Exponent®
Engineering & Scientific Consulting

Elvin Cordero, GISP, CE, GIT
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Professional Profile

Elvin Cordero, GISP, CE, GIT is a Senior Scientist at Exponent with more than a decade of environmental consulting and applied geoscience experience. He specializes in environmental geology, hydrogeology, geospatial data science, remote sensing, and applied artificial intelligence, integrating multidisciplinary datasets and advanced analytical methods to address complex geological and environmental problems for public- and private-sector clients.

Elvin Cordero specializes in environmental investigations, hydrogeologic characterization, and contaminant transport evaluation. He has managed and supported remedial investigations, feasibility studies, site assessments, long-term monitoring, and compliance projects across CERCLA sites, Brownfield properties, military installations, and transportation, utility, and renewable energy facilities. His field experience spans drilling oversight, soil and bedrock logging, monitoring-well installation, aquifer testing, environmental sampling, soil-vapor investigations, and wetland delineation. He integrates field observations with geophysical, analytical, and spatial data to develop conceptual site models, characterize contaminant plumes, and assess groundwater flow and groundwater–surface water interactions.

His work also combines geospatial analytics, remote sensing, geostatistics, and artificial intelligence to address environmental and natural resource challenges. Applications include climate resilience, flood and tsunami hazards, earthquake risk, habitat mapping, and ecosystem change. He develops machine learning and computer vision workflows for species identification and ecological monitoring, supported by GIS analysis, 3D subsurface modeling, and scientific visualization. Across these efforts, he emphasizes reproducible methods that translate complex datasets into practical information for environmental planning and decision-making.

Academic Credentials & Professional Honors

M.S., Geosciences, Mississippi State University, 2018

M.S., Environmental Science, CUNY College of Staten Island, 2016

B.S., Environmental Science and Ecology, SUNY Plattsburgh, 2015

Licenses and Certifications

40-Hour Hazardous Waste Operation and Emergency Response Certification (HAZWOPER)

8-Hour HAZWOPER Annual Refresher

Certified SDI Open Water Scuba Diver

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Certified Ecologist

FAA Remote Pilot Certificate

Geographic Information Systems Professional

Intern Geologist (NY)

OSHA 30 Hour Outreach Training for the Construction Industry (29 CFR 1926) (MI)

Prior Experience

Project Manager / Senior Geologist, Plexus Scientific Corporation, 2024-2026

Independent Consultant, 2021-2024

Environmental Scientist, TRC, 2019-2021

Military Environmental Analyst, Vermont Army National Guard, 2018-2019

Environmental Scientist II, VHB, 2017-2018

Geologist I, Cascade Drilling, 2016-2017

Professional Affiliations

Ecological Society of America

The Oceanography Society

The Association of Environmental and Engineering Geologists

Sociedad Dominicana de Geología

International Society for Geomorphometry

Languages

Spanish

Publications

Cordero E, Sherman CE, Bayó Torres AD, Raju VK, Yadav P. Automated coral detection and instance segmentation in underwater imagery: evaluating YOLO model performance and transferability to mesophotic coral ecosystems. Journal of Marine Science and Engineering 2026; 14(21):2096.

Cordero E, Harris A. Satellite-based surface water change detection and mesohabitat classification at Big Blue—Kansas Rivers confluence. Ecological Informatics 2026; 99:104110.

Cordero E, Sherman CE, Yadav P, Kumar Raju V, Townsend JE, Courtney TA. Coral intel: a YOLOv8 deep learning framework for monitoring Caribbean corals. Intelligent Marine Technology and Systems 2026; 4:18.

Cordero E, Ruiz Vélez R, Huérfano Moreno V, Sherman C. Enhancing tsunami evacuation strategies in Puerto Rico using open-source least-cost path analysis. Journal of Disaster Science and Management 2025; 1:18.

Published Software

Cordero E. pointcoral: Local Point-Count Processing for Coral Photoquadrats. R package. CRAN; version 0.1.0, 2026.

Cordero E. potentiomap: Build Potentiometric Surfaces and Flow Arrows. R package, CRAN, version 0.2.0, 2026.

Cordero E. evacpath: Least-Cost Pedestrian Evacuation Modeling. R package, CRAN, version 0.2.0, 2026.

Cordero E. blueterra: Process-Oriented Geomorphometry for Submerged Terrain. R package, CRAN, version 0.2.0, 2026.

Cordero E. hydromeso: Classify Fluvial Mesohabitats from Depth and Velocity. R package, CRAN, version 0.1.0, 2026.

Project Experience

Environmental Site Characterization & Remedial Investigation

- Led and supported environmental investigations at CERCLA, Superfund, Brownfield, and military sites involving contaminants in soil, groundwater, soil vapor, indoor air, sediment, and fractured bedrock. Integrated field observations, analytical results, historical records, and geospatial data to support remedial investigations, plume delineation, feasibility evaluations, and site-management decisions.
- Interpreted more than 1,500 historical boring logs for a site-wide remedial investigation at a military installation. Standardized lithologic descriptions, characterized saprolite, partially weathered rock, and fractured bedrock, and developed cross sections and subsurface interpretations to refine the hydrogeologic conceptual site model.
- Evaluated contaminant migration pathways using monitoring-well construction data, groundwater elevations, vertical aquifer profiling results, structural geology, bedrock topography, surface-water features, and wetlands. The analysis supported potentiometric mapping, plume interpretation, and assessment of groundwater–surface water interactions.
- Prepared remedial investigation reports, technical memoranda, GIS exhibits, boring-log summaries, analytical tables, and conceptual site model products for agency and client review.

Drilling Oversight, Field Investigation & Hydrogeology

- Managed and performed drilling oversight for direct-push, hollow-stem auger, geotechnical, monitoring-well, and bedrock-coring programs. Responsibilities included coordinating drill crews, selecting and documenting sampling intervals, logging soil and rock, monitoring field conditions, managing investigation-derived waste, and maintaining compliance with project plans and health and safety requirements.
- Conducted high-resolution groundwater characterization using direct-push vertical profiling equipment. Integrated hydraulic response, lithology, and depth-discrete groundwater samples to

identify permeable intervals and improve vertical delineation of a large dissolved contaminant plume.

- Oversaw monitoring-well installation, development, groundwater-level measurement, and low-flow sampling. Evaluated field stabilization parameters, sample quality, well construction, groundwater elevations, and analytical results to support hydrogeologic interpretation and regulatory reporting.
- Logged bedrock cores and collected depth-discrete samples during an investigation of contaminant migration through fractured rock. Assessed lithology, weathering, recovery, fractures, staining, and other features relevant to preferential transport and matrix diffusion.
- Planned and conducted a 72-hour municipal-well pumping test, including baseline monitoring, step-drawdown testing, constant-rate pumping, observation-well monitoring, and recovery measurements to support evaluation of aquifer response and permitted yield.

Groundwater Monitoring, Remediation & Site Management

- Managed long-term groundwater monitoring and monitored natural attenuation activities across multiple CERCLA sites at a former military installation. Reviewed regulatory decisions, historical investigations, monitoring networks, analytical trends, and existing conceptual site models to define monitoring objectives and data requirements.
- Directed field planning, laboratory coordination, subcontractor scopes, schedules, budgets, data review, and technical reporting for federal environmental projects. Coordinated multidisciplinary input from geology, chemistry, GIS, quality assurance, health and safety, and project controls personnel.
- Supported remediation projects involving in situ groundwater treatment, contaminated-soil excavation, demolition, and monitored natural attenuation. Assessed field and laboratory data to evaluate treatment progress, plume behavior, and compliance with remedial objectives.
- Developed project management plans, contractor quality-control plans, Uniform Federal Policy Quality Assurance Project Plans (UFP-QAPP), work plans, sampling plans, and health and safety documentation in accordance with federal and Department of Defense requirements.
- Provided technical and management oversight for remedial construction at a Superfund site, including quality-control planning, safety coordination, budget tracking, subcontractor management, and communication with agency stakeholders.

Environmental Due Diligence, Compliance & Permitting

- Performed Phase I and Phase II Environmental Site Assessments, environmental condition of property evaluations, and site investigations for military, municipal, institutional, and private-sector clients. Identified recognized environmental conditions and developed recommendations for additional investigation or property management.
- Managed environmental compliance programs for a statewide military organization, including hazardous materials, spill response, clean water, air emissions, aboveground and underground storage tanks, environmental condition of property reviews, and internal performance assessments.
- Directed environmental compliance assessments across multiple facilities, evaluated corrective actions and new regulatory requirements, and incorporated findings into installation action plans.

- Managed storage-tank removal and disposition projects, including contractor coordination, regulatory communication, environmental oversight, and cost control. Projects included underground tanks and a 105,000-gallon aboveground storage tank with associated infrastructure.
- Prepared an air-permit application using facility-specific emissions data for boilers, generators, and coating operations. Coordinated technical documentation needed to demonstrate compliance with state air-quality requirements.
- Provided environmental inspection and construction-monitoring services for utility and infrastructure projects, evaluating erosion and sediment controls, stormwater requirements, permit conditions, and protection of wetlands and other natural resources.

Geospatial Analysis & Environmental Data Interpretation

- Integrated boring logs, well records, environmental chemistry, survey information, topography, wetlands, infrastructure, and historical records into GIS-based environmental databases and conceptual site models. Produced maps and technical exhibits for investigation planning, remedial design, regulatory review, and stakeholder communication.
- Developed geologic cross sections, potentiometric-surface maps, contaminant-distribution maps, groundwater-flow interpretations, excavation plans, and monitoring-network figures for contaminated-site investigations.
- Supported three-dimensional subsurface and contaminant-plume modeling by reviewing and standardizing well locations, lithologic intervals, analytical results, detection limits, qualifiers, and sample depths.
- Designed repeatable methods for comparing groundwater-elevation interpolation approaches and assessing how monitoring-network geometry affects interpreted groundwater-flow directions.
- Created high-resolution maps, infrastructure schematics, flow diagrams, and annotated site plans for multi-installation environmental compliance assessments. These products clarified system configurations, discharge pathways, regulatory applicability, and observed deficiencies.

Federal & Military Environmental Consulting

- Managed multi-site environmental projects for military and federal clients, coordinating technical staff, subcontractors, field schedules, budgets, quality requirements, and agency deliverables.
- Led a six-installation assessment of oil-water separator systems across several states. Integrated facility inspections, infrastructure records, photographs, regulatory requirements, and geospatial documentation into consistent engineering inspection reports that required minimal client revision.
- Evaluated climate, flood, earthquake, tsunami, wildfire, drought, extreme-temperature, and other environmental hazards affecting military installations in the United States and overseas. Translated technical hazard information into installation-level risk assessments and planning products.
- Assessed inundation exposure by overlaying modeled hazard areas with installation boundaries, building footprints, infrastructure, and asset information. Quantified affected acreage, exposed facilities, and estimated replacement values to support resilience investment and mission planning.

- Prepared technical evaluations of hydrologic modeling systems and their potential integration with military geospatial programs, addressing data requirements, model outputs, implementation constraints, and applications to flood-risk assessment.
- Developed installation-level earthquake and tsunami datasets using authoritative seismic, ground-motion, fault, run-up, inundation, and scenario-model sources to support consistent hazard screening across geographically distributed facilities.

Ecological, Coastal & Natural-Resource Consulting

- Managed a benthic macroinvertebrate monitoring study for a federal client, including work planning, field coordination, health and safety requirements, data-quality review, historical comparison, and technical reporting to evaluate aquatic habitat conditions.
- Performed statistical evaluations of long-term vegetation monitoring data at a coastal military installation. Assessed native and non-native vegetation trends, rainfall relationships, and differences among ecological communities to support invasive-species management.
- Evaluated an herbicide trial involving an endangered plant species using repeated-measures statistical methods and sensitivity analyses. The assessment found no significant effect on flowering or seeding outcomes relative to controls.
- Developed an automated bioacoustic assessment for a federally listed amphibian and evaluated changes in vocal activity surrounding aerospace launch events. Results supported environmental consultation and mission-planning decisions.
- Conducted wetland delineation support, GPS mapping, stormwater monitoring, surface-water sampling, and natural-resource assessments for utility, transportation, and development projects.
- Developed habitat and ecological assessments using field observations, remote sensing, terrain data, and statistical analysis for wetlands, rivers, coastal systems, and coral reef environments.

Coastal Hazards & Marine Environmental Assessment

- Developed a tsunami evacuation analysis for 46 coastal municipalities using inundation areas, road networks, topography, and designated safe zones. Identified locations with extended travel times, limited connectivity, and constrained access to safe terrain to support emergency planning.
- Analyzed bathymetric and seafloor-terrain data to evaluate geomorphic controls on mesophotic coral ecosystems. Integrated biological observations with slope, relief, curvature, rugosity, and other terrain characteristics.
- Developed automated methods for identifying and mapping corals in underwater imagery, providing a scalable approach for evaluating reef distribution and condition in difficult-to-access environments.
- Synthesized multibeam and gridded bathymetric datasets for coastal and global mapping applications, including assessment of dataset resolution, coverage, vertical references, and suitability for environmental interpretation.

Additional Education & Training

OSHA 8-Hour HAZWOPER Refresher Training, 2026

RockWorks Training, RockWare, 2025

HAZUS Earthquake/Tsunami Model Training, 2023

HAZUS Data Management Training, 2023

MTA Long Island Rail Road Roadway Protection Training, 2020

OSHA 10-Hour/30-Hour Construction Safety Training, 2018

Vermont Natural Shoreland Erosion Control Certification, 2017

OSHA 40-Hour HAZWOPER Training, 2016

Research Grants

- ORISE Research Fellow, U.S. Army Corps of Engineers, Engineer Research and Development Center - Environmental Laboratory, 2022-2024.
- PIRE Fellow, National Science Foundation Coastal Flood Risk Reduction Program, 2022.
- Graduate Endowment Fellowship, University of Puerto Rico-Mayagüez, 2022.

Peer Reviews

Intelligent Marine Technology & Systems

Natural Hazards Review