PATRICK O'SHEA, E.I.

Geospatial & Water Resources Specialist

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CAREER SUMMARY

Over the past four years, I have applied my geospatial training and domain knowledge in hydrology/earth sciences to water resource engineering. An unconventional engineer, I have brought a creative and fresh perspective to water resource problem-solving that has enabled clients successful outcomes. I find working with and deriving insights from spatial data to be the most exciting aspect of my work, and enjoy exploring the most effective ways to visually communicate those insights. I am now looking to pivot my career to a role that utilizes my geospatial skills to help solve the current issues in the water resources space.

FORMAL EDUCATION

M.S. Spatial Data Science/ Pennsylvania State University   *May 2023 - May 2025*
Relevant Coursework: GIS Programming and Software Development, Web Application Development, Advanced Python Programming for GIS, Cartography and Visualization, Open Web Mapping, Geospatial Information Analysis

M.S. Hydrology/ Colorado School of Mines   *December 2018*
Relevant Coursework: Applied Geographic Information Systems, Watershed Systems Modeling, Integrated Surface Water Hydrology

M.S. Geosciences/Scripps Institution of Oceanography   *May 2016*
Relevant Coursework: Intro to Computing

B.S. Double Major in Geography and Geology, Mathematics Minor/ University of Miami   *May 2015*
Geography Departmental Honors, GIS Certificate
Relevant Coursework: Introductory and intermediate GIS, Cartography, Remote Sensing of the Environment, Special Study in Geography

ADDITIONAL CERTIFICATIONS

Engineering Intern: Colorado, Certification number EI.0077541   *Active Jan 2021 - Present*
FAA Licensed Drone Pilot, Certification number 4774082   *Active Jan 2023 - Present*

SKILLS & PROFICIENCIES

Spatial Analysis – Data Management – Project Management – Publication & Report Writing – Collaboration – Data Visualization – Data Automation and Preparation – Spatial Statistics – Spatial Modeling – Remote Sensing – Drone Piloting – Cartography

ArcGIS Pro – ArcGIS Online – ArcMap 10.X – QGIS/GDAL – Leaflet – R – Python – Google Earth Engine – HTML – Java Scipt – CSS – Git – HEC-RAS – HEC-HMS – PCSWMM – HY-8 – ArcHydro

PROFESSIONAL EXPERIENCE

Student Contractor: Geospatial Web Developer   *May 2024 - Present*
USGS Web Informatics and Mapping Group (WIM) / Remote
- Added and improved functionalities within the StreamStats web application
- Expanded the SPARROW nutrient web application for Tennessee
- Creating a floodplain library near Midland, Michigan for the Flood Inundation Mapper web app

DEVELOP Participant: NASA DEVELOP Program *August 2024 - November 2024*
LaRC / Remote
- Worked with Sentinel and Landsat imagery to resolve flooding extents
- Produced a 2-D hydraulic model of flooding events along the Maipo River
- Assisted in research efforts and producing our team's poster and technical report

Scientist *June 2023 - April 2024*
Hazen and Sawyer, Inc. / Cleveland, Ohio
- Added new water infrastructure GIS data and created maps for the City of Cincinnati
- Created custom python scripts for performing geospatial workflows.
- Created a story map to help the City of Hamilton plan building out their water infrastructure

Water Resource Engineer *October 2022 - February 2023*
Bridge & Stream Engineering / Remote
- Utilized publicly available geospatial data to construct 2-D hydraulic models in HEC-RAS.
- Used Esri Suite to process geospatial data (i.e. soils data, land cover data, terrain data, etc.) for incorporation into hydraulic models, hydrologic models, and design drawings.
- Created workmaps and figures for incorporation into reports for clients.
- Gathered and georectified field data for integration into models and design drawings.

Water Resource Design Engineer II *February 2021– September 2022*
Water Resources Designer *September 2019 – February 2021*
Galloway & Company, Inc. / Johnstown, Colorado
- Developed GIS standard operating procedures for the water resources team and produced various GIS derived deliverables both within the team and within the company in general.
- Utilized publicly available geospatial data to construct 1-D and 2-D hydraulic models in HEC-RAS.
- Delineated subbasins to define basin parameters for EPA SWMM hydrologic models.
- Constructed complex workmaps showing modifications to FEMA floodplains.

Engineering Technician *January 2019– September 2019*
City of Greeley / Greeley, Colorado
- Reviewed and provided comments on low to moderately complex civil engineering projects within the City of Greeley.
- Conducted site visits to certify the grades of new residential developments, and met with contractors regarding properties.
- Researched, tracked, and followed up on outstanding development agreements the city entered into.

Hydrology Pathways Intern *August 2017– December 2018*
USGS Colorado Water Science Center / Lakewood, Colorado
- Created a 3-D lithologic model to evaluate aquifer storage in the Wet Mountain Valley Aquifer.
- Contributed to the Water, Energy, and Biogeochemical Budgets (WEBB) program by preparing, collecting, and filtering water samples taken from the Loch Vale Watershed in Rocky Mountain National Park.
- Assisted in an array of surface and groundwater projects including the Fountain Creek Watershed Flood and Sediment Transport Study, acid mine drainage in the Sugarloaf Mining District, and NAWQA.

Planetary Geology and Geophysics Undergraduate Research Program *May 2015 – July 2015*
Southwest Research Institute / Boulder, Colorado
- Used Esri Suite to constrain the slope and aspect patterns of selected dune fields on the Martian southern hemisphere.
- Designed a custom methodology, conducted independent research, and communicated my progress at weekly meetings.
- Presented a poster of the project's results at the American Geophysical Union Conference (AGU) 2015.