

Iterative Project Report for Programs & Multi-Year Phased Projects

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GENERAL INFORMATION

Program/Project Name: NorthSTAR (RBDMS) Upgrade

Agency Name: Department of Mineral Resources

Project Sponsor: Michael Ziesch

Project Manager: Melissa Hvidsten

PROJECT DESCRIPTION

This program will use an iterative approach to implement a customized solution that updates the North Dakota (ND) Oil and Gas Risk-Based Data Management System (RBDMS) legacy platform to a web-enabled environment (now called NorthSTAR). Each release will be planned and executed as a separate project. The efforts for each project will involve staff from the ND Department of Mineral Resources (DMR), ND Information Technology Department (ITD), and the Ground Water Protection Council (GWPC). Impacted systems and applications include all components of the RBDMS platform and workflows associated with them. Analysis has been completed to determine all impacted systems, files, interfaces, letters, reports, and batch processing. The solution includes:

- Updates to the RBDMS 3.0 platform, as identified in existing contract with GWPC dated 10/5/2018, implemented over three releases followed by fourth project for knowledge transfer and M&O.
- Migration to ITD's Azure-based Cloud environments to host the upgraded RBDMS 3.0 platform

BUSINESS NEEDS AND PROBLEMS

The business need for this project is rooted in the following issues with the legacy RBDMS platform:

- The legacy RBDMS platform is at end of life, operating on Access 2003 which is no longer supported by Microsoft.
- The legacy RBDMS platform requires a significant amount of manual entry of data by DMR staff, which increases risk of entry error and takes time away from more technical aspects of their jobs.

PROGRAM/PROJECT FORMAT

Program/Project Start Date: The contract with GWPC was approved by the ESC on 10/5/2018. The program kickoff was held on 10/8/2018. The program charter was approved by the ESC on 11/8/2018.

Budget Allocation at Time of Initial Start Date:

Funding Source	Funded Amount	Explanation
Other Funds	\$650,000	From DMR reservoir data fund
Other Funds	\$1,996,030	From GWPC
Budget Sub-Total	\$2,646,030	
Funding Source	Planned Request Amount	Explanation
Special Funds	\$5,000,000	Approved by Legislature
Budget Sub-Total	\$5,000,000	
Funding Source	Budgeted Amount	Explanation
Budget Total	\$7,646,030	

How Many Phases Expected at Time of Initial Start Date: Four

Phase Approach Description: This program will use an iterative approach to implement the solution over three releases. Each release will be planned and executed as a separate project.

Estimated End Date for All Phases Known at Time of Initial Start Date: 1/31/2021

PROGRAM/PROJECT ROAD MAP

The program road map shows the high-level plan or vision for the program/projects/phases. It is intended to offer a picture of the lifespan of all the effort that is expected to be required to achieve the business objectives.

Project/Phase	Title	Scope Statement	Estimated Months Duration	Estimated Budget
Project 1	Release 1	Release 1 implemented the Bond Management, Entity Management, and General Modules, along with their supplemental components.	7 months	\$962,213 (Actual)
Project 2	Release 2	Release 2 implemented the Transfer and Well Management Modules (including the Well Stim, Idle Well, and Underground Injection Control Sub-Modules), along with their supplemental components.	15 months	\$2,425,936 (Actual)
Project 3	Release 3	Release 3 included Compliance, Facilities, Hearing and Docket, Incidents, Inspections, Payments, and (Oil and Gas) Production, along with their supplemental components.	22 months	\$4,336,466 (Actual)
Project 4	Release 3.1 and M&O	Project 4 addresses the needs of the post-Release 3.0 transition period, in which DMR will finish assuming responsibility for supporting and maintaining the NorthSTAR system. It will include continued M&O support for Release 3.0, continued knowledge transfer sessions, and the implementation of bug fixes, DCRs, and Geology Features in Release 3.1.	4 months	\$70,968 (Actual)

Notes:

Release 4 was cancelled. The scope for that release was moved into Release 3.

PROJECT BASELINES

The baselines below are entered for only those projects or phases that have been planned. At the completion of a project or phase a new planning effort will occur to baseline the next project/phase and any known actual finish dates and costs for completed projects/phases will be recorded. The iterative report will be submitted again with the new information.

Project/Phase	Project/Phase Start Date	Baseline End Date	Baseline Budget	Funding Source	Actual Finish Date	Schedule Variance	Actual Cost	Cost Variance
Release 1 Baseline 1	10/08/2018	5/10/2019	\$1,285,115					
Release 1 Baseline 2	10/08/2018	5/10/2019	\$1,054,099	Special/Other	5/17/2019	3.2% Behind	\$962,213	8.7% Under
Release 2 Baseline 1	2/1/2019	1/22/2020	\$2,433,555					
Release 2 Baseline 2	2/1/2019	3/18/2020	\$2,433,555					
Release 2 Baseline 3	2/1/2019	4/3/2020	\$2,637,301	Special/Other	4/30/2020	6% Behind	\$2,425,936	8% Under
Release 3 Baseline 1	1/1/2020	2/28/2021	\$3,583,967					
Release 3 Baseline 2	1/1/2020	3/15/2021	\$4,087,873					
Release 3 Baseline 3	1/1/2020	7/12/2021	\$4,332,881	Special/Other	10/20/2021	18.8% Behind	\$4,336,466	%.008 Over
Release 3.1 Baseline 1	8/30/2021	12/30/2021	\$71,415	Special/Other	12/30/2021	0% Behind	\$70,968	1% Under

Notes:

Release 1 was baselined on 11/30/2018 and re-baselined on 1/11/2019 due to change requests approved by the ESC.

Release 2 was baselined on 4/12/2019 and re-baselined on 7/12/2019 and 11/19/2019 due to change requests approved by the ESC.

Release 3 was baselined on 2/28/2020, then re-baselined on 6/16/2020 and 11/25/2020 due to change requests approved by the ESC.

Release 3.1 was baselined on 11/16/2021.

The program was funded with \$2,796,030 in Other funds (from the DMR reservoir data fund and the GWPC), along with \$5,000,000 in Special funds appropriated from the legislature.

OBJECTIVES

Project/Phase	Business Objective	Measurement Description	Met/ Not Met	Measurement Outcome
All	1.1 Implement modifications to the RBDMS platform in four releases, where each release contains operational components that are immediately useable	1.1.1 Upon completion of each release, each included module is fully deployed and functioning according to documented requirements	Met	1.1.1.1 Business operations continue at current, and in some cases enhanced, levels of efficiency and flexibility with current staffing levels
All	1.2 Maintain access to all legacy data	1.2.1 Upon completion of the program, access to all legacy data is available without having to access multiple systems	Met	1.2.1.1 Access to all legacy data is available and easily accessible for reporting and data analytics. Field staff will have offline access to data with Release 2.1 as a bridge to final release.
All	1.3 Ensure the upgraded platform has increased compatibility for current and future application development and use.	1.3.1 Upon completion of the program, the RBDMS platform will have been upgraded to meet accessibility standards according to documented requirements	Met, work is being done to bring on Well Finder app	1.3.1.1 Stakeholders will have the ability to gain access to other existing and future compatible relevant applications (i.e., the Well Finder application)
All	1.4 Provide stakeholders with enhanced accessibility to the RBDMS platform through web-enabled technology	1.4.1 Upon completion of the program, access to the entire RBDMS platform is available to stakeholders anywhere there is an internet connection	Met	1.4.1.1 Stakeholders will have access to the platform from anywhere there is an internet connection. Field staff have implemented docker solution for offline access to agency data as a bridge to final release.
All	2.1 Eliminate the need for manual entry of data, freeing staff up for more technical aspects of their jobs.	2.1.1 Upon completion of the production module, there should be a reduction of hours of required data entry by approximately 80% for related forms	Future, work is being taken on by DMR post project framework is present.	2.1.1.1 A streamlined workflow will be realized upon completion of the program.
All			Met, largely present with Release 3	2.1.1.2 Improved automation of basic functions, leading to improved accuracy of information (correspondence and form letters, statistical data gathering, event tracking, improved reconciling of data)

Project/Phase	Business Objective	Measurement Description	Met/ Not Met	Measurement Outcome
All	2.2 Maintain or improve existing business functionality/capabilities	2.2.1 Upon completion of each module, there will be no measurable loss of process efficiencies and all process changes, enhancements, and efficiencies identified for inclusion in the release are fully deployed and functioning according to documented requirements	Met/As expected	2.2.1.1 DMS business operations continue at current or improved levels of efficiency without adding staff

POST-IMPLEMENTATION REPORT

Post-Implementation Reports are to be performed after each project or phase is completed. A “PIR” is a process that utilizes surveys and meetings to determine what happened in the project/phase and identifies actions for improvement going forward. Typical PIR findings include, “What did we do well?” “What did we learn?” “What should we do differently next time?”

Project/Phase	Lesson Learned, Success Story, Idea for Next Time, Etc.
Release 1	Lesson Learned: It is very important for the UAT lead to be involved in the design sessions from the very beginning of the release in order to improve the process of script writing and execution during UAT. Early involvement, adequate design reviews with SMEs, and the proper level of documentation will help the team plan for testing and ensure proper traceability of the test scripts from Design to Results.
Release 1	Lesson Learned: It is very important to ensure that all involved developers and SMEs have the opportunity to complete design reviews prior to approval of the designs, and before they are scheduled to begin any development or work that is dependent on the designs.
Release 1	Lesson Learned: : It is very important to ensure that enough time is allotted in the schedule for Implementation and the resolution of any issues after Go Live, and that adequate time is allowed to complete the Lessons Learned process at the end of the project.
Release 1	Lesson Learned: : Late first-time delivery of key application components limits testing time, and it is very important to ensure that key components are scheduled to be completed and delivered early enough in the timeline to avoid causing delays or issues for other downstream (dependency) testing.
Release 1	Lesson Learned: It is very important to ensure that teams have adequate opportunities for communication (such as meetings) when dealing with cross development activities or issues.
Release 1	Lesson Learned: Allowing the legacy system’s data extract and data cleansing to continue until the week of Go Live resulted in a high risk that code changes could be required without adequate time for regression testing in the schedule. In future releases, all conversion work should be scheduled to complete at least 3 weeks prior to Go Live.
Release 1	Lesson Learned: The schedule must include time for adequate testing of legacy data prior to Go Live, and that any data issues must be escalated as quickly as possible.
Release 1	Lesson n Learned: If possible, the UAT environment should be setup with both the NorthSTAR application and the classic system, with an active interface between them.
Release 1	Success Story: The project team worked very well together, with all parties collaborating and showing a high level of investment in the success of the project.
Release 2	Lesson Learned (Communication): When emails exceed 3 responses, call a meeting to avoid confusion and possibly miscommunication.

Project/ Phase	Lesson Learned, Success Story, Idea for Next Time, Etc.
Release 2	Lesson Learned (Communication): Internal DMR staff who were not part of active R2 components would have benefitted from more communication to them as cutover approached, especially field staff who would be taking questions from operators. In future releases, hold an all staff meeting in Bismarck, and either in person demos to 3 field offices, or dedicated webinars to field staff, to address this concern.
Release 2	Lesson Learned (Communication): External Users who are in or being entered into NorthSTAR are not automatically getting uploaded to the communication email list. This caused some Admins to get frustrated with not receiving newsletter updates or communications. We were able to pull down a list of users and emails to include in the Feb 2020 newsletter and will need to repeat that step in future communications.
Release 2	Lesson Learned (Communication): There are times when a word, or terms, from California's WellSTAR project differ from how North Dakota uses the word or terms. Be careful to talk through a topic fully and don't make assumptions.
Release 2	Lesson Learned (Testing): Testing efforts that don't include formal test scripts are difficult to track, in terms of overall status/progress and later auditing of what was specifically tested. Write formal test scripts for every testing effort.
Release 2	Lesson Learned (Testing): UAT efforts started too late. This led to many issues being identified late in the process. Start UAT as early as possible.
Release 2	Lesson Learned (Testing): The performance test scripts for these complex workflows depend on the state of the data, which in many cases is changed any time a test is run. This adds to the complexity of having to rerun any tests. The use of backups and restores was a very effective approach to prepare the system for retesting without requiring script updates due to changes within the data.
Release 2	Lesson Learned (Testing): When bugs and issues were logged it felt like items were not being addressed. Start having a DDC meeting. Have metrics to support bugs that are blocking scripts.
Release 2	Success Story: During the end of Release 2.0, communication increased, the team was flexible in adding DCRs or determining that DCRs could wait until R2.1. In addition, the entire team was working late or weekends to address issues, test issues and provide timely deployments. All of these efforts resulted in a very successful Release 2 cutover.
Release 2	Success Story: DMR delivered a very complex form in Release 2. Kudos to them.
Release 3	Lesson Learned: For future (post-program) performance testing of any development by DMR, DMR will want to ensure that they include adequate time for this testing in their schedule. DMR may also want to consider options for supporting database performance testing.
Release 3	Lesson Learned: Workload and demand for DMR staff were higher than anticipated, which is something that DMR will need to keep in mind for future projects.
Release 3	Success Story: The team was flexible in adding DCRs or determining that bugs or DCRs could wait until after Go-Live, when DMR development staff would begin to take on more responsibility for handling DCRs, defects, and other system support. In addition, the entire team was working late or weekends to address issues, test issues and provide timely deployments. These efforts resulted in a very successful Release 3.0 cutover.
Release 3	Success Story: DMR delivered complex components for Release 3 and took over responsibility for deployments by 10/7/2021.
Release 3.1 / M&O	Lessons Learned: Fewer DMR staff were impacted with this project, which made for fewer complications and less impact to staff overall. A benefit of keeping the scope of a deployment small is that is less likely to have unexpected complications or delays.
Release 3.1 / M&O	Success Story: DMR staff successfully deployed Release 3.1 and have assumed responsibility for handling production issues.

KEY CONSTRAINTS AND/OR RISKS

Risk	Impact	Response
The project could go over time	Legacy system forced to run longer. Staff engagement distracts from core functions.	Change management team would evaluate options
The project could go over budget	Potentially delay completion or force a change in scope.	Change management team would evaluate options
Other functional requirements could be discovered	Potentially delay completion or force a change in scope.	Change management team would evaluate potential options
The upgraded system might not perform as expected	Potentially delay completion or force a change in scope.	Change management team would evaluate potential options
DMR staff resources may be unavailable due to other priorities	Potentially delay completion or force a change in scope.	Change management team would reassign resources as necessary
The program may end before all releases are completed	Potentially forced to operate in two environments	Change management team would evaluate to transition remaining legacy systems