

# Good Afternoon



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Program Analyst**

I joined Legislative Audit Division in Feb of 2021 with a Master's in Industrial Engineering from the University of Washington.

# Legislative Audit Division

- Our office conducts three kinds of audits:
  - Financial Compliance
  - Information Systems
  - Performance
- We develop objectives for audits based on assessed risk, we then generate conclusions or recommendations that address the objective.
- We make recommendations to the agency or to the Legislature.



# Performance Audits

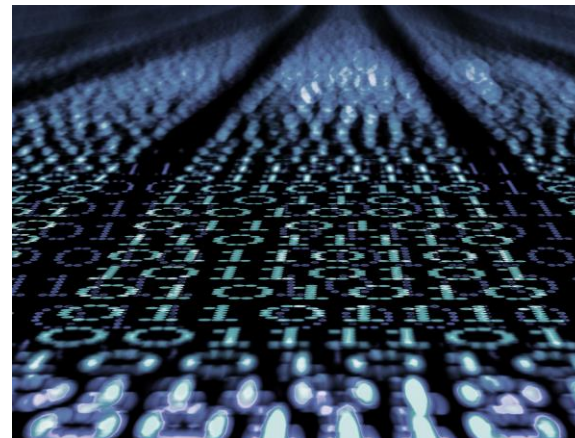
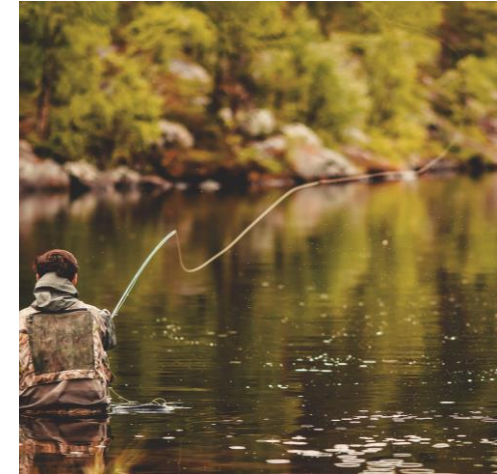
- Performance audits examine the effectiveness and efficiency of state government.
- We usually spend 6 months to 2 years on an audit depending on the objectives.
- We then follow-up with the agency to determine if our recommendations have been implemented.



# Data Quality in the Montana Water Rights Information System

Department of Natural Resources and Conservation

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# Water Rights in Montana

- Landowners can obtain a water right through DNRC to put water to a beneficial use.
- Beneficial uses include:
  - Household
  - Irrigation
  - Livestock
  - Others
- There are about 400,000 water rights in Montana.



# Water Rights Information System (WRIS)

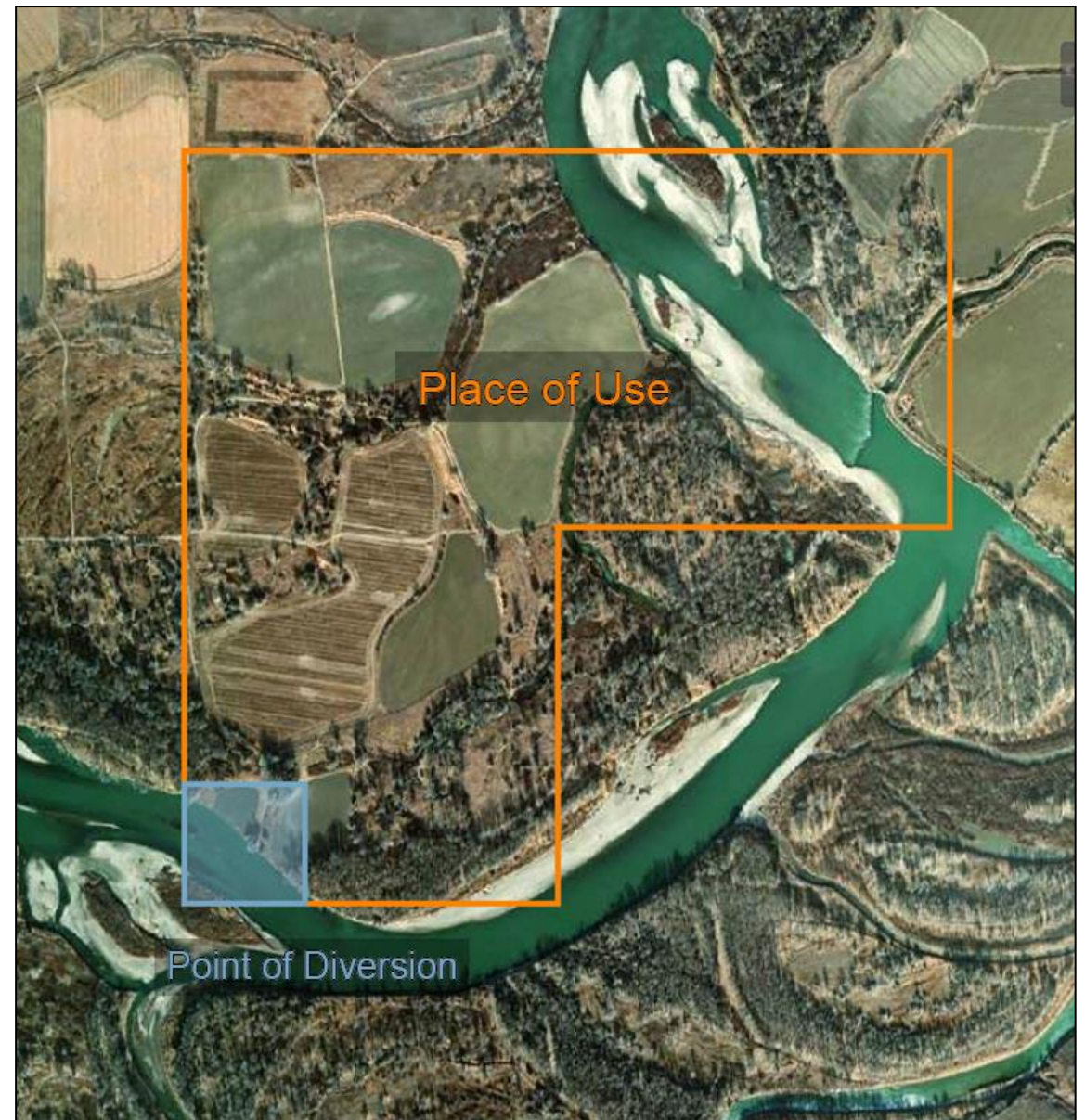
- Electronic database storing information on all water rights.
- Used by
  - DNRC
  - The Water Court
  - Public
- DNRC also stores all paper water right documents with a vendor.





# Water Right Record

- Priority Date
- Purpose
- Point of Diversion
- Place of Use
- Ownership



Owner: State of Montana  
Priority Date: April 15th, 1951  
Source: Yellowstone River

Purpose: Irrigation  
Volume: 320 Acre-Feet  
Maximum Flow Rate: 4,500 GPM



# Objective

Determine the quality of the water right record data housed in the Water Rights Information System.





**Examined Consistency**



**Surveyed Water Right Owners**



**Visited Water Rights in Helena Area**

# Consistency

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## **Water Right Information**

Water right information was over 90 percent consistent between the WRIS and the paper record.



## **Missing Information**

Information was more often missing from the paper record than the WRIS.



## **Scanned Documents**

Over 95 percent of important water right documents are scanned and accessible by the WRIS.



# Survey

We asked owners to verify

- Priority Date
- Purpose
- Owner(s)
- Place of Use
- Point of Diversion
- Geocode(s)



**16% Return Mail**



**Over 90% of respondents marked purpose and ownership correct**



**20% of respondents did not know if the priority date, place of use, point of diversion, or geocode was correct**

# Site Visits

- Owners were a valuable source of verification – if they understood water rights.
- We found errors that could not be identified without observing water usage.





# Conclusion

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- High levels of consistency between the WRIS and paper record.
- The WRIS is generally higher quality than the paper record.
- However, survey responses and physical site visits revealed data quality limitations.
- We identified methods to improve accuracy and quality assurance in the WRIS.

# Data Quality Strategy



DNRC verifies information as it is entered into the WRIS and tracks property transfers with DOR.



However, DNRC relies on owners for ongoing quality assurance.



DNRC did not have a consistent strategy for tracking data quality



# Recommendation #1

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We recommend the Department of Natural Resources and Conservation establish and implement a data quality strategy for the Water Rights Information System that defines desired levels for data quality that are regularly evaluated.

Department: Concur

# Education and Outreach



The Department had not Formalized Outreach



Owner Misunderstandings Create More Work



Owners Want Reminders of Their Information



# Recommendation #2

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We recommend the Department of Natural Resources and Conservation establish an ongoing process for outreach and education including:

- A. Developing professional relationships with title companies and realtors to facilitate greater understanding of water right processes and information, and
- B. Developing a system for owners to sign up for regular reminders regarding their water right information

Department: Concur



**DNRC Maintains a Paper Record  
and the electronic WRIS**



**\$91,000 for Paper Storage Costs  
in Fiscal Year 2022**



**Official Record not Widely  
Understood Across Department**

# Recommendation #3

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We recommend the Department of Natural Resources and Conservation establish the Water Rights Information System as the official record and transition to electronic processes by:

- A. Ensuring historical documents are scanned at acceptable quality,
- B. Creating an online submission option for all applications and updates,
- C. Tracking additional owner contact information electronically such as e-mail address, phone number, etc.

Department: Conditionally Concur



# Scanned Documents

- We found scanned water right documents did not have robust identifying or organizing information.
- The Water Court found scanned files difficult to use for adjudication.



# Uploading Electronic Files

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DNRC did not have a process to directly transfer electronic files internally from the regional offices or from The Water Court.



**No Method for Electronic Transfer**

# Recommendation #4

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We recommend the Department of Natural Resources and Conservation make scanned documents and their processes more functional by:

- A. Establishing an electronic means to transfer documents for upload, both internally and from the Water Court, and
- B. Attaching additional labelling and identifying information to uploaded documents.

Department: Conditionally Concur



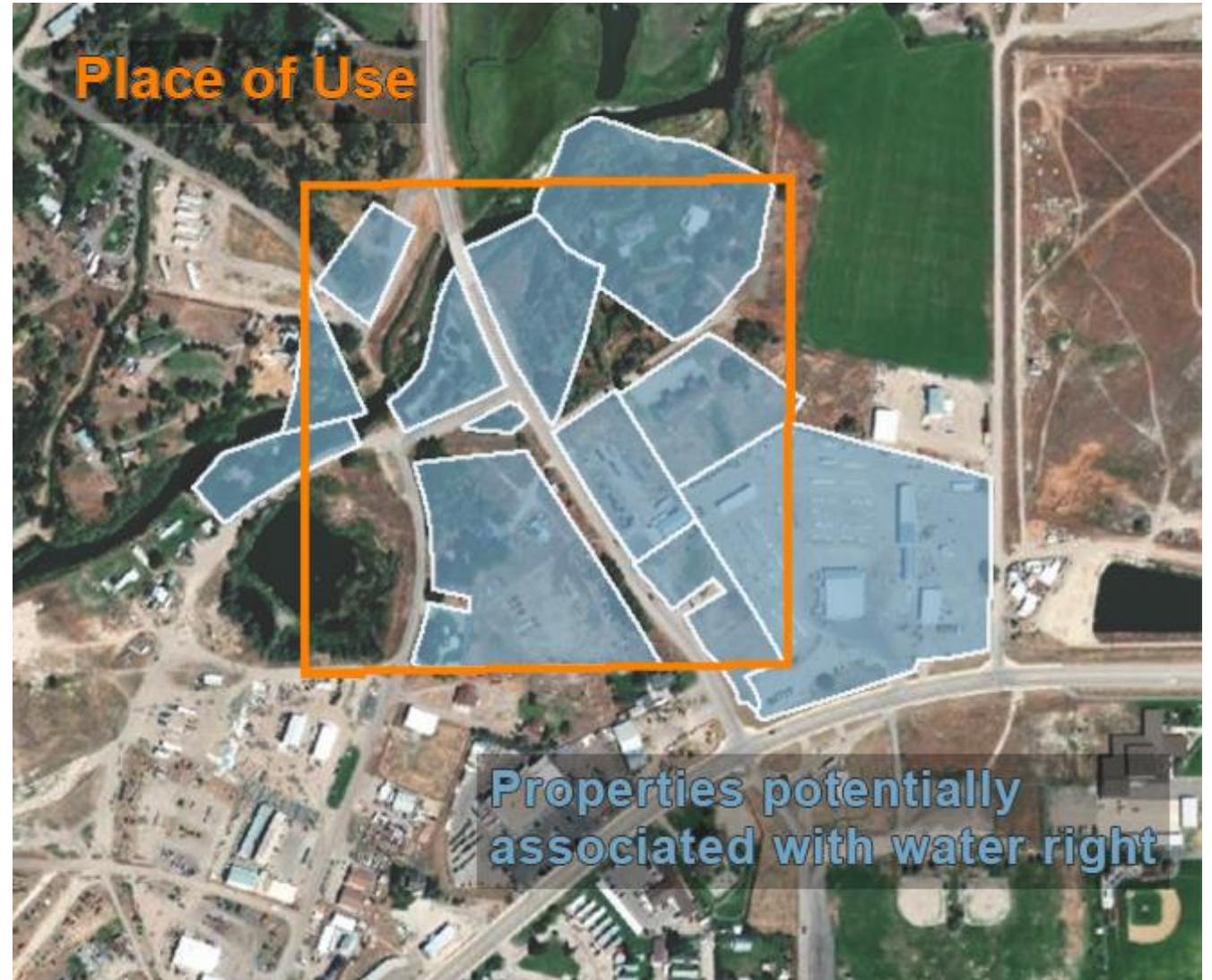
# Maps

- The Department uses maps throughout water right processes.
- Administrative Rule specifies that quarter sections describe water right locations.
- DNRC uses a GIS application internally.



# Effects of Scanned Maps and Quarter Sections

- 10-20% of all water rights have a scanned map where locations are not identifiable.
- 20-25% of survey respondents did not know if their quarter section locations were correct.
- 2.5 acres is the smallest area marked by quarter sections.



# Recommendation #5

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We recommend the Department of Natural Resources and Conservation integrate GIS functionality for stakeholders by:

- A. Introducing a map interface for electronic applications and queries, and
- B. Using additional identifiers for the place of use and point of diversion.

Department: Concur





**Thank You!**

**Happy to Answer Questions**