

M.L. 2014 Project Abstract

For the Period Ending December 31, 2016

PROJECT TITLE: Drainage Records Modernization and Statewide Geographic Information System Database
PROJECT MANAGER: Tim Gillette
AFFILIATION: The Board of Water and Soil Resources
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FUNDING SOURCE: Environment and Natural Resources Trust Fund
LEGAL CITATION: M.L. 2014, Chp. 226, Sec. 2, Subd. 05c
APPROPRIATION AMOUNT: \$230,000

Overall Project Outcomes and Results

Approximately 100 counties and watershed districts serve as public drainage authorities (DA) under Chapter 103E drainage law. Their public drainage system administration encompasses more than 21,000 miles of drainage ditches and many thousands of miles of subsurface tile. Historically, their drainage system records have been maintained primarily in hard copy forms using production methods and materials of the time. Many of these records are over a century old and are becoming faded and fragile. Drainage records modernization (DRM) typically begins with creation and cataloguing of electronic copies (scans) of drainage system records. Advanced levels of DRM includes creation of associated geographic information systems (GIS) data layers.

This project included the development of a DRM GIS Database Template along with data standards, and access via a web-based data portal for M.S. Chapter 103E public drainage system hydrographic information (drainage system location, type, alignment, dimensions, profile, and road crossings) on the Minnesota GeoCommons which is administered by the Minnesota Geospatial Information Office (MnGeo). The database Template is available upon request to BWSR by interested drainage authorities statewide through the GeoCommons (<https://gisdata.mn.gov/organization/us-mn-state-bwsr>). Template use requires that the drainage authority upload drainage system hydrographic information on a yearly basis. If a DA desires to receive competitive DRM cost-share, it will be required to use the Template.

This project also included the updating of the Drainage Records Modernization Guidelines first published in 2008 by the BWSR, which is available on the BWSR website.
http://www.bwsr.state.mn.us/drainage/drainage_records_guidelines.pdf

The GIS database template creation and the Drainage Records Modernization Guidelines update were accomplished in coordination with MnGeo and their subcontractor, Houston Engineering, Inc., in consultation with 3 focus groups and a diverse project advisory committee.

Project Results Use and Dissemination

To date the GIS database template and updated Drainage Records Modernization Guidelines have been shared at the Minnesota GIS/LIS Consortium Conference (8/16), the fall meeting of the Minnesota Association of Drainage Inspectors (MADI) (10/16), the annual meeting of the Minnesota Association of Watershed Districts (MAWD) (10/16), the annual meeting of Association of Minnesota Counties (AMC) (specifically the AMC Ag and Rural Development Committee) (12/16), and the Minnesota Association of Soil and Water Conservation Districts (12/16). Plans are being made to continue outreach in 2017. Presently drainage records modernization cost share is before the Minnesota Legislature in the form of a LCCMR appropriation. The outcome of that effort will help establish the form of future DRM outreach.

At present 3 drainage authorities have requested the DRM GIS Database Template. One of those has uploaded drainage system hydrographic information to the GeoCommons.



Environment and Natural Resources Trust Fund (ENRTF) M.L. 2014 Work Plan

Date of Report: February 27, 2017
Date of Next Status Update Report: -----
Date of Work Plan Approval: June 4, 2014
Project Completion Date: December 31, 2016
Does this submission include an amendment request? No

PROJECT TITLE: Drainage Records Modernization and Statewide Geographic Information System Database

Project Manager: Tim Gillette
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Location: Statewide

Total ENRTF Project Budget:	ENRTF Appropriation:	\$230,000.00
	Amount Spent:	\$224,940.15
	Balance:	\$5,059.85

Legal Citation: M.L. 2014, Chp. 226, Sec. 2, Subd. 05c

Appropriation Language:

\$230,000 the second year is from the trust fund to the Board of Water and Soil Resources to develop a template and Web-based geographic information system (GIS) database portal to facilitate statewide modernization of public drainage records under Minnesota Statutes, chapter 103E, and integrate new specifications into existing drainage records modernization guidelines. This appropriation is available until June 30, 2017, by which time the project must be completed and final products delivered.

I. PROJECT TITLE: Drainage Records Modernization and Statewide GIS Database

II. PROJECT STATEMENT: This project will develop a geographic information systems (GIS) database template along with data standards and access via a web-based data portal, for M.S. Chapter 103E public drainage system records. These tools will draw on recent drainage records modernization experience of county and watershed district drainage authorities and their consultants, as well as the experience of the Minnesota Geospatial Information Office (MnGeo) creating and managing databases and geospatial data portals. The database template will be available to interested parties statewide and its use, together with systematic data portal access, are anticipated to be required for drainage authorities to receive competitive drainage records modernization cost-share, when available. This project will not include drainage records modernization cost-share.

The electronic drainage system records enabled by the project database template and data portal will improve GIS data statewide for records such as public drainage system location, type, alignment, dimensions, profile, and road crossings. This will also improve the National Hydrography Dataset, which is critical for multipurpose water management modeling, planning and implementation in Minnesota. The database template and data portal will be developed through and/or by the MnGeo, which is focused on *“Improving services statewide through the coordinated, affordable, reliable and effective use of GIS”*. This project will also update Drainage Records Modernization Guidelines, published in September 2008 by the Board of Water and Soil Resources, including conversion to a web-based document reflecting the project GIS database template and associated data standards. (2014 Funding Priority A. Foundational Natural Resource Data and Information)

Approximately 100 counties and watershed districts serve as public drainage authorities under Chapter 103E drainage law. Their public drainage system administration encompasses more than 21,000 miles of drainage ditches and many thousands of miles of subsurface tile. Historically, records for these drainage systems have been maintained by drainage authorities primarily in hard copy form using different production methods and materials of the time. Many of these records are more than 100 yrs. old and are becoming faded and fragile. Drainage records modernization typically first involves creation and cataloguing of electronic copies (scans) of drainage system records. Advanced levels of modernization include creation of associated GIS data layers enabling the use and incorporation with other spatial data.

Since 1997, BWSR has administered incentives for public drainage system inventories and records modernization to advance drainage management, through Local Water Planning Challenge Grants and Drainage Records Modernization Grants, when available. The stakeholder Drainage Work Group, which involves more than 20 associations, organizations, agencies and academic institutions facilitated by BWSR, has been a proponent of drainage records modernization and preservation guidelines and cost-share. Up to 55 drainage authorities have conducted some level of records modernization to date, with a much smaller number having developed some GIS compatibility. This project will provide a consistent database template with data standards that can be used by the approximately 46 drainage authorities that have not yet conducted drainage records modernization, and enable drainage authorities with prior drainage records modernization to advance their records to a consistent, higher level, when motivated by cost-share and/or local priorities. The Chapter 103E public drainage system records using the GIS database template will be available through a statewide, web-based data portal.

III. PROJECT STATUS UPDATES:

Project Status as of January 1, 2015: An interagency agreement between BWSR and MnGeo for this project was executed on 10-1-14 under the umbrella of the current BWSR / MNIT Service Level Agreement. The procedures used were new for BWSR and MnGeo, which required more coordination time than anticipated. MnGeo project management documents and procedures were developed, including clarification of project deliverables for a GIS contractor and integration with the Minnesota Geospatial Commons data portal. Background work for user business requirements identification was initiated. Contracting methods for GIS

database IT expertise were investigated by MnGeo through MNIT and documents prepared for use of the current Select Five procedure of the state Master Contracts Program SITE (Seeking IT Expertise). Solicitation is now in progress. A Project Advisory Committee (PAC) information sheet was drafted, but member identification timing was modified to avoid overlap with separate PAC member identification for the Minnesota Public Drainage Manual Update Project, which is in process via a CWF appropriation to BWSR. Due to contracting start up delays, approval of an amendment to revise task completion dates within the project period is requested.

Amendment Request, January 15, 2015:

As indicated in the status update as of January 1, 2015, contract development between BWSR and MnGeo, and for MnGeo hiring a consultant, required more time than anticipated. Therefore, it is requested that task completion dates be amended accordingly, within the original project completion date. During project management to date between BWSR and MnGeo, it was determined that a data portal for the new Chapter 103E drainage records GIS database, and access to the updated Drainage Records Modernization Guidelines, can be effectively integrated with the Minnesota Geospatial Commons managed by MnGeo. This will provide more seamless access and use of the Chapter 103E public drainage records database on the MnGeo website. The Geospatial Commons is a collaborative, robust data distribution site that can be used by both traditional and non-traditional GIS users for data from multiple sources. It was publicly released on June 30, 2014. The decision to integrate the project drainage records database into the Geospatial Commons will be reflected in the contractor requirements and deliverables. Associated amendment of activity and task descriptions is requested. The requested amended work plan task completion dates and text are indicated by ~~strikethrough~~ for deleted text and underline for new text.

Amendment Approved: January 21, 2015

Project Status as of July 1, 2015:

1. MNGEO Completed SITE Select Five procedure mentioned in step 4 of Activity Status as of January 1, 2015 section and hired Houston Engineering, Inc. (HEI) as project contractor in February 2015.
2. Project Advisory Committee was formed by Project Team and met for the first time in June to discuss project and plans for the upcoming survey and focus group meetings. The focus groups were to take place in two locations in greater Minnesota and one in the Metro area to obtain feedback from the drainage user community to help define the GIS database template.
3. Due to lower contractor bids than anticipated, the Project Team is meeting to see if there are appropriate task that can be added to the project that will increase the quality and or value of the project outcomes.

Amendment Request, December 14, 2015:

1. Due to workload constraints, Al Kean designated Tim Gillette of BWSR to succeed him as BWSR Project Manager. Al remains involved in the project part-time as a subject matter expert and project advisor.
2. After review of the original timeline it was determined that the dissemination of the template and associated guidance (Activity 4) would be most effective if accomplished in the fall or early winter of 2016. Therefore, a new end date of December 31, 2016 is being requested.

Activity 1

1. The administrative time necessary to hire a consultant was much higher than anticipated in the original budget and would show a negative in the remaining budget column of the update's worksheet if not resolved. To resolve the issue, MNIT/MNGEO budgeted "managing staff" time was shifted along with additional monies into the budget for the GIS Specialist to complete the efforts required for Activity 1.
2. In the original budget the contractor budget for Activity 1 was set at \$13,000 (included \$3,000 for transportation). The chosen contractor specified a total of \$27,933 (including \$433 for transportation- (broken out of a lump sum of \$1,500 specified by the contractor)). The change to the budget numbers has been shown in the table above and in the Budget Status Update.

Activity 2

1. In the original budget the contractor budget for Activity 2 was set at \$116,900 (included \$400 for transportation). The chosen contractor specified a total of \$39,933 (including \$433 for transportation- (broken out of a lump sum of \$1,500 specified by the contractor)). The change to the budget numbers has been shown in the table above and in the Budget Status Update.

Activity 3

1. In the original budget the contractor budget for Activity 3 was set at \$29,600 (included \$400 for transportation). The chosen contractor specified a total of \$25,433 (including \$433 for transportation- (broken out of a lump sum of \$1,500 specified by the contractor)). The change to the budget numbers has been shown in the table above and in the Budget Status Update.

Activity 4

1. In the original budget the contractor budget for Activity 4 was set at \$1,500 (included \$200 for transportation). The chosen contractor specified a total of \$5,200 (including \$200 for transportation- (broken out of a lump sum of \$1,500 specified by the contractor)). The change to the budget numbers has been shown in the table above and in the Budget Status Update.

Amendment Approved: December 18, 2015

Project Status as of January 1, 2016: Work on Activity 1 (development of project team, product scope and data standards) is nearly complete. Project Advisory Committee (PAC) met once in the period, three focus group meetings took place and a survey of potential template and guidelines users was taken. Business requirements (sub-activity 6 of Activity 1) are pending and should be done by the end of January. Activity 2 (development of database template) is well underway: a preliminary draft database template is being developed by the contractor for review and comment by the project team and PAC.

Amendment Request, January 15, 2015:

An amendment is being requested for the budget and workplan for three activities. It is desired to change the transportation budget in Activity 1 to match the transportation budget to actual dollars spent **and** add the amount of that reduction to the transportation budget in Activity 4. There was significant discussion between BWSR and MGEO as to how to reallocate the \$52,500 released by the low cost of the MNGEO's contract with Houston Engineering, Inc. The outcome of those discussion is a request to add tasks to Activity 2 and Activity 4.

Activity 1

1. In the previously revised budget the contractor's transportation budget for Activity 1 was set at \$433. However, the actual amount was \$225. The unspent amount was added to Activity 4. The requested amendment has been indicated in the Activity 1 and Activity 4 Work Plan status and in the Budget Update.

Activity 2

1. An amendment is being requested to add Task 8: Identify at least two drainage authorities willing to enter their ditch data into the GIS database template and consider sharing via the Geospatial Commons. The Activity budget is updated accordingly.
2. An amendment is being requested to add Task 9: Assist identified drainage authorities with entering and sharing their data into the GIS database template and Geospatial Commons while documenting the process (including barriers to completion and gaps in the data) to inform future discussion and outline needs. The Activity budget is updated accordingly.
3. The requested amendment is indicated in the budget update for both MNGEO staff and the contractor. Contract amendments are planned (when the present amendment is approved) to capture the change in dollars.
4. An amendment is being requested to add/adjust the dates of expected completion of the various tasks (both existing and requested) as indicated in the workplan.

Activity 4

1. An amendment is being requested to modify Task 1 to: MnGeo, BWSR and the Contractor will market the template and updated guidelines document to drainage authorities and local government units via associated convention presentations, websites and publications. The Activity budget is updated accordingly.
2. An amendment is being requested to add Task 2: Contractor and MnGeo will establish and document a suitable training method for entering of drainage authority ditch data into the GIS database template and sharing of the data via the Geospatial Commons.

An amendment is being requested to add Task 3: MnGeo will create a dynamic online web map to serve as a demonstration viewer of drainage data obtained through the Geospatial Commons.

Amendment Approved by LCCMR 1-27-2016

Project Status as of July 1, 2016:

The amendment requested in January 15, 2015 was approved by LCCMR which resulted in the aforementioned changes to the overall project budget as well as Activities 1, 2 and 4. Due to increases in the amount of work in Activity 2 the completion date for Activity 3 was moved from June 30th to August 31st of 2016. The amendment adjusted the project completion date from June 30th to December 31st of 2016.

As of July 1st, 2016, Activity 1 has been completed and all of its budget expended. Activities 2 and 3 are nearly complete. Over all the project is 75% complete. The remaining six months of the project will be devoted to Activity 4 (Disseminating information about the GIS database template and guidelines) and finishing up Activities 2 and 3.

Amendment Request, July 15, 2016:

An amendment is being requested for the budget and workplan for three activities. LCCMR approved a workplan/budget amendment in January that in turn required an amendment to the contract between MnGeo and its contractor. Due to state contracting requirements a portion of the monies that had been budgeted for contractor activities had to be shifted to MnGeo. Both the Budget worksheet and the budget disclosures of this document have been updated to reflect those adjustments.

Activity 2

1. In the previously revised budget the contractor's template efforts in Activity 2 was set to the negotiated amount of \$68,108. However, due to state contracting requirements the actual amount had to be reduced to \$66,428.
2. Due to unexpected efforts required to create both the amendment of the Service Agreement between MnGeo and BWSR, as well as, the contract between MnGeo and the contractor, MnGeo's Supervisor had to have additional monies budgeted. That additional amount was funded via the combination of the reduction of the contractor and MnGeo GIS Specialist budgets as well as the elimination of Senior GIS Specialist budget amount from Activity 3.

Activity 3

1. The Senior GIS Specialist budget amount previously in Activity 3 was eliminated for reasons discussed above.
2. In light of the extended contract and adjusted workloads the deadlines for the sub-activities under Activity 3 in the workplan have been adjusted.

Amendment Approved by LCCMR 7-18-2016

Amendment Request in Arrears, July 15, 2016:

The budget numbers in the Budget Update worksheet need to be further amended from the July 15, 2016 amendment for Activity 3 and Activity 4 to assure funding for additional hours necessary for the MnGeo GIS Specialist to complete the tasks related to the activity while recognizing that less hours are needed for the MnGeo Supervisor within each of the two activities. Adjustments should reflect the July 15, 2016 Amendment

Request to shift line item dollars from *Supervisor, GIS Project Services, MnGeo: \$12,000 (70% salary, 30% benefits) 0.025 FTE for 2 years (0.05 FTE)* to *GIS Specialist, MnGeo: \$34,000 (70% salary, 30% benefits) 0.1 FTE for 2 years (0.2 FTE)*.

Amendment Approved by LCCMR 2-21-2017

Overall Project Outcomes and Results:

All activities and associated tasks have been completed as per specification. Project deliverables were completed successfully and include the drainage records database template and supporting guidelines document, user training, and a demonstration web map viewer. In addition, information about the project was disseminated through BWSR’s website, the Minnesota Geospatial Commons, and through presentations by project staff at various trade conferences.

IV. PROJECT ACTIVITIES AND OUTCOMES:

ACTIVITY 1: Develop project team, investigate and define scope of products and data standards.

Description: This activity includes execution of an interagency agreement between BWSR and MnGeo, which will serve as the prime GIS services provider for this project. A project advisory committee will be established, oriented, and consulted to help guide the development of project goals, scope and outcomes. Members of the stakeholder Drainage Work Group, the interagency Drainage Management Team, drainage authority representatives with drainage records modernization and use experience, and other practitioners with relevant expertise (such as hydrologic modelers who have interest in drainage system hydrographic data), will be recruited to serve on the project advisory committee. MnGeo, in collaboration with BWSR, will hire consultant(s) with experience in applicable GIS database development, and web-based data portal compatibility, and having knowledge required to update the Drainage Records Modernization Guidelines. It is anticipated that the database template will focus on drainage system characteristics such as type (ditch or tile), location, alignment, dimensions, profile, road crossings, hydraulic structures, and dates of establishment and improvement (as applicable). In coordination with BWSR and the project advisory committee, MnGeo and consultant(s) will solicit input of drainage authorities and applicable practitioners via survey and focus groups to help define business requirement characteristics and data standards for the GIS database template and data portal use, as well as an associated scope for updating the Drainage Records Modernization Guidelines.

Summary Budget Information for Activity 1:

ENRTF Budget: \$69,725
Amount Spent: \$69,725
Balance: \$0

Activity Completion Date: March 15, 2015

Outcome	Completion Date	Budget
1. Written and executed project agreement between BWSR and MnGeo, as the prime GIS services provider	October 2014	\$0 (in-kind match)
2. Project management documents and procedures developed and coordinated	December 2014	\$5,000
3. Project information materials developed, and project advisory committee established, oriented and consulted	May 2015	\$5,000
4. Selection process for consultant(s) to assist with the development of a GIS database template, data portal integration, and updated Drainage Records Modernization Guidelines are prepared; proposals solicited and consultant(s) selected, in accordance with applicable state procedures	February 2015	\$34,000

5. Survey and focus groups (est. 2 to 4) with drainage authorities and applicable practitioners are conducted to help define business requirements and data standards for GIS database template and Drainage Records Modernization Guidelines	July 2015	\$10,000
6. Specific objectives, business requirements, data standards and other key characteristics are defined for the GIS database template and use with the web-based Minnesota Geospatial Commons (GeoCommons) data portal, as well as the scope for the update of the Drainage Records Modernization Guidelines	January 2016	\$15,725

Activity Status as of January 1, 2015:

1. An interagency Service Authorization agreement between BWSR and MnGeo for this project was signed by BWSR on 9-12-14 and by MnGeo on 10-1-14, under the umbrella of the current BWSR / MNIT Service Level Agreement. This was the first use of this type of MNIT service authorization agreement for BWSR and MnGeo, which required more coordination time than anticipated.
2. The MnGeo primary team members for the project were defined (Jim Krumrie, Project Manager, and Jim Bunning, GIS Senior Consultant). Project management documents and procedures were developed. Project deliverables were clarified between BWSR and MnGeo for GIS database contractor solicitation, including integration of web-based database access with the Minnesota Geospatial Commons.
3. Began Project Advisory Committee (PAC) member identification coordination with stakeholder Drainage Work Group. A PAC information sheet for prospective members was drafted. PAC member identification timing was adjusted to avoid overlap with PAC identification for the Minnesota Public Drainage Manual Update Project, which also began in FY 15 via a CWF appropriation to BWSR.
4. GIS database IT expertise contracting methods were investigated by MnGeo through MNIT. Through the state Master Contracts Program SITE (Seeking IT Expertise), Select Five procedure, MnGeo and MNIT are in the process of hiring a contractor to develop a GIS database template for Minnesota Statutes Chapter 103E public drainage system records and to update the 2008 Drainage Records Modernization Guidelines.
5. No substantial work on this outcome during the reporting period.
6. Background work for definition of user business requirements was initiated.

Activity Status as of July 1, 2015:

These two sub-activities were the only ones worked on within this period.

1. MNGEO completed SITE Select Five procedure mentioned in step 4 of Activity Status as of January 1, 2015 section and hired Houston Engineering, Inc. (HEI) as project contractor in February 2015.
2. Project Advisory Committee was formed and met for the first time in June to discuss project and plans for the upcoming survey and focus group meetings. These were to take place in two locations in greater Minnesota and one in the Metro area to obtain feedback from the drainage user community to help define the GIS database template.

Activity Status as of January 1, 2016:

These two sub-activities were worked on within this period.

1. This sub-activity has been completed. BWSR, MnGeo and the contractor, HEI, held three focus group meetings at different locations in Minnesota: New Ulm, Shoreview and Barnesville from July 28-29. These entailed discussions with local drainage authorities and data users regarding their data needs and issues as well as presentations of the proposed database template and updated guidelines document. In addition, an online survey was run (until August 14) to obtain more specific feedback from the drainage records community regarding the project deliverables, especially from those unable to attend the focus group meetings.

- The information gleaned from the focus group meetings and survey (sub-activity 5) has helped to define the requirements and standards for the database template and updated guidelines document. MnGeo has started writing the requirements and conditions of acceptance documents required by the MPCA Project Management Office (PMO) that oversees BWSR-related projects.

Activity Status as of July 1, 2016:

All sub-activities of this Activity have been completed and all budgeted funding expended. Specifically, this included sub-activity 6 which entailed completing all business requirements, data standards and objectives for the database template as well as the scope for the updated Drainage Records Modernization Guidelines document.

Final Report Summary:

See Activity Status as of July 1, 2016.

ACTIVITY 2: Develop GIS database template and integrate access for public drainage system records with the Minnesota Geospatial Commons web-based data portal.

Description: MnGeo, serving as the prime GIS services provider, will work with the project consultant hired for the development of a GIS database template, integration with the GeoCommons data portal and user guidance documentation for public drainage system records. These products will be developed in accordance with the specific objectives, business requirements, data standards and associated key characteristics defined in Activity 1. Database access will be coordinated with the MnGeo GeoCommons, as appropriate. At least two willing drainage authorities will be sought, with assistance by the contractor, to enter their drainage data into the database template and then share their data via the Geospatial Commons. This process will help MnGeo and the contractor better understand user needs and develop user training.

Summary Budget Information for Activity 2:

ENRTF Budget: \$100,990
Amount Spent: \$ 99,275
Balance: \$ 1,716

Activity Completion Date: October 31, 2016

Outcome	Completion Date	Budget
1. Draft outline and characteristics of GIS database template and web-based access and functionality are defined by consultant and MnGeo	September 2015	\$5,500
2. Review and feedback from MnGeo and appropriate project advisory committee members completed	December 2015	\$3,000
3. Preliminary draft GIS database template developed	January 2016	\$21,750
4. Review and feedback from MnGeo and appropriate project advisory committee members provided on preliminary draft GIS database template and GeoCommons access	March 2016	\$5,000
5. Final drafts of GIS database template, and user guidance are developed and pilot data incorporated for testing	May 2016	\$17,775
6. Review and feedback from MnGeo and appropriate project advisory committee members provided on final draft GIS database template, access via GeoCommons and user guidance	June 2016	\$2,008
7. GIS database template, access via GeoCommons and associated user guidance completed	July 2016	\$10,000

8. Identify at least two drainage authorities willing to enter their ditch data into the GIS database template and consider sharing via the Geospatial Commons	February 2016	\$1,096
9. Assist identified drainage authorities with entering and sharing their data into the GIS database template and Geospatial Commons while documenting process (including barriers to completion and gaps in the data) to inform future discussion and outline needs	October 2016	\$34,861

Activity Status as of January 1, 2015:

No work had been completed on this activity by this date.

Activity Status as of July 1, 2015:

No work had been completed on this activity by this date.

Activity Status as of January 1, 2016:

These three sub-activities were worked on within this period.

1. This sub-activity has been completed. A draft outline of the database template was completed by the contractor in September, 2015 that incorporated input from MnGeo, the focus groups and survey of drainage records stakeholders.
2. This sub-activity has been completed. BWSR, MnGeo and the Project Advisory Committee (PAC) reviewed and provided feedback on the draft outline of the database template. The PAC met in September to discuss the survey results along with the general characteristics of the template outline. BWSR, MnGeo and the contractor, after incorporating the PAC’s feedback, then voted on the specific data characteristics to include in the template.
3. The contractor is in the process of developing a preliminary draft database template based on the feedback from sub-activity 2.

Activity Status as of July 1, 2016:

These following six sub-activities were worked on within this period:

1. This sub-activity has been completed. The contractor completed the preliminary draft of the GIS database template.
2. This sub-activity has been completed. BWSR, MnGeo and the Project Advisory Committee (PAC) reviewed and provided feedback on the preliminary draft of the database template. The PAC met in March, 2016 and their feedback, along with BWSR’s and MnGeo’s was incorporated into the template.
3. This sub-activity has been completed. The final draft of the GIS database template, a template user document and included pilot data were completed by the contractor.
4. Review and feedback by MnGeo and BWSR were provided on final draft of GIS database template and user document that was provided by the contractor. In August the PAC will meet to discuss the final draft of the template.
5. This sub-activity has been completed. The contractor was able to identify two drainage authorities willing to share their data via the Geospatial Commons.
6. The contractor is currently working with one of the drainage authorities identified in sub-activity 8 to enter their data into the GIS database template while documenting the process. There is remaining work to be done for the second drainage authority identified in task 8 of this activity. Also, the increase in budget for this sub-activity is a reflection of the increased need for MnGeo development support for drainage authority publishing to the Geospatial Commons.

Final Report Summary:

The GIS database template has been completed to specifications determined by the Project Team with help provided by the Project Advisory Committee (PAC). The vendor worked with 2 drainage authorities to enter their data into the drainage template as a proof of concept. Delivered data will be uploaded to the Minnesota Geospatial Commons. Access to the template along with supporting instructional documentation is available via the Minnesota Geospatial Commons web portal.

ACTIVITY 3: Update Drainage Records Modernization Guidelines

Description: MnGeo, as the prime GIS services provider, in consultation with BWSR, will oversee the update of the Drainage Records Modernization Guidelines, September 2008, including conversion to a web-based document by the applicable project consultant, in accordance with the scope of work defined in Activity 1 and informed by Activity 2. The project GIS database template, access via the GeoCommons portal and associated data standards will help advance these guidelines.

Summary Budget Information for Activity 3:

ENRTF Budget: \$ \$31,009
Amount Spent: \$ 30,623
Balance: \$ 386

Activity Completion Date: August 31, 2016

Outcome	Completion Date	Budget
1. Outline for updated Drainage Records Modernization Guidelines defined by consultant, in consultation with MnGeo and BWSR	January 2016	\$3,000
2. Review and feedback from MnGeo, BWSR and appropriate project advisory committee members completed for outline	February 2016	\$2,000
3. Preliminary draft of updated Drainage Records Modernization Guidelines developed by consultant	July 2016	\$15,176
4. Review and feedback from MnGeo, BWSR and appropriate project advisory committee members provided on preliminary draft update of Drainage Records Modernization Guidelines	July 2016	\$3,000
5. Final draft of updated Drainage Records Modernization Guidelines is developed	August 2016	\$4,000
6. Review and feedback from MnGeo, BWSR and appropriate project advisory committee members provided on final draft of updated Drainage Records Modernization Guidelines	August 2016	\$2,000
7. Updated Drainage Records Modernization Guidelines completed	August 2016	\$1,833

Activity Status as of January 1, 2015:

No work had been completed on this activity by this date.

Activity Status as of July 1, 2015:

No work had been completed on this activity by this date.

Activity Status as of January 1, 2016:

No work had been completed on this activity by this date.

Activity Status as of July 1, 2016:

These three sub-activities were worked on within this period:

1. This sub-activity has been completed. The outline for the updated Drainage Records Modernization Guidelines document was completed by the consultant.

2. This sub-activity has been completed. MnGeo, BWSR and the PAC reviewed and provided feedback to the consultant on the updated guidelines outline.
3. Using the feedback on the outline from MnGeo, BWSR and the PAC, the consultant is working to develop a preliminary draft of the updated guidelines document. Also, the lack of need for MnGeo development support for this sub-activity allowed the transfer of funds from here to sub-activity 9 of Activity 2 which needed more development support.

Final Report Summary:

A final draft of the guidelines document has been completed by the contractor and is available through the BWSR website.

ACTIVITY 4: Dissemination of template and associated guidance.

Description: To fulfill the requirements for dissemination as budgeted: 1. When complete, the GIS database template and data standards for public drainage system records developed through this project will be made available via the Minnesota Geospatial Commons on the MnGeo_website. 2. Information about availability of these products will be disseminated to all Chapter 103E drainage authorities and their respective associations (Association of Minnesota Counties, Minnesota Association of Watershed Districts), including at their annual meeting / convention. 3. Information about the current status of public drainage records information available via the Geospatial Commons, will be posted on the MnGeo website. 4. BWSR will also include an applicable article in the BWSR Snapshots publication, which is distributed to local government units. Following sub-activity 9 of Activity 2, the contractor and MnGeo will develop training for local drainage authority users to enter data into the database template and then load it into the Geospatial Commons. MnGeo will also create a web map viewer of drainage data loaded into the Geospatial Commons for demonstrating to non-GIS users the value of obtaining and using such data.

Summary Budget Information for Activity 4:

ENRTF Budget: \$ 28,275
Amount Spent: \$ 25,317
Balance: \$ 2,958

Activity Completion Date: December 31, 2016

Outcome	Completion Date	Budget
1. MnGeo, BWSR and the Contractor will market the template and updated guidelines document to drainage authorities and local government units via associated convention presentations, websites and publications	December 2016	\$10,700
2. Contractor and MnGeo will establish and document a suitable training method for entering of drainage authority ditch data into the GIS database template and sharing of the data via the Geospatial Commons	December 2016	\$12,495
3. MnGeo will create a dynamic online web map to serve as a demonstration viewer of drainage data obtained through the Geospatial Commons	December 2016	\$5,080

Status as of January 1, 2015:

No work had been completed on this activity by this date.

Status as of July 1, 2015:

No work had been completed on this activity by this date.

Status as of January 1, 2016:

No work had been completed on this activity by this date.

Activity Status as of July 1, 2016:

No work had been completed on this activity by this date.

Final Report Summary:

Information about the project is marketed on BWSR’s website, the Minnesota Geospatial Commons, and through various trade conferences attended by project staff. A dynamic web map was created and used as a demonstration viewer of drainage data. In addition, a training webinar was created showing users how to enter drainage authority data into the template.

V. DISSEMINATION:

Description: This element has been incorporated as Activity 4 above.

Status as of January 1, 2015:

This element has been incorporated as Activity 4 above.

Status as of July 1, 2015:

This element has been incorporated as Activity 4 above.

Status as of January 1, 2016:

This element has been incorporated as Activity 4 above.

Activity Status as of July 1, 2016:

This element has been incorporated as Activity 4 above.

Final Report Summary:

This element has been incorporated as Activity 4 above.

VI. PROJECT BUDGET SUMMARY:

A. ENRTF Budget Overview:

Budget Category	\$ Amount	Explanation
Personnel:	\$98,428	MnGeo fees for services: 1 Supervisor, GIS Project Services, 0.025 FTE, 2 yrs.; 1 Sr. GIS Specialist, 0.05 FTE, 2 yrs.; 1 GIS Specialist, 0.1 FTE, 2 yrs.
Professional/Technical/Service Contracts:	\$130,072	Consultant(s) to provide expertise and services for the development of a GIS database template, data standards, data portal, user guidance, and update of the Drainage Records Modernization Guidelines, through competitive bid or State Master Contract.
Travel Expenses in MN:	\$1,500	Meetings with project participants and focus groups (est. 2 -4 focus group mtgs.)
TOTAL ENRTF BUDGET:	\$230,000	

Explanation of Use of Classified Staff: MnGeo staff have the GIS database and data portal expertise required to serve as the prime GIS services provider for this project, including contracting, direction and oversight of services provided by qualified consultant(s) through professional - technical contracts. One of the business functions of MnGeo is to provide GIS expertise in these and other areas on a cost-recovery basis. The planned MnGeo staff positions to be involved are classified positions. MnGeo is the best state office to host the web-based database template and data portal developed through this project.

Explanation of Capital Expenditures Greater Than \$5,000: None

Number of Full-time Equivalents (FTE) Directly Funded with this ENRTF Appropriation: 0.35 FTE MnGeo

Number of Full-time Equivalents (FTE) Estimated to Be Funded through Contracts with this ENRTF Appropriation: 0.9 FTE Consultant(s)

B. Other Funds:

Source of Funds	\$ Amount Proposed	\$ Amount Spent	Use of Other Funds
Non-state			
	\$0	\$0	
State			
	\$20,000 (GF)	<u>\$35,772</u>	In-kind BWSR staff time for project management and project advisory cmte.
TOTAL OTHER FUNDS:	\$20,000	<u>\$35,772</u>	

VII. PROJECT STRATEGY:

A. Project Partners:

Supervisor, GIS Project Services, MnGeo: Lead contract and production manager

Sr. GIS Specialist, MnGeo: Technical development and review

GIS Specialist, MnGeo: Technical development and review

Private Consultant(s): Houston Engineering, Inc. - Technical development and support of a GIS database template, data standards, data portal compatibility and guidance documentation for public drainage system records, and technical development and support for update of the Drainage Records Modernization Guidelines.

B. Project Impact and Long-term Strategy: This project will create a GIS database template, data standards, and web-based data portal for public drainage system records, as well as updated Drainage Records Modernization Guidelines. These products will improve public drainage system GIS hydrographic data availability for multipurpose water management modeling, planning and implementation in Minnesota. If, or when, BWSR is appropriated cost-share funding for public drainage records modernization, it is anticipated that the use of these tools and guidelines by Chapter 103E drainage authorities will be required as a condition of receiving a cost-share grant.

C. Spending History:

Funding Source	M.L. 2007 or FY08
General Fund appropriation for development of Drainage Records Modernization Guidelines	\$150,000

VIII. ACQUISITION/RESTORATION LIST:

N/A

IX. VISUAL ELEMENT or MAP(S):

See attached graphic.

X. ACQUISITION/RESTORATION REQUIREMENTS WORKSHEET:

N/A

XI. RESEARCH ADDENDUM:

N/A

XII. REPORTING REQUIREMENTS:

Periodic work plan status update reports will be submitted no later than January 15, 2015; July 15, 2015; January 15, 2016, and July 15 2016. A final report and associated products will be submitted between December 31, 2016 and February 15, 2017.

M.L. 2014 Project Budget

Project Title: Drainage Records Modernization and Statewide Geographic Information System Database

Legal Citation: M.L. 2014, Chp. 226, Sec. 2, Subd. 05c

Project Manager: Tim Gillette

Organization: Board of Water and Soil Resources

M.L. 2014 ENRTF Appropriation: \$230,000

Project Length and Completion Date: 2.5 Years, December 31, 2016

Date of Report: Final Report February 27, 2017



ENVIRONMENT AND NATURAL RESOURCES TRUST FUND BUDGET	Activity 1 Budget	Amount Spent	Activity 1 Balance	Activity 2 Budget	Amount Spent	Activity 2 Balance	Activity 3 Budget	Amount Spent	Activity 3 Balance	Activity 4 Budget	Amount Spent	Activity 4 Balance	TOTAL BUDGET	Total Amount Spent	TOTAL BALANCE
BUDGET ITEM															
Personnel (Wages and Benefits)	\$42,000	\$42,000	\$0	\$34,129	\$32,476	\$1,653	\$5,576	\$5,544	\$32	\$16,723	\$13,765	\$2,958	\$98,428	\$93,785	\$4,643
<i>Supervisor, GIS Project Services, MnGeo: \$12,000 (70% salary, 30% benefits) 0.025 FTE for 2 years (0.05 FTE)</i>	\$1,166	\$1,166	\$0	\$4,023	\$4,023	\$0	\$0	\$0	\$0	\$744	\$450	\$294	\$5,933	\$5,639	\$294
<i>Sr. GIS Specialist, MnGeo: \$23,000 (70% salary, 30% benefits) 0.05 FTE for 2 years (0.1 FTE)</i>	\$386	\$386	\$0	\$1,639	\$815	\$824	\$0	\$0	\$0	\$155	\$0	\$155	\$2,180	\$1,201	\$979
<i>GIS Specialist, MnGeo: \$34,000 (70% salary, 30% benefits) 0.1 FTE for 2 years (0.2 FTE)</i>	\$40,448	\$40,448	\$0	\$28,467	\$27,638	\$829	\$5,576	\$5,544	\$32	\$15,824	\$13,315	\$2,509	\$90,315	\$86,945	\$3,370
Professional/Technical/Service Contracts															
MnGEO Contract with Houston Engineering, Inc to create GIS database template, data standards, web-based data portal and develop user guidance.	\$27,500	\$27,500	\$0	\$66,428	\$66,428	\$0				\$11,144	\$11,144	\$0	\$105,072	\$105,072	\$0
MnGEO Contract with Houston Engineering, Inc to update Drainage Records Modernization Guidelines.							\$25,000	\$25,000	\$0				\$25,000	\$25,000	\$0
Travel expenses in Minnesota															
Meetings with project participants and focus groups (est. 2 -4 focus group mtgs.)	\$225	\$225	\$0	\$433	\$371	\$62	\$433	\$79	\$354	\$408	\$408	\$0	\$1,500	\$1,083	\$417
COLUMN TOTAL	\$69,725	\$69,725	\$0	\$100,990	\$99,275	\$1,715	\$31,009	\$30,623	\$386	\$28,275	\$25,317	\$2,958	\$230,000	\$224,940	\$5,060