Christopher M. Seigel, P.E.

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Objective – Seeking to continue my career and professional development in a Water/Wastewater Engineering capacity.

Professional Experience:

Sci-Tek Consultants, Inc. - *Civil Engineer* – H&H Modeling - February 2015 to present

1. Prime consultant to the Philadelphia Water Department (PWD) Office of Watersheds (OOW) and sub-consultant to CDM Smith. On-site consultant within PWD's Hydraulic and Hydrologic Modeling group within the Office of Watersheds, supporting Philadelphia's *Green City, Clean Waters* program.
    a. The Green City, Clean Waters program aims to provide the maximum return in environmental, economic, and social benefits, while helping the City to meet the regulatory obligations of the Clean Water Act.
    b. The H&H Modeling group assists in regulatory compliance by quantifying the impact of green and grey projects to ensure that compliance targets are reached. They also serve as a support group to other units in PWD by assisting in a variety of tasks (Sewer capacity analyses, flow monitor/rain gage data sharing, etc).
2. Consultant to PWD Planning and Research Unit – Linear Asset Management Planning (LAMP) contract.
    a. Small Sewer Hydraulic Analysis Task – Consultant Task Lead – January 2020 to present.

Responsibilities for both contracts detailed below:

- *LAMP contract – Small Sewer Hydraulic Analysis Task*
    - Perform drainage area delineations and wet weather capacity fraction assessments on combined sewers 36" or smaller using Arc GIS and python scripts.
    - Responsible for interacting with client's project management staff and coordinating with other consultant staff members to ensure that monthly targets were delivered to client.
- *H/H Modeling Group - Hydrologic/Hydraulic Modeling*
    - Performing calibration and validation of hydrologic model subcatchments using EPA SWMM5.
    - Developing model time patterns to simulate and calibrate hydraulic effects of non-hydrologic discharge impacts to collection system, such as Water Treatment Plant backwash.
    - Suggesting updates to hydraulic model regulator invert elevations by comparing existing model inputs with design drawings, return plans, and field survey measurements performed on the city's wastewater collection system.
    - Comparing model performance between different versions of SWMM and SSOAP.
- *H/H Modeling Group - Design Support*
    - Analyzing flow monitor data, running models, and evaluating outputs to answer wastewater collection system design/capacity questions or discharge requests from the client/other groups.
    - Performing post-storm analyses to quantify and record the magnitude and recurrence intervals of wet-weather events that impact the city and outlying communities.
- *H/H Modeling Group - Model Data: Pre and Post-Processing*
    - Quantifying rainfall derived inflow/infiltration (RDII) entering the city's sewer system by performing flow separation and wet weather response analyses/R value generation using EPA program SSOAP.
    - Delineating model subcatchments in GIS based upon installation of temporary sewer flow monitors.
    - Performing field work to survey & gather GPS elevations of manhole rims and regulating chambers, and measure physical dimensions of wastewater collection components for model validation.
- *H/H Modeling Group - Database management*
    - Performing QAQC on model input data, including data from rain gages & NEXRAD, temporary flow monitors, water pollution control plants, NOAA tidal stations, PHL climatological reports.
    - Writing and editing queries in Microsoft Access and R to manipulate database information, and to understand trends in collected data over time.
- *H/H Modeling Group - Client Communication and Leadership*
    - Developing plots/info graphics based on model outputs to communicate model results to the client.
    - Reviewed PWD's regulatory documentation to aggregate comprehensive list of proposed projects.
    - Presenting at informal "tech talks" to describe H&H Modeling group's work to other groups.
    - Coordinating with off-site personnel to supply, QA, and troubleshoot model calibration data.
    - Reviewing technical memos and conference reports for others, editing and providing feedback.
    - Providing training to new group members, interviewing, selecting, and managing client's interns.
    - Developing procedural documentation for new/updated tasks.

- **Software Experience** - SWMM5, SSOAP, ArcGIS, R, MS Access, AutoCAD, HEC-HMS, HEC-RAS, WMS

Previous Work Experience:

- **Rowan University -** *Teaching Fellow*-July 2013 to December 2014
  - Fully-funded assistantship. Responsible for teaching laboratory sections of Fluid Mechanics and Water Resources Engineering to undergraduate juniors. Work included preparing/conducting lab experiments, reviewing engineering concepts with the classes, and reviewing and grading students' lab reports.
- **Earth Engineering Incorporated**- *Project Geologist Intern* - May 2012 to August 2012
  - Provided geotechnical engineering inspection services at construction sites in NJ and PA. Responsibilities included performing on-site soil analyses for compaction, Nuclear Density Testing, soil exchanges, and undercutting, and documenting work by writing daily field reports. Additional experience inspecting concrete and rebar.

Graduate Research:

Hydrologic modeling of the Maurice River watershed in South Jersey in order to determine three objectives: (1) to validate that NEXRAD radar rainfall data can be effectively utilized in this region, (2) to better understand the role that spatial variability and scaling plays when utilizing NEXRAD data within a hydrologic model, and (3) to determine the possible effects of urbanization on runoff and stream behavior within this watershed.

Relevant Undergraduate Research/Projects:

- River hydraulics modeling using Arc GIS, HEC-RAS, HEC-Geo RAS to determine habitat quality for an endangered species. Work included drawing cross sections on a TIN of each reach in GIS, refining each cross section with field data in HEC-RAS, then running various flows through the HEC-RAS model and analyzing results.
- Energy audits on a residential home, nursing home, and armory to determine current energy usage and propose options to reduce utility costs and carbon footprint. This included analyzing each facility to determine the effectiveness and suitability of installing a photovoltaic system.
- Studying water samples to determine water quality from various parameters such as Total Solids, Total Organic Content, and Bacterial Count.

Education:

- MS Civil Engineering (May 2015) – Rowan University, Glassboro, NJ (GPA 3.91)
- BS Civil Engineering (May 2013) - Rowan University, Glassboro, NJ

Licensure:

- Professional Engineer - NJ State Board of Professional Engineers and Land Surveyors
  - Water Resources and Environmental Exam

Volunteer Activities:

- Volunteer group leader at local client and community environmental clean-up events hosted by entities such as the Philadelphia Water Department and United by Blue.