

# 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 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 Script – 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 in Chile.
- Assisted in research efforts and creating 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 &amp; 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 &amp; 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.