ANASTASIA J. WELCH, P.E.

Education

B.S. Civil and Environmental Engineering, University of Missouri –Columbia, 2000

Professional Licenses

Professional Engineer
- Kansas
- Missouri
- Iowa
- North Dakota

Professional Affiliations

Missouri Waste Control Coalition
- President: 2017-2018
- Past President: 2018-2019

Solid Waste Association of North America,
Landfill Management Technical Division
- Division Director: 2015-2017
- Past Director: 2018-2019

Professional Experience

As a Vice President/Project Director at SCS in the Overland Park, Kansas office, Ms. Welch utilizes her civil engineering background to affect solid waste related projects in numerous states for both municipal and private clients. Throughout her career, Anastasia has focused on solid waste related topics ranging from design and compliance to planning. As a solid waste practice lead in the Central Region of SCS, Anastasia leverages experience across the company to bring the appropriate personnel and work efforts to meet clients' expectations and needs.

Example project experience includes:

Solid Waste

Lee's Summit Resource Recovery Park, Lee's Summit, Missouri: Ms. Welch is the Project Manager for many on-going activities at this municipally-owned facility. Ms. Welch is assisting with closure planning, and long-term landfill post- operation considerations. Ms. Welch is responsible for the team designing the transfer station which is planned to open once the landfill is closed. Ms. Welch oversees the field personnel responsible for monthly balancing of the gas system, and coordinates with individuals to complete annual financial updates, storm water compliance, waste water discharge compliance, volume calculations, and air compliance activities. Other projects at the site have included a groundwater assessment monitoring program and redesign of the gas extraction system. Welch oversaw a re-design to the facility's gas extraction system. The re-design was completed in order to gain compliance with NSPS regulations as well as to limit potential impacts to groundwater. The site also installed an active off-waste gas extraction trench which eliminated limited landfill gas migration at the facility. Ms. Welch oversaw the project team during the design, construction, and follow-up portions of the project. Overall, a 1,700-linear foot trench was installed at depths varying from 10 to 40 feet below the ground surface.

Ms. Welch has coordinated planning efforts from a technical and financial aspect for site closure. Ms. Welch and the City developed a model to evaluate the impact of various financial decisions related to end of life operations, potential future development, closure, and post-closure maintenance. As a result of the model development, the City has been able to make informed

decisions leading up to closure and understand how these decisions will impact cash-flow in the future.

Proposed Yellowstone Disposal Facility, Richland County, Montana – IHD Solids Management, LLC: The proposed Yellowstone Disposal Facility is a greenfield site located in eastern Montana which is proposed to have a municipal solid waste landfill and a special waste landfill. Ms. Welch was the project manager for development of the application, which involved preliminary landfill siting evaluation, preliminary site layout, engineering design, permit drawings, and the permit application. The preliminary landfill siting assessment was used to determine whether the property was worth pursuing as a potential landfill facility. Once determined initially suitable, Ms. Welch oversaw the team conducing the hydrogeologic investigation and engineering design. Engineering design included footprint alignment, base grades, leachate management, and final cover design, as well as facility monitoring. As part of the permit application, a Construction Quality Assurance Plan, Closure/Post-Closure Plan, and Operations Plan were also developed. Initial feedback from the Montana Department of Environmental Quality included 7 comments and a few minor revisions, and indicated it was the best permit application package they had received and should serve as the model for future applications.

Buckskin Landfill, Ft. Berthold Indian Reservation, North Dakota: Ms. Welch served as the Project Manager for this special waste landfill facility design and permitting effort in North Dakota prior to a change in regulations by the Three Affiliated Tribes (TAT). The project site was located on the Ft. Berthold Indian Reservation, and following submittal of the design and associated permit documents to the TAT Environmental Department, a resolution was passed to prohibit the long-term disposal of any waste on reservation land. However, prior to passage of the resolution, the focus of the project was to coordinate site development and design of the Greenfield property to comply with North Dakota Department of Health requirements, TAT regulations, and meet client expectations and a short delivery time. This facility conceptual design was well-received by the TAT Environmental Department and provided superior protection of the environment compared to required design or industry standards.

City of Kirkwood, Missouri: Ms. Welch served as the project director for this master plan and rate study. The purpose of this project was to evaluate the City's funding mechanism and determine the financial impacts of implementing changes to the solid waste program, such as automated collected, incentive pay for drivers, increased recyclables, and elimination of City-provided commercial collection. The project team developed a sophisticated Pro Forma Model to evaluate the financial impacts of each project and made recommendations to the City regarding new rates, program changes, and efficiency upgrades. The largest recommendation from SCS to the City was to automated waste collection. In the City of Kirkwood, residents placed waste in trash bags at the curb and City personnel deployed rear-loader vehicles to collect the bagged waste. SCS evaluated conversion to an automated collection system to reduce costs and increase productivity and the City incorporated this recommendation into their long-term plan.

As a result of the master plan, the City of Kirkwood selected SCS to help guide them through this transition from a bagged waste system at the curb to a containerized service with automated collection vehicles. Ms. Welch leads the team in providing technical support for the conversion project. The initial tasks include benchmarking other communities that have implemented containerized and automated collection of waste, and completing an analysis of variable rates on program metrics, including diversion and participation. The City will roll-out carts in the first half of 2019, and as of November 2018, the education and outreach campaign is kicking off.

The City's commingled curbside recycling program is undergoing changes as well and SCS is helping the City implement necessary modifications to continue curbside recycling under the terms of a new processing contract. SCS has prepared a grant application on behalf of the City to be used to engage the processor to conduct pre-and post-education waste audits to determine recycling contamination types and quantities, and how the contamination changes in light of customer education. SCS hopes to implement the education activities and evaluations in 2019.

City of Olathe, Kansas: Ms. Welch served as the local project manager coordinating a team of SCS Engineers, Economic Environmental Solutions International, and Shockey Consulting Services, LLC (SCS Team) to prepare a Long-Term Solid Waste Management Plan for the City of Olathe Solid Waste Division. The team forecasted waste streams and assessed the capacity of the existing waste infrastructure to manage future waste until 2064. SCS Team evaluated residential collection (waste, recycling, and yard waste), drop-off recycling centers (multi-material and glass only), commercial collection (waste and recycling), HHW/E-Waste, the compost facility, and the transfer station. For each service provided by the City, the SCS Team benchmarked current operations, forecast future quantities and needs, assessed financial performance, and identified and evaluated future final opportunities. The plan is structured to serve as a tool for future decision making in order to assure a sustainable solid waste management system for the City of Olathe.

St. Louis Composting, St. Louis Metro Area: Ms. Welch served as the project director to complete storm water compliance evaluations for five facilities in the St. Louis Metro Region. The evaluations included documentation reviews, site visits, and summary reports. For each site, project staff first completed a detailed review of the existing Storm Water Prevention Plan. A site visit was then conducted where the site was evaluated for compliance with the SWPPP and the permit. Records were reviewed to determine compliance with permit sampling and reporting requirements. A summary report with recommendations for improvement was prepared for each facility.

St. Louis Composting, Belleville, Illinois: Ms. Welch served as the project director to complete the permit renewal for this facility which accepts landscape waste and food waste for composting. Although the permit renewal was included as part of the typical 5-year renewal process, Ms. Welch spent considerable time focusing on the operations specific to incorporating food waste into the composting process so IEPA could easily understand and approve the process being implemented. As of November 2018, the permit renewal is still pending.

City of Gering, Nebraska: Ms. Welch served as a technical consultant to develop a critical path program for a new landfill siting project for the City of Gering, Nebraska. As the existing City of Gering Landfill was reaching capacity, a new landfill site was necessary for regional waste disposal. The City selected a site and retained SCS to provide feedback as well as a logical plan forward to evaluate critical criteria such as fatal flaws, geology, design criteria, and local approvals. Ms. Welch worked with the project team to look beyond existing property issues into long-term development challenges for the project.

TJD Consulting Landfill, Ft. Berthold Indian Reservation, North Dakota: Ms. Welch provided Project Management and overall technical direction for this special waste landfill expansion located on the Ft. Berthold Indian Reservation. The previous design for the site included individual disposal pits with no leachate extraction capabilities. Several 10,000-yard disposal pits were permitted on the site. The overall result was an inefficient means to handle large volumes of oilfield drilling wastes. SCS evaluated the site and developed a new conceptual design taking the facility from a disposal capacity of approximately 300,000 cubic yards to over 2,000,000 cubic yards in approximately double the acreage. The significant increase in volume was due to the utilization of existing site features and increasing the depth of excavation. Following preliminary approval of the conceptual design by the Three Affiliated Tribes (TAT) Environmental Department, a resolution was passed to

prohibit the long-term disposal of any waste on reservation land. The project then morphed into closure of the existing landfill. Special considerations during closure design included minimizing additional site work while encapsulating the waste in an environmentally sound manner.

Central Missouri Landfill, Sedalia, Missouri – Waste Corporation of Missouri, Inc.: During her career, Ms. Welch worked on various aspects of this landfill including groundwater monitoring field work, statistical analysis, and reporting; design and permitting for Vertical and Horizontal Expansions; transfer station design and permitting; and volume calculations. Specific tasks included base and final grade design, leachate recirculation system design, and a complex storm water management system. One critical aspect of management of this project was coordination of compliance monitoring efforts through a change in ownership, re-location of a major power line, and additional property purchase for borrow soil. Ms. Welch provided on-going planning assistance to the facility with regard to soil usage, airspace needed and consumed, construction planning, and budgeting.

Oak Grove Landfill, Arcadia, Kansas – Waste Corporation of Kansas, Inc.: Ms. Welch performed various tasks for this sanitary landfill site over many years including construction oversight of 4.2-acre and 6-acre landfill cells, design of an underdrain system, and re-design of an 11-acre portion of the facility. Detection groundwater monitoring and reporting were also critical issues. Ms. Welch oversaw a preliminary investigation into groundwater quality upgradient and downgradient of the landfill facility. Volatile organic compounds detected in the groundwater were found to be from a source introduced during sampling procedures. The results of this investigation are believed to have saved the facility nearly $100,000. Ms. Welch coordinated preliminary efforts for a horizontal expansion at the facility, including preliminary hydrogeologic review, wetlands delineation, stream classification and characterization, and identification of all government agencies potentially involved in the permitting process for this complex and unique expansion project. Ms. Welch managed the design of an NSPS compliant gas extraction system and assisted the facility with evaluations of landfill gas to energy sale options during the course of 2006 and 2007. In 2008, Ms. Welch oversaw a permit modification for the facility that allowed them to place Subtitle D equivalent liner on top of old, decomposed construction and demolition waste. The movement of the landfill into this particular area was critical to the future expansion and functionality of the landfill gas extraction system.

City of Salina Municipal Solid Waste Landfill Facility, Salina, Kansas: Ms. Welch was the Senior Project Manager for this Midwest landfill. Over a 5-year period, Ms. Welch was responsible for the overall completion of many projects, the more complex of which included cell design and construction, a groundwater plume investigation, and development of a site-wide Master Plan evaluating over 500 acres of the property. The Master Plan included a highly technical and complex gravity system for management of leachate generated in the landfill. Implementation of this system has eliminated the need for electric submersible pumps and electric line installation across the very large site. By relocating several of the landfill cells, the site is able to maximize volume provided per constructed liner acre, supplying the City and its citizens an extremely valuable resource for many years in the future.

BRADKEN Industrial Landfill, Atchison, Kansas – BRADKEN, Inc.: Ms. Welch is the Project Manager for this foundry by-products industrial waste landfill in Atchison, Kansas. Project work includes annual groundwater monitoring; waste characterization; and amendments to the permit and operations plan to gain compliance with current regulations. In order to assist the facility with long-term planning, Ms. Welch managed a thorough evaluation of the facility's airspace use, footprint, and remaining capacity compared to the permit obtained in 1985. At the conclusion of the evaluation, the facility decided to explore a horizontal and/or vertical expansion. A permit for a vertical and horizontal expansion as obtained, providing over 50 years of continued disposal capacity.

Economic Analysis – City of St. Joseph, Missouri: Ms. Welch served as project engineer for an economic analysis to the City in an effort to determine appropriate tipping fee rates at the City's sanitary landfill. The project consisted of evaluating the design and operation of the existing landfill, two closed landfills, and a future disposal site to account for all capital and incurred operating costs from the present through each 20-year post-closure period. The model was run to produce landfill tipping fees and required funding scenarios for three separate waste flows. During the modeling process, current operations and management techniques were evaluated and recommendations were made to the City in an effort to increase efficiencies.

Southeast Landfill, Kansas City, Missouri – Republic Services, Inc.: Components of this project involve compliance monitoring for storm water, gas, and leachate. Ms. Welch has also been responsible for a landfill gas migration investigation and seep remediation at the landfill. During an inspection by the City of Kansas City, Missouri, a number of abandoned 55-gallon drums and 300-gallon totes were found on the property. The City required testing and appropriate disposal of the items. Ms. Welch coordinated the effort with a local hazardous material management company and had all materials properly tested and disposed within the requirements set forth by the City. Special attention to storm water compliance and final cover maintenance was required due to pending closure status and EPA inspections.

Leaf & Brush Drop-off Facilities – Kansas City, Missouri: Ms. Welch was the engineer for this project which involved planning for a beneficial use of two closed landfill facilities in Kansas City, Missouri. Project specifics involved layout and preliminary design of two leaf and brush drop-off facilities, coordination with state and local government entities for the alternative use of the landfill, and engineering controls to ensure integrity of the closed landfill sites.

Johnson County Landfill – Deffenbaugh Industries, Inc.: Ms. Welch performed field activities at the Johnson County Landfill to verify existing final cover thickness on Phase IV of the landfill. Field activities were performed using direct push technology and saved the client from re-installing portions of the final cover. Ms. Welch was also responsible for developing the NSPS Plan for this site in accordance with NSPS and state guidelines.

Hamm Sanitary Landfill – Perry, Kansas: Ms. Welch served as the project manager responsible for redesign services at this large sanitary landfill in Kansas. The project included a cap redesign for increased airspace usage and modifications to the storm water control system. One additional project included the design and construction oversight of an alternative final cover for this large facility. The final design consisted of 5.5 feet of soil material in place of the standard geomembrane and compacted clay cover.

Sibley Fly Ash Landfill, Sibley, Missouri – Aquila, Inc.: Ms. Welch served as project engineer for the Phase V Fly Ash Landfill construction project at this site. Responsibilities included preparation of plans and specifications for the fly ash pond clean-out and landfilling project; bid coordination and oversight; construction management and oversight; and final cap construction quality assurance. It was apparent at the conclusion of Phase V that the landfill was nearing full design capacity and additional space was needed. Therefore, following completion of the Phase V project, Ms. Welch assisted Aquila in selecting the location for a new fly ash landfill. Two sites were evaluated; Ms. Welch coordinated with the MDNR-DGLS to complete the Preliminary Site Investigation (PSI) for both sites. Conceptual design and volume estimates were completed, and a recommendation to the most beneficial site was made to Aquila.

Underground Landfill Evaluation, Lee's Summit, Missouri – Private Client: Ms. Welch worked with this private citizen to evaluate the potential for filling an underground mine in the Lee's Summit area with waste products. The intention was to allow construction above the mined area to progress, while offsetting the cost of filling the mine by accepting waste for a fee. Mine reclamation, solid

waste, and water pollution regulations were reviewed in order to make a sound recommendation to the client regarding the feasibility of this project.

Sanitary Landfill – Coffey County, Kansas: Ms. Welch served as project manager and engineer for many design and monitoring projects at this site. Site improvements includes an alternative earthen final cover (design, permitting, and construction), a construction and demolition landfill (design, permitting, and construction), and storm water management system improvements. Ms. Welch also oversaw compliance monitoring efforts (groundwater, leachate, and gas) at the site and assisted with regulatory requirements when necessary. When leachate generation rates became significant at the facility, Ms. Welch evaluated various leachate management alternatives including: evaporation lagoons, deep well disposal, wetland treatment, packaged treatment system, and continued disposal at the treatment plant.

Private Landfill, Topeka, Kansas – Confidential Client: Ms. Welch completed the design of an alternative final cover for this Subtitle D landfill facility located north of Topeka, Kansas. As part of this project, Ms. Welch oversaw site-specific soil testing, numeric computer modeling, and design report preparation. Once the design is approved by the state agency, a Construction Quality Assurance Report and Closure/Post-Closure Plan will be completed.

City of Columbia Sanitary Landfill, Columbia, Missouri: Ms. Welch is currently the Project Manager for the compliance work being completed at the City of Columbia's Sanitary Landfill. This work includes overseeing their groundwater assessment monitoring program, leachate, and storm water compliance. Ms. Welch also completed a Vertical Expansion for the facility in 2001. Ms. Welch led the update to the facility's groundwater program, which included revisions to the Groundwater Monitoring Plan, development of Groundwater Protection Standards, installation of low-flow pumps, and leachate/groundwater/landfill gas comparisons.

Prairie View Regional Waste Facility, Lamar, Missouri – Republic Services, Inc.: Ms. Welch assisted this facility in a number of engineering related projects, including plans and specification preparation for new cell construction and sediment pond construction; a small-scale feasibility study to evaluate the potential for landfill gas utilization; volume calculations, and a force main design to transport leachate from the landfill directly to the sanitary sewer. Ms. Welch also served as the Project Manger to obtain Nationwide 404 Permits from the US Army Corps of Engineers for three road crossings.

Bluff Road Sanitary Landfill – City of Lincoln, Nebraska: Ms. Welch served as project engineer for the groundwater monitoring program at the City of Lincoln Landfill. These activities included scheduling field activities, ordering bottles for groundwater, leachate and storm water sampling, statistical analysis, report and conclusion preparation and electronic file formatting as required by the City. Compliance reporting at this site included groundwater, leachate, and storm water.

Private Landfill, Kansas – Private Client: Ms. Welch served as Senior Project Manager during the completion of a Storm Water Pollution Prevention Plan (SWPPP) for this sanitary landfill. Development of the SWPPP was required by the General Permit for Industrial Activities issued by the Kansas Department of Health and Environment in September 2006. The SWPPP included an evaluation of significant exposed materials likely to impact storm water discharges, as well as an evaluation of and recommendations for best management practices to be utilized at the facility.

Private Landfill, Kansas – Private Client: Ms. Welch served as the project coordinator for the successful completion of the groundwater monitoring program for this closed landfill facility. Activities completed at the site included communication with the regulatory authority, completion

and submittal of groundwater monitoring reports, and modifications to the monitoring program based on an evaluation of historical results.

Private Landfill, Nebraska – Private Client: Ms. Welch has completed groundwater monitoring reporting for several years for this now-closed landfill facility. The groundwater program included sampling and reporting for both a shallow and deep groundwater zone on a semiannual basis. As part of the report preparation, statistical analysis is completed, with updates to the background time frame occurring on an annual basis.

An Alternative Source Demonstration (ASD) was completed for the facility to evaluate elevated levels of certain inorganic constituents. Results of the ASD indicated that, while no specific and identifiable source of the increasing constituents was found, it was unlikely that the landfill was the source of the increasing concentrations. The state regulatory agency accepted the ASD and the site was not required to enter into assessment monitoring.

Private Landfill, Nebraska – Private Client: Ms. Welch served as the project engineer during an evaluation of the alternative final cover for this facility. Ms. Welch was requested to review the previously-designed cover plan for consistency with other alternative covers used in the Midwest. Ms. Welch's experience with permitting this cover type in other states provided the ideal backdrop for comparison of this facility's cover design.

Private Landfill, Missouri – Private Client: Ms. Welch served as the project coordinator for groundwater activities at this closed pre-Subtitle D landfill facility. Activities completed on a semiannual basis include sampling, reporting, and statistical analysis. Over the years, various levels of groundwater evaluation were completed, including geochemical comparisons and a modification to monitoring program to allow a change in gradient designation of several wells.

Private Landfill, Missouri – Private Client: Ms. Welch served as the project coordinator for groundwater activities at this closed pre-Subtitle D landfill facility. Activities completed on a semiannual basis included groundwater data evaluation, reporting and statistical analysis. Geochemical comparisons between leachate and groundwater were completed on an annual basis for internal use only.

Private Landfill, Missouri – Private Client: Ms. Welch served as the project coordinator for groundwater activities at these two closed pre-Subtitle D landfill facilities. Activities completed at this site included general activities such as data review, statistical analysis, and report preparation. At other times, more in-depth evaluations were necessary to evaluate potential impacts of landfill gas on groundwater samples, field sampling procedures, and split sampling results.

Gas

Black Oak RDF, Hartville, Missouri – Waste Corporation of Missouri, Inc.: Ms. Welch was the project engineer for the Tier 2 testing, calculations, and reporting at this facility. Activities included collaboration with field personnel to determine an effective monitoring plan, coordination, and oversight of field personnel, emission calculations using LandGEM, and report preparation.

Due Diligence – Biomass Development, Inc.: Ms. Welch served as project engineer for due diligence investigating and reporting for Biomass Development, Inc. The purpose of this study was to determine economic feasibility of purchasing landfill gas utilization rights based on site-specific factors and tax incentives. The study looked at landfill sites across the Midwest in a variety of climates and stages of life. This project served as a solid base for dealing with landfill gas utilization.

Oak Grove Landfill, Arcadia, Kansas – Waste Corporation of Kansas, Inc.: Ms. Welch served as the Project Manager for the gas collection and control system design for the Oak Grove Landfill. The facility was required to complete this design as a result of their Tier II testing and analysis completed as part of NSPS requirements.

Landfill Gas to Energy Feasibility Study, Salina Municipal Solid Waste Landfill (MSWLF), Salina, Kansas – Ms. Welch oversaw the project team evaluating the feasibility to utilize landfill gas from the Salina MSWLF. The evaluation included estimates of in place waste and current gas production as well as costs for system installation. Technical feasibility was evaluated for 6 different scenarios for landfill gas end-use; options were also evaluated for economic feasibility. Due to the high costs for landfill gas system installation (no system was in place) and the lack of potential carbon credit funding, it was determined that a landfill gas to energy project was not feasible at the time of the report.

Transfer Station

Transfer Station, Lee's Summit, Missouri: Ms. Welch serves as the project director for the design and permitting of a transfer station at the City of Lee's Summit Resource Recovery Park. The transfer station is planned to become operational after the landfill closes. Currently, the transfer station is in the conceptual design phase with submittal of a Special Use Permit planned for 2017. Following approval of the SUP by City Council, SCS will continue to complete permit and design work to obtain a state operating permit. Detailed design features will include architectural, civil, mechanical, and electrical; Ms. Welch is overseeing the multi-disciplinary team to compete this effort.

Transfer Station, Sedalia, Missouri – Wastes Corporation of Missouri, Inc.: Ms. Welch served as the project engineer for the design and permitting of a transfer station in Sedalia, Missouri. Design aspects included transfer station layout, entrance and exit contouring, waste water volume calculations, and pump sizing calculations. Local coordination was required for the above-ground waste water tank.

Transfer Stations and Hauling Companies, Miscellaneous Midwest Locations, Waste Connections, Inc.: Ms. Welch served as Project Manager to coordinate the completion of industrial storm water compliance at various facilities in Kansas, Oklahoma, Nebraska, Iowa, South Dakota, Minnesota, Colorado and Utah. Regulations implemented in Kansas on September 1, 2006 spurred the project, which required submittal of a Notice of Intent to Discharge Industrial Storm Water, as well as the development of a Storm Water Pollution Prevention Plan.

Town & Country Transfer Station, Harrisonville, Missouri – Ms. Welch served as the project manager for several projects at this facility, including upgrades to the road/scale/recycling areas as well as contractual issues related to customer pickups.

Industrial Facility Support

Industrial Facility, Wastewater Discharge Permitting and Compliance, Kansas City, MO: Anastasia has been the project engineer, and subsequently the project manager, responsible for implementation of wastewater permitting compliance for an industrial facility in Kansas City, Missouri. The Industrial Wastewater discharge permit was issued from the City of Kansas City Industrial Waste Control Division and Anastasia has overseen its effective implementation through several iterations of the permit and permit requirements. The initial sampling protocol was to collect one sample per 150,000 gallons discharged, which during some months was equivalent to four samples per month. Anastasia effected a permit modification to change the sampling protocol to

twice per month, and after a time and demonstrated sample results, was able to reduce the sampling frequency to once per month. She conducts annual site permit reviews with Division staff and maintains open communication to resolve questions quickly and effectively.

Industrial Facility, Wastewater Discharge Permitting and Compliance, Lee's Summit, MO: Anastasia has been the project engineer and subsequently project manager, responsible for implementation of wastewater permitting and compliance for an industrial facility in Lee's Summit, Missouri. The facility is permitted through the Little Blue Valley Sewer District and Anastasia has not only ensured the facility is in compliance with regard to sample and reporting requirements, but has also overseen the permitting process as additional discharge locations have been added to the facility. She oversaw the implementation of wastewater flow monitoring, which was complicated due to the low flows observed in site piping combined with the nature of the discharge which can be damaging to submerged flow meters. Implementation of this project has reduced the overall sewer charges paid by the facility due to lower, yet more accurate, flow volumes.

Multiple Locations, Compliance Audits and Permit Applicability; Private Client: Anastasia is the project director in charge of a multi-person team conducting comprehensive multi-media compliance audits at this company's 12 locations. The audit team is typically composted of three individuals who focus on hazardous waste, water, and air compliance. During the week-long on-site audit, the team reviews the operations of the facility, permit documents, and recordkeeping/compliance to identify compliance deficiencies and recommendations for improvement. The findings and recommendations are uploaded into the facility's tracking software so facility staff can address the issues in a timely manner. In addition to auditing the facility for compliance, the team also evaluates the air permits for the facility and determines if they are appropriate based on 1) actual equipment and air emission sources at the facility, 2) emission calculations completed at the time of permit issuance, and 3) changes proposed to the equipment or operation of the facility. Anastasia coordinates between the team and client, prepares audit questionnaires, and identifies compliance related items for the facilities prior to the on-site audit.

Industrial Facility, Private Client, Atchison, KS: Anastasia assists this industrial facility in appropriately managing their potentially hazardous waste streams by directing and overseeing waste characterization activities. A potential violation brought the characterization needs to light and since that time, Anastasia has assisted the facility in characterizing at least 5 different waste streams to ensure their proper disposal.

Storm Water

Industrial Facility, Atchison, KS: Anastasia is leading efforts to complete storm water improvement activities at this industrial facility, which have the potential to impact Waters of the United States (WOTUS). Thorough open communication with the Corps of Engineers and creative specifications for construction activities, the facility will be able to conduct construction under a "no permit required" scenario.

Industrial Facility, Storm Water Permit and Compliance Assistance, St. Louis Metro Area: Anastasia has assisted this industrial facility, which discharges storm water and process water from three separate industries with permit compliance and permit related activities. First, Anastasia helped negotiate through issuance of the new site-specific permit, with special attention paid to chronic vs acute limits from the different storm water sources. Current project work is focused on identifying structural changes that could be implemented at the facility in order to separate the storm water generated by the different processes. If storm water can be separated, permits can be obtained by each of the different industries that are more appropriate for their discharge characteristics.

Industrial Facility, Storm Water Permit and Enforcement Assistance, Columbia, MO: Anastasia assisted this industrial facility navigate through the Administrative Order for Consent issued by EPA for storm water violations. Through the negotiation process, Anastasia was able to assist the facility and legal counsel in reducing the number of violations significantly due to 1) careful review of AOC document and 2) effective communication regarding monthly vs daily limits. Anastasia has continued to support this client through receipt of a new site-specific permit. Currently, she is assisting the site in evaluating BMPs or permit modifications that could be implemented in order to meet new limits contained in the permit.

Storm Water Compliance and Permitting Assistance, Lee's Summit Municipal Airport, Lee's Summit, MO: Anastasia has completed compliance and permitting activities at this facility since 2007, including traditional sampling, monitoring, and reporting, as well as responding to storm water results in excess of permitted limits. Exceedance response activities included site reconnaissance, evaluation and implementation of best management practices, and ultimately a permit modification to remove two outfalls from the permit which were not associated with industrial activities at the site. Anastasia continues to oversee project work as a project director through on-going construction at the facility and implementation and updates to the facility SWPPP document.

Publications

Marc J. Rogoff, Ph.D., William E. Bensing and Anastasia Welch, P.E., "*Developing a Master Plan for the City of Kirkwood, MO",* (Waste Advantage, March 2017).

Anastasia J. Welch, PE, Michael S. Kukuk, PG, Nathan A. Hamm, PE, and Susan L. McCart, PE, PG, *"Alternative Earthen Final Covers For Landfills – The Midwest Experience"* (Global Waste Management Symposium, September 2008)

Michael S. Kukuk, PG, Nathan A. Hamm, PE, Susan L. McCart, PE, PG, Anastasia J. Welch, PE, and Mark Witt, *"Evapotranspiration Final Covers: The Kansas Experience – From Concept To Reality"* (Landfill Symposium, June 2007).

John Bowders, Nick Roth, Erik Loehr, Mark Russell, Ana Klouzek and Malek Bouazz, "*Municipal Solid Waste Settlement"* (Missouri Waste Control Coalition Conference, July 2001).

Presentations

Olathe, KS: Systematic Pathways to a Sustainable Waste Business, 2018 Kansas SWANA – Kansas Solid Waste Management Conference & Operators Training Course, October 2018.

After Post-Closure Care: What Comes Next?, MWCC Environmental Conference, July 2016.

Got Gas? Not Anymore! Lee's Summit's Active Gas Extraction Trench, MWCC Environmental Conference, June 2011.

Plot Plans and Master Plans - Planning Ahead, SWANA/KDHE Solid Waste Managers and Operators Training Course, November 2009.

Landfill Gas Migration - Where Do We Go From Here? MWCC Environmental Conference, June 2009.

Alternative Earthen Final Covers For Landfills - The Midwest Experience, Global Waste Management Symposium, September 2008.

Landfill Groundwater Monitoring – What is the Data Telling You? Nebraska SWANA Cornhusker Chapter Fall Tours & Technical Conference, August 2008.

Implementing BMPs at Landfill Facilities, MSWLF, SAL, & C&D Landfill Operators Training Course, November 2007.

Industrial Storm Water Regulations at Your Landfill, Kansas Landfill Association Conference, September 2007.

Liquids in a Landfill? Yes, The Solidification Process, Illinois Recycling and Solid Waste Conference, June 2007.

Landfills as Bioreactors: A Short Course to Success, Oklahoma SWANA Spring Symposium, March 2007.

Liquids in a Landfill? The Solidification Process, Missouri Waste Control Coalition Conference, June 2006.

Alternative Covers For Waste Disposal Facilities, University of Missouri – MU College of Engineering Geotech Series, November 2005.

It Was the Glove that Did It…Unusual Sources of Groundwater Contamination, Missouri Waste Control Coalition Conference, June 2005.

The Naked Truth about Landfill Gas and Groundwater, Missouri Waste Control Coalition Conference, June 2003.