

## Update

Ministry

Agriculture and Irrigation

### Describe: Basic Job Details

#### Position

Position ID

50002053

Position Name (200 character maximum)

Data Management Analyst

Current Class

Job Focus

Supervisory Level

Agency (ministry) code

Cost Centre

Program Code: (enter if required)

#### Employee

Employee Name (or Vacant)

#### Organizational Structure

Division, Branch/Unit

☐ Current organizational chart attached?

Supervisor's Position ID

Supervisor's Position Name (30 characters)

Supervisor's Current Class

### Design: Identify Job Duties and Value

#### Changes Since Last Reviewed

Date yyyy-mm-dd

Responsibilities Added:

Responsibilities Removed:

## Job Purpose and Organizational Context

Why the job exists:

This position reports to the Water Management Modelling Engineer in the Basin Water Management Section. The Data Management Analyst provides advanced technical and analytical support for Section initiatives related to irrigation water management and irrigated agriculture. This position supports key goals in the Alberta Irrigation Strategy in continued conservation, efficiency and productivity of Alberta's limited water resources. The position manages and analyzes databases and prepares written reports involving irrigation data, weather data, and other water quantity data used for irrigation water modelling in support of water management in the irrigated basins of Alberta. This position requires advanced technical expertise in database management, data analysis and interpretation, modelling agronomic and weather processes, data quality control processes, and computer application management. This position is responsible for ensuring the operation, maintenance and enhancement of irrigation, weather, crop water use and land use databases in support of the District Data Information Tool (DDIT), the Irrigation Demand Model (IDM), the Water Resources Management Model (WRMM) and other water management databases. The position must ensure accuracy, timeliness and accessibility of the databases, applications, modelling output, and information using or adapting existing procedures and protocols as needed. This position requires knowledge concerning operations of Alberta irrigation districts, private irrigation, on-farm irrigation management, irrigation district water management, and an ability to effectively represent those operations through databases, computer modelling and information delivery. This position supports the Section's mandate with modelling projects, preparing reports and communicating findings to stakeholders. The position works independently and in collaboration with modellers, engineers, agrologists, GIS and data analysts, and IT specialists in a team role.

## Responsibilities

Job outcomes (4-6 core results), and for each outcome, 4-6 corresponding activities:

### **1. Maintain, enhance, and perform quality control analysis on irrigation and water management databases to ensure data integrity and availability for modelling, analysis and reporting.**

Collect, process and maintain annual weather, crop, on-farm irrigation system, land, conveyance infrastructure, water flow, and reservoir data from irrigation districts, government, and other sources.

Implement data analysis and Qa/Qc procedures to ensure data accuracy.

Manage and manipulate tabular and spatial data to ensure database integration for application use.

Prepare databases for the Irrigation Demand Model (IDM) and the Water Resources Management Model (WRMM).

Manage data from the District Data Information Tool (DDIT) and other irrigation district provided data to facilitate the production of annual reports and modelling scenarios.

Manage and inspect weather station data.

Ensure accuracy and functionality of spatial model input data in collaboration with the Geospatial Systems Analyst.

Ensure appropriate use of existing database structures within IT network infrastructure in support of the management of irrigation data, reporting and modelling.

Assess opportunities for new and innovative approaches to database management, data analysis, storage and linkages to applications.

### **2. Support modelling projects relating to water management and assessment of potential irrigation scenarios to ensure accurate and timely information.**

Contribute to the development, analysis and evaluation of modelling scenarios in support of projects including irrigation district area expansion, future basin water management planning initiatives, sustainable development of water supply infrastructure, and assessment of the effects of climate

variability on irrigation water supply and demand.

Operate the IDM by setting up scenarios, managing model input and output, and verifying accuracy of the processes and model results.

Provide timely and accurate IDM output to Environment and Protected Areas and consultants for use in water supply models. Assist with use and interpretation of IDM output and related files.

Process, analyze and interpret the modelling results from the IDM and WRMM models.

Contribute to report preparation and presentations to share findings with stakeholders.

Maintain knowledge of irrigation district operations and water management in the basins.

### **3. Support maintenance and enhancement of irrigation and water management applications in support of the program area's mandate and responsibilities.**

Support maintenance and ensure functionality of the Section's applications to meet business needs in a timely manner for reporting, analysis, and modelling requirements.

Ensure continuity of operations of relevant software and databases through managing information technology updates and system migrations.

Collaborate with modelling unit staff, Section staff, and consultants to enhance and maintain applications including the IDM and DDIT.

Collaborate with Section colleagues and stakeholders to determine needs and anticipate changes and liaise with IT and external consultants to stay current on relevant issues and trends in IT and Government of Alberta standards.

Implement innovative ways to automate processes to facilitate business area repetitive tasks.

Contribute to testing, calibrating and validating operations of current and future tools as development and enhancement work take place.

### **4. Support the preparation of the annual Alberta Irrigation Information Report.**

Support preparation of tables and figures required for the annual report, ensuring accurate and relevant information is presented in a meaningful format.

Support specialized requests for data from internal and external stakeholders.

### **5. Provide technical support to other government departments and relevant external agencies.**

Provide technical support to Environment and Protected Areas regarding irrigation demand data generated by IDM and related information for use in WRMM.

Contribute to inter-departmental and external stakeholder water management activities related to irrigation.

Interact and communicate with other agencies, irrigation industry, and the information technology industry to keep informed of current programs, policies, legislation, practices, tools and technology.

## **Problem Solving**

Typical problems solved:

Contribute to ensuring the program area's irrigation related databases, applications, and technical expertise are integrated and optimized to provide accurate technical analysis and useful recommendations

on complex issues.

Types of guidance available for problem solving:

Support from supervisor, Manager, Director, and peers in the Section.

Input from other departments such as Environment and Protected Areas and Technology and Innovation (TI), and from external stakeholders.

Direct or indirect impacts of decisions:

Indirect impacts to department, other government departments, and external stakeholders responsible for water management through provision of high-quality modelling inputs and related data.

Direct impacts to irrigation producers and districts through technical analysis of irrigation expansion risks and opportunities and irrigation water management initiatives.

### Key Relationships

Major stakeholders and purpose of interactions:

Interact daily with work unit supervisor and colleagues to carry out work unit activities, seek direction, and resolve issues.

Interact weekly with Section colleagues, supervisor and Section Manager to discuss and seek direction on project database requirements, data analysis and reporting.

Interact monthly with Government of Alberta TI personnel for application updates, issues, and actions.

Interact monthly with Environment and Protected Areas Modelling Team to collaborate on data, modelling, and analysis.

Interact quarterly or annually with Irrigation Districts to validate data, manage data requests, and provide application support as needed.

### Required Education, Experience and Technical Competencies

Education Level

Bachelor's Degree (4 year)

Focus/Major

Other

2nd Major/Minor if applicable

Designation

Other

If other, specify:

Computer science, information technology or related field: agriculture, env. science or physical geography

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

Minimum of two years' experience with demonstrated expertise in database analysis and management.

Expertise in data manipulation, QA/QC, data analysis, data visualization, and interpretation of results.

#### Specific skills required:

Experience in database management, including expertise in software and coding languages such as MS Access, advanced Excel (including macros), SQL, DB2, Python, R, and Visual Studio.

Experience in using Geographic Information Systems (GIS) software (e.g. ArcGIS Pro).

Thorough understanding of irrigation water demand or water quantity models, their components and database inputs.

Knowledge of water resource management, crop water requirements, on-farm irrigation management, and irrigation district infrastructure and operations.

Well-developed interpersonal communication skills, both written and verbal, for effective communication

with colleagues and stakeholders including consultants, irrigation district staff, research and government.

Teamwork and relationship building with industry, government and other agencies.

Organization, time management, and problem-solving skills.

Analytical skills and ability to take initiative.

### Behavioral Competencies

Pick 4-5 representative behavioral competencies and their level.

Competency	Level					Level Definition	Examples of how this level best represents the job
	A	B	C	D	E		
Creative Problem Solving	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<p>Focuses on continuous improvement and increasing breadth of insight:</p> <ul style="list-style-type: none"> <li>• Asks questions to understand a problem</li> <li>• Looks for new ways to improve results and activities</li> <li>• Explores different work methods and what made projects successful; shares learning</li> <li>• Collects breadth of data and perspectives to make choices</li> </ul>	
Agility	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<p>Works in a changing environment and takes initiative to change:</p> <ul style="list-style-type: none"> <li>• Takes opportunities to improve work processes</li> <li>• Anticipates and adjusts behaviour to change</li> <li>• Remains optimistic, calm and composed in stressful situations</li> <li>• Seeks advice and support to change appropriately</li> <li>• Works creatively within guidelines</li> </ul>	
Develop Networks	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<p>Maintains collegial internal relationships and understands external network:</p> <ul style="list-style-type: none"> <li>• Seeks to understand perspectives and needs of others</li> <li>• Follows through, has integrity and respect for others</li> <li>• Helps and follows through</li> </ul>	

		<ul style="list-style-type: none"> <li>• Keeps key stakeholders informed; is professional and respectful</li> </ul>	
Drive for Results	<input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	Actively sets goals and remains open to advice on reaching them: <ul style="list-style-type: none"> <li>• Sets goals and prioritizes work</li> <li>• Identifies and corrects areas for improvement</li> <li>• Suggests actions; asks for advice when lacking information or multiple priorities</li> <li>• Operates within APS value system</li> </ul>	

### Benchmarks

List 1-2 potential comparable Government of Alberta: [Benchmark](#)

### 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