

## Research Analyst 2 (Geographic Information Systems)

### *Essential Task Rating Results*

1	Gather and compile geographic data from a variety of sources (e.g., censuses, field observations, satellite imagery, aerial photographs, Global Positioning System [GPS] data, and existing maps).
2	Identify and compile spatially-referenced database information to create maps.
3	Create metadata and support documentation for spatial datasets and work projects.
4	Review and edit attribute and spatial data as required to ensure the most accurate and up-to-date information is available for optimum analyses using Geographical Information Systems (GIS) editing tools and workflows (e.g., merge, create, modify, reshape).
5	Create and modify reports, maps, graphs, or diagrams using geographic information system software, related equipment and principles of cartography.
6	Operate and maintain Geographic Information System (GIS) equipment (e.g., computer hardware, software, plotters, and printers).
7	Design cartographic representations of Geographic Information System (GIS) data to complete mapping tasks in support of departmental needs.
8	Produce custom products (e.g., maps, scripts, tools, models, reports) for geospatial data in accordance with departmental needs.
9	Perform spatial analyses to address specific research questions using geoprocessing tools and methods (buffering, clipping, calculations, etc.).
10	Develop web-based Geographical Information Systems (GIS) to provide access to spatial data for use by various internal and external users.
11	Identify and define appropriate use of remote sensing technology (e.g., Lidar, aerial photography, satellite imagery) to capture geospatial data for analysis and research support.
12	Identify and define appropriate use of satellite (e.g., Global Positioning System [GPS], Global Navigation Satellite System [GLONASS] and/or ground based positioning systems) to capture geospatial data for analysis and research support.
13	Perform aerial imagery interpretation combined with other geospatial data to produce custom data products.
14	Develop standard data collection procedures and analyze existing procedures to ensure accuracy, consistency, and completeness of data used in reports or research projects.
15	Research source documents (e.g., parcel maps, legal descriptions, permits, historical maps) to assess the accuracy and completeness of data prior to input.
16	Evaluate data sources to determine any limitations in terms of reliability or usability to conduct research projects or in response to policy questions.
17	Perform data validation checks to ensure integrity and accuracy of the data to conduct research projects or in response to policy questions.

18	Identify circumstances requiring complex spatial models, and identify appropriate spatial modeling techniques (e.g., network analysis, cost surfaces, 3D analysis) to address important policy, program evaluation, and other research questions.
19	Identify circumstances requiring custom Geographical Information Systems (GIS) tools for data automation, spatial analysis, or web-based Geographical Information Systems (GIS).
20	Identify and evaluate custom Geographical Information Systems (GIS) tools from external sources to improve operational efficiency and enhance program capability.
21	Create detailed technical specifications for custom Geographical Information Systems (GIS) tools, for use in data automation, spatial analysis, or web-based GIS.
22	Create custom Geographical Information Systems (GIS) tools and/or web applications using appropriate programming languages (e.g., Python, java script, Visual Basic) for use in data automation, spatial analysis, or web-based Geographical Information Systems (GIS).
23	Provide input in creating cartographic standards and guidelines for program implementation to ensure consistency and usability of map products.
24	Create documentation of geospatial datasets (metadata), including abstract, purpose, citations, process steps, and data quality assessment to ensure appropriate use.
25	Create topological relationships between data layers to ensure quality control.
26	Maintain currency with Geographical Information Systems (GIS) technology to evaluate usability and make recommendations to meet organizational needs.
27	Georeference maps to real world coordinates to align data.
28	Develop procedures to facilitate standardization of map products using cartographic tools (e.g., map templates, symbology representations or layer files, basemaps).
29	Create and modify maps using geographic information software, related technology, and the principles of cartography to display research results or in response to policy questions.
30	Prepare and format data from various sources (e.g., spreadsheets, Global Positioning System [GPS], text files, databases, Keyhole Markup language [KML]) for import into Geographical Information Systems (GIS) using various software (e.g., Enterprise GIS, ArcGIS, special-purpose programming language [SQL], Access, Excel, Google Earth).
31	Review the results of a Geographical Information Systems (GIS) analysis (e.g., spatial and tabular analysis) to verify the validity, quality, accuracy and significance.
32	Condense and summarize the results of a Geographical Information Systems (GIS) analysis using software (e.g., spreadsheet, database, statistical) to effectively display important findings in appropriate formats (e.g., graphs, charts, tables).
33	Develop conclusions and make program and policy related recommendations based on findings from research studies in order to propose new research or address questions and issues.

34	Develop descriptive categories for data tabulation/display (e.g., variables, labels) to ensure information is organized and clearly displayed.
35	Develop and/or modify basic customized tools for new and existing applications using programming syntax (e.g., Python, ModelBuilder, VisualBasic).
36	Identify new research based on current trends and laws to advance understanding of the relevant areas of study.
37	Conceptualize and hypothesize research strategies to answer or address questions pertaining to program areas.
38	Review background information to define research problems and incorporate relevant research findings as part of studies, including program development and evaluation.
39	Implement and monitor procedures for the collection of qualitative and quantitative data from existing sources (e.g., local, state and federal agencies, non-governmental groups).
40	Retrieve electronic data from various sources (e.g., computer networks, File Transfer Protocol [FTP], email, the cloud, mobile devices) to store in a secure database or data warehouse.
41	Maintain and update databases containing information from departmental, local, state and federal agencies, non-governmental, and other sources to use in research projects and meet requirements of State and/or federal agencies.
42	Meet with field staff to discuss data-gathering methodology and techniques to ensure data consistency and accuracy.
43	Propose solutions to resolve issues (e.g., project management, design, data collection) with research projects to meet deadlines.
44	Prepare operational definitions and criteria to define project parameters and ensure projects meet objectives.
45	Write documents (e.g., metadata, white papers, issue briefs, journal articles, technical briefs, fact sheets) to summarize the background, methods, results, conclusions and recommendations of studies, program development, and evaluation projects to individuals with varying technical expertise.
46	Read and interpret policy manuals, legislative guidelines, departmental manuals or other written materials related to relevant tasks or assignments.
47	Provide data and documentation for research studies, statistical reports, and other sources to internal and external requestors.
48	Create and modify documentation of group policies, reference materials and procedures (e.g., relational database, model structures, training manuals, workflows).
49	Collaborate with Geographical Information Systems (GIS) and non-GIS staff to identify the needs of the requestor and provide products (e.g., maps, data, spreadsheet, reports).
50	Develop and conduct presentations to advise management, departmental staff, legislative bodies, governmental entities, commissions, agencies and advocacy groups on findings related to the assigned areas of research.

51	Develop and conduct informative presentations on a variety of topics (e.g., research studies, demonstration projects, program evaluations, issues, and recommendations) at conferences and meetings to technical and non-technical audiences.
52	Respond to ad-hoc data requests from internal and external requestors.
53	Provide advice, assistance, and general technical support to management, clients, and other agencies regarding various topics (e.g., data requirements, study implications, evaluation objectives, benchmarks).
54	Manage ad-hoc requests for data, maps, and/or analysis from internal and external requestors.
55	Promote Geographical Information Systems (GIS) technology and capabilities to facilitate executive sponsorship to address a broader range of uses within the department.
56	Write correspondence (e.g., memos, letters, emails, telephone calls) to communicate with various departments and/or internal and external stakeholders.
57	Review and edit documents and written materials (e.g., letters, memos, reports, correspondence) to ensure accuracy and completeness.
58	Prioritize the handling of problems or issues related to the progress of work projects or assignments to determine the best course(s) of action to mitigate the impact of such issues and/or problems.
59	Determine work priorities, scope of assignments and establishes deadlines for work to ensure objectives are met effectively and in a timely manner.
60	Coordinate data gathering process with other units, departments and other jurisdictions to ensure project objectives are met.
61	Provide technical support to others regarding Geographical Information Systems (GIS) functionality, policies and procedures to ensure accuracy and understanding.
62	Develop tentative time schedules for projects to achieve project goals and objectives.