

JACOB W. SHEPHERD, P.E.

## Education

MS – Environmental Science and Engineering, Virginia Tech, December 2011

BS – Environmental Science, University of Mary Washington, May 2010

## Professional Licenses

Professional Engineer – Virginia and Maryland

## Professional Affiliations

Legislative Liaison – Mid-Atlantic Chapter – Solid Waste Association of North America

## Professional Experience

As a Senior Project Professional, Jacob Shepherd is responsible for air compliance and landfill gas engineering throughout the mid-Atlantic. Since starting with SCS in 2012, Mr. Shepherd's projects have included environmental engineering, air compliance, renewable energy, landfill and landfill gas engineering, and environmental services. As the legislative liaison for SWANA Mid-Atlantic, he is a regional expert in air permitting and compliance in Maryland, Pennsylvania, and Virginia, including federal Clean Air Act programs (NSPS, NESHAP, PSD, and NSR), RICE engine programs, and state regulatory programs.

Facilities have included landfills ranging from low-capacity rural landfills to large full-scale resource management facilities, renewable energy facilities, and commercial facilities. Specific experience covers design of landfill gas systems, design and maintenance of landfill management systems, permitting of various air emission sources, and data analysis. He also has experience in monitoring and testing of landfills, operations of landfill gas collection and control systems, monitoring of perimeter probe networks, and monitoring of groundwater and surface water. Notable projects include:

### **Pennsylvania**

**Republic Services Modern Landfill, York, PA** – Supported air permitting for the renewal of the facility Title V air permit and an Air Plan Approval for construction of a new utility flare, including calculating potential emissions, completing the required forms, determining the applicability of combustion devices to NESHAP RICE requirements, and coordinating with PADEP. Completed and submitted Title V compliance and AIMS emissions reporting, including compiling and analyzing flare and site testing data. Developed a facility site plan to update GCCS piping layout and conducted a hydraulic analysis of the current GCCS to locate low-functioning header pipes to be replaced.

**IESI Blue Ridge Landfill, Chambersburg, PA** – Prepared an application to renew the facility Title V Operating Permit, including performing calculations and completing application forms. Gathered and analyzed site data and prepared Title V compliance reports, including semi-annual compliance and operating reports and annual compliance and emissions reporting. Compiled LFG flow data and available testing results to complete and submit the AIMS emissions reporting. Prepared a Startup, Shutdown, Malfunction (SSM) plan for NESHAP compliance.

**IESI Bethlehem Landfill, Bethlehem, PA** – Analyzed site data and prepared Title V and NSPS-MACT semi-annual and annual compliance reports to submit to PADEP. Completed a request for determination (RFD) application for a landfill odor-control system and submitted to PADEP.

**PPL Renewable Energy Cumberland Landfill, Shippensburg, PA** – Completed Title V renewal application for a four-engine renewable energy plant utilizing four LFG-fired CAT 3520 engines for the production of electricity, including interfacing with clients and regulators, performing emission calculations, and completing renewal application forms.

**Waste Management Grand Central Sanitary Landfill, Pen Argyl, PA** – Acted as project manager, supervising various reporting of emissions and CAA compliance. Completed various monthly, annual, and quarterly LFGE and Title V air compliance and AIMS emissions reporting. Coordinated with the PADEP Stack Testing Group to achieve approval of flare stack testing results.

**Waste Management Pottstown Landfill, Pottstown, PA** – Prepared and submitted an Air Plan Approval application for the construction of a LFG-fired utility flare, including performing calculations, completing the application and all supporting documentation, and coordinating with PADEP. Assisted with the submission of a minor modification to remove LFG control devices from the site.

**Waste Management Dauphin Meadows LF - Millersburg, PA** – Supported air permitting for a new utility flare to be constructed to improve LFG control, including calculating potential emissions and coordinating with PADEP regulators. Completed the renewal for the state operating permit for the landfill.

**Green Gas Pioneer Crossing Landfill, Birdsboro, PA** – Prepared an Air Plan Approval to construct a new utility flare improve LFG control, including calculating potential emissions and completing forms. Prepared Title V compliance reports, including emissions reports and semiannual and annual NSPS reports.

**McKean County Landfill, Kane, PA** – Completed compliance reporting for the wellfield and LFGE project, including emissions reports and semiannual and annual NSPS reports, and compiled and analyzed LFG flow data.

## **Maryland**

**Waste Management Mountainview Landfill, Frostburg, MD** – Prepared a renewal of the facility Title V (Part 70) Operating Permit, including gathering site information, completion of MDE permit forms, and preparing an application package to submit to MDE. Prepared Title V compliance reports, including semiannual and annual monitoring reports and annual emissions reports. Prepared annual NMOC emissions reports to demonstrate emissions below the NSPS threshold.

**Anne Arundel County Millersville Landfill, Millersville, MD** – Acted as project manager for air compliance and reporting projects. Prepared and submitted a renewal application for the site Title V (Part 70) Operating Permit. Provided compliance reporting services, including NSPS reports, Title V reports, and GHG reporting. Analyzed the NESHAP compliance requirements and conducted a facility audit for the LFGE facility utilizing 2 LFG-fired RIC engines. Tested site LFG for feasibility for a compressed natural gas (CNG) refueling station for the waste management fleet and shipped samples to the laboratory as “dangerous goods.”

**Montgomery County Gude Landfill, Rockville, MD** – Compiled wellfield monitoring data and LFGE plant data and completed Title V compliance reports, emissions reporting, GHG emission reports, and monthly O+M reporting. Provided support for the operations of a one-engine renewable energy

plant, including monitoring engine data, compiling data, performing emissions and flow calculations, and completing reporting for utility compliance, Title V, and GHG compliance. Provided O+M support and assistance and provided QA during extraction well installation.

**Alpha Ridge Landfill, Marriottsville, MD** – Tested site LFG using EPA Tier 2 procedures, shipped samples to an environmental laboratory, and completed the associated reporting.

**Brown Station Road Landfill, Upper Marlboro, MD** – Compiled chart recorder data and applicable analyses and wrote and submitted compliance reports for GHG reporting and Title V reporting. Managed flare and wellfield operations in support of field staff and monitored gas quality in LFG extraction wells.

**Sandy Hill Creative Disposal Project, Bowie, MD** – Supported compliance reporting including Title V reports, GHG reporting and MDE-required reporting. Monitored the leachate collection network to verify proper operation of liquid management system. Compiled the liquid extraction and hauling data monthly to determine monthly volumes handled by the system. Conducted monitoring and testing from the gas extraction system including extraction wells and header collection piping.

**Montgomery County Oaks Landfill, Laytonsville, MD** – Compiled and analyzed laboratory and flow data and completed reporting for Title V and GHG compliance. Provided O+M support and assistance, supported LFGE, tested vacuum and efficiency of extraction wells, and monitored gas quality in extraction wells. Provided support for the operations of the two-engine renewable energy plant, including monitoring engine data, compiling data, performing emissions and flow calculations, and completing reporting for utility compliance, Title V, and GHG compliance.

**Bush Valley Landfill, Abingdon, MD** – Tested and monitored site LFG for EPA CERCLA compliance, compiled data and performed trend and statistical analyses, and completed associated reporting to submit to EPA.

**Loyola University, Baltimore, MD** – Installed LFG monitoring probes and conducted regular monitoring using a GEM 2000 portable gas analyzer.

**Spencers Rubble Landfill, Abingdon, MD** – Conducted monitoring of LFG perimeter monitoring probes and compiled results of monitoring.

## **Virginia**

**Augusta Regional Landfill, Staunton, VA** – Conducted various permitting activities to include landfill expansions, Title V permit applications, New Source Review (NSR) permit applications, and permitting for new sources at the landfill. Evaluated the applicability of new NSPS/EG regulatory requirements to the landfill and submitted the required information and reports to VDEQ and EPA.

**Page County Battle Creek Landfill, Luray, VA** – Prepared and completed various air permit applications, including landfill expansion permitting, Title V permit applications NSR permit applications, and permitting for new sources at the landfill. Evaluated the applicability of new NSPS/EG regulatory requirements to the landfill and submitted the required information and reports to VDEQ and EPA.

**Rockingham County Landfill, Harrisonburg, VA** – Supported compliance reporting for Title V, including emissions reports, annual reports, semi-annual reports, and GHG emissions reports. Conducted Tier 2 sampling to determine site-specific NMOC concentration and allow the facility to remain under the NSPS emission limits. Assisted with the preparation and implementation of remedial actions to

mitigate LFG found in boundary monitoring probes and worked with VDEQ to obtain approval. Prepared and submitted an air permitting application for a landfill expansion. Evaluated the applicability of new NSPS/EG regulatory requirements to the landfill and submitted the required information and reports to VDEQ and EPA. Analyzed current gas extraction system and designed new extraction wells and piping for a system expansion.

**Shenandoah County Landfill, Edinburg, VA** – Supported Title V permitting renewals, tested site and assisted with Title V and GHG reporting. Tested site LFG using Tier 2 procedures, calculated NMOC emissions, and submitted the report of testing results. Prepared and implemented remedial actions to mitigate methane migration discovered in landfill boundary monitoring probes. Analyzed current gas extraction system and designed new extraction wells and piping for a system expansion.

**Frederick County Landfill, Winchester, VA** – Completed Title V permitting renewals and assisted with Title V and GHG reporting.

**Fairfax County I-95 Landfill, Lorton, VA** – Worked as part of a team to investigate the leachate collection network of pump stations and piping and perform a hydraulic analyses to identify problem areas in the network. Supported the development of documents to compile current leachate management network information, identify potential problem areas in the network, and present solutions to site-specific issues. Compiled liquid levels in landfill extraction wells, used Civil 3D to create graphical representations based on the field data, and used available data to determine optimum locations for new extraction wells. Designed/drafted a new header system, new lateral piping, and new extraction wells to improve gas collection and eliminate problem areas in the current collection system. Conducted a hydraulic analysis of the proposed GCCS layout using KY Pipe to identify areas of high head loss and high fluid velocity. As part of a team, designed and drafted a new blower/flare station to tie into new designed header, laterals, and wellfield.

**Hilltop Landfill, Lorton, VA** – Designed a new phase of the gas collection and control system including drafting using AutoCAD and determining optimal extraction well coverage and spacing. Supervised monitoring well installation and construction for methane monitoring network installed adjacent to the landfill.

### **Other Locations**

**Durham School Services, Multiple Locations, CT-MA-RI** – Used GIS, mapping, and census data to create site plans using AutoCAD for multiple bus depots for use in stormwater pollution prevention plans and spill prevention, control, and countermeasure plans.