

RESUME

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TECHNICAL BACKGROUND AND RELEVANT EXPERIENCE

- Advanced degree in relevant interdisciplinary sciences; geology, hydrogeology and structural geology (M.S. Hydrogeology, University of South Florida, Summer Hydrology Field Camp, University of Arizona)
- Extensive experience performing technical reviews and analysis for various clients on the US DOE program in the commercial and defense sectors.
- Extensive experience with hydrogeology, performance assessments and their regulatory basis.
- Advanced knowledge of regulations regarding waste management.
- Employed as a hydraulic engineer with the US NRC, Performance Assessment Section of the HLW Branch and participated in the development of analytical methods to assess disposal facility performance.

KNOWLEDGE OF REGULATIONS

- Participated in the development of 10CFR60, the NRC regulation for HLW disposal.
- Performed reviews of HLW Tanks at Hanford and waste classifications using 10CFR61 and NRC Branch Technical Position on Concentration Averaging for CH2M HILL.
- US DOE Committee to revise DOE Order 435.1 – Waste Management. Participated on the HLW Task Group and liaison to the LLW Task Group.
- Performed reviews of Yucca Mountain for State of Nevada conforming to 40CFR197.
- Wrote the Low-Level Radioactive Waste Disposal Regulations for the State of Maine.
- Reviewed LLW Disposal Regulations (10CFR61) regarding siting a disposal facility at Vermont Yankee Nuclear Power Plant for the Vermont Public Utilities Commission
- Subject Matter Expert for CH2M Hill PRC and CPCCo on DOE Order 435.1 and NRC Regulations regarding waste disposal and waste classification and performance assessment.
- Working knowledge of NEPA and CERCLA.
- Experience in RCRA and Washington State Dangerous Waste Regulations
- Advised CH2M Hill on the Advisory Committee on Nuclear Waste letter to the Nuclear Regulatory Commission regarding the Standard Review Plan for NDAA waste determinations and determinations under DOE O 435.1.
- Assisted in the development of the Closure Strategy for Tank Farms at Hanford while at Jacobs Engineering

EXPERIENCE IN HYDROLOGY AND MODELING

- Developed and ran two-phase, non-isothermal, variably saturated 3-dimensional models for flow and transport at Yucca Mountain to assess flow paths from the HLW repository on behalf of the State of Nevada for over 20 years.
- Master's Thesis Hydrogeochemistry of the Peace River Basin, Florida
- Utilized geochemical statistics to analyze flow paths at Yucca Mountain and Basalt Waste Isolation Project (BWIP)..
- Experience in fractured flow hydrology and in unsaturated zone hydrology.
- Performed reviews on all DOE and DOE Laboratory Performance assessments for Yucca Mountain and WIPP for the State of Nevada, State of New Mexico and/or the Department of Energy.
- Performed ground water flow and contaminant transport modeling of high-level nuclear waste sites including the BWIP at the Hanford Site, Washington for the US NRC and for the Yakima Indian Nation.
- Performed technical reviews of DOE performance assessments and hydrologic analyses of BWIP for the NRC and Yakima Indian Nation.
- Worked with Sandia Laboratories, ran preliminary performance assessments as a comparative study at basalt, tuff, and bedded salt sites to assess relative dose and timeframes of peak dose to the critical group, for the Yakima Indian Nation.
- Performed critical reviews of the Single Shell Tank Performance Assessment for the closure of tank farms. Areas of focus were uncertainty analyses and hydrologic representation via flow and transport models.
- Represented CH2M Hill in NRC/DOE technical exchanges on waste determinations
- Served as liaison with WRPS and CH2M Hill PRC on C Tank Farm, Hanford and for the Integrated Disposal Facility planning and regulatory development for CH2M Hill PRC.
- US DOE LLW Federal Review Group (LLFRG), non-voting member. Selected to review the Savannah River Site Composite Analysis (2010 – 2012).
- Performed reviews for the LFRG on NNSS and Savannah River Annual Summary Reports.
- State of Nevada's representative to the INTRAVAL program. This study was a joint effort with the European Economic Committees, Nuclear Energy Agency and other countries such as the United Kingdom, Germany, Sweden, Finland, Japan, Canada and Australia. The goal was to determine measures or conditions whereby models used to predict repository performance can be presumed "valid".
- Recent work for CH2M HILL and CPCCo includes participation in the development or review of several DOE 435.1 analyses at Hanford, including the C Tank Farm PA, the IDF PA, the Hanford Site Composite Analysis and the Active Low-level Waste Burial Grounds.
- Assisted in the resolution of LFRG comments in several of these analyses.

- Participation in the DOE Risk Assessment and Performance Assessment Community of Practice webinars.
- Retained by Inspection Experts, Incorporated (IEI) to assist with several projects. Revision of DOE Order 435.1, Proposed Rulemaking for DOE O 435.1, training classes on DOE O 435.1, and general support to the LFRG.

EXPERT WITNESS WORK

- Performed expert witness work on Cotter Mill, uranium facility in Colorado Fernald,
- Provided hydrologic expert witness work at Fernald, Ohio, Mound, Ohio, and resulted in a \$75 Million settlement for residents at Fernald and initiated the major DOE cleanup at these sites.
- Provided expert witness testimony on several occasions, including for the New Mexico Office of the Attorney General concerning the performance assessment analyses at the U.S. DOE Waste Isolation Pilot Project (WIPP).
- Provided testimony on Yucca Mountain hydrology and performance assessments to The President's Blue-Ribbon Commission on America's Nuclear Future (2010) that was commissioned by President Obama to review the Yucca Mountain disposal project and select an alternative disposal strategy.
- Provided Expert witness testimony in two landfills, one in Dakota County, Minnesota and one in Cook County, Illinois

SELECTED COMMITTEE APPOINTMENTS:

- Hydrologist for an advisory panel to the U.S. EPA (NACEPT Panel) developing compliance criteria for the technical compliance of the WIPP site (40CFR194).
- US Department of Energy Joint Russian/US Working Group on Regulatory Matters regarding Plutonium Disposition in Russia.
- National Academies of Science - Committee to Review New York State's Siting and Methodology Selection for Low-Level Radioactive Waste Disposal. Serving as hydrology expert on siting a low-level radioactive waste facility, selecting a disposal technology and projecting the Low-Level Waste source term.
- Appointed as representative from Minnesota to the HLW Task Force of the National Governor's Association.
- US DOE LLW Federal Review Group (LLFRG), non-voting member. Selected to review the Savannah River Site Composite Analysis (2010 – 2012).
- US DOE Committee to revise DOE Order 435.1 – Waste Management. Participated on the HLW Task Group and liaison to the LLW Task Group.

EXPERIENCE – INTERNATIONAL

- US Department of Energy – Advisor on Joint Russian/US Working Group on Regulatory Matters regarding Plutonium Disposition in Russia. One of 4 American's chosen to work on this Committee and one of two civilian members. This Committee worked on MOX fuel production in Russia and regulatory requirements of site construction.

- As an employee of Jacobs Engineering, participated in the development of a proposal for the Sellafield site. This work was performed both on-site at Sellafield and in the Jacobs offices near Manchester, UK.
- Facilitated international cooperation with the former Soviet Union regarding the technical and regulatory aspects of nuclear and hazardous waste management, and technology transfers and developed a unique knowledge and expertise in the Russian nuclear waste management program.
- As an expert in the Russian nuclear program, provided briefings and reports to the European Commission, a Swiss Utility, the National Academies of Science, the U.S. Nuclear Regulatory Commission Advisory Committee on Nuclear Waste (ACNW), the Central Intelligence Agency, the US Department of the Army and the U.S. Department of Energy.
- One of the few Americans known to have been appointed to a Russian Interagency Working Group for the development of a Concept Document for the use of sealed radioactive sources in industry in Russia. This appointment was by GOSATOMNADZOR of Russia, the State Nuclear Regulatory Committee.
- Participated in the review and development of several Russian laws via the Russian Duma (Congressional) Committees. These laws were: *On Nuclear Waste Management* and its successors, *On the Use of Nuclear Power* and *On the Environment*. Conducted extensive meetings on the terms of the laws with involved State Committees, Ministries, local authorities and interveners.
- Along with L. Lehman & Associates Moscow staff developed a Guidebook for Oil and Gas Investors in Russia, which was purchased by and assisted, 11 major international oil companies' complete applications for environmental permits in Russia. Also developed similar reports on the Russian program of nuclear waste management.
- L. Lehman & Associates, successfully completed work in Latvia for the Latvian Department of Development and Environmental Protection. This work involved developing a life-cycle cost estimating computer program for the Latvian Radon Site, a low-level nuclear waste disposal site.
- Lectured in Russian language for a seminar sponsored by the International Atomic Energy Agency on the topic of nuclear waste management in Tashkent, Uzbekistan, in September 1998.
- At the request of a US based company attended several meetings on the Kazakhstan nuclear program in Almaty and the desalinization reactor in Aktau, Kazakhstan.

MANAGEMENT EXPERIENCE

With more than 20 years' experience as President of L. Lehman & Associates and the Technical & Regulatory Evaluations Group (T-Reg) managed projects for numerous clients including the State of Nevada, Yakima Indian Nation, the Mid-west Low-Level Radioactive Waste Compact Commission, and many other clients such as EPRI, the State of Maine, the Vermont Public Utilities Commission, The US Army, the Central Intelligence Agency, the European Union, Russian Agency GOSATOMNADZOR,