Update

Ministry

Environment and Protected Areas

Describe: Basic Job Details

Position

Position ID

Position Name

Environmental Data Scientist

Current Class

Scientific 3

Job Focus

Operations/Program

Supervisory Level

00 - No Supervision

Agency (ministry) code

Cost Centre

Program Code: (enter if required)

Employee

Employee Name (or Vacant)

Vacant

Organizational Structure

Division, Branch/Unit

RSD, Airshed and Watershed Stewardship

Supervisor's Position ID

Supervisor's Position Name

Data Stewardship Manager

Supervisor's Current Class

Manager (Zone 2)

Design: Identify Job Duties and Value

Changes Since Last Reviewed

Date yyyy-mm-dd

2022-04-08

Responsibilities Added:

The Environmental Data Scientist takes on the additional role of facilitating data communications to the department through dedicated work on the Environmental Data and Information (EDI) communications hub and the GIS-based Environmental Insight (EInsight) platform, which provides EPA staff with access to trusted and credible spatial layers and maps.

The Environmental Data Scientist is an expert at data visualization, able to create graphs, graphics and dashboards so that users can easily access and understand the data that EPA stewards. The Environmental Data Scientist also takes on the added responsibility of automating existing data-related processes to improve efficiencies by creating new tools and apps.

Responsibilities Removed:

No responsibilities removed; however, the Environmental Data Scientist's focus will be shifted to support data communications, and improve data access and data quality to provide trusted and credible data to inform departmental policy and program decisions.

Job Purpose and Organizational Context

Why the job exists:

The responsibilities of the Environmental Data Scientist are carried out under the authority of the *Alberta Environmental Protection and Enhancement Act* (EPEA) and in fulfillment of the Departmental Business Plan. This specialized position provides the department with scientific and technical ability in the field of data science to:

• Facilitate data communications to the department through the Environmental Data and Information (EDI) sharepoint online (SPO) communications hub, which brings together data owners, data controllers, data stewards, and data users to form a community of practice for information sharing, news updates, and advice from experts.
• Maintain and improve the Environmental Insight platform, which is a tool that provides EPA staff with access to all curated and trusted environmental, social and economic GIS spatial layers and other ministry apps.
• Develop dashboards using PowerBI and/or other programming languages to help visualize data and processes such as quality assurance/quality control and data validation and verification of environmental data.
• Create tools and apps to automate processes for data review and validation, and to improve work flow efficiencies.
• Identify research and scientific knowledge gaps, interact with scientific experts, and manage research projects and contracts to improve knowledge and fill these gaps according to the department business plan.
• Develop and apply scientific/statistical standards, protocols and guidelines to ensure environmental data is processed and analyzed in accordance with the scientific conventions and meets the needs of environmental policies.
• Consult and work with external partners and scientific communities to improve capacities in the area of data science.
• Provide scientific support and advice on complex or emerging issues to others in the department and the government.

Responsibilities

1. Develop and maintain EKDS' two main communication platforms: (a) the Environmental Data and Information (EDI) Communications Sharepoint Hub and (b) the Environmental Insight curated GIS platform for environmental spatial data and information.

Activities
• Create Sharepoint pages and lists, and help users create news posts and advice posts to share data and information to EPA.
• Build new functionalities using sharepoint online webparts and apps to effectively bring users to their desired EDI pages efficiently.
• Use all forms of communications such as diagrams, graphs, and videos to showcase important data-related news and information.
• Maintain the Environmental Insight platform, and add new trusted layers and apps as they become available.

2. Improve data access for EPA staff by developing innovative tools such as visualization dashboards, and automation bots. These innovative solutions support data stewards in the execution of their day-to-day operations to provide trusted and credible data to department staff, stakeholders and the public.

Activities
• Using the latest data visualization approaches, create dashboards and interactive graphs/graphics to help EPA staff and external stakeholders understand the air, water, land and biodioversity data that is stewarded by the department.
• In collaboration with department staff, identify areas where automation/programming/coding can be used to increase efficiencies in day-to-day operations.

• Develop new tools and apps to help EPA staff efficiently verify, validate and analyze data to support department business needs.

3. Identify research and scientific knowledge gaps related to data science and statistics, interact with scientific experts and manage research projects and contracts to improve the knowledge of Alberta's environment and fill these gaps according to the department business plan.

Activities
• Remain current on scientific and technical literature by reading international scientific journals and conference proceedings in the fields of environmental science, data governance and data management, statistics, and related specializations.
• Prepare and manage contracts for research projects that are funded in whole or in part by the department.
• Seek funding partnerships with other government agencies and industries and industrial associations for research projects in order to leverage departmental funding.
• Ensure that research results are communicated to stakeholders and the public in accordance with departmental policies, procedures and practices.

4. Develop and apply data and/or scientific standards, protocols and guidelines to ensure environmental data is processed and analyzed in accordance with scientific conventions and meets the needs of the environmental policies.

Activities
• Review, assess and develop tools and instruments relevant to policy development and implementation
• Identify and generate standard procedures necessary to address uncertainties and data gaps using contractors and partners as appropriate
• Provide scientific expertise to, and represent the department on, multi-stakeholder committees involved in the development of environmental objectives.
• Provide training and information sessions to the department staff and stakeholders.

5. Consult and work with external partners and scientific communities to improve scientific capacities in the area of environmental data science and statistics.

Activities
• Interact with stakeholders and clients to identify emerging issues, and to provide scientific advice as part of the process of issue resolution.
• Lead or participate in multi-agency and multi-stakeholder committees and initiatives that provide opportunities for public and stakeholder input into department activities.
• Liaise with colleges, universities and other research institutions to present lectures and seminars, to interact with professionals and students to contribute to meeting department objectives and to ensure that the research community is aware of and involved appropriately in departmental activities.
• Respond to public and stakeholder inquiries regarding departmental initiatives, policies, procedures, practices and legislation.
• Organize and attend national and provincial stakeholder consultation workshops.

Problem Solving

Typical problems solved:

The Environmental Data Scientist is a business area and subject matter expert who works with other departmental experts to provide innovative solutions to solve complex data problems. This will require research into the latest solutions for developing dashboards, automation tools, protocols and reports to address complex or emerging issues. The Environmental Data Scientist should be an expert in using tools such as programming languages, PowerBI and statistical software packages to solve identified data-related problems. The Environmental Data Scientist may encounter problems where the issues are new and the solutions are unknown; therefore requiring a diligent and creative approach to defining problems while

taking an innovative and planned approach to developing solutions.

The Environmental Data Scientist facilitates the coordination of communications and information/spatial hubs. The Environmental Data Scientist must be knowledgeable in sharepoint online tools and webparts, and also be able to expertly navigate various GIS mapping software and products to manage Environmental Insight as the spatial hub for trusted and credible GIS layers.

This position responds to existing and emerging environmental data and statistical issues, and works independently or collaboratively with stakeholders and other government agencies on:
• Identifying and solving data needs and priorities.
• Manages research projects and contracts to address departmental data needs.
• Interact with stakeholders, the public, students and the research community to identify needs and characterize problems and to develop joint work towards issue resolution.

The Environmental Data Scientist develops and applies science and data standards, guidelines, and instruments that are consistent with government policy requirements:
• This includes adhering to GoA-wide IMT policies on data and information security, meta-data requirements, and policies and directives.
• Apply scientific principles, expertise, and technical principles in developing data visualization or automation tools and apps.

Types of guidance available for problem solving:

The types of guidance available to this position include:

• Cross-functional advice from subject matter experts within and external to the department to provide context and information; program and policy team experts and departmental plans can be used to support project work.
• Guidance from the management and leadership team provide strategic insight and decision-making support
• Leveraging research capabilities to find information and guidance on similar issues within peer reviewed scientific journal articles, online courses, available research material, and network contacts.
• Opportunities for continuous learning through workshops and certification programs helps the Environmental Data Scientist stay current with trends and advancements.

Direct or indirect impacts of decisions:

The outcomes of the work of this position will have a direct impact on the internal staff that the Environmental Data Scientist supports. This includes process improvements for data stewards, new visualization approaches for department scientists and improved sharing of data-related news and information. The Environmental Data Scientist regularly interacts and provides advice to various ministry teams, as well as external stakeholders to streamline processes and improve data quality and data access.

The Environmental Data Scientist also improves data access for internal staff and external stakeholders, thereby also impacting external users of EPA data.

Key Relationships

Major stakeholders and purpose of interactions:

Internal stakeholders

• Team members, other departmental subject matter experts, scientists and data stewards.
• Manager, Data Stewardship: working closely together to deliver on data and information products.
• Director, Environmental Knowledge and Data Stewardship: discussing strategic direction and advice related to the communications Sharepoint hub and curated GIS platform; providing advice and information.

The Environmental Data Scientist works closely with partners to develop protocols, processes and tools to

solve statistical problems or improve data access. These partners include:
• Alberta Environment and Park's organization units and other environmental delivery agencies.

External:
• Governments (municipal, other Alberta Ministries and institutions, other provinces, federal).
• Industries (oil and gas, oil sands, utilities, mining, manufacturing, petrochemical, agriculture, forestry).
• Environmental non-governmental organizations and public interest groups.
• Universities, colleges and research institutions.
• Members of the public.

Required Education, Experience and Technical Competencies

Education Level	Focus/Major	2nd Major/Minor if applicable	Designation
Doctorate	Science		

If other, specify:

PhD+2 years experience, MSc+4 years experience, or BSc+6 years experience in data science, stats, etc.

Job-specific experience, technical competencies, certification and/or training:

The Environmental Data Scientist is expected to:
• Have expert knowledge and skills to create data visualization products such as dashboards, graphs and websites; and create tools for data automation using programming languages and PowerBI.
• Have experience with programming statistical software such as R, Python or SAS. Programming/coding capabilities and experience with PowerBI are required.
• Knowledge of database management systems like SQL Server and Oracle, along with experience in ETL processes, is also important.
• Have demonstrated expert knowledge of statistical methodologies and techniques to provide advice as a subject matter expert;
•Scientific research experience and ability to conduct research, if needed.

The Environmental Data Scientist will develop networks and partnerships:
• Ability to work creatively with other agencies and stakeholders to deal with complex scientific issues.
• Ability to identify data or information gaps to address complex or emerging issues.
• Ability to evaluate scientific proposals on a wide variety of environmental issues.
• Ability to interpret existing scientific information and integrate new data and information as it arises, using the latest scientific methods, and present the information in terms understandable to scientific experts, non-scientific stakeholders and members of the public.
• Ability to establish contacts in the academic and professional community to resolve scientific problems and inconsistencies encountered during the course of the work.

The Environmental Data Scientist will support departmental goals, initiatives and strategies:
• Excellent written and oral communication skills to communicate effectively with specialists and non-specialists, including members of the public.
• Strong time management to be effective in balancing multiple demands.
• Interpersonal skills for teamwork and for effective public consultation and facilitation.
• Knowledge of provincial government administrative and financial procedures and policies are an asset.

Behavioral Competencies

Competency	Level A B C D E	Level Definition	Examples of how this level best represents the job
Creative Problem Solving	○ ○ ◉ ○ ○	Engages the community and resources at hand to address issues: • Engages perspective to seek root causes • Finds ways to improve	Develops and applies scientific/statistical/data standards, protocols and guidelines to solve environmental problems to meet the needs of the

		complex systems • Employs resources from other areas to solve problems • Engages others and encourages debate and idea generation to solve problems while addressing risks	team, department and Alberta Government.
Drive for Results	○ ○ ◉ ○ ○	Takes and delegates responsibility for outcomes: • Uses variety of resources to monitor own performance standards • Acknowledges even indirect responsibility • Commits to what is good for Albertans even if not immediately accepted • Reaches goals consistent with APS direction	Ensures that issues brought forward by all stakeholders are addressed in a manner that meets the needs of the participating stakeholders, and keeping within the context of governmental policy and department procedures.
Build Collaborative Environments	○ ○ ◉ ○ ○	Collaborates across functional areas and proactively addresses conflict: • Encourages broad thinking on projects, and works to eliminate barriers to progress • Facilitates communication and collaboration • Anticipates and reduces conflict at the outset • Credits others and gets talent recognized • Promotes collaboration and commitment	Interacts with stakeholders, the public, students, and the research community to identify needs and characterize problems: develop joint projects leading to issue resolution.
Systems Thinking	○ ○ ◉ ○ ○	Takes a long-term view towards organization's objectives and how to achieve them: • Takes holistic long-term view of challenges and opportunities • Anticipates outcomes and potential impacts, seeks stakeholder perspectives • Works towards actions and plans aligned with APS values • Works with others to	Applies scientific principles, expertise, and technical knowledge in developing procedures and tools. Identify the data needs and priorities of the department and manage projects to meet these needs.

		identify areas for collaboration	

Assign

The signatures below indicate that all parties have read and agree that the job description accurately reflects the work assigned and required in the organization.

Employee Name	Date yyyy-mm-dd	Employee Signature
Supervisor / Manager Name	Date yyyy-mm-dd	Supervisor / Manager Signature
Director / Executive Director Name	Date yyyy-mm-dd	Director / Executive Director Signature
ADM Name	Date yyyy-mm-dd	ADM Signature
DM Name	Date yyyy-mm-dd	DM Signature