prince William County, VA, General Engineering Consultation Services.** Major tasks under this contract have included: development of closure/post-closure plans for 46 acres of the 57-acre landfill, including coordination, review and approval of the plan by the DEQ; preparation of construction bid documents for closure of the landfill, including capping systems, stormwater management improvements, leachate collection system and LFG extraction system; preparation of a LFG utilization feasibility report; review of existing groundwater monitoring data network; development of annual groundwater monitoring reports; development of an assessment monitoring program; and updating/revising the Part B Permit to include a major amendment for an alternate (to the Subtitle D) bottom liner system. SCS provided CQA and closure certification during closure of the existing unlined cell CQA and certification for a new landfill cell.

**King George County, VA, Part A Permit Application, Private Ash Disposal Landfill.** The project site encompassed over 700 acres with a planned 350-acre disposal area. SCS' efforts included development of a hydrogeological/ geotechnical work plan; drilling of over 30 borings at the site, including geotechnical sampling and analyses; a site-wide wetlands delineation and COE confirmation coordination and preparation of the Part A Permit Application. The Part A Permit Application was approved within three months after submission to the Virginia DEQ.

**Accomack County, VA, Solid Waste Consulting Services.** Tasks have included a study of the County's, VA solid waste options; design and construction engineering for closure of a 40-acre trench fill area; solid waste filling plans for a House Bill 1205 vertical expansion; a bird hazard demonstration report; a leachate migration hydrogeological investigation; development of a hazardous waste exclusion program; development and installation of groundwater monitoring and landfill gas monitoring wells; permitting, design, and construction oversight for a baling facility; hydrogeological/ geotechnical evaluation for lateral expansion of the existing landfill; groundwater monitoring well installation; a Part A permit application for lateral expansion; a Part B permit application for a 9-acre lateral expansion including "piggybacking" onto the sideslope of the existing landfill.

**Fort Belvoir, VA, Theote Debris Landfill Closure.** Tasks included the preparation of closure plans for the 10-acre debris landfill in accordance with the Virginia Solid Waste Management Regulations; preparation of a post-closure monitoring plan, installation of landfill gas and groundwater monitoring wells, assessment of existing groundwater monitoring wells, groundwater sampling and analyses, groundwater statistical analysis, preparation of construction bid documents; providing CQA during construction of the cap.

**Prince William County, VA, Design, Permitting, and Construction Oversight, Yard Waste Compost Facilities.** The projects included two stage sedimentation systems that improve water quality for discharge downstream without any further treatment. Other facilities at the sites

include a new scale house and scale, two large concrete pads for transfer truck unloading, internal access roads, and grading of composting pad areas. The site layout also provided space for a future public drop off area.

**Suffolk, VA, Hosier Road Landfill Leachate Control System Design.** Scope included an inactive (NPL site), in compliance with consent orders from the VDEQ and the U.S. EPA. Features of the leachate collection system include leachate collection sumps; corrugated plastic leachate collection piping; 60-mil HDPE liner; and fiberglass underground storage tanks.

**Chesterfield County, VA, Post-Closure Care Plans, Four Landfills.** Plans included site-specific results of site inspections; proposed improvements/repairs; recommendations for post-closure operations; maintenance and monitoring; cost estimates; and an implementation schedule.

**Cumberland County, VA, Hamilton, Madison and Randolph Landfills.** Project included the development of closure/post closure plans for Hamilton and Randolph Landfills in accordance with the Virginia Solid Waste Management Regulations and construction plans for the capping system. The landfill caps were constructed by County forces under the direction of the SCS site manager. A construction certification report was the final deliverable for the projects.

**Suffolk, VA, Hosier Road Landfill Closure Plans.** Project included closure plans and the provision of Construction Quality Assurance (CQA). Efforts included development of a groundwater monitoring plan, statistical analysis of the groundwater data (and submittal of the annual report to the VDEQ), and providing resident engineering and construction quality assurance services during capping of the landfill.

**Reichs Ford Road Sanitary Landfill Expansion, Frederick County, MD.** Project director for the design of a lateral expansion (approximately 28 acres). SCS' responsibilities include preparation of construction drawings and specifications and supporting bid documents for two phased sanitary landfill cells (Cells 2A & 2B). In addition to preparing the construction documents, SCS was also responsible for: preparing a rock blasting plan; obtaining grading and NPDES permits; preparing construction cost estimates for Cells 2A and 2B; and preparing a preliminary construction schedule.

**Howard County, MD, Alpha Ridge, New Cut and Carrs Mill Landfills.** Project director for design of landfill cap, landfill gas extraction, and groundwater remediation systems. The projects involved investigation of the existing conditions at each landfill including depth of cover soils and the extent of existing waste limits; evaluation of landfill gas utilization potential; determination of landfill gas migration; evaluation of groundwater contamination extent and concentrations; evaluation of alternative landfill cap systems; the design and preparation of construction bid documents for the landfill cap, landfill gas extraction, and groundwater remediation systems.

**Travilah Quarry, MD, Feasibility Study/Preliminary Design, Convert Rock Quarry Into A Sanitary Landfill.** This engineering study focused on the feasibility of dual operation of a sanitary landfill and quarry. The phasing plans for the 200-acre, 300-foot deep landfill/quarry operations maximized stone production as well as landfill capacity. The design included a composite liner on the bottom; leachate collection, removal and disposal systems, and a

groundwater collection and removal system that kept the water table below the quarry bottom and maintained a groundwater gradient toward the landfill. An innovative sidewall liner system was developed which featured a 3-foot thick clay liner supported by a gabion basket wall (constructed of stone produced on-site).

**Montgomery County, MD, Post-Closure Improvements, Gude Landfill.** SCS' efforts included design of groundwater monitoring well access roads, repair of miscellaneous storm drainage deficiencies, and stabilization of eroding/consolidating areas. Construction oversight services also were performed by SCS.

### **Solid Waste Facilities**

**Washington, DC, Needs Assessment for Solid Waste Transfer and Rehabilitation of Two District-Owned Transfer Stations.** SCS provided engineering and environmental assistance regarding solid waste management and transfer in DC. to a Site Selection Advisory Panel and then prepared detailed construction plans and specifications for rehabilitation of the DC-owned Benning Road and Fort Totten Transfer Stations. The construction costs for the renovations totaled approximately \$20M and included replacement of the tipping floors with a high strength (8,000 psi) concrete flooring system. Both facilities will have expanded tipping floors and are being retrofitted with transfer trailer "tunnels" for easy transfer of waste into trailers.

**Howard County, MD, Transfer Station Concept Design.** SCS prepared conceptual plans for two alternatives for a Transfer Station at the Alpha Ridge Landfill. The concepts were presented in a detailed report that included an evaluation of each option, their costs and final recommendations.

**Montgomery County, MD, Preliminary Siting Study, Department Of Facilities and Services.** Reviewing Principal for a Yard Waste Drop-Off Facility and Recycling Facility No. 2. These projects are sited at the County's transfer station site in Rockville, MD.

**Arlington County, VA, Leaf Mulch Site Assessment.** SCS assessed the leaf and brush mulching operation at one site and leaf storage at a second site. The sites were assessed for compliance with Virginia's environmental regulations (surface water discharge, solid waste, and yard waste composting). Operational procedures were also assessed to address community concerns.

### **Storage Tanks**

**Fisher Oil, Staunton, VA, Secondary Containment Improvements, SPCC & ODC Plan Update and Secondary Containment Evaluation.** Fisher Oil is a bulk oil and gasoline distribution facility; the secondary containment improvements were prepared as a result of the 2002 Oil Spill Prevention Control and Countermeasure (SPCC) rules which require secondary containment for transfer areas. Construction drawings included plans and details for new concrete paved tanker truck unloading area with secondary containment; masonry secondary containment for the transfer pump area; transfer piping trench from the pump area to the fuel loading rack; and secondary containment for the fuel loading rack. Details were also included on the drawing for concrete pavement; containment diking around the fuel loading rack, and for the conveyance piping trenching and grating.

**HERC Products Incorporated, Portsmouth, VA SPCC & ODC Plans.** SCS prepared an updated

combined SPCC/ODC Plan for the facility based on the latest SPCC and ODC regulations, organized in a format consistent with 40CFR112 and 9 VAC 25-91-10. The final Plan included a cover letter with recommendations for improving the facility operations and site secondary containment to prevent spills from occurring in the future.

**City of Fairfax Property Yard, Fairfax, VA, Bulk Fuel Dispensing Facilities.** SCS prepared construction bid documents for improvements to the City's oil and fuel (gasoline, diesel, oil, antifreeze, transmission fluid) dispensing facility. Effort included removal of two existing underground storage tanks and remedial measures for clean-up of the site. Over the past decade, SCS has also prepared and updated (on two occasions) the SPCC Plan for the Property Yard.

**VA Department of Conservation and Recreation (DCR) Open-End Contract.** Provided quality assurance and oversaw the removal and replacement of USTs fuel dispensing systems at four state parks. Project included design plans and specifications; project bid advertising, receiving, opening, and tabulating contractor's bids; contractor negotiations; review contractor submittals, invoices, and request for change orders and construction oversight.

**Fairfax County Water Authority, VA, Underground Storage Tank Removals, Upgrades, and Renovations, Six Facilities.** The project included underground and aboveground storage tanks, providing secondary containment of the underground fuel piping and tank fill ports, cathodic protection, and UST removals.

**Norfolk District, VA, U.S. Army Corps of Engineers Radford Army Ammunition Plant.** Project director responsible for quality assurance and overseeing the preparation of specifications, cost estimates, and construction drawings for the upgrade of underground storage tanks at ten different locations.

**Norfolk District, VA, U.S. Army Corps of Engineers Fort Pickett Feasibility Study and Design, Petroleum, Oil and Lubricants Facility.** Project includes the consolidation of existing fueling facilities to a new facility with 160,000 gallons of storage capacity as well as demolition and removal of 13 existing USTs (totaling 156,000 gallons) and all incidental equipment.

**Bethesda, MD, David Taylor Research Center Fuel Dispensing System Repair.** The scope included demolition of existing dispensers, piping, high level alarms, new fiberglass reinforced plastic delivery and vent piping, new submersible pumps, new automated dispensing system, new spill containment manholes, and other related items to meet the State of Maryland underground storage tank regulations.

**Indian Head, MD, Naval Ordnance Station Otto Fuel Bulk Loading Facility Design.** Project included a new 1,200 square foot storage facility complete with spill containment, pumps, piping, etc.

**Alexandria, VA, Suburban Fuels Heating Fuel Dispensing Facility Design.** Project included two 20,000-gallon underground storage tanks and top loading rack for off-loading fuel into trucks. Project manager for Spill Prevention Control and Countermeasure (SPCC) plans for real estate management and development firms throughout Northern Virginia.

**Fort Lee, VA Department of Transportation Feasibility Study and Design, POL Facility.** Project

included 5 new storage tanks, fuel dispensing/receiving islands, office building, storage building, impoundment parking lot, and demolition of existing POL facility.

**Charleston, WV Air National Guard, Design/Rehabilitation, JP-4 Fuel Storage and POL Operations Facility.** The project scope included the addition of a 2,500-barrel above ground storage tank; redesign of the fuel unloading/dispensing operations; retrofitting of two existing 20,000 gallon underground storage tanks; and redesign of the POL operations facility.

**Dahlgren, VA, Naval Surface Warfare Center.** Spill Prevention Control and Countermeasure (SPCC) Plan. Project includes SPCC improvements at some 200 sites.

**Baltimore, MD, Glenn L. Martin Airport, Operations and Maintenance Manual.** Preparation of an Operations and Maintenance Manual for the jet fuel storage and dispensing operations at Martin Airport for the Maryland Air National Guard.

### **Environmental Services**

**Suffolk, VA, Hosier Road Landfill Inactive (A NPL Site) Leachate Control System Design.** Scope required compliance with the Virginia Department Of Waste Management and The U.S. Environmental Protection Agency regulations. Features of the leachate collection system include: leachate collection sumps; corrugated plastic leachate collection piping; 60 mil high-density polyethylene (HDPE) liner and; fiberglass underground storage tanks. The design also includes stabilization measures for severely eroded embankment areas of the landfill.

**Bedford, PA, Kennametal Inc., Lagoon Closure.** Efforts included the preparation of construction plans and specifications and full time construction oversight during the capping at this RCRA site. Close coordination with the PADER was required.

**Lynchburg, VA, Babcock & Wilcox, Sanitary and Industrial Wastewater Treatment System Study.** The study focused on each system current condition, analyses of operating efficiency, alternative methods for improvements, costs for alternatives, and overall recommendations.

**Dahlgren, VA, Naval Surface Warfare Center, Removal and Renovation Design, Lead-Contaminated Firing Range.** The Project included provisions for the removal of lead contaminated sand traps; concrete floors for ranges; and ventilation improvements.

**Bedford Village, NY, Feasibility Study, Portion of an RI/FS.** The FS was carried out in accordance with CERCLA, SARA and state requirements. The project was part of New York's efforts to remediate inactive hazardous waste sites.

**NJ, Koch Fuels Permit Applications.** Project included the preparation of Discharge Prevention Control and Countermeasure (DPCC) Plan; Discharge Clean Up and Removal (DCR) Plan; and Treatment Works Approval (TWA). The DPCC, DCR, and TWA were prepared in accordance with NJDEP requirements.

### **Public Works Engineering**

**Arlington, VA, Pentagon Child Care Center Feasibility Study.** SCS was responsible for



investigation and recommendation for utility and site work associated with the proposed Center, including sanitary sewer, potable water, storm drainage, parking, grading, etc.

**Adelphi, MD, Harry Diamond Laboratory Concept Study and Design, Security Enhancements.** Project included a security building, parking, site utilities and fencing.

**Fort Meyer, VA, Barracks Rehabilitation To An Office Area.** SCS' responsibilities was focused on the structural modifications to the facility to accommodate the office space.

**West Palm Beach, FL, Landfill Gas Migration and Odor Control.** Project scope was structural design of a condensate spill containment retention basin.

**Dahlgren, VA, Naval Surface Warfare Center, Drainage System Rehabilitation and Foundation Repairs, Building 193 (Elementary School).** Project included approximately 1,300 linear feet of new storm drainage piping and 140 linear feet of foundation underpinning.

**Dahlgren, VA, Naval Surface Warfare Center Backflow Prevention Devices Installation.** Project included preparation of construction contract documents for installation of double check valves, reduced pressure backflow preventors, pressure vacuum breakers, and atmospheric vacuum breakers at approximately 100 sites across the base.

**Fairfax County, VA, Indian Run.** Structural and hydraulic design for stream improvements and repair/rehabilitation of an existing storm water detention pond and spillway structure

**Fairfax, VA, Turkeycock Creek.** Structural and hydraulic design for stream stabilization

**West Palm Beach, FL.** Structural design of a condensate spill containment retention basin for a landfill gas migration and odor control project

### **Other Experience**

Mr. Mandeville's prior experience was as a project engineer for the Department of the Navy, Chesapeake Division (Chesdiv), on a variety of public works projects. His primary responsibility for the Navy was to oversee designs by A&E consultants, including overall project coordination and review of the designs for conformance with DoD criteria. Included in his project engineering work was overseeing the design of a 900,000 gallon fuel tank farm at the Marine Corps Combat and Development Command Quantico, VA. While employed with Chesdiv, Mr. Mandeville completed the 40-hour certified value engineer-training course.

Other Chesdiv experience included in-house project design where he was responsible for civil/structural design work, including design calculations and specification writing. Design experience includes roads and parking lots; drainage, sewer, water and stream systems; overall project site work; and structural design of building superstructures.

As a special assignment for the Navy, served as the office geotechnical engineering specialist. Duties included determination of boring and testing programs for all in-house design projects; selection and fee negotiation with geotechnical contractors; and geotechnical report review and approval for in-house and A&E consultant designs.

## Publications

Mandeville, Paul A., "Proposed Virginia Solid Waste Management Regulations Amendments." Presented at the SCS Engineers Virginia Landfill & Landfill Gas Seminar. Richmond, VA. February 25, 1997.

Mandeville, Paul A., Robert T. Thomas and James Law. "Permitting, Design and Construction of an Alternate Bottom Liner System." Presented at SWANA's 1<sup>st</sup> Annual Landfill Symposium, November 4-6, 1996, Wilmington, Delaware.

Mandeville, Paul A., Robert T. Thomas, Robert H. Isenberg and Evelyn E. Tomlin, "Evaluation of Alternative Landfill Bottom Liner and Landfill Cap Systems." Presented at the 19<sup>th</sup> International Madison Waste Conference, Madison, Wisconsin, September 25-26, 1996.

Mandeville, Paul A. and Caroline Yap. "Leachate Reduction and Collection." Presented at the SCS Engineers' Virginia Landfill & Landfill Gas Seminar. Virginia Beach & Richmond, VA. June 6 & 7, 1995.

Mandeville, Paul A., Robert T. Thomas, and Jeffrey D. Stewart. "Selection, Design and Permitting of an Alternate Liner System for an Eastern Shore Virginia Landfill Lateral Expansion." Presented at SWANA's 33rd Annual International Solid Waste Exposition, October 24-26, 1995, Baltimore, MD.

Mandeville, Paul A. and Robert T. Thomas. "Landfill Stormwater Management Considerations." Presented at SCS Engineers Maryland Landfill Seminar. Baltimore, MD. April 12, 1994.

Mandeville, Paul A. and Robert T. Thomas. "Landfill Stormwater Management Considerations." Presented at the SCS Engineers Virginia Landfill Seminar. Charlottesville, VA. March 16, 1994.

Mandeville, Paul A., J. Walsh, and Karen L.S. Richardson. "Cost Implications of Subtitle D Criteria." Presented at the Sixteenth International Madison Waste Conference. Madison, Wisconsin. September 22-23, 1993.

Mandeville, Paul A., J. Walsh, and Robert T. Thomas. "Environmental Evaluation for Vertical Expansion of a Virginia Landfill." Presented at the Sixteenth International Madison Waste Conference. Madison, Wisconsin. September 22-23, 1993.

Mandeville, Paul A., J. Walsh, and Karen L.S. Richardson. "Cost Implications of Subtitle D Criteria." Presented at the 1993 National Solid Waste Forum on Integrated Municipal Waste Management (sponsored by the Association of State and Territorial Solid Waste Management Officials). Lake Buena Vista, FL. July 19-21, 1993.

Mandeville, Paul A. and Dana L. Turner. "Ramifications of Subtitle D Regulations." Presented at the SCS Engineers Maryland Landfill Seminar. Baltimore, MD. April 13, 1993.



Mandeville, Paul A. and Dana L. Turner. "Ramifications of New Virginia Regulations." Presented at the SCS Engineers Virginia Landfill Seminar. Charlottesville, VA. March 16, 1993.

Mandeville, Paul A., Charles W. Leung, and Robert T. Thomas. "Conversion of Quarries into Landfills." Presented at the NSWMA Waste Tech '93. Marina Del Ray, California. January 14-15, 1993.

Strickland, Patricia S., Paul A. Mandeville, and Karen L.S. Richardson. "Municipal Solid Waste Landfill Liner Design Standards - Virginia and EPA Subtitle D Regulations Compared." Third Environment Virginia Symposium. Lexington, VA. April 7-8, 1992.

Mandeville, Paul A., J.R. Harriman, and C.G. Ward. "Compliance with the Commonwealth of Virginia Underground Storage Tank Regulations." Third Environment Virginia. Lexington, VA. 1992.

Strickland, P.S., P.A. Mandeville, and D. Turner. "Municipal Solid Waste Landfill Permitting, Design and Construction: A Virginia Case Study." Second Annual EPA National Conference on Solid Waste Management. Arlington, VA. 1992.

Mandeville, Paul A. "Wading Through the Storm Water Regulations: NPDES Permitting for Industrial Facilities." Presented at the Fourth Environment Virginia Symposium. Lexington, VA. April 6-7, 1993.