SCOTT K. KNOEPKE, PE, PG

Education

Master of Environmental Management, Environmental Management and Sustainability, Stuart Graduate School of Business, Chicago, Illinois, 2005

B.E, Geological Engineering, University of Minnesota, Minneapolis, Minnesota, 2002

B.S., Geophysics and Geology, University of Minnesota, Minneapolis, Minnesota, 2002

Professional Licenses

Professional Engineer – Iowa, Illinois, Wisconsin, Indiana

Professional Geologist - Illinois

Professional Experience

Mr. Knoepke has 19 years of experience as an engineer and hydrogeologist. He has diverse experience includes storm water management and design, groundwater treatment, and soil and groundwater remediation adjacent to waterfront locations. This includes contaminants including VOC, CVOC, and metal impacted soils and groundwater. Mr. Knoepke's background applies to environmental regulatory compliance, with particular focus on in-situ methods for passive treatment approaches (ISCO/ISCR, enhanced bio, in-situ metal stabilization, treatment wetlands, and phytotechnologies) and the integration of surface hydrology improvements as part of remediating subsurface soil and groundwater impacts. Mr. Knoepke has applied this knowledge to various industries including heavy industry (steel, rail, coal, mining), electronics manufacturing, metal plating, metal cutting, industrial landfill, municipal landfill applications, and solid waste management permitting, design, and construction projects. Mr. Knoepke's diverse experience includes litigation support, voluntary clean-up program support, in-situ remediation, and storm water management and treatment. Mr. Knoepke supports clients with multi-media environmental permitting and compliance.

Manufacturing & Facilities

Chicago, Illinois, Private Client. Implemented the closure of a coal handling and transfer operation. This closure plan was prepared at the direction of the Illinois Attorney General and incorporated into a Consent Order. Closure measures included limited material removal, regrading, and installation of a closure cover system that provided storm water drainage controls according to the City of Chicago storm water requirements. The storm water controls included a gravel based cover and storage system, modification to a barge slip, improvements to retaining wall tie-backs, modification of barge slips, and removal of a sedimentation pond within the Calumet River. This project had regulatory involvement including the City of Chicago, Metropolitan Water Reclamation District of Greater Chicago (MWRD), Illinois Environmental Protection Agency (IEPA), U.S. Army Corps of Engineers, and the Illinois Department of Natural Resources, and the Illinois Attorney General. The regrading and cover system for this closure plan encompassed over 85% of the 53-acre Site.

Pittsburgh, Kansas, Private Client. Provided engineering and management support for the closure of a former zinc smelter location. This work is part of a Consent Agreement with the U.S. Environmental Protection Agency (USEPA) to implement an approved remedial action to address contamination

from arsenic, lead, and zinc in soils. The remedial action included the design and placement of an engineered cap to prevent the direct contact pathway with impacted surface soil. The implementation of the remedial action is in progress and advanced in a phased approach to achieve the remedial goals for the Site.

Rockford, Illinois, MegaFab. Managed the remediation of cutting oil impacts in soil and groundwater resulting in discharge to an adjacent river. Work included support for outside legal counsel in the development of a Consent Order for the remediation of the impacts by way of In-Situ Chemical Oxidation, augmentation of site soils with injectable organic carbon, and the use of a sea-wall improvement to serve as a Tier 3 vertical engineered barrier. Project involved multiple regulatory bodies including the Illinois Voluntary Cleanup Program, Illinois Bureau of Water, and USACOE for Section 404 and Section 10 permitting.

Hammond, Indiana, Private Client. Served as project manager and technical expert for a Class II railroad in Hammond, Indiana. The project involved the assessment and reuse potential of historically placed materials exhibiting characteristics of slag. Used geotechnical, geophysical, and environmental characteristics to cost-effectively assess the subsurface conditions and petition for an exemption to the solid waste rules for the on-site beneficial reuse of the materials. The subject materials comprised 95,000 cubic yards and achieved a savings of approximately $7 million, allowing a regionally significant industrial development to advance.

Gary, Indiana, Private Client. Managed the development storm water and natural resource management for the expansion of a Class I classification yard. Provided engineering design to provide site-wide drainage including navigating sensitive natural resources and coordinating with multiple regulatory agencies including the Chicago District of the United States Army Corps of Engineers and the U.S. Fish and Wildlife Services. Developed Storm Water Pollution Prevention Plans as part of the construction activities that included track improvement, wetland mitigation, and bridge development.

Naperville, Illinois, Naperville Sportsman's Park. Acted as project engineer for site investigation and remediation of the Naperville Sportsman's Park, an active trap shooting range. Project activities included multiple site investigations to characterize soil, sediments, groundwater, and surface water impacts from historical shooting range operations which primarily involved the use of lead-shot and bituminous clay targets. The site was enrolled in the voluntary IEPA/SRP, and program-required reports were prepared including a Focused Site Investigation Report (FSIR), development of site-specific Remedial Objectives Report (ROR), and a Remedial Action Plan (RAP). Other project tasks included development of remedial action implementation cost estimates; preparation of site-specific Health and Safety Plan(s), Radiation Protection Plan(s), steel/lead shot ballistics studies, and interim remedial action implementation field engineering and oversight management.

Provided characterization of site soil, sediment, groundwater, and surface water, including hazardous concentrations of lead. Provided chemically stabilized lead-impacted soil and sediment in-situ and subsequently removed the materials to an off-site disposal facility as non-hazardous special waste. Unimpacted roadway materials were segregated and disposed of at a Clean Construction Demolition Debris (CCDD) facility.

Maywood, Illinois, Commonwealth Edison. Served as Senior Engineer/Project Manager for the design and installation of a treatment system to manage PCB discharges of storm water to surface water. Designed a sampling protocol to identify PCB loading dynamics to assess first flush versus inflow and infiltration. Included the cleaning and televising of more than 10,000 linear feet (LF) of storm sewer and the repair and replacement of 8,500 LF via CIPP and new sewer installation. Treatment system replacement activities include geotechnical evaluation, soil shoring, decommission of existing

undersized OWS units, installation of new OWS, and provision of temporary OWS during decommissioning and installation. Mr. Knoepke facilitated appropriate permitting with the Metropolitan Water Reclamation District of Greater Chicago, the Village of Maywood, and the Illinois Environmental Protection Agency.

Burnet County, Texas, Private Client. Acted as Senior Engineer/Project Manager for the assessment of graphite mine tailings placed atop bedrock with an aerial footprint of approximately 30 acres. Acid Mine Drainage (AMD) (with elevated Aluminum, Iron and Sulfate, pH 2-3 SU) generated from the site for treatment with Successive Alkalinity Producing (SAP) Cells, Anoxic Lime Drains (ALD), and a combination of SSF and SF CTWs. Discharge of treated AMD to a consumptive use phytoplot. A storm water management system that consists of a toe-drain, detention pond, and phytocap was employed to reduce the amount of AMD generated. Phytocap consisted of 18-acres and 130,000 plantings to inhibit AMD production.

Other Project Experience

Indianapolis, Indiana, Chemical Distribution Company. Performed soil and groundwater remediation and designed in-situ delineation field layout for the remediation of chlorinated volatile organic compounds. Delineation activities included conventional sub-surface drilling and sampling as well as utilization of a membrane interface probe. In-situ treatment included Enhanced In-Situ Bioremediation (EISB) and In-Situ Chemical Reduction (ISCR).

Huntington, Indiana. Applied a consumptive use phytoplot to manage the groundwater generated as a result of operating an underground hydrocarbon holding cavern. System flow rates ranged from 4,000-6,000 GPD.

Joliet, Illinois, Legacy Landfill. Served as senior engineer for the use of a water-balance (phytocap) cover. This application addressed surface water hydrologic drivers that resulted in excess leachate generation. This system design incorporated a reduction of up to 75% of daily flow.

Sebree, Kentucky, Subtitle C Facility. Acted as project engineer for compliance and design of a landfill leachate treatment wetland that resulted in a zero discharge option for effluent disposal within a phytoplot. Primary constituents of concern were cyanide and fluoride. Design eliminated disposal of leachate as hazardous waste.

De Soto, Illinois, Active Subtitle D Landfill. Designed and permitted a Constructed Treatment Wetland with a design average flow of 40,000 gpd with a zero-discharge phytoplot for disposal of treated leachate. This project was permitted via and adjusted standard obtained from the Illinois Pollution Control Boards. This project was first ever IEPA Bureau of Land approval of a Constructed Wetland for treating landfill leachate.

Argos, Indiana, Active Subtitle D Landfill. Designed and permitted a Constructed Treatment Wetland with a design average flow of 60,000 gpd with a zero-discharge phytoplot for disposal of treated leachate. This facility was permitted via 327 IAC 3 with treated effluent disposal permitted via 327 IAC 6.1. Included site-specific design for elevated TDS, iron, and ammonia. Integrated fresh-water flushing to manage salt-bridging as part of the land application of elevated TDS to spray field.

Kosciusko, Indiana Active Subtitle D Landfill. Designed and permitted a Constructed Treatment Wetland with a design average flow of 40,000 gpd with a zero-discharge phytoplot for disposal of treated leachate. This facility was permitted via 327 IAC 3 with treated effluent disposal permitted via 327 IAC 6.1. Site specific challenges included elevated VOCs, CVOCs, TDS, iron, and ammonia.

Atkinson, Illinois. Designed and permitted a 200,000 gpd constructed treatment wetland as part of a Supplemental Environmental Project negotiated between a private client and the Illinois Environmental Protection Agency. This system was designed as a polishing wetland for a POTW servicing a population of approximately 1,100 to manage residual nutrients in effluent. Obtained the first ever Illinois EPA Bureau of Water permit for a constructed wetland treatment system, issued in June 2005.

Sleepy Hollow, Illinois. Obtained the first ever Illinois Department of Public Health Permit for a constructed wetland to discharge domestic wastewater from a 113 home residential housing development to the subsurface. This permit was obtained via the IDPH experimental use provisions and was issued in April 2006.

Seneca, Illinois, Biodiesel Refinery. Served as project manager/engineer for multi-media permitting of 100 MMGal/year biodiesel refinery. Construction and operational permitting consisted of compliance with air, water, storm water, and State Fire Marshall requirements.

Illinois, Speaker Manufacturer. Project engineer for a multi-media compliance assessment and audit.

Coordinated and presented at a technical seminar to 63 technical staff from the IEPA and Illinois Department of Health. This seminar broke new ground within both agencies and has helped to encourage both agencies to address how permits and technical review procedures will be divided and managed for Engineered Natural System Applications such as constructed treatment wetlands and phytotechnologies.

Acted as project engineer for air, water, solid waste compliance consulting for major and minor sources of HAP facilities in Illinois and Indiana. Facilities include on-site CVOC groundwater remediation, gauze manufacturing, and voice-coil manufacturing.

Performed air and water compliance consulting for a minor source HAP waste disposal incinerator in Illinois.

Performed design consultation and multi-media permitting for alternative fuel facilities including ethanol and biodiesel.

Illinois, Indiana, and Missouri, Subtitle D Landfills. Acted as project engineer for the design and permitting for transfer stations and compost facilities. Experienced in new facility permitting, significant modification permits, and design to optimize solid waste management operations.

California, Mirimar Landfill. Authored bird management plan for a Subtitle D facility in proximity to a regional airport.

Developed SPCC and SWPP Plans, and various other compliance documents for a variety of clients including a 100 MGY biodiesel refinery, 5 MGY biodiesel refinery, the AON Center (Chrysler Building), transportation/distribution facilities, and commercial developments.

Conducted over 100 environmental due diligence assessments for commercial and industrial clients. Completed numerous Phase 1 assessments in accordance with the All Appropriate Inquiry due diligence rules. Included automobile dealerships, scrap yards, chemical production facilities, dry cleaning facilities, and automobile rental facilities.

Performed in-situ remediation of pH-impacted soils due to the release of sulfuric acid. Evaluated bench scale, base-agent analysis to optimize injection grid, pH response, and reaction kinetics to

limit heat generation. Expedited project execution in coordination with the IEPA Office of Emergency Response to obtain closure without the issuance of a Violation Notice.

Characterized on-site wastewater treatment lagoons in operation since 1950s for a plastics manufacturer in support of a property transfer. Comprehensive geotechnical, chemical, and hydrologic characterization of lagoon solids for potential land application, in-site/ex-situ stabilization, and disposal to cost-effectively achieve regulatory closure.

Performed geophysical site assessment activities at over 20 locations in Illinois and Indiana. Primary methods of assessment included time-domain electromagnetic detection, frequency-domain electromagnetic detection, and ground-probing radar. Assessments typically included locating underground infrastructure including underground storage tanks, utilities, and shallow burial of wastes. The use of the geophysical assessments were selected to focus Phase 2 investigation areas and minimize risk associated with advancing subsurface borings. Use of geophysical methods such as FDEM and DC-Resistivity were used to identify groundwater contaminant plumes and solid waste boundaries associated with legacy landfills.

Analyzed several Illinois SRP and Indiana VRP sites utilizing risk based assessment and management. Scheduled sampling arrays for the assessment and delineation of contamination for a variety of geologic settings.

Conducted Phase 1 investigations on several major industrial facilities, including an integrated steel mill, and managed several Phase 2 subsurface investigations for property transfers.

Completed Phase 1 and Phase 2 Site Assessments on approximately 40 dry-cleaning facilities in urban settings as part of the Illinois Dry Cleaner Trust Fund. Prepared Remediation Work Plans and obtained NFR decisions from the IEPA for 11 of these locations via Tier II closure.

Provided primary expert witness support for case between the Illinois Attorney General and a private client regarding the placement of over 300,000 cubic yards of material without a solid waste permit. This material was also located within USACE jurisdictional wetlands.

Served as project engineer for subsurface characterization and split sampling activities conducted on behalf of a former chemical company in operation since approximately 1954.

International Truck and Engine Corporation (ITEC). Provided pollution prevention and waste minimization strategy consulting. Based on the life-cycle cost savings assessment provided, ITEC implemented the suggested improvements, realizing a savings of approximately $150,000 annually.

Publications and Presentations

Knoepke, Scott and Eifert, Walt, Methods for Evaluating Candidate Plant Species for Phytocapping and Consumptive Use Phyoplot via an In-field Study Within Mine Tailings, International Phytotechnology Society 8th Annual Conference, Portland, OR, 2011.

Knoepke, Scott, Storm water Management Using Engineered Natural Systems, IIOA WITtec 16th Annual 2011 Conference, Indianapolis, IN, 2011.

Knoepke, Scott and Eifert, Walt, Pilot-Scale Treatment Evaluation of Phyto and Wetland Technologies for the Remediation of AMD, Battelle Conference on In-Situ and On-Site Bioremediation, Baltimore, MD, 2009.