

CHRISTOPHER AUGUSTINE, RG, LHG, PLG, CWRE

### **Education**

BS, Geology, Appalachian State University, 1997

AS, Pre-Engineering Concentration, Brevard College, 1993

### **Professional Licenses**

Registered Geologist, OR, ID

Licensed Geologist/Hydrogeologist, WA

Certified Water Rights Examiner, OR

### **Professional Affiliations**

American Water Works Association

National Ground Water Association

### **Professional Experience**

Mr. Chris Augustine, has over 18 years of experience working on Resource Conservation and Recovery Act; Comprehensive Environmental Response, Compensation, and Liability Act; and National Priorities List (i.e., Superfund) sites in Oregon and Washington. Mr. Augustine's technical experience and management experience includes performing environmental investigations, site remediation, landfill monitoring, solid waste facility permitting and regulatory compliance. While his work focuses on hazardous and solid waste sites, he also has extensive experience providing water supply development, wellfield management, well rehabilitation, and water rights to clients in Washington and Oregon. Finally, he has demonstrated experience in geochemical modeling, groundwater analytical element modeling and numerical modeling applications.

Environmental Resources, Compliance and Monitoring

**Waste Management, Environmental Monitoring and Reporting—Various County and Privately Operated Landfill Sites in AK, OR and WA.** Project director for compliance monitoring at seven environmental sites throughout the Northwest. Monitoring events are consistent with each site's Environmental Monitoring Plan (EMP) and often include groundwater elevation surveys; soil, landfill gas, soil gas, stormwater, groundwater and leachate sampling; and laboratory data management and review. Manage annual, semiannual and quarterly reporting of environmental data to state, county and federal agencies.

**Environmental Compliance for Subtitle C Landfill, Chemical Waste Management of the Northwest, Inc. (CWMNW), Arlington, Oregon.** Project Manager responsible for implementing the detection monitoring program, providing site permit support, and directing the maintenance and abandonment of monitoring wells and piezometers. Developed drilling specifications, directed drilling operations, and communicated with the Oregon Department of Environmental Quality (DEQ). Authored agency reports documenting semiannual sampling events, alternative source demonstrations and monitoring well decommissioning work on CWMNW's Subtitle C Landfill and is providing ongoing support to CWMNW with permit compliance, permit modifications and RCRA and TSCA permit renewals for the facility.

**Environmental Compliance for Subtitle D Landfill, Columbia Ridge Landfill and Recycling Center, Arlington, Oregon.** Project Manager responsible for implementation of the environmental monitoring

program, assisting in updating the site permit, and conducting a statistical evaluation to develop permit and site-specific limits for contaminants in groundwater. Geologist of record for the annual report submittal presenting site-wide monitoring results of groundwater, leachate collection and monitoring systems, and landfill gas monitoring to the DEQ from 2009 to 2011.

**Conceptual Model Refinement for the Central Area of Pasco Landfill Superfund Site, Weyerhaeuser, Pasco, Washington.** Zone E was a past practice unit that historically received chlor-alkali sludge from Weyerhaeuser's Longview facility. The Zone E facility has historically had low level detections of chlorinated solvents; however it is located hydraulically downgradient from an unlined municipal solid waste landfill that is a confirmed source of volatile organic compound (VOC) contamination to groundwater. After review of historical groundwater quality developed and presented a conceptual model to the Potential Liable Parties (PLP) group and Washington Department of Ecology demonstrating the source of the VOCs in groundwater downgradient of Zone E was due to landfill gas migration and not from leachate from the Zone E industrial waste area.

**Lakeside Landfill Orphan Site, Washington County, Oregon.** As senior technical hydrogeologist performed review of fate and transport of redox sensitive contaminants in leachate affected groundwater and porewater along the streambank of the Tualatin River near the orphan landfill facility. Constructed multiple phase diagrams and geochemical plots to evaluate predominate redox sensitive phases and their mobility under seasonally variable redox conditions due to groundwater and surface water exchange with the adjacent Tualatin River. The analysis was used to update the conceptual site model and provide a basis for determining the appropriate remedial alternatives for the site.

**Remedial Investigation, Metro St. Johns Landfill, Portland, Oregon; Metro, Portland, Oregon.** As task manager reviewed historical groundwater quality, groundwater modeling results and groundwater elevations to revise the conceptual site model and identify data gaps, and developed a new monitoring well network to address data gaps. Work was performed as part of the remedial investigation for the closed, unlined Subtitle D landfill.

**Supplemental Remedial Investigation, Union Pacific Railroad (UPRR) Albina Railyard, Portland, Oregon.** As project hydrogeologist responsible for developing the sampling and analysis program, well installation and investigation program, and conceptual model development for a complex site within the Joint Source Control Strategy Program for the Portland Harbor Superfund Site. Based on review of previous work at the site from previous investigations, identified cross connection of aquifers by monitoring wells across the site and instituted a well decommissioning and replacement program. Updated the site conceptual model to correct groundwater flow directions in the shallow aquifer once representative data was compiled and corrected for both river and tidal influences as well as free product thickness in each well.

**Remedial Investigation and Feasibility Study (RI/FS), Blue Heron Paper Company Aerated Stabilization Basin (ASB) Property, Clackamas County Water Environment Services, West Linn, Oregon;** The ASB property, located adjacent to the Willamette River, received industrial paper mill wastewater for nearly 30 years. A Phase II environmental site assessment revealed elevated concentrations of metals (manganese, arsenic, nickel, and zinc) in groundwater downgradient of the ASB. Evaluated water quality results and interpreted fate and transport of the contaminants of concern presented in the RI/FS report.

## **Publications and Presentations**

Augustine, C. 2017. "30 years and beyond: caring for landfills post closure", Seattle Daily Journal of Commerce, Environmental Outlook, September 28, 2017.